Operating Systems

Networking for Home and Small Businesses – Chapter 2
Objectives

- Describe the purpose of an OS and identify common operating systems available.
- Perform an actual or simulated installation of an operating system and prepare the computer to participate on the network.
- Maintain the operating system.
Purpose of an Operating System

- Operating system – allows communication between applications and hardware
- Operating system loaded into RAM at startup
  - Parts of an OS
    - **shell** – works with the application
    - **kernel** – communicates with hardware
Purpose of an Operating System

- Types of user interfaces
  - **CLI** (Command Line Interface)
    - user enters commands at the prompt
    - DOS
  - **GUI** (Graphical Unit Interface)
    - uses pictures
    - more user-friendly
## Purpose of an Operating System

**GPL (GNU Public License)**  
**GNotUnix Linux kernel**

<table>
<thead>
<tr>
<th></th>
<th>Commercial License</th>
<th>GPL License</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access</strong></td>
<td>Restrictive in nature and limits what the end-user can do with the code</td>
<td>Ensures everyone has full access to the source code and can participate in enhancements of the product</td>
</tr>
<tr>
<td><strong>Cost</strong></td>
<td>Often very expensive depending on deployment (for example, Windows XP license must normally be purchased for every client machine on a network)</td>
<td>Often released free-of-charge (for example, Linux can be freely installed on as many machines as desired)</td>
</tr>
<tr>
<td><strong>Development Cycle</strong></td>
<td>Very structured development cycle and changes are not quickly available</td>
<td>Developmental cycle is usually less structured and changes are more quickly implemented</td>
</tr>
<tr>
<td><strong>Support</strong></td>
<td>Structured support available for a fee</td>
<td>Less of a structured support arrangement often relying on community (user based) support</td>
</tr>
</tbody>
</table>
Purpose of an Operating System

- Operating System Requirements
  
  (3 resource specifications that need to be given by the manufacturer)
  
  - 1. Amount of RAM needed
  - 2. Hard drive space required
  - 3. Processor type and speed
  - 4. Video resolutions
How to select an Operating System

- Does it support user requirements?
- Does the hardware support the operating system you have chosen?
- What is the level of human resources needed to support the operating system?
Installation of an Operating System

- **Installation Methods**
  - A hard drive can be divided into an OS partition & a data partition

- **Clean install**
  - new system or no upgrade or damaged OS
  - All data on the partition needs to be deleted
  - All application software must be reinstalled

- **Upgrade**
  - replace old OS with new
  - Verify that the hardware resources meet or exceed the published minimum requirements
  - Complete a full backup of all important files and data

- **Multiboot**
  - more than one OS on a PC
  - set up different partitions (partitions are necessary in multi-boot installations)

- **Virtualization**
  - used for servers
  - allows multiple copies to be run
Complete a **pre-installation checklist** for installing an operating system

1. Verify hardware will work
   (meet or *exceed* the published minimum requirements)
2. Make sure installation medium is available (CD or DVD)
3. Complete a **full backup** of all important files and data
4. Determine **file system** (method OS uses to keep track of files – format)
   - supported by Windows include:
     - FAT 32
     - NTFS – Windows file system more likely to be used in an enterprise-level environment because of the level of security
   - ext2
   - ext3
Prepare your computer to participate in the network

- Must have a NIC
- Must have correct configurations
- **3 pieces of information** that must be specified on a computer on a network
  - 1. IP Address
    - identifies the computer on the network
  - 2. Subnet Mask
    - identifies network on which the computer is connected
  - 3. Default gateway
    - identifies the device the computer uses to access the network or Internet
Installation of an Operating System

- Types of configurations
  - **Manual**
    - entered into the computer by the administrator
    - static addressing
  - **Dynamic**
    - each PC requests information from a DHCP server
When Installing an Operating System

- On computers in a networked environment,
  1. The **computer name** makes it easier for users to reference the device when connecting to it to **share resources** and
  2. the **IP Address** must be **unique** on each computer in the **same network**.
Installation of an Operating System

- Describe how to plan for multiple devices on a network.
Operating System Maintenance

- Describe the purpose of a patch
  - a piece of code that can correct a problem or enhance the functionality

- Identify when a patch should be applied
  - Automatic Installation
    - updates scheduled to occur during times when PC is not in use
  - Prompt for Permission
    - notifies end user when patch is available
    - user decides whether or not to download it
  - Manual
    - primarily used for service packs
Operating System Maintenance

- Identify sources of Applications patches
Refer to Ch 2 Lab 2-1 and Lab 2-2 p361-366

- **Start -> Program -> Accessories -> Windows Explorer -> Help -> About Windows**

  What items are available from the About windows option through the Windows Explorer Help menu?

- **Start -> Settings -> Control Panel -> Automatic Updates**

  Which Windows XP Automatic Update option allows you to select the **time** when a Windows update is executed?

  Which OS patch installation method is used when a user is **notified** of a security update for remotely accessing a computer, but wishes not to install this patch? (this will prompt you for permission).
Summary

- An operating system is the most important software in a PC. It is responsible for making all of the components and software applications work together.

- An OS is installed in a disk partition.

- To participate in a network, a computer requires an IP address, subnet mask and default gateway.

- An OS must be kept up-to-date with the latest revisions, or patches.

- Before installing a wireless network an installation plan should be created.