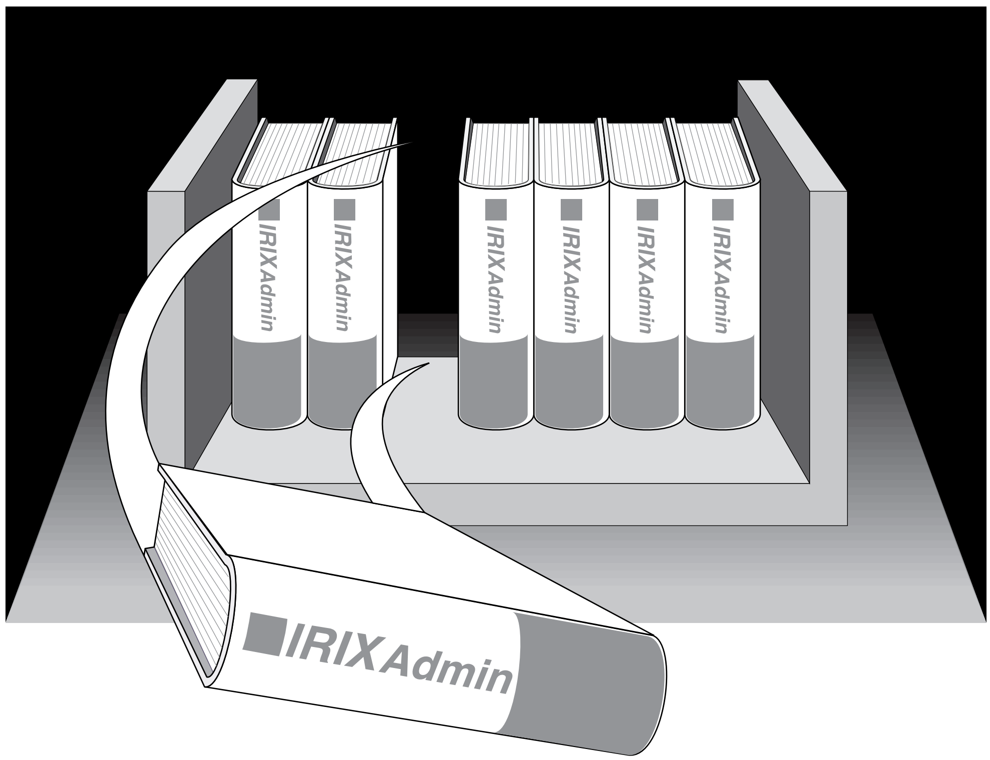
About This Guide



"About This Guide" includes brief descriptions of the contents of this guide and an explanation of typographical conventions used, and refers you to additional sources of information you might find helpful.

This guide explains how to perform general system configuration and operation tasks under the IRIX™ operating system used with Silicon Graphics® workstations and servers. It provides descriptions of a broad range of tasks, from turning on a system, to adding users, to tuning the operating system kernel.

If you have a graphics workstation, you may find it convenient to use the System Manager, which is described in the *Personal System Administration Guide*. That guide should be your first resource for administering graphics workstations. Regardless of whether you use the System Manager or the IRIX command-line interface, the results are the same. The System Manager does not create any new files on your system, unlike applications such as WorkSpace.

If you have a server, the IRIX Administration manual set (of which this guide is part) is your primary guide to system administration, since without graphics you cannot use the System Manager. This guide does not describe the System Manager in great detail. Instead, it covers the traditional shell command approach to administering an IRIX operating system.

IRIX Admin Manual Set

This guide is part of the *IRIX Admin* manual set, which is intended for administrators: those who are responsible for servers, multiple systems, and file structures outside the user's home directory and immediate working directories. If you find yourself in the position of maintaining systems for others or if you require more information about IRIX than is in the end-user manuals, these guides are for you. The *IRIX Admin* guides are available through the IRIS InSight™ online viewing system. The set comprises these volumes:

- *IRIX Admin: Software Installation and Licensing*—Explains how to install and license software that runs under IRIX, the Silicon Graphics implementation of the UNIX® operating system. Contains instructions for performing miniroot and live installations using Inst, the command line interface to the IRIX installation utility. Identifies the licensing products that control access to restricted applications running under IRIX and refers readers to licensing product documentation.
- *IRIX Admin: System Configuration and Operation*—Lists good general system administration practices and describes system administration tasks, including configuring the operating system; managing user accounts, user processes, and disk resources; interacting with the system while in the PROM monitor; and tuning system performance.

- *IRIX Admin: Disks and Filesystems*—Describes how to add, maintain, and use disks and filesystems. Discusses how they work, their organization, and how to optimize their performance.
- *IRIX Admin: Networking and Mail*—Describes how to plan, set up, use, and maintain the networking and mail systems, including discussions of sendmail, UUCP, SLIP, and PPP.
- *IRIX Admin: Backup, Security, and Accounting*I—Describes how to back up and restore files, how to protect your system's and network's security, and how to track system usage on a per-user basis.
- *IRIX Admin: Peripheral Devices*—Describes how to set up and maintain the software for peripheral devices such as terminals, modems, printers, and CD-ROM and tape drives. Also includes specifications for the associated cables for these devices.
- *IRIX Admin: Selected Reference Pages* (not available in InSight)—Provides concise reference page (manual page) information on the use of commands that may be needed while the system is down. Generally, each reference page covers one command, although some reference pages cover several closely related commands. Reference pages are available online through the man(1) command.

What This Guide Contains

This guide has been prepared with the understanding that most readers will view it with the InSight online viewing system and use it as a reference work. It is not necessary to read this Guide in a linear fashion. All information relevant to a given topic will be presented in the section of the Guide devoted to the topic. There is no prerequisite reading or knowledge other than that stated in this introductory chapter.

The *IRIX Admin: System Configuration and Operation* guide contains the following chapters:

Chapter 1, "Introduction To System Configuration and Operation"
: Provides an overview of the guide, the audience expectations and assumptions, and the tasks expected of a system administrator. It describes the various tools available to the administrator and the various pieces of the administration documentation.

Chapter 2, "Making the Most of IRIX"
: Describes IRIX features that are useful for administrators and not common with all operating environments.

Chapter 3, "System Startup and Shutdown"
Provides short instructions on booting up and shutting down your system.

Chapter 4, "Configuring The IRIX Operating System"
Describes the tasks and processes necessary to configure a new or changing system.

Chapter 5, "Configuring User Accounts and Managing User Issues"
Describes the processes of adding and deleting user accounts, user groups, manipulating the user's environment, and communicating with users.

Chapter 6, "Configuring Disk and Swap Space"
Describes simple disk space management. Procedures for checking disk space and establishing user disk usage quotas are described, along with less intrusive strategies for maintaining reasonable disk usage. Also, techniques for managing system swap space are provided. This chapter does not describe the process for adding an additional disk or creating and maintaining file systems. Those topics are covered in the *IRIX Admin: Disks and Filesystems guide*.

Chapter 7, "Managing User Processes"
Describes how to monitor user's CPU usage, set process priority, and terminate processes.

Chapter 8, "Managing cadmin"
Describes the *cadmin* object system of system administration utilities. The *cadmin* system provides utilities to access media and other physical resources on the local system and other systems on the local area network.

Chapter 9, "Maintaining the File Alteration Monitor"
Provides information about the *famd* alteration monitor daemon. This program provides information to applications concerning changes to files used simultaneously by several programs.

Chapter 10, "Using The Command (PROM) Monitor"
Describes the boot-level utilities provided to configure and test your system. It describes the boot environment of the workstation and each of the Command Monitor commands.

Chapter 11, "System Performance Tuning"
Describes how to analyze system performance and adjust system parameters to influence system performance.

Appendix A, "IRIX Kernel Tunable Parameters"
: Describes the various tunable parameters used in system performance tuning.

Appendix B, "Troubleshooting System Configuration Using System Error Messages"
: Provides some troubleshooting pointers related to common system error messages.

Appendix C, "IRIX Directories and Files"
: Provides a list of the directories and files that are important in IRIX administration.

Appendix D, "Encapsulated PostScript File v.3.0 vs. PostScript File Format"
: Describes two common PostScript file formats used on IRIX systems.

Appendix E, "Bibliography and Suggested Reading"
: Provides a bibliography of commonly available books that are useful for the system administrator.

Conventions Used in This Guide

These type conventions and symbols are used in this guide:

Bold C++ class names, C++ member functions, C++ data members, function names, language keywords and data types, literal command-line arguments (options/flags), nonalphabetic data types, operators, and subroutines.

Helvetica Bold Hardware labels

Italics Backus-Naur Form entries, command monitor commands, executable names, filenames, glossary entries (online, these show up as underlined), IRIX commands, manual/book titles, new terms, onscreen button names, program variables, tools, utilities, variable command-line arguments, variable coordinates, and variables to be supplied by the user in examples, code, and syntax statements

`Fixed-width type`
Error messages, prompts, and onscreen text

`Bold fixed-width type`
User input, including keyboard keys (printing and nonprinting); literals supplied by the user in examples, code, and syntax statements (*see also* **<>**)

ALL CAPS	Environment variables, operator names, directives, defined constants, macros in C programs
“”	(Double quotation marks) Onscreen menu items and references in text to document section titles
()	(Parentheses) Following function names—surround function arguments or are empty if the function has no arguments; following IRIX commands—surround reference page (man page) section number
[]	(Brackets) Surrounding optional syntax statement arguments
<>	(Angle brackets) Surrounding nonprinting keyboard keys, for example, **`<Esc>`**, **`<Ctrl-D>`**
`#`	IRIX shell prompt for the superuser (*root*)
`%`	IRIX shell prompt for users other than superuser
`>>`	Command Monitor prompt

This guide uses the standard UNIX convention for referring to entries in IRIX documentation. The entry name is followed by the section number in parentheses. For example, *rcp*(1C) refers to the *rcp* online reference page.

How to Use This Guide

The *IRIX Admin: System Configuration and Operation guide* is written for administrators who are responsible for performing tasks beyond the reasonable scope of “end users.” Frequently, people who would consider themselves end users find themselves performing advanced administrative tasks. This book has been prepared to help both the new and experienced administrator successfully perform all operations necessary to configure IRIX systems. It is hoped that people who considered themselves end users in the past will, by using this book, gain experience and confidence in successfully performing advanced system administration tasks.

Target Audience of This Guide

This guide is intended for administrators who are responsible for one or more systems beyond the usual user responsibility for the user’s home directory structure and immediate working directories. This guide and its companion guides have been written to provide directions for those who find themselves in the position of maintaining systems for themselves and others and who require more information about IRIX commands and system and network expertise.

Additional Resources

For easy reference, here is a list of the guides and resources provided with your system and the specific focus and scope of each:

The IRIX Reference Pages

The IRIX reference pages (often called “man” or “manual” pages) provide concise reference information on the use of IRIX commands, subroutines, and other elements that make up the IRIX operating system. This collection of entries is one of the most important references for an administrator. Generally, each reference page covers one command, although some reference pages cover several closely related commands.

The IRIX reference pages are available online through the *man* command. To view a reference page, use the *man* command at the shell prompt. For example, to see the reference page for *diff*, enter:

```
man diff
```

It is a good practice to print those reference pages you consistently use for reference and those you are likely to need before major administrative operations and keep them in a notebook of some kind.

Each command, system file, or other system object is described on a separate page. The reference pages are divided into seven sections, as shown in Table 1-1. When referring to reference pages, this document follows a standard UNIX convention: the name of the command is followed by its section number in parentheses. For example, *cc*(1) refers to the *cc* reference page in Section 1.

Table 1-1 shows the reference page sections and the types of reference pages that they contain.

Table intro-1 Outline of Reference Page Organization

Type of Reference Page	Section Number
General Commands	(1)
System Calls and Error Numbers	(2)
Library Subroutines	(3)
File Formats	(4)
Miscellaneous	(5)
Demos and Games	(6)
Special Files	(7)

The IRIX Release Notes

Provide specific information about the current release. Exceptions to the administration guides are found in this document. Release Notes are available online through the *relnotes* command. Each optional product or application has its own set of release notes. The *grelnotes* command provides a graphical interface to the release notes of all products installed on your system.

The IRIX Help System

Your IRIX system comes with a help system. This system provides help cards for commonly-asked questions about basic system setup and usage. The command to initiate a help session is *desktophelp*.

The Silicon Graphics World-Wide Web Site

The Silicon Graphics World-Wide Web (WWW) presence has been established to provide current information of interest to Silicon Graphics customers. The following URL addresses are accessible to most commercially available web browsers on the internet:

http://www.sgi.com
The Silicon Graphics general web server, Silicon Surf

http://www.mips.com
The Silicon Graphics mips division server

http://www.studio.sgi.com
The Silicon Studio server

http://www.ids.sgi.com
The InterActive Digital Solutions server

http://www.alias.com
The Alias server

http://www.sgi.com/Technology/TechPubs
The Silicon Graphics Tehcnical Publications Library

From these sites you can find all the Silicon Graphics web-published information, including the Technical Publications Library. Guide