Installation Details for XFree86™ 4.3.0

The XFree86 Project, Inc

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Abstract

How to install XFree86.

1. Introduction

This document contains information about installing the XFree86 binaries as provided by The XFree86 Project.

The XFree86 binaries that we provide for UNIX-like OS's (Linux, the BSDs, Solaris, etc) are packaged in a platform-independent gzipped tar format (aka "tarballs" identified by the `.tgz` suffix). Along with the binaries we provide a customized version of the GNU tar utility called "extract" and an installation script. We recommend that these be used to install the binaries. (The source for this customized version of GNU tar can be found in the XFree86 CVS repository's "utils" module, and from our ftp site <URL:ftp://ftp.xfree86.org/pub/XFree86/misc/utils-1.1.0.tgz>.)

2. Downloading the XFree86 4.3.0 binaries

We provide XFree86 4.3.0 binaries for a range of operating systems at our ftp site <URL:ftp://ftp.xfree86.org/pub/XFree86/4.3.0/binaries/> and our web site <URL:http://ftp.xfree86.org/pub/XFree86/4.3.0/binaries/>. Often during releases our site is heavily loaded. Instead of downloading directly from us we recommend that instead you use one of our mirror sites.

Our binaries are organized by sub-directories which correspond to each of the OS/platforms for which we provide binaries. First go to the sub-directory that represents your OS platform. In some cases (e.g., Linux) there may be a number of choices depending on the architecture or libc version your platform uses. In all case we recommend that you first download the `Xinstall.sh` script, and run it as in the following example to find out which binary distribution you should download.

```
sh Xinstall.sh -check
```

The output of this utility tells you which is the correct set of binaries for you to download. If you are careful with this step you will save yourself a lot time and trouble from NOT downloading an incompatible distribution.

NOTES:

- The Xinstall.sh script must be downloaded in binary mode, otherwise it won't run correctly. If you get lots of "command not found" messages when you try to run it, then it is most likely because the script wasn't downloaded in binary mode. Some web browsers won't do this for files of that name, so we also have a copy of it called "`Xinstall.bin`", and most browsers should download that correctly. When downloading it under this name, select "save as" on your browser, and save the file under the name "`Xinstall.sh`".
- The Xinstall.sh script requires some system commands and utilities to function correctly. While most systems will have these, some Linux installations may not. If you find that the script is failing because of some missing system command, you will need to install it before you can continue. If you don't know how to do this, then we recommend that you obtain this version of XFree86 from your Operating System distributor.
- Always use the version of the Xinstall.sh script that's provided with the release you're installing. Older versions of the script may not install newer releases correctly.
- If the binary distribution reported by the Xinstall.sh script isn't present on our site, then there are two possibilities. The first is that it hasn't been prepared and uploaded yet. This is likely if you are looking soon after the release date. The second possibility is that we won't have it available at all for this release. This is likely if it's still not there about two weeks after the release date. Check here `<URL:http://www.xfree86.org/4.3.0/UPDATES.html>` for information about updates to our binary distributions, and here `<URL:http://www.xfree86.org/4.3.0/ERRATA.html>` for errata related to this release.

Once you're run the `Xinstall.sh` script and found which binary distribution is suitable for your system, download the necessary files. The twelve (12) mandatory files for all installations are listed below. If you have not downloaded all of the files, the installer script will complain.

```
1.   Xinstall.sh    The installer script
2.   extract        The utility for extracting tarballs
3.   Xbin.tgz       X clients/utilities and run-time libraries
4.   Xlib.tgz       Some data files required at run-time
5.   Xman.tgz       Manual pages
6.   Xdoc.tgz       XFree86 documentation
7.   Xfnts.tgz      Base set of fonts
8.   Xfenc.tgz      Base set of font encoding data
9.   Xetc.tgz       Run-time configuration files
10.  Xvar.tgz       Run-time data
11.  Xxserv.tgz     XFree86 X server
12.  Xmod.tgz       XFree86 X server modules
```

NOTES:

- Some web browsers have a problem downloading the `extract` utility correctly. If you encounter this problem, download the version called `extract.exe` instead. This should fix the problem. (This is not a DOS/Windows executable.)
- A few distributions don't have or require the `Xvar.tgz` tarball. If it is present in the `binaries` sub-directory for your platform, then it is required.
- The Darwin/Mac OS X distribution doesn't have or require the `Xmod.tgz` tarball.
- Some distributions may have additional mandatory tarballs. While rare, the installer script will tell you if any are missing.

The following eleven (11) tarballs are optional. You should download the ones you want to install.

```
1.   Xfsrv.tgz      Font server
2.   Xnest.tgz      Nested X server
3.   Xprog.tgz      X header files, config files and compile-time libs
4.   Xprt.tgz       X Print server
5.   Xvfb.tgz       Virtual framebuffer X server
6.   Xf100.tgz      100dpi fonts
7.   Xfcyr.tgz      Cyrillic fonts
8.   Xfscl.tgz      Scalable fonts (Speedo, Type1 and TrueType)
9.   Xhtml.tgz      HTML version of the documentation
10.  Xps.tgz        PostScript version of the documentation
11.  Xjdoc.tgz      Documentation in Japanese
```

NOTES:

- Some distributions may have some additional optional tarballs.

If you miss some and want to install them later, go to the *Manual Installation* (section 4., page 5) section.

3. Installing XFree86 4.3.0 using the Xinstall.sh script

We strongly recommend that our XFree86 4.3.0 binaries be installed using the `Xinstall.sh` script that we provide. There are a lot of steps in the manual installation process, and those steps can vary according to the platform and hardware setup. There is a description of the manual installation process for the most common cases *below* (section 4., page 5).

You must login as the super user (root) to run the installer script. Place all of the downloaded files into a single directory (choose a temporary location with enough space). Use the cd command to change to that directory and then run the installer script as follows:

```
sh Xinstall.sh
```

Answer the prompts as they come up. If you are missing something that is required, the installer may tell you to install it before trying again. If the problem is that you did not download all of mandatory files aforementioned, then the installer will tell you which ones are missing and ask you to download them before proceeding.

3.1 Questions the installer may ask

The installer asks some questions that may not have obvious answers. The information here should help you answer them. In most cases, apart from the first question, the default answers should be OK.

If you run the installer from within an X session (the installer checks if `$DISPLAY` is set), you will be warned that doing so is not a good idea. Unless you have a good reason for knowing that this won't be a problem, you should exit your X session, including stopping xdm or equivalent if it is running, before continuing. If you ignore this warning and run into problems, well, you were warned!

If you have an existing X installation, you will be warned that proceeding with this installation will overwrite it. Only those things that are part of our standard distribution will be overwritten. Other X applications that you may have installed will not be removed. Some configuration files may be overwritten though, but the installer should prompt you before doing so. As the opening greeting says, it is **strongly** recommended that you backup any existing installation before proceeding. If you want your old applications to still be there after you've installed, don't do the "backup" by simply renaming your old `/usr/X11R6` directory. It is better to make a copy of it, and then install over the top of the original one. If you run into problems and want to revert to the old installation, you can then delete the overwritten one and copy the saved version back.

During the first part of the installation over an existing version, the script may remove some old files or directories that would get in the way of the new installation. It will list which

files/directories have been removed. If none are listed, then none were removed.

The next step when installing over an existing version is to check for existing configuration files. As of XFree86 version 3.9.18, the run-time configuration files are installed by default under `/etc/X11` instead of under `/usr/X11R6/lib/X11`. The installer will move the existing ones for you and create the necessary symbolic links. If you don't want to have these configuration files under `/etc/X11`, then you should answer "no" when asked about it. Answering "no" here also means that the new configuration files will be installed in the old `/usr/X11R6/lib/X11` location.

Note: for the rare systems that don't have symbolic links, this question will not be asked. The default answer is "yes" because that is best for most situations. It is our new default. It makes it easier to share the `/usr/X11R6` directory between multiple hosts, and allows it to be mounted read-only. If you don't need these features, then you can safely answer "no" if you don't want them moved.

When installing over an existing version, you will be prompted before each set of configuration files is installed. If you haven't made any Customisations to your existing configuration files, then you can safely answer "yes" for each of these. If you have made customisations, you can try answering "no". If you run into problems later, you may need to manually merge your customisations into the the new version of the configuration files. The configuration files can all be found in the `Xetc.tgz` tarball. See the *section below* (section 4., page 5) about manual installation for information about extracting them separately.

After the configuration files have been dealt with, the other mandatory components of the binary distribution will be installed. This should proceed without any user intervention.

If you downloaded any of the optional components, the installer will ask you about each one before it is installed. The default answer is "yes". If there are any that you've since decided that you don't want to install, answer "no" when prompted.

After that is done, the main part of the installation is complete. The next steps are to tidy up some aspects of the installation. The first of these is to run "`ldconfig`" on systems that require it, so that the newly installed shared libraries are accessible. Then the `fonts.dir` files in some directories are updated so that the fonts can be accessed correctly. Next, the installer checks to see if your system has a termcap file or terminfo files. If it finds the former, it tells you how you may update the entries in that file. If it finds the latter, it asks you if you want it to update them for you.

You may be asked if you want to create links for the GL libraries and header files. The OpenGL standard on some platforms (Linux in particular) says that these should be installed in the standard system locations (`/usr/lib` and `/usr/include`), so the installer offers to create the appropriate links. If you're running Linux, you should probably answer yes. For other platforms it is your choice. If you already have another version of libGL in /usr/lib, answering "yes" will remove it and replace it with a link to the version we supply. The installer will show you a listing of any existing versions before asking if they should be replaced.

Finally, the installer asks you if you want a link created for the `rstart` utility. On most modern systems the link isn't essential, so the default answer is "no". Answer "yes" if you know that you need it. If you find later that you need it, you can create it easily by running:

```
rm -f /usr/bin/rstartd
ln -s /usr/X11R6/bin/rstartd /usr/bin/rstartd
```

3.2 After the installation is complete

The next step is to configure the X server. That is covered in detail in an as-yet unwritten document :-(. In the meantime, there are three ways to create a basic X server configuration file for XFree86 4.3.0. One is to run the `xf86config` utility. Another is to run the `xf86cfg` utility. The third option is to use the new `-configure` X server option:

```
XFree86 -configure
```

Note that if you are running Darwin/Mac OS X, there is no step 3 :-). You should skip this step, as configuration is not required or possible. The X server configuration file is not used on Darwin/Mac OS X.

The X server config file (`XF86Config`) format has changed compared to 3.3.x. Also, its default location is now `/etc/X11`. Finally, there is now only one X server for driving video hardware, and it is called "`XFree86`". Once you're satisfied with the operation of the new X server, you can safely remove the old `XF86_*` and/or `XF98_*` X server binaries from `/usr/X11R6/bin`.

After the X server configuration is done, it may be advisable to reboot, especially if you run xdm (or equivalent) or the font server (xfs).

4. Installing XFree86 4.3.0 manually

This section contains information about manually installing the XFree86 4.3.0 binary distributions. You should only use this method if you know what you're doing. The information here covers some common cases, but not every possible case. It also may not be complete or up to date. Use at your own risk.

Put all of the downloaded files into a single directory (choose some temporary location with enough space). Become the super user (root). All of the following commands should be run as root, and they should be run from the directory that has all of the downloaded files. The "`extract`" utility should be used to unpack the tarballs. This is a customised version of GNU tar that has the gzip code built-in, and which has a different usage when run under the name "extract". One important thing that `extract` does that most versions of tar do not do by default is that it unlinks existing files before writing new ones. This is important when installing over an existing version of X. If you choose to use some other utility to extract the tarballs, you're on your own.

4.1 A new installation

The simplest case is when there is no existing X installation. The installation procedure for this case is as follows:

```
chmod +x extract
mkdir /usr/X11R6
mkdir /etc/X11
./extract -C /usr/X11R6 X[a-df-uw-z]*.tgz
./extract -C /usr/X11R6 Xvfb.tgz    # If you are installing Xvfb
./extract -C /etc/X11 Xetc.tgz
./extract -C /var Xvar.tgz
ln -s /etc/X11/app-defaults /usr/X11R6/lib/X11
ln -s /etc/X11/fs /usr/X11R6/lib/X11
ln -s /etc/X11/lbxproxy /usr/X11R6/lib/X11
ln -s /etc/X11/proxymngr /usr/X11R6/lib/X11
ln -s /etc/X11/rstart /usr/X11R6/lib/X11
ln -s /etc/X11/twm /usr/X11R6/lib/X11
ln -s /etc/X11/xdm /usr/X11R6/lib/X11
ln -s /etc/X11/xinit /usr/X11R6/lib/X11
ln -s /etc/X11/xsm /usr/X11R6/lib/X11
ln -s /etc/X11/xserver /usr/X11R6/lib/X11
chmod ug-w /usr/X11R6/lib           # Make sure the permissions are OK
/sbin/ldconfig /usr/X11R6/lib       # For Linux
/sbin/ldconfig -m /usr/X11R6/lib    # For FreeBSD, NetBSD, OpenBSD
/usr/X11R6/bin/mkfontdir /usr/X11R6/lib/X11/fonts/misc
```

4.2 Installing over an old installation

If you have an existing installation of X, you should make a backup copy of it before installing the new version over the top of it.

Before doing anything else, make sure the `extract` command is executable, and also link it to the name "`gnu-tar`" so that it can be used as a regular `tar` command:

```
chmod +x extract
rm -f gnu-tar
ln extract gnu-tar
```

The first part of the procedure is to move the old run-time config files from `/usr/X11R6/lib/X11` to `/etc/X11`. Create `/etc/X11` if it doesn't already exist. For each of the following sub-directories (`app-defaults`, `fs`, `lbxproxy`, `proxymngr`, `rstart`, `twm`, `xdm`, `xinit`, `xsm`, `xserver`) that you want to move, check that there is a sub-directory of this name in `/usr/X11R6/lib/X11`. Create a sub-directory of the same name under `/etc/X11`, then copy the files over by running:

```
./gnu-tar -C /usr/X11R6/lib/X11/subdir -c -f - . | \
  ./gnu-tar -C /etc/X11/subdir -v -x -p -U -f -
```

For each subdirectory that is moved, remove the one under `/usr/X11R6/lib/X11` and create a symbolic link to the new location:

```
rm -fr /usr/X11R6/lib/X11/subdir
ln -s /etc/X11/subdir /usr/X11R6/lib/X11
```

For those subdirectories that didn't already exist under `/usr/X11R6/lib/X11`, create one under `/etc/X11` and create the symbolic link to it:

```
mkdir /etc/X11/subdir
ln -s /etc/X11/subdir /usr/X11R6/lib/X11
```

Once that is done, extract the config files from the `Xetc.tgz` tarball into a temporary directory:

```
mkdir tmpdir
./extract -C tmpdir Xetc.tgz
```

and then copy each sub-directory over to the installed location:

```
./gnu-tar -C tmpdir/subdir -c -f - . | \
  ./gnu-tar -C /usr/X11R6/lib/X11/subdir -v -x -p -U -f -
```

If you have customised any config files in your old installation, you may want to omit those sub-directories, or copy selected files over by hand.

Once that's done, the main part of the installation can be done:

```
./extract -C /usr/X11R6 `pwd`/X[a-df-uw-z]*.tgz
./extract -C /usr/X11R6 Xvfb.tgz    # If you are installing Xvfb
./extract -C /var Xvar.tgz
chmod ug-w /usr/X11R6/lib           # Make sure the permissions are OK
/sbin/ldconfig /usr/X11R6/lib       # For Linux
/sbin/ldconfig -m /usr/X11R6/lib    # For FreeBSD, NetBSD, OpenBSD
/usr/X11R6/bin/mkfontdir /usr/X11R6/lib/X11/fonts/misc
```

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$XFree86: xc/programs/Xserver/hw/xfree86/doc/sgml/Install.sgml,v 1.17 2003/02/24 17:09:16 dawes I