

DIGITAL UNIX, ASE, and TCR

Patch Kit Installation Instructions

Product Version: DIGITAL UNIX Patch Kits

This manual provides instructions for installing and removing patches using the `dupatch` utility, which is included with DIGITAL UNIX, ASE, and TCR 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 for the DIGITAL UNIX operating system, the Available Server Environment (ASE), and the TruCluster Software products. This manual 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.

Audience

This manual is for the person who installs and removes patch kits and for anyone who manages patches after they are installed.

Organization

This manual is organized as follows:

- Chapter 1 Provides an overview of the concepts and features of the patch kits.
- Chapter 2 Introduces the `dupatch` utility and provides information to be aware of when installing patches.
- Chapter 3 Describes the procedures for installing and removing patches.
- Chapter 4 Provides samples for installing patches, viewing patch documentation, and setting a system baseline.
- Chapter 5 Describes error messages you might see while installing, removing, or maintaining patches.
- Chapter 6 Contains general DIGITAL UNIX system upgrade information.

Related Documentation

In addition to this manual, you should be familiar with the concepts and mechanisms described in the following documents. Note that the TruCluster Software documents included in this list also provide information about the Available Server Environment (ASE):

- *Patch Summary and Release Notes* document for the patch kit you are working with.
- DIGITAL UNIX *Installation Guide*
- DIGITAL UNIX *System Administration* manual
- TruCluster Software Products *Software Installation* manual
- TruCluster Software Products *Administration* manual
- Any release-specific installation documentation.

Reader's Comments

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

You can send your comments in the following ways:

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Please include the following information along with your comments:

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

The DIGITAL 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.

Introduction

This chapter provides an overview of the concepts and features of the patch kits for the DIGITAL UNIX operating system, the Available Server Environment (ASE), and TruCluster Software (TCR) products.

1.1 Overview

The DIGITAL UNIX, ASE, and TCR patch kits contain official 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
- A patch-management utility for installing, viewing, removing, and managing patches

Note

Patch kits are not intended to provide general maintenance and new functionality; applying them to your system does not obviate the need to upgrade to later versions of DIGITAL UNIX, ASE, and TCR.

1.1.1 Applicability of Patch Kits

Patch kits 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 ASE or TCR products (if applicable) at the same time you update your operating system.

1.1.2 Patch Kit Distributions

DIGITAL UNIX, ASE, and TCR 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.service.digital.com/patches/index.html>

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 ASE and TCR software products. For example, the DIGITAL UNIX 4.0B patch tar file will contain the DIGITAL UNIX 4.0B patch kit and the TCR1.4A patch kit.

The content of each patch tar file is summarized in the *00-READ-ME-FIRST* file contained in the tar file. This letter should be the first thing you read after unpacking the tar file.

- Patch kits on CD-ROM.

The latest DIGITAL UNIX Patch CD-ROM is packaged with each new DIGITAL UNIX operating system order, or it can be obtained as follows:

- You can receive the DIGITAL UNIX Patch CD-ROM automatically if you purchase the layered product patch subscription service (order number QT-3CSAA-C8).
- You can order the DIGITAL UNIX Patch CD-ROM separately (order number QA-MT4AA-H8).

Customers in the United States can place orders by calling 1-800-DIGITAL; customers in other countries should contact your local Compaq sales office or authorized reseller for pricing and availability.

The DIGITAL UNIX Patch CD-ROM contains all of the latest patch kits for the supported versions of DIGITAL UNIX, ASE, and TCR. 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.

1.1.3 Patch Kit Contents

Each patch kit contains the following components:

- *Patch Summary and Release Notes*

This manual contains release notes and other information that pertain to the patch tools and the specific patches within each kit.

- *Installation Instructions* (the manual you are reading)

The instructions in this manual are common to all patch kits. Files for this manual are provided in PDF and HTML formats, as follows:

- `/PatchInstallGuide.pdf`, for viewing with Adobe Acrobat Reader, which is provided on the DIGITAL UNIX Version 4.0E Documentation CD-ROM and is available at the Adobe Web site (<http://www.adobe.com/>)
- `/PatchInstallGuide.htm`, for viewing with a Web browser like Netscape

- Patch management utility (`dupatch`)

Installs, removes, and manages official patches for DIGITAL UNIX, ASE, and TCR. This utility is installed and left on the system through the successful installation of a DIGITAL UNIX, ASE, or TCR patch kit.

- Patch subsets
- Patch-specific documentation

Contains information that is installed and left on the system in `/var/adm/patch/doc` through the use of a DIGITAL UNIX, ASE, or TCR patch kit. The following documentation is included for each patch:

- Patch abstract – summarizes the problems that the patch corrects
- Patch README file – describes the problems that the patch corrects

- Patch kit installation tools

1.2 Patch Kit Packaging

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 one or more problems.

Each patch is packaged in its own `setld` subset. The subsets are managed by a utility named `dupatch`.

Each patch kit contains all of the product version-specific patches available at the time of its manufacturing. You can selectively install and remove each patch.

Note

Even though selective patch installation capabilities exist, Compaq recommends that you install all patches for DIGITAL UNIX, ASE, and TCR to prevent the occurrence of known and corrected software problems.

DIGITAL UNIX, ASE, and TCR patches may be provided in two different packages:

- Aggregate selective installation patch kit
Aggregate kits contain all of the product version-specific patches available for distribution at the time of its manufacturing. You can selectively install and remove each patch through the use of `dupatch`, which is included in each kit.

- Singular patch kit

The primary content of a singular patch kit is one patch. To ensure proper installation and system consistency, any dependent patches are included in the kit. Therefore, a singular patch kit may include one or several patches, depending upon the interpatch dependencies.

Installation is accomplished through the use of `dupatch`, which is included in every patch kit.

You run `dupatch` to install, remove, and manage official patches for the DIGITAL UNIX operating system, ASE, and TCR. After you install the patches, the following items are left on the system:

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

1.3 Internet Patch Distribution Naming

The following sections describe the syntax for the names of the patch distribution available from the Internet.

1.3.1 Aggregate Patch Distribution Naming

Aggregate patch kit names have the following syntax:

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

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

OS Product DU = DIGITAL UNIX

Version V40A

V40B

V40C

V40D

V40E

V32G

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	This is the year, month, and day the kit was built and is in the form of YYYYMMDD.
.FileType	.tar

The following example shows the name of an aggregate patch kit for DIGITAL UNIX Version 4.0B, patch kit-2, manufactured on May 1, 1997:

DUV40BAS00002-19970501.tar

1.3.2 Singular Patch Distribution Naming

Singular patch kit names have the following syntax:

OS Product|Version|KitType|Kit#|PatchID-MfgDate|.file_ type

The OS Product, Version, KitType, Kit#, MfgDate, and FileType have the same attributes as described in the Aggregate Patch Distribution Naming section.

The PatchID field has the following syntax:

PatchID The numeric identifier used to track patches which are relative to the product version patch kit.

Where the patch identifiers have the following format:

MajorID Five numeric digits, starting at 1

MinorID Two numeric digits, starting at 0

The following example shows the name of an Internet patch distribution that contains a DIGITAL UNIX 4.0D Patch 37.00, from patch kit 3 which was manufactured on October 30, 1998:

DUV40DSS000030003700-19981030.tar

1.4 Patch Kit Installation Requirements

To successfully install DIGITAL UNIX, ASE, or TCR patch kits, your system must meet the following requirements:

- Be running the appropriate version of DIGITAL UNIX, ASE, or TCR.
- Contain the necessary temporary and permanent storage space described in the *Patch Summary and Release Notes* document for the kit you are installing.

Features and Restrictions

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.

2.1 Patch Management Utility

All official DIGITAL UNIX, ASE, and TCR patches are installed, removed, and managed through the `setld`-based patch management utility `dupatch`. Because `dupatch` manages patch interdependencies, direct `setld` installations and deinstallations (`setld -l -d`) are disabled.

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).

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 have had manually installed system files placed on them.

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

- Every time `dupatch` is run a session log that captures `dupatch` activities is created. It is located in `/var/adm/patch/log/session.log`. Up to 25 copies of the session log are saved. The order is first in, first out — with `session.log.25` as the oldest file.
- When you run `dupatch` from the newly untarred kit or from the mounted DIGITAL UNIX Patch CD-ROM, `dupatch` will determine if the patch distribution contains new patch tools and load them if necessary. The patch tools loading is captured in the log file `/var/adm/patch/log/Dupatch_load_Date.log`.
For example: `Dupatch_load_1998Oct21:15:43:35.log`
- When you run the system baselining feature, a baseline log is created in `/var/adm/patch/log/baseline.log`. Up to 25 copies of the baseline log are saved. The order is first in, first out — with `baseline.log.25` as the oldest file.
- When patches are installed or removed, an event log that captures installation and removal information is created. It is located in `/var/adm/patch/log/event.log`. Only one copy of the file is updated every time patches are installed or removed.

The `dupatch` utility also manages the system inventory for DIGITAL UNIX, ASE, and TCR 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).

2.2 Patch Installation and Removal

Patch installation and removal is accomplished through the `dupatch` utility. For patch installation and removal `dupatch` manages the following:

- Patch applicability
- Patch dependencies
- Patch reversability
- System inventory changes for patches
- Capturing patch activities in log files

2.2.1 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 DIGITAL UNIX, ASE, and TCR patches.

In all cases where a patch is blocked, informative messages are provided to assist you in determining how to proceed. Chapter 5 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 DIGITAL UNIX, ASE, or TCR release subset is not installed.
- The `setld` inventory is inconsistent with the existing system files. This occurs when an operating system, ASE, or TCR `setld` subset is installed and individual operating system files that are part of that subset are moved, deleted, or replaced.
- 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 or prerelease patch installations) are not inadvertently overwritten. You must take special action, through the baseline feature, to enable patch installation in this situation.

2.2.2 Patch Dependency Management

Selective patch installation and removal is allowed in the DIGITAL UNIX, ASE, and TCR 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 Version 4.0B and TCR1.4A are installed or removed:

- Patch dependencies within a product patch kit
If, for example, DIGITAL UNIX 4.0B Patch 1.00 is chosen for installation and it depends upon DIGITAL UNIX 4.0B 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 DIGITAL UNIX 4.0B 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, DIGITAL UNIX 4.0B Patch 1.00 is chosen for installation and it depends upon TruClusters 1.4A 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 DIGITAL UNIX 4.0B 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 for DIGITAL UNIX, ASE, and TCR to prevent the occurrence of known and corrected software problems.

2.2.3 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.

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 DIGITAL UNIX, ASE, and TCR save the files in a compressed tar image for each patch. DIGITAL UNIX Version 4.n releases do this with the `gzip` utility. This results in a file with a name like `filename.tar.gz`.

DIGITAL UNIX Version 3.2G uses the `compress` utility to save the files in a compressed tar image for each patch; this results in a file with a name like `filename.tar.Z`. The file name is the patch subset name that replaced the system files.

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

2.2.4 Patch Installation and Removal Event Log

Patch installation and removal activities are logged in the patch event log located in `/var/adm/patch/log/event.log`. The information in the patch event log is not yet available through the `dupatch` user interface. However, the file is plain text and can be viewed manually.

The following list describes the content of the event log. Note that the format and content are subject to change.

DUPATCH_REV>	Revision of <code>dupatch</code> being used
TYPE>	Type of action, install or remove
NAME>	Name entered by user through <code>dupatch</code> query
USER>	User name of user performing the action
NOTES>	Notes entered by user through <code>dupatch</code> query
SUCCEED>	List of patches for which the action succeeded
FAIL>	List of patches for which the action failed

2.3 Viewing Patch Documentation

The `dupatch` utility allows you to view the patch documentation for installed patches and for the patches available from a specified patch kit. This documentation includes the following:

- Patch Abstracts
These provide summaries of the problems corrected by the patches. You can view the problems corrected by installed patches or by patches available from a specific kit.
- Patch README files
These files 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.
- Patch 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.

2.4 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

```
DIGITAL UNIX Patch Utility (Rev. 25)
=====
- 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 on installed patches
```

- b) Back to Main Menu
- q) Quit

Enter your choice: 1

Patches installed on the system:

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

- DIGITAL_UNIX_V4.0B / Commands, Shells, & Utility Patches:
 - Patch 0101.01 - dd Command Correction
 - Patch 0207.00 - named, screend Correction (SSRT0296U)
 - Patch 0208.00 - uucp Command Correction (SSRT0296U)
- DIGITAL_UNIX_V4.0B / Filesystem Patches:
 - Patch 0157.01 - Filesystem, Vmstat, And IO Device Corrections
- DIGITAL_UNIX_V4.0B / Network Patches:
 - Patch 0060.01 - Token Ring Transmission Timeout Correction
 - Patch 0531.00 - Token Ring Transmission Timeout Correction
- DIGITAL_UNIX_V4.0B / Security Related Patches:
 - Patch 0049.01 - Security, sendmail (SSRT0421U)
 - Patch 0136.01 - libc Corrections, Security (SSRT0425U),(SSRT0296U)

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

List of patched files on the system

DIGITAL UNIX Patch Utility (Rev. 25)

=====

- 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 on installed patches
- b) Back to Main Menu
- q) Quit

Enter your choice: 2

The list of all patched files on your system:

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

```
./sbin/dd          (DIGITAL_UNIX_V4.0B Patch 0101.01)
./sbin/ls          (DIGITAL_UNIX_V4.0B Patch 0136.01)
./sbin/mount       (DIGITAL_UNIX_V4.0B Patch 0136.01)
./sbin/ufs_fsck    (DIGITAL_UNIX_V4.0B Patch 0157.01)
./sbin/umount      (DIGITAL_UNIX_V4.0B Patch 0136.01)
./shlib/libc.so    (DIGITAL_UNIX_V4.0B Patch 0136.01)
./shlib/libc_r.so  (DIGITAL_UNIX_V4.0B Patch 0136.01)
./sys/BINARY/arch_alpha.mod (DIGITAL_UNIX_V4.0B Patch 0157.01)
./sys/BINARY/arch_alphapmap.mod (DIGITAL_UNIX_V4.0B Patch 0157.01)
./sys/BINARY/cam.mod (DIGITAL_UNIX_V4.0B Patch 0157.01)
./sys/BINARY/cam_disk.mod (DIGITAL_UNIX_V4.0B Patch 0157.01)
./sys/BINARY/cam_isp1020.mod (DIGITAL_UNIX_V4.0B Patch 0157.01)
./sys/BINARY/cam_sim.mod (DIGITAL_UNIX_V4.0B Patch 0157.01)
./sys/BINARY/ether.mod (DIGITAL_UNIX_V4.0B Patch 0157.01)
./sys/BINARY/ffm_fs.mod (DIGITAL_UNIX_V4.0B Patch 0157.01)
./sys/BINARY/inet.mod (DIGITAL_UNIX_V4.0B Patch 0157.01)
./sys/BINARY/loop.mod (DIGITAL_UNIX_V4.0B Patch 0157.01)
./sys/BINARY/nfs.mod (DIGITAL_UNIX_V4.0B Patch 0157.01)
./sys/BINARY/presto.mod (DIGITAL_UNIX_V4.0B Patch 0157.01)
./sys/BINARY/procfs.mod (DIGITAL_UNIX_V4.0B Patch 0157.01)
./sys/BINARY/re_xcr.mod (DIGITAL_UNIX_V4.0B Patch 0157.01)
```

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

List of patch kit information on installed patches

DIGITAL UNIX Patch Utility (Rev. 25)

=====

- 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 on installed patches
-
- b) Back to Main Menu
 - q) Quit

Enter your choice: 3

Patches installed on the system came from following patch kits:

- Patches for Digital UNIX V4.0B (DUV40BAS00004-19970808,08-Aug-1997:15:02:19)
- Patches for TruClusters V1.4A (DUV40BAS00004-19970808,08-Aug-1997:15:02:19)

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.

2.5 Optional Multiuser Patch Installation Preparation

You must be in single-user mode to install and remove DIGITAL UNIX, ASE, and TCR patches. However, the following activities can be done in multiuser mode:

- Untar or mount the patch kit.
- View patch documentation, special instructions, and existing dupatch-installed patches on your system when logged in as root.

Viewing documentation, special instructions, or installed patches can be done by root and non-root users. When these functions are executed by a root user, the session is logged in a new session.log. The session is not logged when the functions are executed by a non-root user.

The tracking list of patched files now includes the patch subset from which they were installed. When a file is patched multiple times, all instances will be listed.

- Select and verify patch installation when logged in as root.

Note that while in multiuser mode, you cannot verify the space needed to rebuild the kernel nor whether the kernel rebuild will be successful.

- Set the system baseline when logged in as root.

2.6 Handling Manually Installed System Files with Baselining

The `dupatch` utility adheres to installation conflict management rules that prevent it from installing patches when the system files have been changed through manual installation methods.

System files with unknown origins result from manually installing prerelease patches; replacement of DIGITAL UNIX commands and utilities with system administrator customized versions or freeware versions of those commands or utilities; or movement of files between various systems.

Missing system files result from a root user manually deleting system files that were installed via `setld`. The file is removed but the system inventory records are still in place.

The `dupatch` baselining feature allows you to enable `dupatch` to override the collision detection mechanisms so it will selectively install patches over system files that are unknown or missing. It is important that you understand the origin of the changed system files prior to enabling `dupatch` to overwrite them through patch installation.

For example, a file whose origin is unknown may be part of a manually installed prerelease patch which is not contained in the current official patch kit. Allowing `dupatch` to overwrite one file of a prerelease patch will leave your operating system software environment in an inconsistent and nonoperational state.

Warning

Enabling `dupatch` baselining to update your system sets a new baseline for your operating system, ASE, or TCR 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.

When you run the `dupatch` system baseline feature, a baseline log file is captured in `/var/adm/patch/log/baseline.log`. Up to 25 copies of the baseline log are saved. The order is first in, first out — with `baseline.log.25` as the oldest file.

Manually installed system customizations will block patch installation until corrective action is taken and you enable `dupatch` to override the installation conflict mechanisms.

You will 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.

Baselining is broken 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 render 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, until recently ASE and TCR official patches were installed manually. This phase will report any manually installed official patch files that exactly match a patch contained in the current dupatch-based ASE or TCR 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 Prerelease Patches

In response to a problem report, you may receive a prerelease patch from Compaq Services. Prerelease patches (also called a point patch or test 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 prerelease patches, you must ensure that the fixes delivered by the prerelease patches are included in the current official patch kit before enabling `dupatch` to overwrite any unknown or missing system files.

Warning

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

If the unknown or missing files are attributable to manually installed prerelease patches that are included in the official patch kit, perform one of the following steps:

- If all prerelease 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 prerelease patch files are not overwritten by the patches noted in Phase 5, contact your service provider for assistance.

To determine if your prerelease patch is included in the official patch kit, refer to the *Patch Summary and Release Notes* for the official patch kit, the Compaq Services Web-based patch search engine (<http://www.service.digital.com/patches/index.html>), your service provider, or your Compaq Services representative (if you have purchased Business Critical Services).

2.6.4.2 Manually Installed Official Patches

For some software products, manual installation has been the practiced method for patch installation. For example, up to now official patches for ASE and TCR have been manually installed.

You must determine whether the fixes delivered by the manually installed official patches are included in the current `dupatch`-based official 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 manual installation of official patches and the patches are included in the current `dupatch`-based official 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 DIGITAL 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

The fifth phase 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 cause your operating system, ASE, and TCR software environment to be in an inconsistent and nonoperational state.

2.7 Command Line User Interface

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.

The following example shows the use of the `dupatch` command and several of its options to install DIGITAL UNIX 4.0B Patch 8.01:

```
/usr/sbin/dupatch -install -kit /var/b111/patch_kit -name Mary -note \  
"install patch" -product DIGITAL_UNIX_V4.0B -patch 08.01
```

The following example shows the use of the `dupatch` command and several of its options to install DIGITAL UNIX 4.0B Patch 8.01:

```
/usr/sbin/dupatch -delete -name Mary -note "delete patch" \  
-product DIGITAL_UNIX_V4.0B -patch 08.01
```

2.7.1 Using Command Line Options

You must specify all mandatory options on the command line or in the `data_file` 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.

Remember, there is no reason to delete old official patches on your system before installing the new official patches.

Note

When using the command line, the `-product` option must precede the `-patch` option.

2.7.2 Restriction for 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 the `delete` from the command line, you can first load the new tools, without impacting the system, by issuing the `install` command with the `-precheck_only` option. This will load the tools and not cause changes to your system.

2.7.3 Command line Interface Options

The following list shows all of the command line interface options (typing `dupatch -help` provides the same information):

```
dupatch -delete
```

[Mandatory options]

```
-name user_name  
-note user_note  
-patch all | patch_id{patch_id...}
```

[Optional options]

```
-data data_file  
-nolog (No session logging)  
-proceed ( Proceed with patches that passed predeletion check)  
-product all | product_id*  
-root root_path
```

*Mandatory when more than one product is available for operation

```
dupatch -help
```

[Optional options]

```
-data_file (Specifies data_file use)  
-kit kit_location  
-patch_id ( Specifies patch_id use)  
-rev (Lists dupatch version)  
-product_id (Specifies product_id use)
```

```
dupatch -install
```

[Mandatory options]

```

        -kit kit_location
        -name
user_name*
        -note user_note*
        -patch all | patch_id[patch_id...]

```

*Optional when `-precheck_only` is specified

[Optional options]

```

        -data data_file
        -nobackup
        -nolog (No session logging)
        -precheck_only (Check patch applicability without installing)
        -proceed (Proceed with patches that passed preinstallation check)
        -product all | product_id*
        -root root_path

```

*Mandatory when more than one product is available for operation.

```
dupatch -track
```

[Mandatory options]

```
-typefile | kit | patch
```

(Use *file* to list all patched files.)
 (Use *kit* to list installed patch kits.)
 (Use *patch* to list installed patches.)

[Optional options]

```

        -datadata_file
        -nolog (No session logging.)
        -rootroot_path

```

Using a Data_file

When using the `-data` option, you must specify a `data_file`, which is a file path that contains specifications with the following format:

```

switch1=value
switch2=value
.
.
.
switch3

```

For example:

```

kit = /mnt
name = John Doe
note = install April patch kit
patch = all

precheck_only
nobackup

```

The following list describes characteristics of a `data_file`:

- Blank lines and comments (preceded with #) are allowed.
- Line continuation (\) is required if a specification spans multiple lines.
- When an option is specified both on the command line and in the `data_file`, the value specified on the command line overrides that specified in the `data-file`.

Using a patch_id

The following list describes the characteristics of a `patch_id`:

- A valid `patch_id` specification has the following format:

```
all
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`.

Using a `product_id`

The following list describes the characteristics of a `product_id`.

- A valid `product_id` specification is in the format of:

```
all
description_version
```

where *description* is the product description, and *version* is the product version.

For example:

```
DIGITAL_UNIX_V4.0
TruCluster_V1.4A
```

- `Product_id` specifications are case insensitive.
- Wildcards are not allowed in `product_id` specifications.
- Multiple `product_id` specifications are separated by white space.
- The keyword `all` cannot be combined with other `product_ids`.

Using a `root_path`

The following list describes the characteristics of a `root_path`:

- The `-root` option, which is similar to the `-D` option of `setld`, specifies an alternative root for the specified operation.
- The `root_path` must be the root of a complete DIGITAL UNIX file system.
- 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.

Using Product Strings

The following list provides valid DIGITAL UNIX product strings:

```
ASE_V1.3
DIGITAL_UNIX_V3.2G
DIGITAL_UNIX_V4.0A
DIGITAL_UNIX_V4.0B
DIGITAL_UNIX_V4.0C
DIGITAL_UNIX_V4.0D
DIGITAL_UNIX_V4.0E
TruCluster_V1.0
TruCluster_V1.4A
```

TruCluster_V1.5

The following list describes characteristics of product strings:

- A `product_string` specification only applies to the `patch_id` specifications that follow it and ends when another `product_string` is specified.
- A `product_string` specification is not necessary when the system being patched has only one product installed. For example, Version 4.0B with no TCR.
- Because the purpose of the `product_string` is to clarify the `patch_id` specification, its specification must precede that of the `patch_id`.

The following example shows the `product_string`:

```
dupatch -install -product DIGITAL_UNIX_V4.0D -patch 1.1 -product TruCluster_V1.5 -patch 35 \  
-name Mary -note "installing patch 1.1" -kit
```

2.8 Restrictions

The following sections describe information you must be aware of when installing or removing.

2.8.1 DIGITAL UNIX Operating System Patches Must Be Applied in Single-User Mode

The installation and removal phases of DIGITAL UNIX operating system, ASE, and TCR patch kits require the system to be in single-user mode to ensure computing environment integrity. You can have the network started if you need to access your patch kits. Patch selection and preinstallation checking can be accomplished in multiuser mode. However, the actual installation must be done in single-user mode.

Minimally, a system reboot is required to complete the installation and bring the system to a consistent running environment. Certain file types, such as libraries, are not moved into place until you reboot the system.

Depending upon the patches installed, a kernel rebuild and a system reboot are both required to enable the use of newly installed patches.

2.8.2 Impact on System Upgrades to Later Versions of DIGITAL UNIX

In the presence of patches or layered products, certain procedures used to upgrade a system to a later version of DIGITAL UNIX can lead to an inconsistency among operating system and layered product objects. For more information see Chapter 6 for general DIGITAL UNIX system upgrade information.

Note

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

2.8.3 Root Access Is Required to Install and Remove Patch Kits

Installation and removal of patches requires root or superuser access to the system.

2.8.4 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.

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

You can install and remove DIGITAL UNIX, ASE, and TCR patches only through `dupatch`. You cannot directly install or reinstall the patch subsets with `setld`. This ensures that patch tracking and management is not compromised.

2.8.6 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.

2.8.7 No Ctrl/c During Installation Phase

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

Warning

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.

2.8.8 Deleting Patches Containing Customized Files

If you use `dupatch` to delete 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_OSFPATyyy
```

```
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 deleted 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`

Patch Installation and Removal Instructions

This chapter provides instructions for installing and removing patches from the DIGITAL UNIX operating system, the Available Server Environment (ASE), and the TruCluster Software products (TCR).

3.1 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 DIGITAL UNIX, ASE, or TCR patch kits.

1. Prepare your system for patch installation (see Section 3.2).
2. Make the patch distribution available to your system (see Section 3.3).
3. Load any new patch tools provided with the new patch distribution (see Section 3.4).
4. Set the patch baseline in multiuser mode, if system files have been changed manually (see Section 3.6).
5. Perform patch preinstallation check in multiuser mode (see Section 3.5).
6. Install patches in single-user mode (see Section 3.7).
7. Rebuild the kernel and reboot the system.

3.2 Preparing to Install Patches

Before using the latest DIGITAL UNIX, ASE, or TCR patch distribution, make sure that your system meets the required criteria and that you perform certain preinstallation tasks, as described in the following sections.

3.2.1 Required System Software

You must have the appropriate versions of DIGITAL UNIX, ASE, and TCR installed on your system to install patch kits. There are separate patch kits for each version of the DIGITAL UNIX, ASE, and TCR products. The patch kits will not install on any other version of those products. For example, the DIGITAL UNIX 4.0D patch kit will only install on DIGITAL UNIX Version 4.0D.

3.2.2 Backing Up Your System

It is recommended that you backup your `/`, `/usr`, and `/var` file systems prior to installing patches or baselining your system.

3.2.3 Required Storage Space

Refer to the *Patch Summary and Release Notes* for the required storage space.

3.3 Making the Patch Distribution Available

DIGITAL UNIX, ASE, and TCR patches are available from the Compaq Services Web page or the DIGITAL 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 3.2 are met.
2. If you are using patch tar files obtained via the Internet from the Compaq Services Web page, you must expand the tar file to access the patch kits.

The tar file can be expanded on any NFS mountable file system. It is recommended that the file system not exist in `/usr` or `/var` of the system that will be patched. For example:

```
# /usr/sbin/mount /dev/rz3g /PatchKits
# cd /PatchKits
# mkdir kit8
```

Copy or ftp the patch kit to `/PatchKits/kit8`. For example:

```
# cp DUV40BAS00008-19980821.tar /PatchKits/kit8
# script untar.log
# tar -xpvf DUV40BAS00008-19980821.tar
# ^D
```

View the `untar-kit.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 being patched do the following:

```
# /usr/sbin/mount /PatchKits/kit8@hostname /mnt
```

3. If you are using the DIGITAL 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/rz4a /mnt
```

3.4 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 DIGITAL UNIX Patch CD-ROM.

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

```
# /mnt/patch_kit/dupatch
```

If new patch tools are available they will be loaded and the `dupatch` utility will be started and you will see messages similar to the following when new patch tools are loaded:

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

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

DIGITAL UNIX Patch Utility (Rev. 25)
=====
- 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:

The dupatch utility saves information on the tools that have been loaded to the log file `/var/adm/patch/log/Dupatch_load_date.log`.

3.5 Performing Patch Preinstallation Check Instructions

To minimize system downtime, Compaq recommends that you perform the preinstallation check in multiuser mode. When the patch preinstallation check is successful in multiuser mode, schedule time to bring down the system to single-user mode for patch installation.

The following steps provide the instructions for performing the preinstallation check.

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

```
DIGITAL UNIX Patch Utility (Rev. 25)
=====
- 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:

```
DIGITAL UNIX Patch Utility (Rev. 25)
=====
- 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: 1
```

4. When prompted, enter the location of the patch distribution. For example:

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

5. The program lists the patch kits provided in the patch distribution that apply to your system. Compaq recommends that you install all of these kits. For example:

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 Digital UNIX V4.0B
- 2) Patches for TruCluster Available Server Software_V1.4A

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 Digital UNIX V4.0B
- Patches for TruCluster Available Server Software_V1.4A

Is this correct? (y/n): y

6. 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. Press Return or type y to the following question to make the patches reversible. For example:

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

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.

7. Answer yes when asked if you want to perform the preinstallation check with this setup:
Do you want to proceed with the preinstallation check with this setup? [y]:
8. You will be asked to select the patches for which the preinstallation check will be performed. It is recommended that you select all.
9. The program displays the list of the patches you selected and asks you to verify the selection. If you answer no, you will be given the opportunity to make a new selection.
10. The program lists any patches that fail the prerequisite and applicability checks, and asks how you want to proceed. You are presented with 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 3.6. 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 3.7.

3.6 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 3.7.

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 “Enter your choice” prompt of the Main Menu:

```
DIGITAL UNIX Patch Utility (Rev. 25)
=====
- 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/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.

- Baselineing 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 prerelease 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 prerelease 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 3.7.

WARNING

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 cause your operating system, ASE, or TCR software environments to be in an inconsistent or nonoperational state.

3.7 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 3.2.
- Make sure you made the patch distribution available to your system, as described in Section 3.3.
- Make sure you loaded any new patch tools, as described in Section 3.4.

- Make sure that you performed the patch preinstallation check, as described in Section 3.5.
- If needed, make sure that system patch baseline has been set, as described in Section 3.6.

The following steps provide instructions for installing and enabling DIGITAL UNIX, ASE, and TCR patches:

1. Shut down the system to single-user mode. For example:

```
# /usr/sbin/shutdown -h +5 "Applying 4.0B and TCR Patches"
```
2. Reboot to single-user mode from the console prompt, using a command like the following:

```
>>>boot -fl s
```
3. After the system shuts down and reboots to single-user mode, mount the file system that contains the /usr and /var directories. Use the bcheckrc command to check and mount all the UFS and AdvFS file systems, then issue the update command and activate your swap partition with swapon:

```
# /sbin/bcheckrc
# /sbin/update
# /sbin/swapon -a
```
4. If you are using the Logical Storage Manager, enter the lsmbstartup command:

```
# /sbin/lsmbstartup
```
5. If you need access to the network, enter the rcinet command to start the network:

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

Informational messages will appear on the screen.
6. Run the dupatch utility. (This step assumes that the patch kit is available to your system, as described in Section 3.3, and that the new patch tools have been loaded, as described in Section 3.4). Enter 1 at the “Enter your choice” prompt to invoke the patch installation session:

```
# dupatch
```

```
DIGITAL UNIX Patch Utility (Rev. 25)
=====
- 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
```

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

```
DIGITAL UNIX Patch Utility (Rev. 25)
```

```

=====
- 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

```

8. You will be presented with the list of patch kits that are provided in the patch distribution and that apply to your system. Compaq recommends that you install all patch kits (choice 3) that apply to your system. For example:

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 Digital UNIX V4.0B
2) Patches for TruCluster Available Server Software V1.4A

```

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

9. The program lists your choices and asks to confirm your choices. For example:

You are installing patches (to be selected) from the following products:

```

Patches for Digital UNIX V4.0B
Patches for TruCluster Available Server Software V1.4A

```

Is this correct? (y/n): y

10. 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.

11. 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]:

12. 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: Mary Smith

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]
```

13. 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 selectively choose patches for installation, install all patches, cancel selections and redisplay menus, or exit without installing any patches. For example:

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.

14. The preinstallation check is performed to verify 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 whole `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 3.6.

15. 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.
16. Assuming 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 *DIGITAL UNIX System Administration* manual.

In general the following steps are necessary:

- 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 a with newly installed patches"
```

3.8 Removing Patches

To remove patches from your system you 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.

3.8.1 Steps for Removing Patches

The following steps show how to remove patches:

Caution

See Section 3.8.2 before using the “delete all” option of the Patch Deletion menu.

1. Shut down the system to single-user mode. For example:

```
# /usr/sbin/shutdown -h +5 "Removing Patches"
```
2. After the system shuts down to single-user mode, mount the file system that contains the `/usr` and `/var` directories. Use the `bcheckrc` command to check and mount all the UFS and AdvFS file systems. Then issue the `update` command and activate your swap partition with `swapon`:

```
# /sbin/bcheckrc
# /sbin/update
# /sbin/swapon -a
```

If you are using the Logical Storage Manager, run `lsmbstartup`:

```
# /sbin/lsmbstartup
```

3. If you need access to the network, use the following command to start the network:

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

Informational messages will appear on the screen.

4. Run `dupatch`, select 2 for patch removal:

```
# dupatch
```

```
DIGITAL 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

5. 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: **Mary Smith**

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
```

6. Select and verify the patches to remove 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`.
7. Review the session log to ensure the removal was successful. Note any special patch instructions, informational messages, and error messages.
8. If there are no error messages, follow the instructions for disabling the patches that are listed in the session log. Depending upon the deleted patches, you may need to rebuild the kernel or reboot the system.

3.8.2 Using the “delete all patches” Option

The Delete Patch menu applies to all `setld`-based patches installed on your system; it does not focus on any specific patch kit. This menu allows you to delete a specific patch, a list of patches, or all patches from your system.

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

For example, if chose the “install all patches” menu item when installing Patch Kit-0009 and then decided to remove those patches, you would have to specify the patch ID of all Patch Kit-0009 patches in the Delete Patch menu. If, instead, you select the “delete all patches” menu item, then all `setld`-based patches that were installed on your system would be deleted, not just those from Patch Kit-0009.

Sample Patch Kit Installation

This chapter provides samples of using `dupatch` to do the following:

- Perform a typical patch kit installation (Section 4.1)
- View the patch documentation (Section 4.2)
- Track patches (Section 4.3)
- Perform a baseline analysis (Section 4.4)

4.1 Sample 1: Typical Patch Kit Installation

The example in this section shows a typical patch kit installation.

```
# dupatch

Mon Nov 16 11:25:02 EST 1998
DUPATCH_REV>25

DIGITAL UNIX Patch Utility (Rev. 25)
=====
- 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

DIGITAL UNIX Patch Utility (Rev. 25)
=====
- 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

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

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 Digital UNIX V4.0D
- 2) Patches for TruCluster Available Server Software V1.5

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 Digital UNIX V4.0D
Patches for TruCluster Available Server Software V1.5

Is this correct? (y/n): y

Gathering patch information...
(depending upon the size of the patch kit, this may take a while)

*** 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 DIGITAL 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]: y

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]:

Your name: **Mary Smith**

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

: sample installation of all patches...
:.

KITNAME> OSF425, TCR150

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.

- DIGITAL_UNIX_V4.0D / Command, Shells, & Utility Patches:
 - 1) Patch 0203.00 - adduser Command Correction
 - 2) Patch 0219.00 - find Command Correction
 - 3) Patch 0249.00 - dump/restore Incompatability Correction
 - 4) Patch 0276.00 - crontab Command Correction
 - 5) Patch 0287.00 - tar Command Correction
 - 6) Patch 0364.00 - sendmail Command Correction
 - 7) Patch 0394.00 - acctcom and acctcms Corrections.

- DIGITAL_UNIX_V4.0D / Commands, Shells & Utility Patches:
 - 8) Patch 0365.01 - setacl Command Correction

— MORE TO FOLLOW —

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

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

- 9) Patch 0372.00 - Bourne Shell Performance Improvement

- DIGITAL_UNIX_V4.0D / Commands, Shells, & Utility Patches:
 - 10) Patch 0017.01 - awk Utility Correction
 - 11) Patch 0032.01 - diskx Command Correction
 - 12) Patch 0038.01 - vipw Issues Warnings Enhancement
 - 13) Patch 0064.01 - who Command Correction
 - 14) Patch 0066.01 - lex Command Correction
 - 15) Patch 0073.01 - LSM volsave Command Correction

- TruCluster_V1.5 / ASE API Library Patches:
 - 16) Patch 0004.00 - Networker Core Dump Correction

- TruCluster_V1.5 / ASE Availability Manager (AM) Patches:
 - 17) Patch 0032.00 - Kern Mem Fault And simple_lock Panic Correction

- TruCluster_V1.5 / Cluster Patches:
 - 18) Patch 0005.00 - System Panic dlm getch: illegal csid Correction
 - 19) Patch 0006.00 - drdadmin Command Failure, SysStartUp Error Corr(s)
 - 20) Patch 0011.00 - Cluster Map Not Being Loaded At Boot Time Correction
 - 21) Patch 0013.00 - Cluster Monitor Hang Correction
 - 22) Patch 0026.00 - Booting Second Member To Cluster Correction

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:

- 23) ALL of the above
- 24) CANCEL selections and redisplay menus
- 25) EXIT without installing any patches

Enter your choices or press RETURN to redisplay menus.

Choices (for example, 1 2 4-6): 23

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.

- DIGITAL_UNIX_V4.0D / Command, Shells, & Utility Patches:

- 1) Patch 0203.00 - adduser Command Correction
- 2) Patch 0219.00 - find Command Correction
- 3) Patch 0249.00 - dump/restore Incompatability Correction
- 4) Patch 0276.00 - crontab Command Correction
- 5) Patch 0287.00 - tar Command Correction
- 6) Patch 0364.00 - sendmail Command Correction
- 7) Patch 0394.00 - acctcom and acctcms Corrections.

- DIGITAL_UNIX_V4.0D / Commands, Shells & Utility Patches:

- 8) Patch 0365.01 - setacl Command Correction

— MORE TO FOLLOW —

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

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

- 9) Patch 0372.00 - Bourne Shell Performance Improvement

- DIGITAL_UNIX_V4.0D / Commands, Shells, & Utility Patches:

- 10) Patch 0017.01 - awk Utility Correction
- 11) Patch 0032.01 - diskx Command Correction
- 12) Patch 0038.01 - vipw Issues Warnings Enhancement
- 13) Patch 0064.01 - who Command Correction
- 14) Patch 0066.01 - lex Command Correction
- 15) Patch 0073.01 - LSM volsave Command Correction

- TruCluster_V1.5 / ASE API Library Patches:

- 16) Patch 0004.00 - Networker Core Dump Correction

- TruCluster_V1.5 / ASE Availability Manager (AM) Patches:

- 17) Patch 0032.00 - Kern Mem Fault And simple_lock Panic Correction

- TruCluster_V1.5 / Cluster Patches:

- 18) Patch 0005.00 - System Panic dlm getch: illegal csid Correction
- 19) Patch 0006.00 - drdadmin Command Failure, SysStartUp Error Corr(s)
- 20) Patch 0011.00 - Cluster Map Not Being Loaded At Boot Time Correction
- 21) Patch 0013.00 - Cluster Monitor Hang Correction
- 22) Patch 0026.00 - Booting Second Member To Cluster Correction

Is this correct? (y/n): y

Checking patch prerequisites and patch file applicability..

(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.

=== Installing "Digital UNIX V4.0D":

Checking file system space required to install specified subsets:

File system space checked OK.

15 subset(s) will be installed.

Loading 1 of 15 subset(s)....

Patch: crontab Command Correction

Copying from /var/bl11/patch_kit/DIGITAL_UNIX_V4.0D/kit (disk)
Verifying

Loading 2 of 15 subset(s)....

Patch: LSM volsave Command Correction

Copying from /var/bl11/patch_kit/DIGITAL_UNIX_V4.0D/kit (disk)
Verifying

Loading 3 of 15 subset(s)....

Patch: acctcom and acctcms Corrections.

Copying from /var/bl11/patch_kit/DIGITAL_UNIX_V4.0D/kit (disk)
Verifying

Loading 4 of 15 subset(s)....

Patch: sendmail Command Correction

Copying from /var/bl11/patch_kit/DIGITAL_UNIX_V4.0D/kit (disk)
Verifying

Loading 5 of 15 subset(s)....

Patch: setacl Command Correction

Copying from /var/bl11/patch_kit/DIGITAL_UNIX_V4.0D/kit (disk)
Verifying

Loading 6 of 15 subset(s)....

Patch: tar Command Correction

Copying from /var/bl11/patch_kit/DIGITAL_UNIX_V4.0D/kit (disk)
Verifying

Loading 7 of 15 subset(s)....

Patch: adduser Command Correction

Copying from /var/bl11/patch_kit/DIGITAL_UNIX_V4.0D/kit (disk)
Verifying

Loading 8 of 15 subset(s)....

Patch: lex Command Correction

Copying from /var/bl11/patch_kit/DIGITAL_UNIX_V4.0D/kit (disk)
Verifying

Loading 9 of 15 subset(s)....

Patch: who Command Correction

Copying from /var/bl11/patch_kit/DIGITAL_UNIX_V4.0D/kit (disk)
Verifying

Loading 10 of 15 subset(s)....

Patch: vipw Issues Warnings Enhancement

Copying from /var/bl11/patch_kit/DIGITAL_UNIX_V4.0D/kit (disk)
Verifying

Loading 11 of 15 subset(s)....

Patch: find Command Correction

Copying from /var/bl11/patch_kit/DIGITAL_UNIX_V4.0D/kit (disk)
Verifying

Loading 12 of 15 subset(s)....

Patch: awk Utility Correction

```

Copying from /var/bl11/patch_kit/DIGITAL_UNIX_V4.0D/kit (disk)
Verifying

Loading 13 of 15 subset(s)....

Patch: Bourne Shell Performance Improvement
Copying from /var/bl11/patch_kit/DIGITAL_UNIX_V4.0D/kit (disk)
Verifying

Loading 14 of 15 subset(s)....

Patch: diskx Command Correction
Copying from /var/bl11/patch_kit/DIGITAL_UNIX_V4.0D/kit (disk)
Verifying

Loading 15 of 15 subset(s)....

Patch: dump/restore Incompatibility Correction
Copying from /var/bl11/patch_kit/DIGITAL_UNIX_V4.0D/kit (disk)
Verifying

15 of 15 subset(s) installed successfully.

*Configuring "Patch: crontab Command Correction " (OSFPAT00027600425)

*Configuring "Patch: LSM volsave Command Correction" (OSFPAT00007301425)

*Configuring "Patch: acctcom and acctcms Corrections." (OSFPAT00039400425)

*Configuring "Patch: sendmail Command Correction " (OSFPAT00036400425)

*Configuring "Patch: setacl Command Correction " (OSFPAT00036501425)

*Configuring "Patch: tar Command Correction " (OSFPAT00028700425)

*Configuring "Patch: adduser Command Correction " (OSFPAT00020300425)

*Configuring "Patch: lex Command Correction " (OSFPAT00006601425)

*Configuring "Patch: who Command Correction " (OSFPAT00006401425)

*Configuring "Patch: vipw Issues Warnings Enhancement" (OSFPAT00003801425)

*Configuring "Patch: find Command Correction " (OSFPAT00021900425)

*Configuring "Patch: awk Utility Correction " (OSFPAT00001701425)

*Configuring "Patch: Bourne Shell Performance Improvement" (OSFPAT00037200425)

*Configuring "Patch: diskx Command Correction " (OSFPAT00003201425)

*Configuring "Patch: dump/restore Incompatibility Correction" (OSFPAT00024900425)

=== Installing "TruCluster Available Server Software V1.5":

Checking file system space required to install specified subsets:

File system space checked OK.

7 subset(s) will be installed.

Loading 1 of 7 subset(s)....

Patch: Kern Mem Fault And simple_lock Panic Correction
Copying from /var/bl11/patch_kit/TruCluster_V1.5/kit (disk)
Verifying

Loading 2 of 7 subset(s)....

Patch: Cluster Monitor Hang Correction
Copying from /var/bl11/patch_kit/TruCluster_V1.5/kit (disk)

```

Verifying

Loading 3 of 7 subset(s)....

Patch: Networker Core Dump Correction
Copying from /var/bl11/patch_kit/TruCluster_V1.5/kit (disk)
Verifying

Loading 4 of 7 subset(s)....

Patch: System Panic dlm getch: illegal csid Correction
Copying from /var/bl11/patch_kit/TruCluster_V1.5/kit (disk)
Verifying

Loading 5 of 7 subset(s)....

Patch: drdadmin Command Failure, SysStartUp Error Corr(s)
Copying from /var/bl11/patch_kit/TruCluster_V1.5/kit (disk)
Verifying

Loading 6 of 7 subset(s)....

Patch: Booting Second Member To Cluster Correction
Copying from /var/bl11/patch_kit/TruCluster_V1.5/kit (disk)
Verifying

Loading 7 of 7 subset(s)....

Patch: Cluster Map Not Being Loaded At Boot Time Correction
Copying from /var/bl11/patch_kit/TruCluster_V1.5/kit (disk)
Verifying

7 of 7 subset(s) installed successfully.

- *Configuring "Patch: Kern Mem Fault And simple_lock Panic Correction" (TCRPAT00003200150)
- *Configuring "Patch: Cluster Monitor Hang Correction" (TCRPAT00001300150)
- *Configuring "Patch: Networker Core Dump Correction" (TCRPAT00000400150)
- *Configuring "Patch: System Panic dlm getch: illegal csid Correction" (TCRPAT00000500150)
- *Configuring "Patch: drdadmin Command Failure, SysStartUp Error Corr(s)" (TCRPAT00000600150)
- *Configuring "Patch: Booting Second Member To Cluster Correction" (TCRPAT00002600150)
- *Configuring "Patch: Cluster Map Not Being Loaded At Boot Time Correction" (TCRPAT00001100150)

=====

- TruCluster_V1.5 / ASE Availability Manager (AM) Patches:
Patch 0032.00 - Kern Mem Fault And simple_lock Panic Correction

SPECIAL INSTRUCTIONS FOR TruClusters 1.5 Patch 3.00
WARNING! Possible System Setup Change Required, KZPSA Firmware

If the system contains KZPSA I/O adapters, please ensure A11 or greater
firmware is installed between the shutdown and reboot.

Press RETURN to proceed...

* A kernel rebuild is required for the successfully installed patch(es).

DIGITAL UNIX Patch Utility (Rev. 25)

=====

- 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

4.2 Sample 2: Viewing the Patch Documentation

The example in this section shows how to use `dupatch` to view the documentation included in the patch kits.

```
# dupatch

Mon Nov 16 12:05:00 EST 1998
DUPATCH_REV>25

DIGITAL UNIX Patch Utility (Rev. 25)
=====
- 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: 3

```
DIGITAL UNIX Patch Utility (Rev. 25)
=====
- This dupatch session is logged in //var/adm/patch/log/session.log

Patch Documentation Menu:
-----

1) View abstracts of installed patches on your system
2) View abstracts of patches on the patch kit

3) View READMEs of installed patches on your system
4) View READMEs of patches on the patch kit

5) View special instructions for installed patches on your system
6) View special instructions for patches on the patch kit

7) View all patch abstracts on your system
8) View all patch READMEs on your system
9) View all patch special instructions on your system

b) Back to Main Menu
q) Quit
```

Enter your choice: 2

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

There may be more 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 examined.

- 1) Patches for Digital UNIX V4.0D
- 2) Patches for TruCluster Available Server Software V1.5

Or you may choose one of the following options:

- 3) ALL of the above
- 4) CANCEL selections and redisplay menus
- 5) EXIT without examining any products

Enter your choices or press RETURN to redisplay menus.

Choices (for example, 1 2 4-6): 3

You are examining patches (to be selected) from the following products:

- Patches for Digital UNIX V4.0D
- Patches for TruCluster Available Server Software V1.5

Is this correct? (y/n): y

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.

- DIGITAL_UNIX_V4.0D / Command, Shells, & Utility Patches:
 - 1) Patch 0203.00 - adduser Command Correction
 - 2) Patch 0219.00 - find Command Correction
 - 3) Patch 0249.00 - dump/restore Incompatibility Correction
 - 4) Patch 0276.00 - crontab Command Correction
 - 5) Patch 0287.00 - tar Command Correction
 - 6) Patch 0364.00 - sendmail Command Correction
 - 7) Patch 0394.00 - acctcom and acctcms Corrections.
- DIGITAL_UNIX_V4.0D / Commands, Shells & Utility Patches:
 - 8) Patch 0365.01 - setacl Command Correction
 - 9) Patch 0372.00 - Bourne Shell Performance Improvement

— MORE TO FOLLOW —

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

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

- DIGITAL_UNIX_V4.0D / Commands, Shells, & Utility Patches:
 - 10) Patch 0017.01 - awk Utility Correction
 - 11) Patch 0032.01 - diskx Command Correction
 - 12) Patch 0038.01 - vipw Issues Warnings Enhancement
 - 13) Patch 0064.01 - who Command Correction
 - 14) Patch 0066.01 - lex Command Correction
 - 15) Patch 0073.01 - LSM volsave Command Correction
- TruCluster_V1.5 / ASE API Library Patches:
 - 16) Patch 0004.00 - Networker Core Dump Correction
- TruCluster_V1.5 / ASE Availability Manager (AM) Patches:
 - 17) Patch 0032.00 - Kern Mem Fault And simple_lock Panic Correction
- TruCluster_V1.5 / Cluster Patches:
 - 18) Patch 0005.00 - System Panic dlm getch: illegal csid Correction
 - 19) Patch 0006.00 - drdadmin Command Failure, SysStartUp Error Corr(s)
 - 20) Patch 0011.00 - Cluster Map Not Being Loaded At Boot Time Correction
 - 21) Patch 0013.00 - Cluster Monitor Hang Correction
 - 22) Patch 0026.00 - Booting Second Member To Cluster Correction

Enter your choices or press RETURN to redisplay menus.

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

Or you may choose one of the following options:

- 23) ALL of the above
- 24) CANCEL selections and redisplay menus
- 25) EXIT without examining any patches

Enter your choices or press RETURN to redisplay menus.

Choices (for example, 1 2 4-6): 1-5

You are examining the following patches:

DIGITAL_UNIX_V4.0D / Command, Shells, & Utility Patches:

- 1) Patch 0203.00 - adduser Command Correction
- 2) Patch 0219.00 - find Command Correction
- 3) Patch 0249.00 - dump/restore Incompatability Correction
- 4) Patch 0276.00 - crontab Command Correction
- 5) Patch 0287.00 - tar Command Correction

=====

- DIGITAL_UNIX_V4.0D / Command, Shells, & Utility Patches:
Patch 0203.00 - adduser Command Correction

This patch fixes a problem in which the adduser(8) command puts user directories in /usr instead of /usr/users.

=====

- DIGITAL_UNIX_V4.0D / Command, Shells, & Utility Patches:
Patch 0219.00 - find Command Correction

This patch fixes the "find" command in which files in directories which were mounted with the "-fstype nfsv2" argument were not found.

=====

- DIGITAL_UNIX_V4.0D / Command, Shells, & Utility Patches:
Patch 0249.00 - dump/restore Incompatability Correction

Backups made by the dump program on pre-v4.0d systems were not being correctly restored by the v4.0d restore program. Specifically, ownership was being set to root:system in all cases.

=====

- DIGITAL_UNIX_V4.0D / Command, Shells, & Utility Patches:
Patch 0276.00 - crontab Command Correction

This patch prevents the crontab file from incorrectly deleting files found in file systems mounted under the /var/preserve, /tmp, and /var/tmp directories.

=====

- DIGITAL_UNIX_V4.0D / Command, Shells, & Utility Patches:
Patch 0287.00 - tar Command Correction

This patch fixes an intermittent problem with the tar(1) command in which tar prematurely terminates. The problem can occur on systems configured with both a Qlogic/ISP controller and a tape deck connected to a KZPAA controller.

Press RETURN to proceed...

DIGITAL UNIX Patch Utility (Rev. 25)

=====

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

Patch Documentation Menu:

- 1) View abstracts of installed patches on your system

- 2) View abstracts of patches on the patch kit
- 3) View READMEs of installed patches on your system
- 4) View READMEs of patches on the patch kit
- 5) View special instructions for installed patches on your system
- 6) View special instructions for patches on the patch kit
- 7) View all patch abstracts on your system
- 8) View all patch READMEs on your system
- 9) View all patch special instructions on your system
- b) Back to Main Menu
- q) Quit

Enter your choice: q

4.3 Sample 3: Tracking Patches

The example in this section shows how to use `dupatch` to track patches.

```
# dupatch
```

```
Mon Nov 16 12:15:09 EST 1998
DUPATCH_REV>25
```

```
DIGITAL UNIX Patch Utility (Rev. 25)
```

```
=====
```

```
- 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

```
DIGITAL UNIX Patch Utility (Rev. 25)
```

```
=====
```

```
- 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 on installed patches
- b) Back to Main Menu
- q) Quit

Enter your choice: 1

```
Patches installed on the system:
```

```
-----
```

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

```
- DIGITAL_UNIX_V4.0D / Command, Shells, & Utility Patches:
  Patch 0203.00 - adduser Command Correction
```

- Patch 0219.00 - find Command Correction
 - Patch 0249.00 - dump/restore Incompatibility Correction
 - Patch 0276.00 - crontab Command Correction
 - Patch 0287.00 - tar Command Correction
 - Patch 0364.00 - sendmail Command Correction
 - Patch 0394.00 - acctcom and acctcms Corrections.
- DIGITAL_UNIX_V4.0D / Commands, Shells & Utility Patches:
 - Patch 0365.01 - setacl Command Correction
 - Patch 0372.00 - Bourne Shell Performance Improvement
 - DIGITAL_UNIX_V4.0D / Commands, Shells, & Utility Patches:
 - Patch 0017.01 - awk Utility Correction
 - Patch 0032.01 - diskx Command Correction
 - Patch 0038.01 - vipw Issues Warnings Enhancement
 - Patch 0064.01 - who Command Correction
 - Patch 0066.01 - lex Command Correction
 - Patch 0073.01 - LSM volsave Command Correction
 - TruCluster_V1.5 / ASE API Library Patches:
 - Patch 0004.00 - Networker Core Dump Correction
 - TruCluster_V1.5 / ASE Availability Manager (AM) Patches:
 - Patch 0032.00 - Kern Mem Fault And simple_lock Panic Correction
 - TruCluster_V1.5 / Cluster Patches:
 - Patch 0005.00 - System Panic dlm getch: illegal csid Correction
 - Patch 0006.00 - drdadmin Command Failure, SysStartUp Error Corr(s)
 - Patch 0011.00 - Cluster Map Not Being Loaded At Boot Time Correction
 - Patch 0013.00 - Cluster Monitor Hang Correction
 - Patch 0026.00 - Booting Second Member To Cluster Correction

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

DIGITAL UNIX Patch Utility (Rev. 25)

=====

- 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 on installed patches
- b) Back to Main Menu
- q) Quit

Enter your choice: 2

The list of all patched files on your system:

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

```
./opt/TCR150/sbin/init.d/aseam (TruCluster_V1.5 Patch 0011.00)
./sbin/Rsh (DIGITAL_UNIX_V4.0D Patch 0372.00)
./sbin/advfs/advscan (DIGITAL_UNIX_V4.0D Patch 0352.00)
./sbin/advfs/vdf (DIGITAL_UNIX_V4.0D Patch 0314.00)
./sbin/advfs/verify (DIGITAL_UNIX_V4.0D Patch 0392.00)
./sbin/bcheckrc (DIGITAL_UNIX_V4.0D Patch 0016.01)
./sbin/chfsets (DIGITAL_UNIX_V4.0D Patch 0392.00)
./sbin/chvol (DIGITAL_UNIX_V4.0D Patch 0392.00)
./sbin/cpio (DIGITAL_UNIX_V4.0D Patch 0316.00)
./sys/BINARY/advfs.mod (DIGITAL_UNIX_V4.0D Patch 0392.00)
./sys/BINARY/alphabook.mod (DIGITAL_UNIX_V4.0D Patch 0321.00)
./sys/BINARY/alphabook_mult.mod (DIGITAL_UNIX_V4.0D Patch 0321.00)
./sys/BINARY/arch_alpha.mod (DIGITAL_UNIX_V4.0D Patch 0345.01)
./sys/BINARY/arch_alphapmap.mod (DIGITAL_UNIX_V4.0D Patch 0345.01)
./sys/BINARY/atm.mod (DIGITAL_UNIX_V4.0D Patch 0117.01)
./usr/opt/TCR150/ccs/lib/libimc.a (TruCluster_V1.5 Patch 0017.00)
./usr/opt/TCR150/ccs/lib/libssn.a (TruCluster_V1.5 Patch 0023.00)
```

```

./usr/opt/TCR150/sbin/aseagent (TruCluster_V1.5 Patch 0022.01)
./usr/opt/TCR150/sbin/asedirector (TruCluster_V1.5 Patch 0022.01)
./usr/opt/TCR150/sbin/asehelp (TruCluster_V1.5 Patch 0022.01)
./usr/opt/TCR150/sbin/asehsm (TruCluster_V1.5 Patch 0022.01)
./usr/opt/TCR150/sbin/aselogger (TruCluster_V1.5 Patch 0022.01)
./usr/opt/TCR150/sbin/asemgr (TruCluster_V1.5 Patch 0022.01)
./usr/opt/TCR150/sbin/asetsetup (TruCluster_V1.5 Patch 0022.01)
./usr/opt/TCR150/sbin/cnxmgrd (TruCluster_V1.5 Patch 0005.00)
./usr/opt/TCR150/sbin/drdadmin (TruCluster_V1.5 Patch 0006.00)
./usr/opt/TCR150/sbin/postDevErr (TruCluster_V1.5 Patch 0033.00)
./usr/opt/TCR150/sbin/snd (TruCluster_V1.5 Patch 0022.01)
./usr/opt/TCR150/sbin/submon (TruCluster_V1.5 Patch 0033.00)
./usr/opt/TCR150/shlib/libbaseapi.so (TruCluster_V1.5 Patch 0004.00)
./usr/opt/TCR150/shlib/libimc.so (TruCluster_V1.5 Patch 0017.00)
./usr/opt/TCR150/sys/ase.mod (TruCluster_V1.5 Patch 0032.00)
./usr/opt/TCR150/sys/cludebug.mod (TruCluster_V1.5 Patch 0026.00)
./usr/opt/TCR150/sys/cnxagent.mod (TruCluster_V1.5 Patch 0005.00)
./usr/opt/TCR150/sys/dlm.mod (TruCluster_V1.5 Patch 0023.00)
./usr/opt/TCR150/sys/include/sys/dlm_ssn.h (TruCluster_V1.5 Patch 0023.00)
./usr/opt/TCR150/sys/include/sys/imc.h (TruCluster_V1.5 Patch 0017.00)
./usr/opt/TCR150/sys/mcs.mod (TruCluster_V1.5 Patch 0017.00)
./usr/opt/TCR150/sys/rm.mod (TruCluster_V1.5 Patch 0026.00)
./usr/opt/TCR150/sys/rmvm.mod (TruCluster_V1.5 Patch 0026.00)
./usr/sbin/acct/acctems (DIGITAL_UNIX_V4.0D Patch 0394.00)
./usr/sbin/adduser (DIGITAL_UNIX_V4.0D Patch 0203.00)
./usr/sbin/atmsetup (DIGITAL_UNIX_V4.0D Patch 0117.01)
./usr/sbin/automount (DIGITAL_UNIX_V4.0D Patch 0358.00)
./usr/sbin/chfile (DIGITAL_UNIX_V4.0D Patch 0392.00)
./usr/sbin/cron (DIGITAL_UNIX_V4.0D Patch 0349.00)
./usr/sbin/defragment (DIGITAL_UNIX_V4.0D Patch 0392.00)
./usr/sbin/dump (DIGITAL_UNIX_V4.0D Patch 0362.01)
./usr/sbin/edquota (DIGITAL_UNIX_V4.0D Patch 0362.01)

```

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

DIGITAL UNIX Patch Utility (Rev. 25)

=====

- 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 on installed patches

- b) Back to Main Menu
- q) Quit

Enter your choice: q

4.4 Sample 4: Gathering Baseline Information

The example in this section shows how to use `dupatch` to perform a patch baseline analysis.

```

# dupatch
Tue Nov 17 14:08:48 EST 1998
DUPATCH_REV>25

```

DIGITAL UNIX Patch Utility (Rev. 25)

=====

- 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 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.

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

- Previous baseline logs saved in baseline.log.[1-25]

Enter path to the top of the patch distribution,
or enter "q" to get back to the menu : /usr/pkit/patch_kit

KITNAME> TCR141, OSF410

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.

Press RETURN to see the list of patches...

* list of patches with inter-product inventory conflicts:

- DIGITAL_UNIX_V4.0B / Common Desktop Environment (CDE) Patches:
Patch 0691.00 - CDE Window Manager Corrections

- Files with inter-product inventory conflicts are:

./usr/dt/bin/dtwm is shipped by:

Product: BLT Layered Product Test
Subset: BLTLPCONFLICTTEST410

- There are no other files within this patch.

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.

Press RETURN to see the list of changed system files...

* list of changed files with unknown origin:

./etc/doprc OSFSYSMAN410 UNKNOWN
./sbin/ln OSFBASE410 UNKNOWN
./usr/bin/man OSFBASE410 UNKNOWN
MISSING HARDLINK TO ./usr/bin/apropos
./usr/opt/TCR141/sys/config.file TCRCONF141 UNKNOWN
./usr/opt/TCR141/sys/stanza.static TCRCONF141 UNKNOWN
./usr/sbin/dupatch OSFPAT0000012410 UNKNOWN
./usr/sbin/envmond OSFENVMON410 UNKNOWN
./usr/sbin/talkd OSFCLINET410 UNKNOWN
MISSING HARDLINK TO ./usr/sbin/ntalkd
./usr/shlib/X11/lib_dec_ws.so OSFSER410 UNKNOWN
./usr/sys/include/dec/binlog/crdfilter.h OSFPAT00057401410 UNKNOWN

Press RETURN to see the list of "missing" files...

* list of "missing" files:

./sbin/init.d/envmon OSFENVMON410 MISSING
./usr/bin/apropos OSFBASE410 MISSING
./usr/bin/printenv OSFBASE410 MISSING
./usr/bin/whatis OSFBASE410 MISSING
./usr/opt/TCR141/sys/am.o TCRCOMMON141 MISSING
./usr/sbin/ntalkd OSFCLINET410 MISSING
./usr/sbin/route OSFCLINET410 MISSING
./usr/shlib/X11/lib_dec_ati64.so OSFSERPC410 MISSING
./usr/var/kdbx/mbuf OSFKTOOLS410 MISSING
./usr/var/kdbx/socket OSFKTOOLS410 MISSING

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.

Press RETURN to see the list of patches...

* list of patches with file applicability conflicts:

- DIGITAL_UNIX_V4.0B / I/O Device Handling Patches:
 - Patch 0063.00 - ATI Mach64 Graphics Card Monitor Handling
- Changed files with unknown origin are:
 - ./usr/shlib/X11/lib_dec_ws.so
- Missing system files are:
 - ./usr/shlib/X11/lib_dec_ati64.so
- Other file(s) within this patch, with their origin (identified through checksum match) listed in terms of their translated subset information, if any, are:
 - ./usr/shlib/X11/libextdpms.so
 - X Servers Base
- DIGITAL_UNIX_V4.0B / Security Related Patches:
 - Patch 0117.00 - talkd Correction, Security (SSRT0446U)
- Missing system files are:
 - ./usr/sbin/ntalkd
- There are no other files within this patch.
- DIGITAL_UNIX_V4.0B / Commands, Shells, & Utility Patches:
 - Patch 0118.00 - Environmental Monitoring Daemon Correction
- Changed files with unknown origin are:
 - ./usr/sbin/envmond
- Missing system files are:
 - ./sbin/init.d/envmon
- There are no other files within this patch.
- DIGITAL_UNIX_V4.0B / Security Related Patches:
 - Patch 0410.01 - Security, (SSRT0495U)
- Missing system files are:
 - ./usr/bin/apropos
 - ./usr/bin/whatis
- Other file(s) within this patch, with their origin (identified through checksum match) listed in terms of their translated subset information, if any, are:
 - ./usr/lib/nls/msg/en_US.ISO8859-1/man.cat
 - Base System
- DIGITAL_UNIX_V4.0B / Commands, Shells, & Utility Patches:
 - Patch 0574.01 - New Command, filterlog on AlphaServer 8200/8400

- Changed files with unknown origin are:

`./usr/sys/include/dec/binlog/crdfilter.h`

- Other file(s) within this patch, with their origin (identified through checksum match) listed in terms of their translated subset information, if any, are:

`./etc/new/binlog.conf`
Base System

`./sys/BINARY/kn8ae.mod`
Hardware Kernel Modules

`./usr/sbin/binlogd`
Base System

`./usr/sbin/filterlog`
DIGITAL_UNIX_V4.0B Patch 0574.01

`./usr/sys/include/dec/binlog/binlog.h`
Kernel Header and Common Files

`./usr/sys/include/dec/binlog/crdfilter.h`
DIGITAL_UNIX_V4.0B Patch 0574.01

`./usr/sys/include/io/dec/lsb/tlsbreg.h`
Kernel Header and Common Files

- DIGITAL_UNIX_V4.0B / Miscellaneous Patches:
Patch 0645.01 - kdbx mbuf And Socket Extension Correction

- Missing system files are:

`./usr/var/kdbx/mbuf`
`./usr/var/kdbx/socket`

- There are no other files within this patch.

- TruCluster_V1.4A / ASE Availability Manager (AM) Patches:
Patch 0033.00 - Kern Mem Fault And simple_lock Panic Correction

- Missing system files are:

`./usr/opt/TCR141/sys/am.o`

- Other file(s) within this patch, with their origin (identified through checksum match) listed in terms of their translated subset information, if any, are:

`./usr/opt/TCR141/sys/am_scsi.o`
TruCluster Common Components

`./usr/opt/TCR141/sys/am_tm1.o`
TruCluster Common Components

`./usr/opt/TCR141/sys/am_tm2.o`
TruCluster Common Components

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

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 enabled.

- DIGITAL_UNIX_V4.0B / Commands, Shells, & Utility Patches:
1) Patch 0118.00 - Environmental Monitoring Daemon Correction

2) Patch 0574.01 - New Command, filterlog on AlphaServer 8200/8400

- DIGITAL_UNIX_V4.0B / I/O Device Handling Patches:
 - 3) Patch 0063.00 - ATI Mach64 Graphics Card Monitor Handling
- DIGITAL_UNIX_V4.0B / Miscellaneous Patches:
 - 4) Patch 0645.01 - kdbx mbuf And Socket Extension Correction
- DIGITAL_UNIX_V4.0B / Security Related Patches:
 - 5) Patch 0117.00 - talkd Correction, Security (SSRT0446U)
 - 6) Patch 0410.01 - Security, (SSRT0495U)

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

Choices (for example, 1 2 4-6): 1 3

- TruCluster_V1.4A / ASE Availability Manager (AM) Patches:
 - 7) Patch 0033.00 - Kern Mem Fault And simple_lock Panic Correction

The following choices override your previous selections:

- 8) ALL of the above
- 9) CANCEL selections and redisplay menus
- 10) EXIT without enabling any patches

Add to your choices, choose an overriding action or press RETURN to confirm previous selections.

Choices (for example, 1 2 4-6): 1 3

You are enabling the following patches:

- DIGITAL_UNIX_V4.0B / Commands, Shells, & Utility Patches:
 - Patch 0118.00 - Environmental Monitoring Daemon Correction
- DIGITAL_UNIX_V4.0B / I/O Device Handling Patches:
 - Patch 0063.00 - ATI Mach64 Graphics Card Monitor Handling

Is this correct? (y/n): y

*** Installation of the following patches is enabled:
(NOTE: You need to include these patches for installation from the installation menu)

- DIGITAL_UNIX_V4.0B / Commands, Shells, & Utility Patches:
 - Patch 0118.00 - Environmental Monitoring Daemon Correction
- DIGITAL_UNIX_V4.0B / I/O Device Handling Patches:
 - Patch 0063.00 - ATI Mach64 Graphics Card Monitor Handling

* Baseline Analysis/Adjustment process completed.

=====

Press RETURN to get back to the Main Menu...

DIGITAL UNIX Patch Utility (Rev. 25)

=====

- 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: q

Common Error, Warning, and Informational Messages

This chapter 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.

5.1 Patch Preinstallation Check and Installation Messages

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

5.1.1 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: Generally this situation occurs when system files are placed on the system through manual intervention. For example this may have been the result of installing a prerelease patch received from Compaq Services or a system administrator's customization of a DIGITAL 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_V4.0D / Common Desktop Environment (CDE) Patches:
```

```
  Patch 0326.00 - CDE Login Correction
```

```
  ./usr/dt/bin/dtwn:
    its origin cannot be identified.
```

```
This patch will not be installed.
```

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

- DIGITAL_UNIX_V4.0D / Common Desktop Environment (CDE) Patches:
Patch 0326.00 - CDE Login Correction

5.1.2 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: Generally this situation 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..
(depending upon the number of patches you select, this may take a while)

Problem installing:

- DIGITAL_UNIX_V4.0D / 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_V4.0D / Commands, Shells, & Utility Patches:
Patch 0236.00 - vi Editor Correction

5.1.3 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 DIGITAL UNIX operating system files.

Action: To resolve this situation contact the Product Customer Services representative for your layered product or Compaq Services if you have purchased Business Critical Services.

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_V4.0D / 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_V4.0D / Network Patches:
Patch 0182.00 - xti/streams Interface Module Correction

5.1.4 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: Generally this 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..
(depending upon the number of patches you select, this may take a while)

Problem installing:

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

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

- TruCluster_V1.4A / Filesystem Patches:
Patch 0037.00 - Support For New AdvFS Mount Option "-o noatimes"

- TruCluster_V1.4A / 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:

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

5.1.5 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: Generally this is 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 DIGITAL UNIX, ASE, or TCR release subset and reinstall the patches

Output:

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

```
-----  
Problem installing:
```

```
- TruCluster_V1.4A / Cluster Kernel Patches:  
  Patch 0035.00 - rm_spur Driver Correction
```

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

```
- TruCluster_V1.4A - subset: TCRMCA141
```

```
This patch will not be installed.
```

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

```
- TruCluster_V1.4A / Cluster Kernel Patches:  
  Patch 0035.00 - rm_spur Driver Correction
```

5.1.6 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: 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...  
(depending 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.

.
. .
.

5.2 Patch Removal Messages

This section describes messages you might see when running the `dupatch` patch deletion function.

5.2.1 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_V4.0B / 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_V4.0B / Commands, Shells, & Utility Patches:  
  Patch 0019.00 - quota Command Correction
```

5.2.2 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..
(depending upon the number of patches you select, this may take a while)

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

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

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

* Following patch(es) failed in dependency check:

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

5.2.3 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 DIGITAL UNIX 4.0D Patch 314.00; the patch delivers files that were not shipped with the initial release of DIGITAL UNIX 4.0D.

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

Output:

=== Deleting "Digital UNIX V4.0D":

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.

DIGITAL UNIX System Upgrade Information

This chapter provides background information on DIGITAL UNIX system upgrades in the presence of operating system patches. Releases of DIGITAL UNIX are structured and distributed as full or sparse inventory kits.

6.1 Full Inventory DIGITAL UNIX Kit

This type of kit contains a full inventory of operating system objects (headers, libraries, kernel modules, and the like). It can be used to perform full and update installations:

- A full (also called new) installation creates new file systems and loads a full copy of DIGITAL UNIX from the kit onto a system. Any other version of DIGITAL UNIX, 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.
- An update installation from a full inventory kit loads a full copy of DIGITAL UNIX from the kit, replacing every operating system object that existed on the system prior to the installation.

An update installation does not update layered products. This may cause a regression in operation of a layered product if a layered product version of a DIGITAL UNIX object is replaced with a new version of that object.

The end result of either a full or an update installation is an operating system consisting of a known set of operating system objects that provides predictable system behavior.

Following an update installation it is necessary to install all layered products and all DIGITAL UNIX patches (official as well as test) that were built for the new release.

6.2 Sparse Inventory DIGITAL UNIX Installation

The DIGITAL UNIX Version 3.2C family sparse inventory operating system kits do not contain a full inventory of operating system objects. Also, it does not use either the full or the update installation processes described above; it uses `setld` directly.

Because a sparse inventory kit contains only a partial inventory of DIGITAL UNIX objects, installing from this type of kit does not load an entire copy of DIGITAL UNIX onto a system. Existing objects are overwritten only if replacement objects exist on the software kit.

Sparse inventory kits are produced assuming that any system to be upgraded is running the baseline DIGITAL UNIX operating system objects from a previous release. In the presence of patches, a layered product that modifies base operating system files and other files causes the system to deviate from one of the supported baselines and has the potential to cause object inconsistency following an installation from a sparse inventory kit. Therefore, you must exercise special care when upgrading DIGITAL UNIX from a sparse inventory kit.

Following a sparse inventory installation, you must install all appropriate versions of layered products and all DIGITAL UNIX patches (official as well as test) that were built for the new release. Failure to do so will probably cause a regression in the behavior of layered products, DIGITAL UNIX, or both.

The following tables provide upgrade information for the V4.0 and V3.2 families of releases.

Table 6–1: Upgrade Migration for DIGITAL UNIX Version 4.0 Family

DIGITAL UNIX Version	Kit Type	Upgrade Migration Supported
V4.0E	Full	From 4.0A, 4.0B, 4.0C, 4.0D
V4.0D	Full	From 4.0A, 4.0B, 4.0C
V4.0C	Full	Installs only on DIGITAL Personal Workstation 433AU and DIGITAL Personal Workstation 500AU
V4.0B	Full	From V4.0A
V4.0A	Full	From V3.2G or V4.0
V4.0	Full	From V3.2C, V3.2D-1, V3.2D-2 via update installation

Table 6–2: Upgrade Migration for DIGITAL UNIX Version 3.2 Family

DIGITAL UNIX Version	Kit Type	Upgrade Migration Supported
V3.2G	Sparse	From V3.2C, V3.2D-1, V3.2D-2, V3.2E-1, V3.2E-2, V3.2F via setld.
V3.2F	Sparse Full	From V3.2C, V3.2D-1 via setld. No migration path. Full installation only for AlphaServer 4100.
V3.2E-2	Sparse	From V3.2D-2 via setld. This release contains DIGITAL UNIX fixes necessary for TruCluster V1.0 to function.
V3.2D-2	Full	No migration path. Full installation only for AlphaServer 2100A.
V3.2E-1	Sparse	From V3.2D-1 via setld. This release contains DIGITAL UNIX fixes necessary for TruCluster V1.0 to function.
V3.2D-1	Sparse	From V3.2C via setld.
V3.2C	Full	From V3.2, V3.2A, V3.2B via an update installation.
V3.2B	Sparse	This release provided V3.2 functionality for new hardware.
V3.2A	—	This release consisted of layered products only.
V3.2	Full	From V3.0, V3.0A, V3.0B via an update installation.