SGIconsole™ 1.0 Start Here

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Contents

Figures

About This Guide

This guide documents SGIconsole release 1.0.

SGIconsole is a combination of hardware and software that allows you to manage multiple servers running the IRIX operating system.

This guide contains the following chapters:

Obtaining Publications

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Conventions

The following conventions are used throughout this document:

Convention	Meaning
`command`	This fixed-space font denotes literal items such as commands, files, routines, path names, signals, messages, and programming language structures.
variable	Italic typeface denotes variable entries and words or concepts being defined.

`user input`	This bold, fixed-space font denotes literal items that the user enters in interactive sessions. Output is shown in nonbold, fixed-space font.
`manpage`(*x*)	Man page section identifiers appear in parentheses after man page names.

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Introduction

This chapter introduces SGIconsole. The sections in this chapter include:

What Is SGIconsole

SGIconsole 1.0 is a combination of hardware and software that allows you to manage multiple SGI servers running the IRIX operating system. These servers include SGI servers, SGI partitioned systems and large, single-system-image servers, including legacy SGI servers.

SGIconsole consists of a slim, rackmountable SGI platform, a serial multiplexer or Ethernet hub, and a software suite including the Console Manager package and Performance Co-Pilot (PCP), which provides access to common remote management tools for hardware and software. It is intended to replace the SGI IRISconsole product.

SGIconsole 1.0 assumes your SGIconsole machine and your remote display for viewing and running SGIconsole applications are behind a secure firewall. SGIconsole 1.0 uses standard Linux security features.

Why Use SGIconsole

SGIconsole provides a central server control environment that has the following features:

- Support for SGI clusters, partitioned systems, and large single-system-image servers
- Expandability to support additional servers
- Rackmountable, space-efficient platform
- Software applications and tools for installation and configuration, console functionality, and for monitoring and managing system-level performance

- Web-based user interface

Related Documentation

The following SGIconsole and related documents are available at `http://techpubs.sgi.com`:

- *SGIconsole Start Here*
- *SGIconsole Hardware Connectivity Guide*
- *Console Manager Administrator's Guide*
- *IRISconsole to SGIconsole Migration Guide*
- *Performance Co-Pilot (PCP) Programmer's Guide*
- *Performance Co-Pilot (PCP) User's and Administrator's Guide*
- *System Controllers (SGI Origin 3000 Series Servers)*
- *SGI Origin 3000 Series Owner's Guide*
- *SGI Origin 300 User's Guide*
- *SGI 1100 Server Owner's Guide*
- *SGI 1100 Server Quick Start Guide*
- *SGI 1100 Server Maintenance and Upgrade Guide*
- *EL Serial Port Installation Guide*
- *EL Serial Port Server Installation Guide Errata*

SGIconsole Software

SGIconsole includes the following software tools that enable you to monitor and manage multiple servers:

Console Manager for SGIconsole

Console Manager is a graphical user interface for the SGIconsole management and monitoring tool used to control multiple nodes. A *node* is an SGI server or graphic system. For detailed information about Console Manager, see the *Console Manager for SGIconsole Administrator's Guide*. The manual is provided on the SGIconsole software installation CD and is available at the SGI Technical Publications library at `http://techpubs.sgi.com`.

Console Manager provide the following functions:

- Console window
- Power down, power up, and system reset
- Get, steal, spy console
- Continuous system connection without console window active
- Numerous connections to any one system
- Remote access
- Console security

Only the root user of Console Manager can add or delete other users and view logs and run command line interfaces (CLIs). Console Manager runs only one `setuid` program called `runpriv`.

Performance Co-Pilot (PCP)

SGI Performance Co-Pilot (PCP) is a distributed toolkit that administrators can use to monitor and manage system-level performance of servers (such as system load, network load, disk hotspots, and capacity planning). The SGIconsole implementation of PCP uses existing PCP services on the managed servers to export performance data that is used by monitoring tools on the SGIconsole system. Note that IRIX servers must have PCP licenses in order for this toolkit to function.

Initial access to the PCP toolkit is accomplished through the SGIconsole GUI, which provides a Web-based interface for launching PCP tools. PCP tools monitor the following resource demands and performance metrics on the managed servers:

- Desktop gadget to monitor overall system activity across the following:
  - CPUs
  - Disks
  - Load average
  - Network interfaces
  - Memory usage
- Time-series (stripchart) monitoring of the following:
  - Summary statistics for an overview
  - Aggregate CPU utilization
  - Aggregate demand for disk bandwidth
  - File system fullness
  - Network throughput per interface
  - NFS client and server call rates
  - Virtual memory paging activity
  - Aggregate system call rates
- Three-dimensional performance visualizations for the following:
  - Per processor CPU utilization
  - Per spindle disk activity

- CPU and network activity
- NUMAlink interconnect activity for SGI Origin 2000 series and SGI Origin 3000 series

PCP tools on the SGIconsole system can also be used to create customized performance monitoring and performance management services for the managed servers. The following list describes relevant tools:

`clustervis`	Three-dimensional bar charts of CPU utilization and network traffic for one or more nodes (hosts) in a cluster. The presentation provides a scalable overview of the performance of large clusters. For more information see the `clustervis`(1) man page.
`dkvis`	A three-dimensional bar chart showing activity in the disk subsystem. For more information see the `dkvis` (1) man page.
`mpvis`	A three-dimensional bar chart of multiprocessor CPU utilization. For more information see the `mpvis`(1) man page.
`oview`	Three-dimensional bar charts covering many aspects of system performance, including disk use, job load, memory, CPU activity, and network I/O. For more information see the `oview`(1) man page.
`pmchart`	Trends over time for arbitrarily selected performance metrics from one or more nodes, or from one of more performance metric domains. For more information see the `pmchart`(1) man page.
`pmgcluster`	An animated display based on the hardware configuration of multiple servers, showing the same types of information as that provided by the `pmgsys` utility. For more information see the `pmgcluster` (1) man page.
`pmgsys`	An animated display based on the hardware configuration of a server, showing CPU utilization, load average, memory utilization, network bandwidth

demand, and disk activity. For more information see the `pmgsys` (1) man page.

For more detailed information on PCP, see the PCP documentation provided on the SGIconsole software CD or available online from the SGI Technical Publications Library at `http://techpubs.sgi.com` .

The PCP documents describe the IRIX version of the PCP product, which differs only slightly from the Linux version. Table 2-1 summarizes differences in file and directory pathnames between the IRIX and Linux operating systems.

Table 2-1 IRIX and Linux File/Directory Pathnames

File/Directory	IRIX	Linux
`rc/startup` scripts	`/etc/init.d`	`/etc/rc.d/init.d`
Private PCP binaries	`/usr/pcp/bin`	`/usr/share/pcp/bin`
Shared PCP files (shareable for diskless)	`/usr/pcp`	`/usr/share/pcp`
Directory of manual pages	`/usr/share/catman`	`/usr/man`
PCP logs	`/var/adm/pcplog`	`/var/log/pcp`
PCP documentation	`/var/pcp`	`/usr/doc/pcp-`*Version*
GUI privileged commands	`/usr/sysadm/privbin`	`/usr/lib/sysadm/privbin`
GUI commands log	`/var/sysadm/salog`	`/var/lib/sysadm/salog`
Directory for PCP demos and examples	`/var/pcp/demos`	`/usr/share/pcp/demos`
`magic`, as used by `files` (1)	`/etc/magic`	`/usr/share/magic`

System Controller Software

System controller software enables you to use an SGI Origin 3000 series server's L1 controllers and the hardware L2 controllers or SGI Origin 2000 system single module

System Controller (MSC) or SGI Origin 2000 rackmount system multimodule System Controller (MMSC) to manage and monitor the server from a remote system console. For more information on system controllers, refer to the documentation listed in "Related Documentation", page 2.

Getting Started

This chapter guides you through the steps for setting up and configuring SGIconsole hardware and software. The sections in this chapter include:

Setting Up SGIconsole

To set up and configure your SGIconsole 1.0 system, follow the procedures described in these subsections:

Your SGIconsole machine probably arrived with the Red Hat 6.2 base Linux distribution and SGIconsole 1.0 software preinstalled. If so, then you will need to set up the hardware, configure Red Hat 6.2 Linux, and configure SGIconsole 1.0 software before starting to use SGIconsole.

Note: The SGIconsole reinstallation procedure is the same as the installation procedure after you have removed the SGIconsole rpms.

Note: If your SGIconsole machine has a blank disk, then you will need to go through all the procedures in the order described in this section.

Note: SGIconsole 1.0 assumes your SGIconsole machine and your remote display for viewing and running SGIconsole applications are behind a secure firewall. SGIconsole 1.0 uses standard Linux security features.

Setting Up SGIconsole Hardware

To cable and configure SGIconsole hardware, read and follow the instructions in the *SGIconsole Hardware Connectivity Guide*. This guide is delivered with your SGIconsole system and is available online at `http://techpubs.sgi.com` .

Installing Red Hat 6.2 Base Linux

This section describes how to install Red Hat 6.2 base Linux on an SGIconsole system.

Your SGIconsole machine probably arrived with the Red Hat 6.2 base Linux distribution and SGIconsole 1.0 software preinstalled. If so, when you power up the system it will prompt you for information to configure Red Hat 6.2 Linux. For instructions on configuring Red Hat 6.2 Linux for use with SGIconsole, go to "Configuring Red Hat 6.2 Base Linux", page 11.

After configuring Red Hat 6.2 Linux, it is recommended that you create an SGI 1100 Red Hat KickStart floppy in case the system ever needs to be re-installed. For convenience, a KickStart floppy image resides on the SGIconsole 1.0 CD under the `images` directory. To create a KickStart floppy, copy the image to a blank DOS-formatted floppy disk:

1. Insert and mount the SGIconsole 1.0 CD, using the following command:

   ```
   mount /dev/cdrom /mnt/cdrom
   ```

2. Insert the blank, formatted floppy.
3. Copy the image from the CD to the floppy, using the following command:

   ```
   dd if=/mnt/cdrom/images/SGIconsole1.0-RH6.2.img of=/dev/fd0
   ```

If, when you power up the machine, it displays only a blank screen, then you need to install Red Hat 6.2 Linux:

1. Insert the KickStart floppy into the SGIconsole floppy drive.

2. Insert the Red Hat 6.2 CD into the SGIconsole CD-ROM drive.
3. Reboot SGIconsole. Red Hat 6.2 Linux will install automatically.
4. When the installation is complete, reboot the system.

   At this point the system will come up running `sys-unconfig`. You will be prompted to configure Red Hat 6.2 Linux (refer to "Configuring Red Hat 6.2 Base Linux", page 11).

Configuring Red Hat 6.2 Base Linux

Your SGIconsole machine probably arrived with the Red Hat 6.2 base Linux distribution and SGIconsole 1.0 software pre-installed. If so, when you power up the system it will automatically prompt you for information to configure Red Hat 6.2 Linux for use with SGIconsole. Follow the steps in this section to configure Red Hat 6.2 Linux.

If, when you power up the system, it displays only a blank screen, you will need to install Red Hat 6.2 Linux (refer to "Installing Red Hat 6.2 Base Linux", page 10). When the installation is complete, reboot the system and continue with configuring Red Hat 6.2 Linux.

The system will boot up running the SGI ProPack 1.4 single processor kernel to the init level 3 (text mode, multiuser). You will be automatically prompted for the following information to configure Red Hat 6.2 for use by SGIconsole. You will need to provide certain information such as host name, IP address, and so on. Have this information available before you start this procedure.

Note: If you are interrupted midway through this procedure, or if you want to rerun this configuration, enter the following command at the Linux prompt (as `root`): `touch /.unconfigured`Then reboot the system and enter the configuration information at the prompts.

---

1. The first screen will display **Changing password for user root** after mounting local filesystems, then it will prompt you for a new UNIX password. Set the `root` password to improve the system's security behind your firewall.
2. After the password is entered and verified, the first prompt will ask if you want to set up networking, as shown in Figure 3-1. To allow SGIconsole to access the systems it will be monitoring and managing, select **Yes**.

Figure 3-1 Network Configuration Screen

3. The **Configure TCP/IP** screen will prompt you to assign an Internet Protocol (IP) address to the SGIconsole system so it can participate in your network, as well as a netmask (for example, 255.255.255.0). If your network uses DNS, fill in the default gateway (IP) and primary nameserver.

   After you have entered the information for each of these settings, click on **OK**.

Figure 3-2 Configure TCP/IP Screen

4. In the **Configure Timezones** screen, set your local time zone so the time stamps in various logs are correct. You can scroll through the listbox of time zones. After you have made your selection, click on **OK**.

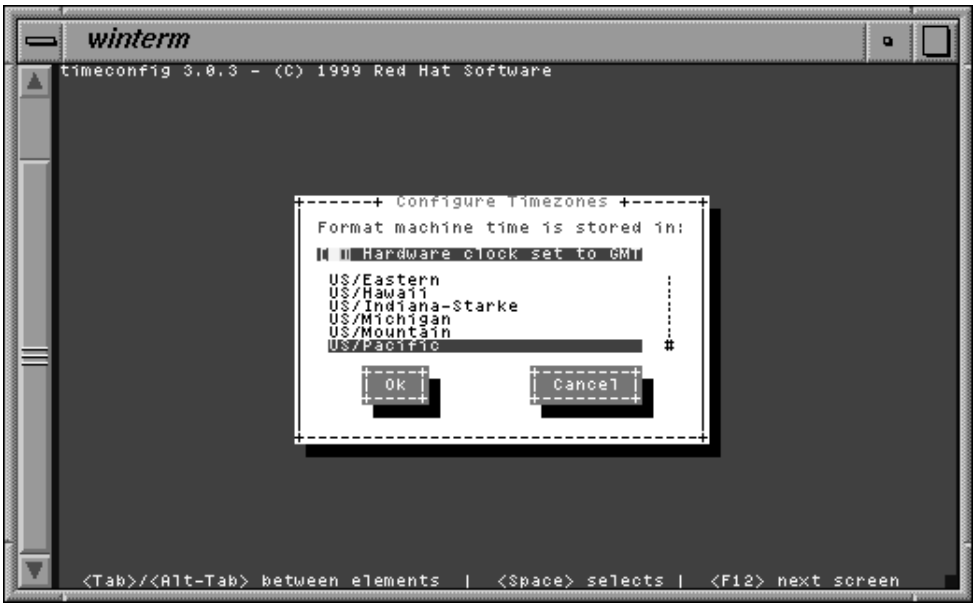

Figure 3-3 Configure Timezones Screen

5. In the **Authentication Configuration** screen, set authentication to control other users' access to the SGIconsole. For the **Authentication Type** option, select **Password File**. Select **Use Shadow Passwords** and **Enable MD5 Passwords.** After you have made your selections, click on **OK**.

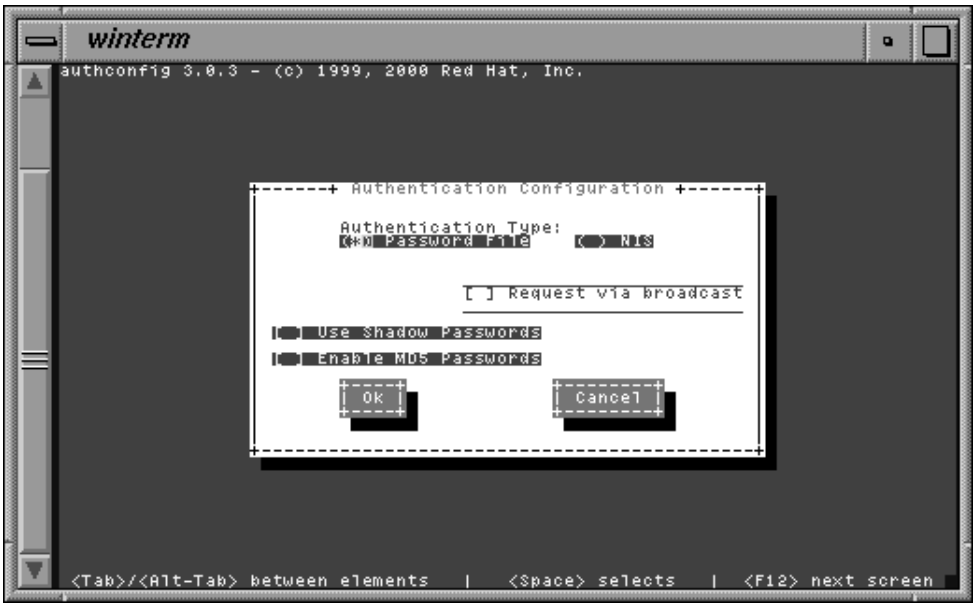

Figure 3-4 Authentication Configuration Screen

6. In the **Services** screen, use the default settings for services to be started automatically at SGIconsole boot-up. After you have reviewed the settings, click on **OK**.

Figure 3-5 Services Screen

7. At this point the display should show the standard login prompt. Log in as `root` with your new password. The configuration of Red Hat 6.2 for use with SGIconsole is complete.

Installing SGIconsole 1.0

If you are uncertain whether SGIconsole 1.0 has been preinstalled on your machine, **after** you have completed configuring Red Hat 6.2 you can run the following command to verify the software.

```
rpm -qa | egrep ‘‘SGIconsole|pcp|vacm|sysadm’’ | sort
```

If SGIconsole is already installed, the output from this command will list the SGIconsole, PCP, and SGIconsole software packages. Go to "Configuring SGIconsole 1.0", page 18, for instructions on configuring SGIconsole software for use.

If SGIconsole has not been installed, follow the instructions in this subsection to install SGIconsole 1.0.

To install SGIconsole 1.0 software, follow these steps:

1. Log in as `root`.
2. Mount the SGIconsole 1.0 CD by executing the `mount` command as you have configured it. A common example is `mount /dev/cdrom /mnt/cdrom`.
3. Change directories to the root directory for the mounted CD. A common root directory is `/mnt/cdrom`.
4. Execute the command `./INSTALL`.
5. The **Welcome** screen appears. Highlight **OK** and press `Enter`.
6. The **Package Group Selection** screen appears. This screen allows you to select the type of package you want to install. You select a package by using the up and down arrow keys and pressing the Space bar to select the one you want. When you select a package, RPMs for that package will be installed after you highlight **OK** and press `Enter`. (RPM is an acronym for Red Hat Package Manager. It is similar to the IRIX `inst` utility. The packages installed by RPM are called RPMs, and have a `.rpm` suffix.)
7. You may see the **Package Dependencies** screen, which tells you if SGIconsole requires additional packages beyond those you selected. Review the packages. If you want to install them (you should install them unless there is some important reason not to do so), highlight **OK** and press `Enter`.
8. The **Installation to Begin** screen appears. It tells you that a log of the installation will be placed in `/tmp/sgi-install.log`. Highlight **OK** and press `Enter`.
9. The installation begins. You will see the **Package Installation** screen, which tells you which packages are being installed and logs the time it takes to install them.
10. After the installation is complete, the **Complete** screen appears. Press `Enter`. You are returned to the root prompt.
11. Reboot your system in order to begin running the newly installed SGIconsole 1.0 kernel. You can reboot by typing `reboot` and pressing `Enter`.

Note: When you reboot the SGIconsole system, an EL-16 error will display because the EL-16 driver is not yet compiled. The `SGIconsole_startup` script (see "Configuring SGIconsole 1.0", page 18) will compile and install the driver for you when you execute the script.

At this point you have completed installing SGIconsole 1.0 software over Red Hat 6.2 Linux. Next, you will need to configure the SGIconsole software.

Configuring SGIconsole 1.0

To configure SGIconsole 1.0, begin by logging in as `root` and running the SGIconsole startup script:

```
/usr/share/SGIconsole/bin/SGIconsole_startup
```

The `sgiconsole_startup`(8) man page provides more information on the startup script.

- If you have not yet configured Red Hat 6.2 Linux for use by SGIconsole, the following error message will be displayed on the system:

  ```
  Error: You cannot run this startup script because you have not
  configured SGIconsole. To be guided through these steps, select
  \"y\" which will reboot the system and run the configuration program.

  Would you like to configure Linux for SGIconsole? [y/n]
  ```

  Choose **y** to configure Linux immediately. (If you choose **n** the script will quit and you will not be able to configure SGIconsole software.) In this case, perform the following command as **root**

  ```
  touch /.unconfigured
  ```

  and then reboot the system.

- If you have already configured Red Hat 6.2 Linux for use with SGIconsole, then follow the startup script.

The SGIconsole startup script begins by displaying the following introduction, which lists the steps in configuring SGIconsole:

```
SGIconsole 1.0 Startup Process
This script will guide you through the steps
to configure SGIconsole for use.
This script should be run on an SGIconsole system
that has Red Hat 6.2 installed and configured
and has SGIconsole software installed.
This script will take you through
the following steps:
```

```
1) Define SGIconsole hostname.
2) Set init runlevel to 5.
3) Configure eth1.
4) Start httpd.
5)Start VACM services.
6) Create console user 'root'.
7) Configure DHCP service for L2
8) Configure DHCP for EL-16.
9) Configure EL-16.
```

Press `Enter` to be guided through the steps. The following list provides more information on the choices to be made.

1. Define SGIconsole hostname.

   In order for SGIconsole software to communicate properly between the SGIconsole and the nodes you will be administering, you need to assign a hostname to the SGIconsole. For more information on hostnames, see the `hostname`(1) man page. This step places your input into the `/etc/sysconfig/network` file.

2. The startup script sets the bootup runlevel to 5 in the `/etc/inittab` file so that X Windows will be started at boot time. **(No input is needed.**)

3. Configure `eth1`.

   SGIconsole comes with two Ethernet interfaces on the motherboard. The configuration steps assume `eth0` will be used for the public network, so you can access the SGIconsole from a remote system inside your firewall, and `eth1` will be used for the private network, to connect the SGIconsole to the machines it administers. This step places your input into the `/etc/sysconfig/network-scripts/ifcfg-eth1` file.

   You will be prompted to define the IP address for `eth1`, as well as the netmask, broadcast address, and network address.

   The script will then attempt to bring up the `eth1` interface that you just configured.

4. Because the SGIconsole main interface and PCP interface are web-based, the script enables the web server (`httpd`) on the SGIconsole. (**No input is needed.**)

5. The startup script starts the `vacm` and `vacm-mode` services. (**No input is needed.**)

6. To enable SGIconsole software to function properly, the startup script creates a console user `root` password file. (**No input is needed.**)

7. Configure DHCP service for L2.

   If you have an SGI Origin 3000 series server or an SGI Onyx 3000 graphics system, you will need an L2 system controller to administer it using SGIconsole. This step sets up one or more L2 system controllers for use with SGIconsole, placing your input into the `/etc/dhcpd.conf` and the `/etc/hosts` files, and into the routing table. For more information on `dhcpd` and `route`, see the `dhcpd`(8) and `route`(1M) man pages.

   You will be prompted to enter for each L2 system controller a hostname, Ethernet (MAC) address, and fixed IP address.

8. Configure DHCP for EL-16.

   If you have an SGI Origin 200 server, an SGI Origin 2000 series server, or and SGI Origin 300 server, or SGI Origin 3000 series server, you will need a Silicon Graphics Ethernet serial port server (EL-16) to administer it using SGIconsole. This step sets up one or more Silicon Graphics Ethernet serial port servers for use with SGIconsole, placing your input into the `/etc/dhcpd.conf` and `/etc/hosts` files, and into the routing table. For more information on `dhcpd` and `route`, see the `dhcpd`(8) and `route`(1M) man pages.

   You will be prompted to enter for each Silicon Graphics Ethernet serial port server a hostname, Ethernet (MAC) address, and fixed IP address.

   Note: At this point, the script will start up DHCP services on the private network `eth1`.

   ---

9. Configure EL-16.

   After the Silicon Graphics Ethernet serial port servers (EL-16) are configured to get their IP addresses via the SGIconsole using DHCP, you will be prompted to run a Silicon Graphics Ethernet serial port server configuration script. Input will be written to the `/etc/bootptab` and `/etc/inetd.conf` files.

   You will be prompted to power cycle the Silicon Graphics Ethernet serial port servers so they can automatically download and install updated firmware from the SGIconsole.

This topic covers information about the SGIconsole as a DHCP server with one or more L2 system controllers, SGIconsole as a DHCP server with a Silicon Graphics Ethernet serial port server (EL-16), or SGIconsole as a DHCP server with both L2 system controllers and a Silicon Graphics Ethernet serial port server.

- Configure SGIconsole as a DHCP server.

  This step places your input into the `/etc/dhcpd.conf` file, which the startup script will create for you, and creates the `/var/state/dhcp/dhcpd.leases` file. For more information on `dhcpd`, see the `dhcpd`(8) man page.

  DHCP can enable SGIconsole to be more flexible in the event of a power cycle, because the Silicon Graphics Ethernet serial port server (EL-16) will be able to reacquire its IP address from the SGIconsole. Alternately, using a static IP can allow SGIconsole to be more secure for those environments concerned about security. The startup script assumes you want to use DHCP; if you prefer to use a static IP, please follow the instructions in the `README.txt` file.

  You will be prompted to enter the SGIconsole subnet address, netmask, broadcast address, and default lease time.

- See steps 7 and 8

When the script has completed successfully, ensure that the host where applications will be displayed has access control disabled. You may have to modify the proxy settings of your Web browser to access the Internet.

At this point SGIconsole software should be configured and ready to use (refer to "Using SGIconsole").

Using SGIconsole

The main SGIconsole window provides access to the ConsoleManager and PCP tools, and to documentation about these and other SGIconsole components.

To start using SGIconsole, enter the following URL into a Web browser on a local or remote machine to bring up the SGIconsole main Web page. Replace *SGIconsole-hostname* with the name of your SGIconsole host:

`http://`*SGIconsole-hostname*

The SGIconsole main window is shown in Figure 3-6.

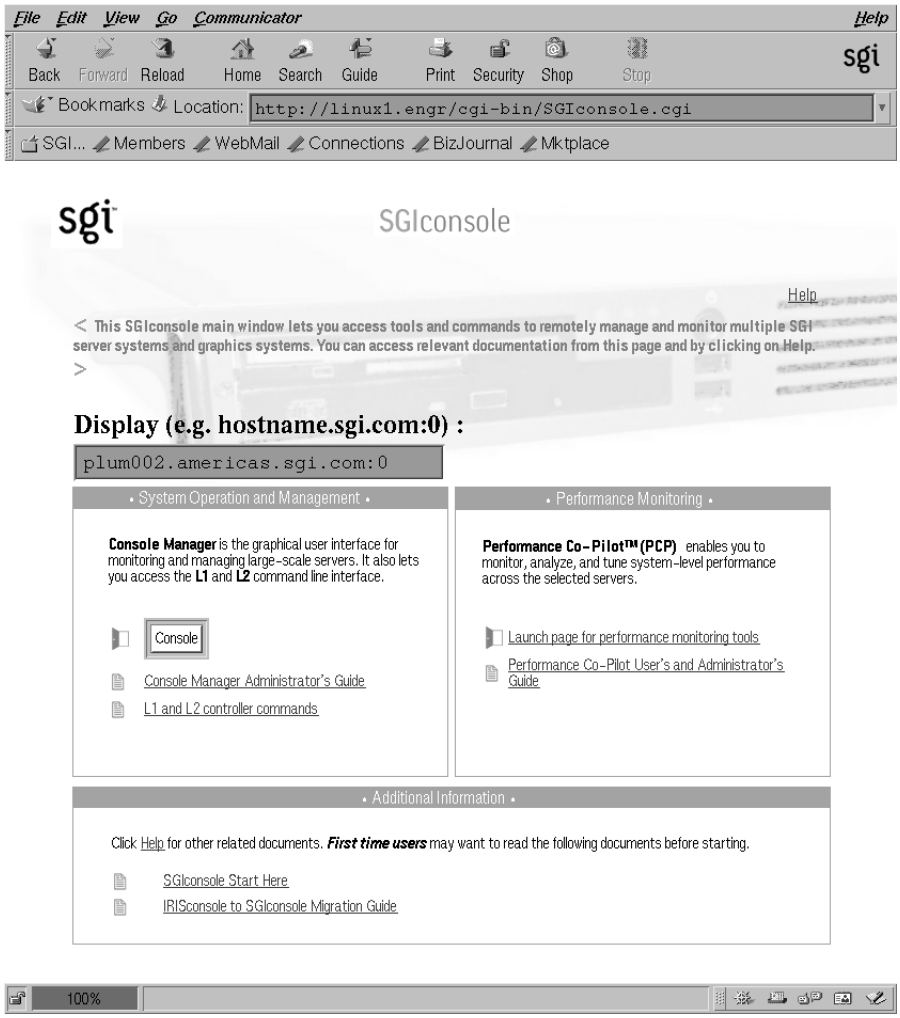

Figure 3-6 SGIconsole Main Window

To activate a specific tool or command, click on the specific link or button. To access documentation, click on the specific title.

If there is no response to clicking on a link, check the following items:

- The access control of the display host may be disallowing application windows to display on your machine. To allow any host to display windows on your machine, enter the following command:

  `xhost +`

  To allow only the host that you specify to display windows on your machine, enter the following command:

  `xhost +` *hostname*

- Your Web browser proxy setting may not be updated to access the Internet. Check your browser's proxy settings.
- You may not have set the "Name of host where tools will display" entry field to your local host. Check the entry field and ensure that the host name is correct.
- You may have iconified the browser or the application window from a previous access. Restore the browser or window to its normal size.

Changing the Appearance of your X terminal

X terminal windows are provided for the system console. You can change the appearance as follows:

- You can change it on the fly by **<ctrl> <right mouse>** to get the font-size menu.
- You can change it globally with X resources. Add the following to the `~/.Xresources` file:

  ```
  XTerm*font:
  -*-lucidatypewriter-medium-r-normal-*-10-*-100-100-*-*-*-*
  ```

- In other applications, where you can invoke `xterm` with the `-name` *name* option, you can specify it as follows:

  ```
  remxterm*font:
  -*-lucidatypewriter-medium-r-normal-*-10-*-100-100-*-*-iso8859-1
  ```

  and then start the Xterminal as `xterm -name` *remxterm*.

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