README for XFree86 3.1.1 on BSD/386 1.1

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Contents

1 What and Where is XFree86?

XFree86 3.1.1 is a port of X11R6 that supports several versions of Intel-based Unix. It is derived from X386 1.2, which was the X server distributed with X11R5. This release consists of many new features and performance improvements as well as many bug fixes. The release is available as source patches against the X Consortium X11R6 code, as well as binary distributions for many architectures.

The sources for XFree86 are available by anonymous ftp from:

ftp.XFree86.org:/pub/XFree86/current (`ftp://ftp.XFree86.org/pub/XFree86/current`)

Binaries for BSD/386 1.1 will be available from:

ftp.XFree86.org:/pub/XFree86/current/binaries/Bsdi
(`ftp://ftp.XFree86.org/pub/XFree86/current/binaries/Bsdi`)

If you're running BSD 1.0, you'll have to build it from source. Building the distribution on BSD/386 1.0 is untested, but believed to work correctly. If you run into trouble building on BSD/386 1.0, please let us know so that we can correct any incompatibilities. If you've done it and want to share your binaries, please let the Bsdi mailing list know. The binaries are compiled using gcc 2.5.8. There may be problems using XFree86 3.1 on a 386/486 without a math coprocessor. If you experience these kind of problems, you may have better luck building from the source using gcc 1.42 instead.

2 Bug Reports for This Document

Send email to *nasten@Everyware.SE* (Hans Nasten) or *XFree86@XFree86.org* if you have comments or suggestions about this file and we'll revise it.

3 Installing the Binaries

The binary distribution is composed of a number of gzipped tar archives which contains the executables, servers, fonts, libraries, include files, man pages, config files, and the server link kit. All tar archives should be extracted as root with / as the default directory. The full distribution takes over 40MB of disk space. The file names are converted to be compatible with CD-rom conventions.

Note that many clients were moved from the X11R6 distribution to the 'contrib' area. However, they are still distributed with the XFree86 binary distribution.

The contents of the archives are:

REQUIRED:

X311doc.tgz
READMEs and XFree86 specific man pages.

X311bin.tgz
all of the executable X client applications.

X311fnts.tgz
all fonts

X311lib.tgz
data files needed at runtime

Choose at least one of the following to match your hardware:

X311SVGA.tgz
the 8-bit pseudo-color X server for Super VGA cards

X311VG16.tgz
the 4-bit pseudo-color X server for VGA & SVGA cards.

X311Mono.tgz
: the Monochrome X Server

X3118514.tgz
: the X server for IBM 8514/A and compatible boards

X311AGX.tgz
: the X server for AGX boards

X311Ma8.tgz
: the X server for ATI Mach8 boards

X311Ma32.tgz
: the X server for ATI Mach32 boards

X311Ma64.tgz
: the X server for ATI Mach64 boards

X311P9K.tgz
: the X server for P9000 based boards

X311S3.tgz
: the X server for S3 based boards

X311W32.tgz
: the X server for ET4000/W32 based boards

OPTIONAL:

X311fsrv.tgz
: the font server with man pages.

X311prog.tgz
: the `include/X11` header files and static libraries needed only for compiling other X applications

X311man.tgz
: all man pages

X311link.tgz
: the server reconfiguration kit.

If this is your first time, then you should be able to safely install all of the packages. As a minimal install, you'll need doc, bin, fonts lib and one X server.

To unpack and install the archives:

1. create some destination directory in which you'd like the X distribution to live. `/usr/X11R6` is recommended, but if that partition is full (as it is on my machine), then just create an alternate directory, and sym-link `/usr/X11R6` to this place.

   ie, on my machine, I do the following:

```
% cd /usr/local
% mkdir X11R6
% ln -s /usr/local/X11R6 /usr/X11R6
```

2. You must be logged in as root to unpack the archives and use a '`umask`' value of 022. Typing '`umask 022`' sets it. Caution: If you do not extract the files as user '`root`' with the correct umask you may not be able to run XFree86 3.1.1. The X server needs special permissions that are only granted to the root user. You must also cd to / before extracting the archives.

3. Create a symbolic link in `/usr/X11R6/bin` named 'X' that points to the server that matches your video card: See the XF86_* man pages for hardware details. For example, if you have an ET4000 based SVGA card:

```
cd /usr/X11R6/bin
rm -f X
ln -s XF86_SVGA X
```

Note: you don't need to uncompress the fonts files in `lib/X11/fonts`. If you want to uncompress them anyway, don't forget to run '`mkfontdir`' in each directory after that.

4 Installing Xdm, the display manager

The display manager makes your PC look like an X terminal. That is, it presents you with a login screen that runs under X. To start the display manager, log in as root on the console and type '`xdm -nodaemon`'.

You can start xdm automatically on bootup by disabling the console getty and adding the following code to `/etc/rc.local`:

```
if [ -x /usr/X11R6/bin/xdm ]; then
  echo -n ' xdm'; /usr/X11R6/bin/xdm
fi
```

To disable the console getty, change '`on`' to '`off`' in the console entry in `/etc/ttys`:

```
console "/usr/libexec/getty std.9600"   ibmpc3  off secure
```

5 Configuring X for Your Hardware

The `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.

XFree86 3.1 and later releases uses a new configuration file format. Consult the `XF86Config` man page and the general `INSTALL` file for instructions.

If you have a `Xconfig` file for XFree86 2.x, use reconfig to translate part of it into the new format:

```
# reconfig <Xconfig >XF86Config
```

and complete the rest according to the `XF86Config` man page and the `XF86Config.sample` file as a template.

In order to protect your hardware from damage, the server will no longer read `XF86Config` files from a user's home directory, but requires that it be in `/etc/XF86Config`, `/usr/X11R6/lib/X11/XF86Config.hostname` or `/usr/X11R6/lib/X11/XF86Config`.

You'll need info on your hardware:

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

The easiest way to find which device your mouse is plugged into is to use '`cat`' or '`kermit`' to look at the output of the mouse. Connect to it and just make sure that it generates output when the mouse is moved or clicked:

```
% cat < /dev/tty00
```

If you can't find the right mouse device then use '`dmesg|grep com`' to get a list of devices that were detected upon booting:

```
% dmesg|grep com
com0 at isa0 iobase 0x3f8 irq 4
```

`com0` is the hardware port used for `/dev/tty00` and `com1` is `/dev/tty01`. If you plan to fine tune the screen size or position on your monitor you'll need the specs for sync frequencies from your monitor's manual.

6 Running X

8mb of memory is a recommended minimum for running X. The server, window manager and an xterm take about 4 Mb of memory themselves. On a 4Mb system that would leave nothing left over for the kernel and other applications like `gcc` that expect a few meg free.

The easiest way for new users to start X windows is to type '`xinit >& xinit.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 Rebuilding the XFree86 Distribution

The server link kit allow you to rebuild just the X server with a minimum amount of disk space. Just unpack it, make the appropriate changes to the site.def, type '`./mkmf`' and '`make`' to link the server. See `/usr/X11R6/lib/Server/README` for more info.

See /usr/X11R6/lib/X11/etc/INSTALL for instructions on unbundling and building the source distribution. You will need about 250Mb free for the sources, objects and binaries during the build.

You should configure the distribution by editing xc/config/cf/xf86site.def before compiling. To compile the sources, invoke

```
make World
```

in the xc directory.

8 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' 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'. To avoid the 'Virtual memory exhausted' message from cc while compiling, increase the data and stack size limits (in csh type 'limit datasize 32M' and 'limit stacksize 16M').

Note: Starting with XFree86 2.1, the symbol "__386BSD__" no longer gets defined or via the X config files for *BSD systems. When porting clients to *BSD systems, make use of the symbol "BSD" for code which is truly BSD-specific. The value of the symbol can be used to distinguish different BSD releases. For example, code specific to the Net-2 and later releases can use:

```
#if (BSD >= 199103)
```

To ensure that this symbol is correctly defined, include <sys/param.h> in the source that requires it. Note that the symbol **CSRG_BASED** is defined for *BSD systems in XFree86 3.1.1 and later. This should be used to protect the inclusion of <sys/param.h>.

For code that really is specific to a particular i386 BSD port, use __FreeBSD__ for FreeBSD, __NetBSD__ for NetBSD, __386BSD__ for 386BSD, and __bsdi__ for BSD/386.

9 Linear access to the frame buffer

The stock BSD/386 1.1 kernel has problems when trying to mmap the frame buffer as a linear (unbanked) memory area in high memory. This patch removes the check in /sys/i386/isa/vga.c that disables mmapping the frame buffer in linear mode. Please consult the BSD/386 1.1 release notes for instructions on how to build a new kernel.

- save the patch below in a separate file.
- cd to /sys/i386/isa.
- apply the patch with "patch -p <*the_separate_patch_file*"

- rebuild and install the new kernel.
- reboot.

`vga.c` patch:

```
*** vga.c.orig  Sun Dec 19 09:35:01 1993
--- vga.c       Mon Oct 24 01:38:44 1994
***************
*** 159,165 ****
  #if 0
        if (off + NBPG > vgap->vga_mem_size)
                return (-1);
! #else
        if (off + NBPG > IOM_END)
                return (-1);
  #endif
--- 159,165 ----
  #if 0
        if (off + NBPG > vgap->vga_mem_size)
                return (-1);
! /*#else*/
        if (off + NBPG > IOM_END)
                return (-1);
  #endif
```

$XConsortium: Bsdi.sgml,v 1.3 95/01/23 15:34:39 kaleb Exp $
$XFree86: xc/programs/Xserver/hw/xfree86/doc/sgml/Bsdi.sgml,v 3.9 1995/01/28 16:01:18 dawes Exp $