Sun N1 System Manager 1.3 Operating System Provisioning Guide

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Contents

Preface 7

1 Introduction to OS Provisioning 11
OS Provisioning Overview 11
OS Provisioning Process Overview 11
OS Provisioning Command Overview 12
Hardware and OS Requirements for Systems to be Provisioned 14
RAM and Disk Space Requirements 14
Supported Operating Systems for Provisioning 14

2 Provisioning UNIX Operating Systems 17
UNIX OS Provisioning Overview 17
Supported UNIX Operating Systems 17
UNIX OS Provisioning Process 18
Provisioning the Solaris 10 Operating System 18
▼ To Provision the Solaris 10 OS 18
Managing UNIX OS Distributions 23
Copying OS Distributions and Flash Archives 23
▼ To Copy an OS Distribution From ISO Files 24
▼ To Copy a SUSE Linux Enterprise Server 9 Service Pack OS Distribution from ISO Files 25
▼ To Copy an OS Distribution From CDs or a DVD 26
▼ To Create a Flash Archive 27
▼ To Copy a Flash Archive to the Management Server 29
▼ To Delete an OS Distribution 31
Managing OS Profiles 32
Creating, Listing, and Modifying OS Profiles 32
Default OS Profiles 33
▼ To List the Available OS Profiles 34

▼ To Create an OS Profile 34
▼ To Clone an Existing OS Profile 37
▼ To Modify an OS Profile 37
▼ To Modify the Default Solaris OS Profile for a Sun Fire V40z or a SPARC V440 Server 39
▼ To Modify a Solaris 9 OS Profile for a Sun Fire V20z Server With a K2.0 Motherboard 39
▼ To Delete an OS Profile 41
Installing the UNIX OS on Managed Servers 41
Deploying OS Profiles 42
▼ To Load an OS Profile on a Server or a Server Group 43
▼ To Initiate Network Boot Manually 49

3 Provisioning Windows Operating Systems 51
Windows OS Provisioning Process Overview 51
Windows Image Server Requirements 52
Supported Windows Operating Systems 52
Supported Windows Hardware Platforms 53
Creating Windows Distributions 53
▼ To Set Up a Windows Image on the Windows RIS Server 53
▼ To Create a Windows OS Distribution 54
▼ To Create a Windows OS Profile 55
▼ To Modify a Windows OS Profile 57
Installing the Windows OS on Managed Servers 58
▼ To Load a Windows OS Profile 58
Potential Issues Related to Provisioning Windows OS 61

4 Working with Diskless Clients 63
Diskless Client Overview 63
Diskless Client Provisioning Process Overview 64
Configuring the Diskless File System 64
▼ To Configure a Link to a Solaris Diskless Client Image 64
▼ To Create a Diskless Client Profile 65
Installing Diskless Clients 66
▼ To Install a Diskless Client 66
▼ To Install a Group of Diskless Clients 67
Managing Diskless Clients 69
Uninstalling Diskless Clients 69

Viewing Diskless Client Profiles 69

5 Managing Packages, Patches, and RPMs 71
Introduction to Managing OS Updates 71
Installing Custom OS Updates 73
Installation Script Overview 74
Installing Multiple Solaris Packages 75
Managing OS Updates 75
▼ To Copy an OS Update 75
▼ To Copy a Custom OS Update 78
▼ To Load an OS Update on a Server or a Server Group 79
▼ To List the Available OS Updates 81
▼ To List the OS Updates Installed on a Managed Server 82
▼ To Delete an OS Update 82
▼ To Uninstall an OS Update From a Managed Server 82
▼ To Uninstall an OS Update on a Server Group 83

6 Managing Firmware SP, BIOS, and ALOM Updates 85
Managing Firmware Updates (Overview) 85
Managing Firmware Updates (Tasks) 87
▼ To Copy a Firmware Update 87
▼ To Load a Firmware Update on a Server or a Server Group 89
▼ To List the Available Firmware Updates 91
▼ To List the Firmware Updates Installed on a Managed Server 92
▼ To Modify Firmware Update Information 92
▼ To Delete a Firmware Update 93

Index 95

Preface

The *Sun N1 System Manager 1.3 Operating System Provisioning Guide* explains how to use the Sun N1 System Manager software to distribute consistent operating system images across your enterprise.

Who Should Use This Book

This guide is intended for system administrators who are responsible for installing operating systems onto managed servers running the Sun N1 System Manager software. These system administrators are expected to have the following background:

- Knowledge of the Solaris™ Operating System and Red Hat Linux and the network administration tools provided by each operating system
- Knowledge of the Solaris, Red Hat Linux, SUSE Linux, and Windows operating systems as appropriate for operating systems that you want to install (provision)
- Knowledge of network equipment and network devices from a variety of vendors such as Sun Microsystems, Cisco, Foundry, and Extreme
- Knowledge of network device interconnections and cabling
- Knowledge of the Simple Network Management Protocol (SNMP) because some elements of the N1 System Manager use software that is based on SNMP

Before You Read This Book

Read the following documents:

- *Sun N1 System Manager 1.3 Introduction*
- *Sun N1 System Manager 1.3 Site Preparation Guide*
- *Sun N1 System Manager 1.3 Installation and Configuration Guide*

Related Books

The following books are useful for installing and using the N1 System Manager. When appropriate, more specific references to the information in these books are provided throughout this book.

- *Sun N1 System Manager 1.3 Release Notes*
- *Sun N1 System Manager 1.3 Introduction*
- *Sun N1 System Manager 1.3 Site Preparation Guide*
- *Sun N1 System Manager 1.3 Installation and Configuration Guide*
- *Sun N1 System Manager 1.3 Discovery and Administration Guide*
- *Sun N1 System Manager 1.3 Troubleshooting Guide*
- *Sun N1 System Manager 1.3 Command Line Reference Manual*

Related Third-Party Web Site References

Third-party URLs are referenced in this document and provide additional, related information.

Note – Sun is not responsible for the availability of third-party web sites mentioned in this document. Sun does not endorse and is not responsible or liable for any content, advertising, products, or other materials that are available on or through such sites or resources. Sun will not be responsible or liable for any actual or alleged damage or loss caused or alleged to be caused by or in connection with use of or reliance on any such content, goods, or services that are available on or through such sites or resources.

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*.
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

Introduction to OS Provisioning

OS provisioning is the act of installing a given operating system across several hosts. You can use the Sun N1™ System Manager product to more easily manage, maintain, and track your OS versions and distributions.

This chapter provides an overview of the operating system (OS) provisioning process and supported OS types. This chapter includes the following:

- "OS Provisioning Overview" on page 11
- "Hardware and OS Requirements for Systems to be Provisioned" on page 14

OS Provisioning Overview

The N1 System Manager enables you to provision hundreds of heterogeneous servers using one interface.

Note – The comprehensive OS provisioning process differs slightly by operating system and client type.

OS Provisioning Process Overview

The OS provisioning process consists of several high-level steps. The following graphic illustrates the main tasks in the OS provisioning process.

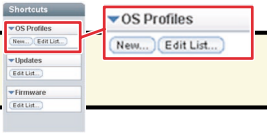
OS Provisioning Process

1. Assume a user role with appropriate privileges.

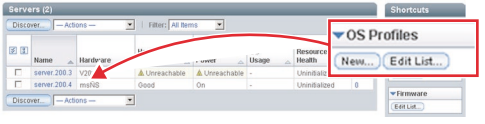
2. Copy an OS distribution to the management server by using the command line.

```
N1-ok> create os myos file /tmp/filename.iso
```

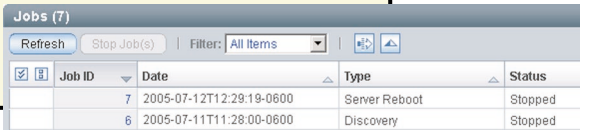
3. Edit the OS Profiles list to view the Shortcut.



4. Drag and drop the icon to launch the Load OS Profile wizard.



5. Track the Load OS job to completion by viewing the Jobs table. Click the job ID to view the job results.



6. Use the command line to add OS monitoring support.

```
N1-ok> add server myserver feature osmonitor
agentip myip agentssh myssh
```

7. Check the System Dashboard to validate that the provisioned OS is running and monitored.

OS Provisioning Command Overview

The `N1–ok` shell provides a simple command set with which to provision and reprovision servers. Use the following list to plan your work and guide you through the provisioning tasks.

1. Configure your hardware to support OS provisioning. A more detailed discussion of appropriate configuration recommendations and requirements is in *Sun N1 System Manager 1.3 Site Preparation Guide*.
2. Assume a user role with appropriate privileges. See "Introduction to User Security" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for procedural information.
3. Provide access to an existing OS distribution. The specific steps differ, depending on the OS and on whether you are provisioning a diskless client.

   To provide access to an OS image, use the `create os` command.

   - For Solaris and Linux systems, copy an OS distribution to the management server. See "To Copy an OS Distribution From CDs or a DVD" on page 26, "To Copy an OS Distribution From ISO Files" on page 24, and "To Copy a Flash Archive to the Management Server" on page 29.
   - For Solaris and Linux diskless clients, configure a link to a diskless client image. See "To Configure a Link to a Solaris Diskless Client Image" on page 64.
   - For Windows systems, make sure that you have access to an appropriately configured RIS server. See "Setting Up a Windows Remote Installation Services Server" in *Sun N1 System Manager 1.3 Site Preparation Guide*.

     Then, create an OS distribution on the RIS server and link it to the management server. See "To Create a Windows OS Distribution" on page 54.
4. Customize the parameters used to install the OS distribution in the OS profile. *Default OS profiles* are created automatically when OS distributions are copied or linked. However, you likely will need to modify this profile to suit your provisioning needs. For Solaris and Linux systems, the default profile is optimized for Sun Fire V20z systems. For information about modifying OS profiles, see "To Modify an OS Profile" on page 37.

   SP

   After successful completion of the Create OS job, an image or *distribution* is identified by its name. The same name is used for the default OS profile. To view the available OS profiles, use the `show osprofile` command and the `all` attribute. For example:

   ```
   N1–ok> show osprofile all
   ```
5. Install an OS profile on a server or a server group.

   To provision individual servers and groups of servers, use the `load server` or `load group` command with the `osprofile` parameter and the required values. For example:

   ```
   N1–ok> load server server osprofile osprofile networktype networktype
   ```

Tip – The N1 System Manager browser interface provides an OS profile wizard and drag-and-drop installation of groups of servers to limit the complexity of OS provisioning. The wizard builds commands to help you learn the syntax and provides default settings to enable efficient configuration of common parameters. See "To Access the N1 System Manager Browser Interface" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for login instructions. Refer to the N1 System Manager online help for wizard instructions.

To reprovision a server or server group with a new OS profile, run the `load` command on a server or server group that was previously provisioned.

6. Track the installation output and the Load OS job progress. See "Connecting to the Serial Console for a Managed Server" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* and "Managing Jobs" in *Sun N1 System Manager 1.3 Discovery and Administration Guide*.
7. After the Load OS job completes, monitor the installed OS. See "OS Health Monitoring" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* and "To Add the OS Monitoring Feature" in *Sun N1 System Manager 1.3 Discovery and Administration Guide*.
8. If you choose not to specify base management or OS monitoring feature support during the load operation, you can add base management and OS monitoring support. See "To Add the OS Monitoring Feature" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for procedural information.

Hardware and OS Requirements for Systems to be Provisioned

This section identifies requirements for systems to be provisioned. Pay specific attention to which specific operating system versions are supported for provisioning on specific hardware systems.

RAM and Disk Space Requirements

Although specific disk space requirements depend on the operating system and distribution being provisioned, managed servers should have the following minimal amounts of RAM and disk space:

- **Disk space** – 12 Gbytes minimum for all managed servers
- **RAM** – 512 Mbytes minimum, 1 Gbyte recommended

Supported Operating Systems for Provisioning

The following tables provide the complete list of operating systems that can be installed and are supported on the provisionable servers with the N1 System Manager.

Note – Solaris 9 OS on x86 platform distributions require the application of two updates from a separate patch server if your management server is running Linux. See "To Patch a Solaris 9 OS Distribution by Using a Solaris 9 OS on an x86 Patch Server" in *Sun N1 System Manager 1.3 Troubleshooting Guide* for detailed instructions on how to create a valid Solaris 9 OS on x86 platform distribution. These patches are necessary for the N1 System Manager to be able to provision Solaris OS 9 update 7 and below. This procedure is not required for Solaris OS 9 update 8 and above.

The following tables list hardware and operating system requirements for managed servers that the N1 System Manager can provision.

TABLE 1–1 SPARC-Based Provisionable Server Hardware and Operating System Requirements

Hardware Name	Management Port Type	Supported Provisionable Operating Systems
Sun Netra 240 and 440	ALOM	Solaris 10 GA and later
		Solaris 9 Update 7 and Update 8
Sun Fire V210, V240, and V440	ALOM	Solaris 10 and Solaris 10 Update 1
		Solaris 9 Update 7 and Update 8
Sun Fire T1000 and T2000	ALOM	Solaris 10 HW2 and later
Sun Fire V490 and V890	RSC	Solaris 9 Update 7 and Update 8
		Solaris 10 and Solaris 10 Update 1

TABLE 1–2 x86–Based Provisionable Server Hardware and Operating System Requirements

Hardware Name	Management Port Type	Supported Provisionable Operating Systems
Sun Fire X2100 with the 8081A IPMI 1.5 Remote Management Card: Part Number: 371-0743	SP	Solaris x86 Version 10 HW1 and later
		Red Hat Enterprise Linux 3.0 WS, ES, and AS Update 5 and 6, 32–bit and 64–bit
		Red Hat Enterprise Linux 4.0 WS, ES, and AS Updates 1 and 2, 32–bit and 64–bit
		SUSE Linux Professional 9.2 and 9.3, 64–bit only
		Windows 2003SE/2003EE (64-bit)
		Windows 2003SE/2003EE SP1 (32-bit)

TABLE 1–2 x86–Based Provisionable Server Hardware and Operating System Requirements *(Continued)*

Hardware Name	Management Port Type	Supported Provisionable Operating Systems
Sun Fire X4100 and X4200	ILOM	Solaris x86 Version 10 HW1 and later
		Red Hat Enterprise Linux 3.0 WS, ES, and AS Updates 5 and 6, 32–bit and 64–bit
		Red Hat Enterprise Linux 4.0 WS, ES, and AS Updates 1 and 2, 64–bit only
		SUSE Linux Enterprise Server 9 Service Pack (SP) 1, SP2, and SP3, 64–bit only
		Windows 2003SE/2003EE SP1 (32-bit)
		Windows 2003SE/2003EE (64-bit)
Sun Fire V20z and V40z	SP	Solaris x86 Version 10 and later
		Solaris x86 Version 9 update 7 and update 8
		Red Hat Enterprise Linux 3.0 WS, ES, and AS, Updates 1 through 6 for 32–bit only
		Red Hat Enterprise Linux 3.0 WS, ES, and AS, Updates 3 through 6, 64-bit only
		Red Hat Enterprise Linux 4.0 WS, ES, and AS, 64-bit only
		Red Hat Enterprise Linux 4.0 WS, ES, and AS update 1 and 2, 32–bit and 64-bit
		SUSE Linux Enterprise Server 9, 32–bit and 64–bit
		SUSE Linux Enterprise Server 9 SP1 and SP2, 32–bit and 64–bit
		SUSE Linux Professional 9.2 and 9.3, 32–bit and 64–bit
		SUSE Linux Professional 9.3, 32–bit and 64–bit
		Windows 2003SE/2003EE/2003WE (32-bit)
		Windows 2003SE/2003EE (64-bit)
		Windows 2000S/2000AS (32-bit)

◆ ◆ ◆ CHAPTER 2

Provisioning UNIX Operating Systems

This chapter describes how to use the N1 System Manager to install Solaris and Linux operating systems on managed servers throughout your data center. For information related to the Windows OS, see Chapter 3. For information about working with diskless clients, see Chapter 4.

The chapter contains the following information:

- "Provisioning the Solaris 10 Operating System" on page 18
- "Managing UNIX OS Distributions" on page 23
- "Managing OS Profiles" on page 32
- "Installing the UNIX OS on Managed Servers" on page 41

UNIX OS Provisioning Overview

This section identifies the UNIX operating systems that N1 System Manager can provision and summarizes the overall provisioning process.

Supported UNIX Operating Systems

The N1 System Manager is able to install the following UNIX-based operating systems onto managed servers:

- Solaris
- Red Hat Linux
- SUSE Linux

For detailed information about specific OS versions and hardware support, see "Hardware and OS Requirements for Systems to be Provisioned" on page 14.

UNIX OS Provisioning Process

The following process describes the high-level process for managing Solaris and Linux installations across your enterprise.

1. Configure your hardware to support OS provisioning. A more detailed discussion of appropriate configuration recommendations and requirements is in *Sun N1 System Manager 1.3 Site Preparation Guide*.
2. Assume a user role with appropriate privileges. See "Introduction to User Security" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for procedural information.
3. Copy an OS distribution to the management server. See "Managing UNIX OS Distributions" on page 23.
4. Verify that the servers you want to provision are known to N1 System Manager. See Chapter 4, "Discovering Manageable Servers," in *Sun N1 System Manager 1.3 Discovery and Administration Guide*.
5. If needed, customize the default OS profile that was created when you copied the OS distribution. See "Managing OS Profiles" on page 32.
6. Load the OS profile onto your managed servers. See "Installing the UNIX OS on Managed Servers" on page 41.
7. Track the Load OS job to completion.

Provisioning the Solaris 10 Operating System

This section explains how to use the N1 System Manager command-line interface to provision the Solaris 10 OS. The process for provisioning the Red Hat Linux and SUSE Linux operating systems is similar.

Tip – You can also perform some provisioning steps from the browser interface. These steps are identified in the following procedure, along with information about where to access those features from within the browser interface. For detailed information about performing tasks in the browser interface, view the N1 System Manager online help.

▼ To Provision the Solaris 10 OS

Before You Begin

- Read "SP-Based Discovery" in *Sun N1 System Manager 1.3 Discovery and Administration Guide*.
- Download the Solaris 10 DVD ISO file to a directory that is accessible by the management server.
- Update the disk device path for the machine type on which you will be provisioning the Solaris OS.

1 Copy the Solaris 10 OS ISO file to the management server.

```
N1-ok> create os os-name file file-location
```

See "To Copy an OS Distribution From ISO Files" on page 24 or "To Copy an OS Distribution From CDs or a DVD" on page 26 for more information.

Note – This operation is CPU intensive and might take several minutes to complete.

A default OS profile is created on the management server. For Solaris and Linux systems, the default profile is optimized for Sun Fire V20z systems. To view the list of OS profiles, type **show osprofile all**.

2 (Optional) Set up a flash archive file on the management server.

See "To Copy a Flash Archive to the Management Server" on page 29.

3 (Optional) Create a custom post-installation script on the management server to add a host.

The following sample script is named `/etc/sysconfig/network-scripts/add-solaris-host`. This script adds a host to the `/etc/hosts` file on a managed server.

```
echo "129.10.12.101 myhost" >>/a/etc/hosts
```

4 (Optional) Customize the default OS profile to use a flash archive and a post-installation script.

```
N1-ok> set osprofile osprofile-name flar flar
```

The *flar* attribute value is the full path and flash archive file name, for example, `/jumpstart/Flash/archive1.flar`.

```
N1-ok> add osprofile osprofile-name script script type type
```

The *script* attribute value is the full path and script file name, for example, `/etc/sysconfig/network-scripts/add-solaris-host`.

The *type* attribute specifies the time when the custom script will run during the installation. Valid values for the type attribute are:

- `pre` – Run the script before the installation (for example, drivers).
- `post` – Run the script after the installation.

The OS profile is modified to use the designated post-installation script and the flash archive file.

5 To use the browser interface to perform the rest of the provisioning procedure, you might want to perform the following two steps:

a. Show the drag-and-drop OS profile icon on the Dashboard tab.

i. On the Task Shortcuts pane, click the Edit List button beneath the OS Profiles list.

The list of available OS profiles appears.

ii. Select the relevant check box and click OK.

The selected OS profile is added to the Task Shortcuts pane.

b. (Optional) Connect to the serial console of the managed server.

i. Choose All Servers from the View Selector menu.

The Servers table appears.

ii. Select the server for which you want to launch a serial console.

The Server Details page appears.

iii. Choose Open Serial Console from the Actions menu.

The serial emulator appears.

6 Load the OS profile on a server or server group.

- **To load the OS profile on a server, use the following command:**

```
N1-ok> load server server-name osprofile profile-name networktype=static ip=ip-address
```

Note – The `networktype` attribute must be set to `static` for Solaris profile installations. See Table 2–2 and "load server" in *Sun N1 System Manager 1.3 Command Line Reference Manual* for details.

The `ip` attribute specifies the static IP to assign to the provisioned server.

- **To load the OS profile on a server group, use the following form of the command:**

```
N1-ok> load group group-name osprofile osprofile-name [excludeserver=ip-address-range]
networktype=static ip=ip-address-range
```

The optional `excludeserver` attribute enables you to exclude specified IP addresses from the load operation. For the `excludeserver` and `ip` attributes, you can provide a list of addresses, separated by commas, or a range of addresses, specified with a hyphen.

Tip – You can also load the OS profile from the browser interface. To do so, drag and drop the OS profile icon from the Task Shortcuts pane to a server or server group. The Load OS Profile wizard appears. Follow the steps on the screen to load the OS profile.

---

7 View the job status.

```
N1-ok> show job job-number
```

Tip – You can also track the progress of the OS profile installation from the browser interface. To do so, use one of the following methods:

- Launch the Serial Console window and view its output.
- Click the Jobs tab to view the OS Load job, and click the Job ID for details.
- Click the Event Log tab to view any events generated by the job.

Example 2–1 Provisioning the Solaris 10 OS through the Command Line

For the following example, assume that you have created a Solaris 10 OS on x86 platform flash archive file named `archive1.flar` and that you have created a post-installation script called `add-host`. Your management server is also assumed to be running the Solaris 10 OS on x86 platform software.

The following example shows how to copy an OS distribution from the `/tmp/solarisdvd.iso` file.

```
N1-ok> create os solaris_ver10 file /tmp/solarisdvd.iso
Job "1" started.
```

The following example shows how to add a line to the `/etc/dfs/dfstab` file, below the last comment, which creates the `/jumpstart/Flash` directory.

```
# vi /etc/dfs/dfstab

# Put custom additions below (Do not change/remove this line)
share -F nfs -o ro,anon=0 -d "Flash Share" /jumpstart/Flash
```

The following example shows how to copy the flash archive to the `/jumpstart/Flash` directory.

```
# cp /tmp/archive1.flar /jumpstart/Flash/
```

The following example shows how to restart NFS.

```
# /etc/init.d/nfs.server stop
# /etc/init.d/nfs.server start
```

The following example shows how to create an OS profile that uses the flash archive.

```
N1-ok> create osprofile solaris_ver10 rootpassword admin
flar /jumpstart/Flash/archive1.flar
description "solaris 10with flar" os solx86
Job "2" started.
```

The following example shows how to add a swap partition to the OS profile.

```
N1-ok> add osprofile solaris_ver10 partition swap sizeoption fixed size 2048
device c1t1d0s1 type swap
```

The following example shows how to add a root partition to the OS profile.

```
N1-ok> add osprofile solaris_ver10 partition / sizeoption free device
c1t1d0s0 type ufs
```

The following example shows how to add a post-installation script to the OS profile.

```
N1-ok> add osprofile solaris_ver10 script
/etc/sysconfig/network-scripts/add-host type post
```

The following example shows how to load the OS profile on a server group with the name `devgroup`.

```
N1-ok> load group devgroup osprofile solaris_ver10
excludeserver=192.168.73.205,192.168.73.31,192.168.73.14
networktype=static ip=192.168.72.201-192.168.73.214
Job "3" started.
```

The `excludeserver` attribute excludes the specified IP addresses from the load operation. The `networktype` attribute specifies the static IP range to assign to the provisioned servers.

The `networktype` attribute must be set to `static` for Solaris profile installations. See Table 2–2 and "load server" in *Sun N1 System Manager 1.3 Command Line Reference Manual* for details.

The following example shows how to view the job status. The number 3 in this example is the number of the job that was started in the preceding `load group` example.

```
N1-ok> show job 3
Job ID:   3
Date:     2005-06-01T13:11:46-0600
Type:     OS Load
Status:   Completed (2005-06-01T13:11:59-0600)
Command:      load group devgroup osprofile solaris_ver10
excludeserver=192.168.73.205,192.168.73.31,192.168.73.14
networktype=static ip=192.168.72.201-192.168.73.214Owner:    root
Errors:   0
Warnings: 0
```

Troubleshooting "OS Distributions and Deployment" in *Sun N1 System Manager 1.3 Troubleshooting Guide*

See Also

- "To Copy a Flash Archive to the Management Server" on page 29
- "Connecting to the Serial Console for a Managed Server" in *Sun N1 System Manager 1.3 Discovery and Administration Guide*

Next Steps "To Add the OS Monitoring Feature" in *Sun N1 System Manager 1.3 Discovery and Administration Guide*

Managing UNIX OS Distributions

This section describes the following tasks:

- "To Copy an OS Distribution From ISO Files" on page 24
- "To Copy a SUSE Linux Enterprise Server 9 Service Pack OS Distribution from ISO Files" on page 25
- "To Copy an OS Distribution From CDs or a DVD" on page 26
- "To Copy a Flash Archive to the Management Server" on page 29
- "To Delete an OS Distribution" on page 31

Copying OS Distributions and Flash Archives

Before you can install an OS profile on a managed server, you must copy an OS image. This copied image is called an OS *distribution*. You can copy an OS image from files that are located on the management server or from a network mounted file system. OS distributions are copied to the directories on the management server as follows:

- Linux management server:
  - Linux OS distributions: `/var/opt/sun/scs/share/allstart/`
  - Solaris OS distributions: `/var/opt/sun/scs/share/allstart/jumpstart/`
- Solaris management server:
  - Linux OS distributions: `/var/opt/SUNWscs/share/allstart`
  - Solaris OS distributions: `/var/js`

Supported file types are:

- CD ISO files (Linux only)
- CD media (Linux only)
- DVD ISO files
- DVD media

Note – The N1 System Manager does not support the copying of Solaris OS CDs and CD ISO files. You must copy a Solaris DVD or DVD ISO file.

Refer to "Hardware and OS Requirements for Systems to be Provisioned" on page 14 for a detailed list of supported distributions for each provisionable server type.

To copy an OS distribution, use the `create os` command. Type `help create os` at the `N1–ok` command line for syntax and parameter details, or see "create os" in *Sun N1 System Manager 1.3 Command Line Reference Manual*. Refer to the following procedures for instructions about how to copy an OS distribution:

- "To Copy an OS Distribution From ISO Files" on page 24

- "To Copy a SUSE Linux Enterprise Server 9 Service Pack OS Distribution from ISO Files" on page 25
- "To Copy an OS Distribution From CDs or a DVD" on page 26

After you have copied an OS distribution, you can copy a flash archive file to the management server for use with a customized OS profile. Copying flash archives involves several manual steps, but it provides the most efficient method for loading OS distributions with the N1 System Manager. See "To Copy a Flash Archive to the Management Server" on page 29.

▼ To Copy an OS Distribution From ISO Files

This procedure describes how to copy an OS distribution to the management server from a set of ISO files by using the command line.

Note – After a distribution is copied, an OS profile of the same name is created by default. This profile appears in the OS Profiles list in the Task Shortcuts pane of the browser interface or by typing `show osprofile all` at the `N1–ok>` prompt.

Before You Begin

- Download the set of ISO files to a directory that the management server can access or network mount.

  Note – The N1 System Manager does not support the copying of Solaris OS CDs and CD ISO files. You must copy a Solaris DVD or DVD ISO file.

- Move any file systems off the `/mnt` mount point.

1 Log in to the N1 System Manager.

See "To Access the N1 System Manager Command Line" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

2 Type the following command:

```
N1-ok> create os os-name file file[,file...]
```

The *file* identifies the absolute full path name to the file.

See "create os" in *Sun N1 System Manager 1.3 Command Line Reference Manual* for details.

3 Verify that the OS distribution was copied.

```
N1-ok> show os all
```

The OS distribution appears in the output.

Example 2–2 Creating an OS Distribution from a File

The following example shows how to create an OS distribution for Solaris 10 from a single Solaris DVD ISO file.

```
N1-ok> create os solaris_ver10 file /tmp/solaris_10_dvd.iso
Job "7" started.
```

Example 2–3 Creating an OS Distribution from Several Files

The following example shows how to create an OS distribution for Red Hat Linux from several ISO files. This command must be typed as a single line.

```
N1-ok> create os RHEL30 file
/os/RHEL3/RHEL3AS-U3-re1215.RC1.0-i386-disc1.iso,
/os/RHEL3/RHEL3AS-U3-re1215.RC1.0-i386-disc2.iso,
/os/RHEL3/RHEL3AS-U3-re1215.RC1.0-i386-disc3.iso,
/os/RHEL3/RHEL3AS-U3-re1215.RC1.0-i386-disc4.iso
```

See Also To find out how to load the OS distribution, see "To Load an OS Profile on a Server or a Server Group" on page 43.

▼ To Copy a SUSE Linux Enterprise Server 9 Service Pack OS Distribution from ISO Files

The following procedure describes how to copy a SUSE Linux Enterprise Server (SLES) 9 Service Pack (SP) OS distribution to the management server. To copy an SLES SP distribution, you must first copy the base distribution, then add the SP to it. Although the specific example below illustrates SP1, the same process applies to all SLES 9 SP numbers.

Before You Begin Move any file systems off the `/mnt` mount point.

1 Copy the SLES 9 distribution.

Use a command similar to the following.

```
# n1sh create os sles9u1 file
  /directory/SLES-9-i386-RC5-CD1.iso,/directory/SLES-9-i386-RC5-CD2.iso,
  /directory/SLES-9-i386-RC5-CD3.iso,/directory/SLES-9-i386-RC5-CD4.iso,
  /directory/SLES-9-i386-RC5-CD5.iso,/directory/SLES-9-i386-RC5-CD6.iso
```

Note – Wait for the Create OS command to complete before going to the next step.

2 Copy the SLES 9 SP distribution:

Note – When you add the update, use the same OS profile name as you used in the previous step.

Type a command similar to the following. This example uses SLES 9 SP1. Replace file names as appropriate for other service packs, such as SP2 and SP3.

```
# n1sh create os sles9u1 file
  /directory/SLES-9-SP-1-i386-RC5-CD1.iso,/directory/SLES9/SLES-9-SP-1-i386-RC5-CD2.iso,
  /directory/SLES-9-SP-1-i386-RC5-CD3.iso
```

3 Verify that the OS distribution was copied.

```
N1-ok> show os all
```

The OS distribution appears in the output.

See Also To find out how to load the OS distribution, see "To Load an OS Profile on a Server or a Server Group" on page 43.

▼ To Copy an OS Distribution From CDs or a DVD

This procedure describes how to copy an OS distribution to the management server from CDs or a DVD by using the command line.

Note – The N1 System Manager does not support the copying of Solaris OS CDs and CD ISO files. You must copy a Solaris DVD or DVD ISO file.

When copying an OS distribution from multiple installation CDs, you must run the `create os` command multiple times. For example, if you are copying an OS distribution that is provided on two CDs, you must insert the first CD, run the `create os` command, and wait for the job to complete. Once the first job completes, you must insert the second CD, run the `create os` command again, and wait for the job to complete. The OS distribution is successfully copied when the second job completes.

When copying a SUSE Linux Enterprise Server 9 Service Pack distribution, you must run the `create os` command multiple times. First, copy the SLES 9 base distribution. When that job finishes, you can then copy the SLES 9 Service Pack distribution. A default OS profile is automatically created for each newly created OS distribution, with the same name as the OS distribution.

The default profile is provided as an example. Most of the time, you will have to update the default profile to match your hardware or it may be easier to just create a new profile. Use the `show osprofile` *osprofile-name* command to see the configuration of an OS profile. The same OS profile name should be used when adding the Service Pack distribution.

Note – After a distribution is copied, an OS profile of the same name is created by default. This profile appears in the OS Profiles list in the Task Shortcuts pane of the browser interface or by typing `show osprofile all` at the `N1–ok>` prompt.

Before You Begin Move any file systems off the `/mnt` mount point.

1. **Insert Disk 1 and type the following command:**

   ```
   N1-ok> create os os-name cdrom cdrom
   ```

   A Create OS Distribution job is started. Note the job ID. When the job completes, insert the next disk. See "create os" in *Sun N1 System Manager 1.3 Command Line Reference Manual* for details.

   Note – You are not prompted to insert the next disk, so you must track the Create OS Distribution job completion and the disk number for your OS. When the job completes, an event is generated.

2. **Insert Disk 2 and type the following command:**

   ```
   N1-ok> create os os-name cdrom cdrom
   ```

3. **Continue with additional disks if needed.**

4. **When the final Create OS Distribution job completes, type the following command:**

   ```
   N1-ok> show os os-name
   ```

   The new OS distribution appears in the output.

Troubleshooting "OS Distribution Creation Fails with a Copying Files Error" in *Sun N1 System Manager 1.3 Troubleshooting Guide*

Next Steps To find out how to load the OS distribution by using an profile, see "To Load an OS Profile on a Server or a Server Group" on page 43.

▼ To Create a Flash Archive

The following procedure explains how to create a flash archive that is suitable for N1 System Manager to use. For general information about creating Solaris flash archives, see *Solaris 10 Installation Guide: Solaris Flash Archives (Creation and Installation)*.

Note – Flash archives on Red Hat Linux systems are limited to 2 GBytes.

1 On the management server, create the Solaris distribution.

Type a command similar to the following:

```
N1-ok> create os s10x file /images/solarisdvd.iso
```

2 Clone the automatically-generated OS profile.

Type a command similar to the following, where the `osprofile` name is the name of the new profile and the `clone` name is the name of the existing profile created when you create the distribution.

```
N1-ok> create osprofile s10-noagent clone s10x
```

3 Modify the cloned OS profile.

For this example, remove `SUNWn1smx86ag-1-2` and `/opt/SUNWscs/data/allstart/scripts/init_agent_firstboot.sh` from `s10-noagent`.

```
   N1-ok> remove osprofile s10-noagent update SUNWn1smx86ag-1-2
N1-ok> remove osprofile s10-noagent script /opt/SUNWscs/data/allstart/scripts/init_agent_firstboot.sh
```

4 Deploy the modified OS profile to the managed server that will create the flash archive.

```
N1-ok> load server server osprofile s10-noagent networktype static ip ip
```

Note – For Solaris, the `networktype` must be `static`.

---

5 On the managed server, create the archive.

```
bash-3.00# flarcreate -n s10xga-flar -c /tmp/s10x-ga.flar
    Full Flash
    Checking integrity...
    Integrity OK.
    Running precreation scripts...
    Precreation scripts done.
    Determining the size of the archive...
    4921218 blocks
    The archive will be approximately 1.32GB.
    Creating the archive...
    4921218 blocks
    Archive creation complete.
```

6 Copy securely the resulting file to the management server.

Make sure that the file is in an NFS accessible location, such as `/var/js`. Use the `scp` (secure copy) utility as shown in the following command:

```
bash-3.00# scp -v /tmp/s10x-ga.flar root@mgmt_server:/var/js
```

7 Create an OS profile for the flash archive.

```
N1-ok> create osprofile s10x-flar os s10x flar /var/js/s10x-ga.flar rootpassword password
```

8 Add partition information to the flash archive OS profile.

```
N1-ok> add osprofile s10x-flar partition / device c1t1d0s0 sizeoption free type ufs
    N1-ok> add osprofile s10x-flar partition swap device c1t1d0s1 sizeoption fixed size 1024 type swap
```

9 Deploy the flash archive OS profile to a managed server.

```
N1-ok> load server server osprofile s10x-flar networktype static ip ip
```

10 Add the OS monitoring feature to the managed server on which you deployed the flash archive (after clearing `.ssh/known_hosts`).

```
N1-ok> add server server feature osmonitor agentssh root/admin agentip ip
```

If you do not follow the above steps to create your flash archive, you might see messages similar to the following on the managed server console:

```
Nov 23 11:56:08 websvr-21 agent[26169]: error    Nov 23 11:56:08 agent
agentServer parameter (luke-8) is not a valid local hostname
Nov 23 11:56:08 websvr-21 agent[26169]: syslog          Nov 23 11:56:08 agent
agentServer parameter (luke-8) is not a valid local hostname
```

If you see these messages, perform the following steps on the management server:

a. Add the basemanagement feature to the managed server.

```
N1-ok> add server server feature basemanagement agentip agentip agentssh agentssh
```

b. Restart the managed server.

```
N1-ok> start server server command "/opt/SUNWsymon/sbin/es-uninst -X"
```

You can run this command on each managed server, or use `start group` to start all managed servers in a server group. Once the managed server restarts, you can add the osmonitoring feature.

▼ To Copy a Flash Archive to the Management Server

This procedure describes how to set up and deploy a flash archive on a server or a server group by using the command line.

Before You Begin

- Copy an OS distribution to the management server.

  See "To Copy an OS Distribution From ISO Files" on page 24 or "To Copy an OS Distribution From CDs or a DVD" on page 26.

- Create a flash archive file appropriate for use by N1 System Manager. See "To Create a Flash Archive" on page 27.

  Flash archives for complete Solaris installations might be too large to provision successfully if the management server is running Linux. Consider compressing the file or using a smaller flash archive with less content.

1. **Log in to the management server as root.**

   See "To Access the N1 System Manager Command Line" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

2. **To make the shared flash archive directory available through NFS, perform one of the following actions:**

   - **If your management server is running the Solaris operating system, modify the `/etc/dfs/dfstab` file.**

     Add `share -F nfs -o ro,anon=0 -d "Flash Share" /`*`jumpstart`*`/Flash` below the last comment in the file.

     For example:

     ```
     # Put custom additions below (Do not change/remove this line)
     share -F nfs -o ro,anon=0 -d "Flash Share" /jumpstart/Flash
     ```

   - **If your management server is running Linux, modify the `/etc/exports` file.**

     Add */*`jumpstart`*`/Flash*(ro,no_root_squash)` below the last comment in the file.

     For example:

     ```
     # Put custom additions below (Do not change/remove this line)
     /jumpstart/Flash      *(ro,no_root_squash)
     ```

3. **Copy the flash archive file to the */*`jumpstart`*`/Flash` directory.**

4. **To restart NFS, perform one of the following actions:**

   - **If your management server is running the Solaris OS version 9, type the following commands:**

     ```
     # /etc/init.d/nfs.server stop
     # /etc/init.d/nfs.server start
     ```

   - **If your management server is running the Solaris OS version 10 or later, type the following command:**

     ```
     # svcadm restart svc:/network/nfs/server:default
     ```

   - **If your management server is running Linux, type one of the following commands:**

     ```
     # /etc/init.d/nfs restart
     # /etc/rc3.d/S60nfs restart
     ```

5. **Create an OS profile that specifies the location of the flash archive file that you copied in Step 3.**

   `N1-ok>` **`create osprofile`** *osprofile-name* **`os`** *os-name* **`rootpassword`** *rootpassword* **`flar`** *flar* **`description`** *description* **`language`** *language* **`timezone`** *timezone*

   The *flar* attribute value is the path and flash archive file name, for example, `/jumpstart/Flash/archive1.flar`.

The OS profile is created.

6 **To verify the OS profile settings, type the following command:**

```
N1-ok> show osprofile osprofile-name
```

The OS profile details appear. Check that the partition settings are appropriate for your business needs. See "To Create an OS Profile" on page 34 for partition settings and examples.

7 **Load the OS profile on a server or a server group.**

See "To Load an OS Profile on a Server or a Server Group" on page 43.

Example 2–4 Deploying a Solaris 9 OS Flash Archive

The following example shows how to create an OS profile that uses a flash archive file.

```
N1-ok> create osprofile solaris9_flar rootpassword admin description "solaris
9 with flar" os solx86 flar /jumpstart/Flash/S9-u7-req-v20z.archive
```

The following examples show how to add root and swap partitions to the OS profile.

```
N1-ok> add osprofile solaris9_flar partition / sizeoption free device
c1t1d0s0 type ufs

N1-ok> add osprofile solaris9_flar partition swap sizeoption fixed size 128
device c1t1d0s1 type swap
```

The following example shows how to deploy the modified OS profile to a server.

```
N1-ok> load server 192.168.73.2 osprofile
solaris9_flar networktype=static ip=192.168.73.244
```

The `networktype` attribute specifies that the installed host is assigned the `192.168.73.244` IP address.

▼ To Delete an OS Distribution

Note – You cannot delete an OS distribution while it is being deployed through an OS profile. Wait until the deployment job finishes, then delete the OS distribution.

Before You Begin Delete all OS profiles that are associated with the OS distribution. This process includes deleting the default OS profile that was created when the OS distribution was copied. An OS profile cannot be deleted while it is being deployed. You may remove it after the deployment is completed. See "To Delete an OS Profile" on page 41 for instructions.

1. **Log in to the N1 System Manager.**

   See "To Access the N1 System Manager Command Line" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

2. **Type the following command:**

   ```
   N1-ok> delete os os-name
   ```

   The distribution is deleted. See "delete os" in *Sun N1 System Manager 1.3 Command Line Reference Manual* for details.

3. **View the available OS distributions.**

   ```
   N1-ok> show os all
   ```

   The deleted OS distribution should not appear in the output.

Managing OS Profiles

This section describes the following tasks:

- "To List the Available OS Profiles" on page 34
- "To Create an OS Profile" on page 34
- "To Clone an Existing OS Profile" on page 37
- "To Modify an OS Profile" on page 37
- "To Modify the Default Solaris OS Profile for a Sun Fire V40z or a SPARC V440 Server" on page 39
- "To Delete an OS Profile" on page 41

Creating, Listing, and Modifying OS Profiles

OS profiles specify the following information:

- OS distribution to install
- Default language and time zone for the installed host
- Flash archive file to use
- Additional packages to install with the distribution
- Configuration information for partitions
- Custom installation scripts to run

After you have copied an OS distribution, the N1 System Manager automatically creates an OS profile of the same name on the management server. This OS profile is also called a *default OS profile*. See "Default OS Profiles" on page 33 for parameter settings and best practices for customizing OS profiles.

To view details of a default OS profile, use the `show` command with the `osprofile` keyword.

To create a new OS profile, use the `create osprofile`, `add osprofile`, and `set osprofile` commands. See Example 2–6 and Example 2–7 for command-line examples.

Default OS Profiles

When you copy an OS distribution, a default OS profile is automatically created for the OS distribution. The default profile is created for a typical Sun Fire V20z server, and it is mainly provided as an example. Settings for the default OS profiles are described in the following table.

TABLE 2–1 Default OS Profile Parameter Settings

Parameters	Solaris OS	Red Hat OS	SUSE OS
Root password	`admin`	`admin`	`admin`
Language	U.S. English	U.S. English	U.S. English
Time zone	Greenwich Mean Time (GMT)	Greenwich Mean Time (GMT)	Greenwich Mean Time (GMT)
Partitions	■ Root mount point `ufs` with a free file system size option on the `c1t1d0s0` slice ■ `swap` mount point 2048-Mbyte `swap` on the `c1t1d0s1` slice	■ Root mount point `ext3` with a free file system size option on the `sda` slice ■ `swap` mount point 2048-Mbyte `swap` on the `sda` slice	■ Root mount point `ext3` with a free file system size option on the `/dev/sda` slice ■ `swap` mount point 2048-Mbyte `swap` on the `/dev/sda` slice
Distribution group	`Entire Distribution plus OEM support`	`Everything`	`Default Installation`
Network Interfaces	Provisioning interface configured Data interface not configured	Provisioning interface configured Data interface not configured	Provisioning interface configured Data interface not configured

Best Practices for Modifying Default OS Profiles

To provision servers other than Sun Fire V20z servers, you need to modify the default profile, create a new OS profile, or clone an existing OS profile and customize the parameter settings. Each server at your site with different hardware and provisioning requirements requires the creation of a customized OS profile.

The browser interface provides a wizard for creating new OS profiles to limit the complexity of this operation. See "To Create an OS Profile" on page 34 for instructions.

Some best practices for modifying default OS profiles are:

- To increase the speed of OS configuration, modify OS profiles to use flash archives. See Example 2–9 for examples of how to modify a default profile and "To Copy a Flash Archive to the Management Server" on page 29 for instructions.
- To automatically configure the data network interface after OS profile installation, use the `add osprofile` command to add a script. See Step 4 in "To Provision the Solaris 10 OS" on page 18.

- Modify the default OS profile for a server other than a V20z server, remember to remove the existing partitions and add new partition information that is appropriate for the server model. See "To Modify the Default Solaris OS Profile for a Sun Fire V40z or a SPARC V440 Server" on page 39 for instructions.

▼ To List the Available OS Profiles

This procedure describes how to use the browser interface to list the available OS profiles. The example that follows the procedure provides the command-line equivalent.

1 Log in to the N1 System Manager.

See "To Access the N1 System Manager Command Line" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

2 Click the System Dashboard tab.

The Task Shortcuts pane appears on the right side of the page.

3 Click the Edit List button beneath the OS Profiles list.

The list of available OS profiles appears.

Example 2–5 Listing Available OS Profiles Through the Command Line

The following example shows how to view all of the OS profiles in the system.

```
N1-ok> show osprofile all
```

All available OS profiles appear in the output. See "show osprofile" in *Sun N1 System Manager 1.3 Command Line Reference Manual* for details.

▼ To Create an OS Profile

This procedure describes how to use the browser interface's OS Profile wizard. The examples that follow the procedure provide command-line equivalents for creating and customizing OS profiles for the Solaris, Red Hat, and SUSE platforms.

Before You Begin You must copy an OS distribution before you can create an OS profile. See "To Copy an OS Distribution From CDs or a DVD" on page 26 or "To Copy an OS Distribution From ISO Files" on page 24.

1 Log in to the N1 System Manager.

See "To Access the N1 System Manager Command Line" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

2. **Click the System Dashboard tab.**

   The Task Shortcuts pane appears on the right side of the page.

3. **Click the New button under the OS Profiles list.**

   The Create New Operating System Profile wizard appears.

4. **Use the wizard steps to guide you through the screens.**

   Click the Help tab in the left pane of the wizard for detailed information about the entry fields.

5. **To complete the creation of the OS profile, click the Finish button in the wizard.**

   The wizard window closes.

6. **To add the profile to the list of profiles shown in the OS Profile Task Shortcuts pane, click the subordinate Edit List button.**

   A dialog box appears.

   a. **Select the check box for the OS profile and click the OK button.**

      The drag-and-drop icon appears in the OS profiles Task Shortcuts list.

Example 2–6 Creating a Solaris OS Profile Through the Command Line

The following example illustrates the commands that are used to create an OS profile for a Solaris OS distribution. The first command creates a Solaris 10 profile that is named `S10profile` and sets the root password to `admin`.

```
N1-ok> create osprofile S10profile rootpassword admin
description "S10 for host123" os solaris10
```

The following example command shows how to configure a `swap` partition with a size of 2048 Mbytes.

```
N1-ok> add osprofile s10profile partition swap size 2048 device c1t1d0s1
type swap
```

The following example command shows how to configure a free `ufs` partition.

```
N1-ok> add osprofile s10profile partition / sizeoption free device c1t1ds0
type ufs
```

The following example command shows how to add the default Solaris distribution group.

```
N1-ok> add osprofile s10profile distributiongroup "Entire Distribution
plus OEM support"
```

OS profiles that install only the Core System Support distribution group cannot be monitored by using the OS monitoring feature.

Example 2–7 Creating a Red Hat OS Profile Through the Command Line

The following example illustrates the commands that are used to create an OS profile for a Red Hat distribution.

```
N1-ok> create osprofile RH30profile rootpassword admin
os RedHat30
```

The following example command shows how to configure a `root` partition.

```
N1-ok> add osprofile RH30profile partition / device sda type ext3
sizeoption free
```

The following example command shows how to configure a `swap` partition.

```
N1-ok> add osprofile RH30profile partition swap device sda type swap
size 2048 sizeoption fixed
```

The following example command shows how to specify the distribution group.

```
N1-ok> add osprofile RH30profile distributiongroup "Everything"
```

Example 2–8 Creating a SUSE OS Profile Through the Command Line

The following example illustrates the commands that are used to create an OS profile for a SUSE distribution.

```
N1-ok> create osprofile default os suse rootpassword admin
```

The following example command shows how to configure a `root` partition.

```
N1-ok> add osprofile default partition / device /dev/sda type ext3
sizeoption free
```

The following example command shows how to configure a `swap` partition.

```
N1-ok> add osprofile default partition swap device /dev/sda type swap
size 2048 sizeoption fixed
```

The following example command shows how to specify the distribution group.

```
N1-ok> add osprofile default distributiongroup "Default Installation"
```

Troubleshooting

- "To Modify the Default Solaris OS Profile for a Sun Fire V40z or a SPARC V440 Server" on page 39
- "To Modify a Solaris 9 OS Profile for a Sun Fire V20z Server With a K2.0 Motherboard" on page 39

See Also To find out how to load the OS profile, see "To Load an OS Profile on a Server or a Server Group" on page 43.

▼ To Clone an Existing OS Profile

The following procedure describes how to *clone* or copy an existing OS profile. There are two main reasons that you would clone a profile:

- You must clone an OS profile and modify it to fit uniquely qualified hardware.
- You might clone an existing OS profile if you need to modify the profile, but cannot modify it because the profile is being installed on a managed server.

1 Log in to the N1 System Manager.

See "To Access the N1 System Manager Command Line" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

2 Type the following command:

```
N1-ok> create osprofile osprofile-name clone oldprofile
```

The new OS profile is created. See "create osprofile" in *Sun N1 System Manager 1.3 Command Line Reference Manual*

3 Type the following command:

```
N1-ok> show osprofile osprofile-name
```

The new OS profile appears in the output.

See Also To find out how to load the OS profile, see "To Load an OS Profile on a Server or a Server Group" on page 43.

▼ To Modify an OS Profile

This procedure describes how to modify the scripts, partitions, updates, and distribution groups that are configured for an OS profile.

Note – An OS profile that is currently being deployed cannot be modified.

---

1 Log in to the N1 System Manager.

See "To Access the N1 System Manager Command Line" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

2 Modify an OS profile by performing one of the following actions:

- **Add new OS profile attributes.**

  `N1-ok>` **`add osprofile`** *osprofile-name* `[`*configuration-attributes*`]`

  See "add osprofile" in *Sun N1 System Manager 1.3 Command Line Reference Manual* for details.

- **Remove existing OS profile attributes.**

  `N1-ok>` **`remove osprofile`** *osprofile-name* `[`*configuration-attributes*`]`

  See "remove osprofile" in *Sun N1 System Manager 1.3 Command Line Reference Manual* for details.

- **Change existing OS profile parameters.**

  `N1-ok>` **`set osprofile`** *osprofile-name* `[`*configuration-attributes*`]`

  See "set osprofile" in *Sun N1 System Manager 1.3 Command Line Reference Manual* for details.

3 View the new OS profile details.

`N1-ok>` **`show osprofile`** *osprofile-name*

The modified OS profile information appears in the output.

Example 2–9 Modifying a Solaris 10 OS Profile Through the Command Line

This example shows how to use a flash archive and a post-installation script by modifying the `solaris_ver10` OS profile.

For this example, assume that you have created the following script in a directory named `/scripts` on the management serverdirectory.

This sample script name is `add_host.sh` and the script adds a host to the `/etc/hosts` file on a managed server.

```
echo "129.10.12.101 myhost" >>/a/etc/hosts
```

Note that the root file system on the provisioned server is `/a` during the post installation time.

This example also assumes that you have created a flash archive file called `archive1.flar` and that you have completed the steps in "To Copy a Flash Archive to the Management Server" on page 29.

The following example shows how to add the script to the OS profile.

```
N1-ok> add osprofile solaris_ver10 script
/scripts/add_host.sh type post
```

The following example shows how to set up the OS profile to use the flash archive.

```
N1-ok> set osprofile solaris_ver10 flar /jumpstart/Flash/archive1.flar
```

See Also To find out how to load the modified OS profile, see "To Load an OS Profile on a Server or a Server Group" on page 43.

▼ To Modify the Default Solaris OS Profile for a Sun Fire V40z or a SPARC V440 Server

This procedure describes how to modify the Solaris OS profile that is created by default. The following modification is required for successful installation of the default Solaris OS profile on a Sun Fire V40z or a SPARC V440 server.

1 Log in to the N1 System Manager.

See "To Access the N1 System Manager Command Line" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

2 Clone the default profile.

```
N1-ok> create osprofile sol10v40z clone sol10
```

3 Remove the root partition.

```
N1-ok> remove osprofile sol10v40z partition /
```

4 Remove the swap partition.

```
N1-ok> remove osprofile sol10v40z partition swap
```

5 Add new root parameters.

```
N1-ok> add osprofile sol10v40z partition / device c1t0d0s0 sizeoption free
 type ufs
```

6 Add new swap parameters.

```
N1-ok> add osprofile sol10v40z partition swap device c1t0d0s1 size 2000
 type swap sizeoption fixed
```

See Also To find out how to load the modified OS profile, see "To Load an OS Profile on a Server or a Server Group" on page 43.

▼ To Modify a Solaris 9 OS Profile for a Sun Fire V20z Server With a K2.0 Motherboard

This procedure describes how to create and add a script to your Solaris OS profile. This script installs the Broadcom 5704 NIC driver needed for Solaris 9 x86 to recognize the NIC Ethernet interface on a Sun Fire V20z server with a K2.0 motherboard. Earlier versions of the Sun Fire V20z server use the K1.0 motherboard. Newer versions use the K2.0 motherboard.

Note – This patch is needed for K2.0 motherboards but can also be used on K1.0 motherboards without negative consequences.

1. **Log in to the N1 System Manager.**

   See "To Access the N1 System Manager Command Line" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

2. **Type the following command:**

   ```
   % /opt/sun/n1gc/bin/n1sh show os
   ```

   The list of available OS distributions appears.

3. **Note down the `ID` for the Solaris 9 distribution.**

   You use this ID, which is in fact the `DISTRO_ID` of the OS, in the next step.

4. **Type the following command:**

   ```
   # mkdir /js/DISTRO_ID/patch
   ```

   Here, `distro_id` is the ID you noted previously. A patch directory is created for the Solaris 9 distribution.

5. **Download the 116666-04 patch from `http://sunsolve.sun.com` to the `/js/`*DISTRO_ID*`/patch` directory.**

6. **Change to the `/js/`*DISTRO_ID*`/patch` directory.**

   ```
   # cd /js/DISTRO_ID/patch
   ```

7. **Unzip the patch file.**

   ```
   # unzip 116666-04.zip
   ```

8. **Type the following command:**

   ```
   # mkdir /js/scripts
   ```

9. **In the `/js/scripts` directory, create a script called `patch_sol9_k2.sh` that includes the following three lines:**

   ```
   #!/bin/sh
   echo "Adding patch for bge devices."
   patchadd -R /a -M /cdrom/patch 116666-04
   ```

Note – Ensure the script is executable. You can use the `chmod 775 patch_sol9_k2.sh` command.

10 **Add the script to the Solaris 9 OS profile.**

```
N1-ok> add osprofile osprofile script /js/scripts/patch_sol9_k2.sh type post
```

Example 2–10 Adding a Script to a Solaris OS Profile

This example shows how to add a script to an OS profile. The `type` attribute specifies that the script is to be run after the installation.

```
N1-ok> add osprofile sol9K2 script /js/scripts/patch_sol9_k2.sh
type post
```

Next Steps To load the modified Solaris OS profile, see "To Load an OS Profile on a Server or a Server Group" on page 43.

▼ To Delete an OS Profile

Note – You cannot delete an OS profile when it is being deployed. Wait until the deployment job finishes, then delete the OS profile.

1 **Log in to the N1 System Manager.**

See "To Access the N1 System Manager Command Line" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

2 **Type the following command:**

```
N1-ok> delete osprofile osprofile-name
```

The OS profile is deleted from the management server.

3 **Type the following command:**

```
N1-ok> show osprofile all
```

The deleted OS profile should not appear in the output.

Installing the UNIX OS on Managed Servers

This section describes the following tasks:

- "Deploying OS Profiles" on page 42
- "To Load an OS Profile on a Server or a Server Group" on page 43
- "To Initiate Network Boot Manually" on page 49

Deploying OS Profiles

OS profile installations can be customized to fit your provisioning and network needs.

To deploy default or custom OS profiles, use the `load` command with the `server` or `group` keyword and the `osprofile` subcommand.

To add the base management and OS monitoring features that support updating and patching, use the `feature` attribute with the `osmonitor` value when you issue the `load` command. The `feature` attribute of the `load` command enables you to automatically configure monitoring when you load the OS profile.

For syntax and parameter details, type `help load server`, `help load group`, and `help add server` at the `N1–ok` command line.

Note – Most managed servers boot from their default network boot interface automatically as the final step of a load operation. However, you must boot manually any managed server that was discovered through the OS or manual discovery processes. The N1 System Manager is not able to boot automatically these systems from the network. See "To Initiate Network Boot Manually" on page 49 for instructions.

The following table provides a quick reference of all the parameters that are available for the `load group` and `load server` commands.

Note – Before you attempt any Solaris OS on x86 platform deployments by using the N1 System Manager, you must ensure that the `nameserver` and `search` values are correctly configured at the operating system level on your management server. Otherwise, the installations will fail.

For more details, see the `resolv.conf`(5) man page. You need `root` user access on your management server to modify these settings.

TABLE 2–2 OS Profile Installation Parameters

Parameters	Red Hat or SUSE OS	Solaris OS	Multiple Servers	Single Server	Notes
bootip	✓ (R)		✓	✓	Also known as provisionable IP.
ip	✓	✓ (R)	✓	✓	Required if *networktype* is set to `static`.
networktype	✓ (R)	✓ (R)	✓	✓	Must be set to `static` for Solaris installation.
bootgateway	✓		✓	✓	
boothostname	✓			✓	

TABLE 2–2 OS Profile Installation Parameters *(Continued)*

Parameters	Red Hat or SUSE OS	Solaris OS	Multiple Servers	Single Server	Notes
bootnameserver	✓		✓	✓	
bootnetmask	✓		✓	✓	Default is set to the provisioning network interface that is specified using the `n1smconfig` utility.
bootnetworkdevice	✓	✓	✓	✓	
bootpath		✓		✓	
console	✓	✓		✓	
consolebaud	✓	✓		✓	
kernelparameter	✓		✓	✓	
domainname		✓	✓	✓	If `domainname` is not specified, a default will be configured
gateway	✓	✓	✓	✓	
hostname	✓	✓		✓	
nameserver	✓	✓	✓	✓	
netmask	✓	✓	✓	✓	Default is set to the provisioning network interface that is specified using the `n1smconfig` utility.
networkdevice	✓		✓	✓	The Linux default is `eth0`. The Primary network interface is the default for Solaris installations.

(R) = Required

✓ = Configurable

▼ To Load an OS Profile on a Server or a Server Group

The following procedure describes how to load an OS profile on a server or a server group by using the browser interface. Although you can load an OS profile from the command-line interface, it is easier to load the profile from the browser interface. The examples that follow the procedure provide command-line equivalents.

Caution – You cannot uninstall an OS profile. However, you can reprovision a server by loading another OS profile on a server that is already provisioned.

Before You Begin

- Create an OS profile. See "To Create an OS Profile" on page 34.

- Disable monitoring for the servers that will be loaded with an OS profile. See "To Disable Monitoring for a Managed Server or a Managed Server Group" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details. Disabling monitoring prevents the fault notifications that are generated if the server reboots after installation.
- Ensure that you have enough disk space available to load an OS profile.
- If you are loading a Red Hat 4 OS profile on a Sun Fire X2100 server or group of Sun Fire X2100 servers, see Example 2–16 for the required `bootnetworkdevice` and `networkdevice` attribute values.
- Optionally create and copy a flash archive file. See "To Copy a Flash Archive to the Management Server" on page 29.
- Optionally create and copy a post-installation script to the management server. See Step 4.

1 Log in to the N1 System Manager.

See "To Access the N1 System Manager Browser Interface" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

2 (Optional) Modify the OS profile to use a flash archive and a post-installation script.

`N1-ok>` **`set osprofile`** *osprofile-name* **`flar`** *flar*

The *flar* attribute value is the full path and flash archive file name, for example, `/jumpstart/Flash/archive1.flar`.

`N1-ok>` **`add osprofile`** *osprofile-name* **`script`** *script* **`type`** *type*

The *script* attribute value is the full path and script file name, for example, `/etc/sysconfig/network-scripts/ifcfg-eth1`.

The *type* attribute specifies the time when the custom script will run during the installation. Valid values for the `type` attribute are:

- `pre` – Run the script before the installation (for example, drivers).
- `post` – Run the script after the installation.
- `postnochroot` (Red Hat Linux only) – Run the script after the installation. The script does not have to be run as superuser (root).

The OS profile is modified to use the designated post-installation script and the flash archive file.

3 Navigate to the table that contains the server or the server group by performing one of the following actions:

- **Choose All Servers from the View Selector menu.**

  The Servers table appears.

- **Choose Servers By Group from the View Selector menu.**

  The Server Groups table appears.

4. **Drag and drop the OS profile icon from the Task Shortcuts pane to the server or the server group.**

   The Load OS Profile wizard appears.

5. **Use the wizard steps to guide you through the screens.**

   Note – Click the Help tab in the left pane of the wizard for detailed information about the entry fields.

   When loading an OS profile on a managed server that was discovered through the OS or manual discovery processes, select the "Enable Manual Net Boot" option on the appropriate step in the wizard. The N1 System Manager is not able to boot these systems automatically from the network, and you must tell N1 System Manager to enable you to initiate the boot manually.

6. **To begin loading the OS profile on the selected servers, click the Finish button in the wizard.**

   The wizard window closes and a job ID appears in the Command Line pane.

7. **Click the Jobs tab.**

   The Jobs table appears with information about your Load OS job.

   Note – The Load OS job will not complete until a final reboot occurs.

8. **Save the options that you used to load the OS profile as a note in case you need to restore the server sometime in the future.**

   See "Modifying Managed Server and Group Information" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

Example 2–11 Loading a Solaris OS Profile on a Server Through the Command Line

The following command provides an example of the syntax for loading an OS profile and supporting the OS monitoring feature on a server. See "Deploying OS Profiles" on page 42 for the complete list of available attributes and supported values.

The following example shows you how to install a Solaris OS profile on a server by using the `load` command. The feature parameter specifies that the OS monitoring feature is installed. See "Adding and Upgrading Base Management and OS Monitoring Features" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

```
N1-ok> load server 192.168.8.9 osprofile S10profile \
networktype static ip 192.168.18.19 feature osmonitor agentssh root/rootpassword
```

The `networktype` attribute must be set to `static` for Solaris profile installations. See Table 2–2 and "load server" in *Sun N1 System Manager 1.3 Command Line Reference Manual* for details.

If the managed server to which you intend to install the OS was discovered manually or using OS-based discovery, add `manualnetboot="true"` on the `load` command.

Use the `show job` command to view the results.

```
N1-ok> show job target=192.168.8.9
```

Example 2–12 Loading a Solaris OS Profile on a Server Group Through the Command Line

This example of `load` command syntax installs an OS profile on a group of servers, excluding specified servers with the `excludeserver` attribute. The SSH user account that is used in the `add server feature` command must have root privileges on the remote machine.

This command adds base management or OS monitoring feature support. See "Adding and Upgrading Base Management and OS Monitoring Features" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for detailed information about supported management features.

The following example shows you how to install a Solaris OS profile on a server group by using the `load` command.

```
N1-ok> load group devgroup osprofile S10profile \
excludeserver=server1 networktype static ip 192.186.8.8-192.186.8.9
Job "14" started.
```

The `networktype` attribute must be set to `static` for Solaris profile installations. See Table 2–2 and "load server" in *Sun N1 System Manager 1.3 Command Line Reference Manual* for details.

The `excludeserver=server1` option specifies that the OS profile is installed on all managed server within the `devgroup` server group *except* `server1`.

If the managed servers to which you intend to install the OS were discovered manually or using OS-based discovery, add `manualnetboot="true"` on the `load` command.

The following command shows you how to view the job results.

```
N1-ok> show job 14
```

Example 2–13 Loading a Linux OS Profile on a Server Using a Static IP Address

The following command provides an example of the syntax for loading an OS profile and supporting the OS monitoring feature on a server. See "Deploying OS Profiles" on page 42 for the complete list of available attributes and supported values.

The following example shows you how to install a Linux OS profile on a server. The feature parameter specifies that the OS monitoring feature is installed. See "Adding and Upgrading Base Management and OS Monitoring Features" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

```
N1-ok> load server 192.168.8.9 osprofile S10profile networktype static \
ip 192.168.18.19 bootip 192.168.28.19 feature osmonitor agentssh root/rootpassword
```

In this example, the `networktype` attribute is set to `static`. For an example that uses DHCP instead, see Example 2–15.

If the managed server to which you intend to install the OS was discovered manually or using OS-based discovery, add `manualnetboot="true"` on the `load` command.

Use the `show job` command to view the results.

```
N1-ok> show job target=192.168.8.9
```

Example 2–14 Loading a Linux OS Profile on a Server Group

The following example shows you how to install a Linux OS profile on a server group by using the `load` command.

```
N1-ok> load group devgroup osprofile RH3profile
ip 192.186.77.1-192.186.77-2 bootip 192.186.8.8-192.186.8.9 networktype static
Job "15" started
```

The following command shows you how to view the job results.

```
N1-ok> show job 15
```

Example 2–15 Loading a Linux OS Profile on a Server Using DHCP

The following example shows you how to install a Linux OS profile on a server by using the `load` command.

```
N1-ok> load server 192.168.8.9 osprofile RH3profile
bootip 192.168.8.9 networktype dhcp
```

The `bootip` attribute is only used for Linux profile installations.

Setting the `networktype` attribute to DHCP means that the server uses DHCP to get its provisioning network IP address. If the system reboots, any added management features will break. In this case, use the `set server agentip` command to modify the server's agent IP address. See "To Modify the Agent IP for a Server" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for more information.

The following command shows you how to view the job results.

```
N1-ok> show job target=192.168.8.9
```

Example 2–16 Loading a Red Hat Enterprise Linux 4 OS Profile on a Sun Fire X2100 Server

This example shows you how to load a Red Hat Enterprise Linux 4 OS profile onto a Sun Fire X2100 server using static IP network configuration.

```
N1-ok> load server server1 osprofile RHEL4profile bootip 192.168.8.8
networktype static ip 192.168.8.8 bootnetworkdevice eth1 networkdevice eth1
```

This example shows you how to load a Red Hat Enterprise Linux 4 OS profile onto a Sun Fire X2100 server using DHCP network configuration.

```
N1-ok> load server server34 osprofile rh4u1es-64-min bootip=10.0.101.34
networktype=dhcp bootnetworkdevice=eth1 networkdevice=eth1
```

The values `bootnetworkdevice` and `networkdevice` are only required for Red Hat Linux 4 on Sun Fire X2100 servers.

Example 2–17 Loading a Solaris 10 x86 OS Profile on a Sun Fire X2100 Server

When loading Solaris 10 x86 to a Sun Fire X2100 server , you need to first add a script to the profile. This script will disable the loading of the `bge` driver in `/etc/system`.

If your management server is running Linux, use the following command to add the script to the profile:

```
N1-ok> add osprofile profile_name script
/opt/sun/scs/data/allstart/scripts/solaris_bge_disable.sh type=post
```

If your management server is running the Solaris OS, use the following command to add the script to the profile:

```
N1-ok> add osprofile profile_name script
/opt/SUNWscs/data/allstart/scripts/solaris_bge_disable.sh type=post
```

The service processor will become inaccessible while the machine is being provisioned.

Troubleshooting If a value is not specified for the `bootnetmask` or `netmask` parameters during the load operation, the netmask will default to the provisioning network interface that is specified in the `n1smconfig` utility. See "To Configure the N1 System Manager" in *Sun N1 System Manager 1.3 Installation and Configuration Guide*.

If the deployment fails, see the topics in "OS Distributions and Deployment" in *Sun N1 System Manager 1.3 Troubleshooting Guide* for possible solutions.

Next Steps To enable remote connectivity, OS resource monitoring, package deployment, and inventory management, you must add the OS monitoring feature on each server. See "To Add the OS Monitoring Feature" in *Sun N1 System Manager 1.3 Discovery and Administration Guide*.

▼ To Initiate Network Boot Manually

Most managed servers boot from their default network boot interface automatically as the final step of a load operation. However, you must manually boot any managed server that was discovered through the OS or manual discovery processes. The N1 System Manager is not able to boot these systems automatically from the network.

This procedure describes the steps that are required to ensure that servers do *not* boot from their default network boot interface after a load operation. Once you follow these steps, you will need to manually boot the managed server when the load operation completes.

1 Access the N1 System Manager command line on the management server.

See "To Access the N1 System Manager Command Line" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

2 To install a given OS profile on a managed server and not boot that server automatically, set the `manualnetboot` option to true.

For a single managed server, use the following form of the `load server` command with the `manualnetboot` option:

```
N1-ok> load server server-name osprofile osprofile-name ip ip-address networktype static manualnetboot="true"
```

For a group of managed servers, use the following form of the `load group` command:

```
N1-ok> load group group-name osprofile osprofile-name ip ip-addresss networktype static manualnetboot="true"
```

Tip – If you load the OS profile through the browser interface, check the "Enable Manual Net Boot" option in the wizard.

◆ ◆ ◆ CHAPTER 3

Provisioning Windows Operating Systems

This chapter describes how to use the N1 System Manager to install the Windows OS on managed servers throughout your data center. For information related to the Solaris and Linux operating systems, see Chapter 2. For information about working with diskless clients, see Chapter 4.

Note – Although N1 System Manager enables you to provision the Windows operating system, the product does not provide OS monitoring or update capabilities for Windows.

The Windows OS provisioning process uses Windows Remote Installation Services (RIS) technology to provision Windows systems. RIS provides an independent setup routine that is executed on the RIS server. RIS provides a centralized location to integrate maintenance and troubleshooting tools that are accessible through a network boot. RIS provides network administrators with the capability to easily install the base operating system or to replace a system that has failed. For more information about RIS, see Microsoft RIS documentation.

This chapter contains the following information:

- "Windows OS Provisioning Process Overview" on page 51
- "Creating Windows Distributions" on page 53
- "Installing the Windows OS on Managed Servers" on page 58

Windows OS Provisioning Process Overview

The following process describes the high-level process for managing Windows installations across your enterprise.

1. Set up a Windows RIS server to contain the Windows distributions as explained in "Setting Up a Windows Remote Installation Services Server" in *Sun N1 System Manager 1.3 Site Preparation Guide*.
2. Copy the appropriate Windows OS files to the RIS server, as explained in "To Set Up a Windows Image on the Windows RIS Server" on page 53.

3. Link the RIS server distributions to the N1 System Manager, as explained in "To Create a Windows OS Distribution" on page 54.
4. Modify the OS profile, if needed. For example, you will need to modify the OS profile to add the product key.
5. Verify that the servers you want to provision are known to N1 System Manager. See Chapter 4, "Discovering Manageable Servers," in *Sun N1 System Manager 1.3 Discovery and Administration Guide*.
6. Link the GUIDs to the managed server names in N1 System Manager. Use the following command:

   ```
   N1-ok> set server server-name guid="guid-value"
   ```

   Where the GUID is of the format `XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXX`, for example `5D607F6A-AF48-4003–AFA8–69E019A4496F`.

   Note – If you have more than one Sun Fire V20z system, you might need to modify the GUIDs to make them unique. Contact Sun support for additional information.

7. Install the Windows OS profile onto a managed server, as explained in "Installing the Windows OS on Managed Servers" on page 58.
8. To verify that the job has completed, view the Jobs table.

Windows Image Server Requirements

The Windows RIS server must be running one of the following operating systems:

- Windows 2003 Server Enterprise edition with Service Pack 1 (32-bit edition only)
- Windows 2003 Server Standard edition with Service Pack 1 (32-bit edition only)

Supported Windows Operating Systems

You can provision the following operating systems:

- Windows 2003 Standard/Enterprise/Web 32-bit Edition
- Windows 2003 Standard/Enterprise 64-bit Edition
- Windows 2000 Advanced Server Edition with Service Pack 3 (or later)
- Windows 2000 Server Edition with Service Pack 3 (or later)

Supported Windows Hardware Platforms

You can provision the Windows operating system onto the following target platforms:

- Sun Fire X4100 and X4200
- Sun Fire 2100
- Sun Fire V20z and V40z

Creating Windows Distributions

Before you can install an OS profile on a managed server, you must copy the files that comprise a Windows OS release to the RIS server and link to it from the management server.

▼ To Set Up a Windows Image on the Windows RIS Server

1 **Log onto the Windows RIS server using the administrator account or an account with administrator privileges.**

2 **Use the `risetup.exe` utility to copy the Windows distribution from a CD or Network Share to the RIS server.**

On the RIS server, use the `RiSetup.exe` utility with `-add` option.

Note – Make sure you select the option "Keep the old existing OSC files" in the `risetup` wizard while creating RIS images.

When you copy a Windows distribution to the RIS server, the appropriate Windows drivers are copied automatically. To add other drivers into the distribution, copy the drivers into the scripts directory on the RIS server.

Do not use MSDN Combo CDs to create a RIS Image. You will get an error message that was described in the Microsoft Knowledge Base Article #300556 (`http://support.microsoft.com/default.aspx?scid=kb;en-us;300556`). To resolve this issue, use a retail version of the OS image being created.

To create a RIS image of a Windows distribution integrated with service packs, follow the procedures described in the following articles:

- How to obtain the latest Windows 2000 service pack is explained in Microsoft Knowledge Base Article #260910

  Choose "Network installation" option for Windows Service Pack Express/Network Installation for downloading a service pack to create a RIS image. Windows 2000 Service pack 3 download process is explained in

`http://www.microsoft.com/Windows2000/downloads/servicepacks/sp3/download.aspx`. Similar download pages can be found in Microsoft documentation for other OS version service packs as well.

- How to create a RIS image with the service pack bundled is explained in Service Pack 3 Installation and Deployment Guide for Windows 2000 Server edition. Similar guides can be found in Microsoft documentation for other OS version service packs as well.

3 (Optional) To provision non-English versions of the Windows OS, you need to do some additional configuration when you set up the image on the RIS server.

Basically, the RIS server assumes that you have files in an English path. To resolve this issue, copy the other language's files to the English path.

a. Go to the directory in which the OS Chooser files live.

For example:

```
% cd RemoteInstall\OSChooser
```

b. Copy the files from the language directory to an English directory.

For example:

```
% copy -r Japanese English
```

This creates a directory `RemoteInstall\OSChooser\English` that contains the install screens in the native language. When the RIS software looks into the default English path, it will display the non-English OS Chooser screens during install.

▼ To Create a Windows OS Distribution

This procedure describes how to use the command line to link a Windows OS distribution from the management server to the Windows RIS server.

Note – You cannot perform this task through the browser interface.

After a distribution is added, an OS profile of the same name is created by default. This profile will appear in the OS Profiles list in the Task Shortcuts pane.

1 Install and configure a Windows RIS server.

See "Setting Up a Windows Remote Installation Services Server" in *Sun N1 System Manager 1.3 Site Preparation Guide*.

2 Copy the Windows distribution from a CD or network share to the RIS server.

See "To Set Up a Windows Image on the Windows RIS Server" on page 53.

3 Link the distribution on the RIS server to the N1 System Manager.

Type the following command on the N1 System Manager command line:

```
N1-ok> create os os-name type windows languageedition language version version arch arch
rissourcepath path-to-RIS-distribution
```

Where:

- *os-name* is the name that you defined for the distribution when you added it to the RIS server. The *os-name* must be unique and may include numbers, letters, and some special symbols. The following special symbols are prohibited: comma, asterisk, single quote, double quote, parenthesis, question mark, equal sign, and newline.
- `type windows` identifies the type of OS as Windows.
- *language* specifies the language to support viewing web pages and other content encoded in a different language and character set. For a list of valid values, use the tab completion feature in the CLI.
- *version* identifies the Windows version. For the most current list of valid values, use the tab completion help feature in the CLI. Valid values are:
  - 2000AS - Windows 2000 Advanced Server
  - 2000SS - Windows 2000 Standard Server
  - 2003EE - Windows 2003 Enterprise Edition
  - 2003SE - Windows 2003 Standard Edition
  - 2003WE - Windows 2003 Web Edition
  - 2003SESP1 – Windows 2003 Standard Edition Service Pack 1
  - 2003EESP1 – Windows 2003 Enterprise Edition Service Pack 1
- *arch* is the architecture of the system to be installed. Valid values are `amd64` or `i386`.
- *rissourcepath* is optional. If specified, it provides a full path to the distribution on the RIS server.

An OS profile is created that uses the *os-name* as the profile name.

Example 3–1 Linking a Windows OS Distribution from the RIS Server to the Management Server

```
N1-ok> create os win2003EE type windows languageedition English version 2003EE
arch i386 rissourcepath j:
```

▼ To Create a Windows OS Profile

Tip – When you create an OS distribution, a default OS profile is created automatically. Most likely, you will need to use the command line to customize the default profile for your specific hardware and configuration parameters. For information about modifying an existing OS profile, see "To Modify an OS Profile" on page 37.

This procedure describes how to create an OS profile from the command line interface. To create an OS profile from the browser interface, click the New button under the OS Profiles list on the Task Shortcuts pane of the System Dashboard.

Before You Begin You must make the OS distribution known to the management server before you can create a new OS profile.

1 To see a list of the available OS profiles, type the `show osprofile all` command at the `N1–ok` prompt.

Tip – To see a list of available profiles in the browser interface, click the Edit button under the OS Profiles list on the Task Shortcuts pane of the System Dashboard.

---

2 To create an OS profile, type the following command:

`N1-ok>` **`create osprofile`** *osprofile-name* **`os`** *os-name* **`rootpassword`** *rootpassword* **`fullname`** *fullname* **`organizationname`** *organization-name* **`productkey`** *productkey* **`[`***Optional-Windows-Attributes***`]`**

Where:

- *fullname* is your full name, surrounded by quotation marks.
- *organizationname* is the name of your organization, surrounded by quotation marks.
- *os* is the name of the OS distribution to install.
- *osprofile* is a name for the OS profile. The OS profile name must be unique and may include up to 100 numbers, letters, and some special symbols. The following special symbols are prohibited: comma, asterisk, single quote, double quote, parenthesis, question mark, equal sign, and newline.
- *productkey* is the product key for each unique installation of Windows. To find the product key, look at the packaging for the operating system CD-ROM. The product key will look similar to this example: `11111-11111-11111-1111-11111`

  You can also set the product key through the `load server` or `load group` command when you install the OS onto a managed server.
- *rootpassword* specifies the root password for the server to use after installation. If you do not want the password to display in the command line, type a question mark (`?`). The software prompts you to enter the password after you issue the command.
- *Optional-Windows-Attributes* provide several additional features that enable you to specify a variety of Windows-specific details, such as language, time zone, license information, and scripts to run when you first login to the system. For more information about Windows attributes, see the "OPTIONAL WINDOWS ATTRIBUTES" section in "create osprofile" in *Sun N1 System Manager 1.3 Command Line Reference Manual*.

Example 3–2 Creating a Windows OS Profile

The following command creates an OS profile for a Windows 2003 Enterprise Edition distribution and prompts the user to enter the password.

```
N1-ok> create osprofile win2003EE os win2003EE rootpassword ?
fullname "IamMe" organizationname "MyOrgPlace" productkey productkey
description "win2003EE" licensingmode "perseat" licenseperserver 1 repartition true
wtsallowconnection false wtsenable true wtslicensingmode perseat wtspermissionssetting all
rootpassword:
```

Once the `create osprofile` command completes, the following command shows details about the OS profile:

```
N1-ok> show osprofile win2003EE
ID:                3
Name:              win2003EE
Distribution:      win2003EE
Description:       win2003EE
In Use:            false
User's Full Name:
Organization Name:
Language:
Timezone:
Language Group:
Firstloginscript:
repartition:       true
targetpath:        Windows
oem driver path:
Windows Licensing Mode: PerSeat
Licenses Per Server: 1
Terminal Server Enable: true
Terminal Server Allow connections: false
Terminal Server Licensing mode: PerSeat
Terminal Server Permissions Setting: All
N1-ok>
```

▼ To Modify a Windows OS Profile

The following task describes some of the specific modifications that you are likely to make to a Windows OS profile. You can also modify some Windows information when you load the OS profile onto the managed server.

1 To change information in an existing Windows OS profile, type the following command:

```
N1-ok> set osprofile osprofile-name [Optional-Windows-Attributes]
```

Optional-Windows-Attributes are the same for modifying an OS profile as for creating an OS profile. See "set osprofile" in *Sun N1 System Manager 1.3 Command Line Reference Manual* for details.

2 Remove existing OS profile attributes.

```
N1-ok> remove osprofile osprofile-name [Optional-Windows-Attributes]
```

Optional-Windows-Attributes are the same for removing attributes from an OS profile as for creating an OS profile. See "remove osprofile" in *Sun N1 System Manager 1.3 Command Line Reference Manual* for details.

Example 3–3 Adding a Product Key to an OS Profile

The following example adds a product key to an existing OS profile. To find the product key, look at the packaging for the operating system CD-ROM. Adding a product key is a fairly common change that you need to make for installing the Windows OS.

```
N1-ok> set osprofile win2003EE productkey BVVVV-99PMV-HH9Z9-BDY9Z-896Z9
```

For security reasons, the actual product key value will not display in the command-line interface.

Installing the Windows OS on Managed Servers

To install an OS onto a managed server, you load the OS profile onto the selected server.

▼ To Load a Windows OS Profile

The following procedure describes how to load an OS profile from the command line interface. To load an OS profile from the System Dashboard in the browser interface, drag an OS profile name from the Task Shortcuts pane onto a server name in the All Servers table, or select a server and choose the Load OS Profile action.

Caution – You cannot uninstall an OS profile. However, you may reprovision a server by loading an OS profile on a server that has already been provisioned. Installation options that are set in the wizard are not maintained by the N1 System Manager.

Before You Begin

- Create an OS profile. See "To Create an OS Profile" on page 34.
- Move any file systems off the `/mnt` mount point.

1 To load a Windows OS profile onto a managed server, use the `load server` command.

```
load server server[,server...] osprofile osprofile networktype networktype [ip ip]
[windows-installation-attributes]
```

Use the following attributes for a Windows installation:

- `gateway` *gateway* – A gateway assigned to the installed server.

- `manualnetboot` *manualnetboot* – Specify whether to enable manual netboot. Enabling manual netboot allows you to control the netboot process, which is required as part of the bootstrapping process to provision an OS on a server. A manual netboot is required for OS-based or manually discovered servers, because the N1 System Manager is not able to automatically netboot these systems. Valid values are `true` and `false` (default).
- `netmask` *netmask* – A netmask assigned to the installed server.
- `productkey` *productkey* – Use this product key value instead of the value specified in the OS profile.

Tip – To load the OS profile onto a group of managed servers, use the `load group` command.

---

2 (Optional) If you enabled manual netboot when you loaded the OS profile, boot the managed server manually.

- **To initiate network boot manually for a server, type the following command:**

  ```
  N1-ok> start server server netboot=true
  ```

  The server is powered on and, if boot PROMs are configured, the server boots. See "start server" in *Sun N1 System Manager 1.3 Command Line Reference Manual* for syntax details.

- **To initiate network boot manually for a server group, type the following command:**

  ```
  N1-ok> start group group netboot=true
  ```

  The server group is powered on and, if boot PROMs are configured, the servers in the group boot. Job completion takes longer for large server groups. See "start group" in *Sun N1 System Manager 1.3 Command Line Reference Manual* for syntax details.

After the Load OS job completes, the server is available for login.

Example 3–4 Loading a Windows OS Profile on a Server Using DHCP

The following example loads an OS profile that contains a Windows 2003 Enterprise Edition distribution onto a managed server.

```
N1-ok> load server 10.5.130.32 osprofile win2003EE bootip=192.168.0.20 \
networktype=dhcp productkey=?
```

The following example shows the status of the job:

```
N1-ok> show job 11
Job ID:   11
Date:     2006-03-16T13:29:30-0800
Type:     Load OS
Status:   Completed (2006-03-16T14:07:27-0800)
Command:  load server 10.5.130.32 osprofile win2003EE bootip=192.168.0.20 networktype=dhcp productkey=?
```

```
Owner:    root
Errors:   0
Warnings: 0

Steps
ID     Type             Start                      Completion                 Result
1      Acquire Host     2006-03-16T13:29:31-0800   2006-03-16T13:29:31-0800   Completed
2      Execute Java     2006-03-16T13:29:31-0800   2006-03-16T13:29:31-0800   Completed
3      Acquire Host     2006-03-16T13:29:33-0800   2006-03-16T13:29:33-0800   Completed
4      Execute Java     2006-03-16T13:29:33-0800   2006-03-16T14:07:26-0800   Completed

Results
Result 1:
Server:   10.5.130.32
Status:   0
Message:  OS deployment using OS Profile win2003EE was successful.
```

Example 3–5 Loading a Windows OS Profile on a Server Using a Static IP Address

The following example shows a command to load the Windows 2003 Enterprise Edition onto a single server with a static IP address.

```
N1-ok> load server 10.5.130.32 osprofile win2003EE bootip=192.168.0.70 networktype=static ip=192.168.0.70
Job "27" started.
```

The following example shows the output of the job started above. The message at the end of the job indicates that the job was successful and that a static IP address was assigned as requested.

```
N1-ok> show job 27
Job ID:   27
Date:     2006-03-21T13:50:20-0800
Type:     Load OS
Status:   Completed (2006-03-21T14:28:20-0800)
Command:  load server 10.5.130.32 osprofile win2003EE bootip=192.168.0.70 networktype=static ip=192.168.0.70
Owner:    root
Errors:   0
Warnings: 0

Steps
ID     Type             Start                      Completion                 Result
1      Acquire Host     2006-03-21T13:50:22-0800   2006-03-21T13:50:22-0800   Completed
2      Execute Java     2006-03-21T13:50:22-0800   2006-03-21T13:50:22-0800   Completed
3      Acquire Host     2006-03-21T13:50:24-0800   2006-03-21T13:50:24-0800   Completed
4      Execute Java     2006-03-21T13:50:24-0800   2006-03-21T14:28:19-0800   Completed

Results
Result 1:
Server:   10.5.130.32
```

```
Status:   0
Message:  OS deployment using OS Profile win2003EE was successful.  IP address 192.168.0.70 was assigned.
N1-ok>
```

Potential Issues Related to Provisioning Windows OS

There are several issues that you might encounter when provisioning Windows OS.

Problem: Installing the base management feature support might fail due to stale SSH entries on the management server.

Solution: If the `add server feature` command fails and no true security breach has occurred, remove one of the following:

- `/root/.ssh/known_hosts` file
- `/.ssh/known_hosts` file
- The specific entry in either of these files that corresponds to the managed server

When you have removed the file or file entry, retry the `add server feature` command.

See "OS Distributions and Deployment" in *Sun N1 System Manager 1.3 Troubleshooting Guide* for detailed troubleshooting information and best practices.

Problem: The product key is not defined or is not correct in the Windows OS profile.

Solution: The product key is unique to each release of the Windows OS. To ensure that the correct product key applies, either modify the OS profile to include the correct product key or use the *productkey* attribute on the `load server` command.

Problem: You encounter a TFTP error when loading the OS profile.

Solution: The GUID is likely incorrect. To find the GUID of a system, use the Pre-Boot eXecution Environment (PXE) to boot the system.

Problem: Windows asks about partitions when you try to install.

Solution: If Linux or Solaris was installed previously on the managed server, Windows will ask about partitions the first time that you try to install Windows on the system. To resolve this issue, delete the partitions on the console, or wipe out the first part of the disk before you install Windows.

Problem: Windows OS provisioning fails with an error message similar to the following:

```
PXE-E55: ProxyDHCP service did not reply to request on port 4011
```

Solution: If the RIS server has multiple IP addresses, make sure that the first IP address is the provisioning interface.

To reset the order of the interfaces, follow these steps on the RIS server.

1. Right click on Control Panel->Network Connections and open the Network Connections screen.
2. On the Network Connection screen, click on Advanced -> Advanced Settings.

3. On the Advanced Settings screen, use the up and down arrows to make sure that the provisioning interface is listed first.

◆ ◆ ◆ CHAPTER 4

Working with Diskless Clients

This chapter describes how to use the N1 System Manager to install diskless clients on managed servers throughout your data center. For information about the Solaris and Linux operating systems, see Chapter 2. For information related to the Windows OS, see Chapter 3.

This chapter explains how to use the N1 System Manager to provision and manage diskless clients. The chapter contains the following information:

- "Diskless Client Overview" on page 63
- "Diskless Client Provisioning Process Overview" on page 64
- "Configuring the Diskless File System" on page 64
- "Installing Diskless Clients" on page 66
- "Managing Diskless Clients" on page 69

Diskless Client Overview

A *diskless client* is a system that depends on an OS server for its operating system, software, and storage. A diskless client mounts its root (`/`), `/usr`, and other file systems from its OS server. A diskless client has its own CPU and physical memory and can process data locally. However, a diskless client cannot operate if it is detached from its network or if its OS server malfunctions. A diskless client generates significant network traffic because of its continual need to function across the network. For a conceptual overview of diskless clients, see "Diskless Client Management Overview" in *System Administration Guide: Basic Administration*.

N1 System Manager supports diskless clients for the following operating systems and relates directly to the OS that is running on the management server:

- Solaris
  - Solaris DHCP: Solaris NFS, works with local TFTP only, works with local NFS server only
  - ISC DHCP: Linux NFS, works with local or remote TFTP, works with local or remote NFS server
  - ISC DHCP: Solaris NFS, works with local TFTP only, works with local NFS server only

- Red Hat Linux
  - Linux NFS, works with local or remote TFTP, works with local or remote NFS server
  - Solaris NFS, works with local or remote TFTP, works with local NFS server only
  - Linux initd, works with local or remote TFTP, works with local or remote NFS server

Diskless Client Provisioning Process Overview

Provisioning a diskless client follows a slightly different process from provisioning systems that maintain their own disks.

1. Configure NFS to export the diskless root file system.
2. Configure a link to a diskless client image. For more information, see "Configuring the Diskless File System" on page 64.
3. Discover potential diskless clients. For more information, see Chapter 4, "Discovering Manageable Servers," in *Sun N1 System Manager 1.3 Discovery and Administration Guide*.
4. Install a diskless client. For more information, see "Installing Diskless Clients" on page 66.
5. Uninstall a diskless client. For more information, see "Uninstalling Diskless Clients" on page 69. Once you uninstall a diskless client, you can reinstall a different diskless client profile.

Configuring the Diskless File System

To enable loading of diskless clients through the N1 System Manager, you need to set up a diskless client server and link diskless client images to he management server.

▼ To Configure a Link to a Solaris Diskless Client Image

1 Access the `n1sh` shell or go to the command line in the N1 System Manager browser.

```
N1-ok>
```

2 To define a link to the diskless client image, use the `create os` command.

Tip – When you define the link to the diskless client image, a default OS profile is created automatically.

```
N1-ok> create os os-name type os-type format diskless \
tftpserver ip kernelimage path-to-kernelimage \
bootimage1 path-to-bootimage1 bootimage2 path-to-bootimage2
```

Where:

- *os-name* is a unique name for the distribution image. The *os-name* may include numbers, letters, and some special symbols. The following special symbols are prohibited: comma (,), asterisk (*), single quote (’), double quote (“), parenthesis (), question mark (?), equal sign (=), and newline (\).
- *ip* identifies the IP address of the TFTP server. The default is the IP address of the management server.
- *os-type* specifies the operating system of the diskless client image. Valid diskless client types include `solaris` and `redhat`.
- *path-to-kernelimage* is the path to the kernel image relative to the TFTP server root directory.
- *path-to-bootimage1* is the path to the first boot image relative to the TFTP server root directory.
- *path-to-bootimage2* is the path to the second boot image relative to the TFTP server root directory.

Example 4–1 Configuring a Link to a Solaris Diskless Client Image

The following example defines a Solaris diskless client image based on a two-part boot image.

```
N1-ok> create os my-diskless type solaris format diskless tftpserver 10.5.4.3 \
kernelimage images/diskless-kernel bootimage1 images/diskless-boot-1 bootimage2 images/diskless-boot-2
```

▼ To Create a Diskless Client Profile

The following procedure explains how to create an OS profile for the diskless client. Creating an OS profile is especially useful for Linux diskless clients, when you want to define NFS options or the size of the RAM disk.

◗ **To create an OS profile for the diskless client, use the `create osprofile` command.**

```
create osprofile osprofile os <os-name> desc <description>
 [nfsopts <nfsopts>[,nfsopts <nfsopts>]]
                   [ramdisksize <ramdisksize>]
```

Where:

- *osprofile* is a unique name for the OS profile.
- *os-name* is the name of the OS distribution to install. as defined when the image was linked.
- *description* provides an optional description of the profile.
- *nfsopts* specify optional NFS-specific information using the format *option*/*value*.
- *ramdisksize* specifies the size of the RAM disk in Mbytes. The default value is 512 Mbytes.

Example 4–2 Creating an OS Profile for a Linux Diskless Client

The following example creates an OS profile for a Linux diskless client.

```
N1-ok> create osprofile my-diskless-pro os my-diskless desc "RedHat diskless client profile" nfsopts=rsize=8192,wsize=8
```

Installing Diskless Clients

Installing is to a diskless client what booting is to a "diskfull" client. When an OS deployment job completes for diskfull clients, the OS is installed successfully on the server and the server has booted successfully and is running the OS. When an OS deployment job completes for diskless clients, the diskless client has finished the initial boot. To determine when the diskless client has successfully booted and is running the OS, use the serial console feature to monitor the state of the managed server.

▼ To Install a Diskless Client

The following procedure explains how to install a diskless client using the `load server` command in the CLI.

You can also install a diskless client from the N1 System Manager browser interface. From the All Servers table, select a server and choose Load OS Profile from the Actions, or drag an OS profile from the Task Shortcuts onto the server name.

Before You Begin

- Verify that N1 System Manager has discovered managed servers that you want to use as diskless clients. For information about discovering managed servers, see Chapter 4, "Discovering Manageable Servers," in *Sun N1 System Manager 1.3 Discovery and Administration Guide*.
- Create and link a diskless client image as explained in "To Configure a Link to a Solaris Diskless Client Image" on page 64.

◗ **To install a diskless client, use the `load server` command.**

`load server` *server*`[,`*server*`...] osprofile` *osprofile* `bootip` *bootip* `[`*diskless-client-installation-attributes*`]`

Where:

- *server* is the management name of a server. To install the diskless client profile on more than one server, separate the server names with a comma (,).
- *osprofile* is the name of an OS profile used to install the OS.
- *bootip* (Linux only) specifies the IP address for the server's provisioning network interface used to install the server, also known as the Provisioning IP. You can specify a range of IP addresses or a subnet mask. Specify a range of IP addresses as follows: *ip-address-ip-address*. Example: `10.0.0.1–10.0.0.3`.
- *diskless-client-installation-attributes* include several diskless client-specific attributes:
  - `bootgateway` *bootgateway* – (Linux only) A gateway used to install the server.
  - `boothostname` *boothostname* – (Single server and Linux only) A host name used to install the server.

- `bootnameserver` *bootnameserver* – (Linux only) A name server used to install the server.
- `bootnetmask` *bootnetmask* – (Linux only) A netmask used to install the server.
- `bootnetworkdevice` *bootnetworkdevice* – The server's provisioning network interface used to install the server. Valid Solaris values are `bge0` (default), `bge1`, `bge2`, and `bge3`. Valid Linux values are `eth0` (default), `eth1`, `eth2`, `eth3`, and `eth4`. Note that when installing the Red Hat 4 OS on Sun Fire X2100 servers, the *bootnetworkdevice* value must be set to `eth1`. The default value does not work for this situation.
- `console` *console* – The device name for the server's system console, which may be used to monitor the installation. Default is `ttys0` (Linux) and `ttya` (Solaris).
- `consolebaud` *consolebaud* – The baud rate for the server's system console. Default is `9600`.
- `nfsroot` *nfsroot* – The location of the NFS root, such as `10.0.0.115:/my_roots/sol_a`. You can specify a comma-separated list of paths, or you can specify a range of paths as follows: `10.1.10.1:/diskless/home/1–40`. When specifying a range of paths, the nfsroot directory names must be numbers. This attribute is not required for initrd-based diskless clients.

Example 4–3 Installing a Solaris Diskless Client

The following example installs a Solaris diskless client on a server.

```
N1-ok> load server 10.1.10.11 osprofile solx86 bootip 10.1.10.11 nfsroot=10.1.10.1:/diskless/solx86
```

▼ To Install a Group of Diskless Clients

The following procedure explains how to install a group of diskless clients using the `load group` command in the CLI.

You can also install a group of diskless clients from the N1 System Manager browser interface. From the Server Groups table, select a group and choose Load OS Profile from the Actions, or drag an OS profile from the Task Shortcuts onto the group name.

Before You Begin

- Verify that N1 System Manager has discovered managed servers that you want to use as diskless clients. For information about discovering managed servers, see Chapter 4, "Discovering Manageable Servers," in *Sun N1 System Manager 1.3 Discovery and Administration Guide*.
- Create and link a diskless client image as explained in "To Configure a Link to a Solaris Diskless Client Image" on page 64.

◗ **To install a group of diskless clients, use the `load group` command.**

```
load group group osprofile osprofile bootip bootip
[excludeserver server[,server...]
[diskless-client-installation-attributes]
```

Where:

- *group* is the name of a server group.
- *osprofile* is the name of an OS profile used to install the OS.
- *bootip* (Linux only) specifies the IP address for the server's provisioning network interface used to install the server, also known as the Provisioning IP. You can specify a range of IP addresses or a subnet mask. Specify a range of IP addresses as follows: *ip-address-ip-address*. Example: `10.0.0.1–10.0.0.3`.
- `excludeserver` identifies one or more servers to exclude from the group installation. *server* is the management name of a server.
- *diskless-client-installation-attributes* include several diskless client-specific attributes:
  - `bootgateway` *bootgateway* – (Linux only) A gateway used to install the server.
  - `boothostname` *boothostname* – (Single server and Linux only) A host name used to install the server.
  - `bootnameserver` *bootnameserver* – (Linux only) A name server used to install the server.
  - `bootnetmask` *bootnetmask* – (Linux only) A netmask used to install the server.
  - `bootnetworkdevice` *bootnetworkdevice* – The server's provisioning network interface used to install the server. Valid Solaris values are `bge0` (default), `bge1`, `bge2`, and `bge3`. Valid Linux values are `eth0` (default), `eth1`, `eth2`, `eth3`, and `eth4`. Note that when installing the Red Hat 4 OS on Sun Fire X2100 servers, the *bootnetworkdevice* value must be set to `eth1`. The default value does not work for this situation.
  - `console` *console* – The device name for the server's system console, which may be used to monitor the installation. Default is `ttys0` (Linux) and `ttya` (Solaris).
  - `consolebaud` *consolebaud* – The baud rate for the server's system console. Default is `9600`.
  - `nfsroot` *nfsroot* – The location of the NFS root, such as `10.0.0.115:/my_roots/sol_a`. You can specify a comma-separated list of paths, or you can specify a range of paths as follows: `10.1.10.1:/diskless/home/1–40`. When specifying a range of paths, the nfsroot directory names must be numbers. This attribute is not required for initrd-based diskless clients.

Example 4–4 Installing a Group of Solaris Diskless Clients

The following example installs a Solaris diskless client on a group of servers.

```
N1-ok> load group my-diskless-group osprofile diskless-image bootip 10.5.5.2
```

Managing Diskless Clients

Managing diskless clients through the N1 System Manager product involves two main tasks: Uninstalling the diskless clients and viewing information about the associated OS profiles.

Uninstalling Diskless Clients

Uninstalling a diskless client removes the association between the client and a root file system. To uninstall a diskless client, use the `unload server` command. To unload a group of diskless clients, use the `unload group` command. For more information, see "unload server" in *Sun N1 System Manager 1.3 Command Line Reference Manual* and "unload group" in *Sun N1 System Manager 1.3 Command Line Reference Manual*.

EXAMPLE 4–5 Uninstalling a Solaris Diskless Client

The following example uninstalls a Solaris diskless client.

```
N1-ok> unload server 10.1.10.11
```

Viewing Diskless Client Profiles

To see a list of defined diskless client profiles, use the `show os all`command. Look in the Format column for diskless. To see more information about a specific profile, use the `show os` *os-name*command.

EXAMPLE 4–6 Viewing Diskless Client Profiles

The following example illustrates how to view information about a diskless client OS profile. The first command lists all OS profiles on the management server. The second command shows additional information about one of the diskless OS profiles.

```
N1-ok> show os all
ID     Name                 Format        Type          Version
1      RedHatAS3u5          diskful       redhat        redhat-as3
2      Solaris10x86         diskful       solaris       solaris10x86
3      SusePro93            diskful       suse          suse-pro93
6      nfs                  diskless      redhat        nfs
5      image                diskless      redhat        image
4      WS2k3Ent             diskful       windows       2003EE
7      SolarisX86           diskless      solaris       nfs
8      SolarisSparc         diskless      solaris       nfs
N1-ok> show os image
ID:           5
Name:         image
Format:       diskless
```

EXAMPLE 4–6 Viewing Diskless Client Profiles *(Continued)*

```
Type:          redhat
Version:       image
Kernel:        diskless/dl_kernel_image
Boot Image 1.: diskless/dl_initrd_image
Boot Image 2:
Tftp Server :
```

◆ ◆ ◆ CHAPTER 5

Managing Packages, Patches, and RPMs

The N1 System Manager enables you to perform the following OS update management tasks:

- "To Copy an OS Update" on page 75
- "To Copy a Custom OS Update" on page 78
- "To Load an OS Update on a Server or a Server Group" on page 79
- "To List the Available OS Updates" on page 81
- "To List the OS Updates Installed on a Managed Server" on page 82
- "To Delete an OS Update" on page 82
- "To Uninstall an OS Update From a Managed Server" on page 82
- "To Uninstall an OS Update on a Server Group" on page 83

Introduction to Managing OS Updates

After you have installed an OS on a managed server, the N1 System Manager enables you to install OS updates. These OS updates consist of Solaris packages and patches and Linux RPMs.

Note – The N1 System Manager does not enable you to install updates or patches for the Windows operating system. You must update the Windows operating system on a managed server outside of the Sun N1 System Manager environment.

Installing OS updates on servers for the first time involves the following four-step process when you use the N1 System Manager:

1. Downloading the OS update.
2. Copying the OS update to the N1 System Manager.

   The N1 System Manager must have system access to the OS update before the update can be installed on the managed servers.

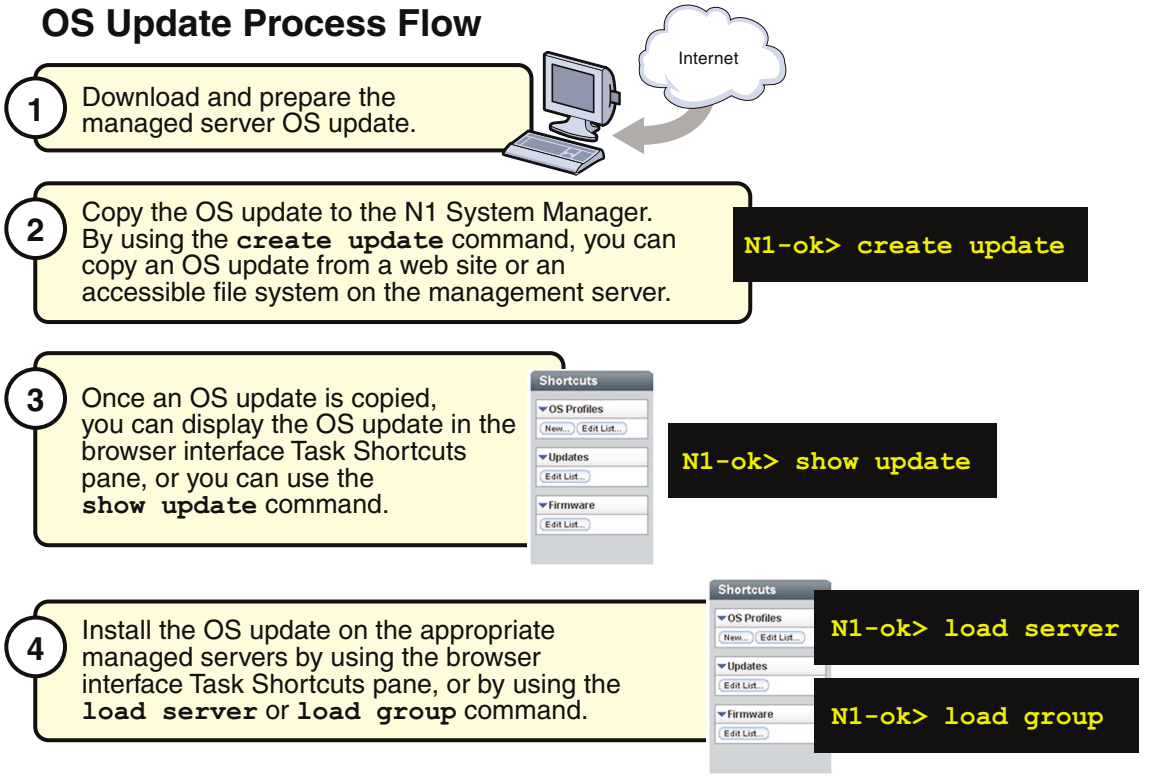
By using the `create update` command, you can copy an OS update from a web site or an accessible file system on the management server. After an OS update is copied, you can display the update in the browser interface's Task Shortcuts pane, or you can use the `show update` command.

3. Verifying that the OS update was copied by displaying the Shortcut in the browser interface or by using the `show update` command.
4. Installing the OS update on the appropriate managed servers by using the browser interface or the `load server` or `load group` commands. The managed servers must have the base management feature supported.

OS update installations behave differently for every operating system because the native package installation mechanisms are used. For example, if a Solaris package is already installed on the target server, the installation might succeed without reporting an error. However, this same scenario for a Linux RPM results in an error message indicating that the package is already installed.

See "OS Updates" in *Sun N1 System Manager 1.3 Troubleshooting Guide* for troubleshooting information.

The following graphic describes the order in which these tasks should be completed.



Installing Custom OS Updates

The N1 System Manager also enables you to install OS updates that don't use the standard patch, package, or RPM update commands, such as `.tgz`, `.tar`, `.Z`, or `.zip` files. Examples of files you can install include:

- Complete software packages or libraries
- Custom RPM files or variants of RPM installs not supported by N1 System Manager
- Executable images or scripts
- Image files, such as `.jpg` or `.gif` files
- Text files

The overall process to copy and install standard OS updates using N1 System Manager is the same for custom OS updates, with the following exceptions:

- When copying custom OS updates to the management server using the `create update` command, the `osupdatetype=other` attribute is required with the `create update` command and an installation script is mandatory.

- The OS update's metadata is not automatically extracted during the copy, so you must provide the `description`, `vendor`, and `version` attribute values or they will be empty.
- When installing a custom OS update, the native OS update mechanisms are not used. Instead, the installation script is used and you are responsible for making sure it works properly.
- You cannot use the `unload update` command to uninstall a custom OS update, since there is no support to specify an uninstall script when copying the OS update.
- When installing Solaris packages, the `pkgadd` command in the installation script must explicitly specify the admin file to use for the install. The admin file's name will be *source-filename*`.admin`, where *source-filename* is the name of the actual source file used in the `create update` command.

Installation Script Overview

When copying an OS update using the `create update` command, you can specify an installation script with the `installscript` attribute. Installation scripts are used to install an OS update and are available for the following scenarios:

- A standard OS update that consists of one or more Solaris packages in a tar file, which is known as a package bundle. An installation script can be used in this instance to resolve dependencies. Note that a Solaris package can be delivered in `.tar` format without the need for an installation script.
- A custom OS update that requires an installation script to install the OS update on a managed server.

The following information provides instructions on how to create a successful installation script for either standard or custom OS update installations:

- The installation script file must be able to run under the Bourne shell (`/bin/sh`).
- During the installation process with the `load update` command, both the installation script file and the OS update source file are copied to `/tmp` directory on the target server. The installation script file is then executed using the Bourne shell with the full path to the source file as the sole argument, instead of the platform's usual native update commands (`rpm`, `pkgadd`, or `patchadd`).
- For Solaris packages, N1 System Manager always provides a default admin file if the admin file is not specified. The admin file is copied to `/tmp` directory on the target server, and the admin file's name will be *source-filename*`.admin`, where *source-filename* is the name of the actual source file used in the `create update` command. Therefore, you can refer to this admin file in the installation script if needed.
- Any output from the installation to stdout or stderr is captured into a single string and displayed in the job detail. If the installation script exits with a non-zero value, it is assumed that the installation failed and the failed status of the task is recorded and displayed.
- After the installation of the OS update is complete, the installation script should remove any files that it creates.
- If the installation script extracts an OS update, the script should create a new subdirectory (for example, in `/tmp`) and extract the OS update into that subdirectory. Once the installation completes, the installation script should remove the subdirectory.

- By default, the installation script executes in the invoker's home directory.
- The installation script should refer to the OS update source files by full path names in order to avoid any confusion.

Installing Multiple Solaris Packages

When you install a standard OS update that contains multiple Solaris packages in a tar file, follow these guidelines:

- You can specify an optional installation script to control the installation, such as the installation order of the packages.
- If you don't specify an installation script, the packages in the bundle are installed without any dependency checking and there is no guaranteed installation order.
- The metadata from the first package is used to populate the OS update metadata. Metadata from the other packages are ignored and you are responsible to maintain this information.
- You can attempt to uninstall the OS update with the `unload update` command, but no dependency checking is performed and the uninstall may fail.

When you install a custom OS update that contains multiple Solaris packages in a tar file, follow these guidelines:

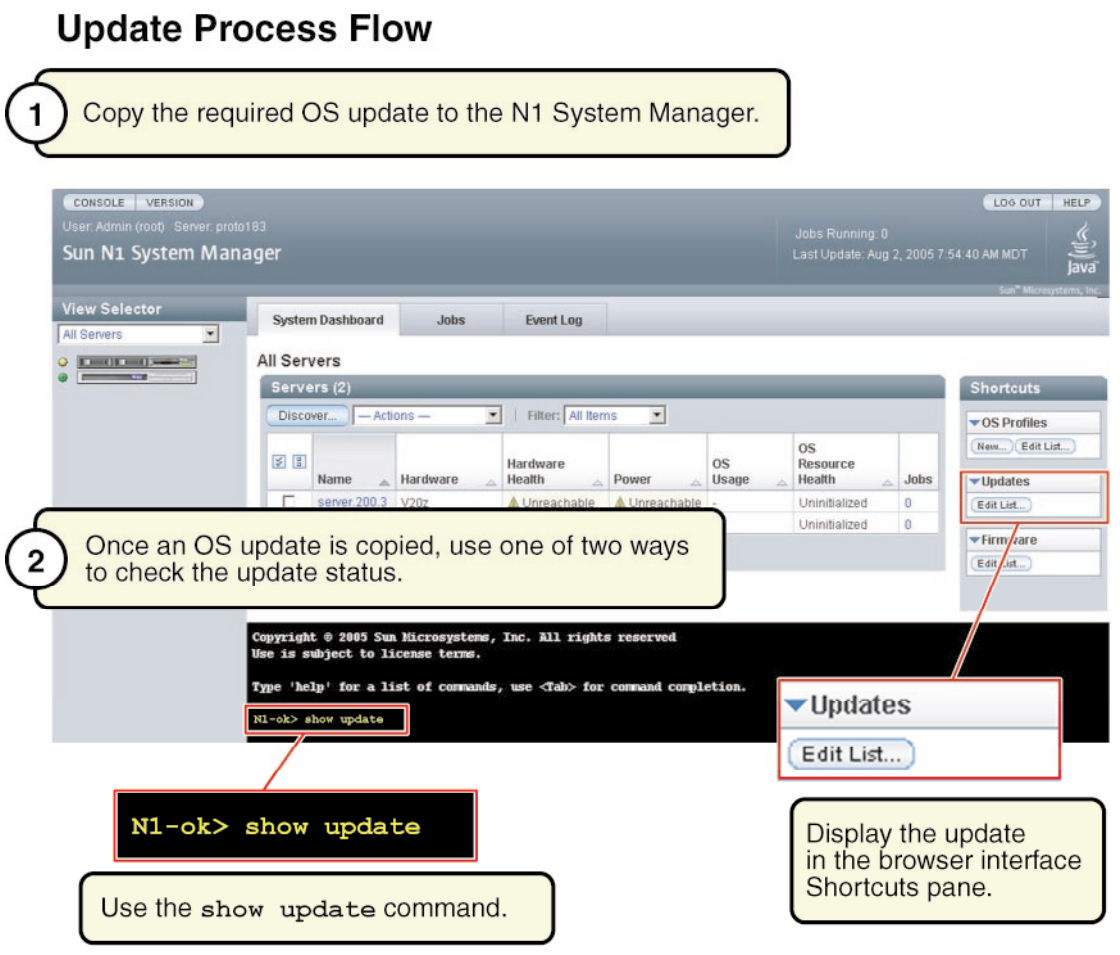
- You must provide an installation script used to perform the installation.
- The installation script must determine the order of the package installations, including all dependences of the packages in the bundle.
- You must provide the package metadata when copying the package bundle to the N1 System Manager. If an OS update consists of multiple packages, you can specify only one set of metadata.
- You can attempt to uninstall the OS update with the `unload update` command, but this may not work and is not supported for custom OS updates.

Managing OS Updates

Managing OS updates includes such tasks as copying OS updates, loading OS updates on a server or server group, listing OS updates, deleting OS updates, and uninstalling OS updates.

▼ To Copy an OS Update

This procedure describes how to copy an OS update to the N1 System Manager. Once an OS update is copied, you can use the command line or the browser interface to install the OS update on a managed server.



Before You Begin Ensure that the OS update is available to the management server on the local file system, a network accessible file, or a web site. You can copy OS updates in the following formats:

- `*.rpm` – Linux RPM
- `*.pkg`– Solaris package (a `*.pkg` file can be with or without the file extension and it must be in a valid datastream format)
- `*.tar` – Single or multiple Solaris packages
- `*.zip` – Solaris patch.

Note – The `*.tar` file must match the top-level directory name after the tar expansion. For example, if the tar file is `SUNWstade.tar`, the top-level directory of the tar expansion must be `SUNWstade`.

If you use the `installscriptfile` parameter when creating an OS update, consider loading the OS update on a single server to test whether the script is working correctly before loading on a large server group.

1. **Log in to the N1 System Manager.**

   See "To Access the N1 System Manager Command Line" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

2. **Copy the OS update to the N1 System Manager.**

   `N1-ok>` **`create update`** *update* **`file`** *file* **`ostype`** *ostype* [**`adminfile`** *adminfile*] [**`responsefile`** *responsefile*] [**`installscriptfile`** *installscriptfile*]

   Use the tab completion help to find out the valid `ostype` values.

   See "create update" in *Sun N1 System Manager 1.3 Command Line Reference Manual* for details.

3. **Confirm that the OS update copy has been successful.**

Example 5–1 Copying an OS Update Through the Command Line

The following example command shows how to copy an OS update named `RH3_update`. where the `ostype` is Red Hat Enterprise Linux, AS 3.0 and the location of the update file is `/tmp/test-i386.rpm`.

```
N1-ok> create update RH3_update file /tmp/test-i386.rpm ostype=redhat-as3
```

Example 5–2 Copying an OS Update With a Package Install Script Through the Command Line

This example shows an executable Bourne shell (`/bin/sh`) package installation script.

```
#!/bin/sh
echo "This is from the install script:"
echo "pkgadd -n -a /tmp/combo-pkgs.pkg.admin -d /tmp/combo-pkgs.pkg SUNWtest1 SUNWtest2"
pkgadd -n -a /tmp/combo-pkgs.pkg.admin -d /tmp/combo-pkgs.pkg SUNWtest1 SUNWtest2
exit $?
```

The following sample command shows how to associate the package installation script with the OS update files. This example assumes that you have copied the script to the management server's `/tmp` directory with the name `install.sh`.

```
N1-ok> create update combo file /tmp/combo-pkgs.pkg ostype solaris10x86 adminfile
/tmp/combo-pkgs.pkg.admin installscriptfile /tmp/install.sh
```

In this example, `/tmp/combo-pkgs.pkg` contains two Solaris packages in the datastream format.

The script and the source files for the OS update are copied to the target server when the `load server` *server-name* `update` command is issued. The installation script file is executed by using the Bourne shell with the full path to the package file as the sole argument. If the `adminfile` subcommand is not specified, the default `admin` file is also copied to the target server and is renamed with `.admin` appended to the source file name.

Troubleshooting Refer to "OS Update Creation Fails" in *Sun N1 System Manager 1.3 Troubleshooting Guide* for solutions to common errors.

See Also To find out how to load an OS update, see "To Load an OS Update on a Server or a Server Group" on page 79

▼ To Copy a Custom OS Update

1 Log in to the N1 System Manager.

See "To Access the N1 System Manager Command Line" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

2 Copy the custom OS update to the N1 System Manager.

```
N1-ok> create update update updatetype other file file ostype ostype
installscriptfile installscriptfile [adminfile adminfile] [responsefile responsefile]
```

Note – Even though the tab completion allows this argument anywhere in the `create update` command, the command will fail if `updatetype other` is not the first argument.

Use the tab completion help to find out the valid `ostype` values.

See "create update" in *Sun N1 System Manager 1.3 Command Line Reference Manual* for details.

Example 5–3 Copying an Custom OS Update With a Patch Installation Script Through the Command Line

This example shows an executable Bourne shell (`/bin/sh`) patch installation script.

```
#!/bin/sh
mkdir /tmp/layer
cd /tmp/layer
echo "untar the source:"
tar -xvf /tmp/mypatches.tar
echo "let's install mypatches:"
```

```
patchadd -M /tmp/layer 117448-01 117466-01
cd /tmp
rm -rf /tmp/layer
exit $?
```

The following sample command shows how to copy the patch installation script to N1 System Manager with the OS update files. This example assumes that you have copied the script to the management server's `/tmp` directory with the name `install.sh`.

```
N1-ok> create update mypatches updatetype other file /tmp/mypatches.tar ostype solaris10x86 installscriptfile
/tmp/install.sh
```

In this example, `/tmp/mypatches.tar` contains the Solaris patches 117448–01 and 117466–01 in the datastream format.

The script and the source files for the OS update are copied to the target server when the `load server` *server-name* `update` command is issued. The script file is executed by using the Bourne shell with the full path to the package file as the sole argument.

▼ To Load an OS Update on a Server or a Server Group

This procedure describes how to load an OS update by using the browser interface. The example that follows the procedure provides a command-line equivalent.

The following default `admin` file is used to install Solaris packages:

```
mail=root
instance=unique
partial=nocheck
runlevel=nocheck
idepend=nocheck
rdepend=nocheck
space=quit
setuid=nocheck
conflict=nocheck
action=nocheck
basedir=default
authentication=nocheck
```

The `admin` file is located in the `/opt/sun/n1gc/etc` directory on the management server.

Before You Begin

- Copy the OS update to the N1 System Manager. See "To Copy an OS Update" on page 75 for details.
- Disable monitoring for the managed server. This action is required only if you want to avoid the fault notifications if the server reboots after an OS update installation. See "To Disable Monitoring for a Managed Server or a Managed Server Group" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

- Ensure that the base management feature is added to the managed server. This action provides the necessary support to install OS updates. You can automatically add base management support by adding the OS monitoring feature. See "To Add the OS Monitoring Feature" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.
- Ensure that the package file name matches the name of the package. If the file name does not match that of the package and an `adminfile` is used to install the OS update, uninstallation will fail.

1 Log in to the N1 System Manager.

See "To Access the N1 System Manager Browser Interface" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

2 Navigate to the table that contains the server or the server group by performing one of the following actions:

- **Choose All Servers from the View Selector menu.**

  The Servers table appears.

- **Choose Servers By Group from the View Selector menu.**

  The Server Groups table appears.

3 Drag and drop the OS update icon from the Task Shortcuts pane to the server or the server group.

The Load OS Update confirmation dialog box appears.

4 To begin loading the OS update on the selected servers, click the OK button.

The dialog box closes.

5 Click the Jobs tab.

The Jobs table appears with information about your Load OS Update job.

6 Verify that the installation was successful.

```
N1-ok> show server server
```

Example 5–4 Loading an OS Update Through the Command Line

The following command shows you how to install an OS update on two servers by using the load command.

```
N1-ok> load server server1,server2 update SUNWn1gcsolsparcag
```

See "load server" in *Sun N1 System Manager 1.3 Command Line Reference Manual* for details.

Example 5–5 Loading an OS Update on a Server Group Through the Command Line

The following command shows you how to install multiple OS updates on a server group by using the load command.

```
N1-ok> load group devgroup update SUNWupdate1,SUNWupdate2
```

See "load group" in *Sun N1 System Manager 1.3 Command Line Reference Manual* for details.

Troubleshooting "Solaris OS Update Deployment Failures" in *Sun N1 System Manager 1.3 Troubleshooting Guide*

▼ To List the Available OS Updates

This procedure describes how to list the available OS updates that have been copied to the N1 System Manager. These OS updates can be installed on a managed server.

The example that follows the procedure provides a command-line equivalent.

1. **Log in to the N1 System Manager.**

   See "To Access the N1 System Manager Browser Interface" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

2. **Click the System Dashboard tab.**

   The Task Shortcuts pane appears.

3. **Click the Expand/Collapse icon on the Update title bar.**

   The Update list expands.

4. **Click the Edit List button.**

   The Edit List dialog box appears with the list of available updates.

Example 5–6 Listing Available OS Updates Through the Command Line

The following command shows you how to list all of the OS updates in the system.

```
N1-ok> show update all
```

▼ To List the OS Updates Installed on a Managed Server

Tip – You can also use the browser interface Server Details page to view all of the OS updates that are installed on a server.

1 Log in to the N1 System Manager.

See "To Access the N1 System Manager Command Line" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

2 List the OS updates that are installed on a managed server.

```
N1-ok> show server server
```

See "show server" in *Sun N1 System Manager 1.3 Command Line Reference Manual* for details

▼ To Delete an OS Update

This procedure describes how to delete an OS update from the N1 System Manager. This procedure does not delete an OS update from a managed server. See "To Uninstall an OS Update From a Managed Server" on page 82 for details on that specific task.

1 Log in to the N1 System Manager.

See "To Access the N1 System Manager Command Line" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

2 Delete an OS update from the N1 System Manager.

```
N1-ok> delete update update
```

See "delete update" in *Sun N1 System Manager 1.3 Command Line Reference Manual* for details.

▼ To Uninstall an OS Update From a Managed Server

Before You Begin

- Disable monitoring for the managed server. Disabling monitoring prevents the fault notifications if the server reboots after an OS update uninstallation. See "To Disable Monitoring for a Managed Server or a Managed Server Group" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.
- Ensure that the OS monitoring feature is supported on the managed server. This action provides the necessary support to uninstall OS updates. See "To Add the OS Monitoring Feature" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

1. **Log in to the N1 System Manager.**

   See "To Access the N1 System Manager Command Line" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

2. **Uninstall an OS update from a managed server.**

   ```
   N1-ok> unload server server[,server...] update update
   ```

Caution – If the user-specified update name is not found, the command tries to uninstall an OS update with a matching file name. The `show update` command enables you to list an OS update's corresponding file name.

See "unload server" in *Sun N1 System Manager 1.3 Command Line Reference Manual* for details.

Troubleshooting

If you cannot uninstall an OS update that was installed with an `admin` file, check that the package file name matches the name of the package. If the name is not the same, rename the `admin` file in the managed server's `/tmp` directory to match the name of the package and try the `unload` command again. If the package still exists, remove it from the managed server by using `pkgrm`.

Refer to "OS Update Uninstallation Failures" in *Sun N1 System Manager 1.3 Troubleshooting Guide* for solutions to common problems.

▼ To Uninstall an OS Update on a Server Group

Before You Begin

- Disable monitoring for the managed servers. This action is required only if you want to avoid the fault notifications if the servers reboot after an OS update uninstallation. See "To Disable Monitoring for a Managed Server or a Managed Server Group" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.
- Ensure that the OS monitoring feature is supported on the managed servers. This action provides the necessary support to uninstall OS updates. See "To Add the OS Monitoring Feature" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

1. **Log in to the N1 System Manager.**

   See "To Access the N1 System Manager Command Line" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

2. **Uninstall an OS update on the managed servers in a server group.**

   ```
   N1-ok> unload group group update update
   ```

Caution – If the user-specified update name is not found, the command tries to uninstall an OS update with a matching file name. Use the `show update` command to list an OS update's corresponding file name.

See "unload group" in *Sun N1 System Manager 1.3 Command Line Reference Manual* for details.

◆ ◆ ◆ CHAPTER 6

Managing Firmware SP, BIOS, and ALOM Updates

The N1 System Manager enables you to perform the following firmware management tasks:

- "To Copy a Firmware Update" on page 87
- "To Load a Firmware Update on a Server or a Server Group" on page 89
- "To List the Available Firmware Updates" on page 91
- "To List the Firmware Updates Installed on a Managed Server" on page 92
- "To Modify Firmware Update Information" on page 92
- "To Delete a Firmware Update" on page 93

Note – The N1 System Manager product does not support firmware updates for all managed servers. For more information, see "Managed Server Limitations" in *Sun N1 System Manager 1.3 Site Preparation Guide*. F

Managing Firmware Updates (Overview)

Updating the firmware on the managed servers is a primary administrative task. Using the N1 System Manager to install a firmware update on a managed server for the first time involves the following process:

1. Download and prepare the firmware update. Verify that the firmware version matches those set out in "SP-Based Discovery" in *Sun N1 System Manager 1.3 Discovery and Administration Guide*.
2. Copy the firmware update to the management server. The N1 System Manager must have system access to the firmware update before the firmware update can be installed on the managed servers.

   Use the `create firmware` command to copy a firmware update from a web site or an accessible file system on the management server.
3. To verify that the firmware updated was copied successfully, view the firmware update in the browser interface Task Shortcuts pane, or use the `show firmware` command.

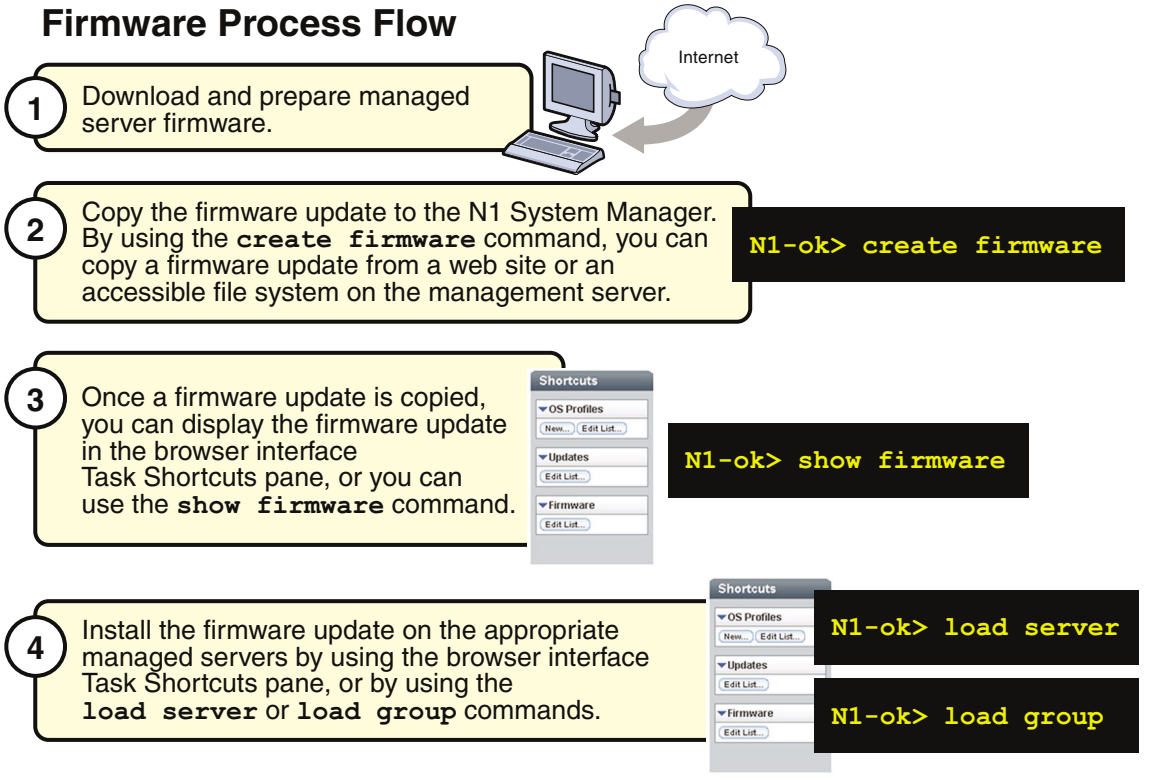
4. Install the firmware update on the appropriate managed servers by using the browser interface, or by using the `load server` or `load group` command.

When copying firmware updates, you must specify the following information:

- Vendor – The name of the firmware update vendor
- Model – The model name of a valid hardware system for the firmware update
- Type – The type of firmware update, required only for Sun Fire V20z and V40z servers:
  - SP – Service Processor
  - BIOS – Server Platform BIOS
  - PIC – Service Processor Operator Panel

Note – Firmware version 2.2 and above for the Sun Fire V20z servers do not support the PIC firmware upgrade. The upgrade of PIC firmware will fail, and the job step will show an error message similar to the following: "This operation is not supported on *server*. Refer to the log file for more information."

The following graphic describes the order in which firmware management tasks must be performed.



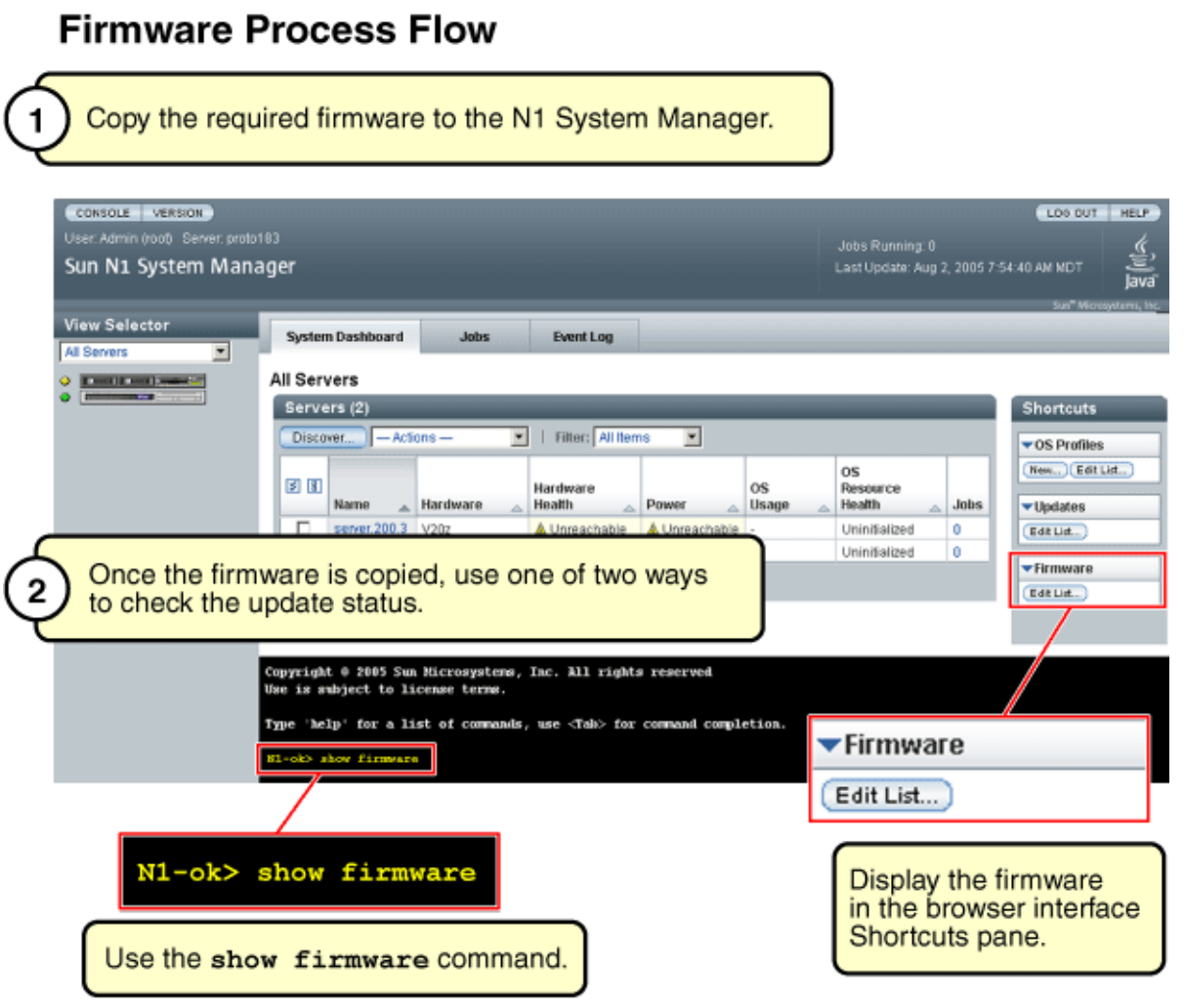
Managing Firmware Updates (Tasks)

Managing firmware updates includes such tasks as copying firmware updates, loading firmware updates on a server or server group, listing firmware updates, changing firmware update information, and deleting firmware updates.

▼ To Copy a Firmware Update

This procedure describes how to copy a new firmware update to the N1 System Manager. Once a firmware update is copied, you can use the command line or the browser interface to install the firmware update on a managed server.

The following graphic illustrates the use of the browser interface to verify a firmware update.



Before You Begin Ensure that the firmware update is available to the management server from the local file system, a network accessible file, or a web site.

1 Log in to the N1 System Manager.

See "To Access the N1 System Manager Command Line" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

2 Copy the firmware update.

```
N1-ok> create firmware firmware url=url vendor=vendor model=model[,model...] [type type]
 [description description] [version version]
```

See "create firmware" in *Sun N1 System Manager 1.3 Command Line Reference Manual* for details.

3 Verify that the firmware update was copied.

```
N1-ok> show firmware firmware
```

See "show firmware" in *Sun N1 System Manager 1.3 Command Line Reference Manual* for details.

Example 6–1 To Copy Sun Fire X4100 Firmware Through the Command Line

The following example shows how to copy the firmware image for a Sun Fire X4100 system. The firmware image applies to either a Sun Fire X4100 or a Sun Fire X4200 system, as illustrated in the second command.

```
N1-ok> create firmware galaxy-9306 model X4100 vendor sun
url file:///var/tmp/x4100bootilom
N1-ok> show firmware
Name                      Type   Vendor      Version     Compatible Model
galaxy_patch                     Sun                     X4200, X4100
galaxy_9306                      Sun                     X4200, X4100
```

See Also "To Load a Firmware Update on a Server or a Server Group" on page 89

▼ To Load a Firmware Update on a Server or a Server Group

This procedure describes how to load a firmware update by using the browser interface. The examples that follow the procedure provide command-line equivalents.

Before You Begin

- Consult your hardware documentation for instructions and information on upgrading your server firmware. See the Sun System Handbook documentation or the documentation that came with your server.
- The firmware update must be copied to the N1 System Manager. See "To Copy a Firmware Update" on page 87 for details.
- Power off the managed server by using the browser interface or the command line before loading a firmware update on it. Sun Fire V20z, Sun Fire V40z, or ALOM (1.5)–based servers can remain powered on during firmware SP updates. The `stop server` command performs a graceful shutdown of the OS on the server, followed by a power off. Otherwise, you can force a power off using the `stop server` *server* `force` command or the `stop group` *group* `force` command.
- Disable monitoring for the managed server. This action is required only if you want to avoid the fault notifications as you shut down the OS on the server to complete the firmware installation. See "To Disable Monitoring for a Managed Server or a Managed Server Group" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

Note – Firmware version 2.2 and above for the Sun Fire V20z servers do not support the PIC firmware upgrade. The upgrade of PIC firmware will fail, and the job step will show an error message similar to the following: "This operation is not supported on *server*. Refer to the log file for more information."

1. **Log in to the N1 System Manager.**

   See "To Access the N1 System Manager Browser Interface" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

2. **Choose All Servers from the View Selector menu.**

   The Servers table appears.

3. **Select the server or servers that you want to update.**

   A check mark appears.

4. **Choose Load Firmware from the Actions menu.**

   The Load Firmware dialog box appears

5. **Select the appropriate firmware from the Firmware menu.**

6. **To apply the firmware update to the listed target servers, click OK.**

   The dialog box closes.

7. **Click the Jobs tab.**

   A Load Firmware job appears in the Jobs table.

8. **Click the job ID.**

   The Job Details page appears. Job steps indicate progress and results. Review the information in the Results section of the Job Details page to determine which servers were successfully updated.

Note – After successful completion, the firmware version number is updated with the actual version number that is reported by the hardware. If the reported version number does not match the original version number, a warning is logged.

9. **Verify that the installation was successful.**

   ```
   N1-ok> show server server
   ```

Example 6–2 Loading Firmware on a Server Through the Command Line

The following example command shows you how to stop a server in preparation for installing a firmware update.

```
N1-ok> stop server server
```

The following example command shows you how to install a firmware update on a server by using the `load` command.

```
N1-ok> load server server1,server2 firmware v20z-bios.sp force true
```

See "load server" in *Sun N1 System Manager 1.3 Command Line Reference Manual* for details.

By default, the firmware update's model and vendor settings must match every managed server that you select for installation; otherwise, the update fails. You can specify the `force` option to bypass this check. However, installing an incompatible firmware update on a server might render the server unusable.

Example 6–3 Loading Firmware on a Server Group Through the Command Line

The following example command shows you how to stop a server group in preparation for installing a firmware update.

```
N1-ok> stop group group
```

The following example command shows you how to install a firmware update on a server group by using the `load` command.

```
N1-ok> load group devgroup firmware bios.sp
```

See "load group" in *Sun N1 System Manager 1.3 Command Line Reference Manual* for details.

▼ To List the Available Firmware Updates

This procedure describes how to list the available firmware updates by using the browser interface. The example that follows the procedure provides the command-line equivalent.

1 Log in to the N1 System Manager.

See "To Access the N1 System Manager Browser Interface" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

2 Click the System Dashboard tab.

The Task Shortcuts pane appears.

3 Click the Expand/Collapse icon on the Firmware title bar.

The Firmware list expands.

4 Click the Edit List button.

The Edit List dialog box appears with the available firmware list.

Example 6–4 Listing the Available Firmware Updates Through the Command Line

```
N1-ok> show firmware all
```

▼ To List the Firmware Updates Installed on a Managed Server

Tip – You can also use the browser interface Server Details page to view all of the firmware updates that are installed on a server.

1 Log in to the N1 System Manager.

See "To Access the N1 System Manager Command Line" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

2 List the firmware updates that are installed on a managed server.

```
N1-ok> show server server
```

See "show server" in *Sun N1 System Manager 1.3 Command Line Reference Manual* for details.

Example 6–5 Listing the Firmware for an ALOM Server

The following example shows how to view all of the firmware for an ALOM enabled server.

```
N1-ok> show server
```

▼ To Modify Firmware Update Information

This procedure describes how to modify the information about a firmware update.

1 Log in to the N1 System Manager.

See "To Access the N1 System Manager Command Line" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

2 Modify information about a firmware update.

```
N1-ok> set firmware firmware [description description]
[name name] [model=model]
[vendor=vendor] [version=version]
```

See "set firmware" in *Sun N1 System Manager 1.3 Command Line Reference Manual* for details.

▼ To Delete a Firmware Update

This procedure describes how to delete a firmware update from the N1 System Manager. This procedure does not delete a firmware update from a managed server.

Note – After you install a firmware update on a managed server, you cannot uninstall it.

---

1 Log in to the N1 System Manager.

See "To Access the N1 System Manager Command Line" in *Sun N1 System Manager 1.3 Discovery and Administration Guide* for details.

2 Delete a firmware update from the N1 System Manager.

```
N1-ok> delete firmware firmware
```

See "delete firmware" in *Sun N1 System Manager 1.3 Command Line Reference Manual* for details.

Index

A

adding, scripts to OS profiles, 39-41

C

cloning, OS profiles, 37
commands, OS provisioning flow, 12-14
copying
  firmware updates, 87-89
  flash archive files, 29-31
  OS distributions
    CD or DVD, 26-27
    ISO, 24-25
  OS updates, 75-78
  SLES 9 Service Pack distributions, 25-26
  SLES 9 SP1 OS distributions, 25-26
  SLES 9 SP2 OS distributions, 25-26
  SLES 9 SP3 OS distributions, 25-26
creating
  OS profiles, 34-37, 56

D

definition
  diskless client, 63-64
  OS provisioning, 11
deleting
  firmware updates, 93
  OS distributions, 31-32
  OS updates, 82
diskless client
  definition, 63-64
diskless client (Continued)
  provisioning process, 64
  supported OS, 63

E

example, Solaris 10 provisioning process, 21-22

F

firmware management overview, 85-87
firmware updates
  copying, 87-89
  deleting, 93
  installing, 89-91
  listing, 91-92
  modifying, 92
flash archive files, copying, 29-31
flash archives, managing, 23-24

I

importing
  OS distributions
    from a RIS server, 54
installing
  OS updates, 79-81
  See loading, 43-48

L

listing
- firmware updates, 91-92
- OS profiles, 34
- OS updates, 81

loading
- OS profiles, 43-48, 58

M

managed server
- disk space requirements, 14
- operating systems, 15
- RAM requirements, 14
- requirements, 15

managing, flash archives, 23-24
modifying
- firmware updates, 92
- OS profiles, 37-39
  - for K2 motherboards, 39-41
  - V40z partitions, 39

N

N1 System Manager, server requirements, 15

O

operating systems
- installation introduction, 11
- managing distributions, 23-24

OS distributions
- copying
  - CD or DVD, 26-27
  - ISO, 24-25
- deleting, 31-32
- linking
  - RIS server, 54
- overview, 23-24
- windows
  - linking to RIS server, 54

OS installation management overview, 41-49
OS profile management overview, 32-41
OS profiles
- adding scripts for driver installation, 39-41
- cloning, 37
- creating, 34-37, 56
- installation parameters, 42-43
- listing, 34
- loading, 43-48, 58
- modifying, 37-39
  - V40z partitions, 39
- modifying for K2 motherboard, 39-41
- using default settings, 33

OS provisioning
- commands, 12-14
- definition, 11
- process, 11-12

OS update management overview, 71-75
OS updates
- copying, 75-78
- deleting, 82
- listing, 81

P

provisionable server, *See* managed server
provisioning, *See* OS provisioning

R

Red Hat, requirements, 15
removing, See deleting, 82
requirements
- managed server, 15
- operating systems, 15

S

scripts, adding to OS profiles for driver installation, 39-41
server groups
- installing OS profiles, 43-48
- uninstalling OS management features, 82-83
- uninstalling OS updates, 83-84

servers
- installing firmware updates, 89-91

servers (Continued)
installing OS profiles, 43-48
installing OS updates, 79-81
listing firmware updates, 92
listing installed OS updates, 82
managed server
requirements, 15
requirements, 15
supported operating systems, 14
uninstalling OS updates, 82-83
SLES 9 SP1 OS distributions, copying, 25-26
SLES 9 SP2 OS distributions, copying, 25-26
SLES 9 SP3 OS distributions, copying, 25-26
SLES Service Packs, 25-26
Solaris, requirements, 15
SUSE, requirements, 15

U

unloading, 82-83