**Network Fundamentals Lecture 1 and 2 Notes**

**Rough notes**

Decisions, designs, data communication, sender 🡪 recipient, acronyms

7 layer OSI model, TCP/IP stack? Network protocol architecture

Systems management, security

**Important Questions**

What is a computer network?

How does a user communicate to a host?

**Definitions**

Communications network – A way of exchanging information, collaborating, sharing access to information.

Network – A group of devices that are able to communicate with each other via a connected infrastructure

Hardware – Physical connections in a network

Software – Enabler of the hardware, allowing us to make them communicate with each other.

Protocols – Set of rules in a network connection

Interoperable – Any device or system should be able to connect to each other

Protocols – Addressing rules, sending rules, receiving rules, management and verification rules.

TCP/IP – A collection of protocols that govern how data is sent and received across networks.

**Connection oriented (direct connection) e.g. Telephone system**

* Connection setup
* Open connection
* Close connection, clear down (release of memory)

Quality of service – High quality of service, low fixed delay, limited packet loss

**Connectionless e.g. Postal system**

Connectionless takes a different route each time

Quality of service – Variable delay, lost packets, sequencing problems

**TCP/IP**

Enables end to end connection by breaking down information into packets, assigns them address and ports and then organizes and sends them. Checks and requests corrupt data. Re-arranges received packets into a readable format.

**TCP**

Verifies that all packets arrive at their destination. Reassembles data. Sends packets in sequence. Ensures packet integrity.

**IP**

Breaks data into packets. Places header information on packet. Determines the amount of data that can fit into a single packet.

**Key Components of Packets**

A packet is a unit of information data

* Header information
* Routers
* TCP/IP

**What is a packet?**A packet is a single unit or “package” of data that is sent across a network(s).

**Packet header**

* Contains origin and destination IP Address
* Contains coding to handle transmission errors
* Header information used by routers to send packets across a network

***Packets take different routes but not always the quickest one!***