

# Computer Know How Series

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**Basic Networking** – Thursday November 10<sup>th</sup> 2016 @ 2pm

<http://www.aehost.net/morpd> or <http://www.morpd.com>

- 1) What is a network? – A group or system of interconnected people or things.
  - a. What is the ultimate network? \_\_\_\_\_
- 2) Types of networks.
  - a. Labels - Internet, internet, intranet, workgroup
  - b. Descriptions – LAN (Local Area Network), WAN (Wide Area Network), WLAN (Wireless Local Area Network), MAN (Metropolitan Area Network) & SAN (Storage Area Network)
  - c. Topologies – Bus, Mesh, Ring, Tree, & Star (hub)
  - d. Peer-to-Peer & Client/Server
- 3) Hardware/Physical
  - a. ISP (Internet Service Provider) – AT&T, Comcast, CCI, Wave, Frontier – Speeds 1.5-150Mb/s
  - b. Mediums (cable [RG6, Cat5/5e/6], fiber, wireless, etc) – physical network connections.
  - c. Modem (define \_\_\_\_\_/\_\_\_\_\_) – changes medium type between two networks.
  - d. Router – distributes traffic based on a protocol and routing table.
  - e. Switch/Hub – multipoint device to connect many devices.
  - f. Access Point (\_\_\_-\_\_\_) – allows wireless clients access to wired network.
  - g. Server – device that provides a resource to network clients.
  - h. Client – device that uses resources on the network.
- 4) Software/Protocols
  - a. Ethernet – Most common LAN connection offering variety of speeds (ie: 10/100/1000/10000Mb/s)
  - b. TCP/IP – Suite of protocols developed to transport data
    - i. TCP (Transmission Control Protocol) & UDP (User Datagram Protocol) – transport protocols
    - ii. IP (Internet Protocol) – current and most common routed network protocol.
    - iii. Two IP versions – the world is in transition.
      1. Version 4 – 32 bit IP Address (ie: 10.10.10.10 Subnet Mask 255.0.0.0)
      2. Version 6 – 128 bit IP Address (ie: fd00:0000:0000:0000:0000:0000:0000:0001)
    - iv. Common TCP/IP Protocols
      1. Most Important – DHCP (Dynamic Host Control Protocol), DNS (Domain Name System)
      2. Browsing & Email – HTTP, HTTPS, FTP & SMTP, POP, IMAP
      3. Security – SSL (Secure Socket Layer), TLS (Transport Layer Security), IPSec, WEP (Wired Equivalent Privacy), WPA (Wi-Fi Protected Access)/WPA2
      4. Other – ARP, SNMP, Telnet, ICMP, SSH, NTP, VPN & SMB
  - c. Other Network Protocols (Historical) – AppleTalk, Microsoft NetBEUI/NetBIOS, Novell IPX/SPX
- 5) The OSI (Open Systems Interconnection) Model & Internet Models are troubleshooting mechanisms to assist in breaking down problems and ease resolution.
- 6) Examples/Demos
  - a. Identifying your network configuration – IP Address, Subnet, Gateway and DHCP/DNS Servers
  - b. Installing a Modem, Router, Switch, Access Point – Cables Connections and Security
  - c. Securing your Wi-Fi Network – MAC Address Filtering (unlocked), Encryption (locked)
  - d. Installing a Network/Wireless Printer/AIO (All in One) or NAS (Network Attached Storage)

## 7) Links

- a. Computer Network – [https://en.wikipedia.org/wiki/Computer\\_network](https://en.wikipedia.org/wiki/Computer_network)
- b. Ethernet – <https://en.wikipedia.org/wiki/Ethernet>
- c. Internet - <https://en.wikipedia.org/wiki/Internet>
- d. Internet Protocol – [https://en.wikipedia.org/wiki/Internet\\_Protocol](https://en.wikipedia.org/wiki/Internet_Protocol)
  - i. Version 4 – <https://en.wikipedia.org/wiki/IPv4> - [https://en.wikipedia.org/wiki/IPv4\\_address](https://en.wikipedia.org/wiki/IPv4_address)
  - ii. Version 6 – <https://en.wikipedia.org/wiki/IPv6> - [https://en.wikipedia.org/wiki/IPv6\\_address](https://en.wikipedia.org/wiki/IPv6_address)
  - iii. IP Suite – [https://en.wikipedia.org/wiki/Internet\\_protocol\\_suite](https://en.wikipedia.org/wiki/Internet_protocol_suite)
- e. Private Networks - [https://en.wikipedia.org/wiki/Private\\_network](https://en.wikipedia.org/wiki/Private_network)
- f. Wi-Fi Network Security – [https://en.wikipedia.org/wiki/Wireless\\_security](https://en.wikipedia.org/wiki/Wireless_security)
- g. OSI Model – [https://en.wikipedia.org/wiki/OSI\\_model](https://en.wikipedia.org/wiki/OSI_model)
- h. Common Protocols –  
[https://en.wikibooks.org/wiki/Network\\_Plus\\_Certification/Technologies/Common\\_Protocols](https://en.wikibooks.org/wiki/Network_Plus_Certification/Technologies/Common_Protocols)
- i. Networking Basics – <http://www.networking-basics.net/>
- j. Basic Network Diagram – <http://www.aehost.net/networkdiagram/>
- k. Speed Tests – check your Internet speed
  - i. <http://www.speedtest.net> & <http://beta.speedtest.net>
  - ii. <http://speedtest.mycci.net>
  - iii. <http://speedtest.comcast.net>
  - iv. <http://speedtest.att.com>