



### How the server act as client and How client act as server ?

In a client-server model, the server typically acts as a central hub that provides resources or services to multiple clients. The client, on the other hand, is a user or device that requests and receives these resources or services from the server.

However, in some cases, the roles of client and server can be reversed. This is known as a peer-to-peer (P2P) model, where each node in the network can act as both a client and a server.

For example:

in a file-sharing application that uses P2P technology, each user's device can act as both a client and a server. When a user wants to download a file, their device acts as a client and requests the file from other users who have it. At the same time, their device also acts as a server by sharing the parts of the file that it has already downloaded with other users who are requesting it.

Similarly, in a messaging application that uses P2P technology, each user's device can act as both a client and a server. When a user sends a message, their device acts as a client and sends the message to other users who are online. At the same time, their device also acts as a server by receiving messages from other users and relaying them to the user.

**Web server acting as a client:** When a user visits a website hosted on a web server, the server acts as a host and serves the website content to the user's web browser. However, if the website requires data from another server or API, the web server can act as a client and make requests for that data on behalf of the user's browser. For example, if a website needs to display weather information, the web server can act as a client and make API requests to a weather service to fetch the necessary data.

**Email server acting as a client:** When a user sends an email, their email client acts as a client and sends the email to their email server. However, if the email server needs to forward the email to another server or email address, it can act as a client and make SMTP requests to the recipient's email server to deliver the email.

**File-sharing client acting as a server:** In a P2P file-sharing network, each user's device can act as both a client and a server. When a user wants to download a file, their device acts as a client and requests the file from other users who have it. At the same time, their device also acts as a server by sharing the parts of the file that it has already downloaded with other users who are requesting it.

Video conferencing client acting as a server: In a video conferencing application, each user's device acts as a client and sends video and audio data to the server for distribution to other users. However, if a user has a particularly stable and high-speed internet connection, their device can also act as a server by hosting the video conference and distributing the video and audio data to other users directly.

In summary, in a client-server model, the server typically acts as a central hub that provides resources or services to multiple clients, while in a P2P model, each node in the network can act as both a client and a server, sharing resources and services with other nodes in the network.