System Installation

THE LINUX FOUNDATION

Installation

- In the early days of Linux, installation was a back-breaking process, involving downloading dozens of floppy disks (through slow telephone lines) and loading them one by one
- Eventually, distributors developed CD-based installations which were far more user-friendly
- As the size of the installation gradually expanded, DVD-based methods also became widespread, and USB-based methods are now probably the most frequent

Installation Choices

- The early incarnations of installations based on optical media often presented one with many configurable choices, and many still do, especially as regards software selection
- Unlike vendors of other operating systems, Linux distributors offer not just the basic operating system and utilities, but also a wide range of applications and utilities
- On other operating systems, these ingredients are separately installed (after the basic system setup) by downloading and/or purchasing from a potentially large number of vendors
- Installation choices start with which desktop manager to use (usually GNOME or KDE), etc., and then cascade into many other alternatives

Installation Choices (Cont.)

- Often the new Linux user has neither the knowledge or experience to evaluate properly parameters and consequences of these choices, much less their long range repercussions
- Most recent distributions have attempted to limit the number of choices made during the installation to a small number of basic questions, and to have the default answers be the most commonly useful ones
- Detailed software selection can be made post-install through the use of the various graphical package management systems that are in common use

Multi-boot Environment

- Sometimes Linux is installed in a multi-boot environment alongside other operating systems
- In this case, an essential step is to rework the disk partitioning scheme to open up enough free space for the installation
- The most user-friendly installation media offer this as part of the initial installation process, by running **gparted**, a widely used graphical partition manipulation program

Live CDs, DVDs and USBs

- Virtually all major Linux distributors offer live CD, DVD and/or USB versions
- These make it possible for you to try out Linux without actually touching your hard disk
- It is always a good idea to try this first as these disks do a great job of detecting and configuring hardware and can help you avoid problems that may arise later when doing the real installation
- The live media usually include a copy of disk partitioning utilities, including gparted
- Finally, the live media always have an *Install* icon you can click on, once you have made sure your hardware can be handled by the Linux distribution

Live CDs, DVDs and USBs (Cont.)

- This gives you a chance to play with Linux before doing the real installation, as they include all major applications you are likely to need
- If you use live media, performance can be slow, and more memory might be needed than is available
- It is even possible to never install Linux on the hard disk, but be able to save your state and work on a file or partition on the disk, or on removable media such as USB disks

Network-based Installation

- Many distributions offer the option of doing a network-based installation, where you boot either off a small CD or USB stick with just a few files, or from within another operating system, and then download the remaining files required through the Internet
- In fact, you can often choose to do a network-based installation after booting off a full installation CD
- This is often useful when performing either a simultaneous installation on a number of machines, such as in a corporate environment, or a classroom, or when requiring a standard image, or set of software and system administration features
  - Red Hat-based systems often use the **kickstart** utility where one constructs a script itemizing the disk partitioning, software selection etc., and then stores that on the central server which holds the installation media
- This can also be combined with **PXE** (**P**reboot e**X**ecution **E**nvironment) to boot using the network interface alone without requiring the insertion of any boot media

Linux Installation Guide

- For a detailed guide to approaching and accomplishing Linux installation in a variety of scenarios, see the guide prepared by The Linux Foundation
- As explained in this document, one can also do an install of a Virtual Machine (VM) using a hypervisor such as Oracle VirtualBox or those distributed by VMWare or Linux's native hypervisor, KVM
- This is less dangerous and avoids a dual boot system, at a cost of reduced performance; however, for this course, such a virtual machine is more than adequate