

Chapter 12

X Windows Configuration

This chapter introduces the user to managing the X Windows environment. A review of each of the management X applications and their effect on the X environment.

Concepts Learned in this Chapter

- X Windows Concept
- X Windows Configuration

Table of Contents

X Windows Configuration.....	1
12.1 X Configuration	3
12.1.1 XFree Configuration.....	3
12.1.2 X.Org Configuration.....	8
12.2 Remote X.....	8
12.3 Multiple Desktops from X.....	9
12.X Commands Used in this Chapter.....	9
12.Y Chapter Review Questions.....	9

12.1 X Configuration ¹

Probably the most difficult part of Linux is X. This is because it interfaces the hardware and the user must be more experienced in order to optimize it performance. The initial configuration during installation probably best for the vast majority of the user requirements. To change the configuration for performance and options can be quite complex. Two options exist for the configuration of the X Server, **XFree86** and **X.org**. The XFree organization elected to establish a new policy, and a new group was formed, and the configuration of X forked to a new software design.

12.1.1 XFree Configuration

To start, for X to respond in a timely manner, the important word is memory. A video card with only 4Mbytes of video RAM might be considered only functional for the Command Line Interface. Using today's video cards, a bare minimum of 32 MBytes should be necessary for basic performance – more if one wants to improve the graphical response.

To make configuration changes to X, the utility **XF86Config** may be used, but this is being depreciated in future versions of **XFree86**. XF86Config is a program that modifies a file also called XF86Config, that resides in the **/etc/X11** directory. This file is quite long, detailed, and reasonably documented – you still need to know what you are doing.

Note: *The XF86Config utility may only be run from the Command Line Interface, do not run it from an XTerm window.*

Configuration of the **/etc/X11/XF86Config** file allows the administrator to configure various parameters of the system, including the keyboard, mouse, video card, RAM, monitor, and various resolutions. During the initial installation, only one resolution may be configured, whereas by using XF86Config multiple resolutions may be configured, allowing one to switch between them.

The XF86Config configuration file is a simple text file that is divided into multiple sections, including Screen, Devices (Video Card), and Monitor. Each section has the format of:

```
Section  "Section Name"
Section Information
  Subsection  Name
    Subsection Information
  EndSubsection
EndSection
```

The following is an example from the **/etc/X11/XF86Config** file:

```
# cat XF86Config
# XFree86 4 configuration created by redhat-config-xfree86
```

¹ Linux User's Resource, James Mohr, Prentice Hall

Section "ServerLayout"

Ignore

```

Identifier    "Default Layout"
Screen      0  "Screen0" 0 0
InputDevice  "Mouse0" "CorePointer"
InputDevice  "Keyboard0" "CoreKeyboard"
InputDevice  "DevInputMice" "AlwaysCore"
EndSection

```

Section "Files"

Ignore

```

# RgbPath is the location of the RGB database. Note, this is the
name of the
# file minus the extension (like ".txt" or ".db"). There is normally
# no need to change the default.
# Multiple FontPath entries are allowed (they are concatenated
together)
# By default, Red Hat 6.0 and later now use a font server
independent of
# the X server to render fonts.
RgbPath      "/usr/X11R6/lib/X11/rgb"
FontPath      "unix/:7100"
EndSection

```

Section "Module"

Ignore

```

Load "dbe"
Load "extmod"
Load "fbdevhw"
Load "glx"
Load "record"
Load "freetype"
Load "type1"
Load "dri"
EndSection

```

Section "InputDevice"

Keyboard

```

# Specify which keyboard LEDs can be user-controlled (eg, with
xset(1))
# Option "Xleds"        "1 2 3"
# To disable the XKEYBOARD extension, uncomment XkbDisable.
# Option "XkbDisable"
# To customise the XKB settings to suit your keyboard, modify the
# lines below (which are the defaults). For example, for a non-U.S.
# keyboard, you will probably want to use:
# Option "XkbModel"      "pc102"
# If you have a US Microsoft Natural keyboard, you can use:

```

```

# Option "XkbModel" "microsoft"
#
# Then to change the language, change the Layout setting.
# For example, a german layout can be obtained with:
# Option "XkbLayout" "de"
# or:
# Option "XkbLayout" "de"
# Option "XkbVariant" "nodeadkeys"
#
# If you'd like to switch the positions of your capslock and
# control keys, use:
# Option "XkbOptions" "ctrl:swapcaps"
# Or if you just want both to be control, use:
# Option "XkbOptions" "ctrl:nocaps"
#
Identifier "Keyboard0"
Driver "keyboard"
Option "XkbRules" "xfree86"
Option "XkbModel" "pc105"
Option "XkbLayout" "us"
EndSection

```

Section "InputDevice"

Mouse

```

Identifier "Mouse0"
Driver "mouse"
Option "Protocol" "IMPS/2"
Option "Device" "/dev/psaux"
Option "ZAxisMapping" "4 5"
Option "Emulate3Buttons" "no"
EndSection

```

Section "InputDevice"

*# If the normal CorePointer mouse is not a USB mouse then
 # this input device can be used in AlwaysCore mode to let you
 # also use USB mice at the same time.*

```

Identifier "DevInputMice"
Driver "mouse"
Option "Protocol" "IMPS/2"
Option "Device" "/dev/input/mice"
Option "ZAxisMapping" "4 5"
Option "Emulate3Buttons" "no"
EndSection

```

Section "Monitor"

Monitor

```

Identifier "Monitor0"
VendorName "Monitor Vendor"

```

```

ModelName  "Dell 1700FP"
HorizSync  30.0 - 80.0
VertRefresh 56.0 - 76.0
Option     "dpms"
EndSection

```

```

Section "Device"                                Video Card
Identifier  "Videocard0"
Driver     "nv"
VendorName  "Videocard vendor"
BoardName   "NVIDIA GeForce 2 MX (generic)"
VideoRam   65536
EndSection

```

```

Section "Screen"                                Screen
Identifier  "Screen0"
Device     "Videocard0"
Monitor    "Monitor0"
DefaultDepth 24
SubSection "Display"
Depth      24
Modes      "1024x768" "800x600" "640x480"
EndSubSection
EndSection

```

```

Section "DRI"                                    Ignore
Group       0
Mode        0666
EndSection

```

Of these, the screen section is probably the most difficult. The reason is because there may be multiple Display SubSections.

```

Section "Screen"
Identifier  "Screen0"
Device     "Videocard0"
Monitor    "Monitor0"
DefaultDepth 24
SubSection "Display"
Depth      24
Modes      "1024x768" "800x600" "640x480"
EndSubSection
EndSection

```

Although in the above, only one SubSection "Display" is shown, but there may be more if there are additional "Depth" options. In this situation, the user may cycle through three different screen resolutions (Modes), 1024x768

(default), 800x600, and 640x480. Better video cards may allow higher resolution (if you can see that small or have that large of a monitor).

The Device SubSection specifies the video card and its driver.

Section "Device"

Identifier "Videocard0"

Driver "nv"

VendorName "Videocard vendor"

BoardName "NVIDIA GeForce 2 MX (generic)"

VideoRam 65536

EndSection

Various default drivers are available. In this case Red Hat comes with an Nvidia driver, but it may not be the latest or up to date. The default drivers for basic operation might include:

accel	For higher performance video cards
vga2	2 color mode vga cards – good for CLI
vag16	16 color mode vga cards
svga	Super-VGA, 256 color, 640x480

When X starts, it selects the first SubSection for a given Section is selected by default, but this can be modified by either moving the section lower using an editor, or starting X using the command:

startx -- -x bbp 24

as an example

The Monitor Section specifies the vendor name and model, Horizontal Sync, and Vertical Refresh Rate. Multiple monitor sections may exist, supporting different connected monitors. The Horizontal Sync specifies how fast the monitor scans horizontally, and can span a range of values. The Vertical Refresh Rate specifies how many times a second a screen is totally redrawn. This too can have a range of values. Typically, the higher the refresh rate the fewer headache.

Section "Monitor"

Identifier "Monitor0"

VendorName "Monitor Vendor"

ModelName "Dell 1700FP"

HorizSync 30.0 - 80.0

VertRefresh 56.0 - 76.0

Option "dpms"

EndSection

In previous versions of X86Free, various mode lines are noted. An example is:

> EXAMPLE

When X first starts, it first looks for the \$HOME/.xinitrc file to determine individual user preferences. If this file does not exist, then the **/etc/X11/xinit/xinitrc** file is used. This file is typically minimal, containing the line **“exec xterm”**.

Knowing how to configure the XF86Configure file is now a little easier to set up using the utility **xvidtune**. To start, when xvidtune is initiated, copy down the values that are observed – so you know what the original settings were in case you need to return to the original settings.

Linux p. 141

12.1.2 X.Org Configuration

The latest configuration of X is to use X.Org, a forked branch of the previously used XFree86 configuration. There are a lot of similarities, and the same time some significant differences.

12.2 Remote X

It is often beneficial to run X remotely. For example, you have a graphical application on a remote server system, and due to its higher processor power it is easier to remotely start the application and edit your graphical files.

What is required to set up the remote system is to allow the remote server access to the local system. This is performed in a two-step process.

First the local client-host must be configured to allow the remote server to display on the local host. On the local host, issue the command:

```
# xhost +server-host-name  
local-host-name being added to access control list
```

Second, the user must telnet to the remote server host. If necessary, switch to the administrator (su). Then issue the following command:

```
# DISPLAY=client-host-name:0  
# export DISPLAY
```

This has configured the server to route its display to the remote host rather than the stdout (monitor).

Exit the telnet session. Now from the client host system the user will be able to run an application from the server host.

>>>>Show example

Note: *Setting up an xhost connection may be convenient and basically easy – but it is not a secure connection. Everything that passes across the network is in clear text and not secure.*

12.3 Multiple Desktops from X

There are two methods to have multiple X Desktops, one being completely independent of the other.

The first method is straight forward and simple. In the Task Bar is a section with four screens. This is the default, but may be expanded to up to eight by configuration of the preferences. Simply clicking on a different window will switch to a different desktop.



The second method is to start a second session of X. This is accomplished by clicking the **CTRL-ALT-Fx** keys. **F1** is the default screen that the user is presently working in. By keying in an alternate Function key, a new Command Line Interface (CLI) will be opened. From that point the user may either issue new commands at the prompt, or start a new X session by issuing the command **startx**.

To switch back to the original desktop, key in **CTRL-ALT-F1**. After the second X session has been started, the user may directly switch back and forth between the two by issuing the appropriate **CTRL-ALT-Fx** keystrokes.

12.X Commands Used in this Chapter

export	A utility to write a variable to the Environment
startx	Command to start the X Windows display
xhost	A utility to provide a remote X display
xterm	A utility to provide a CLI terminal from within X
xvidtune	A utility to provide the administrator a means to tune the performance of X by modifying the Monitor, Video Card, Horizontal Sync, Vertical Refresh Rate, and screen resolution.

12.Y Chapter Review Questions

Chapter Index

Application	A		Remote X		8
XF86Config		3	Utility	U	
Directory	D		export		8
/etc/X11		3	xhost		8
Environment	E		xvidtune		8
DISPLAY		8	Video Memory	V	3
File	F		X Configuration	X	3
/etc/X11/xinit/xinitrc		8	X Configuration		
/etc/XF86Config		3	Resolutions		3
Multiple Desktops	M	9	XF86Config		3
	R		Device Section		7
			Monitor Section		7
			Screen Section		6