SPARC: Installing Solaris Software
Contents

About This Book .......................................................... ix

1. About Installing Solaris ............................................ 1
   Definition: Installing Solaris Software ......................... 1

2. Preparing to Install Solaris ...................................... 5
   Why You Should Not Ignore This Chapter ..................... 5
   Steps to Prepare to Install Solaris ............................... 6
   Task Map: JumpStart Installations ......................... 13
   Task Map: Interactive Installations .................. 14
   Task Map: Custom JumpStart Installation .................. 15

3. Preparing to Install Solaris Over a Network .............. 17
   About Installing Solaris Over a Network .................. 17
   Servers Required for Network Installation ................ 18
   Requirements for Hands-Off Network Installation ........ 20
   Commands You Should Know About ............................. 21
   Creating an Install Server ..................................... 22
<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>If You Override the Boot File Location</td>
<td>115</td>
</tr>
<tr>
<td>Upgrading Dataless Clients</td>
<td>115</td>
</tr>
<tr>
<td>Important Files For Upgrading</td>
<td>115</td>
</tr>
<tr>
<td>Backing Up Your System</td>
<td>115</td>
</tr>
<tr>
<td>Preserving Local Modifications</td>
<td>116</td>
</tr>
<tr>
<td>7. Booting and Installing Solaris: JumpStart</td>
<td>119</td>
</tr>
<tr>
<td>8. Booting and Installing Solaris: Interactive</td>
<td>125</td>
</tr>
<tr>
<td>9. Booting and Installing Solaris: Custom JumpStart</td>
<td>131</td>
</tr>
<tr>
<td>10. Completing an Upgrade</td>
<td>137</td>
</tr>
<tr>
<td>Overview</td>
<td>137</td>
</tr>
<tr>
<td>What Happened During the Upgrade</td>
<td>137</td>
</tr>
<tr>
<td>Cleaning Up the System After an Upgrade</td>
<td>137</td>
</tr>
<tr>
<td>How to Upgrade Clients With Different Platforms and Platform Groups</td>
<td>139</td>
</tr>
<tr>
<td>11. Where to Go After Installing Solaris</td>
<td>141</td>
</tr>
<tr>
<td>A. Worksheets for the Solaris Installation Program</td>
<td>145</td>
</tr>
<tr>
<td>B. System Identification Label</td>
<td>155</td>
</tr>
<tr>
<td>C. Platform Names and Groups</td>
<td>159</td>
</tr>
<tr>
<td>D. Sample Custom JumpStart Installation</td>
<td>161</td>
</tr>
<tr>
<td>E. Troubleshooting</td>
<td>169</td>
</tr>
<tr>
<td>F. Time Zones</td>
<td>177</td>
</tr>
<tr>
<td>G. Glossary</td>
<td>179</td>
</tr>
<tr>
<td>Index</td>
<td>189</td>
</tr>
</tbody>
</table>
About This Book

Who Can Use This Book

This book is for anyone installing the Solaris™ operating environment on networked or non-networked systems. Site policy and/or level of expertise will determine who can perform the tasks required to install Solaris software.

Don't Read the Entire Book!

Because this book covers different ways of installing the Solaris software to accommodate a variety of site needs, you do not need to read the entire book.

Read chapters 1 and 2 — they'll help you decide which method of installing is best for your site, and point you to a task map that tells you exactly what sections of the book to use.
How This Book Is Organized

This book is organized by tasks in the categories of before, during, and after installing Solaris software.

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Note – This book does not include instructions for setting up system hardware or other peripherals. Setting up hardware and peripherals is described in your hardware guides.

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Before Installing Solaris

1 About Installing Solaris
2 Preparing to Install Solaris
3 Preparing to Install Solaris Over a Network
4 Preparing for Custom JumpStart™ Installations
5 Using Optional Custom JumpStart Features
6 Preparing a System for Upgrade

Installing Solaris

7 Installing Solaris: JumpStart
8 Installing Solaris: Interactive
9 Installing Solaris: Custom JumpStart

After Installing Solaris

10 Completing an Upgrade
11 Where To Go After Installing Solaris
Related Information

You may need to refer to the following books or online information when installing Solaris software:

- Hardware vendor online and hardcopy documentation
  Vendor-specific information for installing Solaris software.

- **Installation Notes**
  Describes any late-breaking news about installing Solaris software including known problems.

- **Solstice AdminSuite 2.1 User’s Guide**
  Describes applications such as Solstice™ Host Manager, which you can use if you’re setting up network installations.

- **System Administration Guide, Volume 1**
  Describes how to back up system files.

- **Solaris 1.x to Solaris 2.x Transition Guide**
  Describes transition issues including backing up 4.1.x files before installing Solaris software, and restoring files after Solaris software is installed.
About Installing Solaris

Definition: Installing Solaris Software

As shown on the following pages, the process of installing Solaris software means copying it from the Solaris CD to a system's local disk.
<table>
<thead>
<tr>
<th>Stage</th>
<th>Diagram</th>
<th>What Happens</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><img src="image1.png" alt="Diagram" /></td>
<td>You choose a Solaris CD for your hardware platform. The Solaris CD contains the SunOS operating system and other software.</td>
</tr>
<tr>
<td>2</td>
<td><img src="image2.png" alt="Diagram" /></td>
<td>You load the Solaris CD into the CD-ROM drive.</td>
</tr>
<tr>
<td>Stage</td>
<td>Diagram</td>
<td>What Happens</td>
</tr>
<tr>
<td>-------</td>
<td>---------</td>
<td>--------------</td>
</tr>
</tbody>
</table>
| 3     | ![Diagram](image) | ok boot sd(0,6,2)  
Booting from: sd(0,6,2)  
SunOS Release x.x.x Version [UNIX (r) System V Release]  
Configuring /devices directory  
Configuring /dev directory  

After you power on the system, you boot the system using a boot command specific to your system hardware. (Sample screen shown.)

During the booting phase, checks are performed on the hardware.

4 | The Solaris Installation Program
   |   | The Solaris installation program copies the Solaris software from the CD to the system’s local disk. This is done interactively using a graphical (shown) or character interface, or automatically without user intervention. |
Preparing to Install Solaris

This chapter guides you step-by-step through making decisions and completing the tasks required to prepare your system to install the Solaris software including:

<table>
<thead>
<tr>
<th>Task</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determine if your system is networked.</td>
<td>6</td>
</tr>
<tr>
<td>Determine your system type.</td>
<td>6</td>
</tr>
<tr>
<td>Determine if you have required hardware.</td>
<td>9</td>
</tr>
<tr>
<td>Plan disk space and memory requirements.</td>
<td>9</td>
</tr>
<tr>
<td>Back up your system.</td>
<td>11</td>
</tr>
<tr>
<td>Choose a method for installing Solaris software.</td>
<td>11</td>
</tr>
<tr>
<td>Choose a task map and complete required tasks.</td>
<td>12</td>
</tr>
</tbody>
</table>

Why You Should Not Ignore This Chapter

Successfully installing Solaris software requires a clear sense of what you’re doing and why, or it can become difficult. This chapter provides all the information you need to determine the best way to install the Solaris software for your site. This chapter also directs you to specific chapters of this book you’ll need.
Steps to Prepare to Install Solaris

Follow these steps before turning on your system.

1 Determine if your system is networked.

If your system is networked (connected to a network), an Ethernet connector or similar network adapter should be plugged into your system.

2 Determine your system type.

Before installing Solaris software, you must determine the system type which determines where the system gets important file systems. Using Figure 2-1 on page 7, choose a system type from the following lists:

Networked systems:
- OS server
- Standalone system
- Dataless client
- Diskless client
- AutoClient™ system

Non-networked systems:
- Standalone system
Networked systems

OS Server
Provides Solaris operating environment software including services and/or file systems for systems on the network. For dataless and diskless clients, OS servers provide the /usr file system. For diskless clients, an OS server provides root (/) and swap file systems. For AutoClient systems, an OS server provides all system software except the individual root (/) and /usr file system required for local swapping.

Standalone system
Has a local disk and does not require support from an OS server.

Dataless client
Has a local disk for root (/) and swap. Gets /usr file system from an OS server. Must mount /usr from a server.

Diskless client
Does not install Solaris software, but receives file services from an OS server, and does not have a local disk.

AutoClient system
Does not install Solaris software, but receives file services from an OS server. Has a local disk for swapping and caching its root (/) and /usr file systems.

Non-networked systems

Standalone systems
Have local disks and file systems.

Figure 2-1 System Types

Preparing to Install Solaris
Note – A standalone system in the Solaris operating environment applies to both networked and non-networked systems. Whether networked or non-networked, a standalone system has all of its Solaris software on local hard disk, and does not require services from another system.

3 If you are setting up diskless clients and/or AutoClient systems, and the OS server providing Solaris software is already installed with Solaris, do not go further in this book.

Diskless clients and AutoClient systems do not install Solaris software; instead, they receive file services from an OS server. If the OS server providing Solaris software already has Solaris software installed, refer to the Solstice AdminSuite 2.1 User’s Guide for information on setting up diskless clients, or the Solstice AutoClient 1.0 Administration Guide for setting up AutoClients.

If you do not have an OS server set up with Solaris software, continue in this book.

4 If you are setting up dataless clients, determine if you have required software.

If you are setting up dataless clients to boot over the network from an OS server, you must have the Solstice™ Host Manager, which comes with the server software.

Note – SunSoft™ plans to remove support for the dataless client system type after Solaris 2.5. You can select this system type now, but in future releases you will need to select a different type.
5 Determine if you have required hardware.

For a detailed description of hardware requirements, see your hardware vendor documentation.

Table 2-1 Hardware Requirements

<table>
<thead>
<tr>
<th>Hardware Platform</th>
<th>Minimum Memory</th>
<th>Disk Interfaces</th>
<th>Buses</th>
<th>Device for Installing Solaris Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPARC® system</td>
<td>16 Mbytes</td>
<td>• SMD</td>
<td>• VMEmbus</td>
<td>You must have one of the following devices for installing Solaris software:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• IPI</td>
<td>• Sbus</td>
<td>• Local CD-ROM drive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• SCSI</td>
<td></td>
<td>• Remote CD-ROM drive available over the network</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Remote hard disk available over the network</td>
</tr>
</tbody>
</table>

1. See your hardware vendor documentation for a list of supported systems.

6 Plan disk space and memory requirements.

There are many variables involved in determining disk space and memory requirements. Determining physical memory is easy—the minimum is 16 Mbytes, but more is better. While a system requires 32 Mbytes of virtual memory (physical and swap file/slices), determining requirements beyond this is not easy; it is depends on the type of applications that are running. Determining disk space is also not so easy; it is depends on the following:

- System type selected (for example, OS server, diskless client, AutoClient system, standalone system, dataless client)
- Language selected (for example, Chinese, Japanese, Korean)
- Software group selected (see following table)
If You Want to Install This Software Group¹...

| Software Group               | Which Installs ...                                                                 | Then You'll Need Approximately This Much Disk Space For Domestic Solaris CD ...
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------
| Core System Support          | The minimum software required to boot and run Solaris software.                   | 80 Mbytes                                                                         |
| End User System Support      | The core group plus the recommended software for an end user including OpenWindows and the DeskSet software. | 180 Mbytes                                                                         |
| Developer System Support     | The end user software plus software for developing software including libraries, include files, man pages, and programming tools. Compilers and debuggers are not included. | 280 Mbytes                                                                         |
| Entire Distribution          | The entire Solaris release (everything on the CD). Compilers and debuggers are not included. | 350 Mbytes                                                                         |

¹. Another software group, entire distribution plus OEM support may also be available. It contains hardware support for SPARC clones. Disk space will vary from release to release. To find out if this software group is available for your hardware platform, see the SPARC Hardware Compatibility Guide.

- Software packages that are selected or deselected in the software group (for example, you select Chinese, but deselect the 200-Mbyte font package)
- Disks selected (for example, ten 104-Mbyte disks will waste more space trying to make things fit than a single 1-GByte disk)
- Solaris file system overhead or local file systems (for example, mail, printer spooling, users’ personal file systems, swap space)
- Size of other applications that are running (for example, AnswerBooks, SPARC compilers, FrameMaker®, IslandDraw®)
Depending on which installation method you choose, you can perform a “dry run” to determine if you have enough disk space before actually installing Solaris software.

- Interactive – This method of installation lets you interactively select disks, locales, software, and lay out file systems; you can determine your requirements from a summary at the end of the session, and exit the program prior to installing Solaris software.

- Custom JumpStart – This method of installation lets you run the pfinstall command to test specific installation profiles without actually installing the Solaris software on a system.

7 Back up your system.

If your system has any files on it that you want to save, make sure you perform a backup. The safest way to back up files is to do a level 0 dump. If you do not have a backup procedure in place, see System Administration Guide, Volume I for instructions.

8 Choose a method for installing Solaris software.

There are three methods for installing Solaris software:

1 JumpStart™—easiest method of installing Solaris software. The JumpStart software automatically installs a new system as a standalone (networked or non-networked) with Solaris software. However, not all new systems have the JumpStart software; see Step 1 on page 120 to find out if your system has JumpStart software.

2 Interactive—easy, hands-on method of installing Solaris software. The Solaris installation program guides you step-by-step through identifying your system and installing Solaris software. You’re in control all the way!

3 Custom JumpStart (formerly called auto-install)—for the advanced user with experience in Bourne shell scripting. By creating profiles and rules files, you can set up systems to automatically install Solaris software in different ways on different systems. This method requires up-front work before systems are turned on, but it’s the most cost-effective way to install Solaris software for large, enterprise sites. You can even set up a hands-off installation where the user just boots the system and nothing more needs to be done!
## Methods

<table>
<thead>
<tr>
<th>Methods</th>
<th>Booting</th>
<th>Identifying Your System</th>
<th>Installing Solaris</th>
</tr>
</thead>
<tbody>
<tr>
<td>JumpStart</td>
<td>System automatically boots</td>
<td>You interact with the Solaris installation program to identify your system</td>
<td>Solaris software is automatically installed</td>
</tr>
<tr>
<td>Interactive</td>
<td>You boot system</td>
<td>You interact with the Solaris installation program to identify your system</td>
<td>You interact with the Solaris installation program to install Solaris software</td>
</tr>
<tr>
<td>Custom JumpStart</td>
<td>You boot system</td>
<td>You interact with the Solaris installation program to identify your system</td>
<td>Solaris software is automatically installed using a profile that you create in advance</td>
</tr>
</tbody>
</table>

### 9 Choose a task map and complete required tasks.

Choose the task map from the following pages that matches the method you’ve chosen for installing Solaris software: JumpStart, interactive, or custom JumpStart. The task maps guide you through all the tasks you need to complete before turning on, booting, and installing Solaris software on a system.
## Task Map: JumpStart Installations

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
<th>For Instructions, Go To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepare for network installation</td>
<td>Optional.</td>
<td>&quot;How to Set Up Servers for Network Installation of a Standalone, Server, or Dataless Client&quot;</td>
</tr>
<tr>
<td>Install Solaris software</td>
<td>Boot and install Solaris software.</td>
<td>Chapter 7, &quot;Booting and Installing Solaris: JumpStart&quot;</td>
</tr>
</tbody>
</table>

*Figure 2-2  Task Map for JumpStart Installations*
## Task Map: Interactive Installations

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
<th>For Instructions, Go To</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gather information</strong></td>
<td>Optional. Use worksheets to gather information that may need to be supplied during the Solaris installation program.</td>
<td>Appendix A, “Workheets for the Solaris Installation Program”</td>
<td>113</td>
</tr>
</tbody>
</table>
| **Save files from SunOS 4.x systems**         | **SunOS 4.x system only**  
The upgrade option is not available for SunOS 4.x systems. Backup your system and follow other special procedures. | Solaris 1.x to Solaris 2.x Transition Guide                                             |      |
| **Prepare system for upgrade**                | **Upgrade option only**  
Perform tasks such as backing up files and preserving local modifications.        | Chapter, “Preparing a System for Upgrade”                                               | 113  |
| **Install Solaris software**                  | **From another system on the network**  
Set up systems (standalone, OS server, or dataless client) for network installations. | Chapter 3, “Preparing to Install Solaris Over a Network”                                | 17   |
|                                               | **From local CD-ROM**  
Boot and install Solaris software.                                                      | Chapter 8, “Booting and Installing Solaris: Interactive”                                | 125  |

*Figure 2-3  Task Map for Interactive Installations*
### Task Map: Custom JumpStart Installation

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
<th>For Instructions, Go To</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Save files from SunOS 4.x system</strong></td>
<td><strong>SunOS 4.x system only</strong>&lt;br&gt;The upgrade option is not available for SunOS 4.x systems. Backup your system and follow other special procedures.</td>
<td>Solaris 1.x to Solaris 2.x Transition Guide</td>
</tr>
<tr>
<td><strong>Prepare system for upgrade</strong></td>
<td><strong>Upgrade option only</strong>&lt;br&gt;Perform tasks such as backing up files and preserving local modifications.</td>
<td>Chapter 4, “Preparing a System for Upgrade”</td>
</tr>
<tr>
<td><strong>Set up system for custom JumpStart</strong></td>
<td>Perform the following tasks:&lt;br&gt;• Create a JumpStart directory&lt;br&gt;• Enable clients to access the JumpStart directory&lt;br&gt;• Create profiles&lt;br&gt;• Create a <code>rules</code> file&lt;br&gt;• Use <code>check</code> to validate the <code>rules</code> file</td>
<td>Chapter 4, “Preparing Custom JumpStart Installations”</td>
</tr>
<tr>
<td><strong>Install Solaris Software</strong></td>
<td><strong>From another system on the network</strong>&lt;br&gt;Set up systems (standalone, OS server, or dataless client) for network installations.</td>
<td>Chapter 3, “Preparing to Install Solaris Over a Network”</td>
</tr>
<tr>
<td></td>
<td><strong>From local CD-ROM</strong>&lt;br&gt;Boot and install Solaris software.</td>
<td>Chapter 9, “Booting and Installing Solaris: Custom JumpStart”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chapter 9, “Booting and Installing Solaris: Custom JumpStart”</td>
</tr>
</tbody>
</table>

*Figure 2-4  Task Map for Custom JumpStart Installations*
Preparing to Install Solaris Over a Network

A typical way to install Solaris software is to use the installation program to copy the Solaris CD shipped with your system. However, it is uncommon at most sites for every system to have its own local CD-ROM drive. When a system does not have a local CD-ROM drive, you can perform a network installation. Network installation means that you install software over the network—from a system with a CD-ROM drive to a system without a CD-ROM drive.
Note – Instructions in this chapter are valid for either an x86 or SPARC server being used for network installations. An x86 server can provide the Solaris CD image for SPARC systems, and a SPARC server can provide the Solaris CD image for x86 systems.

Servers Required for Network Installation

As shown in Figure 3-1, systems that install Solaris software over the network require:

- **Install server** – A networked system with the CD-ROM drive that provides installation services for other systems.

- **Name server** – A system that manages a distributed network database (such as NIS or NIS+) containing information about users and other systems on the network.

Note – The install server and name server may be the same or separate systems.

- **Boot server** – A system that boots the system to be installed over the network. A boot server and install server are typically the same system. However, if the system to be installed is on a different subnet than the install server, a boot server is required on that subnet.

Dataless clients also require:

- **OS server** – A system that provides Solaris operating environment software including services and/or file systems. For dataless clients, OS servers provide the `/usr` file system.
Preparing to Install Solaris Over a Network
Requirements for Hands-Off Network Installation

To set up your site to install Solaris software on systems over the network with no user intervention, you must:

- Use the custom JumpStart installation method. (See Chapter 4, “Preparing Custom JumpStart Installations.”)

- Make sure all systems are properly configured in the name service. (Procedures in this chapter include information on how to add systems to the name service.)

- Preconfigure network information, such as the date, time, geographic region, site subnet mask, and language. By using the Solstice Host Manager to set up a server for network installations, you automatically preconfigure network information. This eliminates many prompts that are otherwise necessary to identify the system during an installation.
Commands You Should Know About

Table 3-1 shows programs available for setting up network installations.

<table>
<thead>
<tr>
<th>Program</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>setup_install_server</td>
<td>A script that copies all or part of the Solaris CD onto a server’s local disk. This enables you to perform network installations from the install server’s disk instead of its CD-ROM drive. (Installing from the install server’s disk is faster than installing from the server’s CD-ROM drive.) See the setup_install_server(1m) man page for more information.</td>
</tr>
<tr>
<td>Host Manager</td>
<td>A graphical user interface that is available from within the Solstice AdminSuite (solstice). You can use Host Manager to specify naming services, system’s IP and Ethernet addresses, and other information to be used for installations across a network.</td>
</tr>
<tr>
<td>mount</td>
<td>A command that shows mounted file systems, including the Solaris CD file system. See the mount(1M) page for more information.</td>
</tr>
<tr>
<td>uname -i</td>
<td>A command for determining a system’s platform name (for example, SUNW,SPARCstation-5,). This information is sometimes required during installation. See the uname(1) man page for more information.</td>
</tr>
<tr>
<td>reset</td>
<td>A command for resetting the terminal settings and display. It is sometimes useful to use reset before booting. Or, if you boot and see a series of error messages about I/O interrupts, press the L1 or STOP and A keys at the same time, and then enter reset at the ok or &gt; PROM prompt.</td>
</tr>
<tr>
<td>banner</td>
<td>A command for displaying system information, such as model name, Ethernet address, or memory installed. Available only from the ok or &gt; PROM prompt.</td>
</tr>
</tbody>
</table>
Creating an Install Server

If you are installing systems over the network, you must have an install server—a system with a CD-ROM drive or with Solaris software copied to its local disk. This system will provide the installation services for systems on the network that do not have a local CD-ROM drive.

You can create an install server to install the following system types:

- OS server
- Standalone system
- Dataless client

This section describes how to:

- Set up a new system to be an install server.
- Create an install server by mounting the Solaris CD or by copying the Solaris CD to the install server’s local disk.

Note – If you intend to do frequent installations over the network, you should copy the Solaris CD image from the Solaris CD to the install server’s local disk. Network installations from the install server’s local disk are faster than from its CD-ROM drive. Copying Solaris CD image to the install server’s disk also frees the CD-ROM drive for other uses.

- Create a separate boot server (required only if systems are not on same subnet as the install server).

▼ How to Set Up a New System to be an Install Server

Overview – Setting up a new system to be an install server involves:

- Installing the system hardware, including a CD-ROM drive
- Connecting the system to a network
- Installing Solaris software

Follow this procedure to create an install server

1. Install the system hardware, including a CD-ROM drive.
   Follow the hardware documentation for detailed information.
2. **Connect the system to the network.**
   Follow the hardware documentation for detailed information.

3. **Install Solaris software.**
   During an interactive installation, you are prompted to select a name service. Follow the guidelines in the next table:

<table>
<thead>
<tr>
<th>Is a Name Service Running at Your Site ...</th>
<th>Then ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Select NIS or NIS+, whichever your site uses, when prompted for a name service. After the Solaris software is installed, go to How to Create an Install Server on page 24.</td>
</tr>
<tr>
<td>No</td>
<td>Select None when prompted for a name service. After the Solaris software is installed, go to Step 4.</td>
</tr>
</tbody>
</table>

4. **If you want this system to be a name server, set up a name service after you have installed the Solaris software.** For detailed information, see the NIS+ and DNS Setup and Configuration Guide.

The system is now set up so that you can make it an install server. Next, you must make a Solaris CD image available to other systems. To continue, go to the How to Create an Install Server on page 24.
How to Create an Install Server

Overview – Creating an install server involves:

- Choosing a system with a CD-ROM drive to be the install server
- Mounting the Solaris CD
- Using the setup_install_server command to copy the Solaris CD to the install server’s local disk (optional, but recommended)

Follow this procedure to create an install server.

1. On the system that is going to be the install server, log in and become root.
   This system must have a CD-ROM drive.

2. Insert the Solaris CD into the CD-ROM drive.

3. Mount the Solaris CD (if needed) and change the directory to the mounted CD:

<table>
<thead>
<tr>
<th>If the Install Server Is ...</th>
<th>Then ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Running Volume Management</td>
<td>cd /cdrom/cdrom0/s0</td>
</tr>
<tr>
<td></td>
<td>or</td>
</tr>
<tr>
<td></td>
<td>cd /cdrom/cdrom0/s2</td>
</tr>
</tbody>
</table>

   Note: Volume Management is running if the /vol directory on the system contains files. Systems running Solaris 2.0 or 2.1 do not have Volume Management.

   | Not running Volume Management | 1) mount -F hsfs -o ro /dev/dsk/c0t6d0s0 /cdrom |
   |                              | or |
   |                              | 2) cd /cdrom |

4. Determine your next step based on whether or not you want to copy the Solaris CD to the install server’s local disk:

<table>
<thead>
<tr>
<th>If You ...</th>
<th>Then ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Want to copy the Solaris CD</td>
<td>Go to Step 5.</td>
</tr>
<tr>
<td>Do not want to copy the Solaris CD</td>
<td>Go to Step 7.</td>
</tr>
</tbody>
</table>
5. Use the setup_install_server command to copy the contents of the Solaris CD to the install server's local disk.

```bash
# ./setup_install_server install_dir_path
```

In this command,

`install_dir_path` Specifies the directory where the Solaris CD image will be copied. You can substitute any directory path.

For example, the following command copies the Solaris CD image from the Solaris CD to the /export/install directory on the local disk:

```bash
./setup_install_server /export/install
```

**Note** – The setup_install_server command will indicate if you do not have enough disk space to copy the Solaris CD image from the Solaris CD. Use the `df -kl` command to determine available disk space.

6. Type `cd install_dir_path` and press Return.
7. Determine your next step based on whether or not the install server is on the same subnet as the system to be installed.

<table>
<thead>
<tr>
<th>If Install Server Is ...</th>
<th>Then ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>On same subnet as the system to be installed</td>
<td>Go to Task Complete on page 26.</td>
</tr>
<tr>
<td>Not on the same subnet as the system to be installed</td>
<td>Follow the procedure How to Create a Boot Server on a Subnet on page 27. You must complete this procedure when the install server is not on the same subnet as the system to be installed. After completing that procedure, go to Task Complete on page 26.</td>
</tr>
</tbody>
</table>

The install server is now created. Next, you must add information to the install server's configuration files so it recognizes the systems to be installed. To continue, go to How to Set Up Servers for Network Installation of a Standalone, Server, or Dataless Client on page 31.
How to Create a Boot Server on a Subnet

You can install Solaris software over the network from any install server on the network. However, a system that will use an install server on another subnet requires a separate boot server on its own subnet.

Overview – Creating a boot server involves:
• Choosing a system with a CD-ROM drive to be the boot server for the subnet
• Mounting the Solaris CD
• Using the setup_install_server -b command to copy required platform information from the Solaris CD to the local disk

Follow this procedure to set up a boot server on a subnet.

1. On the system that will be the boot server for the subnet, log in and become root.
   This system must have a CD-ROM drive or an NFS mount of a Solaris CD image. The system must also be in the NIS or NIS+ name service. (If your site doesn’t use the NIS or NIS+ name service, you must distribute information about this system by following your site’s policies.)

2. Determine your next step based on whether the boot server uses a local CD-ROM drive or an NFS mount of a Solaris CD image.

<table>
<thead>
<tr>
<th>If the Boot Server Uses ...</th>
<th>Then ...</th>
</tr>
</thead>
</table>
| Local CD-ROM drive          | 1) Insert the Solaris CD into the CD-ROM drive.  
2) Go to Step 3. |
| NFS mount of a Solaris CD image | 1) mount -F nfs -o ro server_name:path /mnt 
where server_name:path is the host name and absolute path to the Solaris CD image.  
2) cd /mnt 
3) Go to Step 4. |
3. Mount the Solaris CD (if needed) and change the directory to the mounted CD:

<table>
<thead>
<tr>
<th>If the Boot Server Is ...</th>
<th>Then ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Running Volume Management</td>
<td>cd /cdrom/cdrom0/s0 or cd /cdrom/cdrom0/s2</td>
</tr>
</tbody>
</table>

Note: Volume Management is running if the /vol directory on the system contains files. Systems running Solaris 2.0 or 2.1 do not have Volume Management.

| Not running Volume Management | 1) mount -F hsfs -o ro /dev/dsk/c0t6d0s0 /cdrom or mount -F hsfs -o ro /dev/dsk/c0t6d0p0 /cdrom 2) cd /cdrom |
4. **Use the `setup_install_server` command to set up the boot server for the subnet.**

   The `setup_install_server` command copies all supported platform information to the local disk.

   ```
   # ./setup_install_server -b boot_dir_path
   ```

   In this command,

   `-b` Specifies that the system will be set up as a boot server.

   `boot_dir_path` Specifies the directory where the platform information will be copied. You can substitute any directory path.

   For example, the following command copies platform information necessary for booting supported platforms over the network:

   ```
   ./setup_install_server -b /export/install
   ```

   **Note** – The `setup_install_server` command will indicate if you do not have enough disk space to copy the platform dependent information. Use the `df -kl` command to determine available disk space.

   The boot server is now set up to boot supported systems on a subnet. To continue, go to How to Set Up Servers for Network Installation of a Standalone, Server, or Dataless Client on page 31.
Setting Up Servers for Network Installation

This section describes how to set up appropriate servers necessary to install a system over a network. The next table shows servers required for each system type you want to install.

<table>
<thead>
<tr>
<th>If System Type You Are Installing Is ¹ ...</th>
<th>Then You Need This Server Support ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standalone system</td>
<td>Install server</td>
</tr>
<tr>
<td>OS server</td>
<td>Install server</td>
</tr>
<tr>
<td>Dataless client</td>
<td>Install server and OS server</td>
</tr>
</tbody>
</table>

¹. Systems also require a boot server if they are on a different subnet than the install server.

Note – When you install a server, you must allocate disk space required for the clients that server will support. Then, after the server is installed, you must use the Solstice Host Manager and add the platform support required by those clients.
How to Set Up Servers for Network Installation of a Standalone, Server, or Dataless Client

Once you have an install server set up, you are ready to use it to install Solaris software on other systems on the network. Before you can actually do that, however, you need to provide some basic system information about the systems that you are going to install. You do this by using the Solstice Host Manager.

Note – SunSoft plans to remove support for the dataless client system type after Solaris 2.5. You can set up this system type now, but in future releases you will need to change it to a different type (standalone, OS server, diskless client, or AutoClient system.)

The procedure to add system information about standalone systems, servers, and dataless clients to the install server can all be accomplished using the Solstice Host Manager. You simply fill out a form and apply the information you provide, and the Solstice Host Manager updates the appropriate files and name server maps or tables.

Overview – This procedure involves:
• Using the Solstice Host Manager to update the name service, to add information about the standalone, server, or dataless client to the install server’s configuration files, and, if necessary, to set up a file server

Follow this procedure to set up the install server to install a standalone system, a server, or a dataless client on the network.

1. On the install server, log in as a user in the administration group (group 14).

Caution – If your system is part of the NIS+ name service, you must run the Solstice AdminSuite™ while logged in as a user in the NIS+ admin group. Otherwise, you will not have permission to update configuration information on the name server.

2. Start the Solstice AdminSuite with the following command.

$ /usr/bin/solstice &
3. After the Solstice AdminSuite main window appears, click on the Host Manager icon.

**Note** – If your site uses the Domain Name Service (DNS), you will have to modify the `/etc/nsswitch.conf` file and create the `/etc/resolv.conf` file manually. For detailed information, see the *NIS+ and FNS Administration Guide*.

4. On the Host Manager: Select Naming Service screen, select a naming service and click on the Apply button. See the sample Naming Service screen below.

<table>
<thead>
<tr>
<th>If the Name Service Is...</th>
<th>Then Select...</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIS+</td>
<td>NIS+. Host Manager will update the NIS+ tables.</td>
</tr>
<tr>
<td>NIS</td>
<td>NIS. Host Manager will update the NIS maps.</td>
</tr>
<tr>
<td>None</td>
<td>None. Host Manager will store the information you provide in the <code>/etc</code> files. This will provide enough information for systems to boot, and to install Solaris software over the network.</td>
</tr>
</tbody>
</table>

```
NIS+ [ ]  Domain: net.com
```

5. On the Host Manager main window, choose Add... from the Edit menu.
6. Determine your next step based on what kind of system you want to install.

<table>
<thead>
<tr>
<th>System to Be Installed Is ...</th>
<th>Then ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standalone system</td>
<td>Go to Step 7.</td>
</tr>
<tr>
<td>OS server</td>
<td>Go to Step 10.</td>
</tr>
<tr>
<td>Dataless client</td>
<td>Go to Step 13.</td>
</tr>
</tbody>
</table>
7. On the Host Manager: Add Host screen, complete all fields and click on the OK or Apply button.

8. On the Host Manager main window, choose Save Changes from the File menu.

9. Go to Task Complete on page 37.
   Step 10 through Step 13 are only required if you are adding an OS server or dataless client.
10. On the Host Manager: Add Host screen, complete all fields and click on the OK or Apply button.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host Name</td>
<td>Enter the host name.</td>
</tr>
<tr>
<td>IP Address</td>
<td>Input the IP address.</td>
</tr>
<tr>
<td>Ethernet Address</td>
<td>Enter the Ethernet address.</td>
</tr>
<tr>
<td>System Type:</td>
<td>Select OS server.</td>
</tr>
<tr>
<td>Timezone Region:</td>
<td>Select the timezone region.</td>
</tr>
<tr>
<td>Timezone:</td>
<td>Select the timezone.</td>
</tr>
<tr>
<td>Remote Install:</td>
<td>Enable if setting up a network installation.</td>
</tr>
<tr>
<td>Install Server:</td>
<td>Specify the install server path.</td>
</tr>
<tr>
<td>OS Release:</td>
<td>Specify the Solaris OS release.</td>
</tr>
<tr>
<td>Boot Server:</td>
<td>Specify the boot server.</td>
</tr>
<tr>
<td>Profile Server:</td>
<td>Specify the profile server.</td>
</tr>
</tbody>
</table>

Remote Install - Select if setting up a network installation. The install server should have been set up already.

Install Server - If enabling remote install for a network installation, specify the install server and set the path to the location of the Solaris CD image.

Boot Server - If the install client is on a different subnet than the install server, specify the boot server that resides on the install client's subnet.

Profile Server - If using custom JumpStart installations, specify the system with the custom Jumpstart profiles on it.

11. On the Host Manager main window, choose Save Changes from the File menu.

12. Go to Task Complete on page 37.
   Step 13 is required only for adding dataless clients for network installation.
13. On the Host Manager: Add Host screen, complete all fields and click on the OK or Apply button.

14. On the Host Manager main window, choose Save Changes from the File menu.
The standalone system, OS server, or dataless client is now added for network installation. You are now ready to boot and install over the network. To find the correct booting and installing procedure in this book, see the appropriate chapter for the installation you want to perform:

- Chapter 7, “Booting and Installing Solaris: JumpStart”
- Chapter 8, “Booting and Installing Solaris: Interactive”
- Chapter 9, “Booting and Installing Solaris: Custom JumpStart”

Using `add_install_client` to Set Up Servers for Network Installation

Install servers running versions of Solaris released prior to Solaris 2.4 software may not have access to the Solstice AdminSuite. You can install the Solstice products on Solaris 2.3 and 2.4 systems and follow the instructions in How to Set Up Servers for Network Installation of a Standalone, Server, or Dataless Client on page 31. Alternatively, you can use the `add_install_client` command to set up the install server for network installations, as described in the next section.
How to Use add_install_client to Set Up Servers for Network Installation

Use the add_install_client command to add information about the system to be installed to the boot server configuration files.

```
#/add_install_client [-c server:jumpstart_dir _path] -s install_server:install_dir_path host_name platform_group
```

In this command,

- **-c** Specifies a JumpStart directory for custom JumpStart installations. This option and its arguments are required only for custom JumpStart installations.

- **server:jumpstart_dir _path** `server` is the host name of the server on which the JumpStart directory is located. `jumpstart_dir _path` is the absolute path of the JumpStart directory.

- **-s** Specifies the install server.

- **install_server:install_dir_path** `install_server` is the host name of the install server. `install_dir_path` is the absolute path name of the mounted Solaris CD or the directory that has the copy of the Solaris CD image.

- **host_name** Is the host name of the standalone system or the server where Solaris software will be installed over the network. (This is not the host name of the install server). The host must be in the name service for this command to work.

- **platform group** Is the platform group of the system to be installed. (For a detailed list of platform groups, See Appendix C, "Platform Names and Groups.")

For example, the following command copies boot information from Solaris CD image on an install server’s local disk in /export/install.

add_install_client sets up the /tftpboot directory on the local system,
which will be the boot server. The system that will be installed is named basil, and it is a SPARCstation™ 10. The platform group for a SPARCstation 10 is sun4m.

```
./add_install_client -s install_server1:/export/install basil sun4m
```

The standalone system, server, or dataless client is now added for network installation. You are now ready to boot and install over the network. To find the booting and installing procedure in this book, see the appropriate chapter for the installation you want to perform:

- Chapter 7, "Booting and Installing Solaris: JumpStart"
- Chapter 8, "Booting and Installing Solaris: Interactive"
- Chapter 9, "Booting and Installing Solaris: Custom JumpStart"
Preconfiguring the Default Locale

When installing a localized version of Solaris software, you are prompted for the locale (the language) you want to use for the duration of the installation process. The locale you choose for installing Solaris software is also the default locale the installed version of Solaris will provide to the system’s user.

You can set up a default locale of your choice. You do this by modifying the naming service (NIS or NIS+). After you modify the name service, as described in this section, the operating system will use this default locale for users. Also, the installation software will use the default locale for all future installations.

Choose from the following two procedures, depending on whether your site uses the NIS or NIS+ name service.

▼ How to Preconfigure Default Locale Using NIS

**Overview** – The procedure to preconfigure the default locale at sites using the NIS name service involves:

- Using the `vi` or text editor to edit files in the `/var/yp/Makefile` file
- Creating a locale file in the `/etc` directory
- Updating the NIS maps

Follow these instructions to set up a default locale for the system being installed over the network.
1. On the name server, log in and become root and edit the
/var/yp/Makefile file.
Add the following text after the other *.time entries.

```
locale.time: $(DIR)/locale
  @if [ -f $(DIR)/locale ]; then \
    sed -e "/^#/d" -e s/#.*$$// $(DIR)/locale \n    awk '{for (i = 2; i<=NF; i++) print $$i, $$0}' \n    $(MAKEDBM) - $(YPDBDIR)/$(DOM)/locale.byname; \
    touch locale.time; \n    echo "updated locale"; \n    if [ ! $(NOPUSH) ]; then \n      $(YPPUSH) locale.byname; \n      echo "pushed locale"; \n    else \n    fi \n  else \n  fi \n  echo "couldn't find $(DIR)/locale"; \nfi
```

2. Edit the /var/yp/Makefile file.
   a. Add `locale` to the line starting with the word all.
   b. Add `locale: locale.time` on a new line.

```
all: passwd group hosts ethers networks rpc services protocols netgroup bootparams aliases \ timezone locale
locale: locale.time
```
3. Create the file /etc/locale and make one entry for each domain.

```
domain_name  locale
```

The entry specifies the default locale for the domain. For example, the following line specifies French to be the default locale for the `worknet.com` domain:

```
worknet.com  fr
```

You can also use a host name instead of the domain name to specify the default locale for a particular host. For example, the following line specifies Korean to be the default locale for system named `sherlock`:

```
sherlock  ko
```

See the table on page 44 for a list of valid locale values.

**Note** – Not all locales are available on all Solaris CDs. The locale you select will be used for installation if it is present on the Solaris CD.

4. Make the maps.

```
# cd /var/yp; make
```

Systems in the name service are now set up to use the default locale. The default language you have specified will be used during the installation and will also be the language provided to system users.
How to Preconfigure Default Locale Using NIS+

Overview – The procedure to preconfigure the default locale at sites using the NIS+ name service involves:

- Using the nistbladm command to create a locale table and add information to it
- Updating the NIS+ tables

Note – The installation software is not translated to the Asian locales, so this procedure will not work for any of the Asian locales.

Follow these instructions to set up a default locale for a system being installed over the network. (This procedure assumes the NIS+ domain is set up. Setting up the NIS+ domain is documented in the NIS+ and FNS Administration Guide.)

1. Log in to a name server as root or as a user in the NIS+ admin group.

2. Use the following nistbladm command to create the locale table.

```
# nistbladm -D access=og=rmcd,nw=r -c locale_tbl
name=SI,nogw= locale=,nogw= comment=,nogw= locale.org_dir.'nisdefaults -d'
```
3. **Add an entry to the locale.org_dir table by typing the following nistbladm command.**

```
# nistbladm -a name=domain_name locale=locale comment=comment
locale.org_dir.'nisdefaults -d'
```

In this command,

- `domain_name` is either the domain name or a specific host name for which you want to preconfigure a default locale.

- `locale` is the locale you want to use to install the system and the locale you want to come up on users' systems. The following table shows valid values for `locale`.

<table>
<thead>
<tr>
<th>Language</th>
<th>Valid <code>locale</code> Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese</td>
<td>zh</td>
</tr>
<tr>
<td>English (Solaris default)</td>
<td>C</td>
</tr>
<tr>
<td>French</td>
<td>fr</td>
</tr>
<tr>
<td>German</td>
<td>de</td>
</tr>
<tr>
<td>Italian</td>
<td>it</td>
</tr>
<tr>
<td>Japanese</td>
<td>ja</td>
</tr>
<tr>
<td>Korean</td>
<td>ko</td>
</tr>
<tr>
<td>Latin American</td>
<td>es</td>
</tr>
<tr>
<td>Swedish</td>
<td>sv</td>
</tr>
<tr>
<td>Taiwanese</td>
<td>zh_TW</td>
</tr>
</tbody>
</table>

- `comment` is the comment field. Use double quotation marks to begin and end comments that are longer than one word.

**Note** – Not all locales are available on all Solaris CDs. The locale you select will be used for installation if it is present on the Solaris CD.
Systems in the name service are now set up to use the default locale. The default language you have specified will be used during the installation and will also be the language provided to system users.
Prepating Custom JumpStart Installations

| How to Create a JumpStart Directory on a Diskette for x86 Systems | page 53 |
| How to Create a JumpStart Directory on a Diskette for SPARC Systems | page 59 |
| How to Create a JumpStart Directory on a Server | page 63 |
| How to Enable All Systems to Access the JumpStart Directory | page 65 |
| How to Create a Profile | page 67 |
| How to Create the rules File | page 83 |
| How to Use check to Validate the rules File | page 94 |

Definition: Custom JumpStart Installation

A custom JumpStart installation is a type of installation in which the Solaris software is automatically installed on a system based on a user-defined profile. You can create customized profiles for different types of users.

Note – Appendix D, “Sample Custom JumpStart Installation” provides an example of how a fictitious site is prepared for custom JumpStart installations.
Note – Instructions in this chapter are valid for either an x86 or SPARC server that is being used for custom JumpStart installations. An x86 server can provide custom JumpStart files for SPARC systems, and a SPARC system can provide custom JumpStart files for x86 systems.

Reasons to Choose a Custom JumpStart Installation

You should choose custom JumpStart installations when you have to install Solaris software on:

- Many systems.
- Particular groups of systems.

For example, the following scenario would be ideal for performing custom JumpStart installations:

- You need to install the Solaris software on 100 new systems.
- The engineering group owns 70 out of the 100 new systems, and its systems must be installed as standalone systems with the developer software group.
- The marketing group owns 30 out of the 100 new systems, and its systems must be installed as standalone clients with the end user software group.

These installations would be time-consuming and tedious if you chose to perform an interactive installation on each system.
## Tasks to Prepare for Custom JumpStart Installations

Table 4-1 shows the tasks that are required to prepare for custom JumpStart installations.

### Table 4-1 Tasks to Prepare for Custom JumpStart Installations

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creating a JumpStart directory on a diskette or on a server</td>
<td>You must create a JumpStart directory to hold the custom JumpStart files. If you are going to use a diskette for custom JumpStart installations, see “Creating a JumpStart Directory on a Diskette” on page 53. If you are going to use a server for custom JumpStart installations, see “Creating a JumpStart Directory on a Server” on page 62.</td>
</tr>
<tr>
<td>Enabling all clients to access the JumpStart directory</td>
<td>When you use a server to provide the JumpStart directory, you can enable all clients to access the JumpStart directory. See “Enabling All Systems to Access the JumpStart Directory” on page 65 for detailed information.</td>
</tr>
<tr>
<td>Creating profiles</td>
<td>A profile is a text file used as a template by the custom JumpStart installation software. It defines how to install the Solaris software on a system (for example, initial or upgrade installation option, system type, disk partitioning, software group), and it is named in the rules file. See “Creating a Profile” on page 67 for detailed information.</td>
</tr>
<tr>
<td>Creating a rules file</td>
<td>The rules file is a text file used to create the rules.ok file. The rules file is a look-up table consisting of one or more rules that define matches between system attributes and profiles. See “Creating the rules File” on page 82 for detailed information.</td>
</tr>
<tr>
<td>Using check to validate the rules file</td>
<td>The rules.ok file is a generated version of the rules file, and it is required by the custom JumpStart installation software to match a system to a profile. You must use the check script to create the rules.ok file. See “Using check to Validate the rules File” on page 93 for detailed information.</td>
</tr>
</tbody>
</table>
What Happens During a Custom JumpStart Installation

Figure 4-1 describes what happens after you boot a system to perform a custom JumpStart installation.

![Diagram](image)

**Figure 4-1** What Happens During a Custom JumpStart Installation
Figure 4-2 is an example of how a custom JumpStart installation works on a standalone, non-networked system using the system's diskette drive.

1. After the system boots, the Solaris installation program finds a rules.ok file on the diskette in the system's diskette drive.

2. The Solaris installation program finds a matching rule for Pete's system.

3. The matched rule specifies a profile to use for installing Solaris on Pete's system.

4. The Solaris installation program uses the selected profile to automatically install the Solaris software on Pete's system.

Figure 4-2  How a Custom JumpStart Installation Works: Non-Networked Example
After a system boots, the Solaris installation program finds a rules.ok file on designated server.

Solaris installation program finds a matching rule for the specific system.

The matched rule specifies a profile to use for installing the Solaris software on a that system.

The Solaris installation program uses the selected profile to automatically install the Solaris software on the system.

Figure 4-3 is an example of how a custom JumpStart installation works for multiple systems on a network where different profiles are accessed from a single server.

Figure 4-3 How a Custom JumpStart Installation Works: Networked Example
Creating a JumpStart Directory on a Diskette

You should use a diskette for a custom JumpStart installation if the system:

- Has a diskette drive
- Has a local CD-ROM drive
- Is not connected to a network

When you use a diskette for custom JumpStart installations, the JumpStart directory must be the root directory on the diskette that contains all the essential custom JumpStart installation files (for example, the rules file, rules.ok file, and profiles). The JumpStart directory should be owned by root and have permissions equal to 755.

The diskette requirements for the JumpStart directory are different for x86 and SPARC systems. So, the following pages describe how to create a JumpStart directory on a diskette for an x86 system and for a SPARC system.

▼ How to Create a JumpStart Directory on a Diskette for x86 Systems

Overview – The procedure to create a JumpStart directory on a diskette for x86 systems involves:

- Making a copy of the Solaris boot diskette (the copied Solaris boot diskette has a PCFS file system)
- Copying sample custom JumpStart installation files into the diskette’s root directory

Follow this procedure to create a JumpStart directory on a diskette for x86 systems.

1. Log in as root on an x86 or SPARC system that has a diskette drive and a CD-ROM drive.
2. Insert the Solaris boot diskette into the diskette drive.
3. Choose the appropriate steps, depending on whether or not the system is running Volume Management:

<table>
<thead>
<tr>
<th>If the System Is ...</th>
<th>Then ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Running Volume Management</td>
<td>Go to Step 4.</td>
</tr>
<tr>
<td>Not running Volume Management</td>
<td>Go to Step 12.</td>
</tr>
</tbody>
</table>

Note: Volume Management is running if the /vol directory on the system contains files. Systems running Solaris 2.0 or 2.1 do not have Volume Management.

4. Make sure Volume Management knows about the diskette:

```
# volcheck
```

5. Copy the Solaris boot diskette image to the system's hard disk:

```
# dd if=/vol/dev/aliases/floppy0 of=boot_image
```

In this command,

- `boot_image` is the file name where the Solaris boot diskette image is copied. You can specify an absolute path name.

For example, the following command would copy a Solaris boot diskette to the `boot_save` file.

```
dd if=/vol/dev/aliases/floppy0 of=boot_save
```
6. Eject the Solaris boot diskette:

Note – The following command is not required for x86 systems; you must manually eject the diskette on an x86 system.

```
# eject floppy
```

7. Insert a blank diskette into the diskette drive.

8. Make sure Volume Management knows about the diskette:

```
# volcheck
```

9. Format the diskette:

Caution – This step will overwrite any data on the diskette.

```
# fdformat -d -U
```

10. Copy the Solaris boot diskette image from the system’s hard disk to the formatted diskette:

```
# dd if=boot_image of=/vol/dev/aliases/floppy0
```

The boot_image variable should be the same as in Step 5.

11. Go to Step 17.

Step 12 through Step 16 are used if the system is not running Volume Management.
12. Copy the Solaris boot diskette image to the system's hard disk:

```
# dd if=/dev/rdiskette of=boot_image
```

In this command,

- `boot_image` is the file name where the Solaris boot diskette image is copied. You can specify an absolute path name.

For example, the following command would copy a Solaris boot diskette to the `boot_save` file.

```
dd if=/dev/rdiskette of=boot_save
```

13. Eject the Solaris boot diskette:

**Note** – The following command is not required for x86 systems; you must manually eject the diskette on an x86 system.

```
# eject fd
```

14. Insert a blank diskette into the diskette drive.

15. Format the diskette:

**Caution** – This step will overwrite any data on the diskette.

```
# fdformat -d
```
16. Copy the Solaris boot diskette image from the system’s hard disk to the formatted diskette:

```
# dd if=boot_image of=/dev/rdiskette
```

The *boot_image* variable should be the same as in Step 12.

17. Mount the diskette:

<table>
<thead>
<tr>
<th>If the System Is ...</th>
<th>Then ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Running Volume Management</td>
<td>1) Eject the copied Solaris boot diskette.</td>
</tr>
<tr>
<td></td>
<td>2) Insert the copied Solaris boot diskette back into the diskette drive.</td>
</tr>
<tr>
<td></td>
<td>3) Make sure Volume Management knows about the diskette:</td>
</tr>
<tr>
<td></td>
<td><code>volcheck</code></td>
</tr>
<tr>
<td>Not running Volume Management</td>
<td><code>mount -F pcfs /dev/diskette jump_dir_path</code></td>
</tr>
</tbody>
</table>

*Note:* `jump_dir_path` is the absolute directory path where the diskette is mounted.

18. Determine your next step based on where the Solaris CD is located.

<table>
<thead>
<tr>
<th>If You Want to Use The ...</th>
<th>Then ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solaris CD in the local CD-ROM drive</td>
<td>1) Insert the Solaris CD into the CD-ROM drive.</td>
</tr>
<tr>
<td></td>
<td>2) Go to Step 19.</td>
</tr>
<tr>
<td>Solaris CD image on local disk</td>
<td>1) Change the directory to the Solaris CD image on the local disk. For example:</td>
</tr>
<tr>
<td></td>
<td><code>cd /export/install</code></td>
</tr>
<tr>
<td></td>
<td>2) Go to Step 20.</td>
</tr>
</tbody>
</table>
19. Mount the Solaris CD (if needed) and change the directory to the mounted CD:

<table>
<thead>
<tr>
<th>If the System Is ...</th>
<th>Then ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Running Volume</td>
<td>cd /cdrom/cdrom0/s0</td>
</tr>
<tr>
<td>Management</td>
<td>or</td>
</tr>
<tr>
<td></td>
<td>cd /cdrom/cdrom0/s2</td>
</tr>
<tr>
<td>Not running Volume</td>
<td>1)mount -F hsfs -o ro /dev/dsk/c0t6d0s0 /cdrom</td>
</tr>
<tr>
<td>Management</td>
<td>or</td>
</tr>
<tr>
<td></td>
<td>mount -F hsfs -o ro /dev/dsk/c0t6d0p0 /cdrom</td>
</tr>
<tr>
<td></td>
<td>2)cd /cdrom</td>
</tr>
</tbody>
</table>

20. Copy the JumpStart installation files from the auto_install_sample directory on the Solaris CD into the JumpStart directory (root directory) of the diskette:

<table>
<thead>
<tr>
<th>If the System Is ...</th>
<th>Then ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Running Volume</td>
<td>cp -r auto_install_sample/* /floppy/floppy0/</td>
</tr>
<tr>
<td>Management</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Not running Volume</td>
<td>cp -r auto_install_sample/* jumpstart_dir_path</td>
</tr>
<tr>
<td>Management</td>
<td>Note: jump_dir_path is the absolute directory path where the diskette is mounted.</td>
</tr>
</tbody>
</table>

Caution – File names on PCFS file systems can be only 11 characters long (an 8-character file name and a 3-character extension). When copying JumpStart installation files to a diskette for x86 systems, be aware that the file transfer may truncate file names.

Note – The custom JumpStart installation files must be in the root directory of the diskette.

You have completed creating a JumpStart directory on the diskette. To continue, see “How to Create a Profile” on page 67.
How to Create a JumpStart Directory on a Diskette for SPARC Systems

Overview – The procedure to create a JumpStart directory on a diskette for SPARC systems involves:

• Formatting a diskette (if needed).
• Creating a UFS file system on the diskette (if needed).
• Copying sample custom JumpStart installation files into the diskette’s root directory.

Follow this procedure to create a JumpStart directory on a diskette for SPARC Systems.

1. Log in as root on a SPARC system that has a diskette drive and a CD-ROM drive.

2. Insert a diskette into the diskette drive.

3. Choose the appropriate steps, depending on whether or not the system is running Volume Management:

<table>
<thead>
<tr>
<th>If the System Is ...</th>
<th>Then ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Running Volume Management</td>
<td>Go to Step 4.</td>
</tr>
<tr>
<td></td>
<td>Note: Volume Management is running if the /vol directory on the system contains files. Systems running Solaris 2.0 or 2.1 do not have Volume Management.</td>
</tr>
<tr>
<td>Not running Volume Management</td>
<td>Go to Step 12.</td>
</tr>
</tbody>
</table>

4. Make sure Volume Management knows about the diskette:

```
# volcheck
```
5. If the diskette already has a UFS file system on it, go to Step 16.
   To find out if the diskette has a UFS file system on it, check the
   /etc/mnttab file for an entry similar to this:

   /floppy/unnamed_floppy ufs

6. Format the diskette:

   Caution – This step will overwrite any data on the diskette.

   # fdformat -U

7. Create a UFS file system on the diskette:

   # newfs /vol/dev/aliases/floppy0

8. Eject the diskette:

   # eject floppy

9. Insert the formatted diskette back into the diskette drive.

10. Make sure Volume Management knows about the diskette:

    # volcheck

11. Go to Step 16.
    Step 12 through Step 15 are used if the system is not running Volume
    Management.

12. If the diskette already has a UFS file system on it, go to Step 15.
    If the mount command fails in Step 15, the diskette does not have a UFS file
    system on it.
13. Format the diskette:

Caution – This step will overwrite any data on the diskette.

```
# fdformat /dev/rdiskette
```

14. Create a file system on the diskette:

```
# newfs /dev/rdiskette
```

15. Mount the diskette:

```
# mount -F ufs /dev/diskette jumpstart_dir_path
```

In this command,

`jumpstart_dir_path` Is the absolute directory path where the diskette is mounted.

For example, the following command would mount a SPARC diskette on the `/mnt` directory:

```
mount -F ufs /dev/rdiskette /mnt
```

Note – If the `mount` command fails, go back to Step 13 to format the diskette.

16. Determine your next step based on where the Solaris CD is located.

<table>
<thead>
<tr>
<th>If You Want to Use The ...</th>
<th>Then ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solaris CD in the local CD-ROM drive</td>
<td>1) Insert the Solaris CD into the CD-ROM drive. 2) Go to Step 17.</td>
</tr>
<tr>
<td>Solaris CD image on the local disk</td>
<td>1) Change the directory to the Solaris CD image on the local disk. For example: cd/export/install 2) Go to Step 18.</td>
</tr>
</tbody>
</table>
17. Mount the Solaris CD (if needed) and change the directory to the mounted CD:

<table>
<thead>
<tr>
<th>If the System Is ...</th>
<th>Then ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Running Volume</td>
<td>cd /cdrom/cdrom0/s0</td>
</tr>
<tr>
<td>Management</td>
<td>or</td>
</tr>
<tr>
<td></td>
<td>cd /cdrom/cdrom0/s2</td>
</tr>
<tr>
<td>Not running Volume</td>
<td>1)mount -F hsfs -o ro /dev/dsk/c0t6d0s0 /cdrom</td>
</tr>
<tr>
<td>Management</td>
<td>or</td>
</tr>
<tr>
<td></td>
<td>mount -F hsfs -o ro /dev/dsk/c0t6d0p0 /cdrom</td>
</tr>
<tr>
<td></td>
<td>2)cd /cdrom</td>
</tr>
</tbody>
</table>

18. Copy the custom JumpStart installation files from the auto_install_sample directory on the Solaris CD into the JumpStart directory (root directory) of the diskette:

<table>
<thead>
<tr>
<th>If the System Is ...</th>
<th>Then ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Running Volume</td>
<td>cp -r auto_install_sample/* /floppy/floppy0/</td>
</tr>
<tr>
<td>Management</td>
<td></td>
</tr>
<tr>
<td>Not running Volume</td>
<td>cp -r auto_install_sample/* jumpstart_dir_path</td>
</tr>
<tr>
<td>Management</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Note: jump_dir_path is the absolute directory path where the diskette is mounted.</td>
</tr>
</tbody>
</table>

Note – The custom JumpStart installation files must be in the root directory of the diskette.

You have completed creating a JumpStart directory on the diskette. To continue, see “How to Create a Profile” on page 67.

Creating a JumpStart Directory on a Server

If you want to perform custom JumpStart installations by using a server on the network, you must create a JumpStart directory on the server. When you use a server for custom JumpStart installations, the JumpStart directory is a directory
on the server that contains all the essential custom JumpStart files (for example, the rules file, rules.ok file, and profiles). The JumpStart directory should be owned by root and have permissions equal to 755.

How to Create a JumpStart Directory on a Server

Overview – The procedure to create a JumpStart directory on a server involves:

• Creating a directory on the server
• Editing the /etc/dfs/dfstab file
• Copying sample custom JumpStart installation files into the directory on the server

Follow this procedure to create a JumpStart directory on a server.

1. Log in as root on the server where you want the JumpStart directory to reside.

2. Create the JumpStart directory anywhere on the server:

   ```
   # mkdir jumpstart_dir-path
   ```

   In this command,

   `jumpstart_dir-path` Is the absolute path of the JumpStart directory.

   For example, the following command would create the directory called `jumpstart` in the root file system:

   ```
   mkdir /jumpstart
   ```

3. Edit the /etc/dfs/dfstab file. Add the following entry:

   ```
   share -F nfs -o ro,anon=0 jumpstart_dir-path
   ```

   For example, the following entry would be correct for the example shown in Step 2:

   ```
   share -F nfs -o ro,anon=0 /jumpstart
   ```
4. Type `unshareall` and press Return.

5. Type `shareall` and press Return.

6. Determine your next step based on where the Solaris CD is located.

<table>
<thead>
<tr>
<th>If You Want To Use The ...</th>
<th>Then ...</th>
</tr>
</thead>
</table>
| Solaris CD in the local CD-ROM drive | 1) Insert the Solaris CD into the CD-ROM drive.  
2) Go to Step 7. |
| Solaris CD image on the local disk | 1) Change the directory to the Solaris image on the local disk. For example:  
cd /export/install  
2) Go to Step 8. |

7. Mount the Solaris CD (if needed) and change the directory to the mounted CD:

<table>
<thead>
<tr>
<th>If the System Is ...</th>
<th>Then ...</th>
</tr>
</thead>
</table>
| Running Volume Management | cd /cdrom/cdrom0/s0  
or  
cd /cdrom/cdrom0/s2 |
| Not running Volume Management | 1)mount -F hsfs -o ro /dev/dsk/c0t6d0s0 /cdrom  
or  
mount -F hsfs -o ro /dev/dsk/c0t6d0p0 /cdrom  
2) cd /cdrom |

Note: Volume Management is running if the /vol directory on the system contains files. Systems running Solaris 2.0 or 2.1 do not have Volume Management.

8. Copy the contents of the `auto_install_sample` directory from the Solaris CD-ROM into the JumpStart directory:

```
# cp -r auto_install_sample/* jumpstart_dir_path
```

For example, the following command would copy the `auto_install_sample` directory into the JumpStart directory created in Step 2:
Task Complete

You have completed creating a JumpStart directory on the server. To continue, see “How to Create a Profile” on page 67.

Enabling All Systems to Access the JumpStart Directory

When you create a JumpStart directory on a server, you must make sure systems can access it during a custom JumpStart installation. There are two ways to do this:

• Using the -c option of the add_install_client command every time you add a system for network installation.

or

• Enabling all systems to access the JumpStart directory.

To save you time when adding systems for network installations, use the following procedure to enable all systems to access the JumpStart directory from a server.

Note – The following procedure is not necessary if you are using a diskette for the JumpStart directory.

How to Enable All Systems to Access the JumpStart Directory

Overview – The procedure to enable all systems to access the JumpStart directory from a server involves:

• Editing the /etc/bootparams file

• Updating the name service (NIS or NIS+) with the information you’ve added to the /etc/bootparams file

Follow this procedure to enable all systems to access the JumpStart directory from a server.

1. On the NIS or NIS+ master server, log in as root.
2. **Edit the /etc/bootparams file or create the /etc/bootparams file if it does not exist. Add the following entry:**

```
* install_config=server:jumpstart_dir_path
```

In this entry,

* is a wildcard character specifying all systems.

server

Is the host name of the server where the JumpStart directory is located.

jumpstart_dir_path

Is the absolute path of the JumpStart directory.

For example, the following entry would enable all systems to access the /jumpstart directory on the server named sherlock:

```
* install_config=sherlock:/jumpstart
```

**Caution** – Using this procedure may produce the following error message when booting an install client:

WARNING: getfile: RPC failed: error 5: (RPC Timed out).

See page 173 for more details on this error message.

3. **Update the NIS or NIS+ tables (if necessary) with the information you added to the /etc/bootparams files.**

<table>
<thead>
<tr>
<th>If Your Site Uses ...</th>
<th>Then ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIS</td>
<td>/var/yp/make</td>
</tr>
<tr>
<td>NIS+</td>
<td>/usr/lib/nis/nispopulate -F -p /etc bootparams</td>
</tr>
<tr>
<td>No name service</td>
<td>Go to Task Complete on page 67.</td>
</tr>
</tbody>
</table>
All systems can now access the JumpStart directory. You no longer need to use the `-c` option of the `add_install_client` command when adding systems for network installations.

Creating a Profile

**What Is a Profile**

A profile is a text file used as a template by the custom JumpStart installation software. It defines how to install the Solaris software on a system (for example, initial or upgrade installation option, system type, disk partitioning, software group), and it is named in the `rules` file.

A profile consists of one or more profile keywords and their values. Each profile keyword is a command that controls one aspect of how the Solaris installation program will install the Solaris software on a system. For example, the profile keyword and value

```plaintext
system_type   server
```

tells the Solaris installation program to install the system as a server.

| Note | If you created the JumpStart directory by using the procedures on page 53 or page 62, example profiles should already be in the JumpStart directory. |

**Requirements for Profiles**

The following are requirements when creating a profile:

- The `install_type` profile keyword is required.
- Only one profile keyword can be on a line.

**How to Create a Profile**

**Overview** – The procedure to create a profile involves:

- Editing a file
• Selecting profile keywords and profile values to define how to install the Solaris software on a system

Follow this procedure to create as many profiles as you need for your site.

1. **Open a file (the profile) and give it a descriptive name.**
   You can create a new file or edit one of the sample profiles in the JumpStart directory you created.

   The name of a profile should reflect how it will install the Solaris software on a system (for example, `basic_install`, `eng_profile`, or `user_profile`).

2. **Add profile keywords and profile values to the profile.**
   Be aware of these things as you edit the profile:

   • Profile Examples on page 69 provides some examples of profiles.
   • Table 4-2 on page 72 provides the list of valid profile keywords and values.
   • You can have as many lines in the profile as necessary to define how to install the Solaris software on a system.
   • You can add a comment after the pound sign (#) anywhere on a line. If a line begins with a #, the entire line is a comment line. If a # is specified in the middle of a line, everything after the # is considered a comment. Blank lines are also allowed in a profile.
   • The profile keywords and their values are case sensitive.
   • Profiles should be owned by root and have permissions equal to 644.

**Note** – See “Using pfinstall to Test Profiles” on page 104 for detailed information about testing profiles.

This completes the procedure to create a profile. To continue setting up for a custom JumpStart installation, see How to Create the rules File on page 83.
Profile Examples

The following profile examples describe how you can use different profile keywords and profile values to control how the Solaris software is installed on a system. See Table 4-2 on page 72 for the list of profile keywords and profile values.

<table>
<thead>
<tr>
<th># profile keywords</th>
<th>profile values</th>
</tr>
</thead>
<tbody>
<tr>
<td>install_type</td>
<td>initial_install</td>
</tr>
<tr>
<td>system_type</td>
<td>standalone</td>
</tr>
<tr>
<td>partitioning</td>
<td>default</td>
</tr>
<tr>
<td>filesystem</td>
<td>any 60 swap    # specify size of /swap</td>
</tr>
<tr>
<td></td>
<td>s_ref:/usr/share/man - /usr/share/man ro</td>
</tr>
<tr>
<td></td>
<td>s_ref:/usr/openwin/share/man - /usr/openwin/share/man ro,quota</td>
</tr>
<tr>
<td>cluster</td>
<td>SUNWCprog</td>
</tr>
<tr>
<td>package</td>
<td>SUNWman delete</td>
</tr>
<tr>
<td>package</td>
<td>SUNWolman delete</td>
</tr>
<tr>
<td>package</td>
<td>SUNWXwman delete</td>
</tr>
<tr>
<td>package</td>
<td>SUNWoldem add</td>
</tr>
<tr>
<td>package</td>
<td>SUNWXwdem add</td>
</tr>
<tr>
<td>package</td>
<td>SUNWoldim add</td>
</tr>
<tr>
<td>package</td>
<td>SUNWXwdim add</td>
</tr>
</tbody>
</table>

1 This profile keyword is required in every profile.
2 This profile keyword defines that the system will be installed as a standalone system.
3 The file system slices are determined by the software to be installed (default value); however, the size of swap is set to 60 Mbytes and it is installed on any disk (any value). The standard and OpenWindows man pages are mounted from the file server, s_ref, on the network.
4 The developer software group (SUNWCprog) is installed on the system.
5 Because the man pages are being mounted remotely, those packages are selected not to be installed on the system; however, the packages containing the OpenLook and X Windows demo programs and images are selected to be installed on the system.
### Profile Keywords

<table>
<thead>
<tr>
<th>install_type</th>
<th>system_type</th>
<th>partitioning</th>
<th>filesys</th>
<th>filesys</th>
<th>cluster</th>
</tr>
</thead>
<tbody>
<tr>
<td>initial_install</td>
<td>standalone</td>
<td>default</td>
<td>c0t0d0s0 auto /</td>
<td>c0t3d0s1 32 swap</td>
<td>SUNWCall</td>
</tr>
</tbody>
</table>

1. The file system slices are determined by the software to be installed (default value). However, the size of root is based on the selected software (auto value) and it is installed on c0t0d0s0, and the size of swap is set to 32 Mbytes and it is installed on c0t3d0s1.

2. The entire distribution software group (SUNWCall) is installed on the system.

---

### Profile Keywords

<table>
<thead>
<tr>
<th>install_type</th>
<th>system_type</th>
<th>fdisk</th>
<th>fdisk</th>
<th>cluster</th>
<th>cluster</th>
</tr>
</thead>
<tbody>
<tr>
<td>initial_install</td>
<td>standalone</td>
<td>c0t0d0 0x04 delete</td>
<td>c0t0d0 solaris maxfree</td>
<td>SUNWCall</td>
<td>SUNWCall</td>
</tr>
</tbody>
</table>

1. All fdisk partitions of type DOSOS16 (04 hexadecimal) are deleted from the c0t0d0 disk.

2. A Solaris fdisk partition is created on the largest contiguous free space on the c0t0d0 disk.

3. The entire distribution software group (SUNWCall) is installed on the system.

4. The system accounting utilities (SUNWCall) are selected not to be installed on the system.
<table>
<thead>
<tr>
<th># profile keywords</th>
<th>profile values</th>
</tr>
</thead>
<tbody>
<tr>
<td>install_type</td>
<td>upgrade</td>
</tr>
<tr>
<td>package</td>
<td>SUNWbcp delete</td>
</tr>
<tr>
<td>package</td>
<td>SUNWolman add</td>
</tr>
<tr>
<td>package</td>
<td>SUNWxwman add</td>
</tr>
<tr>
<td>cluster</td>
<td>SUNWCumux add</td>
</tr>
<tr>
<td>locale</td>
<td>de</td>
</tr>
</tbody>
</table>

1. This profile upgrades a system (SPARC only).
2. The binary compatibility package (SUNWbcp) is selected to be deleted from the system or prevented from being installed.
3. This code ensures that the OpenLook and X Windows man pages and the universal multiplexor software are selected to be installed if they are not installed on the system. (All packages already on the system are automatically upgraded.)
4. The German localization packages are selected to be installed on the system.
Profile Keywords and Profile Value Descriptions

Table 4-2 shows the profile keywords and profile values that you can use in a profile.

<table>
<thead>
<tr>
<th>Profile Keyword</th>
<th>Profile Values and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>client_arch</td>
<td>karch_value</td>
</tr>
</tbody>
</table>
|                 | client_arch defines that the server will support a different platform group than it uses. If you do not specify client_arch, any diskless client must have the same platform group as the server. You must specify client_arch once for each platform group. Valid values for karch_value are sun4d, sun4c, sun4m, or i86pc. (See Appendix C, “Platform Names and Groups” for a detailed list of the platform names of various systems.)
|                 | Restriction: client_arch can be used only when system_type is specified as server. |
| client_root     | root_size                       |
|                 | client_root defines the amount of root space (root_size in Mbytes) to allocate for each client. If you do not specify client_root in a server’s profile, the installation software will automatically allocate 15 Mbytes of root space per client. The size of the client root area is used in combination with the num_clients keyword to determine how much space to reserve for the /export/root file system.
|                 | Restriction: client_root can be used only when system_type is specified as server. |
| client_swap     | swap_size                       |
|                 | client_swap defines the amount of swap space (swap_size in Mbytes) to allocate for each diskless client. If you do not specify client_swap, 24 Mbytes of swap space is allocated.
|                 | Example: client_swap 32
|                 | The example defines that each diskless client will have a swap space of 32 Mbytes.
|                 | Restriction: client_swap can be used only when system_type is specified as server. |

† Profile keywords that can be used for upgrading
Table 4-2  Profile Keyword and Profile Value Descriptions (2 of 10)

<table>
<thead>
<tr>
<th>Profile Keyword</th>
<th>Profile Values and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cluster</td>
<td><em>group_name</em></td>
</tr>
<tr>
<td>(use for software groups)</td>
<td></td>
</tr>
</tbody>
</table>

`cluster` designates what software group to add to the system. The cluster names for the software groups are:

<table>
<thead>
<tr>
<th>Software Group</th>
<th><em>group_name</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Core</td>
<td>SUNWCreq</td>
</tr>
<tr>
<td>End user system support</td>
<td>SUNWCuser</td>
</tr>
<tr>
<td>Developer system support</td>
<td>SUNWCprog</td>
</tr>
<tr>
<td>Entire distribution</td>
<td>SUNWCall</td>
</tr>
<tr>
<td>Entire distribution plus OEM support</td>
<td>SUNWCXall</td>
</tr>
</tbody>
</table>

You can specify only one software group in a profile, and it must be specified before other `cluster` and package entries. If you do not specify a software group with `cluster`, the end user software group (SUNWCuser) is installed on the system by default.

| cluster†             | *cluster_name* [add | delete]         |
|----------------------|--------------------|
| (use for clusters)   |                     |

`cluster` designates whether a cluster should be added or deleted from the software group that will be installed on the system. `add` or `delete` indicates whether the cluster should be added or deleted. If you do not specify `add` or `delete`, `add` is set by default.

`cluster_name` must be in the form SUNWName. To view detailed information about clusters and their names, start Admintool on an installed system and select Software from the Browse menu.

For Upgrade:
- All clusters already on the system are automatically upgraded.
- If you specify `cluster_name add`, and `cluster_name` is not installed on the system, the cluster is installed.
- If you specify `cluster_name delete`, and `cluster_name` is installed on the system, the package is deleted before the upgrade begins.

† Profile keywords that can be used for upgrading
Table 4-2  Profile Keyword and Profile Value Descriptions (3 of 10)

<table>
<thead>
<tr>
<th>Profile Keyword</th>
<th>Profile Values and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>dontuse</code></td>
<td><code>disk_name</code></td>
</tr>
</tbody>
</table>

`dontuse` designates a disk that the Solaris installation program should *not* use when partitioning default is specified. You can specify `dontuse` once for each disk, and `disk_name` must be specified in the form `cxydz` or `cydz`, for example, `c0t3d0`.

By default, the Solaris installation program uses all the operational disks on the system.

**Restriction:** You cannot specify the `dontuse` keyword and the `usedisk` keyword in the same profile.

<table>
<thead>
<tr>
<th><code>fdisk</code></th>
<th><code>disk_name</code></th>
<th><code>type</code></th>
<th><code>size</code></th>
</tr>
</thead>
</table>

`fdisk` defines how the fdisk partitions are set up on an x86 system (only required for x86 systems), and you can specify `fdisk` more than once. This is what happens by default with `fdisk` partitions on x86 systems:
- All fdisk partitions on the disk are preserved unless you specifically delete them with the `fdisk` keyword (if `size` is `delete` or `0`). Also, all existing fdisk partitions are deleted when `size` is `all`.
- A Solaris fdisk partition that contains a root file system is always designated as the active partition on the disk (an x86 system boots from the active partition by default).
- If no `fdisk` keyword is specified in a profile, the following `fdisk` keyword is specified during the installation:
  - `fdisk all solaris maxfree`
- `fdisk` entries are processed in the order they appear in the profile.

`disk_name` - Choose where the fdisk partition will be created or deleted:
- `cxydz` or `cydz` - A specific disk, for example, `c0t3d0`.
- `rootdisk` - The disk where the root file system is placed during an installation, which is determined by the Solaris installation program (described on page 91).
- `all` - All the selected disks.

`type` - Choose what type of fdisk partition will be created or deleted on the specified disk:
- `solaris` - A Solaris fdisk partition (SUNIXOS fdisk type).
- `dosprimary` - An alias for primary DOS fdisk partitions (not for extended or data DOS fdisk partitions). When deleting fdisk partitions (`size` is `delete`), `dosprimary` is an alias for the DOSHUGE, DOSOS12, and DOSOS16 fdisk types (they are all deleted). When creating an fdisk partition, `dosprimary` is an alias for the DOSHUGE fdisk partition (a DOSHUGE fdisk partition is created).

† Profile keywords that can be used for upgrading
Table 4-2 Profile Keyword and Profile Value Descriptions (4 of 10)

<table>
<thead>
<tr>
<th>Profile Keyword</th>
<th>Profile Values and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>fdisk</td>
<td>disk_name type size</td>
</tr>
</tbody>
</table>

Type - Choose what type of fdisk partition will be created or deleted on the specified disk:
- **DDD** - A decimal fdisk partition. DDD is a decimal number (valid values are 1 through 255).
  **Restriction:** This value can be specified only if size is delete.
- **0xHH** - A hexadecimal fdisk partition. HH is a hexadecimal number (valid values are 01 through FF).
  **Restriction:** This value can be specified only if size is delete.

The following table shows the decimal and hexadecimal numbers for some of the fdisk types:

<table>
<thead>
<tr>
<th>fdisk type</th>
<th>DDDHH</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOSOS</td>
<td>12101</td>
</tr>
<tr>
<td>PCIXOS</td>
<td>202</td>
</tr>
<tr>
<td>DOSOS</td>
<td>16404</td>
</tr>
<tr>
<td>EXTDOS</td>
<td>505</td>
</tr>
<tr>
<td>DOSHUGE</td>
<td>606</td>
</tr>
<tr>
<td>DOSDATA</td>
<td>8656</td>
</tr>
<tr>
<td>OTHEROS</td>
<td>9862</td>
</tr>
<tr>
<td>UNIXOS</td>
<td>9963</td>
</tr>
</tbody>
</table>

Size - Choose one of the following:
- **DDD** - An fdisk partition of size DDD (in Mbytes) is created on the specified disk. DDD must be a decimal number and the Solaris installation program automatically rounds the number up to the nearest cylinder boundary. If 0 is specified, it is the same as specifying delete.
- **all** - An fdisk partition is created on the entire disk (all existing fdisk partitions will be deleted).
  **Restriction:** This value can be specified only if type is solaris.
- **maxfree** - An fdisk partition is created in the largest contiguous free space on the specified disk. If an fdisk partition of the specified type already exists on the disk, the existing fdisk partition is used (a new fdisk partition is not created on the disk).
  **Note:** There must be at least one unused fdisk partition on the disk and the disk must have free space, or an error will occur.
  **Restriction:** This value can be specified only if type is solaris or dosprimary.
- **delete** - All fdisk partitions of the specified type are deleted on the specified disk.

† Profile keywords that can be used for upgrading
### Table 4-2  Profile Keyword and Profile Value Descriptions (5 of 10)

<table>
<thead>
<tr>
<th>Profile Keyword</th>
<th>Profile Values and Description</th>
</tr>
</thead>
</table>
| filesystem               | `server: path server_address mount_pt_name [mount_options]`
| (use for mounting remote |                                                                                                 |
| file systems)            | This instance of filesystem sets up the installed system to automatically mount remote file systems when it boots. You can specify filesystem more than once. For Dataless Clients: Profiles for dataless clients (when `system_type` dataless is specified) must include a remote filesystem entry for both the `/usr` file system. The following line is an example of the filesystem entries that must be used in a profile to install the Solaris software on a dataless client:

```
filesystem sherlock:/export/exec/Solaris_2.4_sparc.all/usr - /usr
```

*server:* The name of the server where the remote file system resides (followed by a colon).

*path:* The remote file system’s mount point name, for example, `/usr` or `/export/home`.

*server_address:* The IP address of the server specified in `server:path`. If you don’t have a name service running on the network, this value can be used to populate the `/etc/hosts` file with the server’s host name and IP address. If you don’t want to specify the server’s IP address (if you have a name service running on the network), you must specify a minus sign (`-`).

*mount_pt_name:* The name of the mount point that the remote file system will be mounted on.

*mount_options:* One or more mount options (`-o` option of the command) that are added to the `/etc/vfstab` entry for the specified `mount_pt_name`.

**Note:** If you need to specify more than one mount option, the mount options must be separated by commas and no spaces. For example: `ro,quota`  

† Profile keywords that can be used for upgrading
### Table 4-2 Profile Keyword and Profile Value Descriptions (6 of 10)

<table>
<thead>
<tr>
<th>Profile Keyword</th>
<th>Profile Values and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>filesys</code> (use for creating local file systems)</td>
<td><code>slice</code> <code>size</code> <code>[file_system]</code> <code>[optional_parameters]</code></td>
</tr>
</tbody>
</table>

This instance of `filesys` creates local file systems during the installation. You can specify `filesys` more than once.

**slice** - Choose one of the following:
- *any* - The Solaris installation program places the file system on any disk.
**Restriction:** `any` cannot be specified when `size` is `existing`, `all`, `free`, `start:size`, or `ignore`.
- *cwtxdysz* or *cxdysz* - The disk slice where the Solaris installation program places the file system, for example, `c0t0d0s0`.
- *rootdisk.sn* - The logical name of the disk where the installation program places the root file system. The `sn` suffix indicates a specific slice on the disk.

**size** - Choose one of the following:
- *num* - The size of the file system is set to `num` (in Mbytes).
- *existing* - The current size of the existing file system is used.
**Note:** When using this value, you can change the name of an existing slice by specifying `file_system` as a different `mount_pt_name`.
- *auto* - The size the file system is automatically determined depending on the selected software.
- *all* - The specified `slice` uses the entire disk for the file system. When you specify this value, no other file systems can reside on the specified disk.
- *free* - The remaining unused space on the disk is used for the file system.
**Restriction:** If `free` is used as the value to `filesys`, it must by the last `filesys` entry in a profile.
- *start:size* - The file system is explicitly partitioned: `start` is the cylinder where the slice begins; `size` is the number of cylinders for the slice.

† Profile keywords that can be used for upgrading

---

*Preparing Custom JumpStart Installations* 77
### Table 4-2  Profile Keyword and Profile Value Descriptions (7 of 10)

<table>
<thead>
<tr>
<th>Profile Keyword</th>
<th>Profile Values and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>file_system</code></td>
<td><code>slice size [file_system] [optional_parameters]</code></td>
</tr>
</tbody>
</table>

*file_system* - You can use this optional value when `slice` is specified as any or `cwtxdysz`. If `file_system` is not specified, `unnamed` is set by default, but then you can’t specify the `optional_parameters` value. Choose one of the following:

- `mount_pt_name` - The file system’s mount point name, for example, `/var`.
- `swap` - The specified `slice` is used as `swap`.
- `overlap` - The specified `slice` is defined as a representation of a disk region (VTOC value is `V_BACKUP`). By default, slice 2 is an overlap slice that is a representation of the whole disk. **Restriction:** `overlap` can be specified only when `size` is existing, all, or `start:size`.

- `unnamed` - The specified `slice` is defined as a raw slice, so `slice` will not have a mount point name. If `file_system` is not specified, `unnamed` is set by default.
- `ignore` - The specified `slice` is not used or recognized by the Solaris installation program. This could be used to ignore a file system on a disk during an installation, so the Solaris installation program can create a new file system on the same disk with the same name.

*optional_parameters* - Choose one of the following:

- `preserve` - The file system on the specified `slice` is preserved. **Restriction:** `preserve` can be specified only when `size` is existing and `slice` is `cwtxdysz`.
- `mount_options` - One or more mount options (`-o` option of the `mount` command) that are added to the `/etc/vfstab` entry for the specified `mount_pt_name`.

**Note:** If you need to specify more than one mount option, the mount options must be separated by commas and no spaces. For example: `ro,quota`

<table>
<thead>
<tr>
<th>install_type†</th>
<th>initial_install</th>
<th>upgrade</th>
</tr>
</thead>
</table>

`install_type` defines whether to perform the initial installation option or upgrade option on the system. **Restriction:** `install_type` must be the first profile keyword in every profile.

† Profile keywords that can be used for upgrading
Table 4-2  Profile Keyword and Profile Value Descriptions (8 of 10)

<table>
<thead>
<tr>
<th>Profile Keyword</th>
<th>Profile Values and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>locale†</td>
<td>locale_name</td>
</tr>
</tbody>
</table>

locale designates that the localization packages associated with the selected software should be installed (or added for upgrade) for the specified locale_name. The locale_name values are the same as the values used for the $LANG environment variable. Solaris 2.5 supports the following localizations:

<table>
<thead>
<tr>
<th>Language</th>
<th>locale_name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese</td>
<td>zh</td>
</tr>
<tr>
<td>French</td>
<td>fr</td>
</tr>
<tr>
<td>German</td>
<td>de</td>
</tr>
<tr>
<td>Italian</td>
<td>it</td>
</tr>
<tr>
<td>Japanese</td>
<td>ja</td>
</tr>
<tr>
<td>Korean</td>
<td>ko</td>
</tr>
<tr>
<td>Latin American</td>
<td>es</td>
</tr>
<tr>
<td>Swedish</td>
<td>sv</td>
</tr>
<tr>
<td>Taiwanese</td>
<td>zh_TW</td>
</tr>
</tbody>
</table>

The English localization packages are installed by default. You can specify locale once for each localization you need to support.

num_clients       | client_num |

When a server is installed, space is allocated for each diskless client’s root (/) and swap file systems. num_clients defines the number of diskless clients (client_num) that a server will support. If you do not specify num_clients, five diskless clients are allocated.

**Restriction:** num_clients can be used only when system_type is specified as server.

† Profile keywords that can be used for upgrading
Table 4-2   Profile Keyword and Profile Value Descriptions (9 of 10)

<table>
<thead>
<tr>
<th>Profile Keyword</th>
<th>Profile Values and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>package†</td>
<td>package_name [add</td>
</tr>
</tbody>
</table>

package designates whether a package should be added to or deleted from the software group that will be installed on the system. add or delete indicates whether the package should be added or deleted. If you do not specify add | delete, add is set by default.

package_name must be in the form SUNWname. Use the pkginfo -i command or Admintool (select Software from the Browse menu) on an installed system to view detailed information about packages and their names.

For Upgrade:
- All packages already on the system are automatically upgraded.
- If you specify package_name add, and package_name is not installed on the system, the package is installed.
- If you specify package_name delete, and package_name is installed on the system, the package is deleted before the upgrade begins.
- If you specify package_name delete, and package_name is not installed on the system, the package is prevented from being installed if it is part of a cluster that is designated to be installed.

† Profile keywords that can be used for upgrading

package designates whether a package should be added to or deleted from the software group that will be installed on the system. add or delete indicates whether the package should be added or deleted. If you do not specify add | delete, add is set by default.

package_name must be in the form SUNWname. Use the pkginfo -i command or Admintool (select Software from the Browse menu) on an installed system to view detailed information about packages and their names.

For Upgrade:
- All packages already on the system are automatically upgraded.
- If you specify package_name add, and package_name is not installed on the system, the package is installed.
- If you specify package_name delete, and package_name is installed on the system, the package is deleted before the upgrade begins.
- If you specify package_name delete, and package_name is not installed on the system, the package is prevented from being installed if it is part of a cluster that is designated to be installed.
Table 4-2  Profile Keyword and Profile Value Descriptions (10 of 10)

<table>
<thead>
<tr>
<th>Profile Keyword</th>
<th>Profile Values and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>partitioning</td>
<td>default</td>
</tr>
</tbody>
</table>

`partitioning` defines how the disks are divided into slices for file systems during the installation. If you do not specify `partitioning`, `default` is set.

- `default` - The Solaris installation program selects the disks and creates the file systems on which to install the specified software, except for any file systems specified by the `filesystems` keyword. `rootdisk` is selected first; additional disks are used if the specified software does not fit on `rootdisk`.

- `existing` - The Solaris installation program uses the existing file systems on the system's disks. All file systems except `/`, `/usr`, `/usr/openwin`, `/opt`, and `/var` are preserved. The installation program uses the last mount point field from the file system superblock to determine which file system mount point the slice represents.

**Restriction:** When specifying the `filesystems` profile keyword with `partitioning existing`, `size` must be `existing`.

- `explicit` - The Solaris installation program uses the disks and creates the file systems specified by the `filesystems` keywords. If you specify only the root (/) file system with the `filesystems` keyword, all the Solaris software will be installed in the root file system.

**Restriction:** When you use the `explicit` profile value, you must use the `filesystems` profile keyword to specify which disks to use and what file systems to create.

| system_type    | standalone | dataless | server |

`system_type` defines the type of system being installed. If you do not specify `system_type` in a profile, `standalone` is set by default.

| usedisk        | disk_name  |

`usedisk` designates a disk that the Solaris installation program will use when `partitioning default` is specified. You can specify `usedisk` once for each disk, and `disk_name` must be specified in the form `cxydz` or `cydz`, for example, `c0t0d0`.

If you specify the `usedisk` profile keyword in a profile, the Solaris installation program will only use the disks that you specify with the `usedisk` profile keyword.

**Restriction:** You cannot specify the `usedisk` keyword and the `dontuse` keyword in the same profile.

† Profile keywords that can be used for upgrading
How the Size of Swap Is Determined

If a profile does not explicitly specify the size of swap, the Solaris installation program determines the maximum size that swap can be, based on the system’s physical memory. Table 4-3 shows how the maximum size of swap is determined during a custom JumpStart installation.

Table 4-3 How the Maximum Size of Swap Is Determined

<table>
<thead>
<tr>
<th>Physical Memory (in Mbytes)</th>
<th>Maximum Size of Swap (in Mbytes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 - 64</td>
<td>32</td>
</tr>
<tr>
<td>64 - 128</td>
<td>64</td>
</tr>
<tr>
<td>128 - 512</td>
<td>128</td>
</tr>
<tr>
<td>512 &gt;</td>
<td>256</td>
</tr>
</tbody>
</table>

The Solaris installation program will make the size of swap no more than 20% of the disk where it resides, unless there is free space left on the disk after laying out the other file systems. If free space exists, the Solaris installation program will allocate the free space to swap up to the maximum size shown in Table 4-3.

Note – Physical memory plus swap space must be a minimum of 32 Mbytes.

Creating the rules File

What Is the rules File

The rules file is a text file used to create the rules.ok file. The rules file is a look-up table consisting of one or more rules that define matches between system attributes and profiles. For example, the rule

```
karch sun4c - basic_prof -
```

matches a system with a sun4c platform name to the basic_prof profile, which the Solaris installation program would use to install the system.
Note – If you set up the JumpStart directory by using the procedures on page 53 or page 62, an example rules file should already be in the JumpStart directory; the example rules file contains documentation and some example rules. If you use the example rules file, make sure you comment out the example rules that you will not use.

When Does a System Match a Rule

During a custom JumpStart installation, the Solaris installation program attempts to match the rules in the rules.ok file in order: first rule through the last rule. A rule match occurs when the system being installed matches any of the rule values in the rule (as defined in Table 4-5 on page 88). As soon as a system matches a rule, the Solaris installation program stops reading the rules.ok file and begins to install the system as defined by the matched rule’s profile.

pressão

How to Create the rules File

Overview – The procedure to create a rules file involves:
- Editing a file
- Selecting rule keywords and rule values for each group of systems you want to install using custom JumpStart. Any systems that match the rule keyword and rule value will be installed as specified by the corresponding profile.

Follow this procedure to create a rules file.

1. Open a file (the rules file) and name it rules.
   You can create a new file or edit the sample rules file provided in the JumpStart directory you created.

2. Add a rule in the rules file for each group of systems you want to install using custom JumpStart.
   Be aware of these things as you add rules to the rules file:
   - Rule Examples on page 86 provides some examples of rules.
   - Table 4-5 on page 88 provides the list of valid rule keywords and values.
   - The rules file must have at least one rule
A rule must have at least a rule keyword, a rule value, and a corresponding profile.

A rule within the rules file must have the following syntax:

```
[!]rule_keyword rule_value [&& [!]rule_keyword rule_value]... begin profile finish
```

Table 4-4 describes the fields of a rule.

**Table 4-4  Field Descriptions of a Rule**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>!</td>
<td>A symbol used before a rule keyword to indicate negation.</td>
</tr>
<tr>
<td>[ ]</td>
<td>A symbol used to indicate an optional expression or field.</td>
</tr>
<tr>
<td>...</td>
<td>A symbol used to indicate the preceding expression may be repeated.</td>
</tr>
<tr>
<td><strong>rule_keyword</strong></td>
<td>A predefined keyword that describes a general system attribute, such as host name (hostname) or memory size (memsize). It is used with the rule value to match a system with the same attribute to a profile. See Table 4-5 on page 88 for the list of rule keywords.</td>
</tr>
<tr>
<td><strong>rule_value</strong></td>
<td>A value that provides the specific system attribute for the corresponding rule keyword. See Table 4-5 on page 88 for the list of rule values.</td>
</tr>
<tr>
<td>&amp; &amp; &amp;</td>
<td>A symbol that must be used to join (logically AND) rule keyword and rule value pairs together in the same rule. During a custom JumpStart installation, a system must match every pair in the rule before the rule matches.</td>
</tr>
</tbody>
</table>
Table 4-4 Field Descriptions of a Rule (Continued)

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>begin</td>
<td>A name of an optional Bourne shell script that can be executed before the installation begins. If no begin script exists, you must enter a minus sign (-) in this field. All begin scripts must reside in the JumpStart directory. See “Creating Begin Scripts” on page 98 for detailed information on how to create begin scripts.</td>
</tr>
<tr>
<td>profile</td>
<td>A name of a text file used as a template that defines how to install Solaris on a system. The information in a profile consists of profile keywords and their corresponding profile values. All profiles must reside in the JumpStart directory. Note - There are optional ways to use the profile field, which are described in “Using a Site-Specific Installation Program” on page 111 and “Creating Derived Profiles With Begin Scripts” on page 98.</td>
</tr>
<tr>
<td>finish</td>
<td>A name of an optional Bourne shell script that can be executed after the installation completes. If no finish script exists, you must enter a minus sign (-) in this field. All finish scripts must reside in the JumpStart directory. See “Creating Finish Scripts” on page 100 for detailed information on how to create finish scripts.</td>
</tr>
</tbody>
</table>

This completes the procedure to create a rules file. To validate the rules file, see How to Use check to Validate the rules File on page 94.
Rule Examples

The following illustration shows several example rules in a rules file. Each line has a rule keyword and a valid value for that keyword. The Solaris installation program scans the rules file from top to bottom. When the Solaris installation program matches a rule keyword and value with a known system, it installs the Solaris software specified by the profile listed in the profile field.

```
# rule keywords and rule values
begin script profile finish script

1  hostname eng-1 - basic_prof -
2  network 192.43.34.0 & model \
   'SUNW,Sun 4_50' - net_prof -
3  model SUNW,SPARCstation-LX - lx_prof complete
4  network 193.144.2.0 & karch i86pcsetup x86_prof done
5  memsize 16-32 & arch sparc - prog_prof -
6  any - - generic_prof -
```

1 This rule matches if the system’s host name is eng-1. The basic_prof profile is used to install the Solaris software on the system that matches this rule.

2 The rule matches if the system is on subnet 192.43.34.0 and it is not a SPARCstation IPX™ (SUNW, Sun 4_50). The net_prof profile is used to install the Solaris software on systems that match this rule.

3 The rule matches if the system is a SPARCstation LX. The lx_prof profile and the complete finish script are used to install the Solaris software on systems that match this rule. This rule also provides an example of rule wrap, which is defined on page 87.

4 This rule matches if the system is on subnet 193.144.2.0 and the system is an x86. The setup begin script, the x86_prof profile, and the done finish script are used to install the Solaris software on systems that match this rule.

5 This rule matches if the system has 16-32 Mbytes of memory and its processor type is SPARC. The prog_prof profile is used to install the Solaris software on systems that match this rule.

6 This rule matches any system that did not match the previous rules. The generic_prof profile is used to install the Solaris software on systems that match this rule. If used, any should always be in the last rule.
Important Information About the rules File

The following information is important to know about the rules file:

- **Name** - The rules file must have the file name, rules.

- **rules.ok file** - The rules.ok file is a generated version of the rules file, and it is required by the custom JumpStart installation software to match a system to a profile. You must run the check script to create the rules.ok file, and the rules.ok file should be owned by root and have permissions equal to 644.

- **Comments** - You can add a comment after the pound sign (#) anywhere on a line. If a line begins with a #, the entire line is a comment line. If a # is specified in the middle of a line, everything after the # is considered a comment. Blank lines are also allowed in the rules file.

---

Note – When creating the rules.ok file, the check script removes all the comment lines, comments at the end of a rule, and blank lines.

---

- **Rule wrap** - When a rule spans multiple lines, you can let a rule to wrap to a new line, or you can continue a rule on a new line by using a backslash (\) before the carriage return.

- **Rule fields** - The rule_value, begin, and finish fields must have a valid entry or a minus sign (-) to specify that there is no entry.
Rule Keyword and Rule Value Descriptions

Table 4-5 describes the rule keywords and rule values that you can use in the rules file.

<table>
<thead>
<tr>
<th>Rule Keyword</th>
<th>Rule Values</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>any</td>
<td>minus sign (-)</td>
<td>Match always succeeds.</td>
</tr>
<tr>
<td>arch</td>
<td>processor_type</td>
<td>Matches a system’s processor type. The <code>uname -p</code> command reports the system’s processor type.</td>
</tr>
<tr>
<td></td>
<td>platform</td>
<td>SPARC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sparc</td>
</tr>
<tr>
<td></td>
<td>x86</td>
<td>i386</td>
</tr>
<tr>
<td>domainname</td>
<td>domain_name</td>
<td>Matches a system’s domain name, which controls how a name service determines information.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If you have a system already installed, the <code>domainname</code> command reports the system’s domain name.</td>
</tr>
<tr>
<td>disksize</td>
<td>disk_name</td>
<td>Matches a system’s disk (in Mbytes).</td>
</tr>
<tr>
<td></td>
<td>size_range</td>
<td>Example: <code>disksize c0t3d0 250-300</code></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The example tries to match a system with a c0t3d0 disk that is between 250 and 300 Mbytes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Note: When calculating <code>size_range</code>, remember that a Mbyte equals 1,048,576 bytes. A disk may be advertised as a “207 Mbyte” disk, but it may have only 207 million bytes of disk space. The Solaris installation program will actually view the “207 Mbyte” disk as a 197 Mbyte disk because $207,000,000 \div 1,048,576 = 197$. So, a “207 Mbyte” disk would not match a <code>size_range</code> equal to 200-210.</td>
</tr>
<tr>
<td>hostaddress</td>
<td>IP_address</td>
<td>Matches a system’s IP address.</td>
</tr>
<tr>
<td>Rule Keyword</td>
<td>Rule Values</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td>-------------</td>
</tr>
<tr>
<td>hostname</td>
<td>host_name</td>
<td>Matches a system's host name. If you have a system already installed, the <code>uname -n</code> command reports the system's host name.</td>
</tr>
<tr>
<td>installed</td>
<td>slice version</td>
<td>Matches a disk that has a root file system corresponding to a particular version of Solaris software. <em>slice</em> - A disk slice name in the form <code>cwxdysz</code>, such as <code>c0t3d0s5</code>, or the special words <em>any</em> or <code>rootdisk</code>. If <em>any</em> is used, any disk attached to the system attempts to match. <code>rootdisk</code> should be used only when trying to match systems that contain the factory-installed JumpStart software. <code>rootdisk</code> is described on page 91. <em>version</em> - A version name, such as <code>Solaris_2.3</code>, or the special words <em>any</em> or <code>upgrade</code>. If <em>any</em> is used, any Solaris or SunOS release is matched. If <code>upgrade</code> is used, any upgradable Solaris 2.1 or greater release is matched.</td>
</tr>
<tr>
<td>karch</td>
<td>platform_group</td>
<td>Matches a system's platform name. If you have a system already installed, the <code>arch -k</code> command or the <code>uname -m</code> command reports the system's platform group.</td>
</tr>
<tr>
<td>memsize</td>
<td>physical_mem</td>
<td>Matches a system's physical memory size (in Mbytes). Example: <code>memsize 16-32</code> The example tries to match a system with a physical memory size between 16 and 32 Mbytes. If you have a system already installed, the <code>prtconf</code> command (line 2) reports the system's physical memory size.</td>
</tr>
</tbody>
</table>
## Table 4-5  Rule Keyword and Rule Value Descriptions (3 of 4)

<table>
<thead>
<tr>
<th>Rule Keyword</th>
<th>Rule Values</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>model</code></td>
<td><code>model_name</code></td>
<td>Matches a system's model number, which is system-dependent and varies by the manufacturer. The list shown may not be complete.</td>
</tr>
<tr>
<td><code>System</code></td>
<td><code>model_name</code></td>
<td>If you have a system already installed, the <code>prtconf</code> command (line 5) reports the system's model number.</td>
</tr>
<tr>
<td><code>Sun-4/110</code></td>
<td><code>Sun 4_100 Series</code></td>
<td></td>
</tr>
<tr>
<td><code>Sun-4/2xx</code></td>
<td><code>Sun 4_200 Series</code></td>
<td></td>
</tr>
<tr>
<td><code>SPARCstation 1 (4/60)</code></td>
<td><code>Sun 4_60</code></td>
<td>Note: If the <code>model_name</code> contains spaces, the <code>model_name</code> must be inside a pair of single quotes (<code>'</code>). For example: <code>'SUNW,Sun 4_50'</code></td>
</tr>
<tr>
<td><code>SPARCstation 1+ (4/65)</code></td>
<td><code>Sun 4_65</code></td>
<td></td>
</tr>
<tr>
<td><code>SPARCstation SLC™ (4/20)</code></td>
<td><code>Sun 4_20</code></td>
<td></td>
</tr>
<tr>
<td><code>SPARCstation IPC (4/40)</code></td>
<td><code>SUNW,Sun 4_40</code></td>
<td></td>
</tr>
<tr>
<td><code>SPARCstation ELCTM (4/25)</code></td>
<td><code>SUNW,SUNW,SUN 4_25</code></td>
<td></td>
</tr>
<tr>
<td><code>SPARCstation IPX (4/50)</code></td>
<td><code>SUNW,Sun 4_50</code></td>
<td></td>
</tr>
<tr>
<td><code>SPARCstation 2 (4/75)</code></td>
<td><code>SUNW,SUNW,4_75</code></td>
<td></td>
</tr>
<tr>
<td><code>Sun-4/3xx</code></td>
<td><code>Sun SPARCsystem 300</code></td>
<td></td>
</tr>
<tr>
<td><code>Sun-4/4xx</code></td>
<td><code>Sun SPARCsystem 400</code></td>
<td></td>
</tr>
<tr>
<td><code>SPARCserver™ 6xx</code></td>
<td><code>SUNW,SPARCsystem-600</code></td>
<td></td>
</tr>
<tr>
<td><code>SPARCstation 10</code></td>
<td><code>SUNW,SPARCstation-10</code></td>
<td></td>
</tr>
<tr>
<td><code>SPARCclassic™ (4/15)</code></td>
<td><code>SUNW,SPARCclassic</code></td>
<td></td>
</tr>
<tr>
<td><code>SPARCstation LX (4/30)</code></td>
<td><code>SUNW,SPARCstation-LX</code></td>
<td></td>
</tr>
<tr>
<td><code>SPARCCenter™ 1000</code></td>
<td><code>SUNW,SPARCserver-1000</code></td>
<td></td>
</tr>
<tr>
<td><code>SPARCCenter 2000</code></td>
<td><code>SUNW,SPARCserver-2000</code></td>
<td></td>
</tr>
<tr>
<td><code>SPARCstation 10 SX</code></td>
<td><code>SUNW,SPARCstation-10,SX</code></td>
<td></td>
</tr>
<tr>
<td><code>SPARCstation 20</code></td>
<td><code>SUNW,SPARCstation-20</code></td>
<td></td>
</tr>
<tr>
<td><code>SPARCstation 5</code></td>
<td><code>SUNW,SPARCstation-5</code></td>
<td></td>
</tr>
<tr>
<td><code>SPARCstation Voyager</code></td>
<td><code>SUNW,S240</code></td>
<td></td>
</tr>
<tr>
<td><code>Sun Ultra™ 1 Model 140</code></td>
<td><code>SUNW,Ultra1-140</code></td>
<td></td>
</tr>
<tr>
<td><code>x86</code></td>
<td><code>i86pc</code></td>
<td></td>
</tr>
</tbody>
</table>
Table 4-5  Rule Keyword and Rule Value Descriptions (4 of 4)

<table>
<thead>
<tr>
<th>Rule Keyword</th>
<th>Rule Values</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>network</td>
<td>network_num</td>
<td>Matches a system’s network number, which the Solaris installation program determines by performing a logical AND between the system’s IP address and the subnet mask.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Example: network 193.144.2.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The example would match a system with a 193.144.2.8 IP address (if the subnet mask were 255.255.255.0).</td>
</tr>
<tr>
<td>osname</td>
<td>Solaris_version</td>
<td>Matches a version of Solaris already installed on a system. Solaris_version is the version of Solaris environment installed on the system: for example, Solaris_2.5.</td>
</tr>
<tr>
<td>totaldisk</td>
<td>size_range</td>
<td>Matches the total disk space on a system (in Mbytes). The total disk space includes all the operational disks attached to a system.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Example: totaldisk 300-500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The example tries to match a system with a total disk space between 300 and 500 Mbytes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Note:</strong> When calculating size_range, remember that a Mbyte equals 1048576 bytes. A disk may be advertised as a “207 Mbyte” disk, but it may have only 207 million bytes of disk space. The Solaris installation program will actually view the “207 Mbyte” disk as a 197 Mbyte disk because 207000000 / 1048576 = 197. So, a “207 Mbyte” disk would not match a size_range equal to 200-210.</td>
</tr>
</tbody>
</table>

How the Installation Program Sets the Value of rootdisk

rootdisk is the logical name of the disk where the root file system is placed during an installation. During a custom JumpStart installation, the Solaris installation program sets the value of rootdisk (that is, the actual disk it represents) depending on various situations; this is described in Table 4-6.
<table>
<thead>
<tr>
<th>Situation</th>
<th>What Happens</th>
</tr>
</thead>
<tbody>
<tr>
<td>A system contains the factory-installed JumpStart software. (this applies to some SPARC systems only).</td>
<td>rootdisk is set to the disk that contains the factory-installed JumpStart software before the system tries to match any rules.</td>
</tr>
<tr>
<td>rootdisk has not been set and a system tries to match the following rule:</td>
<td>rootdisk is set to c0t3d0 or the first available disk attached to the system.</td>
</tr>
<tr>
<td></td>
<td>After rootdisk is set, the system tries to match the rule.</td>
</tr>
<tr>
<td>disksize rootdisk size_range or</td>
<td></td>
</tr>
<tr>
<td>installed rootdisk version</td>
<td></td>
</tr>
<tr>
<td>If rootdisk has been set and the system tries to match the following rule.</td>
<td>The system tries to match the rule.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>A system tries to match the following rule:</td>
<td>If disk is found on the system with a root file system that matches the specified version, the rule matches and rootdisk is set to disk.</td>
</tr>
<tr>
<td>installed disk version</td>
<td></td>
</tr>
<tr>
<td>A system tries to match the following rule:</td>
<td>If any disk is found on the system with a root file system that matches the specified version, the rule matches and rootdisk is set to the found disk. (If there is more than one disk on the system that can match, the system will match the first disk that is found.)</td>
</tr>
<tr>
<td>installed any version</td>
<td></td>
</tr>
</tbody>
</table>
**Table 4-6** How the Solaris Installation Program Sets the Value of rootdisk (Continued)

<table>
<thead>
<tr>
<th>Situation</th>
<th>What Happens</th>
</tr>
</thead>
<tbody>
<tr>
<td>rootdisk has not been set after a system matches a rule and the system</td>
<td>rootdisk is set to the first disk found with a root file system that matches an upgradable version of Solaris software. If no disk is found, the system proceeds with an interactive installation.</td>
</tr>
<tr>
<td>is going to be upgraded (which is defined in the profile).</td>
<td></td>
</tr>
<tr>
<td>rootdisk has not been set after a system matches a rule.</td>
<td>rootdisk is set to c0t3d0 or the first available disk attached to the system.</td>
</tr>
</tbody>
</table>

For the Solaris installation program to use the value of rootdisk, the following conditions must be true in the profile specified for the system:

- Default partitioning is used.
- No slice has been explicitly set for the root file system.

**Using check to Validate the rules File**

Before the rules file and profiles can be used, you must run the check script to validate that these files are set up correctly. The following table shows what the check script does.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The rules file is checked for syntax.</td>
</tr>
<tr>
<td></td>
<td>check makes sure that the rule keywords are legitimate, and the begin, class, and finish fields are specified for each rule (the begin and finish fields may be a minus sign [-] instead of a file name).</td>
</tr>
<tr>
<td>2</td>
<td>If no errors are found in the rules file, each profile specified in the rules is checked for syntax.</td>
</tr>
<tr>
<td>3</td>
<td>If no errors are found, check creates the rules.ok file from the rules file, removing all comments and blank lines, retaining all the rules, and adding the following comment line to the end:</td>
</tr>
</tbody>
</table>

    # version=2 checksum=num
How to Use check to Validate the rules File

Overview – The procedure to use check to validate the rules file involves:
• Making sure the check script resides in the JumpStart directory
• Running the check script

Follow this procedure to use check to validate the rules file.

1. Make sure that the check script resides in the JumpStart directory.

Note – The check script is provided in the auto_install_sample directory on the Solaris CD.

2. Change the directory to the JumpStart directory:

   $ cd jumpstart_dir_path

3. Run the check script to validate the rules file:

   $ ./check [-p path] [-r file_name]

In this command,

- `-p path` Is the path to the Solaris 2.5 CD. You can use a Solaris CD image on a local disk or a mounted Solaris CD. This option ensures that you are using the most recent version of the check script. You should use this option if you are using check on a system that is running a previous version of Solaris.

- `-r file_name` Specifies a rules file other than the one named rules. Using this option, you can test the validity of a rule before integrating it into the rules file.
As the check script runs, it reports that it is checking the validity of the rules file and the validity of each profile. If no errors are encountered, it reports: The auto-install configuration is ok.

The rules files is now validated. To read about the optional features available for custom JumpStart installations, see Chapter 5, "Using Optional Custom JumpStart Features." To perform a custom JumpStart installation on a system, see Chapter 9, "Booting and Installing Solaris: Custom JumpStart."
Using Optional Custom JumpStart Features

Overview

This chapter describes the optional features available for custom JumpStart installations, and it is a supplement to Chapter 4, "Preparing Custom JumpStart Installations." You can use the following optional features to enhance and test custom JumpStart installations:

• Begin scripts
• Finish scripts
• pfinstall
• Site-specific installation program

<table>
<thead>
<tr>
<th>Feature</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>How to Use pfinstall to Test a Profile</td>
<td>105</td>
</tr>
<tr>
<td>How to Create a Disk Configuration File for a SPARC System</td>
<td>107</td>
</tr>
<tr>
<td>How to Create a Multiple Disk Configuration File for a SPARC System</td>
<td>109</td>
</tr>
</tbody>
</table>

Note – This chapter is valid for either an x86 or SPARC server that is being used for custom JumpStart installations. An x86 server can provide custom JumpStart files for SPARC systems and a SPARC system can provide custom JumpStart files for x86 systems.
Creating Begin Scripts

What Is a Begin Script

A begin script is a user-defined Bourne shell script, specified within the rules file, that performs tasks before the Solaris software is installed on the system. Begin scripts can be used only with custom JumpStart installations.

Important Information About Begin Scripts

The following information is important to know about begin scripts:

- Be careful that you do not specify something in the script that would prevent the mounting of file systems onto /a during an initial or upgrade installation. If the Solaris installation program cannot mount the file systems onto /a, an error will occur and the installation will fail.

- Output from the begin script goes to /var/sadm/begin.log.

- Begin scripts should be owned by root and have permissions equal to 644.

Ideas for Begin Scripts

You could set up begin scripts to perform the following tasks:

- Creating derived profiles
- Backing up files before upgrade

Creating Derived Profiles With Begin Scripts

A derived profile is a profile that is dynamically created by a begin script during a custom JumpStart installation. Derived profiles are needed when you cannot set up the rules file to match specific systems to a profile (when you need more flexibility than the rules file can provide). For example, you may need to use derived profiles for identical system models that have different hardware components (for example, systems that have different frame buffers).

To set up a rule to use a derived profile, you must:

- Set the profile field to an equal sign (=) instead of a profile.
- Set the begin field to a begin script that will create a derived profile depending on which system is being installed.

When a system matches a rule with the profile field equal to an equal sign (=), the begin script creates the derived profile that is used to install the Solaris software on the system.

An example of a begin script that creates the same derived profile every time is shown below; however, you could add code to this example that would create a different derived profile depending on certain command's output.

```
#!/bin/sh
echo 'install_type initial_install' > ${SI_PROFILE}
echo 'system_type standalone' >> ${SI_PROFILE}
echo 'partitioning default' >> ${SI_PROFILE}
echo 'cluster SUNWCprog' >> ${SI_PROFILE}
echo 'package SUNWman delete' >> ${SI_PROFILE}
echo 'package SUNWolman delete' >> ${SI_PROFILE}
echo 'package SUNWxwm man delete' >> ${SI_PROFILE}
```

As shown above, the begin script must use the SI_PROFILE environment variable for the name of the derived profile, which is set to /tmp/install.input by default.

**Note** – If a begin script is used to create a derived profile, make sure there are no errors in it. A derived profile is not verified by the check script, because it is not created until the execution of the begin script.
Creating Finish Scripts

What Is a Finish Script

A finish script is a user-defined Bourne shell script, specified within the rules file, that performs tasks after the Solaris software is installed on the system, but before the system reboots. Finish scripts can be used only with custom JumpStart installations.

Important Information About Finish Scripts

The following information is important to know about finish scripts:

• The Solaris installation program mounts the system’s file systems onto /a. The file systems remain mounted on /a until the system reboots. Therefore, you can use the finish script to add, change, or remove files from the newly installed file system hierarchy by modifying the file systems respective to /a.

• Output from the finish script goes to /var/sadm/finish.log.

• Finish scripts should be owned by root and have permissions equal to 644.

Ideas for Finish Scripts

You could set up finish scripts to perform the following tasks:

• Installing patches

• Restoring backed up files

• Setting up print servers

• Adding entries to the automount map

The following finish scripts are provided as examples:

• Adding files

• Customizing the root environment

• Setting the system’s root password
Adding Files With Finish Scripts

Through a finish script, you can add files from the JumpStart directory to the already installed system. This is possible because the JumpStart directory is mounted on the directory specified by the SI_CONFIG_DIR variable (which is set to /tmp/install_config by default).

Note – You can also replace files by copying files from the JumpStart directory to already existing files on the installed system.

The following procedure enables you to create a finish script to add files to a system after the Solaris software is installed on it:

1. Copy all the files you want added to the installed system into the JumpStart directory.

2. Insert the following line into the finish script for each file you want copied into the newly installed file system hierarchy.

```
cp ${SI_CONFIG_DIR}/file_name /a/path_name
```

For example, assume you have a special application, site_prog, developed for all users at your site. If you place a copy of site_prog into the JumpStart directory, the following finish script would copy the site_prog from the JumpStart directory into a system’s /usr/bin directory during a custom JumpStart installation:

```
#!/bin/sh

cp ${SI_CONFIG_DIR}/site_prog /a/usr/bin
```
Customizing the Root Environment

Through a finish script, you can customize files already installed on the system. For example, the following finish script customizes the root environment by appending information to the .cshrc file in the root directory.

```bash
#!/bin/sh
#
# Customize root’s environment
#
echo "***adding customizations in ~/.cshrc"
test -f a/.cshrc \{
cat » a/.cshrc <<EOF
set history=100 savehist=200 filec ignoreeof prompt="\$user@’uname -n’> "
alias cp cp -i
alias mv mv -i
alias rm rm -i
alias ls ls -FC
alias h history
alias c clear
unset autologout
EOF
\}
```

Setting the System’s Root Password With Finish Scripts

After Solaris software is installed on a system, the system reboots. Before the boot process is completed, the system prompts for the root password. This means that until someone enters a password, the system cannot finish booting.

The auto_install_sample directory provides a finish script called set_root_pw that sets the root password for you. This allows the initial reboot of the system to be completed without prompting for a root password.
The `set_root_pw` file is shown below.

```
#!/bin/sh
#
# @(#)set_root-pw 1.4 93/12/23 SMI
#
# This is an example bourne shell script to be run after installation.
# It sets the system’s root password to the entry defined in PASSWD.
# The encrypted password is obtained from an existing root password entry
# in /etc/shadow from an installed machine.

echo 'setting password for root'

# set the root password
PASSWD=dK05IBkSF42lw
mv /a/etc/shadow /a/etc/shadow.orig
nawk -F: '{
    if ( $1 == "root" )
        printf "%s:%s:%s:%s:%s:%s:%s:%s:%s\n",$1,passwd,$3,$4,$5,$6,$7,$8,$9
    else
        printf "%s:%s:%s:%s:%s:%s:%s:%s:%s\n",$1,$2,$3,$4,$5,$6,$7,$8,$9
} ' passwd="$PASSWD" /a/etc/shadow.orig > /a/etc/shadow

# set the flag so sysidroot won’t prompt for the root password
sed -e 's/# root/1# root/' ${SI_SYS_STATE} > /tmp/state.$$ 
mv /tmp/state.$$ ${SI_SYS_STATE}
```

There are three main things you must do to set the root password in a finish script.

1. Set the variable `PASSWD` to an encrypted root password obtained from an existing entry in a system’s `/etc/shadow` file.
2. Change the root entry in the `/etc/shadow` file for the newly installed system using `PASSWD` as the password field.
3. Change the entry from 0 to a 1 in the state file, so that the user will not be prompted for the root password. The state file is accessed using the variable `SI_SYS_STATE`, whose value currently is `/a/etc/.sysIDtool.state`. (To avoid problems with your scripts if this value changes, always reference this file using `$SI_SYS_STATE`.) The `sed` command shown here contains a tab character after the 0 and after the 1.
Note – If you set your root password by using a finish script, be sure to safeguard against those who will try to discover the root password from the encrypted password in the finish script.

Using \texttt{pfinstall} to Test Profiles

Why Use \texttt{pfinstall}

When \texttt{install\_type initial\_install} is defined in a profile, you can use the \texttt{pfinstall} command to test the profile without actually installing the Solaris software on a system. \texttt{pfinstall} shows the results of how a system would be installed according to the specified profile, before you actually perform a custom JumpStart installation.

Note – You cannot use \texttt{pfinstall} to test a profile using the upgrade option (when the \texttt{initial\_type upgrade} is defined in a profile).

Ways to Use \texttt{pfinstall}

\texttt{pfinstall} enables you to test a profile against:

- The system’s disk configuration where \texttt{pfinstall} is being run.
- A disk configuration file that you can create with the \texttt{prtvtoc} command. A disk configuration file is a file that represents a structure of a disk (for example, bytes/sector, flags, slices). Disk configuration files enable you to use \texttt{pfinstall} from a single system to test profiles on different sized disks.

You must run \texttt{pfinstall} on an x86 system to test profiles for x86 systems (using the x86 system’s disk configuration or an x86 disk configuration file). Conversely, you must run \texttt{pfinstall} on a SPARC system to test profiles for SPARC systems (using the SPARC system’s disk configuration or a SPARC disk configuration file).
How to Use `pfinstall` to Test a Profile

Overview – The procedure to use `pfinstall` to test a profile involves:

• Changing the directory to the JumpStart directory
• Using the `pfinstall` command to test the profile

Follow this procedure to use `pfinstall` to test a profile.

1. To test the profile with a specific system memory size, set `SYS_MEMSIZE` to the specific memory size in Mbytes:

   ```
   $ SYS_MEMSIZE=memory_size
   $ export SYS_MEMSIZE
   ```

2. Change the directory to the JumpStart directory where the profile resides:

   ```
   $ cd jumpstart_dir_path
   ```

   For example, the following command would change the directory to the `jumpstart` directory on the root file system.

   ```
   cd /jumpstart
   ```

3. Run the `pfinstall -d` or `pfinstall -D` command to test the profile:

   ```
   $ /usr/sbin/install.d/pfinstall -D | -d disk_config [-c path] profile
   ```

   In this command,

   `-D` Tells `pfinstall` to use the current system’s disk configuration to test the profile against. You must be root to execute `pfinstall` with the `-D` option.
Task Complete

- `d disk_config`  
  Tells `pfinstall` to use a disk configuration file, `disk_config`, to test the profile against.

- `-c path`  
  Is the path to the Solaris CD. This is required if the Solaris CD is not mounted on `/cdrom`. (For example, use this option if you copied the Solaris CD image to disk or mounted the Solaris CD on a directory other than `/cdrom`).

- `profile`  
  The name of the profile to test.

**Note** – You should run `pfinstall` on a system running the same version of Solaris software that will be installed by the profile. Otherwise, use `pfinstall` on the Solaris CD that will be installed by the profile, which is located in the `/export/exec/arch.Solaris_2.4/sbin/install.d` directory.

Run `pfinstall` from the directory where the `profile` and `disk_config` files reside (which should be the JumpStart directory). If the `profile` or `disk_config` file is not in the directory where `pfinstall` is run, you must specify the path.

4. **Check to see if the results of `pfinstall` are as you expected. If not, change the profile and go to Step 3.**

You have completed testing the profile. To perform a custom JumpStart installation on a system, see Chapter 9, "Booting and Installing Solaris: Custom JumpStart."

**pfinstall Examples**

Below are some examples of using `pfinstall` to test the `basic_prof` profile against the `104_test` disk configuration file:

```
/usr/sbin/install.d/pfinstall -D basic_prof  
/usr/sbin/install.d/pfinstall -d 104_test basic_prof  
/usr/sbin/install.d/pfinstall -D -c /export/install basic_prof
```
How to Create a Disk Configuration File for a SPARC System

A disk configuration file is a file that represents a structure of a disk (for example, bytes/sector, flags, slices). Disk configuration files enable you to use pfinstall from a single system to test profiles on different sized disks.

**Overview** – The procedure to create a disk configuration file for a SPARC system involves:
- Locating a SPARC system with a disk that you want to test a profile against
- Using the `prtvtoc(1M)` command to create the disk configuration file

Follow this procedure to create a disk configuration file.

1. Locate a system with a disk that you want to test a profile against.
2. Determine the device name for the system’s disk.
3. Redirect the output of `prtvtoc` to create the disk configuration file:

   ```
   $ prtvtoc /dev/rdsk/device_name > disk_config
   ```

   In this command,

   `/dev/rdsk/device_name` is the device name of the system’s disk.
   `device_name` must be in the form `cwxrdys2` or `cxrdys2`.

   **Note:** Slice 2 must be specified in `device_name`.

   `disk_config` is the disk configuration file name.

4. Copy the disk configuration file to the JumpStart directory:

   ```
   $ cp disk_config jumpstart_dir_path
   ```

   You have completed creating a disk configuration file. The following page provides an example of creating a disk configuration file.
The following example creates a disk configuration file, `104_test`, on a system with a 104-Mbyte disk, whose device name is `c0t3d0s2`.

```
$ prtvtoc /dev/rdsk/c0t3d0s2 > 104_test
```

In this example, the `104_test` file contains the following information:

```
# cat 104_test
* /dev/rdsk/c0t3d0s2 partition map
*
* Dimensions:
*   512 bytes/sector
*   35 sectors/track
*   6 tracks/cylinder
*   210 sectors/cylinder
*   1019 cylinders
*   974 accessible cylinders
*
* Flags:
*   1: unmountable
*   10: read-only
*   
*
*   
*   Partition Tag Flags  First Sector  Sector Count  Sector Last  Mount Directory
*   0   2  00 0   0   16170   16169
*   1   3  00 16170   28140  44309
*   2   5  00   0  204540  204539
*   6   4  01 44310  160230  204539
```
How to Create a Multiple Disk Configuration File for a SPARC System

If you need to test a profile on multiple disks, you can concatenate disk configuration files together to create multiple disk configuration scenarios.

Overview – The procedure to create a multiple disk configuration file for a SPARC system involves:

• Concatenating two or more disk configuration files into one file
• Changing the target numbers of the disks (if needed)

The following procedure creates a disk configuration file to test a profile on two 104-Mbyte disks:

1. Concatenate the 104_test file with itself and save the output to another file:

   $ cat 104_test 104_test > dual_104_test

2. Make sure that each disk device name is specified with a different target.
For example, the dual_104_test file is shown as follows:

```
# cat dual_104_test
  */dev/rdsk/c0t3d0s2 partition map
  *
  * Dimensions:
  *   512 bytes/sector
  *   35 sectors/track
  *   6 tracks/cylinder
  *   210 sectors/cylinder
  *   1019 cylinders
  *   974 accessible cylinders
  *
  * Flags:
  *   1: unmountable
  *   10: read-only
  *
  *
  *
  *
  *
  *
  *  First  Sector  Last
  * Partition  Tag  Flags  Sector  Count  Sector  Mount  Directory
  0       2     00   0       0     16170  16169
  1       3     00  16170   28140  44309
  2       5     00   0     204540  204539
  6       4     01  44310   160230  204539
```

```
# cat dual_104_test
  */dev/rdsk/c0t0d0s2 partition map
  *
  * Dimensions:
  *   512 bytes/sector
  *   35 sectors/track
  *   6 tracks/cylinder
  *   210 sectors/cylinder
  *   1019 cylinders
  *   974 accessible cylinders
  *
  * Flags:
  *   1: unmountable
  *   10: read-only
  *
  *
  *
  *
  *
  *  First  Sector  Last
  * Partition  Tag  Flags  Sector  Count  Sector  Mount  Directory
  0       2     00   0       0     16170  16169
  1       3     00  16170   28140  44309
  2       5     00   0     204540  204539
  6       4     01  44310   160230  204539
```
This is what was done to the dual_104_test file:

1. The first disk device name was not changed.

2. The second disk device name was changed from /dev/rdsk/c0t3d0s2 to /dev/rdsk/c0t0d0s2. This gives each disk a different target.

You have completed creating a multiple disk configuration file.

Using a Site-Specific Installation Program

Through the use of begin and finish scripts, sites with special requirements can install the Solaris software by creating their own installation program. When a minus sign (-) is specified in the profile field, the begin and finish scripts control how the system is installed, instead of the profile and the Solaris installation program.

For example, if the following rule would match, the x_install.beg begin script and the x_install.fin finish script would install the system named sherlock (the Solaris installation program would not be used):

```
hostname sherlock x_install.beg - x_install.fin
```
Preparing a System for Upgrade

Overview

This chapter provides some guidelines for performing an upgrade installation and for preserving local modifications before upgrading from a previous version of Solaris software.

Can You Use Upgrade?

*Upgrade* and *initial* are options in the Solaris installation program that determine how Solaris software is copied to disk:

- **Upgrade** – This option merges the new version of Solaris software with existing files on the system's disk. It saves as many local modifications as possible.
- **Initial** – This option overwrites the system’s disk with the new version of Solaris software.

---

**Note** – The upgrade option is not available for 4.1.x systems. Because you must use the initial installation option, backing up your data is critical. See the *Solaris 1.x to Solaris 2.x Transition Guide* for information.

---

To determine if your system supports the upgrade, see the following table.
Upgrade Option Is Available

If at least one disk attached to the system has a Solaris 2.1 or later root file system.

1) To determine if the system has a root file system, type the following command:
   \texttt{df -a}
   Look for a line of output similar to the following:

   \begin{verbatim}
   Filesystem     kbytes used   avail capacity Mounted on
   /dev/dsk/c0t1d0s048295 15665  27810  36%       /
   \end{verbatim}

2) To determine if the system is running Solaris 2.1 or later, type the following commands:
   \texttt{cd /var/sadm/softinfo}
   \texttt{more INST_RELEASE}

\textbf{Note} – The upgrade option may require deleting software packages if the disk is full; this requires knowledge of packages and dependencies.

Upgrading and Install Patches

You do not need to back out install patches before performing an upgrade.

Check Other Software Documentation

Check the documentation of other software you are running (e.g. Solstice™ DiskSuite™, FrameMaker®) before using the upgrade option. There may be additional instructions you need to follow to preserve existing configurations.

If You’re Using Custom JumpStart

Make sure you change the profile keyword from initial to upgrade in your profiles.
If You Override the Boot File Location

For Solaris 2.5 and later, the kernel resides in
/platform/<arch>/kernel/unix; not in /kernel/unix. If you override
the boot file location by explicitly setting it to kernel/unix, you can
successfully install Solaris software, but you won’t be able to boot the system.

Upgrading Dataless Clients

Dataless clients do not get automatically upgraded when the OS server is
upgraded. After upgrading the OS server, you must perform an upgrade on
dataless clients.

Important Files For Upgrading

The following files must be present on standalone systems, servers, and each
diskless client being upgraded:
/var/sadm/softinfor/INST_RELEASE
/var/sadm/install/contents
/var/sadm/install_data.clustertoc
/var/sadm/install_data/CLUSTER

Backing Up Your System

Always back up an existing system before using the upgrade option and
installing a new version of Solaris software. The safest backup to perform is a
level 0 dump of all the file systems connected to the system being upgraded. If
you do not have an established backup procedure, see System Administration
Guide, Volume I.
Preserving Local Modifications

During an upgrade, the Solaris installation program attempts to preserve local modifications to the system whenever possible; however, sometimes local modifications can make an upgrade fail or perform differently than you would expect. Table 6-1 indicates tasks you should perform before upgrading to make your upgrade a success.

Table 6-1  Preserving Local Modifications

<table>
<thead>
<tr>
<th>What to Do Before Upgrading</th>
<th>How to</th>
<th>Why</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preserve symbolic links</td>
<td>Replace symbolic links that use absolute paths with symbolic links that use relative paths. For example, if <code>/usr/openwin</code> is a symbolic link to <code>/export/openwin</code> change the symbolic link to <code>../export/openwin</code></td>
<td>During an upgrade, the installation program cannot reference symbolic links that use absolute paths, because the Solaris installation program mounts the root (<code>/</code>) file system at <code>/a</code>. For example, a symbolic link to <code>/export/openwin</code> would fail, because during an upgrade, <code>/export/openwin</code> is really <code>/a/export/openwin</code>. When the Solaris installation program cannot reference a symbolic link, it will overwrite the symbolic link and install the software (the installation program doesn’t think the software exists). As a result, duplicate software will be installed on the system and the upgrade may fail because of insufficient disk space.</td>
</tr>
<tr>
<td>Preserve symbolic links to automounted file systems</td>
<td>Remove packages (by using Software Manager or the <code>pkgrm</code> command) that will create files or directories currently automounted.</td>
<td>The automounter is not active during an upgrade, so the Solaris installation program installs any package’s files or directories that are symbolic links to automounted file systems. If a symbolic link is overwritten, the upgrade may fail because of insufficient disk space. (If you cannot remove a package, you can replace the symbolic link after the upgrade is completed.)</td>
</tr>
</tbody>
</table>

Note: The `/var/mail` and `/var/news` directories, which usually reside on an automounted file system, are not affected by an upgrade.
What to Do Before Upgrading | How to | Why
---|---|---
Prevent unneeded file systems from being mounted | Comment out file systems in the `/etc/vfstab` file that you do not want mounted during an upgrade. | During an upgrade, the Solaris installation program attempts to mount all the file systems listed in the `/etc/vfstab` file on the root file system being upgraded. If the Solaris installation program cannot mount a file system, it reports the failure and exits.

Table 6-1  Preserving Local Modifications  (Continued)
This chapter describes how to perform a JumpStart installation.
1 Make sure you have a new system with the JumpStart software.

<table>
<thead>
<tr>
<th>If the New System Is A ...</th>
<th>Then ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPARCclassic™</td>
<td>You can use the JumpStart method of installing the Solaris software described in this chapter.</td>
</tr>
<tr>
<td>SPARCstation™ IPX</td>
<td></td>
</tr>
<tr>
<td>SPARCstation LX</td>
<td></td>
</tr>
<tr>
<td>SPARCstation 5</td>
<td></td>
</tr>
<tr>
<td>SPARCstation 10</td>
<td></td>
</tr>
<tr>
<td>SPARCstation 10 SX</td>
<td></td>
</tr>
<tr>
<td>SPARCstation 20</td>
<td></td>
</tr>
<tr>
<td>SPARCstation™ 20 Voyager™</td>
<td></td>
</tr>
<tr>
<td>None of above</td>
<td>You must use the interactive method or custom JumpStart method; go back to “Choose a method for installing Solaris software.” on page 11</td>
</tr>
</tbody>
</table>

If the JumpStart software is installed on a system, the Customer Information sheet, which is attached to the outside of the system’s packing box, will have the following entry,

**PRE-INSTALLED SOFTWARE**

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>xxxxxxxx-xx</td>
<td>CODE, P/I JUMPSART 1.1 S4M</td>
</tr>
</tbody>
</table>

and the “JumpStart for SPARC Systems” document will be included with the system’s hardware documentation.
2 Make sure you have reviewed the task map for a JumpStart installation (shown in Figure 2-2 on page 13).

3 Make sure the Solaris software that will automatically be installed meets your needs.

<table>
<thead>
<tr>
<th>If the System is A ...</th>
<th>And the Size of Its Formatted, Internal Disk is Between ...</th>
<th>Then the Following Solaris Software is Installed ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPARCstation Voyager</td>
<td>200 - 9999 Mbytes</td>
<td>Core software group, including the following SUNW packages: audio, bnur, bnuu, lpr, lpu, tltk, xlrt, xildg, xiler, xilow, libms, owrqd, admfw, inst, admap, loc, doc, apppr, apppu, pppk</td>
</tr>
<tr>
<td>SPARCstation 10 SX</td>
<td>320 - 430 Mbytes</td>
<td>Developer software group and the SUNWCsx cluster</td>
</tr>
<tr>
<td>SPARCstation 5</td>
<td>N/A</td>
<td>Entire distribution software group</td>
</tr>
<tr>
<td>SPARCclassic IPX</td>
<td>98 - 108 Mbytes</td>
<td>Core software group, including the following SUNW packages: admr, admap, admfw, bcp, esu, inst, ipc, lpr, lpu, too</td>
</tr>
<tr>
<td>SPARCstation 10</td>
<td>109 - 9999 Mbytes</td>
<td>End user software group</td>
</tr>
</tbody>
</table>
4 If you are using the system’s local CD-ROM drive to install the Solaris software, prepare the CD-ROM drive.

The following instructions cover the most common types of CD-ROM drives. If your CD-ROM drive is not one of the following types, see your hardware manual for instructions.

<table>
<thead>
<tr>
<th>CD-ROM Drive - Caddy Version</th>
<th>CD-ROM Drive - Tray Version</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong> To open the caddy, pinch the corners while lifting the lid at the center lip.</td>
<td><strong>1</strong> Press the eject button on the front panel of the CD-ROM drive (a tray will emerge if you have this type of caddy).</td>
</tr>
<tr>
<td><img src="image1.png" alt="Caddy Version" /></td>
<td><img src="image2.png" alt="Tray Version" /></td>
</tr>
<tr>
<td><strong>2</strong> Insert the Solaris CD (logo up) and close the caddy.</td>
<td><strong>2</strong> Insert the Solaris CD (logo up) into the tray.</td>
</tr>
<tr>
<td><img src="image3.png" alt="Caddy Version" /></td>
<td><img src="image4.png" alt="Tray Version" /></td>
</tr>
<tr>
<td><strong>3</strong> With the arrow on the caddy pointing toward the CD-ROM drive, insert the caddy.</td>
<td><strong>3</strong> Push the tray back into CD-ROM drive.</td>
</tr>
</tbody>
</table>
5 **Turn on the components in the order recommended in your hardware guide.**

<table>
<thead>
<tr>
<th>If System Begins to Boot ...</th>
<th>If System Displays the &gt; or ok Prompt ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>You will see messages displayed on the screen indicating hardware and system components are being checked. The booting phase can last for several minutes.</td>
<td>Your system does not have the JumpStart software. Go back to page 11 and choose another method of installing Solaris software.</td>
</tr>
</tbody>
</table>

**Note:** During the booting phase, OpenWindows is started for localization reasons, or for the graphical user interface; however, OpenWindows is not fully installed until Solaris software is installed.

6 **If prompted, provide information about the system.**

After the booting phase, the Solaris installation program may be displayed on the screen, prompting you to provide information about the system.

7 **Wait as the Solaris installation program automatically installs the Solaris software on the system.**

You’re done for awhile; installing the Solaris software can take between 15 minutes and 2 hours. After a successful installation, the system will reboot and you’re ready for Step 8.

8 **Start the OpenWindows software to display the desktop:**

```
$ /usr/openwin/bin/openwin
```

For post-installation information, see Chapter 11, “Where to Go After Installing Solaris.”
This chapter provides procedures to boot a system and perform an interactive installation using the Solaris installation program. If you’re using the:

- **Initial installation option** – you can choose the defaults shown and have software automatically laid out for you, or you can customize the software and file system layout.

- **Upgrade option** – you choose the disk for upgrading, add or delete software if desired, then start the upgrade.

The procedure in this chapter should be done on the system that is being installed.
1 If you are using the system's local CD-ROM drive to install the Solaris software on the system, prepare the CD-ROM drive.

The following instructions cover the most common types of CD drives. If your CD drive is not one of the following types, see your hardware manual for instructions.

<table>
<thead>
<tr>
<th>CD-ROM Drive - Caddy Version</th>
<th>CD-ROM Drive - Tray Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 To open the caddy, pinch the corners while lifting the lid at the center.</td>
<td>Press the eject button on the front panel of the CD-ROM drive (a tray will emerge if you have this type of caddy).</td>
</tr>
<tr>
<td>2 Insert the Solaris CD (logo up) and close the caddy.</td>
<td>2 Insert the Solaris CD (logo up) into the tray.</td>
</tr>
<tr>
<td>3 With the arrow on the caddy pointing toward the CD-ROM drive, insert the caddy.</td>
<td>3 Push the tray back into CD-ROM drive.</td>
</tr>
</tbody>
</table>
2 Make sure you’ve reviewed the task map for an interactive installation (Figure 2-3 on page 14).

3 If you are installing a system connected through a tip line, ensure that your window display is at least 80 columns wide and 24 rows long.

Otherwise, the character installation interface will display improperly. You can use the `stty` command to find out the current dimensions of your tip window.

4 Follow these instructions before you boot the system:

<table>
<thead>
<tr>
<th>If The System Is ...</th>
<th>Then ...</th>
</tr>
</thead>
</table>
| Off                  | 1) Turn on the system components in the order recommended in the hardware guide.  
Caution: If the system starts booting, press L1-A or Stop-A.  
2) Go to Step 5. |
| On                   | 1) If the system is running Solaris, enter the following commands:  
   $ su root  
   # halt  
2) Go to Step 5. |

5 If the screen displays the `>` prompt instead of the `ok` prompt, then enter `n` and press Return.

The screen should now display the `ok` prompt.
6 **Boots the system using the appropriate boot command:**

<table>
<thead>
<tr>
<th>If You Are Booting ...</th>
<th>And The System You Are Booting Is ...</th>
<th>Then Enter ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>From a server on the network</td>
<td>n/a</td>
<td>boot net</td>
</tr>
<tr>
<td>From the system's local CD-ROM drive</td>
<td>SPARCstation 1 (4/60)</td>
<td>boot sd(0,6,2)</td>
</tr>
<tr>
<td></td>
<td>SPARCstation 1+ (4/65)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SPARCstation SLC™ (4/20)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SPARCstation IPC™ (4/40)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SPARCengine™ 1E</td>
<td>boot sd(0,6,5)</td>
</tr>
<tr>
<td></td>
<td>All other Sun systems</td>
<td>boot cdrom</td>
</tr>
</tbody>
</table>

7 **Wait for booting to complete.**

After you type the boot command, the system goes through a booting phase where hardware and system components are checked. This lasts for several minutes. The following screen provides an example of what you should see.

```
Type b (boot), c (continue), or n (new command mode)
> n
Type help for more information
ok boot sd(0,6,2)
Booting from: sd(0,6,2)
SunOS Release 5.4 Version [UNIX(R) System V Release]
Copyright (c) 1983-1994, Sun Microsystems, Inc.
WARNING: clock gained 35 days -- CHECK AND RESET THE DATE!
Configuring the /devices directory
Configuring the /dev directory
Starting OpenWindows...
```

8 **Install the Solaris software on the system by using the Solaris installation program displayed on the screen.**

You are now in the hands of the Solaris installation program. This menu-driven, interactive program guides you step-by-step through installing Solaris software; it also has online help to answer your questions. As shown below, the program has two interfaces to accommodate different hardware.
If you want to record your responses, use the work sheet in Appendix A, "Worksheets for the Solaris Installation Program." There is also a time zone map on page 178 to help you set your system’s time clock.

<table>
<thead>
<tr>
<th>If Your System Has A ...</th>
<th>Then the Interface Is ...</th>
<th>And the Navigation Device Is ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graphics monitor</td>
<td>Graphics-based</td>
<td>Mouse</td>
</tr>
<tr>
<td></td>
<td>The Solaris Installation Program</td>
<td></td>
</tr>
<tr>
<td></td>
<td>You are now interacting with the Solaris installation program. The program is divided into a series of short sections. At the end of each section, you will see a summary of the choices you’ve made, and be given the opportunity to make changes.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Continue</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exit</td>
</tr>
<tr>
<td>Non-graphics monitor,</td>
<td>Character-based</td>
<td>Keyboard</td>
</tr>
<tr>
<td>or an unsupported</td>
<td>--- The Solaris Installation Program</td>
<td></td>
</tr>
<tr>
<td>graphics card</td>
<td>You are now interacting with the Solaris installation program. The program is divided into a series of short sections. At the end of each section, you will see a summary of the choices you’ve made, and be given the opportunity to make changes.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>F2_Continue</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F5_Help</td>
</tr>
</tbody>
</table>

9 If you used the upgrade option, see Chapter 10, “Completing an Upgrade,” for information needed to complete an upgrade.

You must reboot the system after an upgrade.
10 Start the OpenWindows software to display the desktop:

```
$ /usr/openwin/bin/openwin
```

11 If you've allocated space for diskless clients, dataless clients, or AutoClient systems during the Solaris installation program, you must use the Solstice Host Manager to complete set up of these clients.

The Solaris installation program only allocates space for clients during an initial installation. The Solstice Host Manager completes client set up by providing their required directories. See the System Administration Guide, Volume I.

For post-installation information, see Chapter 11, “Where to Go After Installing Solaris.”
This chapter provides a procedure to boot a system and perform a custom JumpStart installation using profiles you’ve created to install Solaris software. If you’re using the:

- **Initial installation option** – Solaris software is automatically installed on the system after you boot the system (or turn on the system in some cases).
- **Upgrade option** – the system is automatically upgraded to new version of Solaris software after you boot the system.

The procedure in this chapter should be done on the system that is being installed.
1 If you are using the system's local CD-ROM drive to install the Solaris software on the system, prepare the CD-ROM drive.

The following instructions cover the most common types of CD drives. If your CD drive is not one of the following types, see your hardware manual for instructions.

<table>
<thead>
<tr>
<th>CD-ROM Drive - Caddy Version</th>
<th>CD-ROM Drive - Tray Version</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="caddy.png" alt="Caddy Version Instructions" /></td>
<td><img src="tray.png" alt="Tray Version Instructions" /></td>
</tr>
</tbody>
</table>

1. To open the caddy, pinch the corners while lifting the lid at the center lip.
2. Insert the Solaris CD (logo up) and close the caddy.
3. With the arrow on the caddy pointing toward the CD-ROM drive, insert the caddy.

1. Press the eject button on the front panel of the CD-ROM drive (a tray will emerge if you have this type of caddy).
2. Insert the Solaris CD (logo up) into the tray.
3. Push the tray back into CD-ROM drive.
2 Make sure you reviewed the task map for a custom JumpStart installation (shown in Figure 2-4 on page 15).

3 If you are using a diskette to perform a custom JumpStart installation, insert a diskette that contains a JumpStart directory into the system’s diskette drive.

4 Follow the instructions before you boot the system:

If the system has the JumpStart software installed (on new or re-preinstalled systems), turn on the system and go to Step 7.

<table>
<thead>
<tr>
<th>If The System Is ...</th>
<th>Then ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td>1) Turn on the system components in the order recommended in the hardware guide.</td>
</tr>
<tr>
<td></td>
<td>Caution: If the system starts booting, press L1-A or Stop-A.</td>
</tr>
<tr>
<td></td>
<td>2) Go to Step 5.</td>
</tr>
<tr>
<td>On</td>
<td>1) If the system is running Solaris, enter the following commands:</td>
</tr>
<tr>
<td></td>
<td>$ su root</td>
</tr>
<tr>
<td></td>
<td># halt</td>
</tr>
<tr>
<td></td>
<td>2) Go to Step 5.</td>
</tr>
</tbody>
</table>

5 If the screen displays the > prompt instead of the ok prompt, then enter n and press Return.

The screen should now display the ok prompt.
### 6 Boot the system using the appropriate boot command:

| If You Are Booting ... | And the System You Are Booting Is ... | Then Enter ...  
1. ____________ | ____________ |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>From a server on the network</td>
<td>n/a</td>
<td>boot net - install</td>
</tr>
<tr>
<td>From the system's local CD-ROM drive</td>
<td>SPARCstation 1 (4/60)</td>
<td>boot sd(0,6,2) - install</td>
</tr>
<tr>
<td></td>
<td>SPARCstation 1+ (4/65)</td>
<td>boot sd(0,6,2) - install</td>
</tr>
<tr>
<td></td>
<td>SPARCstation SLC (4/20)</td>
<td>boot sd(0,6,2) - install</td>
</tr>
<tr>
<td></td>
<td>SPARCstation IPC (4/40)</td>
<td>boot sd(0,6,2) - install</td>
</tr>
<tr>
<td></td>
<td>SPARCengine 1E</td>
<td>boot sd(0,6,5) - install</td>
</tr>
<tr>
<td></td>
<td>All other Sun systems</td>
<td>boot cdrom - install</td>
</tr>
</tbody>
</table>

1. ____________ | ____________ |

1. A space is required between the minus sign and install.
7 Wait for booting to be completed.

After you type the boot command, the system will go through a booting phase where various hardware and system components are checked. The following screen provides an example of what you should see:

```
Type b (boot), c (continue), or n (new command mode)
>n
Type help for more information
ok boot net - install
Booting from: le(0,0,0) - install
2bc00 hostname: sherlock
domainname: england.com
root server: london
root directory: /cdrom/solaris_2_5_sparc/s0/export/exec/kvm/sparc.sun4c.Solaris_2.4
SunOS Release 5.5 Version [UNIX(R) System V Release]
Copyright (c) 1983-1994, Sun Microsystems, Inc.
Configuring the /devices directory
Configuring the /dev directory
Searching for JumpStart directory...using london:/jumpstart
Starting OpenWindows...
```

Note – The booting phase will last for a few minutes.

8 If prompted, provide information about the system.

After the booting phase, the Solaris installation program may be displayed on the screen, prompting you to provide information about the system.

9 Wait as the Solaris installation program automatically installs the Solaris software on the system.

You’re done for awhile; installing Solaris software can take between 15 minutes and 2 hours.
10 Start the OpenWindows software to display the desktop:

```bash
$ /usr/openwin/bin/openwin
```

11 If you used the upgrade option, see Chapter 10, “Completing an Upgrade,” for information needed to complete an upgrade.

You must reboot the system after an upgrade.

12 If you installed Solaris on a server and allocated space for diskless clients, dataless clients, or AutoClient systems, and you selected the initial installation option, you must use the Solstice Host Manager to complete set up of these clients.

The Solaris installation program only allocates space for clients during an initial installation. The Solstice Host Manager completes client set up by providing their required directories. See the System Administration Guide, Volume I.

For post-installation information, see Chapter 11, “Where to Go After Installing Solaris.”
Completing an Upgrade

Overview

This chapter describes files to check and steps for completing an upgrade.

What Happened During the Upgrade

A record of what the installation program did during an upgrade can be important to determine if the upgrade was a success. The output of the upgrade is saved in the following files:

- If upgrade fails – /a/var/sadm/system/logs/upgrade_log
- If upgrade completes and system reboots – /var/sadm/system/logs/upgrade_log

Cleaning Up the System After an Upgrade

During an upgrade, the Solaris installation program merges local software modifications of the existing system with the new software; however, in some cases, it is not possible. The following file provides a list of the unpreserved local modifications during the upgrade that may need to be fixed:

- If upgrade fails – /a/var/sadm/system/data/upgrade_cleanup
- If upgrade completes and system reboots – /var/sadm/system/data/upgrade_cleanup
Table 10-1 provides the entry descriptions of the unpreserved local modifications that may be found in the upgrade cleanup file.

Table 10-1 Entry Descriptions of the upgrade_cleanup File

<table>
<thead>
<tr>
<th>Entry</th>
<th>Explanation</th>
<th>Recommended Action</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>file1</code>: existing file renamed to <code>file2</code></td>
<td><code>file1</code> was on the system at the time of the upgrade. It had been modified since its original installation, so upgrade renamed <code>file1</code> to <code>file2</code> and saved the new file as <code>file1</code>.</td>
<td>Determine whether the modifications made to <code>file2</code> should be made to the new version of the file, <code>file1</code>.</td>
</tr>
<tr>
<td><code>file1</code>: existing file preserved, the new version was installed as <code>file2</code></td>
<td><code>file1</code> has been preserved, and upgrade installed the new version of the file as <code>file2</code>.</td>
<td>Determine whether the differences in the new version of <code>file2</code> should be incorporated into the preserved version of <code>file1</code>.</td>
</tr>
<tr>
<td><code>file</code>: had been deleted and has now been restored</td>
<td><code>file</code> had been deleted from the system since its original installation, and the upgrade installed the new version of <code>file</code>.</td>
<td>Determine whether <code>file</code> should be deleted.</td>
</tr>
<tr>
<td><code>file</code>: file type was changed from <code>type1</code> to <code>type2</code></td>
<td><code>file</code> has changed types since its original installation, from <code>type1</code> to <code>type2</code>. For example, you may have changed an actual file to be a symbolic link. The upgrade changed <code>file</code> back to its original type, <code>type1</code>.</td>
<td>Determine whether <code>file</code> should be changed back to <code>type2</code>.</td>
</tr>
<tr>
<td><code>file</code>: target of symbolic link was changed from <code>target1</code> to <code>target2</code></td>
<td>Since the original installation, <code>file</code> was changed to be a symbolic link to <code>target2</code> instead of <code>target1</code>. The upgrade changed <code>file</code> to point to its original <code>target1</code>.</td>
<td>Determine whether <code>file</code> should be changed to point to <code>target2</code>.</td>
</tr>
<tr>
<td><code>file1</code>: target of hard link was changed from <code>file2</code></td>
<td>When originally installed, <code>file1</code> was a hard link to <code>file2</code>. At the time of the upgrade, <code>file1</code> was no longer a hard link to <code>file2</code>. Upgrade restores the original hard link.</td>
<td>Determine whether <code>file1</code> should be changed to what it was before the upgrade.</td>
</tr>
</tbody>
</table>
How to Upgrade Clients With Different Platforms and Platform Groups

If you've upgraded a heterogeneous OS server, clients of that server are automatically upgraded only if their platform (SPARC, x86) and platform group (for example, sun4d, sun4L, i386) is supported by the Solaris CD. For example, if you upgrade a SPARC server using the SPARC Solaris CD, only SPARC clients that share the platform group on the CD are upgraded.

To upgrade clients with different platforms and platform groups, you must use the server_upgrade command. See the server_upgrade man page or x86: Solaris 2.5 Installation Notes or the SPARC: Installing Solaris Software for more instructions.
Where to Go After Installing Solaris

Table 11-1 shows the Solaris documentation that you may need after installing the Solaris software on a system. For a complete description of all the Solaris 2.5 documentation, refer to the Solaris 2.5 Introduction.

Note – Some SPARC systems require that you add additional software before Solaris software is completely installed. Check your hardware vendor documentation to see if your vendor requires any additional software to run Solaris. For instructions on adding software, see the Solstice AdminSuite 2.1 User’s Guide.

Table 11-1 Where to Go After Installing Solaris Software

<table>
<thead>
<tr>
<th>Information Needed</th>
<th>Manual Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adding and removing Solaris, third-party, or unbundled software</td>
<td>Solstice AdminSuite 2.1 User’s Guide</td>
</tr>
<tr>
<td>Setting up mail accounts</td>
<td>Mail Administration Guide</td>
</tr>
</tbody>
</table>
Table 11-1 Where to Go After Installing Solaris Software (Continued)

<table>
<thead>
<tr>
<th>Information Needed</th>
<th>Manual Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installing software (for example AnswerBooks)</td>
<td><em>System Administration Guide, Volume I</em></td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> The End User AnswerBook is the only AnswerBook installed with the Solaris software; and only installed if the entire distribution software group is installed.</td>
</tr>
<tr>
<td>Setting up user accounts</td>
<td><em>System Administration Guide, Volume I</em></td>
</tr>
<tr>
<td>Halting a system</td>
<td><em>System Administration Guide, Volume I</em></td>
</tr>
<tr>
<td>Boot files</td>
<td><em>System Administration Guide, Volume I</em></td>
</tr>
<tr>
<td>Adding systems to a network</td>
<td><em>System Administration Guide, Volume I</em></td>
</tr>
<tr>
<td>Accessing remote files and systems</td>
<td><em>System Administration Guide, Volume I</em></td>
</tr>
<tr>
<td>Administering file systems</td>
<td><em>System Administration Guide, Volume I</em></td>
</tr>
<tr>
<td>Setting up system security</td>
<td><em>System Administration Guide, Volume I</em></td>
</tr>
<tr>
<td>CD-ROM and diskette drives</td>
<td><em>System Administration Guide, Volume I</em></td>
</tr>
<tr>
<td>Setting up printers</td>
<td><em>System Administration Guide, Volume II</em></td>
</tr>
<tr>
<td>Increasing your system’s performance</td>
<td><em>System Administration Guide, Volume II</em></td>
</tr>
<tr>
<td>Managing disk use</td>
<td><em>System Administration Guide, Volume II</em></td>
</tr>
<tr>
<td>Examining and changing system information</td>
<td><em>System Administration Guide, Volume II</em></td>
</tr>
<tr>
<td>Using crontabs</td>
<td><em>System Administration Guide, Volume II</em></td>
</tr>
<tr>
<td>Information Needed</td>
<td>Manual Title</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Adding and Maintaining Peripherals</td>
<td><em>System Administration Guide, Volume II</em></td>
</tr>
<tr>
<td>Accessing devices</td>
<td><em>System Administration Guide, Volume II</em></td>
</tr>
<tr>
<td>Setting up disks</td>
<td><em>System Administration Guide, Volume II</em></td>
</tr>
<tr>
<td>Terminals and modems,</td>
<td><em>System Administration Guide, Volume II</em></td>
</tr>
<tr>
<td>disk drives, tape drives,</td>
<td></td>
</tr>
<tr>
<td>service access facility,</td>
<td></td>
</tr>
<tr>
<td>connecting devices to serial port</td>
<td></td>
</tr>
<tr>
<td>format utility</td>
<td></td>
</tr>
<tr>
<td>Using system administration tools</td>
<td><em>Solstice AdminSuite 2.1 User’s Guide</em></td>
</tr>
</tbody>
</table>
Worksheets for the Solaris Installation Program

What's in the Worksheets

The worksheets list information that may need to be supplied during the Solaris installation program. There are separate worksheets for the initial and upgrade options.

How to Use the Worksheets

The worksheets can be used before installing Solaris software, or to record your responses when you install Solaris software. For example, if you’re a system administrator of a large site and need to delegate the task of installing Solaris software to less-experienced staff, you can fill out the worksheet in advance; installers will know exactly how you want them to install Solaris software on their system, thus reducing the errors that come from guessing.

Note – If you’re using the following worksheet to gather information before installing Solaris software, you can ignore shaded areas if you are installing a system as a standalone, non-networked system.
### Worksheet for the Initial Installation Option

The following worksheet lists important information you may need to supply when installing Solaris software on a system for the first time.

<table>
<thead>
<tr>
<th>Information You May Need When Installing Solaris</th>
<th>Description/Example</th>
<th>Work Space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host name</td>
<td>Host name of the system. Example: sherlock</td>
<td></td>
</tr>
<tr>
<td>Network connectivity</td>
<td>Is the system connected to a network?</td>
<td></td>
</tr>
<tr>
<td>Primary network interface</td>
<td>Primary network interface for the system. Example: le0</td>
<td></td>
</tr>
<tr>
<td>IP address</td>
<td>Internet protocol address of the system you’re installing. Example: 129.221.2.1</td>
<td></td>
</tr>
<tr>
<td>Name service</td>
<td>Is the system a client of NIS+ or NIS? Part of another name service? Or is a name service not yet established? Example: Other, DCE</td>
<td></td>
</tr>
<tr>
<td>Domain name</td>
<td>Domain in which the system resides. Example: chandy.West.Arp.COM</td>
<td></td>
</tr>
<tr>
<td>Name server</td>
<td>Specify a name server for the system, or have software try to find one?</td>
<td></td>
</tr>
</tbody>
</table>
### Information You May Need When Installing Solaris

<table>
<thead>
<tr>
<th>Information You May Need</th>
<th>Description/Example</th>
<th>Work Space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name server information</td>
<td>Name server’s host name and IP address. Example: toucan, 125.221.2.1</td>
<td></td>
</tr>
<tr>
<td>Subnet</td>
<td>Is the system part of a subnet?</td>
<td></td>
</tr>
<tr>
<td>Netmask</td>
<td>Netmask of the subnet. Example: 255.255.0.0</td>
<td></td>
</tr>
<tr>
<td>Time zone</td>
<td>Default time zone. Can be set by selecting geographic region, hours offset from GMT, or by pointing to a file in /usr/share/zoneinfo directory. Example: US/Mountain</td>
<td></td>
</tr>
<tr>
<td>System type</td>
<td>System type: standalone system, OS server, or dataless client?</td>
<td></td>
</tr>
<tr>
<td>Select platforms</td>
<td>All the platforms for clients that are different from the OS server’s platform (see Appendix C, “Platform Names and Groups”).</td>
<td></td>
</tr>
<tr>
<td>Allocate client services</td>
<td>Number of clients the OS server will support. Example: 5 (default)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of megabytes of swap, root, or both to assign clients. Example: 24 Mbytes (default)</td>
<td></td>
</tr>
<tr>
<td>Information You May Need When Installing Solaris</td>
<td>Description/Example</td>
<td>Work Space</td>
</tr>
<tr>
<td>-------------------------------------------------</td>
<td>----------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Dataless clients</td>
<td><strong>Note:</strong> SunSoft plans to remove support for the dataless client system type after Solaris 2.5. You can select this system type now, but in future releases you will need to select a different type. Host names and IP addresses of the server(s) where dataless clients will mount their <code>/usr</code> file systems. Example: morton, 112.221.2.1, <code>/export/home</code></td>
<td></td>
</tr>
<tr>
<td>Languages</td>
<td>Language(s) to select for displaying the user interface after installing Solaris software. Example: French, Spanish</td>
<td></td>
</tr>
<tr>
<td>Information You May Need When Installing Solaris</td>
<td>Description/Example</td>
<td>Work Space</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Software</td>
<td>Which software group to install?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Core</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• End user system support</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Developer system support</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Entire distribution</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Entire distribution plus OEM support</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Should the software group be customized?</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> Removing or adding software often creates software dependencies; system administration knowledge is often required to fix dependencies.</td>
<td></td>
</tr>
<tr>
<td>Disk(s) to install Solaris software on</td>
<td>Disk(s) for installing Solaris.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Example: c0t0d0, c0t3d0, c0t4d1</td>
<td></td>
</tr>
<tr>
<td>Auto-layout file systems?</td>
<td>Should file systems be laid out on disks automatically or manually?</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> Manual layout requires advanced system administration skills.</td>
<td></td>
</tr>
<tr>
<td>File systems to auto-layout</td>
<td>Which file systems should be used for auto-layout?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Example: /, /opt, /var</td>
<td></td>
</tr>
<tr>
<td>Preserve existing data?</td>
<td>Should existing data on disk(s) be preserved?</td>
<td></td>
</tr>
<tr>
<td>Information You May Need When Installing Solaris</td>
<td>Description/Example</td>
<td>Work Space</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>---------------------</td>
<td>------------</td>
</tr>
</tbody>
</table>
| Disk slices to preserve data                   | Which slices should be preserved?  
Example: /opt on c0t2d2 |            |
| File system and disk layout                    | Accept the layout of file systems as created by auto-layout or manual layout, or customize?  
Note: Customizing requires advanced system administration skills. |            |
| Mount remote file systems?                     | Mount remote file systems from a server? |            |
| Mount remote file systems                      | Provide remote file system information:  
• Local mount point  
• Server’s host name  
• Server’s IP address  
• File system path  
Example:  
Server: mitra  
Server IP address: 129.222.2.2  
File system path: /export/home  
Local mount point: /export |            |
| Reboot                                         | Reboot after installing Solaris? |            |
| Root password                                  | Create root password.  
Example: cat6file |            |
**Worksheet for the Upgrade Option**

The following worksheet lists the important information you may need to supply when upgrading a system from Solaris 2.1 or later.

<table>
<thead>
<tr>
<th>Information You May Need When Upgrading Solaris</th>
<th>Description/Example</th>
<th>Work Space</th>
</tr>
</thead>
</table>
| Host name                                     | Host name of the system  
Example: sherlock      |            |
| Network connectivity                          | Is the system connected to a network? |            |
| Primary network interface                     | Primary network interface for the system.  
Example: le0           |            |
| IP address                                    | Internet protocol address of the system you're installing.  
Example: 129.221.2.1    |            |
| Name service                                  | Is the system a client of NIS+ or NIS? Part of another name service? Or is a name service not yet established?  
Example: Other, DCE     |            |
| Domain name                                   | Domain in which the system resides.  
Example: chandon        |            |
<table>
<thead>
<tr>
<th>Information You May Need When Upgrading Solaris</th>
<th>Description/Example</th>
<th>Work Space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name server</td>
<td>Specify a name server for the system, or have software try to find one?</td>
<td></td>
</tr>
</tbody>
</table>
| Name server information                       | Name server’s host name and IP address.  
Example: toucan, 125.221.2.1 |            |
| Subnet                                        | Is the system part of a subnet? |            |
| Netmask                                       | Netmask of the subnet.  
Example: 255.255.0.0 |            |
| Time zone                                     | Default time zone. Can be set by selecting geographic region, hours offset from GMT, or by pointing to a file in /usr/share/zoneinfo directory.  
Example: US/Mountain |            |
| Installing Solaris - upgrade or initial?      | Choose the upgrade or initial option for installing Solaris. |            |
| Disks to upgrade                              | Select a disk to use for upgrading to new version of Solaris.  
Example: c0d0t0 |            |
<table>
<thead>
<tr>
<th>Information You May Need When Upgrading Solaris</th>
<th>Description/Example</th>
<th>Work Space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Languages</td>
<td>Language(s) to select for displaying the user interface after installing Solaris software. Example: French, Spanish</td>
<td></td>
</tr>
<tr>
<td>Customizing software?</td>
<td>Do you want to customize software before starting the upgrade?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Note: Removing or adding software often creates software dependencies; system administration knowledge is often required to fix dependencies.</td>
<td></td>
</tr>
</tbody>
</table>
For your convenience, the following pages contain system identification labels (a sample, and one for photocopying). Attach them to systems at your site so users have access to information needed to install Solaris software and operate their system.
Sample - System Identification Label

As shown in the following sample, system identification labels can provide a quick reference to important system information.

<table>
<thead>
<tr>
<th>Host name: royalt</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Boot command</strong></td>
</tr>
<tr>
<td><strong>System type</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Platform name</strong></td>
</tr>
<tr>
<td><strong>Terminal type</strong></td>
</tr>
<tr>
<td><strong>Networked?</strong></td>
</tr>
<tr>
<td><strong>Primary network interface</strong></td>
</tr>
<tr>
<td><strong>IP address</strong></td>
</tr>
<tr>
<td><strong>Name service</strong></td>
</tr>
<tr>
<td><strong>Domain name</strong></td>
</tr>
<tr>
<td><strong>Name server and IP address</strong></td>
</tr>
<tr>
<td><strong>System part of a subnet?</strong></td>
</tr>
<tr>
<td><strong>Netmask</strong></td>
</tr>
<tr>
<td><strong>Ethernet address</strong></td>
</tr>
</tbody>
</table>
System Identification Label

Photocopying the following label and identifying system information for each system provides a quick reference for users.

<table>
<thead>
<tr>
<th>Host name:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Boot command</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>System type</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Standalone system</td>
</tr>
<tr>
<td>□ OS server</td>
</tr>
<tr>
<td>□ Diskless client</td>
</tr>
<tr>
<td>□ Dataless client</td>
</tr>
<tr>
<td>□ AutoClient system</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Platform name</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Terminal type</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Networked?</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Primary network interface</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>IP address</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Name service</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Domain name</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Name server</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>System part of a subnet?</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Netmask</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Ethernet address</th>
</tr>
</thead>
</table>
Platform Names and Groups

Table C-1 shows the platform names of various hardware platforms. You may need this information when preparing a system to install Solaris software.

Use `uname -i` to determine a system's platform name; use `uname -m` to determine a system's platform group.

Table C-1 Platform Names and Groups

<table>
<thead>
<tr>
<th>System</th>
<th>Platform Name</th>
<th>Platform Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>x86</td>
<td>i86pc</td>
<td>i86pc</td>
</tr>
<tr>
<td>SPARCstation 1</td>
<td>SUNW,Sun_4_60</td>
<td>sun4c</td>
</tr>
<tr>
<td>SPARCstation 1+</td>
<td>SUNW,Sun_4_65</td>
<td>sun4c</td>
</tr>
<tr>
<td>SPARCstation SLC</td>
<td>SUNW,Sun_4_20</td>
<td>sun4c</td>
</tr>
<tr>
<td>SPARCstation ELC</td>
<td>SUNW,Sun_4_25</td>
<td>sun4c</td>
</tr>
<tr>
<td>SPARCstation IPC</td>
<td>SUNW,Sun_4_40</td>
<td>sun4c</td>
</tr>
<tr>
<td>SPARCstation IPX</td>
<td>SUNW,Sun_4_50</td>
<td>sun4c</td>
</tr>
<tr>
<td>SPARCstation 2</td>
<td>SUNW,Sun_4_75</td>
<td>sun4c</td>
</tr>
<tr>
<td>SPARCcenter 1000</td>
<td>SUNW,SPARCserver-1000</td>
<td>sun4d</td>
</tr>
<tr>
<td>SPARCcenter 2000</td>
<td>SUNW,SPARCcenter-2000</td>
<td>sun4d</td>
</tr>
<tr>
<td>System</td>
<td>Platform Name</td>
<td>Platform Group</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>SPARCstation 5</td>
<td>SUNW,SPARCstation-5</td>
<td>sun4m</td>
</tr>
<tr>
<td>SPARCstation 10</td>
<td>SUNW,SPARCstation-10</td>
<td>sun4m</td>
</tr>
<tr>
<td>SPARCstation 10SX</td>
<td>SUNW,SPARCstation-10,SX</td>
<td>sun4m</td>
</tr>
<tr>
<td>SPARCstation 20</td>
<td>SUNW,SPARCstation-20</td>
<td>sun4m</td>
</tr>
<tr>
<td>SPARCServer6xx</td>
<td>SUNW,SPARCsystem-600</td>
<td>sun4m</td>
</tr>
<tr>
<td>SPARCstation LX</td>
<td>SUNW,SPARCstation-LX</td>
<td>sun4m</td>
</tr>
<tr>
<td>SPARCstation LX+</td>
<td>SUNW,SPARCstation-LX+</td>
<td>sun4m</td>
</tr>
<tr>
<td>SPARCclassic</td>
<td>SUNW,SPARCclassic</td>
<td>sun4m</td>
</tr>
<tr>
<td>SPARCclassic X</td>
<td>SUNW,SPARCclassic-X</td>
<td>sun4m</td>
</tr>
<tr>
<td>SPARCengine EC3</td>
<td>SUNW,SPARCengine-EC-3</td>
<td>sun4m</td>
</tr>
<tr>
<td>SPARCstation Voyager</td>
<td>SUNW,S240</td>
<td>sun4m</td>
</tr>
<tr>
<td>Sun Ultra 1 Model 140</td>
<td>SUNW,Ultra1-140</td>
<td>sun4u</td>
</tr>
<tr>
<td>Other SPARC systems</td>
<td>See your hardware vendor documentation for platform name information.</td>
<td></td>
</tr>
</tbody>
</table>
Sample Custom JumpStart Installation

This example shows a set of steps a system administrator would take to do a custom JumpStart installation for a fictitious site.

Sample Site Setup

Figure D-1 shows the sample site setup for this example.

Figure D-1  Sample Site Setup
At this fictitious site:

- The engineering group is on its own subnet. This group uses 32-Mbyte Sun IPX systems for software development.
- The marketing group is on its own subnet. This group uses 16-Mbyte Sun ELC systems for running word processing, spreadsheets, and other office tools.
- The site uses NIS+. The Ethernet addresses, IP addresses, and host names are in NIS+ tables.
- The engineering server named server_1 has a copy of Solaris 2.4 software on its local disk in a directory named /export/install. Both the engineering and marketing groups will install Solaris software over the network from server_1.

1 **Create a JumpStart directory.**

The administrator sets up a JumpStart directory on the install server, server_1. This directory will hold files necessary for a custom JumpStart installation of Solaris software. The easiest way to set up this directory is to copy the sample directory from the copy of the Solaris CD that has been put in /export/install.

```
# cp -r /export/install/auto_install_sample /jumpstart
```
2 Share the JumpStart directory.

The system administrator shares the /jumpstart directory so that the rules file and profiles are accessible to systems on the network. To accomplish this, the administrator adds the following line to the /etc/dfs/dfstab file:

```
share -F nfs -o ro,anon=0 /jumpstart
```

Then, at the command line, the administrator uses the unshareall and shareall commands:

```
# unshareall
# shareall
```

3 Create the eng_profile profile.

The administrator creates a file named eng_profile in the /jumpstart directory. The eng_profile file has the following entries, which define the Solaris software to be installed on systems in the engineering group.

```
1  install_type  initial_install
2  system_type   standalone
3  partitioning  default
4  cluster       SUNWCprog
5  filesys       any 50 swap
```

1 Specifies that the installation will be treated as an initial installation, as opposed to an upgrade.
2 Specifies that the engineering systems are standalone systems.
3 Specifies that the JumpStart software uses default disk partitioning for installing Solaris software on the engineering systems.
4 Specifies that the developer’s software cluster will be installed.
5 Specifies that each system in the engineering group will have 50 Mbytes of swap space.
4 Create the marketing_profile profile.

The administrator creates a file named marketing_profile in the /jumpstart directory. The marketing_profile file has the following entries, which define the Solaris software to be installed on systems in the marketing group.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>install_type</td>
</tr>
<tr>
<td>2</td>
<td>system_type</td>
</tr>
<tr>
<td>3</td>
<td>partitioning</td>
</tr>
<tr>
<td>4</td>
<td>cluster</td>
</tr>
<tr>
<td>5</td>
<td>package</td>
</tr>
</tbody>
</table>

1 Specifies that the installation will be treated as an initial installation, as opposed to an upgrade.
2 Specifies that the marketing systems are standalone systems.
3 Specifies that the JumpStart software will use default disk partitioning for installing Solaris software on the marketing systems.
4 Specifies that the end user software cluster is to be installed.
5 Specifies that the audio demo software package is to be added to each system.

5 Edit the rules file.

The administrator must define the rules file. The Solaris installation program will use the contents of this file to select the proper installation for each department.

At this site, each department is on its own subnet and network address. The administrator uses this information to control how systems are installed. The engineering department is on subnet 255.222.43.0, and marketing is on 255.222.44.0.

In the /jumpstart directory, the administrator edits the rules file, deletes all of the example rules, and enters:

```
network 255.222.43.0 - eng_profile -
network 255.222.44.0 - marketing_profile -
```
Note – These are sample rules in which an administrator uses a network address to identify which systems will be installed with the eng_profile and marketing_profile, respectively. The administrator could also have chosen to use host names, memory size, or model type as the rule keyword. See “Rule Keyword and Rule Value Descriptions” on page 88 for a complete list of keywords you can use in a rules file.

6 Execute the check script.

After the rules and profile files are properly set up, the system administrator runs the check script to verify the files.

```bash
# cd /jumpstart
# ./check
```

When check finds no errors, it creates the rules.ok file.
7 Set up the engineering systems for installation.

After setting up the /jumpstart directory and appropriate files, the administrator sets up the install server to install Solaris software on the engineering systems.

The administrator first sets up the engineering systems because they are on the same subnet as the install server. On the install server, the administrator uses the `add_install_client` command:

```bash
# cd /export/install
# ./add_install_client -c server_1:/jumpstart host_eng1 sun4c
# ./add_install_client -c server_1:/jumpstart host_eng2 sun4c
```

In the `add_install_client` command,

- `-c` Specifies the server (`server_1`) and path (`/jumpstart`) to the JumpStart directory.
- `host_eng1` Is the name of a system in the engineering group.
- `host_eng2` Is the name of another system in the engineering group.
- `sun4c` Specifies the platform of the systems that will use `server_1` as an install server. (This is the proper platform name for Sun IPX systems.)
8 Set up the marketing systems for installation.

Systems cannot boot from an install server on a different subnet, so the administrator sets up a boot server on the marketing group's subnet. On a server on the marketing subnet, the administrator inserts a Solaris CD. The administrator then uses the `setup_install_server` command to copy the boot software from the CD to the marketing server.

```
# cd /cdrom/cdrom0/s0
# ./setup_install_server -b /marketing/boot-dir sun4c
```

In the `setup_install_server` command,

- `-b` Specifies that `setup_install_server` will copy the boot information from the Solaris CD to the directory named `/marketing/boot-dir`.
- `sun4c` Specifies the platform of the systems that will use this boot server. (This is the proper platform name for Sun ELC systems.)

Next, the administrator sets up the marketing systems to boot from the local boot server and install Solaris from the remote install server. The administrator uses the `add_install_client` command on the marketing group's boot server:

```
# cd /marketing/boot-dir
# ./add_install_client -s server_l:/export/install -c server_l:/jumpstart host_mkt1 sun4c
# ./add_install_client -s server_l:/export/install -c server_l:/jumpstart host_mkt2 sun4c
```

In the `add_install_client` command,

- `-s` Specifies the install server (`server_l`) and the path to the Solaris software (`/export/install`).

---

*Sample Custom JumpStart Installation*
-c Specifies the server (server_1) and path (/jumpstart) to the JumpStart directory.

host_mkt1 Is the name of a system in the marketing group.

host_mkt2 Is the name of another system in the marketing group.

sun4c Specifies the platform of the systems that will use this boot server. (This is the proper platform name for Sun ELC systems.)

9 Boot the systems and install Solaris software.

The administrator boots the engineering systems by using the following boot command at the ok (PROM) prompt of each system.

```
ok boot net - install
```
Troubleshooting

This appendix describes problems you may encounter when installing Solaris software, and suggests possible solutions.

The following table shows common error messages and the page number where you can find causes and possible solutions.

<table>
<thead>
<tr>
<th>Error Message</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>boot: cannot open /kernel/unix</td>
<td>171</td>
</tr>
<tr>
<td>Error: Unknown client “host_name”</td>
<td>170</td>
</tr>
<tr>
<td>le0: No carrier - transceiver cable problem</td>
<td>170</td>
</tr>
<tr>
<td>No network boot server. Unable to install the system. See installation</td>
<td>170</td>
</tr>
<tr>
<td>instructions.</td>
<td></td>
</tr>
<tr>
<td>pkgrm: ERROR: class action script did not complete successfully. Removal</td>
<td>171</td>
</tr>
<tr>
<td>of &lt;SUNWudte&gt; failed.</td>
<td></td>
</tr>
<tr>
<td>prom_panic: Could not mount filesystem</td>
<td>171</td>
</tr>
<tr>
<td>The file just loaded does not appear to be executable</td>
<td>171</td>
</tr>
<tr>
<td>Timeout waiting for ARP/RARP packet...</td>
<td>172</td>
</tr>
<tr>
<td>WARNING: clock gained xxx days -- CHECK AND RESET DATE!</td>
<td>172</td>
</tr>
<tr>
<td>WARNING: getfile: RPC failed: error 5 (RPC Timed out).</td>
<td>173</td>
</tr>
</tbody>
</table>
### Specific Installation Errors

**Error:** Unknown client "host_name"

<table>
<thead>
<tr>
<th>Reason Error Occurred</th>
<th>How to Fix the Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>The host_name argument in the add_install_client command must be a host in the name service.</td>
<td>Add the host host_name to the NIS or NIS+ name service. (Either update the NIS maps or populate the NIS+ tables.) Try executing the add_install_client command again.</td>
</tr>
</tbody>
</table>

**le0: No carrier - transceiver cable problem**

<table>
<thead>
<tr>
<th>Reason Error Occurred</th>
<th>How to Fix the Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>This system is not connected to the network.</td>
<td>If this is a non-networked system, ignore this message. If this is a networked system, make sure the Ethernet cabling is attached securely.</td>
</tr>
</tbody>
</table>

**No network boot server. Unable to install the system.**

<table>
<thead>
<tr>
<th>Reason Error Occurred</th>
<th>How to Fix the Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>This error occurs on a system that you are attempting to install using custom JumpStart. The system could not find a local Solaris CD or an install server on the network.</td>
<td>The system administrator must set up an install server to be used for custom JumpStart installation (see Creating an Install Server on page 22). Otherwise, you must do an interactive installation, as documented in Chapter 8, &quot;Booting and Installing Solaris: Interactive.&quot;</td>
</tr>
</tbody>
</table>
pkgrm: ERROR: class action script did not complete successfully. Removal of <SUNWuodte> failed.

Reason Error Occurred
Problem in Solaris 2.4 and early 2.5 with building the package.

How to Fix the Problem
Ignore the message.

prom_panic: Could not mount filesystem

Reason Error Occurred
This error occurs when you are doing a network installation, but the boot software cannot locate the Solaris installation image (either the Solaris CD or a copy of the Solaris CD on the install server).

How to Fix the Problem
Make sure that the installation software is mounted and shared. If installing from the install server’s CD-ROM drive, make sure the Solaris CD is inserted in the CD-ROM drive, is mounted, and shared in the /etc/dfs/dfstab file. If installing from a copy of the Solaris CD on the install server’s disk, make sure the directory path to the copy is shared in the /etc/dfs/dfstab file.

boot: cannot open /kernel/unix

Reason Error Occurred
This error occurs when you override the boot file location by explicitly setting it to /kernel/unix. In Solaris 2.5, the kernel no longer resides in /kernel/unix, but in /platform/<arch>/kernel/unix.

How to Fix the Problem
Reset the boot file in the PROM to " " (nothing).

The file just loaded does not appear to be executable
**Reason Error Occurred**
This message cannot find the proper media for booting.

**How to Fix the Problem**
Verify that you are using the correct boot command for your system. If installing from a CD-ROM drive, make sure the Solaris CD is in the CD-ROM drive and that the CD-ROM drive is mounted. See the table for boot commands on page 128.

---

**Timeout waiting for ARP/RARP packet...**

---

**Reason Error Occurred**
The client is trying to boot over the network, but it cannot find a system that knows about it.

**How to Fix the Problem**
Verify the system’s host name is in the NIS or NIS+ name service. Also, verify the *bootparams* search order in the `/etc/nsswitch.conf` file. For example, the following line in the `/etc/nsswitch.conf` file indicates the software will first look in the NIS maps for *bootparams* information. If not found there, software will look in the `/etc/bootparams` file.

```
bootparams: nis files
```

---

**WARNING: clock gained xxx days -- CHECK AND RESET DATE!**

---

**Reason Error Occurred**
This is an informational message.

**How to Fix the Problem**
Ignore the message and continue with the installation.

Reason Error Occurred
This error occurs when you have two or more servers on a network responding to an install client's boot request. The install client connects to the wrong boot server, and the installation hangs. The following specific problems may cause this error:

- There may be /etc/bootparams files on different servers with an entry for this install client.

- There may be multiple /tftpboot or /rplpboot directory entries for this install client.

- There may be an install client entry in the /etc/bootparams file on a server and an entry in another /etc/bootparams file enabling all systems to access the profile server. Such an entry would look like this: * install_config=profile_server:path

How to Fix the Problem
Examine the network setup:

- Ensure that servers on the network do not have multiple /etc/bootparams entries for the install client. If they do, remove duplicate client entries in the /etc/bootparams file on all install and boot servers except the one you want the install client to use.

- Ensure that servers on the network do not have multiple /tftpboot or /rplboot directory entries for the install client. If they do, remove duplicate client entries from the /tftpboot or /rplboot directories on all install and boot servers except the one you want the install client to use.

- If there's a wildcard entry in the name service bootparams map or table (for example, * install_config=), delete it and add it to the /etc/bootparams file on the boot server.

Troubleshooting
### General Installation Problems

<table>
<thead>
<tr>
<th>Problem</th>
<th>How to Fix the Problem</th>
</tr>
</thead>
</table>
| **Problem**<br>The system boots over the network, but from a system other than the specified install server. | **How to Fix the Problem**<br>On the name server, update the `/etc/bootparams` entry for the system being installed. The entry should conform to the following syntax:<br>

```text
install_system root=boot_server:path install=install_server:path
```

Also, ensure there is only one `bootparams` entry on the subnet for the install client. |

<table>
<thead>
<tr>
<th>Problem</th>
<th>How to Fix the Problem</th>
</tr>
</thead>
</table>
| **Problem**<br>After you set up an install server and configure the system to install over the network, the system still does not boot. | **How to Fix the Problem**<br>Be sure the `tftpd` daemon is running on the install server. Type the following command and press Return:<br>

```bash
ps -ef | grep tftpd
```

If this command does not return a line indicating the `tftpd` daemon is running, edit the `/etc/inetd.conf` file and remove the comment (`#`) character from the following line:<br>

```text
#tftp dgram udp wait root/usr/sbin/in.tftpd in.tftpd -s /tftpboot
```

After making this change, try booting the system again. |
<table>
<thead>
<tr>
<th>Problem</th>
<th>How to Fix the Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>OpenWindows is not available to diskless and dataless clients.</td>
<td>The <code>/usr/openwin</code> may be on a separate, mounted file system. This directory is not automatically shared by <code>admintool</code>. The <code>/usr/openwin</code> file system must be manually added to the server’s <code>/etc/dfs/dfstab</code> file and the file system must be shared. The entry looks like this:</td>
</tr>
<tr>
<td></td>
<td><code>share -F nfs /usr/openwin</code></td>
</tr>
<tr>
<td></td>
<td>Also, an explicit mount of the file system must be made in the client’s <code>/etc/vfstab</code> file using the following:</td>
</tr>
<tr>
<td></td>
<td><code>server_name:/usr/openwin - /usr/openwin nfs - yes -</code></td>
</tr>
</tbody>
</table>
Problem

Several processes that normally run when booting the system are not run when the system boots from the CD. (This is done to enable the system to boot and the Solaris installation program to run with only 16 Mbytes of memory.)

How to Fix the Problem

To boot from the CD to do disaster recovery (that is, restoring the root file system), you need to add functionality normally provided when booting. To provide this functionality, a script is provided, /sbin/setup_cd, which can be run to perform the additional setup that might be needed to do disaster recovery. setup_cd does the following tasks:

- Finishes setting up the device file system for tapes and ports
- Enables routing
- Enables multicast
- Invokes the statd(1M) daemon
- Invokes the lockd(1M) daemon
- Starts the automounter

Note that if setup_cd is run on a 16 Mbyte system, it may not be possible to run suninstall or other programs that need more memory. If a disk with a swap partition is available, the system administrator could avoid this problem by using the swap(1M) command to add swap space to the system before invoking setup_cd.

When booting from the CD during disaster recovery, it is possible to boot the system in single user mode from the CD. For example:

```
boot cdrom -s
```

Problem

An installation using the upgrade option fails for reasons beyond your control, such as a power failure or a network connection failure. The system may be in an unbootable state.

How to Fix the Problem

1. Reboot the system from the Solaris CD or from the network.
2. Choose the upgrade option for installation.
   The Solaris installation program will determine if the system has been partially upgraded and will continue the upgrade.
Time Zones

The next page shows time zones of the world by hours offset from Greenwich Meantime. This may be useful when setting a system's clock during the Solaris installation program.

Figure F-1 reflects Standard Time. If daylight saving time is in effect, add one hour.
Figure F-1  Greenwich Meantime Map
**Glossary**

**AutoClient system**
A system type that caches all of its needed system software from an OS server. Because it contains no permanent data, an AutoClient is a field replaceable unit (FRU). It requires a small local disk for swapping and for caching its individual root (/) and /usr file systems from an OS server.

**begin script**
A user-defined Bourne shell script, specified within the rules file, that performs tasks before the Solaris software is installed on the system. Begin scripts can be used only with custom JumpStart installations.

**boot server**
A server that provides boot services to systems on the same subnet. A boot server is required if the install server is on a different subnet than the systems that need to install the Solaris software from it.

**client**
A system connected to a network.

**cluster**
A logical grouping of software packages. The Solaris software is divided into four main software groups, which are each composed of clusters and packages.
core

A software group that contains the minimum software required to boot and run the Solaris operating environment on a system. It includes some networking software and the drivers required to run the OpenWindows environment; it does not include the OpenWindows software.

custom JumpStart installation

A type of installation in which the Solaris software is automatically installed on a system based on a user-defined profile. You can create customized profiles for different types of users.

dataless client

A networked system that has its own disk on which it maintains its own root (/) file system and swap space. However, a dataless client relies on an OS server for its /usr system.

derived profile

A profile that is dynamically created by a begin script during a custom JumpStart installation.

developer system support

A software group that contains the End User System Support software group plus the libraries, include files, man pages, and programming tools for developing software.

disk configuration file

A file that represents a structure of a disk (for example, bytes/sector, flags, slices). Disk configuration files enable you to use pfinstall from a single system to test profiles on different sized disks.

diskless client

A networked system that does not have its own disk, so it relies completely on an OS server for software and file storage. Diskless clients do not have to use the Solaris installation program, because they use the software that is already installed on an OS server.

domain

A part of the Internet naming hierarchy. It represents a group of systems on a local network that share administrative files.
domain name

The identification of a group of systems on a local network. A domain name consists of a sequence of component names separated by periods (for example: tundra.mpk.ca.us). As you read a domain name from left to right, the component names identify more general (and usually remote) areas of administrative authority.

end user system support

A software group that contains the core software group plus the recommended software for an end user, including OpenWindows and DeskSet software.

entire distribution

A software group that contains the entire Solaris release.

entire distribution plus OEM support

A software group that contains the entire Solaris release, plus additional hardware support for OEMs. This software group is recommended when installing Solaris software on servers.

/etc

A directory that contains critical system configuration files and maintenance commands.

/export

A file system on an OS server that is shared with other systems on a network. For example, the /export file system can contain the root file system and swap for diskless clients and the home directories for users on the network. Diskless clients rely on the /export file system on an OS server to boot and run.

fdisk partition

A logical partition of a disk drive dedicated to a particular operating system on x86 systems. During the Solaris installation program, you must set up at least one Solaris fdisk partition on an x86 system. x86 systems are designed to support up to four different operating systems on each drive; each operating system must reside on a unique fdisk partition.

file server

A server that provides the software and file storage for systems on a network.
file system

A collection of files and directories that, when set into a logical hierarchy, make up an organized, structured set of information. File systems can be mounted from your local system or a remote system.

finish script

A user-defined Bourne shell script, specified within the rules file, that performs tasks after the Solaris software is installed on the system, but before the system reboots. Finish scripts can be used only with custom JumpStart installations.

host name

The name by which a system is known to other systems on a network. This name must be unique among all the systems within a given domain (usually, this means within any single organization). A host name can be any combination of letters, numbers, and minus sign (-), but it cannot begin or end with a minus sign.

initial installation option

An option presented during the Solaris installation program that overwrites the disk(s) with the new version of Solaris. The initial installation option is presented for upgradable systems; however, the disk(s) that contain the old version of Solaris software (including the local modifications) will be overwritten if you choose the initial installation option.

install server

A server that provides the Solaris installation image for other systems on a network to boot and install from (also known as a media server). The Solaris installation image can reside on the install server's CD-ROM drive or hard disk.

interactive installation

A type of installation where you have full hands-on interaction with the Solaris installation program to install the Solaris software on a system.
IP address

Internet protocol address. A unique number that identifies a networked system so it can communicate via Internet protocols. It consists of four numbers separated by periods. Most often, each part of the IP address is a number between 0 and 225; however, the first number must be less than 224 and the last number cannot be 0.

IP addresses are logically divided into two parts: the network (similar to a telephone area code), and the system on the network (similar to a phone number).

JumpStart directory

When using a diskette for custom JumpStart installations, the JumpStart directory is the root directory on the diskette that contains all the essential custom JumpStart files. When using a server for custom JumpStart installations, the JumpStart directory is a directory on the server that contains all the essential custom JumpStart files.

JumpStart installation

A type of installation in which the Solaris software is automatically installed on a system by using factory-installed JumpStart software.

locale

A specific language associated with a region or territory.

media server

See install server.

mount

The process of making a remote or local file system accessible by executing the mount command. To mount a file system, you need a mount point on the local system and the name of the file system to be mounted (for example, /usr).

mount point

A directory on a system where you can mount a file system that exists on the local or a remote system.

name server

A server that provides a name service to systems on a network.
name service

A distributed network database that contains key system information about all the systems on a network, so the systems can communicate with each other. With a name service, the system information can be maintained, managed, and accessed on a network-wide basis. Sun supports the following name services: NIS (formerly YP) and NIS+. Without a name service, each system has to maintain its own copy of the system information (in the local /etc files).

network installation

A way to install software over the network—from a system with a CD-ROM drive to a system without a CD-ROM drive. Network installations require a name server and an install server.

networked systems

A group of systems (called hosts) connected through hardware and software, so they can communicate and share information; referred to as a local area network (LAN). One or more servers are usually needed when systems are networked.

NIS

Network Information Service. A type of name service that is standard on SunOS 3.x, 4.x, and Solaris 1.x systems.

NIS+

Network Information Service, Plus. The replacement for NIS that provides automatic information updating and adds security features such as authorization and authentication. NIS+ is the standard on Solaris 2.x systems.

non-networked systems

Systems that are not connected to a network or do not rely on other systems.

/opt

A file system that contains the mount points for third-party and unbundled software.

OS server

A system that provides services to systems on a network. To serve diskless clients, an OS server must have disk space set aside for each diskless client’s root file system and swap space (/export/root, /export/swap). To serve dataless clients, an OS server must provide the /usr file system. To serve autoclients, an OS server must provide everything except the individual root (/) and /usr file systems required for swapping and caching.
package

A functional grouping of files and directories that form a software application. The Solaris software is divided into four main software groups, which are each composed of clusters and packages.

platform group

A vendor-defined grouping of hardware platforms for the purpose of distributing specific software. Examples of valid platform names are i86pc, sun4c.

platform name

The output of the `uname -i` command. For example, the platform name for the SPARCstation IPX is SUNW,Sun_4_50.

profile

A text file used as a template by the custom JumpStart installation software. It defines how to install the Solaris software on a system (for example, initial installation or upgrade option, system type, disk partitioning, software group), and it is named in the rules file. See rules file.

/ (root)

The file system at the top of the hierarchical file tree on a system. The root directory contains the directories and files critical for system operation, such as the kernel, device drivers, and the programs used to start (boot) a system.

rule

A series of values that assigns one or more system attributes to a profile.

rules file

A text file used to create the rules.ok file. The rules file is a look-up table consisting of one or more rules that define matches between system attributes and profiles. See profile.

rules.ok file

A generated version of the rules file. It is required by the custom JumpStart installation software to match a system to a profile. You must use the check script to create the rules.ok file.

slice

An area on a disk composed of a single range of contiguous blocks. A slice is a physical subset of a disk (except for slice 2, which by convention represents the entire disk). A disk can be divided into eight slices. Before you can create a file system on a disk, you must format it into slices.
Solaris installation program

(1) A menu-driven, interactive program that enables you to set up a system and install the Solaris software on it. (2) Any part of the software that is used to install the Solaris software on a system.

software group

A logical grouping of the Solaris software (clusters and packages). During a Solaris installation, you can install one of the following software groups: core, end user system software, developer system support, or entire distribution.

standalone system

A system that has its own root (/) file system, swap space, and /usr file system, which reside on its local disk(s); it does not require boot or software services from an OS server. A standalone system can be connected to a network.

subnet

A working scheme that divides a single logical network into smaller physical networks to simplify routing.

subnet mask

A bit mask, which is 32 bits long, used to determine important network or system information from an IP address.

swap space

Disk space used for virtual memory storage when the system does not have enough system memory to handle current processes. Also known as the /swap or swap file system.

system types

The different ways a system can be set up to run the Solaris software. Valid system types are: standalone system, dataless client, and diskless client, AutoClient system, OS server. However, the only system types that are covered in this document are standalone system, dataless client, and OS server.

time zone

Any of the 24 longitudinal divisions of the earth’s surface for which a standard time is kept.
upgrade option

An option presented during the Solaris installation program. The upgrade procedure merges the new version of Solaris with existing files on your disk(s), and it saves as many local modifications as possible since the last time Solaris was installed.

/usr

A file system on a standalone system or server that contains many of the standard UNIX programs. A dataless client must share (mount) /usr from a file server; it does not have its own /usr file system. Sharing the large /usr file system with a server rather than maintaining a local copy minimizes the overall disk space required to install and run the Solaris software on a system.

/var

A file system or directory (on standalone systems) containing system files that are likely to change or grow over the life of the system. These include system logs, vi files, mail files, and uucp files.

Volume Management

A program that provides a mechanism to administer and obtain access to the data on CD-ROMs and diskettes.
Index

Symbols
- (minus sign)
  in begin and finish scripts 111
  in rules 87
! (exclamation mark) rule field 84
# (pound sign)
  in profiles 68
  in rules 87
&& (ampersands) rule field 84
... (ellipsis points) rule field 84
= (equals sign) in profile field 98
> prompt, changing to ok prompt 127, 133
[] (brackets) rule field 84
\ (backslash) in rules 87

Numerics
386 system, See x86 systems
486 systems, See x86 systems

A
/a/var/sadm/install_
data/upgrade_cleanup file 137–138
/a/var/sadm/install_
data/upgrade_log file 137
access to JumpStart directory, enabling 49, 65–67
add_install_client command
custom JumpStart example 166, 167–168
element 38–39
install server setup 37–39
JumpStart directory access 65, 67
syntax 38
adding
See also creating
clusters when upgrading 73
dataless clients for network installation 31–33, 36–37
files with finish scripts 101
install server configuration information 37–39
locale.org_dir table entries 44
OS servers for network installation 31–33, 35, 37
packages from software groups 80
peripheral devices after installation 143
profile keywords to profiles 68
rules to rules file 83–84
software after installation 141
standalone systems for network installation 31–34, 37
systems to network 142
addresses, specifying 21
administering file systems 142
all
  location value for fdisk 74
  size value for fdisk 75
  size value for filesys 77
alternative installation programs 111
ampersands (&&) rule field 84
AND rule field 84
angle bracket (>) prompt, changing to ok
  prompt 127, 133
AnswerBooks, installing 142
any
  rule keyword
    description and values 88
    example 86
    rootdisk matching 92
  slice value for filesys 77
arch rule keyword 88
architecture, See platforms
auto size value for filesys 77
auto_install_sample directory
  check script 94
  copying files to JumpStart directory
    58, 62, 64
  set_root-pw finish script 102–104
AutoClient systems
  custom JumpStart installation
    completion 136
  described 7
identification labels
  SPARC systems 155–157
  x86 systems 155–??
interactive installation completion
  130
Solaris already installed on OS server
  8
auto-install, See custom JumpStart installation
automounted file system symbolic links, preserving 116

B
  -b option of setup_install_server
    command 29, 167
backing up
  before installing Solaris 11
  before upgrading 115
backslash (\) in rules 87
banner command 21
begin rule field
  described 85
  valid entries 87
  validation 93
begin scripts
  creating derived profiles with 98–99
  overview 98
  permissions 98
  rule field 85
  site-specific installation programs 111
begin.log file 98
binary compatibility package profile
  example 71
boot diskette, See Solaris boot diskette
boot server
  creating on subnet 27–29
  described 18
  requirement for network installation
    18–19, 22
  specifying for network installation
    OS servers 35
    standalone systems 34
boot: cannot open /kernel/unix
  message 171
booting the system
  boot file documentation 142
  custom JumpStart installation 133–135
  I/O interrupt error messages 21
  interactive installation 127–128
  JumpStart installation 123
  resetting terminals and display first
    21
troubleshooting
boot: cannot open /kernel/unix message 171
disaster recovery when booting from CD 176
file just loaded does not appear to be executable message 171-172
general installation problems 174, 176
rebooting after failed upgrade 176
Timeout waiting for ARP/RARP packet message 172
WARNING: getfile: RPC failed: error 5: RPC Timed out message 66, 173
wrong server boots 174
upgrade installation and boot file location 115, 171
bootparams file
    enabling JumpStart directory access 66
    updating 174
Bourne shell scripts in rule fields 85
    See also begin scripts; finish scripts
buses supported 9

C
C locale name 44
-c option
    add_install_client command 38, 166, 168
    pfinstall command 106
caddy (CD-ROM), using
    custom JumpStart installation 132
    interactive installation 126
    JumpStart installation 122
cannot open /kernel/unix message 171
case of profile keywords and values 68
cat command
    multiple disk configuration file creation
    SPARC systems 109-111
cd command, See changing directories
CD, See Solaris CD
CD-ROM drives
    booting from 128, 134
documentation 142
    installation on systems without CD-ROM drives 17-18
    requirement for Solaris installation 9
troubleshooting
    disaster recovery when booting from CD 176
    file just loaded does not appear to be executable message 171-172
    No network boot server message 170
    prom_panic: Could not mount filesystem message 171
using
    custom JumpStart installation 132
    interactive installation 126
    JumpStart installation 122
changing directories
    to JumpStart directory 94
    to mounted CD 62, 64
    to Solaris CD image on local disk 57, 61, 64
check script
    comments and 87
directory for 94
derived profiles and 99
    rules file validation 49, 93-95
rules file validation 49, 93-95
    custom JumpStart example 165
derived profiles and 99
rules.ok file creation 93
testing rules 94
Chinese locale value 79
class action script did not complete successfully message 171
client_arch profile keyword 72
client_root profile keyword 72
client_swap profile keyword 72
clients, dataless or diskless, See dataless clients; diskless clients
clock gained xxx days message 172
clock, time zones for setting 177–178
cluster profile keyword
description and values 73
examples 69–71
commands for network installation 21
comments
in profiles 68
in rules file 87
common problems, See troubleshooting
concatenating multiple disk configuration files
SPARC systems 109–111
configuring
disk configuration file creation
multiple disks 109–111
SPARC systems 107–108
hands-off network installation requirements 20
hardware and peripheral devices x
peripheral devices
after installation 143
preconfiguring
default locale for network installation 40–45
hands-off network installation requirements 20
preserving software configurations during upgrade installation 114

copying
boot information with setup_install_server 167
disk configuration file to JumpStart directory 107
JumpStart directory files using finish scripts 101
JumpStart installation files from CD 58, 62, 64
Solaris boot diskette
using Volume Management 54–55, 59–60
without Volume Management 56–57, 60–61
Solaris CD to install server’s local disk 21, 22, 25
Core System Support software
cluster name 73
hard disk space required 10
cost-effective installation method 11
Could not mount filesystem message 171
cp command
See also copying
copying disk configuration file to JumpStart directory 107
copying JumpStart directory files using finish scripts 101
copying JumpStart installation files from CD 64
creating JumpStart directory 162
CPU(s) (processors)
rule keywords 88
creating
See also adding
boot server on subnet 27–29
disk configuration files
SPARC multiple disks 109–111
SPARC systems 107–108
/etc/locale file 42
install server 22–26
new system setup 22–23
overview 22
procedure 24–26
JumpStart directory 49
diskette for SPARC systems 59–62
diskette for x86 systems 53–58
server 62–65
local file systems 77–78
profiles 49, 67–68
Index

derived 98–99
rules file 49, 82–85
rules.ok file 49, 82, 87, 93
UFS file system 60
crontabs documentation 142
cshrc file 102
custom JumpStart installation 131–136
  See also JumpStart directory;
  JumpStart installation
  advantages 11, 48
  AutoClient systems 136
  booting and installing 131–136
    booting the system 133–135
    CD-ROM drive preparation 132
    completing the upgrade 137–138
    installation process 135
    starting OpenWindows 136
  task map 15
dataless clients 136
defined 47
described 11–12
diskless clients 136
examples 161–168
  booting and installing 168
  check script 165
  eng_profile creation 163
  engineering systems setup 166
  JumpStart directory creation 162
  JumpStart directory sharing 163
  marketing systems setup 167–168
  marketing_profile creation 164
  networked 52
  non-networked 51
  rules file editing 164–165
  site setup 161–162
  standalone system 51
hands-off installation
  described 11
  requirements 20
JumpStart directory 38
No network boot server message 170
optional features 97–111
  begin scripts 98–99
  finish scripts 100–104
  overview 97
pfinstall command 104–106
site-specific installation
  programs 111
overview 50–52
preparing 47–95
  enabling JumpStart directory
    access 65–67
  installation process 50–52
  JumpStart directory creation on
    server 62–65
  JumpStart directory on diskette
    for SPARC systems 59–62
  JumpStart directory on diskette
    for x86 systems 53–58
  profile creation 67–68
  profile examples 69–71
  profile keywords and value
    descriptions 72–81
  rootdisk value 91–93
  rule examples 86
  rule keywords and value
    descriptions 88–91
  rules file creation 82–85
  rules file information 87
  rules file validation 93–95
  swap size 82
  tasks 49
profile server
  OS servers 35
  standalone systems 34
  task map 15

D
-D option of pfinstall command 105
-d option of pfinstall command 106
daemons
tftpd 174
dataless clients
  custom JumpStart installation
    completion 136
  described 7
  filesystem profile keyword 76
future Solaris releases (after 2.5) and 8
interactive installation completion
130
network installation server setup 30–37
host, adding 36
install server setup 37–39
name service selection 32
overview 31
server support needed 30
OpenWindows not available 175
software requirements 8
system identification labels
SPARC systems 155–157
x86 systems 155–??
upgrade installation 115
dd command 54–55, 56–57
See also copying
de locale name 44, 79
decimal fdisk partition type 75
defaults
derived profile name 99
locale
preconfiguring using NIS name
service 40–42
preconfiguring using NIS+ name
service 43–45
partitioning 81
designating disks 81
excluding disks 74
SI_CONFIG_DIR variable setting 101
software group installed 73
delete fdisk partition type 75
deleting
clusters when upgrading 73
fdisk partitions 75
packages from software groups 80
software after installation 141
derived profiles 98–99
DeskSet software 10
desktop, displaying 136
interactive installation 130
JumpStart installation 123
Developer System Support software
cluster name 73
hard disk space required 10
Developer System Support software
profile example 69
device access documentation 143
df -a command 114
dfstab file 63, 163
directories
changing
to JumpStart directory 94
to mounted CD 58, 62, 64
to Solaris CD image on local disk
57, 61, 64
JumpStart
adding files with finish scripts
101
copying files 101, 107
copying installation files from
CD 58, 62, 64
creating 49, 162
creating for SPARC systems 59–62
creating for x86 systems 53–58
enabling access 49, 65–67
file name truncation 58
install server setup 38
permissions 53, 63
rules file example 83
sharing 63, 163
disaster recovery when booting from CD
176
See also troubleshooting
disk configuration files
copying to JumpStart directory 107
creating
SPARC multiple disks 109–111
SPARC systems 107–108
described 104, 107
disk drives, See CD-ROM drives; diskette
drives; hard disks
diskette drives
documentation 142, 143
diskettes
copying Solaris boot diskette
using Volume Management 54–55, 59–60
without Volume Management 56–57, 60–61
ejecting
SPARC systems 55
x86 systems 55, 56
formatting 55, 56, 60, 61
JumpStart directory
access 65
creating for SPARC systems 59–62
creating for x86 systems 53–58
mounting 57, 61
diskless clients
custom JumpStart installation
completion 136
described 7
interactive installation completion
130
OpenWindows not available 175
platforms 72
Solaris already installed on OS server 8
swap space 72
system identification labels
SPARC systems 155–157
x86 systems 155–77
disksize rule keyword
description and values 88
rootdisk matching 92
display
interface for interactive installation
129
resetting after I/O interrupts 21
tip line connection and interactive
installation 127
displaying
mounted file systems 21
platform name 21
system information 21, 142
distribution software group profile
examples 70
DNS (Domain Name Service) 32
documentation needed after installation
141–143
Domain Name Service (DNS) 32
domainname rule keyword 88
domains
default locale 42
rule keyword 88
dontuse profile keyword
description and values 74
usedisk and 81
DOSHUGE fdisk partition 74
DOSOS12 fdisk partition 74
DOSOS16 fdisk partition 74
dosprimary fdisk partition type 74
E
ejecting diskettes
SPARC systems 55
x86 systems 55, 56
ellipsis points (...) rule field 84
enabling JumpStart directory access 49, 65–67
End User AnswerBook 142
End User System Support software
cluster name 73
hard disk space required 10
deng_profile example 163
English locale value 44
Entire distribution plus OEM support
software
cluster name 73
Entire distribution software
cluster name 73
equals sign (=) in profile field 98
erasing, See deleting
error messages
See also troubleshooting
boot: cannot open
/kernel/unix 171
Error: Unknown client 170
file just loaded does not appear to be executable 171-172

I/O interrupts 21

le0: No carrier - transceiver cable problem 170

No network boot server 170

pkgrm: ERROR: class action script did not complete successfully 171

prom_panic: Could not mount filesystem 171

Timeout waiting for ARP/RARP packet 172

WARNING: clock gained xxx days 172

WARNING: getfile: RPC failed: error 5: RPC Timed out 66, 173

Error: Unknown client message 170

es locale name 44, 79

/etc files, updating NIS or NIS+ tables 66

/etc/bootsparams file
  enabling JumpStart directory access 66
  updating 174

/etc/dfs/dfstab file 63, 163

/etc/locale file 42

/etc/mnttab file and UFS file system
  existence 60

/etc/resolv.conf file 32

/etc/shadow file 103

/etc/vfstab file
  mount options 78
  preventing file systems from mounting during upgrade 117

Ethernet addresses
  displaying 21
  specifying 21

Ethernet networks, See network installation; networked systems

exclamation mark (!) rule field 84

executing, See starting existing
  partitioning value 81
  size value for filesys 77
  explicit, partitioning value 81

file servers for dataless clients 36

files and file systems administration 142
  begin scripts output 98
  boot file documentation 142
  copying
    JumpStart directory files using finish scripts 101
    JumpStart installation files from CD 58, 62, 64
    Solaris boot diskette using Volume Management 54–55, 59–60
    Solaris boot diskette without Volume Management 56–57, 60–61

creating local file systems 77–78

displaying mounted file systems 21

finish scripts output 100

mounting remote file systems 76

names on PCFS file systems 58

preserving data
  existing data 78
  preventing mounting during upgrade 117
  symbolic links 116
unpreserved local modifications
during upgrade 137–138
remote access 142
troubleshooting
  file just loaded does not
  appear to be
  executable message
  171–172
  prom_panic: Could not
  mount filesystem
  message 171
UFS file system creation 60
filesys profile keyword
  description and values 76–78
  examples 69–70
  local file systems 77–78
  remote file systems 76
finish rule field
  described 85
  valid entries 87
  validation 93
finish scripts 100–104
  adding files using 101
  defined 100
  important information 100
  output 100
  permissions 100
  root environment customization 102
  root password setting 102–104
  rule field 85
  site-specific installation programs 111
  uses 100
finish.log file 100
floppy disks, See diskettes
floppy drives
  documentation 142, 143
format utility documentation 143
formatting diskettes 55, 56, 60, 61
fr locale name 44, 79
free size value for filesys 77
French locale value 44, 79

G
German locale value 44, 79
getfile: RPC failed: error 5:
  RPC Timed out message 66, 173
graphics monitor, See display
Greenwich Meantime map 178
groups, See software groups

H
halting a system 142
hands-off installation
  See also custom JumpStart installation
  described 11
  requirements 20
hard disks
  copying Solaris CD to install server
    22, 25
  documentation 143
  interfaces supported 9
  local disks in networked systems 7
  managing use 142
  mounting
    displaying mounted file systems
    21
    remote file systems 76
partitioning
  deleting fdisk partitions 75
  designating for partitioning
    default 81
  examples 69–70
  excluding for partitioning
    default 74
  profile keyword 81
requirements for Solaris installation
  9–??, 9, ??–11
rootdisk values 77, 91–93
setting up 143
size
  root space 72
  rule keywords 88, 91
  space available 25, 29
  space required for installation 9–
  11
swap space
diskless client 72
maximum size 82
networked systems 7
profile examples 69, 70
upgrade installation and full disk 114
hard links, unpreserved local
modifications 138
hardware
See also peripheral devices; specific
hardware
configuring x
platform names and groups by
system 159–160
platforms supported 9
requirements 9
hexadecimal fdisk partition type 75
host
adding for network Solaris
installation 34–36
name 38, 89
Host Manager
adding hosts
dataless clients 36
OS servers 35
standalone systems 34
custom JumpStart installation
completion 136
described 21
interactive installation completion
130
name service selection 32
hostaddress rule keyword 88
hostname rule keyword
description and values 89
example 86

I
I/O interrupt error messages 21
initial installation
See also preparing for Solaris
installation
custom JumpStart installation 131–136
advantages 11
AutoClient systems 136
booting the system 133–135
CD-ROM drive preparation 132
dataless clients 136
described 11–12
diskless clients 136
installation process 135
starting OpenWindows 136
task map 15
install_type profile keyword 78
interactive installation 125–130
advantages 11
AutoClient systems 130
booting the system 127–128
CD-ROM drive preparation 126
dataless clients 130
described 11–12
diskless clients 130
installation process 128–129
starting OpenWindows 130
task map 14
tip line connection and 127
JumpStart installation 119–123
advantages 11
booting the system 123
CD-ROM drive preparation 122
checking for new system 120
Customer Information sheet 120
described 11–12
installation process 123
selecting software to install 121
starting OpenWindows 123
task map 13
upgrade installation vs. 113
work sheet 146–150
install patches and upgrade installation
114
install server
copying Solaris CD to local disk 21, 22,
25
creating 22–26
new system setup 22–23
overview 22
procedure 24–26
described 18
network installation setup 37–39
on subnet other than system to be
installed 26–29
requirement for network installation
18–19
specifying for network installation
OS servers 35
standalone systems 34
system types applicable 22
install_config command 66
install_type profile keyword
description and values 78
examples 69–??, ??–71
requirement 67, 69
testing profiles 104, 105–106
creating disk configuration files
107–??

Installation Notes xi
installed rule keyword
description and values 89
rootdisk matching 92
installing AnswerBooks 142
Installing Solaris
how to use ix
intended audience ix
organization x–??
related information xi
installing Solaris software
See also custom JumpStart installation;
interactive installation;
JumpStart installation;
preparing for Solaris
installation; upgrade
installation
booting phase 3
choosing a method 11–12, 48
defined 1
documentation needed after
installation 141–143
interactive vs. automatic installation 3
overview
diagram 2–3
 task maps 12–15
site-specific installation programs 111
work sheets 145–153
initial installation 146–150
purposes and uses 145
shaded areas 145
upgrade installation 151–153
Integrated Drive Electronics (IDE)
interface, See IDE interface
interactive installation 125–130
See also preparing for Solaris
installation
advantages 11
AutoClient systems 130
booting the system 127–128
CD-ROM drive preparation 126
completing an upgrade 137–138
dataless clients 130
described 11–12
diskless clients 130
installation process 128–129
starting OpenWindows 130
task map 14
 tip line connection and 127
IP addresses
 rule keyword 88
 specifying 21
IPI interface, requirement 9
it locale name 44, 79
Italian locale value 44, 79
J
ja locale name 79
Japanese locale value 79
JumpStart directory
adding files with finish scripts 101
copying files
disk configuration files 107
installation files from CD 58, 62, 64
using finish scripts 101
creating 49
diskette for SPARC systems 59–62
diskette for x86 systems 53–58
example 162
server 62–65
Index
enabling access 49, 65–67
file name truncation 58
install server setup 38
permissions 53, 63
rules file example 83
sharing 62–65, 163
JumpStart installation
  See also custom JumpStart installation
  advantages 11
  booting and installing 119–123
    booting the system 123
    CD-ROM drive preparation 122
    checking for new system 120
    Customer Information sheet 120
    installation process 123
    selecting software to install 121
    starting OpenWindows 123
  task map 13
  described 11–12
  task map 13
K
karch rule keyword 89
kernel architecture, See platforms
kernel location and upgrade installation 115, 171
keywords, See profile keywords; rule keywords
ko locale name 79
Korean locale value 79
L
labels, system identification
  SPARC systems 155–157
  x86 systems 155–??
language (locale)
  preconfiguring using NIS name
    service 40–42
  preconfiguring using NIS+ name
    service 43–45
Latin America locale value 44, 79
le0: No carrier - transceiver cable problem message 170
links
  hard
    unpreserved local modifications
during upgrade 138
  symbolic
    preserving during upgrade 116
    unpreserved local modifications
during upgrade 138
local disks, See hard disks
locale file 42
locale profile keyword
  description and values 79
  example 71
locale, default
  preconfiguring using NIS name
    service 40–42
  preconfiguring using NIS+ name
    service 43–45
locale.org_dir table, adding entries 44
log files
  begin scripts output 98
  finish scripts output 100
  upgrade installation 137
logical AND rule field 84
M
mail accounts, setting up 141
mail directory 116
make command 42
Makefile file 41
man pages 69, 71
maps, task
  custom JumpStart installation 15
  interactive installation 14
  JumpStart installation 13
marketing_profile example 164
matching
  derived profiles 99
  order for rules 83, 86
  rootdisk values 91–93
maxfree size value for fdisk 75
memory
  displaying amount installed 21
minimum required 9
rule keyword 86, 89
setting size 105
swap space size and 82
virtual 9
memsize rule keyword
description and values 89
element 86
messages, See troubleshooting
microprocessors
rule keywords 88
minus sign (-)
in begin and finish scripts 111
in rules 87
mkdir command 63
mnttab file and UFS file system existence 60
model name, displaying 21
model rule keyword
description and values 90
example 86
modem documentation 143
monitor, See display
mount command 21, 61
mounting
begin script caution 98
diskettes 57, 61
displaying mounted file systems 21
OpenWindows file system 175
remote file systems 76
Solaris CD 24, 27, 58, 62, 64
by Solaris installation 100
multiple disk configuration file
SPARC systems 109–111
multiple lines in rules 87

N
name server 18–19
name service
See also NIS; NIS+
Error: Unknown client message 170
hands-off network installation
requirements 20
selecting 23
selecting for network Solaris
installation 32
specifying 21
names/naming
See also name service
derived profile names 99
host name 38, 89
PCFS file name truncation 58
profile names 68
rules file 83, 87
software group cluster names 73
system model names 90
system platform name determination 21, 159
network installation
See also custom JumpStart installation; dataless clients; diskless clients; interactive installation; JumpStart installation
custom JumpStart installation
example 52
task map 15
described 17
interactive installation task map 14
JumpStart installation task map 13
preparing 17–45
boot server creation 27–29
commands available 21
hands-off installation
requirements 20
install server creation 22–26
preconfiguring default locale 40–45
server setup 30–39
servers required 18–19
speeding up installations 22
prom_panic: Could not mount filesystem message 171
network number 91
network rule keyword
description and values 91
example 86
networked systems
determining if connected 6
types 6–8
news directory 116
NIS
default locale preconfiguration 40–42
Error: Unknown client message 170
name service selection 32
selecting 23
Timeout waiting for ARP/RARP packet message 172
updating tables corresponding to /etc files 66
NIS+
default locale preconfiguration 43–45
Error: Unknown client message 170
name service selection 32
selecting 23
Timeout waiting for ARP/RARP packet message 172
updating tables corresponding to /etc files 66
NIS+ and DNS Setup and Configuration Guide 23
nlistbladm command 43–44
No carrier transceiver cable problem message 170
No network boot server message 170
num_clients profile keyword 79
O
ok prompt, changing from > prompt 127, 133
opening. See starting
openwin command
custom JumpStart installation 136
interactive installation 130
JumpStart installation 123
troubleshooting 175
OpenWindows software
hard disk space requirements 10
not available to diskless or dataless clients 175
starting
custom JumpStart installation 136
interactive installation 130
JumpStart installation 123
OS servers
described 7, 18
drive requirements for Solaris installation 9
network installation server setup host, adding 35
install server setup 37–39
name service selection 32
overview 31
network installation setup 30–37
server support required 30
requirement for network installation 18–19
Solaris already installed 8
system identification labels
SPARC systems 155–157
x86 systems 155–??
osname rule keyword 91
output files
begin scripts log 98
finish scripts log 100
upgrade log 137
overlap value for filesys 78
P
-p option of check script 94
package profile keyword
description and values 80
examples 69, 71
partitioning
deleting fdisk partitions 75
designating disks 81
examples 69–70
excluding disks 74
fdisk partitions 70, 74–75
profile keyword 81
partitioning profile keyword
description and values 81
designating disks 81
PASSWD variable 103
password, root 102–104
paths
ccheck script 94
install server setup 38
relative, for symbolic links 116
PCFS file systems, file name truncation 58
performance, increasing 142
peripheral devices
adding after installation 143
configuring x
maintaining after installation 143
permissions
begin scripts 98
finish scripts 100
JumpStart directory 53, 63
pfininstall command 104–106
See also disk configuration files
disk configuration files
described 104
SPARC multiple disks 109–111
SPARC systems 107–108
options 105–106
profile testing 105–106
uses 104
pkgrm: ERROR: class action
script did not complete
successfully message 171
platform groups 159–160
platforms
diskless client 72
group determination 159
install server setup 38
matching system attributes and
profiles 82, 83, 86
name determination 21, 159
rule keywords 89
selecting software to install 121
supported 9
system model names 90
table of names and groups by system
159–160
pound sign (#)
in profiles 68
in rules 87
preconfiguring, See configuring
preparing for Solaris installation
custom JumpStart installation 47–95
advantages 11, 48
described 11–12
enabling JumpStart directory
access 65–67
example 161–168
installation process 50–52
JumpStart directory creation on
server 62–65
JumpStart directory on diskette
for SPARC systems 59–62
JumpStart directory on diskette
for x86 systems 53–58
profile creation 67–68
profile examples 69–71
profile keywords and value
descriptions 72–81
rootdisk value 91–93
rule examples 86
rule keywords and value
descriptions 88–91
rules file creation 82–85
rules file information 87
rules file validation 93–95
swap size 82
tasks 49
importance of preparation 5
interactive installation
advantages 11
described 11–12
JumpStart installation
advantages 11
described 11–12
network preparation 17–45
boot server creation 27–29
commands available 21
hands-off installation
requirements 20

install server creation 22–26
preconfiguring default locale 40–45
server setup 30–39
servers required 18–19
system preparation 5–15
backing up 11
choosing installation method 11–12
disk space requirement 9–11
hardware requirements 9
network connection
determination 6
system type determination 6–8
task maps (installation) 12–15
tasks (preparatory) 5
upgrade installation 113–117
backing up 115
determining upgrade availability
113–114
preserving local modifications
116–117
work sheets 145–153
initial installation 146–150
purposes and uses 145
shaded areas 145
upgrade installation 151–153
preserve value for filesys 78
preserving data
existing data during installation 78
preventing file systems from
mounting during upgrade
117
symbolic links 116, 117
unpreserved local modifications
during upgrade 137–138
printers
See also peripheral devices
setting up 142
problems, See troubleshooting
processors
rule keywords 88
profile keywords 72–81
adding to profiles 68
case sensitivity 68
client_arch 72
client_root 72
client_swap 72
cluster
description and values 73
examples 69–71
dontuse
description and values 74
usedisk and 81
fdisk
description and values 74–75
example 70
filesys
description and values 76–78
examples 69–70
local file systems 77–78
remote file systems 76
install_type
description and values 78
examples 69–??, 71, ??–71
requirement 67, 69
locale
description and values 79
example 71
num_clients 79
package
description and values 80
examples 69, 71
partitioning
description and values 81
designating disks 81
examples 69–70
excluding disks 74
system_type
description and values 81
examples 69–70
usedisk
description and values 81
dontuse and 74
profile server for custom JumpStart
installation
OS servers 35
standalone systems 34
profiles
comments in 68
creating 49, 67–68
derived profiles 98–99
described 49, 67
examples 69–71
    eng_profile 163
    marketing_profile 164
matching systems to 82, 83, 86
naming 68
requirements 67, 68
rule field 85
testing 105–106
disk configuration files 107–??
prom_panic: Could not mount filesystem message 171
prtconf command 90
prtvtoc command
    SPARC disk configuration file
        creation 107–108
ps -ef | grep tftpd command 174

R
    -r option of check script 94
RAM, See memory
recovery procedure 176
release of Solaris software
determining 114
    installed rule keyword 89
    osname rule keyword 91
remote file systems
    accessing 142
    mounting 76
remote Solaris installation, See network installation
removing, See deleting
requirements
    hard disk space 9–11
    hardware 9
    network installation
        hands-off configuration 20
        servers 18–19, 22
    profiles 67, 68
reset command 21
resetting display and terminal after I/O interrupts 21
resolv.conf file 32
restoring the root file system 176
root (/) file systems
determining existence 114
    networked systems 7
    profile example 70
    restoring (disaster recovery) 176
    value set by installation program 91–93
root environment, customizing 102
root password, setting 102–104
rootdisk
defined 91
    slice value for filesys 77
    value set by installation program 91–93
rootdisk fdisk partition 74
RPC failed: error 5: RPC Timed out message 66, 173
RPC Timed out message 66, 173
rule keywords 88–91
    any
        description and values 88
        example 86
        rootdisk matching 92
    arch 88
disksize
        description and values 88
        rootdisk matching 92
domainname 88
hostaddress 88
hostname 86, 89
installed
    description and values 89
        rootdisk matching 92
karch 89
memsize 86, 89
model 86, 90
network 86, 91
osname 91
totaldisk 91
validation 93
rule_keyword rule field 84
rule_value rule field 84, 87
rules
  derived profiles 98–99
  examples 86
  field descriptions 84–85
  matching order 83, 86
  multiple line rules 87
rootdisk matching rules 91–93
syntax 84
testing validity 94
rules file
  adding rules 83–84
  comments 87
  creating 49, 82–85
  custom JumpStart example 164–165
  described 49, 82
  example 83
  multiple line rules 87
  naming 83, 87
  syntax 84
  testing rules 94
validating using check 49, 93–95
  custom JumpStart example 165
derived profiles and 99
rules.ok file
  comments and 87
  creating 49, 82, 87, 93
  described 87
  matching order for rules 83, 86
running, See starting
S
-s option of add_install_client
  command 38, 167
saving data during installation, See
preserving data
/sbin/setup_cd script 176
Sbus, requirement 9
scripts
  See also check script; finish scripts
  begin scripts 98–99, 111
  Bourne shell scripts in rule fields 85
  finish scripts 100–104, 111
for disaster recovery when booting
from CD 176
network installation commands 21
pkgrm: ERROR: class action
  script did not
  complete successfully
  message 171
SCSI interface, requirement 9
security
documentation 142
root password 102–104
serial port documentation 143
servers
  See also boot server; install server; OS
  servers
  file servers for dataless clients 36
  JumpStart directory creation 62–65
  name server 18–19
  network installation setup
dataless client installation 31–33,
  36–37
  OS server installation 31–33, 35,
  37
  standalone installation 31–34, 37
  profile server for custom JumpStart
  installation 34, 35
  requirements for network installation
  18–19
  root space 72
  service access facility documentation 143
set_rootpw finish script 102–104
setup, See configuring; preparing for
  Solaris installation
setup_cd script 176
setup_install_server command
  boot server setup 29
  custom JumpStart example 167
described 21
  install server setup 25
  shaded areas in work sheets 145
shadow file 103
share command
  sharing JumpStart directory 63, 163
sharing OpenWindows file system 175
shareall command 64, 163
sharing
  JumpStart directory 63, 163
  OpenWindows file system 175
SI_CONFIG_DIR variable 101
SI_PROFILE environment variable 99
SI_SYS_STATE variable 103
site-specific installation programs 111
size
  fdisk partition 75
  hard disk
    root space 72
    rule keywords 88, 91
    space available 25, 29
    space required 9-11
  local file system 77
  memory 86, 89, 105
  swap space
    diskless client 72
    maximum size 82
    profile examples 69, 70
  tip window dimensions 127
slices
  filesys values 77
  profile examples 69-70
  rule keyword 89
Small Computer System Interface (SCSI),
  requirement 9
SMD interface, requirement 9
software groups
  cluster names for profiles 73
  profile examples 69-71
  specifying packages 80
  upgrading 73
software, See Solaris software; third party software
Solaris 1.x to Solaris 2.x Transition Guide xi
Solaris boot diskette
  copying using Volume Management 54-55, 59-60
  copying without Volume Management 56-57, 60-61
Solaris CD
  copying to install server’s local disk 21, 22, 25
  displaying mounted file systems 21
  image on local disk 57, 61, 64
  inserting into local drive
    custom JumpStart installation 132
    interactive installation 126
  installation on systems without CD-ROM drives 17-18
  mounting 24, 27, 58, 62, 64
  software contained 2
troubleshooting
  disaster recovery when booting from CD 176
  file just loaded does not appear to be executable message 171-172
  No network boot server message 170
  prom_panic: Could not mount filesystem message 171
solaris fdisk partition type 74, 75
Solaris software
  See also Solaris CD
  adding after installation 141
  groups
    cluster names for profiles 73
    profile examples 69-71
    specifying packages 80
    upgrading 73
  hard disk space requirements 9-11
  platforms supported 9
  release or version
    determining 114
    installed rule keyword 89
    osname rule keyword 91
Solstice AdminSuite 2.1 User’s Guide xi
Solstice AutoClient 1.0 Administration Guide 8
solstice program, See Solstice System Management Base

Index
Taiwanese locale value 79
tape drive documentation 143

Task maps
  custom JumpStart installation 15
  interactive installation 14
  JumpStart installation 13

Terminals
  documentation 143
  resetting after I/O interrupts 21

Testing
  profiles 105–106
    disk configuration files 107–??
  validating rules files
    custom JumpStart example 165
    derived profiles and 99
    testing rules 94
    using check 49, 93–95

tftpd daemon 174

Third party software, adding 141

Time zones 177–178

Timed out RPC error 173

Timeout waiting for ARP/RARP packet message 172

Tip line connection and interactive installation 127

totaldisk rule keyword 91

Transceiver cable problem message 170

Troubleshooting 169–??
  boot: cannot open
    /kernel/unix message 171
  booting from wrong server 174
  disaster recovery when booting from CD 176
  Error: Unknown client message 170
  failed upgrade 137–138
    file just loaded does not appear to be executable message 171–172
  general installation problems

booting the system 174, 174–??, 176
  OpenWindows doesn’t start 175
  rebooting after failed upgrade 176

I/O interrupt messages 21

le0: No carrier - transceiver cable problem message 170

No network boot server message 170

pkgrm: ERROR: class action script did not complete successfully message 171

prom_panic: Could not mount filesystem message 171

Timeout waiting for ARP/RARP packet message 172

WARNING: clock gained xxx days message 172

WARNING: getfile: RPC failed: error 5: RPC Timed out message 66, 173

Truncated file names 58

UFS file system
  creating 60
    determining existence of 60

Unable to install the system message 170

uname -i command 21, 159
uname -m command 159

Unknown client error message 170

unnamed value for filesys 78

unshareall command 64, 163

Upgrade installation
  See also preparing for Solaris installation
    completing 137–138
    custom JumpStart installation 131–136
    AutoClient systems 136

Index
booting the system 133–135
CD-ROM drive preparation 132
completing the upgrade 137–138
dataless clients 136
diskless clients 136
installation process 135
starting OpenWindows 136
task map 15
dataless clients 115
failed upgrade 137–138, 176
hard disk full 114
initial installation vs. 113
install patches and 114
interactive installation 125–130
AutoClient systems 130
booting the system 127–128
CD-ROM drive preparation 126
completing the upgrade 137–138
dataless clients 130
diskless clients 130
installation process 128–129
starting OpenWindows 130
task map 14
tip line connection and 127
log file 137
overriding boot file location 115, 171
preparing 113–117
backing up 115
determining upgrade availability
113–114
preserving local modifications
116–117
preserving other software
configurations 114
profile example 71
profile keywords
cluster 71, 73
install_type 71, 78
locale 71, 79
package 71, 80
SunOS 4.x systems and 113
unpreserved local modifications 137–138
work sheet 151–153
upgrade_cleanup file 137–138
upgrade_log file 137
usedisk profile keyword
description and values 81
dontuse_and 74
user accounts, setting up 142
/usr file systems 7
/usr/bin/solstice program, See
Solstice System Management Base
/usr/openwin/bin/openwin
command
custom JumpStart installation 136
interactive installation 130
JumpStart installation 123
troubleshooting 175
/usr/sbin/install_d/pfinstall
command, See pfinstall
command
V
validating
profiles 105–106
disk configuration files 107–??
rules files
custom JumpStart example 165
derived profiles and 99
testing rules 94
using check 49, 93–95
/var/mail directory 116
/var/news directory 116
/var/sadm/begin.log file 98
/var/sadm/finish.log file 100
/var/sadm/install_data/upgrade_
cleanup file 137–138
/var/sadm/install_data/upgrade_
log file 137
/var/yp/make command 42
/var/yp/Makefile file 41
variables
PASSWD 103
SI_CONFIG_DIR 101
SI_PROFILE 99
SI_SYS_STATE 103
SYS_MEMSIZE 105
version of Solaris software
determining 114
installed rule keyword 89
osname rule keyword 91
vfstab file
  mount options 78
  preventing file systems from
    mounting during upgrade 117
virtual memory requirements 9
  See also swap file systems
VMEbus, requirement 9
volcheck command 54, 59, 60
Volume Management
  changing directory to mounted CD
    58, 64
  copying
    JumpStart installation files from
      CD 58
    Solaris boot diskette 54–55, 59–60
determining whether running 24, 28
mounting diskettes 57
Solaris CD file path and 24, 28

W
WARNING: clock gained xxx days
  message 172
work sheets 145–153
  initial installation 146–150
  purposes and uses 145
  shaded areas 145
  upgrade installation 151–153
wrapping lines in rules 87

X
x86 systems
  file name truncation 58
  JumpStart directory creation on
    diskette 53–58
  platform name and group 159

Index
## Revision History

<table>
<thead>
<tr>
<th>Release</th>
<th>Date</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solaris 2.5</td>
<td>November 1995</td>
<td><strong>Change to Service Setup For Clients During Installation</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The Solaris installation program (interactive and custom JumpStart) no</td>
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<td></td>
<td></td>
<td>longer sets up services for clients. During installation, selecting</td>
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<td>the system type 'OS server' only allocates space for clients; to</td>
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<tr>
<td></td>
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<td>complete client set up you must use Solstice Host Manager after</td>
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<td>Solaris software is installed.</td>
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</table>

**New bootparams Keyword/Value**

A new bootparams keyword/value forces sysidtool to attempt to configure a specified name service (overriding the default NIS+), thus enabling clients to be set up for off-subnet servers. See bootparams(4).

The bootparams keyword/value has the following syntax:

```
ns=server : nameservice [ (netmask) ]
```

This addition affects the etc/bootparams file, Solstice Host Manager, and add_install_client script (where -n <ns_string> is the string to put in the bootparams table).

**Change of Location of Diskless Client Booting Information**

Information on how to boot diskless clients has been moved to the System Administration Guide, Volume I.
<table>
<thead>
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<th>Comments</th>
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| Solaris 2.4 | October 1994 | **Solstice Host Manager Replaces add_install_client**  
The Solstice Host Manager now supports remote installations, and is the recommended tool for setting up network install servers (instead of the add_install_client command). Solstice Host Manager can also now be used to set up custom JumpStart installations.  

**Hardware Support Dropped**  
The sun4 and sun4e hardware is no longer supported in Solaris 2.5  

**Underlying Software Changes**  
The /usr/kvm directory is replaced by the /usr/platform directory. Servers no longer have to export /usr/kvm for each supported platform, and clients do not have to mount the exported /usr/kvm directory appropriate for their platform. With /usr/platform, the same exported /usr file system can support all platforms.  

The terms, *kernel architecture and architecture*, have been replaced by the terms *platform name* (for example SUNW,S240), and *platform group* (for example, sun4m).  

**Book Rewrite**  
The *System Configuration and Installation Guide* was rewritten. Procedures for installing Solaris software for x86 and SPARC were separated into two books and the titles changed to: *x86: Installing Solaris Software* and *SPARC: Installing Solaris Software*.  

**New Interfaces For Interactive Installations**  
New graphical user interface (GUI) and character user interface (CUI) were added for installing Solaris software.