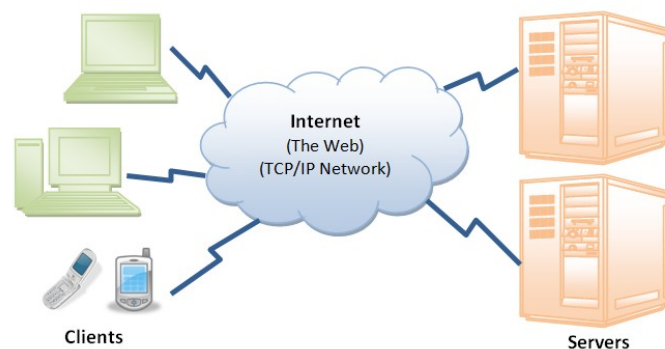


Important terminologies in Web technology

Web Technology : The group of **methods/techniques** by which **computers communicate** with each other through the **use of markup languages** and **multimedia packages** is known as web technology.

Web : **Collection of** electronic **information resource**. It is a **massive distributed client/server** information system



Tim Burners Lee : Father of web who **developed the HTML in 1989**. to access the resources available in the Internet



W3 Consortium (WWW consortium started in 1993 by Tim Burner) : 400 + members (Microsoft, IBM, google, facebook and so on...) are involved to frame the rules for accessing the resources from web. The objective of this forum is to maintain web standards.

Network : A collection of devices connected to exchange information between them. The earliest network is **ARPA** developed by American Defence service. The protocol used by it is FTP (File Transfer Protocol)

Internet : Network of networks. It works on TCP/IP Protocol. Father of Internet is Vint Cerf who developed the concept of Internet



Vint Cerf

TCP/IP Protocol

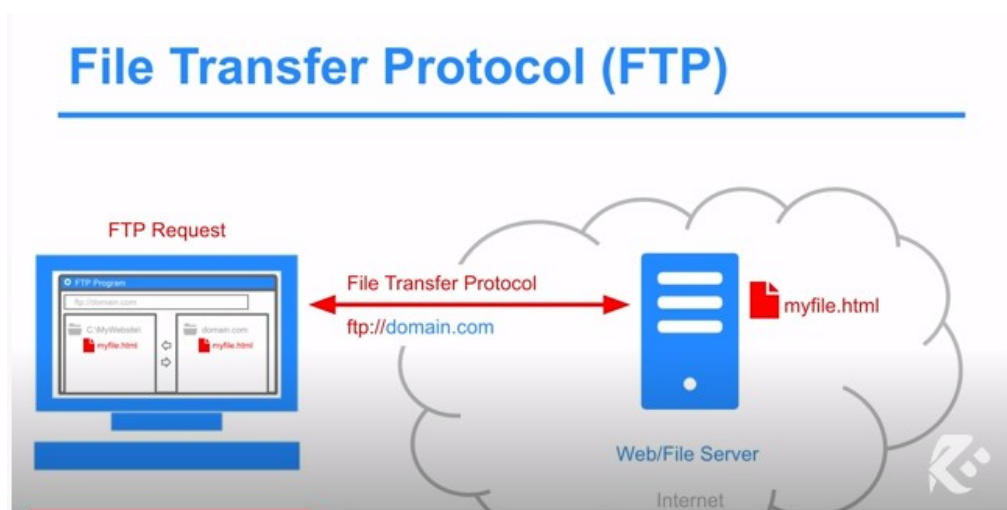
TCP/IP Protocol Suite: TCP/IP specifies **how data is exchanged over the internet** by providing **end-to-end communications** that identify how it should be **broken into packets, addressed, transmitted, routed and received at the destination.**

TCP defines how applications can **create channels of communication** across a network. It also manages how a message is assembled into smaller packet before they are then transmitted over the internet and reassembled in the right order at the destination address.

IP defines how to address and route each packet to make sure it reaches the right destination. Each gateway computer on the network checks this IP address to determine where to forward the message.

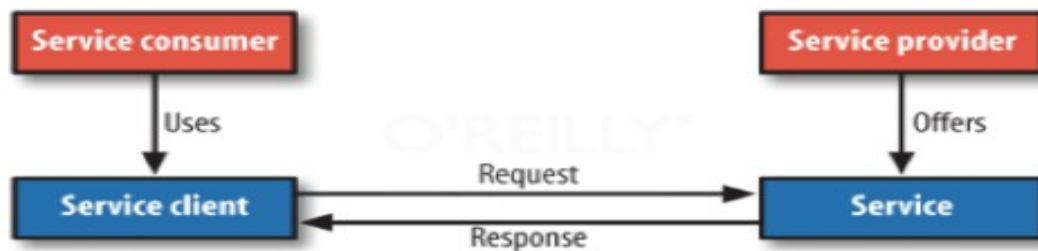
Common protocols of TCP/IP:

- **HTTP**(web browser to web server)
- **HTTPS** (Secure-SSL)
- **FTP** (files from computers to computers).



Client/Server Computing

- All web activity begins on the clients side - you could type a web address into the browser. The browser first consults with the DNS to translate the home page name into an IP address. It then sends a request to the server using the HTTP standard
- A server spends most of its time *listening to the network* waiting for a document request



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Email : Electronic mail based on SMTP (Simple Mail Transfer Protocol) and MIME

HTTP

- Hypertext Transfer Protocol
- HTTP takes care of the communication between a web server and a web browser.
- HTTP is used for sending requests from a web client (a browser) to a web server, returning web content (web pages) from the server back to the client.
- Before the Web, the Internet protocol was FTP (File Transfer Protocol)
- FTP was too slow, and HTTP was invented

HTTP

- HTTP adopted the concept of hypertext links but its protocol includes other methods
- There are four messages within this protocol
 - **Connection:** Establishes a connection between the client and the server
 - **Request:** Asks for a resource
 - **Response:** Delivers the resource
 - **Close:** Terminates the connection

Telnet : connection between local host to remote host through telecommunication networks

IP Address (4 byte number separated by dots)

Example : **167.120.56.2**

An IP address can be compared to a Social Security Number (SSN) since each one is completely unique to the computer or user it is assigned to. The creation of these numbers allows routers to identify where they are sending information on the internet. They also make sure that the correct devices are receiving what is being sent. Much like the post office needs a mailing address to deliver a package, a router needs an IP address to deliver to the web address requested.

Internet Vs Web (www)

*The **Internet*** is a global network of networks while *the **Web***, also referred formally as World Wide Web (www) is collection of information which is accessed via *the Internet*. Another way to look at this difference is *the Internet* is infrastructure while *the Web* is service working on top of that infrastructure.

Client Vs Server Computing

Client Side Scripting / Coding - Client Side Scripting is the type of code that is executed or interpreted by **browsers**.

Below are some common Client Side Scripting technologies:

- **HTML (HyperText Markup Language)**
- **CSS (Cascading Style Sheets)**
- **JavaScript**
- **AJAX (Asynchronous JavaScript and XML)**
- **JSON(Java Script Object Notation)**
- **jQuery (JavaScript Framework Library - commonly used in AJAX development)**

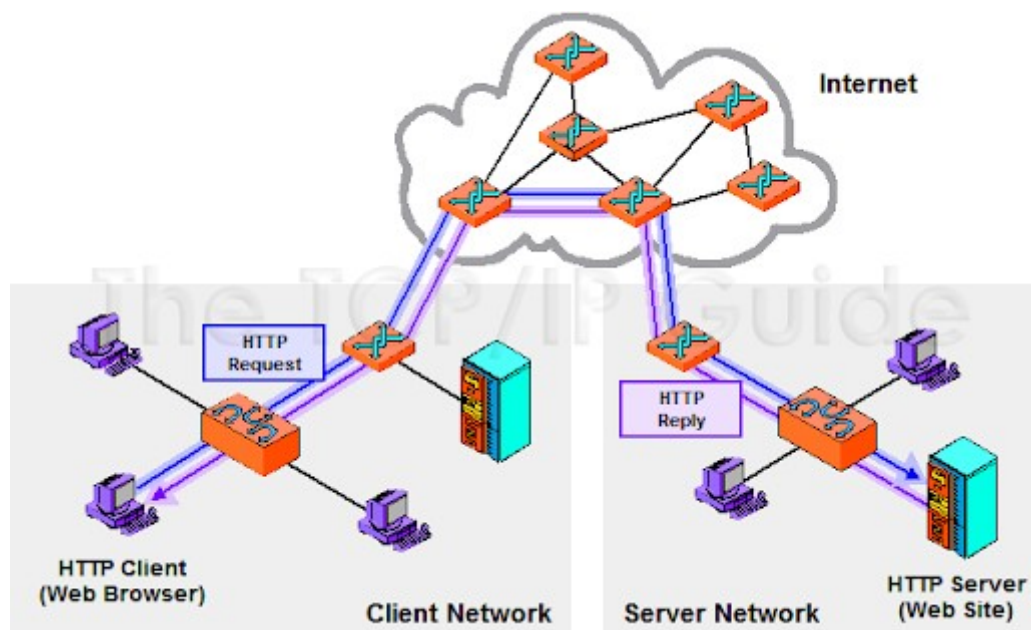
Server Side Scripting / Coding - Server Side Scripting is the type of code that is executed or interpreted by the **web server**.

Server Side Scripting is **not viewable or accessible by any visitor or general public**.

Below are the common Server Side Scripting technologies:

- **PHP (very common Server Side Scripting language** - Linux / Unix based Open Source - free redistribution, usually combines with MySQL database)
- ASP (Microsoft Web Server (IIS) Scripting language)
- ASP.NET (Microsoft's Web Application Framework - successor of ASP)
- Ruby on Rails (Ruby programming's Web Application Framework - free redistribution)
- Perl (general purpose high-level programming language and Server Side Scripting Language - free redistribution - lost its popularity to PHP)
- Python (general purpose high-level programming language and Server Side Scripting language - free redistribution)

Client – Server Architecture Model



How a HTML page is requested and rendered by browser ?



Browser : It is light weight client based software which makes requests to server and receives and renders the response from the server to the client (**Mozilla Fire fox, google chrome, IE & Safari**)

TCP/IP FIVE layer software model

Layer #	Layer Name	Protocol	Protocol Data Unit	Addressing
5	Application	HTTP, SMTP, etc...	Messages	n/a
4	Transport	TCP/UDP	Segments/ Datagrams	Port #s
3	Network or Internet	IP	Packets	IP Address
2	Data Link	Ethernet, Wi-Fi	Frames	MAC Address
1	Physical	10 Base T, 802.11	Bits	n/a

A simple demo of displaying a HTML page through browser

```
<html>
  <head>
    <title>
      A Simple HTML Document
    </title>
  </head>

  <body>

    <p>Hello! Welcome to simple HTML page</p>
    <p>This is a very simple HTML document</p>

  </body>
</html>
```