# Sun Ray™ Server Software 3 Installation and Configuration Guide

for the Linux Operating System

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# Contents

# Preface

*The Sun Ray Server Software 3 Installation and Configuration Guide for the Linux Operating System* provides instructions for installing 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 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 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.<br>Use `ls -a` to list all files.<br>`% You have mail.` |
| **`AaBbCc123`** | What you type, when contrasted with on-screen computer output | `% su`<br>`Password:` |
| *AaBbCc123* | Book titles, new words or terms, words to be emphasized | Read Chapter 6 in the *User's Guide*.<br>These are called *class* options.<br>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 Administrator's Guide for the Linux Operating System* | 817-6811-10 |
| Release Notes | *Sun Ray Server Software 3 Release Notes for the Linux Operating System* | 817-6813-10 |

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CHAPTER 1

# Overview

This guide describes how to install and configure Sun Ray™ Server Software 3.

The reader is presumed to be familiar with basic  Linux 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 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.

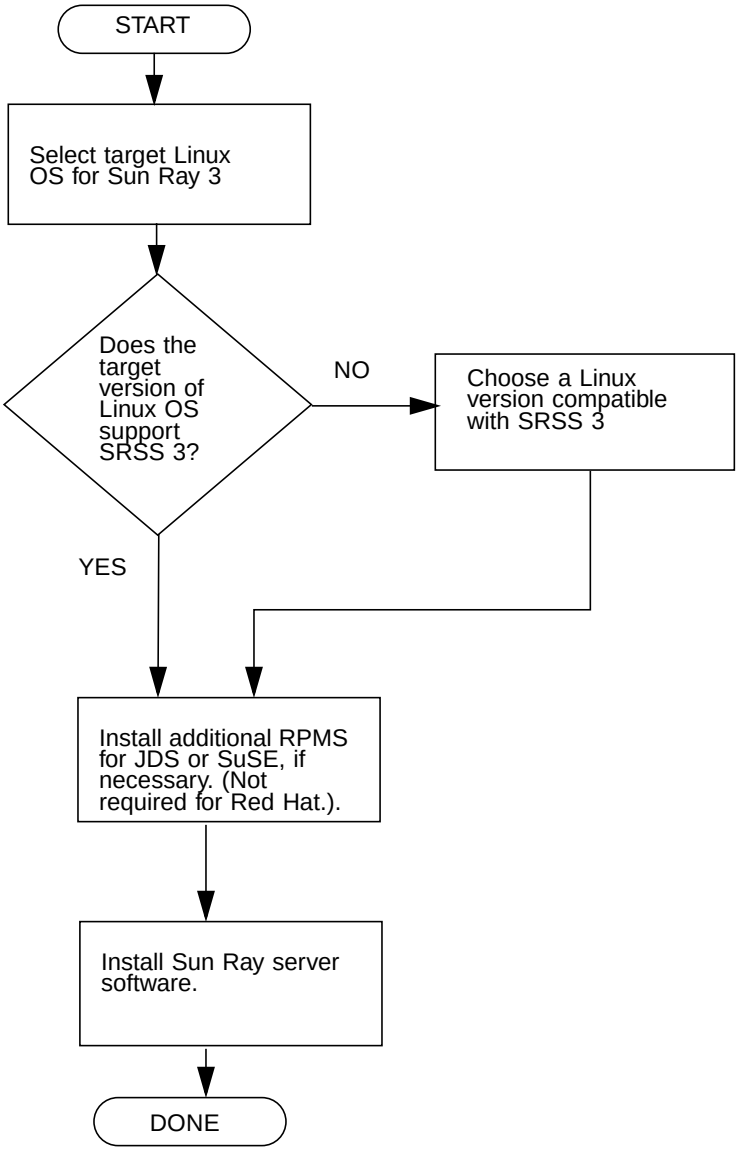


**FIGURE 1-1** Installation Flow Chart

- If you are installing Sun Ray Server Software for the first time, go to "Preparing for Installation" on page 5.
- If you are creating a failover group from both new and existing Sun Ray servers, see "To Configure the Sun Ray Server Hierarchy" on page 39.

# 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.

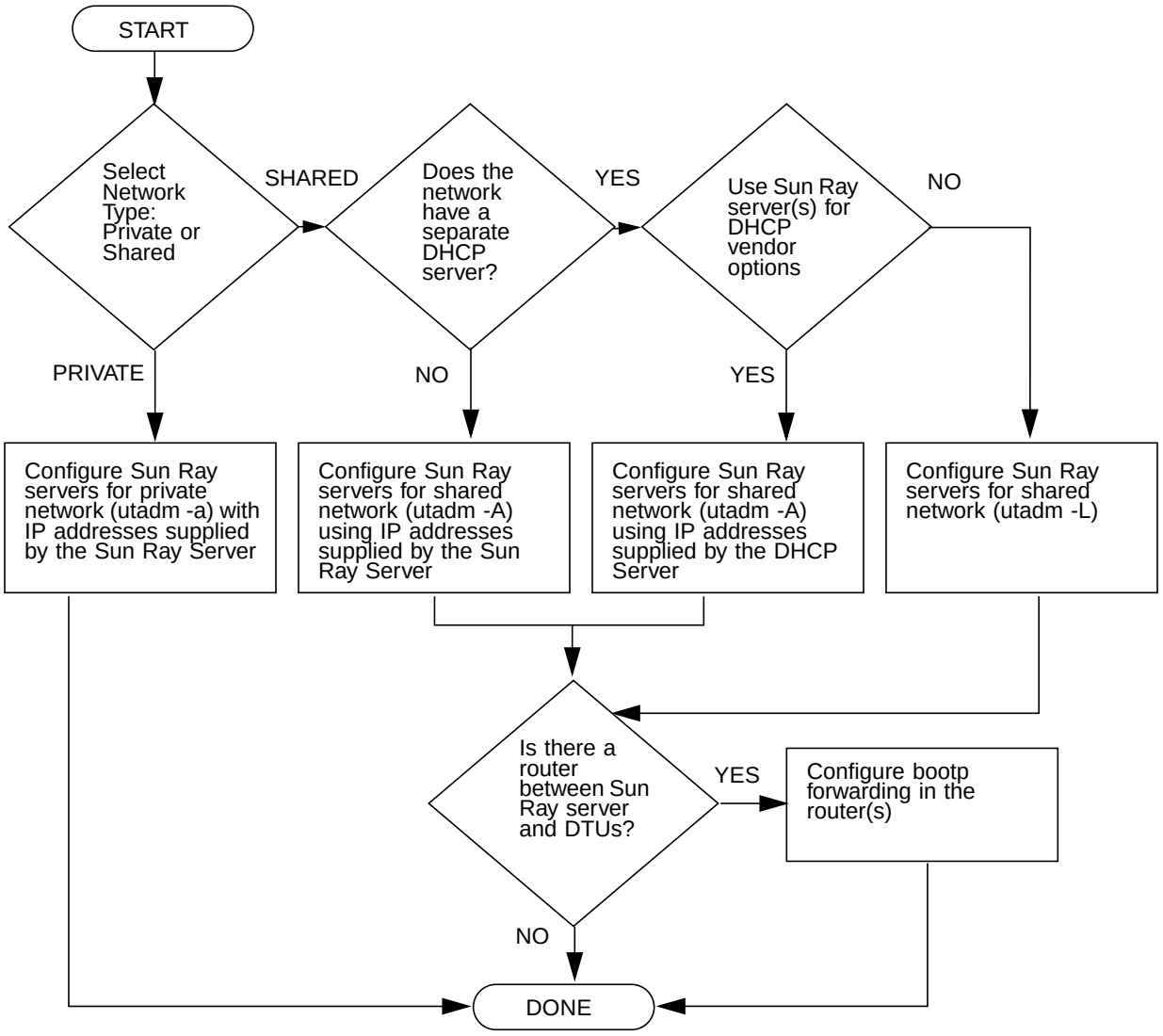


**FIGURE 1-2** Sun Ray Configuration for Various Types of Network

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. 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.
- Verify that you have installed the latest operating system updates patches.
- 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/log` | 1 Mbyte |
| | `/var/tmp` | 5 Mbytes |
| | `/var/opt/SUNWut` | Allow enough disk space for the log files. |
| Sun Ray Data Store 2.0 | `/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. |
| JRE 1.4.2 or later | | 60 Mbytes |
| 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 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 CD, in the Supplemental directory.

## Linux Operating System Versions

Sun Ray Server Software 3 runs on:

- Sun Java Desktop System (JDS) Release 2
- SuSE Linux Enterprise Server (SLES) 8.0, at the SP3 (Service Pack 3) level or later
- Red Hat Enterprise Linux Advanced Server (RHEL AS) 3.0

### Java Desktop System Release 2

JDS requires that all packages be installed, including:

- `dhcp-base-3.0.1rc9-111.i586.rpm`
- `dhcp-server-3.0.1rc9-111.i586.rpm`
- `openmotif-2.2.2-502.i586.rpm`
- `pax-3.0-219.i586.rpm`
- `perl-XML-Parser-2.31-216.i586.rpm`
- `tftp-0.29-105.i586.rpm`

To make sure these RPMs are installed during JDS installation:

1. Select Detailed Selection in Software Selection screen
2. Select Add-on packages, Ice WM Desktop, Development Tools
3. Select `Package groups` followed by `Development -> Libraries -> Perl`, then select `perl-XML-Parser` from the right side panel.
4. Select `Package` groups followed by `Productivity -> Archiving`, then select `pax` from the right side panel.

5. Select `Package groups` followed by `Productivity -> Networking`, then select `dhcp-base`, `dhcp-server`, and `tftp` from the right side panel.

   If you want to enable `telnet` then also select `telnet`, `telnet-server`.

6. Select `Package groups` followed by `System`, then select `openmotif` from the right side panel.

After completing the JDS installation, install `pdksh-5.2.14-531.i586.rpm`, which is available at:

`ftp://rpmfind.net/linux/SuSE-Linux/i386/8.1/suse/i586/pdksh-5.2.14-531.i586.rpm`

## SuSE Linux Enterprise Server (SLES) 8.0

All packages are required and must be installed. During installation, select `Detailed Selection` from the Software Selection screen, then select all check boxes for Package Selection.

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**Note –** In addition, `Service Pack 3` or later must be installed.

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RPMs `freetype2-2.9-87` and `freetype2-devel-2.0.9.87` must be replaced with the latest versions, `freetype2-2.1.3-49.i586.rpm` and `freetype2-devel-2.1.3-49.i586.rpm`, which are available in the SRSS 3 Supplemental directory.

Please use the following procedures:

1. To remove the old RPMs:

```
# rpm -e --nodeps freetype2-2.0.9.87
# rpm -e --nodeps freetype2-devel-2.0.9087
```

2. To install the correct RPMs:

```
# rpm -i freetype2-2.1.3-49.i586.rpm
# rpm -i freetype2-devel-2.1.3-49.i586.rpm
```

## Red Hat Enterprise Linux Advanced Server (RHEL AS) 3.0

All packages are required, so it is best to configure the Sun Ray Server on a system on which all packages of RHEL AS 3.0 are installed.

During installation, select the `Customize` option, then select the check box for `Everything` in the `Package Selection` panel.

**Caution –** The Red Hat installation script asks whether to start a graphical console. Be sure to answer "Yes", otherwise Sun Ray startup scripts and X initialization scripts may fail to run.

## Sun Ray Administration Tool

The Sun Ray Administration Tool (Admin GUI) requires that an Apache HTTP 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 45.

**Note –** The Apache HTTP Server is installed automatically when you follow the instructions above for Red Hat Enterprise Linux Advanced Server and SuSE Linux Enterprise Server 8. JDS requires manual installation of the Apache HTTP Server. See "To Configure an HTTP Server Manually" on page 30.

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 45.

## Sun Ray Port Requirements

When you configure a SRSS 3 server in a failover environment, service port 7012 is used by default.

## Sun Ray Data Store

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.

# 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 45.

CHAPTER 3

# Installation

This chapter contains instructions for installing Sun Ray Server Software.

## ▼ To Install Sun Ray Server Software

1. **If you have already mounted the Sun Ray Server Software 3 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 3 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
   - verifies which required software products are already installed.
   - checks for the existence of a Gnome Display Manager (GDM).

- prompts you to authorize the removal of an existing Gnome Display Manager and its replacement with a GDM that has been enhanced and optimized for Sun Ray server software.

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

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**Note –** If you answer y (yes) to the prompt, SRSS installation continues; if you answer n (no) to the prompt, the SRSS install process aborts.

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

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

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

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**Note –** For a listing of `utinstall` error messages, see "`utinstall` Error Messages" on page 57.

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

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7. **Go to "Preparing for Configuration" on page 25 for instructions how to prepare to configure and reboot the Sun Ray server.**

   If other systems need software installation, repeat the tasks appropriate for 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 does not supply an HTTP server as part of the software; however, if SRSS 3 finds that an Apache web server is already installed, it configures the Apache server automatically.

## Configuration Tasks

To configure a new installation 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 109 of the *Sun Ray Server Software 3 Administrator's Guide*.

2. Fill in the "Configuration Worksheets" on page 27.

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 34. To implement a LAN configuration, see "To Configure the Sun Ray Server on a LAN" on page 36.

4. Configure Sun Ray Server Software. See "To Configure Sun Ray Server Software" on page 38.

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 39.

6. Synchronize the Sun Ray DTU firmware. See "To Synchronize the Sun Ray DTU Firmware" on page 41

7. After Configuration, reboot the Sun Ray server. See "To Reboot the Sun Ray Server" on page 47.

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

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**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.

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# 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 | *eth1* | | |
| 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 alternate 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` | | |

**TABLE 6-1** Basic Parameter Worksheet for Dedicated Interconnect 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) | | |
| 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.

** 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 alternate 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.

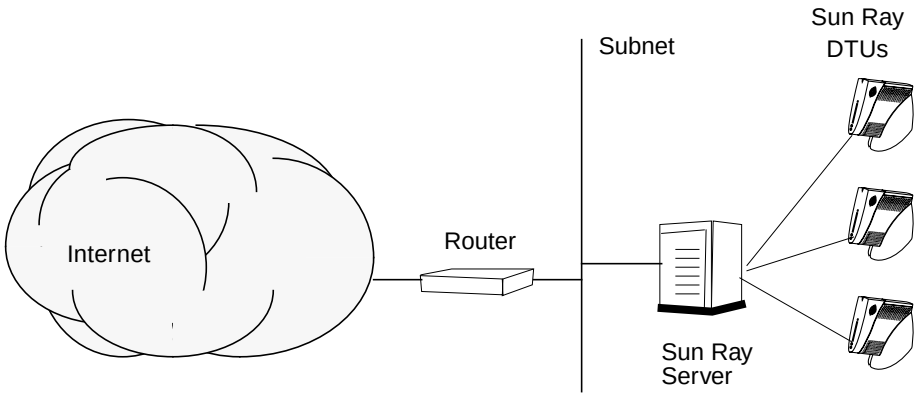


**FIGURE 6-1** Dedicated, private, non-routed Sun Ray network

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.

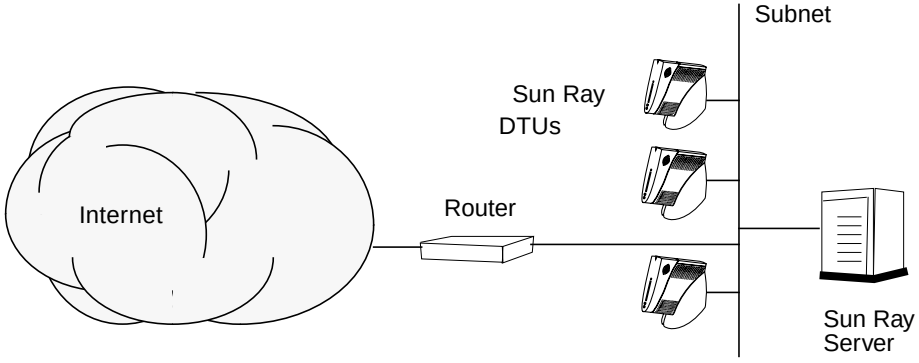


**FIGURE 6-2** Shared network with non-routed Sun Ray DTUs

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

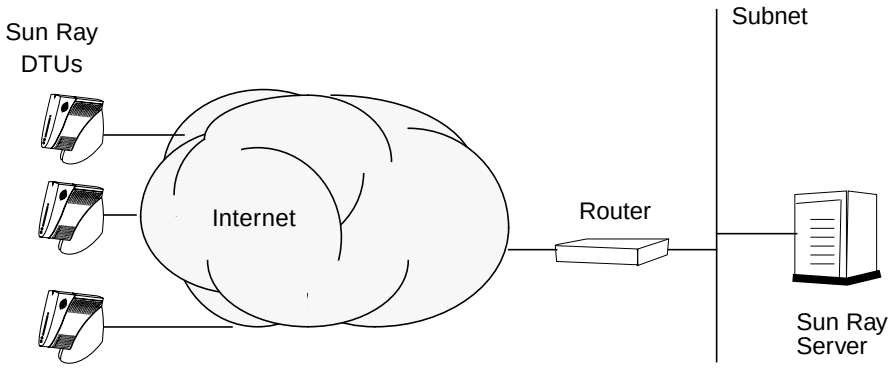


**FIGURE 6-3** Shared, routed network

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

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CHAPTER 7

# Configuration

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


- For further explanation of Sun Ray network configuration, see Chapter 7 of the *Sun Ray Server Software 3 Administrator's Guide*.

## Configuring the Sun Ray Server

### ▼ 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: *eth1*.

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*)
   - New first Sun Ray DTU address (*192.168.128.16*)
   - Total number of Sun Ray DTU 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 Sun Ray-specific files are configured:

```
/etc/opt/SUNWut/net/hostname.eth1
/etc/hosts
/etc/opt/SUNWut/net/netmasks
/etc/opt/SUNWut/net/networks
/etc/dhcpd.conf
```

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. **Go to "Configuring the Sun Ray Server" on page 21.**

## ▼ 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.

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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 firmware server address (*192.168.128.10*)
   - 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 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 38.**
8. **Proceed to "To Configure Sun Ray Server Software" on page 38.**

## ▼ 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 enable remote administration. If you answer yes, it asks:
   - 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/log/SUNWut/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 39.
   - Otherwise, go to "To Synchronize the Sun Ray DTU Firmware" on page 41.

## ▼ To Configure the Sun Ray Server Hierarchy

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

**Note –** If a common home directory is mounted on machines with different Gnome versions, conflicts between or among the versions cause unpredictable behavior. Do not try to use multiple Gnome versions with a common home directory.

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/log/SUNWut/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 41.**

## ▼ 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 47.

---

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 47 for instructions how to reboot the server.**

## ▼ 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 the 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. |

| 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. |
| 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:<br>`/docroot`<br>`/var/opt/SUNWut/http/docroot/`<br>`/images/`<br>`/var/opt/SUNWut/http/docroot/public/ images/`<br>`/javascript/`<br>`/var/opt/SUNWut/http/docroot/public/javascrip` |
| homepage | The page where the server should start | Set to `/var/opt/SUNWut/http/docroot/cgi-bin/start` |

**Note –** Once all of these parameters have been properly configured, you must restart the web server to complete configuration.

## ▼ 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.

Topics covered in this appendix include:



## Mounting a CD-ROM Remotely

If you purchased the Sun Ray Server Software 3 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 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 –** To enable remote login, comment out the line containing `pam_security.so` in the `/etc/pam.d/login` file.

---

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
```

# Modified System Files

The following files are modified during `utadm`:

- `/etc/dhcpd.conf`
- `/etc/nsswitch.conf`

The following files are modified during `utconfig`:

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

The following file is modified during `utinstall`:

- `/etc/syslog.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 |
|---|---|---|
| `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. |
| `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. |
| `The following packages were not successfully removed xxxxxx ...` | The packages listed have not been properly removed. | Use the `rpm` command to remove each `rpm` 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.`<br><br>`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. |

**TABLE A-1** `utinstall` Error Messages *(Continued)*

| Message | Meaning | Resolution |
|---|---|---|
| `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.<br>2. If message appears again, type:<br>`# rpm -qa\|grep SUNWut`<br>`3. Use rpm to remove packages listed.`<br>`4.Type:`<br>`rpm -q SUNWut`<br>• If output, go to step 5.<br>• If no output, type (on one line):<br>`# /cdrom/cdrom0 /Sun_Ray_Core_Services_3.0/Linux /Packages`<br>`# rpm -i SUNWuta`<br>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 *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 `rpm -e` command, then run `utinstall -u` again. |
| `Partition Name Space Required Space Available`<br>`----------`<br>*partition* *xxx* *yyy* | | Not enough disk space was allocated for *partition*. Repartition the disk and run `utinstall` again. |

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