README for XFree86® 4.5.0 on OpenBSD

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1. What and Where is XFree86?

XFree86 is an Open Source version of the X Window System that supports several UNIX(R) and UNIX-like operating systems (such as Linux, the BSDs and Solaris x86) on Intel and other platforms. This version is compatible with X11R6.6.

See the Copyright Notice.

The sources for XFree86 4.5.0 are available by anonymous ftp from:

ftp://ftp.XFree86.org/pub/XFree86/4.5.0

Binaries for OpenBSD/i386 3.4 and later are available from:

ftp://ftp.XFree86.org/pub/XFree86/4.5.0/binaries/OpenBSD

A list of mirror sites is provided by http://www.xfree86.org/MIRRORS.shtml

XFree86 also builds on other OpenBSD architectures. See section *Building on other architectures* (section 8., page 4) for details.

2. Bug Reports for This Document

Use the XFree86 Bugzilla at `<URL:http://bugs.xfree86.org>` to submit comments or suggestions about this file.

3. New OS dependent features

See the Release Notes for non-OS dependent new features in XFree86 4.5.0.

3.1 New OS related features in 4.4

- The IPv6 support is enabled on OpenBSD, but XDMCP over IPv6 is not currently enabled since the code uses IPv6 mapped IPv4 addresses which are not supported on OpenBSD.
- The userland part of DRI is enabled and built. Now waiting for someone to port the kernel modules...
- All major revisions of the shared libraries are incremented on OpenBSD 3.3 and later, to support the API changes introduced by gcc stack protector.

3.2 New OS related features in 4.3

- Support for some VGA cards on OpenBSD/alpha

3.3 New OS dependent features in 4.2

- Support for OpenBSD/macppc on the ATI Rage128 based Power Macintoshes.
- Support for building clients on OpenBSD/sparc64.

3.4 New OS dependent features in 4.0.3

- Support for the wscons console driver in post 2.8 OpenBSD.
- A fix for multi-threaded libraries support.

3.5 New OS dependent features in 4.0.2

- Support for the OpenBSD ports tree,
- Preliminary support for the macppc architecture (clients build and work, the server doesn't work yet),
- xdm now writes an utmp entry,
- startx now creates an Xauthority magic cookie for the display.

3.6 New OS dependent features in 4.0.1

- Several features from the OpenBSD X11 tree were merged into xdm:
  - support for Kerberos IV authentication
  - use the arc4random(4) random number generator
  - add a new resource "allowRootLogin", which can be used to disable root logins through xdm
  - log failed logins to syslogd
  - verify that the shell is valid using /etc/shell
  - verify that the account hasn't expired
- The Xsun server can be built again on OpenBSD/sparc.

3.7 New OS dependent features in 4.0

- Multi-thread safe libraries are built by default on OpenBSD 2.6 and later,
- Preliminary APM support.

3.8 New OS dependent features in 3.9.18

- Support for USB mices has been added on OpenBSD.
- Soft-booting secondary cards through the int10 BIOS interface is now possible using the x86emu real mode emulator.

3.9 New OS dependent features in 3.9.17

- *Silken mouse* is supported for serial mices, and, under post 2.6 OpenBSD-current for PS/2 mices.
- MTRR Write Combining is enabled under post 2.6 OpenBSD-current.

4. Installing the Binaries

Refer to the Installation Document for detailed installation instructions.

5. Configuring X for Your Hardware

The `/etc/X11/XF86Config` file tells the X server what kind of monitor, video card and mouse you have. You *must* create it to tell the server what specific hardware you have.

You'll need info on your hardware:

- Your mouse type, baud rate and its /dev entry.
- The video card's chipset (e.g. ET4000, S3, etc).
- Your monitor's sync frequencies.

The recommended way to generate an `XF86Config` file is to use the `xf86cfg` utility. The xf86config text utility is still there for the (few) cases where xf86cfg can't be used. Also, there is a sample file installed as `/usr/X11R6/lib/X11/XF86Config.eg`, which can be used as a starting point.

For details about the `XF86Config` file format, refer to the *XF86Config(5)* manual page.

Once you've set up a XF86Config file, you can fine tune the video modes with the `xvidtune` utility.

5.1 About mouse configuration

XFree86 4.5.0 has support for the mouse driver included in the new **wscons** console driver introduced by OpenBSD-2.9. Specify "`wsmouse`" as the protocol and "`/dev/wsmouse0`" as the device in `/etc/X11/XF86Config` if you're using OpenBSD-2.9 or later with a PS/2 or USB mouse.

See README.mouse for general instruction on mouse configuration in XFree86.

6. Running X

6.1 Starting xdm, the display manager

To start the display manager, log in as root on the console and type: "`xdm -nodaemon`".

You can start xdm automatically on bootup by changing the line

```
xdm_flags=NO            # for normal use: xdm_flags=""
```

to:

```
xdm_flags=""            # for normal use: xdm_flags=""
```

in `/etc/rc.conf`.

Note that the binary distributions of XFree86 for OpenBSD on ftp.xfree86.org and its mirrors don't include support for the XDM-AUTHORIZATION-1 protocol, because of the US export rules.

6.2 Running X without the display manager

The easiest way for new users to start X windows is to type: "`startx >& startx.log`". Error messages are lost unless you redirect them because the server takes over the screen.

To get out of X windows, type: "`exit`" in the console xterm. You can customize your X by creating `.xinitrc`, `.xserverrc`, and `.twmrc` files in your home directory as described in the xinit and startx man pages.

7. Kernel Support for X

To make sure X support is enabled under OpenBSD, the following line must be in your config file in `/sys/arch/i386/conf`:

```
option APERTURE
```

7.1 Console drivers

The server supports wscons, the standard OpenBSD/i386 console driver.

The pcvt console driver which was the default up to OpenBSD 2.8, is also supported on those releases.

7.2 Aperture Driver

By default OpenBSD includes the BSD 4.4 kernel security feature that disables access to the `/dev/mem` device when in multi-user mode. But the XFree86 server requires linear access to the display memory in most cases.

OpenBSD requires the aperture driver to be enabled for all X servers, because the aperture driver also controls access to the I/O ports of the video boards.

To enable the aperture driver, once included in the kernel, set

```
machdep.allowaperture=2
```

in `/etc/sysctl.conf`. See the xf86(4) manual page for details.

Another (less recommended) way to enable linear memory and I/O ports access is to disable the kernel security feature by initializing `securelevel` to -1 in `/etc/rc.securelevel`.

> **Caveat:** the aperture driver only allows one access at a time (so that the system is in the same security state once X is launched). This means that if you run multiple servers on multiple virtual terminals, only the first one will have linear memory access. Set `securelevel` to -1 if you need more that one X server at a time.

7.3 MIT-SHM

OpenBSD supports System V shared memory. If XFree86 detects this support in your kernel, it will support the MIT-SHM extension.

8. Rebuilding the XFree86 Distribution

You should configure the distribution by editing `xc/config/cf/host.def` before compiling. To compile the sources, invoke "`make World`" in the xc directory.

Note that OpenBSD project now has its own source tree, based on the XFree86 source tree, with some local modifications. You may want to start with this tree to rebuild from sources. The OpenBSD XF4 source tree is available by anoncvs from all OpenBSD anoncvs servers. See http://www.openbsd.org/anoncvs.html for details on anoncvs.

XFree86 also compiles on other OpenBSD architectures.

8.1 XFree86 on OpenBSD/alpha

The XFree86 server is known to work on some VGA cards in alpha machines that support BWX I/O, with OpenBSD 3.2 and higher.

The following cards have been successfully tested for now:

- 3DLabs Permedia 2 (8, 15, 16 and 24 bits depth)
- ATI Rage Pro (works with 'Option "NoAccel"')
- Cirrus Logic CL5430 (works with 'Option "NoAccel"')
- Cirrus Logic GD5446 (8, 16 and 24 bits depth)
- Matrox MGA 2064 (8, 16 and 24 bits depth)

Note that this version of XFree86 doesn't work on TGA cards. The version shipped with OpenBSD 3.1 and higher includes an OS-specific driver *wsfb* that is used to support TGA cards.

8.2 XFree86 on OpenBSD/macppc

The XFree86 server is currently known to work on the G4 Macs and new iBooks with ATI Rage 128 cards running OpenBSD 3.0 or later. Other machines are more or less untested. Earlier OpenBSD versions lack some kernel support for it.

Use xf86config to build a /etc/X11/XF86Config file before starting the server for the first time.

For the Titanium Powerbook G4, you can try the following mode line in `/etc/X11/XF86Config` to match the flat panel resolution:

```
Modeline "1152x768" 64.995 1152 1213 1349 1472  768 771 777 806 -HSync -VSync
```

8.3 XFree86 on OpenBSD/sparc

OpenBSD 3.2 on sparc switched to the wscons device driver and now uses the OS specific *wsfb* driver in the XFree86 server. This driver is not included in XFree86 4.3. Please use the version shipped with OpenBSD instead.

8.4 XFree86 on OpenBSD/sparc64

This version of XFree68 only has support for X clients on OpenBSD/sparc64. Note that the version shipped with OpenBSD also has support for the X server on both SBus and PCI based machines.

9. Building New X Clients

The easiest way to build a new client (X application) is to use `xmkmf` if an `Imakefile` is included in the sources. Type "`xmkmf -a`" to create the Makefiles, check the configuration if necessary and type "`make`". Whenever you install additional man pages you should update `whatis.db` by running "`makewhatis /usr/X11R6/man`".

10. Thanks

Many thanks to all people who contributed to make XFree86 work on *BSD, in particular: **David Dawes**, **Todd Fries**, **Rod Grimes**, **Charles Hannum**, **Amancio Hasty**, **Christoph Robitschko**, **Matthias Scheler**, **Michael Smith**, **Ignatios Souvatzis**, **Jack Velte**, **Nate Williams** and **Pace Willison**.

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$XFree86: xc/programs/Xserver/hw/xfree86/doc/sgml/OpenBSD.sgml,v 1.35 2005/02/15 01:36:54 dawes Exp $