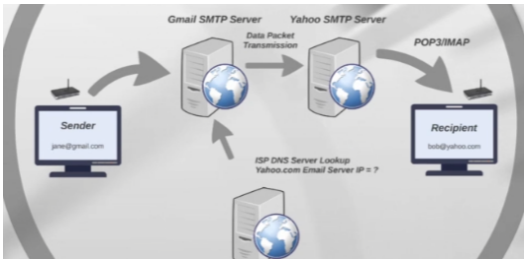
Internet - network of cables: transmission of Data Packets

Internet is actually set of protocols(set of rules to communicate between machines)

- tcp(Transmission Control Protocol) - Facilitates the transmission of data packets, ensures no info missing
- Ip - Route info to the proper address
- http/https - facilitates communication between a web browser and web server.
- smtp(Simple Mail Transfer Protocol) - standard protocol for email transmission



- ftp(file transfer protocol)

Data packet example:

header — sender & receivers IP address, Protocol, Packet Number
payload — Data
trailer — Data to show end of Packet, Error Correction

Bandwidth — the speed at which data packets can be transmitted (capacity measured by bitrate | latency)
Web Server — A computer that hosts a website or Web application

Domain Name Server - list of domain names and their corresponding IP address.
Internet Service Provider

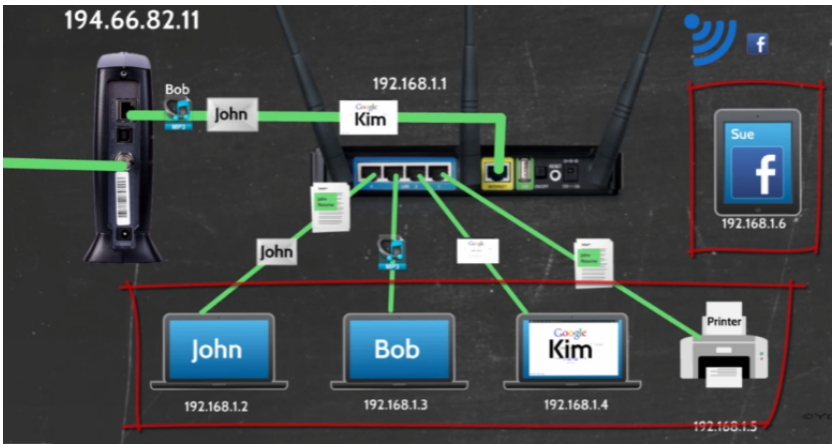
Google.com → modem query ip address using isp dns, if isp fails to locate ip in their dns records, then isp query other authoritative dns servers → send 74.125.224.72 back to modem to browser→ browser sends a request such as GET to the server(IP) → If request is successful the proper data packets will be sent back to the browser.

HTTPS Protocol- Data Packets are Encrypted using SSL(secure socket layer using Security Certificate) or TLS(transport security layer)

Security Certificate - requires installation on the web server, can be purchased from a reputable vendor

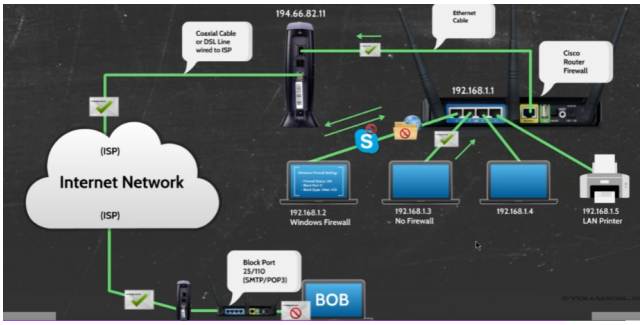
Network Basic

LAN (local area network) - A group of computers that share a common communications line within a relatively small area. So LAN is typically confined to a single room or building.
modem external ip (194.66.82.11)
router offers unique local ip address to each device.



WAN(Wide Area Network) - network that spans across big areas such as cities, states & nations. So we can see the Internet(world wide network) as the largest WAN in existence.

Router
Can open and close Network ports: ex. port 21(ftp), 80(http), 25 (smtp)
HW/SW FireWalls - prevents unauthorized access in network (settings)



Small Web Dev Project process

Testing Server Setup

Why do we need one?

- Allows us to test web application locally, rather than uploading to live production server.
- Important because any issues can be resolved without causing disruptions on the live server.
- PHP & MySQL Require a testing server to function
- Client Side languages do not require a testing server (HTML, CSS, jQuery, JavaScript)
- Pre-Packaged Solutions: WAMP (Windows) MAMP (MAC)

Server Configuration & Services

Production Server Setup

- A Live Production server allows a Web Application to be viewed by Internet Users.
- Large Scale Cloud Hosting Providers: Amazon Web Services, Microsoft Azure, Google Cloud Platform. - More Expensive
- Smaller Scale Providers: Linode, Digital Ocean. - Cheaper
- Both providers (small and large scale) offer reliable and scalable cloud hosting solutions.
- Server Configuration process is the same on any Virtual Machine.