README for XFree86^{TM} 3.1.1

The XFree86 Project, Inc 15 January 1995

XFree86 is a port of X11R6 that supports several versions of Intel-based Unix and Unix-like operating systems. 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.

Contents

1 What's new in XFree86 3.1.1

The following items have been added since XFree86 3.1 was released in October 1994:

1. XFree86 3.1.1 includes the X Consortium's recently released public patches (up to fix-11). The XFree86 Project, Inc has worked with the X Consortium to have much of XFree86 3.1.1 included in the X Consortium's fix-11.

2. A new accelerated server for Mach64 boards.

3. Support for the S3 Trio32 and Trio64 chipsets.
4. Support in the S3 server for the Chrontel 8391 clock chip.
5. Support for SPEA Mercury P64 and MIRO Crystal 40SV.
6. Bug fixes and some performance improvements for most of the accelerated servers.
7. Support for 'double scan' video modes (most servers).
8. New chipset support for the SVGA server. This includes the Avance Logic 2228/2301, Chips & Technology 655xx, Cirrus Logic 6440, and Oak OTI-087. Accelerated support is included for the OTI-087.
9. Support for FreeBSD 2.0.
10. Preliminary support for OS/2 (client-only at this stage; this is still under development).
11. Linear aperture access when running on BSD/386.
12. 16bpp and 32bpp support for more S3 boards (refer to *README.S3* (`S3.html`) for details).
13. Support for ISC's SVR3 (only tested for 3.x and 4.x).
14. The 'xf86config' utility for generating XF86Config files has been improved and now uses a database of video cards.
15. The X server LinkKit has been updated to include support for LBX.
16. The slow X server startup time on machines without hardware floating point has been improved.

Plus a number of other small items. Refer to the CHANGELOG file in the source distribution for full details.

2 What's new in XFree86 3.1?

The following items have been added since XFree86 2.1.1 was released in May 1994:

1. XFree86 is now based on X11R6, including shared library support for SVR4, Linux, FreeBSD and NetBSD.
2. New configuration file format. One of the biggest changes that you will notice with the new XFree86 version is that the old `Xconfig` file has been replaced by an `XF86Config` file.For further details, see the section 5 below.
3. Support is included for the X Image Extension (XIE).
4. A new accelerated server for boards based on the Weitek P9000 chipset.
5. A new accelerated server for boards based on the AGX chipsets.
6. A new accelerated server for boards based on the Tseng ET4000/W32 series of chipsets.

7. Support for the S3 Vision 864 and 964 chipsets (including boards like the ELSA Winner 1000Pro and 2000Pro, Number Nine GXE64 and GXE64Pro, Miro Crystal 20SV).
8. 16bpp support for some Mach32 boards.
9. 16bpp and 32bpp support for P9000 boards.
10. 16bpp and 32bpp support for some S3 boards.
11. Improved Cirrus accelerated support (including 5434), and 16bpp and 32bpp support for some Cirrus boards.
12. Accelerated support for Western Digital WD90C33 boards.
13. Support for the S3 GENDAC, S3 SDAC, AT&T 20C498, STG1700 and TI3025 RAMDACS in the S3 server.
14. Support for the S3 GENDAC, S3 SDAC, ICS2595, and TI3025 programmable clocks in the S3 server.
15. New SVGA drivers for the AL2101, MX68000/MX68010, Video7, Cirrus CL6420 chipsets.
16. Significantly updated ATI vgawonder driver, including unaccelerated support for Mach64 boards.
17. A generic VGA driver for the SVGA server (fixed 320x200 at 8bpp).
18. Dual-headed vga2/mono and vga16/mono servers.
19. Significant updates to the VGA16 code, including a wider range of banking support.
20. Incorporated the Screen Saver extension into the base server.
21. Support for "green" monitor screen savers in S3 and SVGA servers.
22. Support for the "experimental" LBX code included with X11R6.

Plus a number of other small things. Refer to the CHANGELOG file in the source distribution for full details.

3 Systems XFree86 has been tested on

SVR4.0:

- Esix: 4.0.3A, 4.0.4, 4.0.4.1
- Microport: 2.2, 3.1, 4.1, 4.2
- Dell: 2.1, 2.2, 2.2.1
- UHC: 2.0, 3.6
- Consensys: 1.2
- MST: 4.0.3 (Load 2.07 and Load 3.02)

- ISC: 4.0.3
- AT&T: 2.1, 4.0
- NCR: MP-RAS
- SunSoft: Solaris x86 2.1, 2.4

SVR4.2:

- Consensys
- Novell UnixWare

SVR3:

- SCO: 3.2.2, 3.2.4
- ISC: 3.0, 4.0, 4.1

Others:

- NetBSD 1.0,
- FreeBSD 1.1.5.1, 2.0
- BSD/386 1.1
- Mach 386
- Linux
- Amoeba
- Minix-386

4 Supported video-card chip-sets

At this time, XFree86 3.1.1 supports the following accelerated chipsets:

8514/A

(and true clones)

ATI

Mach8, Mach32, Mach64

Cirrus

CLGD5420, CLGD5422, CLGD5424, CLGD5426, CLGD5428, CLGD5429, CLGD5430, CLGD5434

S3

86C911, 86C924, 86C801, 86C805, 86C805i, 86C928, 86C864, 86C964, 86C732, 86C764

Western Digital

WD90C31, WD90C33

Weitek

P9000

IIT

AGX-014, AGX-015, AGX-016

Tseng

ET4000/W32, ET4000/W32i, ET4000/W32p

The Cirrus, Western Digital and Oak accelerators are supported in the SVGA server; the other chipsets each have their own server. A list of some cards which the accelerated servers have been tested is included in the files AccelCards, Devices, and some of the chipset-specific `README` files. They may well work on other cards, but we cannot guarantee it.

In addition, the following SVGA chipsets are supported:

Tseng

ET3000, ET4000AX, ET4000/W32

Western Digital/Paradise

PVGA1

Western Digital

WD90C00, WD90C10, WD90C11, WD90C24, WD90C30, WD90C31,WD90C33

Genoa

GVGA

Trident

TVGA8800CS, TVGA8900B, TVGA8900C, TVGA8900CL, TVGA9000, TVGA9000i, TVGA9100B, TVGA9200CX, TVGA9320, TVGA9400CX, TVGA9420

ATI

18800, 18800-1, 28800-2, 28800-4, 28800-5, 28800-6, 68800-3, 68800-6, 68800AX, 68800LX, 88800

NCR

77C22, 77C22E, 77C22E+

Cirrus Logic

CLGD5420, CLGD5422, CLGD5424, CLGD5426, CLGD5428, CLGD5429, CLGD5430, CLGD5434, CLGD6205, CLGD6215, CLGD6225, CLGD6235, CLGD6410, CLGD6412, CLGD6420, CLGD6440

Compaq

AVGA

OAK

OTI067, OTI077, OTI087

Avance Logic

ALG2101, ALG2228, ALG2301, ALG2302, ALG2308, ALG2401

Chips & Technology

65520, 65530, 65540, 65545

MX

MX68000, MX680010

Video 7/Headland Technologies

HT216-32

All of the above are supported in both 256 color and monochrome modes, with the exception of the Advance Logic, MX, Chips & Technology and Video 7 chipsets, which are only supported in 256 color mode.

Refer to the chipset-specific `README` files (currently for Cirrus, Tseng, Western Digital, ATI, Trident, Oak and Video 7) for more information about using those chipsets.

The monochrome server also supports generic VGA cards, using 64k of video memory in a single bank, the Hercules monochrome card, the Hyundai HGC1280, Sigma LaserView, Visa and Apollo monochrome cards. On the Compaq AVGA, only 64k of video memory is supported for the monochrome server, and the GVGA has not been tested with more than 64k.

The VGA16 server supports memory banking with the ET4000, Trident, ATI, NCR, OAK and Cirrus 6420 chipsets allowing virtual display sizes up to about 1600x1200 (with 1MB of video memory). For other chipsets the display size is limited to approximately 800x600.

Note: The Diamond SpeedStar 24 (and possibly recent SpeedStar+) boards are NOT supported, even though they use the ET4000. The Stealth 32 which uses the ET4000/W32p is also not supported. Most other Diamond boards will work with this release of XFree86. Historically the information required for this support was only available under non-disclosure. As of September 27, 1994, Diamond has verbally agreed to provide The XFree86 Project, Inc. with detailed information about Diamond products. This should permit us to better support these in future versions of XFree86.

5 Important Changes

There are a number of important user-visible changes between XFree86 2.1.1 and XFree86 3.1. The first is the default install location. The XFree86 distribution is now installed by default under `/usr/X11R6` instead of `/usr/X386`. This moves away from the now out-dated "X386" name, and it also makes it possible for both versions to co-exist.

The next major change is related to the server configuration file. The old `Xconfig` file has been replaced in XFree86 3.1 by an `XF86Config` file. This is more than just a name change. The new `XF86Config` file uses a format that is quite different from the old `Xconfig` file. The new format is more structured, logical, and extensible than the old format. We realise that the transition to this new format won't be without problems. To help in this transition we have provided a program ('reconfig') to convert the old `Xconfig` format into the new `XF86Config` format. This doesn't provide a perfect conversion mostly because the new format contains more information than the old format. Some manual editing will always be required. One of the new types of information the `XF86Config` contains is a description of the monitor(s) you are using. This addition allows the servers to check that the video modes are within the specifications of the monitor.

For information about the new config file format and how to use it, refer to the *XF86Config(4/5)* and *reconfig(1)* manual pages, and the `README.Config` file which can be found in `/usr/X11R6/lib/X11/doc`.

Another change related to the config file is the locations the servers look for it in. In previous releases the servers would look in places which could be specified by the user. This raised a number of security concerns. To address these, the server now only looks in places which are normally under the control of the system administrator. For further details, refer to the *XFree86(1)* manual page.

6 Where to get more information

Additional documentation is available in the *XFree86(1)*, *XF86Config(4/5)*, *XF86_SVGA(1)*, *XF86_Mono(1)*, *XF86_VGA16(1)* and *XF86_Accel(1)* manual pages. In addition, several `README` files and tutorial documents are provided. These are available in `/usr/X11R6/lib/X11/doc` in the binary distributions, and in `xc/programs/Xserver/hw/xfree86/doc` in the source distribution.

The files `README.Config` and `VideoModes.doc` should be consulted for information on how to set up the XFree86 servers. All supplied documents and manual pages should be read before contacting the XFree86 team for assistance.

Documentation on SVGA driver development can be found in the directory `/usr/X11R6/lib/Server/VGADriverDoc` in the binary distribution, and in the directory `xc/programs/Xserver/hw/xfree86/VGADriverDoc` in the source distribution.

If you are totally at a loss, you can contact the XFree86 Support Team at <*XFree86@XFree86.Org*>.

There is a Usenet news group comp.windows.x.i386unix that contains mostly discussions about XFree86 and related topics. Many questions can be answered there. The answers to common questions are found in the corresponding FAQ.

7 Credits

XFree86 was originally put together by:

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Oak Technologies Inc. accelerated code by:

- Jorge Delgado <*ernar@dit.upm.es*>,

16 color VGA server by:

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2 color VGA and non-VGA mono servers by:

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ATI SVGA driver by:

- Per Lindqvist <*pgd@compuram.bbt.se*> and Doug Evans <*dje@cygnus.com*>.
- Ported to X11R5 by Rik Faith <*faith@cs.unc.edu*>.
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Cirrus SVGA driver by:

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AL2101 SVGA driver by:

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Avance Logic "ali" SVGA driver by:

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MX SVGA driver by:

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Video7 SVGA driver by:

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Apollo Mono driver by:

- Hamish Coleman <*hamish@zot.apana.org.au*>

Other contributors:

- Joerg Wunsch <*joerg_wunsch@uriah.sax.de*> (ET3000 banked mono),
- Eric Raymond <*esr@snark.thyrsus.com*> (new video mode documentation),
- and an entire horde of beta-testers around the world!

8 Contact information

Ongoing development planning and support is coordinated by the XFree86 Core Team. At this time the Core Team consists of (in alphabetical order):

- Robin Cutshaw <*robin@XFree86.org*>
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Mail sent to <*Core@XFree86.org*> will reach the core team. Please note that support questions should be sent to <*XFree86@XFree86.org*>.

9 The XFree86 Project, Inc.

The XFree86 Project, Inc, has been founded to accomplish two major goals:

1. To provide a vehicle by which XFree86 can be represented in X Consortium, Inc, the organization responsible for the design, development, and release of The X Window System.
2. To provide some basic funding for acquisition of facilities for ongoing XFree86 development, largely to consist of new video hardware and basic computing facilities.

The first of these was the primary motivation. We have held discussions with the X Consortium on and off for many months, attempting to find an avenue by which our loosely-organized free software project could be given a voice within the X Consortium. The bylaws of the Consortium would not recognize such an organization. After an initial investigation about funding, we decided to form our own corporation to provide the avenue we needed to meet the requirements of the X Consortium bylaws.

By doing this, we were able to be involved in the beta-test interval for X11R6, and have contributed the majority of XFree86 to the X11R6 core release. The version of XFree86 in the initial X11R6 core is 3.0. The version of XFree86 in the current X11R6 patched release is 3.1.1. As time goes on, XFree86 will be involved with more of the development of The X Window System, as a full Consortium member. How exactly this will evolve is still being determined.

An additional benefit of this incorporation is that The XFree86 Project, Inc has obtained outside financial support for our work. This will hopefully give us the freedom to be more pro-active in obtaining new video hardware, and enable us to release better products more quickly, as we will be able to go and get what we need, and get it into the hands of the people who can do the work.

The current Board of Directors and Officers of the The XFree86 Project, Inc, are:

- David Dawes, President and Secretary
- Dirk Hohndel, Vice-President
- Glenn Lai, Director
- Rich Murphey, Treasurer
- Jim Tsillas, Director
- Jon Tombs, Director
- David Wexelblat, Director

Email to <*BOD@XFree86.org*> reaches the board of directors.

Our bylaws have been crafted in such a way to ensure that XFree86 is and always will be a free software project. There is no personal financial benefit to any member of the Core Team or any other XFree86 participant. All assets of the corporation remain with the corporation, and, in the event of the dissolution of the corporation, all assets will be turned over to the X Consortium, Inc. It is hoped that by doing this, our corporation will be merely a formalization of what we have been doing in the past, rather than something entirely new.

Here is a list of the organizations and individuals who have provided sponsorship to The XFree86 Project, Inc, either by financial contribution or by the donation of equipment and resources. The XFree86 Project, Inc gratefully acknowledges these contributions, and hopes that we can do justice to them by continuing to release high-quality free software for the betterment of the Internet community as a whole.

- *UUNET Communications Services, Inc.* (`http://www.uu.net/`)

UUNET Communications Services, Inc, deserves special mention. This organization stepped forward and contributed the entire 1994 X Consortium membership fee on a moment's notice. This single act ensured XFree86's involvement in X11R6.

- *AIB Software Corporation* (`ftp://ftp.uu.net/vendor/AIB/`), Dulles, VA
- Roland Alder, Armin Fessler, Patrick Seemann, Martin Wunderli
- American Micro Group
- *AT&T Global Information Services* (`http://www.ncr.com/`) (formerly NCR)
- Andrew Burgess
- *Berkeley Software Design, Inc* (`http://www.bsdi.com/`), Falls Church, VA
- *The Destek Group, Inc.* (`http://www.destek.net/Destek/`), Pelham, NH (formerly Synergytics)
- *Digital Equipment Corporation* (`http://www.digital.com/`)
- Elsa GmbH, Aachen, Germany
- Dirk Hohndel
- Frank & Paige McCormick
- *InfoMagic* (`http://www.infomagic.com/`), Rocky Hill, NJ
- LunetIX Softfair, Berlin, Germany
- MIRO Computer Products AG, Braunschweig, Germany
- Rich & Amy Murphey
- Brett Neumeier
- Number Nine, Lexington, MA

- Kazuyuki Okamoto, Japan
- Prime Time Freeware, San Bruno, CA
- Red Hat Software, Chapel Hill, NC
- SPEA Software AG, Starnberg, Germany
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- S.u.S.E, GmbH, Fuerth, Germany
- Tekelec Airtronic GmbH, Muenchen, Germany
- Jim Tsillas
- Trans-Ameritech Enterprises, Inc., Santa Clara, CA
- Unifix Software GmbH, Braunschweig, Germany
- *Vixie Enterprises* (`http://www.vix.com/`), La Honda, CA
- *Walnut Creek CDROM* (`http://www.cdrom.com/`), Concord, CA
- Xtreme s.a.s., Livorno, Italy

The XFree86 Project, Inc, welcomes the additional contribution of funding and/or equipment. Such contributions should be tax-deductible; we will know for certain when the lawyers get finished with the papers. For more information, contact The XFree86 Project, Inc, at <*BOD@XFree86.org*>

10 Source and binary archive sites

Source patches are available to upgrade X11R6 PL11 from the X Consortium to XFree86 3.1.1. They and binaries for many OSs are available via anonymous FTP from:

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

and the following mirror sites:

- North America:
  - *Xfree86.cdrom.com:/pub/XFree86* (`ftp://xfree86.cdrom.com/pub/XFree86`) (source and binaries)
  - *ftp.bsdi.com:/contrib/X11/XFree86* (`ftp://ftp.bsdi.com/contrib/X11/XFree86`) (source and BSD/386 binaries)
  - *ref.tfs.com:/pub/mirrors/XFree86* (`ftp://ref.tfs.com/pub/mirrors/XFree86`) (source and FreeBSD binaries)

- *ftp.iastate.edu:/pub/netbsd/XFree86/XFree86-3.1.1* (`ftp://ftp.iastate.edu/pub/netbsd/XFree86/XFree86-3.1.1`) (source and NetBSD binaries)
- *tsx-11.mit.edu:/pub/linux/packages/X11* (`ftp://tsx-11.mit.edu/pub/linux/packages/X11`) (Linux binaries and source diffs)
- *ftp.eecs.umich.edu:/BSD/XFree86* (`ftp://ftp.eecs.umich.edu/BSD/XFree86`) (source and binaries)
- *sunsite.unc.edu:/pub/X11/XFree86* (`ftp://sunsite.unc.edu/pub/X11/XFree86`) (source and binaries)
- *abode.ccd.bnl.gov:/pub/XFree86* (`ftp://abode.ccd.bnl.gov/pub/XFree86`) (Solaris, SVR4, SCO binaries)

* Europe:
  - *ftp.fee.vutbr.cz:/pub/XFree86* (`ftp://ftp.fee.vutbr.cz/pub/XFree86`) (source and binaries)
  - *ftp.gwdg.de:/pub/Xfree86* (`ftp://ftp.gwdg.de/pub/Xfree86`) (source and binaries)
  - *ftp.uni-stuttgart.de:/pub/X11/Xfree86* (`ftp://ftp.uni-stuttgart.de/pub/X11/Xfree86`) (source and binaries)
  - *fvkma.tu-graz.ac.at:/pub/X11/XFree86/3.1.1* (`ftp://fvkma.tu-graz.ac.at/pub/XFree86/3.1.1`) (source and binaries)
  - *ftp.funet.fi:/pub/X11/XFree86* (`ftp://ftp.funet.fi/pub/X11/XFree86`) (source and binaries)
  - *ftp.laas.fr:/pub/netbsd/XFree86-3.1.1* (`ftp://ftp.laas.fr/pub/NetBSD/XFree86-3.1.1`) (NetBSD binaries only)
  - *ftp.unipi.it:/pub/mirrors/XFree86-3.1.1* (`ftp://ftp.unipi.it/pub/mirrors/XFree86-3.1.1`) (source and binaries)
  - *nova.pvv.unit.no:/pub/XFree86/current* (`ftp://nova.pvv.unit.no/pub/XFree86/current`) (source and binaries)
  - *ftp.demon.co.uk:/pub/Xwindows/XFree86* (`ftp://ftp.demon.co.uk/pub/Xwindows/XFree86`) (source and binaries)

* Middle East:
  - *orgchem.weizmann.ac.il:/pub/XFree86* (`ftp://orgchem.weizmann.ac.il/pub/XFree86`) (sources and FreeBSD binaries)

* Asia/Australia:
  - *x.physics.su.oz.au:/pub/XFree86* (`ftp://x.physics.su.oz.au/pub/XFree86`) (source and binaries)
  - *ftp.iij.ad.jp:/pub/X/XFree86* (`ftp://ftp.iij.ad.jp/pub/X/XFree86`) (source and binaries)
  - *ftp.nectec.or.th:/pub/mirrors/XFree86* (`ftp://ftp.nectec.or.th/pub/mirrors/XFree86`) (source and binaries)

- *ftp.edu.tw:/X/XFree86/3.1.1* (`ftp://ftp.edu.tw/X/XFree86/3.1.1`) (source and Linux binaries)

Refer to the `README` file under the specified directory for information on which files you need to get to build your distribution.

Ensure that you are getting XFree86 3.1.1 - some of these sites may archive older releases as well. Each binary distribution will contain a `README` file that describes what files you need to take from the archive, and which compile-time option selections were made when building the distribution.

```
$XConsortium: README.sgml,v 1.4 95/01/27 16:14:29 kaleb Exp $
$XFree86: xc/programs/Xserver/hw/xfree86/doc/sgml/README.sgml,v 3.17 1995/01/28 16:02:13 dawes Exp $
```