

History and configuration

X Window System



X Windows System / X11 – brief history

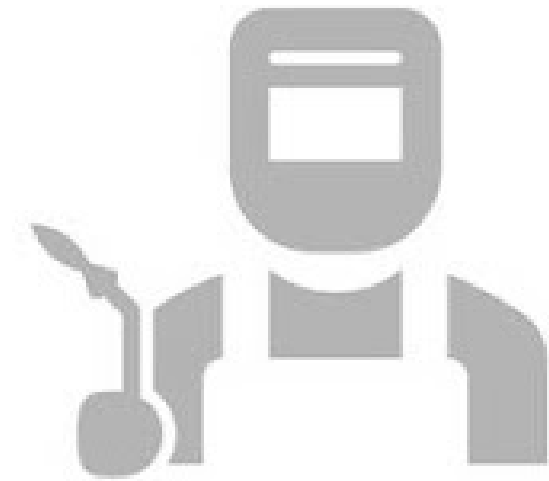
- 1983 – W window system working on V-System
- June 1984 - Jim Gettys and Bob Scheifler from MIT create X Window System
- 1988 – MIT X Consortium
- January 1994 – all rights to X moved to X Consortium
- 1996 – Open Software Foundation and X/Open create The Open Group with X Project Team
- May 1999 – X Project Team is disbanded, X.org Group created
- 22/Jan/2004 – members of X.org Group create X.org Foundation

What is X Window System?



Role of X:

- Windowing system for bitmaps display
- Provides framework for building GUI
- Handles peripheral devices like mouse, keyboard, touchpad, tablets



What is not a role of X:

- Doesn't handle windows
- Doesn't provide UI
- Doesn't draw windows elements – it's a role for Window manager.

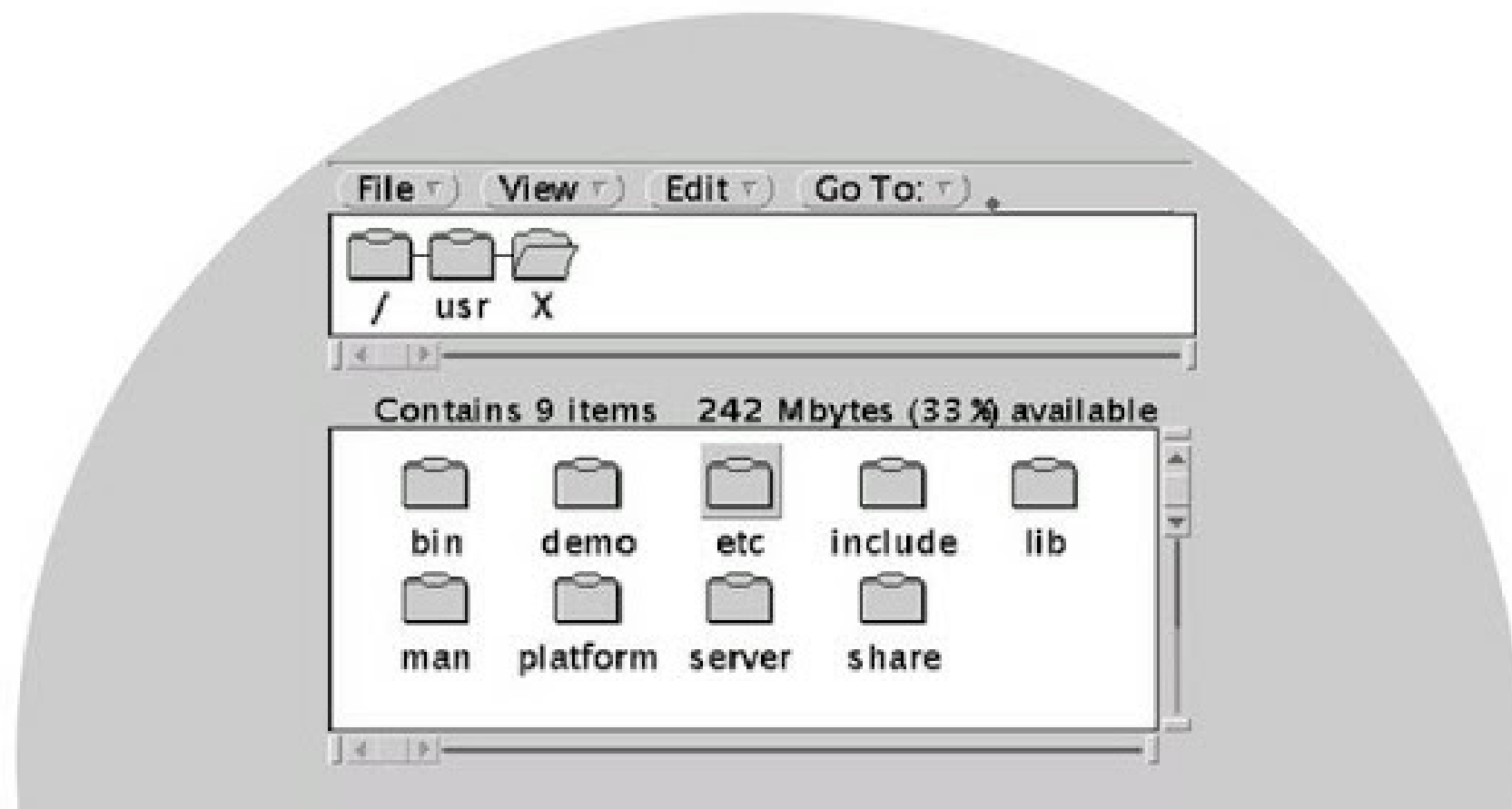
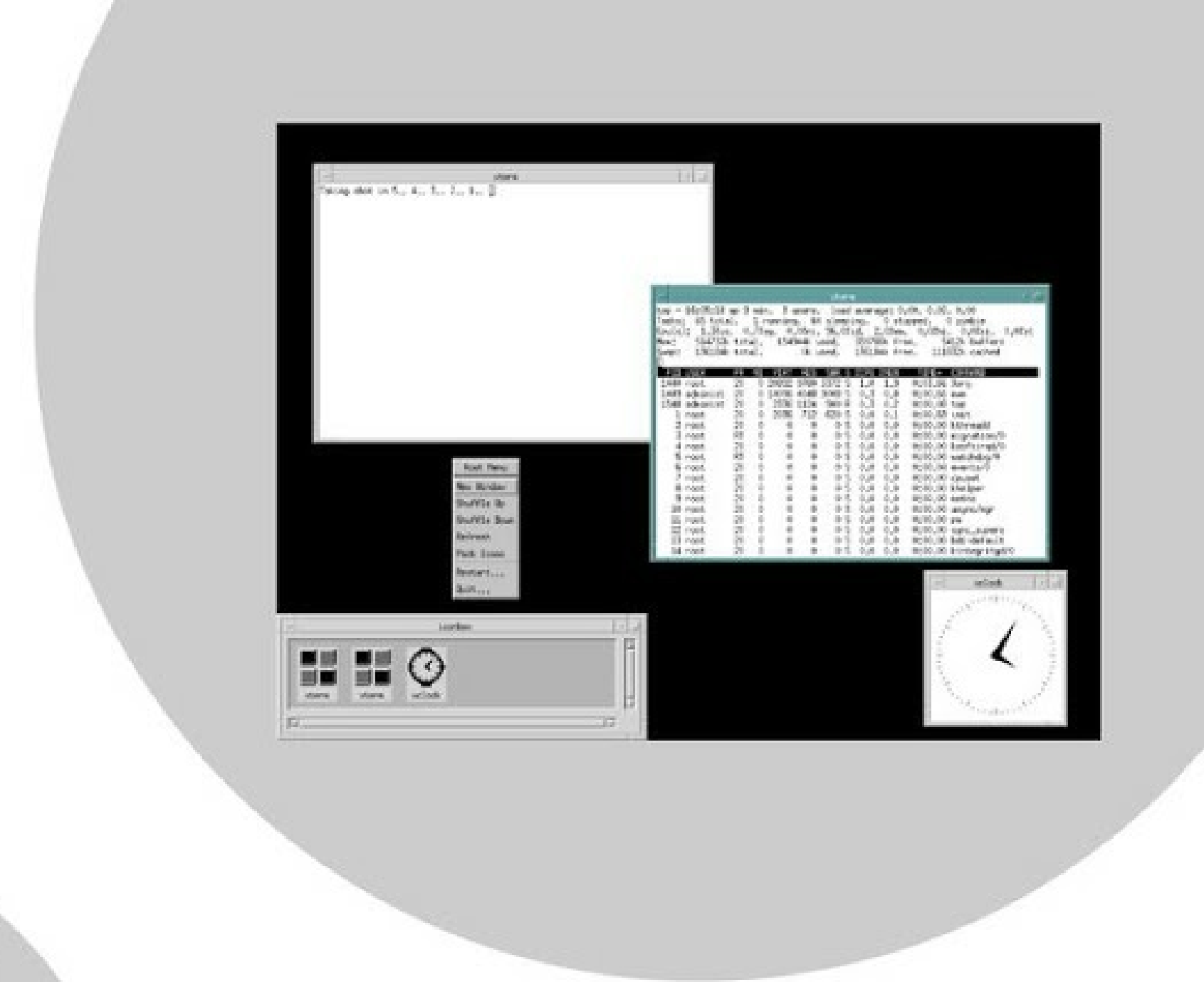
Implementations

- X.org
- XFree86

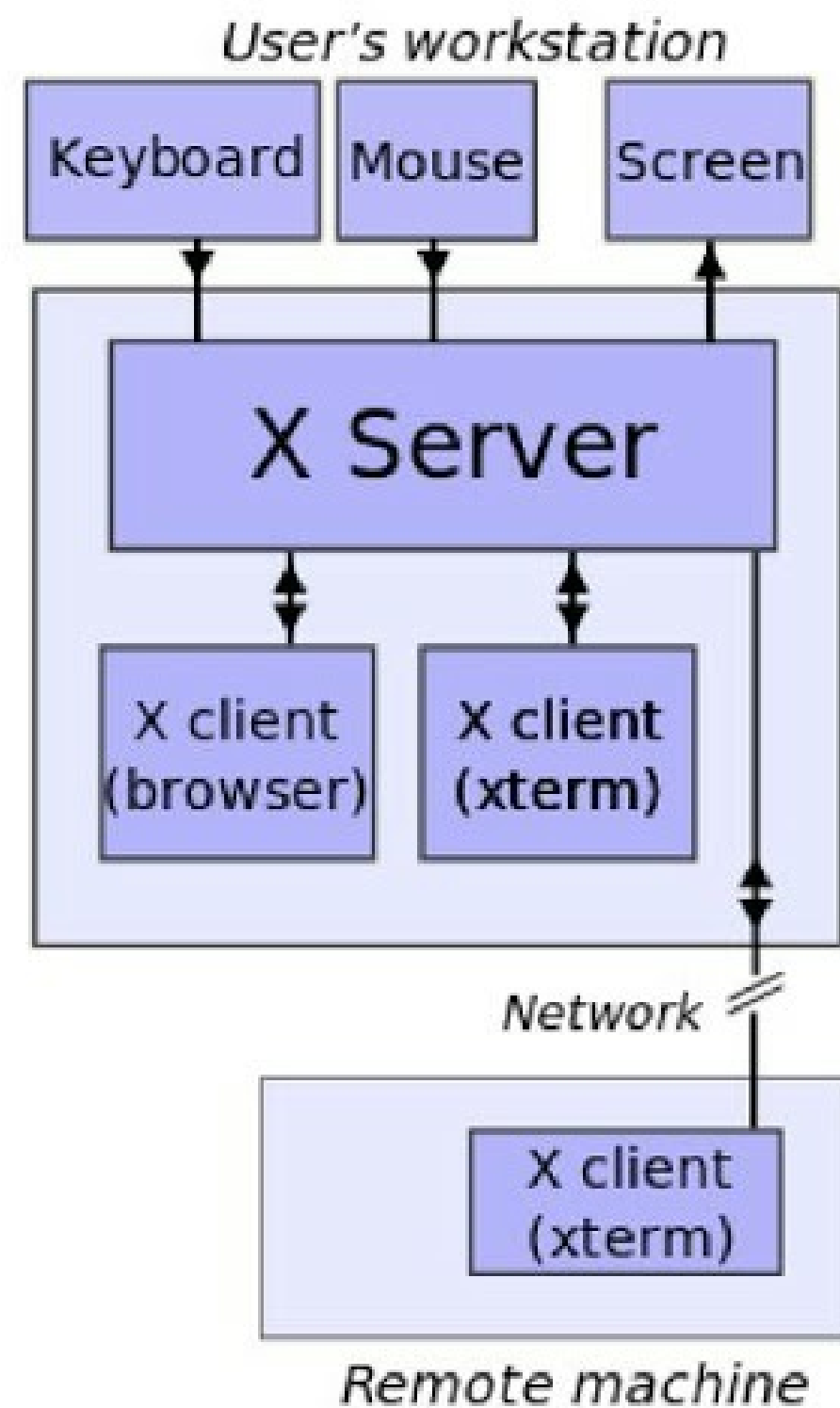


Widgets libraries for X Window System

- Athena
- Motif
- OpenLook
- Gnome
- KDE



X Window System internals



- Client-server architecture
- Server – displays bitmaps, handles peripheral devices
- Client – software requesting changes to contents of windows

Linux

- Installation by default with OS: Fedora
- Offers option on system setup: Slackware, openSuse

BSD

- Using Package manager
- Using ports collection
- Installed with OS: TridentOS, DragonFlyBSD, GhostBSD

Installation of X Window System

Packages

```
# pkg install xorg
```

Ports
collection

```
# cd /usr/ports/x11/xorg  
# make install clean
```

Installing X11 on FreeBSD

Add user to video or wheel group

- # pw groupmod video -m kili | |
pw groupmod wheel -m kili

Add to /boot/loader.conf:

- kern.vty=vt
- kern.vt.fb.default_mode="1024x768"
- i915kms_load="YES" only on newer Intel GPU (requires install of drm-next-kmod)

X11 Configuration

X11 Configuration

Configuration files paths:

- Single file configuration:
 - /usr/local/etc/X11/xorg.conf
 - Everything in one place
 - Horrible to manage on long run
- Multi-file configuration:
 - /usr/local/etc/X11/xorg.conf.d/
 - screen-resolution.conf
 - driver-vesa.conf
 - driver-intel.conf
 - Can split configuration to multiple files
 - Can use multiple drivers
 - Looks nice & easy to manage



I use single file since I often make changes and I am too lazy to open many files ;P



X11 Configuration

- My config file:

```
Section "ServerLayout"
    Identifier    "X.org Configured"
    Screen      0 "Screen0" 0 0
    InputDevice  "Mouse0" "CorePointer"
    InputDevice  "Keyboard0" "CoreKeyboard"
EndSection
```

X11 Configuration

Section "Files"

ModulePath "/usr/local/lib/xorg/modules"

FontPath "/usr/local/share/fonts/misc/"

FontPath "/usr/local/share/fonts/TTF/"

FontPath "/usr/local/share/fonts/OTF/"

FontPath "/usr/local/share/fonts/Type1/"

FontPath "/usr/local/share/fonts/100dpi/"

FontPath "/usr/local/share/fonts/75dpi/"

EndSection

X11 Configuration

```
Section "Module"
```

```
    Load "glx"
```

```
EndSection
```

```
Section "InputDevice"
```

```
    Identifier "Keyboard0"
```

```
    Driver "kbd"
```

```
EndSection
```

X11 Configuration

```
Section "InputDevice"
    Identifier "Mouse0"
    Driver     "evdev"
    Option     "Protocol" "auto"
    Option     "Device"  "/dev/sysmouse"
    Option     "ZAxisMapping" "4 5 6 7"
EndSection

Section "Monitor"
    Identifier "Monitor0"
    VendorName "Monitor Vendor"
    ModelName  "Monitor Model"
EndSection
```

X11 Configuration

```
Section "Device"
    ### Available Driver options are:-
    ### Values: <i>: integer, <f>: float, <bool>: "True"/"False",
    ### <string>: "String", <freq>: "<f> Hz/kHz/MHz",
    ### <percent>: "<f>%"
    ### [arg]: arg optional
    #Option "ShadowFB"          # [<bool>]
    #Option "DefaultRefresh"    # [<bool>]
    #Option "ModeSetClearScreen" # [<bool>]
    Identifier "Card0"
    #Driver "vesa"
    Driver "intel"
    BusID "PCI:0:2:0"
EndSection
```

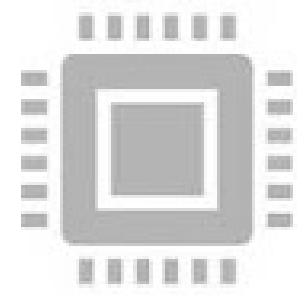
X11 Configuration

```
Section "Screen"
    Identifier "Screen0"
    Device "Card0"
    Monitor "Monitor0"
    SubSection "Display"
        Viewport 0 0
        Depth 24
        Visual "TrueColor"
        Modes "1920x1080" "1366x768" "1280x768" "1024x768" "800x600" "640x480"
    EndSubSection
EndSection
```

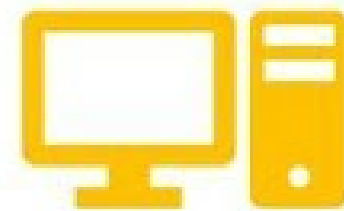

X11 Configuration - Summary



4 of 5 people won't need to configure X Window System manually



Those who do this by hand are unlucky few, who use strange hardware configuration



Linux configuration files for X Window System have different location depending on distribution or even distro version



Linux tries to hide this mess switching to Wayland



Wayland is good – I want to use it on BSD, so I can forget about this presentation!



Questions?



Thank you

- E-mail (SHA256):
707a2d59fdd3cd1305f00aff01a21464ac3e706496b39d1072037324c29a5837 -
- E-mail: bWljaGFsQGtpbGlqYW5lay5wbA==
- Twitter: aHR0cHM6Ly90d2l0dGVyLmNvbS9raWxpamFuZWs=