Alex Hoff

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Networks

Lab 1

For this lab we piped in different amounts of data at the same time to see how long it took for the data to transfer, effectively measuring the bandwidth. Bandwidth is the amount of data that can be carried from one point to another in a given time period. To do this we created a public and private file then transferred data between them. To create the test file of size 1G we used the following commands:

ssh-keygen -t rsa

cat ~/.ssh/id\_rsa.pub >> ~/.ssh/authorized\_keys

dd if=/dev/zero of="test" bs=1024 count=1048576

To measure the time it took to transfer 1K of data we used the following command line:

time cat test | head -c 1K | ssh ahoff@linux.scudc.scu.edu "cd Documents/Networks && cat test -> test1"

We then changed the amount of data transferred to measure the bandwidth performance of the machine. The following table is what we found from these tests.



We took measurements by powers of 10 to get an accurate reading of times while also showing change. The smaller values all passed in almost instantly but as the size increased dramatically, so did the times, relatively. The graph below depicts the test results:

To compare our results against a baseline experiment we tried sending an empty file to see how much time it took. When passing an empty file, the kernel must still create and disconnect the connection but will not actually send a file so the system time took only 0.003 seconds vs the 0.004-0.006 seconds it takes to send a small file therefore it takes roughly 0.003 seconds to set up and disconnect a connection while the rest of the time is spent transferring data.