Recap/

Communication protocol

Protocols

**are required for computers to properly communicate across the network**

These include:

Message format

**A message must be in a specific format or structure**

Message size

**Rules about size of pieces communicated across the network**

Timing

**Determines the speed of bits across the network**

**Also determines when individual can send a msg**

**And the total amount of data that can be sent**

Encoding

**Each bit encoded into a pattern of sounds, light waves, or electrical impulses depending on the network media**

Encapsulation

**Adding information to pieces of data that make the message** (sener, destination,…)

Message pattern

**Unicast, multicast or broadcast**

Communication standards

Think of device in a bubble. The only thing a device sees is its own addresssing information

How does it know its on the same network as another device?

The answer is network protocols.

*A standard*

is a **set of rules that determines how something must be done**.

*Networking and internet standards*

**ensure that all devices connecting to the network implement the same set of rules or protocols in the same manner**

*Internet standard*

is the **end result of a comprehensive cycle of discussion, problem solving, and testing**. These different standards are developed, published, and maintained by a variety of organizations. When developing a new standard its recorded in the RFC

Network communication models

*Protocols*

Are the **rules that govern communications** (HTTP, TCP, IP, Ethernet)

They are implemented in software and hardware

The interaction between the different protocols on a device can be illustrated as a protocol stack. A stack illustrates the protocols as a layered hierarchy

The suite of TCP/IP protocols that are used for internet communications follows this structure:

**Application =** represents data for user, decides on protocols

**Transport =** choosing TCP/UCP, segmentation, supports communication between devices

**Internet =** determines best path, gives IP address to segments

**Network access =** gives mac address, hardware and media of the network

*Reference model*

Describes the functions that must be completed at a particular layer but does not specify exacly how a function should be accomplished

**AID IN CLEARER UNDERSTANDING OF THE FUNCTIONS AND PROCESSES NECESSARY FOR NETWORK COMMUNICATIONS**

Most known is the OSI

OSI model layer description

7 - *application* = **protocols used for process-to-process communication**

6 - *presentation* = **provides for common representation of the data transferred between application layer services**

5 - *session* = **provides services to the presentation layer to organize its dialogue and to manage data exchange**

4 - *transport* = **defines services to segment, transfer, and reassemble the data between the end devices**

3 - *network* = **provides services to exchange the individual pieces of data over the network between identified end devices**

2 - *data link* = **describe methods for exchanging data frames between devices over a common media**

1 - *physical* = **describe the mechanical, electrical, functional, and procedural means to activate, maintain, and de-activate physical connections for a bit transmission to and from a network device**