Linux Installation Workshop

Learning Objectives:

- To understand what Linux and Open Source Software is.
- To resize a windows partition and install Ubuntu Linux using the Ubuntu 6.10 Live CD.
- To gain the knowledge necessary to use Linux for day-to-day computer needs.
- To gain experience using the programs outlined in the presentation

Required Materials:

- Computer to install on
- Projector
- Live CDs (One for use during the demonstration, one for each attendee)
- White board and markers

Session Narrative:

Introduction: (3-5 minutes)

- Introduce Ourselves
    - Names
    - Majors
    - Time at Clarkson
- Depending on the number of attendees, have them introduce themselves
- Their hopes for the demonstration (what they hope to learn)
- Linux Intro
    - *What is Linux?*
        - *From Wikipedia, "Linux is a Unix-like operating system family that uses the Linux kernel. A Linux system which includes system utilities and libraries from the GNU Project is sometimes referred to as GNU/Linux. ..." (The article continues to discuss the development history, which is certainly not the most interesting of projects. The article then goes on to say) "... Linux is a prominent example of free software and of open source development. Its underlying source code is available for anyone to use, modify, and redistribute freely, and in some instances the entire operating system consists of free/open source software."*
        - *So what exactly does that mean? It means that Linux is a family of operating systems, similar to Windows or Mac, but instead of being developed and sold by a company for profit, it is developed by the community, and, for the most part, distributed for free.*
        - *One relatively unique thing about Linux is that there are variety of Distributions. This is similar to different releases of Windows (Vista, XP, 2000...), but they are not linearly developed, but instead, more of a tree-like structure.*
          [Display Timeline Image]
          Different groups work on different distributions (distros as they are commonly called), and different distros are designed for different purposes and audiences. A distro that has recently become popular and is targeted at new users is Ubuntu. Today we will be showing you the latest version, 6.10 (or Edgy Eft as it is unofficially named).

Main Session Part I (Information and Installation): (20-25 minutes)

- Partitioning
  - *What are Partitions?*
    - *Partitioning a hard drive makes it appear to be more than one hard drive. Often, each partition is formatted for different operating systems. Today we are going to show you how to partition a hard drive on a machine that currently runs Windows such that it can boot into either Windows or ubuntu. This is known as dual booting.*
  - Go through the partitioning process
- Installation
  - Complete the installation (take questions, and then continue while the installation is progressing
- Information
  - User types and permissions (User, Sudo, Root)
    - *In most linux systems, there are three categories of users: standard user, user with "super user do" (sudo) ability, and root.*
      - *By default there is a single root account. A root account has unrestricted access to the entire system, and should therefore be protected accordingly. Part of this security is avoiding use of the root account for everyday activities.*
      - *Non-root users have access to only their files, which, for everyday computing, is sufficient. A user with the sudo permission can execute single commands, or a series of commands, acting as a sudo user (after, of course, verifying their identity by entering their password). A web comic from XKCD demonstrates this concept quite well.*
      - *In general, only the owner of a computer needs to know the root password, and only trusted users should be given sudo access (as they can access anyone, including other sudo user's) files.*
  - File system structure
    - *Every operating system has a file structure (or organization system for the files on the hard drive). You are probably already familiar with the windows structure (C:\Program Files\, C:\Documents and Settings\Username, C:\Windows, etc.). There is a different, yet in many ways, similar, file system for Ubuntu. In Ubuntu (and many other linux distributions) the file system is structured*:
      - */ - root directory*
      - ***/home** - where directories are contained for each user, example:*
      - ***/usr** - pronounced 'user' and contains Linux commands and utilities that are more specific to user-level applications*
        - ***/bin** - binary executable programs*
        - ***/lib** - program libraries, similar to Windows 'dll' files*
        - ***/sbin** - more executable programs and Linux utilities for administrative purposes*
        - ***/doc** - documentation*
        - ***/src** - source code to programs*
      - ***/tmp** - temporary work files*
      - ***/etc** - configuration files*
        - ***/rc.d** - scripts used during boot and shutdown process*
        - ***/sysconfig** - default configuration files*
        - ***/sysconfig/network-scripts** - network scripts*
        - ***/sysconfig/daemons** - special programs that run in background, such as print spooling*
        - ***init.d** "init" scripts, used to start and stop services (referred to by the rc.d directory)*
      - ***/bin** - binary executable programs that all users need (these are more specific to system stuff)*
      - ***/dev** - device files that control drives, terminals and any equipment attached to the server*
      - ***/var** - application specific files used to store states of things (think things that can vary, or in programming the concept of variables)*
        - ***/log** - log files containing system usage and errors*

        - ***/spool*** *- where spooled files are stored during print spooling process*
        - ***/mail*** *- where Email files are stored until retrieved by client Email program*
    - ***/proc*** *- system files populated at boot by the kernel to keep track of system and processes*
    - ***/root*** *- root's home directory*
    - ***/opt*** *- other options (usually where optional packages and non-standard (i.e proprietary or not standard packages) stuff is installed to*
    - ***/sbin*** *- more executable programs and utilities (used by the super user for administation)*
  - *It certainly isn't necessary to memorize this type of information as it is widely available on the internet (Just google something like "linux filesystem structure")*
- Menu structure
  -
- Cool features
  - *Ubuntu has a variety of neat little features, some of which are more useful than others. Some of the more interesting ones include:*
  - *Sized icons - Desktop Icons can be stretched to larger (or smaller) than normal so that important icons can be made to stick out.*
  - *Middle click - Middle click will copy any selected text in most programs, and another middle click will paste it (similar to ctrl+c/ctrl+v without the keyboard)*
  - *Window focus - In Ubuntu, window focus (or what window is selected) works slightly differently than in windows. When you click a window in the background, it comes forward, but if you hover over it, you can preform actions such as scroll without bringing it to the foreground.*

Main Session Part II (Programs and Terminal): (20-25 minutes)

- Terminal
  - Tab Completion
  - Help - man
  - Navigation
    - cd, ls, pwd...
  - File Management
    - mkdir, rmdir, rm, mv, cp...
  - SSH, SCP
- Programs
  - Apt/synaptic
  - System Monitor
  - GEdit
  - Firefox
  - Gaim
  - OpenOffice
  - Beryl (Install)
  - VLC (Install)
  - Banshee (Install and Ipod setup)
  - (mention) Wine
- Virtual Consoles/Workspaces

Conclusion: (3-5 minutes)

- Where to get help
  - Links
- Handout
- Q&A