
CompTIA
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#Partnersummit16

Teaching Linux from a Windows Point of View

Mike's Premise

- Windows is the predominant Desktop OS
- While Linux is wildly popular on Servers and Mobile devices, it has comparatively very little exposure on Desktops
- Desktops are the systems most users begin their practical exposure of OSes on the Desktop
- All operating systems have parallel functions, although the procedures will vary.
- **We must take advantage of user's Windows experience to act as a jump off point to accelerate the understanding of Linux!**

How do we go about this?

- We need to determine what we need to teach our students about Linux in as granular a set of topics as possible
- We need to have some amount of assumption as to what Windows users know about the Windows OS
- We need to look at each of these Linux topics and determine which will be easier to learn using user's Windows OS experience
  - Topics that can be taught immediately as we are confident that most if not all Windows users have experience in that subject
  - Linux topics that have excellent Windows' analogies but we cannot assume users have done so in Windows
  - Linux topics that due to substantial variance with Windows requires self-standing lecture

Mike's Four Rules to Decide to Teach a Topic

1. Does this topic properly cover a certification objective?
   - Does this topic make learning a certification topic easier?
2. Does this topic make a student a better tech?
3. Cuz' It's Cool (CiC)
4. Teaching people things they don't need to know (To prove to them they don't need to know it)

The Certification Objectives

- The CompTIA 220-902 exam includes multiple Linux objectives
  - We need to carefully inspect the objectives to get a handle on what exactly CompTIA wants us to know Linux-wise
  - While there are a few references in other objectives, the bulk is under Objective 2.0

- 2.0 Other Operating Systems and Technologies
  - 2.1 Identify common features and functionality of the Mac OS and Linux operating systems

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Best practices

- Scheduled backups
- Scheduled disk maintenance
- System updates/App Store
- Patch management
- Driver/firmware updates
- Antivirus/anti-malware updates

2.1 Identify common features and functionality of the Mac OS and Linux operating systems

Tools

- Backup/Time Machine
- Restore/snapshot
- Image recovery
- Disk maintenance utilities
- Shell/Terminal
- Screen sharing
- Force Quit

2.1 Identify common features and functionality of the Mac OS and Linux operating systems

Organizing Shell Commands

Navigation/Manipulation

- - ls
- - cd
- - pwd
- - mv
- - cp
- - rm

Permissions

- - su/sudo
- - passwd
- - chmod
- - chown

What do we do With the Rest?

- - iwconfig/ifconfig
- - ps
- - apt-get
- - vi
- - dd
- - grep
- - shutdown

Perhaps Tools or
Best Practices will give us a clue?

2.1 Identify common features and functionality of the Mac OS and Linux operating systems

Tools

- Backup/Time Machine DD
- Restore/snapshot DD
- Image recovery DD
- Disk maintenance utilities DD
- Shell/Terminal
- Screen sharing
- Force Quit Shutdown

2.1 Identify common features and functionality of the Mac OS and Linux operating systems

Best practices

- Scheduled backups
- Scheduled disk maintenance
- System updates/App Store — Apt-get
- Patch management — Apt-get
- Driver/firmware updates — Apt-get
- Antivirus/anti-malware updates — Apt-get (maybe)

We Need to Fill in Some Blanks

- Certain Linux concepts not explicitly addressed by CompTIA objectives must be covered to help learners understand A+ objectives
- Basic Navigations
  - File/Directory naming conventions (for navigation)
  - Pipes (for grep)
  - Device naming (sda, eth0, tty, et al) – for dd command
- Permissions
  - Must have a practical example where changing permissions makes a difference
  - Group/User administration (for chmod/chown)
- Job Scheduling
  - Cron/crontab (for scheduling)

Making Better Techs

- Certain basic Linux concepts simply aren't clearly covered by A+ objectives
  - Why Linux exists
  - Understanding distros
  - Making Linux work in a Windows world (Samba)
  - Configuring .conf files
  - Alternatives to vi

Begin vi rant!

The Certification Objectives

- Go with Debian
- Ubuntu is probably a safe bet
- CompTIA has listed specific shell commands
- Introduce Linux via history, motivation, distros, directory structure
- Most Linux training should concentrate on shell commands
  - Basic Navigation
  - Permissions
  - Disk Maintenance
  - Networking (ifconfig, iwconfig, ping)
  - Application Installation/Update (“simple” and “hard”)

A Better Tech

- A technician of the A+ experience level should know a number of core Linux topics not mentioned in A+ objectives
  - Mounting/unmounting mass storage
  - Partitioning and formatting
  - IP address manipulation (dynamic, static, IPv6)
  - Awareness of desktop options

CIC (Cuz it's cool)

- Samba (name a system, join a domain, share a folder)
- Alternative distros
- Alternative file systems

Topics you DON'T need to know

- Compiling source code
- "Weird" distros (Gentoo, Raspian)
- Manually changing desktops (KDE to Gnome for example)

Applying Windows Knowledge to Linux Instruction

What does your Student Know About Windows?

- Distribution
  - Closed Source
  - Install/Upgrade
- GUI
  - Windows Desktop/Metro
- File Structure
  - Hasn't changed since XP
- Applications
  - Windows Store is somewhat recent and not heavily used in the Desktop/Server world
- Command Line
  - They know it exists – but can they do anything

Instruction Strategies

- Most of Windows comes first
  - Installation
  - Mass storage (Installation, partitioning, formatting)
  - “Inner works”
    - Registry
    - Folder structure
    - NTFS permissions/Users/Groups
    - Basic Networking (folder sharing)
  - Application Administration

From here you have two options

Instruction Strategies (Option 1)

- Teach Windows command line, alone (EVERYTHING)
  - You've covered many cmd line utilities already so finish it all!
- At the completion of the Windows command line topics, start a "Linux" Topic
- Introduce Linux via short overview
  - We will do a light version in a moment
- Install Ubuntu Linux (stand alone, Live CD, VM, whatever)
  - Unity Desktop overview
  - System Settings
  - Ubuntu Software Center

Instruction Strategies (Option 1) - Continued

- Introduce Terminal
  - Root, su/sudo
  - Navigation, directory structure
  - Copy, move
- Permissions (Chmod, chown)
- Disk Maintenance (gparted, dd)
- Networking (ifconfig, iwconfig, ping)
- Application Installation/Update (apt-get)
- (Go where you want from here)

Instruction Strategies (Option 2)

- Teach Windows command line and Linux command line AT THE SAME TIME
  - You have to go slow
  - Need separate Linux and windows systems (hard to do with VMs)
- Complete the same Windows topics as in Option 1, however, save Windows CMD line till later.
- Introduce Linux via short overview
  - We will do a light version in a moment
- Install Ubuntu Linux (stand alone, Live CD, VM, whatever)
  - Unity Desktop overview
  - System Settings
  - Ubuntu Software Center

Instruction Strategies (Option 2) - Continued

- Introduce Windows CMD shell and Linux Terminal side by side
  - Administrator, Root, su/sudo
  - Navigation, directory structure (Windows then Linux)
  - Copy, move (Windows then Linux)
- Permissions (Review NTFS, compare to Linux permissions)
- Disk Maintenance (Review Windows tools, gparted, dd)
- Networking (ipconfig/ping in Windows, ifconfig, iwconfig, ping in Linux)
- Application Installation/Update (Windows store, apt-get)
- (Go where you want from here)

Sample Linux Intro

Why Linux? A Brief History

- Unix was the dominant OS in academia since the early 1970s
- Originally given away by AT&T
- Post AT&T breakup sold by Bell Labs
- The Free Software Foundation
  - GNU
  - Copyleft
- GNU/Linux
- Distros

Operating System Distribution

- Windows - Proprietary
- Linux – GNU
- Distro Tour!
  - Ubuntu
  - Mint
  - Fedora/Red Hat
  - Gentoo
  - Raspian
  - Android

Graphical User Interface

- Windows – The Desktop (Metro or Modern)
- Linux – Gnome, KDE, Unity

Applications

Windows – Self standing programs, Store

Linux – Repositories

Questions?

- Mike Meyers
- 281-773-8160
- michaelm@totalsem.com
- desweds