IT Fundamentals

CHAPTER 8:

NETWORKING CONCEPTS AND TECHNOLOGIES

External Network Connections

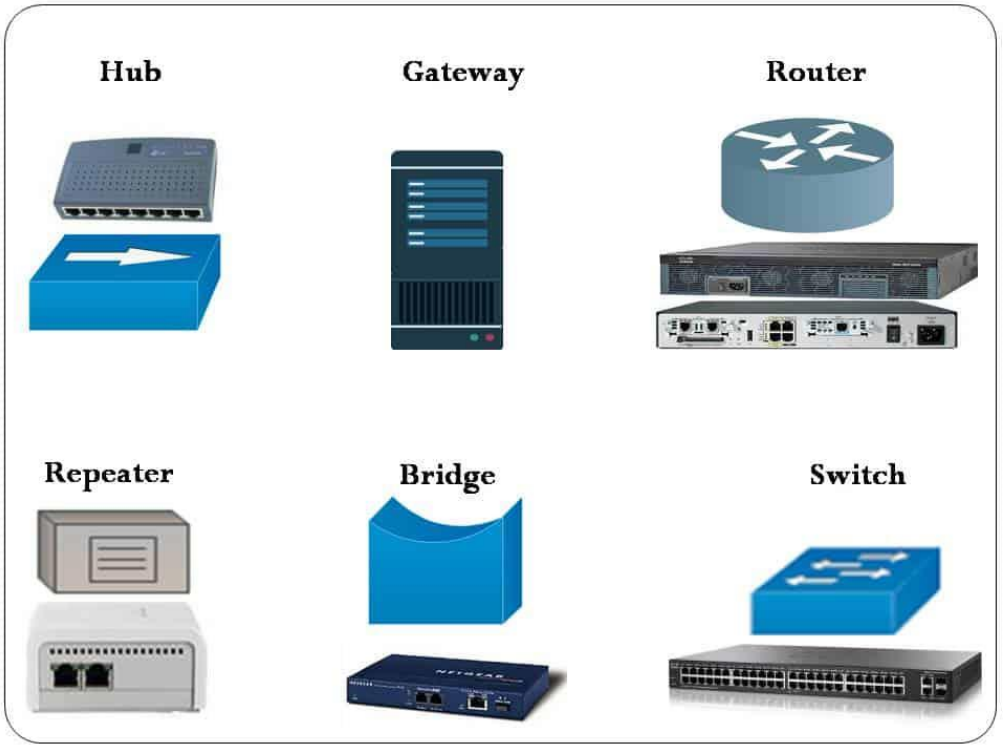
- Telephone/POTS
- DSL
- Cable
- Fiber-Optic Internet
- Satellite
- Cellular networking
- Radio frequency Internet

Internal Network Connections

- Wired
  - Ethernet
  - Copper vs. Fiber-optic
- Wireless
  - WiFi (802.11a/b/g/n/ac)
  - Bluetooth
  - Infrared

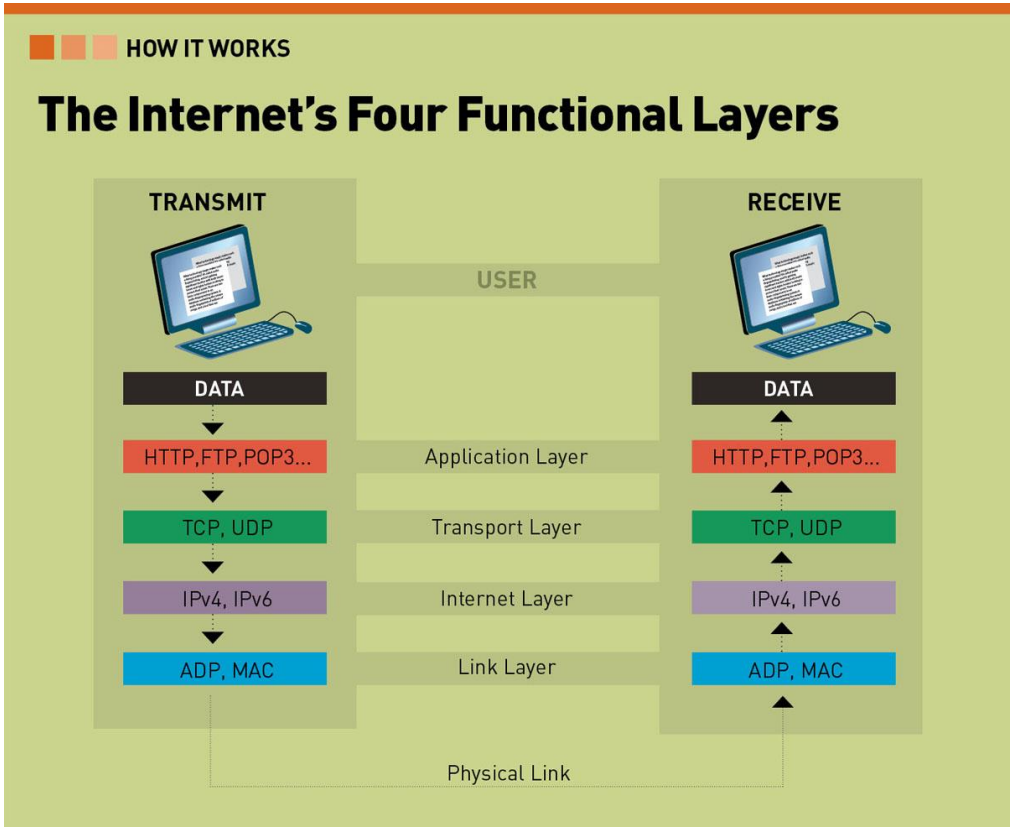
Networking Devices

- Modem
- Switch
- Access point
- Router
- Firewall



Network Protocols

- Language that computers speak
- Transmission Control Protocol/ Internet Protocol (TCP/IP) is the most common one

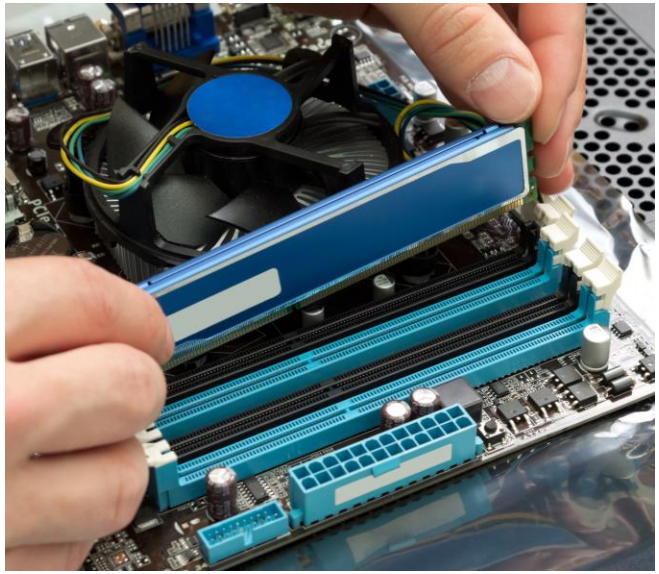


TCP/IP Fundamentals

- Suite of protocols working together
- IP addresses
- Dynamic Host Configuration Protocol (DHCP)
- Domain Name System (DNS)
- Automatic Private IP Addressing (APIPA)
- Public vs. private IP addresses

Network Storage Options

- Local network storage
  - File server
  - Network attached storage (NAS)
- Cloud storage



Basic Steps for Setting Up a SOHO Router

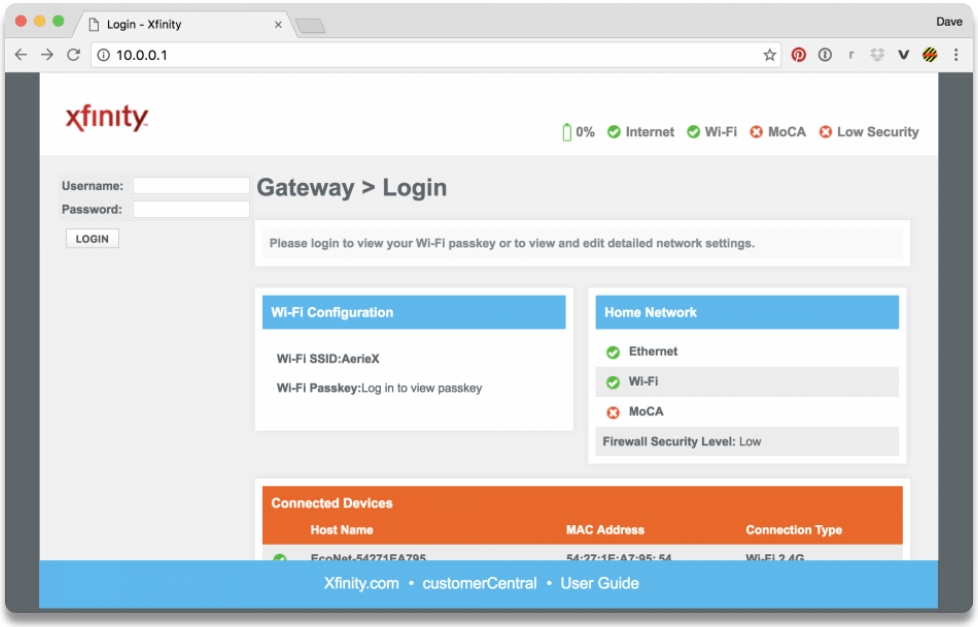
1. Change the router's SSID
2. Change the administrator username and password. Give it a strong password.
3. Enable WPA2 Personal with AES
4. Choose a high-quality passphrase
5. From the client side, select WPA2 and enter the security passphrase to connect

Network Name

- Wireless network name is the Service Set Identifier (SSID)
  - Uniquely identifies a wireless network
  - All clients must be configured with the appropriate SSID

Router Administrator Account

- Change the name of the account (if possible) from the default
  - Makes it harder to hack
- Set a strong password – do not giv e it out
- What to do if you forget the password



Choosing a Passphrase

- This is the password clients will use to access the network
- Generally, not given to clients but typed in by an administrator
- Make sure the password is different than the administrator password

Client Configuration

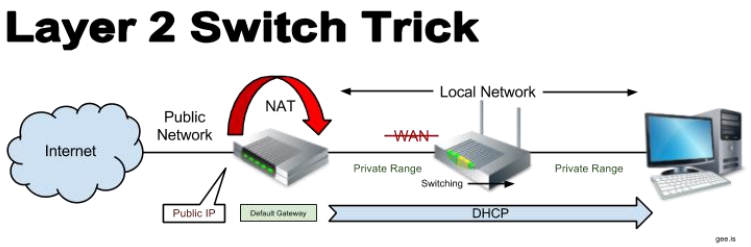
- Search for or provide SSID
- Ensure security is set to the appropriate standard
- Enter the passphrase

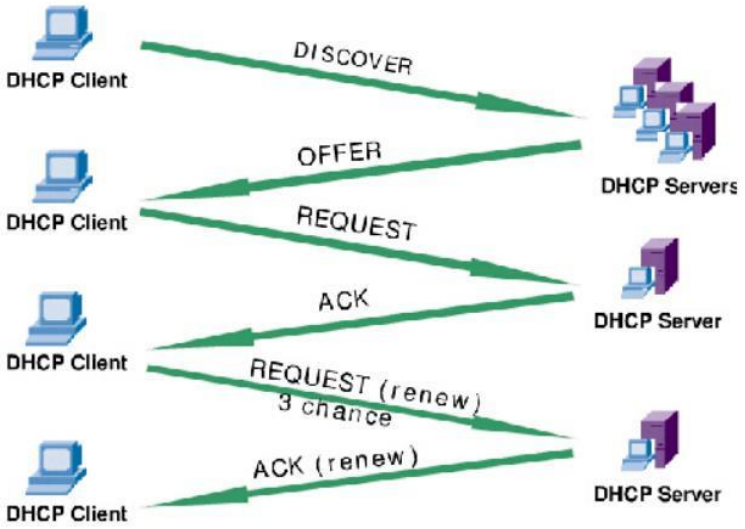
Wireless Security

- Open portals (not secure at all)
  - Captive portal
- Wired Equivalency Protocol (WEP)
- WiFi Protected Access (WPA)
- WiFi Protected Access 2 (WPA2)

Additional Wireless Router Services

- Guest access
- DHCP
- NAT
- QoS
- Firewall





Chapter 8: Networking Concepts and Technologies

- Compare and contrast common Internet service types
  - Fiber optic
  - Cable
  - DSL
  - Wireless
    - Radio Frequency
    - Satellite
    - Cellular
- Compare and contrast storage types
  - Local network storage types
    - NAS
    - File server
  - Cloud storage service
- Explain basic networking concepts
  - Basics of network communication
    - Basics of packet transmission
    - DNS
      - URL-to-IP translation
    - LAN vs. WAN
      - Device addresses
        - IP address
        - MAC address
      - Basic protocols
        - HTTP/S
        - POP3
        - IMAP
        - SMTP
      - Devices
        - Modem
        - Router
        - Switch
        - Access point
        - Firewall
- Given a scenario, install and configure a basic wireless network
  - 802.11a/b/g/n/ac
    - Older vs. newer standards
    - Speed limitations
    - Interference and attenuation factors
  - Best practices
    - Change SSID
    - Change default password
    - Encrypted vs. unencrypted
      - Open
        - Captive portal
      - WEP
      - WPA
      - WPA2