Networking Basics modules 1,2 and 3

Day 2/365

23rd of January.
Started with Cisco's academy Networking Basics first set of modules.

Module 1: Communication in a Connected World

In this module, I went through different Network Types such as ->

SOHO (Small Office /Home Office)

- Computers in home offices or a remote office connect to a corporate network.
  Medium to Large networks
- Corporations and Schools, hundreds / thousands of interconnected hosts, can have many locations.
  The Internet
- Network of networks, connects hundreds of millions of computers across the globe.

Also glanced over the various devices that can connect to the internet, from the most common ones like Smartphones, tablets or PC's to others such as RFID Tags, sensors and actuators.

There are 3 types of personal data
Volunteered

- Explicitly shared by individuals, can include video files, pictures, text files, etc.
  Observed
- Captured by recording the actions of individuals, like location data
  Inferred data
- Based on analysis of volunteered or observed data, like shopping preferences, age, or credit score.

Spent as little time as possible going over bit's and binary terminology due to having learned about it extensively in University.

There are 3 common methods of signal transmission used in networks
Electrical

- electrical pulses on copper wire

Optical

- light pulses thorough glass or plastic (fiber optics)
  Wireless
- infrared, microwave or radio through the air (WIFI)

Bandwidth is the capacity of a medium to carry data, usually measured in bits per second:
KBPS MBPS GPBS

Throughput does not usually match the specified bandwidth and can be influenced by

- Amount of data being sent and received over the connection
- Latency created by number of network devices encountered between source and destination

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Module 2: Network Components, Types, and Connections

All computers connected to a network that participate in network communication are HOSTS, they can send and receive messages on the network. Computer hosts can act as a client and/or a server. The software installed on the computer determines which role the computer plays.

Client and servers are usually run on separate machines, but if costs are too limited, they can be run in conjunction, although that comes with performance issues, less security, lack of scalability or centralized administration.
When 2 or more machines act as both clients and servers in an interconnected network we call it a P2P network, they are less complex and lower in costs.

Network components comprises end devices and the media (cables), at least from a Hardware standpoint.

An ISP provides the link between the home network and the internet. ISPs connect to other ISPs to form a network of links all over the world, and they are connected in a hierarchical manner to ensure internet traffic takes the shortest path.
The backbone of the internet --> Fiber Optic cables with expensive networking switches and routers that direct the flow of information between source and destination hosts. 95% of the worlds data travels through under the sea bed Fiber Optic cables.

Home users use a router to connect to their ISP, cellular, cable and wireless are still the most common but Fiber Optic has been on the rise.

Module 3: Wireless and Mobile Networks

Module 3 is pretty straightforward and sometimes a little outdated, not much to note personally. Mostly Bluetooth, VPNs, WIFI , WPA2 encryption and NFC.
