X Window System

Version 6.4.2 Release Notes

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CONCURRENT
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1.0. Introduction

The X Window System™ is a network-transparent window system that allows applications built with the X™ libraries on a Concurrent computer to display graphics on devices such as an X terminal or a workstation running an X server. X is a cross-platform standard currently maintained by The Open Group. This product is based on Version 11, Release 6.4 of the X Window System (X11R6.4).

Also included in this product is OSF/Motif®. Motif is an industry-standard graphical user interface system that is also maintained by The Open Group. This product uses version 2.1 of the Motif software.

In addition to the base X and Motif technologies, this product includes a number of programs, also referred to as clients, that perform a variety of useful functions. These include the standard X and Motif client programs distributed by The Open Group, plus a collection of "desktop tools" that provide a complete graphical user environment.

See "Product Description" on page 6 for full details on the contents of this product.

NOTE

This release of the X Window System is comprised of a number of packages as opposed to earlier versions which were contained in one sizeable package. This compartmentalization allows for greater flexiblity on systems that do not require all of the X Window System, but can benefit from some of the features contained in the individual packages. See "Installation" on page 4 for more information.

2.0. Documentation

Table 2-1 lists the X Window System 6.4.2 documentation available from Concurrent.

Table 2-1. X Window System Version 6.4.2 Documentation

Manual Name	Pub. Number
X Window System Version 6.4.2 Release Notes	0890298-6.4.2

Copies of the Concurrent documentation can be ordered by contacting the Concurrent Software Support Center. The toll-free number for calls within the continental United States is 1-800-245-6453. For calls outside the continental United States, the number is 1-954-973-5354.

Additionally, the *X Window System Version 6.4.2 Release Notes* are available online by using the X Window System utility, **nhelp**.

Further, the *X Window System Version 6.4.2 Release Notes* are also available on Concurrent Computer Corporation's web site at www.ccur.com.

Online manual pages are provided for the programs included in this package, as well as for the X Window System and Motif library routines. Many programs also have online help accessible from within the program.

A wide selection of additional documentation can be found in local bookstores for both the X Window System and Motif. For instance, O'Reilly & Associates, Inc. publishes a series of books on X and Motif, including two books on Motif programming: *Volume 6A: Motif Programming Manual* and *Volume 6B: Motif Reference Manual*. Prentice-Hall publishes the official OSF/Motif documentation set; available books include the *User's Guide*, *Programmer's Guide*, and *Programmer's Reference*.

3.0. Prerequisites

Prerequisites for X Window System Version 6.4.2 are as follows:

3.1. Software

- PowerMAX OS™ 4.3 or later

3.2. Hardware

- Computer Systems:
  - Power Hawk™ 620 and 640
  - Power Hawk 710, 720 and 740
  - PowerStack™ II and III
  - Night Hawk® Series 6000
  - TurboHawk™
  - PowerMAXION™
- Board-Level Products:
  - Motorola MVME2604
  - Motorola MVME4604
- An X Window System display device, such as an X terminal

4.0. Installation

The X Window System product consists of a number of standard PowerMAX OS software packages and utilizes the standard PowerMAX OS product installation mechanism, **pkgadd** (see **pkgadd(1)**). The user may customize the installation of the X Window System package by selecting which packages are installed. Certain configurations may not require installation of all the packages.

The package names are:

x11ipc	the libraries for ICE and **ktalk** only
x11*	all other libraries including runtime support files they reference
x11progs	the X client programs **xdm**, **mwm**, **app-default** files, etc.
x11dev	the X program development tools, header files, **imake**, static libs, etc.

* The **x11** package name was retained for the runtime libraries because other packages such as the NightStar™ tools depend on a package named **x11** in order to get their libraries.

NOTE

The above packages must be installed in the order shown.

The following packages contain the man pages for the above tools. These packages are independent of those above and are not specifically required by any of the tools.

x11pman	man pages for all the application level programs
x11dman	man pages for the libraries and program development tools

NOTE

The package names are case-sensitive.

Please refer to the “Installing Add-on Software” chapter in the *System Administration Volume I* (0890429) manual and the *PowerMAX OS Release Notes* for instructions on software installation.

4.1. Installation Options

When you run **pkgadd(1M)** to install the X Window System, you are prompted to enter the name of the directory for installation. If you want to install in the default directory, **/usr/opt**, just press the <return> key at the prompt. Otherwise, enter the name of the directory where you want X Window System installed. If this directory does not exist, the installation procedures attempt to create it for you.

NOTE

Previous versions of X Window System installed in root if a directory was not specified. The latest release of X Window System will install in **/usr/opt** if no directory is specified, *not* root.

The **x11ipc** package requires an installation location to be specified by the user. All the other X packages which depend on it (**x11**, **x11progs**, **x11dev**) will subsequently install in the same location. The **x11pman** and **x11dman** packages always install the man pages directly under **/usr/share/man**.

The **x11progs** package will ask if the X Display Manager daemon, **xdm**, should be started at boot time on this system. If the answer is "yes", then the script **/etc/init.d/xdm** is linked into the directory of commands that are executed at each system boot.

The **x11dev** package will ask if you want to load the source code for the demo programs.

See **xdm(1)** and **X(1)** for more information about using **xdm**.

4.2. Installation Details

Version 6.4 of the X Window System created symbolic links for the directories **/usr/bin/X11** and **/usr/lib/X11/config**. These links pointed to the actual directories in which they were installed for that particular release.

This release of the X Window System Version 6.4.2 now utilizes the **/usr/bin/X11** and **/usr/lib/X11/config** directories as physical directories in which the *files* are installed as symbolic links.

Users who have previously installed X Window System Version 6.4 and are now upgrading to Version 6.4.2 may need to move any files installed in these directories by other programs. Such programs include the Metro-X™ product (specifically, the **metroess** package). The files, if any exist, will reside in the original directory used by the 6.4 release (e.g. **/usr/opt/x11-6.4/usr/X11R6/bin**) and should be moved to the **/usr/bin/X11** directory after removing the 6.4 release and installing 6.4.2.

5.0. Product Description

This product contains the X Window System and OSF/Motif user environment plus the software needed to develop X/Motif programs.

5.1. User Environment

The X/Motif user environment is a set of programs that use X/Motif technology to provide their graphical user interfaces. This includes several new "desktop tools" that share a common look and that work together to provide an integrated graphical environment that is more accessible to users who may not be comfortable with a command-line based environment.

These programs are installed using the **x11progs** package. Their associated man pages are installed with the **x11pman** package. See "Installation" on page 4 for more information.

The following list describes the major components of the user environment.

- **X Display Manager** (**xdm**). This program provides graphical login services to PowerMAX OS systems. Typically, **xdm** is started at system boot time (see "Installation" on page 4). X Window System terminals on the network with the machine contact **xdm**, which provides a graphical login window for the user. The version of **xdm** in this product is an enhanced version of the standard X Consortium program, providing a Motif user interface and more attractive graphics.
- **Front Panel** (**npanel**). This tool provides a number of useful functions together in a single convenient panel. It includes a clock, mail monitor, system load monitor, program launching capability, and other functions, plus it is fully configurable. New users who log in to an X display managed by the X Display Manager are automatically presented with the front panel.
- **Motif Window Manager** (**mwm**). The window manager is used to control placement and sizing of all windows on the display. This version of **mwm** (Motif 2.0) has the virtual root window capability that allows the user to place windows on a virtual desktop larger than the physical screen, and treat the screen as a viewport into this virtual space. The Front Panel tool has controls for working with this feature.
- **NightLaunch**™ (**nlaunch**). This is a tool for launching other programs graphically by activating icons. Icons and the windows containing them ("launchpads") are fully configurable through the tool.
- **Terminal Tool** (**nterm**). This tool creates a terminal window for interacting with the system through the command-line shell. **Nterm** is an enhancement of the standard **xterm** terminal emulator, providing a Motif user interface and additional features such as a blinking cursor and a configurable scroll bar.
- **File Manager** (**moxfm**). This is a Motif based tool that allows users to browse the directory tree and perform file operations such as copying, moving, and deleting files in an intuitive way by simple drag-and-drop actions. It also provides configurable file typing, allowing distinct icons for different kinds of files, as well as commands to be executed when a file is double-clicked. Drag-and-drop can also be used with the NightLaunch tool to open files with programs represented by NightLaunch icons.
- **Mail Tool** (**ml**). ML is a Motif GUI style mail user agent. It allows reading incoming mail, composing outgoing mail, and also provides powerful mail processing and filing features.

- **Calendar/Planner Tool** (**plan**). This tool is a calendar and schedule planner with a Motif user interface. It can display daily, weekly, monthly, or yearly calendar and planner windows, and can pop up reminder windows based on events in the calendar.
- **Text Editor** (**nedit**). This is a full featured mouse-based text editor simple enough to be used by novices, yet powerful enough to be used by programmers.
- **File Difference Browser** (**mgdiff**). This tool is a graphical front end to the **diff(1)** command. It uses color coding to show the differences between two plain text files, and provides a simple way to produce a third file that is a merging of the first two.
- **Pixmap Browser** (**xbmbrowser**). The Front Panel, Motif Window Manager, Program Launcher, and File Manager programs all use color icons in the XPM (X Pixmap) format. The **xbmbrowser** tool provides a way to view and manage collections of these icons by displaying a whole directory full of icons in one window. A basic set of icon pixmaps are supplied in the directory **/usr/include/X11/pixmaps**.
- **Pixmap Editor** (**pixmap**). This is a tool for creating and editing color images in the XPM format.
- **Online Help System** (**HyperHelp**). HyperHelp is a sophisticated online help system that provides a viewer for displaying documentation with full formatting, inline graphics, and hypertext links. The HyperHelp viewer is used for desktop help and for online help and documentation in other Concurrent graphical tools. The **nhelp** command can be used to access the online help system.
- **Standard X Window System Client Programs**. The X Window System distribution from the X Consortium includes a "core" set of client programs. All core clients are present in this release; see the **X(1)** man page for a list.
- **Miscellaneous Client Programs** - A number of useful clients that are not part of the X Consortium core distribution are also provided. These include a text file viewer (**xcat**), calculator (**xcalc**), man page viewer (**xman**), font browser (**xfontsel**), load average monitor (**xload**), mailbox monitor (**xbiff**), simple diary/calendar tool (**xdiary**), popup message/query tool (**xmessage**), color pixmap viewer (**sxpm**), tool for setting the desktop background to a color image (**xpmroot**), window printing tool (**xpr**), and a ditroff output viewer (**xditview**).
- **Inter-Tool Communication Mechanism** (**KoalaTalk**) The KoalaTalk communication system allows programs to exchange messages with each other. Some of the desktop tools, like the Front Panel, NightLaunch, and the Mail tool, can use this mechanism to send information and commands to one another. The mechanism uses a server program, **ktserv**, which manages the communication between tools.

All of the desktop tools and X client programs are installed in the directory **/usr/bin/X11**; when working in the command-line shell, users should make sure that this directory is listed in their **PATH** environment variable. All listed commands have man pages; many also have online help accessible from a Help button or menu on the main window.

5.2. Development Environment

The X Window System software package **x11dev** contains all of the software necessary to develop programs that use X and OSF/Motif. Installing this package is optional; see "Installation" on page 4 for details.

The following list describes the major components of the development environment.

- Shared and static versions of all the standard X libraries, for **both** X11 Release 5 and X11 Release 6.4.2. This includes:
- X Window System library (**libX11**)

- X extension library (**libXext**)
- X toolkit library (**libXt**)
- Athena widget set (**libXaw**)
- Miscellaneous utilities library (**libXmu**)
- PEX library (**libPEX5**)
- Inter-client exchange library (**libICE**) - release 6 only
- Session management library (**libSM**) - release 6 only
- X print services library (**libXp**) - release 6 only

NOTE

Both the **/usr/X11R5** and **/usr/X11R6** directories are created. The **X11R6** include files and libraries are also linked into the standard **/usr/include** and **/usr/lib** locations for compatibility with previous releases and existing X applications which have those paths built into them.

- Shared and static versions of all the standard Motif libraries, for **both** Motif 1.2 and Motif 2.1. This includes:
  - Motif widget set (**libXm**)
  - Motif Resource Manager library (**libMrm**)
  - User Interface Language library (**libUil**)
- Additional libraries not part of the X or Motif standards:
  - X pixmap library (**libXpm**)
  - Motif example widget set (**libExm**)
  - KoalaTalk communication system library (**libktalk**)
- C language header files for all of the preceding libraries.
- Standard X program development tools (**xmkmf**, **imake**, and **makedepend**).
- The Motif User Interface Language compiler (**uil**).
- The Motif Widget Meta Language (WML) facility. Two versions of this are provided: the Motif 2.1 version, located in the directory **/usr/lib/Xm/wml**, and the Motif 1.2 version, located in the directory **/usr/lib/Xm/wml1.2**.
- Unsupported Motif demo programs in source form. These can be found in the directory **/usr/lib/Xm/demos**.

NOTE

Online manual pages for library functions and programs of the **x11dev** package are contained in the **x11dman** package, which must be installed separately. See “Installation” on page 4 for more information.

The libraries and header files included with this product can be used to compile C and C++ programs written for X and Motif. Most publicly-distributed X programs come with an **`Imakefile`** from which a regular **`Makefile`** can be generated. To do this, use the command **`xmkmf`**. The resulting **`Makefile`** will have all the settings necessary to build your X program with the installed X11R6.4 and Motif 2.1 libraries. An alternate command, **`xmkmfR5`**, will build the **`Makefile`** with the settings necessary to compile and link with the X11R5 and Motif 1.2 libraries.

If you do not have an **`Imakefile`** or do not wish to use this facility, you must set up the compiling and linking commands manually. For compilation, no special options are needed if you wish to use the new X11R6.4 and Motif 2.1 header files, as these are stored in the standard locations under **`/usr/include`**.

To use the old X11R5 and Motif 1.2 header files, the option **`-I/usr/X11R5/include`** should be added to the command line of each compilation.

Setting up the link stage of the build is somewhat more complex, as the various libraries have dependencies on one another. The following table lists the most common cases.

Application Type	Command Line Options for Linking
X11R6 toolkit	**`-lXt -lSM -lICE -lXext -lX11 -lsocket -lnsl`**
Motif 2.1 (with X11R6)	**`-lXm -lXt -lSM -lICE -lXp -lXext -lX11 -lsocket -lnsl`**
X11R5 toolkit	**`-L/usr/X11R5/lib -lXt -lXext -lX11 -lsocket -lnsl`**
Motif 1.2 (with X11R5)	**`-L/usr/X11R5/lib -lXm -lXt -lXext -lX11 -lgen -lsocket -lnsl`**

It is **extremely important** that the header files used in compilation and the libraries used in the link step be from the same release. In other words, the **`-I/usr/X11R5/include`** option for selecting X11R5 and Motif 1.2 header files should be included in compile commands if and only if the **`-L/usr/X11R5/lib`** option is included in the corresponding link command.

Another issue that often comes up when developing and porting X and Motif programs has to do with the **`strcasecmp()`** library function. This function is not present in the standard C library under PowerMAX OS. The function is officially a BSD compatibility function; however, the BSD compatibility library **`libucbc.a`** is **not compatible** with the X/Motif libraries because it changes the behavior of other C library functions. The solution is to use the resolver library (add **`-lresolv`** to the link line); this library also contains the **`strcasecmp()`** function, and it can be safely linked with X/Motif programs.

5.3. Support of Product Components

This product is made up of a combination of standard software products and non-standard “contributed” software. Concurrent Computer Corporation officially supports only the standard components. These include:

- The standard X Consortium libraries for both X11R5 and X11R6.4.
- The “core” X Consortium client programs and development tools listed in **`X(1)`**.
- The standard OSF/Motif libraries for both Motif 1.2 and Motif 2.1.
- The Motif window managers (**`mwm`** and **`mwm12`**).
- The Motif UIL and WML facilities.
- The HyperHelp online help system.

All other components are considered non-standard. Support requests for these components will be accepted, but action on these requests is not guaranteed.

6.0. New Features and Changes in This Release

This is primarily a patch to the Version 6.4.1 release.

6.1. HyperHelp

6.1.1. Enhanced Find Capabilities

HyperHelp now contains a Find dialog that allows users to locate specific search content within a particular online manual. When a search is performed, the online manual is positioned to the next occurrence of the text, highlighting that text within the topic. The user is given the option to search forward or backward from the current position in the manual. In addition, the search may include all topics in the manual or may be restricted to the current topic only.

Other search criteria includes case-sensitivity as well as partial word/whole word matching.

The Find button on the button bar of the HyperHelp viewer as well as the Find… menu item on the Edit menu now brings up the new Find dialog. The previous Find dialog can be accessed by using the Find Topic… menu item on the Edit menu of the HyperHelp viewer.

6.1.2. Faster Initialization

HyperHelp has been optimized resulting in shorter time for initialization.

6.1.3. Find Topic Defaults

The default for the Search For item for the Options associated with the Find Topic dialog (accessed by using the Find Topic… menu item on the Edit menu of the HyperHelp viewer) has been changed from:

At least one of the words you typed

to:

The words you typed in exact order

allowing the user to enter multiple words as a complete phrase by default. The user may change this option for a more comprehensive list with no dependence on the order the items were entered.

6.2. KoalaTalk

6.2.1. kts_readProtocolFiles()

A bad string array initializer in `kts_readProtocolFiles()` which could cause a Segmentation Fault when an attempt was made to store into the last element of the array was fixed in this release.

6.2.2. libktalk Regular Expression Facility

The following routines

`regcomp()`, `regerror()`, and `regexec()`

were renamed to:

`kt_RE_regcomp()`, `kt_RE_regerror()`, and `kt_RE_regexec()`

respectively.

6.2.3. kt_RE_regerror()

`kt_RE_regerror()` was changed to emit a newline after the error message.

6.2.4. More Robust Handling of ICE message buffer

Many checks were added to check for and guard against overflow of the ICE message buffer used to pass messages between KoalaTalk clients and servers.

6.2.5. kt_MessageCopy()

`kt_MessageCopy()` now permits an opcode of `0`. This allows copies of messages that were not received, but rather were constructed by the caller.

6.2.6. kt_NextMessage()

In previous versions of **`libktalk`**, the `kt_NextMessage()` service would act much like `kt_MainLoop()`. In X Window System Version 6.4.2, it returns a single message.

6.2.7. Support for NightBench Communications

Support was added for more robust communication between NightBench tools.

6.3. /usr/bin/X11/bitmap

Previous versions of the **`/usr/bin/X11/bitmap`** program would issue the following errors on startup:

```
Warning: Cannot convert string "up" to type Widget
Warning: Cannot convert string "flipVert" to type Widget
```

In addition, a number of the application's buttons would not appear when the application was started.

These problems have been fixed in this release.

7.0. Cautions

7.1. SFNOLIM Kernel Tunable

The `SFNOLIM` kernel tunable should not be set above 1024; doing so may cause failures during initialization or communication of NightStar tools (or any programs) that use the KoalaTalk API.

8.0. Direct Software Support

Software support is available from a central source. If you need assistance or information about your system, please contact the Concurrent Software Support Center at our toll free number (1-800-245-6453). Our customers outside the continental United States can contact us directly at 1-954-973-5354. The Software Support Center operates Monday through Friday from 8 a.m. to 7 p.m., Eastern Standard time.

Calling the Software Support Center gives you immediate access to a broad range of skilled personnel and guarantees you a prompt response from the person most qualified to assist you. If you have a question requiring on-site assistance or consultation, the Software Support Center staff will arrange for a field analyst to return your call and schedule a visit.