ConvexMLIB for PA-RISC V3.0 Installation Notice

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Contents

Overview 1

This chapter gives an overview of the ConvexMLIB for PA-RISC V3.0 release.

About this package

This section describes the documents and requirements associated with this release.

Table 1 Distribution contents

Title	Part or order number
ConvexMLIB for PA-RISC V3.0 Installation Notice	770-003730-007
ConvexMLIB User's Guide: VECLIB	DSW-132
ConvexMLIB User's Guide: LAPACK	DSW-866
ConvexMLIB for PA-RISC V3.0	770-001715-005
ConvexMLIB Quick Reference	770-003730-003
CD-ROM Volume IV	770-004515-003

Documentation

Documentation for ConvexMLIB V3.0 consists of:

- *ConvexMLIB for PA-RISC V3.0 Installation Notice*
- *ConvexMLIB User's Guide: VECLIB*
- *ConvexMLIB User's Guide: LAPACK*
- *ConvexMLIB Quick Reference*
- Online man pages

Prerequisites

ConvexMLIB for PA-RISC runs on the HP 9000/700 Series PA-RISC hardware platform.

Before you can install this package on a a PA-RISC computer, your system must already be running HP-UX 9.0.x or HP-UX 10.x.

ConvexMLIB for PA-RISC is available on DAT, anonymous ftp, or by the World-Wide-Web.

To download ConvexMLIB for PA-RISC using ftp, follow these steps:

- ftp to convex.com
- login as user "anonymous". Enter your e-mail address for the password.
- cd to the cxsadm/mlib directory
- type "bin" to ensure you download in binary mode.
- type "get mlib3.0.tar.Z"
- type "quit"

Please note that due to security considerations the "ls" command will not work on our ftp server.

To download ConvexMLIB for PA-RISC using a World-Wide-Web browser, follow these steps:

- Open the URL http://www.convex.com/prod_serv/cxsoft/demo.html.
- click on ConvexMLIB Software to download.

Disk space requirements

The installation of ConvexMLIB takes approximately 10Mb of disk space in the /usr directory tree.

Software installation strategies

This section details the different strategies for installing CXSOFT products on your workstation(s). It will be of most interest to people executing software on more than one computer. Read this section to understand the directory schema used by this software installation.

Background

Recognizing the system management problems of even a modest number of workstations, CXSOFT provides software installations giving you the greatest flexibility in administering this product, either on a single workstation or in a clustered workstation environment.

This installation supports two different strategies for loading the software:

- **Peer strategy**—All software is specifically installed on each host running the software. This method is traditional in workstation software.
- **Client/server strategy**—Sharable files are loaded on a single host, the "file server." These files are then served to zero or more "clients" using Network File System (NFS). A single file server may have clients of several different architectures.

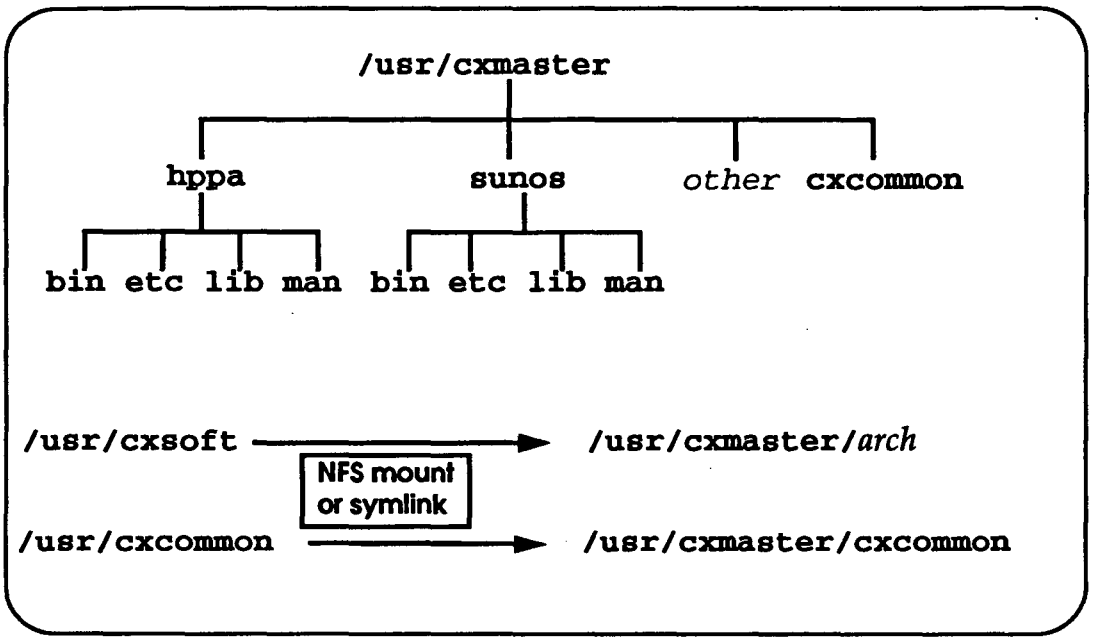
File server directory structure

This and other CXSOFT products install under the /usr/cxmaster directory. Additionally the following directory trees are created:

- /usr/cxmaster/hppa—This is where the architecture specific files are installed.
- /usr/cxmaster/cxcommon—This is where common configuration files are installed and maintained.

This directory tree is capable of supporting multiple architectures on a single file server as illustrated in Figure 1.

Figure 1 CXSOFT Software Install Directories



If the software is installed locally, /usr/cxsoft will be a symbolic link to the appropriate /usr/cxmaster/*arch* directory. Similarly, /usr/cxcommon will be a symbolic link to /usr/cxmaster/cxcommon.

Exporting the file server directories to client hosts

In order to locate the appropriate product excecutables on any given host, the following scheme is used by CXSOFT installations.

On the file server host, there are the following symbolic links:

- /usr/cxsoft -> /usr/cxmaster/*arch*
- /usr/cxcommon -> /usr/cxmaster/cxcommon

On each of the client hosts, there are the following directory mounts:

- *server*:/usr/cxmaster/*arch* mounted on *client*:/usr/cxsoft
- *server*:/usr/cxmaster/cxcommon mounted on *client*:/usr/cxcommon

where *arch* is an architecture type. For example, if your client host is an HP workstation, then *arch* would be `hppa`. If your client is a Sun workstation running SunOS, then *arch* would be `sunos`.

In this manner, users need only add the /usr/cxsoft/bin directory to their execution path, and they will automatically execute the correct executable programs no matter which host they are logged into. Similarly, they need only add /usr/cxsoft/man to their MANPATH variable and they will always access the man pages specific to the host they are on.

Refer to your HP system administration documentation for instructions on exporting and mounting directories across hosts.

Selecting a strategy

To help you recognize the strategy that best suits your environment, Table 2 compares the two with regard to specific system administration issues.

Table 2 Software installation Strategy Comparison

Issue	Peer strategy	Client/server strategy
Disk space	Each software package is installed on every host on which it executes.	Most software is loaded on the file server with a minimum number of files installed on the client hosts. This conserves disk space on the client hosts.
Fault tolerance	Since all executables are installed on the individual hosts, there is no single point of failure as long as all data is also local.	The file server becomes a single point of failure for the cluster environment. If the file server is also serving data files to the cluster, this becomes a moot point.
Software installations	All software packages are installed on each host.	All software packages are installed on a file server. Some software packages may also have small "Environment" filesets that must be installed on each client as well.
System administration	Configuration files must be copied to all cooperating hosts.	Configuration files localized on a single file serving host.

In selecting a strategy, you may also determine that a hybrid environment works best. For example, consider an environment where all executable software is loaded on each host running the software (as in the Peer Strategy). Common configuration files that can be shared among multiple hosts are stored on single file server hosts. Clients then access the configuration files using NFS. Specifically:

- /usr/cxsoft is a symbolic link to /usr/cxmaster/*arch*.
- *server*:/usr/cxcommon is mounted on *client*:/usr/cxcommon.

Any given host can be either a client or a file server/peer, but not both, because /usr/cxsoft is either a mount point or a symbolic link. If /usr/cxsoft is a link, the host is either a file server (in the client/server strategy) or a peer (in the peer strategy). If /usr/cxsoft is a mount point, the host is a client. A host should be designated as either a file server or a client, but never both.

Solving installation problems

Should you encounter any problems during the installation and cannot continue, please contact the CXSOFT Technical Assistance Center (TAC) for help. Depending on your location, the TAC may be reached at one of the following telephone numbers:

- In the United States or Canada, call 1 (800) 426–8979.
- Outside the United States or Canada, call 1 (214) 497–4027.

You may also contact the CXSOFT TAC by e-mail. The address is support@cxsoft.convex.com.

Installation 2

This chapter describes the installation of ConvexMLIB for PA-RISC V3.0.

ConvexMLIB for PA-RISC V3.0 is packaged in a tar file. After running tar to restore the product files, you will have to run a script to complete the installation.

If you have any problems or questions regarding the installation procedure, please contact the CXSOFT Technical Assistance Center (TAC) at 1 (800) 426–8979 inside the United States and Canada, or 1 (214) 497–4027 outside the United States or Canada. You may also contact the CXSOFT TAC by e-mail. The address is support@cxsoft.convex.com.

Before You Begin

Before you install this package, you should be familiar with the information in "About this package" on page 1, namely the prerequisites and software installation strategies.

Note

Remove Old Versions of ConvexMLIB before you install version 3.0.

Before installing this version of ConvexMLIB for PA-RISC, you must remove or rename previous versions of this product.

Renaming Older Versions of ConvexMLIB

Use the following commands to rename your previous version of ConvexMLIB for PA-RISC:

```
# cd /usr/cxmaster/hppa
# mv bin/mlibu bin/mlibu_old
# mv lib/liblapack.a lib/liblapack.a_old
# mv lib/libveclib.a lib/libveclib.a_old
```

Use the next commands only if /usr/lib/libveclib.a and /usr/lib/liblapack.a are symbolic links to /usr/cxmaster/hppa/lib/.

```
# cd /usr/lib
# ls -l liblapack.a ; ls -l libveclib.a
```

If these files are symbolic links, it is ok to delete them.

```
# rm /usr/lib/liblapack.a
# rm /usr/lib/libveclib.a
```

Deleting Old Versions of ConvexMLIB

This section only applies to systems running HP-UX 9.0.x.

ConvexMLIB for PA-RISC version 1.2 and earlier used Hewlett-Packard's installation program, /etc/update. To remove the three components of ConvexMLIB for PA-RISC version 1.2 or earlier, use the rmfn command.

As root, run the following commands to remove ConvexMLIB for PA-RISC V1.2, 1.1, and 1.0.

```
# rmfn MLIB-ENV
# rmfn MLIB-LIB
# rmfn MLIB-MAN
```

If you have a pre-release version of ConvexMLIB for PA-RISC V3.0, you do not need to remove the product files before this installation as they will be overwritten.

Installation Overview

The ConvexMLIB installation creates a bin, include, lib, and man directory in /usr/cxmaster/hppa/. If these directories do not exist, they will be created during the installation.

ConvexMLIB is packaged as a tar file. After tar is used to restore the ConvexMLIB files, run an installation script to create a directory for your license file, /usr/cxcommon/licenses, and link it to /usr/cxmaster/cxcommon. The install script asks whether or not you want ConvexMLIB libraries to be link to /usr/lib. For most installations, you should link the libraries to /usr/lib. Under certain circumstance, you might not want to link the ConvexMLIB libraries to /usr/lib. An example of this is if you use other libraries with the names liblapack.a and libveclib.a.

Installing on a file server host

These steps apply to installing ConvexMLIB for PA-RISC on a file server (Client/Server Strategy) or on an individual workstation (Peer Strategy). See "Software installation strategies" on page 3 for definitions.

Note

If you are installing ConvexMLIB from a tar file (for instance, if you retrieved ConvexMLIB from our ftp or www server), replace the tape device name with the file name in Step 4.

Step 1 Login as root.

Step 2 Insert the DAT tape or CD-ROM with ConvexMLIB for PA-RISC into your DAT drive or CD-ROM drive.

Step 3 Check to make sure that you have the required amount of disk space as specified in "Disk space requirements" on page 2.

```
# /usr/bin/bdf.
```

Step 4 For a DAT tape, extract the tar image by using the command

```
# tar xvf /dev/rmt/3m
```

/dev/rmt/3m is the name of a DAT tape device. The tape device on your system may have a different name.

For a CD-ROM, extract the tar file using the command:

```
# tar xvf /cdrom/HPPA/MLIB3_0.TAR
```

/cdrom is a mount point for a CD-ROM device. Your mount point directory may be different.

```
Execute the following command as root:
# /usr/cxmaster/hppa/bin/mlib_install
```

Step 5 Continue by reading the section titled "After the Installation" on page 13.

Installing on a Client Host

These steps apply to installing ConvexMLIB for PA-RISC on a client host (Client/Server Strategy) only. See "Software installation strategies" on page 3 for definitions. The server must be installed before the client is installed.

Step 1 Login as root.

Step 2 Change to the root filesystem

```
# cd /
```

Step 3 Ensure that /usr/cxsoft and /usr/cxcommon exist as a directories (mount point). These directories may be created with the command:

```
# mkdir /usr/cxsoft /usr/cxcommonBefore beginning
the installation /usr/cxsoft must be properly
mounted from your file server. The /etc/checklist
file on the client should have an entry similar to
Figure 2, where server is the hostname of your file
server.
```

Figure 2 Entry in /etc/checklist

```
server:/usr/cxmaster/hppa       /usr/cxsoft    nfs rw,intr,bg 0 0
server:/usr/cxmaster/cxcommon   /usr/cxcommon  nfs rw,intr,bg 0 0
```

Step 4 On the server, edit /etc/exports and include the line **/usr/cxmaster -root=*client*** where *client* is the hostname for your client system. root access to the server is required for installation only. You may change the line in /etc/exports after running mlib_install (Step 8) to **/usr/cxmaster -access=*client***

Step 5 On the server, run the command:

```
# /usr/etc/exportfs -va
```

Step 6 Once the /usr/cxmaster directory is exported to the client host, mount the file system from the file server with the commands:

```
# mount /usr/cxsoft
# mount /usr/cxcommon
```

Step 7 Execute the following command:

```
# /usr/cxmaster/hppa/bin/mlib_install
```

Step 8 Continue by reading "After the Installation" on page 13.

ConvexMLIB man pages

Man pages for ConvexMLIB are located in the /usr/cxmaster/hppa/man. This directory must be added to your MANPATH shell variable to access ConvexMLIB man pages.

For C-Shell, use the following command:

```
setenv MANPATH $MANPATH:/usr/cxmaster/hppa/man
```

For Bourne Shell, use the command:

```
MANPATH=$MANPATH:/usr/cxmaster/hppa/man
```

After the Installation

Before using ConvexMLIB, you will need to install your ConvexMLIB activation key in the FLEXlm license file. You may use the Activation Key Request Form to obtains your key(s) from CXSOFT.

The location of the FLEXlm license file will depend on your configuration, but will most likely be either /usr/cxcommon/licenses/license.dat or in /usr/local/flexlm/licenses/license.dat. Consult the *FLEXlm Installation Notice* and the *Flexible License Manager End User Manual* for more information. A sample license is shown in Figure 3.

Figure 3 Sample ConvexMLIB license

```
SERVER retry 08000932ba04 744
DAEMON cxs /usr/local/flexlm/cxs

#
# MLIB license, node-locked to server "retry"
#
FEATURE mlib cxs 3.0 1-jan-00 4 BFCA36115072A2D36C52 ""
```

New and changed features 3

This chapter describes the new and changed features in the ConvexMLIB for PA-RISC V3.0 release.

Updated features

This release of ConvexMLIB updates the following features.

Performance improvements in ConvexMLIB 3.0

- LAPACK V2.0
- Optimization to some routines specifically for the HP PA-RISC 7200 chip.

Performance improvements from ConvexMLIB 2.0

Several ConvexMLIB routines have been further optimized for performance. Some of these improvements include:

- Complete optimization of Level 3 BLAS
- Additional optimization of Level 2 and Level 1 BLAS
- Redesign of FFT's for better-out-of-cache and overall performance
- Addition of Strassen's matrix multiply algorithm (DGEMSS and ZGEMMS, see the ConvexMLIB: VECLIB User's Guide)
- Optimization of LAPACK routines: [CDSZ]GETRF and the related general, dense, linear, linear equation solver and {[DS]SY,[CZ]HE}TRD, symmetric tridiagonal reduction

Bug fixes

There are no bug fixes for this release.