Protocol programming

Introduction

Stuff to Transfer Protocol (STP) is an application-level file transfer protocol, which is used to simply transfer small amount of data e.g. music, photos or text files.

STP uses TCP to ensure reliable transmission with low packet loss, using sequence number to detect any packet loss and to restore the lost packets in correct order. Receiver sends acknowledgements to tell the sender that the data has been received and when the whole file has been sent, both the sender and the receiver sends Acks containing the file size to make sure that all off the data has been sent and then closes the connection.

Client requests

LIST

Lists all the files that are available to download from the server and shows filename, size and when the file has been uploaded to the server.

DOWNLOAD

Download is used to download the selected file using the files filename from the server. Before the file can be downloaded, the connection has to be made with 3-way handshake.

CANCEL

After the download has started, the receiver can cancel the file transfer using CANCEL request, which cancels and deletes the download immediately.

Server responses

ERROR

ERROR is used when the request cannot be processed. ERROR tells to the receiver which error it is and which file is at issue.

FILE

FILE response returns data to the client, containing files filename, size and upload date.

SEND

SEND response starts the upload to the receiver.

CANCEL

CANCEL response cancels the file upload.

Errors

File not found

If the clients requested filename cannot be found, the server informs the client to make sure that the requested filename is correct or suggest to choose another file.

Connection fail

If there is a problem with the connection between client and the server, both of them informs each other that there is a problem and suggest that a new connection has to be made.