

Linux Installation
Monday, January 12, 2015, 12:45 PM

Chapter 2 & 3

- review

- Name 3 design philosophies of UNIX/Linux



• Name two most prominent Linux "families" today

Objectives for today

- Choose best distribution for your needs
- Download a "Live" or "install" image
- Use a "Live Session" to test system requirements
- Understand disk partitioning

Planning installation

- SE Linux (security enhanced) NSA
Enforces ACL ("Access Control Lists")
in the Kernel (on by default)
- GUI?
 - Do you need a GUI or just a command line?
- Software + Services
 - What will this system be doing?
 - Serving web pages?
 - Graphic arts?
 - Hacking your neighbors wi-fi router?
- Disk Encryption
 - Do you work for a company with sensitive data?
 - Government?
 - NFL?
 - Encryption built into the file system.
- Requirements
 - 64 bit 32 bit processor?
 - 512 mb 4 GB memory?
 - x86 x86_64 or ARM?
- Which OS?
 - Fedora or RHEL?
 - Fedora
 - updated twice per year (new version)
 - Rolling updates
 - old version quickly becomes outdated and unsupported

Address Bus? ←
PAE 36 or 32

Address = 40 bit

Memory Bus → 32 bit
64 bitCPU
Internal Registers 64 bit
4 bit

- RHEL

- Red Hat Enterprise Linux
 - a stand alone snapshot of Fedora
 - Updates small
 - Supported for 5 to 8 years
 - Targeted to business
 - Stable platform
 - Package updates + support very slow
- CentOS
- RHEL code (open source right?)
 - Fedora speed of updates + availability
 - Best of both worlds



~~Non-commercial voluntary~~
 Install media used to be enemies of Red Hat → now embraced. Why?
 - <http://getfedora.org> (url has been updated)

- Let's try Fedora First

- Download a Workstation ".iso file"
- There are server versions (No GUI)
 - net install versions
 - install packages locally
- There are "spins" Fedora software with different user interfaces
- Why? Preference + target
- Choose 1 spin and let's install it.

- Manual Install

- Partitioning
- Free space on disk
- Partitions (like a slice)
 - /dev/sda1
- Partition Table
- LVM
 - ↳ Dynamic way to manage partitions
 - ↳ File system
 - ↳ what allows you to access places of memory
- Primary / Logical / extended partitions
 - ↳ Left over from DOS era
 - ↳ LVM handles this

structure of partitions

Windows uses letters C:\ D:\ E:\ F:\
 ↳ Linux uses an inverted tree, the top is "/"
 _{root or}

→ Linux systems needs basically 3 partitions
 / Entire OS/filesystem resides

/boot → where the minimum files required to start the OS or installer ~~are~~

swap → special file system to extend your physical
 - usually 1 to 1.5 times size of RAM ^{memory}

If you know your ^{why?} application setup

- Database
 web server

- you can break other partitions out _{own}

- set /var on its own hard disk for instance

- /var/log is where system logs live, good candidate
 why?

- /home → user accounts - why?

RAID (see supplementary slides)

- Allows you to combine single physical disks into
 a larger logical array of disks.

- RAID 0 stripe

- RAID 1 mirror

- RAID 5 Disk stripe w/parity

- RAID 10 Combo of 0+1

- Downside, once RAID is set - can be difficult to change

- Not backup!!!

Chapter 3 → Step by Step Installation

Objectives

- Run a "Live-Session" using gnome-disks

- Perform in place upgrade from ^{using} Fedora 20 to 21

- Use _{based} image install

Modify ^{an} boot parameters

- Install software

Most new installs will happen in a "Virtual" environment

Via Virtualbox

Vmware
Hyper-V

KVM/Qemu

Docker/Rocket

live
→ media

Operating system runs in RAM (memory) not
→ touching underlying hard drives + OS-
for online banking → why?

→ OS is volatile. When power goes -- all data goes.

Checksums

→ You can use tools to compute a checksum
to make sure your download is not corrupt
→ Fedora uses below SHA256
(see

http://fedoraproject.org/wiki/How_to_create_Fedora_20_installation_media
SHA256 checksums

On Linux - there is a built-in tool called sha256sum
Microsoft Pressed Book checker
<http://msdn.microsoft.com/en-us/library/aa367242.aspx>

In class Demo

Summary

- Installed an OS from an ISO image
- Understood booting messages
- Understood Anaconda, Linux Redhat installer
- Partitioned Hard Drives
- Upgraded an install of Fedora 20 to Fedora 21

Assignment -

LAB and Review Questions