FTP AND PROXY SERVER

A computer that can act on the behalf of other computers to request content from the Internet or an intranet. Proxy Server is placed between a user's machine and the Internet. It can act as a firewall to provide protection and as a cache area to speed up Web page display.
 A firewall mechanism that replaces the IP address of a host on the internal (protected) network with its own IP address for all traffic passing through it. A software agent that acts on behalf of a user, typical proxies accept a connection from a user, make a decision as to whether or not the user or client IP address is permitted to use the proxy, perhaps does additional authentication, and then completes a connection on behalf of the user to a remote destination.

Proxy servers have two main purposes:
- **Improve Performance:** Proxy servers can dramatically improve performance for groups of users. This is because it saves the results of all requests for a certain amount of time. proxy server is often on the same network as the user, this is a much faster operation. Real proxy servers support hundreds or thousands of users.
- **Filter Requests:** Proxy servers can also be used to filter requests.

Types of Proxy:

1. Forward Proxy:

Forward proxies are proxies where the client server names the target server to connect to. Forward proxies are able to retrieve from a wide range of sources (in most cases anywhere on the Internet).
The terms "forward proxy" and "forwarding proxy" are a general description of behavior (forwarding traffic) and thus ambiguous. Except for Reverse proxy
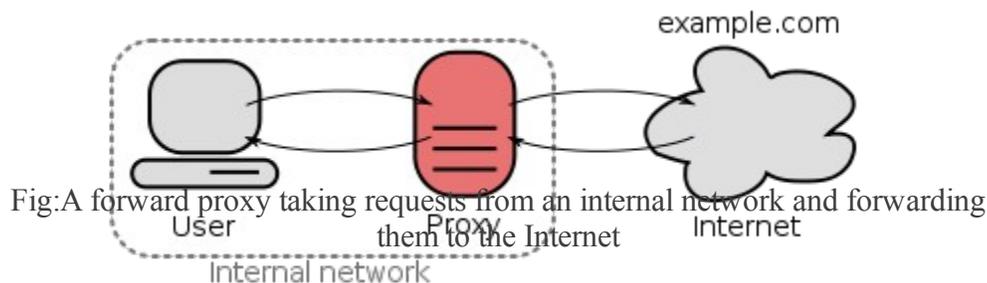

Fig:A forward proxy taking requests from an internal network and forwarding them to the Internet

2. Open Proxy:

An open proxy is a forward proxy server that is accessible by any Internet user. Gordon Lyon estimates there are "hundreds of thousands" of open proxies on the Internet.[4] An *anonymous open proxy* allows users to conceal their IP address while browsing the Web or using other Internet services.
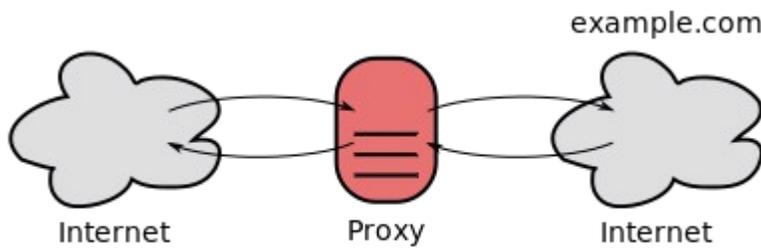
Fig: An open proxy forwarding requests from and to anywhere on the Internet.

3. Reverse Proxy:

A **reverse proxy** is a proxy server that appears to clients to be an ordinary server. Requests are forwarded to one or more origin servers which handle the request. The response is returned as if it came directly from the proxy server
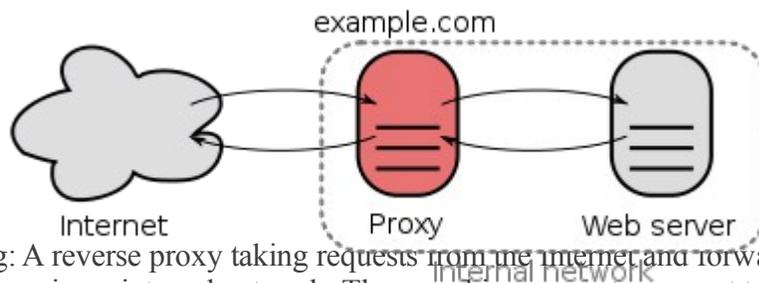

Fig: A reverse proxy taking requests from the Internet and forwarding them to servers in an internal network. Those making requests connect to the proxy and may not be aware of the internal network.

File Transfer Protocol (FTP)

An Internet standard application-level TCP/IP protocol that can be used for transferring files between hosts on a TCP/IP internetwork.

How It Works

File Transfer Protocol (FTP) is one of the earliest Internet protocols, and is still used for uploading and downloading files between clients and servers. An FTP client is an application that can issue FTP commands to an FTP server, while an FTP server is a service or daemon running on a server that responds to FTP commands from a client. FTP commands can be used to change directories, change transfer modes between binary and ASCII, upload files, and download files. FTP uses Transmission Control Protocol (TCP) for reliable network communication by establishing a session before initiating data transfer. TCP port number 21 on the FTP server listens for connection attempts from an FTP client and is used as a control port for establishing a connection between the client and server, for allowing the client to send an FTP command to the server, and for returning the server's response to the command. Once a control connection has been established, the server opens port number 20 to form a new connection with the client for transferring the actual data during uploads and downloads.
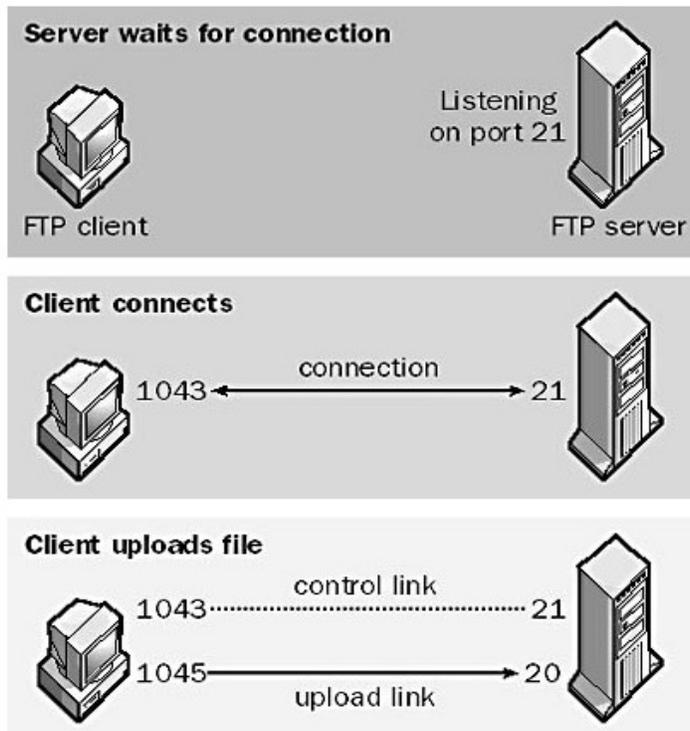
While transferring Data over the network, two modes can be used:

1. Ascii Mode
2. Binary Mode

The two types differ from the way they send the data. When a file is sent using an ASCII-type transfer, the individual letters, numbers and characters are sent. The receiving machine saves these in a text file in the appropriate format (for example, a Unix machine saves it in a Unix format, a Macintosh saves it in a Mac format). Hence if an ASCII transfer is used it can be assumed plain text is sent, which is stored by the receiving computer in its own format.

Sending a file in binary mode is different. The sending machine sends each file bit for bit and as such the recipient stores the bit-stream as it receives it.

By default, most FTP clients use ASCII mode. Some clients, nevertheless are more clever and try to determine the required transfer-mode by inspecting the file's contents.

Server waits for connection

FTP client

Listening on port 21

FTP server

Client connects

1043 ← connection → 21

Client uploads file

1043 ·········· control link ·········· 21

1045 ——— upload link ———→ 20