An Overview of the File Transfer Protocol (FTP)

Mario Murrent

Wiener Neustadt, am 5. Dezember 2013

Table of Contents

1 Overview

The File Transfer Protocol (FTP) was one of the first efforts to create a standard means of exchanging files over a TCP/IP network. FTP was designed to be used over networks as well as being engineered to have the capability with exchanging files with a broad variety of machines.

The base specification is RFC 959 and is dated October 1985. There are some additional RFCs relating to FTP. The purpose of this document is to provide general information about how the protocol works without getting into too many technical details. RFC 959 should be consulted for details on the protocol.

2 FTP Commands

- USER
- PASS
- CWD
- QUIT
- PORT
- PASV
- TYPE
- PWD
- RETR
- STOR
- LIST
  Note that a directory listing is considered a file transfer.

- SYST
- FEAT
- EPRT

3 Communication

The protocol can be thought of as interactive, because clients and servers actually have a conversation where they authenticate themselves. In addition, the protocol specifies that the client and server do not exchange data on the conversation channel. Instead, clients and servers negotiate how to send data files on separate connections, with one connection for each data transfer.

4 Connection

FTP Control Connection and Data Connection A critical concept in understanding FTP is that while it uses TCP like many other applications, it does not use just one TCP connection for all communication the way most protocols do. The FTP model is designed around two logical channels of communication between the server and user FTP processes:

- Control Connection
  This is the main logical TCP connection that is created when an FTP session is established. It is maintained throughout the FTP session and is used only for passing control information, such as FTP commands and replies. It is not used to send files.
- Data Connection
  Each time that data is sent from the server to the client or vice-versa, a distinct TCP data connection is established between them. Data is transferred over this connection. When the file transfer is complete, the connection is terminated.