

# Misc. Shell

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Control – C

Control – Z

Control - V

# Process Management

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fg

bg

jobs

ps

kill

# What is a window manager?

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Graphical Framework

X11

Graphical “Prettyness” and user interaction handling

Window Manager

Metacity for Gnome, Kwin for KDE

Desktop Environment

Set of tools in a typical desktop for every day user

# Window Manager

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Responsible for the physical management of windows on a desktop

Theming

Borders (Min/Max Buttons)

Moving / Resizing

Multiple Desktops etc.

# Desktop Environment

## GNOME

Based on the GTK toolkit for creating applications.

Includes

window manager (Metacity)

GVFS – virtual filesystem

Gconf – settings

GTK+

Gnome-Panel (Taskbar, application menus etc.)

# Desktop Environment

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## KDE

Based on the “Qt” (formerly owned by trolltech, now Nokia) framework.

KHTML

Kwin Window Manager

KDELibs

# Gnome vs. KDE

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GTK – Gnome Toolkit

QT – cute

Paradigms for creating applications

Gnome / KDE – More than a toolkit difference

Paradigms (dcop vs. dbus etc. )

User interface styles

# An Exception...

A “Desktop Shell” is both a Window Manager and *partial* desktop environment.

Ex: Enlightenment DR 17

Includes full window management ability

Built in toolkits! (2!) (ETK, EWL)

Some basic features, taskbars, application menus, settings all *BUILT IN!* Not their own apps!

# SSH

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## A Secure SHell

# Networking 101

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Localhost

Routing

Hostnames

DNS lookup

Intranet

/etc/host

# Terminology

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localhost / loopback / 127.0.0.1

The name your local machine calls itself.

Hostname

A domain name for a machine (abc.com, dhcp0001.serverx.comcast.net)

DNS – Domain Name Server

You ask it who “abc.com” is and it gives you an IP

# Intranet / Internet

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## Internet

The big world-wide network of computers.

## Intranet

A local network within an organization.

## /etc/hosts

Aliases. Can add your own 'names' for commonly used servers (aka eniac = eniac.seas.upenn.edu)

## Port

A channel for network communication. Computers have many. Common ones: ftp:21, ssh: 22, smtp: 25, http:80

# OpenSSH

OpenSSH is a commonly used set of tools for communication over SSH.

sshd – an ssh server, allowing for ssh connections. Default over port 22.

Installs by default with ssh on most computers.

Server started with (On Ubuntu)

```
sudo /etc/init.d/ssh start
```

```
sudo /etc/init.d/sshd start (Gentoo)
```

# Remote login

SSH's most common use – for providing a remote terminal.

Command is simple

```
# ssh username@hostname
```

Can daisy chain as long as you'd like (ssh from within ssh from within ssh ...)

# Tunneling (-L)

**CAUTION** – This topic requires a little bit more knowledge about networking that is appropriate for this course.

**HOWEVER** – SSH Tunneling is extremely useful, and as such if you wish to know more about it please do see me or look up the -L and -R commands in SSH.

Basic idea: A port on the local (or remote) host can be redirected through the ssh port (on 22) and opened on the remote (or local) side.

Allows you to access port 80 from somebody else's machine, for example. (If your port 80 was blocked, could be useful)

# Public Private Key I

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SSH has many authentication methods.

Passwords are the simplest.

“Keys” are more convenient and more secure.

You encrypt everything you send with your 'private key' and remote can decrypt with 'public' key. RSA came up with the math behind this.

# Public Private Key II

ssh-keygen to generate public / private keys

Put private key (id\_rsa) in YOUR ~/.ssh directory

Add your public key to ~/.ssh/authorized\_keys on the remote host.

Thats it! Next time you type ssh eniac it'll just work! and be secure!

# X11

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A network transparent windowing system for bitmap displays.

Network transparent – works and can display images / windows across the network with little effort

Windowing – provides support and management of individual windows on a display.

X is huge, powerful, ubiquitous

# X Forwarding

With SSH you can forward an X connection.

`ssh -X` forwards the X connection to allow you to open X windows from the remote host locally.

`ssh -Y` is the same thing but with less security.

Good idea to use the `-C` (compression) flag!

# Other tools built on OpenSSH

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Scp

Secure copy – copy a file to another host via ssh

Rsync

Really powerful file synchronizer

Non-SSH network tools

Ping - “ping” another server, see if its alive

Wget – download a URL