Service Procedures
(SGI® 3000 Series Systems)

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Contents

Figures

Tables

Chapter 1

L3 Controller Solution Installation/Reinstallation (Internal)

An SGI Origin 3000 series L3 controller solution consists of L3 controller software and either a Silicon Graphics 230 visual workstation or a Customer Service laptop that is loaded with the Red Hat Linux operating system (OS). Two types of L3 controller software are available: an internal type that is installed and used only by SGI personnel and an external type that is installed and used by non-SGI personnel.

Complete the procedures in this chapter to install or reinstall an L3 controller that uses internal L3 controller software.

Note: Non-SGI personnel are not allowed to install or use internal L3 controller software; therefore, they are not authorized to complete the procedures in this chapter. External L3 controller solution installation procedures for non-SGI personnel are located in the *SGI Origin 3000 L3 Controller Installation Guide* (Silicon Graphics P / N 007-4363-00x).

1.1 Software Installation Requirements

Ensure that you can access and download the software that is listed in Table 1-1 from the workstation or laptop before you install any software. If you cannot access an online version of the required software, order a CD-ROM version.

Note: Your Silicon Graphics 230 visual workstation or Customer Service laptop must have Internet and network access if you will remotely copy (`rcp`) the internal L3 controller software directly to the workstation during the installation.

Table 1-1 Required Installation Software (Internal Version)

Software Required	Minimum Version Required	Online Software Download Location	CD-ROM Software Order Location
Red Hat Linux OS	Version 6.2 (or newer)	FTP via the following location: [1] *ftp://dist.engr/linux/redhat/-x.x/* **Note:** The FTP option is not supported by this documentation.	Order *Red Hat Linux OS* from your account representative. [1] (SGI part number SC5-REDHAT-*x.x*)
Origin 3000 Series L3 Controller Software [2]	Internal version 1.5 (or newer)	RCP via the following directory: [3] */usr/release/www/Tools/Tools_Distribution/CD_images/current/linux/rpms*	Order *Internal Support Tools CD* via the following URL: [1] *http://www.csd.sgi.com/prod/software/swd/tool/Order/intl_bof.cgi* (SGI part number 812-0640-*xxx*)

[1] An italicized *x* indicates a variable numeric value. Replace each *x.x* in *Red Hat Linux OS* download and order locations with the OS version number you require (for example, *ftp://dist.engr/linux/redhat/-6.2/*). Replace the *xxx* in the *L3 Controller Software* order location with the CD-ROM release number you wish to order (for example, SGI part number 812-0640-008).

[2] This software is part of CD-ROM and / or online versions of the *Internal Support Tools CD* (version 2.3 or newer).

[3] This software is also available for download at the following URL if the RCP feature is unavailable: *http://ist.csd.sgi.com/Tools/Tools_Distribution/CD_html/current/linux.html*

1.2 Installation Process Overview

The following subsections provide overviews of how to install the required software on Silicon Graphics 230 visual workstations and Customer Service laptops.

Note: The procedures in this chapter have been tested with Red Hat Linux OS versions 6.2, 7.0, 7.1, and 7.2. (SGI recommends that you use Red Hat Linux OS version 6.2 on Silicon Graphics 230 visual workstation-based L3 controllers; SGI recommends that you use Red Hat Linux OS version 7.0 on Customer Service laptop-based L3 controllers.)

1.2.1 Installation Process for Silicon Graphics 230 Visual Workstations

The following subsections describe the L3 controller solution installation process for the following configurations:

- Silicon Graphics 230 visual workstations with the Red Hat Linux OS installed
- Silicon Graphics 230 visual workstations without the Red Hat Linux OS installed

1.2.1.1 Systems with the Red Hat Linux OS Installed

The factory installs the Red Hat Linux OS on workstations that ship to customers who are located in North America. To install an SGI Origin 3000 series L3 controller solution on a Silicon Graphics 230 visual workstation that shipped with the Red Hat Linux OS already installed, you must:

1. Install the internal L3 controller software (via CD-ROM or download) on the workstation as described in Section 1.5, “Internal L3 Controller Software Installation.”
2. Connect the workstation to an SGI Origin 3000 series server that runs IRIX version 6.5.9 OS (or newer) as described in Section 1.6, “SGI Origin 3000 Series Server-to-L3 Connection.”

1.2.1.2 Systems without the Red Hat Linux OS Installed

The factory does not install the Red Hat Linux OS on workstations that ship to customers who are located outside of North America. To install an SGI Origin 3000 series L3 controller solution on a Silicon Graphics 230 visual workstation that shipped without the Red Hat Linux OS already installed, you must:

1. Configure and install the Red Hat Linux OS and install the auxiliary Linux software components (via CD-ROM) on the workstation as described in Section 1.4, “Red Hat Linux OS Configuration and Installation.”
2. Install the internal L3 controller software (via CD-ROM or download) on the workstation as described in Section 1.5, “Internal L3 Controller Software Installation.”
3. Connect the workstation to an SGI Origin 3000 series server that runs IRIX version 6.5.9 OS (or newer) as described in Section 1.6, “SGI Origin 3000 Series Server-to-L3 Connection.”

1.2.2 Installation Process for Customer Service Laptops

Field Information Services (IS) installs the Red Hat Linux OS on your Customer Service laptop before you receive it, so you do not need to install the Red Hat Linux OS on the laptop. You must install the auxiliary Linux software components and the internal L3 controller software.

To install an SGI Origin 3000 series L3 controller solution on a Customer Service laptop, you must:

1. Install the auxiliary Linux software components (via CD-ROM) on the laptop as described in Section 1.4.3, “Auxiliary Linux Software Component Installation.”
2. Install the internal L3 controller software (via CD-ROM or download) on the laptop as described in Section 1.5, “Internal L3 Controller Software Installation.”
3. Connect the laptop to an SGI Origin 3000 series server that runs IRIX version 6.5.9 OS (or newer) as described in Section 1.6, “SGI Origin 3000 Series Server-to-L3 Connection.”

1.3 Reinstallation Process Overview

Occasionally, you may need to reinstall all of the software that is required for an L3 controller solution (for example, if the hard drive crashes). To reinstall the Red Hat Linux OS and the L3 controller software on a Silicon Graphics 230 visual workstation or a Customer Service laptop, you must:

1. Configure and install the Red Hat Linux OS and install the auxiliary Linux software components (via CD-ROM) on the workstation as described in Section 1.4, “Red Hat Linux OS Configuration and Installation.”
2. Install the internal L3 controller software (via CD-ROM or download) on the workstation as described in Section 1.5, “Internal L3 Controller Software Installation.”
3. Connect the workstation to an SGI Origin 3000 series server that runs IRIX version 6.5.9 OS (or newer) as described in Section 1.6, “SGI Origin 3000 Series Server-to-L3 Connection.”

1.4 Red Hat Linux OS Configuration and Installation

Note: Refer to the *Red Hat Linux Installation Guide* for detailed information related to any Red Hat Linux OS installation process.

Before you begin the Red Hat Linux OS configuration and installation, ensure that you have the following information:

- Monitor type, video card type, and video memory size
- IP address, netmask, network and broadcast addresses

  Important: IP address, netmask, network, and broadcast address information is not required if your network uses only DHCP addressing.

Note: Obtain a blank DOS-formatted floppy disk if you want to create an optional boot disk when the Red Hat Linux OS installation concludes.

When you have obtained the required information (and optional items), continue to Section 1.4.1, “Red Hat Linux OS Configuration”.

1.4.1 Red Hat Linux OS Configuration

Complete the procedures is this subsection to configure the Red Hat Linux OS for installation:

1. Power on the Silicon Graphics 230 visual workstation or Customer Service laptop.
2. When the SGI title screen appears, press the *F12* key; the `Boot Menu` appears.
3. Insert the *Red Hat Linux* CD-ROM.
4. Use the arrow keys to select `CD-ROM` from the `Boot Menu`; then press the *Enter* key. The Red Hat menu appears.
5. At the boot prompt, press the *Enter* key; the workstation boots from the *Red Hat Linux* CD-ROM.
6. Press the *Enter* key when the `Welcome to Red Hat Linux` screen displays.

1.4.1.1 Keyboard and Mouse Configuration

7. Use the keyboard directional arrow keys to select a language for your system; click *Next* to continue.
8. Configure the keyboard options for your system:
   a. Use the keyboard directional arrow keys to select the keyboard configuration for your system.

      Note: Standard Silicon Graphics 230 visual workstation and Customer Service laptop users should select the `Generic 101-Key PC` keyboard configuration.

   b. Click the keyboard layout option button that best matches your system.
   c. Click the `Enable Dead Keys` option button to enable non-English keyboard characters (umlauts, for example).
   d. Click *Next* to continue.
9. Use the keyboard directional arrow keys to select the mouse type for your system; click *Next* to continue.

   Note: Standard Silicon Graphics 230 visual workstation users should select the `(3 Button Mouse (PS/2))` mouse configuration. Customer Service laptop users should select the `(Generic (PS/2))` mouse configuration.
10. Click *Next* in the `Red Hat Linux System Installer` window to continue.

1.4.1.2 Installation Type Selection

11. Click the `Install` and `GNOME Workstation` option buttons (if not already selected by default) in the `Install Type` window; click *Next* to continue (refer to Figure 1-1).

    Note: Click *Initialize* to format the workstation drive if the following message displays:

    ```
    The partition table on device hda is corrupted. To create new
    partitions it must be initialized, causing the loss of ALL DATA
    on this drive.
    ```

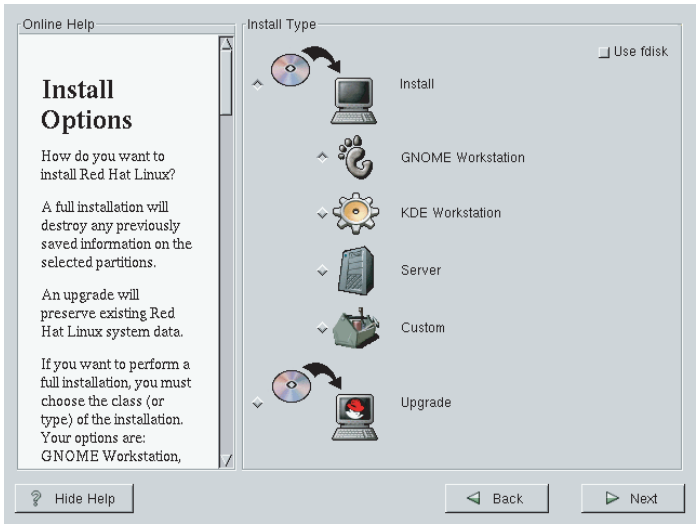


Figure 1-1 Install Type Options

1.4.1.3 Workstation Partition Creation and Configuration

12. Click the `Manually partition` option button in the `Install Window`; click *`Next`* to continue (refer to Figure 1-2).

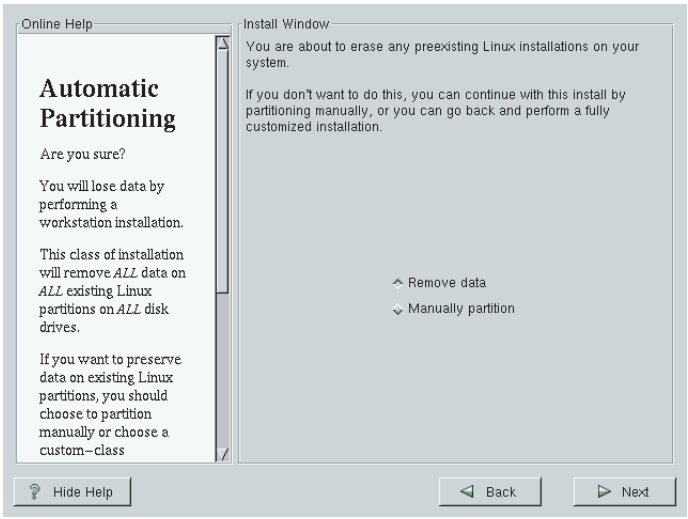


Figure 1-2 Install Window Options

13. Configure the three required workstation drive partitions:

    a. Click *Add* in the `Disk Druid Partitions` window; a popup window displays (refer to Figure 1-3).

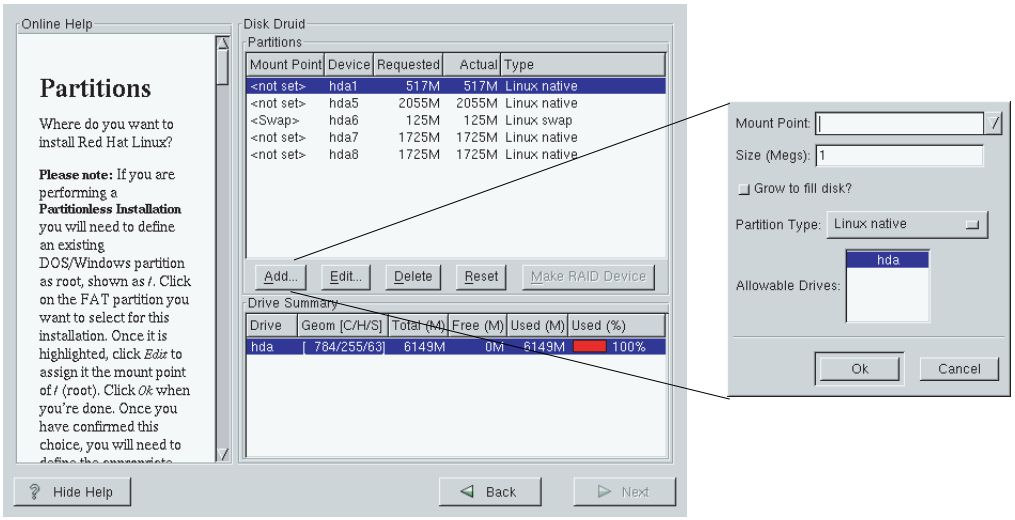


Figure 1-3 Disk Druid Partitions Window and Popup Window

b. Select a partition type (listed in Table 1-2) from the pull-down menu.

c. Type the mount-point information (from Table 1-2) for the partition into the `Mount Point` field.

Note: If you selected a Linux swap partition type, the mount-point value is automatically entered into the `Mount Point` field.

d. Type the partition size (from Table 1-2) for the partition into the `Size (Megs)` field in the popup window.

Important: Be sure to click the `Grow to fill disk?` option button in the popup window when you create the root (/) partition.

e. Click *OK*.

Table 1-2 Disk Partition Configuration Settings

Mount Point	Size (MB)	Partition Type
/boot	50 MB	Linux native
<Swap Partition>	512 MB	Linux swap
/	1 MB (Grow to fill)	Linux native

Note: The Linux <Swap Partition> size should be set to a value that is at least equal to the amount of available workstation memory. If you choose to increase the Linux <Swap Partition> size, increase it by multiples of the available workstation memory; for example, a workstation with 512 MB of available memory should have a Linux <Swap Partition> size of 512 MB, 1024 MB, 1536 MB, and so forth.

14. Repeat Step 13 to configure the remaining 2 disk partitions that are listed in Table 1-2.
15. Click *Next* to continue; the `Choose partitions to Format` window displays.
16. Click the option button that precedes each partition that you configured in Step 12 (refer to Figure 1-4).

Note: `<Swap Partition>` is automatically configured; therefore, you are not able to select this partition.

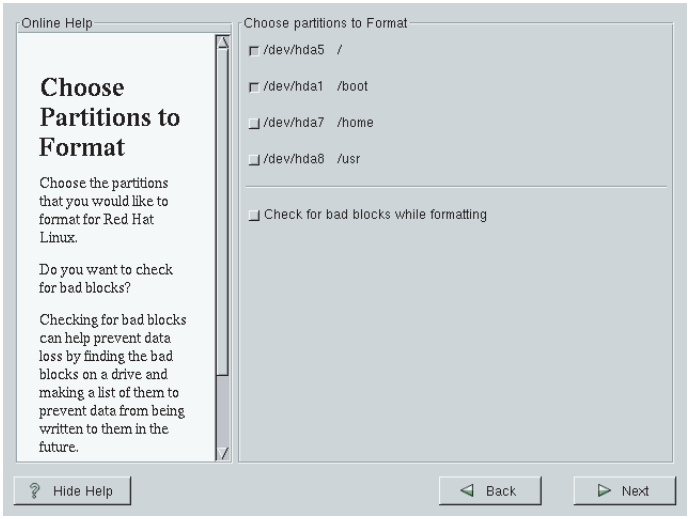


Figure 1-4 Choose partitions to Format Window

17. Click *Next* to format the selected partitions.

    Note: Click the `Check for bad blocks while formatting` option button if you want to scan the workstation drive for bad memory blocks during the Linux Red Hat Linux OS installation. If you check for bad blocks while you format the partitions, the amount of time that is required to install the OS increases.

1.4.1.4 Network Settings Configuration

Note: Standard Silicon Graphics 230 visual workstations have a single-port Ethernet interface card; this single-port card connects to the system L2 controllers via DHCP protocol. An optional 4-port Ethernet interface card is also available from SGI; you must configure these additional ports via DHCP protocol. If your workstation contains multiple Ethernet cards or ports that do not use DHCP protocol, you must manually configure these additional network interfaces. Ensure that you have IP, netmask, network, and broadcast addresses for these interfaces.

Note: Customer Service laptop users should configure the primary Ethernet port to connect to the L2 controllers via DHCP protocol.

18. Configure the Ethernet card or port that connects to the L2 controllers via DHCP protocol (refer to Figure 1-5):

    a. Click the tab in the `Network Configurations` window that corresponds to the Ethernet card or port.

       Note: This tab is typically labeled `eth0` in systems that have a single-port Ethernet interface card.

    b. Click the `Configure using DHCP` option.

    c. Click the `Activate on boot` option.

    d. If you have no additional Ethernet cards or ports of this type to configure, skip to Step 21.

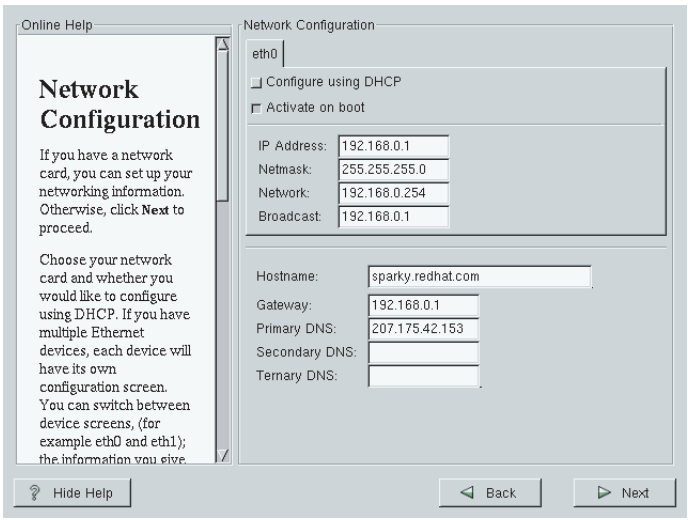


Figure 1-5 Network Configuration Window

19. Configure an optional Ethernet card or port that connects to the L2 controllers via DHCP protocol:

    a. Click the tab in the `Network Configurations` window that corresponds to the Ethernet card or port.

    b. Click the `Activate on boot` option.

    c. Click the `Configure using DHCP` option.

    d. Repeat Step 19 if you wish to configure additional Ethernet cards or ports of this type.

    e. If you have no additional Ethernet cards or ports of this type to configure, skip to Step 21.

20. Configure an optional Ethernet card or port that connects to the L2 controllers via non-DHCP protocol.

    a. Click the tab in the `Network Configurations` window that corresponds to the Ethernet card or port.

    b. Click the `Activate on boot` option.

    c. Type your site-specific information (for example, IP address, Netmask) into the appropriate fields in the `Network Configuration` window.

    d. Repeat Step 20 if you wish to configure additional Ethernet cards or ports of this type.

21. Click *Next* to continue.

1.4.1.5 Account Configuration

22. Use the scroll bar to locate your time zone in the available list; then, click *`Next`* to continue.

    Note: You may also use your mouse to double-click an area on the map that corresponds to your time zone.

23. Type the root password and configure your account; click *Add*.

24. Create and configure each additional user account; click *Add* when you complete each account.
25. Click *Next* to continue; the first `X Configuration` windows displays.

1.4.1.6 X Configuration Settings Selection

Note: The settings suggested in this subsection are typically used to configure the Linux OS to operate with a standard Silicon Graphics 230 visual workstation and SGI monitor; your workstation and monitor configuration may require other settings. You may manually input these settings if the option you require is not displayed.

26. Select the monitor configuration; click *`Next`* to install the Red Hat Linux OS.

    Note: Most monitors use the `DDC Probed Monitor-->`*(YOUR MONITOR TYPE)* option.

27. Select the video card that is installed in your workstation; click *`Next`* to continue.

    Note: Standard Silicon Graphics 230 visual workstation users should select the `NVIDIA GeForce DDR Generic` video card.

    Note: The video card used in Customer Service laptops varies from system to system; however, the configuration application probes the hardware and selects the correct setting. Use the setting that the configuration application selects.

28. Select the memory requirement; click *`Next`* to continue.

    Note: Standard Silicon Graphics 230 visual workstation users should select `16384k` as the memory requirement.

    Note: The memory requirement varies for Customer Service laptops; however, the configuration application determines the correct setting. Use the setting that the configuration application selects.

29. Select the preferred user interface.

    Note: Most users prefer to use the `Graphical Login` interface option.

30. Click the *Test this Configuration* button to verify that your X configuration settings are correct. If no image displays on the monitor, repeat the steps in this section until the X configuration test displays an image on the monitor.
31. Click *`Next`* to continue.

1.4.2 Red Hat Linux OS Installation

32. Click *`Next`* in the `About to install window` to begin the Red Hat Linux OS installation.

    Note: Allow 15 to 60 minutes for the Red Hat Linux OS installation to complete.

33. If you do not want to create an optional Red Hat Linux boot disk, click the `Skip boot disk creation option` and proceed to Step 35. If you want to create a boot disk, complete the procedure in Step 34.

    Note: The boot disk is optional because you can boot the workstation from the *Red Hat Linux* CD-ROM.

34. Create the optional Red Hat Linux boot disk:
    a. Click the option button to deselect the `Skip boot disk creation` option.
    b. Insert a blank, DOS-formatted floppy disk into the workstation floppy disk drive.
    c. Click *`Next`* to create the boot disk.
35. Click *Exit* to reboot the workstation.
36. Remove the *Red Hat Linux* CD-ROM and the optional boot disk when the workstation automatically ejects them from their respective drives.
37. Install the auxiliary Linux software components as directed in Section 1.4.3, "Auxiliary Linux Software Component Installation".

1.4.3 Auxiliary Linux Software Component Installation

You must install 5 auxiliary Linux software components to enable the L3 controller solution to function: `pdksh`, `uucp`, `inetd`, `dhcp`, and `telnet-server`.

Complete the following procedure to install these components:

1. Boot the Silicon Graphics 230 visual workstation or Customer Service laptop from the hard disk.
2. Log in to the workstation as root.
3. Insert the *Red Hat Linux* CD-ROM into the CD-ROM drive.

   Note: Click *No* if a `Question` dialog box appears with the question, "Do you wish to run `/mnt/cdrom/autorun` ?"
4. Double-click the `Red Hat Linux CD-ROM` desktop icon to access the CD-ROM software.
5. Double-click the `Red Hat` folder icon to open the `Red Hat` directory.
6. Double-click the `RPMS` folder icon to open the `RPMS` directory.
7. Install the `pdksh`, `uucp`, `inetd`, `dhcp`, and `telnet-server` software components:
   a. Locate and double-click one of the component files that is listed above in the `RPMS` directory.
   b. Repeat Substep a until you have installed the required components.
8. Remove the CD-ROM from the CD-ROM drive.
9. Install the L3 controller software as directed in Section 1.5, "Internal L3 Controller Software Installation".

1.5 Internal L3 Controller Software Installation

Table 1-3 lists the components that the internal L3 controller software includes.

Table 1-3 Internal L3 Controller Software Components

Components	Description
`l3_install`	L3 software installation tool
`kernel_sgisn1-2.2.16` [a]	Kernel software
`kernel_sgisn1_usb-2.4.2-2-1.3` [b]	L1 USB module for the Red Hat 7.1 kernel
`kernel_sgisn1_usb-2.4.7-10-1.3` [b]	L1 USB module for the Red Hat 7.2 kernel
`kernel_sgisn1_usb-2.4.2-5SGI_137-1.3` [b]	L1 USB module for the SGI ProPack for Linux 1.5 kernel
`kernel_sgisn1_usb-2.4.2-SGI_XFS_1.0-1.3` [b]	L1 USB module for the SGI XFS 1.0 kernel
`kernel_sgisn1_usb-2.4.3-SGI_XFS_1.0.1-1.3` [b]	L1 USB module for the SGI XFS 1.0.1 kernel
`sgi230_l3_reinstall`	Script that reinstalls L3 software on a Silicon Graphics 230 visual workstation
`sgidiag`	`sgidiag` user account **Note:** The `sgidiag` component is not part of the external L3 controller software.
`sgil1_make_driver`	Script that creates an L1 USB runtime-loadable module for kernels that are not supported by the runtime-loadable modules included in the L3 controller software package
`sgil1.tar.gz`	Source files that the `sgil1_make_driver` script uses to create an L1 USB runtime-loadable module
`sn1sc_firmware`	L1 and L2 firmware
`sn1sc_l3`	L3 utilities
`sn1scan`	Boundary scan tools Refer to the *Scan Tools* document, publication number 108-0263-00x, for more information about the boundary scan tools. **Note:** The `sn1scan` component is not part of the external L3 controller software.

a. This package contains the full kernel package for systems that are running the supported configuration (Red Hat Linux 6.2 on Silicon Graphics 230 visual workstation-based L3 controllers and Red Hat Linux 7.0 on laptop-based L3 controllers.)

b. If you are not running the supported configuration (Red Hat Linux 6.2 or 7.0), this package contains a runtime-loadable module that provides L1 USB support for the specified kernel. Load the module to add USB support to the existing kernel. Enter the **`/bin/uname -r`** command to determine which kernel your system is running. If you are running a kernel that is not supported by the runtime-loadable modules available in the L3 controller software, the `l3_install` script automatically prompts you to run the `sgil1_make_driver` script. The `sgil1_make_driver` script guides you through the procedure to build a runtime-loadable module for the kernel that is installed.

Complete the procedures in Section 1.5.1, “Internal L3 Controller Software Installation (Download)” if you plan to download the internal L3 controller software.

Complete the procedures in Section 1.5.2, “Internal L3 Controller Software Installation (CD-ROM)” if you plan to install the internal L3 controller software from CD-ROM.

1.5.1 Internal L3 Controller Software Installation (Download)

The internal L3 controller software is available for download via the following directory:

```
ist.csd.sgi.com:/usr/release/www/Tools/Tools_Distribution/
CD_images/current/linux/rpms/
```

To download and install the internal L3 controller software, complete the following procedure:

1. Log on to the workstation with root privileges.
2. Type the following commands at the superuser prompt to both create a new directory for the L3 controller software files and move to that directory:

   ```
   # mkdir l3
   # cd l3
   ```

3. Type the following command to download the L3 controller software to the directory that you created in Step 2:

   ```
   # rcp guest@ist.csd.sgi.com:/usr/release/www/Tools/Tools_Distribution/
   CD_images/current/linux/rpms/L3.tar .
   ```

4. Type the following command to expand the `L3.tar` file:

   ```
   # tar -xf L3.tar
   ```

5. Insert the *Red Hat Linux* CD-ROM into the CD-ROM drive.
6. If you are installing the L3 controller software on a Silicon Graphics 230 visual workstation after installing or reinstalling Red Hat Linux OS version 6.2, type the following command:

   ```
   # ./sgi230_l3_reinstall
   ```

   The `sgi230_l3_reinstall` script automatically installs additional Red Hat Linux components that are normally installed in the factory. This script installs additional required packages that are not part of the default Red Hat Linux installation.

   The script takes several minutes to run; it lists each package that it installs and displays a progress bar as it installs each package.

   Note: The `sgi230_l3_reinstall` script is available starting with the *Internal Support Tools 2.5.1* Web release.

7. Remove the *Red Hat Linux* CD-ROM from the workstation CD-ROM drive.
8. Type the following command to install the L3 controller software:

   ```
   # ./l3_install
   ```

   Note: The `l3_install` script determines which version of the Linux operating system is installed on the system (Red Hat Linux OS version 6.2, 7.0, 7.1, or 7.2) and installs the correct packages for that operating system.

9. Type the following commands to both move out of and delete the L3 directory:

   ```
   # cd ../
   # rm -r l3
   ```

10. Restart the workstation; then, connect the workstation to the SGI Origin 3000 series server as directed in Section 1.6, “SGI Origin 3000 Series Server-to-L3 Connection”.

1.5.2 Internal L3 Controller Software Installation (CD-ROM)

The internal L3 controller software is available on the *Internal Support Tools* CD-ROM (Silicon Graphics P / N 812-0640-*xxx*). You can order this CD-ROM via the following URL: *http://www.csd.sgi.com/prod/software/swd/tool/Order/intl_bof.cgi*

To install internal L3 controller software from CD-ROM, complete the following procedure:

1. Log on to the workstation with root privileges.
2. Insert the *Internal Support Tools* CD-ROM into the workstation CD-ROM drive.
3. Type the following command at the superuser prompt to change to the **/mnt/cdrom/linux/rpms** directory:

   ```
   # cd /mnt/cdrom/linux/rpms
   ```

Note: The `sgi230_l3_reinstall` script described in Step 4 is currently available only in the *Internal Support Tools 2.5.1* Web release. It will not be available on CD-ROM until the *Internal Support Tools* 2.6 CD release. If you need to perform Step 4 before the *Internal Support Tools 2.6* CD release is available, download the `L3.tar` file and install the L3 controller software from that file as directed in Section 1.5.1, “Internal L3 Controller Software Installation (Download)”.

4. If you are installing the L3 controller software on a Silicon Graphics 230 visual workstation after installing or reinstalling Red Hat Linux OS version 6.2, perform the following procedure:
   a. Type the following command to copy the script to the workstation:

      ```
      # cp sgi230_l3_reinstall /tmp
      ```

   b. Remove the *Internal Support Tools* CD-ROM from the workstation CD-ROM drive.
   c. Insert the *Red Hat Linux* CD-ROM into the workstation CD-ROM drive.
   d. Type the following command to change to the **/tmp** directory:

      ```
      # cd /tmp
      ```

   e. Type the following command to make the `sgi230_l3_reinstall` script executable:

      ```
      # chmod 755 sgi230_l3_reinstall
      ```

f. Type the following command to run the script:

```
# ./sgi230_l3_reinstall
```

The `sgi230_l3_reinstall` script automatically installs additional Red Hat Linux components that are normally installed in the factory. This script installs additional required packages that are not part of the default Red Hat Linux installation.

The script takes several minutes to run; it lists each package that it installs and displays a progress bar as it installs each package.

g. Remove the *Red Hat Linux* CD-ROM from the workstation CD-ROM drive.

h. Type the following command to delete the `sgi230_l3_reinstall` script:

```
# rm sgi230_l3_reinstall
```

i. Insert the *Internal Support Tools* CD-ROM into the workstation CD-ROM drive.

j. Type the following command to change to the **/mnt/cdrom/linux/rpms** directory:

```
# cd /mnt/cdrom/linux/rpms
```

5. Type the following command to install the software from the CD-ROM:

```
# ./l3_install
```

Note: The `l3_install` script determines which version of the Linux operating system is installed on the system (Red Hat Linux OS version 6.2, 7.0, 7.1, or 7.2) and installs the correct package for that operating system.

6. Remove the *Internal Support Tools* CD-ROM from the workstation.

7. Restart the workstation; then, connect the workstation to the SGI Origin 3000 series server as directed in Section 1.6, “SGI Origin 3000 Series Server-to-L3 Connection”.

1.6 SGI Origin 3000 Series Server-to-L3 Connection

The following subsections provide procedures for establishing connections between the L3 controller solution and L1 and L2 controllers.

Note: The figures in the following subsections show connections to a Silicon Graphics 230 visual workstation-based L3 controller solution. The connections are identical for Customer Service laptop-based L3 controller solutions; use the same cables to connect to the appropriate ports on the laptop (serial port, USB port, or Ethernet port).

1.6.1 SGI Origin 3200-to-L3 Connection

Complete the procedure in Section 1.6.1.1 to connect the L3 controller solution to the L1 controller via a serial connection. Complete the procedure in Section 1.6.1.2 to connect the L3 controller solution to the L2 emulator via a USB connection.

1.6.1.1 L3-to-L1 Controller Serial Connection

1. Ensure network settings are set to the following values:
   - vt100
   - Baud 38400
   - No parity
   - 8 data bits
   - 1 stop bit
   - Hardware flow control on (rts/cts)
2. Power down the workstation.
3. Connect a null modem serial cable from the L3 serial connector to the console port at the rear of the C brick (refer to Figure 1-6).
4. Power up the workstation.

Important: Ensure that you have write access to the ttyS0 device before you complete Step 5.

5. Type **`cu -l ttyS0 -s 38400`** at the Linux prompt. The L1 responds with "Connected."

```
$ cu -l ttyS0 -s 38400
Connected.
```

6. Press the *Enter* key to display the L1 prompt.

```
001c04>
```

1.6.1.2 L3-to-L2 Emulator USB Connection

1. Connect a USB cable from the workstation to the L1 port (USB port) on the rear of the C brick (refer to Figure 1-6).
2. Ensure that you are in the `/stand/sysco/bin` directory.
3. Type **`./l2`** at the Linux prompt to establish a connection.

```
$ ./l2
```

Note: Ensure that either the L1 network auto-detect is enabled or the C-brick network interface ports are set to 422 protocol.

Note: Figure 1-6 shows serial and USB connections to a Silicon Graphics 230 visual workstation-based L3 controller solution. The connections are identical for Customer Service laptop-based L3 controller solutions; use the same cables to connect to the serial or USB port on the laptop.

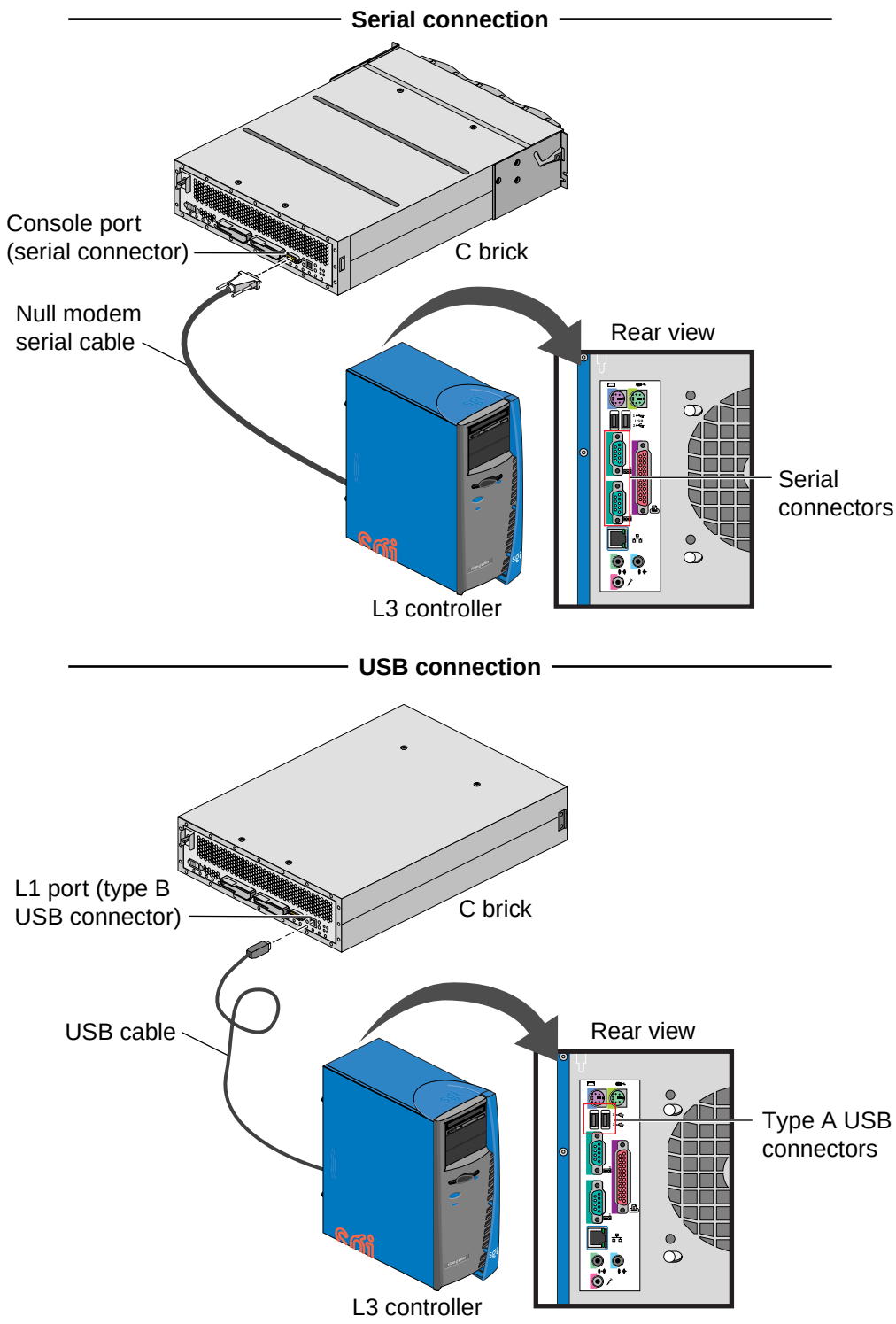


Figure 1-6 SGI Origin 3200-to-L3 Physical Connections (Serial and USB)

1.6.2 L3-to-SGI Origin 3400/3800 Systems

Complete the procedure in Section 1.6.2.1 to connect the L3 controller solution to the L2 controller via a serial connection. Complete the procedure in Section 1.6.2.2 to connect the L3 controller solution to the L2 controller via an Ethernet connection.

1.6.2.1 L3-to-L2 Controller Serial Connection

1. Ensure network settings are set to the following values:
   - vt100
   - Baud 38400
   - No parity
   - 8 data bits
   - 1 stop bit
   - Hardware flow control on (rts/cts)
2. Power down the workstation.
3. Connect a null modem serial cable from the L3 serial connector to the console port at the rear of the C brick. Refer to Figure 1-7.
4. Power up the workstation.

Important: Ensure that you have write access to the ttyS0 device before you complete Step 5.

5. Type **`cu -l ttyS0 -s 38400`** at the Linux prompt. The L1 responds with "Connected."

```
$ cu -l ttyS0 -s 38400
Connected.
```

6. Press the *Enter* key to display the L2 prompt.

```
001-L2>
```

7. Type **`cfg`** at the L2 prompt and press the *Enter* key to display a list of all attached bricks.

```
001-L2> cfg
L2 01.1.1.77: - 001
L1 10.1.1.77:0:0 - 001r19
L1 10.1.1.77:1:0 - 001c07
L1 10.1.1.77:1:1 - 001i21
L1 10.1.1.77:2:0 - 001c10
```

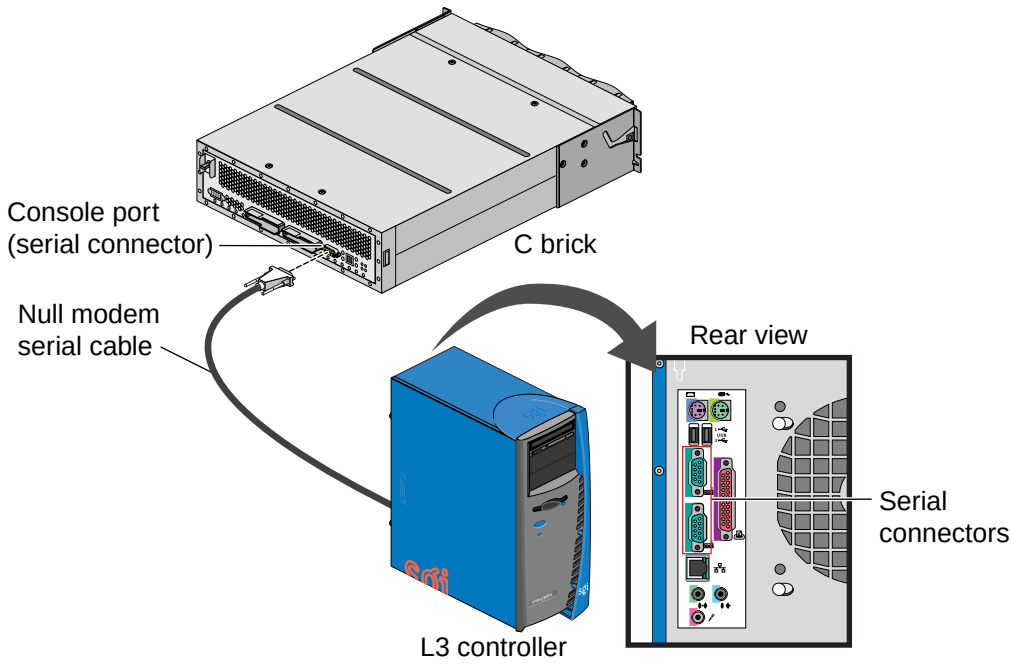


Figure 1-7 SGI Origin 3400 / 3800-to-L3 Physical Connections (Serial)

Note: Figure 1-7 shows a serial connection to a Silicon Graphics 230 visual workstation-based L3 controller solution. The connection is identical for Customer Service laptop-based L3 controller solutions; use the same cable to connect to the serial port on the laptop.

1.6.2.2 L3-to-L2 Controller Ethernet Connection

1. Connect the L3 controller solution to the L2 controller:
   - **If your system does not use an Ethernet hub** (refer to Figure 1-8)**:**
     Connect the workstation Ethernet port to the ENET connector at the rear of the L2 controller via a cross-over Ethernet cable.
   - **If your system uses an Ethernet hub** (refer to Figure 1-8)**:**
     Connect the workstation Ethernet port to an Ethernet connector at the rear of the Ethernet hub via a standard Ethernet cable.
2. Reboot or restart the L3 network.
   a. Type **`/etc/rc.d/init.d/network stop`** at the Linux prompt.
   b. Type **`/etc/rc.d/init.d/network start`** at the Linux prompt.
3. Ensure that you are in the `/stand/sysco/bin` directory.
4. Type **`./l2term`** at the Linux prompt to establish a connection.

```
$ ./l2term
```

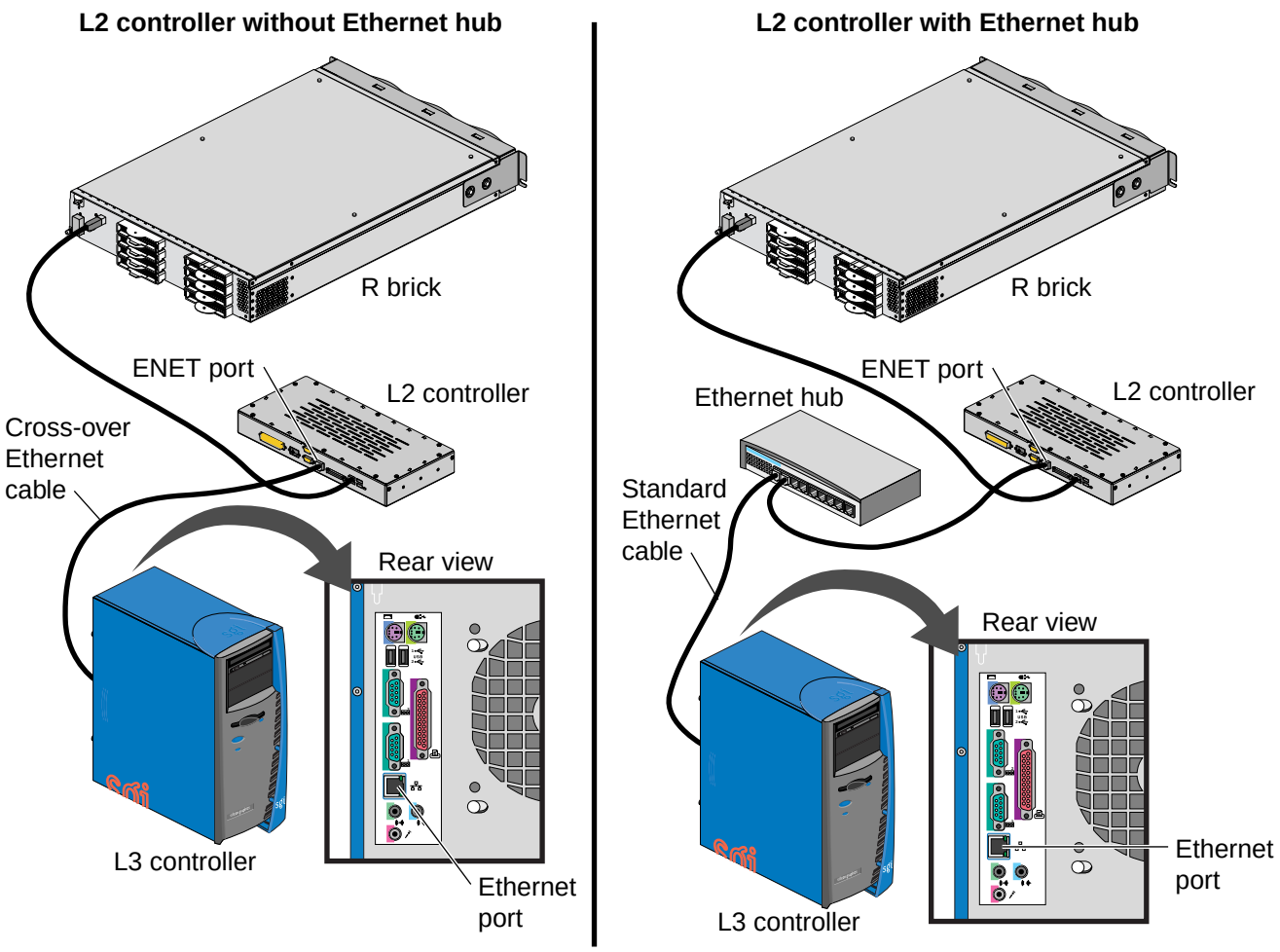


Figure 1-8 SGI Origin 3400 / 3800-to-L3 Physical Connections (Ethernet)

Note: Figure 1-8 shows Ethernet connections to a Silicon Graphics 230 visual workstation-based L3 controller solution. The connections are identical for Customer Service laptop-based L3 controller solutions; use the same cables to connect to the Ethernet port on the laptop.

Chapter 2

Secure Serial Number (SSN) Procedures

Note: This chapter does not include R-brick router port disable / enable procedures. Refer to Chapter 3, "Router Port Disable / Enable Procedures" for this information.

2.1 Secure Serial Number (SSN) Overview

The SSN feature prevents the unauthorized modification of R bricks that could result in illegal SGI 3000 series system installations, upgrades, merges, exports, and maintenance procedures.

A system SSN is assigned to each SGI 3000 series system when it is manufactured; the SSN is stored in the system's L2 controller NVRAM and in each brick's L1 controller NVRAM.

When power is applied to the system, the SSN that is stored in each brick is compared to the SSN that is stored in the hardware L2 controller. If a C, G, I, P, or X-brick SSN does not match the hardware L2 controller SSN, the brick automatically acquires the correct system SSN from the hardware L2 controller and powers on; however, if an R-brick SSN does not match, that R brick must be reset before it can acquire the correct system SSN and power on.

Note: In SGI 3200 systems without an R brick, the C brick acquires its SSN from the system's L2 emulator. SSNs must be set manually in systems without a hardware L2 controller.

This chapter contains procedures that allow authorized SGI personnel to reset SSNs, verify SSNs, and temporarily disable / enable the SSN feature during authorized system installations, upgrades, merges, exports, and maintenance procedures.

For additional information and resources, refer to Section 2.11, "Additional SSN Feature Information".

2.2 SSN Actions

SGI 3000 series system error, merge, maintenance, and upgrade situations require you to either reset an SGI 3000 R-brick SSN, assign an SSN to a reset R brick, or disable / enable the R-brick SSN feature.

Locate your specific SSN activity in Table 2-1; then, complete the specified action.

Table 2-1 SSN Actions

Activity:	Action:
Recover from a Generated Brick Disabled error.	Complete Section 2.5, "Reset an R-brick SSN (snap_erase)" on page 2-5.
Recover from a Generated System Serial Number Invalid Format error.	
Recover from a Generated System Serial Number Mismatch error.	
Permanently install an R brick from one system into a second system.	
Replace an R-brick power board (NVRAM erased).	
Suspect that NVRAM is erased or corrupt.	
Permanently install a reset R brick (an R brick with an SSN that has been set to L0000000) into an SGI 3000 series system.	Complete Section 2.6, "Assign an SSN to a Reset R Brick" on page 2-8.
Temporarily move an R brick from one system to a second SGI 3000 series system without resetting the brick SSN during the move.	Complete Section 2.7, "Disable the R-brick Security Feature (snap_security)" on page 2-9.
Permanently return a security-disabled R brick from its temporary location to its original SGI 3000 series system.	Complete Section 2.8, "Enable the R-brick Security Feature (snap_security)" on page 2-13.
Assign, set, or change an SSN in an SGI 3200 system that has 8 processors (or fewer) and no L2 controller.	Complete Section 2.9, "Assign an SSN to a System without a Hardware L2 Controller" on page 2-14.

Note: Refer to Section 2.10, "SSN-related Error Messages" on page 2-15 for information about common SSN-related error messages.

2.3 SSN Commands

Table 2-2 lists an overview of the SSN-related commands that are used in this chapter.

Table 2-2 SSN-related Commands and Actions

Command	Action
date	Displays the current L1 date and time. Example: *** l1 date**
date ***<string>***	Sets the L1 date with the UNIX date string. Example: *** l1 date 121310052000.00** Refer to Appendix A, Section A.1, "Date Input String Format" for a detailed explanation of each variable in the date input string.
date tz	Displays the current L1 time zone. Example: *** l1 date tz**
date tz ***<string>***	Sets the L1 time zone with the UNIX time zone string. Example: *** l1 date tz cst6cdt** Refer to Appendix A, Section A.2, "Time Zone Input String Format" for a detailed explanation of each variable in the time zone input string.
serial	Displays the brick number, brick serial number, system serial number, L1 date, L1 time, and L1 time zone. Example: *** l1 serial**
serial set ***<XXXXX XXXXX XXXX XXXX>***	Resets the SSN to L00000000 in the R brick. Requires a temporary authenticator in the format *XXXX XXXXX XXXX XXXX*. Example: **r 001 s 03 serial set 2JLTY JH836 6TSY 5JQY**
serial security off ***<XXXXX XXXXX XXXX XXXX>***	Disables R-brick security in the R brick. Requires a temporary authenticator in the format *XXXX XXXXX XXXX XXXX*. Example: **r 001 s 03 serial security off 2JLTY JH836 6TSY 5JQY**
serial security on	Enables R-brick security in the R brick. Example: **r 001 s 03 serial security on**

2.4 System Configurations

To complete the SSN procedures in this chapter, your SGI 3000 series system must be configured via one of the methods listed below.

Possible System Configurations for Systems with a Hardware L2 Controller:

- Dumb terminal with RS-232 support; the device connects directly to any system L2 controller via a standard null-modem serial cable. IRIX operating system (OS) software release 6.5.12 (or newer) must be installed. Internet access is recommended.

- Laptop computer with Linux and L3 controller software installed; the laptop connects to any open port on the system's private Ethernet network via a standard Ethernet cable. IRIX OS software release 6.5.12 (or newer) must be installed. Internet access is recommended.

  Note: You must restart the laptop computer after you connect it to the system so that the laptop acquires the IP addresses from the DHCP server on the private Ethernet network. If the laptop does not acquire the IP addresses via DHCP, you must obtain the available addresses and manually enter them.

- Laptop computer with Linux and L3 controller software installed; the laptop connects directly to an L2 controller via an Ethernet crossover cable. IRIX OS software release 6.5.12 (or newer) must be installed. Internet access is recommended.

  Note: Connect the laptop to the same L2 controller that is attached to the R brick that you will modify. You must restart the laptop computer so that it acquires the IP addresses from the DHCP server on the private Ethernet network. If the laptop does not acquire the IP addresses via DHCP, you must obtain the available addresses and manually enter them.

- Laptop computer with terminal emulation in Windows 95, Windows 98, Windows NT, or Windows 2000 installed or Linux with shell tool installed; the device connects directly to any system L2 controller via a standard null-modem serial cable. IRIX OS software release 6.5.12 (or newer) must be installed. Internet access is recommended.

- On-site computer with Linux and L3 controller software installed; the terminal connects to the system's private Ethernet network via a standard Ethernet cable. IRIX OS software release 6.5.12 (or newer) installed. Internet access recommended.

Possible System Configurations for Systems without a Hardware L2 Controller:

- On-site computer or laptop computer with Linux, L2 emulator, and L3 controller software installed; the device USB port connects to the R-brick USB port via a standard USB cable in systems with more than two C bricks. IRIX OS software release 6.5.12 (or newer) must be installed. Internet access is recommended.

- On-site computer or laptop computer with Linux, L2 emulator, and L3 controller software installed; the device USB port connects to the C-brick USB port via a standard USB cable in systems with two or fewer C bricks. IRIX OS software release 6.5.12 (or newer) must be installed.

- Dumb terminal with RS-232 support; the device connects directly to the bottom C brick via a standard null-modem serial cable. IRIX OS software release 6.5.12 (or newer) must be installed.

- Laptop computer with terminal emulation in Windows 95, Windows 98, Windows NT, or Windows 2000 installed or Linux with shell tool installed; the device connects directly to the bottom C brick via a standard null-modem serial cable. IRIX OS software release 6.5.12 (or newer) must be installed. Internet access is recommended.

2.5 Reset an R-brick SSN (snap_erase)

Complete the following procedure to reset the R-brick SSN:

1. Ensure that the R brick is correctly installed and cabled.
2. Power up the system.

   Note: The R brick does not power up until its SSN is identical to the SSN that is assigned to the L2 controller. The system displays an error message that explains why an R brick failed to power up. Refer to Section 2.2, "SSN Actions" for additional information.

3. Start the L3 controller solution (if necessary).
4. Type **`/stand/sysco/bin/l2find`** at the terminal prompt to locate all of the L2 controllers that are connected to the system.
5. Type **`/stand/sysco/bin/l2term --l2 <ip>`** where <ip> is the IP address of one of the L2 controllers that is connected to the system.
6. Type **`cfg`** at the L2 prompt to display the current system configuration; if the new brick is installed correctly, its information displays.

```
001-L2>cfg
L2 10.25.1.20: - 001
L1 10.25.1.20:3:0 - 001r03
L1 10.25.1.20:4:0 - 001r19
L1 10.25.1.20:6:0 - 001c17
L1 10.25.1.20:6:1 - 001i31
L1 10.25.1.20:7:0 - 001c10
L1 10.25.1.20:8:0 - 001c13
L1 10.25.1.20:8:1 - 001i31
L1 10.25.1.20:9:0 - 001c07
L1 10.25.1.20:9:1 - 001i21
```

7. Verify and / or change the system time zone:

   Note: The system time zone must be set correctly before you reset the R-brick SSN. Authentication may not occur if the time zone is not correct.

   a. Type **`* l1 date tz`** at the L2 prompt to display the current system time zone for each brick.

```
001-L2>* l1 date tz
001r19:12/13/2000  10:04:30 CST
001r03:00/00/0000  00:00:00
001i21:12/13/2000  10:04:30 CST
001i31:12/13/2000  10:04:30 CST
001c17:12/13/2000  10:04:30 CST
001c10:12/13/2000  10:04:30 CST
001c13:12/13/2000  10:04:30 CST
001c07:12/13/2000  10:04:30 CST
```

b. Type **`* l1 date tz <string>`** to change the system time zone, if required.

Note: Refer to Appendix A, Section A.2, “Time Zone Input String Format” for a detailed explanation of each variable in the time zone input string. Changing the time zone does not affect the current system date and time.

```
001-L2>* l1 date tz cst6cdt
001r19:12/13/2000  10:04:30 CST
001r03:00/00/0000  00:00:00 CST
001i21:12/13/2000  10:04:30 CST
001i31:12/13/2000  10:04:30 CST
001c17:12/13/2000  10:04:30 CST
001c10:12/13/2000  10:04:30 CST
001c13:12/13/2000  10:04:30 CST
001c07:12/13/2000  10:04:30 CST
```

8. Verify and / or change the system time:

Note: The system date and time must be set correctly before you reset the R-brick SSN. Authentication may not occur if the date and time are not correct.

a. Type **`* l1 date`** at the L2 prompt to display the system date and time for each brick.

```
001-L2>* l1 date
001r19:12/13/2000  10:04:30 CST
001r03:00/00/0000  00:00:00 CST
001i21:12/13/2000  10:04:30 CST
001i31:12/13/2000  10:04:30 CST
001c17:12/13/2000  10:04:30 CST
001c10:12/13/2000  10:04:30 CST
001c13:12/13/2000  10:04:30 CST
001c07:12/13/2000  10:04:30 CST
```

b. Type **`* l1 date <string>`** to change the system date and time, if required.

Note: Refer to Appendix A, Section A.1, “Date Input String Format” for a detailed explanation of each variable in the date input string.

```
001-L2>*l1 date 121310052000.00
001r19:12/13/2000  10:05:00 CST
001r03:12/13/2000  10:05:00 CST
001i21:12/13/2000  10:05:00 CST
001i31:12/13/2000  10:05:00 CST
001c17:12/13/2000  10:05:00 CST
001c10:12/13/2000  10:05:00 CST
001c13:12/13/2000  10:05:00 CST
001c07:12/13/2000  10:05:00 CST
```

9. Display the current brick serial number (BSN) and SSN that are assigned to each brick:

a. Type **`* l1 serial`** at the L2 prompt. All BSNs display, along with their SSNs.

```
001-L2>* l1 serial
001r19:BSN: LMJ855 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001r03:BSN: LBN361 SSN: L1001001 Time: 12/13/2000  11:40:59 CST
001i31:BSN: KBN424 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001i21:BSN: LMZ491 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001c17:BSN: LNC393 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001c07:BSN: LMK370 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001c10:BSN: LNC202 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001c13:BSN: LNA101 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
```

b. Record the BSN of the R brick that you moved.

Note: The BSN is a six-character value expressed in the following format: *xxx###* (Example: `LBN361`).

10. Obtain a temporary authenticator to reset the current SSN on the desired R brick to L0000000:

a. Start your Internet browser.

Note: You may contact the SGI Help Desk for a temporary authenticator if Internet access is unavailable. You will be asked for your employee number and the BSN.

b. Connect to the Web site at the following URL:
http://www-crystal.corp.sgi.com/Secure/SN1ssn

c. Type your employee number and WebSafe password into the appropriate fields; then, click the *Login* button or press **<Enter>** to connect to the `SN1 Authenticator Generation Page`.

d. Click *snap_erase* to go to the `SN1 Verification: Serial Number Erase Authenticator` page.

e. Type the BSN that you recorded in Step 9; then, click the "Submit" button or press **<Enter>**. The generator creates an 18-character temporary authenticator for the brick serial number you entered and displays it in the following format: *XXXXX XXXXX XXXX XXXX* (Example: `2JLTY JH836 6TSY 5JQY`).

Note: A temporary authenticator expires 48 hours after you obtain it. A unique authenticator is required for each moved brick; a single authenticator may be used only with the brick for which it was obtained.

f. Record the temporary authenticator along with the brick serial number that you used to obtain the authenticator.

Note: To obtain authenticators for additional bricks, click your browser's *Back* button. Click the *Reset* button on the `SN1 Verification: Serial Number Erase Authenticator` page; then, repeat Substeps e and f.

11. Type **r *x* s *y* serial set <*XXXXX XXXXX XXXX XXXX*>** at the L2 prompt to reset the SSN at rack *x* and slot *y* (the desired brick) to L0000000.

Note: The R brick's L1 system controller automatically acquires the SSN and writes it to its NVRAM when its SSN is reset. The system displays an on-screen message to notify you that the brick was assigned a new SSN.

```
001-L2>r 001 s 03 serial set 2JLTY JH836 6TSY 5JQY
001r03: system serial number has been reassigned to L0000000
001-L2>001r03 INFO: System serial number reassigned to L1000000 from
attached L2.
001-L2>
```

12. Type **`* l1 serial`** at the L2 prompt. Verify that all bricks now use the SSN assigned to the system.

```
001-L2>* l1 serial
001r19:BSN: LMJ855 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001r03:BSN: LBN361 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001i31:BSN: KBN424 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001i21:BSN: LMZ491 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001c17:BSN: LNC393 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001c07:BSN: LMK370 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001c10:BSN: LNC202 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001c13:BSN: LNA101 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
```

13. Power up the R brick.
14. Type **`CTRL+D`** to revert to the console prompt.

2.6 Assign an SSN to a Reset R Brick

Complete the following procedure to assign a new SSN to a reset R brick (an R brick with an SSN that has been set to L0000000):

1. Ensure that the R brick is correctly installed and cabled.
2. Power up the system.

   Note: The system displays an error message that explains why an R brick failed to power up. Refer to Section 2.2, “SSN Actions” for additional information.

3. Start the L3 controller solution (if necessary).
4. Type **`/stand/sysco/bin/l2find`** at the terminal prompt to locate all of the L2 controllers that are connected to the system.
5. Type **`/stand/sysco/bin/l2term --l2 <ip>`** where <ip> is the IP address of one of the L2 controllers that is connected to the system.
6. Type **`cfg`** at the L2 prompt to display the current system configuration; if the new brick is cabled correctly, its information displays.

```
001-L2>cfg
L2 10.25.1.20: - 001
L1 10.25.1.20:3:0 - 001r03
L1 10.25.1.20:4:0 - 001r19
L1 10.25.1.20:6:0 - 001c17
L1 10.25.1.20:6:1 - 001i31
L1 10.25.1.20:7:0 - 001c10
L1 10.25.1.20:8:0 - 001c13
L1 10.25.1.20:8:1 - 001i31
L1 10.25.1.20:9:0 - 001c07
L1 10.25.1.20:9:1 - 001i21
```

7. The R-brick L1 system controller automatically acquires the SSN and writes it to NVRAM. The system displays an on-screen message to notify you that the R brick was assigned a new SSN.

   Important: The L2 controller automatically assigns a new SSN to the reset R brick when power is applied to the system; you should verify that the R brick was assigned the correct SSN.

```
001-L2>001r03 INFO: System serial number reassigned to L1000001 from
attached L2.
001-L2>
```

8. Type **`* l1 serial`** at the L2 prompt. Verify that all installed bricks use the SSN that is assigned to the system.

```
001-L2>* l1 serial
001r19:BSN: LMJ855 SSN: L1000001 Time: 12/13/2000  11:40:59 CST
001r03:BSN: LBN361 SSN: L1000001 Time: 12/13/2000  11:40:59 CST
001i31:BSN: KBN424 SSN: L1000001 Time: 12/13/2000  11:40:59 CST
001i21:BSN: LMZ491 SSN: L1000001 Time: 12/13/2000  11:40:59 CST
001c17:BSN: LNC393 SSN: L1000001 Time: 12/13/2000  11:40:59 CST
001c07:BSN: LMK370 SSN: L1000001 Time: 12/13/2000  11:40:59 CST
001c10:BSN: LNC202 SSN: L1000001 Time: 12/13/2000  11:40:59 CST
```

9. Power up the R brick.

10. Type **`CTRL+D`** to revert to the console prompt.

2.7 Disable the R-brick Security Feature (snap_security)

Important: Disabling the R-brick security feature allows an R brick to acquire an SSN and power up under all conditions. This is not a normal field condition; security should be disabled in field systems only in emergency situations when an R brick from a system is temporarily installed in a second system. To permanently move an R brick into a system, complete the procedure in Section 2.5, “Reset an R-brick SSN (snap_erase)” instead of disabling the security feature.

Complete the following procedure to disable the R-brick security feature:

1. Ensure that the R brick is correctly installed and cabled.

2. Power up the system.

   Note: The moved R brick does not fully power up unless you have successfully disabled its R-brick security feature. The system displays a error message that explains why an R brick failed to power up. Refer to Section 2.2, “SSN Actions” for additional information.

3. Start the L3 controller solution (if necessary).

4. Type **`/stand/sysco/bin/l2find`** at the terminal prompt to locate all of the L2 controllers that are connected to the system.

5. Type **`/stand/sysco/bin/l2term --l2 <ip>`** where <ip> is the IP address of one of the L2 controllers that is connected to the system.

6. Type **cfg** at the L2 prompt to display the current system configuration; if the R brick is powered on and cabled correctly, its information displays.

```
001-L2>cfg
L2 10.25.1.20: - 001
L1 10.25.1.20:3:0 - 001r03
L1 10.25.1.20:4:0 - 001r19
L1 10.25.1.20:6:0 - 001c17
L1 10.25.1.20:6:1 - 001i31
L1 10.25.1.20:7:0 - 001c10
L1 10.25.1.20:8:0 - 001c13
L1 10.25.1.20:8:1 - 001i31
L1 10.25.1.20:9:0 - 001c07
L1 10.25.1.20:9:1 - 001i21
```

7. Verify and / or change the system time zone:

   Note: The system time zone must be set correctly before you reset the R-brick SSN. Authentication may not occur if the time zone is not correct.

   a. Type *** l1 date tz** at the L2 prompt to display the current system time zone for each brick.

```
001-L2>* l1 date tz
001r19:12/13/2000  10:04:30 CST
001r03:00/00/0000  00:00:00
001i21:12/13/2000  10:04:30 CST
001i31:12/13/2000  10:04:30 CST
001c17:12/13/2000  10:04:30 CST
001c10:12/13/2000  10:04:30 CST
001c13:12/13/2000  10:04:30 CST
001c07:12/13/2000  10:04:30 CST
```

   b. Type *** l1 date tz *<string>*** to change the system time zone, if required.

      Note: Refer to Appendix A, Section A.2, “Time Zone Input String Format” for a detailed explanation of each variable in the time zone input string. Changing the time zone does not affect the current system date and time.

```
001-L2>* l1 date tz cst6cdt
001r19:12/13/2000  10:04:30 CST
001r03:00/00/0000  00:00:00 CST
001i21:12/13/2000  10:04:30 CST
001i31:12/13/2000  10:04:30 CST
001c17:12/13/2000  10:04:30 CST
001c10:12/13/2000  10:04:30 CST
001c13:12/13/2000  10:04:30 CST
001c07:12/13/2000  10:04:30 CST
```

8. Verify and / or change the system time:

   Note: The system date and time must be set correctly before you reset the R-brick SSN. Authentication may not occur if the date and time are not correct.

   a. Type **`* l1 date`** at the L2 prompt to display the system date and time for each brick.

```
001-L2>* l1 date
001r19:12/13/2000  10:04:30 CST
001r03:00/00/0000  00:00:00 CST
001i21:12/13/2000  10:04:30 CST
001i31:12/13/2000  10:04:30 CST
001c17:12/13/2000  10:04:30 CST
001c10:12/13/2000  10:04:30 CST
001c13:12/13/2000  10:04:30 CST
001c07:12/13/2000  10:04:30 CST
```

   b. Type **`* l1 date <string>`** to change the system date and time, if required.

   Note: Refer to Appendix A, Section A.1, "Date Input String Format" for detailed explanation of each variable in the date input string.

```
001-L2>*l1 date 121310052000.00
001r19:12/13/2000  10:05:00 CST
001r03:12/13/2000  10:05:00 CST
001i21:12/13/2000  10:05:00 CST
001i31:12/13/2000  10:05:00 CST
001c17:12/13/2000  10:05:00 CST
001c10:12/13/2000  10:05:00 CST
001c13:12/13/2000  10:05:00 CST
001c07:12/13/2000  10:05:00 CST
```

9. Display the current brick serial number (BSN) and SSN that are assigned to each brick:

   a. Type **`* l1 serial`** at the L2 prompt. All BSNs display, along with their SSNs.

```
001-L2>* l1 serial
001r19:BSN: LMJ855 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001r03:BSN: LBN361 SSN: L1001001 Time: 12/13/2000  11:40:59 CST
001i31:BSN: KBN424 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001i21:BSN: LMZ491 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001c17:BSN: LNC393 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001c07:BSN: LMK370 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001c10:BSN: LNC202 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001c13:BSN: LNA101 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
```

   b. Record the BSN for the moved brick that does not use the assigned SSN.

   Note: The BSN is a six-character value expressed in the following format: *xxx###* (Example: `LBN361`).

10. Obtain a temporary authenticator to disable the security feature in the moved brick:

    Note: You may contact the SGI Help Desk for a temporary authenticator if Internet access is unavailable. You will be asked for your employee number and the BSN.

    a. Start your Internet browser.

b. Connect to the Web site at the following URL:
http://www-crystal.corp.sgi.com/Secure/SN1ssn

c. Type your employee number and WebSafe password into the appropriate fields; then, click the *Login* button or press **<Enter>** to connect to the `SN1 Authenticator Generation Page`.

d. Click *snap_security* to go to the `SN1 Verification: Security Disable Authenticator` page.

e. Type the BSN that you recorded in Step 9; then, click the *Submit* button or press **<Enter>**. The generator creates an 18-character temporary authenticator for the BSN that you entered and displays it in the following format:
XXXXX XXXXX XXXX XXXX (Example: `2JLTY JH836 6TSY 5JQY`).

Note: A temporary authenticator expires 48 hours after you obtain it. A unique authenticator is required for each moved brick; a single authenticator may be used only with the brick for which it was obtained.

f. Record the temporary authenticator along with the BSN that you used to obtain the authenticator.

Note: To obtain authenticators for additional bricks, click your browser's *Back* button. Click the *Reset* button on the `SN1 Verification: Security Disable Authenticator` page; then, repeat substeps e and f.

11. Type **r *x* s *y* serial security off <*XXXXX XXXXX XXXX XXXX*>** at the L2 prompt to disable security in the brick at rack *x* and slot *y*.

Note: The system displays an on-screen message to notify you that brick security is off.

```
001-L2>r 001 s 03 serial security off 2JLTY JH836 6TSY 5JQY
001r03: system serial number security has been disabled
001-L2>001r03 INFO: System serial number reassigned to L1000000 from
attached L2.
001-L2>
```

12. Type *** l1 serial** at the L2 prompt. Verify that the moved brick now has an SSN that matches the system SSN.

```
01-L2>* l1 serial
001r19:BSN: LMJ855 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001r03:BSN: LBN361 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
Security: OFF
001i31:BSN: KBN424 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001i21:BSN: LMZ491 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001c17:BSN: LNC393 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001c07:BSN: LMK370 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001c10:BSN: LNC202 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001c13:BSN: LNA101 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
```

13. Power up the R brick.

14. Type **CTRL+D** to revert to the console prompt.

Important: Ensure that you activate the R-brick security feature when you move a disabled R brick from its temporary location to its original location.

2.8 Enable the R-brick Security Feature (snap_security)

Complete the following procedure to enable the R-brick security feature:

Important: Ensure that you enable the R-brick security feature when you reinstall a disabled R brick into its permanent location. This procedure should not be used if you activated security while the R brick was in its temporary location. Instead, complete the procedure in Section 2.5, “Reset an R-brick SSN (snap_erase)” to reset the R-brick SSN.

Complete the following procedure to enable the R-brick security feature:

1. Ensure that the R brick is correctly installed and cabled.
2. Power up the system.

   Note: The system displays an error message that explains why an R brick failed to power up. Refer to Section 2.2, “SSN Actions” for additional information.
3. Start the L3 controller solution (if necessary).
4. Type **`/stand/sysco/bin/l2find`** at the terminal prompt to locate all L2 controllers that are connected to the system.
5. Type **`/stand/sysco/bin/l2term --l2 <ip>`** where <ip> is the IP address of one of the L2 controllers that is connected to the system.
6. Type **`cfg`** at the L2 prompt to display the current system configuration; if the R brick is powered on and cabled correctly, its information displays.

```
001-L2>cfg
L2 10.25.1.20: - 001
L1 10.25.1.20:3:0 - 001r03
L1 10.25.1.20:4:0 - 001r19
L1 10.25.1.20:6:0 - 001c17
L1 10.25.1.20:6:1 - 001i31
L1 10.25.1.20:7:0 - 001c10
L1 10.25.1.20:8:0 - 001c13
L1 10.25.1.20:8:1 - 001i31
L1 10.25.1.20:9:0 - 001c07
L1 10.25.1.20:9:1 - 001i21
```

7. Type **`r x s y serial security on`** at the L2 prompt to enable security in the brick at rack *x* and slot *y*.

   Note: The system displays an on-screen message to notify you that brick security is on.

```
001-L2>r 001 s 03 serial security on
001r03: system serial number security has been enabled
001-L2>001r03 INFO: System serial number reassigned to L1001001 from
attached L2.
001-L2>
```

8. Type **`* l1 serial`** at the L2 prompt. Verify that all bricks now use the SSN that was assigned to the system.

```
01-L2>* l1 serial
001r19:BSN: LMJ855 SSN: L1001001 Time: 12/14/2000  12:40:59 CST
001r03:BSN: LBN361 SSN: L1001001 Time: 12/14/2000  12:40:59 CST
```

```
001i31:BSN: KBN424 SSN: L1001001 Time: 12/14/2000  12:40:59 CST
001i21:BSN: LMZ491 SSN: L1001001 Time: 12/14/2000  12:40:59 CST
001c17:BSN: LNC393 SSN: L1001001 Time: 12/14/2000  12:40:59 CST
001c07:BSN: LMK370 SSN: L1001001 Time: 12/14/2000  12:40:59 CST
001c10:BSN: LNC202 SSN: L1001001 Time: 12/14/2000  12:40:59 CST
001c13:BSN: LNA101 SSN: L1001001 Time: 12/14/2000  12:40:59 CST
```

9. Power up the R brick.
10. Type **CTRL+D** to revert to the console prompt.

2.9 Assign an SSN to a System without a Hardware L2 Controller

Complete the procedure in this section to assign an SSN to a system without an L2 controller:

Important: A system with more than 8 processors requires an L2 system controller. If your system contains more than 8 processors and / or has a system controller, you cannot complete the procedure in this section.

1. Ensure that all of the bricks are correctly installed and cabled.
2. Power up the system.

   Note: The system displays an error message that explains specifically why a brick failed to power up. Refer to Section 2.2, “SSN Actions” for additional information.

3. Type **CTRL+D** to switch to the console prompt.
4. Type *** serial** at the console prompt; the current BSN and SSN assigned to each brick display.

```
001c03-L1>* serial
001c19:BSN: LMJ855 SSN: L1234567 Time: 12/13/2000  11:40:59 CST
001c03:BSN: LBN361 SSN: L7654321 Time: 12/13/2000  11:40:59 CST
001i31:BSN: KBN424 SSN: L1234567 Time: 12/13/2000  11:40:59 CST
```

5. Type *** serial set L<*SSN*>** where <SSN> is the numeric value you wish to assign to all system bricks. You may set this <SSN> value to any 7-digit numeric value.

   Note: Each brick’s L1 system controller automatically acquires the SSN and writes it to its NVRAM. The system displays an on-screen message to notify you that the brick was assigned a new SSN.

```
001c03-L1>* serial set L1234567
001c03-L1>001c19 INFO: System serial number reassigned to L1234567.
001c03-L1>001c03 INFO: System serial number reassigned to L1234567.
001c03-L1>001i31 INFO: System serial number reassigned to L1234567.
001c03-L1>
```

6. Type **`* serial`** at the L2 prompt. Verify that all bricks now use the SSN that is assigned to the system.

```
001c03-L1>* serial
001c19:BSN: LMJ855 SSN: L1234567 Time: 12/13/2000  11:41:59 CST
001c03:BSN: LBN361 SSN: L1234567 Time: 12/13/2000  11:41:59 CST
001i31:BSN: KBN424 SSN: L1234567 Time: 12/13/2000  11:41:59 CST
```

7. Power up all of the remaining bricks.

2.10 SSN-related Error Messages

This section lists SGI 3000 series SSN-related error messages. Refer to Section 2.2, "SSN Actions" to determine how to correct each error condition.

- **Brick Serial Number Mismatch Error**

  The brick serial number (BSN) stored in R-brick EEPROM does not match the copy of the BSN stored in R-brick NVRAM.

  Important: This is an extremely rare, but serious error condition; contact SGI Global Product Support if the system generates this error message.

- **System Serial Number Invalid Format Error**

  The SSN that is stored in the R-brick NVRAM is not in the format *LXXXXXXX*.

- **Brick Disabled Error**

  The SSN that is stored in the R-brick NVRAM is L9999999. The brick will not power up under any conditions.

- **No System Serial Number Assigned Error**

  The SSN that is stored in the R-brick NVRAM and the SSN that is stored in the L2 controller are set to L0000000.

- **System Serial Number Mismatch Error**

  The SSN stored in R-brick NVRAM does not match the SSN that is stored in the L2 controller.

2.11 Additional SSN Feature Information

Refer to the following SGI 3000 series documentation for additional information about the SSN feature:

- *Hardware Components Quick-Reference* (P / N 108-0242-00x)
- *Owner's Guide* (P / N 007-4240-00x)
- *System Architecture* (P / N 108-0240-00x)
- *System Installation* (P / N 108-0262-00x)
- *System Upgrades* (P / N 108-0307-00x)

Chapter 3

Router Port Disable/Enable Procedures

Note: This chapter does not include secure serial number (SSN) procedures. Refer to Chapter 2, “Secure Serial Number (SSN) Procedures” for this information.

3.1 Router Port Disable/Enable Overview

The router port disable / enable feature prevents the unauthorized modification of R bricks that could result in illegal SGI 3000 series system installations, upgrades, merges, exports, and maintenance procedures.

All SGI 3000 series R bricks have a total of eight router ports; however, the number of ports that are enabled in each R brick varies with the system configuration.

Only the SGI 3800 system requires that eight ports per R brick are enabled for system operation; SGI 3400 systems require that only six ports per R brick are enabled. The router port disable / enable feature prevents activation of the two additional router ports that effectively upgrade an R brick from a 6-port to an 8-port router.

Note: R bricks and router boards from SGI always ship with six ports enabled.

This chapter contains procedures that allow authorized SGI personnel to disable / enable R-brick router ports and set the router type during authorized system installations, upgrades, merges, exports, and maintenance procedures.

For additional information and resources, refer to Section 3.7, “Additional Router Port Disable / Enable Information”.

3.2 Router Port Disable/Enable Conditions and Actions

SGI 3000 series system error, merge, maintenance, and upgrade situations require you to enable the two additional R-brick router ports (increasing the number of enabled ports from six to eight), and disabling these router ports (decreasing the number of enabled ports from eight to six).

Locate your specific router port disable / enable condition in Table 3-1 below; then, complete the specified action.

Table 3-1 Router Port Disable / Enable Conditions and Actions

Condition:	Action:
Enable the two additional router ports because you will permanently install a 6-port R brick in an SGI 3800 system.	Complete Section 3.5, “Enable R-brick Ports (snap_router)” on page 3-5.
Enable the two additional router ports because you will temporarily install a 6-port R brick router in an SGI 3800 system.	
Reenable the two additional router ports because an error caused an 8-port router to revert to a 6-port router.	
Reenable the two additional router ports because you replaced the power board in an 8-port router (NVRAM erased).	
Reenable the two additional router ports because you suspect that the NVRAM is erased or corrupt.	
Upgrade an SGI 3400 system to an SGI 3800 system.	
Disable the two additional router ports because you will permanently install an 8-port R brick into an SGI 3400 system.	Complete Section 3.6, “Disable R-brick Ports (snap_router)” on page 3-9.
Disable the two additional router ports because you will temporarily install an 8-port R brick into an SGI 3400 system.	

3.3 Router Port Commands

Table 3-2 lists an overview of the router port commands that are used in this chapter.

Table 3-2 SSN-related Commands and Actions

Command	Action
date	Displays the current L1 date and time. Example: *** l1 date**
date ***<string>***	Sets the L1 date with the UNIX date string. Example: *** l1 date 121310052000.00** Refer to Appendix A, Section A.1, "Date Input String Format" for a detailed explanation of each variable in the date input string.
date tz	Displays the current L1 time zone Example: *** l1 date tz**
date tz ***<string>***	Sets the L1 time zone with the UNIX time zone string. Example: *** l1 date tz cst6cdt** Refer to Appendix A, Section A.2, "Time Zone Input String Format" for a detailed explanation of each variable in the time zone input string.
serial	Displays the brick number, brick serial number, system serial number, L1 date, L1 time, and L1 time zone. Example: *** l1 serial**
router|rtr	Displays the router rack numbers, slot numbers, port status, and router type. Example: *** l1 router**
router|rtr meta	Sets the router type to *metarouter* in an 8-port R brick. Example: **r 001 s 03 rtr meta**
router|rtr ordinary	Sets the router type to *ordinary* in a 6-port or 8-port R brick. Example: **r 001 s 03 router ordinary**
router|rtr repeater	Sets the router type to *repeater* in an 8-port R brick. Example: **r 001 s 03 rtr repeater**
router|rtr 6 port	Disables two router ports in an 8-port R brick. Example: **r 001 s 03 router 6 port**
router|rtr 6 port confirm	Confirms the disabling of two router ports in an 8-port R brick. Example: **r 001 s 03 rtr 6 port confirm**
router|rtr 8 port ***<XXXXX XXXXX XXXX XXXX>***	Enables all of the router ports in the R brick. Requires a temporary authenticator in the format *XXXX XXXXX XXXX XXXX*. Example: **r 001 s 03 router 8 port 2JLTY JH836 6TSY 5JQY**

3.4 Required System Configurations

Possible System Configurations for Systems with a Hardware L2 Controller:

- Dumb terminal with RS-232 support; the device connects directly to any system L2 controller via a standard null-modem serial cable. IRIX operating system (OS) software release 6.5.12 (or newer) must be installed. Internet access is recommended.
- Laptop computer with Linux and L3 controller software installed; the laptop connects to any open port on the system's private Ethernet network via a standard Ethernet cable. IRIX OS software release 6.5.12 (or newer) must be installed. Internet access is recommended.

  Note: You must restart the laptop computer after you connect it to the system so that the laptop acquires the IP addresses from the DHCP server on the private Ethernet network. If the laptop does not acquire the IP addresses via DHCP, you must obtain the available addresses and manually enter them.

- Laptop computer with Linux and L3 controller software installed; the laptop connects directly to an L2 controller via an Ethernet crossover cable. IRIX OS software release 6.5.12 (or newer) must be installed. Internet access is recommended.

  Note: Connect the laptop to the same L2 controller that is attached to the R brick that you will modify. You must restart the laptop computer so that it acquires the IP addresses from the DHCP server on the private Ethernet network. If the laptop does not acquire the IP addresses via DHCP, you must obtain the available addresses and manually enter them.

- Laptop computer with terminal emulation in Windows 95, Windows 98, Windows NT, or Windows 2000 installed or Linux with shell tool installed; the device connects directly to any system L2 controller via a standard null-modem serial cable. IRIX OS software release 6.5.12 (or newer) must be installed. Internet access is recommended.
- On-site computer with Linux and L3 controller software installed; the terminal connects to the system's private Ethernet network via a standard Ethernet cable. IRIX OS software release 6.5.12 (or newer) must be installed. Internet access is recommended.

Possible System Configurations for Systems without a Hardware L2 Controller:

- On-site computer or laptop computer with Linux, L2 emulator, and L3 controller software installed; the device USB port connects to the R-brick USB port via a standard USB cable in systems with more than two C bricks. IRIX OS software release 6.5.12 (or newer) must be installed. Internet access is recommended.
- On-site computer or laptop computer with Linux, L2 emulator, and L3 controller software installed; the device USB port connects to the C-brick USB port via a standard USB cable in systems with two or fewer C bricks. IRIX OS software release 6.5.12 (or newer) must be installed.
- Dumb terminal with RS-232 support; the device connects directly to the bottom C brick via a standard null-modem serial cable. IRIX OS software release 6.5.12 (or newer) must be installed.

- Laptop computer with terminal emulation in Windows 95, Windows 98, Windows NT, or Windows 2000 installed or Linux with shell tool installed; the device connects directly to the bottom C brick via a standard null-modem serial cable. IRIX OS software release 6.5.12 (or newer) must be installed. Internet access is recommended.

3.5 Enable R-brick Ports (snap_router)

Note: Ensure that the R-brick SSN matches the system SSN before you continue. If the R brick that you want to change from six ports to eight ports was used in a different SGI 3000 series system, complete the procedures in Section 2.5, "Reset an R-brick SSN (snap_erase)" before you complete this procedure. If the R brick has a reset SSN, complete the procedure in Section 2.6, "Assign an SSN to a Reset R Brick" before you complete this procedure.

Complete the following procedure to increase the number of enabled R-brick ports from 6 to 8:

Important: Never enable a 6-port R brick to use eight ports unless the customer has purchased the 6 port-to-8 port upgrade option. Unauthorized activation of these ports may result in illegal system upgrades or mergers that violate Federal and International export law, invalidate SGI contractual agreements, and / or decrease SGI revenue.

1. Install the R brick in the desired rack if it is not already part of the current system; ensure that the R brick is cabled correctly.
2. Switch the rear R brick power switch to the ON position.
3. Start the L3 terminal (if necessary).
4. Type **`/stand/sysco/bin/l2find`** at the terminal prompt to locate all of the L2 controllers that are connected to the system.
5. Type **`/stand/sysco/bin/l2term --l2 <ip>`** where <ip> is the IP address of one of the L2 controllers that is connected to the system.
6. Type **`CTRL+T`** to switch to the L2 controller prompt.
7. Type **`cfg`** at the L2 prompt to display the current system configuration; if the new brick is installed correctly, its information displays.

```
001-L2>cfg
L2 10.25.1.20: - 001
L1 10.25.1.20:3:0 - 001r03
L1 10.25.1.20:4:0 - 001r19
L1 10.25.1.20:6:0 - 001c17
L1 10.25.1.20:6:1 - 001i31
L1 10.25.1.20:7:0 - 001c10
L1 10.25.1.20:8:0 - 001c13
L1 10.25.1.20:8:1 - 001i31
L1 10.25.1.20:9:0 - 001c07
L1 10.25.1.20:9:1 - 001i21
```

8. Type **`router`** at the L2 prompt to display the current router port status; if the R brick is cabled correctly, its information displays.

```
001-L2>router
001r19: 3400 Series: router type is ordinary
001r03: 3400 Series: router type is ordinary
001i21: INFO: command not support on this brick type
001i31: INFO: command not support on this brick type
001c17: INFO: command not support on this brick type
001c10: INFO: command not support on this brick type
001c13: INFO: command not support on this brick type
001c07: INFO: command not support on this brick type
```

9. Verify and / or change the system time zone:

   Note: The system time zone must be set correctly before you reset the R-brick SSN. Authentication may not occur if the time zone is not correct.

   a. Type **`* l1 date tz`** at the L2 prompt to display the current system time zone for each brick.

```
001-L2>* l1 date tz
001r19:12/13/2000  10:04:30 CST
001r03:00/00/0000  00:00:00
001i21:12/13/2000  10:04:30 CST
001i31:12/13/2000  10:04:30 CST
001c17:12/13/2000  10:04:30 CST
001c10:12/13/2000  10:04:30 CST
001c13:12/13/2000  10:04:30 CST
001c07:12/13/2000  10:04:30 CST
```

   b. Type **`* l1 date tz <`*`string`*`>`** to change the system time zone, if required.

      Note: Refer to Appendix A, Section A.2, “Time Zone Input String Format” for a detailed explanation of each variable in the time zone input string. Changing the time zone does not affect the current system date and time.

```
001-L2>* l1 date tz cst6cdt
001r19:12/13/2000  10:04:30 CST
001r03:00/00/0000  00:00:00 CST
001i21:12/13/2000  10:04:30 CST
001i31:12/13/2000  10:04:30 CST
001c17:12/13/2000  10:04:30 CST
001c10:12/13/2000  10:04:30 CST
001c13:12/13/2000  10:04:30 CST
001c07:12/13/2000  10:04:30 CST
```

10. Verify and / or change the system time:

    Note: The system date and time must be set correctly before you reset the R-brick SSN. Authentication may not occur if the date and time are not correct.

    a. Type **`* l1 date`** at the L2 prompt to display the system date and time for each brick.

```
001-L2>* l1 date
001r19:12/13/2000  10:04:30 CST
001r03:00/00/0000  00:00:00 CST
001i21:12/13/2000  10:04:30 CST
001i31:12/13/2000  10:04:30 CST
001c17:12/13/2000  10:04:30 CST
001c10:12/13/2000  10:04:30 CST
001c13:12/13/2000  10:04:30 CST
001c07:12/13/2000  10:04:30 CST
```

b. Type **`* l1 date <string>`** to change the system date and time, if required.

Note: Refer to Appendix A, Section A.1, "Date Input String Format" for a detailed explanation of each variable in the date input string.

```
001-L2>* l1 date 121310052000.00
001r19:12/13/2000  10:05:00 CST
001r03:12/13/2000  10:05:00 CST
001i21:12/13/2000  10:05:00 CST
001i31:12/13/2000  10:05:00 CST
001c17:12/13/2000  10:05:00 CST
001c10:12/13/2000  10:05:00 CST
001c13:12/13/2000  10:05:00 CST
001c07:12/13/2000  10:05:00 CST
```

11. Display the current brick serial number (BSN) and SSN that are assigned to each brick:

a. Type **`* l1 serial`** at the L2 prompt. All of the BSNs display, along with their SSNs.

```
001-L2>* l1 serial
001r19:BSN: LMJ855 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001r03:BSN: LBN361 SSN: L1001001 Time: 12/13/2000  11:40:59 CST
001i31:BSN: KBN424 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001i21:BSN: LMZ491 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001c17:BSN: LNC393 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001c07:BSN: LMK370 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001c10:BSN: LNC202 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
001c13:BSN: LNA101 SSN: L1000000 Time: 12/13/2000  11:40:59 CST
```

b. Record the BSN for brick that you moved.

Note: The BSN is a six-character value expressed in the following format: *xxx###* (Example: `LBN361`).

12. Obtain a temporary authenticator to change the R brick from 6 ports to 8 ports:

Note: You may contact the SGI Help Desk for a temporary authenticator if Internet access is unavailable. You will be asked for your employee number and the R-brick BSN.

a. Start your Internet browser.

b. Connect to the Web site at the following URL:
http://www-crystal.corp.sgi.com/Secure/SN1ssn

c. Type your employee number and WebSafe password into the appropriate fields; then, click the *Login* button or press **`<Enter>`** to connect to the `SN1 Verification: Router Port Enable Authenticator` page.

d. Click *snap_router* to go to the `SN1 Router Port Enable Temporary Authenticator Generator` page.

e. Type the BSN that you recorded in Step 11; then, click the *Submit* button or press **`<Enter>`**. The generator creates an 18-character temporary authenticator for the R-brick BSN that you entered and displays it in the following format: *XXXXX XXXXX XXXX XXXX* (Example: `2JLTY JH836 6TSY 5JQY`).

Note: A temporary authenticator expires 48 hours after you obtain it. A unique authenticator is required for each moved brick; a single authenticator may be used only with the brick for which it was obtained.

f. Record the temporary authenticator along with the R-brick BSN that you used to obtain the authenticator.

Note: To obtain authenticators for additional bricks, click your browser's *Back* button. Click the *Reset* button on the `SN1 Verification: Router Port Enable Authenticator` page; then, repeat Substeps e and f.

13. Type **`r x s y router 8 port <XXXXX XXXXX XXXX XXXX>`** at the L2 prompt to enable the ports at rack *x* and slot *y* and change the 6-port R brick to an 8-port R brick.

    Note: The system displays an on-screen message to notify you that the R brick is now an 8-port router.

```
001-L2>r 001 s 03 8 port 2JLTY JH836 6TSY 5JQY
001r03: Router set to 3800 Series 8 port router.
001-L2>
```

14. Type **`router`** at the L2 prompt to verify the current router port status and display the router type.

```
001-L2>router
001r19: 3400 Series: router type is ordinary
001r03: 3800 Series: router type is ordinary
001i21: INFO: command not support on this brick type
001i31: INFO: command not support on this brick type
001c17: INFO: command not support on this brick type
001c10: INFO: command not support on this brick type
001c13: INFO: command not support on this brick type
001c07: INFO: command not support on this brick type
```

15. Change the router type:

    Note: If your R-brick router types are set correctly, skip to Step 17.

    Type **`r x s y router <string>`** at the L2 prompt to change the R-brick router type at rack *x* and slot *y*. The system displays an on-screen message to notify you that the R-brick router type has changed.

    Note: You may set the R brick to any router type regardless of the number of enabled router ports; however, system functionality may be affected if you select an incorrect router type for your configuration. Typically, you should type **`meta`** in the <*string*> position to set an 8-port R-brick router type to metarouter. Type **`ord`** to set a 6-port or an 8-port router type to ordinary. Type **`repeater`** to set an 8-port R-brick router type to repeater.

```
001-L2>r 001 s 03 router meta
001r03: router type changed, effective on power up or reset
001-L2>
```

16. Type **router** at the L2 prompt to verify the current router type.

```
001-L2>router
001r19: 3400 Series: router type is ordinary
001r03: 3800 Series: router type is meta
001i21: INFO: command not support on this brick type
001i31: INFO: command not support on this brick type
001c17: INFO: command not support on this brick type
001c10: INFO: command not support on this brick type
001c13: INFO: command not support on this brick type
001c07: INFO: command not support on this brick type
```

17. Power up the R brick.
18. Type **CTRL+D** to revert to the console prompt.

3.6 Disable R-brick Ports (snap_router)

Note: Ensure that the R-brick SSN matches the system SSN before you continue. If the R brick that you want to change from eight ports to six ports was used in a different SGI 3000 series system, complete the procedures in Section 2.5, “Reset an R-brick SSN (snap_erase)” before you complete this procedure.

Complete the following procedure to decrease the number of active R-brick router ports from eight to six:

Important: Always disable two of the eight active router ports when you permanently move an R brick from an SGI 3800 system to an SGI 3400 system. If you neglect to disable these ports, illegal system upgrades or mergers that violate Federal and International export law, invalidate SGI contractual agreements, and/or decrease SGI revenue may occur.

1. Install the R brick in the desired rack if it is not already part of the current system; ensure that the R brick is cabled correctly.

   Note: Ensure that the R-brick SSN matches the system SSN before you continue. If the R brick that you want to change from eight ports to six ports was used in a different SGI 3000 series system, complete the procedures in Section 2.5, “Reset an R-brick SSN (snap_erase)” before you continue to Step 2.

2. Switch the R-brick power switch to the ON position.
3. Start the L3 terminal (if necessary).
4. Type **/stand/sysco/bin/l2find** at the terminal prompt to locate all of the L2 controllers that are connected to the system.
5. Type **/stand/sysco/bin/l2term --l2 *<ip>*** where <ip> is the IP address of one of the L2 controllers that is connected to the system.
6. Type **CTRL+T** to switch to the L2 controller prompt.

7. Type **cfg** at the L2 prompt to display the current system configuration; if the new brick is installed correctly, its information displays.

```
001-L2>cfg
L2 10.25.1.20: - 001
L1 10.25.1.20:3:0 - 001r03
L1 10.25.1.20:4:0 - 001r19
L1 10.25.1.20:6:0 - 001c17
L1 10.25.1.20:6:1 - 001i31
L1 10.25.1.20:7:0 - 001c10
L1 10.25.1.20:8:0 - 001c13
L1 10.25.1.20:8:1 - 001i31
L1 10.25.1.20:9:0 - 001c07
L1 10.25.1.20:9:1 - 001i21
```

8. Type **router** at the L2 prompt to display the current router port status.

```
001-L2>router
001r19: 3800 Series: router type is ordinary
001r03: 3400 Series: router type is meta
001i21: INFO: command not support on this brick type
001i31: INFO: command not support on this brick type
001c17: INFO: command not support on this brick type
001c10: INFO: command not support on this brick type
001c13: INFO: command not support on this brick type
001c07: INFO: command not support on this brick type
```

9. Change the 8-port R brick to a 6-port R brick:

   a. Type **r *x* s *y* router 6 port** at the L2 prompt to disable 2 router ports in the R brick that is in rack *x* and slot *y*.

      Note: The system displays a warning message that asks you to confirm that you want to disable the router ports.

```
001-L2>r 001 s 03 router 6 port
001r03: !!!WARNING!!! Issuing this command will downgrade the
router and disable ports until a temporary authenticator is
acquired. Please enter <router 6 port confirm> only if you are
absolutely certain you wish to perform this action.
001-L2>
```

   b. Type **r *x* s *y* router 6 port confirm** at the L2 prompt to confirm that you want to disable two router ports in the R brick that is in rack *x* and slot *y*.

      Note: The system displays an on-screen message to notify you that the R brick is now a 6-port router.

```
001-L2>r 001 s 03 router 6 port confirm
001r03: Router set to 3600 Series 6 port router.
001-L2>
```

10. Type **router** at the L2 prompt to verify the current router port status and display the router type.

```
001-L2>router
001r19: 3800 Series: router type is ordinary
001r03: 3600 Series: router type is meta
001i21: INFO: command not support on this brick type
001i31: INFO: command not support on this brick type
001c17: INFO: command not support on this brick type
001c10: INFO: command not support on this brick type
001c13: INFO: command not support on this brick type
001c07: INFO: command not support on this brick type
```

11. Change the router type:

    Note: If your R-brick router types are set correctly, skip to Step 13.

    a. Type **r *x* s *y* router <*string*>** at the L2 prompt to change the R-brick router type at rack *x* and slot *y*. The system displays an on-screen message to notify you that the R-brick router type has changed.

       Note: You may set the R brick to any router type regardless of the number of enabled router ports; however, system functionality may be affected if you select an incorrect router type for your configuration. Typically, you should type **meta** in the <*string*> position to set an 8-port R-brick router type to metarouter. Type **ord** to set a 6-port or an 8-port router type to ordinary. Type **repeater** to set an 8-port R-brick router type to repeater.

```
001-L2>r 001 s 03 router ord
001r03: router type changed, effective on power up or reset
001-L2>
```

12. Type **router** at the L2 prompt to verify the current router type.

```
001-L2>router
001r19: 3800 Series: router type is ordinary
001r03: 3400 Series: router type is ordinary
001i21: INFO: command not support on this brick type
001i31: INFO: command not support on this brick type
001c17: INFO: command not support on this brick type
001c10: INFO: command not support on this brick type
001c13: INFO: command not support on this brick type
001c07: INFO: command not support on this brick type
```

13. Power up the R brick.

14. Type **CTRL+D** to revert to the console prompt.

3.7 Additional Router Port Disable/Enable Information

Refer to the following SGI 3000 series documentation for additional information about router ports and the router port disable / enable feature:

- *Owner's Guide* (P / N 007-4240-00x)
- *SGI 3000 Family Quick-reference Information Kit* (P / N 026-1438-00x)
- *System Architecture* (P / N 108-0240-00x)
- *System Configuration Guide* (P / N 108-0266-00x)
- *System Installation* (P / N 108-0262-00x)
- *System Upgrades* (P / N 108-0307-00x)

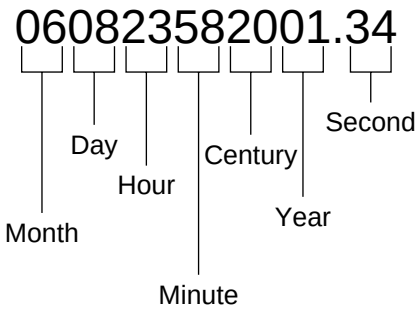
Appendix A

Service Procedures Supplemental Information

This Appendix contains general information that was referenced in the SGI 3000 series service procedures.

A.1 Date Input String Format

Refer to Figure A-1 for date input string format information and examples.



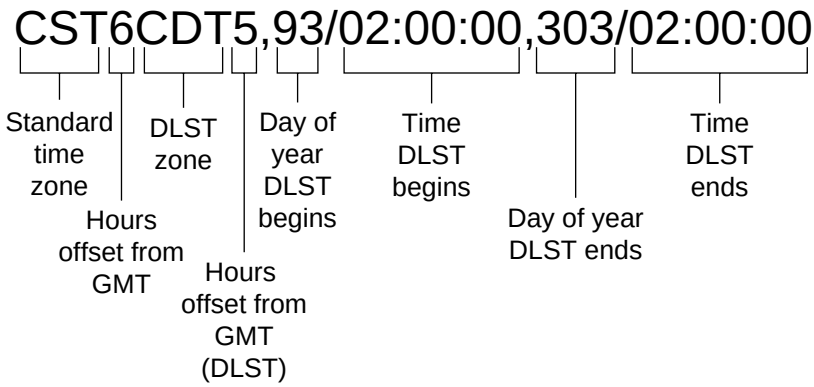
Resulting date and time:
8 June 2001 at 23:58:34

Note: If the century is unspecified, year-of-century inputs of 00-50 represent years 2000-2050; inputs of 51-99 represent years 1951-1999.

Figure A-1 Date Input String Format Example

A.2 Time Zone Input String Format

Refer to Figure A-2 for time zone input string format information and examples.



GMT = Greenwich mean time
DLST = daylight savings time

Resulting time zone:
Central standard time, 6 hours west of GMT; DLST used with 5-hour offset; DLST begins at 2:00 A.M. on day 93 of current year; DLST ends at 2:00 A.M. on day 303 of current year.

Note: If all inputs after the first comma are omitted, the system calculates DLST start and end as 2:00 A.M. on the first Sunday in April and on the last Sunday in October.

Figure A-2 Time Zone String Format Example

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