5.0: *Software Requirements Specification*

**5.1 Introduction**

The Client-Server Storage is a software application where a server and a client are created from first principles and are capable of connecting to each either via TCP. In order to run the server, it must be able to connect to an open port on the local machine and have a specified local directory where various files can be stored. Provided the client is given the correct local name, port, and a file within the size limit, it can create a TCP connection with the server, break up the file into packets, send the file to the server, have the server recompile the packets, and then store the file into the specified directory.

Section 5.2 contains all of the functional requirements that the Client-Server Storage will be able to perform. Following that, section 5.3 covers the response times expected out of the Client-Server Storage. Lastly, 5.4 contains the computer hardware requirements for the Client-Server Storage Application to run properly

**5.2 Functional Requirements**

The required functions are to be able to launch a server, connect a client to the server, and then send a file from a client to the server.

**5.2.1 Launch server**

The first steps to using the Client-Server Storage application is getting the server up and running. In order to successfully run the server, the appropriate files must be compiled. Once compiled, an executable becomes available to run. The executable takes in a port and local directory. Once launched, the server now waits for clients to connect. The server can listen to multiple clients at once and is capable of managing too much traffic on the port.

**5.2.1.1** The server shall generate an executable file for initializing the server.

**5.2.1.2** The server shall launch on an available port.

**5.2.1.3** The server shall store files in a designated directory.

**5.2.1.4** The server shall listen to current clients.

**5.2.1.5** The server shall listen for new clients trying to establish a TCP connection.

**5.2.2 Connect a client to the server**

Similar to the server, the client must be successfully compiled in order to create an executable. In order to run the executable, the client requires a localname, port, and file. Once ran, the client will attempt to connect to the server. If this is successful, the client will then send the file over. The server will then return whether or the this is success. Regardless of the file result, the client will remain connected to the server.

**5.2.2.1** The client shall generate an executable file for initializing a client.

**5.2.2.2** The client shall conduct a three-way handshake with the server.

**5.2.2.2** The client shall connect to the server from the given localname and port

**5.2.2.3** The client shall attempt to send a file to the server.

**5.2.2.4** The client shall stay connected to the server.

**5.2.2.5** The client shall wait for the user to request to send another file to the server.

**5.2.3 Send file from client to the server**

Once a TCP connection is established, the client will break up a file into individual packets. Instead of sending one large packet, the server has an easier time with processing multiple smaller packets. If any of the packets are lost or corrupted, the server will ask the client to send specific packages again. The server will also stop certain clients from sending packets if there is too much traffic on the port.

**5.2.3.1** The client shall convert a file into small packets.

**5.2.3.1** The client shall send the individual packets over to the server via the TCP connection.

**5.2.3.1** The client shall resend packets that the server declared corrupted.

**5.2.3.1** The client shall stop sending packets if the server returns that the port has too much traffic.

**5.3 Performance Requirements**

**5.3.1 Launching Return Times**

**5.3.1.1** The server shall take no more than 1 seconds to compile and launch a server.

**5.3.1.1** The client shall take no more than 1 seconds to compile and launch a client that connects to the server.

**5.3.1.1** The client shall take no longer than 10 seconds to send a file to a server.

**5.4 Environment Requirements**

Hardware requirement for development, deployment, and execution.

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| --- | --- |
| Category | Requirement |
| Processor | Intel Pentium 4 Processor or Later |
| RAM | 128 MB |
| Hard Drive Space | 256 MB |
| Display | Any |

Hardware requirement for development, deployment, and execution.

|  |  |
| --- | --- |
| Category | Requirement |
| CLI | Bash |
| Operating System | Mac OS X10.13.3 or later; Ubuntu 16.04.3 or later |
| Text Editor | Any |