

# README for X11R6.8 on OpenBSD

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## 1. What and Where is X11R6.8?

The X.org Foundation X11R6.8 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.

See the Copyright Notice.

The sources for X11R6.8 are available from

<http://wiki.x.org>

X11R6.8 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 X.org Bugzilla at `urlnam <URL:http://bugzilla.freedesktop.org>` to submit comments or suggestions about this file, using the `xorg` product.

## 3. New OS dependent features

See the Release Notes for non-OS dependent new features in X11R6.8.

### 3.1 New OS related features

- 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/xorg.conf` 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 `xorg.conf` file is to use the `xorgcfg` utility. The `xorgconfig` text utility is still there for the (few) cases where `xorgcfg` can't be used. Also, there is a sample file installed as `/usr/X11R6/lib/X11/xorg.conf.eg`, which can be used as a starting point.

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

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

### 5.1 About mouse configuration

X11R6.8 has support for the mouse driver included in the new **wscn** console driver introduced by OpenBSD-2.9. Specify `"wsmouse"` as the protocol and `"/dev/wsmouse0"` as the device in `/etc/X11/xorg.conf` 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.

## 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`.

### 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 `wscns`, 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 X 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 than one X server at a time.

## 7.3 MIT-SHM

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

## 8. Rebuilding the X 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, 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.

X11R6.8 also compiles on other OpenBSD architectures.

### 8.1 X11R6.8 on OpenBSD/alpha

The X 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 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 X11R6.8 on OpenBSD/macppc

The X 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 `xorgconfig` to build a `/etc/X11/xorg.conf` file before starting the server for the first time.

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

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

## 8.3 OpenBSD/sparc

OpenBSD 3.2 on sparc switched to the `wcons` device driver and now uses the OS specific *wsfb* driver in the X server. This driver is not included in X11R6.8. Please use the version shipped with OpenBSD instead.

## 8.4 OpenBSD/sparc64

This version 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 X11R6.8 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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