

Tru64 UNIX and TruCluster Software Products

Patch Kit Installation Instructions

May 2001

Product Version: Tru64 UNIX Patch Kits

This manual provides instructions for installing and removing patches using the `dupatch` utility, which is included with Tru64 UNIX and TruCluster software patch kits. It also describes baselining techniques and provides other information for working with patches.

For information about individual patches, see the *Patch Summary and Release Notes* document for the kit you are installing.

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About This Manual

This manual provides instructions for installing and removing patches that are provided by Compaq Computer Corporation in its Tru64 UNIX and TruCluster software products patch kits. It also describes baselining techniques and provides other information for working with patches.

The information provided here deals with patches installed on Versions 4.0D and higher and 5.0 and higher, including both official and customer-specific (CSP) patches. The differences in dealing with the different product versions and patch-kit types are minimal; this manual alerts you to those differences during process discussions and step-by-step instructions.

The process for installing and removing patches using the rolling upgrade procedure, introduced in Version 5.0A release of the TruCluster Server software, is discussed in *Chapter 5*.

For information about individual patches, see the *Patch Summary and Release Notes* document for the kit you are installing.

Note

In most instances, this manual uses the name Tru64 UNIX for all versions of the operating system, including those that were originally released as DIGITAL UNIX.

In general, the terms *TruCluster software products* and *TCR* are used throughout this manual to refer to all releases of Compaq's TruCluster products.

Audience

This manual is for those who install and remove patch kits and manage patches after they are installed.

Organization

The first two chapters describe the concepts of the patching process and provide an overview of the patch management utility, `dupatch`. *Chapter 3* lists issues and restrictions you should be aware of before you begin to work with the patch kits following the step-by-step procedures in *Chapter 4*.

This manual is organized as follows:

<i>Chapter 1</i>	Provides an overview of the concepts and features of the patch kits.
<i>Chapter 2</i>	Introduces the <code>dupatch</code> utility and describes its features.
<i>Chapter 3</i>	Provides information you must be aware of when installing and removing patches.
<i>Chapter 4</i>	Describes the procedures for installing and removing patches.
<i>Chapter 5</i>	Describes the rolling upgrade process for patching a cluster running TruCluster Server Version 5.0A or higher while the cluster is in operation. This process is also used for upgrading to a new version of the TruCluster software software or for doing an upgrade and a patch together.

<i>Appendix B</i>	Provides examples of a typical patch installation, a TruCluster patch installation in a rolling upgrade, a baselining process, and a patch removal process.
<i>Appendix A</i>	Describes error messages you might see while installing, removing, or maintaining patches.
<i>Appendix C</i>	Provides information about using the <code>dupatch</code> command-line interface and documents the <code>dupatch(8)</code> reference page.
<i>Appendix D</i>	Provides Tru64 UNIX system upgrade information.

Related Documentation

The following documentation can help you work with patch kits:

- The *Patch Summary and Release Notes* document for the patch kit you are working with
- The `dupatch(8)` reference page, which is installed on your system when you install the patch tools
- The Tru64 UNIX *Installation Guide* and *System Administration* manuals
- Tru64 UNIX manual
- TruCluster *Software Installation* and *Cluster Administration* manuals
- Any release-specific documentation, specifically the *Release Notes* for the version you are patching

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- Fax: 603-884-0120 Attn: UBPG Publications, ZKO3-3/Y32
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Please include the following information along with your comments:

- The section numbers and page numbers of the information on which you are commenting.
- The version of Tru64 UNIX that you are using.
- If known, the type of processor that is running the Tru64 UNIX software.

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

Conventions

This guide uses the following conventions:

<i>file</i>	Italic (slanted) type indicates variable values, placeholders, and function argument names.
Ctrl/ <i>x</i>	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).
% cat	Boldface type in interactive examples indicates typed user input.
device names	Operating system versions before Version 5.0 use different names than those of Version 5.0 and higher. In general, this manual uses the Version 5.0 names. For example, where a partition name is represented by <code>/dev/disk/dsk3g</code> , the Version 4.0n name might be <code>/dev/rz3g</code> .
:	This symbol is used in output examples to replace redundant information. This is information you would see on your terminal screen or in a log file created by <code>dupatch</code> , but is not particularly useful in the examples in this manual.
Glossary Terms	In the online version of this document, various terms are linked to the <i>Glossary</i> . By clicking on the term, you will be taken to its definition. You can easily return to the place you were reading by clicking on your browser's Back button.

Introduction

This chapter provides an overview of the concepts and features of the patch kits for the Tru64 UNIX operating system and TruCluster software products.

1.1 Overview

A patch is a collection of files that contain fixes to problems. When possible, patches are merged together, into one patch, if they have intersecting files or code dependencies. A patch may correct more than one problem.

The Tru64 UNIX and TruCluster software patch kits contain patches for critical problems for those software products. These kits, which are distributed as needed, provide interim maintenance that prevents the occurrence of known critical problems. The patch kits contain the following elements:

- Version-specific patches and patch-specific documentation
- The `dupatch` patch-management utility, which you use to install, view, remove, and manage patches

Patch kits are not intended to provide general maintenance and new functions; applying them to your system does not eliminate the need to upgrade to later versions of Tru64 UNIX and TruCluster software.

Patches are applicable to a specific version of the software products, unless stated otherwise in the patch kit release notes. You cannot install version-specific kits on other software versions. Compaq recommends that you install all of the patches included in the kits and that you update the TruCluster software products (if applicable) at the same time you update your operating system.

To install Tru64 UNIX and TruCluster software patches, your system must meet the following requirements:

- Be running the appropriate version of Tru64 UNIX and TruCluster software
- Contain the necessary temporary and permanent storage space described in the Patch Summary and Release Notes document for the kit you are installing

After you install the patches, the following items are left on the system:

- The `dupatch` utility
- Patch-specific documentation that you can view with `dupatch`
- Optionally, the archived system files that were updated by the installed patches

1.2 Types of Patches

Compaq provides two kinds of patches for its Tru64 UNIX and TruCluster software products — release kits and customer-specific kits:

- Release patches

These patches provide interim maintenance that prevents the occurrence of known critical problems. Release patches (sometimes referred to as *official patches*) are provided in kits, grouped by software product versions. The following are features of release patch kits:

- Provide selective patch installation and removal

- Use `dupatch` for installing, viewing, removing, and managing patches
- Are provided on the Internet or CD-ROM
- Customer-specific patches (CSPs)

These patches are provided by your service provider in response to Tru64 UNIX or TruCluster software problems that are specific to your own system's hardware and software configuration. CSP kits have the following features:

 - Generally use the `dupatch` utility for installing, viewing, removing, and managing patches.
 - May contain patches for one or more software products. For example, a single tar file may contain patches for Tru64 UNIX Version 4.0F, Tru64 UNIX Version 5.0A, TruCluster Version 1.5, and TruCluster Version 1.6.
 - May require release patches but do not contain any release patches.

1.3 Patch Kit Distribution and Naming

Tru64 UNIX patches for specific operating system and TruCluster software releases and customer-specific patches are packaged together in tar files. Each patch kit contains the following components:

- Patch management utility (`dupatch`) and other patch management tools

Installs, removes, and manages patches for Tru64 UNIX and TruCluster software. This utility is installed and left on the system through the successful installation of a patch kit.
- Patch subsets for the operating system and TruCluster software products
- Documentation

Packaged with release patch kits is a document called *Patch Summary and Release Notes*, which summarizes the problems that the patches in that kit correct and provides any information you may need to know about specific patches. The information in this document also exists in separate files that you can access using the `dupatch` utility. (See Section 2.4.)

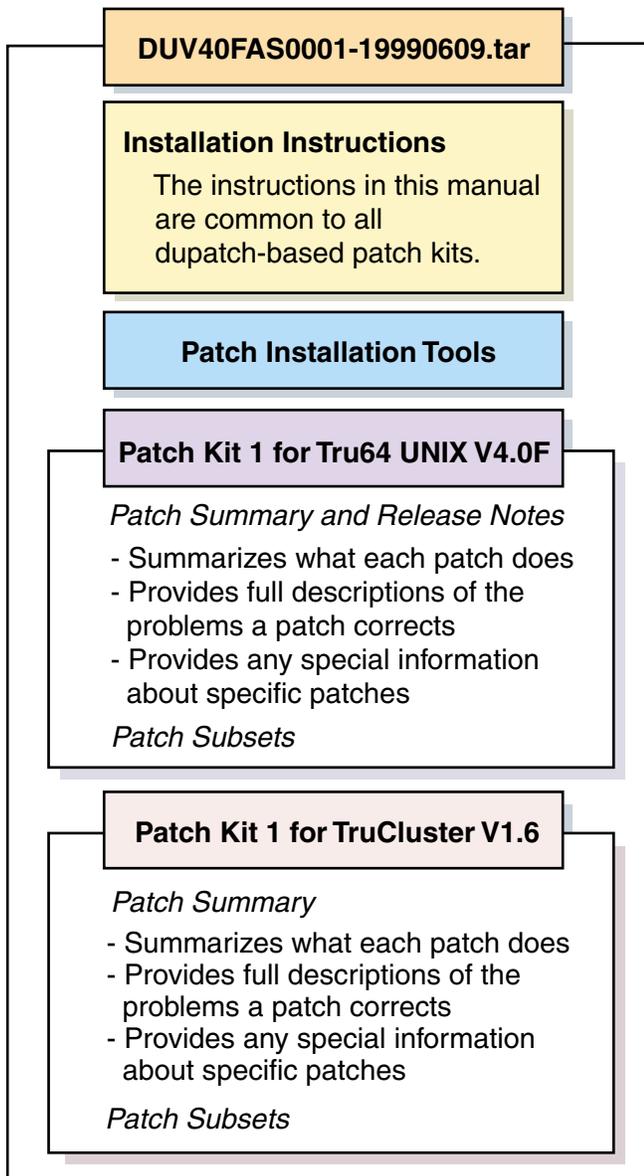
Release patch kits also contain the *Installation Instructions* (the manual you are reading), which is common to all patch kits.

Both of these manuals are provided in PDF and HTML formats. The PDF version is easy to view and print using Adobe Acrobat Reader, which is provided on the Documentation CD-ROM that ships with Tru64 UNIX Version 4.0E and higher, and is also available at the Adobe Web site (<http://www.adobe.com/>). The HTML version is viewed with your Internet browser, such as Netscape.

Beginning with kits shipped after March 2001, the `dupatch(8)` reference page is installed with the patch tools. Once installed, you can view the reference page by using the `man` command.

The contents of the tar file varies, depending on the type of kit. For example, a CSP kit might contain patches for several operating system versions, while release patch kits always contain patches for only one operating system version. Also, the tar file may or may not contain TruCluster software patches. However, the structure of the tar file is the same for each type of kit. Figure 1-1 illustrates the contents of a patch tar file.

Figure 1–1: Structure of a Patch Kit Tar File



ZK-1586U-AI

The following sections describe release and customer-specific patch kits.

1.3.1 Release Patch Kits

Tru64 UNIX and TruCluster software release patch kits are available from the Internet and on CD-ROM.

- Patch Kits on the Internet

Patch kits are available publicly on the Internet through the Compaq Services Web page located at:

<http://www.support.compaq.com/patches>

Release patches distributed over the Internet are provided in a tar file that you must unpack on your system or on an NFS-mountable file system. The tar file for each operating system version will contain patch kits for that version of the operating system and patch kits for the applicable TruCluster software products.

- Patch kits on CD-ROM

The Tru64 UNIX Patch CD-ROM contains all of the latest patch kits for the supported versions of Tru64 UNIX and TruCluster software. The patch kits on the CD-ROM are provided in an expanded form (rather than a tar file) so they can be installed directly from the disk. The *00-READ-ME-FIRST* file on the CD-ROM lists the contents of the disk and provides other information.

You can order a Patch CD-ROM in the United States by calling 1-800-344-4825 (1-800-ATCOMPAQ); customers in other countries should contact your local Compaq sales office or authorized reseller for pricing and availability. The order number is QA-MT4AW-H8.

Release patch kit names have the following syntax:

```
OS Product|Version|-KitType|Kit#|-MfgDate|.FileType
```

For example, a file named `DUV40FAS0001-19990609.tar` contains Patch Kit 0001 for Tru64 UNIX Version 4.0F and TruCluster software Version 1.6, manufactured on June 9, 1999.

The following list describes the attributes currently used in patch kit names:

OS Product	DU = DIGITAL UNIX T64 = Tru64 UNIX (some versions of Tru64 UNIX may have the DU label) TC = TruCluster
Version	V51 V50A V50 V40G V40F V40D
KitType	AS = Aggregate Selective installation patch kit SS = A patch kit containing a single patch
Kit#	The numeric identifier that Compaq uses to track the kit contents
-MfgDate	The year, month, and day the kit was built in the form of YYYYMMDD
.FileType	.tar

1.3.2 Customer-Specific Patch Kits

Customer-specific patch kits provide interim patches for a specific customer's problem and computing environment. Customer-specific patch kit names have the following syntax:

```
Product|Version|BL|-C|PatchID|-UniqueID|-MfgDate|.FileType
```

For example, a file named `DUV40F13-C0022300-1875-20000920.tar` contains a customer-specific patch distribution for DIGITAL UNIX 4.0D of BL13 containing patch 223.00 from the unique kit 1875 which was built on September 20, 2000.

The following list describes the attributes currently used in patch kit names:

Product	DU = DIGITAL UNIX T64 = Tru64 UNIX TC = TruCluster
Version	V51 V50A V50 V40G V40F V40D
BL	The release patch base level the customer-specific patch is built against, for example, 13. This field is used by the service provider.
C	Indicates a customer-specific patch.
PatchID	The numeric identifier used to track patches that are relative to the product version patch kit. Patch identifiers have the following format: MajorID Five numeric digits, for example 00223. MinorID Two numeric digits, starting at 0, for example, 00.
UniqueID	The 4-8 place unique kitting ID for that patch, for example, 1875.
-MfgDate	The year, month, and day the kit was built, in the form of YYYYMMDD.
.FileType	.tar

1.4 Patch Process Resources

Compaq provides Web sites to help you with the patching process:

- To obtain the latest patch kit for your operating system and cluster:
<http://ftp1.support.compaq.com/public/unix/>
- To view or print the latest version of the *Patch Kit Installation Instructions* or the *Patch Summary and Release Notes* for a specific patch kit:
<http://www.tru64unix.compaq.com/faqs/publications/patch/>
- To visit Compaq's main support page:
<http://www.compaq.com/support/index.shtml>
- To visit the Tru64 UNIX homepage:
<http://www.tru64unix.compaq.com/>

Patch Management Utility

This chapter introduces you to the `dupatch` utility for installing, removing, and managing patches. It also provides information you must be aware of when installing patches. See Chapter 4 for instructions on installing and removing patches from the Tru64 UNIX operating system and the TruCluster software products.

2.1 Overview of `dupatch`

All Tru64 UNIX and TruCluster software patches are installed, removed, and managed using the `setld`-based `dupatch` utility, which provides you with menus that step you through the various tasks.

For clustered systems running TruCluster Server Version 5.0A or higher, `dupatch` is run in conjunction with the rolling upgrade procedure described in Chapter 5.

The `dupatch` utility also provides a command-line interface from which you can specify options to invoke all functions, except for baselining. The functions have the same operation and definition as the menu-driven interface. For information about using the command-line interface, see Appendix C and the `dupatch(8)` reference page.

With `dupatch`, you can perform the following actions:

- Install and remove all or selected patches.
- View the patch-specific documentation.
- View patch tracking and management information.
- Establish a baseline for systems that had manually installed system files placed on them.

Directions for enabling or disabling patches are provided after the successful installation or removal of all selected patches (for example, kernel rebuild and system reboot).

The `dupatch` utility also manages the system inventory for Tru64 UNIX and TruCluster software patches. This enables patch tracking and management of patch activity such as:

- Tracking current `dupatch`-installed patches.
- Ensuring correct handling of customized system configuration files so that customizations are not lost (for example, `conf.c`). These files are also referred to as system-protected files (`.new.`).
- Validating patch applicability to existing system files (collision detection).

Because `dupatch` manages patch interdependencies, direct `setld` installations and deinstallations (`setld -l -d`) are disabled.

2.2 Log Files Created by `dupatch` Processes

The `dupatch` utility captures patching activities in the following log files:

- `/var/adm/patch/log/session.log`

Every time you run `dupatch` it creates a session log that captures `dupatch` activities. The `session.log` files from the previous 25 sessions are saved. The order is first in, first out, with `session.log.25` as the oldest file.

- `/var/adm/patch/log/Dupatch_load_Date.log`

When you run `dupatch` from the newly untarred kit or from the mounted Tru64 UNIX Patch CD-ROM, `dupatch` determines if the patch distribution contains new patch tools, and loads them if necessary.

This log file has a name similar to this:

`Dupatch_load_2000Jul1:15:43:35.log`

- `/var/adm/patch/log/baseline.log`

When you run the system baselining feature, `dupatch` creates a baseline log. The `session.log` files from the previous 25 sessions are saved. The order is first in, first out, with `baseline.log.25` as the oldest file.

- `/var/adm/patch/log/event.log`

When patches are installed or removed, an event log captures that information. Only one copy of the file is updated each time patches are installed or removed. The information in the patch event log is not available through the `dupatch` user interface, but the log is a text file that you can view with a command such as `more`. The following list describes the types of information an event log provides, although the format and content are subject to change. Example 2-1 shows a typical event log.

DUPATCH_REV>	The revision of <code>dupatch</code> being used
TYPE>	The type of action that was taken; either install or remove
NAME>	The name entered by the user through a <code>dupatch</code> query
USER>	The name of the user performing the action
NOTES>	Notes that were entered by the user through a <code>dupatch</code> query
KITLOC>	The directory from which the patch kit was installed
KITNAME>	The name of the patch kit that was installed
REVERT>	The choice made on whether or not the patch installation is reversible
BACKUP_DIRECTORY>	A pointer to the directory that contains the original files before they were patched
BACKUP_SETUP>	A plain directory; not a mount point or a symbolic link
SUCCEED>	A list of patches for which the action succeeded
FAIL>	A list of patches for which the action failed

Example 2-1: Sample Event Log

```
<RECORD>
DUPATCH_REV>29-01
TYPE>install
NAME>mstone
USER>mstone
DATE>Mon Jul 3 13:03:33 EST 2000
NOTES>Install BL13 patches from CD-ROM
>
KITLOC>/cdrom/DIGITAL_UNIX_V4.0F/patch_kit/DIGITAL_UNIX_V4.0F/kit
KITNAME><DUV40FAS0004-20000613> OSF440
REVERT>Y
BACKUP_DIRECTORY>//var/adm/patch/backup
BACKUP_SETUP>
SUCCEED>OSFPAT00001900440
```

2.3 Patch Installation and Removal

When installing and removing patches, `dupatch` manages the following:

- The applicability of patches
- Patch dependencies
- Patch reversibility
- System inventory changes for patches

2.3.1 Patch Applicability

Patch applicability to the existing system files is done on a file-by-file basis for each patch. This ensures that the installation of a patch will not degrade or crash the system. The installation of a patch is blocked if any system files to be replaced by a patch are not valid predecessors of the patch files.

Patch applicability also enables consistency checking and reporting for the installation of Tru64 UNIX and TruCluster software patches.

In all cases where a patch is blocked, informative messages are provided to assist you in determining how to proceed. Appendix A lists common error messages and suggested corrective actions.

The installation of a patch is blocked if any of the following conditions exist:

- The underlying software product subset is not installed; for example, if the applicable Tru64 UNIX or TruCluster software release subset is not installed.
- The `setld` inventory is inconsistent with the existing system files. This occurs when an operating system or TruCluster software `setld` subset is installed and individual operating system files that are part of that subset are moved, deleted, or replaced.
- If any of the existing system files (files that are targeted to be updated by a patch) have changed and cannot be related to previous versions of the patch. This ensures that operating system files that change due to other explicit system administrator action (for example, layered product patches or non-`dupatch` installed CSP installations) are not inadvertently overwritten. You must take special action, through the baseline feature, to enable patch installation in this situation.

2.3.2 Patch Dependency Management

Selective patch installation and removal is allowed in the Tru64 UNIX and TruCluster software patch kits. When patches are selectively chosen, `dupatch` provides warning messages regarding other dependent patches requiring installation or removal for correct system operation.

The `dupatch` utility manages the dependencies between patches within each product patch kit and across product patch kits. For example, `dupatch` manages the following kinds of dependencies when patches on systems where both Tru64 UNIX Version 4.0F and TruCluster software Version 1.6 are installed or removed:

- Patch dependencies within a product patch kit

If, for example, you choose to install Tru64 UNIX 4.0F Patch 1.00 and it depends upon Tru64 UNIX 4.0F Patch 5.00, which is not already installed or chosen for installation, the `dupatch` preinstallation check will warn you of the dependency and prevent the installation of Tru64 UNIX 4.0F Patch 1.00.

If the patch selections are reversed, `dupatch` will warn you and prevent installation of the chosen patch.

- Patch dependencies across product patch kits

If, for example, you choose to install Tru64 UNIX 4.0F Patch 1.00 and it depends upon TruCluster 1.6 Patch 17.00, which is not already installed or chosen for installation, the `dupatch` preinstallation check will warn you of the dependency and prevent the installation of the Tru64 UNIX 4.0F Patch 1.00.

If the patch selections are reversed, `dupatch` will warn you and prevent installation of the chosen patch.

Note

Even though selective patch installation capabilities exist, Compaq recommends that you install all patches in each kit for Tru64 UNIX and TruCluster software to prevent the occurrence of known and corrected software problems.

2.3.3 Patch Reversibility

Enabling patch reversibility during patch installation allows you to revert the system to its state prior to the installation of a particular patch.

By default, the reversibility installation option is set to enable reversibility for patches. If you choose to make patch subsets nonreversible, then those patches will become nonremovable upon the successful installation of those patches.

Note

Customer-specific patches are forced to be reversible when the CSP kit is manufactured. This forced reversibility overrides the reversibility option provided by `dupatch` during installation.

Patch reversibility is dependent upon saving the existing system files that will be updated by the patch. Saving these files requires the availability of adequate storage space in `/var/adm/patch/backup`, which can be a mount point for a separate disk partition, an NFS mount point, or a symbolic link to another file system. This allows you to configure your system to reduce the impact on system disk space for the `/`, `/usr`, and `/var` partitions.

To further reduce the storage space required to save existing system files, the patch kits for Tru64 UNIX and TruCluster software use the `gzip` utility to save each patch file in a compressed tar image. This results in a file with a name like `filename.tar.gz`.

The `dupatch` utility checks for the required storage space prior to patch installation. Patch installation is prevented if adequate backup space is unavailable.

2.4 Viewing the Patch Documentation

When you select the Patch Documentation item of the main menu, `dupatch` returns a menu that gives you access to different information:

- Problem summaries
Provide brief descriptions of the problems corrected by the patches. You can view the problems corrected by installed patches or by patches available from a specific kit.
- Full descriptions

Provide complete descriptions of the problems corrected by the individual patches. You can view the problem descriptions for installed patches or for patches available from a specific kit.

- **Special Instructions**

These files describe special instructions you need to be aware of for individual patches. You can view the instructions for installed patches or for patches available from a specific kit.

- **Report identifiers**

- **Revision control strings**

The following output shows the Patch Documentation menu and a typical session:

```
Tru64 UNIX Patch Utility (Rev. 29-01)
=====
- This dupatch session is logged in /var/adm/patch/log/session.log

Patch Documentation Menu:
-----

    Installed patches on the system
    1) View problem summaries
    2) View full descriptions
    3) View special instructions
    4) View Problem Report Identifiers
    5) View Revision Control Strings
    Patches in the patch kit
    6) View problem summaries
    7) View full descriptions
    8) View special instructions
    9) View Problem Report Identifiers
    10) View Revision Control Strings
    All (installed and non-installed) patches
    11) View patch problem summaries
    12) View patch full descriptions
    13) View patch special instructions
    14) View Problem Report Identifiers
    15) View Revision Control Strings

    b) Back to Main Menu
    q) Quit

Enter your choice: 6

Patch Documentation Selection Menu:
-----

    1) List Release problem summaries
    2) List Customer Specific problem summaries
    3) List All problem summaries

    b) Back to Documentation Menu
    q) Quit

Enter your choice: 1

Enter path to the top of the patch distribution,
or enter "q" to get back to the menu [/mnt/PatchKit/kit2/patch_kit]: Return

    There may be more patches than can be presented on a single
    screen. If this is the case, you can choose patches screen by screen
    or all at once on the last screen. All of the choices you make will
    be collected for your confirmation before any patches are examined.

- Tru64_UNIX_V5.0A / Cluster Kernel Patches:
    1) Patch 00090.00 - versw command can core dump during rolling upgrade
    2) Patch 00186.00 - Disks can become inaccessible on a cluster node

- Tru64_UNIX_V5.0A / Commands, Shells, & Utilities Patches:
    3) Patch 00015.00 - Fixes a problem that occurs in multibyte locales
    4) Patch 00019
:
:
```

The patch description information and special instructions are conveniently organized in the *Patch Summary and Release Notes* document that is packaged with each kit.

2.5 Viewing Patch Tracking Information

The dupatch utility allows you to view the following patch installation and removal information:

List of dupatch-installed patches on the system

The following sample log shows how you can list the installed dupatch-based customer-specific patches:

```
DIGITAL UNIX Patch Utility (Rev. 29-01)
=====
- This dupatch session is logged in /var/adm/patch/log/session.log

Patch Tracking Menu:
-----
1) List installed patches
2) List installed patch files
3) List patch kit information for installed patches
4) Show Patch History for selected patches
5) Show System Patch History

b) Back to Main Menu
q) Quit Enter your choice: 1

Patch Tracking Selection Menu:
-----

1) List Release Patches
2) List Customer Specific Patches
3) List All Patches

b) Back to Tracking Menu
q) Quit

Enter your choice: 2

Gathering details of relevant patches, this may take a bit of time

Patches installed on the system:
-----
(dependent upon the number of patches you installed, this may take a while)

- DIGITAL_UNIX_V4.0F / Commands, Shells, & Utility Patches:
  Patch C 00045.00 - Fix for QAR 61365

- DIGITAL_UNIX_V4.0F / Security Related Patches:
  Patch C 00043.00 - Fix for SSRT0585U
  Patch C 00052.00 - Fix for SSRT0585U

- DIGITAL_UNIX_V4.0F / X11 Patches:
  Patch C 00044.00 - Fix for QAR 57198

Press RETURN to get back to the Patch Tracking Menu...
```

List of patched files on the system

The following sample log shows how you can list the installed patch files for customer-specific patches:

```
DIGITAL UNIX Patch Utility (Rev. 29-01)
=====
- This dupatch session is logged in /var/adm/patch/log/session.log

Patch Tracking Menu:
-----

1) List installed patches
2) List installed patch files
3) List patch kit information for installed patches
```

- 4) Show Patch History for selected patches
- 5) Show System Patch History

- b) Back to Main Menu
- q) Quit

Enter your choice: 2

Patch Tracking Selection Menu:

- 1) List Release Files
- 2) List Customer Specific Files
- 3) List All Files

- b) Back to Tracking Menu
- q) Quit

Enter your choice: 2

Gathering details of relevant patches, this may take a bit of time

The list of all patched files on your system:

(depending upon the number of patches you installed, this may take a while)

```
./usr/bin/X11/dxpause (DIGITAL_UNIX_V4.0F Patch C 00044.00)
./usr/dt/bin/dtappintegrate (DIGITAL_UNIX_V4.0F Patch C 00043.00)
./usr/dt/bin/dtappintegrate (DIGITAL_UNIX_V4.0F Patch C 00052.00)
./usr/sbin/quotaoff (DIGITAL_UNIX_V4.0F Patch C 00045.00)
./usr/sbin/quotaon (DIGITAL_UNIX_V4.0F Patch C 00045.00)
```

Press RETURN to get back to the Patch Tracking Menu...

List of patch kit information on installed patches

The following sample log shows how you can list the patch kits for the installed patches on your system:

DIGITAL UNIX Patch Utility (Rev. 29-01)

=====

- This dupatch session is logged in /var/adm/patch/log/session.log

Patch Tracking Menu:

- 1) List installed patches
- 2) List installed patch files
- 3) List patch kit information for installed patches
- 4) Show Patch History for selected patches
- 5) Show System Patch History

- b) Back to Main Menu
- q) Quit

Enter your choice: 3

Patch Tracking Selection Menu:

- 1) List Release kit information
- 2) List Customer Specific kit information
- 3) List All kit information

- b) Back to Tracking Menu
- q) Quit

Enter your choice: 3

Gathering details of relevant patches, this may take a bit of time

Patches installed on the system came from following patch kits:

```
- DUV40F1-C0004300-1367-19991104 OSF440
- DUV40F1-C0004400-1372-19991105 OSF440
- DUV40F1-C0004500-1373-19991105 OSF440
```

- DUV40F1-C0005200-1377-19991105 OSF440
- DUV40FAS0001-19990609 OSF440

NOTE

When a patch kit is listed, it does not necessarily mean all patches on that kit are installed on your system.

Press RETURN to get back to the Patch Tracking Menu...

If no patches are installed on the system, you will receive a message similar to the following:

There are no patches installed on your system.

List history for selected patches

The following sample log shows you how to show the patch history for selected patches:

```
DIGITAL UNIX Patch Utility (Rev. 29-01)
=====
- This dupatch session is logged in /var/adm/patch/log/session.log
```

```
Patch Tracking Menu:
-----
```

- 1) List installed patches
- 2) List installed patch files
- 3) List patch kit information for installed patches
- 4) Show Patch History for selected patches
- 5) Show System Patch History

- b) Back to Main Menu
- q) Quit

Enter your choice: 4

```
Patch Tracking Selection Menu:
-----
```

- 1) List Release Patch History for selected patches
- 2) List Customer Specific Patch History for selected patches
- 3) List All Patch History for selected patches

- b) Back to Tracking Menu
- q) Quit

Enter your choice: 3

There may be more patches than can be presented on a single screen. If this is the case, you can choose patches screen by screen or all at once on the last screen. All of the choices you make will be collected for your confirmation before any patches are listed.

- DIGITAL_UNIX_V4.0F / Commands, Shells, & Utility Patches:
 - 1) Patch 00020.00 - Cannot Use ipcs Cmd On System Not Booted With vmunix
 - 2) Patch 00025.00 - Fix For ksh, file, tail, nawk, awk, And pax
 - 3) Patch 00032.00 - mkdir -p Not Returning Error
 - 4) Patch 00038.00 - quotaon Returns Incorrect Error Status
 - 5) Patch 00040.00 - binmail Delivers Only Partial Messages
 - 6) Patch 00041.00 - Fix For nroff Y2K Problem
 - 7) Patch 00045.00 - Fix For sort -i Abort Problem
 - 8) Patch 00047.00 - vi Puts Server Port INTO PASSALL MODE
 - 9) Patch C 00045.00 - Fix for QAR 61365
 - 10) Patch C 00046.00 - Fix for TLAQ90041

- DIGITAL_UNIX_V4.0F / Common Desktop Environment (CDE) Patches:
 - 11) Patch 00005.00 - dtfile May Leave Defunct Processes

- DIGITAL_UNIX_V4.0F / Filesystem Patches:
 - 12) Patch 00039.00 - System Panic When Accessing ISO9660 Format CDROM
 - 13) Patch 00054.00 - AdvFS volumes Not Setting I/O Byte Transfer Size

- DIGITAL_UNIX_V4.0F / Hardware Configuration Patches:
 - 14) Patch 00018.00 - Resolves Corrupt EV6 Binary Error Log Entries

- 15) Patch 00072.00 - Updates FORE ATM (lfa) driver to Rev. V1.0.14
- DIGITAL_UNIX_V4.0F / I/O Device Handling Patches:
 - 16) Patch 00053.00 - Fix For spo_process_rsp Panic
 - 17) Patch 00056.00 - KZPCA Host Bus Adapter May Hang
 - 18) Patch 00058.00 - Additional Error Detection for FC Driver
 - 19) Patch 00060.00 - Fix For spo_misc_errors errlog Entries
 - 20) Patch 00073.00 - Problems With Driver Support For ELSA Gloria Synergy
- DIGITAL_UNIX_V4.0F / Kernel Patches:
 - 21) Patch 00016.00 - Fixes Kernel Memory Fault Caused By SMP Race
 - 22) Patch 00034.00 - Fix For kio Subsystem Panic
 - 23) Patch 00044.00 - Fix For Kernel Memory Fault
 - 24) Patch 00055.00 - New Functionality To Detect Unlinked Reference Files
- DIGITAL_UNIX_V4.0F / Library Patches:
 - 25) Patch 00046.00 - Shared Library Fix For curses-based Applications
 - 26) Patch 00048.00 - DECThreads Library Fix
- DIGITAL_UNIX_V4.0F / Network Patches:
 - 27) Patch 00008.00 - Fix For POP Mail Handler
 - 28) Patch 00017.00 - Fix For BIND Server
 - 29) Patch 00021.00 - Fix For XTI And DECnet/OSI
 - 30) Patch 00022.00 - automount Daemon Hangs
 - 31) Patch 00043.00 - Fix For XTI Over TCP/IP
 - 32) Patch 00057.00 - Fixes Several NFS Problems
 - 33) Patch 00059.00 - Characters Randomly Repeated Using tip
- DIGITAL_UNIX_V4.0F / Security Related Patches:
 - 34) Patch 00002.00 - Security (SSRT0571U)
 - 35) Patch 00003.00 - Security (SSRT0585U)
 - 36) Patch 00004.00 - Security (SSRT0580U)
 - 37) Patch 00006.00 - Security (SSRT0600U)
 - 38) Patch 00011.00 - Security (SSRT0596U)
 - 39) Patch 00012.00 - Security (SSRT0567U)
 - 40) Patch 00028.00 - Security (SSRT0556U)
 - 41) Patch 00031.00 - Security (SSRT0563U)
 - 42) Patch C 00043.00 - Fix for SSRT0585U
 - 43) Patch C 00052.00 - Fix for SSRT0585U
- DIGITAL_UNIX_V4.0F / X11 Patches:
 - 44) Patch 00007.00 - dxcalendar Reminder Displays Through dxpause Screen
 - 45) Patch 00062.00 - Fix For Motif Drag-and-Drop
 - 46) Patch 00063.00 - xfs Fails With Segmentation Fault
 - 47) Patch 00074.00 - Fix For ELSA Gloria Synergy Graphics Board
 - 48) Patch C 00044.00 - Fix for QAR 57198

Or you may choose one of the following options:

- 49) ALL of the above
- 50) CANCEL selections and redisplay menus
- 51) EXIT without listing any patches

Enter your choices or press RETURN to redisplay menus.

Choices (for example, 1 2 4-6): **49**

You are listing the following patches:

- DIGITAL_UNIX_V4.0F / Commands, Shells, & Utility Patches:
 - Patch 00020.00 - Cannot Use ipcs Cmd On System Not Booted With vmunix
 - Patch 00025.00 - Fix For ksh, file, tail, nawk, awk, And pax
 - Patch 00032.00 - mkdir -p Not Returning Error
 - Patch 00038.00 - quotaon Returns Incorrect Error Status
 - Patch 00040.00 - binmail Delivers Only Partial Messages
 - Patch 00041.00 - Fix For nroff Y2K Problem
 - Patch 00045.00 - Fix For sort -i Abort Problem
 - Patch 00047.00 - vi Puts Server Port INTO PASSALL MODE
 - Patch C 00045.00 - Fix for QAR 61365
 - Patch C 00046.00 - Fix for TLAQ90041
- DIGITAL_UNIX_V4.0F / Common Desktop Environment (CDE) Patches:
 - Patch 00005.00 - dtfile May Leave Defunct Processes
- DIGITAL_UNIX_V4.0F / Filesystem Patches:
 - Patch 00039.00 - System Panic When Accessing ISO9660 Format CDROM
 - Patch 00054.00 - AdvFS volumes Not Setting I/O Byte Transfer Size
- DIGITAL_UNIX_V4.0F / Hardware Configuration Patches:
 - Patch 00018.00 - Resolves Corrupt EV6 Binary Error Log Entries
 - Patch 00072.00 - Updates FORE ATM (lfa) driver to Rev. V1.0.14

- DIGITAL_UNIX_V4.0F / I/O Device Handling Patches:
 - Patch 00053.00 - Fix For spo_process_rsp Panic
 - Patch 00056.00 - KZPCA Host Bus Adapter May Hang
 - Patch 00058.00 - Additional Error Detection for FC Driver
 - Patch 00060.00 - Fix For spo_misc_errors errlog Entries
 - Patch 00073.00 - Problems With Driver Support For ELSA Gloria Synergy
- DIGITAL_UNIX_V4.0F / Kernel Patches:
 - Patch 00016.00 - Fixes Kernel Memory Fault Caused By SMP Race
 - Patch 00034.00 - Fix For kio Subsystem Panic
 - Patch 00044.00 - Fix For Kernel Memory Fault
 - Patch 00055.00 - New Functionality To Detect Unlinked Reference Files
- DIGITAL_UNIX_V4.0F / Library Patches:
 - Patch 00046.00 - Shared Library Fix For curses-based Applications
 - Patch 00048.00 - DECthreads Library Fix
- DIGITAL_UNIX_V4.0F / Network Patches:
 - Patch 00008.00 - Fix For POP Mail Handler
 - Patch 00017.00 - Fix For BIND Server
 - Patch 00021.00 - Fix For XTI And DECnet/OSI
 - Patch 00022.00 - automount Daemon Hangs
 - Patch 00043.00 - Fix For XTI Over TCP/IP
 - Patch 00057.00 - Fixes Several NFS Problems
 - Patch 00059.00 - Characters Randomly Repeated Using tip
- DIGITAL_UNIX_V4.0F / Security Related Patches:
 - Patch 00002.00 - Security (SSRT0571U)
 - Patch 00003.00 - Security (SSRT0585U)
 - Patch 00004.00 - Security (SSRT0580U)
 - Patch 00006.00 - Security (SSRT0600U)
 - Patch 00011.00 - Security (SSRT0596U)
 - Patch 00012.00 - Security (SSRT0567U)
 - Patch 00028.00 - Security (SSRT0556U)
 - Patch 00031.00 - Security (SSRT0563U)
 - Patch C 00043.00 - Fix for SSRT0585U
 - Patch C 00052.00 - Fix for SSRT0585U
- DIGITAL_UNIX_V4.0F / X11 Patches:
 - Patch 00007.00 - dxcalendar Reminder Displays Through dxpouse Screen
 - Patch 00062.00 - Fix For Motif Drag-and-Drop
 - Patch 00063.00 - xfs Fails With Segmentation Fault
 - Patch 00074.00 - Fix For ELSA Gloria Synergy Graphics Board
 - Patch C 00044.00 - Fix for QAR 57198

Is this correct? (y/n): y

Patch History for selected patches

Date	Time	Prd	Patch	Operation	KitName
1999/11/05	13:13	DU	Patch C 00052.00	Installed	DUV40F1-C0005200-1377-19991105
1999/11/05	12:56	DU	Patch C 00046.00	Removed	
1999/11/05	10:53	DU	Patch C 00046.00	Installed	DUV40F1-C0004600-1374-19991105
1999/11/05	10:50	DU	Patch C 00045.00	Installed	DUV40F1-C0004500-1373-19991105
1999/11/05	10:48	DU	Patch C 00044.00	Installed	DUV40F1-C0004400-1372-19991105
1999/11/05	10:43	DU	Patch C 00043.00	Installed	DUV40F1-C0004300-1367-19991104
1999/11/04	10:11	DU	Patch 00074.00	Installed	DUV40FAS0001-19990609
1999/11/04	10:11	DU	Patch 00073.00	Installed	DUV40FAS0001-19990609
1999/11/04	10:11	DU	Patch 00072.00	Installed	DUV40FAS0001-19990609
1999/11/04	10:11	DU	Patch 00063.00	Installed	DUV40FAS0001-19990609
1999/11/04	10:11	DU	Patch 00062.00	Installed	DUV40FAS0001-19990609
1999/11/04	10:11	DU	Patch 00060.00	Installed	DUV40FAS0001-19990609
1999/11/04	10:11	DU	Patch 00059.00	Installed	DUV40FAS0001-19990609
1999/11/04	10:11	DU	Patch 00058.00	Installed	DUV40FAS0001-19990609
1999/11/04	10:11	DU	Patch 00057.00	Installed	DUV40FAS0001-19990609
1999/11/04	10:11	DU	Patch 00056.00	Installed	DUV40FAS0001-19990609
1999/11/04	10:11	DU	Patch 00055.00	Installed	DUV40FAS0001-19990609
1999/11/04	10:11	DU	Patch 00054.00	Installed	DUV40FAS0001-19990609
1999/11/04	10:11	DU	Patch 00053.00	Installed	DUV40FAS0001-19990609
1999/11/04	10:11	DU	Patch 00048.00	Installed	DUV40FAS0001-19990609
1999/11/04	10:11	DU	Patch 00047.00	Installed	DUV40FAS0001-19990609
1999/11/04	10:11	DU	Patch 00046.00	Installed	DUV40FAS0001-19990609
1999/11/04	10:11	DU	Patch 00045.00	Installed	DUV40FAS0001-19990609
1999/11/04	10:11	DU	Patch 00044.00	Installed	DUV40FAS0001-19990609
1999/11/04	10:11	DU	Patch 00043.00	Installed	DUV40FAS0001-19990609
1999/11/04	10:11	DU	Patch 00041.00	Installed	DUV40FAS0001-19990609
1999/11/04	10:11	DU	Patch 00040.00	Installed	DUV40FAS0001-19990609
1999/11/04	10:11	DU	Patch 00039.00	Installed	DUV40FAS0001-19990609
1999/11/04	10:11	DU	Patch 00038.00	Installed	DUV40FAS0001-19990609
1999/11/04	10:11	DU	Patch 00034.00	Installed	DUV40FAS0001-19990609
1999/11/04	10:11	DU	Patch 00032.00	Installed	DUV40FAS0001-19990609
1999/11/04	10:11	DU	Patch 00031.00	Installed	DUV40FAS0001-19990609

```

1999/11/04 10:11 DU Patch 00028.00 Installed DUV40FAS0001-19990609
1999/11/04 10:11 DU Patch 00025.00 Installed DUV40FAS0001-19990609
1999/11/04 10:11 DU Patch 00022.00 Installed DUV40FAS0001-19990609
1999/11/04 10:11 DU Patch 00021.00 Installed DUV40FAS0001-19990609
1999/11/04 10:11 DU Patch 00020.00 Installed DUV40FAS0001-19990609
1999/11/04 10:11 DU Patch 00018.00 Installed DUV40FAS0001-19990609
1999/11/04 10:11 DU Patch 00017.00 Installed DUV40FAS0001-19990609
1999/11/04 10:11 DU Patch 00016.00 Installed DUV40FAS0001-19990609
1999/11/04 10:11 DU Patch 00012.00 Installed DUV40FAS0001-19990609
1999/11/04 10:11 DU Patch 00011.00 Installed DUV40FAS0001-19990609
1999/11/04 10:11 DU Patch 00008.00 Installed DUV40FAS0001-19990609
1999/11/04 10:11 DU Patch 00007.00 Installed DUV40FAS0001-19990609
1999/11/04 10:11 DU Patch 00006.00 Installed DUV40FAS0001-19990609
1999/11/04 10:11 DU Patch 00005.00 Installed DUV40FAS0001-19990609
1999/11/04 10:11 DU Patch 00004.00 Installed DUV40FAS0001-19990609
1999/11/04 10:11 DU Patch 00003.00 Installed DUV40FAS0001-19990609
1999/11/04 10:11 DU Patch 00002.00 Installed DUV40FAS0001-19990609

```

Press RETURN to get back to the Patch Tracking Menu...

2.6 Handling Manually Installed System Files with Baselining

The `dupatch` baselining process looks at the files installed on a system, compares them to the files it expects to find, and prevents the installation of any patch files that might cause an incompatibility among system files. This section provides an overview of the baselining process. See Section 4.7 for instructions on setting a baseline.

Unknown system files occur when the files are replaced through non-standard system file installation methods such as the following:

- The manual installation of system files such as system administration customizations or manually installed patches
- Using the `setld` utility to install system files from user-derived `setld` subsets
- Using the `setld` utility to install files for layered software products
- Changes that result from weak system control programs (usually named `file.scp`)

Missing system files result from a root user manually deleting system files that were installed during a standard full or update installation procedure or with the `dupatch` utility. The file is removed but the system inventory records are still in place.

Unknown and missing system files will block patch installations until you take corrective action. However, before taking any action, it is important that you understand the origin of the unknown system files or why missing files are no longer present on your system. Changing the system without this knowledge could leave your operating system or layered product software environment in an inconsistent and nonoperational state.

For example, a file whose origin is unknown that is blocking the installation of a release patch could be part of a manually installed customer-specific patch that is not contained in the release patch. Removing that one file will disrupt the operation of your CSP and possibly the operation of the system.

When you run the `dupatch` system baseline feature, a baseline log file is captured in `/var/adm/patch/log/baseline.log`. (See Section 2.2 for information about log files.)

You may need to set the patch baseline for your system if you have manually installed system files or if `dupatch` informs you that patch installation is blocked by system files that are missing or unknown.

Warning

Misusing the baselining feature can cause serious problems with your system. It is important to be aware of the following potential problems:

- Enabling baselining to override its applicability checking could leave your operating system or layered product software environment in an inconsistent and nonoperational state.
 - Enabling baselining to update your system sets a new baseline for your operating system or TruCluster software environments. You will not be able to revert to the previous system state for manually installed patches that were marked as installed by baselining. Compaq recommends that you backup your /, /usr, and /var file systems before enabling system updates through dupatch baselining.
-

Baselining is divided into five phases that provide system information and optionally allow you to take actions that change the patch baseline of your system. You can run through all phases of baselining to get the system analysis without enabling changes to your system. You can run baselining in multiuser mode when you are the root user.

2.6.1 Phase 1 – System Evaluation

The primary goal of Phase 1 is to evaluate your system relative to the patch kit that is being installed. However, the baselining feature will report all missing and unknown files to assist you in better understanding the state of the changed files on the system.

The rest of the baselining phases use the information gathered in Phase 1 to inform you of any installation conflicts for patches contained in the patch kit.

The amount of time needed to evaluate the state of the system varies greatly depending on the size of the patch kit, the version of the software product, and the performance of the system.

2.6.2 Phase 2 – Patch Layered Product Conflicts

Phase 2 reports information for patches whose installation is blocked by system files that were installed by layered products.

Baselining will not override layered product patch installation collision detection mechanisms as it is likely that the layered product or application customizations are not contained in the patch. Installation of the patch in this situation would leave the layered product or application nonoperational.

To resolve this situation, contact your layered product or application Customer Services or Compaq Services if you have purchased Business Critical Services.

2.6.3 Phase 3 – Identifying Manually Installed Patches

Phase 3 reports patches that exactly match existing files on your system that are not marked as *installed* by the system inventory. For example, in earlier kits, TruCluster software release patches were installed manually. This phase will report any manually installed release patch files that exactly match a patch contained in the current dupatch-based TruCluster software patch kit.

You can optionally enable dupatch to mark these patches as *installed*, which involves copying valid setld database information to your system. The dupatch

utility will copy the appropriate `patch_subset.inv`, `patch_subset.scp`, and `patch_subset.ctrl` files into place for these patches.

If you do not want to enable `dupatch` to mark these patches as installed, you must manually remove the patched system files so the normal `dupatch` installation can install the affected patches.

2.6.4 Phase 4 – Handling Missing or Unknown Files on Your System

Phase 4 reports information about any unknown and missing system files. These files should be considered as intentional customizations which are important to correct system operation. As such, care should be taken to understand why system files have been customized.

Before enabling any patch installations in Phase 5, review the information reported in Phase 4 against your log of manual system changes to ensure you understand why the system was intentionally customized and to determine how to proceed. In some cases you may need to remove customizations to ensure proper system operation.

To assist you in identifying the origin of changed system files, baselining now reports all missing or unknown system files.

The following sections provide general guidance for some of the normal situations where system files are intentionally customized manually.

2.6.4.1 Manually Installed Customer-Specific Patches

In response to a problem report, you may receive a manually installable customer-specific patch from your service provider. Customer-specific patches are a set of compatible files that deliver fixes to the problems you reported. Additionally, the patch may include instrumentation necessary for debugging purposes.

If your system was customized through a manual installation of customer-specific patches, you must ensure that the fixes delivered by the customer-specific patches are included in the current release patch kit before enabling `dupatch` to overwrite any unknown or missing system files.

Warning

If you are unsure if the customer-specific patch is included in the official patch kit, do not enable `dupatch` to overwrite the manually installed customer-specific patch. If you must install the official patch being blocked by a customer-specific patch, contact your service provider for assistance.

If the unknown or missing files are attributable to manually installed customer-specific patches that are included in a release patch kit, perform one of the following steps:

- If all customer-specific patch files are overwritten by the patches noted in Phase 5, you can safely enable `dupatch` to overwrite applicable missing or unknown system files.
- If some of the customer-specific patch files are not overwritten by the patches noted in Phase 5, contact your service provider for assistance.

To determine if your customer-specific patch is included in the release patch kit, refer to the *Patch Summary and Release Notes* for the release patch kit. See Section 1.4 for information about viewing patch documentation on the Web.

2.6.4.2 Manually Installed Release Patches

For some software products, manual installation has been the practiced method for patch installation. For example, until recently, patches for TruCluster software had been manually installed.

You must determine whether the fixes delivered by the manually installed release patches are included in the current `dupatch`-based release patch kit before enabling `dupatch` to overwrite any unknown or missing system files. Once you have made this determination, proceed as follows:

- If the unknown or missing system files are attributable to the manual installation of release patches and those patches are included in the current `dupatch`-based release patch kit, you can safely enable `dupatch` to overwrite applicable missing or unknown system files.
- If the unknown or missing system files are not attributable to manual installation, you must understand the origin of the unknown or missing system files by reviewing the information reported in Phase 4 against your log of manual system changes to ensure you understand why the system was intentionally customized, and to determine how to proceed.

2.6.4.3 User Customized Commands and Utilities

Periodically, system administrators of production computing environments replace Tru64 UNIX commands or utilities with freeware or their own customized version of the command or utility. In this situation you must ensure the unknown or missing files are attributable to intentional replacement of commands, utilities, or other system files.

If the unknown or missing system files are attributable to the replacement of commands, utilities, or other system files with customized versions for the computing environment, do not enable `dupatch` to overwrite the manually installed customized files. Instead, determine the reason for the customization and then decide how to proceed.

2.6.5 Phase 5 – Enabling `dupatch` to Overwrite Changed System Files

Phase 5 reports patches that are blocked due to missing or unknown system files, and optionally allows you to override the `dupatch` conflict management mechanism so the `dupatch`-based patch may be installed.

For each patch that is blocked by a missing or unknown system file you are presented with the following information:

- Software product identifier
- Patch category
- Patch identifier
- Patch subset description
- The list of unknown and missing files that block the patch installation
- The origin of all other files contained in the patch

Optionally, you can enable `dupatch` to override the collision detection mechanisms and install any of these patches. Use the missing and unknown file information presented in Phase 4 and your system administration log of manual system changes to make Phase 5 patch installation enabling decisions.

Warning

Do not enable `dupatch` to install patches over missing or unknown system files for which you do not know the origin. Doing so may leave your operating system and TruCluster software environment in an inconsistent and nonoperational state.

Issues and Restrictions

This chapter provides information you must be aware of when installing or removing patches. Be sure to check the *Patch Summary and Release Notes* document of the kit you are installing for any issues and restrictions that pertain to that installation.

3.1 When Single-User Mode Is Recommended

Although you can install patches in multiuser mode, Compaq recommends that you bring down your system to single-user mode when installing patches that affect the operation of the Tru64 UNIX operating system or the product you are patching. If your system must remain in multiuser mode, it is recommended that you apply the patches when the system is as lightly loaded as possible.

There are no restrictions on performing patch selection and preinstallation checking in multiuser mode. Patch removals can only be done in single-user mode.

3.2 Impact on System Upgrades to Later Versions of Tru64 UNIX

In the presence of patches or layered products, certain procedures used to upgrade a system to a later version of Tru64 UNIX can lead to inconsistencies among operating system and layered product objects. For more information see Appendix D for general Tru64 UNIX system upgrade information.

Note

After successfully installing a new version of Tru64 UNIX, you should obtain and install the latest patch kit that is applicable to that version of Tru64 UNIX.

3.3 Patching a System Prior to Creating a Cluster

If you have not yet created your cluster, you can save time by patching your system first. The sequence of events when patching the initial installation of Tru64 UNIX is as follows:

1. Install and configure the Tru64 UNIX operating system.
2. Use the `setld` command to install the TruCluster software kit. If the TruCluster software kit is not loaded before the patch operation, patches for TruCluster software will not be loaded.
3. Patch the system.
4. Use the `clu_create` command to create the single-member cluster.

Note

Once you have completed step 4 and created your cluster, do not remove patches installed during step 3. To do so may cause your system to become unusable if `dupatch` replaces certain patched files with ones that are not cluster enabled. If you have identified

patches that you want to remove, contact your Compaq service representative to find out if you can do so safely.

See the Tru64 UNIX *Installation Guide* for information about installing the operating system and the TruCluster Server *Software Installation* manual for information about creating your cluster.

3.4 Restriction on Loading New dupatch Tools from the Command Line

The new patch tools cannot be loaded using the `delete` command on the command line. Doing that will cause the following error to be displayed:

```
product_map does not exist or is empty, Cannot continue.
```

If you want to use `delete` from the command line, you can first load the new tools, without affecting the system, by issuing the `install` command with the `-precheck_only` option. This will load the tools and not cause changes to your system.

3.5 No RIS or DMS Installation of Patches

Remote Installation Services (RIS) and Dataless Management Services (DMS) installations of patches are not supported. However, the patch kit installation mechanism does support network installation via NFS.

3.6 Direct setld Installation and Removal of Patch Subsets Is Not Allowed

You can install and remove Tru64 UNIX and TruCluster software patches only through `dupatch`. You cannot directly install or reinstall the patch subsets with `setld`. This ensures that patch tracking and management are not compromised.

3.7 Limitation for /var/adm/patch/backup Directory Handling

The patch management utility assumes there is one `/var/adm/patch/backup` directory per system. It does not handle placement of archived original files for multiple systems in one directory.

3.8 Do Not Enter Ctrl/c During Installation Phase

Do not enter a `Ctrl/c` command during the installation phase of the patch kit.

Caution

As with any system update, entering a `Ctrl/c` during this phase will leave the operating system software environment in an inconsistent and nonrecoverable state.

3.9 Removing Patches Containing Customized Files

If you use `dupatch` to remove a patch containing a customized file, messages similar to the following may appear in the session log file, `/var/adm/patch/log/session.log`:

```
Customization found in /<path>/filename
```

```
Before the backup was restored, we had saved a copy of this file in:
```

```
<path>/filename.PreDel_OSPPATyyy
```

Please compare `<path>/filename` with this saved copy.

If there are extra customizations you want to keep, you would need to merge them into `<path>/filename` manually.

`<path>/filename.PreDel_OSFPATyyy`
can be removed afterwards.

In this message, `<path>/filename` is the full path of the customized file being replaced, and `yyy` is the patch subset ID number. This message warns you to examine the removed patch for any customized files it may contain. In order to keep those customizations, you will have to manually add them.

The following are examples of such customized files:

- `/usr/var/spool/cron/crontabs/root`
- `/etc/sysconfigtab`
- `/usr/var/adm/sendmail/sendmail.cf`

3.10 Release Patches Do Not Automatically Supersede CSPs

Currently, release patches cannot automatically supersede `dupatch`-based customer-specific patches (CSPs). Any release patch blocked by a CSP will result in a `dupatch` message. See Section A.1.7 for more information.

Patch Installation and Removal Instructions

This chapter provides instructions for installing and removing patches from the Tru64 UNIX operating system and the TruCluster software products.

Note

Chapter 5 describes the procedure for patching a TruCluster Server Version 5.0A or higher cluster using the rolling upgrade function. If you are patching your system with that process, follow the steps described in Chapter 5, and then return to this chapter for help in running the `dupatch` utility.

If you have not yet created your cluster, follow the steps in Section 3.3.

4.1 Summary of Steps for Using Patch Kits

The following list summarizes the steps necessary to install patches on your system. The referenced sections provide the full details. Compaq recommends that you familiarize yourself with these steps before attempting to install Tru64 UNIX or TruCluster software patch kits.

1. Review the list of issues and restrictions in Chapter 3 and in the *Patch Summary and Release Notes* document that comes with your patch kit.
2. Prepare your system for patch installation (Section 4.2).
3. Make the patch distribution available to your system (Section 4.3).
4. Load any new patch tools provided with the new patch distribution (Section 4.4).
5. Set the patch baseline if system files have been changed manually (Section 4.7).
6. Perform patch preinstallation check (Section 4.6).
7. Install patches mode (Section 4.8).
8. Rebuild the kernel and reboot the system (Section 4.9).

4.2 Preparing to Install Patches

Before using the latest Tru64 UNIX or TruCluster software patch distribution, make sure that your system meets the required criteria and that you perform certain preinstallation tasks, as described in the following list:

- Make sure you have the correct software
You must have the appropriate versions of Tru64 UNIX and TruCluster software installed on your system to install patch kits. There are separate patch kits for each version of the Tru64 UNIX and TruCluster software products. The patch kits will not install on any other version of those products. For example, the Tru64 UNIX 5.0 patch kit will only install on Tru64 UNIX Version 5.0.
- Back up your system
It is recommended that you backup your `/`, `/usr`, and `/var` file systems prior to installing patches or baselining your system.

- Make sure you have enough storage space
Refer to the *Patch Summary and Release Notes* for the required storage space.

4.3 Making the Patch Distribution Available

Tru64 UNIX and TruCluster software patches are available from the Compaq Services Web page or the Tru64 UNIX Patch CD-ROM. Once you have obtained the patch distributions use the following instructions to make the patch kits available to the system targeted for update:

1. Ensure the installation prerequisites described in Section 4.2 are met.
2. If you are using patch tar files obtained via the Internet from Compaq (see Section 1.4), you must expand the tar file to access the patch kits. The tar file can be expanded on any NFS mountable file system. For example:

```
# /usr/sbin/mount /dev/disk/dsk3g /PatchKits
# cd /PatchKits
# mkdir kit2
```

Copy or ftp the patch kit to /PatchKits/kit2. For example:

```
# cp T64V50AS0002-20000324.tar /PatchKits/kit2
# script untar.log
# tar -xpvf T64V50AS0002-20000324.tar
# Ctrl/d
```

Or alternatively:

```
# exit
```

View the untar.log for errors or failures untarring the file.

Once the tar file has been expanded, make the file system containing the patch kits available to the system being patched. For example, on the system you are patching do the following:

```
# /usr/sbin/mount /PatchKits/kit2@hostname /mnt
```

3. If you are using the Tru64 UNIX Patch CD-ROM you need only mount the CD-ROM, as the information on the CD-ROM is already expanded. For example:

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

4.4 Loading New Patch Tools

The patch kits deliver updated patch tools to your system. It is important that you run the dupatch utility located in the /patch_kit directory every time you obtain new patch tar files or a new Tru64 UNIX Patch CD-ROM.

After you have made the patch kits available to the system being patched, run dupatch as follows:

```
# /mnt/PatchKits/kit2/patch_kit/dupatch
```

If new patch tools are available they will be loaded and you will see messages similar to the following:

```
* A new version of patch tools required for patch management
  is now being installed on your system.

* Tools updated, invoking the updated Patch Utility...
```

The dupatch utility saves information on the tools that have been loaded to the log file /var/adm/patch/log/Dupatch_load_date.log. (See Section 2.2 for information about log files.)

4.5 Invoking the Main dupatch Menu

Once the new tools have been loaded, dupatch prompts you for the path to the patch kit files. After you specify the path (or press Return if the patch kit is your current directory) you will see the main menu. For example:

```
Enter path to the top of the patch distribution,
or enter "q" to get back to the menu : /mnt/PatchKit/kit2/patch_kit

Tru64 UNIX Patch Utility (Rev. 29-01)
=====
- This dupatch session is logged in /var/adm/patch/log/session.log

Main Menu:
-----

1) Patch Installation
2) Patch Deletion

3) Patch Documentation
4) Patch Tracking

5) Patch Baseline Analysis/Adjustment

h) Help on Command Line Interface

q) Quit

Enter your choice:
```

4.6 Performing Patch Preinstallation Check Instructions

To minimize system down time, you can perform the preinstallation check on a system running in multiuser mode, even if you will perform the actual installation in single-user mode.

Note that the menu you see will differ slightly, depending upon whether you log in from a pseudo-terminal or a system console. The following steps assume you logged in from a pseudo-terminal.

1. Log in as root.
2. From the main dupatch menu, enter 1 at the Enter your choice prompt:

```
Tru64 UNIX Patch Utility (Rev. 29-01)
=====
- This dupatch session is logged in /var/adm/patch/log/session.log

Main Menu:
-----

1) Patch Installation
2) Patch Deletion

3) Patch Documentation
4) Patch Tracking

5) Patch Baseline Analysis/Adjustment

h) Help on Command Line Interface

q) Quit

Enter your choice: 1
```

3. The program responds with the Patch Installation Menu. Enter 1 at the Enter your choice prompt:

```
Tru64 UNIX Patch Utility (Rev. 29-01)
=====
- This dupatch session is logged in /var/adm/patch/log/session.log

Patch Installation Menu:
-----
```

- 1) Pre-Installation Check ONLY
- 2) Check & Install in single-user mode w/ network services
- 3) Check and Install in Multi-User mode

- b) Back to Main Menu
- q) Quit

Enter your choice: 1

Checking patch kit for transmission errors during download...

Finished Checking patch kit checksums

Gathering patch information...

(depending upon the size of the patch kit, this may take awhile)

*** Start of Special Instructions ***

*** There are NO Special Instructions ***

Press RETURN to proceed...

4. You have the option to make the patches reversible so you can revert the system to its state prior to the installation of a patch. The `dupatch` utility lists the following information. Press Return at the prompt to make the patches reversible. This is the recommended action.

To Make Patches Reversible - PLEASE READ THE FOLLOWING INFORMATION:

- You have the option to make the patches reversible so you can revert the system to its state prior to the installation of a patch.
- Reversibility is achieved by compressing and saving a copy of the files being replaced by the patches. These files would be restored to the system if you choose to delete a patch.
- If you choose to make patches NON-reversible, then the system cannot be restored to the state prior to the installation of a patch; you will not be able to delete the patches later.
- This patch kit may force a small set of patches to be reversible to ensure your upgrades to future versions of Tru64 UNIX are successful. The Patch Utility will make those patches reversible automatically.

Refer to the Release Notes / Installation Instructions provided with this patch kit.

Do you want the patches to be reversible? [y]: **Return**

By default, the backup copies of the installed patches will be saved in `"/var/adm/patch/backup"`.

If you have limited space in `/var`, you may want to make the backup directory the mount point for a separate disk partition, an NFS mounted directory, or a symbolic link to another file system.

You must ensure the backup directory is configured the same way during any patch removal operations.

Your current setup of `"/var/adm/patch/backup"` is:

* A plain directory (not a mount point or a symbolic link)

Do you want the patches to be reversible? [y]: **Return**

By default, the backup copies of the installed patches will be saved in `/var/adm/patch/backup`. If you have limited space in `/var`, you may want to make the backup directory the mount point for a separate disk partition, an NFS mounted directory, or a symbolic link to another file system.

5. Answer yes when asked if you want to perform the preinstallation check with this setup:

```
Do you want to proceed with the pre-installation check with this setup? [y]:
```

6. The program then lists the patches that apply to your system. Compaq recommends that you install all of these patches. For example:

The patches listed below are optional:

```
There may be more optional patches than can be presented on a single
screen. If this is the case, you can choose patches screen by screen
or all at once on the last screen. All of the choices you make will
be collected for your confirmation before any patches are installed.
```

```
- Tru64_UNIX_V5.0A / Cluster Kernel Patches:
  1) Patch 00090.00 - versw command can core dump during rolling upgrade
  2) Patch 00186.00 - Disks can become inaccessible on a cluster node

- Tru64_UNIX_V5.0A / Commands, Shells, & Utilities Patches:
  3) Patch 00015.00 - Fixes a problem that occurs in multibyte locales
  4) Patch 00019.00 - Fixes a problem with the grep command

:
94) Patch 00152.00 - Memory leak when creating and destroying widgets
95) Patch 00174.00 - Fix for memory leaks in Xlib
96) Patch 00176.00 - Memory leaks occur when creating widgets
97) Patch 00180.00 - Fixes memory leak in libXm
98) Patch 00182.00 - libXm memory leak when creating widgets
```

Or you may choose one of the following options:

```
99) ALL of the above
100) CANCEL selections and redisplay menus
101) EXIT without installing any patches
```

Enter your choices or press RETURN to redisplay menus.

```
Choices (for example, 1 2 4-6): 99
```

You are installing the following optional patches:

The program lists the patches you have selected, asks you to confirm the selection, and runs the preinstallation check if you answer yes:

```
Is this correct? (y/n): y
```

```
Checking patch prerequisites and patch file applicability...
(dependent upon the number of patches you select, this may take awhile)
```

```
*** You have selected 98 patches ***
```

```
Checking system space needed for patch installation and backup...
```

```
*****
```

```
Pre-Installation Check COMPLETED with the following results:
```

```
98 patches passed Pre-Installation Check
```

```
0 patches failed Pre-Installation Check
```

```
*****
```

```
Press RETURN to continue...
```

7. The program lists any patches that fail the prerequisite and applicability checks, and asks how you want to proceed. You have the following choices:

Select the action you'd like to take:

- 1) proceed with the patches that passed the check
- 2) select patches again
- 3) go back to the previous menu

If the patches are prevented from being installed because of missing or unknown system files, set the system patch baseline, as described in Section 4.7. If patches are prevented from being installed because dependent patches were not selected, choose the `select patches again` item and add the required patches that are missing.

Otherwise, proceed to the installation phase, as described in Section 4.8.

4.7 Setting the System Patch Baseline

If your system was customized as a result of the manual installation of any system files, you will need to set the patch baseline for your system. If you do not need to set the patch baseline for your system, proceed to Section 4.8.

Note

You will need to be familiar with the concepts of baselining in Section 2.6 before performing the steps in this section.

You can set the patch baseline in multiuser mode, thereby minimizing system down time.

The following steps show you how to set a patch baseline.

1. Log in as root.
2. Run `dupatch` and enter 5 in response to the `Enter your choice` prompt of the Main Menu:

```
Tru64 UNIX Patch Utility (Rev. 29-01)
=====
- This dupatch session is logged in /var/adm/patch/log/session.log

Main Menu:
-----

1) Patch Installation
2) Patch Deletion

3) Patch Documentation
4) Patch Tracking

5) Patch Baseline Analysis/Adjustment

h) Help on Command Line Interface

q) Quit

Enter your choice: 5
```

A summary of the patch baselining phases will be displayed on the screen.

3. Answer `y` or `n` when asked if you want to proceed with setting the patch baseline (you must provide an answer; there is no default answer):

```
Do you want to proceed with the analysis and adjustment? [y/n]: y
```

If you answer yes, `dupatch` asks you to enter the location of the patch distribution as follows:

```
Enter path to the top of the patch distribution,
or enter "q" to get back to the menu : /mnt/PatchKit/kit2/patch_kit
```

The summary of the patch baselining phases provides the following information:

- Baselining Phase 1 evaluates your system relative to the patch kit.

- Baselining Phase 2 reports information for patches whose installation is blocked by system files that were installed by layered products. You cannot enable `dupatch` to install patches that replace system files installed by layered products. You must contact your layered product customer services or Compaq Services if you have purchased Business Critical Services.
- Baselining Phase 3 reports on patches that match existing files on your system, but are not marked as *installed* by the system inventory. You can tell `dupatch` to mark these patches as *installed*. This involves copying valid `setld` database information to your system. If exact matches are found you will be asked the following question:

Do you want to mark these patches as installed ? [y/n]

You must provide an answer; there is no default answer.

- Baselining Phase 4 reports information about any unknown or missing system files. This information is provided to assist you in understanding the state of files that may prevent patch installation.

Consider this information carefully when making decisions to override patch-installation checks for patches noted in Phase 5.

- Phase 5 reports patches that do not pass installation applicability tests due to the current state of your system. The installation of these patches is prevented by missing or unknown system files.

The `dupatch` utility reports the known information about the files contained in each patch and asks if you want to enable the installation:

Do you want to enable the installation of any of these patches? [y/n]:

You must provide an answer; there is no default answer.

Answer `n`, until you know the origin of the files that are preventing the patch installation. The changed system files that are preventing the official patch installation may be part of a manually installed customer-specific patch or an intentionally customized utility or file.

If, for example, the file that is preventing the installation of an official patch is one of many files that are part of a customer-specific patch, you must determine how to proceed. For more information, see Section 2.6.4.1 and Section 2.6.5.

If you answer `y` to this question, you can selectively enable `dupatch` to install patches that are prevented from being installed by missing or unknown files.

The `dupatch` utility will present the list of patches so you can optionally enable installation. It then asks you how to proceed.

If you select patches for installation, `dupatch` asks you to confirm your selections and then enables installation of the selected patches. Perform the patch installation as described in Section 4.8.

Caution

Do not enable `dupatch` to install patches over missing or unknown system files for which you do not know the origin. To do so might leave your operating system or TruCluster software environments in an inconsistent or nonoperational state.

4.8 Installing and Enabling Patches

Patch installation is performed through `dupatch`. The `-l` of the `setld` command is disabled for patch subsets.

Before beginning the installation, make sure that you have completed all of the preliminary steps:

- Make sure you have met the installation prerequisites described in Section 4.2.
- Make sure you made the patch distribution available to your system, as described in Section 4.3.
- Make sure you loaded any new patch tools, as described in Section 4.4.
- Make sure that you performed the patch preinstallation check, as described in Section 4.6.
- If needed, make sure that system patch baseline has been set, as described in Section 4.7.

The following sections provide step-by-step instructions for installing and enabling patches.

Note

If you are installing patches on a cluster, see Chapter 5 before you begin the patching process.

4.8.1 Choosing Single-User or Multiuser Mode

You can install patches from either single-user or multiuser modes. See Section 3.1 for information about selecting one of these modes. Section 4.8.1.1 describes the process from single-user mode and Section 4.8.1.2 describes the process from multiuser mode. Section 4.8.2 describes the remaining steps, which are common to installations from single-user and multiuser modes.

4.8.1.1 Installing Patches from Single-User Mode

The following steps describe the steps you take and the type of output you will see when you install patches from single-user mode.

1. Halt the system. For example:


```
# /usr/sbin/shutdown -h +5 "Applying 5.0A and TCR Patches"
```
2. Boot to single-user mode from the console prompt. For example:


```
>>>boot -fl s
```
3. Mount the file system that contains the /usr and /var directories and run the `init s` command:


```
# /sbin/init s
```
4. Run the `bcheckrc` command to check and mount all the UFS and AdvFS file systems and the `lmf reset` command to copy license details for all enabled products from the License Database to the kernel cache:


```
# /sbin/bcheckrc
# /usr/sbin/lmf reset
```
5. Issue the `update` command and activate your swap partition with the `swapon` command:


```
# /sbin/update
# /sbin/swapon -a
```
6. If you need access to the network, enter the `rcinet` command to enable the network:


```
# /usr/sbin/rcinet
```

Informational messages will appear on the screen.

7. Run the `dupatch` utility. (This step assumes that the patch kit is available to your system, as described in Section 4.3, and that the new patch tools have been loaded, as described in Section 4.4). Enter 1 at the Enter your choice prompt to the invoke the patch installation session:

```
# dupatch

Tru64 UNIX Patch Utility (Rev. 29-01)
=====
- This dupatch session is logged in /var/adm/patch/log/session.log

Main Menu:
-----

1) Patch Installation
2) Patch Deletion

3) Patch Documentation
4) Patch Tracking

5) Patch Baseline Analysis/Adjustment

h) Help on Command Line Interface

q) Quit

Enter your choice: 1
```

8. When the patch installation menu is displayed. Enter 2, at the Enter your choice prompt:

```
Tru64 UNIX Patch Utility (Rev. 29-01)
=====
- This dupatch session is logged in /var/adm/patch/log/session.log

Patch Installation Menu:
-----

1) Pre-Installation Check ONLY
2) Check & Install patches in Single-User Mode

b) Back to Main Menu
q) Quit

Enter your choice: 2
```

4.8.1.2 Installing Patches from Multiuser Mode

The following list describes the steps you take and the type of output you will see when you install patches from multiuser mode.

1. Run the `dupatch` utility. (This step assumes that the patch kit is available to your system, as described in Section 4.3, and that the new patch tools have been loaded, as described in Section 4.4). Enter 1 at the Enter your choice prompt to the invoke the patch installation session:

```
# dupatch

Tru64 UNIX Patch Utility (Rev. 29-01)
=====
- This dupatch session is logged in /var/adm/patch/log/session.log

Main Menu:
-----

1) Patch Installation
2) Patch Deletion

3) Patch Documentation
4) Patch Tracking

5) Patch Baseline Analysis/Adjustment

h) Help on Command Line Interface
```

```
q) Quit
Enter your choice: 1
```

2. When the patch installation menu is displayed. Enter 3, at the Enter your choice prompt:

```
Tru64 UNIX Patch Utility (Rev. 29-01)
=====
- This dupatch session is logged in //var/adm/patch/log/session.log

Patch Installation Menu:
-----

1) Pre-Installation Check ONLY
2) Check & Install in single-user mode w/ network services
3) Check and Install in Multi-User mode

b) Back to Main Menu
q) Quit

Enter your choice: 3
```

```
*** Installation Warning ***
```

```
You have chosen to install patches onto this system while it is running in
Multi-User mode. Some patches may directly affect core operating system
operations. To insure the proper operation of all applications, it is strongly
suggested that you install these patches while the system is in
Single-User mode. If this cannot be done, install these patches when the system
is as lightly loaded as possible (i.e. not running production environments, no users
logged on, etc.).
```

```
Do you wish to continue? (y/n) [y]:
```

4.8.2 Common Installation Steps

The following steps provide instructions for continuing the installation of Tru64 UNIX and TruCluster software patches after you have selected either single-user or multiuser mode.

1. You have the option to make patches reversible so you can return the system to its state prior to the installation of a patch. Enter y or press Return to make the patches reversible. For example:

```
Do you want the patches to be reversible? [y]:
```

By default, backup copies of the installed patches are saved in /var/adm/patch/backup. If you have limited space in /var, you may want to make the backup directory the mount point for a separate disk partition, an NFS mounted directory, or a symbolic link to another file system.

If you answer no to this question, the existing system files will not be saved and the installed patches will not be reversible. Compaq recommends that you install patches so they are reversible.

2. The program describes your backup setup and asks you if you want to proceed:

```
Do you want to proceed with the installation with this setup? [y]:
```

3. You are asked to record your name as the person installing the patches and to add any comments you would like stored for future reference. For example:

```
Your name: Joe
```

Enter any notes about this operation that you would like stored for future reference. To end your input, enter a period (.) and press Return.

```
: Installing Patch Kit 3
: . Return
```

4. The program lists the patches available for installation on your system. This list may be different from system to system because dupatch does not display

available patches that are already installed on your system. You can install all patches (as recommended by Compaq) or selectively choose patches for installation. You can also cancel selections and redisplay menus, or exit without installing any patches. The following is an example of the `dupatch` output:

```
Enter your choices or press RETURN to display the next screen.
```

```
Choices (for example, 1 2 4-6) :
```

```
  .
  .
130) Patch 0381.00 - Motif Toolkit Correction
131) Patch 0384.00 - Various X11 Server Corrections
```

```
Or you may choose one of the following options:
```

```
134) ALL of the above
133) CANCEL selections and redisplay menus
134) EXIT without installing any patches
```

Selecting CANCEL cancels your patch selections and returns to the patch list and selection menus so you can reselect patches for installation.

Selecting EXIT returns you to the `dupatch` installation menu.

Note

When installing customer-specific patches, you do not have the option of selecting individual patches; you must install them all. You can, however, remove individual CSPs after the installation process is completed and the system has been rebooted.

5. The preinstallation check verifies that the patches will install. If the preinstallation check is successful, `dupatch` proceeds with the installation. If the preinstallation check fails, `dupatch` lists the specific patches that fail and asks how you want to proceed:

```
Select the action you'd like to take:
```

```
1) proceed with the patches that passed the check
2) select patches again
3) go back to the previous menu
```

If you choose to proceed with patches that passed the preinstallation check, `dupatch` will start installing those patches and provide informational messages on the screen. The entire `dupatch` session is logged to ensure you can view any messages that may scroll off the screen.

If patch installation is blocked due to missing or unknown system files, refer to Section 4.7.

6. Review the `dupatch` session log, `/var/adm/patch/log/session.log`, to ensure that the installation was successful. Note any special patch instructions, informational messages, and error messages. (See Section 2.2 for information about `dupatch` logs.)
7. Assuming the patch installation was successful, rebuild the kernel (`vmunix`), save the existing kernel, move the new kernel into place, and reboot the system. For more information, see the *Tru64 UNIX System Administration* manual.

The following steps show the typical process:

- a. Configure a new `vmunix`. For example:

```
# doconfig -c HOSTNAME
```

- b. Save the existing `vmunix`. For example:

```
# cp /vmunix /usr/vmunix.prekit11-<yyyymmdd>
```

- c. Install the newly built kernel (vmunix). For example:

```
# mv /usr/sys/HOSTNAME/vmunix /vmunix
```
- d. Reboot the system. For example:

```
# /usr/sbin/shutdown -r +5 \  
"Reboot with newly installed patches"
```

4.9 Rebuilding the Kernel

The `dupatch` utility determines whether the installation or removal of patches requires that the kernel be rebuilt and the system rebooted. This action is then performed automatically or manually, depending upon the method you used to install the patches:

- When using the command line, the kernel is built automatically with the `doconfig` utility, using the `-a` option. It also uses the `-c` option of the `-cfgfile` command line option if that command was used.
- When using the menu-based interface, the kernel build occurs as if `doconfig` was entered from the command line. The `dupatch` utility asks if your system has a custom configuration file and if you want to change it.

4.10 Rebooting the System

The action that `dupatch` takes to reboot your system depends upon whether you used the command-line or menu-based interface or performed the action in single-user or multiuser mode.

4.10.1 In Single-User Mode

When performing a patch installation or removal in single-user mode from the command line, the system automatically reboots after the command line operation is completed.

When performing a patch installation or removal in single-user mode using the menu-based interface, `dupatch` asks if you want to reboot the system after the patch installation or removal is completed:

- If you answer yes, the system reboots immediately.
- If you answer no, `dupatch` returns to the appropriate menu — either installation or removal, depending on the operation.

4.10.2 In Multiuser Mode

When installing patches in multiuser mode from the command line, you are given a message informing you that a reboot is necessary to complete the patch installation. However, the system does not reboot itself.

When installing patches in multiuser mode using the menu-based interface, `dupatch` gives you three options if a reboot is necessary:

- Reboot now
- Schedule a reboot for a later time
- Do not reboot

4.11 Removing Patches

To remove patches from your system, use the Patch Deletion option of the `dupatch` Main Menu. The system must be in single-user mode to remove patches. Note that the `-d` option to the `setld` command is disabled for patch subsets.

The following steps show how to remove patches:

Caution

The Patch Deletion menu lists every setld-based patch on your system, regardless of which patch kit installed them. Therefore, if you select the ALL of the above menu item, it will remove all setld-based patches from your system.

For example, if you chose the ALL of the above menu item when installing Patch Kit-0003 and then decide to remove those patches, you will have to specify the patch ID of all Patch Kit-0003 patches in the Delete Patch menu. If, instead, you select the ALL of the above menu item, then all setld-based patches that are installed on your system are removed, not only those from Patch Kit-0003.

1. Halt the system and bring it up in single-user mode, as described in Section 4.8.1.1.

2. Run dupatch and select 2 for patch removal:

```
# dupatch

Tru64 UNIX Patch Utility
=====
(This dupatch session is logged in /var/adm/patch/log/session.log)

Main Menu:
-----

1) Patch Installation
2) Patch Deletion

3) Patch Documentation
4) Patch Tracking

5) Patch Baseline Analysis/Adjustment

h) Help on Command Line Interface

q) Quit

Enter your choice: 2
```

3. You are asked to record your name as the person removing the patches and to add any comments you would like stored for future reference. For example:

```
Your name: Mike
```

Enter any notes about this operation that you would like stored for future reference. To end your input, enter a period (.) and press Return.

```
: Removing patches 6.00, 12.00, and 22.00 until the
: firmware can be updated to the proper revision.
: . [Return]
```

4. Select and verify the patches to be removed through the patch selection menus. Once the patch selection is done, dupatch removes the selected patches and provides informational messages on the screen. The dupatch session is logged to /var/adm/patch/log/session.log. (See Section 2.2 for information about dupatch logs.)

Note

When removing patches after incremental installations, you may see Special Instructions from previously installed patches that have since been superseded. You should ignore these instructions and instead follow any Special Instructions relating to the most current patch.

5. Review the session log to ensure the removal was successful. Note any special patch instructions, informational messages, and error messages.
6. If there are no error messages, follow the instructions for disabling the patches that are listed in the session log. Depending on the removed patches, you may need to rebuild the kernel or reboot the system.

Rolling Upgrade

TruCluster Server Version 5.0A and higher provides the infrastructure that makes a rolling upgrade possible.

For more detailed information about using the rolling upgrade process to install a new operating system or TruCluster software version, see the Version 5.1 or higher *Cluster Installation* manual.

Note

If you have not yet created your cluster, Compaq recommends that you patch your system first. See Section 3.3 for this time-saving procedure.

This chapter provides the following information:

- An overview of the rolling upgrade process. (Section 5.1)
- A description of the rolling upgrade stages. (Section 5.2)
- The step-by-step procedure for performing a rolling upgrade on your cluster. (Section 5.3)
- How to display the status of a rolling upgrade. (Section 5.4)
- How to undo a stage. (Section 5.5)
- How to remove patches installed during a rolling upgrade. (Section 5.6)

5.1 Overview

A rolling upgrade is a software upgrade of a cluster that is performed while the cluster is in operation. One member at a time is rolled and returned to operation while the cluster transparently maintains a mixed-version environment for the base operating system, cluster, and Worldwide Language Support (WSL) software. Clients accessing services are not aware that a rolling upgrade is in progress.

When performing a rolling upgrade, the same procedure is used for patching your system as for upgrading to a new operating system or TruCluster version. The only difference is that for a rolling patch you use the `dupatch` utility and for a rolling upgrade you use the `installupdate` utility during the install stage.

Note

See Chapter 2 for an overview of the `dupatch` utility and Chapter 4 for step-by-step instructions for using `dupatch`.

A roll consists of a series of stages (described in Section 5.2) that must be performed in a fixed order. When patching a cluster, the commands that control a rolling upgrade to enforce this order are `clu_upgrade` and `dupatch`.

You can perform only one rolling upgrade at a time. You cannot start another roll until the first roll is completed.

Note

A rolling upgrade updates the file systems and disks that the cluster currently uses; it does not update the disk or disks that contain the Tru64 UNIX operating system that were used to create the cluster (the operating system on which you ran `clu_create`). Although you can boot the original operating system in an emergency, remember that the differences between the current cluster and the original operating system increase with each roll.

5.1.1 Tagged Files

A rolling upgrade updates the software on one cluster member at a time so that you can test the new software without disrupting critical services. In order to support two versions of software in the cluster during a roll, `clu_upgrade` creates a set of tagged files in the setup stage.

These tagged files are copies of current files with `.Old.` prepended to the file name. For example, the tagged file for the `vdump` command is `/sbin/.Old.vdump`. Tagged files are created in the same file system as the original files.

Each tagged file has an AdvFS property, `DEC_VERSION_TAG`, set on it. If a member's `sysconfigtab` `rolls_ver_lookup` attribute is set to 1, pathname resolution includes determining whether a specified filename has a `.Old.filename` copy and whether the copy has the `DEC_VERSION_TAG` property set on it. If both conditions are met, the requested file operation is transparently diverted to use the `.Old.filename` version of the file.

Note that file system operations on directories are not bound by this `.Old.` restraint. For example, you will see both versions of a file listed when you issue the `ls` command of a directory on any cluster member during a rolling upgrade.

The upgrade commands control when a member runs on tagged files by setting that member's `sysconfigtab` `rolls_ver_lookup` variable. The commands set the value to 1 when the member must run on tagged files, and to 0 when the member must not run on tagged files. The only member that never runs on tagged files is the lead member (the first member to roll).

The following rules determine which files have tagged files automatically created for them in the setup stage:

- Tagged files are created for the following product codes: base operating system (OSF), TruCluster software (TCR), and Worldwide Language Support (IOS). The subsets for each product use that product's three-letter product code as a prefix for each subset name. For example, TruCluster software subset names start with the TruCluster software three-letter product code: `TCRBASE505`, `TCRMAN505`, and `TCRMIGRATE505`.
- By default, files that are associated with other layered products do not have tagged files created for them. Tagged files are created only for layered products that have been modified to support tagged files during a rolling upgrade.

Caution

Unless a layered product's documentation specifically states that you can install a newer version of the product on the first rolled member, and that the layered product knows what actions to take in a mixed-version cluster, Compaq strongly recommend that you

do not install either a new layered product or a new version of a currently installed layered product during a rolling upgrade.

The `clu_upgrade` command provides several command options to manipulate tagged files: `check`, `add`, `remove`, `enable`, and `disable`. When dealing with tagged files, take the following into consideration:

- During a normal rolling upgrade you do not have to manually add or remove tagged files. The `clu_upgrade` command calls the tagged commands as needed to control the creation and removal of tagged files.
- The target for a `check`, `add`, or `remove` tagged file operation is a product code that represents an entire product. The `clu_upgrade` tagged commands operate on all files in the specified product or products. For example, the following command verifies the correctness of all the tagged files created for the TCR kernel layered product (the TruCluster software subsets):

```
# clu_upgrade tagged check TCR
```

If you inadvertently remove a `.Old.` copy of a file, you must create tagged files for the entire layered product to re-create that one file. For example, the `vdump` command is in the `OSFADVFSnnn` subset, which is part of the `OSF` product. If you mistakenly remove `/sbin/.Old.vdump`, run the following command to re-create tagged files for the entire layered product:

```
# clu_upgrade tagged add OSF
```

- The `enable` and `disable` commands enable or disable the use of tagged files by a cluster member. You do not have to use `enable` or `disable` during a normal rolling upgrade.

The `disable` command is useful if you have to undo the setup stage. Because no members can be running with tagged files when undoing the setup stage, you can use the `disable` command to disable tagged files on any cluster member that is currently running on tagged files. For example, to disable tagged files for a member whose ID is `3m`, issue the following command:

```
# clu_upgrade tagged disable 3
```

The `enable` command is provided in case you make a mistake with the `disable` command.

5.1.2 Version Switch

A version switch manages the transition of the active version to the new version of an operating system. The active version is the one that is currently in use. The purpose of a version switch in a cluster is to prevent the introduction of potentially incompatible new features until all members have been updated.

For example, if a new version introduces a change to a kernel structure that is incompatible with the current structure, you do not want cluster members to use that new feature until all members have updated to the version that supports the new features.

At the start of a rolling upgrade, all members' active versions are the same as their new versions. During a roll, each member's new version is updated when it rolls. After all members have rolled, the switch stage sets the active version to the new version on all members. At the completion of the upgrade, all members' active versions are once again the same as their new versions.

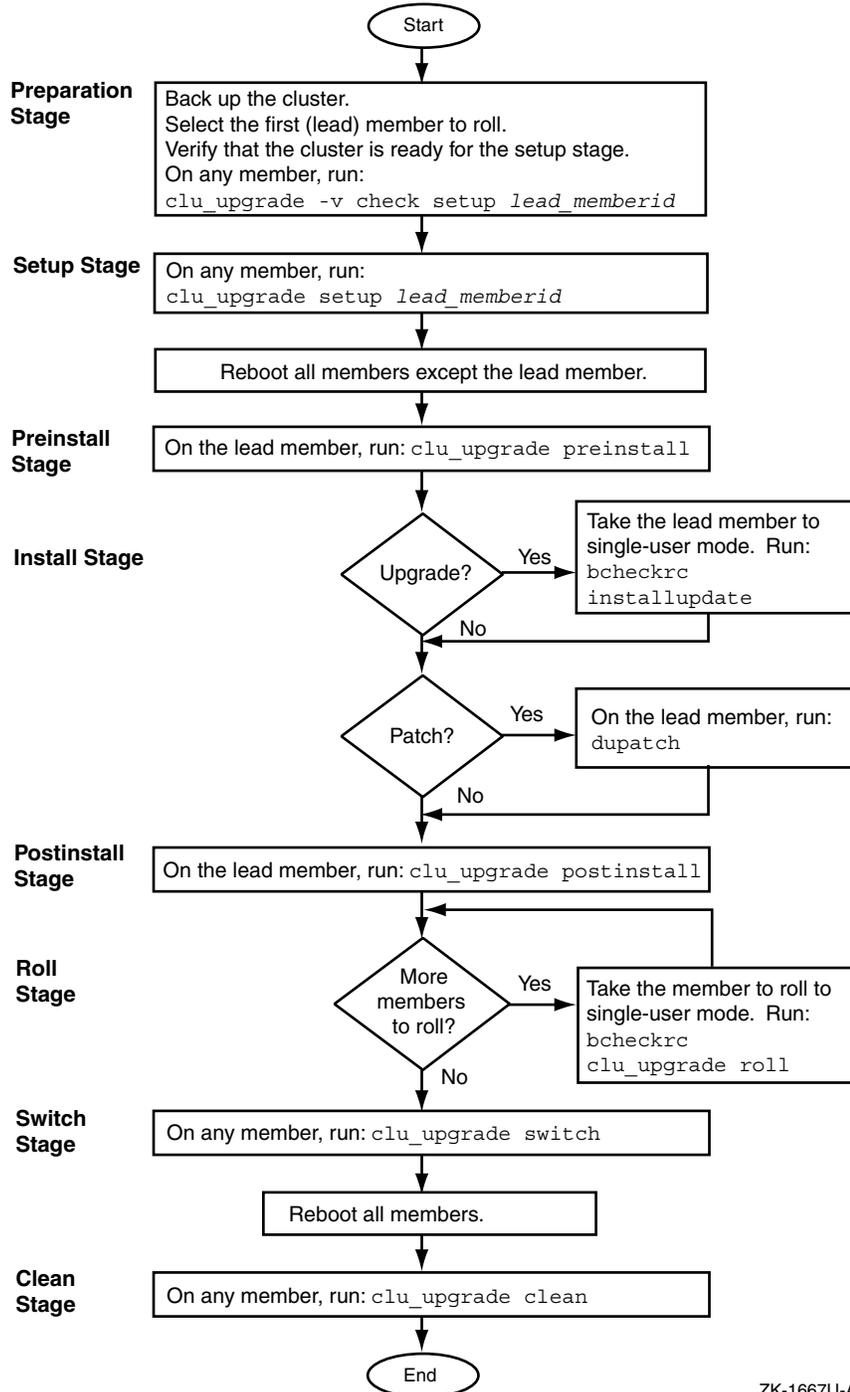
The `clu_upgrade` command uses the `versw` command (described in `versw(8)`) to manage version transitions. The `clu_upgrade` command manages all the version switch activity when rolling individual members. In the switch stage, after all

members have rolled, run the `clu_upgrade switch` command to complete the transition to the new software.

5.2 Rolling Upgrade Stages

This section takes a closer look at each of the rolling upgrade stages. Figure 5–1 provides a flow chart of the tasks and stages that are required to perform a rolling upgrade. (See Section 5.3 for the rolling upgrade procedure.)

Figure 5–1: Rolling Upgrade Flow Chart



ZK-1667U-AI

The stages are performed in the following order:

1. Preparation stage (Section 5.2.1)

2. Setup stage (Section 5.2.2)
3. Preinstall stage (Section 5.2.3)
4. Install stage (Section 5.2.4)
5. Postinstallation stage (Section 5.2.5)
6. Roll stage (Section 5.2.6)
7. Switch stage (Section 5.2.7)
8. Clean stage (Section 5.2.8)

5.2.1 Preparation Stage

Command	Where Run	Run Level
<code>clu_upgrade -v check setup lead_memberid</code>	any member	multiuser mode

During the preparation stage, you back up all important cluster data and verify that the cluster is ready for a roll. Before beginning a rolling upgrade, do the following:

1. Back up the clusterwide root (/), /usr, and /var file systems. The backups should include all member-specific files in these file systems. If the cluster has a separate `i18n` file system, back up that file system. In addition, back up any other file systems that contain critical user or application data.

Note

If you perform an incremental or full backup of the cluster during a rolling upgrade, make sure to perform the backup on a member that is not running on tagged files. If you back up from a member that is using tagged files, you will back up the contents of the `.Old.` files. Because the lead member never uses tagged files, you can back up the cluster from the lead member (or any other member that has rolled) during a rolling upgrade.

Most sites have automated backup procedures. If you know that an automatic backup will take place while the cluster is in the middle of a rolling upgrade, make sure that backups are done on the lead member or on a member that has rolled.

2. Choose one member of the cluster as the first member to roll. This member, known as the lead member, must have direct access to the root (/), /usr, /var, and if used, `i18n` file systems.

Make sure that the lead member can run any critical applications. You can test these applications after you update this member during the install stage, but before you roll any other members. If there is a problem, you can try to resolve it on this member before you continue. If there is a problem that you cannot resolve, you can undo the rolling upgrade and return the cluster to its pre-roll state. (Section 5.5 describes how to undo rolling upgrade stages.)

3. Run the `clu_upgrade -v check setup lead_memberid` command, which verifies that:
 - No rolling upgrade is in progress.
 - All members are running the same versions of the base operating system and cluster software.
 - No members are running on tagged files.

Note

The `clu_upgrade -v check setup lead_memberid` command may check some — but not all — file systems for adequate space. Make sure that you manually check that your system meets the disk space requirements described later in this section.

A cluster can continue to operate during a rolling upgrade or a patch because there are two copies of almost every file. (There is only one copy of some configuration files so that changes made by any member are visible to all members.) This approach makes it possible to run two different versions of the base operating system and the cluster software at the same time in the same cluster. The trade-off is that, before you start an upgrade or patch, you must make sure that there is adequate free space in each of the clusterwide root (/), /usr, and /var file systems, and if there is a separate domain for the Worldwide Language Support (WLS) subsets, i18n file systems.

A rolling upgrade has the following disk space requirements:

- At least 50 percent free space in root (/), `cluster_root#root`.
- At least 50 percent free space in /usr, `cluster_usr#usr`.
- At least 50 percent free space in /var, `cluster_var#var`, plus an additional 425 MB to hold the subsets for the new version of the base operating system.
- If there is a separate i18n domain, at least 50 percent free space in that file system.
- See the *Patch Summary and Release Notes* included with each patch kit to find out the amount of space you will need to install the patch kit for your system.

If a file system needs more free space, use AdvFS utilities such as `addvol` to add volumes to domains as needed. For information on managing AdvFS domains, see the *AdvFS Administration* manual. Note that you can expand the clusterwide root (/) domain.

5.2.2 Setup Stage

Command	Where Run	Run Level
<code>clu_upgrade setup lead_memberid</code>	any member	multiuser mode

The `clu_upgrade setup lead_memberid` command performs the following tasks:

Caution

Make sure your system meets the space requirements described in Section 5.2.1 before issuing the `clu_upgrade setup` command.

- Makes the `-v check setup` tests listed in Section 5.2.1.
- Asks whether you are going to patch (run `dupatch`) or update (run `installupdate`) your cluster.
- Creates the log file `/cluster/admin/clu_upgrade.log`.
- Makes on-disk backup copies of the lead member's member-specific files.
- Creates the mandatory set of tagged files (copies of existing files, but with `.old.` prepended to the file name) for the OSF (base), TCR (cluster), and IOS (Worldwide Language Support) products.

Caution

If, for any reason, during an upgrade you need to create `.Old.` files for a layered product, see Section 5.1.1.

- Sets the `sysconfigtab` variable `rolls_ver_lookup=1` on all members except the lead member. When `rolls_ver_lookup=1`, a member uses the tagged files. As a result, the lead member can upgrade while the remaining members run on the `.Old.` files from the current release.
- Prompts you to reboot all cluster members except the lead member. When the `setup` command completes, reboot these members (one at a time so that the cluster can maintain quorum). This reboot is required for each member that uses tagged files in the mixed-version cluster. When the reboots complete, all members except the lead member use tagged files.

5.2.3 Preinstall Stage

Command	Where Run	Run Level
<code>clu_upgrade preinstall</code>	lead member	multiuser mode

The purpose of the preinstall stage is to verify that the cluster is ready for the lead member to run the `installupdate` or `dupatch` commands and, if the upgrade includes update installation, to copy the new TruCluster software kit so that the kit will be available during the install stage. If you will perform an update installation when you perform the step-by-step upgrade procedure in Section 5.3, remember to mount the new TruCluster software kit before you run the `preinstall` command.

The `clu_upgrade preinstall` command performs the following tasks:

- Verifies that the command is being run on the lead member, that the lead member is not running on tagged files, and that any other cluster members that are up are running on tagged files.
- Verifies that tagged files are present, that they match their product's inventory files, and that each tagged file's AdvFS property is set correctly. (This process can take a while, but not as long as it does to create the tagged files in the setup stage.)
- If you are performing a rolling upgrade, `clu_upgrade preinstall` prompts you for the location of the new TruCluster software kit, and then copies the kit to `/var/adm/update/TruClusterKit` on the lead member so that the kit will be available to the `installupdate` command during the install stage. (The `installupdate` command copies the operating system kit to `/var/adm/update/OSKit` during the install stage.)

Caution

The files in `/var/adm/update` are critical to the roll process. Do not remove or modify files in this directory. Doing so can cause a rolling upgrade to fail.

5.2.4 Install Stage

Command	Where Run	Run Level
<code>installupdate</code>	lead member	single-user mode
<code>dupatch</code>	lead member	single-user mode or multiuser

The install stage starts when the `clu_upgrade preinstall` command completes, and continues until you run the `clu_upgrade postinstall` command.

The lead member must be in single-user mode to run the `installupdate` command, and single-user mode is recommended for the `dupatch` command. When taking the system to single-user mode, you must halt the system and then boot it to single-user mode.

When the system is in single-user mode, run the `bcheckrc` and `init -s` commands before you run either the `installupdate` or `dupatch` command. See the *Tru64 UNIX Installation Guide* for information on how to use these commands.

In the install stage, you can perform one of the following:

- An update installation: `installupdate`
- A patch: `dupatch`

Note

If you run `clu_upgrade status` after running `installupdate`, `clu_upgrade` will print a line indicating that the install stage is complete. However, the install stage is not complete until you run the `clu_upgrade postinstall` command.

5.2.5 Postinstallation Stage

Command	Where Run	Run Level
<code>clu_upgrade postinstall</code>	lead member	multiuser mode

The postinstallation stage verifies that the lead member has completed an update installation, a patch, or both. If an update installation was performed, `clu_upgrade postinstall` verifies that the lead member has rolled to the new version of the base operating system.

5.2.6 Roll Stage

Command	Where Run	Run Level
<code>clu_upgrade roll</code>	member being rolled	single-user mode

The lead member was upgraded in the install stage. The remaining members are upgraded one at a time in the roll stage.

The `clu_upgrade roll` command performs the following tasks:

- Verifies that the member is not the lead member, that the member has not already been rolled, and that the member is in single-user mode.
- Backs up the member's member-specific files.
- Sets up the `it(8)` scripts that will be run on reboot to perform the roll.
- Reboots the member. During this boot, the `it` scripts roll the member, build a customized kernel, and reboot with the customized kernel.

5.2.7 Switch Stage

Command	Where Run	Run Level
<code>clu_upgrade switch</code>	any member	multiuser mode

The switch stage sets the active version of the software to the new version, which results in turning on any new features that had been deliberately disabled during the rolling upgrade.

The `clu_upgrade switch` command performs the following tasks:

- Verifies that all members have rolled, that all members are running the same versions of the base operating system and cluster software, and that no members are running on tagged files.
- Sets the new version ID in each member's `sysconfigtab` file and running kernel.
- Sets the active version to the new version for all cluster members.

Note

After the switch stage completes, you must reboot each member of the cluster, one at a time.

5.2.8 Clean Stage

Command	Where Run	Run Level
<code>clu_upgrade clean</code>	any member	multiuser mode

The clean stage cleans up the files and directories that were used for the rolling upgrade.

The `clu_upgrade clean` command performs the following tasks:

- Verifies that the switch stage has completed, that all members are running the same versions of the base operating system and cluster software, and that no members are running on tagged files.
- Removes all tagged `.Old..` files.
- Removes any on-disk backup archives that `clu_upgrade` created.
- Deletes the following directories: `/var/adm/update/TruClusterKit` and `/var/adm/clu_upgrade/OSKit`.
- If an update installation was performed, gives you the option of running the Update Administration Utility (`updadmin`) to manage the files that were saved during an update installation.
- Creates an archive directory for this upgrade, `/cluster/admin/clu_upgrade/history/base_OS_version`, and moves the `clu_upgrade.log` file to the archive directory.

5.3 Rolling Upgrade Procedure

In the following procedure, unless otherwise stated, run commands in multiuser mode.

Note

If you have not yet created your cluster, it is recommended that you patch the operating system and TruCluster software before performing a rolling upgrade. See Section 3.3 for information.

Some stages of a rolling upgrade take longer to complete than others. Table 5–1 lists the approximate time it takes to complete each stage.

Table 5–1: Time Estimations for a Rolling Upgrade

Stage	Duration
Preparation	Not under program control.
Setup	45 – 120 minutes. ^a
Preinstall	15 – 30 minutes. ^a
Install	The same as installing a patch kit on a single system. Approximately 35 minutes, depending upon the size of the patch kit.
Postinstall	Less than 1 minute.
Roll (per member)	Patch: less than 5 minutes. Update installation: about the same amount of time it takes to add a member.
Switch	Less than 1 minute.
Clean	30 – 90 minutes. ^a

^a These stages create, verify, or remove the tagged files required for a rolling upgrade. The time that it takes to run one of these stages depends on the speed of the member executing the command, the speed of the storage, and whether the member executing the command is the CFS server for the root (/), /usr, and /var file systems. Consider relocating these file systems to the member where you will run the `clu_upgrade` command.

1. Prepare the cluster (see Section 5.2.1):
 - a. Back up the cluster.
 - b. Choose a cluster member to be the lead member (the first member to roll). The examples in this procedure use the member whose `memberid` is 2 as the lead member. The member's host name is `provolone`.
 - c. Make sure that your system contains the required space in all file systems as described in Section 5.2.1. If a file system needs more free space, use AdvFS utilities such as `addvol` to add volumes to domains as needed. For information on managing AdvFS domains, see the *AdvFS Administration* manual. Note that the `clu_upgrade -v check setup lead_memberid` command may check some — but not all — file systems for adequate space. Make sure that you manually check that your system meets the disk space requirements described in Section 5.2.1.
 - d. On any member, run the `clu_upgrade -v check setup lead_memberid` command to determine whether the cluster is ready for an upgrade. For example:

```
# clu_upgrade -v check setup 2
```

2. Perform the setup stage (Section 5.2.2).

On any member, run the `clu_upgrade setup lead_memberid` command. For example:

```
# clu_upgrade setup 2
```

Caution

If any file system fails to meet the minimum space requirements, the program will fail and generate an error message similar to the following:

```
*** Error ***
The tar commands used to create tagged files in the '/' file system have
reported the following errors and warnings:
NOTE: CFS: File system full: /

        tar: sbin/lsm.d/raid5/volsd : No space left on device
        tar: sbin/lsm.d/raid5/volume : No space left on device
NOTE: CFS: File system full: /

.NOTE: CFS: File system full: /
```

If you receive this message, run the `clu_upgrade -undo setup` command, free up the required amount of space on the affected file systems, and then rerun the `clu_upgrade setup` command.

During the setup stage, `clu_upgrade` asks whether you are performing a update installation or a patch. However, the wording of the prompts in the Version 5.0A command is somewhat ambiguous:

```
Are you running the clu_upgrade command to upgrade to a new version of
the base operating system and cluster software? [yes]:
```

```
Are you running the clu_upgrade command in order to apply a rolling
patch? [yes]
```

The `clu_upgrade` command does not display the second prompt until it receives an answer for the first. An administrator might be tempted to answer yes to the ... upgrade to a new version ... prompt when performing a rolling upgrade to patch the cluster because a patch is an upgrade to new software. However, if you see these prompts, answer yes to the first prompt only if you plan to run `installupdate` during the install stage.

Note: No WLS and Disk Space

Additional space is required in the `cluster_root` domain for backing up member files on clusters without Worldwide Language Support (WLS). If no space is available, the following message is displayed:

```
*** Error ***
There is no space available in the root (/), /usr, or /var
file systems to back up member '????' member-specific files.
Increase the available disk space on one of these file systems
and rerun this stage of the upgrade.
```

The minimum required available space in the `cluster_root` domain must be greater than the sum of all of the member directories in the root (/), /usr, or /var file systems.

To view the available space in the `cluster_root` domain, enter the following command:

```
# df /
```

For example:

```
# df /
Filesystem      512-blocks  Used  Available  Capacity  Mounted on
cluster_root#root  524288 175710   330512    35%     /
```

To calculate the minimum required value, enter the following command:

```
# ksh 'du -s {/,usr,/var}/cluster/members/member?*/ | \
awk '{minimum+=$1}; END{print minimum}'
```

For example:

```
# ksh 'du -s {,/usr,/var}/cluster/members/member?*/' | \
> awk '{minimum+=$1}; END{print minimum}'
679030
```

The example indicates that `cluster_root` domain needs 348518 more blocks (679030 minus 330512), or approximately 175 MB of disk space. Use the `addvol` command to add additional volumes to the `cluster_root` domain.

3. When asked if you want to continue the cluster upgrade, accept the default of yes:

```
This is the cluster upgrade program.
You have indicated that you want to perform the 'setup' stage of the
upgrade.
```

```
Do you want to continue to upgrade the cluster? [yes]: Return
```

```
Are you running the clu_upgrade command to upgrade to a new version of
the base operating system and cluster software? [yes]: no
```

```
Are you running the clu_upgrade command to apply a rolling patch? [yes]: Return
```

Note that these prompts will change if you run the upgrade to its conclusion and then rerun it to remove patches. See Section 5.6 for more information (including the prompts you will see).

4. One at a time, reboot all cluster members except the lead member.
5. Perform the preinstall stage (Section 5.2.3).

Note

If you plan to run `installupdate` in the install stage, mount the device or directory that contains the new TruCluster software kit before running `clu_upgrade preinstall`. The `preinstall` command will copy the kit to the `/var/adm/update/TruClusterKit` directory.

On the lead member, run the following command:

```
# clu_upgrade preinstall
```

6. Manually relocate CAA services from the lead member to another cluster member before performing the install stage. For example:

```
# /usr/sbin/caa_relocate -s lead_member -c non_lead_member
```

7. Perform the install stage (Section 5.2.4).

Caution

If you encounter unrecoverable failures while running `dupatch`, do not run the `clu_upgrade -undo install` command.

Contact your support personnel for further instructions.

You can patch a cluster or update cluster and operating system software.

You can perform a rolling upgrade to patch a cluster in either single-user mode, which is recommended, or in multiuser mode:

- To patch the system in single-user mode, follow the instructions in Section 4.8.1.1.
- To patch the system in multiuser mode, run the `dupatch` command.

See Chapter 4 for information about using the `dupatch` utility.

If you are performing a roll that includes both an upgrade and a patch, do the update installation first and then the patch installation.

After the lead member performs its final reboot with its new custom kernel, perform the following manual tests before you roll any additional members:

Verify that the newly rolled lead member can serve the shared root (/) file system.

- a. Use the `cfsmgr` command to determine which cluster member is currently serving the root file system. For example:

```
# cfsmgr -v -a server /  
  
Domain or filesystem name = /  
Server Name = polishham  
Server Status : OK
```

- b. Relocate the root (/) file system to the lead member. For example:

```
# cfsmgr -h polishham -r -a SERVER=provolone /
```

Verify that the lead member can serve applications to clients. Make sure that the lead member can serve all important applications that the cluster makes available to its clients.

You decide how and what to test. Thoroughly exercise all critical applications and satisfy yourself that the lead member can serve these applications to clients before continuing the roll. For example, you can:

- a. Manually relocate CAA services to the lead member. For example, to relocate an application resource named `clock` to lead member `provolone`:

```
# caa_relocate clock -c provolone
```

- b. Temporarily modify the default cluster alias attributes for the lead member so that it handles routing for the alias and serves all client requests that are directed to the alias. For example:

```
# cluamgr -a alias=DEFAULTALIAS,rpri=100,selp=100  
# cluamgr -r start
```

The lead member is now handling all traffic that is addressed to the default cluster alias. (You can use the `arp -a` command to verify that the lead member has the permanent `published` entry for the default cluster alias.)

From another member or from an outside client, use services such as `telnet` and `ftp` to verify that the lead member can handle alias traffic. Test client access to all important services that the cluster provides. When you are satisfied, reset the alias attributes on the lead member to their original values.

8. Perform the postinstallation stage (Section 5.2.5).

On the lead member, run:

```
# clu_upgrade postinstall
```

9. Perform the roll stage (Section 5.2.6).

One at a time, on each member of the cluster that has not rolled, do the following:

- a. Manually relocate CAA services from the member to another cluster member before performing the roll stage. For example:

```
# /usr/sbin/caa_relocate -s member_to_roll \  
-c another_member
```

- b. Take the member to single-user mode:

```
# shutdown now
```

- c. Run the bcheckrc command:

```
# bcheckrc
```

- d. Roll the member:

```
# clu_upgrade roll
```

When the member boots its new kernel, it has completed its roll and is no longer running on tagged files. Continue to roll members until all members of the cluster have rolled.

Note: /var Disk Space

The following messages might be displayed while running the `clu_upgrade roll` command:

```
Backing up member-specific data for member: n  
...NOTE: CFS: File system full: /var
```

```
tar: /dev/tty Unavailable
```

```
*** Error ***  
An error was detected while backing up member 'n' \  
member-specific files.
```

Additional space in the `cluster_var` domain is required. To view the available space in the `cluster_var` domain, enter the following command:

```
# df /var
```

To calculate the required value, enter the following command:

```
# ksh 'du -s {,/usr,/var}/cluster/members/member?*/' | \  
awk '{minimum+=$1}; END{print minimum}'
```

Use the `addvol` command to add additional volumes to the `cluster_var` domain.

10. Perform the switch stage (Section 5.2.7).

After all members have rolled, run the following command on any member to enable any new software features that were deliberately disabled until all members have rolled:

```
# clu_upgrade switch
```

11. One at a time, reboot each member of the cluster.
12. Perform the clean stage (Section 5.2.8).

Run the following command on any member to remove the tagged (`.Old..`) files from the cluster and complete the upgrade.

```
# clu_upgrade clean
```

5.4 Displaying the Status of a Rolling Upgrade

The `clu_upgrade` command provides the following options for displaying the status of a rolling upgrade or patch. You can run status commands at any time.

Note

During a roll, there might be two versions of the `clu_upgrade` in the cluster — an older version used by members that have not yet rolled, and a newer version (if included in the update distribution or patch kit). When checking status, the information that is displayed by the `status` command might differ depending on whether the command is run on a member that has rolled. Therefore, if you run the `status` command on two members, do not be surprised if the format and content of the displayed output are not the same.

-
- To display the overall status of a rolling upgrade or patch: `clu_upgrade -v` or `clu_upgrade -v status`.

Note

If you run `clu_upgrade status` after running `installupdate`, `clu_upgrade` will print a line indicating that the install stage is complete. However, the install stage is not complete until you run the `clu_upgrade postinstall` command.

-
- To determine whether you can run a stage: `clu_upgrade check [stage]`. If you do not specify a *stage*, the `clu_upgrade` tests whether the next stage can be run.
 - To determine whether a stage has started or completed: `clu_upgrade started stage` and `clu_upgrade completed stage`.
 - To determine whether a member has rolled: `clu_upgrade check roll memberid`.
 - To verify whether tagged files have been created for a layered product: `clu_upgrade tagged check [prod_code [prod_code ...]]`. If you do not specify a product code, `clu_upgrade` inspects all tagged files in the cluster.

5.5 Undoing a Stage

The `clu_upgrade undo` command provides the ability to undo a rolling upgrade that has not completed the switch stage. You can undo any stage except the switch stage and the clean stage.

Note

See Section 5.6 for information about deleting patches installed during a rolling upgrade.

To undo a stage, use the `undo` command with the stage that you want to undo. The `clu_upgrade` command determines whether the specified stage is a valid stage to undo. Table 5–2 outlines the requirements for undoing a stage:

Caution

If you encounter unrecoverable failures while running `dupatch`, do not run the `clu_upgrade -undo install` command.

Contact your support personnel for further instructions.

Table 5–2: Undoing a Stage

Stage to Undo	Command	Comments
Setup	<code>clu_upgrade undo setup</code>	You must run this command on the lead member. In addition, no members can be running on tagged files when you undo the setup stage. Before you undo the setup stage, use the <code>clu_upgrade -v status</code> command to determine which members are running on tagged files. Then use the <code>clu_upgrade tagged disable memberid</code> command to disable tagged files on those members. When no members are running on tagged files, run the <code>clu_upgrade undo setup</code> command on the lead member.
Preinstall	<code>clu_upgrade undo preinstall</code>	You must run this command on the lead member.
Install	<code>clu_upgrade undo install</code>	You can run this command on any member except the lead member. Halt the lead member. Then run the <code>clu_upgrade undo install</code> command on any member that has access to the halted lead member's boot disk. When the command completes, boot the lead member.
Postinstall	<code>clu_upgrade undo postinstall</code>	You must run this command on the lead member.
Roll	<code>clu_upgrade undo roll memberid</code>	You can run this command on any member except the member whose roll is being undone. Halt the member whose roll stage is being undone. Then run the <code>clu_upgrade undo roll memberid</code> command on any other member that has access to the halted member's boot disk. When the command completes, boot the halted member. The member will now be using tagged files.

Note

You might see the following error message when running the `clu_upgrade undo postinstall` command:

```
*** Error ***
The 'undo' option cannot be run at the 'postinstall' stage,
either because the next stage has already been started or
because the stage specified for undo has not been started.
```

If you see the message, remove the following file before running the `clu_upgrade undo postinstall` command:

```
# rm /cluster/admin/clu_upgrade/roll.started
```

5.6 Removing Patches Installed During a Rolling Upgrade

After you have installed the patches in your patch kit, you can remove some or all of the patches by returning to the install stage, rerunning `dupatch`, and selecting the Patch Deletion item in the Main Menu at any time prior to issuing the `clu_upgrade switch` command. See Section 4.11 for information about removing patches with `dupatch`.

You can also reinstall some or all of the patches you removed prior to the switch stage by rerunning `dupatch`. (See Section 5.5 for information about undoing any of the rolling upgrade stages.)

In order to remove patches after you have issued the `clu_upgrade switch` command, you will have to complete the current rolling upgrade procedure and then rerun the procedure from the beginning (starting with the setup stage). When you rerun `dupatch`, select the Patch Deletion item in the Main Menu.

Note

If you rerun the rolling upgrade procedure to remove patches, the prompts you receive during the setup stage will be different from those

issued during the initial rolling upgrade. Those prompts will look as follows:

```
Do you want to continue to upgrade the cluster? [yes]: Return
```

```
What type of upgrade will be performed?
```

- 1) Rolling upgrade using the installupdate command
- 2) Rolling patch using the dupatch command
- 3) Both a rolling upgrade and a rolling patch
- 4) Exit cluster software upgrade

```
Enter your choice: 2
```

The sample installation in Section B.2 shows the prompts you will see during the initial rolling upgrade.

Common Error, Warning, and Informational Messages

This appendix describes error, warning, and informational messages for the `dupatch` utility. The following information is provided for each message:

Source: The function that generates the message.

Problem: A brief description of possible causes for the message.

Causes: A summary of situations that cause the message.

Action: General recovery guidance.

Output: A sample of the message.

A.1 Patch Preinstallation Check and Installation Messages

The following sections describe messages you might see when running the `dupatch` preinstallation check or installation functions.

A.1.1 Patch Installation Blocked by Unknown System File

Source: `dupatch` preinstallation check or installation.

Problem: The installation of a specific patch is blocked due to an existing system file that is unknown.

Cause: This situation usually occurs when system files are placed on the system through manual intervention. For example, this may have been the result of installing a customer-specific patch received from Compaq Services or a system administrator's customization of a Tru64 UNIX file.

Until you confirm otherwise, the unknown system files should be viewed as intentional customizations that are important for proper system operation. As such, care should be taken to understand why the system files have been customized.

Action: Determine the origin of the existing unknown system files. The steps you take will be determined by the reason your system files were manually changed. See Section 2.6 for more information.

Output:

```
Checking patch prerequisites and patch file applicability ...
      (depending upon the number of patches you select, this may take a while)
-----
Problem installing:

- DIGITAL_UNIX_V4.0F / Common Desktop Environment (CDE) Patches:

    Patch 0326.00 - CDE Login Correction

    ./usr/dt/bin/dtwm:
        its origin cannot be identified.

This patch will not be installed.
-----
* Following patch(es) failed in prerequisite/file applicability check:

- TRU64_UNIX_V4.0D / Common Desktop Environment (CDE) Patches:
    Patch 0326.00 - CDE Login Correction
```

A.1.2 Patch Installation Blocked by Missing System File

Source: dupatch preinstallation check or installation.

Problem: Installation of a specific patch is blocked due to missing system file.

Causes: This situation usually occurs when a system file that was installed with setld is manually removed from the system. The file is marked as installed in the system inventory records.

Action: Determine why the system file is missing and whether it is safe to enable dupatch to install the blocked patch. See Section 2.6 for more information.

Output:

```
Checking patch prerequisites and patch file applicability...
(dependent upon the number of patches you select, this may take a while)
-----
Problem installing:

- DIGITAL_UNIX_V4.0F / Commands, Shells, & Utility Patches:
  Patch 0236.00 - vi Editor Correction

  ./usr/bin/vedit:
    does not exist on your system,
    however, it is in the inventory of installed subsets.

This patch will not be installed.

-----
* Following patch(es) failed in prerequisite/file applicability check:

- DIGITAL_UNIX_V4.0F / Commands, Shells, & Utility Patches:
  Patch 0236.00 - vi Editor Correction
```

A.1.3 Installation Blocked by Layered Product Collision

Source: dupatch preinstallation check or installation.

Problem: The installation of a specific patch is blocked due to an existing system file that is installed by a layered product.

Causes: A small set of layered products deliver updated Tru64 UNIX operating system files.

Action: To resolve this situation contact the Product Customer Services representative.

Output:

```
Checking patch prerequisites and patch file applicability...
(dependent upon the number of patches you select, this may take a while)
-----
Problem installing:

- TRU_UNIX_V4.0F / Network Patches:
  Patch 0182.00 - xti/streams Interface Module Correction

  ./sys/BINARY/xtiso.mod:
    is installed by:

                                BLTLPCONFLICTTEST410

    and can not be replaced by this patch.

This patch will not be installed.

-----
```

```

* Following patch(es) failed in prerequisite/file applicability check:
- DIGITAL_UNIX_V4.0F / Network Patches:
  Patch 0182.00 - xti/streams Interface Module Correction

```

A.1.4 Patch Installation Blocked by Dependencies on Other Patches

Source: dupatch preinstallation check or installation.

Problem: The installation of a specific patch is blocked due to its dependency on other uninstalled patches.

Causes: This usually occurs when you miss the selection of all dependent patches.

Action: Through the dupatch Installation Menu, take one of the following actions:

- Reselect the patches including the noted dependent patch and attempt reinstallation; dupatch will notify you of other missing dependent patches.
- Select all patches and proceed with patch installation.

Output:

```

SAMPLE OUTPUT:

Checking patch prerequisites and patch file applicability...
(dependent upon the number of patches you select, this may take a while)
-----

Problem installing:

- DIGITAL_UNIX_V4.0F / Security Related Patches:
  Patch 0579.01 - Security, Various Kernel Fixes (SSRT0482U)

requires the existence of the following un-installed/un-selected subset(s):

- TruCluster_V1.6 / Filesystem Patches:
  Patch 0037.00 - Support For New AdvFS Mount Option "-o noatimes"

- TruCluster_V1.6 / ASE Availability Manager (AM) Patches:
  Patch 0033.00 - Kern Mem Fault And simple_lock Panic Correction

This patch will not be installed.

-----
* Following patch(es) failed in prerequisite/file applicability check:
- TRU64L_UNIX_V4.0F / Security Related Patches:
  Patch 0579.01 - Security, Various Kernel Fixes (SSRT0482U)

```

A.1.5 Patch Installation Blocked by Missing Product Subset

Source: dupatch preinstallation check or installation.

Problem: A specific patch cannot be installed because the product software subset is not installed on your system.

Causes: This is usually an informational message and no further action is required. However, this message may also occur due to an internal patch kit error that results in an incorrectly specified patch dependencies.

Action: If the specific patch being blocked is the only patch being blocked you can assume this is an informational message. It may be an internal patch kit error if there are other patches whose installation is blocked by the patch whose subset is not installed. As a workaround, if you need one of the other patches whose installation is blocked, you can install the optional Tru64 UNIX or TCR release subset and reinstall the patches.

Output:

```
Checking patch prerequisites and patch file applicability...
(dependent upon the number of patches you select, this may take a while)
-----

Problem installing:

- TruCluster_V1.6 / Cluster Kernel Patches:
  Patch 0035.00 - rm_spur Driver Correction

requires the existence of the following un-installed/un-selected subset(s):

- TruCluster_V1.6 - subset: TCRMCA141

This patch will not be installed.

-----
* Following patch(es) failed in prerequisite/file applicability check:

- TruCluster_V1.6 / Cluster Kernel Patches:
  Patch 0035.00 - rm_spur Driver Correction
```

A.1.6 Patch Installation Blocked by Disk Space

Source: dupatch preinstallation check or installation.

Problem: The system disk did not have enough space to install patches.

Causes: This occurs when there is not enough disk space in /, /var, or /usr partitions for dupatch to archive the existing system files and move the patched files into place.

Action: Provide the necessary disk space and reinstall patches. If you cannot provide enough system disk space through other means, you may want to make /var/adm/patch/backup a symbolic link to or NFS-mount another file system that is not related to the /, /var, or /usr partitions.

Output:

```
Checking patch prerequisites once more...
(dependent upon the number of patches you select, this may take a while)

./usr/sbin/fitset:
file system /whd needs 65829 Kbytes more to install the software specified.

There is not enough file system space to install all the patches.
you have selected.

Please press RETURN to start another selection.
.
.
.
```

A.1.7 Patch Installation Blocked by Installed Patch or Subset

Source: dupatch preinstallation check or installation.

Problem: The patch you are trying to install is built so it cannot supersede the later revision patch or subset that is installed on your system.

Causes: This applicability feature is used to ensure that your system is not regressed through the installation of older code.

Action: If the situation is caused by a release patch being blocked by a layered product or other subsets, contact your service provider.

Output:

```
Problem installing:

- DIGITAL_UNIX_V4.0D / Filesystem Patches:
```

```

Patch 00016.01 - System Run Level Correction

./sbin/.new..bcheckrc:
    is installed by:

- DIGITAL_UNIX_V4.0D:
    Patch C 00484.01

        and can not be replaced by this patch.

This patch will not be installed.

```

A.1.8 Patch Installation Blocked by an Existing CSP

Source: dupatch preinstallation check or installation.

Problem: Release patches will not automatically supersede a customer-specific patch (CSP).

Causes: A file you are trying to update with a release patch has been previously updated through the installation of a CSP. The release patch does not have any knowledge as to whether it contains fixes contained in CSPs.

Action: Determine if the CSP is included in the release patch kit:

- If yes, then you can safely remove the CSP (via dupatch) and reinstall the release patch .
- If no, contact your service provider to determine how to proceed.

Output:

```

Problem installing:

- DIGITAL_UNIX_V4.0F / Commands, Shells, & Utility Patches:
    Patch 00444.00 - Fixes sort problem when running in Japanese locale

./usr/bin/sort:
    is installed by Customer Specific Patch (CSP):

- DIGITAL_UNIX_V4.0F:
    Patch C 00187.00

        and can not be replaced by this patch. To install this patch,
        you must first remove the CSP using dupatch. Before performing
        this action, you should contact your Compaq Service
        Representative to determine if this patch kit contains the
        CSP. If it does not, you may need to obtain a new CSP from
        Compaq in order to install the patch kit and retain the CSP fix.

```

A.1.9 The dupatch Tools Are Outdated

Source: dupatch preinstallation check or installation.

Problem: Patch tool set residing on system are not the most recent version.

Causes: If the dupatch utility delivered with the patch kit determines that the tools residing on the system are not consistent with the patch kit, it will copy over updated versions of utilities used by dupatch.

Action: This is an informational message and no further action is required.

Output:

```

Patch tools need to be installed or updated on your system.
Please invoke the command as the super-user (root) first.

* A new version of patch tools required for patch management
  is now being installed on your system.

```

A.1.10 Some Patches Must Be Made Reversible

Source: dupatch preinstallation check or installation.

Problem: Patch tool set residing on system is not the most recent version.

Causes: The user tried to install a patch as nonreversible; however, the patch in question must be installed as reversible.

Action: This is an informational message and no further action is required.

Output:

```
* The following patch(es) are required to be reversible and
   will be made reversible automatically:

- DIGITAL_UNIX_V4.0F / Commands, Shells, & Utility Patches:
  Patch C 00187.00 - v 4.0f patch E C187.00
```

A.2 Patch Removal Messages

The following sections describe messages you might see when running the dupatch patch deletion function.

A.2.1 Patch Removal Blocked by Missing Patch Backup Files

Source: dupatch deletion.

Problem: An attempt to remove a specific patch or all patches fails because the backup of the prepatch system files is not available to dupatch.

Causes: The /var/adm/patch/backup area does not contain the prepatch system files.

Action: Ensure that dupatch can access the /var/adm/patch/backup area and that the area is set up as it was when the patches were installed. For example, if you were using /var/adm/patch/backup as a mount point for another file system, make sure that file system is mounted. Once you have solved the /var/adm/patch/backup access or content problem, remove patches through the dupatch Delete Menu.

Output:

```
Checking patch dependency...
  (depending upon the number of patches you select, this may take a while)
-----

- DIGITAL_UNIX_V4.0F / Commands, Shells, & Utility Patches:
  Patch 0019.00 - quota Command Correction

cannot be deleted.

Can not find the backup copy for this patch in /var/adm/patch/backup.

-----

* Following patch(es) failed in dependency check:

- DIGITAL_UNIX_V4.0F / Commands, Shells, & Utility Patches:
  Patch 0019.00 - quota Command Correction
```

A.2.2 Patch Removal Blocked by Dependencies on Other Patches

Source: dupatch deletion.

Problem: A specific patch cannot be removed because of its dependency on other installed patches.

Causes: Generally this occurs when you miss the selection of all dependent patches.

Action: Through the dupatch Delete Menu, reselect the patches including the noted dependent patch and try to remove them. The program will notify you of any other dependent patches you might have missed.

Output:

```
Checking patch dependency...
(dependent upon the number of patches you select, this may take a while)
-----
- DIGITAL_UNIX_V4.0F / Library Patches:
  Patch 0262.00 - libm Corrections

can not be deleted unless the following patches are also selected or
deleted first:

- DIGITAL_UNIX_V4.0F / Library Patches:
  Patch 0676.00 - libm Corrections

-----

* Following patch(es) failed in dependency check:

- DIGITAL_UNIX_V4.0F / Library Patches:
  Patch 0262.00 - libm Corrections
```

A.2.3 No Original Files Restored When Patch Is Removed

Source: dupatch deletion.

Problem: The removal of a specific patch results in no original system files being restored.

Causes: This occurs when a patch delivers files to your system that were not shipped in the initial release of the product. For example, the sample output shows the removal of Tru64 UNIX 4.0F Patch 314.00; the patch delivers files that were not shipped with the initial release of Tru64 UNIX 4.0F.

Action: This is an informational message and no further action is required.

Output:

```
=== Deleting "DIGITAL UNIX V4.0F":

Deleting "Patch: AdvFS Command Correction " (OSFPAT00031400425) .
-----

Patch OSFPAT00031400425 delivered all new files to your system
so there are no original files to be restored.
No user action is necessary.

-----
```

A.3 TruCluster Specific dupatch Messages

The following sections show the output of informational messages you might see when running dupatch on a TruCluster system:

A.3.1 System Not Adequately Prepared

Output:

```
This system is part of a V5.0 cluster which has
not been prepared to do a rolling patch installation. Refer to the Patch
Installation Guide as to the proper procedure to start a
rolling patch.
```

A.3.2 Rolling Upgrade in Progress (Installation)

Output:

This system is part of a V5.0 cluster which is currently in the process of being installed via the rolling upgrade/rolling patch procedure. New patches cannot be installed on the system until the rolling installation procedure has completed on all cluster members.

A.3.3 Rolling Upgrade in Progress (Baselining)

Output:

This Cluster is in the process of a roll. Baselining is not permitted until the cluster is out of the roll.

A.3.4 Version 5.0 Wave 4 Cluster is Unsupported

Output:

This system is a Version 5.0 - Wave 4 Cluster. Dupatch cannot patch this type of cluster. This is an unsupported operation and dupatch will now exit.

A.4 Message Specific to the Rolling Patch Procedure

The following message is generated by the rolling patch procedure.

A.4.1 Insufficient Free Space (File System Full)

Source: `clu_upgrade setup` stage of the rolling upgrade procedure.

Problem: The rolling upgrade cannot proceed because required space allocations are not met.

Causes: The `/`, `/usr`, `/var`, and/or `/i18n` file systems do not have the required amount of free space.

Action: Run the `clu_upgrade -undo setup` command, free up enough space in the affected file systems to meet the requirements listed in Section 5.2.1, and rerun the `clu_upgrade -undo setup` command.

Output:

```
*** Error ***
The tar commands used to create tagged files in the '/' file system have
reported the following errors and warnings:
NOTE: CFS: File system full: /

        tar: sbin/lsm.d/raid5/volsd : No space left on device
        tar: sbin/lsm.d/raid5/volume : No space left on device
NOTE: CFS: File system full: /

.NOTE: CFS: File system full: /
```

Sample Patch-Kit Installations

This appendix provides samples of using dupatch to do the following:

- Perform a typical patch kit installation (Section B.1)
- Install Tru64 UNIX and TruCluster Server patches using the rolling upgrade procedure (Section B.2)
- Perform a baseline analysis (Section B.3)
- Remove patches (Section B.4)

B.1 Typical Patch Kit Installation

```
# /mnt/PatchKits/Kit2/patch_kits/dupatch

Tru64 UNIX Patch Utility (Rev. 29-01)
=====
- This dupatch session is logged in /var/adm/patch/log/session.log

Main Menu:
-----

1) Patch Installation
2) Patch Deletion

3) Patch Documentation
4) Patch Tracking

5) Patch Baseline Analysis/Adjustment

h) Help on Command Line Interface

q) Quit

Enter your choice: 1

Tru64 UNIX Patch Utility (Rev. 29-01)
=====
- This dupatch session is logged in /var/adm/patch/log/session.log

Patch Installation Menu:
-----

1) Pre-Installation Check ONLY
2) Check & Install patches in Single-User Mode

b) Back to Main Menu
q) Quit

Enter your choice: 2

Checking patch kit for transmission errors during download...

Finished Checking patch kit checksums

Gathering patch information...
(dependent upon the size of the patch kit, this may take awhile)

*** Start of Special Instructions ***

*** There are NO Special Instructions ***

Press RETURN to proceed...

-----

To Make Patches Reversible - PLEASE READ THE FOLLOWING INFORMATION:
```

- You have the option to make the patches reversible so you can revert the system to its state prior to the installation of a patch.
- Reversibility is achieved by compressing and saving a copy of the files being replaced by the patches. These files would be restored to the system if you choose to delete a patch.
- If you choose to make patches NON-reversible, then the system cannot be restored to the state prior to the installation of a patch; you will not be able to delete the patches later.
- This patch kit may force a small set of patches to be reversible to ensure your upgrades to future versions of Tru64 UNIX are successful. The Patch Utility will make those patches reversible automatically.

Refer to the Release Notes / Installation Instructions provided with this patch kit.

Do you want the patches to be reversible? [y]: **Return**

By default, the backup copies of the installed patches will be saved in "/var/adm/patch/backup".

If you have limited space in /var, you may want to make the backup directory the mount point for a separate disk partition, an NFS mounted directory, or a symbolic link to another file system.

You must ensure the backup directory is configured the same way during any patch removal operations.

Your current setup of "/var/adm/patch/backup" is:

- * A plain directory (not a mount point or a symbolic link)

Do you want to proceed with the installation with this setup? [y]: **Return**

Your name: **Mike**

Enter any notes about this operation that you would like stored for future reference (To end your input, enter a "."):

: **Installing all patches for V5.0A Kit2**
: .

The patches listed below are optional:

There may be more optional patches than can be presented on a single screen. If this is the case, you can choose patches screen by screen or all at once on the last screen. All of the choices you make will be collected for your confirmation before any patches are installed.

- Tru64_UNIX_V5.0A / Cluster Kernel Patches:
 - 1) Patch 00090.00 - versw command can core dump during rolling upgrade
 - 2) Patch 00186.00 - Disks can become inaccessible on a cluster node
- Tru64_UNIX_V5.0A / Commands, Shells, & Utilities Patches:
 - 3) Patch 00015.00 - Fixes a problem that occurs in multibyte locales
 - 4) Patch 00019.00 - Fixes a problem with the grep command
 - 5) Patch 00035.00 - Fixes a problem with the find command
 - 6) Patch 00041.00 - Corrects problem with the fgrep command
 - 7) Patch 00042.00 - Fixes problem with the restore command
 - 8) Patch 00064.00 - Fixes btcreate and btextract problems

--- MORE TO FOLLOW ---

Enter your choices or press RETURN to display the next screen.

Choices (for example, 1 2 4-6): **Return**

- 9) Patch 00065.00 - Fixes a hang in the shutdown process
- 10) Patch 00068.00 - Fix for vrestore problems
- 11) Patch 00079.00 - Fix for pax and vdump problems
- 12) Patch 00098.00 - pax opens and truncated pre-existing files
- Tru64_UNIX_V5.0A / Commands, Shells, & Utility Patches:
 - 13) Patch 00116.00 - Fixes a problem in uucp
 - 14) Patch 00192.00 - Fix for what command
 - 15) Patch 00205.00 - Corrects problem with mv command deleting files
 - 16) Patch 00211.00 - Fixes cron problems
- Tru64_UNIX_V5.0A / Common Desktop Environment (CDE) Patches:
 - 17) Patch 00001.00 - CDE does not recreate list of application groups

- 18) Patch 00165.00 - dtlogin core dumps from XDMCP clients
- 19) Patch 00200.00 - Fix for dtmail problem
- 20) Patch 00209.00 - dtwm hangs on system using multiple displays

--- MORE TO FOLLOW ---

Enter your choices or press RETURN to display the next screen.

Choices (for example, 1 2 4-6): **Return**

- Tru64_UNIX_V5.0A / Filesystem Patches:
 - 21) Patch 00027.00 - Changes quotactl prototype to meet POSIX standards
 - 22) Patch 00031.00 - Fix for nfscast error message
 - 23) Patch 00047.00 - UFS disk quotas are not updating automatically
 - 24) Patch 00130.00 - Incorrect warning messages about mounted filesystems
 - 25) Patch 00134.00 - Fixes problems with vdf
 - 26) Patch 00190.00 - b-tree index for directory could become corrupted
 - 27) Patch 00207.00 - Potential hang on booting a cluster
- Tru64_UNIX_V5.0A / Hardware Configuration Patches:
 - 28) Patch 00061.00 - Hardware manager inaccurately reports CPU speed
 - 29) Patch 00081.00 - Fix for dn_setup core dump
 - 30) Patch 00083.00 - SCSI_MC_GENERIC-READ_ELEMENT_STATUS fails
- Tru64_UNIX_V5.0A / I/O Device Handling Patches:
 - 31) Patch 00051.00 - Provides the latest driver for PowerStorm 4D10T
 - 32) Patch 00084.00 - Corrects a hardware probe time hang

--- MORE TO FOLLOW ---

Enter your choices or press RETURN to display the next screen.

Choices (for example, 1 2 4-6): **Return**

- 33) Patch 00122.00 - Fixes a timeout table overflow system panic
- 34) Patch 00154.00 - Improper handling of PCI options cards
- 35) Patch 00159.00 - Fixes AdvFS domain panic
- 36) Patch 00194.00 - Fixes potential source code computability problem
- Tru64_UNIX_V5.0A / I18N Patches:
 - 37) Patch 00014.00 - Updates the Danish (da_DK.ISO8859-1) locale
 - 38) Patch 00124.00 - Adds support for euro character to keymap files
- Tru64_UNIX_V5.0A / Kernel Patches:
 - 39) Patch 00036.00 - OS only looks in slot 0 for primary CPU
 - 40) Patch 00057.00 - Fixes panic caused when deleting process group
 - 41) Patch 00062.00 - Cursor displays incorrectly when image plane set to 1
 - 42) Patch 00141.00 - System hangs when running granularity hints
 - 43) Patch 00178.00 - Incorrect bcache size returned to kernel from HWRPB
 - 44) Patch 00184.00 - Bootlink can fail on AlphaStations 600, 600A, 500/400

--- MORE TO FOLLOW ---

Enter your choices or press RETURN to display the next screen.

Choices (for example, 1 2 4-6): **Return**

- Tru64_UNIX_V5.0A / Library Patches:
 - 45) Patch 00008.00 - Provides missing compose definitions for ISO8859-15
 - 46) Patch 00022.00 - Fix for EVM problems on some Alpha EV6 systems
 - 47) Patch 00071.00 - Static library fix for libevm
 - 48) Patch 00095.00 - Overlap checking in MKFDMN and NEWFS fails
 - 49) Patch 00097.00 - Fixes a problem with the dlsym routine
 - 50) Patch 00099.00 - MKFDMN NEWFS fails for third party drivers in cluster
 - 51) Patch 00163.00 - Fixes conflicting cuserid declarations
- Tru64_UNIX_V5.0A / Memory Channel Patches:
 - 52) Patch 00086.00 - Fix for rm_state_change panic
- Tru64_UNIX_V5.0A / Network Patches:
 - 53) Patch 00023.00 - Fixes a kernel memory fault when using ATM
 - 54) Patch 00025.00 - Fix for VMAC functionality when used with NETrain
 - 55) Patch 00032.00 - Kernel panics Classical IP over lfa ATM driver
 - 56) Patch 00033.00 - System panics when running ATM

--- MORE TO FOLLOW ---

Enter your choices or press RETURN to display the next screen.

Choices (for example, 1 2 4-6): **Return**

- 57) Patch 00037.00 - Fixes a tftpd problem
- 58) Patch 00069.00 - Updates the lfa ATM device driver to V1.0.17
- 59) Patch 00118.00 - Corrects a problem in the lat driver

- 60) Patch 00148.00 - Performance problem in Cluster File System
- 61) Patch 00161.00 - Updates emx Fiber Channel driver to revision 1.22
- 62) Patch 00170.00 - ATM LAN emulation fails with ATM Meteor 351 board
- Tru64_UNIX_V5.0A / Printers Patches:
 - 63) Patch 00157.00 - Unnecessary error messages written to lpr log file
- Tru64_UNIX_V5.0A / Security Related Patches:
 - 64) Patch 00074.00 - Security (SSRT0636U)
 - 65) Patch 00076.00 - Security (SSRT0656U)
 - 66) Patch 00100.00 - Security (SSRT0656U)
 - 67) Patch 00114.00 - Security (SSRT0636U)
 - 68) Patch 00120.00 - System panic occurs when auditing is enabled
 - 69) Patch 00188.00 - advscan does not display bootable partitions properly
 - 70) Patch 00196.00 - Security (SSRT0683U)

--- MORE TO FOLLOW ---

Enter your choices or press RETURN to display the next screen.

Choices (for example, 1 2 4-6):

- 71) Patch 00202.00 - Upgrades sys_check utility to version 119
- Tru64_UNIX_V5.0A / Software Development Environment Patches:
 - 72) Patch 00038.00 - Fixes linker (ld) problems
 - 73) Patch 00053.00 - Fixes errors seen when compiling with the -om switch
 - 74) Patch 00066.00 - Problems with kdbx extensions mount and swap
 - 75) Patch 00067.00 - Fixes a problem with routines in the libst library
 - 76) Patch 00072.00 - Cannot change file permission using libst routines
 - 77) Patch 00073.00 - prof profiling tool causes segmentation fault
 - 78) Patch 00198.00 - Fixes problems in the Compaq C compiler
- Tru64_UNIX_V5.0A / System Administration Patches:
 - 79) Patch 00002.00 - Compaq SNMP subagent core dumps
 - 80) Patch 00003.00 - Fixes automount problem
 - 81) Patch 00075.00 - Fix for System Management Station daemon
 - 82) Patch 00167.00 - Fixes incorrect date and time stamp on new directory
 - 83) Patch 00172.00 - Fixes problems with the collect command

--- MORE TO FOLLOW ---

Enter your choices or press RETURN to display the next screen.

Choices (for example, 1 2 4-6):

- Tru64_UNIX_V5.0A / Threads Patches:
 - 84) Patch 00126.00 - Fix for threaded applications problem
 - 85) Patch 00128.00 - Fix for threads created by taso programs
- Tru64_UNIX_V5.0A / VM Patches:
 - 86) Patch 00089.00 - Adding swap partition less than 8KB causes problems
- Tru64_UNIX_V5.0A / Workstation Patches:
 - 87) Patch 00213.00 - Fixes problem causing diskconfig to issue error msg
- Tru64_UNIX_V5.0A / X11 Patches:
 - 88) Patch 00010.00 - Fixes a problem with the svn widget of libDXm.so
 - 89) Patch 00011.00 - Fix for lbxproxy utility
 - 90) Patch 00012.00 - Drawing problems with PowerStorm 4D10T graphics card
 - 91) Patch 00070.00 - Static library fix for libDXm
 - 92) Patch 00132.00 - Fix for tclhelp failure
 - 93) Patch 00150.00 - Fixes a memory leak in Xt

--- MORE TO FOLLOW ---

Enter your choices or press RETURN to display the next screen.

Choices (for example, 1 2 4-6): **Return**

- 94) Patch 00152.00 - Memory leak when creating and destroying widgets
- 95) Patch 00174.00 - Fix for memory leaks in Xlib
- 96) Patch 00176.00 - Memory leaks occur when creating widgets
- 97) Patch 00180.00 - Fixes memory leak in libXm
- 98) Patch 00182.00 - libXm memory leak when creating widgets

Or you may choose one of the following options:

- 99) ALL of the above
- 100) CANCEL selections and redisplay menus
- 101) EXIT without installing any patches

Enter your choices or press RETURN to redisplay menus.

Choices (for example, 1 2 4-6): 99

You are installing the following optional patches:

- Tru64_UNIX_V5.0A / Cluster Kernel Patches:
 - Patch 00090.00 - versw command can core dump during rolling upgrade
 - Patch 00186.00 - Disks can become inaccessible on a cluster node
- Tru64_UNIX_V5.0A / Commands, Shells, & Utilities Patches:
 - Patch 00015.00 - Fixes a problem that occurs in multibyte locales
 - Patch 00019.00 - Fixes a problem with the grep command
 - Patch 00035.00 - Fixes a problem with the find command
 - Patch 00041.00 - Corrects problem with the fgrep command
 - Patch 00042.00 - Fixes problem with the restore command
 - Patch 00064.00 - Fixes btcreate and btextact problems
 - Patch 00065.00 - Fixes a hang in the shutdown process
 - Patch 00068.00 - Fix for vrestore problems
 - Patch 00079.00 - Fix for pax and vdump problems
 - Patch 00098.00 - pax opens and truncated pre-existing files
- Tru64_UNIX_V5.0A / Commands, Shells, & Utility Patches:
 - Patch 00116.00 - Fixes a problem in uucp

Press RETURN to display the next screen: **Return**

- Patch 00192.00 - Fix for what command
 - Patch 00205.00 - Corrects problem with mv command deleting files
 - Patch 00211.00 - Fixes cron problems
- Tru64_UNIX_V5.0A / Common Desktop Environment (CDE) Patches:
 - Patch 00001.00 - CDE does not recreate list of application groups
 - Patch 00165.00 - dtlogin core dumps from XDMCP clients
 - Patch 00200.00 - Fix for dtmail problem
 - Patch 00209.00 - dtwm hangs on system using multiple displays
- Tru64_UNIX_V5.0A / Filesystem Patches:
 - Patch 00027.00 - Changes quotactl prototype to meet POSIX standards
 - Patch 00031.00 - Fix for nfscast error message
 - Patch 00047.00 - UFS disk quotas are not updating automatically
 - Patch 00130.00 - Incorrect warning messages about mounted filesystems
 - Patch 00134.00 - Fixes problems with vdf
 - Patch 00190.00 - b-tree index for directory could become corrupted
 - Patch 00207.00 - Potential hang on booting a cluster

Press RETURN to display the next screen: **Return**

- Tru64_UNIX_V5.0A / Hardware Configuration Patches:
 - Patch 00061.00 - Hardware manager inaccurately reports CPU speed
 - Patch 00081.00 - Fix for dn_setup core dump
 - Patch 00083.00 - SCSI_MC_GENERIC-READ_ELEMENT_STATUS fails
- Tru64_UNIX_V5.0A / I/O Device Handling Patches:
 - Patch 00051.00 - Provides the latest driver for PowerStorm 4D10T
 - Patch 00084.00 - Corrects a hardware probe time hang
 - Patch 00122.00 - Fixes a timeout table overflow system panic
 - Patch 00154.00 - Improper handling of PCI options cards
 - Patch 00159.00 - Fixes AdvFS domain panic
 - Patch 00194.00 - Fixes potential source code computability problem
- Tru64_UNIX_V5.0A / I18N Patches:
 - Patch 00014.00 - Updates the Danish (da_DK.ISO8859-1) locale
 - Patch 00124.00 - Adds support for euro character to keymap files
- Tru64_UNIX_V5.0A / Kernel Patches:
 - Patch 00036.00 - OS only looks in slot 0 for primary CPU

Press RETURN to display the next screen: **Return**

- Patch 00057.00 - Fixes panic caused when deleting process group
 - Patch 00062.00 - Cursor displays incorrectly when image plane set to 1
 - Patch 00141.00 - System hangs when running granularity hints
 - Patch 00178.00 - Incorrect bcache size returned to kernel from HWRPB
 - Patch 00184.00 - Bootlink can fail on AlphaStations 600, 600A, 500/400
- Tru64_UNIX_V5.0A / Library Patches:
 - Patch 00008.00 - Provides missing compose definitions for ISO8859-15
 - Patch 00022.00 - Fix for EVM problems on some Alpha EV6 systems
 - Patch 00071.00 - Static library fix for libevm
 - Patch 00095.00 - Overlap checking in MKFDMN and NEWFS fails
 - Patch 00097.00 - Fixes a problem with the dlsym routine
 - Patch 00099.00 - MKFDMN NEWFS fails for third party drivers in cluster

```

Patch 00163.00 - Fixes conflicting cuserid declarations
- Tru64_UNIX_V5.0A / Memory Channel Patches:
  Patch 00086.00 - Fix for rm_state_change panic
- Tru64_UNIX_V5.0A / Network Patches:
  Patch 00023.00 - Fixes a kernel memory fault when using ATM
Press RETURN to display the next screen: Return

Patch 00025.00 - Fix for VMAC functionality when used with NETrain
Patch 00032.00 - Kernel panics Classical IP over lfa ATM driver
Patch 00033.00 - System panics when running ATM
Patch 00037.00 - Fixes a tftpd problem
Patch 00069.00 - Updates the lfa ATM device driver to V1.0.17
Patch 00118.00 - Corrects a problem in the lat driver
Patch 00148.00 - Performance problem in Cluster File System
Patch 00161.00 - Updates emx Fiber Channel driver to revision 1.22
Patch 00170.00 - ATM LAN emulation fails with ATM Meteor 351 board

- Tru64_UNIX_V5.0A / Printers Patches:
  Patch 00157.00 - Unnecessary error messages written to lpr log file

- Tru64_UNIX_V5.0A / Security Related Patches:
  Patch 00074.00 - Security (SSRT0636U)
  Patch 00076.00 - Security (SSRT0656U)
  Patch 00100.00 - Security (SSRT0656U)
  Patch 00114.00 - Security (SSRT0636U)
  Patch 00120.00 - System panic occurs when auditing is enabled
  Patch 00188.00 - advscan does not display bootable partitions properly

Press RETURN to display the next screen: Return

Patch 00196.00 - Security (SSRT0683U)
Patch 00202.00 - Upgrades sys_check utility to version 119

- Tru64_UNIX_V5.0A / Software Development Environment Patches:
  Patch 00038.00 - Fixes linker (ld) problems
  Patch 00053.00 - Fixes errors seen when compiling with the -om switch
  Patch 00066.00 - Problems with kdbx extensions mount and swap
  Patch 00067.00 - Fixes a problem with routines in the libst library
  Patch 00072.00 - Cannot change file permission using libst routines
  Patch 00073.00 - prof profiling tool causes segmentation fault
  Patch 00198.00 - Fixes problems in the Compaq C compiler

- Tru64_UNIX_V5.0A / System Administration Patches:
  Patch 00002.00 - Compaq SNMP subagent core dumps
  Patch 00003.00 - Fixes automount problem
  Patch 00075.00 - Fix for System Management Station daemon
  Patch 00167.00 - Fixes incorrect date and time stamp on new directory
  Patch 00172.00 - Fixes problems with the collect command

Press RETURN to display the next screen: Return

- Tru64_UNIX_V5.0A / Threads Patches:
  Patch 00126.00 - Fix for threaded applications problem
  Patch 00128.00 - Fix for threads created by taso programs

- Tru64_UNIX_V5.0A / VM Patches:
  Patch 00089.00 - Adding swap partition less than 8KB causes problems

- Tru64_UNIX_V5.0A / Workstation Patches:
  Patch 00213.00 - Fixes problem causing diskconfig to issue error msg

- Tru64_UNIX_V5.0A / X11 Patches:
  Patch 00010.00 - Fixes a problem with the svn widget of libDXm.so
  Patch 00011.00 - Fix for lbxproxy utility
  Patch 00012.00 - Drawing problems with PowerStorm 4D10T graphics card
  Patch 00070.00 - Static library fix for libDXm
  Patch 00132.00 - Fix for tclhelp failure
  Patch 00150.00 - Fixes a memory leak in Xt
  Patch 00152.00 - Memory leak when creating and destroying widgets
  Patch 00174.00 - Fix for memory leaks in Xlib

Press RETURN to display the next screen: Return

Patch 00176.00 - Memory leaks occur when creating widgets
Patch 00180.00 - Fixes memory leak in libXm
Patch 00182.00 - libXm memory leak when creating widgets

```

Is this correct? (y/n): **y**

Checking patch prerequisites and patch file applicability...
(depending upon the number of patches you select, this may take awhile)

*** You have selected 98 patches ***

***** CAUTION *****

Interruption of this phase of the operation will corrupt your
operating system software and compromise the patch database
integrity.

DO NOT Ctrl/C, power off your system, or in any other way
interrupt the patch operation. The patch operation is complete
when you are returned to the Patch Utility menus.

=== Installing "Tru64 UNIX V5.0A" Patches:

Checking file system space required to install specified subsets:

File system space checked OK.

98 subsets will be installed.

Loading subset 1 of 98 ...

Patch: Fixes panic caused when deleting process group
Copying from /scratch/public/patch_kit/Tru64_UNIX_V5.0A/kit (disk)
Verifying

Loading subset 2 of 98 ...

Patch: Fixes problems with vdf
Copying from /scratch/public/patch_kit/Tru64_UNIX_V5.0A/kit (disk)
Verifying

Loading subset 3 of 98 ...

:
:

Loading subset 97 of 98 ...

Patch: Fixes a problem in uucp
Copying from /scratch/public/patch_kit/Tru64_UNIX_V5.0A/kit (disk)
Verifying

Loading subset 98 of 98 ...

Patch: pax opens and truncated pre-existing files
Copying from /scratch/public/patch_kit/Tru64_UNIX_V5.0A/kit (disk)
Verifying

98 of 98 subsets installed successfully.

Configuring "Patch: Fixes panic caused when deleting process group" (OSFPAT00005700505)

Configuring "Patch: Fixes problems with vdf" (OSFPAT00013400505)

Configuring "Patch: Upgrades sys_check utility to version 119" (OSFPAT00020200505)

:
:

Configuring "Patch: Fixes a problem in uucp" (OSFPAT00011600505)

Configuring "Patch: pax opens and truncated pre-existing files" (OSFPAT00009800505)

Beginning kernel build...

Do you have a pre-existing configuration file?: y

*** KERNEL CONFIGURATION AND BUILD PROCEDURE ***

Enter a name for the kernel configuration file. [IDIOM2]: **Return**

A configuration file with the name 'IDIOM2' already exists.

Do you want to replace it? (y/n) [n]: **y**

Saving /sys/conf/IDIOM2 as /sys/conf/IDIOM2.bck

*** KERNEL OPTION SELECTION ***

```
      Selection   Kernel Option
-----
1 System V Devices
2 NTP V3 Kernel Phase Lock Loop (NTP_TIME)
3 Kernel Breakpoint Debugger (KDEBUG)
4 Packetfilter driver (PACKETFILTER)
5 Point-to-Point Protocol (PPP)
6 STREAMS pckt module (PCKT)
7 X/Open Transport Interface (XTISO, TIMOD, TIRDWR)
8 ISO 9660 Compact Disc File System (CDFS)
9 Audit Subsystem
10 ATM UNI 3.0/3.1 ILMI (ATMILMI3X)
11 IP Switching over ATM (ATMIFMP)
12 LAN Emulation over ATM (LANE)
13 Classical IP over ATM (ATMIP)
14 ATM UNI 3.0/3.1 Signalling for SVCs (UNI3X)
15 Asynchronous Transfer Mode (ATM)
16 All of the above
17 None of the above
18 Help
19 Display all options again
-----
```

Enter your choices.

Choices (for example, 1 2 4-6) [17]: **8**

You selected the following kernel options:
ISO 9660 Compact Disc File System (CDFS)

Is that correct? (y/n) [y]: **Return**

Do you want to edit the configuration file? (y/n) [n]:

*** PERFORMING KERNEL BUILD ***

A log file listing special device files is located in /dev/MAKEDEV.log
Working...Thu Sep 21 12:57:42 EDT 2000
Working...Thu Sep 21 12:59:44 EDT 2000

The new kernel is /sys/IDIOM2/vmunix

A reboot is necessary to complete the patch installation. Do
you want to reboot now? [y/n] [y]: **Return**

Existing kernel copied to /vmunix.PrePatch.

New Kernel (/sys/IDIOM2/vmunix) moved to /vmunix.

*** successfully installed 98 patches; failed to install 0 pathes ***

* A system reboot of the patched system is required for the successfully installed patches.

B.2 TruCluster Patch Installation in Rolling Upgrade

The example in this section illustrates the installation of a patch kit during a rolling upgrade. When following this example, note the following conventions:

- The cluster ID of the lead member is 10.
- During the roll stage, you will roll each member. This example shows the roll of only one member, which has the ID of 61.
- The output of booting processes in this sample has been truncated.

```
# clu_upgrade setup 10

This is the cluster upgrade program.
You have indicated that you want to perform the 'setup' stage of the
upgrade.

Do you want to continue to upgrade the cluster? [yes]: Return

Are you running the clu_upgrade command to upgrade to a new version of
the base operating system and cluster software? [yes]: no

Are you running the clu_upgrade command to apply a rolling patch? [yes]: Return

Backing-up member specific data for member: 10
.
Creating tagged files.
.....
.....
.....

The cluster upgrade 'setup' stage has completed successfully.
Reboot all cluster members except member: '10'
:
:

The 'setup' stage of the upgrade has completed successfully.

# clu_upgrade preinstall Return

This is the cluster upgrade program.
You have indicated that you want to perform the 'preinstall' stage of the
upgrade.

Do you want to continue to upgrade the cluster? [yes]: Return
Checking tagged files.
.....
The cluster upgrade 'preinstall' stage has completed successfully.
You can now run the dupatch command on the lead member.

# ./dupatch

Enter path to the top of the patch distribution,
or enter "q" to quit : .

    * A new version of patch tools required for patch management
      is now being installed on your system.

    * Tools updated, invoking the updated Patch Utility...

Tru64 UNIX Patch Utility (Rev. 29-01)
=====
- This dupatch session is logged in /var/adm/patch/log/session.log

Main Menu:
-----

1) Patch Installation
2) Patch Deletion

3) Patch Documentation
4) Patch Tracking

5) Patch Baseline Analysis/Adjustment

h) Help on Command Line Interface
```

```

q) Quit
Enter your choice: 1
Checking Cluster State...done

Tru64 UNIX Patch Utility (Rev. 29-01)
=====
- This dupatch session is logged in /var/adm/patch/log/session.log

Patch Installation Menu:
-----

1) Pre-Installation Check ONLY
2) Check & Install patches in Single-User Mode
3) Check and Install in Multi-User mode

b) Back to Main Menu
q) Quit

Enter your choice: 3

*** Installation Warning ***

You have chosen to install patches onto this system while it is running in
Multi-User mode. Some patches may directly affect core operating system
operations. To insure the proper operation of all applications, it is
strongly suggested that you install these patches while the system is in
Single-User mode. If this cannot be done, install these patches when the
system is as lightly loaded as possible (i.e. not running production
environments, no users logged on, etc.).

Do you wish to continue? (y/n) [y]: y

The products listed below are optional:

There may be more optional products than can be presented on a single
screen. If this is the case, you can choose products screen by screen
or all at once on the last screen. All of the choices you make will
be collected for your confirmation before any products are installed.

1) Patches for Tru64 UNIX V5.0A
2) Patches for TruCluster Server V5.0A

Or you may choose one of the following options:

3) ALL of the above
4) CANCEL selections and redisplay menus
5) EXIT without installing any products

Enter your choices or press RETURN to redisplay menus.

Choices (for example, 1 2 4-6): 3

You are installing patches (to be selected) from the following products:

Patches for Tru64 UNIX V5.0A
Patches for TruCluster Server V5.0A

Is this correct? (y/n): y

Gathering patch information...
(dependent upon the size of the patch kit, this may take awhile)

*** Start of Special Instructions ***

*** There are NO Special Instructions ***

Press RETURN to proceed...

-----

To Make Patches Reversible - PLEASE READ THE FOLLOWING INFORMATION:

```

- You have the option to make the patches reversible so you can revert the system to its state prior to the installation of a patch.
- Reversibility is achieved by compressing and saving a copy of the files being replaced by the patches. These files would be restored to the system if you choose to delete a patch.
- If you choose to make patches NON-reversible, then the system cannot be restored to the state prior to the installation of a patch; you will not be able to delete the patches later.
- This patch kit may force a small set of patches to be reversible to ensure your upgrades to future versions of Tru64 UNIX are successful. The Patch Utility will make those patches reversible automatically.

Refer to the Release Notes / Installation Instructions provided with this patch kit.

Do you want the patches to be reversible? [y]: **Return**

By default, the backup copies of the installed patches will be saved in "/var/adm/patch/backup".

If you have limited space in /var, you may want to make the backup directory the mount point for a separate disk partition, an NFS mounted directory, or a symbolic link to another file system.

You must ensure the backup directory is configured the same way during any patch removal operations.

Your current setup of "/var/adm/patch/backup" is:

* A plain directory (not a mount point or a symbolic link)

Do you want to proceed with the installation with this setup? [y]: **Return**

Enter any notes about this operation that you would like stored for future reference (To end your input, enter a "."):

: **Installing IPK for 5.0a on 3 nodes**
: .

The patches listed below are optional:

There may be more optional patches than can be presented on a single screen. If this is the case, you can choose patches screen by screen or all at once on the last screen. All of the choices you make will be collected for your confirmation before any patches are installed.

- Tru64_UNIX_V5.0A / Cluster Kernel Patches:
 - 1) Patch 0090.00 - versw command can core dump during rolling upgrade
- Tru64_UNIX_V5.0A / Commands, Shells, & Utilities Patches:
 - 2) Patch 0015.00 - Fixes a problem that occurs in multibyte locales
 - 3) Patch 0019.00 - Fixes a problem with the grep command
 - 4) Patch 0035.00 - Fixes a problem with the find command
 - 5) Patch 0041.00 - Corrects problem with the fgrep command
 - 6) Patch 0042.00 - Fixes problem with the restore command
 - 7) Patch 0050.00 - crontab jobs run multiple times in same minute
 - 8) Patch 0064.00 - Fixes btcreate and btextract problems

--- MORE TO FOLLOW ---

Enter your choices or press RETURN to display the next screen.

Choices (for example, 1 2 4-6): **Return**

- 9) Patch 0065.00 - Fixes a hang in the shutdown process
- 10) Patch 0068.00 - Fix for vrestore problems
- 11) Patch 0079.00 - Fix for pax and vdump problems
- 12) Patch 0098.00 - pax opens and truncated pre-existing files
- Tru64_UNIX_V5.0A / Common Desktop Environment (CDE) Patches:
 - 13) Patch 0001.00 - CDE does not recreate list of application groups
- Tru64_UNIX_V5.0A / Filesystem Patches:
 - 14) Patch 0027.00 - Changes quotactl prototype to meet POSIX standards
 - 15) Patch 0031.00 - Fix for nfscast error message
 - 16) Patch 0047.00 - UFS disk quotas are not updating automatically
 - 17) Patch 0077.00 - Fix for AdvFS kernel memory fault problem
 - 18) Patch 0078.00 - Fix for advscan utility
 - 19) Patch 0096.00 - Fix for sendmsg, nsendmsg, recvmmsg, and nrecvmmsg

- Tru64_UNIX_V5.0A / Hardware Configuration Patches:
 - 20) Patch 0054.00 - Provides PCI Resource Mgmt support for Atalla AXL200

--- MORE TO FOLLOW ---

Enter your choices or press RETURN to display the next screen.

Choices (for example, 1 2 4-6): **Return**

- 21) Patch 0061.00 - Hardware manager inaccurately reports CPU speed
- 22) Patch 0081.00 - Fix for dn_setup core dump
- 23) Patch 0083.00 - SCSI_MC_GENERIC-READ_ELEMENT_STATUS fails
- 24) Patch 0102.00 - Fixes a panic during a multi-node reboot

- Tru64_UNIX_V5.0A / I/O Device Handling Patches:

- 25) Patch 0051.00 - Provides the latest driver for PowerStorm 4D10T
- 26) Patch 0059.00 - Updates emx Fiber Channel driver to revision 1.22
- 27) Patch 0084.00 - Corrects a hardware probe time hang
- 28) Patch 0103.00 - Fixes CAM disk problems

- Tru64_UNIX_V5.0A / I18N Patches:

- 29) Patch 0014.00 - Updates the Danish (da_DK.ISO8859-1) locale

- Tru64_UNIX_V5.0A / Kernel Patches:

- 30) Patch 0036.00 - OS only looks in slot 0 for primary CPU
- 31) Patch 0062.00 - Cursor displays incorrectly when image plane set to 1

--- MORE TO FOLLOW ---

Enter your choices or press RETURN to display the next screen.

Choices (for example, 1 2 4-6): **Return**

- Tru64_UNIX_V5.0A / Library Patches:

- 32) Patch 0008.00 - Provides missing compose definitions for ISO8859-15
- 33) Patch 0022.00 - Fix for EVM problems on some Alpha EV6 systems
- 34) Patch 0071.00 - Static library fix for libevm
- 35) Patch 0095.00 - Overlap checking in MKPDMN and NEWFS fails
- 36) Patch 0097.00 - Fixes a problem with the dlsym routine
- 37) Patch 0099.00 - MKPDMN NEWFS fails for third party drivers in cluster

- Tru64_UNIX_V5.0A / Memory Channel Patches:

- 38) Patch 0086.00 - Fix for rm_state_change panic

- Tru64_UNIX_V5.0A / Network Patches:

- 39) Patch 0023.00 - Fixes a kernel memory fault when using ATM
- 40) Patch 0025.00 - Fix for VMAC functionality when used with NETrain
- 41) Patch 0032.00 - Kernel panics Classical IP over lfa ATM driver
- 42) Patch 0033.00 - System panics when running ATM
- 43) Patch 0037.00 - Fixes a tftpd problem

--- MORE TO FOLLOW ---

Enter your choices or press RETURN to display the next screen.

Choices (for example, 1 2 4-6): **Return**

- 44) Patch 0069.00 - Updates the lfa ATM device driver to V1.0.17
- 45) Patch 0091.00 - Performance problem in Cluster File System

- Tru64_UNIX_V5.0A / Printers Patches:

- 46) Patch 0101.00 - Fixes various printing problems

- Tru64_UNIX_V5.0A / Security Related Patches:

- 47) Patch 0074.00 - Security (SSRT0636U)
- 48) Patch 0076.00 - Security (SSRT0656U)
- 49) Patch 0087.00 - Security (SSRT0636U)
- 50) Patch 0100.00 - Security (SSRT0656U)

- Tru64_UNIX_V5.0A / Software Development Environment Patches:

- 51) Patch 0030.00 - Fixes problems in the Compaq C compiler
- 52) Patch 0038.00 - Fixes linker (ld) problems
- 53) Patch 0053.00 - Fixes errors seen when compiling with the -om switch
- 54) Patch 0066.00 - Problems with kdbx extensions mount and swap
- 55) Patch 0067.00 - Fixes a problem with routines in the libst library

--- MORE TO FOLLOW ---

Enter your choices or press RETURN to display the next screen.

Choices (for example, 1 2 4-6): **Return**

- 56) Patch 0072.00 - Cannot change file permission using libst routines
- 57) Patch 0073.00 - prof profiling tool causes segmentation fault

- Tru64_UNIX_V5.0A / System Administration Patches:
 - 58) Patch 0002.00 - Compaq SNMP subagent core dumps
 - 59) Patch 0003.00 - Fixes automount problem
 - 60) Patch 0007.00 - Fixes problems with dxaccounts application
 - 61) Patch 0075.00 - Fix for System Management Station daemon
- Tru64_UNIX_V5.0A / Threads Patches:
 - 62) Patch 0080.00 - Fix for threaded applications problem
- Tru64_UNIX_V5.0A / VM Patches:
 - 63) Patch 0089.00 - Adding swap partition less than 8KB causes problems
- Tru64_UNIX_V5.0A / X11 Patches:
 - 64) Patch 0009.00 - Fix for problem with Caps Lock setting
 - 65) Patch 0010.00 - Fixes a problem with the svn widget of libDXm.so

--- MORE TO FOLLOW ---

Enter your choices or press RETURN to display the next screen.

Choices (for example, 1 2 4-6): **Return**

- 66) Patch 0011.00 - Fix for lbxproxy utility
- 67) Patch 0012.00 - Drawing problems with PowerStorm 4D10T graphics card
- 68) Patch 0070.00 - Static library fix for libDXm
- TruCluster_V5.0A / Cluster Kernel Patches:
 - 69) Patch 0001.00 - mounts that return ESTALE may loop forever
 - 70) Patch 0005.00 - Fixes a kernel memory fault panic
 - 71) Patch 0008.00 - Fix for MC2 vhub cluster panic
 - 72) Patch 0011.00 - Fixes problem on cluster nodes
 - 73) Patch 0012.00 - Corrects problem with cluster member
- TruCluster_V5.0A / Cluster Services Patches:
 - 74) Patch 0003.00 - Delivers a new stripped clu_genvmunix

--- MORE TO FOLLOW ---

Enter your choices or press RETURN to display the next screen.

Choices (for example, 1 2 4-6):

Or you may choose one of the following options:

- 75) ALL of the above
- 76) CANCEL selections and redisplay menus
- 77) EXIT without installing any patches

Enter your choices or press RETURN to redisplay menus.

Choices (for example, 1 2 4-6): **75**

You are installing the following optional patches:

- Tru64_UNIX_V5.0A / Cluster Kernel Patches:
 - Patch 0090.00 - versw command can core dump during rolling upgrade
- Tru64_UNIX_V5.0A / Commands, Shells, & Utilities Patches:
 - Patch 0015.00 - Fixes a problem that occurs in multibyte locales
 - Patch 0019.00 - Fixes a problem with the grep command
 - Patch 0035.00 - Fixes a problem with the find command
 - Patch 0041.00 - Corrects problem with the fgrep command
 - Patch 0042.00 - Fixes problem with the restore command
 - Patch 0050.00 - crontab jobs run multiple times in same minute
 - Patch 0064.00 - Fixes btcreate and btextract problems
 - Patch 0065.00 - Fixes a hang in the shutdown process
 - Patch 0068.00 - Fix for vrestore problems
 - Patch 0079.00 - Fix for pax and vdump problems
 - Patch 0098.00 - pax opens and truncated pre-existing files
- Tru64_UNIX_V5.0A / Common Desktop Environment (CDE) Patches:
 - Patch 0001.00 - CDE does not recreate list of application groups

Press RETURN to display the next screen: **Return**

- Tru64_UNIX_V5.0A / Filesystem Patches:
 - Patch 0027.00 - Changes quotactl prototype to meet POSIX standards
 - Patch 0031.00 - Fix for nfscast error message
 - Patch 0047.00 - UFS disk quotas are not updating automatically
 - Patch 0077.00 - Fix for AdvFS kernel memory fault problem
 - Patch 0078.00 - Fix for advscan utility

```

Patch 0096.00 - Fix for sendmsg, nsendmsg, recvmsg, and nrecvmsg

- Tru64_UNIX_V5.0A / Hardware Configuration Patches:
Patch 0054.00 - Provides PCI Resource Mgmt support for Atalla AXL200
Patch 0061.00 - Hardware manager inaccurately reports CPU speed
Patch 0081.00 - Fix for dn_setup core dump
Patch 0083.00 - SCSI_MC_GENERIC-READ_ELEMENT_STATUS fails
Patch 0102.00 - Fixes a panic during a multi-node reboot

- Tru64_UNIX_V5.0A / I/O Device Handling Patches:
Patch 0051.00 - Provides the latest driver for PowerStorm 4D10T
Patch 0059.00 - Updates emx Fiber Channel driver to revision 1.22
Patch 0084.00 - Corrects a hardware probe time hang

Press RETURN to display the next screen: Return

Patch 0103.00 - Fixes CAM disk problems

- Tru64_UNIX_V5.0A / I18N Patches:
Patch 0014.00 - Updates the Danish (da_DK.ISO8859-1) locale

- Tru64_UNIX_V5.0A / Kernel Patches:
Patch 0036.00 - OS only looks in slot 0 for primary CPU
Patch 0062.00 - Cursor displays incorrectly when image plane set to 1

- Tru64_UNIX_V5.0A / Library Patches:
Patch 0008.00 - Provides missing compose definitions for ISO8859-15
Patch 0022.00 - Fix for EVM problems on some Alpha EV6 systems
Patch 0071.00 - Static library fix for libevm
Patch 0095.00 - Overlap checking in MKFDMN and NEWFS fails
Patch 0097.00 - Fixes a problem with the dlsym routine
Patch 0099.00 - MKFDMN NEWFS fails for third party drivers in cluster

- Tru64_UNIX_V5.0A / Memory Channel Patches:
Patch 0086.00 - Fix for rm_state_change panic

Press RETURN to display the next screen: Return

- Tru64_UNIX_V5.0A / Network Patches:
Patch 0023.00 - Fixes a kernel memory fault when using ATM
Patch 0025.00 - Fix for VMAC functionality when used with NETrain
Patch 0032.00 - Kernel panics Classical IP over lfa ATM driver
Patch 0033.00 - System panics when running ATM
Patch 0037.00 - Fixes a tftpd problem
Patch 0069.00 - Updates the lfa ATM device driver to V1.0.17
Patch 0091.00 - Performance problem in Cluster File System

- Tru64_UNIX_V5.0A / Printers Patches:
Patch 0101.00 - Fixes various printing problems

- Tru64_UNIX_V5.0A / Security Related Patches:
Patch 0074.00 - Security (SSRT0636U)
Patch 0076.00 - Security (SSRT0656U)
Patch 0087.00 - Security (SSRT0636U)
Patch 0100.00 - Security (SSRT0656U)

Press RETURN to display the next screen: Return

- Tru64_UNIX_V5.0A / Software Development Environment Patches:
Patch 0030.00 - Fixes problems in the Compaq C compiler
Patch 0038.00 - Fixes linker (ld) problems
Patch 0053.00 - Fixes errors seen when compiling with the -om switch
Patch 0066.00 - Problems with kdbx extensions mount and swap
Patch 0067.00 - Fixes a problem with routines in the libst library
Patch 0072.00 - Cannot change file permission using libst routines
Patch 0073.00 - prof profiling tool causes segmentation fault

- Tru64_UNIX_V5.0A / System Administration Patches:
Patch 0002.00 - Compaq SNMP subagent core dumps
Patch 0003.00 - Fixes automount problem
Patch 0007.00 - Fixes problems with dxaccounts application
Patch 0075.00 - Fix for System Management Station daemon

- Tru64_UNIX_V5.0A / Threads Patches:
Patch 0080.00 - Fix for threaded applications problem

Press RETURN to display the next screen: Return

- Tru64_UNIX_V5.0A / VM Patches:

```

```

Patch 0089.00 - Adding swap partition less than 8KB causes problems

- Tru64_UNIX_V5.0A / X11 Patches:
  Patch 0009.00 - Fix for problem with Caps Lock setting
  Patch 0010.00 - Fixes a problem with the svn widget of libDXm.so
  Patch 0011.00 - Fix for lbxproxy utility
  Patch 0012.00 - Drawing problems with PowerStorm 4D10T graphics card
  Patch 0070.00 - Static library fix for libDXm

- TruCluster_V5.0A / Cluster Kernel Patches:
  Patch 0001.00 - mounts that return ESTALE may loop forever
  Patch 0005.00 - Fixes a kernel memory fault panic
  Patch 0008.00 - Fix for MC2 vhub cluster panic
  Patch 0011.00 - Fixes problem on cluster nodes
  Patch 0012.00 - Corrects problem with cluster member

- TruCluster_V5.0A / Cluster Services Patches:
  Patch 0003.00 - Delivers a new stripped clu_genvmunix

Press RETURN to display the next screen: Return

Is this correct? (y/n): y

Checking patch prerequisites and patch file applicability...
  (depending upon the number of patches you select, this may take awhile)

***** CAUTION *****

      Interruption of this phase of the operation will corrupt your
      operating system software and compromise the patch database
      integrity.

      DO NOT Ctrl/C, power off your system, or in any other way
      interrupt the patch operation. The patch operation is complete
      when you are returned to the Patch Utility menus.

*****

=== Installing "Tru64 UNIX V5.0A" Patches:

68 subsets will be installed.

Loading subset 1 of 68 ...

Patch: Corrects problem with the fgrep command
  Copying from /Patchkits/patch_kit/Tru64_UNIX_V5.0A/kit (disk)
  Verifying

Loading subset 2 of 68 ...

Patch: Fixes problem with the restore command
  Copying from /Patchkits/patch_kit/Tru64_UNIX_V5.0A/kit (disk)
  Verifying

Loading subset 3 of 68 ...

Patch: CDE does not recreate list of application groups
  Copying from /Patchkits/patch_kit/Tru64_UNIX_V5.0A/kit (disk)
  Verifying

:
:
Loading subset 67 of 68 ...

Patch: prof profiling tool causes segmentation fault
  Copying from /Patchkits/patch_kit/Tru64_UNIX_V5.0A/kit (disk)
  Verifying

Loading subset 68 of 68 ...

Patch: Static library fix for libDXm
  Copying from /Patchkits/patch_kit/Tru64_UNIX_V5.0A/kit (disk)
  Verifying

68 of 68 subsets installed successfully.

*** Starting protofile merges for "Tru64 UNIX V5.0A Patch Distribution"
(T64V50AAS0001-20000626OSP505,26-Jun-2000:15:22:42) ***

Configuring "Patch: Corrects problem with the fgrep command" (OSFPAT00004100505)
on member0

```

```

Configuring "Patch: Fixes problem with the restore command" (OSFPAT00004200505)
on member0

Configuring "Patch: CDE does not recreate list of application groups"
(OSFPAT00000100505) on member0

:

Configuring "Patch: Cannot change file permission using libst routines"
(OSFPAT00007200505) on member0

Configuring "Patch: prof profiling tool causes segmentation fault"
(OSFPAT00007300505) on member0

Configuring "Patch: Static library fix for libDXm" (OSFPAT00007000505) on member0

*** Finished protofile merges for "Tru64 UNIX V5.0A Patch Distribution"
(T64V50AAS0001-20000626OSF505,26-Jun-2000:15:22:42) ***

Configuring "Patch: Corrects problem with the fgrep command" (OSFPAT00004100505)
on member10

Configuring "Patch: Fixes problem with the restore command" (OSFPAT00004200505)
on member10

Configuring "Patch: CDE does not recreate list of application groups"
(OSFPAT00000100505) on member10

:

Configuring "Patch: MKFDMN NEWFS fails for third party drivers in cluster"
(OSFPAT00009900505) on member10

Configuring "Patch: Static library fix for libevm" (OSFPAT00007100505) on member10

Configuring "Patch: pax opens and truncated pre-existing files"
(OSFPAT00009800505) on member10
=== Installing "TruCluster Server V5.0A" Patches:

6 subsets will be installed.

Loading subset 1 of 6 ...

Patch: Fixes a kernel memory fault panic
  Copying from /Patchkits/patch_kit/TruCluster_V5.0A/kit (disk)
  Verifying

Loading subset 2 of 6 ...

Patch: mounts that return ESTALE may loop forever
  Copying from /Patchkits/patch_kit/TruCluster_V5.0A/kit (disk)
  Verifying

Loading subset 3 of 6 ...

Patch: Fix for MC2 vhub cluster panic
  Copying from /Patchkits/patch_kit/TruCluster_V5.0A/kit (disk)
  Verifying

Loading subset 4 of 6 ...

Patch: Delivers a new stripped clu_genvmunix
  Copying from /Patchkits/patch_kit/TruCluster_V5.0A/kit (disk)
  Verifying

Loading subset 5 of 6 ...

Patch: Fixes problem on cluster nodes
  Copying from /Patchkits/patch_kit/TruCluster_V5.0A/kit (disk)
  Verifying

Loading subset 6 of 6 ...

Patch: Corrects problem with cluster member
  Copying from /Patchkits/patch_kit/TruCluster_V5.0A/kit (disk)
  Verifying

6 of 6 subsets installed successfully.

*** Starting protofile merges for "Tru64 UNIX V5.0A Patch Distribution"

```

```

(T64V50AAS0001-20000626TCR505,26-Jun-2000:15:25:36) ***

Configuring "Patch: Fixes a kernel memory fault panic" (TCRPAT00000500505)
on member0

Configuring "Patch: mounts that return ESTALE may loop forever"
(TCRPAT00000100505) on member0

Configuring "Patch: Fix for MC2 vhub cluster panic" (TCRPAT00000800505) on member0

Configuring "Patch: Delivers a new stripped clu_genvmunix" (TCRPAT00000300505)
on member0

Configuring "Patch: Fixes problem on cluster nodes" (TCRPAT00001100505) on member0

Configuring "Patch: Corrects problem with cluster member" (TCRPAT00001200505)
on member0

*** Finished protofile merges for "Tru64 UNIX V5.0A Patch Distribution"
(T64V50AAS0001-20000626TCR505,26-Jun-2000:15:25:36) ***

Configuring "Patch: Fixes a kernel memory fault panic" (TCRPAT00000500505)
on member10

Configuring "Patch: mounts that return ESTALE may loop forever"
(TCRPAT00000100505) on member10

Configuring "Patch: Fix for MC2 vhub cluster panic" (TCRPAT00000800505) on member10

Configuring "Patch: Delivers a new stripped clu_genvmunix" (TCRPAT00000300505)
on member10

Configuring "Patch: Fixes problem on cluster nodes" (TCRPAT00001100505) on member10

Configuring "Patch: Corrects problem with cluster member" (TCRPAT00001200505)
on member10

Beginning kernel build...

Do you have a pre-existing configuration file?: y

Enter the name of the pre-existing configuration file or
press RETURN to use :

*** KERNEL CONFIGURATION AND BUILD PROCEDURE ***

Saving /sys/conf/ as /sys/conf/.bck

Do you want to edit the configuration file? (y/n) [n]: Return

*** PERFORMING KERNEL BUILD ***
Working...Fri Jun 30 10:44:08 EDT 2000

The new kernel is /sys/nodename/vmunix
The system needs to be rebooted in order to complete the patch installation.

Please choose one of the following options.

Reboot Menu:
-----

1) Reboot now
2) Schedule a reboot at a later time
3) Do nothing at this time

Enter your choice: 1

Existing kernel copied to cluster/members/{memb}/boot_partition/vmunix.PrePatch.

New Kernel (/sys/nodename/vmunix) moved to
cluster/members/{memb}/boot_partition/vmunix.

CPU 0 halted
halt code = 5
HALT instruction executed
PC = fffffc00005b3310

CPU 0 booting

:
:

```

```
LAT started.
Printer service started
SysMan authentication server started
CAA Applications now started
Cluster sub-agent started
cluster wall daemon started
SysMan Station Server (smsd) started
The system is ready.
```

```
Compaq Tru64 UNIX V5.0A (Rev. 1094) (stone.grosys.com) console
```

```
login: root
Password:
Last login: Thu Jun 29 14:49:11 EDT 2000 from bensyl.grosys.com
Compaq Tru64 UNIX V5.0A (Rev. 1094); Thu Jun 29 13:44:13 EDT 2000
```

The installation software has successfully installed your system.

There are logfiles that contain a record of your installation. These are:

```
    /var/adm/smlogs/install.cdf      - configuration description file
    /var/adm/smlogs/install.log     - general log file
    /var/adm/smlogs/install.FS.log  - file system creation logs
    /var/adm/smlogs/setld.log       - log for the setld(8) utility
    /var/adm/smlogs/fverify.log     - verification log file
```

```
# clu_upgrade postinstall
```

```
This is the cluster upgrade program.
You have indicated that you want to perform the 'postinstall' stage of the
upgrade.
```

```
Do you want to continue to upgrade the cluster? [yes]: Return
```

The 'postinstall' stage of the upgrade has completed successfully.

The following step involves performing the cluster_upgrade roll program on all other members of your cluster:

```
# clu_upgrade roll
```

```
This is the cluster upgrade program.
You have indicated that you want to perform the 'roll' stage of the
upgrade.
```

```
Do you want to continue to upgrade the cluster? [yes]: Return
```

```
Backing up member-specific data for member: 61
```

```
.
The 'roll' stage has completed successfully. This
member must be rebooted in order to run with the newly installed software.
Do you want to reboot this member at this time? []: y
```

```
You indicated that you want to reboot this member at this time.
```

```
Is that correct? [yes]: Return
```

```
# syncing disks... done
```

```
drd: Clean ShutdownCP - SAVE_TERM routine to be called
```

```
CP - SAVE_TERM exited with hlt_req = 1, r0 = 00000000.00000000
```

```
halted CPU 0
```

```
halt code = 5
HALT instruction executed
PC = fffffc00005b3320
```

```
CPU 0 booting
```

```
:
```

```
Subsystem hwautoconfig was successfully configured.
Jun 30 14:40:03 update: started
```

```
Checking for Installation Tasks...
```

```
Executing Installation Tasks...
```

```
Rolling member specific files on member...CNX QDISK: Successfully claimed quorum disk, adding 1 vote.
```

```
Configuring "Patch: versw command can core dump during rolling upgrade" (OSFPAT00009000505) on member61
```

```

Configuring "Patch: Fixes a problem that occurs in multibyte locales" (OSFPAT00001500505) on member61
Configuring "Patch: Fixes a problem with the grep command" (OSFPAT00001900505) on member61
:
Configuring "Patch: Fixes problem on cluster nodes" (TCRPAT00001100505) on member61
Configuring "Patch: Corrects problem with cluster member" (TCRPAT00001200505) on member61
Configuring "Patch: Delivers a new stripped clu_genvmunix" (TCRPAT00000300505) on member61
Beginning kernel build...

Do you have a pre-existing configuration file?: y

Enter the name of the pre-existing configuration file or
press RETURN to use :

*** KERNEL CONFIGURATION AND BUILD PROCEDURE ***

Saving /sys/conf/ as /sys/conf/.bck

Do you want to edit the configuration file? (y/n) [n]: Return

*** PERFORMING KERNEL BUILD ***
Working...Fri Jun 30 14:42:28 EDT 2000
Working...Fri Jun 30 14:44:29 EDT 2000
Working...Fri Jun 30 14:46:29 EDT 2000

The new kernel is /sys/nodename/vmunix
syncing disks... done
drd: Clean Shutdown
CP - SAVE_TERM routine to be called
CP - SAVE_TERM exited with hlt_req = 1, r0 = 00000000.00000000

halted CPU 0

halt code = 5
HALT instruction executed
PC = fffffc00005b3320

CPU 0 booting

:
:

# clu_upgrade switch

This is the cluster upgrade program.
You have indicated that you want to perform the 'switch' stage of the
upgrade.

Do you want to continue to upgrade the cluster? [yes]: Return

The cluster upgrade 'switch' stage has completed successfully.

# shutdown -h now
Shutdown at 15:07 (in 0 minutes) [pid 5250134]

*** FINAL System shutdown message from root@stone.grosys.com ***

System going down IMMEDIATELY
...

System shutdown time has arrived

CPU 0 halted
halt code = 5
HALT instruction executed
PC = fffffc00005b3310

CPU 0 booting

:
:

The system is ready.

Compaq Tru64 UNIX V5.0A (Rev. 1094) (stone.grosys.com) console

login: root
Password:

```

Last login: Fri Jun 30 15:15:31 EDT 2000 from bensyl.grosys.com
Compaq Tru64 UNIX V5.0A (Rev. 1094); Thu Jun 29 13:44:13 EDT 2000

The installation software has successfully installed your system.

There are logfiles that contain a record of your installation. These are:

/var/adm/smlogs/install.cdf	- configuration description file
/var/adm/smlogs/install.log	- general log file
/var/adm/smlogs/install.FS.log	- file system creation logs
/var/adm/smlogs/setld.log	- log for the setld(8) utility
/var/adm/smlogs/fverify.log	- verification log file

At this point you will reboot each remaining member of the cluster before beginning the clean stage to complete the rolling upgrade procedure.

```
# clu_upgrade clean
```

This is the cluster upgrade program.
You have indicated that you want to perform the 'clean' stage of the upgrade.

Do you want to continue to upgrade the cluster? [yes]: **Return**
Deleting tagged files.

B.3 Gathering Baseline Information

The example in this section shows how to use `dupatch` to perform a patch baseline analysis. You can perform this operation in either single-user or multiuser mode.

```
# dupatch

Tru64 UNIX Patch Utility (Rev. 29-01)
=====
- This dupatch session is logged in //var/adm/patch/log/session.log

Main Menu:
-----

1) Patch Installation
2) Patch Deletion

3) Patch Documentation
4) Patch Tracking

5) Patch Baseline Analysis/Adjustment

h) Help on Command Line Interface

q) Quit

Enter your choice: 5

Patch Baseline Analysis and Adjustment
=====

This section of the patch management utility does not actually install
patches. It is an enabler and need only be used to baseline your
system for routine use of setld-based patch kits. It is recommended that
you read the release notes accompanying this kit, prior to continuing.

It is specifically designed to provide continuity from an environment with
manually installed operating system patches to one that can be managed
using the standard 'setld' installation technology.

This baselining is broken into phases that assess and report the state of
your operating system files. It will only make changes to your system with
your confirmation.

Phase 1 - System Evaluation

Where possible, this phase determines the origin of changed operating
system files and detects formally released official patches that were

-----
Press <RETURN> to continue viewing:
-----

manually installed.

Phase 2 - Report patches with inter-product inventory conflicts

Some layered products ship operating system files or files delivered
by other layered products. If you have any of these layered products
installed on your system and the patch kit happens to contain those
files with inventory conflicts, the Patch Utility will block the
installation of the patches containing inventory conflicts since it
may corrupt the layered product operation.

Phase 3 - Create installation records for manually-installed patches

During this phase, you will be shown a list of patches that match
the files on your system, but are not marked as 'installed'. You will
be offered an opportunity to mark these patches as 'installed'. This
involves copying valid 'setld' database information to your system.

Phase 4 - Report changed system files

This phase provides information to help you make choices later in
this process. It reports both 'missing' and files whose origin
cannot be determined. Some of these files may affect patch
installation. You will want to consider this information when you
later make decisions in phase 5.

Phase 5 - Enable patches with file applicability conflicts
```

This phase allows you to enable subsequent installation of patches whose inventory does not match the installed system. This occurs when:

- 1) System files changed and the origin of that change cannot be determined, or
- 2) The changed files can only be traced back to previous manual patches, or
- 3) The original file to be patched is missing from the system, or
- 4) Hard links to files about to be patched are broken

It is recommended that you do not enable the installation of these patches, if any, until you have tracked down the origin of the files that are in conflict, or you may compromise the integrity of your operating system.

Press <RETURN> to continue viewing:

To assist you in this effort, the file list for the entire patch with the known information will be displayed. You may run through this phase to get the analysis without enabling the installation of any of the listed patches.

It is recommended that you backup your operating system prior to the actual patch installation.

Do you want to proceed with the analysis and adjustment? [y/n]: **y**

- This Patch Baseline Analysis/Adjustment session is logged in:
//var/adm/patch/log/baseline.log

KITNAME><DUV50AS0001-19991008> OSF500

Phase 1 - System Evaluation

=====

This evaluation compares the contents of your patch kit to the state of files already installed on your system regardless of their origin.

The amount of time needed to complete this phase can vary greatly depending on the size of the patch kit, the version of the Operating System, and the performance of the system.

* system evaluation completed.

Press RETURN to proceed to the next phase...

Phase 2 - Report patches with inter-product inventory conflicts

=====

Some layered products replace files delivered in the original Operating System inventory or other layered products' inventory. The Patch Utility will block installation of those patches with inventory conflicts since they could compromise the integrity of the layered products.

* no inter-product inventory conflicts detected.

Press RETURN to proceed to the next phase...

Phase 3 - Create installation records for manually installed patches

=====

You can choose to copy valid installation records to your system for the following patches, if any. This will allow future management and reporting for patches to your operating system.

Creating installation records is intended to establish a baseline to which future patches might be applied. Future patch removal may only ever occur to this baseline.

* no manually installed patches detected.

Press RETURN to proceed to the next phase...

Phase 4 - Report changed system files and missing files

=====

This phase provides information to help you make choices later in this process. It reports both 'missing' and files whose origin cannot be determined. Some of these files may affect patch installation. You will want to consider this information when you later make decisions in phase 5.

* no changed files detected

Press RETURN to proceed to the next phase...

Phase 5 - Enable patches with file applicability conflicts

=====

You will be shown a list of patches, if any, and their files. Patches show up during this phase when:

- 1) System files changed and the origin of that change cannot be determined, or
- 2) The changed files can only be traced back to previous manual patches, or
- 3) The file to be patched is missing from the system, or
- 4) Hard links to files about to be patched are broken

After reviewing this section, you can elect to enable the installation of these patches using a standard selection menu. Enabling a patch means that the checks for patch file applicability, done during patch installation, will be bypassed if you later choose to install that patch through the installation section of dupatch.

It is recommended that you understand the origin of the listed files before enabling a patch for installation.

* no patches with file applicability conflicts detected.

* Baseline Analysis/Adjustment process completed.
=====

Press RETURN to get back to the Main Menu...

Tru64 UNIX Patch Utility (Rev. 29-01)

=====

- This dupatch session is logged in //var/adm/patch/log/session.log

Main Menu:

- 1) Patch Installation
- 2) Patch Deletion

- 3) Patch Documentation
- 4) Patch Tracking

- 5) Patch Baseline Analysis/Adjustment

- h) Help on Command Line Interface

- q) Quit

Enter your choice: 1

Tru64 UNIX Patch Utility (Rev. 29-01)

=====

- This dupatch session is logged in //var/adm/patch/log/session.log

Patch Installation Menu:

- 1) Pre-Installation Check ONLY
- 2) Check & Install (requires single-user mode)

- b) Back to Main Menu
- q) Quit

Enter your choice: 2

This operation can be performed in single-user mode only.

Tru64 UNIX Patch Utility (Rev. 29-01)

=====

- This dupatch session is logged in //var/adm/patch/log/session.log

Patch Installation Menu:

- 1) Pre-Installation Check ONLY
- 2) Check & Install (requires single-user mode)

- b) Back to Main Menu
- q) Quit

Enter your choice: **q**

B.4 Removing Patches

The example in this section shows how to use `dupatch` to remove patches from a system. You can perform this operation only from systems running in single-user mode.

```
# dupatch

* Previous session logs saved in session.log.[1-25]

Tru64 UNIX Patch Utility (Rev. 29-01)
=====
- This dupatch session is logged in //var/adm/patch/log/session.log

Main Menu:
-----

1) Patch Installation
2) Patch Deletion

3) Patch Documentation
4) Patch Tracking

5) Patch Baseline Analysis/Adjustment

h) Help on Command Line Interface

q) Quit

Enter your choice: 2

*** Start of Special Instructions ***

SPECIAL INSTRUCTIONS FOR Tru64 UNIX V5.0 Patch 48.00
Update your /etc/fstab entries to enable the selected mount option
("throttle") on the selected UFS filesystems.

For example, change from:
/dev/rz12e      /mnt/test ufs rw 0 2

TO:
/dev/rz12e      /mnt/test ufs rw,throttle 0 2

Append to /etc/sysconfigtab any tuning changes. For further information
on this patch, refer to the Patch Summary and Release Notes document.
The release note for this patch includes a section on TUNING. The TUNING
section describes the new io-throttle-shift, io-throttle-maxmzthruput,
and io-throttle-static tunables. These tunables are configured in the
"vfs" stanza.

The following 3 lines make up an example:

vfs:
-----
Press <RETURN> to continue viewing:
-----

io-throttle-shift = 1
io-throttle-maxmzthruput = 1

(Note - if you already have a vfs stanza in your sysconfigtab file, then
just add the 2 "io-throttle" entries.)

*** End of Special Instructions ***

Your name: Mike

Enter any notes about this operation that you would like stored for
future reference (To end your input, enter a "."): .

: Deleting Patches
```

: .

There may be more patches than can be presented on a single screen. If this is the case, you can choose patches screen by screen or all at once on the last screen. All of the choices you make will be collected for your confirmation before any patches are deleted.

- Tru64_UNIX_V5.0 / Commands, Shells, & Utility Patches:
 - 1) Patch 0011.00 - ld command inserts incorrect values
 - 2) Patch 0019.00 - C shell incorrectly handles 2-byte characters
 - 3) Patch 0021.00 - Fix for crontab command
 - 4) Patch 0022.00 - Fix for sort command
 - 5) Patch 0023.00 - Fix for ksh core dump problem
 - 6) Patch 0028.00 - Fix for binmail
 - 7) Patch 0032.00 - Fix for tar/pax program
 - 8) Patch 0033.00 - Fix for vdump program dumping core
 - 9) Patch 0035.00 - usermod command does not allow use of commas
 - 10) Patch 0042.00 - rc.config and rc.config.common files may be corrupt

--- MORE TO FOLLOW ---

Enter your choices or press RETURN to display the next screen.

Choices (for example, 1 2 4-6): **Return**

- Tru64_UNIX_V5.0 / Common Desktop Environment (CDE) Patches:
 - 11) Patch 0039.00 - Fix for dxaccounts shared library
- Tru64_UNIX_V5.0 / Filesystem Patches:
 - 12) Patch 0049.00 - Fix for AdvFS system hang
- Tru64_UNIX_V5.0 / Hardware Configuration Patches:
 - 13) Patch 0005.00 - Fix for Compaq AlphaServer problems
 - 14) Patch 0025.00 - Restriction lifted for AlphaServer DS20 and ES40
 - 15) Patch 0046.00 - Fix for simple lock timeout panic
 - 16) Patch 0051.00 - Fix for system hang at boot time
- Tru64_UNIX_V5.0 / I/O Device Handling Patches:
 - 17) Patch 0001.00 - Fix for KZPCM and 8952U adapters
 - 18) Patch 0004.00 - Fix for Universal Serial Bus (USB) problems
 - 19) Patch 0036.00 - Powerstorm 4D10T does not draw lines correctly

--- MORE TO FOLLOW ---

Enter your choices or press RETURN to display the next screen.

Choices (for example, 1 2 4-6): **Return**

- Tru64_UNIX_V5.0 / Kernel Patches:
 - 20) Patch 0017.00 - Fix for kernel memory fault
 - 21) Patch 0045.00 - Fixes error in the SCSI device probe code
 - 22) Patch 0048.00 - Fix for lock hierarchy violation panic
- Tru64_UNIX_V5.0 / Network Patches:
 - 23) Patch 0007.00 - Fix for FDDI interface hang
 - 24) Patch 0012.00 - Fix for packetfilter problems
 - 25) Patch 0024.00 - Fix for NFS V3 XDR encoding
 - 26) Patch 0030.00 - NFS server cannot handle greater than 8K I/O reqs
- Tru64_UNIX_V5.0 / Security Related Patches:
 - 27) Patch 0040.00 - Security (SSRT0614U)
 - 28) Patch 0041.00 - Security (SSRT0571U)
- Tru64_UNIX_V5.0 / Software Development Environment Patches:
 - 29) Patch 0029.00 - Fix for Compaq C compiler

--- MORE TO FOLLOW ---

Enter your choices or press RETURN to display the next screen.

Choices (for example, 1 2 4-6): **Return**

- Tru64_UNIX_V5.0 / X11 Patches:
 - 30) Patch 0038.00 - Fix for problem in X Display Manager (xdm)

Or you may choose one of the following options:

- 31) ALL of the above
- 32) CANCEL selections and redisplay menus
- 33) EXIT without deleting any patches

Enter your choices or press RETURN to redisplay menus.

Choices (for example, 1 2 4-6): 31

You are deleting the following patches:

- Tru64_UNIX_V5.0 / Commands, Shells, & Utility Patches:
 - Patch 0011.00 - ld command inserts incorrect values
 - Patch 0019.00 - C shell incorrectly handles 2-byte characters
 - Patch 0021.00 - Fix for crontab command
 - Patch 0022.00 - Fix for sort command
 - Patch 0023.00 - Fix for ksh core dump problem
 - Patch 0028.00 - Fix for binmail
 - Patch 0032.00 - Fix for tar/pax program
 - Patch 0033.00 - Fix for vdump program dumping core
 - Patch 0035.00 - usermod command does not allow use of commas
 - Patch 0042.00 - rc.config and rc.config.common files may be corrupt
- Tru64_UNIX_V5.0 / Common Desktop Environment (CDE) Patches:
 - Patch 0039.00 - Fix for dxaccounts shared library
- Tru64_UNIX_V5.0 / Filesystem Patches:
 - Patch 0049.00 - Fix for AdvFS system hang

Press RETURN to display the next screen: **Return**

- Tru64_UNIX_V5.0 / Hardware Configuration Patches:
 - Patch 0005.00 - Fix for Compaq AlphaServer problems
 - Patch 0025.00 - Restriction lifted for AlphaServer DS20 and ES40
 - Patch 0046.00 - Fix for simple lock timeout panic
 - Patch 0051.00 - Fix for system hang at boot time
- Tru64_UNIX_V5.0 / I/O Device Handling Patches:
 - Patch 0001.00 - Fix for KZPCM and 8952U adapters
 - Patch 0004.00 - Fix for Universal Serial Bus (USB) problems
 - Patch 0036.00 - Powerstorm 4D10T does not draw lines correctly
- Tru64_UNIX_V5.0 / Kernel Patches:
 - Patch 0017.00 - Fix for kernel memory fault
 - Patch 0045.00 - Fixes error in the SCSI device probe code
 - Patch 0048.00 - Fix for lock hierarchy violation panic
- Tru64_UNIX_V5.0 / Network Patches:
 - Patch 0007.00 - Fix for FDDI interface hang
 - Patch 0012.00 - Fix for packetfilter problems

Press RETURN to display the next screen:

- Patch 0024.00 - Fix for NFS V3 XDR encoding
- Patch 0030.00 - NFS server cannot handle greater than 8K I/O reqs
- Tru64_UNIX_V5.0 / Security Related Patches:
 - Patch 0040.00 - Security (SSRT0614U)
 - Patch 0041.00 - Security (SSRT0571U)
- Tru64_UNIX_V5.0 / Software Development Environment Patches:
 - Patch 0029.00 - Fix for Compaq C compiler
- Tru64_UNIX_V5.0 / X11 Patches:
 - Patch 0038.00 - Fix for problem in X Display Manager (xdm)

Is this correct? (y/n): y

Checking patch dependency...

(depending upon the number of patches you select, this may take a while)

***** CAUTION *****

Interruption of this phase of the operation will corrupt your operating system software and compromise the patch database integrity.

DO NOT Ctrl/C, power off your system, or in any other way interrupt the patch operation. The patch operation is complete when you are returned to the Patch Utility menus.

=== Deleting "Tru64 UNIX V5.0":

Deleting "Patch: Fix for problem in X Display Manager (xdm)" (OSFPAT00003800500).

Deleting "Patch: Fix for Compaq C compiler" (OSFPAT00002900500).

:
:

Deleting "Patch: Fix for crontab command" (OSFPAT00002100500).

Deleting "Patch: C shell incorrectly handles 2-byte characters" (OSFPAT00001900500).

Deleting "Patch: ld command inserts incorrect values" (OSFPAT00001100500).

*** KERNEL CONFIGURATION AND BUILD PROCEDURE ***

Enter a name for the kernel configuration file. [COBB]: **Return**

A configuration file with the name 'COBB' already exists.
Do you want to replace it? (y/n) [n]: **y**

Saving /sys/conf/COBB as /sys/conf/COBB.bck

*** KERNEL OPTION SELECTION ***

Selection Kernel Option

1 System V Devices
2 NTP V3 Kernel Phase Lock Loop (NTP_TIME)
3 Kernel Breakpoint Debugger (KDEBUG)
4 Packetfilter driver (PACKETFILTER)
5 Point-to-Point Protocol (PPP)
6 STREAMS pckt module (PCKT)
7 Data Link Bridge (DLPI V2.0 Service Class 1)
8 X/Open Transport Interface (XTISO, TIMOD, TIRDWR)
9 ISO 9660 Compact Disc File System (CDFS)
10 Audit Subsystem
11 All of the above
12 None of the above
13 Help
14 Display all options again

Enter your choices.

Choices (for example, 1 2 4-6) [12]: **Return**

You do not want to select any kernel options.
Is that correct? (y/n) [y]: **Return**

Do you want to edit the configuration file? (y/n) [n]: **Return**

*** PERFORMING KERNEL BUILD ***

A log file listing special device files is located in /dev/MAKEDEV.log
Working...Tue Feb 1 14:09:04 EDT 2000
Working...Tue Feb 1 14:11:08 EDT 2000

The new kernel is /sys/COBB/vmunix

A reboot is necessary to complete the patch deletion. Do
you want to reboot now? [y/n] [y]: **Return**

Using dupatch from the Command Line

The `dupatch` utility provides a command line interface that allows `dupatch` to be called by other programs. You can use the command line to invoke all functions except for baselining. The functions have the same operation and definition as the menu-driven interface. For information about using the command-line interface, see the `dupatch(8)` reference page, which is installed on your system when you install the patch-kit tools and is documented in this appendix.

The following example shows the use of the `dupatch` command and several of its options to install Patch 8.01 from a Version 5.0A kit:

```
/usr/sbin/dupatch -install -kit /var/bl15/patch_kit -name Joe -note \  
"install patch" -product TRU64_UNIX_V5.0A -patch 08.01
```

The following example shows the use of the `dupatch` command and several of its options to remove Patch 8.01 from a Version 5.0A kit:

```
/usr/sbin/dupatch -delete -name Joe -note "delete patch" \  
-product TRU64_UNIX_V5.0A -patch 08.01
```

You must specify all mandatory options on the command line or in a data file. If any mandatory option is missing, the command will fail with an appropriate error message; it will not prompt you for the missing option and information.

The rest of this appendix documents the `dupatch(8)`.

dupatch(8)

NAME

dupatch – Installs, deletes and maintains software patch updates to the Tru64 UNIX operating system and TruCluster software products.

SYNOPSIS

/usr/sbin/dupatch

/usr/sbin/dupatch -help [-data_file] [-kit *kit_location*] [-patch_id] [-rev] [-product_id]

/usr/sbin/dupatch -install -kit *kit_location* -name *user_name* -note *user_note*
-patch all | *patch_id* [*patch_id*]... [-cfgfile *config_file*] [-data *data_file*] [-noauto
] [-nobackup] [-nolog] [-precheck_only] [-proceed] [-root *root_path*] -product [all
| *product_id*] [-single_user]

/usr/sbin/dupatch -delete -name *user_name* -note *user_note* -patch all | *patch_id*
[*patch_id*]... [-cfgfile *config_file*] [-data *data_file*] [-noauto] [-nolog] [-proceed] [-root
root_path] [-product all | *product_id*] [-single_user]

/usr/sbin/dupatch -track -type [file | kit | patch] -kit *kit_location* [-data *data_file*]
[-nolog] [-root *root_path*]

COMMAND KEYWORDS

-install *install-options*

Installs a software patch or patch kit.

-delete *delete-options*

Removes an installed patch or patches from the operating system. Patch deletion requires that the patch was installed as a reversible patch.

-track *track-options*

Constructs a history of patch installations and deletions. Information can be patch-kit specific or patch-file specific.

-help *help-options*

Requests quick help on dupatch. Supplying an argument will provide help specifically on that argument.

OPTIONS

Required -install Options

-kit *kit_location*

Specifies the location of the patch kit from which patches will be installed onto the system.

kit_location is a full path to the directory containing the patch kit.

-name *user_name*

Specifies the name to be recorded in `event.log`. Enclose the *user_name* in quotation marks if it contains space characters.

dupatch(8)

`-note user_note`

Records user-supplied text in the event log. The *user_note* is a text string enclosed in quotation marks.

`-patch all`

`-patch patch_id [patch_id]...`

Directs dupatch to install all patches (all) patches or specific patches (*patch_id*) from the specified patch kit. `-patch` is optional with `-precheck_only`. See Specifying a Patch ID.

`-product product_id [product_id]...`

Required when more than one product is available for operation.

Specifies the installed operating system and/or TruCluster software product to be patched. Product ID specifications are case insensitive. Wildcards are not permitted. See Specifying a Product ID.

Optional –install Options

`-cfgfile config_file`

Specifies a configuration file for rebuilding the kernel. See Specifying a Configuration File.

`-data data_file`

Specifies a file that contains arguments (in the form *argument = value*) to the dupatch command. See Using a Data File.

`-noauto`

Directs dupatch to not automatically rebuild the kernel if indicated by the patches installed. In addition, if running dupatch to install the patches in single-user mode, the system will not automatically reboot after the patch process is complete.

`-nobackup`

Directs dupatch to not retain backup information during a patch installation. This will remove the ability to back out an installed patch.

`-nolog`

Directs dupatch to not record actions in a `session.log` file.

`-precheck_only`

Directs dupatch to perform the preinstallation check but to not proceed with the patch installation. If `-precheck_only` is omitted, dupatch begins the installation process after the preinstallation check has been completed, as long as no patch failed the preinstallation check. The preinstallation check determines whether new patches that depend on the presence of other patches or software subsets can be installed. It does this by verifying that the required patches or software subsets are already installed onto the system.

dupatch(8)

`-proceed`

Directs dupatch to install any patches that passed the preinstallation check, even if one or more patches failed the preinstallation check. If `-proceed` is omitted, dupatch will not install any patches if at least one patch fails the preinstallation check. The preinstallation check determines whether new patches that depend on the presence of other patches or software subsets can be installed. It does this by verifying that the required patches or software subsets are already installed onto the system.

`-root root_path`

Specifies an alternate root location. The default *root_path* is `/` for all operations.

`-single_user`

If the system is presently in multiuser mode, brings the system down to single-user mode prior to installing patches.

`-rev`

Prints the current dupatch revision.

Required –delete Options

`-name user_name`

Specifies the name to be recorded in `event.log`. Enclose the *user_name* in quotation marks if it contains space characters.

`-note user_note`

Records user-supplied text in the event log. The *user_note* is a text string enclosed in quotation marks.

`-patch all`

`-patch patch_id [patch_id]...`

Directs dupatch to remove all *all* patches or specific (*patch_id*) patches from the specified patch kit. See Specifying a Patch ID.

`-product product_id [product_id]...`

Mandatory when more than one product is installed.

Specifies the installed operating system and/or TruCluster software product to be patched. Product ID specifications are case insensitive. Wildcards are not permitted. See Specifying a Product ID.

Optional –delete Options

`-data data_file`

Specifies a file that contains arguments (in the form *argument = value*) to the dupatch command. See Using a Data File.

`-nolog`

Directs dupatch to not record actions in a `session.log` file.

dupatch(8)

-proceed

Directs dupatch to delete any patches that passed the predeletion check, even if one or more patches failed the predeletion check. If `-proceed` is omitted, dupatch will not delete any patches if at least one patch failed the predeletion check. The predeletion check determines whether any installed patches have dependencies on any of the patches listed for removal. If such dependencies exist, dupatch blocks the removal of any required patch.

-root *root_path*

Specifies an alternate root location. The default *root_path* is / for all operations.

Required `-track` Options

-type *file*

-type *kit*

-type *patch*

Lists all patched files (`-file`), installed patch kits (`-kit`), or installed patches (`-patch`).

Optional `-track` Options

-data *data_file*

Specifies a file that contains arguments (in the form *argument = value*) to the dupatch command. See Using a Data File.

-kit *kit_location*

Identifies the location of the patch kit for which the reports will cover. *kit_location* is a full path to the directory containing the patch kit.

-nolog

Directs dupatch to not record actions in a session.log file.

-root *root_path*

Specifies an alternate root location. The default *root_path* is / for all operations.

DESCRIPTION

The dupatch utility is an interactive program used to install and delete software patches to the Tru64 UNIX operating system and systems running TruCluster software products.

With dupatch you can baseline your system to incorporate any system files that may have been manually installed. You can also use dupatch to obtain a list of installed patches or view the system history of patch installations and deletions.

When invoked without arguments, dupatch is run interactively by providing menus that step you through the patching procedure while prompting you for necessary information. Alternatively, you can invoke dupatch from the command line, whereby you supply required arguments to the dupatch command.

dupatch(8)

Although you can install patches in either single-user or multiuser mode, the use of single-user mode is strongly recommended. In multiuser mode, libraries and system files that are in use by active processes may be affected by the new patches. The patching of any active library or system files may result in unexpected consequences.

On clustered systems running TruCluster software Version 5.0A or higher, the `dupatch` utility is run in conjunction with the rolling upgrade procedure. (See the *Patch Kit Installation Instructions* or the *Cluster Installation* manual for information about performing a rolling upgrade.)

Using a Data File

The `data_file` that you specify with the `-data` option is a fully qualified file location and a file that contains command-line options with the following format:

```
option1 = value
option2 = value
      :
option3 = n
```

For example:

```
kit = /mnt
name = Joe
note = Installing April patch kit
product = Tru64_UNIX_V5.1
patch = 27.01 63.00 74 83.01
product = TruCluster_V5.1
# multiple patches are separated by space characters
patch = 21.01 27.01 40
precheck_only
nobackup
```

Blank lines and comments (preceded with #) are allowed. Line continuation (\) is required if a specification spans multiple lines. Only one `data_file` is permitted per command line and nested `data_file` specifications are not allowed.

Specifying a Product ID

The `product_id` you specify with the `-product` option is one of the following:

```
TRU64_UNIX_V5.1
TRU64_UNIX_V5.0A
TRU64_UNIX_V5.0
TRU64_UNIX_V4.0G
TRU64_UNIX_V4.0F
DIGITAL_UNIX_V4.0D

TruCluster_V5.1
TruCluster_V5.0A
TruCluster_V1.6
TruCluster_V1.5
```

- A `product_id` specification is not necessary when the system being patched has only one product installed; for example, Tru64 UNIX Version 4.0F with no TruCluster software product.
- A `product_id` specification only applies to the `patch_id` specifications that follow it and ends when another `product_id` is specified.
- Because the purpose of the `product_id` is to clarify the `patch_id` specification, the `product_id` must precede the `patch_id`.
- Product strings are not case sensitive. Wildcards are not permitted.

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The following example shows a product string:

```
dupatch -install -product DIGITAL_UNIX_V4.0F -patch 1.1 -product TruCluster_V1.6 -patch 35 \  
-name Joe -note "installing patch 1.1" -kit
```

Specifying a Patch ID

The *patch_id* you specify with the `-patch` option has the following format:

```
xxxx[.yy]
```

For example:

```
15  
200.11  
10.2  
00111.02
```

- Both *xxxx* and *yy* are numeric values; leading zeros can be omitted.
- Patch revision (*yy*), when left unspecified, maps to wildcarded "??"
- Multiple *patch_id* specifications are separated by white space.
- The keyword `all` cannot be combined with other patch IDs.
- If *product_id* is used, *patch_id* must come after it.

Specifying a Root Path

The *root_path* you specify with the `-root` option specifies an alternative root for the specified operation. (The `-root` option is similar to the `-D` option of `setld`.) The following list describes characteristics of the `-root` option.

- The root path must be the root of a complete UFS file system or AdvFS domain.
- The default root path is `/` for all operations.
- If `-root` is the only argument on the command line, `dupatch` will proceed in interactive mode; this is an exception to the command-line rule previously mentioned.
- When performing an alternate root installation, the `-noauto` flag is set implicitly.

Specifying a Configuration File

The `-cfgfile` option to the `-install` and `-delete` command options allows you to call in the system configuration file (`/usr/sys/conf/config_file`). For information about creating or modifying a `config_file`, see the `doconfig(8)` and `sizer(8)` reference pages.

RESTRICTIONS

The following restrictions apply to the `dupatch` utility.

You must be logged in as `root` to run `dupatch`.

The system must be running in single-user mode when removing patches.

The `-product` option must precede the `-patch` option on the command line.

EXIT STATUS

0 (Zero) Success.

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>0 An error occurred.

ERRORS

See the Patch Kit Installation Instructions for a detailed list of dupatch error messages.

EXAMPLES

1. The following interactive example shows how to invoke the menu-driven interface of dupatch:

```
# dupatch

Tru64 UNIX Patch Utility (Rev. 28-03)
=====
- This dupatch session is logged in /var/adm/patch/log/session.log

Main Menu:
-----

1) Patch Installation
2) Patch Deletion

3) Patch Documentation
4) Patch Tracking

5) Patch Baseline Analysis/Adjustment

h) Help on Command Line Interface

q) Quit

Enter your choice: 1
```

2. The following interactive example shows how to perform a preinstallation check on patch 00183.00 contained in the kit located at */mnt/patch_kit*. This will verify that the specified patch can be installed onto the system without actually proceeding with the installation:

```
# dupatch -install -kit /mnt/patch_kit -name Jessica -note \
"Pre-Installation check only on 183.00" -patch 183.00 -precheck_only
```

3. The following interactive example shows how to install all patches in kit located at */mnt/patch_kit*:

```
# dupatch -install -kit /mnt/patch_kit -name Jessica \
-note "install all patches" -patch all
```

4. The following interactive example shows how to identify all patches installed on system:

```
# dupatch -track -type patch
```

5. The following interactive example shows how to list all system files updated by installed patches:

```
# dupatch -track -type file
```

6. The following interactive example shows how to remove patch 00183.00 from the system. Note that the system will automatically be rebooted upon patch deletion because `-noauto` was not specified:

```
# dupatch -help patch_id
```

7. The following interactive example shows how to obtain help on specifying *patch_id* usage:

```
# dupatch -delete -patch 183.00 -name Joe \  
-note "delete patch 00183.00 from system"
```

ENVIRONMENT VARIABLES

The following environment variables affect the execution of dupatch:

`MAX_LOGS`

Specifies the maximum number of session logs to be retained on the system. The default number is 25. If, for example, `MAX_LOGS` is set to 25, the oldest session log would be named `session.log.24` and the current would be named `session.log`, with no number affixed.

`_ROOT`

Overrides the location of the root directory. The default value is `/`, the system root directory. This value must be the top-level directory of a file system (or an AdvFS domain).

`PATCHDIR`

Specifies the path to the patch tools repository. The default value is `$_ROOT/var/adm/patch`.

FILES

`/var/adm/patch/log/session.log. [n]`

This file captures dupatch activities. A separate session log is written with each dupatch session and log files from the previous sessions are saved. The order is first in, first out, with `session.log.$MAX_LOGS` as the oldest file.

`/var/adm/patch/log/Dupatch_load_Date.log`

This file specifies the date when the patch tools were loaded or updated onto the system.

`/var/adm/patch/log/baseline.log. [n]`

This file records the screen output from the baselining session. A separate baseline log is written for each baselining session and log files from previous sessions are saved. The order is first in, first out, with `session.log.$MAX_LOGS` as the oldest file.

`/var/adm/patch/log/event.log. [n]`

This file captures information regarding patch installation and removal operations. A separate event log is written each time patches are installed or removed. Log files from previous sessions are saved. The order is first in, first out, with `session.log.$MAX_LOGS` as the oldest file.

`/var/adm/patch/backup`

The files in this directory are used to restore the system to its former state if patches are deleted.

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`/var/adm/patch/doc/OSFPAT*patch_no.abs`

Provides brief summary of what a patch fixes.

`/var/adm/patch/doc/OSFPAT*patch_no.txt`

Provides detailed discussion of what a patch fixes.

`root-path/usr/.smdb./OSFPAT*.inv`

Lists the subset inventory files.

`root-path/usr/.smdb./OSFPAT*.ctrl`

Lists the subset control files.

`root-path/usr/.smdb./OSFPAT*.scp`

Lists the subset inventory programs.

`root-path/usr/.smdb./OSFPAT*.lk`

Lists the subset installed lock files.

SEE ALSO

Commands: `setld(8)`, `clu_upgrade(8)`

Documents:

Patch Installation Instructions

Patch Summary and Release Notes supplied with the patch kit to be installed

Tru64 UNIX Installation Guide

Tru64 UNIX System Administration manual

TruCluster Software Products Software Installation manual for the installed 4.0n or 5.n cluster system

TruCluster Software Products Cluster Administration manual for the installed 4.0n or 5.n cluster system

System Upgrade Information

The Tru64 UNIX Update Installation procedure lets you upgrade your system from an earlier version, while preserving disk partitions, file systems, file customizations, the network print, and mail environments, user accounts, user created files, and any other system setup you may have done. Table D-1 lists the supported upgrades for Tru64 UNIX releases. (See the Tru64 UNIX *Installation Guide* for more information.)

Table D-1: Upgrade Migration

Version	Upgrade Migration Supported
V5.1	From 4.0G and 5.0A
V5.0A	From 4.0F and 5.0
V5.0	From 4.0D and 4.0F
V4.0G	From 4.0E and 4.0F
V4.0F	From 4.0D and 4.0E

Glossary

baselining

A dupatch feature that looks at the files installed on a system, compares them to the files it expects to find, and prevents the installation of any patch files that might cause an incompatibility among system files.

customer-specific patch (CSP)

Any patch that is developed and made available to resolve a problem for a specific customer. A customer-specific patch is developed with prior knowledge of that customer's unique hardware and software configuration and environment. Customer-specific patches may not be useful for another customer's system.

See also *release patch*

dupatch

A utility included in a patch kit that installs, removes, and manages patches for Tru64 UNIX and TruCluster software products. This utility is installed and left on the system through the successful installation of a patch kit.

full installation

A Tru64 UNIX installation that creates new file systems and loads a full copy of the operating system from the kit onto a system. Any other version of the operating system, any layered products, and any patches that previously existed on the system are overwritten. A full installation does not preserve system customizations (for example, user or data files) because the root (/), /usr, and /var file systems are re-created during the process.

See also *update installation*

official patch

See *release patch*

patch

A file or a collection of files that contain fixes to problems. When possible, patches are merged together into one patch if they have intersecting files or code dependencies. A patch may correct one or more problems.

Each patch is packaged in its own setld subset. The subsets are managed by a utility named dupatch.

patch applicability

A file-by-file check of system files to determine whether a patch might cause a system to be degraded or crash. The installation of a patch is blocked if any system files to be replaced by that patch are not valid predecessors of the patch files.

release patch

Any patch that is included in a Tru64 UNIX patch kit. Sometimes referred to as official patches, release patches are intended for worldwide distribution and can be safely used on any customer's system within the guidelines documented in the patch kit.

See also *customer-specific patch (CSP)*

rolling upgrade

A software upgrade of a cluster that is performed while the cluster is in operation. One member at a time is rolled and returned to operation while the cluster transparently maintains a mixed-version environment for the base operating

system, cluster, and Worldwide Language Support (WSL) software. Clients accessing services are not aware that a rolling upgrade is in progress.

On Version 5.0A and higher systems, you use a rolling upgrade to patch a cluster or to update the Tru64 UNIX operating system or TruCluster Server software on a cluster. The procedure is the same for both types of upgrades — the only difference is the command you run during the install stage of the rolling upgrade procedure.

setld

An interactive program for installing and managing software subsets. Software products are organized into subsets that can be loaded, deleted, inventoried, and configured. The load operation reads software from disk, tape, CD-ROM, or an Internet installation server. The patch installation tool, `dupatch`, is based on the `setld` program.

tar file

A file created with the `tar` command that saves and restores multiple files in a single file. Tru64 UNIX patch kits are provided as tar files (except for kits included on the Tru64 UNIX CD-ROM).

update installation

A type of installation that preserves disk partitions, file systems, file customizations, the network, print and mail environments, user accounts, user-created files, and any other system setup you may have done. If software patches had been applied to the operating system, it would not be necessary to remove the patches before beginning the update process, which is designed to update and reinstall any software fixes or features that were supplied in release patches.

See also *full installation*

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