

File Transfer Protocol (FTP)

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FTP Protocol (RFC 959)

- Helps transfer files from one host to another
- Based on client-server architecture
- Can connect anonymously, also supports clear-text sign-in
- Can be secured via SSL/TLS as well (FTPS)
 - FTPS not same as SFTP or SCP
- Clients: Command-line, GUI based, web-browsers (ftp://)

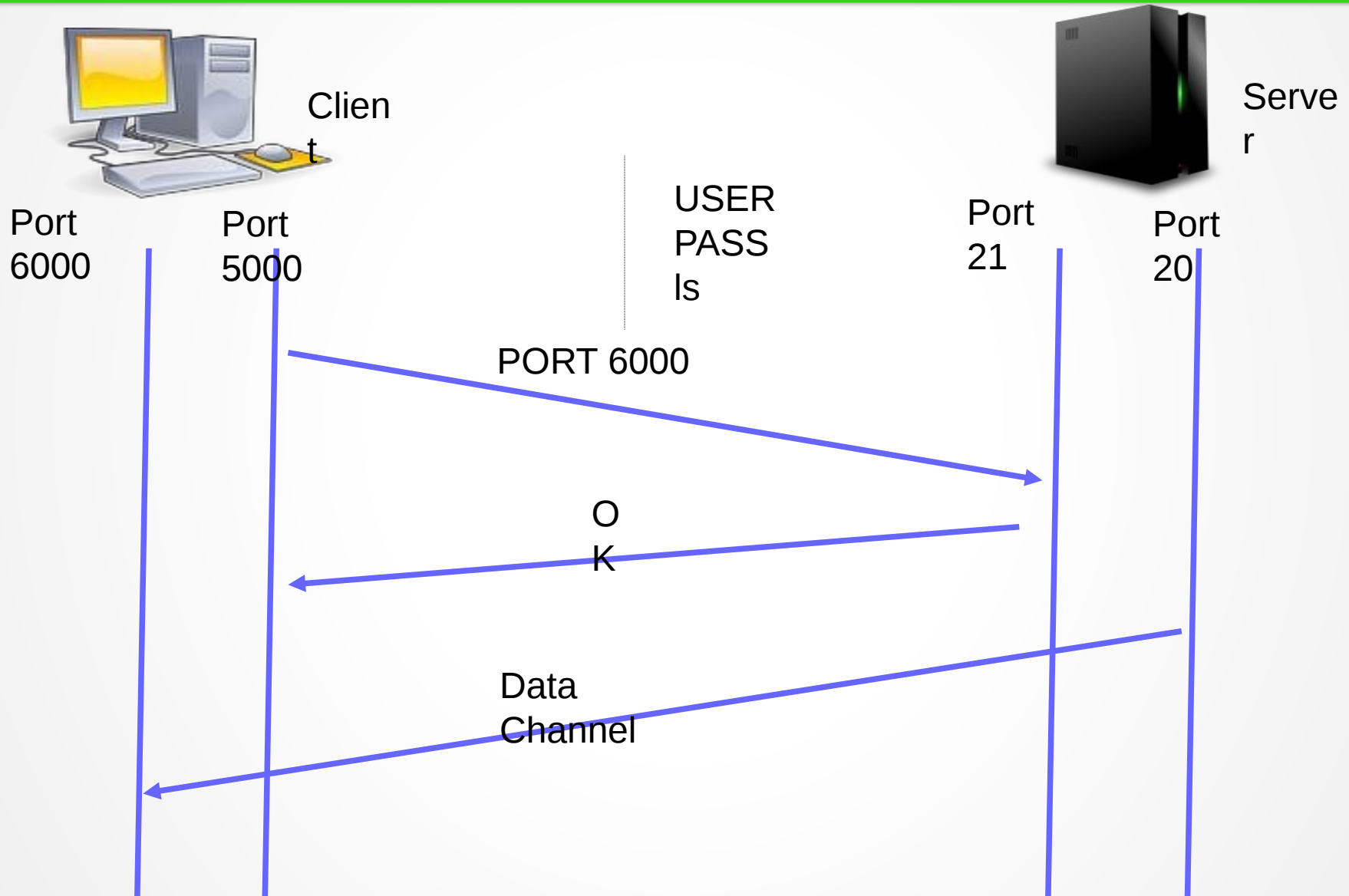
Protocol Details

- Employs TCP and server listens on port 21
- Separate control and data channel
 - Control channel used for authorization, browsing directory listing; kept open during a session
 - Data channel supports file transfer; closed after each transfer (one file per connection)
- Through a session, FTP protocol maintains state
 - E..g for a given user, current directory as user explores directory tree

Commands

- ASCII based, sent over control channel
- USER username
- PASS password
- LIST (return list of files in current directory)
- RETR filename (retrieves file)
- STOR filename (stores file onto remote host)

Active Mode



Passive Mode



Client



Server

Port 6000

Port 5000

Port 21

Port 5555

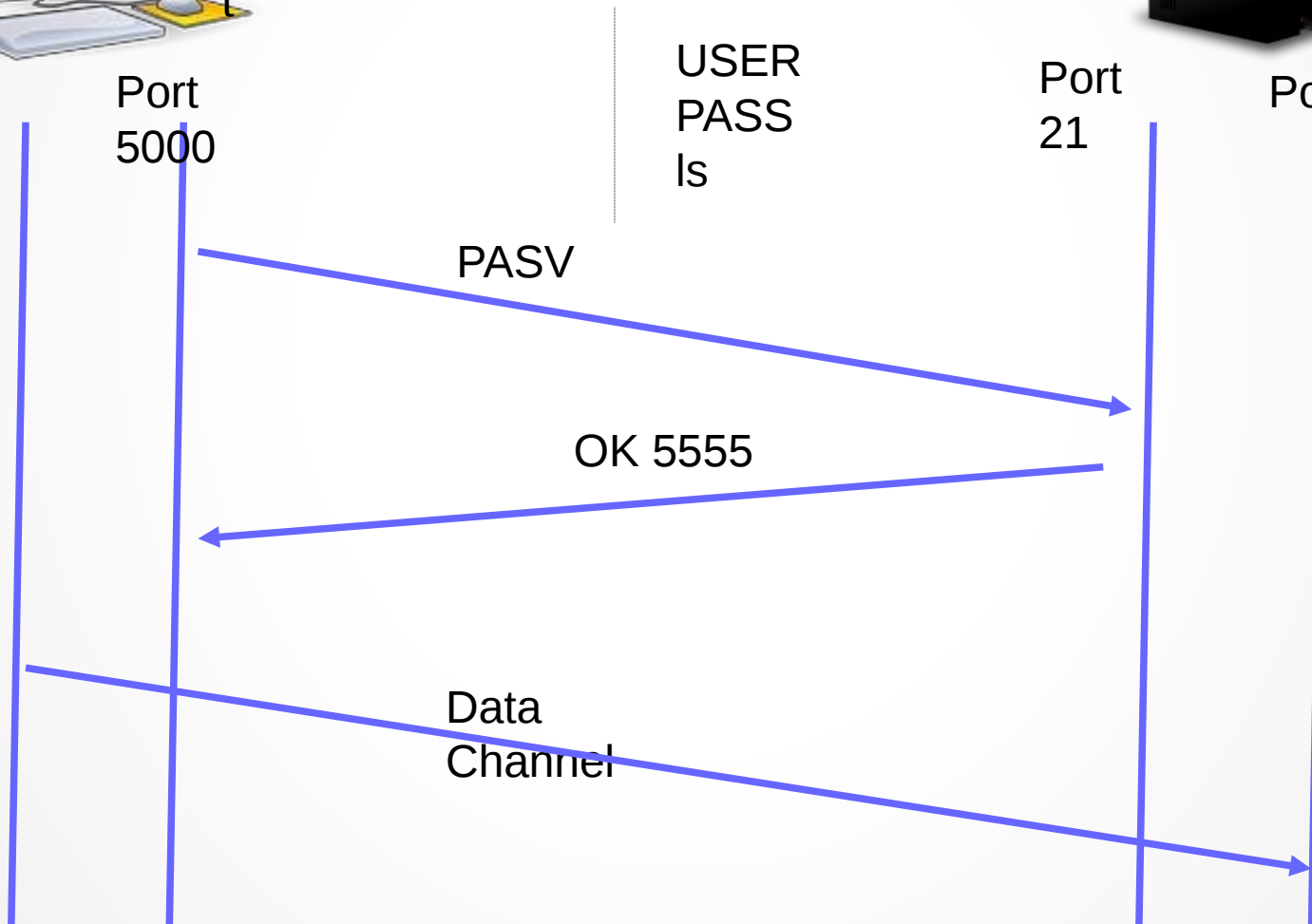
USER
PASS
Is

PASV

OK 5555

Data
Channel

Useful for
NAT/firewall
traversal
(basically
where
incoming
connections
from outside
are blocked)



Summary

- FTP that is based on client-server architecture
- Maintains separate data and control connections
- Offers two modes of operation: active and passive