
CONVEX CXwindows V3.1 Release Notice



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**CONVEX
CXwindows V3.1
Release Notice**

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Overview of CONVEX CXwindows V3.1

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About this package

CONVEX CXwindows allows users to access CONVEX supercomputers through familiar X windowing techniques. With CONVEX CXwindows, workstation users can transfer data from windows on a CONVEX supercomputer into other application windows on remote machines. The CONVEX machine can serve as an X or PEX applications engine serving many workstations in the network.

CONVEX CXwindows V3.1 includes:

- The X programming libraries:
 - The X Protocol library.
 - The X Toolkit Intrinsics library.
 - The MIT Athena widget set.
- OSF/Motif widgets and programming libraries.
- Common MIT X clients, CONVEX-specific X clients, window managers and application development utilities including:
 - The OSF/Motif Window Manager, *mwm*.
 - The OSF/Motif User Interface Language compiler, *uil*.
 - *editres*, an interactive client for editing X resource files.
 - WCL, the Widget Creation Language library.
- The X font server, *fs*.
- PEX programming libraries:
 - PEX protocol generating PHIGS/PHIGS PLUS libraries for C and FORTRAN.
 - The PEX Protocol library, *PEXlib*.

Documentation for CONVEX CXwindows V3.1 includes:

- Man pages for all X, Motif, and PHIGS programming library routines and for all X clients.
- *CONVEX CXwindows V3.1 Release Notice* and *CONVEX CXwindows V3.1 Installation Procedure*.

All software in the CONVEX CXwindows V3.1 release is based on X Version 11 Release 5, OSF/Motif 1.2 and ANSI C.

Prerequisites

Before you can install this package, your system must already be running these software packages:

- ConvexOS V10.0 or a later release of the operating system.

- ConvexOS Utilities V10.0 or a later release of the system utilities.
- ConvexOS Internet Services V10.0 or a later release of the networking utilities.
- CONVEX C Compiler V5.0 or a later release of the compiler.

If your system is not running these four software packages, you must install them before continuing. If you need additional information on new releases, contact the CONVEX Technical Assistance Center (TAC).

X Display Server Requirements

In addition to the CONVEX software mentioned above, you must be running an R4 or R5-compliant X server. In order to run the PEX software, you must be running a PEX 5.0 or 5.1 server.

CONVEX does not directly support any X or PEX servers.

Disk Space Requirements

CONVEX CXwindows V3.1 requires 83 megabytes of disk space. At product installation, the installer specifies the disk partition and directory into which CONVEX CXwindows will be installed. The CONVEX CXwindows install script creates the necessary links from /usr to the alternate install directory.

CONVEX CXwindows V3.1 optionally allows the installation of various unsupported X clients in executable and source format. If this option is chosen, another 64 megabytes of disk space will be required.

Refer to the *CONVEX CXwindows V3.1 Installation Procedures* for more details.

Corequisites

CONVEX CXwindows will operate with CONVEX COVUEnet V2.1 or later releases of CONVEX COVUEnet. CONVEX CXwindows V3.1 will not work with COVUEnet releases prior to COVUEnet V2.1.

If you are running an older versions of CONVEX COVUEnet, please contact your CONVEX sales representative for information on upgrading your software.

Installing this Release

Refer to the *CONVEX CXwindows V3.1 Installation Procedures* for special instructions on how to install the software.

What is new in CONVEX CXwindows V3.1?

CONVEX CXwindows V3.1 upgrades OSF Motif from version 1.1 to version 1.2 and fixes many, many bugs in the X programming libraries and clients. CONVEX CXwindows V3.1 also adds PEXlib, the X Consortium sample implementation

programming library that generates PEX 5.1 protocol. Refer to the section "CONVEX PEX" on page 5 for more information.

CONVEX OSF/Motif

CONVEX OSF/Motif has been upgraded to version 1.2. Features new to this version of Motif include tear-off menu support, drag and drop data interchange, internationalization support, and many bug fixes. See the chapter "Summary of Motif Changes" for a more comprehensive description.

All CONVEX OSF/Motif widget resources can still be edited with `editres`.

New clients

CONVEX CXwindows V3.1 includes the new OSF Motif client `xmbind` which configures the virtual key bindings for Motif applications. See the `xmbind` man page or the *OSF Motif Programmer's Guide* for further details.

Changes to clients

All of the standard X clients are still available in CONVEX CXwindows V3.1. Many have had bug fixes applied. The following table presents some new features of interest.

Client	Change
<code>xterm</code>	Logging has been removed since it is susceptible to OS security violations.
<code>xdm</code>	Support for ConvexOS shadow passwords has been added.

List of clients

These are the clients supported in CONVEX CXwindows V3.1:

<code>appres</code>	<code>atobm</code>	<code>bdftopcf</code>	<code>bitmap</code>
<code>bmtoa</code>	<code>editres</code>	<code>execqt</code>	<code>fs</code>
<code>fsinfo</code>	<code>fslsfonts</code>	<code>fstobdf</code>	<code>imake</code>
<code>listres</code>	<code>makedepend</code>	<code>mkdirhier</code>	<code>mkfontdir</code>
<code>mwm</code>	<code>oclock</code>	<code>resize</code>	<code>showfont</code>
<code>twm</code>	<code>uil</code>	<code>viewres</code>	<code>xauth</code>
<code>xbiff</code>	<code>xcalc</code>	<code>xclipboard</code>	<code>xclock</code>
<code>xcmsdb</code>	<code>xcutsel</code>	<code>xditview</code>	<code>xdm</code>
<code>xdpr</code>	<code>xdpyinfo</code>	<code>xedit</code>	<code>xfd</code>
<code>xfontsel</code>	<code>xhost</code>	<code>xkill</code>	<code>xload</code>
<code>xlogo</code>	<code>xlsatoms</code>	<code>xlsclients</code>	<code>xlsfonts</code>
<code>xmag</code>	<code>xman</code>	<code>xmbind</code>	<code>xmh</code>
<code>xmkmf</code>	<code>xmodmap</code>	<code>xpostage</code>	<code>xpr</code>
<code>xprop</code>	<code>xrdb</code>	<code>xrefresh</code>	<code>xset</code>
<code>xsetroot</code>	<code>xstddcmap</code>	<code>xterm</code>	<code>xwd</code>
<code>xwininfo</code>	<code>xwud</code>		

Accessing CONVEX CXwindows V3.1 man pages

To access the new X man pages, add `/usr/X11/manX` to your `MANPATH` variable. To access the PEX man pages, add `/usr/X11/manPEX` to `MANPATH`.

Contributed software

This release of CONVEX CXwindows includes a large set of contributed X clients. The contributed software was collected from sources available from MIT and from the news group `comp.sources.x`.

The contributed software has not been fully tested and is not supported by CONVEX. This software is provided to you as a convenience. Many of the applications are already compiled and ready to use; other applications have already been modified for CONVEX systems and only require recompilation. If the contributed software has been installed on your system, it can be found in the directory `/usr/X11/unsupported`.

The following sections describe some of the X clients that are available.

`/usr/X11/unsupported/bin`

This directory contains executables of some contributed clients including:

- PEX demonstration programs.
- OSF Motif 1.2 demonstration clients.
- Image display and manipulation utilities including `xfig`, an X drawing program, and `xloadimage`, an X-based image viewing program.
- Clients to assist with reading and sending electronic mail and Internet news.

`/usr/X11/unsupported/lib`

This directory is analogous to the standard CONVEX CXwindows directory `/usr/X11/lib`. It includes:

- Contributed clients' application defaults files.
- Specialized directories needed by the contributed clients.

`/usr/X11/unsupported/src`

This directory contains source for all the clients and libraries. The source directory is divided into three subdirectories:

- The `Motif` subdirectory contains source for clients that use the OSF/Motif widget set.
- The `clients` subdirectory contains the source for all other clients and utilities. Interesting clients include `xrn`, and X-based Internet news reader, and `tvtwm`, a virtual desktop version of `twm`. Interesting utilities include PBM, the Portable BitMap utilities.
- The `demos` subdirectory contains the source for PEX, general X, and OSF/Motif demonstration clients.

All of these sources (except Motif) are available by anonymous ftp from a number of sites around the Internet.

CONVEX PEX

New in CONVEX CXwindows V3.1 is PEXlib, a programming library that generates PEX 5.1 protocol. The PEXlib library is the X Consortium sample implementation (SI) and includes a C Application Protocol Interface (API) for clients to generate PEX 5.1 protocol.

No documentation for PEXlib is being shipped with CONVEX CXwindows V3.1. We recommend the O'Reilly and Associates documents *PEXlib Programming Manual* (ISBN: 0-56592-028-7) and *PEXlib Reference Manual* (ISBN: 1-56592-029-5) by Tom Gaskins for instruction and reference.

The PHIGS programming libraries that generate PEX 5.0 protocol are still included in CONVEX CXwindows V3.1. As in CONVEX CXwindows 3.0, the FORTRAN PHIGS binding library is an unsupported product.

Building X applications

The programming libraries provided in CONVEX CXwindows V3.1 are based on the C language.

Building X applications

To build X applications written in C with the CONVEX C compiler, use a command like:

```
cc -o Xapp Xapp.c -lXt -lXmu -lXext -lX11
```

If you are building an application using the MIT Athena widget set, use a command like:

```
cc -o xaw xaw.c -lXaw -lXt -lXmu -lXext -lX11
```

See the CONVEX C compiler documentation for further details.

Building OSF/Motif V1.1 applications

To build Motif applications, you must use the Motif libraries and the CONVEX CXwindows Xlib and X Toolkit Intrinsics libraries. The OSF/Motif-specific toolkit intrinsics have been replaced with the standard R5 X Toolkit Intrinsics.

The order of the libraries in your compilation is important. To build applications that use the OSF/Motif widget set, use the command:

```
cc -o app app.c -lXm -lXt -lXext -lX11
```

Building PEX applications

To build PEX applications, you must use either the PHIGS or PEXlib library and the CONVEX CXwindows Xlib and X Toolkit Intrinsics libraries.

The order of the libraries in your compilation is important. To build applications that use the PHIGS library, use the command:

```
cc -o PEXapp PEXapp.c -lphigs -lXt -lXext -lX11
```

To build applications that use the PEXlib library, use the command:

```
cc -o PEXapp PEXapp.c -lPEX5 -lXt -lXext -lX11
```

This section contains a list of software bug reports. The list is divided into known problems and problems that have been fixed since the last release.

Known problems

This section lists the known problems with CONVEX CXwindows V3.1 as of June 24, 1993. Problems reported after this date are not reflected in this document.

Please refer to this list before reporting a problem. If a work-around is known it is included in the description of the bug.

- There is a bug loading pixmaps from .uid files. There is currently no known workaround. This bug is also present in CONVEX CXwindows V3.0.
- In X, the use of the standard option `-xnl language` does not work as intended. Using the resource specification `"*xnl language: <value>"` works only when it is defined in the RESOURCE_MANAGER property on the root window; it does not work as intended if the specification is in the application's resource file or used with the `-xrm` option. To work around the limitation, use `xrdb` to merge the resource specification with the current contents of the RESOURCE_MANAGER property prior to executing the application that requires the resource value.
- There is a problem in PEX with the value of the clip flag communicated between the client and server. The initial sample implementations of both the PEX server and the PHIGS libraries incorrectly interpret the value specified by the protocol definition. Since both were incorrect, there was no problem. However, if a client and server get out of phase with each other, the effect of setting the flag will be the opposite of what was intended.

There is an MIT patch to the PHIGS library code that takes care of the change but it has not been applied to CONVEX CXwindows at this time because the change has not had time to be reflected in the currently available PEX servers. If you acquire a new PEX server and need a version of the library that is compatible with it, contact CONVEX TAC with your request.

- If you compile X applications using the Motif 1.2 header files and link with Motif 1.1 (CONVEX CXwindows V3.0) libraries, you will get an error message "XmStrings is undefined."

To avoid this problem, be sure to compile and link your X application with corresponding header files and libraries.

- The files `convex.cf` and `customer.cf` in `/usr/lib/X11/config` contain the following definitions:

```
#define DefaultCCOptions -tm c1 -fn
#define LinkOptions -tm c1 -fn
#define ILinkOptions -tm c1 -fi
```

They should be modified to be the following:

```
#define DefaultCCOptions
#define LinkOptions
```

Fixed problems

This section lists fixes that have been made to CONVEX CXwindows since the last release.

- `xterm` works correctly with NIS.
- `xterm` no longer leaves open file descriptors for files used during start-up.
- `xterm` no longer supports logging because logging allows relatively trivial OS security violations.
- `twm` no longer goes into an infinite loop when the functions `f.upiconmgr` or `f.downiconmgr` are invoked inside an icon manager that no longer contains entries.
- `xpr` now correctly handles the `-psfig` option.
- `editres` now correctly responds to the death of its target client.
- A `String` to `unitType` converter is now provided.
- Setting the `symbolPixmap` resource to `NULL` for a `MessageBox` widget no longer generates an X error. The value `XmUNSPECIFIED_PIXMAP` is silently substituted.
- The default button border for `PushButton` widgets is now correctly rendered on monochrome displays.

Obsolescent Features

The following features are maintained in CONVEX CXwindows V3.1 for backward compatibility with previous versions and should be considered obsolescent. There are no plans to carry them forward into the next major release.

- The following symbolic links to standard libraries:
 - `/usr/lib/libX.a` -> `/usr/X11/lib/libX11.a`
 - `/usr/lib/libXmt.a` -> `/usr/X11/lib/libXm.a`
- The following symbolic links to standard include files:
 - `/usr/include/X11/AtomMgr.h` -> `Xm/AtomMgr.h`
 - `/usr/include/X11/MwmUtil.h` -> `Xm/MwmUtil.h`
 - `/usr/include/X11/Protocols.h` -> `Xm/Protocols.h`
 - `/usr/include/X11/ProtocolsP.h` -> `Xm/ProtocolsP.h`
- The following CONVEX CXwindows components:
 - The C and FORTRAN PHIGS bindings libraries, include files, man pages, and executables. These are obsolescent in the current release of the PEX sample implementation; none are planned for PEX 6.0.
 - All WCL libraries, include files, and executables.

Reporting problems

To report bugs on CONVEX CXwindows V3.1 software, please use the contact utility. When submitting bugs, please be as explicit as you can; if the problem is reproducible, include instructions on how to reproduce the bug.

When reporting bugs please specify:

- The name of the client (e.g., `xterm`, `oclock`, `editres`) if reporting bugs against any of the X utilities.
- The name of the library (e.g., `libX11.a`, `libXm.a`) if reporting bugs against any of the programming libraries.
- The name of the man page (e.g., `XOpenDisplay(3)`) if reporting bugs against any of the X manual pages.

Also, please specify the following information about your X environment:

- The type of your CONVEX system (C3200, C3400, C3800) and the version of the operating system.
- The type of X display you are using (e.g., NCD16, NCD19, Sun 3, etc.)
- The version number (R3, R4, R5) of your server (easily determined with the `xdpyinfo(1)` utility).
- The name of your window manager (`mwm`, `twm`).

This chapter presents answers to commonly asked questions about CONVEX CXwindows.

What version of X is CONVEX CXwindows V3.1?

CONVEX CXwindows V3.1 is based on X Version 11 Release 5 and includes MIT patches 1-21. CONVEX CXwindows also includes the OSF/Motif V1.2 Motif Window Manager and Motif user interface development software.

Is there an X server included with CONVEX CXwindows?

CONVEX CXwindows does not include an X server; CONVEX CXwindows only includes client-side software only.

What is the DISPLAY environment variable?

The DISPLAY environment variable specifies the server your X clients should connect to. The DISPLAY variable specifies the name of the machine to connect to, and what screen on that machine to use.

For example, if the DISPLAY variable was set to `mysun:0`, your X client would connect to the machine named "mysun" and be displayed on screen 0 of that workstation. To set the display variable in `csh`, enter

```
% setenv DISPLAY displayname:0
```

where *displayname* is the name of your X server. *displayname* is usually the host name of your workstation or X terminal.

To set the DISPLAY in the Bourne shell, use the sequence

```
$ DISPLAY=displayname:0
```

```
$ export DISPLAY
```

For a complete description of the DISPLAY variable, refer to the O'Reilly and Associates *X Window System User's Guide, Motif Edition* or the CONVEX Press document *The X Primer*.

Can I run CONVEX CXwindows V3.1 with X Version 11 Release 3 (R3) servers?

CONVEX CXwindows V3.1 is based on X Version 11 Release 5 (R5) and includes new features not supported by R3 servers.

For example, R3 servers cannot display round windows; clients such as `oclock` that use round windows will be displayed in rectangular windows. R5 also supports better inter-client communication paradigms that R3-based window managers will not understand. Most CONVEX CXwindows clients will work with most R3 servers.

In order to use the R5 font server and access scalable fonts, you must be running an R5-compliant X server; R3 or R4-based X servers cannot use scalable fonts or the font server.

It is recommended that CONVEX CXwindows V3.1 be used with R5 servers.

What are X resources?

X resources allow you to customize X applications. With X resources you can specify the fonts and colors of an application, control the size and placement of windows, and change the bindings of your keyboard. X resources allow you to customize the behavior of applications to suit your preferences.

Refer to Chapter 10 of the O'Reilly and Associates *X Window System User's Guide* or Chapter 3 in the CONVEX Press document *The X Primer* for a complete discussion of X resources.

Why are there C preprocessor directives in the resources files?

`xrdb` defines a number of symbols based on the capabilities of the server you are using. For example, `xrdb` will define the symbol `COLOR` if the display you are using supports color.

You can use `xrdb` and C preprocessor directives to create a flexible X resources file that will work with a variety of X servers. Refer to the `xrdb` man page for more information.

What is imake?

`imake` is a portable front-end to the `make` utility. `imake` is used to generate Makefiles from a template, a set of C preprocessor macros, and a simplified file of build rules called an `Imakefile`.

`Imakefiles` are preferred over `Makefiles` because different operating systems have different versions of `make`. With `imake`, machine dependencies (such as compiler options, alternate command names, and special `make` rules) can be kept separate from the descriptions of the items to be built. `Imakefiles` can be ported to any system that has an `imake` configuration.

To use `imake`, refer to the `imake` man page. The directory `/usr/lib/X11/config` includes `imake` templates and the rules for building on ConvexOS.

Refer to the file `/usr/lib/X11/config/Imake.rules` and `/usr/lib/X11/config/Convex.rules` for a list of `imake` macros that are available. The file `/usr/lib/X11/config/convex.cf` declares machine-dependent information for ConvexOS.

Can I preview a font to see what it looks like?

To view what a font family looks like, use the CONVEX CXwindows client `xfontsel`. If you want to look at an individual font, you can use `xfd`. Refer to the `xfontsel` and `xfd` man pages for more details.

What widget libraries does CONVEX support?

CONVEX supports the MIT Athena widgets and the OSF/Motif V1.2 widgets. Both widget libraries are included as part of CONVEX CXwindows V3.1.

Are the OSF/Motif widgets provided with CONVEX CXwindows V3.1 compatible with previous releases of OSF/Motif?

There have been many changes made to the OSF/Motif widgets to make the widgets compliant with X Version 11 Release 5. In some cases, your source will not need modification to use the new widgets. However, there are many cases where changes are required.

Refer to the chapter "Summary of Motif Changes" in this release notice for more information about the new OSF/Motif widgets.

Introduction

OSF/Motif V1.2 has changed significantly since the previous release (Motif V1.1). New capabilities have been added and many of the existing widgets have been rewritten to add features and to be more robust. All OSF/Motif V1.2 widgets are based on the X Version 11 Release 5 Toolkit Intrinsics.

The OSF/Motif V1.2 widget set is compatible with earlier versions. However, some changes in the widget set will affect applications written against the Motif V1.1 widgets. This chapter is a summary of the changes to OSF Motif and is derived from the OSF/Motif V1.2 release notes. See the release 1.2 versions of the Prentice-Hall documents *OSF/Motif Programmer's Reference* (ISBN 0-13-643115-1), *OSF/Motif Programmer's Guide* (ISBN 0-13-643107-0), and *OSF/Motif Style Guide* (ISBN 0-13-643123-2) for further detail.

Developers are urged to migrate their code to the new widgets wherever possible.

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