Network+ Study Guide Taylan Unal 9/7/16-Present

**3.1 Network Adapters**

Network adapters or NICs transmit data over a network. Transceivers accept digital data converting it to digital signals or analog signals. Media converters convert UTP to Fiber Optics, or Fiber Optics to UTP. Only converts in one direction. These both operate at the Physical layer of the OSI model.

MAC or Media Access Control Address is a 48bit number that defines and identifies a network adapter. First 6 values identify the NIC manufacturer, and last 6 identify network adapter. Though burned into firmware, MAC may be changed. ARP protocol is used to identify a Mac address from a device with a known IP; saves MAC address after receiving MAC from target. If MAC is known, and IP isn’t known, reverse ARP can be used.

Modems convert binary data to digital data using digital signals sent on a network medium. Modulation converts, demodulation converts back.

**3.2 Network Devices**

Hubs are devices that send out packets to all devices without examination. They operate at the physical level. Bridges are devices that connect 2+ media segments on one subnet; filtering traffic. While bridges can only process 1 frame at a time, switches handle multiple frames; both devices operate at level 2 of the OSI model: Data-link.

WAP or Wireless Access Points use radio signals to transmit data, because wireless signals are unbounded and Mac address filtering can limit access to network.

**3.3 Internetwork Devices**

A router is devices with multiple network interfaces that connect two or more network segments or subnets. Routing tables can help routers maintain information about all known networks and the next router in its path.

Some switches operate at Layer 3, and feature inter-subnet packet transfers, but routers are still superior because of their additional features.