Linux Administration

Where to start

A Linux administrator's day

- Dealing with the black screen (writing scripts) requires a Linux admin to have some diagnostic and architectural thinking. BASH scripting is covered in section 3.
- Handling users and their appropriate accounts, security, privileges. In addition to deactivating "dormant accounts". User management is covered in section 8.
- Backing up important data: Taking backups on time, ensuring secure storage of backup files, and making sure the backup media can be used for a restore, is one of the most vital Linux admin activities. Backup is covered in section 11.
- Package management: confirming that the OS is up to date, installing any required security or operating system patches makes a Linux admin's life a lot easier by mitigating the risks of system failures or hackers attacks. Package management is discussed in the next section

What else?

- System checking: a famous saying goes like this "a good system administrator should not be a *fire fighter*". This implies that a Linux admin should anticipate problems before they happen, instead of waiting for the failure before dealing with it. Performance analysis and system monitoring is covered in section 23.
- Finding help: an administrator is not expected to be a "walking book". Linux has a huge number of commands, with a lot of different options and arguments. Effectively using the man pages, and figuring out how a specific command works is an indispensable skill. We discuss man later in this section.

Linux flavors

- All Linux *types* have the same kernel. They differ in some additional components, how they handle specific tasks like software installation and package management, among other things.
- If you have a look at "Linux Distributions" on Wikipedia https://en.wikipedia.org/wiki/List_of_Linux_distributions, you will find dozens of them. A lot of which you may have even not heard of before. This is because Linux is *open source*. Which means, anybody can grab a copy of the kernel, change it, and launch a new flavor.
- The most common Linux you'll ever be working with is one of the following:
  - Red Hat
  - Debian
  - SUSE
- Choosing among Linux distributions depends on factors like: will my software work on it?, does the vendor supply patches regularly?, and does the vendor have decent and fast support?

How to find help?

- When you're all by the black screen, you're only left with the MAN pages.
- Man stands for manual. In it's simplest form, you just type `man command`
- It has several sections, for example:
  - Commands and applications (man 1)
  - System calls (man 2)
  - Library calls (man 3)
  - Drivers (man 4)
  - Files (man 5)
- You can use `more` or `less` command shortcuts for navigation

- For example, to view the documentation for `smb.conf` (SAMBA configuration file), you use the command `man 5 smb.conf`. But to learn the various options of the `smbclient` command, you use `man 1 smblclient`
- The section number is automatically determined by man unless there is a title that is common in two sections. For example, passwd is a command and a file at the same time. So to see the file documentation you have to type man 5 passwd.

Searching for help

- When you want to search for a specific man page use the command `man -k` keyword
- You can also use `man -a` *`keyword`* to display multiple man pages of the topic you want to search for depending on the section
- Use `man -af` keyword to search only in the title
- A lot of commands provide help if you type the command alone without arguments or when you follow it by --help or -h
- If you want to know whether or not a command is installed or want to know it's path, you type `which` *`command`*
- As time passes, and new software gets installed, sometimes the man page get out of date. To update them type the following command:
  Red Hat: `makewhatis`
  Ubuntu, SUSE: `mandb`

Useful Linux commands

- `which` *command*: find the path of a *command*
- `history`: list the commands that you have issued.
- If you want the commands to contain a time stamp, use the following environment variable before using history:
  `export HISTTIMEFORMAT="%d/%m/%y %T "`
- `du:` find the amount of space taken by a file or directory
- `du -h -max-depth=1 *` : find the file and directory sizes in the current location in a human readable format
- `echo > file` : empty a file without deleting it

Other online documentation

- Of course you cannot find everything you need to learn in the man pages. You can consult a number of online sources to get the information you want, among which are:
  - Linux.com
  - Kernel.org
  - Serverfault.com

Introducing the lab

- Throughout this course, we are going to be using – basically – two Linux machines:
  - Centos 6.7
  - Ubuntu 15.10
  - MAC OSX: The host machine (acting as gateway to the internet)
- We may make other Linux installations where appropriate