Sun Ray™ Server Software 3.1 Installation and Configuration Guide

for the Solaris™ Operating System

Sun Microsystems, Inc.
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Preface

The *Sun Ray Server Software 3.1 Installation and Configuration Guide for the Solaris™ Operating System* provides instructions for installing, upgrading, and configuring a system of Sun Ray™ DTUs and their server or servers. It is written for system and network administrators who are already familiar with the Sun Ray™ computing paradigm and have substantial networking knowledge. This guide may also be useful for those interested in customizing their Sun Ray systems.

Before You Read This Book

This guide assumes that you have access to the Sun Ray Server Software 3.1 CD or the Electronic Software Download (ESD).

How This Book Is Organized

Chapter 1 gives a brief overview installation, upgrade, and configuration along with two flow charts to help make it easier to get the latest Sun Ray Server Software up and running.

Chapter 2 describes the requirements for installation.

Chapter 3 steps through the installation process.

Chapter 4 describes preparations for upgrading from earlier versions of Sun Ray Server Software. It includes a brief discussion of failover groups.

Chapter 5 steps through the upgrade procedures.

Chapter 6 describes configuration requirements. It includes a brief discussion of network topology and a set of worksheets.

Chapter 7 steps through the configuration procedures.

Appendix A contains all the material that did not fit neatly into the chapters above. It includes, among other items, error messages from the installation script.

This manual also contains an index.

Using UNIX Commands

This document does not contain information on basic UNIX® commands and procedures, such as shutting down the system, booting the system, or configuring devices. This document does, however, contain information about specific Sun Ray system commands.

Typographic Conventions

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

Shell Prompts

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

Related Documentation

Application	Title	Part Number
Administration	*Sun Ray Server Software 3.1 Administrator's Guide for the Solaris™ Operating System*	819-2384-10
Release Notes	*Sun Ray Server Software 3.1 Release Notes for the Solaris Operating System*	819-2386-10

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CHAPTER 1

Overview

This guide describes how to install, upgrade, configure, and remove Sun Ray™ Server Software 3.1. It also provides instructions for upgrading to the appropriate version of the Solaris operating environment.

The reader is presumed to be familiar with basic UNIX® commands and to have experience in network configuration and administration. Technical information and procedures are presented with a command-line interface.

For a visual overview of the tasks to be performed, please look at the decision flow chart (FIGURE 1-1) on the next page. Following the procedures in this guide can help you to avoid unnecessary problems when you install, upgrade, or configure Sun Ray systems.

Media Formats

Sun Ray Server Software 3.1 is available on CD-ROM and ESD (electronic software download). If you download the software electronically, then when instructions and procedures in this guide ask you to change to the image directory on the CD-ROM, please change instead to the image directory under the download directory. Commands issued in either file system should execute properly.

Installation Flow Chart

The following diagram shows the key decisions you should take before performing an installation or upgrade.

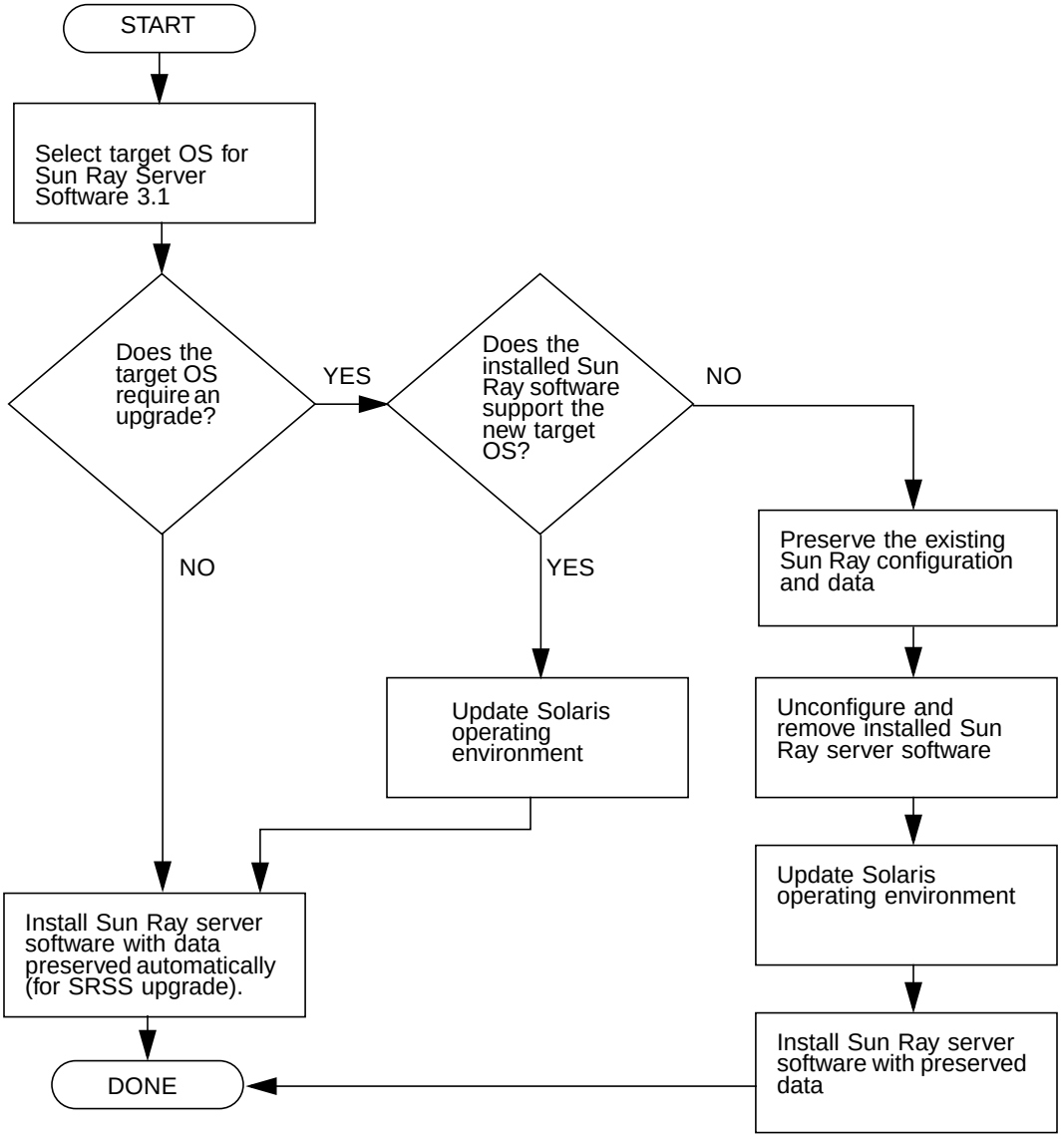

FIGURE 1-1 Installation and Upgrade Flow Chart

- If you are installing Sun Ray Server Software for the first time, go to "Preparing for Installation" on page 5.
- If you are upgrading Sun Ray Server Software, go to "Preparing to Upgrade Sun Ray Server Software" on page 15.
- If you are creating a failover group from both new and existing Sun Ray servers, see "To Configure the Sun Ray Server Hierarchy" on page 41.

The following table shows which versions of Sun Ray Server Software are compatible with which versions of the Solaris operating environment.

TABLE 1-1 Sun Ray Server Software vs. Operating System Versions

Sun Ray	Solaris 2.6	Solaris 7	Solaris 8	Solaris 9	Solaris 10	TSOL
1.0	Yes	Yes	-	-		
1.1	Yes	Yes	-	-		
1.2	Yes	Yes	Yes	-		
1.3	Yes	Yes	Yes	-		
2.0	-	-	Solaris 8 Update 7 or higher (Solaris 8 2/02)	Solaris 9 Update 1 or higher (Solaris 9 9/02)		Trusted Solaris 8 (12/02)
3	-	-	Solaris 8 Update 7 or higher (Solaris 8 2/02)	Solaris 9 Update 5 or higher (Solaris 9 12/03)		Trusted Solaris 8 (7/03)
3.1			Solaris 8 Update 7 or higher (Solaris 8 2/02)	Solaris 9 Update 7 or higher (Solaris 9 9/04)	SPARC and x86 (Solaris 10 3/05)	Trusted Solaris 8 (2/04)

Note – SRSS versions 1.0, 1.1, 1.2 and 1.3 are no longer supported.

Configuration Flow Chart

The following diagram shows the key decisions to take before configuring Sun Ray servers and DTUs on a network, or before configuring a network for Sun Rays.

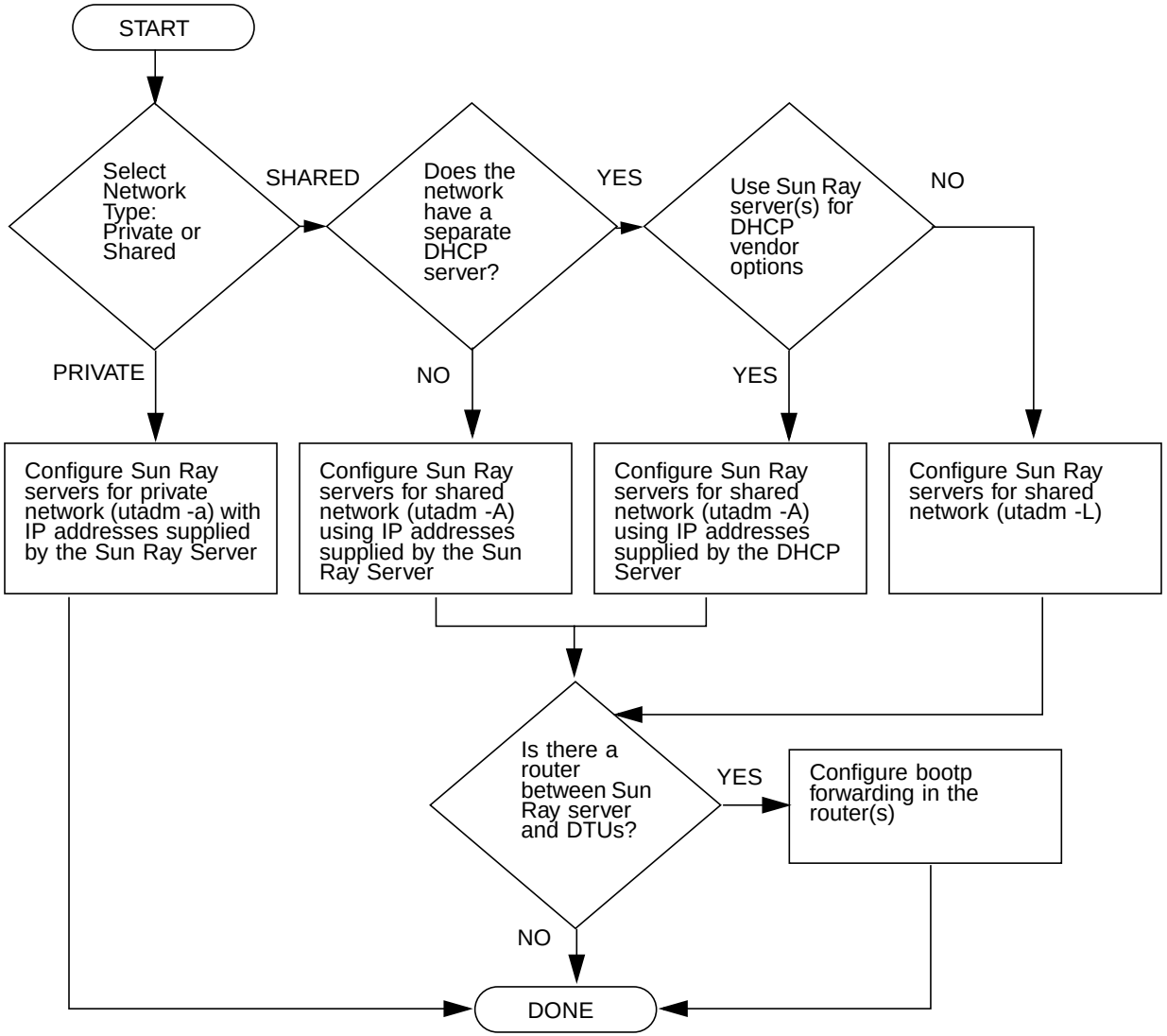

FIGURE 1-2 Sun Ray Configuration for Various Types of Networks

CHAPTER 2

Preparing for Installation

The installation process is easy and straightforward; however, it is essential that you verify all requirements before you install Sun Ray Server Software 3.1. This chapter describes what you need to do.

Topics in this chapter include:

Before you install Sun Ray Server Software, you should:

- Verify the operating environment.

  Make sure that you are running the desired supported operating system on your system. See "Upgrading the Operating System" on page 23.

- Verify that you have installed the latest operating system patches.

  For Solaris patches, see "Operating System Patch Requirements" on page 8.

- Verify system requirements.

  Make sure that the system(s) on which you plan to install the software fulfills the necessary hardware and software requirements.

Note – The utinstall script for SRSS 3.1 does not automatically add Sun Ray information to the `crontab`, `syslog`, `PAM`, and `SunMC` services as earlier versions did; instead, it adds them upon the first reboot after installation or upgrade.

Hardware Requirements

Disk Space

Note – The suggested server configuration includes approximately 50-100 MB of swap space per user.

The standard installation of Sun Ray Server Software requires at least 95 MB of disk space. TABLE 2-1 lists the disk space requirements for specific directories:

TABLE 2-1 Sun Ray Server Software Disk Space Requirements

Product	Default Installation Path	Requirements
Sun Ray core software	`/`	1 Mbyte
	`/opt`	20 Mbytes
	`/var/adm/log`	1 Mbyte
	`/var/tmp`	5 Mbytes
	`/var/opt/SUNWut`	Allow enough disk space for the log files.
Sun Ray Data Store 2.1	`/opt/SUNWut/srds`	4 Mbytes in `/opt`
	`/etc/opt`	0.1 Mbytes in `/etc`
	`/var/opt/SUNWut/srds`	Allow enough disk space for the database and log files. For 1,000 entries, allocate roughly 1.5 Mbytes of disk space, 64 Mbytes of RAM, and 128 Mbytes of swap space.

Solaris Shared Memory	`/etc/system`	`# set shmsys:shminfo_shmmax = 0x2000000`
		`# set shmsys:shminfo_shmmni = 0x2000`
		`# set shmsys:shminfo_shmseg = 0x400`

English docs (optional)	`/opt`	8.5 Mbytes
Non-English docs (optional)	`/opt`	8.5 Mbytes for each locale

Software Requirements

Java Runtime Environment (JRE)

SRSS 3.1 requires JRE version 1.4.2 or later. The latest Java release is available at:

`http://java.sun.com/j2se`

JRE version 1.4.2 is also bundled on the SRSS 3.1 CD, in the Supplemental directory.

Solaris Operating System Versions

The Sun Ray system runs on the Solaris 8_update7 (Solaris 8 2/02), Solaris 9_update7 (Solaris 9 9/04) on SPARC platforms; it runs on the Solaris 10 operating environment on both SPARC and x86 platforms. If the correct version of the Solaris operating environment is already installed on the system or systems on which you will install Sun Ray Server Software, go to Chapter 3. If you need to upgrade the Solaris operating environment, please follow the instructions in "Upgrading the Operating System" on page 23 before continuing.

- On SPARC platforms, configure the Sun Ray server with an "Entire Distribution" software cluster installation of the Solaris 8, 9, or 10 "Server", SPARC Platform Edition before you install the Sun Ray sever software.
- On x86 platforms, configure the x86 Sun Ray server with an "Entire Distribution" software cluster installation.

Note – x86 platforms require Solaris 10.

You can check the operating system version by typing the following UNIX command as a user of the Sun Ray server:

```
% cat /etc/release
```

If the server has a lower version number than you need, please contact your Sun Microsystems representative to purchase the latest version of the Solaris software.

Operating System Patch Requirements

Sun Ray Server Software's `utinstall` script installs, by default, required patches that have not yet been included in the latest Recommend Patch Cluster (RPC). For the software to function properly, however, you *must* also install the latest Recommend Patch Cluster (RPC) for the operating system version you intend to run.

Please download the latest RPC from `http://sunsolve.sun.com`, then navigate to Product Patches->Recommended Patch Clusters->Recommended Solaris Patch Clusters and J2SE Clusters.

From the scrolling list of patch clusters, you can select the latest patches for your operating system version.

Note – As this installation guide nears completion, the resulting URL is `http://sunsolve.Sun.COM/pub-cgi/show.pl?target=patches/patch-access` but it may change without further notice.

Further information on the latest Sun Ray patches is located at the following URL:

`http://www.sun.com/software/sunray/patches.xml`

Caution – Failure to install the latest RPC may cause unforeseen problems.

SunMC Requirements

To use SunMC, the administrator must install the correct version of the SunMC software. See "Installing the SunMC Software" on page 51.

Sun Ray Administration Tool

The Sun Ray Administration Tool (Admin GUI) requires that a web server be installed and running on each Sun Ray Server.

If an Apache HTTP Server is detected, the `utconfig` script asks whether it should be configured automatically. If you answer Yes, then it is so configured.

If you answer No, then the configuration is stored in `/etc/opt/SUNWut/http/http.conf`. You can then use this file to configure the HTTP server manually. If you want to use a web server other than Apache, see "To Configure an HTTP Server Manually" on page 47.

The Apache HTTP Server is available at the following URL:
`http://httpd.apache.org`

The Sun Ray configuration script uses port 1660 for the Sun Ray Administration Tool (Admin GUI) by default. If this port is unavailable, you can configure a new port while running the `utconfig` script.

For information on configuring a web server manually, see "To Configure an HTTP Server Manually" on page 47.

Sun Ray Port Requirements

Sun Ray Server Software 3.1 has different port requirements than 1.X versions for the Sun Ray Data Store.

Sun Ray Data Store

Instead of the SunDS product formerly used for storing Sun Ray data, Sun Ray Server Software 3.1 installs and uses the Sun Ray Data Store. This private data store uses the new service port 7012. It can interoperate with the old SunDS if configured properly.

When you configure a new Sun Ray server in a failover environment that uses SRSS 3.1 only, service port 7012 is used by default.

If you already have an LDAP (Lightweight Data Access Protocol) server configured on the Sun Ray server, it can coexist with Sun Ray Data Store; however, it must not use port 7012, which is reserved for use by the Sun Ray Data Store.

If you configure a new Sun Ray server in a mixed failover group, you must make sure that the primary server is running SRSS 3.1.

Note – Although it is possible to configure mixed failover groups consisting of servers running various versions of Sun Ray Server Software, this practice is discouraged. For more information, see Chapter 11 in the *Sun Ray Server Software 3.1 Administrator's Guide*.

If the secondary server is running SRSS 3.1, no special care is required; the `utreplica` utility automatically synchronizes with the port number on the primary.

When you upgrade from a 1.x server, the old LDAP port remains active so that it can continue to inter-operate with other 1.x servers in the failover group.

Tip – Once you finish upgrading all the servers in the failover group, be sure to convert your servers to use port 7012 by running the `utdssync` command on the primary server. This procedure allows the SunDS to coexist with the Sun Ray Data Store.

Web Browser Requirements

To view the Sun Ray Administration Tool (Admin GUI), you must have a web browser, such as Mozilla or Netscape™ Communicator, installed on the system that will display it.

The latest version of the Mozilla browser is available at:

`http://www.mozilla.org/download.html`

The latest version of the Netscape Communicator web browser is available at:

`http://www.netscape.com/download`

For instructions on manual configuration of a web server, see "To Configure an HTTP Server Manually" on page 47.

CHAPTER 3

Installation

This chapter contains instructions for installing Sun Ray Server Software. If you are *upgrading* Sun Ray Server Software from an earlier version, please see "Preparing to Upgrade Sun Ray Server Software" on page 15.

▼ To Install Sun Ray Server Software

1. **If you have already mounted the Sun Ray Server Software 3.1 CD-ROM locally or from a remote server, or if you have extracted the ESD files to an image directory, begin at Step 4.**

2. **As superuser, open a shell window on the Sun Ray server.**

   Tip – To avoid installation script errors that can occur if user environment settings are carried forward, use one of the following commands for superuser login instead of using the `su` command without arguments.:

   ```
   % su -
   ```

   ```
   % su - root
   ```

3. **Insert the Sun Ray Server Software 3.1 CD-ROM.**

   If a file manager window opens, close it. The file manager CD-ROM window is not necessary for installation.

4. **Change to the image directory. For example:**

```
# cd /cdrom/cdrom0
```

5. **Install Sun Ray Server Software:**

```
# ./utinstall
```

The installation process begins. The script:

- prompts you for the location of the Java JRE 1.4.2 or later

---

Note – To install JRE from the Supplemental directory, use
`j2re-1_4_2_07-solaris-sparc.sh`
not
`j2re-1_4_2_07-solaris-sparcv9.sh`

- verifies which required software products are already installed.
- checks for the existence of Controlled Access Mode (kiosk) packages.

Note – Earlier releases of SRSS installed all locales by default. For upgrades, the SRSS 3.1 installation script automatically installs whatever locales were previously installed. For fresh installations, it asks about each locale in sequence. If you have installed `en_US` only, then later want to add one or more foreign locales, please refer to the Release Notes for instructions.

- prompts you for a response before it installs the required software products and any necessary patches (Solaris only).

6. **Answer `y` (yes) to the prompt.**
   - The script installs Solaris patches (if any) and the required software applications:

Note – The `utinstall` script requests that you reboot the Sun Ray server. In the past, this step was optional; however, it is now required.

- The `utinstall` script ends, indicating a log file is available at the following location:
  - `/var/adm/log/utinstall.`*year_month_date_hour*`:`*minute*`:`*second*`.log`

  where the values displayed reflect a time stamp of when `utinstall` was started.

Note – For a listing of `utinstall` error messages, see “utinstall Error Messages” on page 59.

Tip – Check the log file. Many installation problems are reported in this file and are frequently overlooked.

7. **If you have not already done so, reboot the Sun Ray server before trying to run `utadm` or `utconfig`.**

```
# sync;sync;init 6
```

8. **Go to “Preparing for Configuration” on page 27 for instructions how to prepare to configure and reboot the Sun Ray server.**

   If other systems need software installation, return to “Upgrading the Operating System” on page 23 and repeat the tasks appropriate for those systems.

CHAPTER 4

Preparing to Upgrade Sun Ray Server Software

This chapter describes the preparations for *upgrading* from earlier versions of Sun Ray Server Software.

Topics in this chapter include:

Requirements

You can upgrade your current Sun Ray Server Software if you have purchased a new Sun Ray Server Software 3.1 Right-to-Use license or have a Sun Ray Server Software service contract that entitles you to upgrades.

To upgrade from the earlier versions of Sun Ray Server Software, first determine whether you need to upgrade your operating system release, and perform the operating environment upgrade if necessary. See "Upgrading the Operating System" on page 23.

Note – If your current version is older than 2.0, you must either upgrade to 2.0 or 3.0 and then upgrade again to 3.1 or else perform a clean install. The clean install is usually preferable to upgrading twice.

Note – Before you upgrade Sun Ray Server Software, inform your users of your plans, and have them terminate their sessions. An effect of the upgrade procedure is that all active and suspended sessions are lost.

In addition, the utinstall script for SRSS 3.1 does not automatically add Sun Ray information to the `crontab`, `syslog`, `PAM`, and `SunMC` services as earlier versions did; instead, it adds them upon the first reboot after installation or upgrade.

The following table summarizes your upgrade requirements.

TABLE 4-1 Summary of Upgrade Requirements

If Upgrading the Operating System Release	If NOT Upgrading the Operating System Release
1. Preserve the configuration. Upgrading from previous releases of Sun Ray Server Software requires you to preserve the existing Sun Ray configuration manually. See "Preserving Configuration Data" on page 18.	1. Verify that you have installed the latest operating system patches. See "Operating System Patch Requirements" on page 8.
2. Run utadm -l and note the configuration for all existing Sun Ray subnetworks, then run utadm -r to unconfigure all active Sun Ray interfaces and remove all Sun Ray entries from the configuration databases.	2. Upgrade Sun Ray Server Software. See "Upgrading the Sun Ray Server" on page 24.
3. Unconfigure the server. Upgrading from earlier releases requires you to unconfigure the server manually. See "Unconfiguring the Sun Ray Server" on page 21.	
4. Remove the existing Sun Ray software. See "To Remove Sun Ray Server Software" on page 21.	
5. Upgrade the operating system. See "To Upgrade the Operating System" on page 23	
6. Upgrade Sun Ray Server Software. See "Upgrading the Sun Ray Server" on page 24.	

Note – It is not necessary to uninstall the current Sun Ray Server Software to perform the upgrade if you are not upgrading the operating system release.

Failover Groups

By configuring two or more Sun Ray servers in a failover group, you can reduce interruption of new service availability in the event that one server fails. If you plan to combine existing Sun Ray servers into a failover group, or to upgrade an existing failover group, please consider the following:

- Before you upgrade a given server, Sun Ray DTU users should terminate their sessions.

Tip – If it is not convenient to upgrade all servers in a large configuration at once, upgrade one or two servers at a time until the entire configuration is complete.

- For best results in groups of four or more servers, configure the primary server so that it serves only the Sun Ray Data Store. Configure the secondary servers so that they serve users directly in addition to serving the Data Store.
- To take advantage of new features in SRSS 3.1, do not mix different Sun Ray Server Software versions within a failover group. Failover groups that use more than one software version revert to the functionality of the earliest version.
- Using the Admin GUI to restart or reset Sun Ray services does not work across servers with different Sun Ray releases. For example, even if you use the Admin GUI to restart all the servers in a failover group that are running SRSS 3.1, you should still restart or reset any Sun Ray servers running earlier versions of SRSS manually. Please see the previous item.
- When you configure a new server with `utconfig`, the Sun Ray Data Store uses port 7012 by default. When you upgrade an existing Sun Ray server, however, the 2.1 Sun Ray Data Store continues to use the old LDAP port 389, which can create port conflicts.

Tip – To avoid port conflicts, remove the old Sun Data Store product during the `utinstall` procedure. If you have any non-Sun Ray data stored in the Sun Data Store, back it up before upgrading the server so that you can restore the data later.

- Turn off all firmware updates until all the servers in a failover group are upgraded. For instance**:**

```
# /opt/SUNWut/sbin/utfwadm -D -a -n all
```

Note – Even if you upgrade one or two servers per week, you must wait until all servers in the group are upgraded before you update their firmware.

- If your configuration is a dedicated, private interconnect, disconnect the server from the Sun Ray interconnect.

Note – See "To Configure the Sun Ray Server Hierarchy" on page 41 for instructions and Chapter 11 in the *Sun Ray Server Software 3.1 Administrator's Guide* for a more general discussion of failover groups, including diagrams of failover topologies.

▼ To Disconnect the Sun Ray Server From the Interconnect

Caution – This procedure disconnects users from their sessions on the Sun Ray server. Make sure your users terminate their sessions before you continue.

---

1. **As superuser, open a shell window on the Sun Ray server.**
2. **Disconnect the Sun Ray server from the Sun Ray interconnect:**

```
# /opt/SUNWut/sbin/utadm -r
```

Tip – If you issue the signal `<CTRL>C` while performing `utadm` configuration, the Admin GUI may not function correctly the next time you invoke it. To correct this condition, type: **`dhtadm -R`**.

---

3. **Perform one of the following tasks:**
   - If you need to upgrade or re-install the operating system, see "Preserving Configuration Data" on page 18.
   - Otherwise, see "Upgrading the Sun Ray Server" on page 24.

Preserving Configuration Data

You must preserve your existing configuration before running the `utinstall` script if:

- You are upgrading the Solaris operating environment, for instance, because you are upgrading from Sun Ray Server Software 2.0 or an earlier version.
  or

- You are already running Solaris 8 2/02 or later or Solaris 9 9/02 or later

If neither condition applies, go to "Upgrading the Sun Ray Server" on page 24.

The `utpreserve` script in the Sun Ray Server Software image directory preserves:

- X user settings
- Sun Ray Data Store
- Sun Ray configuration and log files
- Authentication Manager configuration files
- `utsettings` properties
- Failover group information

Note – The `utpreserve` script does not save *all* configuration files, so you must configure the Sun Ray interconnect interface, Sun Ray administration server, and SSL for the Administration Tool (optionally) after upgrading Sun Ray Server Software.

▼ To Preserve the Sun Ray Server Configuration

If you have already mounted the Sun Ray Server Software 3.1 CD-ROM locally or from a remote server, or if you have extracted the ESD files to an image directory, begin at Step 3.

Caution – Running the `utpreserve` script stops all Sun Ray daemons and services, including the Sun Ray Data Store, causing users to lose all of their sessions, both active and disconnected. Please inform them of your plans.

Depending on the size of your configuration, this procedure, including the operating system software upgrade, may take anywhere from five minutes to several hours or even more to complete.

1. **As superuser, open a shell window on the Sun Ray server.**
2. **Insert the Sun Ray Server Software 3.1 CD-ROM.**

   If a file manager window opens, close it. It is not necessary for installation.
3. **Change to the image directory. For example:**

```
# cd /cdrom/cdrom0
```

4. **Preserve the Sun Ray configuration:**

```
# ./utpreserve
```

The `utpreserve` script warns that it will stop all Sun Ray services, consequently terminating all user sessions, and asks if it should continue.

Caution – Answering `y` terminates all user sessions, both active and disconnected.

---

5. **Answer `y`.**

The `utpreserve` script:

- Stops the Sun Ray services and the Sun Ray Data Store daemon.
- Lists the files that are saved.
- Tars and compresses the entire list of files as the `/var/tmp/SUNWut.upgrade/preserve_`*version*`.tar.gz` file, where *version* is the currently installed version of Sun Ray Server Software.
- Ends, indicating that a log file is available at `/var/adm/log/utpreserve.`*year_month_date_hour*`:`*minute*`:`*second*`.log`: where *year*, *month*, etc. are represented by numeric values reflecting the time `utpreserve` was started.

Tip – Be sure to check this log file for errors that are frequently overlooked.

- Recommends that the `/var/tmp/SUNWut.upgrade/preserve_`*version*`.tar.gz` file be moved to a safe location before the operating system software upgrade.

6. **Use NFS, FTP, or other means to copy the `/var/tmp/SUNWut.upgrade/preserve_`*version*`.tar.gz` file to a safe location on another server.**

7. **Make a tape backup of the Sun Ray server's file systems.**

Caution – If you have modified the `/etc/pam.conf` file in a previous version of Sun Ray Server Software, your changes may be lost when SRSS is upgraded to 3.1. To avoid losing your modifications, be sure to save a copy before performing the update, then use the saved copy to restore your earlier modifications.

Unconfiguring the Sun Ray Server

To upgrade Sun Ray Server Software, you must first remove the replication configuration, then unconfigure the Sun WebServer™.

▼ To Unconfigure Sun Ray Server Software

1. **As superuser, open a shell window on the Sun Ray server.**
2. **Remove the replication configuration:**

```
# /opt/SUNWut/sbin/utreplica -u
```

3. **Unconfigure Sun Ray Server Software:**

```
# /opt/SUNWut/sbin/utconfig -u
```

4. **Answer** y **to all the prompts.**
5. **Perform one of the following tasks:**
   - To upgrade or re-install the operating system, see "Upgrading the Operating System" on page 23.
   - Otherwise, go to "Upgrading the Sun Ray Server" on page 24.

Removing the Software

Note – The following procedures are *not* required for installation or upgrade.

▼ To Remove Sun Ray Server Software

To remove Sun Ray Server Software in its entirety, follow this procedure.

1. **Log in as the superuser of the Sun Ray server.**

   You can log in locally or remotely use the `rlogin` or `telnet` commands.

2. **Open a shell window and change to the following directory:**

```
# cd /opt/SUNWut/sbin
```

3. **If you are removing Sun Ray Server Software from a server in a failover group, follow steps a and b. Otherwise, skip to Step 4.**

   a. Disable Sun Ray DTU firmware downloads:

```
# ./utfwadm -D -a -n all
```

   b. Remove the replication configuration:

```
# ./utreplica -u
```

4. **Remove the Sun Ray network interface(s):**

```
# ./utadm -r
```

5. **Unconfigure the Sun Ray software:**

```
# ./utconfig -u
```

   Answer `y` to all of the prompts.

6. **Uninstall Sun Ray Server Software:**

```
# cd /
# /opt/SUNWut/sbin/utinstall -u
```

   Answer `y` to all of the prompts.

7. **Repeat the steps in this sub-section for all remaining Sun Ray servers.**

CHAPTER 5

Upgrading

This chapter describes the procedure to *upgrade* from earlier versions of Sun Ray Server Software.

Topics in this chapter include:

Upgrading the Operating System

▼ To Upgrade the Operating System

Note – For complete instructions, please refer to the documentation provided with the latest version of the Solaris Operating System. This procedure may take several hours or more to complete.

1. **Log in, or use the `rlogin` command to log in, as superuser of the Sun Ray server.**

Tip – To avoid preserve script errors that can occur if user environment settings are carried forward, use the `su` command with one of the following arguments instead of using the command without arguments.

```
% su -
```

```
% su - root
```

2. **Use NFS, FTP, or other means to copy the `/var/tmp/SUNWut.upgrade/preserve_`*version*`.tar.gz` file, if it exists, to a safe location on another server.**
3. **Make a tape backup of the Sun Ray server's file systems.**
4. **If you have run `utpreserve`, re-install or upgrade the operating system.**

   Make an "Entire Distribution" software group installation. Instructions are provided with the Solaris software.

   If you have not run `utpreserve`, go to Step 6.
5. **Use NFS, FTP, or other means to return the `/var/tmp/SUNWut.upgrade/preserve_`*version*`.tar.gz` file to the Sun Ray server.**
6. **Selectively restore the file systems previously backed up.**
7. **Go to "Upgrading the Sun Ray Server" on page 24.**

Upgrading the Sun Ray Server

▼ To Upgrade the Sun Ray Server

Tip – If you have already mounted the Sun Ray Server Software 3.1 CD-ROM locally or from a remote server, or if you have extracted the ESD files to an image directory, begin at Step 4.

---

1. **As superuser, open a shell window on the Sun Ray server.**
2. **Use NFS, FTP, or other means to return the `/var/tmp/SUNWut.upgrade/preserve_`*version*`.tar.gz` file to the Sun Ray server.**
3. **Insert the Sun Ray Server Software 3.1 CD-ROM.**

   If a file manager window opens, close it. The file manager CD-ROM window is not necessary for upgrade.

4. **Change to the image directory. For example:**

```
# cd /cdrom/cdrom0
```

5. **Upgrade Sun Ray Server Software:**

```
# ./utinstall
```

Tip – Reboot the Sun Ray server when the `utinstall` script requests that you do so.

The `utinstall` script:

- Checks to see which required software products are already installed.
- Displays a message about what it has found.
- Might indicate that an encryption change is about to happen. Answer `y` (yes).
- Asks if you want to install localized documentation and Admin GUI.

Note – Pre-2.0 releases of SRSS installed all locales by default. For upgrades, the SRSS 3.1 installation script automatically installs whatever locales were previously installed. For fresh installations, it asks about each locale in sequence. If you have installed `en_US` only, then later want to add one or more foreign locales, please refer to the *Sun Ray Server Software 3.1 Release Notes* for instructions.

- Informs you that it will install, upgrade, or migrate the required software products and any necessary patches and waits for approval. Answer `y` (yes).
- Removes all previous Sun Ray software.
- Installs patches.
- Installs the required software applications.
  - Sun Ray Data Store
  - Sun Ray server:
    Administration software
    English man pages and product documentation
    Core software
    Configuration
    Drivers
  - Controlled Access Mode software
- Provides a notice that the system must be rebooted.

- Ends, indicating a log file is available at
  `/var/adm/log/utinstall.`*year_month_date_hour*`:`*minute*`:`*second*`.log`
  where the values displayed reflect a time stamp of when `utinstall` was started.

Note – For a listing of utinstall error messages, see "utinstall Error Messages" on page 59.

---

6. **Run the `utfwadm` command to update the DTU firmware.**

   a. **For dedicated interconnects, run:**

```
# utfwadm -A -a -n all
```

   b. **For LAN subnetworks, run:**

```
# utfwadm -A -a -N all
```

7. **Run utfwsync:**

```
# utfwsync -v
```

   This step is required even for standalone servers.

8. **See "Configuration" on page 35 for instructions how to configure and reboot the Sun Ray server.**

   If other systems need a software upgrade, return to "Preserving Configuration Data" on page 18 and repeat the tasks appropriate for each of those systems.

CHAPTER 6

Preparing for Configuration

This chapter describes what to do before you configure the Sun Ray server.

Topics in this chapter include:

Note – SRSS 3.1 does not supply an HTTP server as part of the software; however, if SRSS 3.1 finds that an Apache web server is already installed, it configures the Apache server automatically.

Configuration Tasks

To configure a new installation or an upgrade of Sun Ray Server Software:

1. Determine your network topology.

   Sun Ray servers can be deployed on dedicated private networks and on shared networks. Sun Ray Server Software deployments on shared networks, whether routed or non-routed shared networks (LANs), offer many benefits to users, especially hotdesking. Shared networks can be configured with or without:

   - separate DHCP servers
   - `bootp` forwarding

   If you are not sure about any aspect of your network configuration, you may want to consult your IT staff. For more information, see "Deployment on Shared Networks" on page 101 of the *Sun Ray Server Software 3.1 Administrator's Guide*.

2. Fill in the "Configuration Worksheets" on page 29.

3. Configure a Sun Ray interconnect interface if you do not require Sun Ray functionality on a LAN. See “To Configure a Dedicated Sun Ray Interconnect Interface” on page 36. To implement a LAN configuration, see “To Configure the Sun Ray Server on a LAN” on page 38.

4. Configure Sun Ray Server Software. See “To Configure Sun Ray Server Software” on page 40.

5. For failover groups, configure the hierarchy of the Sun Ray servers in the failover group. See “To Configure the Sun Ray Server Hierarchy” on page 41.

6. Synchronize the Sun Ray DTU firmware. See “To Synchronize the Sun Ray DTU Firmware” on page 43

7. Synchronize the Sun Ray Data Store. See “To Convert and Synchronize the Sun Ray Data Store Port” on page 44.

8. After Configuration, reboot the Sun Ray server. See “To Reboot the Sun Ray Server” on page 49.

Repeat this sequence for each Sun Ray server in a failover group.

Note – When the hostname or IP address of a Sun Ray server is changed, the interfaces should also be configured, especially if the Sun Ray server is used for DHCP services.

Configuration Worksheets

Fill out these worksheets so that the information is readily available during the actual configuration process. Values that are provided in *italics* are only *examples* and should *not* be used. Values provided in `this font` are `defaults` and can be used. Superscripted numbers (7) refer to footnotes at the end of this worksheet.

TABLE 6-1 Basic Parameter Worksheet for Dedicated Interconnect Configuration

Aspect or Variable	`Default` Value, *Example*, or (Other)	Your Primary Server Value	Your Secondary Server Value
Configuring the Sun Ray interconnect interface using `utadm`	(Enter start time here)		
Interface name	*hme1*		
Host address*	`192.168.128.1`		
Net mask	`255.255.255.0`		
Net address	`192.168.128.0`		
Host name[1]	*hostname-interface-name*		
If Sun Ray server is used for IP address allocation			
First Sun Ray DTU address	`192.168.128.16`		
Number of Sun Ray DTU addresses†	*X*		
Firmware server‡	`192.168.128.1`		
Router(3)	`192.168.128.1`		
Specify additional server list? (optional)	(yes or no)		
If yes, File name	*filename*		
Or, Server IP address	`192.168.128.2`		
Configuring Sun Ray Server Software using `utconfig`	(Enter start time here)		
Admin password	*adminpass*		
Configure Admin GUI? If yes, then:			
Sun Ray admin server port number	`1660`		
CGI username	`utwww`		
Enable remote administration? (optional)	(yes or no)		

TABLE 6-1 Basic Parameter Worksheet for Dedicated Interconnect Configuration

Aspect or Variable	`Default` Value, *Example*, or (Other)	Your Primary Server Value	Your Secondary Server Value
Configure Controlled Access Mode? (optional) (Solaris only)	(yes or no)		
If yes, User prefix	`utcu`		
User ID range start	`150000`		
Number of users§	`25`		
Configure failover group? (optional)	(yes or no)		
If yes, Failover group signature**	*signature1*		

* These values are different for each Sun Ray server, even if that server is part of a failover group.

† These values must be unique among the servers in a failover group. The following guidelines help you determine what addresses to allocate for each Sun Ray server:
* X = (Number of DTUs/(Number of servers - 1)) - 1
* First unit address for primary server= 192.168.128.16
* Last unit address for all servers = X + first unit address. If last unit address is greater than 240, reduce to 240.
* First unit address for secondary servers = 1 + last unit address of previous server. If first unit address is greater than 239, configure for a class B network.

Example: 120 DTUs, 4 servers. X= 39

‡ These values are the same as the interface host address by default.

§ The value entered for the number of users is the greater of:
∗ The total number of Sun Ray DTUs
∗ The total number of disconnected and active sessions

** This signature *must* be the same for every Sun Ray server in a failover group. The signature requires at least one numeric character.

If you are configuring a Sun Ray server on a LAN, use the following worksheet:

TABLE 6-2 Local Interface Parameter Worksheet for LAN Configuration

Aspect or Variable	`Default` **Value,** *Example*, **or (Other)**	**Your Primary Server Value**	**Your Secondary Server Value**
Configuring the Sun Ray interconnect interface using `utadm`	(Enter start time here)		
Subnetwork	`192.168.128.0`		
Host address(1)	`192.168.128.1`		
Net mask	`255.255.255.0`		
Net address	`192.168.128.0`		
Host name(1)	*hostname-interface-name*		
If Sun Ray server is used for IP address allocation			
First Sun Ray DTU address(2)	`192.168.128.16`		
Number of Sun Ray DTU addresses(2)	*X*		
Firmware server(3)	`192.168.128.1`		
Router(3)	`192.168.128.1`		
Specify additional server list? (optional)	(yes or no)		
If yes, File name	*filename*		
Or, Server IP address	`192.168.128.2`		

(1) These values are different for each Sun Ray server, even if that server is part of a failover group.

(2) These values must be unique among the servers in a failover group. The following guidelines help you determine what addresses to allocate for each Sun Ray server:
* X = (Number of DTUs/(Number of servers - 1)) - 1
* First unit address for primary server= 192.168.128.16
* Last unit address for all servers = X + first unit address. If last unit address is greater than 240, reduce to 240.
* First unit address for secondary servers = 1 + last unit address of previous server. If first unit address is greater than 239, configure for a class B network.

Example: 120 DTUs, 4 servers. X= 39

(3) These values are the same as the interface host address by default.

If you are configuring for a failover group, fill in this portion of the worksheet:

TABLE 6-3 Sun Ray Server Configuration Failover Parameters

Aspect or Variable	`Default` **Value,** *Example*, **or (Other)**	**Your Primary Server Value**	**Your Secondary Server Value**
Configuring the Sun Ray server hierarchy using `utreplica (`Required for failover groups)	(Enter start time here)		
Primary Sun Ray server host name(1)	*primary-server*		
Secondary Sun Ray server host name(1)	*secondary-server*		

(1) These values are different for each Sun Ray server, even if that server is part of a failover group.

TABLE 6-4 First and Last Unit Address in a Failover Group

Server	**First Unit Address**	**Last Unit Address**
Primary	`192.168.128.16`	`192.168.128.55`
Secondary	`192.168.128.56`	`192.168.128.95`
Secondary	`192.168.128.96`	`192.168.128.135`
Secondary	`192.168.128.136`	`192.168.128.175`

Tip – If you forget the address range, use `utadm -l` to list the addresses you specified or `utadm -p` to print them.

Basic Network Topology

Before configuring a Sun Ray server on a shared network, you should understand what your basic network configuration looks like. The following figures illustrate, in a simplified form, the most common types.

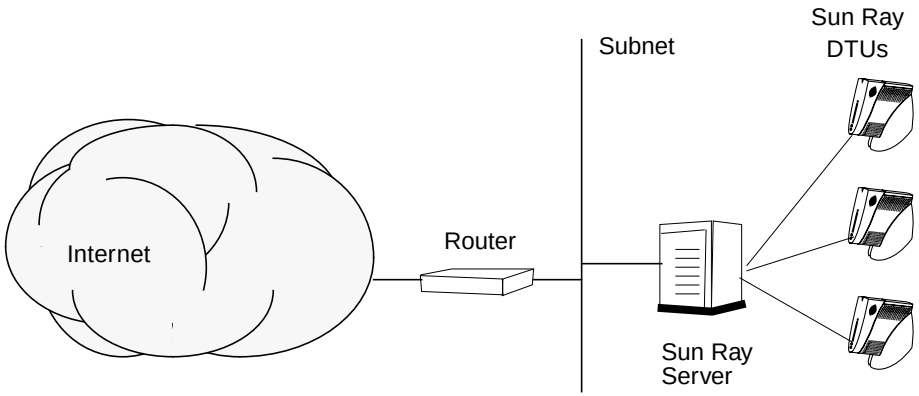

FIGURE 6-1 Dedicated Private Non-routed Sun Ray Network

In contrast to private network configurations, shared network configurations with existing DHCP servers may require `bootp` forwarding in order to function properly with existing network infrastructure.

Many newer configurations will resemble the following figure, which illustrates a shared network with non-routed Sun Ray DTUs.

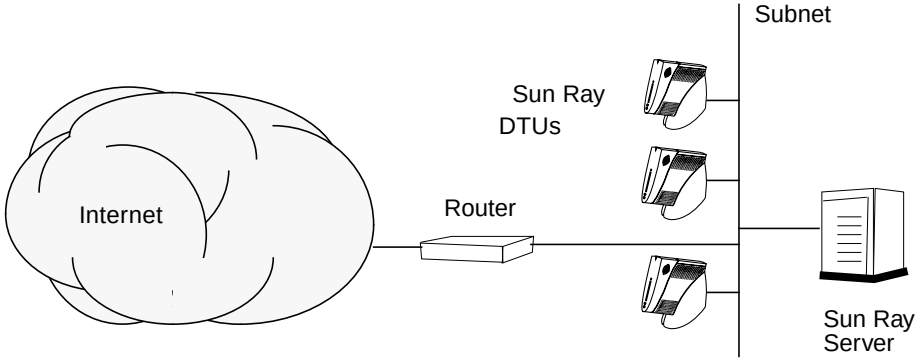

FIGURE 6-2 Shared Network with Non-routed Sun Ray DTUs

Some new configurations use shared, routed networks, as illustrated, in simplified form, in the following figure.

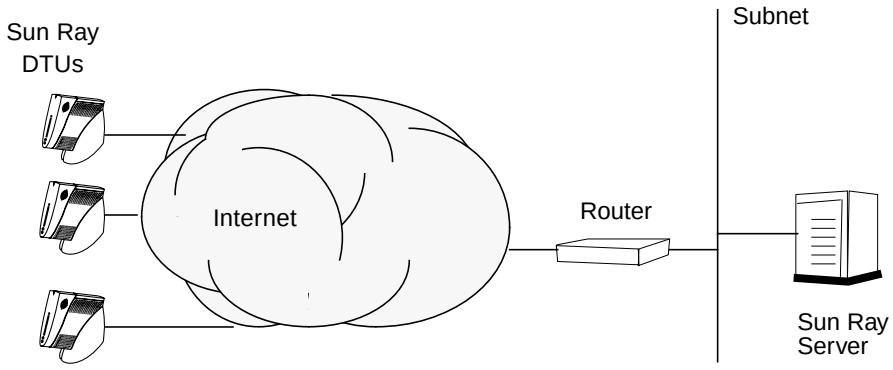

FIGURE 6-3 Shared Routed Network

Note – If you have any doubt as to which network model most nearly approximates your site, please consult your IT staff.

CHAPTER 7

Configuration

This chapter describes how to configure the Sun Ray server. Procedures in this chapter include:

Configuring the Sun Ray Server

Sun Ray Server Software manipulates the `/etc/dt/config/Xservers` file. Generally speaking, you should copy `/usr/dt/config/Xservers` to `/etc/dt/config/Xservers.SUNWut.prototype` and customize it as needed. Sun Ray Server Software uses the contents of that file as a base configuration when you add Sun Rays DTUs to `/etc/dt/config/Xservers`.

The `Xservers` file shipped with `dtlogin` includes an entry for `DISPLAY:0`, on the assumption that there is a frame buffer in the system. On a headless Sun Ray server, you need to configure `/etc/dt/config/Xservers.SUNWut.prototype` so that `dtlogin` does not try to start an Xsun on `DISPLAY:0`. For instructions, see `/etc/dt/config/README.SUNWut`.

Note – If the server is headless, it has no display and cannot, therefore, have a meaningful value for the *DISPLAY* variable.

▼ To Configure a Dedicated Sun Ray Interconnect Interface

1. **Log in as the superuser of the Sun Ray server, either locally or remotely.**
2. **Open a shell window and change to the following directory:**

```
# cd /opt/SUNWut/sbin
```

Note – Make sure that the /etc/hosts file contains the following entry:
`ip-address of the system hostname`

---

3. **Configure the Sun Ray interconnect interface:**

```
# ./utadm -a interface-name
```

where *interface-name* is the name of the interface to the Sun Ray interconnect, for example: `hme1`, `qfe0`, or `ge0`.

The `utadm` script begins configuring DHCP for the Sun Ray interconnect, restarts the DHCP daemon, and configures the interface. The script then lists the default values and asks if they are acceptable.

Caution – If the IP addresses and DHCP configuration data are not set up correctly when the interfaces are configured, the failover feature cannot work properly. In particular, configuring the Sun Ray server's interconnect IP address as a duplicate of any other server's interconnect IP address may cause the Sun Ray Authentication Manager to generate "Out of Memory" errors.

---

4. **If you are satisfied with the default values, and the server is not part of a failover group, answer `y`.**

5. **Otherwise, answer `n` and accept whatever default values are shown by pressing return or provide the correct values from the worksheet.**

   The `utadm` script prompts for the following:

   - New host address (*192.168.128.1*)
   - New netmask (*255.255.255.0*)
   - New host name (*hostname-interface-name*)
   - Offer IP addresses for this interface? ([Y]/N)
   - New first Sun Ray DTU address (*192.168.128.16*)
   - Total number of Sun Ray DTU address (*X*)
   - New authorization server address (`192.168.128.1`)
   - New firmware server address (`192.168.128.1`)
   - New router address (`192.168.128.1`)
   - To specify an additional server list.
     If you answer yes, it requests either a filename (*filename*) or a Server IP Address (`192.168.128.2`)

6. **The `utadm` script again lists the configuration values and asks if they are acceptable. Answer appropriately.**

   - If you answer `n`, go back to Step 5.
     - If you answer `y`, the following Sun Ray-specific files are configured:

```
/etc/hostname.interface-name
/etc/inet/hosts
/etc/inet/netmasks
/etc/inet/networks
```

   The `utadm` script configures the Sun Ray DTU firmware versions and restarts the DHCP daemon.

7. **Repeat Step 1 through Step 6 for each of the secondary servers in your failover group.**

8. **Do one of the following:**

   - If you upgraded Sun Ray Server Software without upgrading the Solaris operating environment, go to "To Synchronize the Sun Ray DTU Firmware" on page 43.
   - Otherwise, go to "Configuring the Sun Ray Server" on page 35.

▼ To Configure the Sun Ray Server on a LAN

1. **Log in as the superuser of the Sun Ray server.**

   You can log in locally or remotely use the `rlogin` or `telnet` commands.

2. **Open a shell window and change to the following directory:**

```
# cd /opt/SUNWut/sbin
```

3. **Configure the Sun Ray LAN subnet:**

```
# ./utadm -A subnet#
```

   Where *subnet#* is the name (really a number) of the subnet, such as 192.168.128.0.

   The `utadm` script begins configuring DHCP for the Sun Ray interconnect, restarts the DHCP daemon, and configures the interface. The script then lists the default values and asks if they are acceptable.

Caution – If the IP addresses and DHCP configuration data are not set up correctly when the interfaces are configured, the failover feature cannot work properly. In particular, configuring the Sun Ray server's subnet IP address as a duplicate of any other server's subnet IP address may cause the Sun Ray Authentication Manager to throw "Out of Memory" errors.

---

4. **If you are satisfied with the default values, and the server is not part of a failover group, answer `y`.**

5. **Otherwise, answer `n` and accept whatever default values are shown by pressing return or provide the correct values from the worksheet.**

   The `utadm` script prompts for the following:

   - New netmask (*255.255.255.0*)
   - New first Sun Ray DTU address (*192.168.128.16*)
   - Total number of Sun Ray DTU addresses
   - New authorization server address (`192.168.128.1`)
   - New firmware server address (*192.168.128.10*)
   - New router address (*192.168.128.1*)
   - To specify an additional server list. If you answer yes, it requests either:
     - Filename (*filename*)
     - Server IP Address (*192.168.128.2*)

6. **The `utadm` script again lists the configuration values and asks if they are acceptable. Answer appropriately.**
   - If you answer `n`, go back to Step 5.
   - If you answer `y`, the `utadm` script configures the Sun Ray DTU firmware versions and restarts the DHCP daemon.
7. **Repeat Step 1 through Step 6 for each of the secondary servers in your failover group. See "To Configure Sun Ray Server Software" on page 40.**
8. **Do one of the following:**
   - If you upgraded Sun Ray Server Software without upgrading the Solaris operating environment, go to "To Synchronize the Sun Ray DTU Firmware" on page 43.
   - Otherwise, proceed to "To Configure Sun Ray Server Software" on page 40.
9. **Proceed to "To Configure Sun Ray Server Software" on page 40.**

▼ To Turn the Sun Ray LAN Connection On or Off

When you configure a Sun Ray server for a shared network, the `utadm -A` command enables the server's LAN connection. If you do not use `utadm -A`, however, and you still wish to enable or disable the LAN connection, use this procedure.

When the LAN connection is turned off, Sun Ray DTUs on the LAN cannot attach to the server.

Tip – If you plan to use an existing DHCP server to provide Sun Ray parameters, use this procedure to turn the LAN connection on or off on the Sun Ray server.

---

1. **Log in as the superuser of the Sun Ray server, either locally or remotely.**
2. **Turn the Sun Ray LAN connection on:**

```
# /opt/SUNWut/sbin/utadm -L on
```

Tip – Use `utadm -l` to verify the current setting for Sun Ray LAN connection. To disable all Sun Ray LAN connections, use `utadm -L off`.

---

3. **Restart services as prompted:**

```
# utrestart
```

▼ To Configure Sun Ray Server Software

1. **If you have not already done so, log in as the superuser of the Sun Ray server.**

   You can log in locally or remotely use the `rlogin` or `telnet` commands.

2. **Open a shell window and change to the following directory:**

```
# cd /opt/SUNWut/sbin
```

3. **Configure Sun Ray Server Software**

```
# ./utconfig
```

4. **Accept the default `utconfig` values shown by pressing Return or provide the correct values from the worksheet.**

   The `utconfig` script prompts for the following:

   - Whether the script should continue (press Return)
   - Sun Ray administration password (*adminpass*)
   - Sun Ray administration password again

Note – All servers in a failover group must use the same administration password.

   - To configure the Sun Ray Admin GUI, (press Return)
   - Web server port number (`1660`)
   - CGI username (`utwww`)
   - Whether you want to use the existing Apache Web Server to host Sun Ray Web Administration

---

Note – You may *not* want to use the existing Apache Web Server if it is already configured for another purpose

---

   - Whether you want to enable remote administration.
   - Whether you want to configure Controlled Access Mode (available for Solaris only). It requests:
     - User prefix (`utcu`)
     - User ID range start (`150000`)

    - Number of users (25)
- Whether you want to configure for a failover group
- Whether the script should continue (press Return)

The `utconfig` script begins configuring Sun Ray Server Software.

- If you responded that this is a failover group, the script requests the signature (*signature1*)
- The signature again

The Sun Ray Data Store is restarted.

Note – The `utconfig` script states that you must restart the authentication manager. This happens automatically when you reboot the Sun Ray server.

The `utconfig` script ends, indicating a log file is available at the following locations:

```
/var/adm/log/utconfig.year_month_date_hour:minute:second.log
```

Where the *year*, *month*, etc are represented by numeric values reflecting the time `utconfig` was started.

5. **Repeat Step 1 through Step 4 for each secondary server if in a failover group.**
6. **Do one of the following:**
    - If you have a failover group, see "To Configure the Sun Ray Server Hierarchy" on page 41.
    - Otherwise, go to "To Synchronize the Sun Ray DTU Firmware" on page 43.

▼ To Configure the Sun Ray Server Hierarchy

Perform this task after all servers in the failover group have been configured.

1. **If you have not already done so, log in as the superuser of the primary Sun Ray server.**

   You can log in locally or remotely use the `rlogin` or `telnet` commands.

2. **Open a shell window and change to the following directory:**

```
# cd /opt/SUNWut/sbin
```

3. **Configure this server as the primary Sun Ray server and identify all secondary servers.**

```
# ./utreplica -p secondary-server1 secondary-server2 ...
```

Where *secondary-server1, secondary-server2, ...* identifies the host names of the secondary servers. Include all secondary servers in this command.

The `utreplica` script:

- Stops and starts the Sun Ray services
- Reads the Authentication Manager policy
- Indicates a log file is available at the appropriate location:
  - `/var/adm/log/utreplica`.*year_month_date_hour:minute:second.log*

4. **Log in as the superuser of a secondary Sun Ray server.**

You can log in locally or remotely using the `rlogin` or `telnet` commands.

5. **Open a shell window and change to the following directory:**

```
# cd /opt/SUNWut/sbin
```

6. **Configure the server as a secondary Sun Ray server and identify the primary server.**

```
# ./utreplica -s primary-server
```

Where *primary-server* is the host name of the primary server configured in Step 3.

7. **Repeat Step 4 through Step 6 for all remaining secondary servers.**

8. **When you are finished, go to "To Synchronize the Sun Ray DTU Firmware" on page 43.**

▼ To Synchronize Primary and Secondary Sun Ray Servers

Log files for Sun Ray servers contain time-stamped error messages which are difficult to interpret if the time is out of sync. To make troubleshooting easier, please make sure that all secondary servers periodically synchronize with their primary server. For instance:

```
# rdate <primary-server>
```

▼ To Synchronize the Sun Ray DTU Firmware

Note – This task is performed on standalone Sun Ray servers or the last Sun Ray server configured in a failover group. If your server is not one of these, see "To Reboot the Sun Ray Server" on page 49.

---

1. **If you have not already done so, log in as the superuser of the Sun Ray server.**

   You can log in locally or remotely using the `rlogin` or `telnet` commands.

2. **Open a shell window and change to the following directory:**

```
# cd /opt/SUNWut/sbin
```

3. **Synchronize the Sun Ray DTU firmware:**

```
# ./utfwsync
```

   The Sun Ray DTUs will reboot themselves and load the new firmware.

4. **When you are finished, go to "To Reboot the Sun Ray Server" on page 49 for instructions how to reboot the server.**

▼ To Convert and Synchronize the Sun Ray Data Store Port

In place of the old Sun Directory Service (Sun DS) used in Sun Ray Server Software versions 1.0 through 1.3, versions 2.0, 3, and later provides a private data store service, the Sun Ray Data Store (SRDS).

SRDS uses service port 7012, to avoid conflict with the standard LDAP port number, 389. When you upgrade a server to SRSS 2.0 or later, the LDAP port remains in use until all the servers in the failover group have been upgraded and converted. Port conversion is required only if you plan to continue to run SunDS on the recently upgraded SRSS server.

Note – Even though you have upgraded a server, you cannot run the Sun Ray Data Store until you also convert the port number.

Tip – Perform this task on standalone Sun Ray servers or on the primary server in a failover group after all the servers in the group have been upgraded.

---

1. **If you have not already done so, log in as the superuser of the primary Sun Ray server.**

   You can log in locally or remotely use the `rlogin` or `telnet` commands.

2. **Open a shell window and change to the following directory:**

```
# cd /opt/SUNWut/sbin
```

3. **Convert and synchronize the Sun Ray Data Store service port number on all the servers in a failover group:**

```
# ./utdssync
```

   This step restarts the Sun Ray Data Store on all the servers.

▼ To Re-enable the Old SunDS Service

This procedure re-enables the old SunDS, in case you need to use it for old private data on the Sun Ray servers.

Note – You can re-enable the SunDS service only if you have chosen to preserve the old SunDS data when you upgraded from an earlier version of Sun Ray Server Software.

The following task requires you to have completed the `utdssync` command. See "To Convert and Synchronize the Sun Ray Data Store Port" on page 44.

1. **If you have not already done so, log in as the superuser of the primary Sun Ray server.**
2. **Open a shell window and change to the following directory:**

```
# cd /etc/opt/SUNWconn/ldap/current
```

3. **Rename the saved configuration file to** `dsserv.conf`**:**

```
# mv dsserv.conf_save_date_time dsserv.conf
```

where *date* is the current date in YYMMDD format and *time* is the time save file is created in `<hh:mm>` format.

4. **Start the SunDS service:**

```
# /etc/init.d/dsserv start
```

Support for the Sun DS product was discontinued as of the Sun Ray Server Software 2.0 release. In any case, unless you have purchased the SunDS product separately, you cannot use it.

▼ To Determine the Integrity of the Configuration Files

Two configuration files are susceptible to corruption:

- `/etc/dt/config/Xservers`
- `/etc/dt/config/Xconfig`

When they are corrupt, the `dtlogin` daemon cannot start the `Xsun` server properly. To prevent or correct this problem, use the following procedure.

1. **As a user of the Sun Ray server, open a shell window and compare the `/usr/dt/config/Xservers` and `/etc/dt/config/Xservers` files:**

```
% diff /usr/dt/config/Xservers /etc/dt/config/Xservers
```

This command compares a known good file with the suspect file. The output should be similar to the following example:

```
106a107,130
> # BEGIN SUNRAY CONFIGURATION
> :3 SunRay local@none /etc/opt/SUNWut/basedir/lib/utxsun :3 -nobanner
    .
    .
> :18 SunRay local@none /etc/opt/SUNWut/basedir/lib/utxsun :18 -nobanner
> # END SUNRAY CONFIGURATION
```

Note – This is a simplified example. Your output may have tens of lines between the `BEGIN SUNRAY CONFIGURATION` and `END SUNRAY CONFIGURATION` comments.

In the first line of output, there is `106a107,130.` The `106` means that the two files are identical to the 106th line of the files. The `a107,130` means that the information on lines 107 through 130 of the second file would have to be added to the first file to make it the same as the second.

If your output shows the first three digits to be a number less than 100, the `/etc/dt/config/Xservers` file is corrupt.

2. **Compare the `/usr/dt/config/Xconfig` and `/etc/dt/config/Xconfig` files:**

```
% diff /usr/dt/config/Xconfig /etc/dt/config/Xconfig
```

The output should be similar to the following example:

```
156a157,180
> # BEGIN SUNRAY CONFIGURATION
> Dtlogin.*_8.environment:
SUN_SUNRAY_TOKEN=ZeroAdmin.m1.at88sc1608.6d0400aa
    .
    .
> Dtlogin.*_9.environment:
SUN_SUNRAY_TOKEN=ZeroAdmin.m1.at88sc1608.a10100aa
> # END SUNRAY CONFIGURATION
```

Note – This is a simplified example. Your output may have tens of lines between the `BEGIN SUNRAY CONFIGURATION` and `END SUNRAY CONFIGURATION` comments.

If your output shows the first three digits to be a number less than 154, the `/etc/dt/config/Xconfig` file is corrupt.

▼ To Replace the `Xservers` and `Xconfig` Files

Caution – Replacing the `Xservers` file requires shutting down all Sun Ray DTU services. Remember to inform users of the outage.

1. **As superuser, open a shell window and stop the Sun Ray server:**

```
# /etc/init.d/utsvc stop
```

2. **Replace the `Xservers` and `Xconfig` files as appropriate:**

```
# /bin/cp -p /usr/dt/config/Xservers /etc/dt/config/Xservers
# /bin/cp -p /usr/dt/config/Xconfig /etc/dt/config/Xconfig
```

3. **Re-initialize the authentication policy:**

```
# /opt/SUNWut/sbin/utrestart -c
```

The extra lines within the previous `Xservers` and `Xconfig` files are automatically rebuilt.

▼ To Configure an HTTP Server Manually

To successfully configure an HTTP server to host the Sun Ray Administration Tool (Admin GUI), you must choose to configure the web server manually in `utconfig`. The `utconfig` script creates the directories, symbolic links, and user/group identities required to operate the Admin GUI.

Any web server can be manually configured to host the Admin GUI as long as:

- The web server supports the CGI version 1.1 specification.
- The web server supports directory and script aliasing.

- The web server allows you to set the user and group ID.

The best way to manually configure a web server is to look at `/etc/opt/SUNWut/http/http.conf` after running `utconfig`. This file contains all the specific parameters and values you will need to manipulate in order to properly configure the web server.

For manual configuration, the key components needed to make a web server work with the Sun Ray Admin GUI are:

Component	Description	Comments
port number	Port number that the web server should listen on	The administrator can decide which port number to use. The default is 1660.
document root	The root to the document tree structure (HTML, images, JavaScript, etc.)	The document root must be set to: `/var/opt/SUNWut/http/docroot - document root`
server name	The name of the server the web server is running on	The name of the server where SRSS and the web server are running.
cgi-bin	The directory where files are to be executed as cgi scripts	The cgi-bin directory is: `/var/opt/SUNWut/http/docroot/cgi-bin`
user id	The user id that the web server should be run as	The user to run the web server as. The default value is utwww.
group	The user group the web server should be run as	The group to run the web server as. Only `utadmin` is used at this time.

aliases id	Any other directory aliases used by the HTML or CGI to point to specific directories	Some HTML and CGI files use aliases to access directories in the document tree. These aliases need to be created in order for everything to function properly:
		`/docroot`
		`/var/opt/SUNWut/http/docroot/`
		`/images/`
		`/var/opt/SUNWut/http/docroot/public/images/`
		`/javascript/`
		`/var/opt/SUNWut/http/docroot/public/javascript/`

homepage	The page where the server should start	Set to `/var/opt/SUNWut/http/docroot/cgi-bin/start`

▼ To Reboot the Sun Ray Server

After following the configuration procedures, reboot the Sun Ray server(s).

1. **If you have not already done so, log in as the superuser of the Sun Ray server.**
   You can log in locally or remotely use the `rlogin` or `telnet` commands.
2. **Open a shell window and reboot the Sun Ray server:**

```
# sync;sync;init 6
```

   The Sun Ray server is rebooted.

3. **Repeat Step 1 and Step 2 for each Sun Ray server.**

   See Appendix A for more information and procedures.

APPENDIX **A**

Additional Information

This appendix provides additional information regarding your installation or upgrade to Sun Ray Server Software 3.1.

Topics covered in this appendix include:

Installing the SunMC Software

Note – The Sun Management Center is not currently available for Linux implementations.

Sun Ray Server Software includes a module for interfacing with Sun Management Center software. If Sun Ray Server Software and Sun Management Center software are to run on the same server, different procedures are used, depending on the order in which the software is installed. If Sun Ray Server Software and Sun Management Center server component are configured on separate servers, then the module must be installed on both servers. This section describes the installation procedures. For more detail on SunMC functionality, see "Monitoring the Sun Ray System" on page 149 of the *Sun Ray Server Software 3.1 Administrator's Guide*.

If you are doing a clean installation of Sun Management Center software and Sun Ray Server Software on the same server, it is easier to install Sun Management Center software first.

When you install Sun Management Center software, you are given the option of installing any of the three components on the selected server. If you want to add only the agent to a Sun Ray server, just choose to add the agent component.

After the appropriate hardware configuration product is installed on the server, you can choose to run the setup now or later. When you run the setup, you are prompted for a host name of Sun Management Center server, a seed to generate security keys, a base URL for the console, and, if there is a conflict, a different port for the agent.

Tip – To monitor all the servers in a failover group, make sure every server runs Sun Ray Server Software 3.1. In addition, all servers must run the Sun Management Center agent component.

Note – Administration of the SunMC software is documented in the *Sun Ray Server Software 3.1 Administrator's Guide*.

SunMC Software Requirements

The Sun Ray system monitoring feature has the following software requirements:

- For SPARC platforms:
  - Sun Ray Server Software 2.0, 3, or 3.1 for Solaris
  - Sun Management Center 3.0 or 3.5 Update 1a software.
- For x86 platforms:
  - Sun Ray Server Software 3.1 for Solaris
  - Sun Management Center 3.5 update 1a

Note – Any SunMC server collecting data from a Solaris 10 system must run Sun Management Center 3.5 update 1a.

The Sun Ray module adds the following requirements when added to either the Sun Management Center server or agent component:

TABLE A-1 Additional Requirements for the Server

Component	Size
RAM	8 KB
`/opt/SUNWut`	153 KB
`/opt/SUNWsymon`	12 KB

TABLE A-2 Additional Requirements for the Agent

Component	Size
RAM	1 MB
Swap	1 MB
`/opt/SUNWut`	602 KB
`/opt/SUNWsymon`	12 KB
`/var/opt/SUNWsymon`	0.5 KB

The Sun Ray module adds the following requirements to the Sun Management Center server and agent components:

TABLE A-3 Additional Requirements to the Server and Agent Components

Component	Size
RAM	1008 KB
Swap	1 MB
`/opt/SUNWut`	602 KB
`/opt/SUNWsymon`	12 KB
`/var/opt/SUNWsymon`	.5 KB

Caution – The Sun Management Center server component has very high resource requirements. Do not install the complete Sun Management Center software on a Sun Ray server, especially if the Sun Ray server is configured for failover.

▼ To Install Sun Ray Server Software After Installing the Sun Management Center Software

1. **Start the Sun Management Center software:**

```
# /opt/SUNWsymon/sbin/es-start -c &
```

Check to see if the Sun Management Center works. If not, reinstall the Sun Management Center software. Use the *Sun Management Center 3.5 Software Installation Guide* and the *Sun Management Center 3.5 Software User's Guide* to install the Sun Management Center software.

2. **Use the standard Sun Ray installation script to add the Sun Ray module:**

```
# utinstall
```

If the Sun Management Center agent software is running, the standard Sun Ray install script automatically stops it, adds the Sun Ray module, and restarts the Sun Management Center agent software.

If the Sun Management Center agent software is not running, the Sun Ray install script adds the Sun Ray module but does not start the Sun Management Center agent software.

▼ To Install Sun Management Center Software After Installing Sun Ray Server Software

1. **Use the standard Sun Ray installation script:**

```
# utinstall
```

The Sun Ray module for SunMC is installed automatically on the server when `utinstall` installs Sun Ray Server Software.

2. **Follow the installation instructions found in the** *Sun Management Center Software Installation Guide* **to install the Sun Management Center software.**

3. **Type the following to enable Sun Ray monitoring:**

```
# /opt/SUNWut/sbin/utsunmc
```

4. **Start the Sun Management Center software:**

```
# /opt/SUNWsymon/sbin/es-start -c &
```

Check to see if Sun Management Center works. If not, reinstall the Sun Management Center software.

▼ To Install the SunMC Agent on Separate Servers

1. **Verify that the Sun Management Center agent, `SUNWesagt`, is installed on the Sun Ray server:**

```
# pkginfo -l SUNWesagt
```

2. **Perform a standard installation of Sun Ray Server Software:**

```
# utinstall
```

If the Sun Management Center agent is running, the installation process stops and restarts the SunMC software.

Note – You can install Sun Management Center agents after Sun Ray Server Software installation; however, you must then enable the Sun Ray module by typing **`/opt/SUNWut/sbin/utsunmc`** to register the Sun Ray module with the SunMC.

---

3. **Install the Sun Ray interface package on the Sun Management Center server:**

If you have already mounted the Sun Ray Server Software 3.1 CD-ROM on the SunMC server or from a remote server, or if you have extracted the ESD files to an image directory, begin at Step c.

a. As superuser, open a shell window on the SunMC server.

b. Insert the Sun Ray Server Software 3.1 CD-ROM

If a File Manager window opens, close it. The File Manger CD-ROM window is not necessary for installation.

c. Change to the image directory. For example:

```
# cd /cdrom/cdrom0
```

d. Install the Sun Ray module:

```
# ./utsunmcinstall
```

The installation process begins. The `utsunmcinstall` script:

- Verifies that the SunMC software is installed.
- Verifies that Sun Ray Server Software is *not* installed.
- Installs the parts of the Sun Ray module needed on the SunMC server.

Mounting a CD-ROM Remotely

If you purchased the Sun Ray Server Software 3.1 CD-ROM but your Sun Ray server does not have a CD-ROM drive, follow these instructions to mount the Sun Ray Server Software CD-ROM from a remote server.

▼ To Mount the CD-ROM From a Remote Server

1. **As superuser of the remote system, open a shell window.**
2. **Insert the Sun Ray Server Software 3.1 CD-ROM into the CD-ROM drive.**

   If a file manager window opens, close it. The file manager CD-ROM window is not necessary for installation.
3. **Share the Sun Ray CD-ROM file system:**

```
# share -o ro /cdrom/cdrom0
```

4. **Use the `rlogin` command to log into the Sun Ray server as the root user:**

```
# rlogin sunray-server-name -l root
Password:
```

   Where *sunray-server-name* is the host name of the Sun Ray server.

Tip – If you receive an error that you are not on the system console, comment out the line `CONSOLE=/dev/console` in the `/etc/default/login` file on the Sun Ray server.

---

5. **Create the CD-ROM file system mount point:**

```
# mkdir -p /cdrom/cdrom0
```

6. **Mount the remote CD-ROM drive:**

```
# mount -o ro cd-server-name:/cdrom/cdrom0 /cdrom/cdrom0
```

Where *cd-server-name* is the host name of the server with the Sun Ray CD-ROM.

7. **Return to the point where you referenced this procedure.**

▼ To Unmount the CD-ROM From a Remote Server

1. **From the shell window where you mounted the CD-ROM, unmount the CD-ROM file system:**

```
# cd /
# umount /cdrom/cdrom0
```

2. **Close the `rlogin` session:**

```
# exit
```

3. **Unshare the CD-ROM file system:**

Note – This procedure is for Solaris only.

```
# unshare /cdrom/cdrom0
```

Restoring `utadm` Functionality

If you issue the command `<CTRL>C` while performing `utadm` configuration, `utadm` may not function correctly the next time you invoke it. To correct this condition, type:

```
# dhtadm -R
```

Modified System Files

The following files are modified during `utadm`:

- `/etc/inet/hosts`
- `/etc/inet/networks`
- `/etc/inet/netmasks`
- `/etc/inet/dhcpsvc.conf    # including all DHCP related files`
- `/etc/nsswitch.conf`
- `/etc/hostname.<intf>`
- `/etc/notrouter`

The following files are modified during SR service startup:

- `/etc/inet/services`
- `/etc/inet/inetd.conf`

The following files are modified during `utconfig`:

- `/etc/passwd`
- `/etc/shadow`
- `/etc/group`

After installation, the following files are updated upon reboot:

- `/etc/syslog.conf`
- `/etc/pam.conf`

`utinstall` Error Messages

If during an installation, upgrade, or uninstall the `utinstall` script returns an error, refer to the following table for assistance.

TABLE A-4 `utinstall` Error Messages

Message	Meaning	Resolution
`utinstall: fatal, media-dir is not a valid directory.`	You called the `-d` option, but *media-dir* is incomplete.	The *media-dir* directory requires relevant patches and packages for installation. The *media-dir* directory includes the Sun Ray directory.
`Cannot open for read admin-file`	The `admin_default` file is unreadable, or you called the `-a` option and the *admin-file* is unreadable.	Verify that the installation administration file exists (`admin_default` or other) and the permissions are correct.
For SPARC platforms: `SunOS release is x.x, valid releases are: 8 and 9`	You are attempting to install Sun Ray Server Software onto Solaris software version 2.7 (5.7) or older.	Upgrade to version 8, 9, or 10 of the Solaris operating environment before installing Sun Ray Server Software.
For x86 platforms: `SunOS release is x.x, valid releases are: 10`	You are not running a valid OS release for this platform.	Upgrade to version 10 of the Solaris operating environment before installing Sun Ray Server Software.
`Please clean up the directory /var/tmp/SUNWut.upgrade before rerunning utinstall.`	Other unrelated files are foundin the preserve directory.	Clean up the directory.
`Please remove the existing preserved file <preserved_tarfilename> before rerunning utinstall.`	You decided not to restore from the indicated tar file.	Remove the tar file before rerunning utinstall.
`utpreserve: unable to preserve data. Error while creating archive file`	The `utinstall` script failed to preserve existing configuration files.	Either exit and manually preserve these files or just continue.
`xxxxxx not successfully installed`	Might occur for the installation of any application or patch, *xxxxxx*, if relevant packages have not been properly installed.	Verify the component *xxxxxx* is present in the installation media directory path and has the correct permissions, then re-run the `utinstall` script.

TABLE A-4 `utinstall` Error Messages *(Continued)*

Message	Meaning	Resolution
`The following packages were not successfully removed xxxxxx ...`	The packages listed have not been properly removed.	Use the `pkgrm` command to remove each package listed manually, then run `utinstall -u` again.

`A different version x.x of product has been detected. The other-product Software is only compatible with product y.y. You must either upgrade or remove the current product installation before proceeding.`
 	
`Exiting ...`
	Some of the applications provided with Sun Ray Server Software are only compatible with certain versions of other applications.	Compatible and necessary applications are included with Sun Ray Server Software. Remove older versions, then re-run the `utinstall` script.

`error, no Sun Ray software packages installed.`	None of the Sun Ray components are installed on this system.	No action is required as the product is not installed.

`packages have not installed correctly. All data saved during the upgrade 'Save & Restore' has been retained at the following location:`	Upgrade of Sun Ray Server Software was incomplete.	1. Run `utinstall` again.
		2. If message appears again, type:
		`# pkginfo -p|grep SUNWut`
		3. Use `pkgrm` to remove packages listed.
		4. Type the following sequence:
		`# pkginfo|grep SUNWut`
		• If output, go to step 5.
		• If no output, type (on one line):
		a. For SPARC platforms:
		`# cd /cdrom/cdrom0/Sun_Ray_Core_Services_3.1/Solaris_8+/sparc/Packages`
		`# pkgadd -d . SUNWuta`
		b.For x86 platforms:
		`cd /cdrom/cdrom0/Sun_Ray_Core_Services_3.1/Solaris_10+/i386/Packages`
		`# pkgadd -d . SUNWuta`
		5. Run `utinstall` again.

TABLE A-4 `utinstall` Error Messages *(Continued)*

Message	Meaning	Resolution
`The following files were not successfully replaced during this upgrade. The saved copies can be found in <directory>`	Some files were not properly replaced as part of the upgrade.	Manually copy the listed files from the *directory* overwriting the newer files if applicable.
`Removal of product was not successfully completed. See log file for more details.`	Removal of Sun Ray Server Software was incomplete.	Check *logfile* for the package that started the problem and manually remove it with the `pkgrm` command, then run `utinstall -u` again.

`Partition Name Space Required Space Available`
`----------`
partition *xxx* *yyy*
		Not enough disk space was allocated for *partition*. Repartition the disk and run `utinstall` again.

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