



# Sun Ray Server Software 1.2 Product Notes

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Sun Microsystems, Inc.  
901 San Antonio Road  
Palo Alto, CA 94303-4900  
U.S.A. 650-960-1300

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# Preface

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The *Sun Ray Server Software 1.2 Product Notes* provide instructions for Sun Ray™ server software 1.2. These product notes are an addendum to the complete documentation set for *Sun Ray* enterprise server software 1.1, which is valid for this release. All references to 1.1 within the documentation set for *Sun Ray* enterprise server software 1.1 should be read as referring to version 1.2.

The new features for Sun Ray server software 1.2 include:

- Compatibility with the Solaris™ 8 operating environment
- Multihead
- Universal serial bus (USB) printer device class and serial service with select adapters
- Local printing

The documentation accompanying this product refers to support for the Solaris 2.6 and Solaris 7 operating environments. Solaris 8 software is also supported in this release.

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## How This Book Is Organized

Chapter 1 describes the new features in the Sun Ray server software 1.2.

Chapter 2 describes issues affecting installation and upgrade.

Chapter 3 describes new features in the Administration Tool, new commands for the command-line interface, and display resolution issues.

Chapter 4 describes documentation errata.

Chapter 5 describes late-breaking news and known problems.

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# Using UNIX Commands

This document may not contain information on basic UNIX® commands and procedures, such as shutting down the system, booting the system, and configuring devices.

See one or more of the following for this information:

- AnswerBook2™ online documentation for the Solaris software environment
- Other software documentation that you received with your system

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# Typographic Conventions

Typeface or Symbol	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.
<b>AaBbCc123</b>	What you type, when contrasted with on-screen computer output	% <b>su</b> 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	#

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# Related Documentation

Application	Title	Part Number
Installation	<i>Sun Ray Enterprise Server Software 1.1 Installation Guide</i>	805-7916-11
Administration	<i>Sun Ray Enterprise Server Software 1.1 Administrator's Guide</i>	805-7915-11
Advanced Administration	<i>Sun Ray Enterprise Server Software 1.1 Advanced Administrator's Guide</i>	805-4181-10

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Please include the part number (806-5931-10) of your document in the subject line of your email.

## New Features

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The new features for Sun Ray server software 1.2, include:

- “Support for Solaris 8 Software” on page 1
- “Multihead” on page 1
- “USB Support for Qualified Peripherals” on page 12
- “Additional Smart Card Support” on page 20
- “Failover—The User’s Experience” on page 21

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## Support for Solaris 8 Software

Sun Ray server software 1.2 is supported on both the 32- and 64-bit versions of Solaris 8 software although it does not fully utilize some of the Solaris 8 features, such as OCF.

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## Multihead

Sun Ray server software 1.2 supports the multihead feature and multihead groups. Multihead is a single large display made up of the screens on several monitors. A multihead group, consisting of two or more appliances controlled by one keyboard and mouse, can be composed of Sun Ray 1, Sun Ray 100, and Sun Ray 150 appliances.

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**Note** – Multihead is not supported in a mixed version failover environment; for example, Sun Ray enterprise server software versions 1.1 and 1.2. All servers in the failover group must be upgraded to Sun Ray enterprise server software, version 1.2.

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**Note** – Multihead functionality requires LDAP replication in the failover group.

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**Note** – For multihead to function properly, you must be in administered mode; therefore, you must run `utxconfig` before you run `utmhconfig` and `utmhadm`.

---

With Sun Ray server software 1.2, you can create and configure the multihead groups. If the user does not use `utxconfig`, then by default when the user logs into a multihead group, the user gets a multihead session using the number of screens available in that group. The resolution is automatically set to the largest supported resolution of the primary appliance.

The user can explicitly choose not to use multiple screens per session by using `utxconfig -m off`. The user can also choose a particular number of screens in a particular geometry by using `utxconfig -R geometry`. Users can configure their sessions to start up to 16 screens on a single display. The user navigates among these screens using a pointer device, such as a mouse or trackball.

When the user moves the mouse past the edge between two screens, the next screen replaces the previous screen. The geometry of the multihead group determines which screen is displayed.

## Multihead Groups

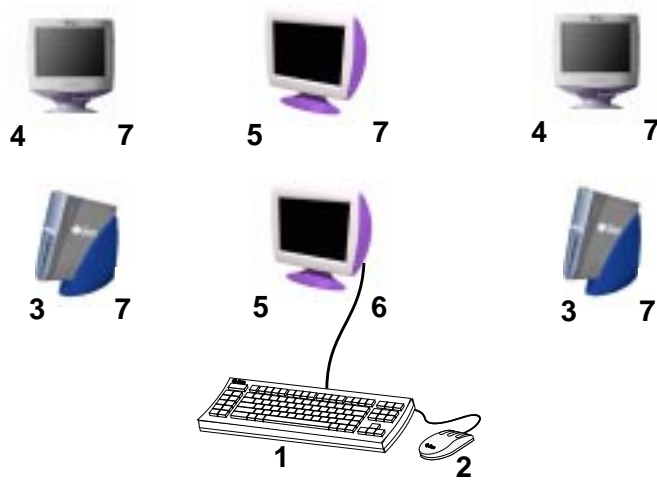
A multihead group is a set of associated Sun Ray appliances connected to a single session. There can be a maximum of 16 appliances in a multihead group. There is a separate CDE toolbar (with separate workspaces) per screen. Windows cannot be moved between screens.

---

**Note** – Multihead group names must consist of ASCII alphanumeric characters and hyphens.

---

The primary appliance hosts the input devices, such as a keyboard and a pointer device, and the USB devices associated with the session. The remaining appliances, called the secondaries, provide the additional screens; however, they are passive displays. A multihead group is defined by a row-major order list of appliance identifiers (left to right across row 1 followed by left to right across row 2 and so on), an index to the primary appliance in that list, and a two-dimensional geometry (the number of rows by the number of columns). See FIGURE 1-1 for an example of a multihead group. The geometry of this group is 3 by 2 because there are three columns and two rows.



**FIGURE 1-1** Example Multihead Group

Legend:

1. Keyboard
2. Mouse
3. Sun Ray 1 appliances
4. Sun Ray 100 appliances
5. Sun Ray 150 appliances
6. Primary appliance
7. Secondary appliances

## Ordering Appliances

Once the appliances are set up in the desired order, a smart card is inserted in each appliance in order, starting at the upper left, moving across to the last appliance on the right, then moving to the first appliance in the second row, moving across to the one on the far right in order until all appliances are added to the group. The geometry of the group must be rectangular.

---

**Note** – All the appliances must be in the desired order and functioning properly before the smart card is inserted so that the screen is displayed correctly across all appliances.

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## XINERAMA

The XINERAMA extension to X11 is one single large screen displayed across several monitors. With XINERAMA only one toolbar is displayed, and the mouse moves smoothly from one part of the screen to the next. XINERAMA is supported on both the Solaris 7 operating environment and the Solaris 8 operating environment.

There is only one CDE toolbar (and set of workspaces) which manages all the heads. Windows can span heads since they are still within the same screen. This includes the CDE toolbar itself.

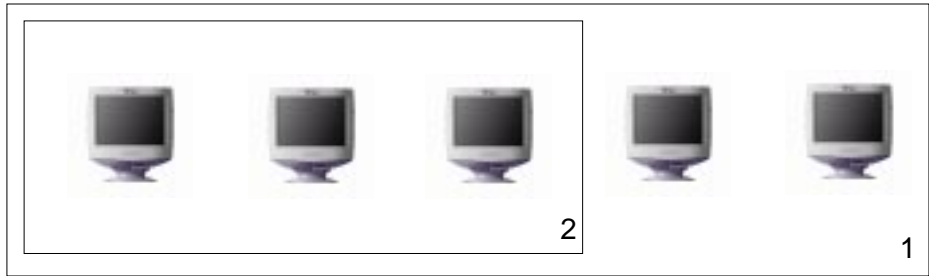
XINERAMA is much more resource intensive, in terms of CPU, memory, and network bandwidth, and perturbs the scaling calculations.

## Session Groups

The user has the option of associating more than one screen with a session and navigating among the screens using a pointer device, such as a mouse or trackball. If the user's session is connected to a multihead group and that group can support all of the session's screens, then the user can view all screens simultaneously.

The session group, which is connected to a multihead group, checks to see if the group's appliance layout accommodates all of its screens; that is, whether there are enough displays in the group to show one screen per display. If so, then each of the screens is connected to an independent monitor in the group. If there are more monitors in rows or columns in the multihead group than in the session group, then these are not used and display a blank purple screen. In FIGURE 1-2 the multihead group contains five appliances, but there are only three appliances in the session group. The screens are displayed on the first three appliances. The next two appliances display a blank purple screen.





**FIGURE 1-2** Fewer Session Group Appliances

Legend:

1. Multihead Group
2. Session Group

If there are fewer monitors in rows or columns in the multihead group than in the session, the session group is only mapped to the primary appliance. In FIGURE 1-3 the multihead group contains five appliances, but the session group contains six appliances; therefore, all screens are displayed on the primary appliance only. The other four screens are purple.



**FIGURE 1-3** Fewer Multihead Group Appliances

Legend:

1. Multihead Group
2. Session Group

## Multihead on a Single Appliance

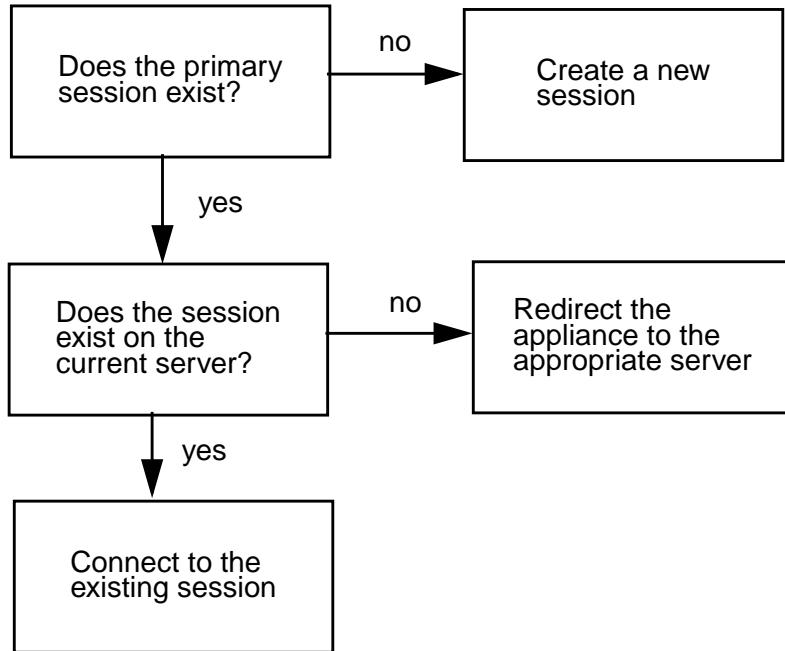
If you hot desk from a multihead group to an appliance that is not part of a multihead group—that is, only having a single head—all the screens created in the original multihead group can be viewed on the single screen or head, using a pointer device, such as a mouse, to pan to each screen in turn on the appliance. This is called screen flipping.

However, if you disconnect the secondary appliances, the screens are not displayed on the single primary appliance. The primary appliance behaves as though it is still part of the multihead group, and the mouse seems to get lost when it goes to the disconnected secondary appliance.

## Authentication Manager

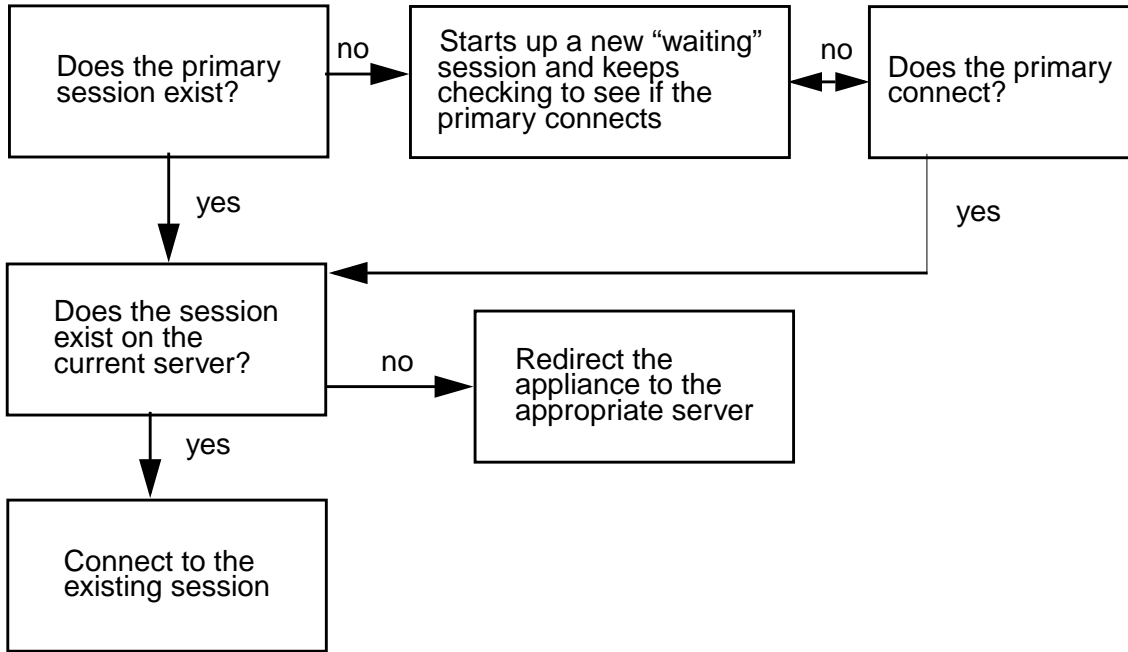
The TerminalGroup policy module extends the Authentication Manager for support of multihead groups. The Authentication Manager queries its appliance group database for an identifier. If the identifier is not found, then the module passes on it.

If the appliance is the primary, then one of a number of things can occur. If a session exists on the same server, then a permit is issued to the session manager containing the appliance's IP address or port. If a session exists on another server (determined through a group manager lookup), then the appliance is redirected to the correct server. If no session exists, then the normal steps for creating a session occur, which may include redirecting the session to another, less loaded server. See FIGURE 1-4.



**FIGURE 1-4** Authentication Manager Flowchart for the Primary Appliance

If the connecting appliance is a secondary appliance and if a session on the group's primary exists on this server, a new permit message containing the primary and secondary IP address or port is issued to the Session Manager. If the session is found on another server, then the appliance is redirected as before. See FIGURE 1-5.



**FIGURE 1-5** Flowchart for the Secondary Appliance

When a secondary connection cannot find a primary session on the first attempt, a temporary icon session is created. Thereafter, this session continuously monitors the Authentication Manager for a connection from the primary session. When the connection is made, the temporary session is removed and the secondary joins the primary session.

## Display Resolution

For the best results with a multihead group, all the displays within each workgroup should have the same resolution. If the resolution differs among displays within a workgroup, designate the lowest resolution display as the primary display and the others as the secondary displays since the primary display sets the resolution for all secondary displays.

---

**Note** – If the resolutions of the displays differ, you may have problems with unwanted movement on your screen, called panning.

---

## Multihead Screen Display

When the multihead feature is used, a small window indicating the current session on each screen is displayed with the current screen highlighted for easy identification. This window is automatically displayed for users during session creation. For example, the display in FIGURE 1-6 indicates that the user is on the second screen of a three-screen display.



FIGURE 1-6 The Multihead Screen Display

## Multihead Administration Tool

The new administration tool for the multihead feature displays the multihead groups that have been created and allows you to create new groups.

To Create a New Multihead Group

1. **On the command-line interface, type:**

```
# /opt/SUNWut/sbin/utmhconfig
```

2. **On the initial screen select a group in the lefthand box.**

The initial screen displays existing group names on the left side and group details—including group name and group geometry—on the right side. See FIGURE 1-7.

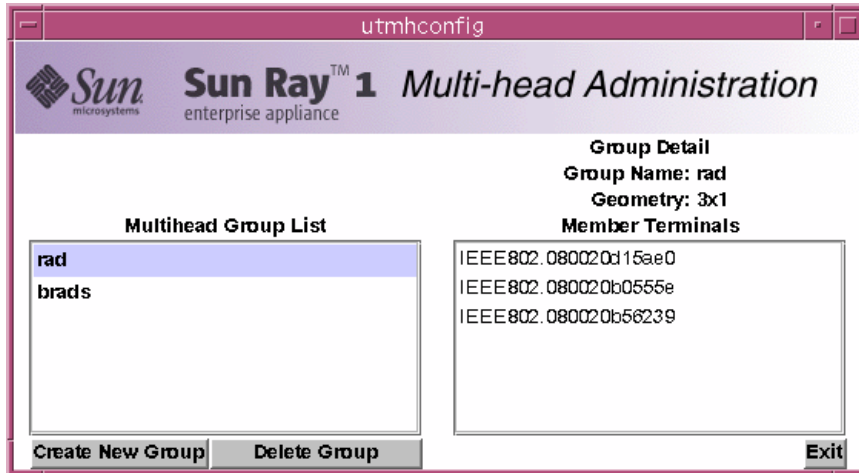


FIGURE 1-7 Multihead Group List With Group Detail

**3. Click the Create New Group button.**

The Create New Multiheaded Group popup is displayed. See FIGURE 1-8. The number of rows and the number of columns you enter are displayed as the group geometry when the group has been created. See FIGURE 1-7.

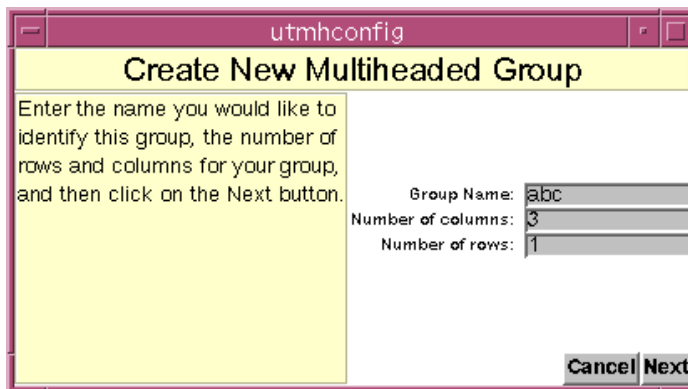


FIGURE 1-8 Create New Multiheaded Group Popup

**4. Enter the information for the group.**

Enter a name for the group and the number of rows and columns.

**5. Click the Next button.**

A third screen is displayed. See FIGURE 1-9.

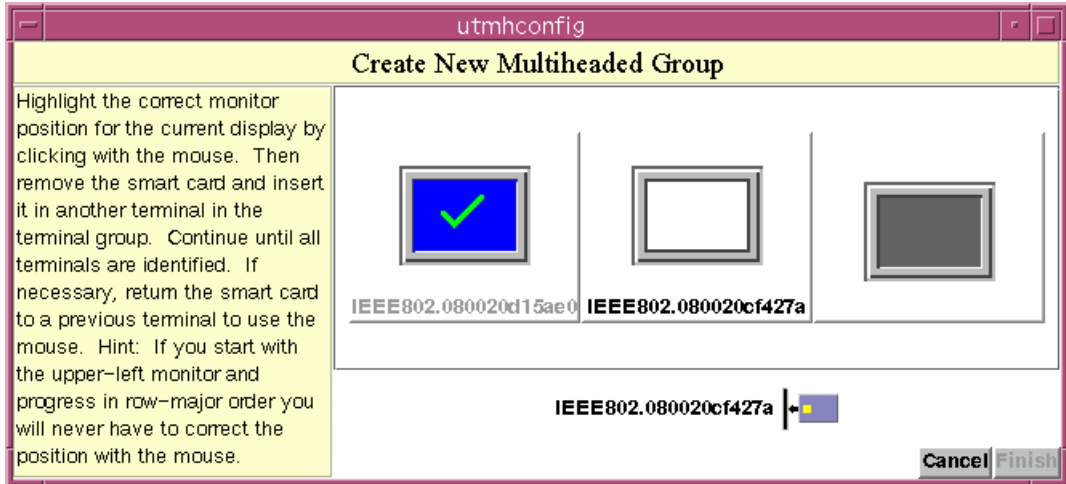


FIGURE 1-9 Setup Display for the New Multihead Group

6. Select the appliances within the multihead group and insert a smart card in each Sun Ray in turn to establish the order of the group.

The Finish button, which was previously grayed out, is now active. See FIGURE 1-10.

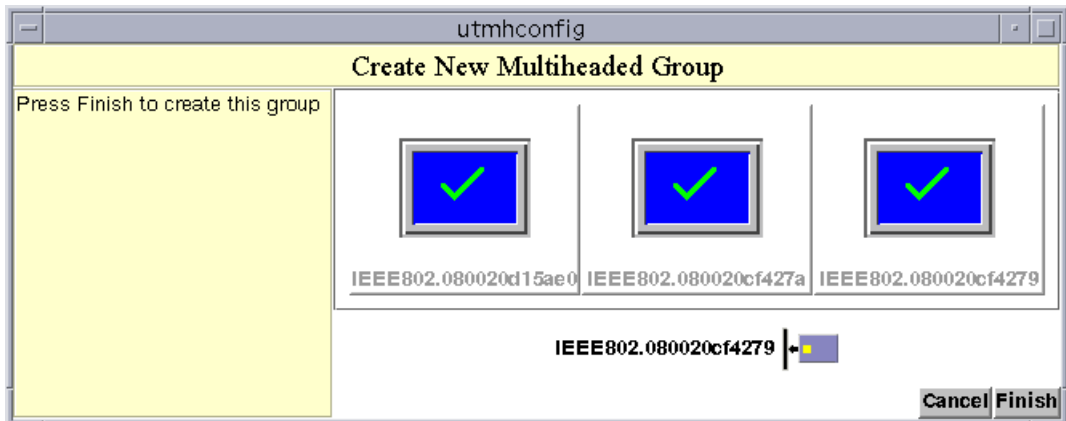


FIGURE 1-10 Completed Multihead Group List With Active Finish Button

7. Click the Finish button.

---

# USB Support for Qualified Peripherals

The Sun Ray remote desktop architecture enables management of serial devices, such as PDAs, and parallel devices, such as printers. This section contains information on the following:

- “USB and Failover” on page 12
- “USB Adapters” on page 12
- “Device Nodes and USB Peripherals” on page 12
- “Serial Device Support” on page 15
- “Printing to an Attached Printer” on page 17

## USB and Failover

In the failover environment, service can be redirected to any server. When a USB device is attached to a Sun Ray appliance, all the servers in the failover group are aware of the device.

## USB Adapters

A list of USB adapters is available on the Sun Ray third-party peripherals web site:

[http://www.sun.com/io\\_technologies/sunray/usb/sunray\\_usb.html](http://www.sun.com/io_technologies/sunray/usb/sunray_usb.html)

## Device Nodes and USB Peripherals

A devices directory is created on the server for each appliance on the interconnect. The directory is created in `/tmp/SUNWut/units` and is named `CoronaPn.tid` where *n* is the hardware model revision, and *tid* is the mac address.

This directory contains `dev` and `devices` directories, analogous to the `/dev` and `/devices` directories in Solaris. The `devices` directory contains a representation of the physical topology of the devices connected to the appliance. Directories correspond to buses and hubs, and files correspond to ports. Hub directories are named according to the port on the upstream hub into which they are attached.



Device nodes are created for each serial or printer port on an attached USB device. The device nodes are created in the `hub` directory corresponding to the hub to which they are attached, and they are named:

```
manufacturer_name, model_name@upstream_hub_port
```

If the USB device has multiple identical ports (for example, two serial ports) the name is followed by `:n` where `n` is a numerical index.

A typical device node path is as follows:

```
/tmp/SUNWut/units/IEEE802/devices/usb@1/hub@1/Central_Data,USB-2+-@3:1
```

This represents a central data USB-2 USB-to-serial adapter connected to port 3 on the internal USB hub of a P1 Sun Ray with the MAC number 080020b57655.

---

**Note** – The model name given to this device by the manufacturer is USB-2.

---

---

**Note** – For Sun Ray server software 1.2, the only supported bus is USB, so the `devices` directory only contains an entry for the `usb@1` directory. The root hub has only one port, so the `usb@1` directory only contains a `hub@1` directory.

---

If any supported serial adaptors are attached to the appliance, the `dev` directory contains a `term` directory. If any parallel adapters or USB printers are attached, the `dev` directory contains a `printers` directory. These directories contain links to the device nodes in the `devices` directory.

## Definitions

TABLE 1-1 Definitions of Naming Conventions

Term	Definition
<i>tid</i>	Terminal ID
<i>sid</i>	Session ID
<i>bus</i>	Universal Serial Bus (USB)
<i>physical topology</i>	<i>physical topology</i> is <i>hub@port/hub@port</i> and so on. <i>port</i> here refers to the port on the parent hub into which the device or child hub is plugged.
<i>printer name 1,</i> <i>terminal name 1</i>	The printer and term name in the devices directory is <i>manufacturer, model@port</i> , with a colon separating numerical index in cases when the string just described is not unique in the directory. For example: Inside_Out_Networks,Edgeport-4@4:1 Inside_Out_Networks,Edgeport-4@4:2 Inside_Out_Networks,Edgeport-4@4:3
<i>printer name 2,</i> <i>terminal name 2</i>	The printer and terminal name in the /dev directory is the manufacturer and serial number concatenated with an alphabetic index in cases when the serial number is not unique. For example: Inside_Out_Networks04-01-004575a Inside_Out_Networks04-01-004575b Inside_Out_Networks04-01-004575c

## Device Linknames

*manufacturer\_name-serial\_number index*

Index is an increasing alphabetical character, starting at “a.”

If the manufacturer name is not available, the USB vendor and product ID numbers are used.

## Session Link

The /tmp/SUNWut directory also contains a sessions directory. For each session that is associated with an appliance, there is a link to the `unit` directory associated with the appliance. The link names are *x\_session\_id*. For convenience, the `UTDEVROOT` environment variable points to this directory, conveniently allowing you to locate the `devices` and `dev` directories for the appliance on which your session is active.

## Device Node Ownership

All device nodes are owned by the user whose session is active on the appliance. Only that user has permission to use the attached device. If there is no user with an active session, the device nodes are owned by superuser.

## Hot Desking and Device Node Ownership

Changing the active session on an appliance changes the ownership of the device nodes to the user associated with the new session. A session change occurs whenever a smart card is inserted into or removed from an appliance. A session change causes all devices currently open by a non-root user to be closed after 15 seconds. Any input or output to or from any affected device results in an input or output error. Any devices currently open by root are not affected by the session change.

---

**Caution** – Any input or output in progress on a device node opened by a non-root user when a session is changed is cancelled after 15 seconds. For example, PDA synchronizing should be completed before changing sessions.

---

---

**Note** – If the original session is restored within 15 seconds, the ownership is not relinquished, and input and output continue uninterrupted.

---

## Serial Device Support

With the release of this version of the Sun Ray software, serial devices can be attached to Sun Ray appliances using a serial adapter. Such devices include PDAs, touch screens, and the Sun Tuner.

## Personal Digital Assistant (PDA) Synchronization

PDAs that use Palm OS can be synchronized to your Sun Ray appliance. Using hot desking, the user's ability to sync a PDA moves with the user when the user moves from appliance to appliance. For PDA syncing, the Solaris PDASync™ application is included in the Solaris 7 11/99 and Solaris 8 operating environments.

In the Solaris 8 operating environment, PDASync is compatible with Java™ 1.2 software. In the Solaris 7 operating environment, PDASync is compatible with Java 1.1 software. To run PDASync under Java 1.2 software, the PDASync patch is required. This patch is available at the following website:

## ▼ To Run the PDASync Application on a Sun Ray Appliance

### 1. Create a new directory by typing:

```
# mkdir newdir
```

### 2. Change to the new directory by typing:

```
# cd newdir
```

### 3. Copy the `comm.tar.Z` file to the new directory by typing:

```
# cp /cdrom/cdrom0/Supplemental/comm.tar.Z
```

### 4. Uncompress the `comm.tar.Z` file located in the Supplemental top-level directory on the Sun Ray 1.2 CD.

```
# uncompress /Supplemental/comm.tar.Z  
# tar -xvf comm.tar
```

### 5. Follow the installation instructions in the `README.html` file in the `newdir` directory.

### 6. Run the PDASync application by going to Application Manager -> Desktop\_Apps->PDASync or typing:

```
# /usr/dt/bin/sdtpdasync
```

## ▼ To Synchronize a PDA Using PilotManager

### 1. Plug in a verified USB-to-serial adapter.

### 2. Press the three audio option keys to the left of the moon key in the upper right corner of your keyboard.

The alphanumeric displayed above the connection icon represents the unique part of your MAC address or your truncated MAC address.

**3. To locate your Sun Ray appliance, type:**

```
# cd /tmp/SUNWut/units/*truncated_MAC_address
# pwd
/tmp/SUNWut/units/IEEE802/
```

The path to the extended MAC address for your particular Sun Ray appliance is displayed.

**4. To locate the device, type:**

```
# cd dev/term
```

**5. In the `term` directory, find the device; for example, `Digi_International.4-66a`. Serial port 1 will be "a," and serial port 2 will be "b." For example:**

```
/tmp/SUNWut/units/IEEE802/dev/term/Digi_International.4-66a
```

**6. Make a link to a unique identifier either in a temporary directory or in your home directory; for example, `/tmp/george-digi` or `/home/user_name/george-digi`, by typing:**

```
# ln -s /tmp/SUNWut/units/IEEE802/dev/term/Digi_International.4-66a \
/tmp/unique_identifier
```

Use this link as your serial device in the application.

**7. Sync your PDA.**

---

**Note** – If you are synchronizing your PDA using PilotManager, use the simple link (for example, `/tmp/unique_identifier`) instead of `/dev/ttya`.

---

## Printing to an Attached Printer

Starting a print queue on a Sun Ray-attached printer is identical to starting a print queue on solaris. To set up a printer, you need to know the name of the printer, the path to the printer, and whether or not the printer is a PostScript printer.

---

**Note** – When starting a print queue, be sure to use the `units` path under `/tmp/SUNWut`. You should not use the `sessions` path or the `UTDEVROOT` variable when starting a print queue because these change with each session.

---

---

**Note** – You can use either the node in the `devices` directory or the link in the `dev` directory.

---

---

**Note** – The `lp` subsystem opens the device node as root for each print request, so print jobs are not affected by hot desking.

---

USB printing is supported with Sun Ray server software 1.2. USB printers are attached directly to a port on the Sun Ray appliance. Parallel printers require a parallel-to-USB adapter to attach the printer. USB and parallel printers function in the same way, using the same type of device nodes created in the same directory.

System administrators can add printers using Administration Tool.

---

**Note** – Only superuser can add a printer.

---

## Printer Setup

### ▼ To Power On a Printer

1. **If you are attaching a parallel printer using a USB-to-parallel adapter, plug the adapter into the printer with the printer power off.**
2. **Turn on the printer and plug the USB side of the adapter into your Sun Ray appliance.**

### ▼ To Set Up a Printer

---

**Note** – You must be logged in as superuser to add a printer.

---

1. **To determine the MAC address of the appliance, press the three audio option keys to the left of the moon key in the upper right corner of your keyboard.**

The alphanumeric displayed above the connection icon represents the unique part of your MAC address or your truncated MAC address.

**2. To locate your Sun Ray appliance, type:**

```
# cd /tmp/SUNWut/units/*truncated_MAC_address
# pwd
/tmp/SUNWut/units/IEEE802/
```

The path to the extended MAC address for your particular Sun Ray appliance is displayed.

**3. Locate the port for your printer by typing:**

```
# cd dev/printers
# pwd
/tmp/SUNWut/units/IEEE802/dev/printers
# ls
printer-assigned-name
```

**4. In the directory, locate your printer.**

**5. Bring up the administration tool by typing:**

```
# admintool &
```

**6. Go to Browse -> Printers -> Edit -> Add -> LocalPrinter.**

**7. Type in:**

**a. Printer name:** *printername*

**b. Description (optional):**

**c. Printer Port:**

Choose “Other” to enter the printer port pathname, using the resulting directory from instruction Step 5.

```
/tmp/SUNWut/units/IEEE802/dev/printers/printer-assigned-name
```

---

**Note – Do not use the port name under device directory.**

---

Click OK.

**d. If you are using a PostScript printer, under Printer Type choose Postscript.**

Select the printer type according to your printer model. If no option matches, select "other"; then type your printer type or "unknown."

**e. If you are using a PostScript printer, under File Contents choose Postscript and ASCII.**

**f. Options: Default Printer (optional)**

**g. Click OK.**

---

**Note** – Do not click OK more than one time. The failure message indicates if OK has been clicked more than once.

---

**8. To verify that the printer has been set up correctly by printing, type.**

```
# lp -d printername
```

## USB Printers

For current list of USB printers for use with Sun Ray appliances, go to the following web site:

<http://www.sun.com/sunray>

## Serial Printers

Serial printers are enabled with the Sun Ray server software 1.2 through specific USB-to-serial adapters from Inside/Out Networks and Digi International. The device drivers for these adapters are developed and delivered with the Sun Ray server software. The application or hardware vendor must provide a Solaris or Java printer driver that can communicate with the serial devices attached to the adapters.

---

# Additional Smart Card Support

In this release, the configuration files for the most commonly used smart cards are included with the software and continue to be available on the web site. See "Further Information" in Chapter 4. The delivered configuration files are installed and active by default.



---

**Note** – Additional configuration files, software developer kits (SDK), white papers, and smart card information are available on the web site. See “Further Information” in Chapter 4.

---

## Supported Cards

Configuration files for the following smart cards are included with the software:

- Schlumberger MicroPayflex
- Schlumberger Payflex

Configuration files for the following cards are available from the web site:

- GemPlus MPCOS
- G+D SMARTCAFE
- MONDEX MM-2

---

## Failover—The User’s Experience

Although failover configuration and administration is discussed in Chapter 2 of the *Sun Ray Enterprise Server Software 1.1 Advanced Administrator’s Guide*, what the user sees in a failover condition is not addressed. This section briefly describes what happens in a failover, what the user may experience, and what actions a user can take.

For the Sun Ray server to create a user session, a token is required. When a user inserts a smart card into a Sun Ray appliance, the token from the card is sent to the Sun Ray server and a session identified with that token is either created or made active. When no smart card is inserted or if a smart card is removed, the MAC address of the Sun Ray appliance is used as a pseudo token. The pseudo token is sent to the Sun Ray server, and a session identified with that pseudo token is either created or made active for that session.

When a Sun Ray server fails over, the Sun Ray appliance loses connection with its session and attempts to find another Sun Ray server. When it does, it creates a connection to the second server using the same token or pseudo token. Effectively, it is the same as if the user were to just connect to the second server.

Here are the rules that govern what happens in a failover:

- When a failover occurs, the surviving Sun Ray servers search for an inactive session with the same token or pseudo token as the failed server.

- If one or more inactive sessions are found, the most current session is made active.
- If no inactive sessions are found, the load balancing algorithm determines which secondary server the user is to log into and the `dtlogin` screen is displayed. After login, the user has a new session.
- If no inactive sessions are found and the second server is configured to do so, the Server Selection window is displayed. See “The `utselect` Command” in Chapter 3. In this window, the user can choose which server to start a new session on. The user may need to re-select the server a second time before the `dtlogin` screen is presented. After login, the user has a new session.

---

**Note** – To configure a server to display the Server Selection window, the `/etc/opt/SUNWut/auth.props` file must contain the following line:  
`selectAtLogin=true`

---

To summarize the user experience in a failover condition, the user is either:

- Directed to an older, suspended session
- Prompted to log into a predetermined server with a new session
- Given the ability to choose a server with a new session

## Installation and Upgrade

---

The following items are addressed in this chapter:

- “Installation and Upgrade” on page 23
  - “Upgrading in a Failover Group” on page 25
  - “Firmware Upgrades” on page 28
- 

## Installation and Upgrade

Sun Ray server software 1.2 supports the Solaris 2.6, Solaris 7, and Solaris 8 operating environments. If you are not currently running Sun Ray software, please make sure you have the “entire distribution” server version of one of these operating systems installed and then install the Sun Ray server software 1.2, as instructed in the *Sun Ray Enterprise Server Software 1.1 Installation Guide* (see “Installation Guide” on page 35).

If you are currently running Sun Ray enterprise server software 1.0 or 1.1 and wish to obtain a clean, default installation of Sun Ray server software 1.2 without saving the current configuration, please uninstall the current software and install Sun Ray server software 1.2 according to the *Sun Ray Enterprise Server Software 1.1 Installation Guide*.

If you are currently running Sun Ray enterprise server software 1.0 or 1.1 and wish to upgrade to Sun Ray server software 1.2 while maintaining the current configuration, please do the following.

## ▼ To Preserve Your Current Data

1. If you are upgrading a failover group using the database replication feature, you must remove the replication configuration from all servers, primary first, as follows:

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

Repeat this command on all secondary servers in the failover group once the primary has been unconfigured.

2. Dump and save your current Sun Ray configuration and database entries using the following script.

---

**Note** – The preserve script detailed below saves only Sun Ray specific configuration data. If you have other settings or data that need to be preserved, this must be done manually.

---

```
# /cdrom/cdrom0/.upgrade/utpreserve
```

---

**Note** – A directory other than `/var/tmp/SUNWut` can be passed to `utpreserve` using the `-d` option if `/var/tmp/SUNWut` does not have enough space. The resulting archive is still created in `/var/tmp/SUNWut`. (Call `utpreserve` with the `-?` option for usage.) This script must be run in all scenarios to facilitate upgrade.

---

---

**Note** – Sun WebServer configuration is lost when the operating system is re-installed.

---

3. If you are planning to reinstall the operating system, please save the resulting file to a safe location using either `cp` or `ftp`.
4. Sun Ray enterprise server software 1.0 customers with a configured Sun WebServer™ *must* do the following:
  - a. After dumping and saving the current Sun Ray configuration, run `utconfig -u` and answer yes to the prompt to remove the current Sun WebServer instance.

**b. Sun WebServer software packages *must* be replaced when asked at upgrade time as follows:**

```
An earlier or incomplete version of Sun Web Server has been
detected. In order to obtain secure remote Sun Web Server
administration you will need to replace the current Sun Web
Server version.
```

```
Although the Sun Ray server web-based applications
are only supported running under Sun Web Server 2.1, you can
elect to use a different Web server. However, you will be
responsible for configuring this web server on your own. If
you wish to take advantage of the Sun Ray enterprise server
automatic installation and configuration tools, you must either
upgrade or remove the current Sun Web Server installation before
proceeding.
```

```
Do you want to replace current Sun Web Server version ([y]/n)?y
```

**c. In order to use the Sun WebServer features in the Sun Ray server software 1.2, you *must* re-configure your Sun WebServer using `utconfig` after the upgrade has been completed successfully.**

---

## Upgrading in a Failover Group

### Mixed Sun Ray Versions in a Failover Group

A single failover group running multiple Sun Ray versions (for example, Sun Ray enterprise server software 1.1 and Sun Ray server software 1.2 together) is not supported.

---

**Note** – The new features in the Sun Ray server software 1.2 are not supported until *all* servers in the failover group have been upgraded to Sun Ray server software 1.2.

---

However, it is not necessary to power down all the servers at once to perform the group upgrade. As long as users are aware that they will lose their sessions at some point and as long as you don't overload one single server, the server systems can be upgraded one by one. Users failover to the remaining available servers until all servers have been upgraded to Sun Ray server software 1.2.

# Adding Database Replication to an Existing Failover Group

A group of servers running in failover mode can be configured to use database replication as described in the *Sun Ray Enterprise Server Software 1.1 Administrator's Guide*.

---

**Caution** – Configuring a group of servers for database replication destroys all entries on secondary servers. Transfer relevant entries to the primary server before proceeding with the configuration.

---

## Java Restrictions

Unlike Sun Ray enterprise server software 1.0 and 1.1, Sun Ray server software 1.2 allows the user to change the default JDK™ software from 1.1.x on the Solaris 2.6 and Solaris 7 operating environments as long as the 1.1.x installation is not removed.

## SunDS Data Not Specific to Sun Ray Software

Sun Directory Services version 3.1 (SunDS), bundled with Sun Ray server software, is assumed to be available solely for Sun Ray use. Additional information stored in the SunDS database is not supported and may be lost during an installation or upgrade.

---

**Note** – An upgrade to the Solaris 8 operating environment from the Solaris 2.6 or 7 operating environment on a Sun Ray 1.0 or 1.1 server might give some Java™ exceptions at boot time. Upgrading the Sun Ray software to version 1.2 eliminates these exceptions.

---

### ▼ To Prepare the System for Upgrade

1. **You can reinstall, upgrade, or leave the operating environment at its current version as required.**

## ▼ To Install the Sun Ray Server Software 1.2

1. **Replace the `utpreserve.tar` file created previously in the following location:**

```
/var/tmp/SUNWut/utpreserve.tar
```

2. **Install the Sun Ray server software 1.2 according to the instructions in the *Sun Ray Enterprise Server Software 1.1 Installation Guide*.**

## ▼ To Reconfigure Your System After Operating System Re-Installation and Sun Ray Upgrade

---

**Note** – An operating system upgrade or a simple Sun Ray upgrade system do not need to have the following steps performed.

---

1. **On the upgraded server, run:**

```
# /opt/SUNWut/sbin/utadm -a interface
```

2. **If the Sun WebServer™ and SSL certification were previously configured, reconfigure them.**

## ▼ To Reconfigure Failover Replication

1. **Run `utreplica` as documented in the *Sun Ray Enterprise Server Software 1.1 Administrator's Guide*.**

## If Upgrade Fails Due to Failing `patchrm`

If the upgrade fails because a patch cannot be removed, attempt to remove the patch manually using `patchrm -f`. If this also fails, retrieve the patch instance in question from SunSolve<sup>SM</sup> and re-add it using `patchadd -u`.

---

**Note** – Do not use the `-d` argument with `patchadd` as this tells the utility not to store backout data, making the patch unremovable.

---

# If Installation or Upgrade Fails Due to Package Dependencies

Installation or upgrade can fail due to package dependencies. Installation attempts to replace a number of Solaris 2.6 packages and upgrade attempts to replace all packages requested (Sun Ray packages are replaced by default). The error message is displayed in the following format:

```
The following packages were not removed due to dependencies:  
package depends on SUNWuta  
package depends on SUNWutj  
package depends on SUNWuto  
package depends on SUNWutr  
package depends on SUNWutk  
package depends on SUNWutu  
Please manually remove packages listed in the first column above.  
  
utinstall: fatal, failed to completely remove Sun Ray enterprise server
```

Remove all packages listed in the first column before restarting the installation or upgrade process.

---

## Firmware Upgrades

The firmware version must be the same on all servers in the failover group that have firmware upgrade enabled.

### Upgrading Firmware

#### ▼ To Upgrade the Sun Ray Software Version for a Group

1. **Disable firmware upgrade on all members of the failover group.**
2. **Install the new Sun Ray software on each server in the failover group, enabling upgrade.**

As each Sun Ray appliance connects to an upgraded server, it downloads the new firmware version once.



## Administration Tool

---

The following sections describe additions and changes to the Administration Tool.

- “The None Option” on page 29
- “About Link” on page 30
- “Documentation Link” on page 31
- “The utwall Command” on page 32
- “The utgroupsig Command” on page 33
- “Running utconfig to Change Administration Configuration Parameters” on page 33
- “Display Resolution” on page 34

---

### The None Option

Under Admin, the Policy link displays the policy screen. For the access policy for both smart card users and nonsmart card users, there is now a None option. For smart card users, when None is selected, smart card access is not allowed. For nonsmart card users, when None is selected, nonsmart card access is not allowed. This policy makes the appliance behave similarly to a traditional workstation.

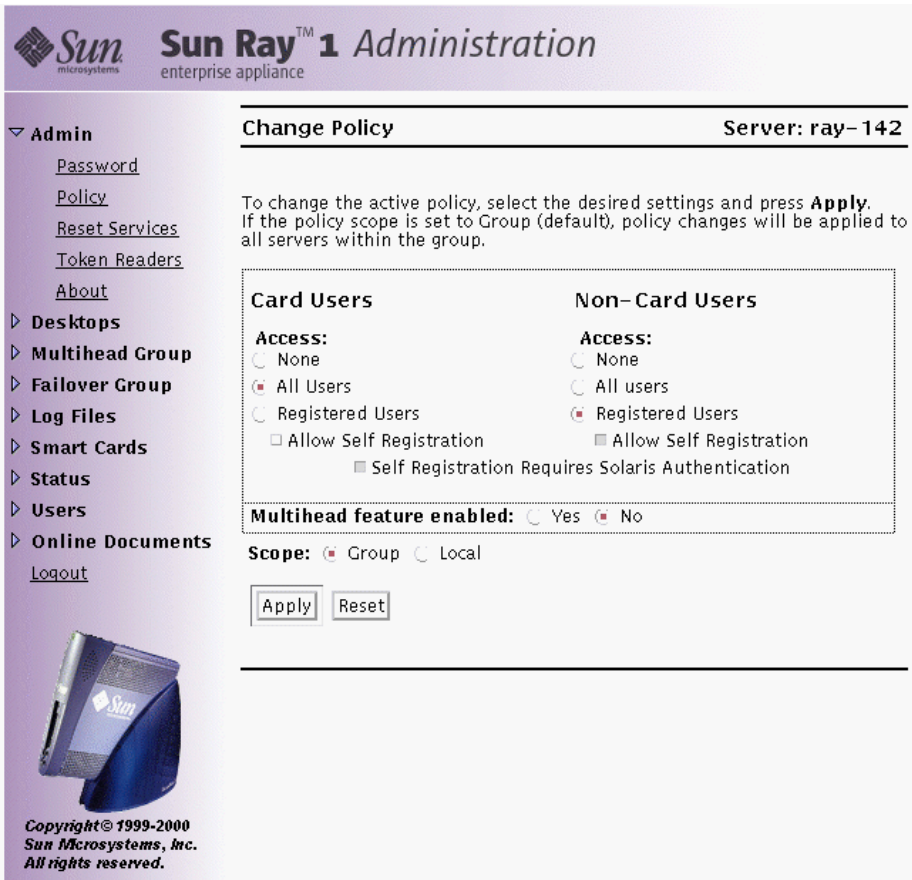


FIGURE 3-1 The Policy Screen

## About Link

For a description and the version of the software currently running and other information, click the About link under Admin in the Administration Tool menu.

**Sun** Sun Ray™ 1 Administration  
enterprise appliance

Server: ray-142

Package	Name	Version	PSTAMP
SUNWautdo	Sun Ray server Online Documentation – English	1.2_15.b.REV=2000.10.06.18.00	server6620001006183416
SUNWjeutm	Sun Ray server Manual Pages – Japanese (JLC)	1.2_15.b.REV=2000.10.06.18.00	server6620001006183459
SUNWjutdo	Sun Ray server Online Documentation – Japanese	1.2_15.b.REV=2000.10.06.18.00	server6620001006183504
SUNWuta	Sun Ray server Administration Software	1.2_15.b.REV=2000.10.06.18.00	server6620001006182609
SUNWutj	Sun Ray server Java (JRE) Software	1.2_15.b.REV=2000.10.06.18.00	server6620001006182652
SUNWutk	Sun Ray server Drivers	1.2_15.b.REV=2000.10.06.18.00	server6620001006182729
SUNWutlx	Sun Ray server Drivers, (64-bit)	1.2_15.b.REV=2000.10.06.18.00	server8020001006183408
SUNWutm	Sun Ray server Manual Pages	1.2_15.b.REV=2000.10.06.18.00	server6620001006183410
SUNWuto	Sun Ray server Core Software	1.2_15.b.REV=2000.10.06.18.00	server6620001006182732
SUNWutr	Sun Ray server Configuration, (root)	1.2_15.b.REV=2000.10.06.18.00	server6620001006182742
SUNWutu	Sun Ray server Configuration, (usr)	1.2_15.b.REV=2000.10.06.18.00	server6620001006182746
SUNWutux	Sun Ray server Configuration, (usr) (64-bit)	1.2_15.b.REV=2000.10.06.18.00	server8020001006183412

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FIGURE 3-2 About Screen

## Documentation Link

View the documentation for Sun Ray server software 1.2 online by clicking the links to the documentation in the Administration Tool. The documentation is displayed in a separate window so you can continue to use the Administration Tool while reading the documentation. Use the navigation buttons within the documentation to move among pages and chapters.

---

## The utwall Command

The `utwall` command is a new notification utility for Sun Ray administrators. The utility sends a message to users who are running an Xsun process. These messages can be sent in email or displayed in a pop-up window. To use the `-d` and `-a` options, the administrator must be logged in as superuser. For more information, see the `utwall` man page.

---

## The utselect Command

The Server Selection window, which is displayed using the `utselect` command, has changed. The new screen contains an Enter Server text field. See FIGURE 3-4.

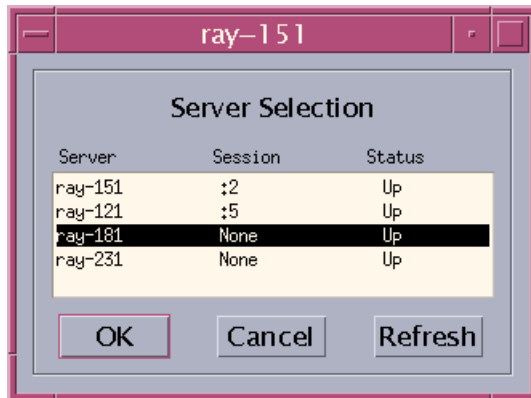


FIGURE 3-3 Old `utselect` Screen

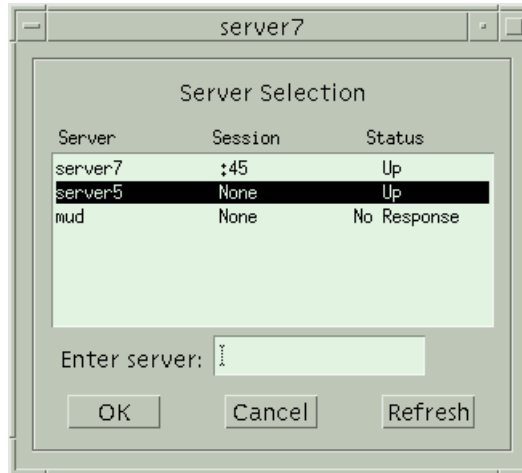


FIGURE 3-4 New utselect Screen

---

## The utgroupsig Command

The group signature command does not execute unless the two signatures are consecutive and identical. In other words, when the user is prompted for a password, the user must enter two consecutive and identical passwords. If the user makes an error, the password must still be entered twice consecutively. The first attempt, even if correct, is not read if the second attempt is not identical; two more consecutive entries are required.

---

## Running utconfig to Change Administration Configuration Parameters

The `utconfig` utility can be rerun after the administration preferences have been set using this utility. Rerunning `utconfig` allows you to revise settings or override previous configurations.

---

**Note** – When `utconfig` is rerun, the utility detects the existing SunWebserver customizations supporting the web-based administration of the Sun Ray server software.

---

When you rerun `utconfig`, the following prompt is displayed:

```
Previous Web admin configuration found.  
Do you wish to preserve it?
```

Choose either to retain the previous settings for web administration by answering “yes” or supply a new set of web administration parameters (for example, web server port number) by answering “all.”

## Removed Prompts

The following prompts from the previous version of `utconfig` in the Sun Ray enterprise server software 1.0 and 1.1 have now been removed.

```
Enter UT root entry [o=utdata]:  
Enter SunDS 'root DN' [cn=admin,o=utdata] :
```

## Failover Group Signature and `utconfig -u`

You can assign a group signature to a group of servers participating in a Sun Ray failover scheme. Use the `utgroupsig` utility to define a group signature without running the `utconfig` utility to set up an LDAP repository for storing registered smart card details.

---

## Display Resolution

Due to session mobility with the Sun Ray appliance, the display resolution used by the appliance and the resolution of the user’s workspace are not necessarily the same.

---

**Note** – The information in this section pertains to users as well as system administrators.

---

When a user starts a session, the Sun Ray server software 1.2 normally sets the resolution of the user's workspace (or Xsun server) to the default setting for the display attached to the Sun Ray appliance where the session is started. As a user moves from one Sun Ray appliance to another, the software attempts to select the best resolution available that most closely matches the resolution of the user's Xsun workspace session. With modern displays that supply display configuration data via Display Data Channel (DDC), this happens fairly transparently.

## ▼ To Override the Choice of Starting Resolution

- **Type the following command:**

```
# /opt/SUNWut/bin/utxconfig
```

---

**Note** – The changes take effect when Xsun is restarted.

---

See “Using Sun Ray 1 Settings” in the *Sun Ray Enterprise Server Software 1.1 Administrator's Guide* for further information on the Sun Ray 1 Settings graphical user interface (GUI).

If the display is not large enough for the screen being displayed, some icons will disappear from view. This is known as panning. There are two options for resolving this situation:

- Change the resolution that the appliance can display (`utsettings`).
- Change the size of the display being sent from the server (`utxconfig`).

---

**Note** – The `utxconfig` command sets the resolution on the Xserver, not the display.

---

# Resolution Via Settings

## ▼ To Override the Automatic Display Resolution

- **Type:**

```
# /opt/SUNWut/bin/utsettings
```

This command forces the Sun Ray appliance to use a different display resolution that can be physically displayed on the appliance. You may also press Shift+Props.

## Supported Resolutions

---

**Note** – All resolutions are not supported on all appliances.

---

- 640 x 480 at 60 Hz
- 640 x 480 at 85 Hz
- 800 x 600 at 60 Hz
- 800 x 600 at 85 Hz
- 1024 x 768 at 60 Hz
- 1024 x 768 at 75 Hz
- 1024 x 768 at 85 Hz
- 1152 x 900 at 66 Hz
- 1152 x 900 at 76 Hz
- 1280 x 1024 at 60 Hz
- 1280 x 1024 at 66 Hz
- 1280 x 1024 at 75 Hz
- 1280 x 1024 at 76 Hz
- 1280 x 1024 at 85 Hz

The Monitor setting is the display's fastest preferred setting, which must be from the list above.

The Standard setting depends on the firmware. The default firmware uses 1152 x 900 at 66; the alternate firmware uses 640 x 480 at 60.



## Documentation Errata

---

This chapter contains corrections or clarifications to the Sun Ray enterprise server software 1.1 documentation set. These changes are applicable to the Sun Ray server software 1.2.

- “Installation Guide” on page 37
- “Administrator’s Guide” on page 38
- “Advanced Administrator’s Guide” on page 48

---

## Installation Guide

The following changes apply to the *Sun Ray Enterprise Server Software 1.1 Installation Guide* (part number 805-7916).

### What Does Full Cluster Mean?

The *Sun Ray Enterprise Server Software 1.1 Installation Guide* states that a full cluster installation of the Solaris 2.6 or Solaris 7 operating environment is required.

Full cluster means that either the Entire Distribution plus OEM support or the Entire Distribution software group is checked in the Select Software window during the Solaris software installation.

# Solaris Software Upgrade Documentation Change

In “Solaris Operating Environment” in the *Sun Ray Enterprise Server Software 1.1 Installation Guide* on page 9, a note states that Sun Ray 1.1 does not support a Solaris software upgrade. This has changed for Sun Ray server software 1.2. Upgrades between the Solaris 2.6, Solaris 7, and Solaris 8 operating environments are supported.

---

## Administrator’s Guide

The following changes apply to the *Sun Ray Enterprise Server Software 1.1 Administrator’s Guide* (part number 805-7915).

### Chapter 2, Sun Ray Software and Hardware Requirements

In the section “Disk Space,” replace Table 2-3 with the following:

**TABLE 4-1** Sun Ray Server Software Disk Space Requirements

Product	Default Installation Path	Requirements
Sun Ray core software	/	1MB
	/opt	8MB
	/var	1MB + log files
LDAP client libraries	/usr	350 K
Sun Directory Services 3.1	/opt/SUNWconn The default location for the directory database is /var.	JDK 1.1.x 25 MB disk space in /opt 2.0 MB in /var 0.4 MB in /etc Allow enough disk space for the database. 1,000 entries require roughly 1.5 MB of disk space, 64 MB of RAM, and 128 MB of swap.
Sun WebServer 2.1	/usr	Software—9.5 MB and 2 MB disk space for documents and log files. Memory—64 MB minimum, 96 MB is recommended.
JRE 1.2.2	/opt	26.5 MB

## Chapter 3, Configuring the Software

In the procedure “To Run the Configuration Script,” Steps 7 through 9 should be replaced with the following:

Answer the failover group prompt.

```
# Configure this server for a failover group (y/[n])
```

Answer the prompt for `groupSignature`.

If you are in a group environment then the `groupSignature` must be the same for all group members. A group of 1 is valid. This prevents unintended results when additional servers are brought online.

After the script has completed, check in `/var/tmp/utconfig.date-format.log` to see if there were any errors.

Once the software is successfully configured, see “Testing the Installation and Configuration” on page 47.

## Chapter 4, SSL Certificate Configuration

### Secure Sockets Layer

Substitute the following table for Table 4-2 in the administrator’s guide:

TABLE 4-2 Required Information

Information	example	Comment
RootCA user	<i>rcauser</i>	Existing user, or new one.
RootCA directory	<i>/var/certs</i>	
RootCA Distinguished Name	<i>cn=rcauser, o=fun, c=we</i>	Simplified for table.
RootCA password	<i>rcapass</i>	Requested to enable login as the RootCA user.
Sun Ray server root password	<i>rootpass</i>	Root password of Sun Ray server.
Web server domain name	<i>eng.fun.com</i>	
*Web server IP address		

**TABLE 4-2** Required Information (*Continued*)

Information	example	Comment
*Web server Distinguished Name	<code>ou=eng,o=fun,l=laffland,st=bliss,c=we</code>	Every attribute except the common name. Simplified for table.
*Web server certificate directory	<code>/var/certs/IP address</code>	Directory is the IP address of the web server.
*Key package password	<code>keypass</code>	Requested to create the RootCA credentials.
*Encryption password	<code>encpass</code>	Requested when configuring the web server's certificate.

\* Additional values must be provided for each failover Sun Ray server.

## Configuring SSL on the Primary Sun Ray Server

Replace Steps 4 through 7 of the procedure “To Configure SSL on the Primary Sun Ray Server” with the following:

### 4. Become the RootCA user and run the `crca` script to create the RootCA credentials:

```
# su rcauser
$ /usr/bin/crca
```

The `crca` script asks for the following:

- RootCA distinguished name (`cn=rcauser,o=fun,st=bliss,c=we`)
- RootCA 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`)

### 5. Create the web server certificate directory and set permissions and ownership:

```
$ mkdir /var/certs/IP address
$ chmod 700 /var/certs/IP address
$ chown rcauser /var/certs/IP address
```

## 6. Run the `sslgencred` script to generate the web server certificate:

```
$ /usr/http/bin/sslgencred -r rcauser -d /var/certs/IP address -i IP address
```

The `sslgencred` script asks for the following:

- Web server (`httpd`) host name (press Return)
- Web server domain name (*eng.fun.com*)
- Web server DN without common name (*ou=eng,o=fun,l=laffland,st=bliss,c=we*)
- Encryption password (*encpass*)
- Encryption password again (*encpass*)
- Key package password (*keypass*)

## 7. Install the web server certificate as superuser:

```
$ exit
# /usr/http/bin/sslstore -i IP address -p /var/certs/IP address 0
```

---

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

---

The `sslstore` script requests the encryption password:

```
/usr/bin/skilogin; Enter host key package password: encpass
```

---

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

---

## Troubleshooting SSL Configuration

The procedure “To Remove All SSL Information” does not remove all SSL information. The following procedure removes files to enable reconfiguration.

### ▼ To Remove SSL Database

1. Log in or use the `rlogin` command to become superuser on the Sun Ray server.

**2. Stop both the cryptorand server and the skiserv server:**

```
# /etc/init.d/cryptorand stop
# /etc/init.d/skiserv 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 WebServer certificate directory, files, and subdirectories from the `RootCA` directory:**

```
# rm -rf new_cred_list keypkgs certs IP address
```

**6. Start both the cryptorand server and the skiserv server:**

```
# /etc/init.d/cryptorand start
# /etc/init.d/skiserv start
```

Reconfigure SSL according to “Configuring SSL on the Primary Sun Ray Server” on page 56 of this document, starting with Step 4.

---

**Note** – Do not create the `RootCA` user again.

---

## Accessing the Sun Ray Server Through SSL

The following information was omitted from Chapter 4 of the *Sun Ray Enterprise Server Software 1.1 Administrator’s Guide*:

After configuring the Sun Ray server with an SSL certificate and enabling SSL, type the following URL to access the administration application:

`https://servername:port`

Where *servername:port* is the host name and port of the Sun WebServer. By default, the port is 1660.

## Chapter 6, Administering the Sun Ray System

Replace the first step in the procedure “To Restart the Session Manager” with the following:

- **If the Session Manager exits and does not automatically restart, stop and start the `utsvnc` daemons by typing:**

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

## Chapter 8, Managing Sun Ray 1 Appliances

In the section “Interpreting Failover Group Status Information,” replace the second paragraph with the following:

For example, in Figure 8-9 there is one public network and two Sun Ray interconnect fabrics. Sunray5 (a) has the potential for failover for all of the Sun Ray appliances that reside on the *fully qualified IP address* network. On the *fully qualified IP address network* (e) the network appliances are not intended for failover and considered completely private to Sunray5 (a).

In the section “Interpreting Failover Group Status Information,” replace the fourth paragraph with the following:

The network and netmask headings (*fully qualified IP address*) refer to all of the networks that are observed. Group membership is represented by the group icon. Other Sun Ray servers visible on the screen may also be members of another group. View that information by selecting a different server which refreshes the broadcast information and reveals other groups. Multiple groups can use same network IDs for their private interconnect fabrics. For example, the group Sunray5 and Sunray11 use a specific network. The connection exists only between those two servers.

In the section “Example Configurations,” replace the second item in the legend with the following:

2. Private network (*fully qualified IP address*)

## Viewing System Status

In the section “Viewing System Status,” the Status Summary page has been redesigned as shown in FIGURE 4-1. The page layout has changed to enhance usability.

**Sun Ray™ 1 Administration**  
enterprise appliance

Server: ray-142

**Desktop Summary Status**

Units Connected:	17
Units Disconnected:	0
Token card readers:	0

**User Summary Status**

Users in database:	0
Users logged in:	17
Enabled cards:	0
Disabled cards:	0
Users logged in with card:	2
Users logged in without card:	13

**System Information**

Description	kbytes	Used	Available
Root File System	17160406	1415554	15744852
Swap Space	708024	3016	705008

Refresh

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FIGURE 4-1 Redesigned Status Summary Page

---

**Note** – The Policy field, showing which policy is currently in use, has been removed from the Summary Status frame. The Users logged out field has also been removed.

---

### ▼ To View Group and Local Policies

1. Go to the Admin->Policy page and click the associated radio button to view the policy.



Replace Table 8-2 with the following:

**TABLE 4-3** System Status Page Field Descriptions

<b>Options</b>	<b>Description</b>
DeskTop Summary Status	
Units Connected	Total number of Sun Ray appliances attached to the interconnect fabric.
Units Disconnected	Total number of Sun Ray appliances logged off the Sun Ray server.
Token card readers	Total number of Sun Ray appliances designated as token card readers attached to the interconnect fabric.
User Summary Status	
Users in database	Total number of users in the LDAP database.
User Summary Status (continued)	
Users logged in	Total number of users logged in to the system.
Enabled cards	Total number of enabled smart cards.
Disabled cards	Total number of disabled smart cards.
Users logged in with cards	Total number of users logged in with smart cards.
Users logged in without cards	Total number of users logged in not using smart cards.
System Information	
Root File System	Total, used, and available disk space available for the Sun Ray server.
Swap Space	Total, used, and available swap space available for the Sun Ray server.

## View Current Desktop Page

In the section “Listing Currently Connected Desktops,” the View Current Desktop page has been modified. It now contains a server column as shown in FIGURE 4-2.

---

## View Current Desktops

---

Desktop ID	Server	Location	Other Info	Current User
<a href="#">080020b34231</a>	server1			<a href="#">pseudo.080020b34231</a>
<a href="#">080020b56513</a>	server2			<a href="#">pseudo.080020b56513</a>
<a href="#">080020b5653c</a>	server3			<a href="#">pseudo.080020b5653c</a>
<a href="#">080020b60d30</a>	server4			<a href="#">pseudo.080020b60d30</a>
<a href="#">080020b60d5e</a>	server5			<a href="#">pseudo.080020b60d5e</a>

---

FIGURE 4-2 Redesigned View Current Desktops Page

## Examining Log Files

The string "The date last modified:" \$date " has been removed from the log files in the web-based administration software. Disregard this line in Figures 8-11 through 8-14 of the section "Examining Log Files."

## Chapter 10, Removing the Sun Ray Software

In the procedure "To Unconfigure the Sun Ray Server Software," the output screen in Step 8 contains utadmin, which is the incorrect output. The default CGI username is utwww.

Replace the output screen in Step 8 with the following:

```
Un-configuration of Sun Ray server Software

Unconfigure Sun Web Server 2.1 ([y]/n)y
Delete CGI username account ([y]/n)y

About to un-configure the following software products:

Sun Directory Services 3.1
Sun Web Server 2.1
Sun Ray enterprise server 1.2

Continue ([y]/n)y
```

## Unconfiguring the Sun Ray Server Software

In the procedure “To Unconfigure the Sun Ray Server Software,” replace Step 9 with the following:

After the script has completed, check in `/var/tmp/utconfig.date-format.log` to see if there were any errors where `date-format` is in the format `year_month_day_hour:min:sec`.

## Uninstalling the Sun Ray Software

In the procedure “To Uninstall the Sun Ray Software,” replace Step 4 with the following:

After the script has completed, check in `/var/tmp/utinstall.date-format.log` to see if there were any errors where `date-format` is in the format `year_month_day_hour:min:sec`.

# Appendix A, Troubleshooting

## Server Questions

In the “Server Questions” section of Appendix A, the following answer asks the user to edit the `/etc/systems` file. The name of this file should be `/etc/system`.

Q: A user is receiving an `Unable to get pty` error message. What is wrong?

A: The Sun Ray server has exhausted the number of pseudo terminals defined. If a system does not have enough pseudo terminals defined, users can not bring up a shell window and cannot log in. For example, a network consists of 50 Sun Ray 1 appliances and the `pty` entry is set to 40. When the 41st user tries to open a shell window, this error message displays. As superuser, edit the `/etc/systems` file `pt_cnt` value to increase the number of available pseudo terminals. Change the `pt_cnt` entry to a higher number (at least four or five times the number of users). You must reboot.

```
# set pt_cnt=40
set pt_cnt=200
```

## User Questions

In the “User Questions” section of Appendix A, the answer to the following question offers two possibilities.

Q: The user’s screen locked up. What do I do?

In the second possibility, solution C, replace substep i with the following:

To identify the X server’s PID, type:

```
# ps -ef | grep Xsun | grep username
```

---

# Advanced Administrator’s Guide

## Server Recovery

### The `ldbmcat` Command

Step 1 on page 36 of the *Sun Ray Enterprise Server Software 1.1 Advanced Administrator’s Guide* incorrectly references the `ldmcat` command. The correct command is:

```
/opt/SUNWconn/sbin/ldbmcat /var/opt/SUNWconn/ldap/dbm.ut/id2entry.dbb> \  
/tmp/store
```

### The `ldif2ldbm` Command

Step 3 on page 37 of the same document provides a command with an incomplete path. The correct command is:

```
/opt/SUNWconn/sbin/ldif2ldbm -c -n 2 -j 10 /tmp/store
```

## Group/LDAP Password

Once a group password is established within a failover group, any change to the password locally replicates the new password to all the databases. The password in the database is then out of synchronization with the local password on each server.

To bring the utilities and the Authentication Manager back into synchronization with the database, you must change the password on each individual server that is part of the failover group.

To change the password initially, use the administration GUI or `utpw` on the command line. Subsequent changes to the password on the other servers in the group must be made using the command line interface.

### ▼ To Change the Local Password

- **Manually log in to each group server and type:**

```
# /opt/SUNWconn/sbin/utpw -f
```

You are prompted for the new password.

### ▼ To Restart Services

- **Type:**

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

You must restart services after changing the password.

## Using the `utreplica` Command

The `utreplica` command is a configuration utility that enables you to manage and configure a group of servers. This command works in conjunction with the `utconfig` command. The `utreplica` command performs configuration of the Sun Ray LDAP server to enable replication of administered data from a designated primary server to each secondary server in a failover group. The command syntax depends on whether you are configuring the primary server or a secondary server for administered group membership.

The `utreplica` command syntax has changed since the *Sun Ray Enterprise Server Software 1.1 Advanced Administrator's Guide* was published. The new syntax is shown below:

```
# /opt/SUNWut/sbin/utreplica -p secondary-server [secondary-server]...
```

Use this command only on Sun Ray servers that have been configured for administration by the `utconfig` command.

---

**Note** – The `utreplica` command must be run on the primary server first and then on each secondary server.

---

To add an additional secondary server, you must perform `utreplica -u` and reconfigure your primary and secondary servers. If you try to add a secondary server without doing this, the server will not be added and you will not receive an error message.

---

**Note** – For this command to work, all servers in the group must be configured with the same group manager signature.

---

For additional information on the `utreplica` command and its options, refer to the `utreplica` man page.

## utreplica Password

The `utreplica` command no longer requires `@(UTPASSWD)` when configuring a server for failover.

## Primary Failover Servers and Setting Local Policies

A primary server cannot have `useLocalPolicy=true`. Essentially, this is an override in the `auth.props` file (in expert mode). It is possible to run a server within a group that will not adhere to group policies. This situation could be a security issue, and, in addition, Sun is restricting its use to secondary and not primary servers. If you do make this change, the global administration tools on primary servers may not work across the group. The policy you receive may not be the policy you intended; rather, it is a result of interaction between the tool and utility.

---

**Note** – The LDAP and failover domains should be the same.

---

---

**Note** – Configuring and modifying policies should be conducted on primary failover servers, not the secondaries.

---

The `utreplica` command sets or defines the LDAP domain. Use `utgroupsig` to configure the failover domain.





## Late-Breaking News

---

This chapter contains late-breaking news, including patches, known problems, and documentation errata.

- “Known Problems” on page 53
- “Other Issues” on page 57
- “Further Information” on page 61

---

## Known Problems

The following section documents existing problems and known solutions (workarounds).

### Problems for System Administrators

#### Pseudo Terminal Limit

When the pseudo terminal (`pty`) count or limit is reached, a user is unable to open a terminal window or start any other application that spawns a shell. This problem may occur if the maximum value is underestimated.

When a Sun Ray user attempts to log in to a server where the `pty` count is at its maximum, the screen goes momentarily blank, followed by an apparently new `dtlogin` screen. It is not apparent that this failure is due to the aforementioned `pty` problem. At the present time, there are no diagnostic or other messages issued to `/var/adm/messages` indicating that this event occurred.

Workaround: In a Sun Ray environment, the `pty` resource is shared among both the Sun Ray server and all its associated Sun Ray sessions. Instructions are given in the “Troubleshooting” appendix in the *Sun Ray Enterprise Server Software 1.1 Administration Guide* on how to set the `pty` limit to an appropriate number so that this resource is not exceeded.

As superuser, edit the `/etc/system` file `pt_cnt` value to increase the number of available pseudo terminals. The basic rule is (number of users) times (average number of windows/user) = number of `ptys`. Change the `pt_cnt` entry to a higher number (at least four or five times the number of users) and reboot.

For example:

```
# set pt_cnt=40
set pt_cnt=200
```

---

**Note** – Once this value is reset in `/etc/system`, use the command `reboot -- -r` to see the change.

---

## Sun Resource Manager (SRM)

Two issues have been identified involving running SRM together with the Sun Ray server software 1.2:

### 1. Lock Problem

All the Sun Ray appliances lose contact with the Sun Ray server if many users log in at the same time because SRM’s implementation in the Sun Ray enterprise server software 1.0 and 1.1 contained a single `SharePcntLock`. All the CPUs contend for this lock which causes the system to appear to lock up until this contention is resolved. During this time, the Sun Ray daemon processes are unable to run and send the “heartbeat” messages. Therefore, the Sun Ray appliances assume the system has failed, and they reset.

### 2. Scalability Problem

SRM software was originally designed to manage a small number of resource intensive tasks. It was not intended to manage a large number of interactive sessions with each user in a different share group. When the SRM software is configured on a Sun Ray server, the default action is to put each user in a separate share group. SRM is not able to properly manage hundreds of Sun Ray users and many thousands of processes. As a result, the system slows down with poor audio and video performance, and you may experience the same symptoms seen in the previous problem.

Workaround:

### 1. Run Sun Ray without SRM

To limit the resources used by each Sun Ray user, use `limit(1)`, `ulimit(1)`, and `quota(1M)`.

An example of limiting the resources used by Sun Ray users is provided below. To use this script, copy it into `/etc/dt/config/Xsession.d/` directory and make it executable. Now any user login is subject to resource limitation.

```
#!/bin/ksh
# Set default limits
#
# Data/stack size in KB (1GB/200)
#
ulimit -d 1000000
ulimit -S -d 500000
ulimit -H -s 1000000
#
# VM
#
ulimit -S -v 1000000
#
# Core file size in blocks
#
ulimit -c 500000
ulimit -S -c 200000
#
# Soft file-size limit 500MB
#
ulimit -S -f 1000000
```

### 2. Run Sun Ray in a different domain than SRM (1.0/1.1/1.2)

For hardware platforms that can be partitioned into domains, run SRM and Sun Ray server on separate domains. Use SRM to manage a few large resource-intensive tasks on an appropriately sized domain and run the Sun Ray server software 1.2 on a domain without SRM.

## Sun Ray Audio Issues

Sun Ray servers are required to support an audio device for each appliance connected to the server. Historically, the `/dev/audio` device has been used by programs as the means to access the audio driver. This works fine on a single-user workstation, but on a Sun Ray server, it gives access to the base audio device on the server itself, not the audio device on the user's Sun Ray appliance.

Recent practice has defined the environment variable `$AUDIODEV` as containing the name of the audio device. The Sun Ray session startup sets this variable to the appropriate audio device for the current Sun Ray appliance, which takes the form of `/tmp/SUNWut/dev/utaudio/55`, for example. Thus, programs that use `$AUDIODEV` to retrieve the name of the audio device work correctly on Sun Ray appliances. There is a problem, however, with legacy applications that do not follow the convention and that use `/dev/audio` directly.

**Workaround:** A library shipped with the Sun Ray server software transparently translates the `/dev/audio` and `/dev/audioctl` devices to the value contained in `$UTAUDIODEV`, which is normally the same value as `$AUDIODEV`. The library, called `libc_ut.so`, is interposed by setting the environment variable `LD_PRELOAD=libc_ut.so`. This `LD_PRELOAD` variable is set in the Sun Ray session startup script and normally does not interfere with correct operation of programs that do not open `/dev/audio`.

There are some programs, notably old SunOS™ 4 binaries and some statically linked programs that do not run due to the setting of `LD_PRELOAD` and which usually exit with an error message stating that the `libc_ut.so` cannot be found. The solution to this problem is to unset the `LD_PRELOAD` variable before invoking these programs. There are also some programs that do not run correctly with this variable set, such as StarOffice™. When an unexplained program failure is encountered, rerun the program with `LD_PRELOAD` unset to see if it is causing the problem.

Due to the more widespread adoption of the `$AUDIODEV` convention by applications using audio, the default setting of `LD_PRELOAD` in the Sun Ray 1.2 software release was changed. `LD_PRELOAD` is still set as described in the previous paragraph when the software is installed on the Solaris 2.6 and Solaris 7 operating environments. However, it is not set by default on the Solaris 8 operating environment. Thus, applications running on Solaris 8 software that still use `/dev/audio` do not function correctly. You must set `LD_PRELOAD=libc_ut.so` before running such applications. If possible, set this variable in a wrapper script that sets `LD_PRELOAD` before running the application.

# Problems for Users

## Green Newt Cursor

The script that implements a session only paints the screen once. If a card is removed after the screen has been painted and inserted again before the session removes itself, the user sees the green newt cursor and no graphic.

If the user inserts a card that is not registered, the NO ENTRY sign appears.

If the user pulls the card out and reinserts it after one second, the green newt cursor is displayed.

Workaround: When the user inserts the card again after about 15 seconds, the graphic is displayed.

### ▼ To Set the Required Policy

- Type:

```
# /opt/SUNWut/sbin/utpolicy -a -r card -z pseudo -t clear -t add:080020a85170
```

### ▼ To Enforce the New Policy

- Type:

```
# /opt/SUNWut/sbin/utpolicy -i soft
```

---

## Other Issues

### Group Signature

If the Sun Ray server is to be configured for failover, a group signature is required. This signature is like a password in that it must contain at least eight characters and one character must be nonalphabetic. Use this unique signature for all Sun Ray servers in a failover group.

## Log Files

The following log files are not created until the `utadm` script is run for the first time. Logging references are not maintained until the `utadm` script is run.

- `/var/opt/SUNWut/log/auth_log`
- `/var/opt/SUNWut/log/admin_log`
- `/var/opt/SUNWut/log/messages`

## The `rootdn` Password

When the `/opt/SUNWut/sbin/utpw` command requests the user to:

```
Enter SunDS "rootdn" password:
```

The command is asking for the old Sun Ray administration password.

## In a Failover Group

When the `utadmin` password is changed on any Sun Ray server in a failover group, passwords on the remaining servers must be synchronized.

### ▼ To Force Synchronization

1. **Type the following command on each server:**

```
# /opt/SUNWut/sbin/utpw -f
```

2. **Then type the new `utadmin` password.**

---

**Note** – You are not prompted for the password. Type the new password and press the Return key. The password is echoed.

---

## Backup Files

After executing `utconfig -u` and `utinstall -u`, only two Sun Ray specific files remain:

- /etc/opt/SUNWut/auth.props.bak
- /etc/opt/SUNWut/gmSignature.bak

These backup files can be safely deleted. Patches that were installed with the Sun Ray software are not Sun Ray specific and, therefore, are not removed.

## SSL

Although SSL is updated directly by `utconfig`, SSL services can be disabled by editing the `/etc/http/utadmin.httptd.conf` file.

Find the line with the string:

```
ssl_enable yes
```

Change the string to `ssl_enable no` to disable SSL.

## The `utadm` Script

### Taking Servers Offline

With the release of the Sun Ray server software 1.2, Sun Ray servers may now be taken offline. This capability makes it easier for servers within a failover group to be taken out of active service for maintenance purposes. In the offline state, no new sessions are created on the server as a result of load balancing. Old sessions on the server continue to exist and may be activated until they are terminated.

#### ▼ To Take a Server Offline

- At the command-line interface, type:

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

#### ▼ To Bring a Server Online

- At the command-line interface, type:

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

## The `utfwadm` Command

---

**Note** – The `-z` option is reserved for use by the Sun Ray server software and should not be used.

---

## Script Sequence

The `utadm` script now configures DHCP services before configuring the Sun Ray interface.

## Reconfiguration

After configuring the Sun Ray private network using the `utadm -a interface` script, subsequent reconfigurations of the network must be prefixed with the `utadm -d interface` script.

## The `Xsession.d` Directory

For the Sun Ray enterprise server software 1.0, the `Xsession.d` directory resided in `/etc/dt/config`. For the Sun Ray enterprise server software 1.1, the `Xsession.d` directory is now located in `/usr/dt/config`.

## Token Reader

Before configuring a Sun Ray appliance as a token reader, the authentication policy must support a token reader. Refer to “Choosing an Authentication Policy” on page 70 of the *Sun Ray Enterprise Server Software 1.1 Administrator's Guide*.



# Ethernet Address Location

The Ethernet address is located on the back of each Sun Ray appliance. Each address begins with the sequence: 080020.

**TABLE 5-1** Location of Ethernet Address on Sun Ray Appliance

Sun Ray Appliance	Locations
1	Left side toward the back
100	In the back on the left side
150	In the back on the right side

---

## Further Information

Further information on Sun Ray server software 1.2 may be found on the web site:

<http://www.sun.com/sunray>

