A Quick Introduction to Linux

Systems Administration

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A little history

- 1969: Unix
  - Developed be Brian Kernighan, Dennis Ritchie, Kenneth Thompson, et al. at AT&T's Bell Labs
  - Networked, Multi-user, Multi-tasking operating system
  - Perhaps the most influential operating system in the world today
- 1991: GNU/Linux
  - The linux kernel started as a personal project of Linus Torvalds when he was a student in Finland
  - The core utilities initially came from the GNU project started by Richard Stallman in the 1980's
  - One of the largest and most successful FOSS projects
  - Not Unix - but close enough
  - Extremely flexible, inexpensive, reliable, and well-supported server operating system[1].

[1] It's good for more than just servers, but that's what we care about here.

Linux Distributions

There is no single company or organisation that distributes Linux, and there is nothing that stops any of us from distributing a version of our own. The various "versions" of Linux are called *distributions*. Some well known distributions include

- Debian
- Ubuntu
- Red Hat
- Centos
- Fedora
- Suse

but there are over 100 Linux distributions.

The Linux File System

Linux filesystems are organised into a tree whose root is simply labeled '/'. The top level subdirectories are

- /bin
- /boot
- /dev
- /etc
- /home
- /lib
- /media
- /mnt
- /opt
- /proc
- /root
- /sbin
- /srv
- /tmp
- /var
- /usr
- /usr/bin, /usr/sbin, /usr/src, /usr/local

The Shell

We interact with Linux using a *shell*, a utility program that provides an command line and a scripting interface. There are many shells available. but we will primarily use Bash. There are some Bash quick references on the I: drive.

Users, Groups, and Permissions

Our systems have only one user right now, the root user (with our typical password). We can, and will, add new users with the `adduser` command.
Users belong to one or more groups. We can use groups to assign rights to a collection of users.
Files and directories have permissions. Those permissions are grouped into three sets: permissions for the owner, permission for the group, and permission for everybody else.

Sudo

Only idiots log in as root under ordinary circumstances, and usually we don't allow remote access to root[2]. Instead, we use sudo when we need elevated privileges. See the l: drive for a link to the Introducion to Sudo article.

[2] Expect a ticket for this RSN