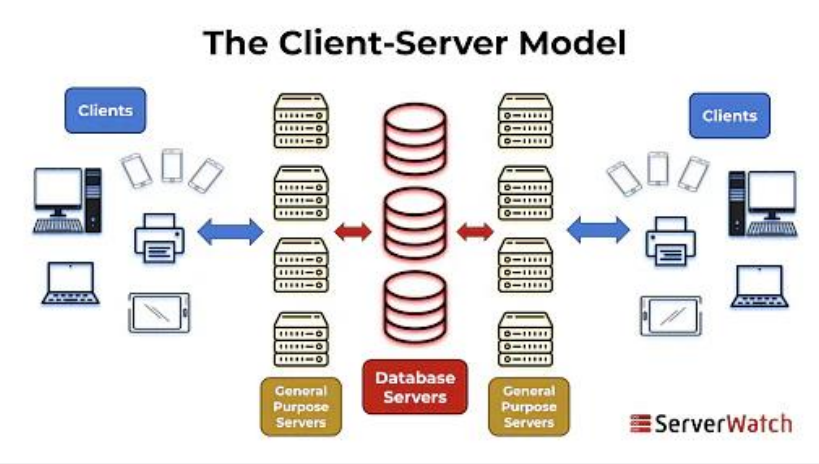
CLIENT-SERVER ARCHITECTURE

WHAT IS CLIENT SERVER ARCHITECTURE?

Client-server architecture is a computing model in which the server hosts, delivers, and manages most of the resources and services requested by the client. It is also known as the networking computing model or client server network as all requests and services are delivered over a network. The client-server architecture or model has other systems connected over a network where resources are shared among the different computers.

- Typically, client server architecture is arranged in a way that clients are often situated at workstations or on personal computers, while servers are located elsewhere on the network, usually on more powerful machines.



THE CHARACTERISTICS OF CLIENT-SERVER ARCHITECTURE

- Client-server architecture typically features the following characteristics:

NO	characteristics
1	Client and server machines typically require different hardware and software resources and come from other vendors.
2	The network has horizontal scalability, which increases the number of client machines and vertical scalability, an then moves the entire process to more powerful servers or a multi-server configuration.
3	One computer server can provide multiple services simultaneously, although each service requires a separate server program.
4	Both client and server applications interact directly with a transport layer protocol. This process establishes communication and enables the entities to send and receive information.
5	Both the client and server computers need a complete stack of protocols. The transport protocol employs lower-layer protocols to send and receive individual messages.

WHEN CLIENT SERVER IS EFFECTIVE?

- Client server computing model is effective when clients and the server each have distinct tasks that they routinely perform. In hospital data processing, for example, a client computer can be running an application program for entering patient information while the server computer is running another program that manages the database in which the information is permanently stored. Many clients can access the server's information simultaneously, and, at the same time, a client computer can perform other tasks, such as sending e-mail.

SOME EXAMPLES OF CLIENT SERVER

- Mail servers: Email servers are used for sending and receiving emails. There are different software that allow email handling.
- File servers: File servers act as a centralized location for files. One of the daily life examples to understand this is the files that we store in Google Docs. The cloud services for Microsoft Office and Google Docs can be accessed from your devices; the files that you save from your computer, can be accessed from your phone. So, the centrally stored files can be accessed by multiple users.
- Web servers: Web servers are high-performance computers that host different websites. The server site data is requested by the client through high-speed internet.

WHAT IS THE WORKING PROCESS OF CLIENT SERVER?

- The user enters the uniform resource locator (URL) of the website or file and the browser sends a request to the domain name system (DNS) server.
- The DNS server looks for the address of the web server and the DNS server responds with the IP address of the web server.
- After the DNS server responds, the browser sends over an HTTP or HTTPS request to the web server's IP, which was provided by the DNS server.
- The server then sends over the necessary files of the website.
- finally, the browser renders the files and the website is displayed

DIFFERENCE BETWEEN CLIENT AND SERVER

Clients are the ones that request the service, that is, they are part of the software or computers that request services from the server. Client computing is classified as Thick, Thin, or Hybrid:

- **Thick Client:** a client that provides rich functionality, performs the majority of data processing itself, and relies very lightly upon the server.
- **Thin Client:** a thin-client server is a lightweight computer that relies heavily on the resources of the host computer -- an application server performs the majority of any required data processing.
- **Hybrid Client:** possessing a combination of thin client and thick client characteristics, a hybrid client relies on the server to store persistent data, but is capable of local processing.

A server is a computer or software that provides services to other devices, i.e. a computerized process that a client can request and use to share resources and distribute work**.** Some common examples of servers include:

- **Application Server:** hosts web applications that users in the network can use without needing their own copy.
- **Computing Server:** shares an enormous amount of computer resources with networked computers that require more CPU power and RAM than is typically available for a personal computer.
- **Database Server:** maintains and shares databases for any computer program that ingests well-organized data, such as accounting software and spreadsheets.

DIFFERENCE BETWEEN SERVER-SIDE PROGRAMMING AND CLIENT-SIDE PROGRAMMING

Server-side programming refers to a program that runs on the server and focuses on the generation of dynamic content. Server-side programming is used for querying and interacting with the database, accessing files on a server, interacting with other servers, processing user input, and structuring web applications. Popular programming languages for server-side programming include C++, Java and JSP, PHP, Python, and Ruby on Rails.

Client-side programming refers to a program that runs on the client machine and focuses on the user interface and other processes such as reading and/or writing cookies. Client-side programming is used for sending requests to the server, interacting with local storage, interacting with temporary storage, creating interactive web pages, and functions as an interface between client and server. Popular programming languages for client-server programming include AJAX, CSS, HTML, Javascript, and VBScript.