Sun Fire™ X4500 Server Guide for Preinstalled Solaris™ 10 Operating System

Sun Microsystems, Inc.
www.sun.com

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Contents

Preface

This document contains instructions for configuring the preinstalled Solaris™ 10 operating system on a Sun Fire™ X4500 server.

Related Documentation

For the most up-to-date information about the Sun Fire X4500 server and the Zettabyte File System (ZFS), go to the sites listed in the following table. For a list of documents in the Sun Fire X4500 documentation set, see the *Where to Find Sun Fire X4500 Server Documentation* on the first web site listed below.

Documentation	Web Site
Sun Fire X4500 Server documentation set	http://www.sun.com/products-n-solutions/hardware/docs/Servers/x64_servers/x4500/
Solaris Operating System Installation	http://docs.sun.com/
ZFS Administration Guide (819-5462)	http://docs.sun.com/
All Sun hardware documentation	http://www.sun.com/documentation

Translated versions of some of the documents in the Sun Fire X4500 server documentation set are available in French, Simplified Chinese, Traditional Chinese, Korean, and Japanese at the first web site listed in the preceding table. The English documentation is revised more frequently and might be more up-to-date than the translated documentation.

Contacting Sun Technical Support

If you have technical questions about this product that are not answered in this document, go to:

http://www.sun.com/service/contacting

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Sun Fire X4500 Server Guide for Preinstalled Solaris 10 OS, part number 819-7148-12

CHAPTER 1

Configuring the Preinstalled Solaris Operating System

This chapter walks you through the steps for configuring the Solaris Operating System (OS) that has been preinstalled on your Sun Fire X4500 Server.

Note – Unlike with SPARC® systems, you will *not* see most of the output of the pre-installed Solaris 10 image through a monitor when you power on the server. You will see the BIOS Power-On Self Test (POST) and other boot information output.

The server ships with its console redirected to the *serial* port. For more information, see "To Connect to the Server Using a Terminal Program" on page 8.

You can choose an option to send the output to VGA (video port). If you want to use the video port, see "To Redirect the Console Output to the Video Port (Optional)" on page 8.

This chapter covers these topics:

Before You Begin

Before you begin configuring the preinstalled OS, do the following:

1. Perform initial configuration of the server's Integrated Lights Out Manager (ILOM) Service Processor (SP) and determine the server's network settings, as described in the *Sun Fire X4500 Installation Guide*.
2. Gather the information that you will need for the configuration, as listed in "Gathering Information for the Installation Worksheet" on page 2. Note that default values are indicated by an asterisk (*).

Gathering Information for the Installation Worksheet

Use the worksheet in TABLE 1-1 to gather the information that you need for configuring the preinstalled Solaris OS.

Finding the IO Board and SP MAC Addresses

The IO board and SP MAC addresses are printed on their respective PC boards, but these are also printed on the system controller handle.

- The SP MAC address is on the left side of the handle. Look for the label that says "SP MAC ID".
- The IO board MAC address is on the right side of the handle. Look for the label that says "Net 0 MAC ID."

Note – If the cable management arm (CMA) is in place, it can obscure these addresses. To view the MAC address labels when the CMA is in place, use a stylus to press the recessed button to release the system controller handle, and swivel it down partway until the addresses are visible. Return it to the closed position when you are done.

TABLE 1-1 Worksheet for Installation

Information for Installation		Description or Example	Your Answers: Defaults (*)
Language		Choose from the list of available languages for the Solaris 10 software.	English*
Locale		Choose your geographic region from the list of available locales.	
Terminal		Choose the type of terminal that you are using from the list of available terminal types.	
Network connection		Is the system connected to a network?	• Networked • Non-networked*
DHCP		Can the system use Dynamic Host Configuration Protocol (DHCP) to configure its network interfaces?	• Yes • No*
If you are not using DHCP, note the network address:	IP address	If you are not using DHCP, supply the IP address for the system. Example: `129.200.9.1`	
	Subnet	If you are not using DHCP, is the system part of a subnet? If yes, what is the netmask of the subnet? Example: `255.255.0.0`	255.255.0.0*
	IPv6	Do you want to enable IPv6 on this machine?	• Yes • No*
Host name		A host name that you choose for the system.	
Kerberos		Do you want to configure Kerberos security on this machine? If yes, gather this information: Default Realm: Administration Server: First KDC: (Optional) Additional KDCs:	• Yes • No*

TABLE 1-1 Worksheet for Installation *(Continued)*

Information for Installation		Description or Example	Your Answers: Defaults (*)
Name service	Name service	If applicable, which name service should this system use?	• NIS+ • NIS • DNS • LDAP • None*
	Domain name	Provide the name of the domain in which the system resides.	
	NIS+ and NIS	Do you want to specify a name server, or let the installation program find one?	• Specify One • Find One*
	DNS	Provide IP addresses for the DNS server. You must enter at least one IP address, but you can enter up to three addresses. You can also enter a list of domains to search when a DNS query is made. Search Domain: Search Domain: Search Domain:	
	LDAP	Provide the following information about your LDAP profile: Profile name: Profile server: If you specify a proxy credential level in your LDAP profile, gather this information: Proxy-Bind Distinguished Name: Proxy-Bind Password:	

TABLE 1-1 Worksheet for Installation *(Continued)*

Information for Installation	Description or Example	Your Answers: Defaults (*)
Default route	Do you want to specify a default route IP address, or let the Solaris installation program find one? The default route provides a bridge that forwards traffic between two physical networks. An IP address is a unique number that identifies each host on a network. You have the following choices: • You can specify the IP address. An `/etc/defaultrouter` file is created with the specified IP address. When the system is rebooted, the specified IP address becomes the default route. • You can let the Solaris installation program detect an IP address. However, the system must be on a subnet that has a router that advertises itself by using the Internet Control Message Protocol (ICMP) router discovery protocol. If you are using the command-line interface, the software detects an IP address when the system is booted. • You can choose None if you do not have a router or do not want the software to detect an IP address at this time. The software automatically tries to detect an IP address on reboot.	• Specify One • Detect One • None*
Time zone	How do you want to specify your default time zone?	• Geographic region* • Offset from GM • Time zone file
Root password	Choose a root password for the system.	

Configuring the Preinstalled Solaris Operating System

The Solaris 10 Operating System is preinstalled on the hard disk drives in slot 0 and mirrored in slot 1. Use the information that you gathered in "Gathering Information for the Installation Worksheet" on page 2 as you configure this preinstalled OS.

You can configure the preinstalled Solaris OS by using another system to connect to the server. Two possible ways to do this are described here:

- "To Connect to the Server Using the Service Processor's IP Address" on page 6

  If you use this method, you first must determine the service processor's IP address. The server must be connected to the network.

- "To Connect to the Server Using a Terminal Program" on page 8

  If you use this method, you do *not* need to determine the service processor's IP address, but you must have a cable connection from the server to the serial port of of the host system.

  Optionally, you can redirect the console output to the video output. For more information, see "To Redirect the Console Output to the Video Port (Optional)" on page 8.

To Connect to the Server Using the Service Processor's IP Address

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Note – This procedure assumes that you have connected the server to your network through an Ethernet cable.

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1. **Determine the service processor's IP address:**

   a. **Power on the main power to the platform by using a stylus to press the recessed Power button on the front panel.**

   Power-On Self-Test (POST) messages appear on your screen as the OS boots.

   b. **Initialize the BIOS Setup utility by pressing the F2 key while the system is performing the POST.**

      The main BIOS screen is displayed.

c. **Select Advanced.**

The Advanced screen is displayed.

d. **Select IPMI 2.0 Configuration.**

The IPMI 2.0 Configuration screen is displayed.

e. **Select the LAN Configuration menu item.**

f. **Select the IP Address menu option.**

The service processor's IP address is displayed using the following format:
`Current IP address in BMC: xxx.xxx.xxx.xxx`

2. **Using a client system, establish a Secure Shell (SSH) connection to the service processor's IP address.**

`$ssh -l root` *<sp_ip_address>*

3. **Log in to the service processor as an administrator, for example:**

```
login: root
password: changeme
```

4. **If you have changed the SP Serial Port default settings, make sure you reset them to the default settings.**

The default settings are 9600 baud, 8N1 (eight data bits, no parity, one stop bit), no flow control.

5. **Start the serial console mode by typing the following:**

```
start /SP/console
```

Note – Only accounts with Administrator privileges are enabled to configure the SP serial port.

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6. **Follow the Solaris preinstallation on-screen prompts.**

7. **Use the information gathered in** "Gathering Information for the Installation Worksheet" on page 2 **to help you enter the system and network information as you are prompted.**

The screens that are displayed will vary, depending on the method that you chose for assigning network information to the server (DHCP or static IP address).

After you have entered the system-configuration information, the server completes the boot process and displays the Solaris login prompt.

To Redirect the Console Output to the Video Port (Optional)

The server's console is automatically directed to the serial port. GRUB, the open source boot loader, is the default boot loader in the Solaris OS for X86 or X64 based systems. The boot loader is the first software program that runs after you power on a system.

From the GRUB menu, you have the option of displaying the installation process to a VGA connection (video port) as shown here:

```
**************************************************************************
* Solaris 10 11/06 s10x_u2wos_09a X86                                    *
* Solaris failsafe                                                       *
* Solaris 10 11/06 s10x_u2wos_09a X86 (VGA)                              *
*                                                                        *
*                                                                        *
*                                                                        *
*                                                                        *
*                                                                        *
```

To display output to the video port, choose the `Solaris 10 11/06 s10x_u2wos_09a X86 (VGA) option.`

To Connect to the Server Using a Terminal Program

1. **Use a cable to connect the serial port of the server to the serial port of the host system where you will run a terminal program.**

Tip – You might need a Sun RJ45 to terminal concentrator adapter. For serial port pinouts, see the *Sun Fire X4500 Service Manual*.

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2. **Make sure the communication properties of the serial port of the system are set to the default.**

   The default settings are 9600 baud, 8N1 (eight data bits, no parity, one stop bit), no flow control.

3. **Start a terminal program to connect to the serial console:**

   On a client running Solaris OS, type:

$ **tip -9600 /dev/tty***x*

where *x* is a, b, and so on.

On a client running Windows, start a program such as HyperTerminal.

On a client running Linux, start a program such as Minicom, a text-based serial communication program that is included in the Linux distributions. For more information, see the man pages included in the Linux distribution.

4. **Log in to the service processor as an administrator, for example:**

   login: **root**
   password: **changeme**

5. **Start the serial console by typing the following:**

start /SP/console

6. **Power on the main power to the server by using a stylus to press the recessed Power button on the front panel.**

Power-on self test (POST) messages display on your screen as the OS boots.

Using the Solaris Installation Program

The documentation listed in this section provides instructions for using the Solaris Installation program and is available at the following web site:

http://docs.sun.com/

Make sure you follow the instructions for *x86-based* systems, not *SPARC-based* systems. For more information, see the Solaris 10 Release and Installation Collection for the version of the Solaris 10 operating system you have installed. This documentation is available at:

http://docs.sun.com/app/docs/prod/solaris.10

Before You Begin

Make sure the Sun Fire X4500 Server is connected to:

- (Optional) Monitor
- (Optional) Keyboard
- (Optional) Mouse
- Ethernet
  - Through the NET MGT (SP) port
  - Through the 10/100/1000 Gigabit Ethernet ports
- Power
- Serial device (depending on console type)

For locations of connections, see the *Sun Fire X4500 Server Installation Guide*.

During Installation

After you configure the preinstalled Solaris OS, the Solaris Installation program reboots the system and prompts you to log in. The system displays the message of the day, indicating the preloaded software that comes with your system:

- Sun Java™ Enterprise System (Java ES)
- Sun Studio 11

In addition to this software, Sun™ N1 System Manager is shipped on DVD, which is enclosed in the system box.

Online documentation for this software can be found at:

http://docs.sun.com/

Sun Java Enterprise System

Sun Java Enterprise System (Java ES) is a set of software components that provide services needed to support enterprise-strength applications distributed across a network or Internet environment.

Sun Studio 11

Sun Studio 11 includes high-performance, optimizing C, C++, and Fortran compilers for the Solaris OS on SPARC and x86/x64 platforms, plus command-line tools and a NetBeans-based Integrated Development Environment (IDE) for application performance analysis and debugging of mixed source language applications. The tools offer multi-platform support, compatible with gcc, Visual C++, C99, OpenMP, and Fortran 2003.

Sun N1 System Manager

Sun N1 System Manager is an aggregated system manager that helps administrators reduce cost and complexity while providing the agility to manage hundreds of systems. Using the N1 System Manager software, administrators can discover, provision, patch, monitor and manage anywhere from one to hundreds of Sun systems. The benefits of the N1 System Manager software include a centralized, interactive, easy-to-use browser and command line interface (CLI), allowing administrators to make quick and accurate changes to single systems or groups of systems.

For more information, go to:

http://www.sun.com/software/products/system_manager

After Installation

The Solaris OS is preinstalled on the hard disk in physical slot 0 and is mirrored on the hard disk in physical slot 1. Hard disks in physical slot 2 through 26 are configured as a single ZFS volume.

To learn about:	Read this:
Administering, configuring, and monitoring the server including hard disk management, the `hd` utility and preinstalled disk mirroring	*Sun Fire X4500 Administration Guide*
Solaris Operating System installation options	*Sun Fire X4500 OS Installation Guide* and the Solaris 10 Release and Installation documentation
Diagnosing problems, including SunVTS diagnostics software, event logs and POST codes, LEDs and error handling	*Sun Fire X4500 Diagnostics Guide*
ZFS filesystem	*ZFS Administration Guide*

See the following documentation for more information about managing the server.

`hd` Utility

Installing the `hd` utility is recommended. The `hd` utility enables you to map the logical-to-physical devices for the server. You need to understand this mapping to administer the system, manage the hard disks, and troubleshoot the system. The `hd` utility is available from:

- SunVTS Bootable Diagnostic CD included in your system box
- Preinstalled in `/usr/bin/hd`
- From the Downloads section of the following web site:

  `http://www.sun.com/servers/x64/x4500/support.xml`

For more information about the utility, see the *Sun Fire X4500 Administration Guide*. If you reinstall the Solaris 10 operating system, you will need to use the `pkgadd` command to reinstall the `hd` utility.

Reinstalling the Solaris Operating System

If you want to reinstall Solaris or to install a different version of Solaris, you can install the OS in one of several ways, including by DVD and network (using Preboot eXecution Environment (PXE)).

For step-by-step procedures, see the book, Solaris 10 Installation Guide: Basic Installations.

In addition to installing the Solaris 10 Operating system, you **must** install any required patches as described in the product download site. To access the product download site, go to the following web site and locate the Downloads section.

`http://www.sun.com/servers/x64/x4500/support.xml`

Downloading Software

If you need to reinstall software, you can download the software from these sites:

- To download the Solaris 10 operating system, see:

  `http://www.sun.com/software/solaris/get.jsp`

- To download patches, see:

  `http://sunsolve.sun.com/pub-cgi/show.pl?target=home`

Important Solaris OS Installation and Bootable Hard Disk Drive Guidelines

Note the following important guidelines when installing the Solaris OS on the Sun Fire X4500 Server:

The controller number of the bootable disk *differs* depending on the server's configuration. For example, the controller number of the bootable disk is set during installation based on:

- The number of disks installed
- The existence of any external USB disk or CD device, including the virtual CD-ROM and virtual floppy devices supported by the SP

Thus, you must identify the bootable disk *during* the installation procedure.

The Sun Fire X4500 Server comes with six controllers, each supporting up to eight SATA drives, for a total of 48 SATA drives. Before you reinstall the Solaris OS, you need to determine the logical device name that corresponds to the two bootable disks, which is in the form:
`c`*X*`t`*Y*`d`*Z*`s`*W*

where

- `c`*X* is the controller (or interface) number, such as c0, c2, c4, and so on. Controller numbers are logically assigned in sequential order.
- `t`*Y* is the target ID of the device, such as t0, t1, t2, and so on up to 7.
- `d`*Z* is the device number (also known as the logical unit number (LUN). It reflects the actual address of the device unit. *Z* is zero (0) for Solaris 10 OS.
- `s`*W* is the slice number that represents a slice of a disk. Valid numbers are 0 to 7.

To determine the bootable disk, use the command `cfgadm` as described below. The `cfgadm` command provides configuration administration operations on dynamically reconfigurable hardware resources. For more information this command, see the man page.

▼ To Determine the Bootable Disks and to Reinstall Solaris OS

This procedure assumes you are running the Solaris Installation Program and you are reinstalling the Solaris 10 operating system.

1. **From the Solaris Installation Program, choose the installation type.**

   From the Solaris Installation Program, you should see a screen similar to this:

```
Select the type of installation you want to perform:

        1 Solaris Interactive
        2 Custom JumpStart
        3 Solaris Interactive Text (Desktop session)
        4 Solaris Interactive Text (Console session)
        5 Apply driver updates
        6 Single user shell

       Enter the number of your choice followed by the <ENTER> key.
        Alternatively, enter custom boot arguments directly.

        If you wait 30 seconds without typing anything,
        an interactive installation will be started.
```

   a. **Choose option 1 or 3 as the installation type as these options allow you to open a terminal window while running the installation program. Opening a terminal window is required in** Step 4**.**

   b. **Alternatively, you can choose 4, Console session, exit the installation after verifying the system is complete, type the commands in Step 4, and restart the installation by using the** `suninstall` **command.**

2. **Use the information gathered in** "Gathering Information for the Installation Worksheet" on page 2 **to help you enter the system and network information when prompted.**

3. **When prompted for the type of installation you want to perform, click Next.**

4. **Find the logical disk name for the bootable disks.**

   a. **Open a terminal window by right-clicking your mouse and choosing the option Program > Terminal.**

   b. **Determine the bootable disk in physical slot #0 for installing the operating system by typing:**

```
# cfgadm | grep sata3/0
```

   The system displays the logical disk name for the disk in physical slot #0 that is available for booting, for example:

```
sata3/0::dsk/c4t0d0 disk connected configured OK
```

c. **(Optional) To determine the bootable disk in physical slot #1, type:**

```
# cfgadm | grep sata3/4
```

5. **Go back to the installation program and select the logical disk name that corresponds to the bootable disk onto which you want to install the Solaris OS.**

   In this example, the bootable disk in physical slot #0 has the logical disk name of c4t0d0.

Note – You might see a message that the disk is not a bootable disk drive. Ignore this message and continue.

---

   a. **Use the up and down arrow keys to select the bootable disk determined in Step 4 and press F2 to continue.**

   b. **If the disk you chose contains Windows or Linux partitions, you need to create a Solaris partition that can coexist with the Windows or Linux partition. To do this, follow the prompts to create a Solaris fdisk partition to hold the Solaris OS installation.**

6. **Install the latest version of required patches as described in the product download site. To access the product download site, go to the following web site and locate the Downloads section.**

   http://www.sun.com/servers/x64/x4500/support.xml

Solaris OS Training

Sun provides flexible training options that accommodate your personal schedule and learning style. The training options include instructor-led, web-based online, CD-ROM and Live Virtual classes. For Solaris 10 Training and Certification options at a glance, please visit:

http://www.sun.com/training/catalog/solaris10.html

Installing Other Operating Systems

For information on installing other operating systems, see the following:

- *Sun Fire X4500 Server Windows and Linux OS Supplement*
- *Sun Fire X4500 Server OS Installation Guide*
- *Sun Fire X4500 Server Windows OS Installation Guide*
- *Sun Fire X4500 Server Product Notes*

Other operating systems might require software updates; see the appropriate Release Notes for the software release that supports the OS you want to install.