Week 3 Lecturecast Notes

Title: Network Fundamentals

Types of Network Communication:

Serial communication: offers better connection, high transmission speed and cheaper propagation costs example include Firewire UB, Ethernet

Parallel: VGA Connection, PATA connection, Centronics printer links.

Famous communication protocols include TCP/IP, IPX/SPX and apple talk

Modern Networking Technologies

From 2012 to present:

Ethernet networks now providing up to 400gb/s

Wireless networking: 802.11ax version at 11gb/s

Mobile technology: 5G available at 10GB/s, 6G in the works

Internet of Things

Internet Protocols: ubiquitous HTTP protocol (HTTP/3, also known as QUIC - Quick UDP Internet Connections)

Fundamentals of Computer Networks

The 7 layers of OSI helps us understand how networks function. It consists of 7 layers as outlined below:

7) Application layer: Protocols include HTTP, FTP, IRC, SSH, DNS

6) Presentation layer: SSL, SSH IMAP, FTP, MPEG, JPEG

5) Session Layer: APIs, Sockets, WinSock

4) Transport Layer: UDP, TCP

3) Network Layer: ARP, IP, IGMP, ICMP

2) Data Link Layer: Ethernet, Bridge

1) Physical Layer: Hubs, Repeaters, cables

TCP/IP is the defacto standard for networking due to its role as the core of the internet. It consists of 4 layers which can be mapped onto the OSI model. They include Application Layer, Network Layer, Internet Layer and Link Layer. IP is the backbone of the internet protocol suite. Has 2 versions IPv4 and IPv6.

Basic Network Troubleshooting tools include: PING, TRACEROUTE, NSLOOKUP, DIG, WHOIS, NETSTAT