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Running the Code:

In order to run the code, open two terminals and in both of the terminals, change directory to where the code is located. One of the terminals will act as the server and the other as the client. In the first terminal, type:

```
>python ./a3Server <port#> [<secret key>]
```

This will start the server. Now, in the other terminal, type one of the following:

```
//uploading
>cat <file> | ./a3Client write <filename> <hostIp>:<port#> <none/aes128/aes256> [<secret key>]

//downloading
>python ./a3Client.py read <file> <hostIp>:<port#> <none/aes128/aes256> [<secret key>] > <filename>
```

For the program to function as intended, the following must be true:

- server and client must use the same port number
- server and client must use the same secret key for successful communication
- '<file>' is an existing file on client side for uploading and on the server side for downloading
- if a cipher of either aes128/aes256 is given, a secret key must be provided for the client program

Discussion of Test Results:

As one would expect, the time to read/write increased proportionally to the size of the file being uploaded or downloaded. However, there is not a significant increase in time between the 1KB and the 1MB tests. It was observed that a "write" operation took slightly longer than a read operation for the 1KB and 1MB tests. However, there was not a significant difference between the aes128 and aes256 modes.

The 256MB results were surprisingly not aligned with the 1KB and the 1MB results. For example the aes128 "read" took longer than the aes256 "read" for the 256MB file size. An aes128 "read" also took longer than an aes256 "write" operation. This was not expected. These results are likely due to the fact that the 256MB tests were run on different machines, at different times. The reason for this was that there is not enough space to save 10 256MB files on the local machine. The amount reserved for students is 2.5 GB and in the case of this student 2.0 GH was already allocated. This was recognized the next day after running the tests and reviewing the results. A solution was to make use of the /tmp/ folder which had a typical capacity of 4.0 GB. When attempting to merge the tests, some errors were made and some of the 256MB tests had to be re-run. This is the likely reason for the inconsistent results. Due to time constraints of other assignments and deliverables, it was not possible to re-run the 256MB tests at this time.

As can be observed in the Graph, and raw data sections, significant time and effort was put in to collecting this data.

Protocol Description:

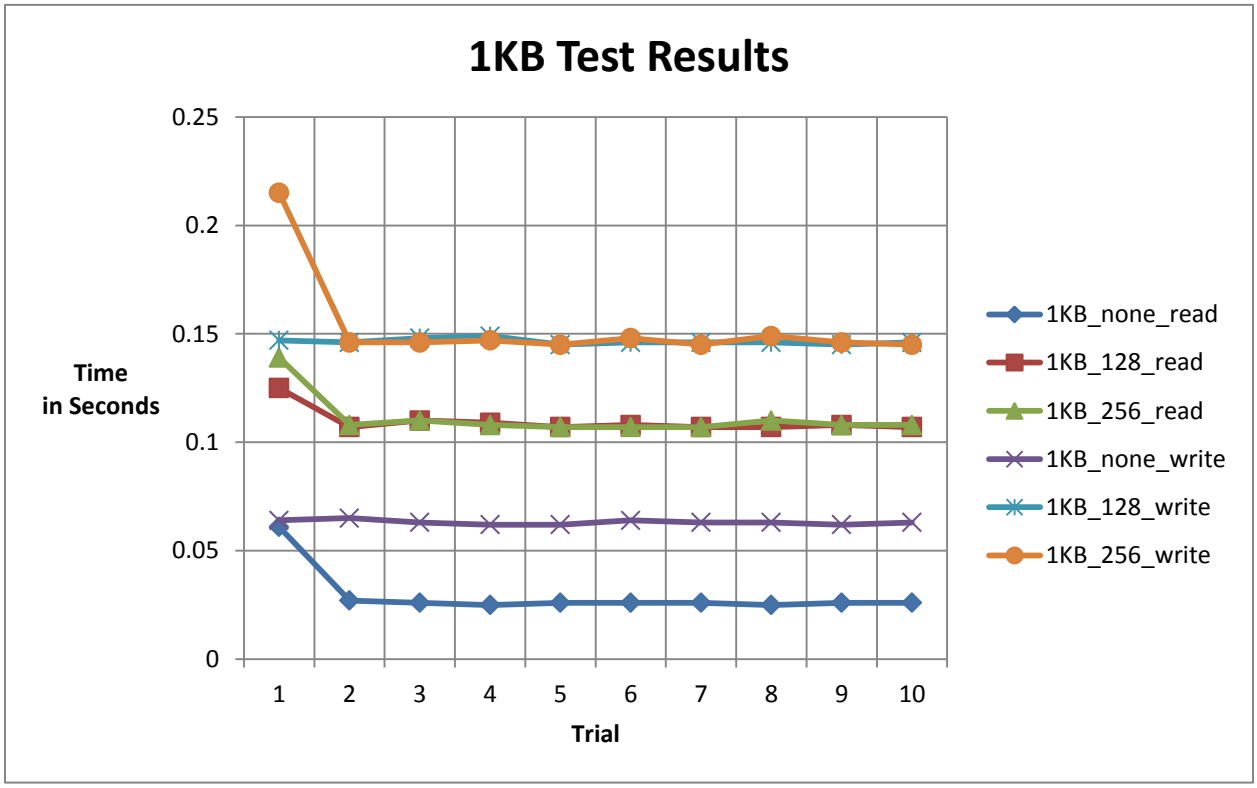
Table 1: Protocol Description

Client	Action	Server
	Server starts and either generates a random key or uses the key provided as an arg on cmdline	
	Server binds to the port and waits for incoming messages, echoing a message and the key to the screen.	
---->	Client connects	---->
---->	Client sends cipher in the clear	---->
<----	Server sends the string 'ack' in the clear back to client	<----
---->	Client determines if the message is a string 'ack', and if so does Client sends the IV in the clear.	---->
	If encryption is being used, Client initiates 'verify key'	
	The client creates a random 31 character string variable, call it message,	
	The client then: hashes message using an md5 hash function appends the hash to message, (ie message = message || hash_of_message) encrypts the appended message || hash_of_message	
---->	Sends to server	---->
	The Server then: decrypts the message determines length of the message – hash (ie length = len(message) – 32) parses the message portion and stores in avariable parses the hash portion and stores in a variable hashes the message portion compares the hash of the message portion to previously stored hash variable hashes message using an md5 hash function appends the hash to message, (ie message = message || hash_of_message) encrypts the appended message || hash_of_message	
<----	Sends to client	<----
	The Client then: Rreceives the server message, performs the same steps as above to verify the message and respective hash. If the hash is not correct the client shuts down and displays an error message	
<----	If key is valid Server sends 'ack' to client, encrypted if encryption is used	<----
	Client receives the ack and sends the command and filename to be used, (encrypted if necessary)	
	Server receives command, displays log info	
<----	If command is a **read**: Server verifies that file exists and sends 'ack' to client. If file does not exists, server sends error message in the form of a string and displays log message.	<----
---->	Client upon successful ack, Sends message to server	---->
<----	Server reads file, Server encrypts file, Server Sends file	<----
	Client receieves, Client decrypts Clients writes to stdout	
	if command is a write:	
---->	Client reads in the file, Client gets size of file, Client sends size to server	---->
<----	Server receives file size, Server Determines size of space on disk, Server sends ack if ok or error if no space	<----
<----	Client receives ack	<----
---->	Client encrypts and sends file	---->

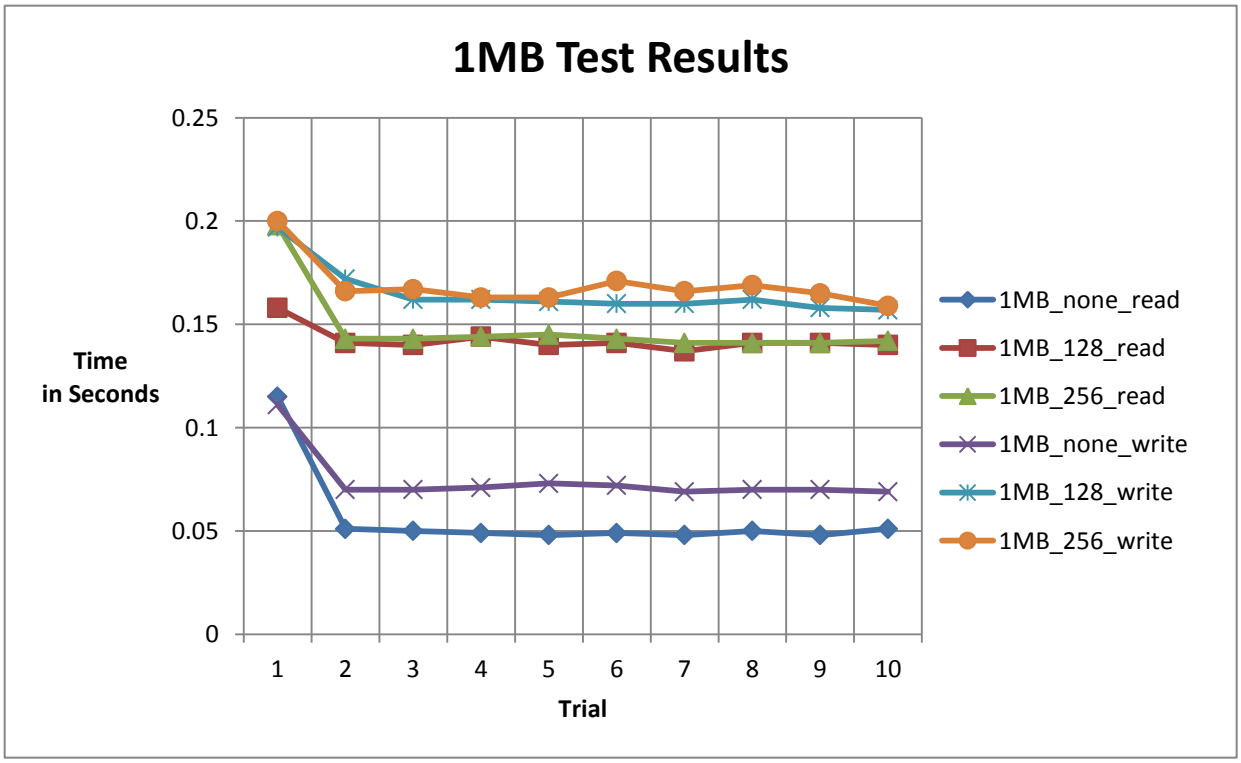
Table 2: Collected Test data

	1KB						1MB						256MB					
	none		AES128		AES256		none		AES128		AES256		none		AES128		AES256	
	read	write	read	write	read	write	read	write	read	write	read	write	read	write	read	write	read	write
1	0.061	0.064	0.125	0.147	0.139	0.215	0.115	0.111	0.158	0.197	0.198	0.2	2.561	2.444	6.845	3.772	5.882	4.123
2	0.027	0.065	0.107	0.146	0.108	0.146	0.051	0.07	0.141	0.172	0.143	0.166	2.518	3.321	6.161	6.281	5.849	5.737
3	0.026	0.063	0.11	0.148	0.11	0.146	0.05	0.07	0.14	0.162	0.143	0.167	2.523	3.297	6.095	6.099	5.961	5.858
4	0.025	0.062	0.109	0.149	0.108	0.147	0.049	0.071	0.144	0.162	0.144	0.163	2.516	3.27	6.066	5.978	5.839	5.962
5	0.026	0.062	0.107	0.145	0.107	0.145	0.048	0.073	0.14	0.161	0.145	0.163	2.526	3.382	6.135	5.989	5.857	5.934
6	0.026	0.064	0.108	0.146	0.107	0.148	0.049	0.072	0.141	0.16	0.143	0.171	2.744	3.175	6.093	5.92	5.863	5.853
7	0.026	0.063	0.107	0.146	0.107	0.145	0.048	0.069	0.137	0.16	0.141	0.166	2.657	3.269	6.096	6.056	5.806	6.38
8	0.025	0.063	0.107	0.146	0.11	0.149	0.05	0.07	0.141	0.162	0.141	0.169	2.724	3.289	6.298	6.113	5.812	5.74
9	0.026	0.062	0.108	0.145	0.108	0.146	0.048	0.07	0.141	0.158	0.141	0.165	2.729	3.495	6.369	6.552	5.799	5.823
10	0.026	0.063	0.107	0.146	0.108	0.145	0.051	0.069	0.14	0.157	0.142	0.159	2.789	3.247	6.231	6.314	5.987	5.887

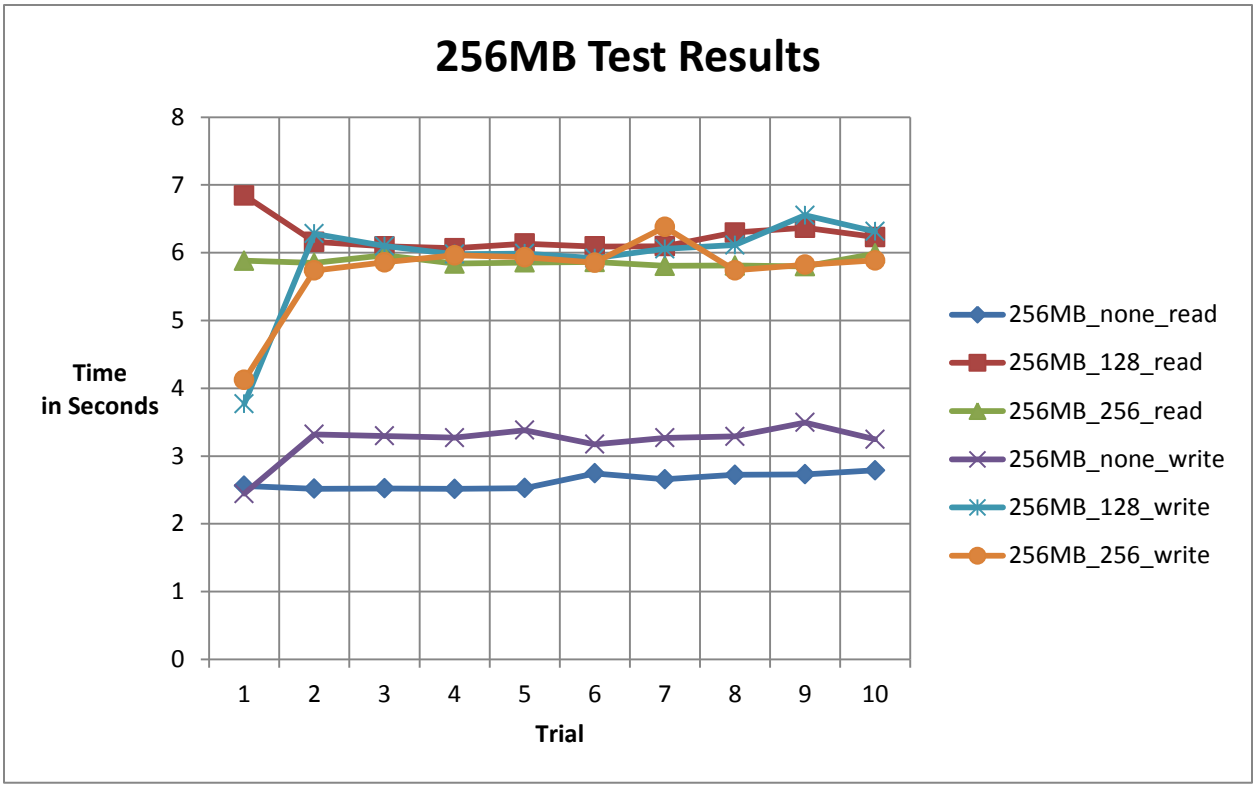
Graph 1: 1KB Test Results



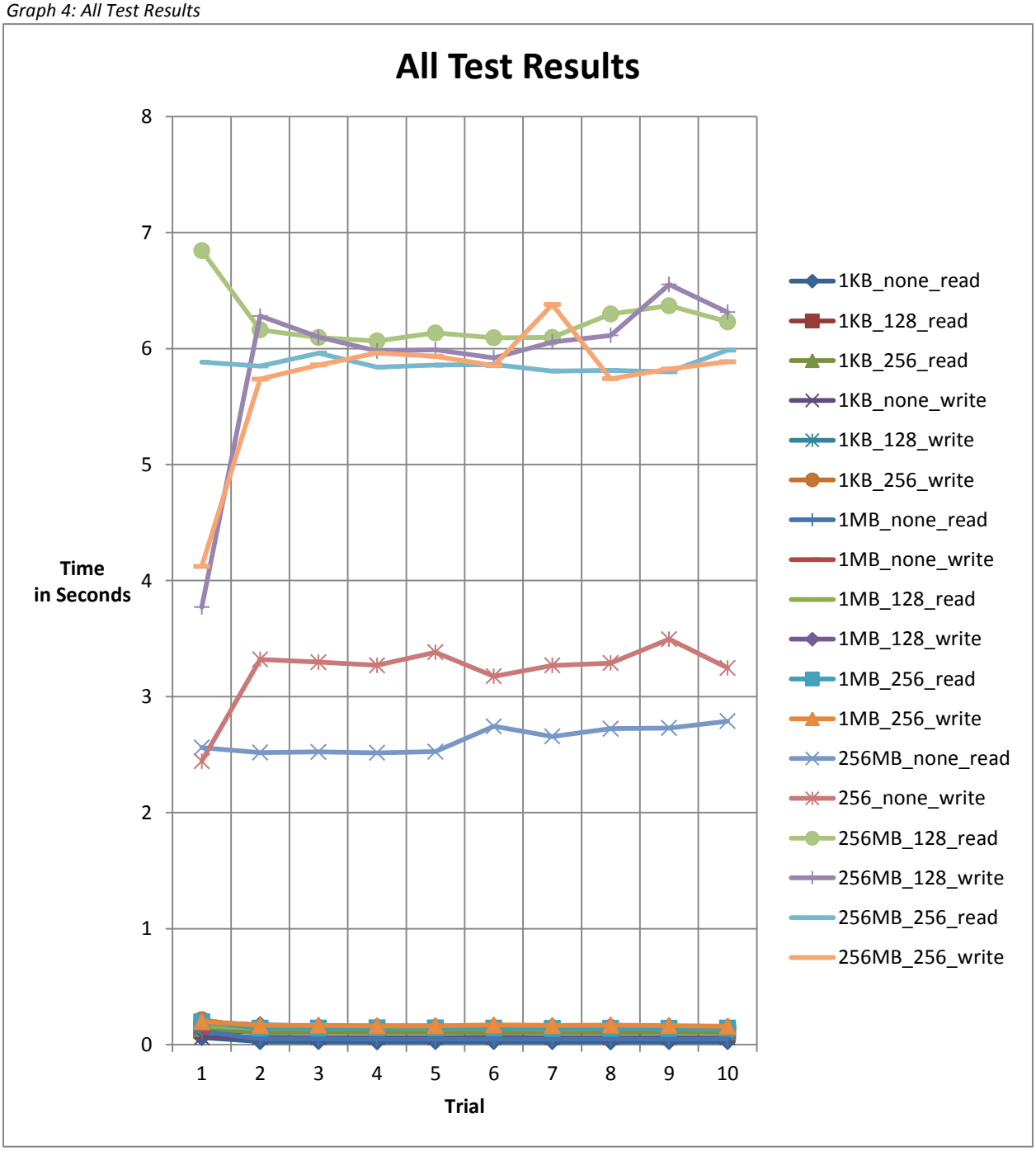
Graph 2: 1MB Test Results



Graph 3: 256MB Test Results



Graph 4: All Test Results



Raw Test Data:

Tests 1 - 10
File = 1KB.bin
Encryption = none
Command: read
for((i=0; i<10; i++)); do time python a3Client.py read 1KB.bin 172.19.1.157:9998 none > 1KB_bin_output$i.bin; done

real 0m0.061s
user 0m0.037s
sys 0m0.014s

real 0m0.027s
user 0m0.016s
sys 0m0.007s

real 0m0.026s
user 0m0.014s
sys 0m0.008s

real 0m0.025s
user 0m0.016s
sys 0m0.006s

real 0m0.026s
user 0m0.016s
sys 0m0.006s

real 0m0.026s
user 0m0.016s
sys 0m0.006s

real 0m0.026s
user 0m0.014s
sys 0m0.009s

real 0m0.025s
user 0m0.016s
sys 0m0.006s

real 0m0.026s
user 0m0.013s
sys 0m0.009s

real 0m0.026s
user 0m0.020s
sys 0m0.003s

sha256sum 1KB*.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output0.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output1.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output2.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output3.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output4.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output5.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output6.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output7.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output8.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output9.bin

Tests 11- 20
File: 1MB.bin
Encryption = none
Command = read

for((i=0; i<10; i++)); do time python a3Client.py read 1MB.bin 172.19.1.157:9998 none > 1MB_bin_output$i.bin; done

real 0m0.115s
user 0m0.021s
sys 0m0.015s

real 0m0.051s
user 0m0.018s
sys 0m0.006s

real 0m0.050s
user 0m0.017s
sys 0m0.007s

real 0m0.049s
user 0m0.015s
sys 0m0.008s

real 0m0.048s
user 0m0.014s
sys 0m0.009s

real 0m0.049s
user 0m0.015s
sys 0m0.009s

real 0m0.048s
user 0m0.014s
sys 0m0.010s

real 0m0.050s
user 0m0.018s
sys 0m0.005s

real 0m0.048s
user 0m0.011s
sys 0m0.012s

real 0m0.051s
user 0m0.014s
sys 0m0.009s

sha256sum 1MB*.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output0.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output1.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output2.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output3.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output4.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output5.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output6.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output7.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output8.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output9.bin

Tests 21- 30
File: 256MB.bin
Encryption = none
Command = read

ffor((i=0; i<10; i++)); do time python a3Client.py read 256MB.bin 172.19.2.81:9998 none > 256MB_bin_output$i.bin; done

real 0m2.561s
user 0m0.096s
sys 0m0.262s

real 0m2.518s
user 0m0.117s
sys 0m0.356s

real 0m2.523s
user 0m0.068s
sys 0m0.244s

real 0m2.516s
user 0m0.060s
sys 0m0.225s

real 0m2.526s
user 0m0.051s
sys 0m0.197s

real 0m2.744s
user 0m0.068s
sys 0m0.207s

real 0m2.657s
user 0m0.089s
sys 0m0.401s

real 0m2.724s
user 0m0.067s
sys 0m0.220s

real 0m2.729s
user 0m0.084s
sys 0m0.266s

real 0m2.789s
user 0m0.050s
sys 0m0.224s

[msimiste@zone40-ta Assignment3]$ sha256sum 256MB*.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB_bin_output0.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB_bin_output1.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB_bin_output2.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB_bin_output3.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB_bin_output4.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB_bin_output5.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB_bin_output6.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB_bin_output7.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB_bin_output8.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB_bin_output9.bin

Tests 31- 40
File: 1KB.bin
Encryption = aes128
User Chosen Key: secretKey123459a
Command = read

for((i=0; i<10; i++)); do time python a3Client.py read 1KB.bin 172.19.1.157:9998 aes128 secretKey123459a > 1KB_bin_output$i.bin; done

real 0m0.125s
user 0m0.028s
sys 0m0.008s

real 0m0.107s
user 0m0.016s
sys 0m0.006s

real 0m0.110s
user 0m0.018s
sys 0m0.006s

real 0m0.109s
user 0m0.020s
sys 0m0.003s

real 0m0.107s
user 0m0.016s
sys 0m0.005s

real 0m0.108s
user 0m0.019s
sys 0m0.004s

real 0m0.107s
user 0m0.013s
sys 0m0.008s

real 0m0.107s
user 0m0.016s
sys 0m0.006s

real 0m0.108s
user 0m0.018s
sys 0m0.004s

real 0m0.107s
user 0m0.016s
sys 0m0.005s

sha256sum 1KB*.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output0.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output1.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output2.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output3.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output4.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output5.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output6.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output7.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output8.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output9.bin

Tests 41- 50
File: 1MB.bin
Encryption = aes128
User Chosen Key: secretKey123459a
Command = read

for((i=0; i<10; i++)); do time python a3Client.py read 1MB.bin 172.19.1.157:9998 aes128 secretKey123459a > 1MB_bin_output$i.bin; done

real 0m0.158s
user 0m0.019s
sys 0m0.010s

real 0m0.141s
user 0m0.020s
sys 0m0.007s

real 0m0.140s
user 0m0.024s
sys 0m0.003s

real 0m0.144s
user 0m0.016s
sys 0m0.012s

real 0m0.140s
user 0m0.020s
sys 0m0.007s

real 0m0.141s
user 0m0.017s
sys 0m0.010s

real 0m0.137s
user 0m0.019s
sys 0m0.008s

real 0m0.141s
user 0m0.020s
sys 0m0.007s

real 0m0.141s
user 0m0.020s
sys 0m0.007s

real 0m0.140s
user 0m0.024s
sys 0m0.003s

sha256sum 1MB*.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output0.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output1.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output2.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output3.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output4.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output5.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output6.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output7.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output8.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output9.bin

Tests 51- 60
File: 256MB.bin
Encryption = aes128
User Chosen Key: secretKey123459a
Command = read

for((i=0; i<10; i++)); do time python a3Client.py read 256MB.bin 172.19.2.81:9998 aes128 notsosecret123 > 256MB_bin_output$i.bin; done

real 0m6.845s
user 0m1.299s
sys 0m0.553s

real 0m6.161s
user 0m1.206s
sys 0m0.511s

real 0m6.095s
user 0m1.212s
sys 0m0.489s

real 0m6.066s
user 0m1.228s
sys 0m0.552s

real 0m6.135s
user 0m1.243s
sys 0m0.543s

real 0m6.093s
user 0m1.187s
sys 0m0.434s

real 0m6.096s
user 0m1.187s
sys 0m0.464s

real 0m6.298s
user 0m1.184s
sys 0m0.432s

real 0m6.369s
user 0m1.171s
sys 0m0.435s

real 0m6.231s
user 0m1.164s
sys 0m0.479s

[msimiste@zone40-ta Assignment3]$ sha256sum 256MB*.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB_bin_output0.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB_bin_output1.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB_bin_output2.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB_bin_output3.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB_bin_output4.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB_bin_output5.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB_bin_output6.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB_bin_output7.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB_bin_output8.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB_bin_output9.bin

Tests 61- 70
File: 1KB.bin
Encryption = aes256
User Chosen Key: secretKey123459a
Command = read

for((i=0; i<10; i++)); do time python a3Client.py read 1KB.bin 172.19.1.157:9998 aes256 secretKey123459a > 1KB_bin_output$i.bin; done

real 0m0.139s
user 0m0.039s
sys 0m0.007s

real 0m0.108s
user 0m0.016s
sys 0m0.007s

real 0m0.110s
user 0m0.019s
sys 0m0.005s

real 0m0.108s
user 0m0.017s
sys 0m0.005s

real 0m0.107s
user 0m0.017s
sys 0m0.004s

real 0m0.107s
user 0m0.020s
sys 0m0.002s

real 0m0.107s
user 0m0.017s
sys 0m0.005s

real 0m0.110s
user 0m0.019s
sys 0m0.005s

real 0m0.108s
user 0m0.016s
sys 0m0.007s

real 0m0.108s
user 0m0.015s
sys 0m0.006s

sha256sum 1KB*.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output0.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output1.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output2.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output3.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output4.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output5.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output6.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output7.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output8.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output9.bin

Tests 71- 80
File: 1MB.bin
Encryption = aes256
User Chosen Key: secretKey123459a
Command = read

for((i=0; i<10; i++)); do time python a3Client.py read 1MB.bin 172.19.1.157:9998 aes256 secretKey123459a > 1MB_bin_output$i.bin; done

real 0m0.198s
user 0m0.019s
sys 0m0.017s

real 0m0.143s
user 0m0.023s
sys 0m0.005s

real 0m0.143s
user 0m0.021s
sys 0m0.007s

real 0m0.144s
user 0m0.023s
sys 0m0.005s

real 0m0.145s
user 0m0.020s
sys 0m0.009s

real 0m0.143s
user 0m0.020s
sys 0m0.009s

real 0m0.141s
user 0m0.020s
sys 0m0.009s

real 0m0.141s
user 0m0.019s
sys 0m0.009s

real 0m0.141s
user 0m0.022s
sys 0m0.006s

real 0m0.142s
user 0m0.018s
sys 0m0.011s

sha256sum 1MB*.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output0.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output1.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output2.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output3.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output4.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output5.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output6.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output7.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output8.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output9.bin

Tests 81- 90
File: 256MB.bin
Encryption = aes256
User Chosen Key: secretKey123459a
Command = read

for((i=0; i<10; i++)); do time python a3Client.py read 256MB.bin 172.19.2.81:9998 aes256 notsosecret123 > 256MB_bin_output$i.bin; done

real 0m5.882s
user 0m1.522s
sys 0m0.414s

real 0m5.849s
user 0m1.511s
sys 0m0.423s

real 0m5.961s
user 0m1.496s
sys 0m0.432s

real 0m5.839s
user 0m1.569s
sys 0m0.536s

real 0m5.857s
user 0m1.509s
sys 0m0.415s

real 0m5.863s
user 0m1.502s
sys 0m0.420s

real 0m5.806s
user 0m1.459s
sys 0m0.418s

real 0m5.812s
user 0m1.477s
sys 0m0.418s

real 0m5.799s
user 0m1.462s
sys 0m0.425s

real 0m5.987s
user 0m1.537s
sys 0m0.432s

sha256sum 256*.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66 256MB.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66 256MB_bin_output0.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66 256MB_bin_output1.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66 256MB_bin_output2.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66 256MB_bin_output3.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66 256MB_bin_output4.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66 256MB_bin_output5.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66 256MB_bin_output6.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66 256MB_bin_output7.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66 256MB_bin_output8.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66 256MB_bin_output9.bin

Tests 91- 100
File: 1KB.bin
Encryption = none
Command = write

for((i=0; i<10; i++)); do time python a3Client.py write 1KB_bin_output$i.bin 172.19.1.157:9998 none < 1KB.bin; done

real 0m0.064s
user 0m0.014s
sys 0m0.008s

real 0m0.065s
user 0m0.021s
sys 0m0.001s

real 0m0.063s
user 0m0.014s
sys 0m0.006s

real 0m0.062s
user 0m0.014s
sys 0m0.006s

real 0m0.062s
user 0m0.014s
sys 0m0.006s

real 0m0.064s
user 0m0.017s
sys 0m0.004s

real 0m0.063s
user 0m0.015s
sys 0m0.006s

real 0m0.063s
user 0m0.014s
sys 0m0.006s

real 0m0.062s
user 0m0.015s
sys 0m0.006s

real 0m0.063s
user 0m0.018s
sys 0m0.002s

sha256sum 1KB*.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output0.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output1.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output2.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output3.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output4.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output5.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output6.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output7.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output8.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output9.bin

Tests 101- 110
File: 1MB.bin
Encryption = none
Command = write

for((i=0; i<10; i++)); do time python a3Client.py write 1MB_bin_output$i.bin 172.19.1.157:9998 none < 1MB.bin; done

real 0m0.111s
user 0m0.018s
sys 0m0.007s

real 0m0.070s
user 0m0.015s
sys 0m0.005s

real 0m0.070s
user 0m0.013s
sys 0m0.008s

real 0m0.071s
user 0m0.013s
sys 0m0.008s

real 0m0.073s
user 0m0.018s
sys 0m0.004s

real 0m0.072s
user 0m0.017s
sys 0m0.005s

real 0m0.069s
user 0m0.011s
sys 0m0.010s

real 0m0.070s
user 0m0.014s
sys 0m0.007s

real 0m0.070s
user 0m0.015s
sys 0m0.006s

real 0m0.069s
user 0m0.016s
sys 0m0.004s

sha256sum 1MB*.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output0.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output1.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output2.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output3.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output4.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output5.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output6.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output7.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output8.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output9.bin

Tests 101- 110
File: 256MB.bin
Encryption = none
Command = write

```
 for((i=0; i<10; i++)); do time python a3Client.py write 256MB_bin_output$i.bin 172.19.2.81:9998 none < 256MB.bin; done
real    0m2.444s
user    0m0.039s
sys     0m0.145s

real    0m3.321s
user    0m0.016s
sys     0m0.169s

real    0m3.297s
user    0m0.016s
sys     0m0.136s

real    0m3.270s
user    0m0.016s
sys     0m0.135s

real    0m3.382s
user    0m0.016s
sys     0m0.193s

real    0m3.175s
user    0m0.012s
sys     0m0.137s

real    0m3.269s
user    0m0.016s
sys     0m0.141s

real    0m3.289s
user    0m0.016s
sys     0m0.197s

real    0m3.495s
user    0m0.016s
sys     0m0.137s

real    0m3.247s
user    0m0.016s
sys     0m0.135s

sha256sum 256*.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66  256MB.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66  256MB_bin_output0.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66  256MB_bin_output1.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66  256MB_bin_output2.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66  256MB_bin_output3.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66  256MB_bin_output4.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66  256MB_bin_output5.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66  256MB_bin_output6.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66  256MB_bin_output7.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66  256MB_bin_output8.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66  256MB_bin_output9.bin
```

Tests 121- 130
File: 1KB.bin
Encryption = aes128
User Chosen Key: secretKey123459a
Command = write

for((i=0; i<10; i++)); do time python a3Client.py write 1KB_bin_output$i.bin 172.19.1.157:9998 aes128 secretKey123459a < 1KB.bin; done

real 0m0.147s
user 0m0.015s
sys 0m0.006s

real 0m0.146s
user 0m0.015s
sys 0m0.006s

real 0m0.148s
user 0m0.018s
sys 0m0.005s

real 0m0.149s
user 0m0.019s
sys 0m0.005s

real 0m0.145s
user 0m0.015s
sys 0m0.006s

real 0m0.146s
user 0m0.016s
sys 0m0.005s

real 0m0.146s
user 0m0.016s
sys 0m0.005s

real 0m0.146s
user 0m0.017s
sys 0m0.004s

real 0m0.145s
user 0m0.013s
sys 0m0.007s

real 0m0.146s
user 0m0.017s
sys 0m0.004s

sha256sum 1KB*.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output0.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output1.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output2.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output3.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output4.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output5.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output6.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output7.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output8.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output9.bin

Tests 131- 140
File: 1MB.bin
Encryption = aes128
User Chosen Key: secretKey123459a
Command = write

for((i=0; i<10; i++)); do time python a3Client.py write 1MB_bin_output$i.bin 172.19.1.157:9998 aes128 secretKey123459a < 1MB.bin; done

real 0m0.197s
user 0m0.018s
sys 0m0.014s

real 0m0.172s
user 0m0.020s
sys 0m0.006s

real 0m0.162s
user 0m0.018s
sys 0m0.009s

real 0m0.162s
user 0m0.021s
sys 0m0.005s

real 0m0.161s
user 0m0.015s
sys 0m0.011s

real 0m0.160s
user 0m0.024s
sys 0m0.002s

real 0m0.160s
user 0m0.019s
sys 0m0.008s

real 0m0.162s
user 0m0.023s
sys 0m0.004s

real 0m0.158s
user 0m0.020s
sys 0m0.006s

real 0m0.157s
user 0m0.016s
sys 0m0.010s

sha256sum 1MB*.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output0.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output1.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output2.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output3.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output4.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output5.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output6.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output7.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output8.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output9.bin

Tests 141- 150
File: 256MB.bin
Encryption = aes128
User Chosen Key: secretKey123459a
Command = write

for((i=0; i<10; i++)); do time python a3Client.py write 256MB_bin_output$i.bin 172.19.2.81:9998 aes128 notsosecret123 < 256MB.bin; done

real 0m3.772s
user 0m1.162s
sys 0m0.269s

real 0m6.281s
user 0m1.151s
sys 0m0.295s

real 0m6.099s
user 0m1.144s
sys 0m0.353s

real 0m5.978s
user 0m1.123s
sys 0m0.365s

real 0m5.989s
user 0m1.136s
sys 0m0.367s

real 0m5.920s
user 0m1.123s
sys 0m0.303s

real 0m6.056s
user 0m1.140s
sys 0m0.366s

real 0m6.113s
user 0m1.137s
sys 0m0.406s

real 0m6.552s
user 0m1.155s
sys 0m0.348s

real 0m6.314s
user 0m1.133s
sys 0m0.306s

sha256sum 256*.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66 256MB.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66 256MB_bin_output0.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66 256MB_bin_output1.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66 256MB_bin_output2.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66 256MB_bin_output3.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66 256MB_bin_output4.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66 256MB_bin_output5.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66 256MB_bin_output6.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66 256MB_bin_output7.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66 256MB_bin_output8.bin
7f5b8a374b65b1030166bdcfe4a4f4bc1f499363e052c148592177198e6cea66 256MB_bin_output9.bin

Tests 151- 160
File: 1KB.bin
Encryption = aes256
User Chosen Key: secretKey123459a
Command = write

for((i=0; i<10; i++)); do time python a3Client.py write 1KB_bin_output$i.bin 172.19.1.157:9998 aes256 secretKey123459a < 1KB.bin; done

real 0m0.215s
user 0m0.033s
sys 0m0.021s

real 0m0.146s
user 0m0.017s
sys 0m0.004s

real 0m0.146s
user 0m0.016s
sys 0m0.006s

real 0m0.147s
user 0m0.020s
sys 0m0.003s

real 0m0.145s
user 0m0.018s
sys 0m0.003s

real 0m0.148s
user 0m0.017s
sys 0m0.006s

real 0m0.145s
user 0m0.014s
sys 0m0.007s

real 0m0.149s
user 0m0.020s
sys 0m0.004s

real 0m0.146s
user 0m0.017s
sys 0m0.004s

real 0m0.145s
user 0m0.013s
sys 0m0.007s

sha256sum *_bin_*.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output0.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output1.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output2.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output3.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output4.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output5.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output6.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output7.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output8.bin
b2a80f2d6be606a03ecb951d66a2466538f18a3fcdd9ab49ba460bc8553eb678 1KB_bin_output9.bin
Tests 161- 170

File: 1MB.bin
Encryption = aes256
User Chosen Key: secretKey123459a
Command = write

for((i=0; i<10; i++)); do time python a3Client.py write 1MB_bin_output$i.bin 172.19.1.157:9998 aes256 secretKey123459a < 1MB.bin; done

real 0m0.200s
user 0m0.027s
sys 0m0.009s

real 0m0.166s
user 0m0.022s
sys 0m0.005s

real 0m0.167s
user 0m0.026s
sys 0m0.005s

real 0m0.163s
user 0m0.019s
sys 0m0.008s

real 0m0.163s
user 0m0.023s
sys 0m0.004s

real 0m0.171s
user 0m0.023s
sys 0m0.004s

real 0m0.166s
user 0m0.028s
sys 0m0.003s

real 0m0.169s
user 0m0.023s
sys 0m0.008s

real 0m0.165s
user 0m0.024s
sys 0m0.005s

real 0m0.159s
user 0m0.024s
sys 0m0.003s

sha256sum 1MB*.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output0.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output1.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output2.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output3.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output4.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output5.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output6.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output7.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output8.bin
1bb48d0c89d72edf5d0720bbd9de1aeb646b3d5a5e80a1bc7c52d4047aecd26f 1MB_bin_output9.bin

Tests 171- 180
File: 256MB.bin
Encryption = aes256
User Chosen Key: secretKey123459a
Command = write

for((i=0; i<10; i++)); do time python a3Client.py write 256MB_bin_output$i.bin 172.19.2.81:9998 aes256 notsosecret123 < 256MB.bin; done

real 0m4.123s
user 0m1.472s
sys 0m0.309s

real 0m5.737s
user 0m1.454s
sys 0m0.294s

real 0m5.858s
user 0m1.441s
sys 0m0.353s

real 0m5.962s
user 0m1.437s
sys 0m0.301s

real 0m5.934s
user 0m1.463s
sys 0m0.297s

real 0m5.853s
user 0m1.429s
sys 0m0.322s

real 0m6.380s
user 0m1.426s
sys 0m0.328s

real 0m5.740s
user 0m1.424s
sys 0m0.315s

real 0m5.823s
user 0m1.412s
sys 0m0.403s

real 0m5.887s
user 0m1.466s
sys 0m0.294s

sha256sum 256*.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB_bin_output0.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB_bin_output1.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB_bin_output2.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB_bin_output3.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB_bin_output4.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB_bin_output5.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB_bin_output6.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB_bin_output7.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB_bin_output8.bin
1e87c536c0ec309e125e87e9776dcc5f4bd7ac2590206f2dadae6670a66aa791 256MB_bin_output9.bin