



Sun Ray™ Server Software 2.0 Installation and Configuration Guide

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Preface

The *Sun Ray Server Software 2.0 Installation and Configuration Guide* provides instructions for installing, upgrading, and configuring a system of Sun Ray[™] appliances 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 2.0 CD or the Electronic Software Download (ESD) and that you have added the required patches.

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, information on SSL certificates and 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 <code>.login</code> file. Use <code>ls -a</code> to list all files. % You have mail.
AaBbCc123	What you type, when contrasted with on-screen computer output	% su Password:
<i>AaBbCc123</i>	Book titles, new words or terms, words to be emphasized	Read Chapter 6 in the <i>User's Guide</i> . These are called <i>class</i> options. You <i>must</i> be superuser to do this.
	Command-line variable; replace with a real name or value	To delete a file, type <code>rm filename</code> .

Shell Prompts

Shell	Prompt
C shell	<i>machine_name</i> %
C shell superuser	<i>machine_name</i> #
Bourne shell and Korn shell	\$
Bourne shell and Korn shell superuser	#

Related Documentation

Application	Title	Part Number
Administration	<i>Sun Ray Server Software 2.0 Administrator's Guide</i>	816-6753-10
Release Notes	<i>Sun Ray Server Software 2.0 Release Notes</i>	816-7398-10

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Please include the part number (816-7396-10) of your document in the subject line of your email.

Overview

This guide describes how to install, upgrade, configure, and remove Sun Ray™ Server Software 2.0. 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 2.0 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.

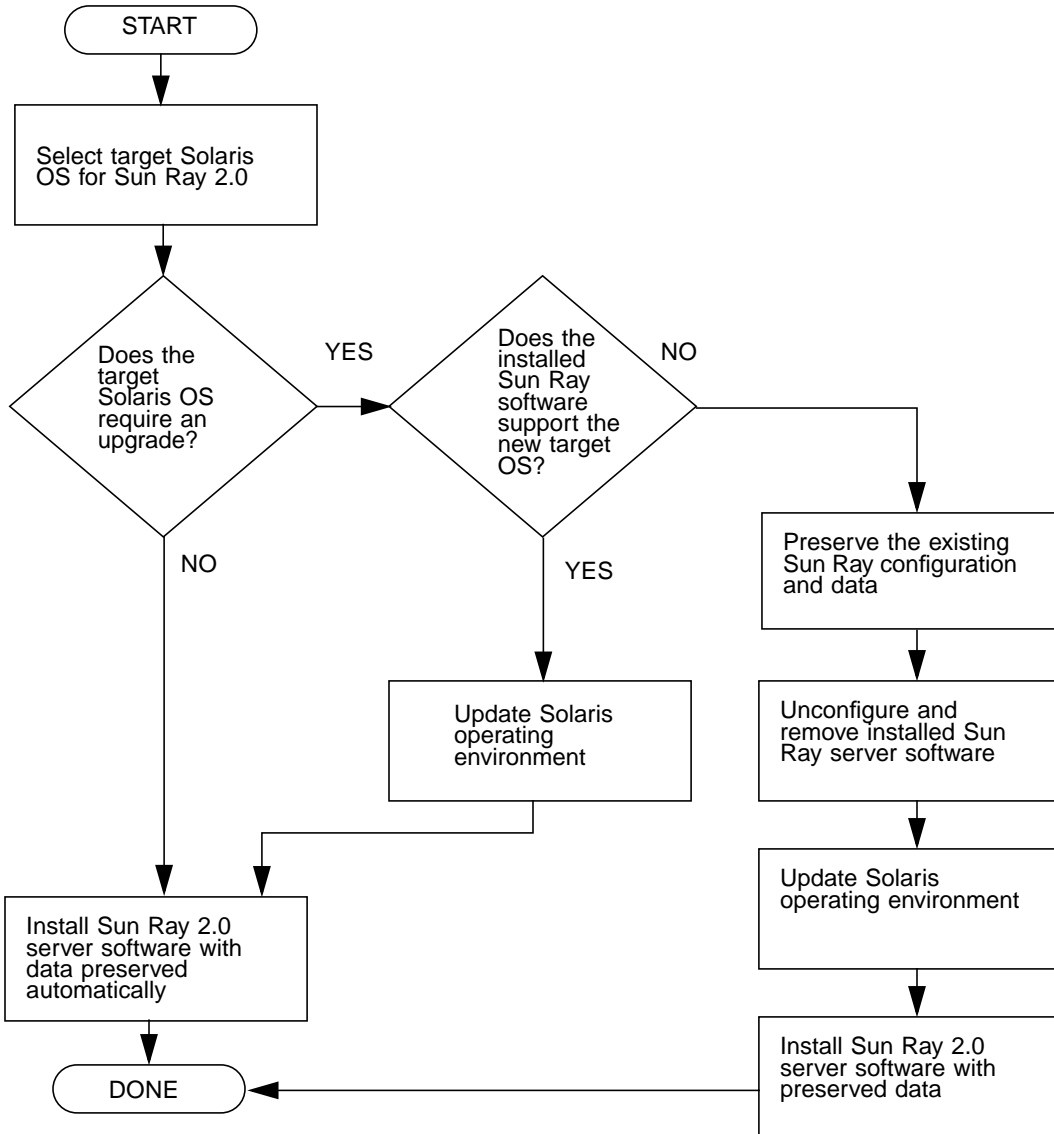


FIGURE 1-1 Installation and Upgrade Flow Chart

- 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 13.
- 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 45.
- If you are trying to estimate how large a hardware configuration you need, and what components to include, see “Sizing Sun Ray Enterprise Servers” on the URL: <http://www.sun.com/products/sunray/whitepapers/>

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. Solaris Versions

Sun Ray	Solaris 2.6	Solaris 7	Solaris 8	Solaris 9
1.0	Yes	Yes	-	-
1.1	Yes	Yes	-	-
1.2	Yes	Yes	Yes	-
1.3	Yes	Yes	Yes	-
2.0	-	-	Update 7 or higher (Solaris 8 2/02)	Update 1 or higher (Solaris 9 9/02)

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.

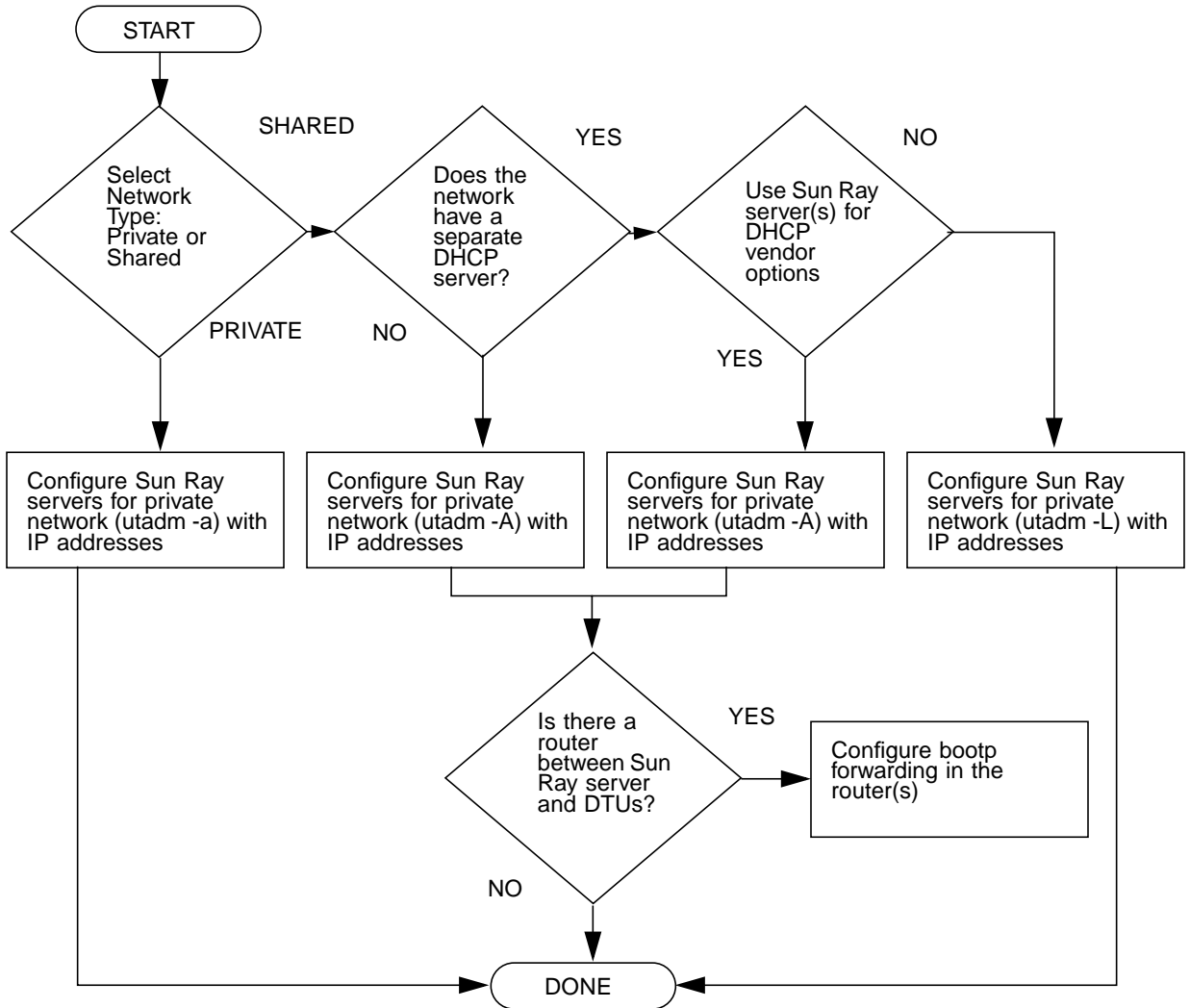


FIGURE 1-2 Sun Ray Configuration for Various Types of Network

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 2.0. This chapter describes what you need to do.

Topics in this chapter include:

- “Hardware Requirements” on page 6
- “Software Requirements” on page 7

Before you install Sun Ray Server Software, you should:

- Verify the operating environment — Make sure that you are running Solaris 8 2/02 or Solaris 9 9/02 on your system. See “Upgrading the Solaris Operating Environment” on page 23.
- Verify that you have installed the latest operating system patches. See “Operating System Patch Requirements” on page 7.
- Verify system requirements — Make sure that the system(s) on which you plan to install the software fulfills the necessary hardware and software requirements.

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 1.0	/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.
Shared Memory	/etc/system	# set shmsys:shminfo_shmmax = 0x2000000 # set shmsys:shminfo_shmmni = 0x2000 # set shmsys:shminfo_shmseg = 0x400
Sun Ray 2.0 Administration Server	/opt/SUNWut/http	5 Mbytes for software and 2 Mbytes for documents and log files.
JRE 1.2.2_12	/opt	26.5 Mbytes
English docs (optional)	/opt	8.5 Mbytes
Non-English docs (optional)	/opt	8.5 Mbytes for each locale

Software Requirements

Solaris Operating Environment

The Sun Ray system runs on the Solaris 8_update7 (Solaris 8 2/02) or Solaris 9_update1 (Solaris 9 9/02) operating environment. 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 Solaris Operating Environment” on page 23 before continuing.

Note – Configure the Sun Ray server with an “Entire Distribution” software cluster installation of the Solaris 8 or 9 “Server”, SPARC Platform Edition before you install the Sun Ray sever software.

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/products/sunray/patches.html>

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

Sun Ray Port Requirements

Sun Ray Server Software 2.0 has different port requirements than earlier versions both for the Administration Server and for the Sun Ray Data Store.

Sun Ray Administration

Sun Ray Server Software includes and installs the required Sun Ray Administration Server Web server software. The Sun Ray Administration Server can coexist with a different Web server configured on the Sun Ray server. By default, the Sun Ray Administration Server uses port 1660 for the Sun Ray Administration Tool. If this port is unavailable, you can configure a new port while running the `utconfig` script.

Sun Ray Data Store

Instead of the SunDS product formerly used for storing Sun Ray data, Sun Ray Server Software 2.0 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 2.0 server in a 2.0-only failover environment, the new service port is used by default.

Note – 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 2.0 Sun Ray server in a mixed 1.x and 2.0 failover group, you must make sure that the primary server is a 2.0 server.

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 2.0 Administrator's Guide*.

After you configure the new server with the `utconfig` command, run `utreplica -z 389` to configure the data store to use the old LDAP port 389.

If 2.0 server is the secondary, 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 the new port 7012 by running the `utdssync` command on the primary. This procedure allows the SunDS to coexist with the Sun Ray Data Store on the 2.0 Sun Ray servers.

Web Browser Requirements

To view the Sun Ray Administration Tool, you must have a Web browser installed on the system that will display it, such as Netscape™ Communicator. The latest version of the Netscape Communicator Web browser is available at this URL:

<http://www.netscape.com/download>

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 13.

▼ To Install Sun Ray Server Software

1. **If you have already mounted the Sun Ray Server Software 2.0 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.**

3. **Insert the Sun Ray Server Software 2.0 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:

- verifies which required software products are already installed.
- checks for the existence of Controlled Access Mode (kiosk) packages.
- asks whether you want to install localized documentation and Admin GUI.

Note – Earlier releases of SRSS installed all locales by default. For upgrades, the 2.0 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.

6. Answer `y` (yes) to the prompt.

There is a five to ten minute pause while the filesystem is checked. The script then installs patches and the required software applications:

Note – The `utinstall` script requests that you reboot the Sun Ray server; however, you may defer this action until you have configured all features.

- The `utinstall` script 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 58.

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

7. 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 Solaris Operating Environment” on page 23 and repeat the tasks appropriate for those systems.

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” on page 13
- “Failover Groups” on page 14
- “Preserving the Configuration” on page 16
- “Unconfiguring the Sun Ray Server” on page 18
- “Removing the Software” on page 19

Requirements

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

The following table summarizes your upgrade requirements.

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.

TABLE 4-1 Summary of Upgrade Requirements

If Upgrading the Solaris Release	If NOT Upgrading the Solaris 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 the Configuration” on page 16.	1. Verify that you have installed the latest operating system patches. See “Operating System Patch Requirements” on page 7.
2. Unconfigure the server. Upgrading from earlier releases requires you to unconfigure the server manually. See “Unconfiguring the Sun Ray Server” on page 18.	2. Upgrade Sun Ray Server Software. See “Upgrading the Sun Ray Server” on page 24.
3. Remove the existing Sun Ray software. See “To Remove Sun Ray Server Software” on page 19.	
4. Upgrade the Solaris Operating Environment. See “To Upgrade the Solaris Operating Environment” on page 23.	
5. 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 Solaris 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 appliance 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 version 2.0, 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 2.0 servers in a failover group, you must still restart or reset any pre-2.0 servers 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 2.0 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 45 for instructions and Chapter 11 in the *Sun Ray Server Software 2.0 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 Solaris operating environment, see “Preserving the Configuration” on page 16.
 - Otherwise, see “Upgrading the Sun Ray Server” on page 24.

Preserving the Configuration

You must preserve your existing configuration before running the `utinstall` script if either of these conditions apply:

- If you are upgrading the Solaris operating environment, for instance, because you are upgrading from Sun Ray Server Software 1.0
- If 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 2.0 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 – This procedure stops all Sun Ray daemons and services, including the Sun Ray Data Store. Users will 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 Solaris 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 2.0 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.Z` file, where *version* is the currently installed version of Sun Ray Server Software, 1.0, 1.1, 1.2, or 1.3.
- 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.Z` file be moved to a safe location before the Solaris software upgrade.

6. Use NFS, FTP, or other means to copy the

`/var/tmp/SUNWut.upgrade/preserve_<version>.tar.Z`
file to a safe location on another server.

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

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 Solaris operating environment, see “Upgrading the Solaris Operating Environment” 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, take these immediate steps. Otherwise, skip to Step 4.

a. Disable Sun Ray appliance 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. If you configured the Sun Ray server for SSL, follow these steps, otherwise go to Step 8:

a. Delete the Federated Naming service directory:

```
# rm -rf /var/fn
```

b. Delete the Certificate directory:

```
# rm -rf /var/certs
```

c. Delete the Root Certificate Authority user:

```
# userdel rcauser
```

d. Delete the Certificate log:

- If SSL certificates were configured under any Sun Ray Server Software version lower than 2.0, delete the following certificate log:

```
# rm /etc/ski/rcauser.certlog
```

- If SSL certificates were configured under Sun Ray Server Software version 2.0 or higher, delete the following certificate log:

```
# rm /var/opt/SUNWut/http/ski/rcauser.certlog
```

8. Repeat from Step 1 to Step 7 for all remaining Sun Ray servers.

Upgrading

This chapter describes the procedure to *upgrade* from earlier versions of Sun Ray Server Software. It also includes instructions for upgrading the Solaris operating environment.

Topics in this chapter include:

- “Upgrading the Solaris Operating Environment” on page 23
- “Upgrading the Sun Ray Server” on page 24

Upgrading the Solaris Operating Environment

▼ To Upgrade the Solaris Operating Environment

Note – For complete instructions, please refer to the documentation provided with the Solaris software. 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.**
2. **Use NFS, FTP, or other means to copy the `/var/tmp/SUNWut.upgrade/preserve_version.tar.Z` 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 to the Solaris 8 or Solaris 9 operating environment.**

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.Z` 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 2.0 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.Z` file to the Sun Ray server.**

3. **Insert the Sun Ray Server Software 2.0 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 – The `utinstall` script requests that you reboot the Sun Ray server; however, you may defer this action until you have configured all features.

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 – Earlier releases of SRSS installed all locales by default. For upgrades, the 2.0 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.

- 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 Administration Server
 - Sun Ray server:
 - Administration software
 - Java JRE software
 - English man pages and product documentation
 - Core software
 - Configuration
 - Drivers
 - Controlled Access Mode software
- Provides a notice that the system must be rebooted; however, this action can be deferred until later.
- 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 58.

6. 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 the Configuration” on page 16 and repeat the tasks appropriate for each of those systems.

Preparing for Configuration

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

Topics in this chapter include:

- “Configuration Tasks” on page 27
- “Basic Network Topology” on page 28
- “Configuration Worksheets” on page 30

Configuration Tasks

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

1. Determine your network topology.

Most existing Sun Ray servers are deployed on dedicated private networks; however, Sun Ray Server Software 2.0 enables deployment on routed and non-routed shared networks (LANs). 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 “Network Topology” on page 105 of the *Sun Ray Server Software 2.0 Administrator’s Guide*.

2. Fill in the “Basic Network Topology” on page 28.
3. Configure the Sun Ray interconnect interface. See “To Configure the Sun Ray Interconnect Interface” on page 36.
4. Configure Sun Ray Server Software. See “To Configure Sun Ray Server Software” on page 40.

5. If the Sun Ray Administration Server is enabled with Secure Sockets Layer (SSL), configure an SSL certificate. See “To Configure a Secure Socket Layer Certificate” on page 42.
6. 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 45.
7. Synchronize the Sun Ray appliance firmware. See “To Synchronize the Sun Ray Appliance Firmware” on page 47
8. Synchronize the Sun Ray Data Store. See
9. After Configuration, reboot the Sun Ray server. See “To Reboot the Sun Ray Server” on page 51.

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

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.

Older Sun Ray implementations are usually deployed on a dedicated, private, non-routed interconnect.

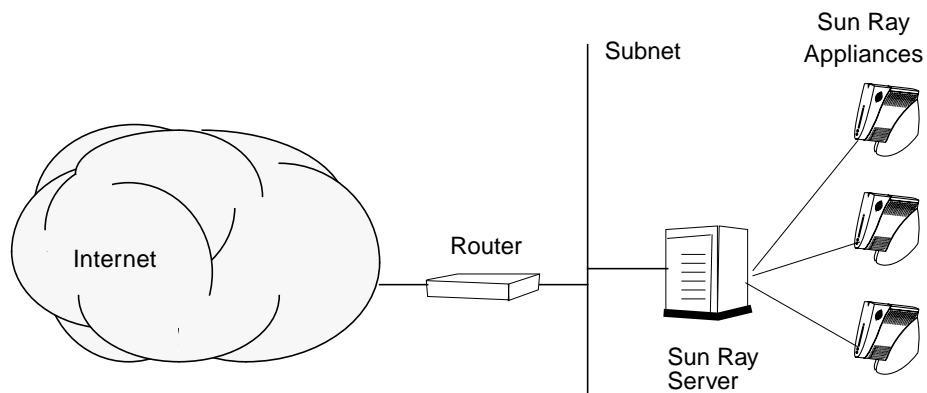


FIGURE 6-1 Dedicated, private, non-routed Sun Ray network

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 appliances.

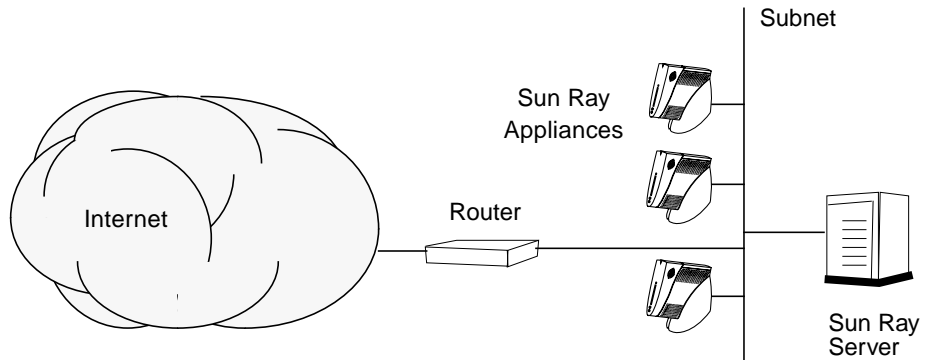


FIGURE 6-2 Shared network with non-routed Sun Ray appliances

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

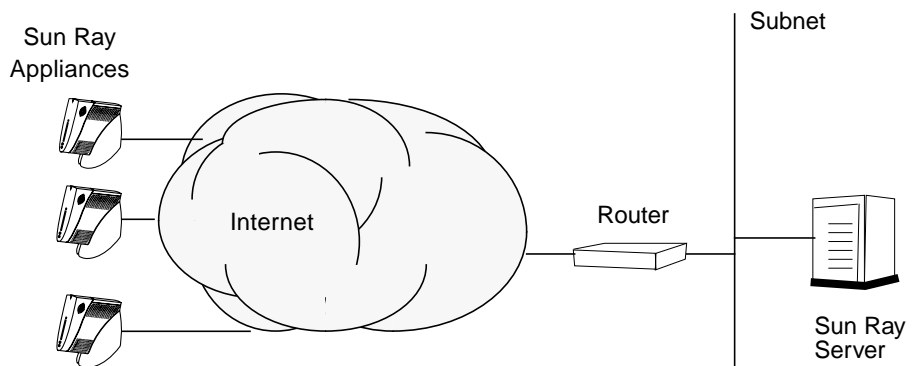


FIGURE 6-3 Shared, routed network

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

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 Sun Ray Server Configuration

Aspect or Variable	Default Value, <i>Example</i> , or (Other)	Your Primary Server Value	Your Secondary Server Value
Configuring the Sun Ray interconnect interface using <code>utadm</code>	(Enter start time here)		
Interface name	<i>hme1</i>		
Host address*	192.168.128.1		
Net mask	255.255.255.0		
Net address	192.168.128.0		
Host name ¹	<i>hostname-interface-name</i>		
First Sun Ray appliance address	192.168.128.16		
Number of Sun Ray appliance addresses [†]	X		
Firmware server [‡]	192.168.128.1		
Router ⁽³⁾	192.168.128.1		
Specify alternate server list? (optional)	(yes or no)		
If yes, File name	<i>filename</i>		
Or, Server IP address	192.168.128.2		
Configuring Sun Ray Server Software using <code>utconfig</code>	(Enter start time here)		
Admin password	<i>adminpass</i>		
Sun Ray admin server port number	1660		
CGI username	utwww		

TABLE 6-1 Basic Parameter Worksheet for Sun Ray Server Configuration (Continued)

Aspect or Variable	Default Value, Example, or (Other)	Your Primary Server Value	Your Secondary Server Value
Enable remote administration? (optional)	(yes or no)		
If yes, Enable SSL? (optional)	(yes or no)		
Configure Controlled Access Mode? (optional)	(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**	<i>signature1</i>		

* 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:

* $X = (\text{Number of appliances} / (\text{Number of servers} - 1)) - 1$

* 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 appliances, 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 appliances

* 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 Sun Ray Server Configuration

Aspect or Variable	Default Value, Example, or (Other)	Your Primary Server Value	Your Secondary Server Value
Configuring the Sun Ray interconnect interface using <code>utadm</code>	(Enter start time here)		
Interface name	<i>hme1</i>		
Host address ⁽¹⁾	192.168.128.1		
Net mask	255.255.255.0		
Net address	192.168.128.0		
Host name ⁽¹⁾	<i>hostname-interface-name</i>		
First Sun Ray appliance address ⁽²⁾	192.168.128.16		
Number of Sun Ray appliance addresses ⁽²⁾	<i>X</i>		
Firmware server ⁽³⁾	192.168.128.1		
Router ⁽³⁾	192.168.128.1		
Specify alternate server list? (optional)	(yes or no)		
If yes, File name	<i>filename</i>		
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:

* $X = (\text{Number of appliances} / (\text{Number of servers} - 1)) - 1$

* First unit address for primary server = 192.168.128.16

* Last unit address for all servers = $X + \text{first unit address}$. If last unit address is greater than 240, reduce to 240.

* First unit address for secondary servers = $1 + \text{last unit address of previous server}$. If first unit address is greater than 239, configure for a class B network.

Example: 120 appliances, 4 servers. $X = 39$

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

If you are configuring SSL for remote administration, fill in this portion of the worksheet:

TABLE 6-3 Sun Ray Server Configuration SSL Parameters

Aspect or Variable	Default Value, Example, or (Other)	Your Primary Server Value	Your Secondary Server Value
Configuring a secured socket layer certificate using <code>utcrca</code> and <code>utsslgencred</code> (Needed if SSL is enabled)			
Root Certificate Authority (RootCA) directory	<code>/var/certs</code>		
RootCA user	<code>rcauser</code>		
RootCA user password	<code>rcapass</code>		
RootCA user distinguished name Attributes may contain text, numbers, and spaces. <code>cn=common-name</code> <code>ou=organization-unit</code> <code>o=organization</code> <code>l=locale</code> <code>st=state</code> <code>c=country</code>	<code>cn=rcauser</code> <code>ou=it</code> <code>o=bctel</code> <code>l-richmond</code> <code>st=bc</code> <code>c=ca</code>		
Key package password	<code>keypass</code>		
Store RootCA credentials in naming service	<code>yes</code>		
Sun Ray server root password	<code>rootpass</code>		
Sun Ray admin server public IP address ⁽¹⁾	<code>IPaddress</code>		
Sun Ray admin server certificate directory ⁽¹⁾	<code>/var/certs/IPaddress</code>		
Sun Ray server hostname ⁽¹⁾	<code>hostname</code>		
Sun Ray server domain name	<code>eng.fun.com</code>		
Sun Ray admin server distinguished name (RootCA user distinguished name suffix)	<code>ou=it</code> <code>o=bctel</code> <code>l-richmond</code> <code>st=bc</code> <code>c=ca</code>		
Encryption password ⁽¹⁾	<code>encpass</code>		

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

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

TABLE 6-4 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 <code>utreplica</code> (Required for failover groups)	(Enter start time here)		
Primary Sun Ray server host name ⁽¹⁾	<i>primary-server</i>		
Secondary Sun Ray server host name ⁽¹⁾	<i>secondary-server</i>		

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

TABLE 6-5 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.

Configuration

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

- “To Configure the Sun Ray Interconnect Interface” on page 36
- “To Configure the Sun Ray Server on a LAN” on page 38
- “To Turn the Sun Ray LAN Connection On or Off” on page 39
- “To Configure Sun Ray Server Software” on page 40
- “To Configure a Secure Socket Layer Certificate” on page 42
- “To Configure the Sun Ray Server Hierarchy” on page 45
- “To Synchronize Primary and Secondary Sun Ray Servers” on page 46
- “To Synchronize the Sun Ray Appliance Firmware” on page 47
- “To Convert and Synchronize the Sun Ray Data Store Port” on page 47
- “To Re-enable the Old SunDS Service” on page 48
- “To Determine the Integrity of the Configuration Files” on page 49
- “To Replace the `Xservers` and `Xconfig` Files” on page 51
- “To Reboot the Sun Ray Server” on page 51

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 appliances 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 the 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
```

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 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 host address (*192.168.128.1*)
- New netmask (*255.255.255.0*)
- New host name (*hostname-interface-name*)
- New first Sun Ray appliance address (*192.168.128.16*)
- Total number of Sun Ray appliance address (*X*)
- New firmware server address (*192.168.128.1*)
- New router address (*192.168.128.1*)
- To specify an alternate 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 files are configured:

```

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

The `utadm` script configures the Sun Ray appliance 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 Appliance Firmware” on page 47.
- 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 appliance address (*192.168.128.16*)
- Total number of Sun Ray appliance addresses
- New firmware server address (*192.168.128.1*)
- New router address (*192.168.128.1*)
- To specify an alternate 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 appliance 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 Appliance Firmware” on page 47.
 - Otherwise, 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`.

▼ 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 Administration Server (press Return)
- Sun Ray administration server port number (1660)
- CGI username (*utwww*)
- Whether you want to enable remote administration. If you answer yes, it asks:
 - Whether you want to enable a Secure Sockets Layer for remote administration

Note – SSL is not recommended unless you have security concerns about sending the Sun Ray Server Software administrative username and password over the network in a form that, potentially, could be read by other network users. For a full description of Secure Socket Layers, see the *Sun WebServer 2.1 Installation Guide* or the *Introduction to SSL*, both of which are available on <http://docs.sun.com>.

- Whether you want to configure Controlled Access Mode. If you answer yes, 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:

```
/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 enabled SSL for remote administration, see “To Configure a Secure Socket Layer Certificate” on page 42.
- If you have a failover group, see “To Configure the Sun Ray Server Hierarchy” on page 45.
- Otherwise, go to “To Synchronize the Sun Ray Appliance Firmware” on page 47.

▼ To Configure a Secure Socket Layer Certificate

The SSL protocol allows an SSL-enabled server to authenticate itself to an SSL-enabled client, allows the client to authenticate itself to the server, and allows both to establish an encrypted connection. For a full description of Secure Socket Layers, see the *Sun WebServer 2.1 Installation Guide* or the *Introduction to SSL*, both of which are available on <http://docs.sun.com>.

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 verify that the `utskid` process is present:

```
# ps -ef |grep utskid
```

3. If the process is not running, restart it using the following commands:

```
# /etc/init.d/utskid stop
# /etc/init.d/utskid start
```

4. Create the local RootCA user:

```
# useradd -c "Root CA user" -m -k /etc/skel -d /var/certs rcauser
# passwd rcauser
New password: rcapass
Re-enter new passwd: rcapass
# chmod 700 /var/certs
# chown rcauser /var/certs
```

5. Log in as RootCA user and run the `utcrca` script to create the RootCA credentials:

```
# su rcauser
$ /opt/SUNWut/http/ski/bin/utcrca
```

The `utcrca` script prompts for the following:

- RootCA distinguished name. Examples are given in the following table:

Attribute Type	Abbreviation	Example
Common name	cn	cn=rcauser
Organizational unit name	ou	ou=eng
Organization Name	o	o=bctel
Locality name	l	l=richmond
State or province name	st	st=bc
Country name	c	c=ca

- Root certificate directory (*/var/certs*)
- Key package password (*keypass*)
- Key package password again (*keypass*)
- To store the credentials in the name server (*y*)
- Sun Ray server root password (*rootpass*)

6. Create the Sun Ray administration server certificate directory and set permissions and ownership, using the server's IP address:

```
$ mkdir /var/certs/IPaddress
$ chmod 700 /var/certs/IPaddress
$ chown rcauser /var/certs/IPaddress
```

7. Run the `utsslgenrcd` script to generate the Sun Ray administration server certificate

```
$ /opt/SUNWut/http/bin/utsslgenrcd -r rcauser -d /var/certs/IPaddress \
-i IPaddress
```

The `utsslgenrcd` script prompts for the following:

- Sun Ray administration server (`httpd`) host name (press Return)
- Sun Ray administration server domain name (*eng.fun.com*)
- Sun Ray administration server DN (*ou=eng,o=fun,l=laffland,st=bliss,c=we*)
- Encryption password (*encpass*)
- Encryption password again (*encpass*)
- Key package password (*keypass*)

8. Become superuser again:

```
$ exit
```

9. Install the Web server certificate:

```
# /opt/SUNWut/http/bin/utsslstore -i IPaddress -p /var/certs/IPaddress 0
```

Note – In the above command line, the last character is a zero.

The `utsslstore` script requests the **encryption password**:

```
/opt/SUNWut/http/ski/bin; Enter host key package password: encpass
```

Note – Type the **encryption password** *encpass* here, not the key package password.

10. Configure the Web server to use SSL.

Note – The `utconfig` script did this step for you when you chose to enable SSL.

- a. Open the `/etc/opt/SUNWut/http/utadmin.httpd.conf` file in a text editor.
- b. Find the text `ssl_enable "no"` and change it to `ssl_enable "yes"`.
- c. Save the file.

11. Start or restart the Sun Ray administration server to use SSL.

- To start the server:

```
# /opt/SUNWut/http/bin/htserver start
```

- To restart the server:

```
# /opt/SUNWut/http/bin/htserver restart
```

12. Repeat Step 1 through Step 11 for each of the secondary servers if in a failover group.

13. After configuring the Sun Ray server with an SSL certificate and enabling SSL, use the following URL to access the Sun Ray Administration Tool:

```
https://hostname:port
```

Where *hostname:port* is the host name and port of the Sun Ray Administration Server. By default, the port is 1660.

Note – Port 7012 is reserved for the Sun Ray Data Store.

▼ 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
`/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 locally log in or remotely use 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. Restart the agent on any server monitored by the Sun Management Center.

```
# /opt/SUNWsysmon/sbin/es-stop -a  
# /opt/SUNWsysmon/sbin/es-start -a
```

9. When you are finished, go to “To Synchronize the Sun Ray Appliance Firmware” on page 47.

▼ 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 Appliance 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 51.

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. Synchronize the Sun Ray appliance firmware:

```
# ./utfwsync
```

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

4. When you are finished, go to “To Reboot the Sun Ray Server” on page 51 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), Sun Ray Server Software 2.0 provides a private data store service, the Sun Ray Data Store (SRDS).

SRDS uses a different service port, 7012, to avoid conflict with the standard LDAP port number, 389. When you upgrade a server to SRSS 2.0, 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 2.0 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 47.

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 YYYYMMDD format and *time* is the time save file is created in `<hh:mm>` format.

4. Start the SunDS service:

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

As of the Sun Ray Server Software 2.0 release, the SunDS product is no longer supported. 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
> :8 SunRay local@none /usr/openwin/bin/Xsun :8 -nobanner
.
.
> :9 SunRay local@none /usr/openwin/bin/Xsun :9 -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.ml.at88sc1608.6d0400aa
.
.
> Dtlogin.*_9.environment:
SUN_SUNRAY_TOKEN=ZeroAdmin.ml.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 appliance 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 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.

Additional Information

This appendix provides additional information regarding your installation or upgrade to Sun Ray Server Software 2.0.

Topics covered in this appendix include:

- “Mounting a CD-ROM Remotely” on page 53
- “Disabling and Unconfiguring SSL Certificates” on page 55
- “Modified System Files” on page 57
- “utinstall Error Messages” on page 58

Mounting a CD-ROM Remotely

If you purchased the Sun Ray Server Software 2.0 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 2.0 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:

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

Disabling and Unconfiguring SSL Certificates

Tip – If you need to disable secure socket layers, please refer to “Removing the Software” on page 19 in addition to the following procedure.

▼ To Disable SSL

You do not need to unconfigure SSL to disable it.

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 the `/etc/opt/SUNWut/http/utadmin.httpd.conf` file in a text editor.

3. Find the text `ssl_enable "yes"` and change it to `ssl_enable "no"`.

4. Save the file.

5. Start or restart the Sun Ray administration server.

a. Start the server:

```
# /opt/SUNWut/http/bin/htserver start
```

b. Restart the server:

```
# /opt/SUNWut/http/bin/htserver restart
```

▼ To Unconfigure SSL Certificates

Follow this procedure to unconfigure SSL certificates or as a prerequisite to reconfiguring a SSL certificate.

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

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

2. Open a shell window and stop the `utskid` server:

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

3. Remove the Federated Naming Service directory:

```
# rm -rf /var/fn
```

4. Change to the `RootCA` directory:

```
# cd /var/certs
```

5. Remove the Sun Ray Administration Server certificate directory, files, and subdirectories from the `RootCA` directory:

```
# rm -rf new_cred_list keypkgs certs IPaddress
```

6. Start the `utskid` server:

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

7. If you wish to reconfigure a certificate, return to Step 7 of “To Configure a Secure Socket Layer Certificate” on page 42.

8. Start or restart the Sun Ray administration server.

a. Start the server:

```
# /opt/SUNWut/http/bin/htserver start
```

b. Restart the server:

```
# /opt/SUNWut/http/bin/htserver restart
```

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

The following files are modified during utinstall:

- /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-1 utinstall Error Messages

Message	Meaning	Resolution
<code>utinstall: fatal, media-dir is not a valid directory.</code>	You called the <code>-d</code> option, but <i>media-dir</i> is incomplete.	The <i>media-dir</i> directory requires relevant patches and packages for installation. The <i>media-dir</i> directory includes the Sun Ray directory.
<code>Cannot open for read admin-file</code>	The <code>admin_default</code> file is unreadable, or you called the <code>-a</code> option and the <i>admin-file</i> is unreadable.	Verify that the installation administration file exists (<code>admin_default</code> or other) and the permissions are correct.
<code>SunOS release is x.x, valid releases are: 8 and 9</code>	You are attempting to install Sun Ray Server Software onto Solaris software version 2.7 (5.7) or older.	Upgrade to version 8 update 7 or 9 update 1 of the Solaris operating environment before installing Sun Ray Server Software.
<code>Please clean up the directory /var/tmp/SUNWut.upgrade before rerunning utinstall.</code>	Other unrelated files are found in the preserve directory.	Clean up the directory.
<code>Please remove the existing preserved file <preserved_tarfilename> before rerunning utinstall.</code>	You decided not to restore from the indicated tar file.	Remove the tar file before rerunning <code>utinstall</code> .
<code>utpreserve: unable to preserve data. Error while creating archive file</code>	The <code>utinstall</code> script failed to preserve existing configuration files.	Either exit and manually preserve these files or just continue.
<code>xxxxxx not successfully installed</code>	Might occur for the installation of any application or patch, <code>xxxxxx</code> , if relevant packages have not been properly installed.	Verify the component <code>xxxxxx</code> is present in the installation media directory path and has the correct permissions, then re-run the <code>utinstall</code> script.
<code>The following packages were not successfully removed xxxxxx ...</code>	The packages listed have not been properly removed.	Use the <code>pkgrm</code> command to remove each package listed manually, then run <code>utinstall -u</code> again.

TABLE A-1 utinstall Error Messages (Continued)

Message	Meaning	Resolution
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.	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.
Exiting ...		
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.	<ol style="list-style-type: none"> 1. Run utinstall again. 2. If message appears again, type: # <code>pkginfo -p grep SUNWut</code> 3. Use <code>pkgrm</code> to remove packages listed. 4. Type: # <code>pkginfo grep SUNWut</code> <ul style="list-style-type: none"> • If output, go to step 5. • If no output, type (on one line): # <code>cd /cdrom/cdrom0/Sun_Ray_Server_Software_2.0Solaris_8+/Packages</code> 5. Run utinstall again.
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 <i>directory</i> 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 <i>logfile</i> for the package which started the problem and manually remove it with the <code>pkgrm</code> command, then run <code>utinstall -u</code> again.
Partition Name Space Required Space Available ----- <i>partition</i> <i>xxx</i> <i>yyy</i>		Not enough disk space was allocated for <i>partition</i> . Repartition the disk and run utinstall again.

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