Linux Administration

A Crash Course

Welcome!

- This is a "crash course" in Linux System Administration
- The goal is to expose you to a broad range of system admin concepts
- Great starting point and overview

Intended Audience

- Anyone interested in Linux administration
- Those that are new to IT
- Experienced IT professionals who want to learn more about the in-demand Linux OS
- Those who want a Linux refresher course

What People Are Saying

"Excellent course on Linux! It is the best way to get started using Linux that I have come across." --Chris

"It's absolutely one of the best courses I've taken." --Idriss

"Fantastic course and very beautifully explained." --John

Linux Boot Process

- BIOS
- Boot Loaders
  - LILO
  - GRUB
- initrd
- /boot
- vmlinux or vmlinuz

Booting

- dmesg or /var/log/dmesg
- runlevels and targets
- telinit (init)
- systemctl (systemd)
- shutdown, reboot, poweroff

System Logging

- The syslog standard
- Facilities
- Severities
  - emergency
  - alert
  - critical
  - error
  - warning
  - notice
  - info

System Logging

- Syslog servers
  - syslogd
  - rsyslog
  - syslog-ng
- Use `logger` to generate your own log messages
- Use `logrotate` to automatically prune messages.

Disk Management - Partitions

- Partitions
- Partition tables
  - MBR - Master Boot Record
  - GPT - GUID Partition Table
- Mount points
  - / - "slash" or the root of the directory tree
- fdisk, gdisk, parted

Disk Management - File Systems

- mkfs
  - `mkfs -t TYPE DEVICE`
  - `mkfs -t ext4 /dev/sdb3`
- mount
  - `mount DEVICE MOUNT_POINT`
  - `mount /dev/sdb3 /opt`
- df
- umount
  - umount /opt OR umount /dev/sdb3

Disk Management - File System Table

- /etc/fstab
- viewing UUIDs and labels
  - `lsblk -f`
  - `blkid`
- creating labels
  - `e2label`

Managing Users and Groups

- Account information is stored in:
  - `/etc/passwd` and `/etc/shadow`
- Accounts have the following attributes:
  - username
  - UID
  - GID (default group)
  - Comment
  - home directory
  - shell

Managing Users and Groups

- Create accounts with `useradd`.
- Delete accounts with `userdel`.
- Modify accounts with `usermod`.

Managing Users and Groups

- Group information is stored in `/etc/group`.
- Create groups with `groupadd`.
- Delete groups with `groupdel`.
- Modify groups with `groupmod`.
- To view group memberships use `groups`.
  - groups [ACCOUNT]
  - groups
  - groups jason

Switching users and sudo

- Use `su` to switch users.
- The `whoami` command displays your account name.
- The `sudo` command allows you to run programs as others.
- To switch users with `sudo`, use `sudo -s` or `sudo su`.
- Use `visudo` to edit the sudoers file.

TCP/IP Networking

- TCP/IP
- IP address
  - xxx.xxx.xxx.xxx (Example: 192.168.12.33)
  - 0.0.0.0 -> 255.255.255.255
- Subnet mask
- Broadcast address

Classful Networks

Class	Network	Hosts Allowed
A	1.0 -> 127.0 Ex: 17.24.88.9	16,777,216
B	128.0 -> 191.255 Ex: 183.194.46.31	65,536
C	192.0.0 -> 233.255.255 Ex: 199.83.131.186	255

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TCP/IP Networking

- Subnet masks
  - Class A: 255.0.0.0
  - Class B: 255.255.0.0
  - Class C: 255.255.255.0
- CIDR - Classless Interdomain Routing
- Private Address Space
  - 10.0.0.0 - 10.255.255.255
  - 172.16.0.0 - 172.31.255.255
  - 192.168.0.0 - 192.168.255.255

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Linux Networking

- Determining your IP address
  - `ip address`
  - `ifconfig`
- hostnames
  - `hostname`
  - `hostname -f`
  - `uname -n`

Linux Networking

- DNS and name resolution
  - host
  - dig
- /etc/hosts
- /etc/nsswitch.conf

Linux Networking

- Network ports
  - well-known / privileged (1 -> 1,023)
  - unprivileged (1,024 -> 65,535)
- DHCP
- Static IP addresses
- Configuring network interfaces
  - RHEL - /etc/sysconfig/network-scripts/ifcfg-DEVICE
  - Ubuntu - /etc/network/interfaces

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Linux Networking

- ip / ifconfig
- ifup / ifdown
- GUI / TUI tools
  - RHEL - nmtui
  - Older RHEL - system-config-network
  - SUSE - YaST

Jobs and Processes

- `ps`
- `Ctrl-c`
- `Ctrl-Z`
- `bg`
- `fg`
- `jobs`
- `kill`

Scheduling Jobs with Cron

- The cron service runs scheduled jobs
- Use the crontab command to schedule jobs

Managing Software

- Package
- Package Manager
- RPM
  - yum
  - rpm
- DEB
  - apt
  - dpkg

In-Depth Linux Admin Course

- Boot process.
- System Logging.
- Disk management and file system creation.
- Managing Linux users and groups.
- Linux Networking.
- Process and job management.
- Linux shell scripting.
- And much more...

Why Enroll Now?

- Live Question and Answer Session.
- YOU choose the next topic(s).
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