

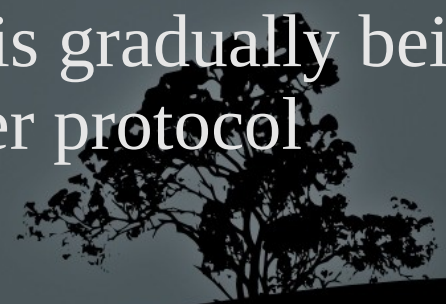
# LPIC-1 102-400 – Lesson 3

## 106.1 Install and configure X11



# The X Window System (X11)

- The *X Window System* (X11 or simply X) is a windowing system traditionally used on Graphical Linux Installations
- *X.Org* (Xorg) is the most popular implementation of the X11 standard. Other implementations are the *XFree86* and *Xwin* for MS Windows.
- It uses the *client-server model*. That means it has to be paired with a *Window Manager* (client). By default that Window Manager is TWM.
- Because of various design limitations it is gradually being replaced by the *Wayland* display server protocol



# Installing X.Org

- Installing Xorg on Debian/Ubuntu:

```
$ sudo apt install xorg # Full
```

```
$ sudo apt install xserver-xorg-core # Server only
```

- Installing Xorg on RedHat/CentOS/Fedora:

```
$ sudo yum groupinstall "X Window System" # replace  
yum with dnf of Fedora and recent versions of RedHat/  
CentOS
```



# Starting X

- To start the Graphical Environment on a CLI-only Linux system, we have to run **X** or **startx**
- **X** is usually a symlink to the **Xorg** executable. We usually avoid running **X** directly. Running **startx** is preferable.
- **startx** is a script that prepares the environment to allow **X** to start.
- If **X** fails to start a *.xsession-errors* file will be created under your home directory.



# The Xorg configuration

- Usually under */etc/X11/xorg.conf*
- You can also create your own custom configuration files under */etc/X11/xorg.conf.d* (ending in .conf)
- A new sample xorg.conf can be generated on a Gui-less terminal (ex. Ctrl-Alt-F2) with:

```
$ sudo X :1 -configure
```

```
$ sudo ls -l /root/xorg.conf.new
```

```
-rw-r--r-- 1 root root 3306 Nov 26 10:08 /root/xorg.conf.new
```



# Xorg Configuration Sections

- **Section "Files"**: Files (usually fonts) to load
- **Section "Module"**: Modules to be loaded
- **Section "InputDevice"**: Input devices like keyboard/Mouse
- **Section "Device"**: Graphics card
- **Section "Monitor"**: Monitor Definition
- **Section "Screen"**: Screen definition (resolution etc)
- There are some other less definitions as well. Have a look at the *xorg.conf* file under **Lesson3**



# The *\$DISPLAY* environment variable

- The **\$DISPLAY** environment variable sets the display used by the system. It is possible to set a different display for remote access or have two displays on a system, ex. :0.0 and :0.1
- **\$ echo \$DISPLAY** # show the **\$DISPLAY** variable  
:0.0 # :0.1, :0, :1 are other possible choices
- If you want to use the display on another computer:

```
$ export DISPLAY=remote.cut.edu:0.0
```



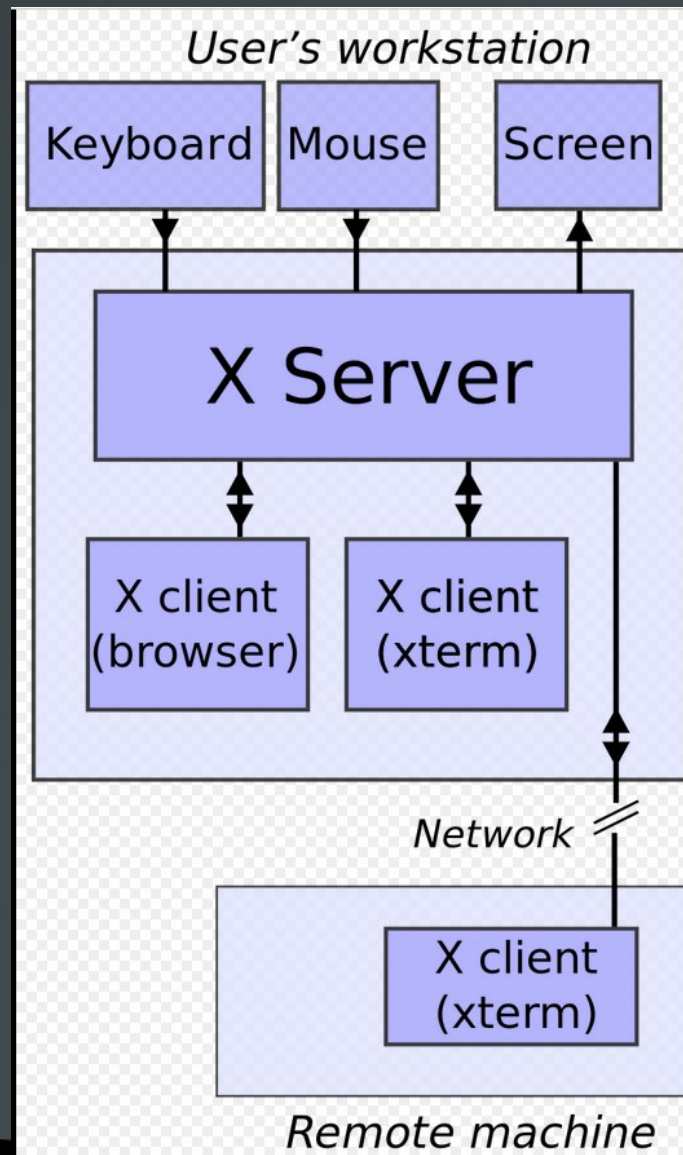
# Acecssing a remote X server using *xhost*

- **root@host1 # xhost +host2** # the remote host **host2** is granted the right to use the X server on **host1**
- **root@host1 # xhost +10.0.0.10** # we can also use the ip address of **host2**
- **root@host2 # export DISPLAY=host1:0.0** # we can also use the IP of **host1**, ex:  
**export DISPLAY=10.0.0.11:0.0**
- **root@host2 # gedit** # the **gedit** graphical application runs on **host2** but displayed on **host1**



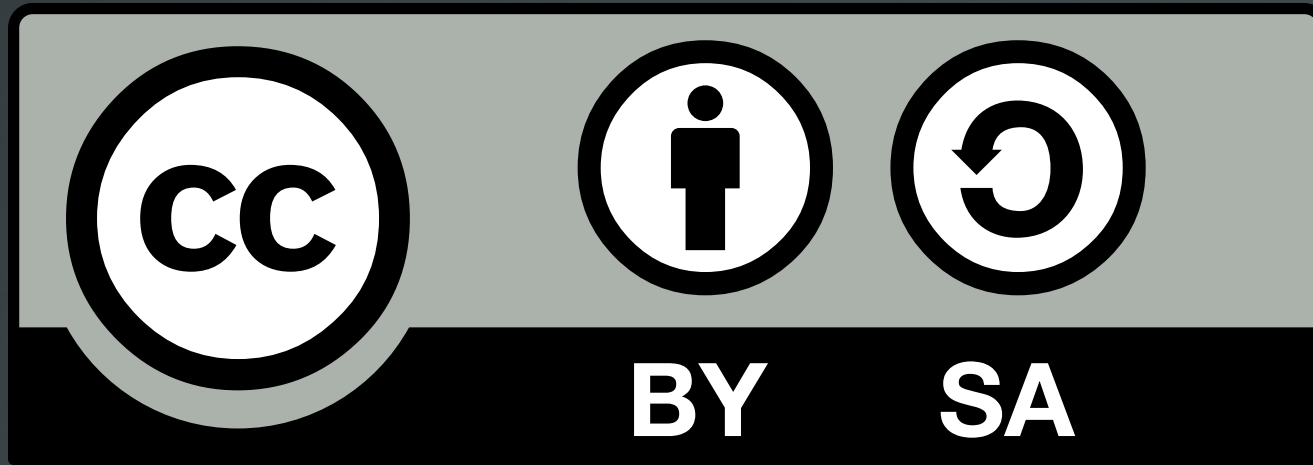


# Accessing a remote X server using *xhost*



Original by David Gerard, recreated by Efitu

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