ULI101

Week 06b

Week Overview

- Installing Linux
- Linux on your Desktop
- Virtualization
- Basic Linux system administration

Installing Linux

- Standalone installation
  - Linux is the only OS on the computer
  - Any existing data on disk will be erased
- Multi-boot setup
  - A boot menu allows the user to select the desired OS
  - The installation process will take some of the free disk space from OS already installed
  - Back up important data before proceeding
  - Install Linux last, as other operating systems may not offer a multi-boot option
- Virtualized installation

Where to install Linux?

- Desktop
  - Personal use or corporate use
  - Open Source community member
    - Very good products
    - GPL: Free
- Server
  - Very popular as part of LAMP stack
    - Linux, Apache, MySQL, PHP
  - Open source and cost benefits

Linux On Your Desktop

- If you would like to use your own Linux OS, you will need to install it
  - Having your own Linux system offers a great learning opportunity and gives you access to a large library of software
- The installation process transfers the live image to a disk (or flash memory) and configures the system
  - The OS requires compatible hardware
- For most distribution the installation involves a guided graphical environment and it is easy to accomplish

Linux on the Server
(vs. Windows)

- Stability
  - Greater reliability, less crash, better for large number of processes because of UNIX roots
- Security
  - Unix security roots, less vulnerable to virus and malware
- Hardware
  - Slim, trim, flexible and scalable
- Total Cost of Ownership
  - Licensing and community-based
- Freedom

Virtualization

- Virtualization requires a compatible processor – not all processors support that feature
  - Most recent multi-core processors support virtualization
- The virtualized OS is installed and run in a window under another OS
  - The installation can be usually completed from an ISO image
  - One or more virtual machines can be run at the same time
  - The guest OS shares the hardware with the host OS and possibly other virtualized systems
  - Special software is used to manage the entire process this is the “hypervisor”
  - The guest systems have network access through the host

Virtualization Software

- The selection of virtualization software (which allows creation and running of virtual machines) depends mainly on the host OS, although some are cross-platform
- Other considerations as to virtualization software may be features, support, price and/or personal preferences
- Popular VM software for Windows and MAC include:
  - VMware
  - Oracle Virtual Box
- Popular Linux virtualization software included KVM and XEN

Server Virtualization

- Major market today

- Benefits
  - Consolidation of servers
  - Resource sharing/ increase utilization
  - Energy efficiency
  - Dynamic (change config without reboot): scalability and elasticity
  - Basis for CLOUD computing

Virtualization Benefits

- Software testing
  - Try a new OS without changing your existing one
  - Study malware
- Network simulation
  - Build entire networks on your laptop!
- Server consolidation
  - Run multiple servers on the same physical computer
  - Saves hardware costs and energy
- Easier disaster recovery
  - A virtual machine is stored as a single file on disk

Virtualization Pros and Cons

	Pros	Cons
Standalone	Fast and Simple Example: refurbish old PC	All resources are committed to a single OS
Partition	Can boot one system with multiple OS Example: Enable Mac to run Windows	Resources are partitioned
Virtualized	Run multiple OS on single system Example: Consolidated system on laptop or machine room	Virtualization overheads

Basic Linux System Administration

- Running your own system requires completing some administrative tasks, such as:
  - Updating the system
  - Installing and removing software packages
  - Managing users and hardware
  - Running backups
  - File and printer sharing
- Most Linux distributions have GUI applications which allow you to complete the above
- Keep in mind, that seasoned administrators tend to use the command line to manage their systems

Software Packages on Fedora

- Fedora offers and easy to use GUI interface to manage software packages on your system
  - This is used to install, update and remove software
- This utility connects to an on-line repository to access thousands of free software titles
  - The system is configured to find the nearest mirror automatically
- Other software can be obtained from other repositories, but you will need to configure your system to connect to them
  - You may want to check out the RPM Fusion repository and it contains multimedia libraries