Tru64 UNIX
Release Notes for Version 5.1B

Part Number: AA-RH8WE-TE

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Product Version: Tru64 UNIX Version 5.1B

This manual provides information on new and changed features for
the HP Tru64 UNIX operating system. It also provides information on
restrictions to the software and documentation.

You can also view the Tru64 UNIX Version 5.1B *Technical Update* for any
additional information not included in these notes. You can access the
Technical Update from the following URL:

http://www.tru64unix.compaq.com/docs/pub_page/update_list.html

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About This Manual

This manual contains release notes for the HP Tru64 UNIX Version 5.1B operating system software.

This manual also describes significant new and changed features in this version of the Tru64 UNIX operating system and lists features and interfaces scheduled for retirement in future releases.

Audience

These release notes are for the person who installs the product and for anyone using the product following installation.

Organization

This manual is organized as follows:

Chapter 1   Contains an overview of new and changed features in this version of the operating system software

Chapter 2   Contains information about features that have been retired in this release of Tru64 UNIX and that are scheduled to be removed in future versions

Chapter 3   Contains installation notes

Chapter 4   Contains processor-specific notes

Chapter 5   Contains information about the base operating system software

Chapter 6   Contains information about the development environment

Chapter 7   Contains information about the window system software

Chapter 8   Contains information about the documentation

Appendix A Contains the disk space requirements for the individual subsets included on the kit

Related Documents

You will find it helpful to have the following documentation available during the installation of this product:

- The hardware documentation for your system

- The *Installation Guide*

- The *Installation Guide — Advanced Topics*

- The online or hardcopy reference pages

- The HTML files provided on the Software Documentation CD–ROM, especially *New and Changed Features from Previous Releases*

You can also view the Tru64 UNIX Version 5.1B *Technical Update* for any additional information not included in these notes. You can access the *Technical Update* from the following URL:

http://www.tru64unix.compaq.com/docs/pub_page/update_list.html

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- The full title of the manual and the order number. (The order number appears on the title page of printed and PDF versions of a manual.)

- 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 HP technical support office. Information provided with the software media explains how to send problem reports to HP.

Conventions

The following conventions are used in this manual:

`%` `$`	A percent sign represents the C shell system prompt. A dollar sign represents the system prompt for the Bourne, Korn, and POSIX shells.
`#`	A number sign represents the superuser prompt.
`% `**`cat`**	Boldface type in interactive examples indicates typed user input.
`file`	Italic (slanted) type indicates variable values, placeholders, and function argument names.
`[|]` `{|}`	In syntax definitions, brackets indicate items that are optional and braces indicate items that are required. Vertical bars separating items inside brackets or braces indicate that you choose one item from among those listed.
`. . .`	In syntax definitions, a horizontal ellipsis indicates that the preceding item can be repeated one or more times.
`cat`(1)	A cross-reference to a reference page includes the appropriate section number in parentheses. For example, `cat`(1) indicates that you can find information on the `cat` command in Section 1 of the reference pages.
Ctrl/*x*	This symbol indicates that you hold down the first named key while pressing the key or mouse button that follows the slash. In examples, this key combination is enclosed in a box (for example, Ctrl/C).

1

New and Changed Features

This chapter describes features that are new to the operating system, features that have changed significantly from previous releases, and restrictions to the software and the documentation.

Tru64 UNIX Version 5.1B is a functional release that includes the following enhancements:

- Support for variable memory page sizes (Big Pages)

- Enhanced features for IPv6 support

- The ability to perform parallel scanning of multiple SCSI and Fibre Channel buses during system boot

- Logical Storage Manager Fast Plex Attach support

- Enhanced security features

- Support for the Netscape 6.2.3 Web Client for Tru64 UNIX product

- Enhanced features for I18N support

1.1 Support for Variable Memory Page Size (Big Pages)

Big pages memory allocation supports mapping a page of virtual memory to 8, 64, or 512 pages of physical memory. Given physical memory's current 8-KB page size, this means that a single page of virtual memory can map to 64, 512, or 4096 KB. Using big pages can minimize the performance penalties that are associated with misses in the translation lookaside buffer. The result can be improved performance for applications that need to map large amounts of data.

Applications can take advantage of increased page size without making changes or rebuilding. Big pages memory allocation has the following characteristics:

- Allows a virtual page in the process address space to be mapped to the most appropriate multiple-page granularity option supported by the system's physical memory.

- Uses threshold values set on a per memory-type basis to determine whether a memory allocation request is eligible for use of the extended page sizes.

By default, the use of variable memory page sizes is disabled. For information about enabling this feature, see sys_attrs_vm(5) and the *System Configuration and Tuning* guide.

1.2 IPv6 Enhancements

The following enhancements and changes to IPv6 have been incorporated into this release of the operating system:

- Internet Protocol Version 6 (IPv6) search and analysis tool — this tool searches one or more files to identify potential IPv6 porting issues. The tool searches for IPv4-only socket usage and options and IPv4 name and address resolution.

  For more information, see ipv6sniff(8).

- Support for a 6to4 transition mechanism — this mechanism, as described in RFC 3056, allows a host or a site to derive a /48 IPv6 prefix from a single global unicast IPv4 address. This implementation supports host and border gateway configurations. For more information, see the *Network Administration: Connections* manual.

- Support for generic tunneling in IPv6 — this tunneling mechanism provides the ability to encapsulate any type of traffic inside an IPv6 packet. For more information about applicability and configuration see the *Network Administration: Connections* manual.

- Support for IPv6 Advanced API — these programming interfaces allow applications to take advantage of advanced IPv6 features, such as extension headers. For more information, see the *Network Programmer's Guide*.

1.3 Parallel Bus Scan

Parallel scanning is a new feature in Tru64 UNIX Version 5.1B that is designed to shorten the system's boot time. Parallel scanning is disabled in the default system configuration. See the *Hardware Management* manual for information on using this feature.

When you enable parallel scanning of SCSI and Fibre Channel buses, the system initiates the scan on all buses simultaneously (rather than sequentially). This feature reduces the time required to find devices. On systems with moderate to large numbers of storage devices, the reduction of time required to boot can be significant.

1.4 LSM Fast Plex Attach

For mirrored LSM volumes, you can use the Fast Plex Attach feature to make a temporary copy of the volume data available for backup. You

use the temporary volume to perform your backups, leaving the original volume running and available for use. You can use this feature on any mirrored volume on a standalone system or a cluster, including rootvol and cluster_rootvol, except volumes used for swap space. See the *Logical Storage Manager* manual for more information.

The temporary (secondary) volume is created from one complete plex (mirror) from the original mirrored volume (the primary volume).

Both the primary and secondary volumes use a Fast Plex Attach log, which tracks the regions that change in each volume, similar to a Dirty Region Log. When the plex that created the secondary volume (the migrant plex) is reattached to the original volume, the two FPA logs are merged. Only the regions that changed in the original volume are written to the returning migrant plex, resynchronizing the plex with the original volume in much less time than usually required. The FPA log also ensures that changes to the secondary volume are in effect thrown away, and that the corresponding regions from the primary volume are also written to the returning migrant plex.

1.5 Ensuring Metadata Integrity by Freezing Domains

The `freezefs` command causes a domain to enter into a metadata-consistent state and guarantees that it stays that way until it is explicitly thawed with the `thawfs` command, or the freeze time expires. All of the filesets in the domain are frozen. All metadata, which could be spread across multiple volumes or logical units (LUNs), is flushed to disk and does not change for the duration of the freeze.

When you freeze a file system, all in-process file system operations are allowed to complete. Some file system operations that do not require metadata updates (for example, read) work normally even if the file system is frozen.

Once frozen, the file system remains in this metadata-consistent state until it is thawed:

* By the issuance of the `thawfs` command
* In a cluster, by shutting down any node of a frozen file system or if any cluster member fails
* By timing out

See `freezefs`(8) and the *Cluster Installation* manual for more information.

1.6 The vfast Utility

The `vfast` utility runs at the operating system level with low overhead, continuously defragmenting and balancing files, consolidating free space and distributing the file I/O over the volumes of a domain. It only processes files that are actively being opened and closed. The utility automatically runs during periods of low system demand so that system administrators do not have to take a system off line.

The `vfast` utility balances the available free space over volumes to maximize file-creation performance. It defragments all active files including the `frag` file and the `root tag` file. The system administrator does not need to perform balance and defragment maintenance tasks. The utility also uses file I/O statistics gathered by the AdvFS kernel to distribute files with high I/O to different volumes in the domain.

The `vfast` utility takes into account reserved file access, but it does not move any of the reserved files.

1.7 LUN/UNIT Expansion

You can increase the amount of storage available in your domain by enlarging the size of an existing volume. For example, LSM and hardware RAID controllers support dynamically increasing the size of a volume.

Because expanding the size of an LSM or hardware RAID volume is done independently of AdvFS, you must notify the domain when the size of a volume changes by using the `mount` command with the `-o` extend option.

If the fileset is not already mounted, enter:

mount -o extend domain#fileset /mountpoint

If the fileset is already mounted, enter:

mount -u -o extend domain#fileset /mountpoint

For non-LSM volumes, you must first modify the disk label to include additional storage. See `disklabel(8)`for more information.

When you use the `-o` extend option, all additional storage is available to all filesets in the domain.

1.8 Security

The following notes describe changes and enhancements to the security features of the operating system.

1.8.1 Secure Shell

The Secure Shell software is client/server software that provides a suite of network commands to create a secure connection for all data that is exchanged via a Secure Shell command.

You can use the Secure Shell commands in addition to or in place of traditional nonsecure network commands. The following table describes the traditional nonsecure network commands and the equivalent Secure Shell command:

Traditional Commands	Equivalent Secure Shell Commands
`rsh`	`ssh2`
`rlogin` or `telnet`	`ssh2`
`rcp` or `ftp`	`scp2` or `sftp`

1.8.2 Single Sign On Moved to the Operating Ssystem CD–ROM

Single Sign On (SSO) is optional client/server software that uses Kerberos technology to provide secure communication for the `ftp`, `rcp`, `rlogin`, `rsh`, and `telnet` network commands and for applications that use Kerberos.

The OSFSSOW2K540 software subset that contains the SSO software has been moved from the Associated Products CD–ROM, Volume 2, to the Tru64 UNIX Operating System CD–ROM. In order to load this subset, you must select it from the list of optional subsets.

1.8.3 Common Data Security Architecture (CDSA)

CDSA shipped as an Advanced Developers Kit with Version 5.1 and Version 5.1A. With this release of the operating system, CDSA is integrated into the base operating system. CDSA provides the following infrastructure for security services:

*   Published service provider APIs

*   Security plug-ins

        Crypto layer (CSP)
        Trust policy (TP)
        Database layer (DL)
        Certificate layer (CL)

*   Common Security Services Manager (CSSM)

For more information, see `CDSA_intro`(3) and the *Security Programming* manual.

1.8.4 Support for /dev/random

This release of the operating system provides support for `/dev/random` and `/dev/urandom` character device special files. These files provide an interface to the kernel random number generator. For more information, see `random`(4) and `get_random_bytes`(9r) and the *Security Programming* manual.

1.9 Netscape 6.2.3 Web Client for Tru64 UNIX

This release of the operating system contains the Netscape 6.2.3 Web Client for Tru64 UNIX as well as Netscape Communicator. The Netscape 6 Web client is the next-generation Web client to the popular Netscape Communicator Web client.

Enter the following command from a terminal window to start the Netscape 6 Web client:

```
# /usr/bin/X11/netscape6
```

To set Netscape 6 to be the default Web client for the system, run the following script as a privileged user from a console prompt or a terminal window:

```
# /usr/opt/netscape6/set_default_client
```

For additional information about the Netscape 6.2.3 Web client for Tru64 UNIX, refer to the release notes by entering the following URL in a Web browser: `file:/usr/doc/netscape6/release_notes.html`

1.10 I18N Support

The following new internationalization features have been added in this release of the operating system:

- Support for Unicode Version 3.1.

  Unicode (ISO/IEC 10646) is a major I18N character set standard supported by all major operating system vendors and ISVs. Unicode Version 3.1 was approved in May, 2001, and it adds 44,946 new characters to Unicode's repertoire, bringing the total repertoire to 94,140. Most of the new characters are Asian ideographs.

- A new set of Unicode locales that use Unicode scalar values as the wide character code for all characters. In addition, there is a simple switching mechanism that allows users to chose the new Unicode or existing dense code locales as the default.

- Improved font support for Unicode (UTF-8 based) locales

- `dxim`, a multilingual input server for Simplified Chinese, Traditional Chinese, Korean, and Phrase input methods. See `dxim(1X)` for more information.

1.11 Additional Changes

The following new features also deserve mention:

- Support for ATI RV200 AGP graphics card.

- Support for the SDLT320 Tape Drive. For information on configuring this device, see Section 5.3.1

- An upgrade to POSIX Threads Library Version 3.20. The upgrade includes numerous bug fixes and changes required to support the AlphaServer ES80 and AlphaServer GS1280 systems.

- An update of Java to Version 1.3.1. Java Version 1.1.8 has been retired but is still available on the retired subsets directory (`Tru64_UNIX_Retired`) of the Associated Products Volume 2 CD–ROM.

  Java 1.3.1 uses the Fast VM as a default VM. Fast VM uses more memory than the Classic VM and may result in low swap space messages. See the Java release notes in `/usr/share/doclib/java/index.html` for more information.

- Essential Services Monitor daemon (`esmd`), which monitors the availability of essential system daemons. The `esmd` monitors the Event Manager daemon, `evmd`, and the the Cluster Application Availability daemon, `caad`.

- Use of the `df` command with the `-h` option, which displays disk space in a human readable format:

```
/dev/disk/dsk0a   252M         99M        128M      44%     /
/proc             0            0          0         100%     /proc
/dev/disk/dsk7e   2596M        734M       1602M     32%     /usr
var_domain#var    2637M        13M        2618M     1%      /var
```

- Limited support for PCI device indictment is included with this release. PCI indictment of the KGPSA adapter is supported on AlphaServer GS80, GS160, GS320, ES45, and DS25 systems.

- The return of the previously retired Bookreader (`dxbook`) application, now available on the Associated Products CD–ROM, Volume 2. This application is located in the Tru64_UNIX_Retired directory.

2

Features and Interfaces Scheduled for Retirement

This chapter provides information on features that have been retired from the operating system or that are scheduled to be removed from, or changed in, future releases. This information is provided so that users and developers can migrate away from these features in the near future.

2.1 Retired in This Release

The following notes provide information on features that have been retired in this release. These changes were announced in previous releases.

2.1.1 Performance Manager CDE GUI

The Performance Manager CDE GUI has been retired. Performance management functions are available using the `collect` utility. The `collect` utility includes a command line interface and a graphical user interface.

2.1.2 COM for Tru64 UNIX

COM for Tru64 UNIX has been retired in this release of the operating system.

2.1.3 DECmigrate

DECmigrate has beeen retired in this release of the operating system. This retirement includes the removal of the `mxr` command, the `libmxr.so` library, and the `mxr(1)` reference page.

2.1.4 iPlanet Directory Server

iPlanet Directory Server has been retired in this release of the operating system. This product has been replaced by the OpenLDAP Directory Server.

2.1.5 AdvFS Subsystem Attributes

The following AdvFS subsystem attributes have been retired:

- `AdvfsCacheHashSize`

- `AdvfsCacheMaxPercent`

- `AdvfsMinFreeAccess`

- `AdvfsMaxFreeAccessPercent`

- `AdvfsFavorBlockingQueue`

- `AdvfsMaxDevQLen`

The functionality provided by these attributes has been replaced by new dynamic kernel algorithms to optimize system performance.

2.1.6 AdvFS Fragment Attributes

The AdvFS subsystem attributes `AdvfsMinFragGrps` and `AdvfsMaxFragGrps` have been retired.

2.1.7 C++ Run-Time Libraries libtask and libcomplex

The `libtask` and `libcomplex` C++ run-time libraries have been moved to the retired subsets directory (`Tru64_UNIX_Retired`) on the Associated Products, Volume 2, CD–ROM. If you have code that uses the nonstandard complex class in the library, we recommend that you use the template complex class defined in the C++ Standard Library. If you have code that uses `libtask`, we recommend that you use the POSIX Threads Library.

2.1.8 Unsupported Kernel Object Subsets

The following kernel object subsets have been moved to the obsolete subsets directory (`Tru64_UNIX_Obsolete`) on the Associated Products, Volume 2, CD–ROM:

OSFBINOBJECT540	Main kernel objects
OSFHWBINOBJECT540	Hardware kernel objects
OSFADVFSOBJECT540	AdvFS kernel objects
OSFLSMOBJECT540	LSM kernel objects
OSFATMOBJECT540	ATM kernel objects

2.2 Features and Interfaces Scheduled for Retirement in Future Releases

The following notes contain information on features and interfaces that will be retired in future releases. This information is provided so you can begin planning for the time when these features are retired.

2.2.1 The emxmgr Utility

The `emxmgr` utility will be retired in a future release of the operating
system. The functionality of this utility is now available in the `hwmgr` utility
(`hwmgr show fibre`). For more information, see `hwmgr_show(8)` or enter
the `hwmgr -help show` command.

2.2.2 The automount Utility

The `automount` utility will be retired in a future release of the operating
system. This utility is being replaced by the `autofs` utility. Instructions
for migrating from `automount` to `autofs` are provided in the *Network
Administration: Services* manual. Instructions for migrating from
`automount` to `autofs` in a TruCluster environment are provided in the
Cluster Administration manual.

2.2.3 POSIX Threads Metering

The metering features of the POSIX Threads Library will be retired in a
future release of the operating system. These features are described in the
Guide to the POSIX Threads Library. If you want to collect statistical and
historical information on synchronization objects, use Visual Threads, which
is a tool that you can use to analyze and debug multithreaded programs.

2.2.4 SCSI Device Names

Support for rz and tz SCSI device names will be retired in a future release.
Any code that derives knowledge about a device from the ASCII name or
minor number might be impacted.

All code that uses the current name space will be compatible until the
retirement because a mechanism that ensures binary compatibility has
been provided.

The compatibility name space can be used to access devices in only the old,
limited address space, and the new names can be used to access devices in
only the new extended address space.

2.2.5 XIE Version 3.0 X Client Extension

This version of the operating system supports XIE Version 5.0. Support
for XIE Version 3.0 server extensions was removed in Version 4.0 of the
operating system. Client support will be removed in a future release.

2.2.6 ATM IP Switching

The operating system provides limited support for IP switching over ATM, based on the Ipsilon Networks Inc. reference model (RFC 1953 and 1954). This support will be retired in a future release.

IP switching support is provided in this release for backward compatibility only. Do not use it to develop new applications. Other methods of carrying IP over ATM, including classical IP and LAN emulation, will continue to be supported.

2.2.7 The ogated Routing Daemon

The `ogated` daemon (the old version of the `gated` routing daemon) will be retired in a future release of the operating system. If you use the `ogated` routing daemon, you must migrate to the `gated` routing daemon, which supports a superset of functionality in the `ogated` daemon.

2.2.8 DEC Ada RTL

DEC Ada (UPI - 0HM) and DEC Ada PDO (UPI - 0VS) will be retired in a future release of the operating system.

2.2.9 Event Report Formatter (uerf)

The Event Report Formatter (`uerf`) will be retired in a future release. The `uerf` command is not certified to be Y2K compliant. Depending on your system, use either Compaq Analyze or DECevent.

2.2.10 Tcl Version 7.6 and Tk Version 4.2

Tcl Version 7.6 and Tk Version 4.2 will be retired in a future release. This release contains Tcl/Tk Version 8.2.

Tcl Version 7.6 and Tk Version 4.2 have been moved to the optional subsets `OSRETIREDTCL76510` and `OSRETIREDTK42510`. These subsets will install under the `/usr/opt/obsolete` directory and only contain the run-time environment. Header files and reference pages are no longer included.

2.2.11 The dxlsm Interface

The CDE/X11 graphical Logical Storage Management tool, `dxlsm`, will be retired in a future release. The `dxlsm` interface is superseded by the new LSM Storage Administrator, `lsmsa`, which was introduced in Version 5.0 of the operating system.

Both the `dxlsm` and the `lsmsa` interfaces are installed from the `OSFLSMX115`*xx* subset.

We recommend you begin using the `lsmsa` interface to manage your LSM configurations.

2.3 Hardware Support Retirement Notices

To allow for future growth and enhancements to the operating system, it is necessary to retire support for some of the existing hardware. This section provides information on hardware support that has been retired in this release and hardware support that will be retired in future releases.

2.3.1 Hardware Support Retired in This Release

The following note provides information on hardware support that has been retired in this release of the operating system.

2.3.1.1 Network Adapters

Starting with Tru64 UNIX Version 5.1B , the DETRA Token Ring network adapter for 4 Mbps and 16 Mbps networks is no longer supported.

Most customers have upgraded their Token Ring network infrastructure to standard 100 Mbps Fast Ethernet or 1000 Mbps Gigabit Ethernet networks, rendering the use of Token Ring obsolete. However, there are a variety of vendor solutions which can be used to bridge a Token Ring network to an existing Ethernet network, should this functionality be desired.

2.3.1.2 Array Controllers

Support for the following storage array controllers is retired in this release of the operating system:

- HSZ10
- HSZ20
- HSZ40
- HSZ50
- HSZ70

2.3.1.3 Disk Devices

The following disk devices are retired as of this release of the operating system:

- RZ55
- RZ56
- RZ57

- RZ58
- RZ73
- RZ74

2.3.2 Hardware Support Scheduled to Be Retired in Future Releases

The following notes provide information on hardware support that will be retired in future releases.

2.3.2.1 VME Bus Retirement

Support for the VME bus will be retired in a future release of the operating system. This includes retirement of systems and options that use this bus technology.

2.3.2.2 Array Controllers

Support for the following storage array controllers will be retired in a future release of the operating system:

- HSG60
- HSZ22
- HSZ80

2.3.2.3 Network Adapters

Support for the following network adapters will be retired in a future version of the operating system:

- DE500-FA — PCI to 100 BASE-FX (Fast Ethernet) network interface card
- DE500-BA — Single-port Ethernet, copper
- DE450–CA — Single-port Ethernet, twisted pair
- DE435 — PCI Ethernet
- DE425 — EISA Ethernet
- DE422 — EISA Ethernet
- DEFEA — EISA FDDI

2.3.2.4 FDDI Adapter for Futurebus

In a future release of the operating system, support for the DEFAA FDDI adapter will be retired.

3

Installation Notes

The notes in this chapter discuss the following topics:

- General information about installation (Section 3.1)
- Layered product considerations (Section 3.2)
- Full installation (Section 3.3)
- Update installation (Section 3.4)
- RIS installation (Section 3.5)

Do not attempt to install the operating system without first reading the notes in this chapter and in Chapter 4 that are appropriate to your processor. Failure to read these notes can result in installation problems. Also, before you start your installation process, be sure to review the hardware documentation that came with your system.

3.1 General Information About Installation

The following notes apply to the installation process in general.

3.1.1 Disk Space Requirements

The minimum disk size requirement for single-disk installations is now 1 GB. It is possible to perform single-disk installations on disks with less than 1 GB of disk space, however, performance may be degraded and it is not recommended. If you attempt a single-disk installation on a disk smaller than 1 GB, you will receive a warning message.

Although the minimum disk space for installing the operating system is a 1 GB disk, we recommend that systems have at least two 2 GB disks to ensure sufficient disk space for swap, patches, and storage.

For more information about disk space requirements, see Appendix A, which lists the size requirements for each subset.

3.1.2 Firmware Revision

The proper firmware for your system is included on the *Alpha Systems Firmware Update* CD–ROM that came with your kit. The *Release Notes*

Overview included with the firmware CD–ROM provides all the information you need to install the proper firmware.

Alternatively, you can obtain this information from the Internet by using the following URL with a Web browser:

http://ftp.digital.com/pub/Digital/Alpha/firmware/readme.html

You can also obtain this information from the Internet by using the following address to access the firmware using FTP:

```
ftp.digital.com/pub/Digital/Alpha/firmware
```

On most systems, you can determine the current level of the firmware entering the following command:

```
# consvar -v -l | grep "Firmware Rev"
```

If this command is not supported on your system, you can use the following command:

```
# uerf | grep "Firmware revision:" | tail -1
```

3.1.3 Files Left in /tmp Directory After Installation

After you install the operating system, a number of temporary work files may remain in the `/usr/tmp` directory. These files are necessary for the Tru64 UNIX installation proceedure, and are named `stltmp`*nnnn*.

It is safe to delete these files after the installation is complete. You can use the following command to delete the temporary files:

```
# rm -r /usr/tmp/sltmp*
```

3.1.4 Installing Tru64 UNIX on Disks Containing Linux disklabels

There is a known problem when installing Tru64 UNIX on disks that have disklabels that were created on Linux systems.

The workaround for this problem requires using BSD style disklabels on your Linux systems. Boot your Linux system and run the `fdisk` utility. At the prompt, enter `b`. This command rewrites the disklabel in a format that Tru64 UNIX requires. You may then install Tru64 UNIX on the disk with the BSD style label.

Alternatively, you can use the `dd` utility to clear the disklabel. Enter the following command at the console prompt:

```
>>> dd if=/dev/zero of=rdsk -bs=1024 count=1024
```

3.1.5 Reloading Subsets with setld

Some layered product subsets check when they are installed to see if the
subsets are already on the system. If they are, they prevent you from
reinstalling them. This introduces an error into the software management
database, after which the `setld -i` command reports that the subset is not
installed, even though all of its files are present on the system.

To avoid this problem, use the `setld -d` command to delete a subset before
using the `setld -l` command to reinstall it.

If you try to delete a subset but you cannot, you can correct the problem by
using the `touch` command and then the `setld -d` command. For example,
to delete the `DFARTL388` subset, you would do the following:

```
# touch /usr/.smdb./DFARTL388.lk
# setld -d DFARTL388
```

Afterwards, you can reinstall the subset using the `setld -l` command.

3.1.6 setld Failures Caused by Temp Files

Messages similar to the following may be displayed when using the setld
utility to install subsets on a running system:

```
setld: Temp directory /var/tmp/stltmp2870 already in use
setld: error in Dirs()
```

To correct this problem, remove the temporary `stl*` files in the `/usr/tmp`
directory:

```
# rm -r /usr/tmp/sltmp*
```

3.1.7 IMAP and POP

In order to use the Internet Message Access Protocol (IMAP) and Post Office
Protocol (POP) servers after performing an update installation or installing
the `OSFINET (Additional Networking Services)` subset, you need to
do the following:

1. Make sure that the `/etc/passwd` file (local, yp, or NIS) contains entries
   for the IMAP and POP users. If it does not, create them. For example:

   ```
   pop:*:13:6:POP Mail Service Account:/:
   imap:*:14:6:IMAP Mail Service Account:/:
   ```

   Substitute the values 13 and 14 with a user ID that is appropriate for
   your system. For more information, see `passwd`(4). Also, substitute
   the value 6 with the group ID of the `mail` group on your system; see
   `group`(4).

2. Enter the following command as root so that the IMAP and POP files and directories have the correct permission, owner, and group:

   # **setld -c OSFINET500 MAILSERVERSETUP**

3.1.8 Configuration Failure Messages During System Boot

The following error messages may be displayed when your system boots. You can ignore these messages. Your system will boot and operate correctly.

```
failed configuring xpc subsystem
failed configuring ev7_ocla subsystem

Warning: subsystem xpc is neither new or old format, not configured
Warning: subsystem ev7_ocla is neither new or old format, not configured
```

3.1.9 Initial sendmail Warning Message

The first time you boot the system after a full installation, the following warning message is displayed as a result of starting sendmail:

```
warning: local host name (hostname) is not qualified;
fix $j in config file.
```

This indicates that the system does not have a qualified name because neither DNS (BIND) nor mail has been configured. However, sendmail will continue to operate.

3.1.10 The autopush Message Displayed During Boot

The following message is displayed on the console during system boot:

```
/usr/sbin/autopush: Can't push requested modules on STREAM for entry 39
/usr/sbin/autopush: Device (6,-1) already configured
```

You can ignore this message.

3.1.11 I/O Error Message

After the installation process has completed installing all of the requested subsets, you might see the following benign error message:

```
I/O error (errno 5) for block ( xxx , xxx ) on device xxx , x
```

You can ignore this message. The installation will complete successfully.

3.1.12 Ignore the error writing output file Message

During the installation of software subsets, ignore the error writing output file message. The error is harmless.

3.1.13 Persistent Reservation Errors

Under certain circumstances, you can encounter persistent reservation errors. If this problem occurs, see the *Hardware Management* manual.

3.2 Layered Product Considerations

The following notes apply to layered products for Tru64 UNIX.

3.2.1 Mounting the Associated Products CD–ROM

You can mount the Associated Products CD–ROMs (APCDs) with the `mount` command on Tru64 UNIX systems running Version 4.0E or higher, as follows:

```
# mount -r /dev/disk/cdrom0c /mnt
```

On releases prior to Version 4.0E, you must mount the APCDs with the following options:

```
# mount -r -t cdfs -o rrip /dev/rz4c /mnt
```

On versions prior to Version 4.0D, you might receive the following error message, indicating that compact disc file system (CDFS) support is not built in to the kernel that is currently running:

```
# mount -r -t cdfs -o rrip /dev/rz4c /mnt
/dev/rz4c on /mnt: No valid filesystem exists on this partition
```

If you receive this error, you need to build your kernel with the following option:

```
ISO 9660 Compact Disc File System (CDFS)
```

3.3 Full Installation

To perform a full installation on your system, see the instructions in the *Installation Guide*.

3.4 Update Installation

Version 5.1B supports update installations from Versions 5.1 and Version 5.1A.

To update your operating system software to Version 5.1B, you must use the `installupdate` utility as described in the *Installation Guide*.

The `installupdate` procedure checks to see if there is enough space on the disk you have selected to do the installation. If there are any conflicts, the `installupdate` procedure enables you to remove unecessary files to create space. For more information, see the *Installation Guide*.

3.5 RIS Installation

This following notes pertain to Remote Installation Services (RIS).

3.5.1 bootlink Restriction

This version of the operating system does not support RIS installation of a bootlink kernel.

CD–ROM installation using a bootlink kernel is supported.

3.5.2 Time Zone Restriction

New time zones were added in Version 5.1 of the operating system. Therefore, servers that might have indicated the US/Eastern time zone while running an earlier version of the operating system now indicate a time zone such as America/New York.

When you install a prior version of the operating system on a client from a RIS server running Version 5.1 or higher, the prior version of the operating system does not recognize the time zone and does not automatically set the time zone during the installation procedure. This occurs because the new time zones do not match those in the prior versions. Therefore, you must set the time zone manually after the installation.

4

Processor-Specific Notes

This chapter contains general notes that apply to all processors and specific notes that apply to the following systems:

- AlphaServer 1000 and 1000A systems (Section 4.2)
- AlphaServer GS systems (Section 4.3)
- AlphaServer DS25 systems
- Personal Workstation 433au, 500au, and 600au systems (Section 4.5)
- Alpha VME and PCI/ISA (DMCC) Modular Single-Board Computers (Section 4.6)

Do not attempt to install this release of the operating system without first reading the notes appropriate to your processor. Failure to read these notes can result in installation problems. Also, before you start your installation, be sure to review the hardware documentation that came with your system.

4.1 General Notes on Processors

The following notes apply to more than one processor type.

4.1.1 Upgrading Your Hardware

You can follow the instructions in the *Installation Guide* and those provided by your hardware and firmware documentation when you add new options or change your system hardware. However, if the new option is supported only in the newest version of the operating system, you must perform the upgrade in the following sequence:

1. Update your operating system software.
2. Upgrade your firmware.
3. Upgrade your hardware or install the new option.
4. Follow the instructions in Chapter 2 of the Tru64 UNIX *Installation Guide* to rebuild your system kernel.

4.1.2 Future Enhancements for Expanded Block Size

Most applications accessing storage devices (such as disk, CD–ROM, floppy drives, and so on) currently assume each block of data contains 512 bytes of data. In the future, for applications using raw access to these devices, this assumption will not necessarily be valid. Applications using file systems (such as UFS, AdVFS, CDFS, and DVDFS) will not be impacted. Applications using raw access should be modified to use the `DEVGETGEOM ioctl` call to determine a device's sector size and adjust accesses appropriately.

4.1.3 Floppy Disk Drives

Some of the software documentation states to use the floppy disk drive for certain procedures. However, some systems do not include floppy disk drives. If your system does not include a floppy disk drive, you must find an alternative to the documented procedure.

4.1.4 KZPSA Behind the PCI-to-PCI Bridge

On AlphaServer 1000A and 2100A class systems, updating the firmware on a KZPSA SCSI adapter is not supported when the adapter is behind the PCI-to-PCI bridge. See your hardware installation manual for further information.

4.1.5 Qlogic ISP1040B CAM Errors

On systems with a Qlogic ISP1040B option, CAM errors like the following might occur when you boot the system:

```
pci2000 at pci0 slot 8
isp0 at pci2000 slot 0
isp0: QLOGIC ISP1020A
cam_logger: CAM_ERROR packet
cam_logger: bus 0
isp_probe
NVRAM parameters invalid, using driver Fast10 defaults
```

To correct the error, you must use the `eeromcfg` utility to program the NVRAM with the proper set of parameters. The `eeromcfg` utility is provided in the */mnt-pnt/*`utility` directory of the *Alpha Systems Firmware Update* CD–ROM. Consult the `readme.txt` file in that directory for information about how to use the utility.

4.1.6 DJ-ML200-xx PCI NVRAM Hardware Revision

The revision of the ML200-xx 2/4/8MB PCI NVRAM adapter must be revision E01.

4.1.7 No Console-Level Multipath Support for Some Older Systems

The console firmware on the AlphaServer 1000, AlphaServer 1000A, and AlphaServer 2x00 systems does not support selecting multiple boot or dump devices for storage units located behind HSZ70, HSZ80, or HSG80 RAID Array controllers that are enabled for multiple-bus failover mode.

The console must have a visible path to the storage unit that it is booting from or to which it is dumping. If a controller, in multiple-bus failover mode, fails over to the other controller, all devices served by the failed controller are now visible on alternate paths. Therefore, before booting the system, reset the `bootdef_dev` console environment variable to a path that is visible to the boot device.

After the operating system has been booted, multipath support is fully functional.

4.2 AlphaServer 1000 and 1000A Systems

The following notes are specific to AlphaServer 1000 and 1000A systems.

4.2.1 EISA Configuration Utility Version 1.10

This note applies to users of the onboard Cirrus VGA graphics controller.

The default setting for the VGA graphics controller when running the EISA Configuration Utility (ECU) Version 1.10 is `Disabled`. For previous versions, the default is `Enabled`.

When you run the ECU Version 1.10 for the first time on a system that was previously configured with an earlier version of the ECU, the setting for the onboard VGA graphics controller is automatically set to `Disabled`. To change the default value, run the ECU, select Step 3: View and edit details, and set the VGA graphic controller to `Enabled` before exiting. If you do not set the VGA graphic controller to `Enabled` prior to booting the operating system, your X server will not start and your system will have generic console support when you boot the operating system.

4.2.2 Graphics Resolution

The default graphics resolution for AlphaServer 1000A systems that contain built-in Cirrus video with 1 MB of video RAM is 1024x768. If the optional 512 KB of video RAM is not present, the operating system supports resolutions of 640x480 (by default) or 800x600 only.

The default graphics resolution for AlphaServer 1000 systems that contain built-in Cirrus video with 512 KB of video RAM is 640x480. This configuration also supports 800x600 resolution.

To use 800x600 resolution, edit the following line in the
`/usr/lib/X11/xdm/Xservers` file:

```
:0 local /usr/bin/X11/X
```

Change the line to:

```
:0 local /usr/bin/X11/X "-screen0 800x600"
```

To use 800x600 resolution for the CDE Session Manager, edit the following
line in the `/usr/dt/config/Xservers` and `Xservers.conf` files:

```
:0 Local local@console /usr/bin/X11/X :0
```

Change the line to:

```
:0 Local local@console /usr/bin/X11/X :0 -screen0 800
```

To use 800x600 resolution, edit the file `/usr/var/X11/Xserver.conf`
to add the X server command line argument `"-screen 800x600"`. For
example:

```
! you specify command line arguments here args <     -pn     -screen 800x600 >
```

Before editing this file, be sure that your system's monitor supports 800x600
resolution.

4.3 AlphaServer GS Systems

The following notes are specific to AlphaServer GS systems.

4.3.1 Do Not Repetitively Power Cycle CPUs

The use of OLAR management commands in continuous test loops can
degrade the reliability of the CPU. These commands remove the DC power
source from the CPU module. We recommend that you do not power cycle
CPUs repetitively with shell scripts.

The CPU module's DC to DC converter is specified to have a maximum of
1000 power cycles. Do not exceed this number of power cycles for a CPU.

4.3.2 Hot Add Restriction

This release of the operating system supports GS80, GS160, and GS320
CPU hot additions with the following restriction: A Quad Building Block
(QBB) booted without memory and without at least one CPU cannot have
CPUs hot added to that QBB. Doing so will result in a system panic. If the
target QBB is booted with memory and at least one CPU, additional CPUs
can be hot added as desired. This is a software restriction that will be lifted
in a future kernel update.

4.4 AlphaServer DS25 Systems

The following note is specific to AlphaServer DS25 systems.

4.4.1 Restriction on Burning CD–ROMs

This release provides support for a CD–R/W console device on the
AlphaServer DS25 model. HP supports the burning of CD–ROM media on
the AlphaServer model DS25 processor only.

Because of a restriction in the IDE controller of the ACER M1543C
PCI-to-ISA bus bridge, it is not possible to use direct memory access (DMA)
to perform data write transfers to CD–R or CD–RW drives that are controlled
by this chip. Consequently, this release provides a workaround to use the
slower programmed input/output (PIO) method so that the ACER M1543C
chip can successfully complete CD–ROM burns using the CD–R/W drive
on the AlphaServer DS25.

System loads have an effect on PIO transfers because the I/O must pass
through the processor. If your system is under a heavy CPU load, it is
possible that a buffer underrun might occur, resulting in a failed burn
operation. In such cases, CD–R media is destroyed, but you can attempt the
burn again provided you use rewriteable CD–RW media.

To avoid this problem, always run a test burn under your typical CPU load.
Specify the `-dummy` option with the `cdrecord` command as shown in the
following example:

```
# cdrecord -dummy -v -data padsize=307200 speed=0
dev=0,0,0 ./test.iso
```

If the burn fails consistently, retry when there is a lighter load on the CPU.

For additional information, see the Best Practice *Recording a Data CD-ROM*
at the following URL:

http://www.tru64unix.compaq.com/docs/best_practices/BP_CDRECORD/TITLE.HTM

4.5 Personal Workstation 433au, 500au, and 600au Systems

The following notes are specific to Personal Workstation class systems.

4.5.1 64-Bit PCI Option Cards

The 64-bit PCI slots, slots 4 and 5, are intended only for those cards listed
in the *Systems and Options Catalog* as supported for slots 4 and 5. The
console prevents system operation and displays the following error if an
unsupported card is present in one of these slots (*n*):

```
Illegal device detected on primary bus in physical slot n
Power down the system and remove the unsupported
device from slot n
```

4.5.2 Incorrect Default Keyboard Mappings

If you use a PCXLA-NA keyboard on a Personal Workstation 433au, 500au,
or 600au class system, the keys will not map properly unless you reconfigure
the keyboard driver to use the correct keymaps.

You can do this by executing the following command:

sysconfig -r gpc_input kbd_scancode=2

If you prefer, you can use the sysconfigdb command to add the following
entry to the /etc/sysconfigtab file:

```
gpc_input:
kbd_scancode = 2
```

If you use the sysconfig command to reconfigure the driver, you must
execute the command each time you reboot the system. Using the
sysconfigdb utility to make the change preserves the information across
reboots, and no other user intervention is required.

4.6 Alpha VME and PCI/ISA (DMCC) Modular Single-Board Computers

For information about configuring the operating system on Alpha VME
single-board computers (SBCs) and PCI/ISA EBMnn modular SBCs, see the
System Configuration Supplement: OEM Platforms manual. (The PCI/ISA
modular systems and components product family was formerly known as
DIGITAL Modular Computing Components, or DMCC.)

5

Base Operating System Software Notes

This chapter contains notes about issues and known problems with the base operating system and, whenever possible, provides solutions or workarounds to those problems.

The following topics are discussed:

- Commands and utilities (Section 5.1)
- SysMan system management applications (Section 5.2)
- System administration (Section 5.3)
- Network and communications (Section 5.4)
- Local Area Transport (LAT) (Section 5.5)
- File systems (Section 5.6)
- Logical Storage Manager (LSM) (Section 5.7)

5.1 Commands and Utilities

The following notes apply to commands and utilities.

5.1.1 The vdump Restriction with Clone Filesets and NFS

If you mount a clone AdvFS fileset on a Version 4.*x* system across NFS to a Version 5.*x* system (the NFS server is Version 4.*x* and the NFS client is Version 5.*x*), you cannot use the 5.*x* version of `vdump` to back up the clone fileset. The resulting saveset from the `vdump` utility may not contain all of the data in the clone fileset. If both the NFS client and the NFS server are running 4.*x* or are running 5.*x*, a backup works correctly. If the NFS server is running 5.*x* and the NFS client is running 4.*x*, this also works correctly.

5.1.2 APIs and Commands Affected by Mixed-Speed CPUs

This release of the operating system supports CPUs of different speeds on some hardware platforms. Several existing APIs and commands may return incorrect information in a mixed-speed CPU environment. See `getsysinfo`(2) and `psrinfo`(1) for more information.

5.1.3 SCSI CAM User Agent — Disabling Autosense Is Not Permitted

The `/usr/sys/include/io/cam/cam.h` defines a function that enables you to disable autosense as follows:

```
# define CAM_DIS_AUTOSENSE 0x00000020 /* Disable
autosense feature */
```

An example of use under the User Agent is shown in the Device Driver Kit Version 1.0 as follows:

```
ccb.cam_ch.cam_flags = CAM_DIR_IN | CAM_DIS_AUTOSENSE;
```

Due to required changes in device support, disabling `autosense` is no longer allowed. Do not use the `CAM_DIS_AUTOSENSE` function.

5.1.4 Escaped Comment Symbols in a Makefile

The `make` command does not recognize escaped comment symbols as literal characters in a Makefile. Comment lines that begin with a number sign (#) and all text following this symbol up to the end of the line are considered part of a comment. This is true even if the symbol is preceded with a backslash (\).

5.1.5 Editing an HTML File with XEmacs

If you use XEmacs to edit an HTML file, the editor looks for an entry corresponding to the e-mail ID in an `.emacs` file. If this file does not exist or if the entry is not found, XEmacs prompts the user for the e-mail ID, and this information is updated in the `.emacs` file.

5.1.6 Change to the sh, ksh, and csh Shells

The Bourne, Korn, and C shells generate random file names when opening files created using the `<<` construct. In this release, the following changes have been implemented:

- More randomness is used in generated file names
- File protection defaults to 0600
- Existing files will never be overwriten on a name collision

If a shell-generated file name conflicts with an existing file, the shell will retry with a different random name. After 100 failed attempts, the shell returns the error `Unable to create temporary file`.

5.1.7 Netscape Communicator

The following notes apply to the Netscape Communicator product.

5.1.7.1 Netscape Communicator Dumps Core Running in CDE

Netscape Communicator dumps core when the application posts a file
selection dialog (`XmFileSelectionBox`). Typically, this occurs when you
run the application in the Common Desktop Environment (CDE) and select
the Save As option in the File pulldown menu of the Navigator browser.
It can also occur when you select a link to download a file or save an
attachment to a mail message in the Messenger Mailbox component.

To avoid this problem, invoke Netscape using the following script:

/usr/bin/X11/netscape

If you use this script to start Netscape Communicator, the application
displays the file selection dialog within CDE without dumping core. Use the
`-xrm '*nsMotifFSBCdeMode: True'` command line option if you start
Netscape Communicator using some other means.

For more information, see the Communicator on UNIX release notes at the
Netscape Web site:

http://home.netscape.com/eng/mozilla/4.0/relnotes/unix-4.0.html

5.1.7.2 Deleting Multiple Mail Messages Causes Netscape Communicator to Dump Core

Deleting multiple mail messages in Netscape Communicator's Messenger
Mailbox component sometimes causes Communicator to dump core. Usually,
it requires several multiple deletions of mail to make Communicator dump
core. If Communicator does not dump core immediately, deleted messages
might reappear in the mail folder from which they were deleted.

5.1.7.3 Netscape Communicator Dumps Core Intermittently

Netscape Communicator intermittently dumps core and returns the
following error in the terminal window from which it is started:

```
Memory Fault - (core dumped)
```

This core dump occurs with different hardware and software configurations
and under different circumstances. Sometimes it hangs for a time, taking
most of the CPU time, then it crashes. At other times, you must kill the
process and restart the application. Numerous problems of this nature
have been reported. None are resolved at this time and no workaround is
available. In all cases, the behavior cannot be reproduced consistently.

5.1.7.4 Cannot Delete Mail Messages from Inbox to Trash When Using IMAP Server

After upgrading from a previous version of Communicator, an IMAP mail user cannot move messages to the Trash folder in the Messenger component. All Delete options in the user interface are insensitive (greyed-out). Setting the Move it to trash folder option in the IMAP mail server preferences window does not work. This behavior is the result of a new feature in Netscape Communicator that might require user customization after upgrading to the latest version.

Starting with Netscape Communicator Version 4.5, the Namespace extension to the standard IMAP protocol is used to locate the users' folders on the IMAP mail server. This feature does not work if you are using an older IMAP server that does not support the Namespace extension to the protocol. Use the following procedure to customize Netscape Communicator to be able to locate a user's Trash folder on an old IMAP server:

1. Choose the Preferences option in the Edit pulldown menu and choose the Mail and News Servers option in the Preferences window.

2. Choose the Mail Servers option from the list of Mail and News Servers options.

3. Choose the IMAP server from the list of servers and click on the Edit button to edit the server configuration.

4. Choose the Advanced tab in the pop-up dialog box.

5. Ensure that the Namespace field in the tab reads as follows (quotes and period included):

    ```
    Namespace: "INBOX."
    ```

6. Click on the OK button in the pop-up window and again in the Preferences window to save the settings.

7. Exit and restart Communicator.

You can now move messages to the Trash folder and use all the Delete options. Because IMAP mail server configurations differ (including the location of the user's folders on the server), check with your IMAP mail server administrator if the preceding procedure fails to resolve the problem.

5.1.7.5 Netscape Communicator Returns sh: /usr/bin/X11/showps: not found

When you select a link to a PostScript file in the Navigator component of Communicator, the following error message might be displayed:

```
sh: /usr/bin/X11/showps: not found
```

The showps helper application has been retired from the operating system as a result of licensing changes to Adobe Display PostScript. The user might

have customized the PostScript Document MIME type to use the `showps`
helper application in `$HOME/.mailcap` and `$HOME/.mime.types` files.

To resolve this problem, you must obtain a new PostScript
viewer and reconfigure the helper application for the PostScript
Document MIME type in Communicator. Use the Edit option in
the Edit->Preferences->Navigator->Applications pulldown menu of
Communicator to edit your PostScript Document helper application and
replace `/usr/bin/X11/showps` with the path to your new PostScript
viewer.

5.1.7.6 Netscape Communicator Returns X Authorization Error

When logged in as root, if you start Netscape Communicator on display
":0.0", and your current working directory is not "/" (root), the following
X authorization error is returned:

```
lib: connection to ":0.0" refused by server
Xlib: Client is not authorized to connect to Server
Error: Can't open display: :0.0
```

To work around this problem, set the XAUTHORITY environment variable
to point to the root user's `.Xauthority` file (Bourne shell syntax):

```
# XAUTHORITY=/.Xauthority
# export XAUTHORITY
# /usr/bin/X11/netscape
```

5.1.8 Netscape 6.2.3 Web Client

The following notes apply to the Netscape 6.2.3 Web Client product.

5.1.8.1 Netscape Startup Preferences Do Not Work

Choosing the Netscape 6 component startup options in the Appearance
dialog under the Preferences option in the Edit pulldown menu has no effect
on which components are started. Regardless of which component toggle
buttons are selected, when Netscape 6 is restarted it will only start the
Navigator component. To correct this problem, edit the Borne shell script
located at `/usr/opt/netscape6/netscape` and change it to a Korn shell
script by updating the first line in the file from `#!/bin/sh` to `#!/bin/ksh`

When Netscape 6 is restarted, the component startup preferences will take
effect.

5.1.8.2 Netscape 6.2.3 Displays Poorly in the X11 PseudoColor Visual Class

Although Netscape 6.2.3 will run on an X server with only PseudoColor
visual classes available, it has not been qualified in the PseudoColor visual

class. The user interface does not display properly in the PseudoColor visual class. The most obvious effects are dithering of the background skin, fonts, and images, and images displaying in incorrect colors.

To work around this problem, use a display interface that supports the TrueColor visual class with a minimum of a 16-bit depth. We recommend 24-bit TrueColor.

Depending on the graphics card you have installed, you may also need to update the `/usr/var/X11/Xserver.conf` file to enable support for the TrueColor visual class in the X server. For example, the line at the bottom of the file might look like the following after it has been modified to support the 16-bit TrueColor visual class on a 1280 x1024 resolution screen:

```
-pn -vclass TrueColor -depth 16 -screen 1280x1024
```

Use the `xdpyinfo` command to determine what visual classes your X server supports. Netscape 6.2.3 will always use the best matching X visual class available.

5.1.8.3 Netscape 6 Will Not Load the Adobe Acrobat Plugin That Works with Netscape 4

Netscape 6 will not load the Adobe Acrobat plugin that works with Netscape Communicator and returns the following error:

```
LoadPlugin: failed to initialize shared library  /usr/opt/netscape6/plugins/nppdf.so
[dlopen: /usr/opt/netscape6/plugins/nppdf.so: symbol "DeQueue" unresolved]
```

To work around this problem, you can configure Adobe Acrobat as a helper application using the Helper Applications dialog under Navigator in the Preferences option of the Edit pulldown menu. You can also use Netscape Communicator to view PDF documents using the Adobe Acrobat plugin.

5.1.8.4 Missing S/MIME Support in Mail and News

Unlike Netscape Communicator, Netscape 6.2.3 Mail and Newsgroup components do not have S/MIME support. Continue to use Netscape Communicator if you need these features.

5.1.8.5 Problems Downloading Files

When you download a file using the Netscape 6 Web client, the client may hang during the download operation, or the download may complete before the entire contents of a file are downloaded. Also, users may see "file system full" errors appear on the system console while downloading a file, and the event manager may log events that indicate the file system is full.

These problems are caused by the file being downloaded to the `/tmp` directory as a temporary file before Netscape 6 moves the temporary file to the destination directory and file name.

To work around this problem, use Netscape Communicator to download files.

5.1.8.6 Netscape 6 Has Several X Input Method Failures in Some Locales

Netscape 6 has several defects related to user input via the X Input Method in various locales. The following problems have been reported:

- Netscape 6 will core dump frequently when used in the dxhanyuim (Traditional Chinese IM), dxhanyuim, dxjim (Japanese IM), or dxhanziim (Simplified Chinese IM) locales.

- The input cursor is incorrectly positioned in the text field when input focus is returned to the Netscape 6 client when entering text in the dxhangulim (Korean IM) locale.

- Multibyte characters are garbled when pasted to Netscape 6 from other clients (`dxterm` and `dtterm`) in the following locales:

      ja_JP.deckanji
      ja_JP.sdeckanji
      zh_CN.dechanzi
      zh_TW.dechanyu
      zh_HK.dechanyu
      ko_KR.deckorean

- When the Language/Region is set to English (Canada) / Canadian in Netscape 6, some pull-down menu items appear to be missing. The missing menus may include the Close and Quit items under the File pulldown menu.

5.1.8.7 Informational Messages Can Be Ignored

Netscape 6.2.3 generates messages when started and intermittently during use. These messages are informational messages only, and do not indicate problems or defects in the Netscape Web client. They can safely be ignored. An example of these messages follows:

```
$ /usr/bin/X11/netscape6
/usr/opt/netscape6/run-mozilla.sh
/usr/opt/netscape6/mozilla-bin
MOZILLA_FIVE_HOME=/usr/opt/netscape6
LD_LIBRARY_PATH=/usr/opt/netscape6:/usr/opt/netscape6/Cool:
/usr/opt/netscape6/gnome/lib
LIBPATH=/usr/opt/netscape6:/usr/opt/netscape6/Cool
SHLIB_PATH=/usr/opt/netscape6:/usr/opt/netscape6/Cool
XPCS_HOME=/usr/opt/netscape6/Cool
```

```
MOZ_PROGRAM=/usr/opt/netscape6/mozilla-bin
```

5.1.8.8 Netscape Web Client Does Not Evaluate Local Files Passed As Arguments

Unlike Netscape Communicator, Netscape Web client does not evaluate
paths to local files when they are passed as arguments on the command line.

For example, an error dialog appears stating the local file does not exist in
response to the following commands:

```
# /usr/bin/X11/netscape6 foo.html
# /usr/bin/X11/netscape6 ./foo.html
```

To work around this problem, specify the full URL of the local file on the
command line:

```
#/usr/bin/X11/netscape6 file:/usr/users/myhome/foo.html
```

5.1.8.9 Netscape 6 Failures When Loading Applets Using Java OJI Plugin

The following problems with using Netscape 6 to display applets with the
Java OJI plugin from Java Version 1.3.1-2 or later have been reported:

- The Navigator browser crashes while loading an applet and displays
  the following error:

  ```
  INTERNAL ERROR on Browser End: Pipe closed during
  read? State may be corrupt System error?
  ```

- The Navigator browser crashes attempting to display an applet that
  passes a value with more than 900 lines of characters as the last
  parameter of the applet tag.

- The Navigator browser hangs, consumes memory, and may eventually
  crash, displaying the following error:

  ```
  process (pid = <Process ID>) killed because of no swap space
  process /usr/opt/netscape6/run-mozilla.sh:
  <Process ID> Killed
  ```

The problems experienced depend on the version of the Java installed
(OSFJAVA*xxx* or JAVA*xxx* subsets, where *xxx* represents the subset version
number), which version of the Java Virtual Machine is being used by the
plugin, and the particular Java applet being loaded. To obtain the latest
fixes for these and other problems with the Java plugins for Netscape 6,
download and install the latest version of Java from: For more information,
see the Communicator on UNIX release notes at the Netscape Web site:

http://www.compaq.com/java/download/index.html

After installing Java, update the soft link to the Java OJI plugin found in the directory `/usr/opt/netscape6/plugins`:

```
# su root
# cd /usr/opt/netscape6/plugins
# rm libjavaplugin_oji.so
# ln -sf /usr/opt/java140/jre/alpha/ns600/libjavaplugin_oji140.so
```

In order for the plugin to work in Netscape 6, you must create a soft link to the plugin file. Do not copy the plugin file to the `/usr/opt/netscape6/plugins` directory.

5.1.8.10 Starting Multiple Instances of Netscape 6 Can Cause It to Hang or Display Poorly

Starting multiple instances of Netscape 6 from the same user account can cause subsequent instances of the client to hang or display poorly.

To avoid this problem, use the Task pulldown menu in Netscape 6 to create multiple instances of the client component windows instead of starting a new Netscape 6 client process.

5.1.8.11 Netscape 6 Cannot Be Used to Access WebMail

You cannot log in to a user's WebMail account by selecting the WebMail bookmark in the Netscape 6 Web client.

5.1.8.12 Netscape 6 Crashes When Attempting to Open Mail Attachments

Attempting to open an attachment in the Mail & Newsgroups component of Netscape 6 causes the client to crash and display the following error:

```
INTERNAL ERROR on Browser End: [0] Initialize. No docbase?
System error?:: Operation would block
```

To work around this problem, use the "Save As" option that appears on the pop-up menu displayed when the right mouse button is clicked on the attachment in the Mail & Newgroup component window. Save the attachment to a file, then invoke a helper application from a terminal window to view the file.

5.2 SysMan System Management Applications

The following notes apply to restrictions on using the SysMan system management applications.

5.2.1 Possible Loss of Data When the root File System Is Full

When the root file system is full, SysMan applications might not be able to update the system files. This might lead to loss of data or truncated files. We recommend that you ensure that the root file system is not full or nearly full, prior to running SysMan applications.

Also, the /tmp directory usually resides on the root file system. Therefore, do not run applications that create large temporary files while you are running SysMan applications.

5.2.2 Large Integer Values in Configuration Applications

Entering a very large integer value (on the order of 10^{19}) in numeric fields in some system configuration applications can cause a stack trace. Such large integers are not appropriate values for these applications. Therefore, this problem is not expected to impede you from configuring your system.

5.2.3 Error Message When Using sysman -cli -set values Command

If you use the sysman -cli -set values command to change specific values for an existing row in the table defined by the staticRoutes group, you might receive an error message. For example:

```
# sysman -cli -set values -comp routing -group staticRoutes\"

 -attr gateway=1.2.3.4 -key1 "dummy system 1.1.1.1"
Error: "SYSMAN_NO_DATA"
No row exists with the specified key: 'dummy system 1.1.1.1'
```

If a row with the defined key is present in the staticRoutes group, you can ignore this message. In any case, to verify that the row was modified properly, issue the following command:

```
# sysman -cli -list values -comp routing -group staticRoutes
```

5.2.4 Problem When Reconfiguring Network Interface Cards

If you use a SysMan application to reconfigure a network interface card (NIC) and you change the host name, the HOSTNAME variable in the /etc/rc.config file is not updated.

If the system has a single network interface card, you can correct this problem by performing the steps in the following procedure. If the system has more than one network interface card and you changed the host name of the primary card (that is, the card with the same host name as the system's host name), do the following to correct the problem:

1. Use the rcmgr set HOSTNAME command to set the HOSTNAME to the correct name. For example:

```
#  rcmgr set HOSTNAME abcxyz.com
```

2. Use the `hostname` command to change the host name to the correct value in the kernel. For example:

```
#  hostname abcxyz.com
```

3. Use the `xhost` command to add `localhost` to the access control list of the local X server, as follows:

```
#  xhost + localhost
```

5.2.5 SysMan Command Line Interface

The `-mib` option of the SysMan command line interface does not work properly. The `/usr/sbin/sysman -cli -mib` command generates a Management Information Base file for use by SNMP applications. If you use this command, the following error message is displayed:

```
ERROR: inrange longer than outrange
```

5.2.6 SysMan Web Page Does Not Display or Work Properly

If you navigate to the SysMan Web page from the default Web page `/usr/doc/netscape/Welcome.html`, the SysMan page may not display or function correctly. (For example, downloads may not work.)

A workaround for this problem is to navigate to this page by opening `http://localhost:2301` and selecting the Tru64 UNIX SysMan icon.

5.2.7 SysMan Configuration and Administration Restriction

The `sysman` configuration and administration utility does not work on hardware configurations within the following locales:

- `tr_TR.ISO8859-9`
- `tr_TR.ISO8859-9@ucs4`

To avoid this problem, set the `LC_ALL` and `LANG` environment variables to C when you run the `sysman` utility.

5.2.8 Display Problems on Systems with Low-Resolution Graphics Cards

If your system has a low-resolution graphics card and you use large fonts, the images of some graphical applications might be displayed longer than the display area on the monitor. Images that are larger than the display area are truncated at the bottom, often resulting in the buttons being cut off. Some windows in Quick Setup have exhibited this behavior.

To avoid this problem, reduce the size of the font. See the documentation for the window manager you are using. Also, applications with a curses (character) mode fit the screen better than graphical applications using large fonts.

For more information, see X(1X), dtstyle(1), curses(3), and sysman_intro(8).

If you are running these applications in Asian locales, see Section 5.2.9.

5.2.9 SysMan Applications Do Not Work Properly at VGA Resolution

If your monitor is set to VGA resolution (640x480), Quick Setup and other SysMan applications might not work correctly. The problem is that the large fonts used by some locales (for example, Asian locales such as Chinese and Japanese) cause dialog boxes to be larger than 640x480, and control buttons such as OK and Cancel are no longer accessible. This is a more specific problem than that described in Section 5.2.8, and the workarounds in that note do not work for this problem.

To avoid this problem, you have the following options:

- Set the language option to C or other English locales and reenter the desktop before starting the SysMan applications.

- Invoke the SysMan applications in terminal mode using a terminal emulator.

  If you have DISPLAY set, use the sysman -menu -ui cui command.

  If you do not have DISPLAY set, use the sysman or sysman -menu command.

- 3D-capable graphics cards, such as PowerStorm 300/350 and 4D40T/50T/60T/51T, support increased display resolutions when used with the appropriate subsets from the Associated Products CD–ROM.

5.2.10 SysMan Menu

The following notes apply to the SysMan Menu application. Also see Section 8.5.1 for information related to online help.

5.2.10.1 Installation Branch Hangs When Run in Background

The Install software, List installed software, and Remove installed software tasks in the Installation branch of the SysMan Menu hang if you run the SysMan Menu in the background. Do not run the SysMan Menu in the background if you plan to use these tasks in Installation branch.

5.2.10.2 Installation Branch Is Not Supported for Clusters

Do not run the SysMan Menu Installation branch in a cluster environment.
The Install software, List installed software, and Remove installed software
tasks in the Installation branch of the SysMan Menu do not work on a
cluster system.

5.2.10.3 Running the SysMan Menu Standalone on a PC Fails to Launch Tasks

When you run the SysMan Menu from a PC, you might encounter the
following problems:

- Sometimes multiple logins are required. You are asked for your user
  name and password each time you launch a task.

- Sometimes tasks fail to run. No error is displayed. The task window is
  not displayed.

To avoid these problems, run the SysMan Menu from within the SysMan
Station by doing the following:

1. Start the SysMan Station either from the Start menu or from a Web
    browser.

2. Choose the Hardware view.

3. Right click on a host icon and choose the SysMan Station.

5.2.10.4 Manage Local Users and NIS Users Task Restriction

The Manage local users and Manage NIS users tasks on the SysMan Menu
are front ends for the `useradd`, `usermod`, and `userdel` commands. If
you use the Manage local users and Manage NIS users tasks to change
the `/etc/passwd` file, a warning message is displayed, even though the
operation completes successfully. However, the changes do not display in the
Manage local users and Manage NIS users tasks dialog boxes. This happens
in the following cases:

- When you are adding or modifying a user and specifying a primary or
  secondary group that does not exist

- When you are adding a user with Create Home Directory enabled but the
  user's home directory already exists

To correct this problem, exit the task and restart it. The correct attributes
for the user will be displayed.

5.2.10.5 Display Currently Mounted File Systems Option Restriction

The SysMan Menu Display Currently Mounted File Systems option works
only in the English version of the operating system. (You can access the
Display Currently Mounted File Systems option from the SysMan Menu by

selecting Storage → File Systems Management Utilities → General File System Utilities.)

To avoid this problem, set the `LC_ALL` environment variable to C before running the `sysman` command. This forces the SysMan Menu to work in English. Restore the `LC_ALL` environment variable to its prior setting when you are done using the SysMan Menu.

5.2.11 SysMan Station

The following notes apply to the SysMan Station. Also see Section 8.5.2 for information related to online help.

5.2.11.1 Smart Array 5300A RAID Array Not Supported in SysMan Station

SysMan Station cannot render a correct Hardware View display for systems containing a Smart Array 5300A RAID storage array.

To correct this problem you must define the `smart_array_adapter` to SysMan Station in it's object definition file (`/usr/share/sys-man./sms/objects/base.smo`). Add the following lines after the SCSI_ADAPTER definition stanzato the object definition file:

```
SMART_ARRAY_ADAPTER:
TYPE = MANAGED_OBJECT
CATEGORY = Hardware
ALLOW_HIDE = "Yes"
CHILD_OF = HOST,BUS
COMMENT = "This is a definition of a Smart Array adapter "
ICON = smsscsi
LAYOUT_TYPE = BUSADAPTER
LAYOUT_PRIORITY = 135
LABEL_PHYSICAL = name
REPOSITORY_TYPE = CH
REPOSITORY_IDENTIFIER = hardware/smart_array_adapter
AVAILABLE_ACTIONS = <FAILED_ACTIONS>
UNAVAILABLE_ACTIONS = <FAILED_ACTIONS>
BROKEN_ACTIONS = <FAILED_ACTIONS>
LIMITED_ACTIONS = <FAILED_ACTIONS>
OFF_ACTIONS = <FAILED_ACTIONS>
TESTING_ACTIONS = <FAILED_ACTIONS>
FAILED_ACTIONS = Event_Viewer_context_filtered
NORMAL_ACTIONS = <FAILED_ACTIONS>
TROUBLE_ACTIONS = <FAILED_ACTIONS>
STATE_TYPE = HARDWARE_HEALTH_STATE
ACCESS_STATE_TYPE = HARDWARE_ACCESS_STATE
INDICTED_TYPE = INDICTMENT_STATE
```

Exit all active SysMan Station client sessions and Restart the SysMan Station daemon using the following command:

smsd_restart

5.2.11.2 SysMan Station Deamon Restart Required After Completing OLAR Operations

The SysMan Station deamon must be restarted to accurately display a system's hardware configuration after a hardware component is either added or removed from the running system (Online Addition and Removal).

Exit all active SysMan Station client sessions and Restart the SysMan Station daemon using the following command:

```
# smsd_restart
```

5.2.11.3 Incorrect Launch Status

SysMan Station checks the status returned by all the applications that it launches. A few applications incorrectly exit with nonzero (failure) status returns even though the tool has launched successfully.

5.2.11.4 Objects Might Not Display Properly with Internet Explorer

Objects might not display properly in SysMan Station View windows when you run SysMan Station from a PC using the Internet Explorer Web browser. Sometimes objects are overlayed in the upper left corner of the display window.

To correct this problem, choose the Show All option from the Action menu to redraw the display properly.

5.2.11.5 Cannot Restart the Client in a Web Browser

When you run the SysMan Station client from a Web browser, if you exit the SysMan Station and attempt to restart it by returning to the URL (`http://your_machine:2301`), the client will not restart.

You can correct the problem by restarting the browser. The client will load properly from the URL.

5.2.11.6 Client 5-Minute Timeout

If you restart the SysMan Station daemon (`smsd`) while there are active SysMan Station clients, the clients will keep an active network connection that times out after 5 minutes have elapsed. Attempts to use the `/sbin/init.d/smsd start` command during this 5-minute interval will fail to restart the server because it cannot access the required network port. You must wait for the 5-minute timeout to elapse before you can restart the SysMan Station server.

You can use the following command to see if any clients are using the network port:

```
# /usr/sbin/netstat -a | grep 596
```
If no matches are found, you can restart the SysMan Station daemon.

5.2.11.7 Physical_Filesystems View Displays Two Disk Objects for LSM

Two disk objects are displayed in the Physical_Filesystems view for each file system that uses LSM. One disk object represents the LSM private region, the other represents the LSM public region.

5.2.11.8 Icons Indicating Warning or Failed States

Objects in a failed or warning state are depicted in the SysMan Station's Hardware view using a red or yellow highlight for the object's icon. A small number of objects do not have warning or failed icons. In this case, the object's label correctly indicates that it is in a warning or failed state.

5.2.11.9 Group Icons Are Not Available for Some Objects

When objects are grouped together, a special group icon is used to represent the grouping. A small number of objects do not display a group icon when an object group is formed. In these instances, the group's label correctly indicates that the icon represents a group.

5.2.11.10 Multiple AdvFS Volumes Might Not Appear Properly

When multiple volumes are added to AdvFS file domains, the new AdvFS volume objects might not appear in the SysMan Station AdvFS Filesystem and Physical Filesystem view windows.

You can correct this problem by restarting the SysMan Station daemon (smsd). To restart the smsd daemon, exit all connected SysMan Station client sessions and issue the following command:

```
# /sbin/init.d/smsd restart
```

5.2.11.11 SysMan Station Does Not Update Changes to Device base_name Dynamically

If you use the dsfmgr utility to change the base_name of a device while the SysMan Station daemon (smsd) is running, any clients connected to the running daemon will continue to reflect the old base_name in their views.

To obtain a correct view, close all open SysMan Station sessions and restart the SysMan Station daemon with the following command:

```
# /sbin/init.d/smsd restart
```

If the system is a member of a cluster, perform these steps on all affected cluster members.

5.2.11.12 Some Tools Might Fail When Launched From a Group Object

If you launch a tool from a SysMan Station group object, the SysMan Station attempts to invoke an instance of the tool for each object contained in the group. For certain tools, not all instances of the application will launch successfully. An application error or SysMan Station Authentication server core dump might result.

To work around this problem, do the following:

1. Close all open SysMan Station sessions.

2. Enter the following commands:

```
# /sbin/init.d/smauth restart
# /sbin/init.d/smsd restart
```

On a cluster, perform these steps on all affected cluster members.

5.2.11.13 Unable to Expand the Host Object in a Cluster

The Sysman Station client might occasionally encounter a Java class exception error when a user attempts to expand a Host object.

If you encounter this problem, restart the SysMan Station client and retry the expand operation.

5.2.11.14 Unable to Select Other Objects After a Vertical Bus Is Selected

If you select a vertical bus within the SysMan Station Hardware view, you are unable to select any other object in the view. If this problem occurs, exit the view and then return to it, or restart the client.

5.2.12 Configuring Tru64 UNIX from Linux Systems

You can now configure Tru64 UNIX from systems running Linux using Java. The following procedure describes how to install the SysMan client on these systems:

1. Download the /usr/share/sysman/web/classLib/suit.jar file from the Tru64 UNIX system to your Linux system and add the full path of that file to your CLASSPATH environment variable.

    If you use csh and you downloaded the suit.jar file to /usr/local/lib, use the following syntax:

    setenv CLASSPATH $CLASSPATH:/usr/local/lib/suit.jar

    If you use ksh and you downloaded the suit.jar file to /usr/local/lib, use the following syntax:

```
CLASSPATH=$CLASSPATH:/usr/local/lib/suit.jar
export CLASSPATH
```

2. Run SysMan Menu with the following command, substituting the name
   or IP address of your Tru64 UNIX computer for *HOST*:

   # **java suit** *HOST* **sysman**

   Alternatively, you can run a SysMan task directly by substituting the
   accelerator for sysman. For example:

   # **java suit** *HOST* **ntp_config**

You can redirect the standard output to /dev/null if you do not want to see
the diagnostic messages that SysMan prints when run in this fashion.

SysMan has been tested on RedHat Linux Version 6.0 and SuSE Linux
Version 6.0 on Intel using Version 1.1.7 of the Java Run-time Engine (JRE).
Other versions of Linux and Java might also work.

5.3 System Administration

The following notes apply to system administration.

5.3.1 Configuring the SDLT320 Tape Drive

The SDLT320 Tape Drive (160/320GB Super DLT) is supported in this
release of Tru64 UNIX. The installation procedure for this model requires
that you shut down and and then reboot the system. However, before adding
the device to your system, you must manually update the /etc/ddr.dbase
file as follows:

1. Copy the existing /etc/ddr.dbase file to a holding file for safe keeping.

2. Open the file with an editor and search for the SuperDLT1 SCSIDEVICE
   entry.

3. Insert the following density information and SCSIDEVICE entry:

   ```
   csi_density_table_size = 0x4a

       scsi_tape_density[0x42] =  "density_code_42"    0       0
       scsi_tape_density[0x43] =  "density_code_43"    0       0
       scsi_tape_density[0x44] =  "density_code_44"    0       0
       scsi_tape_density[0x45] =  "density_code_45"    0       0
       scsi_tape_density[0x46] =  "density_code_46"    0       0
       scsi_tape_density[0x47] =  "density_code_47"    0       0
       scsi_tape_density[0x48] =  "131000_bpi"       131000    0
       scsi_tape_density[0x49] =  "190000_bpi"       190000    0

       SCSIDEVICE
       #
       # Matches SDLT320
       #
   ```

```
Type = tape
Name = "COMPAQ" "SDLT320"
#
#
PARAMETERS:
TypeSubClass       = tk
TagQueueDepth      = 0
MaxTransferSize    = 0x0fffffb        # (16MB - 4)
ReadyTimeSeconds   = 120             # seconds

DENSITY:
#
DensityNumber = 0
DensityCode = 0x48
CompressionCode = 0x1
Buffered = 0x1

DENSITY:
#
DensityNumber = 1,5
DensityCode = default
CompressionCode = 0x1
Buffered = 0x1

DENSITY:
#
DensityNumber = 2,4,6,7
DensityCode = default
CompressionCode = 0x0
Buffered = 0x1

DENSITY:
#
DensityNumber = 3
DensityCode = 0x48
CompressionCode = 0x0
Buffered = 0x1
```

4. Run the `/sbin/ddr_config` utility to update the `ddr.dbase` database.

5. Shut down the system and install the SDLT320 Tape Drive according to the hardware installation instructions.

6. Power on the system and use the `show dev` console command to ensure that the tape is seen by the console.

    The tape device should be displayed with a console device name of MK*xn* or similar, and bus/target/lun location and its device name, such as COMPAQ SDLT320. If the device is not visible, check the cabling before proceeding.

7. Boot the system. The tape drive is automatically recognised and is registered by the hardware manager. When the system is at multi-user mode, use the following command to determine that the device is recognized:

```
# hwmgr view devices | grep tape
```

Information similar to the following should be displayed:

```
86: /dev/ntape/tape0 COMPAQ SDLT320 bus-5-targ-0-lun-0
```

Use the dump command to test the operation of the tape at different densities supported in the /etc/ddr.dbase file. This will ensure that the tape drive is using the updated ddr.dbase entry and is not using a generic tape entry.

You should also find a set of device special files that map to the supported tape densities in the /dev directory as follows:

```
# ls /dev/tape
tape0 tape0_d1 tape0_d3 tape0_d5 tape0_d7 tape0_d0 tape0_d2
tape0_d4 tape0_d6 tape0c
```

If these device special files do not exist, use the dsfmgr -n command to create them. (see dsfmgr(8))

5.3.2 Binary Error Log Event May Be Incorrectly Reported As Double Error Halt

A binary error log (binlog) event with type 113 is reported as a Double Error Halt event when reported by the Event Manager (EVM), but is reported as a Console Data Log event by Compaq Analyze. EVM might report this event by mailing it to the root user and by displaying it on the system console.

The event is actually a Console Data Log event. This event type is posted when any of several different errors occur, including double error halts, uncorrectable environmental errors, and platform-specific system faults. See the the Compaq Analyze translation of the event for information about its cause.

5.3.3 Account Manager

The following notes apply to the Account Manager (dxaccounts) applications.

5.3.3.1 General Restrictions

The Account Manager has the following restrictions on both base security and enhanced security (C2) systems:

- Leading and trailing white space is not stripped from text entry areas. This can lead to confusion. For example, if a field in the Find dialog box contains a space character before the desired search string, the search string will not match because of the spurious space character.

- Using mouse button 1 (MB1) to drag and drop user accounts, groups, or templates does a copy operation, not a move operation. This is different

from the CDE/Motif default, in which MB1 performs a drag-and-drop move operation and Shift/MB1 performs a copy operation. For example, if you use MB1 to drag a user account from the Local Users view and drop it in the NIS Users view, you create a copy of that user account in NIS. To avoid this problem, delete the original icon after the copy has been completed.

- If you change a user's UID with the Account Manager, the ownership of the user's files and subdirectories does not change and, under certain circumstances, the home directory ownership might not change, either. For example, if you change the UID of user `johndoe` from 200 to 201, the files and subdirectories under his home directory still belong to UID 200. Furthermore, if `johndoe` does not own his home directory, the ownership of that directory does not change. To avoid this problem, use the `chown` command to change the directory and files, if applicable.

- You cannot drag and drop items across different instances of the Account Manager. For example, if the Account Manager A on system 1 and the Account Manager B on system 2 are displayed on the same workstation, then you cannot drag and drop between Account Manager A and B. To avoid this problem, use the copy/paste feature to copy users, groups, or templates from Account Manager A to B. After paste operations, the Paste Errors dialog box might be displayed. You can ignore the error message and click OK to dismiss the dialog box.

- Although the Account Manager correctly allows two or more system administrators to work on the same password files simultaneously, only one system administrator can use the Account Manager at a time. If multiple instances of the Account Manger are run concurrently, the proper file locking occurs and new accounts can be added or modified. However, the local groups file, `/etc/group`, and the NIS groups file, `/var/yp/src/group`, are written out after modification of each group. Therefore, if more than one system administrator is working on the same file, the last one to change a group's view window overwrites any prior changes from a different system administrator. For this reason, running multiple, concurrent Account Manager instances is not recommended.

- Use caution when editing the `/etc/passwd`, `/etc/yppasswd`, and `/etc/group` files. The accidental insertion of a blank line will cause Account Manager to dump core.

- The Account Manager Suitlet requires LDAP search tools. If these tools are not installed, the system displays the following error message:

  ```
  "LDAP tools (ldap_get_user ldap_get_group) are not installed"
  ```

  You can install these tools from either of the following CD–ROMs:

  - Internet Express CD–ROM – The LDAP Module for System Authentication (IAELDAM590)

–   Associated Products, Volume 1, CD–ROM – LDAP Utilities
    (LDPUTILS100)

- Secondary LDAP group information is not updated when you rename
  a local or LDAP user that has secondary LDAP groups. For example,
  assume there is a user name "smith" on the system, either local or LDAP,
  and "smith" is in the LDAP group `ldapgrp1`. The user name is changed
  to "jones" with a command such as "`usermod -l jones smith`". The
  user name is successfully changed, but the LDAP group information for
  `ldapgrp1` is not updated with the new name "jones".

  To work around this problem:

  1.   Remove the user from any LDAP groups that the user is a
       secondary member of.

  2.   Change the user name with the `-l` option.

  3.   If necessary, manually update the LDAP group information:

       ```
       # groupmod -x ldap=1 members-=smith ldapgrp1
       # usermod -l jones smith
       # groupmod -x ldap=1 members+=jones ldapgrp1
       ```

5.3.3.2 Account Manager and Enhanced Security

The following problems apply to the Account Manager application when
running on systems with enhanced security:

- The Lock/Unlock Toolbar and Menu Options are inactive for the
  Template views. To avoid this problem, change the template lock setting
  on the Add/Modify Template dialog box after selecting the template by
  double-clicking on the template icon in the Template view icon box.

- The Account Manager does not enforce the minimum and maximum
  password length limitations when setting passwords. To avoid this
  problem, set passwords by using the `/usr/tcb/bin/dxchpwd` or the
  `/usr/bin/passwd` command if the minimum and maximum password
  length limitation is necessary.

- When you rename a user account by changing the Username field of the
  Add/Modify User dialog box in Modify mode, the protected password
  database entry for the old name does not change. To avoid this problem,
  use the following command to remove the dangling protected password
  database entry:

  ```
  # /usr/tcb/bin/edauth -r user name
  ```

- Do not rename a template by changing the Template name field of the
  Add/Modify Template dialog box in Modify mode. The Account Manager
  creates a new template without removing the old template, but renames

the old template's icon from the Icon Box. To avoid this problem, restart
the Account Manager to restore the former template icon. Use the Delete
Toolbar icon or the Edit->Delete... option from the Template view to
delete the undesired template.

- Accounts and templates inherit their settings either from locally defined
  values in their protected password database entry or from the templates
  that they reference. All accounts and templates implicitly reference
  a default template that is not served by the Network Information
  Service (NIS). This creates an inconsistency for the Account Manager
  when displaying NIS user accounts and templates on a NIS master.
  The user and template values displayed might be the default template
  values of the NIS master. When a NIS user logs in to a NIS client, the
  NIS client's default template might be different from the NIS master's
  default template. The client's default template is used to establish the
  user's account settings.

- When you use drag and drop to copy a user account on a different
  view, the user's template references are copied by value. This means
  that the template itself is no longer referenced by the new account.
  Instead, the template's values are contained directly in the new user's
  protected password database entry. For example, assume the local
  user Joe has an account based on the developers template. If you drag
  and drop Joe's account from the Developers view into the NIS Users
  view, the attributes from the developers template are placed into the
  protected password database entry for Joe's account. This preserves
  Joe's developer attributes and overrides any corresponding attributes
  from the default template for NIS users. To avoid this problem, modify
  the copied user's account and change the template from the default to
  the desired template. The template reference is maintained if the user
  account is dropped within the same view.

- After deleting a template, the NIS maps are not remade. Therefore, you
  must manually remake the NIS maps or perform an Account Manager
  function (for example, Account Modification) that will remake the maps.
  To manually remake the maps, do the following:

```
# cd /var/yp
# make all
```

5.3.4 Prestoserve Restriction on Devices Larger Than 1 TB

The Prestoserve product has a restriction in its ability to cache blocks on a
device that is larger than 1 TB. This applies both to physical devices (RAID)
and logical devices (LSM). Any device that is larger than 1 TB can be cached
via the Prestoserve product, but blocks with an address that exceeds the
1 TB boundary will not be cached.

5.3.5 Possible Error Updating /etc/doprc

If you use the `dop -W` command and the following error occurs, unset the DISPLAY variable:

```
Error occurred trying to update /etc/doprc:
        Dop_write_actions verbose ; Dop_update_binary /etc/doprc
        child process exited abnormally
```

5.3.6 Persistent Reservation Error

Under certain circumstances, you can encounter persistent reservation problems. If this occurs, see the *Hardware Management* manual.

5.3.7 Security

The following notes have to do with system management and security.

5.3.7.1 Authentication Problem with Multithreaded Applications

Third-party applications that perform user authentication or impersonation from multiple threads, such as PMDF, will correctly verify a user's group membership only from the first thread. All other threads that call the `sia_get_groups` routine receive a failure status. This can lead to seemingly random behavior, in which a user's membership in a group of which the user is a legitimate member is sporadically denied.

5.3.7.2 Security and HP Management Agents

The HP Management Agents for Tru64 UNIX product is configured by default when you install the operating system. Anonymous login to WebAgent applications, enabled by default, allows nonprivileged users to invoke the Management Agents and view details of any connected devices in the local area network, although users cannot perform any operations unless authorized. Many site security policies strongly discourage such anonymous access. To disable these agents, use the HP Management Agents Configuration icon on the Monitoring/Tuning menu.

5.3.7.3 Behavior of useradd, usermod, and userdel Commands

The `useradd` command correctly honors the default administrative lock value found in the `/.sysman/Account_defaults` file. If the `Account_defaults` file does not exist, the internal default for the `useradd` command is to create locked accounts. Use the `administrative_lock_applied` extended command line option to override the default. In the following example, the `useradd` command

creates a locked account for `foo` regardless of the default value for administrative lock:

```
useradd -x administrative_lock_applied=1 foo
```

For base security, a locked account has the text `Nologin` in the password field in the `/etc/passwd` file. If an account is unlocked and has no password, that account has no value in the password field. The account is open and accessible to anyone. A warning is displayed if an unlocked account with no password is created.

For enhanced security, all accounts have an asterisk (`*`) in the password field in the `/etc/passwd` file, but the lock flag in the protected password database is correctly set to reflect the lock status. As with base security, an unlocked account with no password is accessible to anyone.

The `usermod` command correctly sets the lock flags for enhanced security when the `administrative_lock_applied` option is given on the command line. If you use the `usermod` command to unlock a locked account with no password, a warning is displayed.

The `userdel` command will either retire or remove accounts on a system running enhanced security.

5.3.7.4 Prevent IP Spoofing Attacks

To detect and prevent an IP spoofing attack that can potentially result in a denial of service, configure the `ifaccess.conf` file to disable `localhost` as a source address.

For all adapters except the local loopback adapter (`lo0`), disable incoming packets with a source address of `localhost` (127.0.0.1). For example, add the following entry to the `/etc/ifaccess.conf` for `tu0`:

```
tu0    127.0.0.1   255.255.255.255  denylog
```

Then enable access filtering on `tu0`:

```
# ifconfig tu0 filter
```

Note that `localhost` is now disabled by default for new installations.

5.3.7.5 Use db_checkpoint for Log Trimming

A customized version of the Berkeley Database (Berkeley DB) is embedded in this version of the operating system to provide high-performance database support for critical security files. The database includes full transactional support and database recovery, using write-ahead logging and checkpointing to record changes.

The `secconfig` utility enables you to create a `cron` job to perform log file trimming; that is, to delete log files no longer involved in active transactions.

The `db_archive` utility requires a log file checkpoint to determine when a log file is no longer in use. Under some circumstances, security activity may not generate checkpoints for long intervals. Therefore, add the following line to the `/var/spool/cron/crontabs/root` before the `db_archive` entry:

```
/usr/tcb/bin/db_checkpoint -1 -h /var/tcb/files
```

5.3.8 OSFJAVA Subsets Are Required for Bundled Applications

Java Version 1.1.8-7 is included with this version of the operating system. Other versions of Java are available, however, SysMan Station and other system components will fail to operate if Java Version 1.1.8-7 is removed. Therefore, do not remove Java Version 1.1.8-7 from your system.

5.3.9 Argument Size Limit for the exec System Call

The amount of memory used by the arguments to the `exec` system call is limited by `sysconf(_SC_ARG_MAX)`, which is about 38 KB. You can exceed this limit systemwide by setting the `exec_disable_arg_limit` argument in the `sysconfigtab` file to 1, as follows:

```
# sysconfig -r proc exec_disable_arg_limit=1
```

When you set this argument to 1, the limit becomes an amount that is slightly less than the maximum stack size for the process, which is typically 8 MB or more. When you set the `exec_disable_arg_limit` argument to 1, `sysconf(_SC_ARG_MAX)` incorrectly reports that the limit is 38 KB. However, programs that rely on this value will not be limited to 38 KB and will function normally.

It is unlikely that programs will require more than 38 KB of memory; however, test suites that test this limit and expect an error return when `sysconf(_SC_ARG_MAX)` is exceeded will not obtain their expected result. If you are running test suites that expect an error return when this limit is exceeded, leave the `exec_disable_arg_limit` argument set to 0. Otherwise, we recommend that you set this argument to 1.

5.3.10 Hardware Manager Incorrectly Reports the Presence of the Keyboard and Mouse

If you boot a system with no keyboard and no mouse, the system incorrectly registers default keyboard and mouse information with the hardware manager, and displays keyboard0 and mouse0 when you view the hardware hierarchy. This information is not correct and will not match the correct information reported by the `sizer` command.

To view the correct information, use the `sizer -wk` and `sizer -wm` commands.

5.3.11 HP Management Agents for Tru64 UNIX (HP Insight Manager)

The following notes provide information on the HP Management Agents for Tru64 UNIX (formerly, Insight Manager). Version 2.41 agents are provided with this release of the operating system.

5.3.11.1 Software Notes

The following notes apply to the HP Management Agents for Tru64 UNIX software:

- Fibre Channel devices are not supported by HP Management Agents for Tru64 UNIX.

- The HP Management Agents Device Discovery Web page is not supported.

- Due to a limited MIB definition, ATAPI IDE devices always display the blue status icon regardless of their actual status.

- The NIC MIB does not support network cards that are not configured.

- The GS Platform and Discovery Web agent is not supported on the GS 1280 platform.

- The HP Management Agents System Board Web page displays CPU cache and memory module information from AlphaServers supporting FRU Version 4.0 and Version 5.2 configuration tables only.

5.3.11.2 Known Problems

The following problems exist in the current version of the HP Management Agents:

- SysMan, the Configuration Report Management Modules, or the HP Management Agents may not complete their initialization. This may result in the following problems:

  - Respective icons may not be displayed on the Device Home Page.

  - Icons may display correctly, but clicking on them results in an "HTTP Server 404 (Not Found)" error.

  - On system boot, this problem may cause a core dump of one of the Management Modules.

  To correct these problems, log in as root to stop and then restart the HP Management Agents using the following procedure:

  1. Stop the `insightd` daemon.
     # **/sbin/init.d/insightd stop**

2. Remove the *.CFG files from the /var/im directory:

```
# cd /var/im
# rm -f *.CFG
```

3. Restart the `insightd` daemon:

```
# /sbin/init.d/insightd start
```

- When an HP Web agent that is not the first option listed on the Device Home Page is stopped, the HTTP Server does not remove its icon and description. Selecting this stopped service results in an HTTP error. You can correct this problem by stopping and restarting the first HP Web agent in the list to update the Device Home Page and to remove the icon and description of the stopped agent.

- The Web agent (`insightd`) displays information in a browser incorrectly if the SNMP public community is not defined.

- The HP Management Agents may return incorrect cache or memory module sizes on AlphaServer platforms that are configured with EV6 CPUs and support FRU V5.2.

- If the power of one or more CPUs is off when the HP Management Agents are started, the number of CPUs and their current status are not displayed correctly in the Utilization frame.

- The CPU status incorrectly displays the unknown (blue) icon instead of the degraded (yellow) icon when a CPU is Indicted during agent initialization.

- The SCSI MIB may incorrectly calculate the number of sectors read and written on disks with large amounts of I/O activity.

- The `cpq_mibs` daemon may exit or produce a core dump because of one of the following reasons:

  - The `cpq_mibs` daemon cannot process the /var/adm/messages file. You can fix this problem by clearing out the /var/adm/messages file and restarting `cpq_mibs`.

  - A full clone installation of this release of the operating system was completed. You can fix this problem by restarting `cpq_mibs`.

- On systems with host names greater than 32 characters, `cpq_mibs` exits.

- If the sysman netconfig wizard is used to restart the network, some of the SNMP sub-agents are not restarted. This results in a loss of data in the Insight Manager Web pages. To correct this problem, as `root`, run the following scripts (as applicable) after the network has been restarted:

```
# /sbin/init.d/insightd stop
# /sbin/init.d/snmpevmd stop
# /sbin/init.d/gshmmod stop
```

```
# /sbin/init.d/insightd start
# /sbin/init.d/snmpevmd start
# /sbin/init.d/gshmmod start
```

- The Compaq GS Platform and Discovery Web agent does not discover partitions in which the SNMP sysName attribute is not the same as the host name.

- Under the NIC category, the Internet Tunnel Interface web pages may display the Type as Unknown enumeration value 210, instead of OTHER.

- The Environment and Power Supply Web pages are not supported with the base OS management agents on AlphaServer ES80 and GS1280 platforms. Please consult the Insight Manager for Tru64 UNIX Web site for future support and updates to the Agents:

  http://www.tru64unix.compaq.com/cma

- On ES40 platforms, the Environmental Web page displays Temperature Sensors in the Unknown (blue icon) condition. You can use the `hwmgr` command to examine the actual states and values of the temperature sensors.

- On some multiprocessor systems, if the CPU with the highest CPU ID number is put off line, the `cpq_mibs` daemon may not respond to SNMP requests. To correct this problem, restart the `cpq_mibs` daemon.

For the latest version of the HP Management Agents and reference guide, go to the following Web site:

http://www.tru64unix.compaq.com/cma

5.3.12 Event Manager

The notes in this section apply to the Event Manager.

5.3.12.1 Event Viewer and evmget Display a Message When the binlog File Is Invalid

If the binary error log file, `/var/adm/binary.errlog`, contains invalid log entries, an error message similar to the following is displayed when you run `evmget`:

```
binlog2evm: Invalid event data encountered at offset 80216
binlog2evm: Error occurred while reading from
"/.local../usr/var/adm/binary.errlog"
binlog2evm: Skipped invalid data – restarted at offset 85248
```

If you see this message, follow your normal investigation and reporting procedures to determine the source of the corruption.

A short-term solution to prevent the message from being displayed is to redirect `stderr` to `/dev/null`.

If you are certain that the error log is properly backed up and does not contain required event information, you can permanently remove the invalid data by cleaning up the log file as described in the directions in `binlogd(8)`. This operation removes the log file and creates a new one. Because two generations of the error log are held, the message continues to be displayed until you run the cleanup procedure twice.

5.3.12.2 Event Manager Reports Kernel Messages with Critical Priority

Event Manager reports all messages that are posted from the kernel through the `syslog` event facility as having critical priority. This incorrectly includes many informational messages that are posted when you start the system.

5.3.12.3 Event Manager Fails to Detect syslogd and binlogd During Boot

Occasionally, Event Manager displays either or both of the following messages on the console:

```
S97evm: Communication with syslogd is not functioning
S97evm: Communication with binlogd is not functioning
```

In most cases, communication with `syslogd` and `binlogd` works correctly. The `S97evm` script subscribes to `binlog` and `syslog` events and then posts a `syslog` and `binlog` event. The `S97evm` script expects to see the events it just posted, but a synchronization issue in the script might cause the posted events to be missed. As a result, the script times out and displays the error messages.

You can correct this problem by modifying the sleep time-out parameter in the `/sbin/rc3.d/S97evm` script by changing `sleep 1` to `sleep 3`. Then rerun the script by executing the `/sbin/rc/3.d/S97evm start` command.

5.4 Network and Communications

The following notes apply to network and communications software.

5.4.1 Link Aggregation and Local Area Transport Restriction

You cannot configure a link aggregation group (LAG) at system startup on a system that is also configured to run the Local Area Transport (LAT) protocol. If you want to configure link aggregation at system startup, verify that LAT is not configured by issuing the following command:

```
# rcmgr get LAT_SETUP
```

If the number 1 is displayed, run the `latsetup` utility and deconfigure LAT. From the SysMan Menu, select Networking->Additional Network Services->Configure Local Area Transport (LAT). Alternatively, you can use the `/usr/sbin/latsetup` command.

5.4.2 Restriction When Configuring IPsec and IP Tunnels

When you configure your system with both IPsec and IP tunnels, the following restriction applies. If a packet matches an IPsec tunnel-mode policy, you must make sure that the route to the remote secure gateway (IPsec tunnel endpoint) does not go through an IP tunnel interface, unless you ensure that the resulting IP tunneled packet will never match any IPsec tunnel-mode policy rule.

5.4.3 Performance Tuning for Gigabit Ethernet Adapters

The following attributes are available for tuning the performance of driver software for Gigabit Ethernet adapters. These attributes are included in the `alt` kernel subsystem even though they are not visible through the `sysconfig` utility or the `dxkerneltuner` application:

`minimal_isr`

A value that enables (1) or disables (0) the awakening of separate threads by the driver's interrupt service routine to handle completion of transmit and receive operations. When separate worker threads are enabled, the system load of the Gigabit Ethernet driver can be spread over multiple CPUs. When separate worker threads are disabled, the master system CPU (or the master CPU in each RAD of a NUMA system) services all the transmit and receive operations for the system's Gigabit Ethernet adapters.

Default: 1 (multiple threads enabled)

A 0 setting improves the performance of the driver software itself. However, overall system performance is likely to suffer during times of high network load because kernel applications other than the driver can have difficulty accessing the master CPU. Furthermore, the likelihood of overall system performance degradation goes up with each additional Gigabit Ethernet adapter supported by the system. For this reason, the default setting (1) is recommended for most systems and applications.

`recv_coal`

The number of packets that are sent before an interrupt is generated (assuming that the `recv_ticks` timer does not expire first).

Default: 32 (packets)

Minimum: 0

Maximum: 511

This attribute can be modified at run time.

* `recv_ticks`

The number of microseconds (usec) that elapse after receipt of the last packet before an interrupt is generated (assuming that the `recv_coal` threshold is not reached first).

Default: 200 (usec)

Minimum: 0

Maximum: 888,888

This attribute can be modified at run time.

`send_coal`

The number of packets that are sent before an interrupt is generated (assuming that the `send_ticks` timer does not expire first).

Default: 32 (packets)

Minimum: 0

Maximum: 511

This attribute can be modified at run time.

`send_ticks`

The number of microseconds (usec) that elapse after transmission of the last packet before an interrupt is generated (assuming that the `send_coal` threshold is not reached first).

Default: 125,000 (usec)

Minimum: 0

Maximum: 888,888

This attribute can be modified at run time.

The default value of the `send_ticks` attribute might have a negative performance impact on applications using NFSv3. For these applications, it is recommended that `send_ticks` be lowered to 10. Depending on the results from continued testing with a wide variety of applications and systems, 10 might be the default value for `send_ticks` in a future release.

5.4.4 The autofsd Utility

The following problems can occur when you use the `autofsd` utility:

- A problem can occur with certain busy file systems if you stop and restart the `autofsd` utility without bringing the system to a halt.

  Hierarchical direct map entries specify file systems to be mounted and unmounted together; however, the `autofsmount` program currently does not enforce this rule. If the hierarchy is only partially unmounted, when the `autofsd` utility starts, these unmounted subentries are not automatically available again.

  To avoid this problem, unmount the rest of the submounts (those that were busy), unmount the intercept point, and run the `autofsmount` program again to reinstall the intercept points.

- Local and remote mounts do not always work together in a hierarchical map entry. For example, in the following direct map entry, `lcl` represents the local system and `remote` represents a remote system:

  ```
  /dir1       /          remote:/a/b       /subdir1  lcl:/c/d
  ```

  The intention of this direct map is to mount `remote:/a/b` on `/dir1`, and to mount `lcl:/c/d` on `/dir1/subdir1`. The `remote:/a/b/subdir1` directory should already exist, but the `autofsd` utility serves local file systems by using symbolic links. In this example, the `autofsd` utility needs to convert `remote:/a/b/subdir1` to a symbolic link, which it cannot do.

  To avoid this problem, move the data of `lcl:/c/d` to `remote:/a/b/subdir1` and delete the last line from the map entry.

5.4.5 The rcinet stop inet Command Stops IPv6 Communications

Issuing the `/usr/sbin/rcinet stop inet` command marks all network interfaces as down. Therefore, applications that use IPv6 will be unable to transmit messages through the interfaces.

5.4.6 Mail

This following notes provide information on problems that can occur when configuring and running mail on your systems.

5.4.6.1 The mailcv -I -t and -M -t Commands Do Not Work As Expected

If you are converting a `dtmail` folder hierarchy to IMAP, or if you are converting a single folder that does not already exist in the IMAP hierarchy, you receive the following error message and the conversion of the hierarchy stops:

```
Mailcv: Can't create output file {foldername}, ignoring conversion.

foldername is the new name of the folder.
```

Use Netscape to migrate your folders to IMAP, as follows:

1. Set the Local Mail folder to point to the directory that contains the dtmail folder hierarchy.

2. From the Preferences menu, choose the Mail & Newsgroup subtree, then choose Mail Servers.

3. Choose the Local Mail Directory and change the directory to the UNIX folder directory you want to convert.

4. Click OK and restart Netscape.

5. Choose the Netscape Messenger window to display your mail folders. Drag and drop the mail folders from the local folders to the IMAP folders or select all the messages in a folder and use the move command to move all the messages to the IMAP folder.

If you are converting dxmail or MH mail to IMAP folders, you receive the following error message:

```
Mailcv: Can't create output file {foldername}, ignoring conversion.

foldername is the new name of the folder.
```

To migrate folders from dxmail or MH mail folders to IMAP, do the following:

1. Migrate the folders to UNIX style by using the mailcv command with the -A option.

2. Use Netscape, as described in the previous procedure, to migrate the UNIX mail folders to your IMAP folders.

5.4.6.2 IMAP Server: Preserving Uppercase User Names

If your system is configured as an IMAP server and you want to preserve uppercase for user names, do the following:

1. Add the F=u flag for IMAP mailer in your sendmail configuration file.

2. Edit the /var/adm/sendmail/sendmail.cf.pd file and /var/adm/sendmail/sendmail.m4 file (if it exists) before you run either the mailsetup script or mailconfig application.

   Search for the line with Mimap and add the u flag to its F= option. The original line appears as follows:

   ```
   Mimap,   P=/usr/bin/deliver, F=nsmFDM, S=10, R=20/50, A=deliver $u
   ```

   After you update the line, it should appear as follows:

   ```
   Mimap,   P=/usr/bin/deliver, F=nsmFDMu, S=10, R=20/50, A=deliver $u
   ```

If you have already configured sendmail using either the mailsetup script or the mailconfig application, apply these

changes to the `/var/adm/sendmail/sendmail.cf` file in
addition to the `/var/adm/sendmail/sendmail.cf.pd` and
`/var/adm/sendmail/sendmail.m4` files.

5.4.6.3 The sendmail Warning Message

The permissions on the `/var` directory do not satisfy the checks by the
`sendmail` binary. The `sendmail` utility expects the permissions on the
`/var` directory to be 755. However, the permissions are 775. Therefore,
`sendmail` logs the following warning message in the `syslog` file every time
it checks the mode of the `/var` directory:

```
WARNING: writable directory /var/adm/sendmail
```

This does not impact the functionality of `sendmail`, so you can ignore this
warning. If you want, you can change the permissions on the directory to
755 by logging in as root and entering the following command:

```
# chmod go-w /var
```

5.4.6.4 Problem Starting the sendmail Daemon

If you manually edit the `/var/adm/sendmail/sendmail.cf` file and the
file contains errors, the Sendmail startup script might display a message
that the daemon started when it has not.

To verify whether the `sendmail` daemon has actually started, issue the
following command:

```
# ps -aef | grep sendmail
```

If the `sendmail` process is not present, check the `/var/adm/sys-
log.dated/current/mail.log` file for any errors associated with the
start of the daemon. Correct any errors recorded in this file before starting
the `sendmail` daemon again with the following command:

```
# /sbin/init.d/sendmail start
```

5.5 Local Area Transport

The following notes apply to Local Area Transport (LAT).

5.5.1 Duplicate Minor Numbers and latsetup

The `latsetup` utility sometimes creates devices with duplicate minor
numbers. If you manually create LAT BSD devices that do not match the
valid BSD `tty` name space convention, `latsetup` can create devices with
duplicate minor numbers. For example, creating device `tty0` with a minor
number 2 instead of 1 can cause this problem.

5.5.2 Simultaneous llogin Connections

When doing a number of simultaneous `llogin` connections, use `llogin` with the `-p` option. To speed up an `llogin` connection, add the target host name as a reserved service.

5.6 File Systems

The following notes apply to file systems.

5.6.1 Advanced File System (AdvFS)

The following notes discuss features, problems, and restrictions of the Advanced File System (AdvFS).

5.6.1.1 New AdvFS Mount Option Activates Data Logging on All Files in a Fileset

A new AdvFS mount option, `-o adl`, causes all files in the mounted fileset to use atomic write data logging for the duration of the mount. See `chfile`(8) for an explanation of atomic write data logging. This data logging is not persistent across mounts, unlike the data logging provided by `chfile`(8).

Additionally, files using temporary (`-o adl`) data logging may be `mmapped()`, unlike files that have had persistent data logging activated on them. The temporary data logging is suspended until the last thread using the `mmaped` file unmaps it. The use of `chfile` on a file that is using temporary data logging causes the `chfile` command to override the temporary data logging provided by the new mount option, and the file's I/O mode is changed persistently according to the arguments given to the `chfile` command.

5.7 Logical Storage Manager

The following note describes problems and restrictions of the Logical Storage Manager (LSM).

5.7.1 The diskconfig LSMnopriv Option Does Not Work

The LSMnopriv partition type in `diskconfig` does not work and will generate an error when used. To create this type of partition, invoke the `disklabel` command directly with an `fstype` of LSMnoprv.

6

Development Environment Notes

This chapter contains notes about issues and known problems with the development environment software and, whenever possible, provides solutions or ways to avoid the problems. The following topics are discussed:

- General programming (Section 6.1)
- POSIX Threads Library (Section 6.2)
- Kernel programming (Section 6.3)

6.1 General Programming

The following notes apply to general programming.

6.1.1 Change to bcopy, bcmp, and bzero

The argument types for the bcopy, bcmp, and bzero system functions have been changed to conform to the ANSI specification. The new interface prototypes are as follows:

```
int bcmp __((const void *, const void *, size_t);
int bcopy __((const void *, void *, size_t);
int bzero __((void *, size_t);
```

You can access the old prototype definitions by compiling applications using the -D__V40_OBJ_COMPAT compile flag. For example:

```
> cc -D__V40_OBJ_COMPAT test.c
```

6.1.2 Change to struct utmp, struct utmpx, and struct lastlog

To bring them into compliance with several UNIX and Internet standards, the struct utmp, struct utmpx, and struct lastlog structures were updated in Version 5.0. These changes affect the /usr/include/utmp.h, /usr/include/utmpx.h, and /usr/include/lastlog.h file.

6.1.3 The getaddrinfo() Routine Might Return the Incorrect Return Status

Under the following circumstances, the getaddrinfo() routine returns an incorrect status to the application:

- If the address family in the hints is not specified (`PF_UNSPEC`) or the parameter is NULL, the `getaddrinfo()` routine incorrectly returns the status as `EAI_FAMILY`.

- The `getaddrinfo()` routine incorrectly returns the status as `EAI_SERVICE` under the following circumstances:

  - The `servname` parameter is specified as the name of the service that exists in the `/etc/services` file.

  - The `ai_socktype` and `ai_protocol addrinfo` structure members are not specified.

  - The service, specified in the `servname` parameter, only has TCP protocol listed in the `/etc/services` file.

To avoid these problems, check the `res` pointer to make sure that it is valid.

6.2 POSIX Threads Library (pthreads)

DECthreads has been renamed the POSIX Threads Library. The library has been enhanced to improve the performance of some classes of threaded applications.

The following notes apply to the POSIX Threads Library.

6.2.1 pthread_mutex_destroy() Can Return EBUSY for Unlocked Mutex

One of the possible return status values of the POSIX Threads Library routine `pthread_mutex_destroy()` is EBUSY. Normally, this indicates that the mutex to be destroyed is currently locked or in use. Attempting to destroy a locked or in-use mutex is an application error.

Under certain timing conditions, `pthread_mutex_destroy()` can erroneously return EBUSY when the mutex is unlocked or unused. In such cases, the mutex is not destroyed. If the application detects the EBUSY return status, the call can be repeated. A subsequent call may succeed, or may fail with EBUSY again. Eventually the call should succeed. If the call is not successfully repeated, a small amount of memory will be leaked.

6.2.2 Problems with Use of the stackaddr Thread Creation Attribute

Using the `stackaddr` thread creation attribute, which allows you to allocate your own stack for a thread, is not recommended. The semantics of this attribute are poorly defined by POSIX and the Single UNIX Specification, Version 2. As a result, code using the attribute is unlikely to be portable between implementations. The attribute is difficult to use reliably, because you must, by intimate knowledge of the machine architecture and

implementation, know the correct address to specify relative to the allocated stack. The implementation cannot diagnose an incorrect value because the interface does not provide sufficient information. Using an incorrect value might result in program failure, possibly in obscure ways.

Alternatively, if you want to supply your own thread stacks, consider using the `pthread_attr_setstackaddr_np()` routine. Callers specify the thread stack using a base address and size, which avoids the worst problems with the standard interface.

6.2.3 Memory Alignment Issue

Although older Alpha processors (prior to the 21264 chip) can only access memory in units of at least a quadword (8 bytes), multiple variables, each of which is less than 8 bytes, can occupy the same quadword in memory. In such cases, multithreaded programs might experience a problem if two or more threads read the same quadword, update different parts of it, then independently write their respective copies back to memory. The last thread to write the quadword overwrites any data previously written to other parts of the quadword. This can happen even though each thread protects its part of the quadword with its own mutex.

The Tru64 UNIX C compiler protects scalar variables against this problem by aligning them in memory on quadword (8-byte) boundaries. However, in composite data objects such as structures or arrays, the compiler aligns members on their natural boundaries. For example, a 2-byte member is aligned on a 2-byte boundary. Because of this, any adjacent members of the composite object that total 8 bytes or less could occupy the same quadword in memory.

Inspect your multithreaded application code to determine if you have a composite data object, in which adjacent members could share the same quadword in memory. If you do and if your project allows, it is recommended that you force alignment of each such member variable to a quadword boundary by redefining the variable to be at least 8 bytes, or by defining sufficient padding storage after the variable to total 8 bytes.

Alternatively, you can create one mutex for each composite data object in which adjacent members can share the same quadword in memory. Then use this single mutex to protect all write accesses by all threads to the composite data object. This technique might be less desirable because of performance considerations.

For more information, see the Granularity Considerations section in the *Guide to the POSIX Threads Library*.

6.2.4 POSIX Threads Library pthread_debug() and pthread_debug_cmd() Routines

In order to allow for the possibility of a more comprehensive and robust threads debugging environment, it has become necessary to remove the `pthread_debug()` and `pthread_debug_cmd()` routines. To prevent existing binaries from failing, the routines will continue to be recognized. However, a call to either routine now results in an immediate return to the calling program. The `pthread_debug_cmd()` routine returns a 0 (zero) indicating success. Debuggers such as Ladebug and TotalView provide functionality formerly provided by these routines.

6.2.5 Process-Shared Synchronization Objects and Debugging

The POSIX Threads Library (pthread) interface now supports the sharing of certain synchronization objects (mutexes, condition variables, and read-write locks) among threads running in multiple cooperating processes. Such objects are termed process-shared objects.

For this release, process-shared objects are not visible to the Ladebug debugger. For example, the `show mutex` Ladebug command lists process-private mutexes but not process-shared mutexes.

6.2.6 Use of errno

The initial or default thread in a multithreaded application uses the global `errno` cell instead of a per thread `errno`.

Starting in Version 5.1, use of the global `errno` cell by threads other than the initial thread (for example, by calling nonthreadsafe or incorrectly compiled code that uses an `errno` symbol) will corrupt the initial thread's value.

Properly compiled or existing binaries using the POSIX Threads Library will not be affected by this change.

6.3 Kernel Programming

The following notes apply to kernel programming.

6.3.1 System Call Funneling

If you are a kernel developer who implements or maintains a third-party kernel module that "patches in" its own system call handler, and if that handler needs to be funneled (have its execution restricted to the primary CPU), then you will need to add the funneling hooks into the handler function. Add a call to `unix_master()` at the start of the handler and a call to `unix_release()` at the end of the handler.

6.3.2 Changes to the ATM Kernel Programming Interface

To support features needed for point-to-multipoint virtual circuits
(VCs) and to provide for future enhancements, the parameters to the
`atm_cmm_register_cvg()` and `atm_cmm_register_sig()` routines
have been changed.

Binary compatibility with previously compiled modules has been maintained.
Convergence and signaling modules require minor source code changes when
recompiled under this release of the operating system.

See the *Asynchronous Transfer Mode* manual for more information.

6.3.3 Changes to the Internal Kernel Exception Frame

The kernel's exception frame format has been reduced in size from 264 to
256 bytes by eliminating an unused 8-byte quadword that had been used to
save the stack pointer register value. Because this register layout is used
solely for exceptions taken on a kernel stack, this change causes no impact to
applications. However, if you need to display the contents of an exception
frame when debugging a kernel crash dump, you now will need to interpret
the data in its new 32-register format.

6.3.4 Changes to the VFS Programming Interface

The VFS namecache is now replicated across processors to provide lower
overhead and better scalability. If you are developing third-party file
systems, you must be aware of the synchronization requirements with the
VFS namecache. Specifically, if you are going to delete or rename files,
use the `cache_purge()` kernel call on the file. The `namei()` kernel
call removes the entry from its own namecache only (when called with
the DELETE or RENAME flag). The `cache_purge()` kernel call invalidates
the entry in all namecaches. Additionally, when renaming files, use the
`cache_purge()` kernel call on the existing target entry before you add
the new name entry to the directory.

7

Window System Software Notes

This chapter contains notes about issues and known problems with the windowing software and, whenever possible, provides solutions or workarounds to those problems. The following topics are discussed in this chapter:

- Hardware notes and restrictions (Section 7.1)
- X servers (Section 7.2)
- CDE clients (Section 7.3)
- Internationalization (Section 7.4)

7.1 Hardware Notes and Restrictions

The following notes apply to graphics hardware restrictions.

7.1.1 PowerStorm Graphics Support

Support for the following 3D graphics adapter families is included on the Associated Products CD–ROM:

- PowerStorm 4D51T
- PowerStorm 300
- PowerStorm 350

The base operating system provides only VGA mode support for these devices. Drivers for these devices are available at the following URL:

http://www.support.compaq.com/open3d/

7.1.2 Qvision Graphics Display Error

Different versions of Qvision graphics boards demonstrate `fillsolid` drawing problems, leaving a line at the bottom of the screen, which is evident when you run the CDE blank lock screen. The line varies in color and intensity depending on the version of the Qvision board.

7.2 X Servers

The following notes apply to X servers.

7.2.1 Limited Multiscreen Display Support with CDE

CDE provides limited support for X servers with more than one screen. While a multiscreen environment is possible, a number of inconsistencies are noticeable. For example, colors in secondary screens may not be correct, icons may not display properly, and applications may not appear on the screen where they are invoked. Using the PanoramiX extension mitigates some of these inconsistencies.

7.2.2 Pixmap Color Errors with PanoramiX

Some pixmap color corruption has been seen when using the PanoramiX extension. Background pixmaps can be corrupted when a client is displayed on any screen other than the physical screen 0. The corruption is most frequently seen when using Netscape and loading pages with background pixmaps.

To avoid this problem, check the "Always use my colors, overriding document." box under the color section of Netscape preferences.

7.2.3 X Print Server Extension Library Restriction

Programmers who may be using the X Print extension library in combination with the X Print Server shipped as a subset of the base operating system should be aware that the library calls `XpCancelDoc()` and `XpCancelPage()` are currently not functional. Their use triggers no operation to be performed.

7.3 CDE Clients

The following notes apply to CDE clients.

7.3.1 Inaccessible Dialog Buttons

When you use low resolution graphics, the buttons in a dialog box, such as OK, Apply, Cancel, and Help, might not display. For CDE and Motif based applications, set the `DXmfitToScreenPolicy` resource to `as_needed` in the application's resource file under your home directory or, to make it effective systemwide, in the `/usr/dt/config/$LANG/sys.resources` file.

For non-Motif based SysMan applications, such as those launched from SysMan Menu, see Section 5.2.9.

7.3.2 Remote Invocation of CDE File Manager dtfile

File Manager, Application Manager, and Trash Manager are different views supported by the `dtfile` application. Avoid invoking `dtfile` from a remote system with the `DISPLAY` environment variable set appropriately. This restriction is necessary because of the client-server model used by the `dtfile` application and its close interaction with the ToolTalk messaging system.

In the event of unexpected behavior from any of these utilities, close all windows associated with the File Manager, Application Manager, and Trash Manager. Then kill all processes associated with the `dtfile` application. You can obtain the `pid` for each process by using the following command:

```
# ps -aef | grep dtfile
```

7.3.3 Possible Failure in the XOpenDisplay Call

When a user logs in to the CDE desktop, some applications might not restart. The X server process might not be able to handle all of the requests for new open connections, causing some to fail in the `XOpenDisplay` call. Some applications, like `xterm`, log startup errors such as the following in the `dxconsole` window:

```
xterm error: can't open display :0
```

To avoid this problem, add the following resource to your `$HOME/.Xdefaults` file:

```
Dtsession*contManagement:   2
```

This resource enables a handshake protocol between the CDE Session Manager and Window Manager during the login phase to control the appearance of new windows. While it might marginally increase the time before the login completes, it better assures that all applications will restart.

You can add the resource to the `/usr/dt/app-defaults/C/Dtsession` file to make the change for all users automatically.

7.3.4 Login to CDE_SESSION Restriction

Login to `CDE_SESSION` is restricted to machines with host names that are not greater than 31 characters. This is because CDE and the X libraries use the `uname` command to get the system name to process the user credentials.

7.3.5 Possible Problem with CDE ToolTalk Messaging

The `$HOME/.TTauthority` file contains a key that ToolTalk clients read and send to the `ttsession` message server along with each message. The `ttsession` message server compares this key with the key it placed in the

user's `$HOME/.TTauthority` file when the user logged in to CDE. If, for some reason, the `$HOME/.TTauthority` file becomes corrupted, clients are not able to send a valid key to the `ttsession` message server. As a result, CDE cannot function normally and might not start at all.

You can use the `/usr/dt/bin/ttauth list` command to examine the contents of your `$HOME/.TTauthority` file. A corrupted file might contain null values that might cause the `ttsession` message server to dump core while trying to read the file. The `$HOME/.dt/errorlog` file contains the following error message if the `ttsession` message server could not start:

```
dtsession: Unable to start message server - exiting.
```

If this problem occurs, remove the `$HOME/.TTauthority` file and restart CDE by becoming the root user and executing the `/sbin/init.d/xlogin stop` and then the `/sbin/init.d/xlogin start` commands.

When you log back in to CDE, a new `$HOME/.TTauthority` file is created that contains a valid key.

If the home directory is shared with other users, the other users must also restart CDE and log out and log in again.

7.4 Internationalization

The following notes apply to restrictions on use of internationalization features in the windowing environments.

7.4.1 Unicode Locales and Dense Code Locales

Prior to Tru64 UNIX Version 5.1B, dense code locales with a compact wide character encoding were the only fully supported locales. Starting with Version 5.1B, an equivalent set of Unicode locales (formerly known as the `@ucs4` locales) are also shipped. These Unicode locales use Unicode (UTF-32) as their wide character encoding, thus enabling better interoperability with other operating systems, such as Windows, and interoperability with processes running in different locales.

The system administrator can choose to set either the Unicode locales or the dense code locales as the system default using the `i18nconfig` SysMan tool. See `l10n_intro`(5) for information on how to switch the set of system default locales.

However, applications that depend on dense code wide character encoding may have to be recompiled or modified to work with the new Unicode locales.

These changes are made to make this implementation better conform to the Unicode Standard.

7.4.2 Minor Behavioral Changes in Unicode Iconv Converters

Prior to Tru64 UNIX Version 5.1B, converting a coded character set to Unicode (UTF-16 or UTF-32) without generating a Byte Order Mark (BOM) at the beginning of the output stream writes the Unicode data in little-endian format (least significant byte first). However, starting with Version 5.1B, the default behavior is to write out big-endian Unicode data values if BOM is suppressed. If BOM is allowed, little-endian data is written out as before. Applications that use the operating system's Unicode conversion capability without generating a BOM should be aware of this behavioral change.

Moreover, if the UTF-16BE, UTF-16LE, UTF-32BE, or UTF-32LE names are used as `iconv` converter output encoding, no BOM will be prefixed to the data stream by default. BOM was added before Version 5.1B.

The assumption that the byte value of a single-byte character set is equal to the wide character value is now no longer valid for the Unicode locales. Applications that make this assumption in their code, may not work properly with the single-byte Unicode locales.

7.4.3 Japanese Keyboard Support in Console Mode

When running in single-user or console mode, Tru64 UNIX now supports two new Japanese keyboard types (JIS and ANSI) on AlphaStation and AlphaServer systems. (Japanese keyboard support is not available on TURBOchannel-based machines.)

To use JIS-type Japanese keyboards, like the PCXAJ-AA and LK411-JJ, set the `language` console environment variable to 50, as follows:

```
>>> set language 50
```

To use ANSI-type Japanese keyboards, like the LK411-AJ, set the `language` console environment variable to 52, as follows:

```
>>> set language 52
```

7.4.4 Default Keyboard Setting Might Prevent User Login

When a user logs in to a system, the default keyboard setting must be appropriate for the keys that the user presses when entering characters in the user name and password fields. Otherwise, characters that are correct from the user perspective, given the keyboard being used, might be treated as invalid. In this case, the user cannot log in to the system. This situation most often arises when a keyboard is being used in one language and the default keyboard setting is another language. You can change the default keyboard setting at the console prompt or, if the required language is not available at the console level, by editing the `Xserver.conf` file to change

the keymap used by the X server. See `keyboard`(5) for more detailed
information about changing keyboard settings.

8

Documentation Notes

This chapter contains release notes that apply to the operating system
documentation. It provides information on the following:

- Software Product Description (Section 8.1)
- Changes to the documentation set (Section 8.2)
- Netscape problem with the Search by Keyword feature (Section 8.3)
- AltaVista search (Section 8.4)
- Online help (Section 8.5)
- Reference pages (Section 8.5.3)

8.1 Software Product Description (SPD) Replaced by QuickSpecs

The Software Product Description (SPD) has been replaced by the Tru64
UNIX QuickSpecs. For a description of this release of Tru64 UNIX and
information about its capabilities and the hardware it supports, see the
QuickSpecs.

8.2 Changes to the Documentation Set

For this release of the operating system, a new hardware management
manual has been added to the documentation set and significant changes
have been made to the *Security* and *Writing Software for the International
Market* manuals.

The *Hardware Management* manual is intended for experienced UNIX
system administrators who manage hardware components and storage
devices.

The *Security* manual has been split into two separate books:

- *Security Administration* describes administrative tasks used to manage
  and monitor the security of your system.

- *Security Programming* contains the information that was in the
  Programmer's Guide to Security section of the original *Security* manual
  and the GSS API Overview and Tutorial information currently in the
  Single Sign On Application Security SDK manual.

The information previously contained in *Writing Software for the International Market* is now contained in two manuals:

- *Using International Software* describes how to use internationalized software and how to set up and use UDC databases and the Chinese Phrase Input Method.

- *Writing Software for the International Market* contains information programmers need to create applications for a non-English language environment: message catalogs, curses routines, internationalized Motif applications, and locales.

8.3 Netscape Problem with the Search by Keyword Feature

Netscape on Tru64 UNIX does not handle JavaScript forms correctly. When you use the Reference Pages Search by Keyword feature on the Documentation CD–ROM, the search can fail.

To work around the problem, click in any other window and return to the search window.

This problem does not occur with Netscape or Microsoft Internet Explorer on a Windows PC or Macintosh.

8.4 AltaVista CD–ROM Search Might Not Work Correctly with Netscape Communicator

When the Tru64 UNIX *Documentation* CD–ROM is used on a PC for which Internet Explorer is the default browser, the CD–ROM search capability works as documented in the instructions window. This window automatically pops up when you click on the Search button that is available from the main page of the documentation library. The instructions tell you to open Windows Explorer, double-click on the icon for the CD–ROM drive, and then double-click on `search.exe`, which automatically loads the search query entry form into the Internet Explorer window.

When the documentation CD–ROM is used on a PC for which Netscape Communicator is the default browser, these instructions might work, but sometimes do not. Problems observed when trying to use AltaVista CD–ROM Search with Netscape Communicator (Version 4.5 or higher) include the following:

- An attempt to load the search query entry form (`InitPage.html`) results in a "browser not found" error.

- The search query entry form comes up in a window different from the Netscape browser window.

- If the search query entry form does come up in the Netscape browser window, the first search query consistently hangs.

If you encounter one or more of these problems, use the following procedure to work around them:

1. After launching the AltaVista Search Dispatcher (`search.exe`), invoke Netscape manually if it is not already running.

2. Use the `File Open` option in the Netscape window to find and open the `InitPage.html` file on the CD–ROM drive. Alternatively, you can type the URL to this file in the Netscape browser's Location: field.

3. If your first search query takes more than 30 seconds to execute, click on the Stop icon and re-enter the query.

8.5 Online Help

The following notes apply to the online help.

8.5.1 SysMan Menu

The notes in this section apply to the online help for the SysMan Menu application.

8.5.1.1 Title Bar Is Incorrect

When you use the SysMan Menu's online help in the Common Desktop Environment (CDE), the title bar for the help window always displays the name of the first application for which you requested help.

Ignore the title bar. The correct help volume is displayed in the help window and the Volume label at the top of the window correctly identifies the help volume.

8.5.1.2 Help on Item Sometimes Fails

The SysMan Menu's Help On Item buttons provide online help for the selected menu item. When running the SysMan Menu from a PC, from a web browser, or from the SysMan Station, Help On Item for certain tasks fails with an error when trying to access a URL such as the following:

`http://your_machine:2301/SYSMAN/suitlet_help/html/en_US.ISO-8859-1/help_application/help_task.html`

To avoid this problem, launch the specific task and select the online help within the task itself. You can also run the SysMan Menu on a terminal or on an X11 display (for example, `sysman -display host:0.0`) and the help is displayed properly.

8.5.2 SysMan Station

The notes in this section apply to the online help for the SysMan Station (SMS).

8.5.2.1 Online Help Window Does Not Maximize Automatically

If you open an SMS online help window and minimize it, it does not automatically maximize when you reselect Help from the SMS session. You must manually maximize the Help window to view the new help information.

8.5.3 Reference Pages

The following note describes a known problem with the reference pages.

8.5.3.1 Examples Missing New Lines in add_proplist_entry(3) and clu_info(3)

A conversion filter erroneously replaced \n" with 0" or 0 in several examples in these reference pages.

The following shows the incorrect line of code followed by the correct line of code:

```
add_proplist_entry(3):
  printf("ret %d != buffer_size %d0", ret, buffer_size);
  printf("ret %d != buffer_size %d\n", ret, buffer_size);

clu_info(3):
  fprintf(stderr, "clu_get_info error0);
  fprintf(stderr, "clu_get_info error\n");

  printf("member hostname is %s0, clugenptr->memblist[i].hostname);
  printf("member hostname is %s\n", clugenptr->memblist[i].hostname);

  fprintf(stderr, "Error! Return code of %d0, errno);
  fprintf(stderr, "Error! Return code of %d\n", errno);

  printf("Member cluster version is %s0, membinfo->clu_version);
  printf("Member cluster version is %s\n", membinfo->clu_version);
```

A

Software Subset Information

This appendix provides information on the disk space required to install this release of the operating system, including information on software subsets for full and RIS installations.

A.1 Disk Space Required for Software Subsets

Table A–1, Table A–2, and Table A–3 show disk space as the number of 512-byte blocks required in the `root`, `/usr`, and `/var` file systems to install each Tru64 UNIX software subset. The figures for each group of files within a subset have been rounded up to the next-highest 512-byte increment; this means that the total space requirements listed are slightly greater than the space actually required.

To determine the subset size in megabytes (MB), divide the size in blocks by 2048.

For information on the contents of each subset, see the *Installation Guide*. If you want to add optional subsets after you install the operating system, use the `df` command to determine free disk space in blocks.

Table A–1: Disk Space Requirements – Base Operating System

Tru64 UNIX V5.1B Operating System

Subset	root	/usr	/var	Total
OSFACCT540	9.28	1097.42	99.53	1206.22
OSFADVFS540	8138.74	3441.46	—	11580.20
OSFADVFSBIN540	2807.66	3.06	—	2810.71
OSFADVFSDAEMON540	10.67	1694.06	139.18	1843.91
OSFAFM540	—	2160.73	—	2160.73
OSFATMBASE540	261.74	1361.37	—	1623.11
OSFATMBIN540	5463.93	21.40	—	5485.33
OSFATMBINCOM540	—	284.96	—	284.96
OSFBASE540	46856.80	111424.81	2536.78	160818.39
OSFBIN540	23293.03	1743.67	—	25036.71

Table A–1: Disk Space Requirements – Base Operating System (cont.)

Tru64 UNIX V5.1B Operating System

Subset	root	/usr	/var	Total
OSFBINCOM540	39.41	29973.43	76.39	30089.23
OSFC2SEC540	414.93	1223.25	160.22	1798.40
OSFCDEAPPS540	—	11864.29	—	11864.29
OSFCDEDEV540	—	26380.79	—	26380.79
OSFCDEDT540	—	52140.87	—	52140.87
OSFCDEMAIL540	—	3799.76	—	3799.76
OSFCDEMANOP540	—	2014.91	—	2014.91
OSFCDEMANOS540	—	1500.95	—	1500.95
OSFCDEMIN540	—	16042.05	79.05	16121.10
OSFCDSABASE540	9.36	8710.19	38.00	8757.55
OSFCLINET540	1132.49	21021.90	47.12	22201.51
OSFCMPLRS540	—	38959.67	—	38959.67
OSFCODBASE540	—	37.92	—	37.92
OSFDCMT540	—	1158.96	—	1158.96
OSFDCMTEXT540	—	4403.41	—	4403.41
OSFDECW540	—	2990.21	60.99	3051.20
OSFDMS540	—	97.65	73.34	170.99
OSFDOSTOOLS540	—	3424.36	—	3424.36
OSFEMACS540	—	203333.22	—	203333.22
OSFENVMON540	21.48	172.27	—	193.75
OSFEURLOC540	—	1526.29	—	1526.29
OSFEVMJAVADEV540	—	2448.94	—	2448.94
OSFEXAMPLES540	—	1688.12	—	1688.12
OSFEXER540	—	6471.75	—	6471.75
OSFFONT15540	—	3160.99	—	3160.99
OSFFONT540	—	2432.85	—	2432.85
OSFGSVIEW540	24.60	1203.00	747.15	1974.75
OSFHWBASE540	31713.70	3109.37	34.40	34857.46
OSFHWBIN540	37265.98	2592.01	12.22	39870.21

Table A–1: Disk Space Requirements – Base Operating System (cont.)

Tru64 UNIX V5.1B Operating System

Subset	root	/usr	/var	Total
OSFHWBINCOM540	19.00	3964.71	—	3983.71
OSFIMXE540	101.65	6915.22	6641.02	13657.89
OSFINCLUDE540	—	5909.12	—	5909.12
OSFINET540	2104.77	27837.25	748.93	30690.95
OSFIPSECBASE540	2595.27	16411.67	60.07	19067.00
OSFJAVA540	—	80788.25	—	80788.25
OSFJAVADEV540	—	51097.85	—	51097.85
OSFJAVADOC540	—	22720.54	—	22720.54
OSFKBDLK411540	—	134.33	—	134.33
OSFKBDPCXAL540	—	273.11	—	273.11
OSFKTOOLS540	—	1778.79	8360.09	10138.88
OSFLAT540	730.62	975.96	7.83	1714.40
OSFLDBBASE540	—	35554.67	—	35554.67
OSFLDBDOC540	—	2595.74	—	2595.74
OSFLDPAUTH540	29.51	514.40	—	543.91
OSFLEARN540	—	3100.59	—	3100.59
OSFLIBA540	—	9699.89	—	9699.89
OSFLSMBASE540	8265.54	6857.01	—	15122.55
OSFLSMBIN540	1775.18	9.16	—	1784.35
OSFLSMX11540	—	16987.77	61.54	17049.31
OSFMANOP540	—	21130.74	—	21130.74
OSFMANOS540	—	17510.34	—	17510.34
OSFMANWOP540	—	8844.48	—	8844.48
OSFMANWOS540	—	1275.42	—	1275.42
OSFMH540	—	4361.65	—	4361.65
OSFMITFONT540	—	18793.97	104.01	18897.99
OSFNETCONF540	—	2664.64	—	2664.64
OSFNETSCAPE540	—	53578.25	—	53578.25
OSFNETSCAPECLT540	—	89348.46	—	89348.46

Table A–1: Disk Space Requirements – Base Operating System (cont.)

Tru64 UNIX V5.1B Operating System

Subset	root	/usr	/var	Total
OSFNETSCAPEGRT540	—	15406.06	—	15406.06
OSFNFS540	57.57	1692.58	—	1750.15
OSFNFSCONF540	—	69.05	—	69.05
OSFOBSOLETE540	—	2256.32	—	2256.32
OSFOEMBASE540	—	515.63	—	515.63
OSFOLDDECW540	—	343.38	—	343.38
OSFOPENGL540	—	2687.30	—	2687.30
OSFOPENGLDEV540	—	691.06	—	691.06
OSFPERL540	—	83119.06	—	83119.06
OSFPGMR540	—	12095.17	—	12095.17
OSFPRINT540	114.87	10038.85	44.13	10197.85
OSFRCS540	—	2116.06	—	2116.06
OSFRIS540	—	234.62	144.03	378.65
OSFSCCS540	—	18176.80	—	18176.80
OSFSDE540	—	42547.02	—	42547.02
OSFSDECDE540	—	314.93	—	314.93
OSFSECMANOP540	—	9262.84	—	9262.84
OSFSER540	—	16824.02	53.11	16877.12
OSFSERPC540	—	6270.31	—	6270.31
OSFSERVICETOOLS540	15.93	4298.41	3.08	4317.42
OSFSSHBASE540	52.37	13468.81	38.00	13559.18
OSFSSOSSL540	—	9926.90	57.00	9983.90
OSFSSOW2K540	7.98	3276.36	76.00	3360.34
OSFSVID2540	30.00	654.70	—	684.69
OSFSYSMAN540	173.25	92081.34	39.56	92294.16
OSFTCLBASE540	—	24940.98	—	24940.98
OSFTERM540	—	3702.49	—	3702.49
OSFTKBASE540	—	16170.23	—	16170.23
OSFTRUETYPE540	—	419.01	—	419.01

Table A–1: Disk Space Requirements – Base Operating System (cont.)

Tru64 UNIX V5.1B Operating System

Subset	root	/usr	/var	Total
OSFUUCP540	119.63	21080.57	272.15	21472.36
OSFX11540	22.30	37498.01	711.54	38231.84
OSFXADMIN540	—	7372.50	68.38	7440.88
OSFXADVFS540	—	21346.92	655.17	22002.09
OSFXC2SEC540	—	495.07	—	495.07
OSFXDEMOS540	—	3598.87	—	3598.87
OSFXDEV540	—	2903.59	—	2903.59
OSFXEXAMPLES540	—	9500.41	—	9500.41
OSFXIEDOC540	—	3249.65	—	3249.65
OSFXINCLUDE540	—	7457.87	—	7457.87
OSFXLIBA540	—	16734.58	—	16734.58
OSFXMIT540	—	6480.13	47.91	6528.04
OSFXNEST540	—	410.47	18.46	428.93
OSFXOEM540	—	—	965.52	965.52
OSFXPRINT540	—	722.65	—	722.65
OSFXPRT540	—	1322.47	318.93	1641.40
OSFXSYSMAN540	66.73	16367.34	242.82	16676.89
OSFXVFB540	—	251.62	18.45	270.08
Totals	**173745.96**	**1639143.33**	**23862.11**	**1836751.39**
Grand Totals	**root**	**/usr**	**/var**	**Total**
	173745.96	**1639143.33**	**23862.11**	**1836751.39**

Table A–2: Disk Space Requirements – Associated Products Vol. 1

Advanced Printing Software V1.2

Subset	root	/usr	/var	Total
APXADMIN120	—	5048.49	—	5048.49
APXBASE120	—	7684.63	95.00	7779.63
APXGUI120	—	14228.66	—	14228.66
APXGW120	—	1054.10	—	1054.10

Table A–2: Disk Space Requirements – Associated Products Vol. 1 (cont.)

Advanced Printing Software V1.2

Subset	root	/usr	/var	Total
APXSVR120	—	2460.04	—	2460.04
Totals	**—**	**30475.92**	**95.00**	**30570.92**

Compaq Decimal RTL V2.6-46 for Tru64 UNIX

Subset	root	/usr	/var	Total
DCARTL270	—	2598.09	—	2598.09

Table A–2: Disk Space Requirements – Associated Products Vol. 1 (cont.)

Compaq Decimal RTL V2.6-46 for Tru64 UNIX

Subset	root	/usr	/var	Total
O2ABASE270	—	1749.24	—	1749.24
Totals	**—**	**4347.32**	**—**	**4347.32**

Compaq Fortran RTL #394 for Compaq Tru64 UNIX Alpha Systems (f90 and f77)

Subset	root	/usr	/var	Total
DFARTL394	—	5045.49	—	5045.49
Totals	**—**	**5045.49**	**—**	**5045.49**

Compaq Pascal RTL V5.8-23 for Tru64 UNIX Systems

Subset	root	/usr	/var	Total
DPORTL580	—	1420.60	—	1420.60
Totals	**—**	**1420.60**	**—**	**1420.60**

Sort Library

Subset	root	/usr	/var	Total
SORLIB400	—	2381.48	—	2381.48
Totals	**—**	**2381.48**	**—**	**2381.48**

DataDirect Technologies

Subset	root	/usr	/var	Total
DAUBRND200	—	—	257.23	257.23
DAUDOC200	—	—	18113.80	18113.80
DAUJDBCODBC200	—	—	397.95	397.95
DAUODBCCON200	33.35	—	34871.92	34905.27
DAUSQLNKJAVA200	—	—	5119.24	5119.24
DAUSQLNKODBC200	—	—	16428.04	16428.04

Table A–2: Disk Space Requirements – Associated Products Vol. 1 (cont.)

DataDirect Technologies

Subset	root	/usr	/var	Total
DAUSQLNKSVR200	—	—	23012.07	23012.07
Totals	**33.35**	**—**	**98200.25**	**98233.60**

Development Enhancement Tools for Tru64 UNIX

Subset	root	/usr	/var	Total
CMPDEVENH540	—	276.93	—	276.93
Totals	**—**	**276.93**	**—**	**276.93**

LDAP Client Utilities

Subset	root	/usr	/var	Total
LDPUTILS100	—	18059.41	—	18059.41
Totals	**—**	**18059.41**	**—**	**18059.41**

Multimedia Services V3.4 for Compaq Tru64 UNIX

Subset	root	/usr	/var	Total
MMEDEV304	—	3620.38	—	3620.38
MMEDOC304	—	283.98	—	283.98
MMEDOCDEV304	—	1677.61	—	1677.61
MMEDRVEN-SONIQ304	—	752.82	—	752.82
MMEDRVMMSESS304	—	951.86	—	951.86
MMEDRVMSB304	—	1312.86	—	1312.86
MMEMANDEV304	—	1686.01	—	1686.01
MMEMANRT304	—	357.83	—	357.83
MMERELNOTES304	—	66.46	—	66.46
MMERT304	68.93	33790.00	41.23	33900.15
MMERTCDE304	—	592.34	—	592.34

Table A–2: Disk Space Requirements – Associated Products Vol. 1 (cont.)

Multimedia Services V3.4 for Compaq Tru64 UNIX

Subset	root	/usr	/var	Total
MMERTSMPLDAT304	—	12509.19	—	12509.19
Totals	**68.93**	**57601.33**	**41.23**	**57711.48**

OpenLDAP

Subset	root	/usr	/var	Total
IAEOLDAP590	5.51	88282.33	7.80	88295.64
Totals	**5.51**	**88282.33**	**7.80**	**88295.64**

Tru64 UNIX Worldwide Language Support V5.1B

Subset	root	/usr	/var	Total
IOSAACMENU540	—	—	—	—
IOSCABASE540	—	357.90	41.03	398.93
IOSCACDEAPPS540	—	2157.04	5.64	2162.68
IOSCACDEDEV540	—	318.60	—	318.60
IOSCACDEDT540	—	1205.37	—	1205.37
IOSCACDEMAIL540	—	102.43	—	102.43
IOSCACDEMIN540	—	598.02	—	598.02
IOSCADECW540	—	27.00	11.17	38.17
IOSCAX11540	—	435.89	3.30	439.20
IOSCAXDEV540	—	109.57	—	109.57
IOSCAXSYSMAN540	—	111.91	13.15	125.05
IOSCSBASE540	—	377.97	22.03	400.00
IOSCSCDEAPPS540	—	2080.84	5.58	2086.42
IOSCSCDEDEV540	—	298.65	—	298.65
IOSCSCDEDT540	—	1434.30	—	1434.30
IOSCSCDEMAIL540	—	96.14	—	96.14
IOSCSCDEMIN540	—	4057.49	—	4057.49
IOSCSDECW540	—	39.86	5.51	45.37
IOSCSX11540	—	1543.04	3.30	1546.34
IOSCSXDEV540	—	109.49	—	109.49

Table A–2: Disk Space Requirements – Associated Products Vol. 1 (cont.)

Tru64 UNIX Worldwide Language Support V5.1B

Subset	root	/usr	/var	Total
IOSCSXSYSMAN540	—	110.69	6.41	117.09
IOSDEBASE540	—	370.61	41.03	411.64
IOSDECDEAPPS540	—	285.63	5.63	291.27
IOSDECDEDEV540	—	325.96	—	325.96
IOSDECDEDT540	—	1568.59	—	1568.59
IOSDECDEHLP540	—	19985.70	—	19985.70
IOSDECDEMAIL540	—	104.44	—	104.44
IOSDECDEMIN540	—	600.45	—	600.45
IOSDECHX11540	—	387.97	—	387.97
IOSDEDECW540	—	27.00	10.91	37.91
IOSDEX11540	—	1325.01	3.30	1328.31
IOSDEXDEV540	—	109.57	—	109.57
IOSDEXSYSMAN540	—	112.64	12.95	125.60
IOSELBASE540	—	350.80	—	350.80
IOSELCDEDT540	—	33.60	—	33.60
IOSELCDEMIN540	—	83.62	—	83.62
IOSELFONT100M540	—	1092.72	—	1092.72
IOSELFONT100P540	—	1080.35	—	1080.35
IOSELFONT75M540	—	933.73	—	933.73
IOSELFONT75P540	—	926.07	—	926.07
IOSELOLFONT540	—	2011.26	37.23	2048.49
IOSELX11540	—	217.91	3.30	221.21
IOSESBASE540	—	364.76	41.03	405.79
IOSESCDEAPPS540	—	273.99	5.63	279.62
IOSESCDEDEV540	—	322.61	—	322.61
IOSESCDEDT540	—	1569.28	—	1569.28
IOSESCDEHLP540	—	23864.02	—	23864.02
IOSESCDEMAIL540	—	103.62	—	103.62

Table A–2: Disk Space Requirements – Associated Products Vol. 1 (cont.)

Tru64 UNIX Worldwide Language Support V5.1B

Subset	root	/usr	/var	Total
IOSESCDEMIN540	—	579.81	—	579.81
IOSESDECW540	—	27.00	11.14	38.14
IOSESX11540	—	1333.16	3.30	1336.46
IOSESXDEV540	—	109.64	—	109.64
IOSESXSYSMAN540	—	112.54	13.17	125.71
IOSFRBASE540	—	364.75	41.03	405.78
IOSFRBEX11540	—	393.80	—	393.80
IOSFRCAX11540	—	393.76	—	393.76
IOSFRCDEAPPS540	—	276.95	5.77	282.72
IOSFRCDEDEV540	—	310.12	—	310.12
IOSFRCDEDT540	—	1568.68	—	1568.68
IOSFRCDEHLP540	—	20311.80	—	20311.80
IOSFRCDEMAIL540	—	106.74	—	106.74
IOSFRCDEMIN540	—	580.63	—	580.63
IOSFRCHX11540	—	393.80	—	393.80
IOSFRDECW540	—	27.00	11.16	38.16
IOSFRX11540	—	1324.77	3.30	1328.07
IOSFRXDEV540	—	109.67	—	109.67
IOSFRXSYSMAN540	—	112.75	13.12	125.87
IOSHUBASE540	—	384.22	22.03	406.25
IOSHUCDEAPPS540	—	2094.60	5.62	2100.22
IOSHUCDEDEV540	—	315.71	—	315.71
IOSHUCDEDT540	—	1405.96	—	1405.96
IOSHUCDEMAIL540	—	98.83	—	98.83
IOSHUCDEMIN540	—	4105.17	—	4105.17
IOSHUDECW540	—	39.81	5.49	45.30
IOSHUX11540	—	1549.37	3.30	1552.67
IOSHUXDEV540	—	109.56	—	109.56

Table A–2: Disk Space Requirements – Associated Products Vol. 1 (cont.)

Tru64 UNIX Worldwide Language Support V5.1B

Subset	root	/usr	/var	Total
IOSHUXSYSMAN540	—	111.13	6.35	117.48
IOSITBASE540	—	364.79	41.03	405.82
IOSITCDEAPPS540	—	2160.33	5.64	2165.97
IOSITCDEDEV540	—	324.77	—	324.77
IOSITCDEDT540	—	1480.88	—	1480.88
IOSITCDEHLP540	—	14421.12	—	14421.12
IOSITCDEMAIL540	—	106.64	—	106.64
IOSITCDEMIN540	—	590.09	—	590.09
IOSITDECW540	—	27.00	11.02	38.02
IOSITX11540	—	1357.03	3.30	1360.33
IOSITXDEV540	—	109.63	—	109.63
IOSITXSYSMAN540	—	112.80	13.37	126.17
IOSIWBASE540	—	290.01	3.30	293.31
IOSIWCDEDT540	—	198.24	—	198.24
IOSIWCDEMIN540	—	174.53	—	174.53
IOSIWFONT100M540	—	664.17	—	664.17
IOSIWFONT100P540	—	2157.05	—	2157.05
IOSIWFONT75M540	—	439.21	—	439.21
IOSIWFONT75P540	—	1901.38	—	1901.38
IOSIWOLFONT540	—	3038.24	62.44	3100.68
IOSIWX11540	—	1450.53	—	1450.53
IOSIWXDEV540	—	950.04	—	950.04
IOSJPABASE540	—	3733.46	—	3733.46
IOSJPAMANOS540	—	34.54	—	34.54
IOSJPAPXBASE540	—	911.42	—	911.42
IOSJPAPXGUI540	—	4371.46	—	4371.46
IOSJPBASE540	—	52405.93	92.19	52498.11
IOSJPBIN540	772.70	96.04	6.10	874.83

Table A–2: Disk Space Requirements – Associated Products Vol. 1 (cont.)

Tru64 UNIX Worldwide Language Support V5.1B

Subset	root	/usr	/var	Total
IOSJPCDEAPPS540	—	696.45	—	696.45
IOSJPCDEDEV540	—	952.88	—	952.88
IOSJPCDEDT540	—	3795.71	—	3795.71
IOSJPCDEHLP540	—	32763.48	—	32763.48
IOSJPCDEHLP-SJIS540	—	33449.34	—	33449.34
IOSJPCDEMAIL540	—	348.00	—	348.00
IOSJPCDEMIN540	—	2171.74	104.13	2275.88
IOSJPDECW540	—	69.71	22.05	91.76
IOSJPDOSTOOLS540	—	665.40	—	665.40
IOSJPFONT100M540	—	12373.39	—	12373.39
IOSJPFONT100P540	—	12187.89	—	12187.89
IOSJPFONT75M540	—	8753.49	—	8753.49
IOSJPFONT75P540	—	8525.84	—	8525.84
IOSJPFONTM540	—	13715.83	—	13715.83
IOSJPLDBBASE540	—	2582.11	—	2582.11
IOSJPLSMX11540	—	2566.41	26.19	2592.60
IOSJPMANOS540	—	7956.14	—	7956.14
IOSJPMANWOS540	—	109.51	—	109.51
IOSJPNETSCAPE540	—	6137.88	—	6137.88
IOSJPPGMR540	—	2204.95	—	2204.95
IOSJPSDECDE540	—	27.88	—	27.88
IOSJPSYSMAN540	—	18208.04	—	18208.04
IOSJPTCRMAN540	—	797.39	—	797.39
IOSJPWNN540	9.57	20441.75	95.00	20546.32
IOSJPWNNPGMR540	—	1358.04	—	1358.04
IOSJPWNNSRC540	—	3.48	—	3.48
IOSJPX11540	—	2461.96	—	2461.96

Table A–2: Disk Space Requirements – Associated Products Vol. 1 (cont.)

Tru64 UNIX Worldwide Language Support V5.1B

Subset	root	/usr	/var	Total
IOSJPXADMIN540	—	3689.49	—	3689.49
IOSJPXADVFS540	—	265.88	1986.47	2252.35
IOSJPXDEV540	—	142.20	—	142.20
IOSJPXSYSMAN540	—	18603.97	—	18603.97
IOSKOBASE540	—	14686.11	28.61	14714.71
IOSKOCDEAPPS540	—	198.24	5.60	203.84
IOSKOCDEDEV540	—	315.82	—	315.82
IOSKOCDEDT540	—	4744.19	—	4744.19
IOSKOCDEHLP540	—	11097.10	—	11097.10
IOSKOCDEMAIL540	—	161.21	—	161.21
IOSKOCDEMIN540	—	902.67	—	902.67
IOSKODECW540	—	48.22	5.49	53.71
IOSKOFONTM540	—	3896.31	—	3896.31
IOSKOFONTP540	—	9568.90	—	9568.90
IOSKOOLFONT540	—	6157.34	3.07	6160.42
IOSKOPGMR540	—	173.57	—	173.57
IOSKOX11540	—	2165.36	—	2165.36
IOSKOXDEV540	—	115.37	—	115.37
IOSKOXSYSMAN540	—	110.78	6.48	117.26
IOSLTX11540	—	540.76	3.30	544.06
IOSPLBASE540	—	432.19	22.03	454.22
IOSPLCDEAPPS540	—	2157.97	5.67	2163.64
IOSPLCDEDEV540	—	325.84	—	325.84
IOSPLCDEDT540	—	1335.26	—	1335.26
IOSPLCDEMAIL540	—	101.59	—	101.59
IOSPLCDEMIN540	—	4129.12	—	4129.12
IOSPLDECW540	—	39.81	5.55	45.36
IOSPLX11540	—	1563.19	3.30	1566.49

Table A–2: Disk Space Requirements – Associated Products Vol. 1 (cont.)

Tru64 UNIX Worldwide Language Support V5.1B

Subset	root	/usr	/var	Total
IOSPLXDEV540	—	109.59	—	109.59
IOSPLXSYSMAN540	—	111.99	6.57	118.56
IOSRUBASE540	—	340.69	—	340.69
IOSRUCDEAPPS540	—	1954.34	—	1954.34
IOSRUCDEDT540	—	264.40	—	264.40
IOSRUDECW540	—	39.86	—	39.86
IOSRUX11540	—	1439.63	3.30	1442.93
IOSRUXDEV540	—	109.68	—	109.68
IOSSKBASE540	—	384.12	22.03	406.15
IOSSKCDEAPPS540	—	2141.27	5.58	2146.85
IOSSKCDEDEV540	—	416.13	—	416.13
IOSSKCDEDT540	—	1332.84	—	1332.84
IOSSKCDEMAIL540	—	98.65	—	98.65
IOSSKCDEMIN540	—	4095.66	—	4095.66
IOSSKDECW540	—	39.86	5.50	45.37
IOSSKX11540	—	1531.51	3.30	1534.81
IOSSKXDEV540	—	109.44	—	109.44
IOSSKXSYSMAN540	—	110.86	6.42	117.28
IOSSLCDEDT540	—	31.05	—	31.05
IOSSLX11540	—	568.86	3.30	572.16
IOSSVBASE540	—	364.73	41.03	405.76
IOSSVCDEAPPS540	—	276.46	5.56	282.02
IOSSVCDEDEV540	—	314.09	—	314.09
IOSSVCDEDT540	—	1510.70	—	1510.70
IOSSVCDEHLP540	—	14413.44	—	14413.44
IOSSVCDEMAIL540	—	98.67	—	98.67
IOSSVCDEMIN540	—	554.11	—	554.11
IOSSVDECW540	—	27.00	10.98	37.98

Table A–2: Disk Space Requirements – Associated Products Vol. 1 (cont.)

Tru64 UNIX Worldwide Language Support V5.1B

Subset	root	/usr	/var	Total
IOSSVX11540	—	1332.67	3.30	1335.97
IOSSVXDEV540	—	109.39	—	109.39
IOSSVXSYSMAN540	—	109.08	12.71	121.79
IOSTHBASE540	—	967.38	25.31	992.69
IOSTHBIN540	644.62	12.20	6.10	662.91
IOSTHCDEAPPS540	—	152.47	5.67	158.15
IOSTHCDEDEV540	—	432.10	—	432.10
IOSTHCDEDT540	—	1096.28	—	1096.28
IOSTHCDEMAIL540	—	95.00	—	95.00
IOSTHCDEMIN540	—	522.63	—	522.63
IOSTHDECW540	—	39.69	5.65	45.34
IOSTHFONTM540	—	281.13	—	281.13
IOSTHOLFONT540	—	7382.06	123.70	7505.76
IOSTHPGMR540	—	132.89	—	132.89
IOSTHPRINT540	—	189.39	—	189.39
IOSTHX11540	—	1358.65	—	1358.65
IOSTHXDEV540	—	117.96	—	117.96
IOSTHXSYSMAN540	—	112.42	6.64	119.06
IOSTRBASE540	—	388.64	—	388.64
IOSTRCDEDT540	—	33.55	—	33.55
IOSTRCDEMIN540	—	83.62	—	83.62
IOSTRFONT100M540	—	1097.05	—	1097.05
IOSTRFONT100P540	—	4112.34	—	4112.34
IOSTRFONT75M540	—	944.16	—	944.16
IOSTRFONT75P540	—	3467.88	—	3467.88
IOSTROLFONT540	—	5455.58	102.34	5557.92
IOSTRX11540	—	241.71	3.30	245.01
IOSWWBASE540	23.70	77501.42	194.00	77719.12

Table A–2: Disk Space Requirements – Associated Products Vol. 1 (cont.)

Tru64 UNIX Worldwide Language Support V5.1B

Subset	root	/usr	/var	Total
IOSWWBIN540	1366.22	130.22	12.20	1508.64
IOSWWBINCOM540	18.50	70.61	3.08	92.19
IOSWWBINUCS540	1718.33	6.09	3.05	1727.47
IOSWWEURLOC540	—	1483.42	—	1483.42
IOSWWFGC540	—	1500.80	—	1500.80
IOSWWFONTM540	—	1376.69	—	1376.69
IOSWWFONTP540	—	502.56	—	502.56
IOSWWLAT2FONT100M540	—	1178.66	—	1178.66
IOSWWLAT2FONT100P540	—	4363.28	—	4363.28
IOSWWLAT2FONT75M540	—	871.17	—	871.17
IOSWWLAT2FONT75P540	—	3805.77	—	3805.77
IOSWWLAT2OL-FONT540	—	5573.38	102.34	5675.71
IOSWWLAT4FONT100M540	—	1183.15	—	1183.15
IOSWWLAT4FONT100P540	—	4386.89	—	4386.89
IOSWWLAT4FONT75M540	—	885.65	—	885.65
IOSWWLAT4FONT75P540	—	3828.26	—	3828.26
IOSWWLAT9FONT100M540	—	2258.76	—	2258.76
IOSWWLAT9FONT100P540	—	3035.54	—	3035.54
IOSWWLAT9FONT75M540	—	1907.39	—	1907.39
IOSWWLAT9FONT75P540	—	2566.77	—	2566.77
IOSWWLAT9LOC540	—	2577.35	—	2577.35
IOSWWLATC-FONT100M540	—	1159.46	—	1159.46
IOSWWLATC-FONT100P540	—	2420.13	—	2420.13
IOSWWLATC-FONT75M540	—	985.95	—	985.95

Table A–2: Disk Space Requirements – Associated Products Vol. 1 (cont.)

Tru64 UNIX Worldwide Language Support V5.1B

Subset	root	/usr	/var	Total
IOSWWLATC-FONT75P540	—	2029.76	—	2029.76
IOSWWLATCOL-FONT540	—	3660.26	62.14	3722.40
IOSWWMULE540	—	79504.36	—	79504.36
IOSWWMULESRC540	—	26983.10	—	26983.10
IOSWWOBSOLETE540	37.38	757.72	—	795.10
IOSWWPGMR540	—	302.33	—	302.33
IOSWWPHRASE540	597.63	586.35	6.10	1190.08
IOSWWPRINT540	—	1947.76	44.15	1991.90
IOSWWSVEDEV540	—	428.95	—	428.95
IOSWWSYSMAN540	—	1321.20	4.78	1325.97
IOSWWUDCOS540	612.82	2138.07	6.10	2756.99
IOSWWUDCWOS540	—	123.10	—	123.10
IOSWWX11540	—	8385.38	—	8385.38
IOSWWXDEV540	—	2454.55	—	2454.55
IOSWWXFR540	15.10	1251.83	3.49	1270.43
IOSZHBASE540	—	96200.07	—	96200.07
IOSZHBIG5540	169.85	250.41	3.05	423.31
IOSZHCNBASE540	—	3037.43	69.89	3107.33
IOSZHC-NCDEAPPS540	—	156.22	16.60	172.82
IOSZHCNCDEDEV540	—	322.34	—	322.34
IOSZHCNCDEDT540	—	11553.48	—	11553.48
IOSZHCNCDEHLP540	—	18520.48	—	18520.48
IOSZHCNCDE-MAIL540	—	107.84	—	107.84
IOSZHCNCDEMIN540	—	610.79	—	610.79
IOSZHCNLOC540	—	2149.39	—	2149.39

Table A–2: Disk Space Requirements – Associated Products Vol. 1 (cont.)

Tru64 UNIX Worldwide Language Support V5.1B

Subset	root	/usr	/var	Total
IOSZHCONV540	82.15	32.94	3.05	118.14
IOSZHHKBASE540	—	4427.24	13.16	4440.40
IOSZHPGMR540	—	2689.42	—	2689.42
IOSZHSDECW540	—	131.48	16.30	147.78
IOSZHSFONTM540	—	3449.72	—	3449.72
IOSZHSFONTP540	—	27595.29	—	27595.29
IOSZHSOLFONT540	—	15013.72	6.19	15019.91
IOSZHSSYSMAN540	—	7957.59	19.12	7976.71
IOSZHSTCRBASE540	—	51.65	—	51.65
IOSZHSTTFONT540	—	117704.77	—	117704.77
IOSZHSTTFONTP540	—	85052.05	—	85052.05
IOSZHSX11540	—	2787.11	—	2787.11
IOSZHSXADMIN540	—	133.22	—	133.22
IOSZHSXDEV540	—	227.25	—	227.25
IOSZHSXSYSMAN540	—	120.82	—	120.82
IOSZHTDECW540	—	122.50	—	122.50
IOSZHTELEX540	136.07	6.10	3.05	145.21
IOSZHTFONTM540	—	9272.73	—	9272.73
IOSZHTFONTP540	—	25532.25	—	25532.25
IOSZHTOLFONT540	—	28158.10	6.20	28164.30
IOSZHTWBASE540	—	3810.07	9.86	3819.93
IOSZHTWCDEAPPS540	—	412.32	—	412.32
IOSZHTWCDEDEV540	—	615.04	—	615.04
IOSZHTWCDEDT540	—	10559.80	—	10559.80
IOSZHTWCDEHLP540	—	11918.55	—	11918.55
IOSZHTWCDE-MAIL540	—	257.08	—	257.08
IOSZHTWCDEMIN540	—	1404.38	—	1404.38

Table A–2: Disk Space Requirements – Associated Products Vol. 1 (cont.)

Tru64 UNIX Worldwide Language Support V5.1B

Subset	root	/usr	/var	Total
IOSZHTWLOC540	—	9736.09	—	9736.09
IOSZHTX11540	—	4920.96	—	4920.96
IOSZHTXDEV540	—	1015.71	—	1015.71
IOSZHX11540	—	5207.42	—	5207.42
Totals	**6204.64**	**1323243.79**	**4000.45**	**1333448.88**
Grand Totals	**root**	**/usr**	**/var**	**Total**
	6312.43	**1531134.60**	**102344.73**	**1639791.75**

Table A–3: Disk Space Requirements – Associated Products Vol. 2

ARMTech Active Resource Management 1.08 2002/06/03

Subset	root	/usr	/var	Total
ARMTBASE108	105.27	21978.16	194.46	22277.89
ARMTCPU108	3.05	150.07	—	153.12
ARMTDMN108	12.44	10171.94	—	10184.38
ARMTDOC108	3.05	11584.05	—	11587.11
ARMTGUI108	28.73	2480.86	—	2509.59
ARMTMAN108	3.05	849.51	—	852.56
ARMTPDB108	3.05	—	12357.07	12360.12
Totals	**158.64**	**47214.60**	**12551.53**	**59924.77**

Advanced Server for UNIX V5.1B

Subset	root	/usr	/var	Total
ASUADM540	—	27721.06	—	27721.06
ASUADMJP540	—	26249.62	—	26249.62
ASUBASE540	17.55	40722.96	—	40740.51
ASUMANJP540	—	443.24	—	443.24
ASUMANPAGE540	—	418.37	—	418.37
ASUSIA540	3.96	83.00	—	86.96

Table A–3: Disk Space Requirements – Associated Products Vol. 2 (cont.)

Advanced Server for UNIX V5.1B

Subset	root	/usr	/var	Total
ASUTRAN540	97.02	4247.58	3202.03	7546.63
Totals	**118.53**	**99885.83**	**3202.03**	**103206.39**

Collect for Tru64 UNIX

Subset	root	/usr	/var	Total
COLUTIL540	—	5165.60	—	5165.60
Totals	**—**	**5165.60**	**—**	**5165.60**

DECevent

Subset	root	/usr	/var	Total
DIABASE340	23.33	75011.69	606.00	75641.02
Totals	**23.33**	**75011.69**	**606.00**	**75641.02**

Extended System V Functionality

Subset	root	/usr	/var	Total
ESVFBIN200	—	22649.18	22.06	22671.24
ESVFMAN200	—	1994.38	—	1994.38
Totals	**—**	**24643.56**	**22.06**	**24665.62**

Free Software Foundation GNU Source for Tru64 UNIX

Subset	root	/usr	/var	Total
FSFCDRTOOLS540	—	9346.10	—	9346.10
FSFEMACS540	—	66050.22	—	66050.22
FSFGNOMESRC540	—	36802.19	—	36802.19
FSFGZIPSRC540	—	1900.70	—	1900.70
FSFINDENTSRC540	—	1238.49	—	1238.49
FSFM4V14540	—	2739.14	—	2739.14
FSFPERL540	—	52022.29	—	52022.29

Table A–3: Disk Space Requirements – Associated Products Vol. 2 (cont.)

Free Software Foundation GNU Source for Tru64 UNIX

Subset	root	/usr	/var	Total
FSFRCSSRC540	—	1907.61	—	1907.61
Totals	**—**	**172006.74**	**—**	**172006.74**

Motif Version 2.1.30

Subset	root	/usr	/var	Total
DSKMOTIF21510	—	39404.14	—	39404.14
Totals	**—**	**39404.14**	**—**	**39404.14**

Legato NetWorker

Subset	root	/usr	/var	Total
LGTOCLNT611	—	92860.33	—	92860.33
LGTOMAN611	—	2388.08	—	2388.08
LGTONODE611	—	46708.00	—	46708.00
LGTOSERV611	—	60037.38	—	60037.38
Totals	**—**	**201993.79**	**—**	**201993.79**

Compaq Porting Assistant V3.0-1 for Tru64 UNIX

Subset	root	/usr	/var	Total
PRTBASE301	—	50552.06	—	50552.06
PRTMAN301	—	18.45	—	18.45
Totals	**—**	**50570.51**	**—**	**50570.51**

PowerStorm 3x0 Support

Subset	root	/usr	/var	Total
3X0CLUSTERINFO524	—	—	—	—
3X0CONFIG524	—	—	—	—
3X0DEVICE524	—	49887.85	—	49887.85

Table A–3: Disk Space Requirements – Associated Products Vol. 2 (cont.)

PowerStorm 3x0 Support

Subset	root	/usr	/var	Total
3X0GLBASE524	—	9478.42	—	9478.42
Totals	**—**	**59366.28**	**—**	**59366.28**

PowerStorm 4D40T/4D50T/4D51T/4D60T Support

Subset	root	/usr	/var	Total
4DTCLUSTERINFO515	—	—	—	—
4DTCONFIG515	—	—	—	—
4DTGLBASE515	—	8707.58	—	8707.58
4DTGLEXAM515	—	13996.47	—	13996.47
4DTGLMAN515	—	2050.56	—	2050.56
4DTZE3515	—	27349.66	—	27349.66
Totals	**—**	**52104.27**	**—**	**52104.27**

Graphical Program Analysis Tools V3.1 for Compaq Tru64 UNIX

Subset	root	/usr	/var	Total
GPABASE314	—	47324.66	—	47324.66
GPALCLCLIENTS314	—	18172.43	—	18172.43
JAVJRE118	—	6629.07	—	6629.07
JAVJREOPT118	—	6068.14	—	6068.14
Totals	**—**	**78194.30**	**—**	**78194.30**

Secure Web Server and Administration Utility

Subset	root	/usr	/var	Total
IAEAPAD592	149.68	10488.17	—	10637.86
IAEAPCH592	14.02	33025.44	—	33039.46
IAEAPDOC592	—	11495.24	—	11495.24

Table A–3: Disk Space Requirements – Associated Products Vol. 2 (cont.)

Secure Web Server and Administration Utility

Subset	root	/usr	/var	Total
IAETOMCAT592	10.12	13193.77	7.63	13211.52
Totals	**173.82**	**68202.62**	**7.63**	**68384.07**

SysMan Software Manager

Subset	root	/usr	/var	Total
OSPSWMGR540	115.04	34454.55	—	34569.59
OSPSWMGRDOC540	44923.41	—	—	44923.41
OSPSWMGRMAN540	—	832.08	—	832.08
Totals	**45038.44**	**35286.63**	**—**	**80325.08**

Tru64 UNIX Obsolete Components

Subset	root	/usr	/var	Total
OSUNSUPPORT-EDADVFSBINOB-JECT540	—	5283.83	—	5283.83
OSUNSUPPORTE-DATMBINOBJECT540	—	22309.34	—	22309.34
OSUNSUPPORTED-BINOBJECT540	—	37247.92	—	37247.92
OSUNSUPPORTED-HWBINOBJECT540	—	35482.96	—	35482.96
Totals	**—**	**100324.06**	**—**	**100324.06**

Tru64 UNIX Retired Components

Subset	root	/usr	/var	Total
OSRETIREDCXL-LIBA540	—	224.93	—	224.93
OSRETIREDCXL-SHRDA540	—	284.15	—	284.15
OSRETIREDDX-BOOK540	—	3689.25	—	3689.25
OSRETIRED-JAVA118540	—	22638.77	—	22638.77

Table A–3: Disk Space Requirements – Associated Products Vol. 2 (cont.)

Tru64 UNIX Retired Components

Subset	root	/usr	/var	Total
OSRETIRED-JAVADEV118540	—	17572.77	—	17572.77
OSRETIRED-JAVADOC118540	—	35539.48	—	35539.48
OSRETIREDTCL76540	—	3559.99	—	3559.99
OSRETIREDTK42540	—	3976.99	—	3976.99
Totals	**—**	**87486.33**	**—**	**87486.33**

Tru64 UNIX TruCluster(TM) Server Software T5.1B-6

Subset	root	/usr	/var	Total
TCRBASE540	1265.64	100282.53	20369.44	121917.61
TCRMAN540	—	2057.37	—	2057.37
TCRMIGRATE540	—	2169.57	—	2169.57
Totals	**1265.64**	**104509.47**	**20369.44**	**126144.55**

UniCensus

Subset	root	/usr	/var	Total
UNICEN452	—	—	3386.71	3386.71
Totals	**—**	**—**	**3386.71**	**3386.71**

Java JRE 1.1.8-10

Subset	root	/usr	/var	Total
DVTBASE220	—	32930.84	—	32930.84
JAVJRE118	—	6629.07	—	6629.07
Totals	**—**	**39559.91**	**—**	**39559.91**

Web-Based Enterprise Service

Subset	root	/usr	/var	Total
WEBESBASE400	—	136131.16	—	136131.16
Totals	**—**	**136131.16**	**—**	**136131.16**
Grand Totals	**root**	**/usr**	**/var**	**Total**
	46778.40	**1477061.49**	**40145.40**	**1563985.30**

A.2 Disk Space Required for RIS Areas

The Remote Installation Services (RIS) area for this release of the operating system requires approximately 3 MB of disk space. The space requirements are identified by product area in Table A–4.

Table A–4: Disk Space Required for RIS Areas

Product Area	512-Byte Blocks
Tru64 UNIX	1520760
Advanced Printing	29860
DEC C++ Class Libraries	73670
Compaq COBOL RTL	4317
Compaq Fortran RTL	4544
Compaq Pascal RTL	1421
Sort Library	2522
MERANT DataDirect	75141
Development Enhancement Tools	252
Multimedia Services 49213	49213
Netscape Directory Server	307670
Netscape FastTrack	172956
Worldwide Language Support	1170659
Advanced Server	101310
DECevent	74365
Extended System V Functionality	20334
GNU Source	106605
Motif	39407
Legato NetWorker	111861
Performance Manager	33660
Porting Assistant	50650
PowerStorm 3x0 Support	51348
PowerStorm 4DxxT Support	60541
Graphical Program Analysis Tools	75797
SysMan Software Manager	72089
Tru64 UNIX Retired Components	7287

Table A–4: Disk Space Required for RIS Areas (cont.)

Product Area	512-Byte Blocks
TruCluster Server	92607
UniCensus	2225
Java JRE	39908
Web-Based Enterprise Service	55986
Windows 2000 Single Sign On	5353
Total	2858534

A.3 Disk Space Required for Documentation

The Tru64 UNIX documentation set is provided in HTML and PDF format on the Tru64 UNIX *Documentation* CD–ROM. It requires approximately 127 MB of disk space, as follows:

- 89 MB for the HTML files
- 38 MB for the PDF files

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