Shastri 3ʳᵈ Semester

Computer Science

Unit 2

File Transfer Protocol

Introduction to FTP and Terminology

File Transfer Protocol (FTP) is a standard network protocol used for the transfer of files between a client and a server on a computer network. FTP is used to upload and download files, such as documents, images, and videos, between computers on a network.

The following are some of the common terms used in FTP:

1. FTP client: An FTP client is a software program that allows a user to upload and download files from an FTP server.
2. FTP server: An FTP server is a software program that runs on a computer and allows clients to connect and transfer files.
3. FTP login: An FTP login is the process of providing a username and password to gain access to an FTP server.
4. FTP session: An FTP session is a connection between an FTP client and an FTP server.
5. FTP commands: FTP commands are used to control and manage the file transfer process between the client and server. Common FTP commands include PUT, GET, DELETE, and LIST.
6. FTP passive mode: FTP passive mode is a mode in which the data connection between the client and server is initiated by the client, rather than the server. This mode is useful when the client is behind a firewall.
7. FTP active mode: FTP active mode is a mode in which the data connection between the client and server is initiated by the server, rather than the client. This mode is the default mode for FTP.
8. Binary mode: Binary mode is a type of FTP transfer mode that is used to transfer binary files, such as images, videos, and executable files.
9. ASCII mode: ASCII mode is a type of FTP transfer mode that is used to transfer text files, such as documents and scripts.

FTP is an unencrypted protocol and it's not secure, there are alternative protocols like SFTP and FTPS which are more secure.

FTP Servers and Authentication

FTP servers are software programs that run on a computer and allow clients to connect and transfer files. There are many different types of FTP servers available, but some of the most popular include:

1. FileZilla Server: FileZilla Server is a free and open-source FTP server that is available for Windows, Linux, and macOS.
2. ProFTPD: ProFTPD is another free and open-source FTP server that is available for a variety of platforms, including Windows, Linux, and macOS.
3. Microsoft IIS: Microsoft Internet Information Services (IIS) is an FTP server that is included with the Windows operating system.
4. vsFTPd: vsFTPd is a secure and efficient FTP server that is available for Linux and Unix-based systems.

Authentication is the process of verifying a user's identity before allowing access to an FTP server. There are several methods of authentication that can be used with FTP servers, including:

1. Anonymous authentication: Anonymous authentication allows anyone to connect to the FTP server without providing a username or password.
2. User authentication: User authentication requires a user to provide a username and password to connect to the FTP server.
3. Public-key authentication: Public-key authentication uses a pair of keys, one public and one private, to authenticate the user. The public key is used to encrypt the user's password, and the private key is used to decrypt it.
4. Two-factor authentication: Two-factor authentication combines two different methods of authentication, such as a password and a security token, to provide an added layer of security.

It's important to note that the level of security used for authentication should be based on the level of security required for the data that is being stored and transferred. Anonymous authentication is not recommended for sensitive data.

Live model FTP and common commands

FTP (File Transfer Protocol) is a standard network protocol used for transferring files between a client and a server on a computer network. FTP is commonly used to upload and download files, such as documents, images, and videos, between computers on a network.

To use FTP, you will need an FTP client, which is a software program that allows you to connect to an FTP server and transfer files. Some popular FTP clients include FileZilla, WinSCP, and Cyberduck.

Once you have an FTP client installed, you can connect to an FTP server by providing the server's address, port number, and login credentials (username and password). Once connected, you can use various FTP commands to transfer files and manage the server.

Here are some common FTP commands:

1. **ls (or dir):** Lists the files and directories in the current directory on the server.

2. **cd:** Changes the current directory on the server. For example, "cd /public_html" would change the current directory to the public_html directory.

3. **get:** Download a file from the server to the client. For example, "get file.txt" would download the file.txt from the server to the client.

4. **put:** Uploads a file from the client to the server. For example, "put file.txt" would upload the file.txt from the client to the server.

5. **pwd**: Prints the current working directory on the server.

6. **mkdir**: Creates a new directory on the server. For example, "mkdir myfolder" would create a new directory named "myfolder" on the server.

7. **rmdir:** Removes a directory on the server. For example, "rmdir myfolder" would remove the directory named "myfolder" on the server.

8. **delete** Deletes a file on the server. For example, "delete file.txt" would delete the file named "file.txt" on the server.

9. **quit:** Ends the FTP session and disconnects from the server.

these commands may vary slightly depending on the FTP client you are using. Also, you should be careful when using delete and rmdir commands as they will delete the files permanently.

GUI-based FTP clients

GUI-based FTP clients are software programs that have a graphical user interface (GUI) for interacting with an FTP server. These clients typically have a more user-friendly interface compared to command-line FTP clients, and they may include features such as drag-and-drop file transfer, file browsing, and more. Examples of GUI-based FTP clients include FileZilla, and Transmit.

Browser-based FTP clients

Browser-based FTP clients are web-based applications that allow users to access and transfer files to and from an FTP server using a web browser. These clients are accessible from any device with a web browser and an internet connection, and they do not require the user to install any additional software. Examples of browser-based FTP cweb FTP include webftp, FTP Voyager JV Web Client, and FTP Rush.

Some Question

1. What is FTP and what is it used for?
2. How does FTP work?
3. What are the main components of an FTP system?
4. What are the two main modes of FTP transfer?
5. What are the main commands used in FTP?
6. How do you connect to an FTP server?
7. How do you upload and download files using FTP?
8. How do you create and delete directories using FTP?
9. How do you change file permissions using FTP?
10. How do you use FTP in a script or program?
11. How do you secure FTP connections?

12.   What are some common errors encountered when using FTP?

13.   What are some alternatives to FTP?

14.   What are the benefits and drawbacks of using FTP?

15.   How does FTP compare to other file transfer protocols?