

Tru64 UNIX

Documentation Overview

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This manual describes the documentation for the *Compaq Tru64™ UNIX®* operating system. It also describes the structure of the documentation kits and provides information about ordering them.

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About This Manual

This manual describes the documentation that comes with the *Compaq Tru64 UNIX* operating system. It also provides information about the structure of the documentation kits and gives you information to help you order printed versions of the documentation.

Audience

This manual is for anyone who needs to access documentation about the Tru64 UNIX operating system. It can help you decide which manuals in the documentation set are most useful to you and how you can use those manuals.

New and Changed Features

This manual has been revised to provide you with information about changes to the Tru64 UNIX documentation that have been made since the last release of the operating system. The *Glossary of Common UNIX and General Computer Term*, previously included in this manual, is now in the *Technical Overview*.

For an overview of the major changes to the Version 5.0A documentation set, see *Section 1.2*.

Organization

This manual is organized as follows:

- | | |
|------------------|--|
| <i>Chapter 1</i> | Provides general information about the Tru64 UNIX documentation set. |
| <i>Chapter 2</i> | Describes the Tru64 UNIX documentation set, provides a description of each manual, and describes how the documentation is packaged. |
| <i>Chapter 3</i> | Describes documentation that supplements the Tru64 UNIX documentation set. Some of these documents are produced by Compaq and others are produced by other organizations and provided by Compaq to help meet specific needs when working with the Tru64 UNIX operating system. |
| <i>Chapter 4</i> | Describes the Tru64 UNIX reference pages, shows the various ways of displaying the reference pages on line, and describes the contents of the Reference Pages Documentation Kit. |

- Chapter 5* Describes the Device Driver Kit and the contents of the books in that kit.
- Chapter 6* Provides information on how to order Tru64 UNIX printed documentation.

Reader's Comments

Compaq welcomes any comments and suggestions you have on this and other Tru64 UNIX manuals.

You can send your comments in the following ways:

- Fax: 603-884-0120 Attn: UBPG Publications, ZKO3-3/Y32
- Internet electronic mail: readers_comment@zk3.dec.com

A Reader's Comment form is located on your system in the following location:

```
/usr/doc/readers_comment.txt
```

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A Reader's Comment form is located in the back of each printed manual. The form is postage paid if you mail it in the United States.

Please include the following information along with your comments:

- The full title of the book and the order number. (The order number is printed on the title page of this book and on its back cover.)
- The section numbers and page numbers of the information on which you are commenting.
- The version of Tru64 UNIX that you are using.
- If known, the type of processor that is running the Tru64 UNIX software.

The Tru64 UNIX Publications group cannot respond to system problems or technical support inquiries. Please address technical questions to your local system vendor or to the appropriate Compaq technical support office. Information provided with the software media explains how to send problem reports to Compaq.

Finding the Documentation You Need

You can find most of the Tru64 UNIX documentation you need on the Documentation CD-ROM that comes with the Tru64 UNIX product and also on the World Wide Web. Most of this documentation is provided on line in HTML and PDF formats and is also available as printed books.

Your Web browser gives you access to the HTML format, and the Adobe Acrobat Reader lets you view and print the PDF versions. The printed books are packaged in kits that you can purchase from Compaq.

Additional documentation is included on the Tru64 UNIX Operating System CD-ROM and on the Associated Products CD-ROMs.

This chapter can help you to find the documentation you need, in the format that is most convenient to you.

1.1 Defining the Documentation Set

The following list describes some of the terms used to categorize documentation that is provided with the operating system or used in conjunction with utilities and applications that run on the operating system:

- Core documentation

Consists of books and reference pages that help you to use the Tru64 UNIX operating system, including the components provided when you install the system's optional and mandatory subsets. Most of this documentation was created by Compaq writers who worked closely with the developers of the operating system to document the system's various components. The books that make up the core documentation are described in Chapter 2.

On line, the Tru64 UNIX reference pages are available as optional subsets of the operating system and in HTML form on the Documentation CD-ROM. They are also available in printed format in a 22-volume kit. For information about the reference pages, see Chapter 4.

Documentation to aid program developers in writing device drivers for Tru64 UNIX was produced by Compaq writers working closely with the device driver engineers. This documentation is packaged in a separately orderable kit that also includes driver development tools, device driver

examples, and X Consortium code. For information about the device driver documentation, see Chapter 5.

- **Supplementary documentation**

Tends to be less formal in structure than the core documentation. This category includes many different types of documents, such as Software Product Descriptions (SPDs), release notes for some components of the Tru64 UNIX operating system, and industry reference material and white papers that come from Compaq engineers and other sources. Supplementary documentation exists only on line, so it is not available in any of the printed Tru64 UNIX documentation kits. For more information, see Chapter 3.

- **Layered products documentation**

Consists of books and other documents that aid in the use of separately licensed products, such as Compaq's C++ product and the TruCluster Server products. For more information, see Section 1.6.

1.2 Changes to the Version 5.0A Documentation Set

With this release of the Tru64 UNIX, the following documentation has been updated:

- *Release Notes for Version 5.0A*
- *Installation Guide*
- *Installation Guide — Advanced Topics*
Update Installation Quick Reference Card
- *Compaq C Language Reference Manual* (formerly *DEC C Language Reference Manual*)
- *Programmer's Guide*
- *Security*
- *Guide to Preparing Product Kits*
- *System Administration*
- *Guide to the POSIX Threads Library* (formerly *Guide to DECthreads*)
- *Network Programmer's Guide*
- *Technical Overview*
- *Sharing Software on a Local Area Network*
- *System Configuration Supplement: OEM Platforms*

Other noteworthy changes to the documentation are as follows:

- The following documentation is new with this release:

- TruCluster Server *Technical Overview*
- *Full Installation Quick Start* card

Both documents are packaged in the Startup Documentation Kit. See Section 2.1.1 for information about these documents.

- The *Glossary of Common UNIX and General Computer Terms*, once included in this manual, is now in the *Technical Overview*, where many of the terms defined in the Glossary are discussed in the text. Also, the Glossary is now accessible directly from the General User shelf of the Documentation CD-ROM and on the Tru64 UNIX documentation Web site. (See Section 1.4.1 for an overview of the Documentation CD-ROM and Section 1.4.2 for an overview of the Tru64 UNIX documentation available on the Web.)
- The *Ladefug Debugger Manual* is no longer available in a printed format, and is therefore no longer part of the Developer's Documentation Kit. It is, however, still available on line on the Programming Guides shelf.
- The online version of the *Master Index* was revised with this release; the printed version was not revised.

1.3 What You Get

The documentation that you receive from Compaq depends upon the purchase you make:

- If you purchase a Tru64 UNIX media kit, you receive all of the online documentation, as well as printed versions of the Startup documentation described in Chapter 2.
- If you purchase the Tru64 UNIX Documentation Kit, you receive printed versions of the books described in Chapter 2.
- If you purchase an Update Contract for the media, you receive the most current version of the Documentation CD-ROM, and printed versions of the books in the Startup documentation that were revised.
- If you purchase an Update Contract for the documentation set, you receive printed versions of the books that have been updated.
- If you purchase a system with the Tru64 UNIX operating system preinstalled (often called a FIS system, for factory installed software), online versions of the following books are installed on the system:
 - *Release Notes for Version 5.0A*
 - *Installation Guide*
 - *Installation Guide — Advanced Topics*
 - *Security*

- *System Administration*
- *Network Administration*
- *Technical Overview*
- *Documentation Overview* (the book you are reading)
- *Safety & Comfort Guide*

1.4 Online Documentation

The documentation for the Tru64 UNIX operating system, including the reference pages, is available on the Tru64 UNIX Documentation CD-ROM in a format that is readable with a Web browser or with the Adobe Acrobat Reader.

Most of this documentation, as well as documentation for associated applications, is also available on the World Wide Web (see Section 1.4.2). The features that are available on the Documentation CD-ROM, such as the links to other documentation, are also available on the Web.

If you are working on an Alpha system, the operating system provides a Netscape browser for viewing the HTML documentation. If you want to view the documentation on a Windows PC or Macintosh, you will need a browser that supports frames and Java Script Version 1.1. Compaq recommends using Version 4.0 or higher of Netscape Navigator, Netscape Communicator, or Microsoft Internet Explorer.

To view the PDF files, you need to install Version 3.0 or higher of the Adobe Acrobat Reader or the Reader plug-in to your Web browser. The Documentation CD-ROM provides the Acrobat Reader for Tru64 UNIX systems, Windows PCs, Macintosh, and several other platforms. You can also obtain the latest version directly from the Adobe Systems Inc. Web site:

<http://www.adobe.com>

With Acrobat Reader, you can scroll through books, print selected sections or entire books, and copy sections to the clipboard.

1.4.1 The Documentation CD-ROM

The Documentation CD-ROM contains HTML and PDF versions of Tru64 UNIX documents, including books, white papers, and the complete set of operating system reference pages. The CD-ROM provides links to these HTML and PDF documents.

You can use the Tru64 UNIX Documentation CD-ROM on a Tru64 UNIX system, as well as on a Windows PC or Macintosh – laptop or workstation – or on any other system that uses the ISO 9660 Level 1 CD-ROM standard.

(For additional information, see the information on the Documentation CD-ROM jacket.)

To help you locate specific information in the documentation, the CD-ROM contains a copy of the AltaVista Search CD-ROM software with a complete index of the HTML documents. The AltaVista software runs on an x86-based PC with Windows 95, Windows 98, Windows 2000, and Windows NT Version 4.0.

The CD's online Documentation Library is arranged into categories that generally follow the structure of the printed documentation kits. Each category is represented by a bulleted list, with the bullet for each book colored to indicate the documentation subkit to which the book belongs:

- A blue bullet indicates General User Documentation.
- A purple bullet indicates Programming Documentation.
- A maroon bullet indicates the System and Network Management Documentation.
- A silver bullet indicates Supplementary Documentation, which is documentation that is not part of any kit and cannot be ordered from Compaq.
- A green bullet indicates the Reference Pages.

Books that meet the needs of different audiences appear in several categories. For example, you will find the *Security* book in the General User, Programming, and System and Network Management categories because it serves each of those audiences. Because it is part of the General User subkit, its bullet is blue in all of the categories in which it appears.

Most cross-references are hot links, so you can follow those references from book to book, from book to reference page, from reference page to book, and from reference page to reference page.

Each book you refer to opens in a separate window so you can easily move from book to book as you gather the information you need. When following links to reference pages, the first reference page opens in a new window, and references to subsequent reference pages will appear in the same reference page window as long as you keep it on your screen.

The Documentation CD-ROM also contains the `webman` viewer, a program you can use with your browser to view reference pages. For information about the `webman` viewer, see Chapter 4.

To mount the Documentation CD-ROM on Tru64 UNIX systems, PCs, and Macintosh computers, see the inside panels of the Documentation CD-ROM jacket. The Tru64 UNIX *Installation Guide* provides an overview of using CD-ROMs on Tru64 UNIX systems.

1.4.2 Documentation on the World Wide Web

You can find most of the Tru64 UNIX core and supplementary documentation, the reference pages, and other useful documentation on the World Wide Web.

To view this documentation, point your Web browser to the following URL:

http://www.unix.digital.com/faqs/publications/pub_page/pubs_page.html

There you will find documentation sets for Tru64 UNIX versions dating back to Version 3.0. Books for the current and most recent versions are available in HTML and PDF formats. The books for earlier versions of the operating system are available only in PostScript format.

Beginning with the Version 4.0D release, the *Documentation Overview* lists the documentation changes for each release. You might want to begin with the *Documentation Overview* in your search for information about the documentation in prior versions.

The Web site also gives you access to the Tru64 UNIX reference pages, as well as to the following documentation:

- Tru64 UNIX Tru64 UNIX Tru64 UNIX Best Practices documentation (See Section 3.2 for details)
- Tru64 UNIX Device Driver documentation library (See Chapter 5 for details)
- TruCluster Server (including the TruCluster reference pages)
- Advanced Server for UNIX
- Open Source Internet Solutions for Tru64 UNIX
- Tru64 UNIX Porting Guides
- Tru64 UNIX POSIX Conformance Documentation

The Web also provides updates to documentation between formal product releases. For example, Compaq maintains online Technical Updates, which provide information about restrictions and problems that have been discovered with specific versions since their release. Visit the following Web site to see the Technical Update for Version 5.0A:

<http://www.unix.digital.com/faqs/publications/updates/V50A/TITLE.HTM>

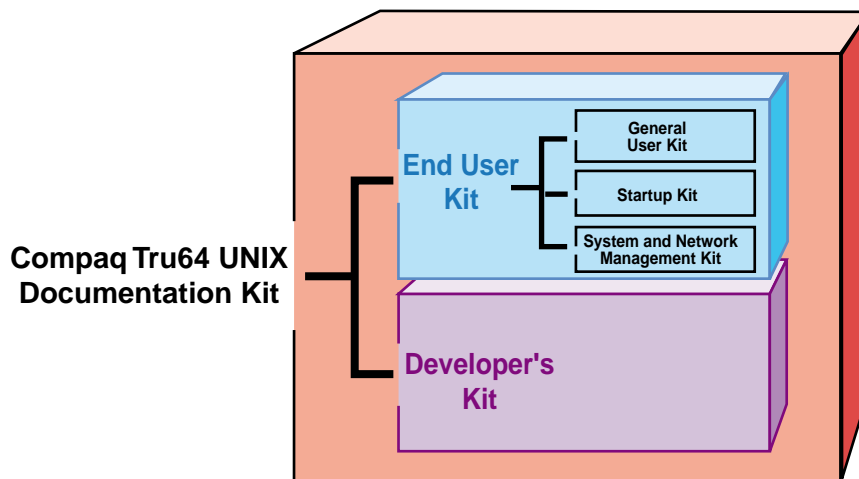
Compaq recommends that you view this site periodically to see if any new information has been added.

1.5 Printed Documentation

When you purchase a Tru64 UNIX media kit, you receive printed versions of various manuals to help you install and begin using the operating system. To receive printed versions of the rest of the core documentation, you must

order a Tru64 UNIX Documentation Kit (Figure 1–1) or one or more of its subkits, as described in Chapter 2.

Figure 1–1: Structure of the Tru64 UNIX Documentation Kit



- **End User Documentation Kit**

This kit contains all the information needed to install and use the Tru64 UNIX system. This kit is divided into three subkits as follows:

 - **Startup Documentation Kit**

This kit is primarily for the person who installs the Tru64 UNIX operating system. It contains information on how to configure software components and some information (such as the *Release Notes*) needed by all Tru64 UNIX users.

When you order the Tru64 UNIX operating system, the books in the Startup Documentation Kit are packaged with the distribution media.
 - **System and Network Management Documentation Kit**

This kit is for people who are responsible for managing the Tru64 UNIX operating system or network. The manuals in this kit provide information on how to configure, manage, and tune Tru64 UNIX systems.
 - **General User Documentation Kit**

This kit provides general information on how to use the Tru64 UNIX operating system. The manuals in this kit are for everyone who uses Tru64 UNIX.
- **Developer's Documentation Kit**

This kit is for software developers who write programs on or for the Tru64 UNIX operating system. The books in this kit include information on tools and programming recommendations.

The printed manuals include a letter icon on the spine to help you quickly find the book you are looking for. The following icons are used:

- G** Indicates books that are in the General User Documentation Kit
- S** Indicates books that are in the System and Network Management Documentation Kit
- P** Indicates books that are in the Developer's Documentation Kit (the P is for programmers)

Although a book's primary audience determines the documentation kit it is packaged in, some books help meet the needs of several audiences. For example, a general user can read the *Programming Support Tools* manual (packaged in the Developer's Documentation Kit) to get advanced information about using commands such as `grep` or `awk`. The *Security* manual (packaged in the General User Documentation Kit) provides information for system administrators and programmers, as well as for general users. Keep this in mind when searching for information on specific topics.

1.6 Documentation for Layered Applications

Compaq and third-party vendors produce many applications that run on Tru64 UNIX systems. The documentation for most of these products is included with the individual application software. The following sections provide some guidance.

1.6.1 Products Packaged with Tru64 UNIX

The CD-ROMs in the Tru64 UNIX media kit include the software and documentation for several separately licensed products. You do not need a license to view this documentation, which in most cases is provided in both HTML and PDF (or PostScript) formats.

The following separately licensed products are among those included with the kit:

- TruCluster Server products
- Advanced File System (AdvFS) Utilities
- Advanced Server for UNIX
- Windows 2000 Single Sign On
- Advanced Printing Software

See the *Tru64 UNIX Version 5.0A CD-ROMs* sheet (included in printed form in the Tru64 UNIX media kit and in HTML form on the Documentation CD-ROM) for a complete list and the location of the layered applications included with Tru64 UNIX. See Section 3.5 for information about the Tru64 UNIX Associated Products CD-ROMS.

1.6.2 Tru64 UNIX Alpha Online Documentation Library

Many of the layered applications produced by Compaq, such as Compaq's C++ product and the Distributed Computing Environment (DCE), are included on the Tru64 UNIX Alpha Software Product Library, a collection of CD-ROMs in a kit that is updated every three months. The documentation for these products is included on the companion Tru64 UNIX Alpha Online Documentation Library CD-ROM. These software and documentation kits are separately orderable products; they are not included with the Tru64 UNIX media kit. For information about ordering these kits, contact your Compaq sales representative.

1.6.3 Device Driver Documentation

Documentation for programmers who create device driver software for the Tru64 UNIX operating system is available as a separately orderable kit. See Chapter 5 for more information about the Device Driver Documentation Kit.

The Tru64 UNIX Manuals

This chapter provides brief descriptions of the core documentation. It is divided into sections that follow the structure of the printed documentation kits. All of the books in this chapter are available as printed books and, except where indicated, are also provided in various online formats. See Section 1.4 for information about the online Documentation Library structure.

Except for a few externally published manuals, the documentation described here was produced by Compaq writers working closely with the developers of the Tru64 UNIX operating system.

2.1 End User Documentation

Manuals for the end user contain the information you need to install and configure a Tru64 UNIX system, bring it up on a network, and use it. The documentation in this category is grouped in three primary areas: startup documentation, general user documentation, and system and network management documentation.

2.1.1 Startup Documentation

The startup documentation is packaged in printed form with your Tru64 UNIX media. It consists of the documents you need to install, configure, and begin using your system.

Documentation Overview

This is the book you are reading.

Installation Guide

This manual describes the procedures for performing an update installation or a basic installation of the Tru64 UNIX product on all supported processors.

Installation Guide — Advanced Topics

This manual describes the procedures for performing an advanced installation of the Tru64 UNIX product on all supported processors. It also discusses system administration procedures in a standalone environment.

Full Installation Quick Start (available only in printed form)

This foldout card provides easy access to the information needed to install a Tru64 UNIX system.

Update Installation Quick Reference Card (available only in printed form)

This foldout card provides easy access to the information needed to upgrade a Tru64 UNIX system to the next version. Update installations preserve disk partitions, file systems, and file customizations.

Quick Reference Card (available only in printed form)

This foldout card provides fingertip access to the format of common user commands, such as `cd`, `chmod`, `lpr`, and `man`. The card also describes options that are commonly used with each command.

Additionally, this card provides command summaries for the `vi`, `emacs`, `Mail`, and `mail` applications, and it summarizes the rules for forming regular expressions. It provides a description of command control symbols (such as `|`, the pipe symbol) and gives definitions of shell environment variables and metacharacters.

Release Notes for Version 5.0A

The *Release Notes* are for all users of the Tru64 UNIX operating system. This book includes the following information:

- An overview of the new and changed features of the Version 5.0A software
- Announcements about features and interfaces that are scheduled for removal in future versions of Tru64 UNIX
- Information about installing the software
- Information that is relevant to specific Compaq Alpha processors
- Information about the base operating system
- Information about the development environment
- Information about the graphical interfaces
- Additions and corrections to the books in the Tru64 UNIX documentation set
- Information about the contents of the media and disk-space requirements
- Information about changes to time zone directories and files

Compaq recommends that you read this information before installing or using the Tru64 UNIX operating system.

Note

Compaq maintains an online *Technical Update* that contains information about restrictions and problems that have been discovered since Version 5.0A began shipping. To view this document on the Web, go to the following URL:

<http://www.unix.digital.com/faqs/publications/updates/V50A/TITLE.HTM>

Compaq recommends that you visit this site periodically to see if any new information has been added.

Technical Overview

This manual describes the major components of the Tru64 UNIX operating system. The opening chapter provides an introduction to the operating system, including discussions of recent enhancements, licensing, and available optional software. This is followed by more in-depth discussions on various aspects of the operating system. A partial list of the topics follows:

- The various features available to system administrators
- The available networking protocols and applications
- The supported file systems
- The Tru64 UNIX kernel, symmetric multiprocessing, virtual memory, and device recognition
- Major features of the Tru64 UNIX development environment
- Tru64 UNIX interoperability with Windows NT and Windows 2000
- Tru64 UNIX security
- Issues concerning internationalization

Because this book might introduce new terms to you, it now contains the *Glossary of Common UNIX and General Computer Terms*, which was previously part of this *Documentation Overview*. When using the online version of the *Technical Overview*, some of the terms used within the discussions are linked to the Glossary; you are a mouse click away from the term's definition.

TruCluster Server Technical Overview

This manual describes the major components of the TruCluster Server product. The opening chapter introduces the features of a TruCluster Server cluster and compares them to those provided in earlier products in the TruCluster Software family. Subsequent chapters provide a more in-depth discussion of certain features, including:

- Clusterwide file systems, storage, and device names

- The connection manager
- Highly available applications
- The cluster application availability (CAA) component
- The cluster alias subsystem
- The cluster interconnect
- The distributed lock manager (DLM)

Tru64 UNIX Version 5.0A CD-ROMs

This one-page document provides a brief listing of the components on the CD-ROMs in the media kit. An online version of this document is included in the General User Documents category of the Tru64 UNIX Documentation CD-ROM.

The information on this card is covered in detail in Chapter 2 of the *Installation Guide*.

2.1.2 General User Documentation

General user documentation contains important information for all users of the Tru64 UNIX operating system. The books in this category provide introductory information for people who are unfamiliar with Tru64 UNIX.

CDE Companion

This manual provides an introduction to Compaq's implementation of the Common Desktop Environment (CDE), an easy method of interacting with the Tru64 UNIX operating system.

For users migrating from DECwindows Motif to CDE, this book serves as an introduction to the new environment, providing information on how to use CDE to complete tasks previously done by using DECwindows.

For users who are new to desktop environments, this book provides quick-start information on topics such as logging into the system, navigating the system, and using and managing the desktop and applications.

This book can be used in conjunction with the *Common Desktop Environment: User's Guide*.

Command and Shell User's Guide

This manual introduces the basic features of the Tru64 UNIX operating system. It describes how to use the command line interface and to perform such tasks as copying files and creating directories. It also describes how to use the shells and their built-in commands.

Although this manual is primarily for users who have little or no familiarity with UNIX-compatible systems, experienced users can find useful shortcuts and tips.

Master Index

This book can help you find the information you need in the core documentation set, as follows:

- In the printed version of this book, the index items advise you in which books to look and direct you to the pages where the topic is discussed. The printed version of the *Master Index* was not revised for this release, although the online version was revised.
- In the online version of this book, clicking on an index item in many cases will take you to the appropriate book at the point where the topic is discussed. For the Common Desktop Environment books and various other books, clicking on the index item will take you only to the beginning of the appropriate book, where you can use the table of contents or the book's index to find out where the topic is discussed.

Security

This manual provides information needed by users and system administrators who are working on Tru64 UNIX systems that have the optional enhanced security subsets installed. It also provides information needed by developers who are writing programs that will run on secure systems. The enhanced security features help protect systems and data from access by unauthorized users.

This manual also provides information about security on systems that do not have the enhanced security subsets installed.

The information is organized as follows:

- Part 1 describes how to use the Tru64 UNIX operating system with enhanced security from the command line.
- Part 2 describes how to administer the operating system's enhanced security, which includes enhanced passwords and the audit subsystem. The Security Integration Architecture (SIA) is also discussed. This part of the manual assumes prior knowledge and experience administering secure systems.
- Part 3 describes how to write programs that run on the Tru64 UNIX operating system with enhanced security. This part assumes general programming knowledge, including knowing how to use the Tru64 UNIX programming tools.

2.1.3 System and Network Management Documentation

System and network management documentation provides information on topics such as configuring systems and networks, maintaining disks, and using system administration tools.

AdvFS Administration

AdvFS is the default file system for the Tru64 UNIX operating system. It provides rapid crash recovery and a flexible structure that allows you to manage your file system while it is on line.

The AdvFS Utilities, which are available as a layered product, extend the file system capabilities by including utilities to add volumes, create clones, stripe files, and balance file domains.

This manual provides task-based information and instruction on using, configuring, troubleshooting, tuning, and administering AdvFS base and utilities functions.

Guide to Prestoserve

Prestoserve speeds up synchronous disk writes, including Network File System (NFS) server access, by reducing the amount of disk I/O.

This manual describes how to manage and maintain a Tru64 UNIX system that includes the optional Prestoserve hardware and software.

Kernel Debugging

The manual describes using the `dbx`, `kdbx`, and `kdebug` debuggers to find problems in kernel code. It also describes how to write a `kdbx` utility extension and how to create and analyze a crash dump file.

This manual is for system administrators responsible for modifying, rebuilding, and debugging the kernel configuration. It is also for system programmers who need to debug their kernel-space programs.

Logical Storage Manager

The Logical Storage Manager (LSM) software provides high data availability, better performance, and greater storage management flexibility through online support for disk storage devices on Alpha systems.

This manual explains LSM concepts and how to install and administer the LSM software.

Network Administration

This manual provides information on establishing a Tru64 UNIX system on a network and configuring network software such as NFS and DNS. It also explains how to manage a network and network applications and how to solve problems that might arise.

This manual is for experienced system and network administrators who have knowledge of TCP/IP networking concepts and network configuration. Readers should also have knowledge of operating system concepts, commands, and configuration.

Sharing Software on a Local Area Network

This manual describes Remote Installation Services (RIS) and Dataless Management Services (DMS). The RIS utility is used for installing software across a network, instead of using locally mounted media. DMS allows a server system to maintain the `root`, `/usr`, and `/var` file systems for client systems. Each client computer has its own root file system on the server, but clients share the `/usr` and `/var` file systems.

Software License Management

This manual describes how to use the License Management Facility (LMF) to manage software licenses from Compaq.

Although intended primarily for system administrators responsible for managing software licenses on Tru64 UNIX systems, this manual also provides information for anyone who uses licensed software on Tru64 UNIX systems.

System Administration

This manual describes how to configure, use, and maintain the Tru64 UNIX operating system. It includes information on general day-to-day activities and tasks, changing system configurations, and locating and eliminating sources of trouble.

System administrators are provided with overviews of administrative concepts, as well as step-by-step instructions to perform necessary tasks using either the SysMan graphical interface or the command-line tools.

This manual is for system administrators responsible for managing the operating system. It assumes a knowledge of operating system concepts, commands, and configurations.

System Configuration and Tuning

This manual describes how to set up and tune high-performance and high-availability systems running the Tru64 UNIX operating system. It can help system administrators to accomplish many system tasks, including the following:

- Determine the needs of the environment
- Configure and tune a system that will meet current and future needs
- Understand how hardware, operating system subsystems, and layered applications interact to affect system performance
- Learn recommended ways to improve performance

System Configuration Supplement: OEM Platforms

This manual provides information needed to set up OEM platforms running the Tru64 UNIX operating system. It helps system and network administrators configure Alpha VME single-board computers (SBCs), PCI/ISA modular SBCs, and VMEbus backplane networks in which SBCs operate as Ethernet nodes.

This manual is for experienced system and network administrators who are thoroughly familiar with their platform's I/O bus and with the operating system concepts, commands, and configurations.

X Window System Administrator's Guide (available only in printed form)

This manual, published by O'Reilly & Associates, describes how to customize a wide range of X Window System environments, from an individual workstation to groups of workstations and X terminals connected on a network. Major topics include security, the X display manager (x_{dm}), fonts, color, X terminals, and X client applications.

X Window System Environment

This manual describes various aspects of the X Window System environment as it is implemented on Tru64 UNIX. It provides information on how to perform system administration tasks for the Tru64 UNIX X Window System environment, and describes how to customize X Window System resources and key mappings. It also provides information about programming within the Tru64 UNIX X Window System environment.

2.2 Documentation for Program Developers

The programming documentation consists of manuals designed for software developers who write software applications on or for the Tru64 UNIX operating system.

Assembly Language Programmer's Guide

This manual describes the Alpha hardware architecture's assembly language, which is supported by the Tru64 UNIX compiler system. The manual describes the assembly language syntax rules, and how to write assembly language programs.

This manual is for system software developers who are writing assembly language programs on or for Tru64 UNIX.

Asynchronous Transfer Mode

This manual describes the Tru64 UNIX Asynchronous Transfer Mode (ATM) subsystem, how to configure the subsystem, and how to use the ATM kernel interfaces. It is written for experienced UNIX kernel programmers who are responsible for writing ATM device drivers and kernel modules. After reading this manual, a kernel programmer should be able to do the following:

- Understand the ATM subsystem architecture
- Configure ATM software
- Understand how the different kernel interfaces operate
- Write a kernel module

This manual does not describe the application programming interface (API) that user-level applications would use to access the ATM subsystem. This manual is not an ATM networking tutorial.

Calling Standard for Alpha Systems

This manual defines the requirements, mechanisms, and conventions used in the interface that supports procedure calls on Tru64 UNIX for Alpha systems. The standard defines data structures, constants, algorithms, conventions, methods, and functional interfaces, which enable a native, user-mode procedure to operate correctly in the multilanguage and multithreaded Tru64 UNIX environment on Alpha hardware.

Although this manual primarily defines requirements for compiler and debugger writers, the information applies to procedure calling for all programmers at all levels of programming.

Compaq C Language Reference Manual

This manual (previously called the *DEC C Language Reference Manual*) provides reference information for using the Compaq C language on Compaq systems. Compaq C is an ISO/ANSI-compliant C compiler for Tru64 UNIX and OpenVMS VAX and Alpha systems.

This manual is based on the ISO C Standard (ISO 9899:1990[1992]), formerly the ANSI X3J11 committee's standard for the C programming language (commonly called ANSI C). All library functions and language extensions to the ANSI C standard are also described.

This manual is intended for programmers who need reference information on the Compaq C language. For task-oriented information or platform-specific information, see the `cc(1)` reference page and the *Programmer's Guide*.

Compaq Portable Mathematics Library

This manual provides reference and exception information for the Compaq Portable Mathematics Library (CPML) software. This manual documents the CPML routines and, in particular, how they behave when given an exception input argument. It also documents operating system entry points and supported floating-point data types.

This manual is for compiler writers and system and application programmers who do not have high-level language support of CPML routines in their language of choice, but instead need to access CPML routines directly from application programs.

Guide to the POSIX Threads Library

This manual (formerly called *Guide to DECThreads*) provides usage and reference information on POSIX Threads Library routines. It provides information on the three POSIX Threads Library interfaces used to perform multithreaded operations: `cma`, `pthread`, and `pthread` exception-returning.

This manual is for programmers writing multithreaded applications. It assumes experience with a high-level programming language (such as C), with UNIX operating systems, and with UNIX software development tools.

Guide to Preparing Product Kits

This manual describes the procedures for creating, maintaining, and installing the collections of files and directories that make up a layered product kit. A kit is the standard mechanism by which layered product modifications are delivered and maintained on a Tru64 UNIX system. Kits are distributed on CD-ROM, diskettes, or tape for installation on customers' systems.

This is the same manual that is included in the Tru64 UNIX Device Drivers Kit (DDK).

Guide to Realtime Programming

This manual is for programmers who are developing realtime applications on Tru64 UNIX systems. It provides information on writing new realtime applications and porting existing realtime applications from other systems.

This manual does not present function syntax or reference information; the online reference pages provide that information.

This manual is for application programmers or system engineers who are already familiar with the C programming language. It assumes experience with UNIX operating systems and with UNIX software development tools.

Network Programmer's Guide

This manual describes the Tru64 UNIX network programming environment. It describes in depth the X/Open Transport Interface (XTI) and the sockets and STREAMS programming frameworks, including information about system calls, header files, and libraries. Additionally, it provides information about porting sockets-based applications to XTI.

This manual also describes the software bridge `ifnet` (STREAMS module and DLPI STREAMS pseudodevice driver) that the Tru64 UNIX operating system supports. This bridge allows programs that use sockets-based protocol stacks to access STREAMS drivers, and programs that use STREAMS-based protocol stacks to access BSD-based drivers.

This manual is for experienced UNIX programmers.

OSF/Motif Programmer's Guide (available in printed form only)

This manual (developed by the OSF and published by Prentice Hall) provides programming information on how to use the various components of the OSF/Motif environment: the Toolkit, window manager, and user interface language.

This manual is for programmers who want to create applications in the OSF/Motif environment.

OSF/Motif Style Guide (available in printed form only)

This manual (developed by the OSF and published by Prentice Hall) provides a framework of behavior specifications to guide application developers, widget developers, and window manager developers in the design and implementation of products consistent with the Presentation Manager and the OSF/Motif user interface.

This manual establishes consistent behavior among new products by drawing out common elements from a variety of current behavioral models.

It anticipates the evolution of graphical user interfaces as new technology becomes available and as the use of the OSF/Motif user interface spreads.

This manual is for programmers and interface designers developing OSF/Motif applications who want to present a uniform and usable software interface consistent with other OSF/Motif applications.

Programmer's Guide

This manual describes the programming environment of the Tru64 UNIX operating system, with an emphasis on the C programming language.

This manual is for all programmers who use the Tru64 UNIX operating system to create or maintain programs in any supported language.

Programmer's Guide: STREAMS (available only in printed form)

This manual (developed by AT&T and published by Prentice Hall) provides information on the use of the STREAMS mechanism at the user and kernel levels. It contains introductory information for those who are unfamiliar with the STREAMS mechanism.

This manual addresses topics such as using STREAMS to monitor, control, and poll STREAMS; designing and implementing STREAMS modules and drivers; and using STREAMS-based pipes and FIFOs. It also describes the STREAMS multiplexing facility and the STREAMS-based terminal and pseudo-terminal subsystems.

Programming Support Tools

This manual describes commands and utilities for text manipulation, macro and program generation, and source file management on Tru64 UNIX.

Although the commands and utilities described in this manual are primarily for programmers, some of them (such as `grep`, `awk`, `sed`, and the Source Code Control System (SCCS)) are useful for general users.

This manual assumes that the reader is a moderately experienced user of UNIX systems.

Programming with ONC RPC

This manual provides an overview of high-level programming with remote procedure calls (RPC) in the Open-Network Computing Environment (ONC). It describes how to use the `rpcgen` protocol compiler to create RPC applications and describes the RPC programming interface.

This manual is for programmers who want to write network applications without knowledge of the underlying network.

Writing Software for the International Market

Internationalization (often called I18N) is the process of designing or adapting programs to interact with users in their own language and to reflect the culture of the user's region.

This manual provides an overview of internationalization concepts. It also provides details about writing internationalized programs, creating and using message catalogs, and developing or customizing locales.

This manual is for programmers developing internationalized applications for the Tru64 UNIX operating system.

Writing Kernel Modules

Kernel modules are binary images containing code and data structures that run in the UNIX kernel. These modules provide a level of common code that improves the efficiency of a system by combining like tasks in a single area and eliminating redundant code.

This manual provides information for developers who want to augment the kernel with modules tailored to their particular environment.

Supplementary Documentation

To help meet specific needs when working with the Tru64 UNIX operating system, Compaq makes available documentation that supplements the core Tru64 UNIX documentation set. This chapter describes this supplementary documentation.

3.1 Overview

Supplementary documentation is provided only on line and comes from various sources. Some of this material, including all of the Best Practice documentation, is produced by Compaq writers working closely with Tru64 UNIX developers. Other documentation is produced by UNIX professionals both within Compaq and outside of the corporation. Supplementary documentation tends to be less formal in structure than the core documentation.

The Documentation CD-ROM, Operating System CD-ROM, Associated Products CD-ROMs Volumes 1 and 2 and the Compaq World Wide Web environment all contain supplementary documentation.

For example, the Associated Products CD-ROMs contain installation guides for the Multimedia Services for Tru64 UNIX run-time environment, DEEvent, and the Porting Assistant. Other component-specific information includes release notes, Software Product Descriptions (SPDs), and user information.

This *Documentation Overview* does not list all of the supplementary documentation on the CD-ROMs, but it does provide some guidance in the following sections.

3.2 Web-Based Best Practices Documentation

Best Practices documentation offers a recommended method for performing a task, rather than presenting all of the options available. This type of documentation walks you step-by-step through the process.

The recommend procedure might depend on your configuration environment. For example, the Best Practice for performing a particular task on a Web server might differ from the one for performing the same task on a file server. The Best Practice documentation cannot meet the needs of all users, but

it is aimed at the most common tasks and system configurations in order to meet the demands of most users.

The Best Practices documentation currently resides only on the Web at the following site:

http://www.unix.digital.com/faqs/publications/best_practices/

The volume of Best Practice documentation continues to grow, due in part to requests from customers. The Best Practices Web page provides information for sending your suggestions to Compaq. You might find new Best Practice documentation at this site each time you visit it.

3.3 Documentation CD-ROM

The supplementary documentation described in the following sections is included on the Documentation CD-ROM.

Much of this documentation is provided in both HTML and PDF formats; some is provided only in one of the two formats. If your system is configured as suggested, you can click on the HTML link to view the document in your Web browser or click on the PDF link to view the document using Adobe Acrobat Reader.

3.3.1 Advanced Printing Software *User Guide*

This manual provides information about using the Advanced Printing Software, which is included as an optional component of the Tru64 UNIX operating system. The *User Guide* describes how to submit jobs to your printer using the command-line interface. It also shows you how to set up your local print environment and monitor jobs you have submitted.

This manual is also packaged with the software kit, as is the following companion documentation:

- Advanced Printing Software *System Administration and Operation Guide*
- Advanced Printing Software *Command Reference Guide*
- Advanced Printing Software *Release Notes*
- Advanced Printing Software *Installation Guide*

3.3.2 CD-ROM Contents Listing

This is an online version of the document called *Tru64 UNIX Version 5.0A CD-ROMs*, which is included in the Tru64 UNIX media kit. It provides brief listings of the software components on the CD-ROMs in the media kit.

3.3.3 Common Desktop Environment and TookTalk Documentation

Prior to the Version 5.0 release, the Common Desktop Environment documentation was provided in printed format. It is now available only on line.

3.3.3.1 Documentation for Users and System Administrators

The following books were previously included in the General User Documentation Kit:

- *Common Desktop Environment: Advanced User's and System Administrator's Guide*

This manual describes how to customize the appearance and behavior of CDE. It provides information on topics such as the following:

- Customizing system initialization, log in, and session initiation
- Adding applications and providing interface representations for applications and their data
- Configuring desktop processes, applications, and data across the network
- Customizing desktop services such as window management, printing, colors, and fonts

This book is intended for users who want to perform customizations that cannot be accomplished using the desktop user interface. This book is also intended for system administrators; many of the tasks in this book require superuser permission.

- *Common Desktop Environment: User's Guide*

This manual describes the basic features of the CDE and describes how to use the desktop and the desktop applications. It expands upon some of the topics in the *CDE Companion* and provides figures of the graphical interface as it is displayed on workstation screens.

3.3.3.2 Documentation for Windows Developers

The following books were previously included in the Windows Programming Documentation Kit:

- *Common Desktop Environment: Application Builder User's Guide*

This manual introduces the Application Builder and explains how to use it to build CDE applications. Because the Application Builder helps to easily create and modify user interfaces, it is a powerful tool for programmers, user interface designers, and project managers.

- *Common Desktop Environment: Desktop KornShell User's Guide*

This manual provides the information needed to create Motif applications with KornShell (`ksh`) scripts. It also provides several example scripts of increasing complexity.

This manual is for programmers who want to develop Motif applications using KornShell scripts rather than the C programming language. This manual assumes knowledge of KornShell programming, Motif, and the Xt Intrinsics. Familiarity with the X programming library (`xlib`) is also assumed.

- *Common Desktop Environment: Help System Author's and Programmer's Guide*

This manual describes how to develop online help for CDE applications. It describes how to create help topics and how to integrate online help into a CDE application.

This manual is for application programmers who want to do the following:

- Design, create, and view online help information
- Create software applications that provide a fully integrated help facility

- *Common Desktop Environment: Internationalization Programmer's Guide*

This manual provides information for internationalizing the desktop and enabling applications to support various languages and cultural conventions in a consistent user interface.

This manual is for CDE application programmers whose products are available worldwide.

- *Common Desktop Environment: Programmer's Guide*

This manual contains the information needed to integrate an existing application into the CDE desktop. It also describes how to write new CDE applications.

This manual assumes a familiarity with Motif, X, UNIX, and C programming.

- *Common Desktop Environment: Programmer's Overview*

This manual provides a high-level view of the development environment and the developer documentation set for CDE. It is for the following audiences:

- Application developers who develop new CDE applications, or integrate existing OSF/Motif applications into CDE
- Managers or project leaders interested in designing a project involving applications that will run on CDE

- *Common Desktop Environment: Style Guide and Certification Checklist*

This manual provides style guidelines for CDE application design and lists the requirements for CDE application-level certification. CDE requirements consist of the OSF/Motif Version 1.2 requirements with CDE-specific additions.

- *Common Desktop Environment: Product Glossary*

This glossary provides a comprehensive list of terms used in the Common Desktop Environment.

This manual is for all CDE users.

3.3.3.3 ToolTalk Service Documentation

ToolTalk is an interapplication communication service that is included as part of the Common Desktop Environment. ToolTalk provides a way for applications and desktop components to request services of each other and to announce events. The following books provide information about the ToolTalk service:

- *Common Desktop Environment: ToolTalk Messaging Overview*

This manual describes how the ToolTalk service works and how it uses information that applications supply to deliver messages. It also describes how applications use the ToolTalk service and ToolTalk components.

This manual assumes familiarity with the ToolTalk service, UNIX operating system commands, system administrator commands, and system terminology.

This book was previously included in the Windows Programming Documentation Kit.

- *ToolTalk User's Guide*

This manual is useful to developers who create or maintain applications that use the ToolTalk service to interoperate with other applications; it is also useful to system administrators who set up workstations. This manual assumes the reader is familiar with operating system commands, system administrator commands, and system terminology.

- *ToolTalk Reference Manual*

This manual describes components of the ToolTalk application programming interface such as enumerated types and functions. It also describes ToolTalk-enhanced operating system shell commands, error messages, and standard ToolTalk messaging sets.

3.3.4 BIND Configuration File Guide

The *BIND Configuration File Guide* describes the Berkeley Internet Name Domain (BIND) Version 8 and its implementation as an Internet name server for BSD-derived operating systems.

Version 8 is more configurable than previous releases of BIND; there are entirely new areas of configuration, such as access control lists and categorized logging. Also, you can now selectively use many options that previously applied to all zones. These features, plus a consideration of future configuration needs, led to the creation of a new configuration file format.

3.3.5 DECEvent Translation and Reporting Utility

DECEvent provides an interface between a system user and the operating system's event logger. DECEvent can help system administrators to troubleshoot Tru64 UNIX system problems.

This manual describes the DECEvent command features related to the translation and reporting of events on Tru64 UNIX operating systems. It contains an overview of the utility, information on how to obtain help for the utility, and information about all the commands necessary to translate event logs on Tru64 UNIX operating systems.

3.3.6 How to Order Tru64 UNIX Documentation

The file titled *How to Order Tru64 UNIX Documentation* duplicates the information in Chapter 6. It provides a convenient way to move to the information and the Web links you need to order Tru64 UNIX documentation.

3.3.7 Java Documentation

The Tru64 UNIX operating system includes a Java Development Kit (JDK), which provides tools to develop and run Java applets and programs on the Tru64 UNIX operating system.

Access to the Java documentation depends upon whether the Java Development Kit is installed on your system and how your system administrator has set up your system. Clicking on *Java Overview* takes you to a page that provides information about viewing the Java documentation. This page also provides a Web link to the JavaSoft JDK documentation at the Sun Microsystems Java site.

3.3.8 *Ladebug Debugger Manual*

The Ladebug Debugger is a tool for debugging executable programs at the source-code and machine-code levels. It can debug programs written in C and C++, Ada, COBOL, and Fortran.

This manual is for developers who need to debug multiprocess and multithreaded applications, perform kernel debugging, and perform remote client/server debugging.

3.3.9 *New and Changed Features from Prior Releases*

The *New and Changed Features from Prior Releases* document lists the major features that were introduced and changes that were made to the Tru64 UNIX operating system since Version 4.0. The information in this document was originally presented in the *New and Changed Features* chapter of the operating system *Release Notes* of each of those versions.

3.3.10 *Object File / Symbol Table Specification*

The *Object File / Symbol Table Specification* fills a need for technical information for compiler and debugger writers and other developers who must access or manipulate object files on the Tru64 UNIX operating system. It supplements or replaces information that has been previously available in the *Assembly Language Programmer's Guide*. A familiarity with basic program development and symbol table concepts is assumed.

3.3.11 *Performance Manager*

Performance Manager is a real-time performance management tool that allows system administrators to detect and correct performance problems in Tru64 UNIX systems. The three primary components of the Performance Manager are a graphical user interface, the Performance Manager daemon, and an activity daemon. An additional daemon monitors systems running the TruCluster software.

This manual explains the concepts of the Performance Manager software, and describes tasks such as monitoring, thresholding, archiving, and distributed command execution.

3.3.12 *Safety & Comfort Guide*

The *Safety & Comfort Guide* describes how to set up your workstation environment to minimize the possibility of injury and provide you with the maximum of comfort. This guide focuses on posture and on other health and work habits for computer users. Additionally, it provides product safety information applicable to all Compaq products.

3.3.13 *sendmail* Installation and Operation Guide

The *sendmail Installation and Operation Guide* describes the configuration file for Version 8.9 of the `sendmail` utility, which implements a general-purpose internetwork mail routing facility under the Tru64 UNIX operating system.

The `sendmail` utility is not tied to any one transport protocol — its function can be likened to a crossbar switch, relaying messages from one domain into another. In the process, it can do a limited amount of message header editing to put the message into a format that is appropriate for the receiving domain. All of this is done under the control of a configuration file.

3.3.14 Technical References for Asian Languages

The following guides provide language-specific information and describe the features of several Asian languages supported on the Tru64 UNIX system:

- *Technical Reference for Using Chinese Features*
- *Technical Reference for Using Japanese Features*
- *Technical Reference for Using Korean Features*
- *Technical Reference for Using Thai Features*

3.3.15 X Window System Documentation

The documentation described in this section pertains to X Windows System, Version 11, Release 6. These documents are provided by the X Consortium.

- *Inter-Client Communication Conventions Manual*

This document proposes suitable conventions for interclient communications with X Version 11 software. The proposed conventions do not attempt to enforce any particular user interface.

- *X Toolkit Intrinsics — C Language Interface*

Intrinsics are a programming library tailored to the special requirements of user-interface construction within a network window system — specifically the X Window System. The Intrinsics and a widget set make up the X Toolkit. This document describes the X Toolkit Intrinsics.

- *X Logical Font Description Conventions*

This document provides a standard logical font description and the conventions to be used in the core protocol so that clients can query and access screen type libraries in a consistent manner across all X servers.

- *Xlib — C Language X Interface*

This document provides reference information for the low-level C language interface to the X Window System protocol. It provides a detailed description of each function in the library, as well as a discussion of the related background information.

- *X Window System Protocol*

This document describes the X Window System protocol.

- *X Window System: The Complete Reference to Xlib, X Protocol, ICCCM, XFLD*

This 1000–page manual describes the features of the X Window System Version 11, Release 5. It was written by Robert W. Scheifler and James Gettys, who were on the team that designed X Window System, and was originally published by Digital Press.

3.4 Operating System CD–ROM

The documentation described in the following sections is included on the Tru64 UNIX Operating System CD–ROM. Some of this documentation is available only when you install the software it describes.

3.4.1 Software Product Descriptions

A Software Product Description (SPD) is the legal description of the Tru64 UNIX product. It describes the software and gives information about its capabilities and about the hardware it supports. With this release, the SPD for the operating system provides a listing of system limits.

PostScript versions of the SPDs are located on the CD–ROM in the `mount_point/DOCUMENTATION/POSTSCRIPT` directory. The files are named as follows:

```
Tru64_UNIX_Operating_System_SPD.ps
Tru64_UNIX_Developers_Extensions_SPD.ps
Tru64_UNIX_Server_Extensions_SPD.ps
Tru64_UNIX_Logical_Storage_Manager_SPD.ps
```

PDF versions of the SPDs are located on the CD–ROM in the `mount_point/DOCUMENTATION/ACRO` directory. You view PDF files using the Adobe Acrobat Reader. The files are named as follows:

```
Tru64_UNIX_Operating_System_SPD.pdf
Tru64_UNIX_Developers_Extensions_SPD.pdf
Tru64_UNIX_Server_Extensions_SPD.pdf
Tru64_UNIX_Logical_Storage_Manager_SPD.pdf
```

3.4.2 Listings of Patches to the Operating System

Listings of fixes (usually called patches) that Compaq has made to each version of the Tru64 UNIX operating system are provided in text files on the CD-ROM in the `mount_point/DOCUMENTATION/TEXT` directory. The files are named as follows:

```
Digital_UNIX_V3_2C_CLD_Fixes.txt
Digital_UNIX_V3_2D_CLD_Fixes.txt
Digital_UNIX_V3_2G_CLD_Fixes.txt
Digital_UNIX_V4_0_CLD_Fixes.txt
Digital_UNIX_V4_0A_CLD_Fixes.txt
Digital_UNIX_V4_0B_CLD_Fixes.txt
DIGITAL_UNIX_V4_0D_CLD_Fixes.txt
DIGITAL_UNIX_V4_0E_CLD_Fixes.txt
Tru64_UNIX_V4_0F_CLD_Fixes.txt
Tru64_UNIX_V5_0_CLD_Fixes.txt
```

To obtain Tru64 UNIX patch kits from Compaq, visit the following Web site:

<http://www.service.digital.com/patches/>

3.4.3 X Image Extension Documentation

The X Image Extension (XIE) code provides a powerful mechanism for the transfer and display of virtually any image on X-capable hardware. Documentation for XIE is provided in the `/usr/share/doc/lib/xie` directory on an installed Tru64 UNIX system.

Before you can view or print an XIE document, you must uncompress it using the `gzip -d` command. For more information, see the `gzip(1)` reference page.

The following list describes the XIE documentation. The names of the individual files are listed after the titles.

- *X Image Extension Overview* (`overview.ps.gz`)
This document provides general information about the X Image Extension code. The topics covered include XIE design goals, XIE historical summary, XIE architecture, element definitions, and subsetting.
- *XIELib Specification* (`xielib.ps.gz`)
This document contains reference information about the XIELib functions, XIELib events, and XIELib errors. The Functions section covers such functions as startup, LUT, photomap, ROI, photoflo, client data, abort and await, photoflo element, technique, and free.
- *XIE Sample Implementation Architecture* (`xieSIarch.ps.gz`)

This document provides an architecture overview of XIE, including chapters on extension initialization, memory management, request dispatching, data representation, data structures, protocol requests, DIXIE photoflo management, DDXIE photoflo management, and photo elements.

- *X Image Extension Protocol Reference Manual, Version 5.0*
(XIEProto.ps.gz)

This document specifies the X wire protocol for XIE. It defines the syntax, structure, and semantics of the XIE protocol elements. The topics covered include syntax specification, parameter types, resources, pipelined processing, import elements, process elements, export elements, events and errors, techniques, service class, and protocol encodings.

3.5 Associated Products CD-ROMs

The Associated Products CD-ROMs contain documentation for various components of Tru64 UNIX. The document called *Tru64 UNIX Version 5.0A CD-ROMs* (a printed sheet packaged with the Tru64 UNIX media kit and included on the Documentation CD-ROM) provides a list of the applications located on these CD-ROMs, as do the 00README.TXT files located on the CD-ROMs.

Both CD-ROMs provide a graphical user interface that you can use to access documentation and to install product software. To use this interface, invoke Netscape and go to the following location:

```
file://<mount_point>/index.html
```

A list of products on the CD-ROM will be displayed. When you click on a product name you will be given the option to install the product or access the documentation, if applicable.

Beginning with this release, the Associated Products CD-ROMs comply with the ISO 9660 Level 1 CD-ROM standard, which means you can view the contents of these CD-ROMs on a Windows PC or Macintosh or on any other system that uses that ISO standard.

The Tru64 UNIX Reference Pages

The Tru64 UNIX operating system provides an extensive set of reference pages (also called man pages or manual pages), each of which describes one topic, such as a command, function, or file. This chapter discusses the reference pages.

4.1 Reading Reference Pages On Line

You can use the `webman` utility to read the reference pages on line using your Web browser, and print them by clicking on the browser's Print menu. Alternatively, you can use the `xman` or `man` utilities from the command line to read the reference pages.

Your system administrator determines at system installation time whether to make the operating system reference pages available on your system. If you receive an error message when you try to read reference pages, the problem might be that they are not installed.

Your system administrator also decides whether to install the reference pages that are included with layered products. This includes products such as the TruCluster Server, which provides a full set of its own reference pages.

4.1.1 Using the Documentation CD-ROM

The Library on the Documentation CD-ROM includes a category that contains the full set of base operating system reference pages in HTML form. You can view these reference pages with your Web browser just as you would view any of the HTML books. These reference pages are indexed and hot-linked with the books for easy access. (The reference pages for layered products are not included on this CD-ROM.)

4.1.2 Using `webman`

The Documentation CD-ROM contains the `webman` viewer, a UNIX CGI program you can use with your browser to view the reference pages that are installed with the operating system. The `webman` viewer is most useful when the Documentation CD-ROM is not mounted, or when you need to access reference pages that have been installed with layered applications. For

information about installing and using `webman`, see the following file on the Documentation CD-ROM:

```
/mount-point/DOCS/HTML/webman/Installing_webman.txt
```

See Section 1.4.1 for information about the Documentation CD-ROM.

4.1.3 Using the `xman` Command

The `xman` command starts an X Window System reference-page browsing tool. One of the functions of the tool is to display a list of the reference pages. You display a reference page by double-clicking on its name in the list. For more information about the `xman` command, start up the tool by entering the following command:

```
% xman &
```

The ampersand (&) runs the command in the background, allowing the command line to be used for other tasks. The application displays a small window that contains three buttons. Click on the Manual Page button to read a reference page about the `xman` command.

4.1.4 Using the `man` Command

The `man` command displays the reference page specified on the `man` command line. For more information about the `man` command, read the `man(1)` reference page. To display this reference page, enter the following command:

```
% man man
```

4.2 Reading Reference Pages in Printed Books

Compaq provides a separately orderable Reference Pages Documentation Set. In this printed format, the Reference Page books are grouped according to their sections, each of which contains one or more volumes. The books contain an R on the spines to help you to quickly identify them as reference page books.

To order the Reference Page Kit, refer to Chapter 6.

Note

The Reference Page Kit is usually updated only with major releases of Tru64 UNIX. Therefore, the online reference pages provide more current information about features that are added or revised in minor releases.

4.3 Overview of the Sections

The reference pages are grouped into sections, according to their function, audience, or both. The section numbers appear as numbers in parentheses next to the name of the reference page. For example:

```
lpr(1)
automount(8)
createlabel(3)
```

The following list describes the section numbers:

Reference Pages Section 1

Section 1 describes user commands that are available to everyone who uses the Tru64 UNIX operating system.

In printed form, this section is divided into five volumes.

Reference Pages Section 2

Section 2 defines system calls (entries into the Tru64 UNIX kernel) that programmers use. The introduction to Section 2, `intro(2)`, lists error numbers with brief descriptions of their meanings. The introduction also defines many of the terms used in this section.

In printed form, this section is in one volume.

Reference Pages Section 3

Section 3 describes the routines available in Tru64 UNIX programming libraries, including the C library, Motif library, and X library. This section is for programmers.

In printed form, this section is divided into seven volumes.

Reference Pages Section 4

Section 4 describes the format of system files and how the files are used. The files described include assembler and link editor output, system accounting, and file system formats. This section is for programmers and system administrators.

In printed form, this section is divided into two volumes.

Reference Pages Section 5

Section 5 contains miscellaneous information, including ASCII character codes, mail-addressing formats, text-formatting macros, and a description of the root file system. This section is for programmers and system administrators.

In printed form, this section is divided into two volumes.

Reference Pages Section 7

Section 7 describes special files, related device driver functions, databases, and network support. This section is for programmers and system administrators.

In printed form, this section is in one volume.

Reference Pages Sections 8 and 1m

Sections 8 and 1m describe commands for system operation and maintenance. These sections are for system administrators.

In printed form, these sections are divided into three volumes.

Reference Pages Sections 9

Section 9 describes data structures and routines used in writing kernel modules. This section is for developers.

In printed form, this section is in one volume.

Device Driver Documentation

The Tru64 UNIX Device Driver Kit (DDK) provides programming information specifically for system engineers who are developing device drivers for the Tru64 UNIX operating system.

This kit includes printed versions of the device driver documentation and a CD-ROM that provides driver development tools, device driver examples, X Consortium code, white papers, and HTML and PDF versions of the device driver documentation.

In printed form, the spines of the device driver books are identified with a D icon on the spine to help you find them quickly.

The rest of this section describes the books in the DDK. This information is provided here because of the close relationship between the device driver documentation and the Tru64 UNIX documentation set.

Note

The Device Driver Kit is produced independently of the Tru64 UNIX operating system. The following descriptions are for Release 1 (June 1997) of the kit. For information about the DDK, visit the following Web site:

http://www.UNIX.digital.com/faqs/publications/pub_page/devdoc_list.html

Writing Device Drivers: Tutorial

This manual provides information for systems engineers who write device drivers for hardware that runs the Tru64 UNIX operating system. Systems engineers can find information on device driver concepts, interfaces, and configurations, as well as summary information about kernel interfaces, kernel data structures, and header files related to device drivers. (See the manual *Writing Device Drivers: Reference* for complete descriptions of these concepts).

This manual also provides a glossary of device driver terms.

Writing Device Drivers: Advanced Topics

This manual provides information on topics that are beyond the scope of the core tutorial. Systems engineers can find information on such advanced topics as kernel threads and writing device drivers in a symmetric multiprocessing (SMP) environment.

The manual also contains additional summary information about kernel interfaces and data structures, header files, global variables, and `ioctl` commands. (See the manual *Writing Device Drivers: Reference* for complete descriptions of these concepts).

Writing Device Drivers: Reference

This manual contains detailed descriptions of the header files, kernel interfaces, `ioctl` commands, global variables, and data structures associated with device drivers.

Writing EISA and ISA Bus Device Drivers

This manual provides information for systems engineers who write device drivers for the EISA/ISA bus. The manual describes EISA/ISA bus-specific topics, including EISA/ISA bus architecture, kernel interfaces, and data structures that EISA/ISA bus device drivers use.

Writing PCI Bus Device Drivers

This manual provides information for systems engineers who write device drivers for the PCI bus. The manual describes PCI bus-specific topics, including PCI bus architecture, kernel interfaces, and data structures that PCI bus device drivers use.

Writing Device Drivers for the SCSI/CAM Architecture Interfaces

This manual provides information for systems engineers who write device drivers for the SCSI/CAM Architecture interfaces. It provides an overview of the Tru64 UNIX SCSI/CAM architecture and describes user agent routines, data structures, common and generic routines and macros, error handling, and debugging routines.

Writing TURBOchannel Device Drivers

This manual contains information that systems engineers need to write device drivers which operate on the TURBOchannel bus. The manual describes TURBOchannel-specific topics, including TURBOchannel kernel interfaces and data structures that TURBOchannel device drivers use.

Writing VMEbus Device Drivers

This manual contains information systems engineers need to write device drivers that operate on the VMEbus. The manual describes VMEbus-specific topics, including VMEbus architecture, kernel interfaces, and data structures that VMEbus device drivers use. A VMEbus device driver example show the use of these interfaces.

Writing Network Device Drivers

This manual introduces driver writers to topics that are specific to writing a device driver for a local area network (LAN) device.

Writing a Graphics Device Driver and DDX for the Tru64 UNIX X Server

This manual describes how to add graphics device support to the X Window system on systems running the Tru64 UNIX operating system.

Guide to Preparing Product Kits

This manual describes the procedures for creating, maintaining, and installing the collections of files and directories that make up a layered product kit. A kit is the standard mechanism by which layered product modifications are delivered and maintained on a Tru64 UNIX operating system. Kits are distributed on CD-ROM, diskettes, or tape for installation on customers' systems.

This is the same manual that is included in the Programmer's Kit of the Tru64 UNIX documentation set.

Installation Instructions and Release Notes

This document provides instructions for installing the DDK components: online documentation, example files and the development tool, and the X Developer's Kit. It also provides product release notes.

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How to Order Tru64 UNIX Documentation

You can order Tru64 UNIX documentation at the following Web site:

<http://www.businesslink.digital.com/>

If you need further help in deciding which documentation best meets your needs, you can call **800-344-4825** in the United States and Canada. In Puerto Rico, call **787-781-0505**. In other countries, contact your local Compaq subsidiary.

If you have access to Compaq's intranet, you can place an order at the following Web site:

<http://asmorder.nqo.dec.com/>

Table 6-1 provides the order number for the Tru64 UNIX Documentation CD-ROM and the kits containing the printed documentation for Version 5.0 and higher. (The indentation indicates which kits are included in those above them. For example, the Tru64 UNIX Documentation Kit contains all of the kits listed below it.)

Table 6-1: Tru64 UNIX Documentation Kits and CD-ROM

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Reference Page Kit	QA-6ADAF-GZ
Tru64 UNIX Documentation Kit	QA-6ADAA-GZ
Developer's Documentation Kit	QA-6ADAG-GZ
End User Documentation Kit	QA-6ADAB-GZ
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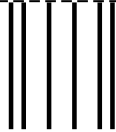
Additional comments or suggestions to improve this manual:

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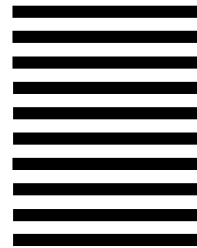
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