

```
ec2-user@ip-172-31-88-180:~$ aws s3 ls s3://stat196k-data-examples --no-sign-request
PRE dir1/
2021-02-03 04:25:13      0 -
2021-02-04 18:25:30 4150844161 2018.csv.gz
2021-02-03 03:31:08 41328290 20190203.csv
2021-02-03 04:28:46 65780184 20190204.csv
2021-02-04 19:37:55 27344 GDELT_2.0_Events_Column_Labels_Header_Row_Sep2016.csv
2021-02-04 15:36:17      6 a.csv
2021-02-04 15:36:17      4 a.txt
2021-02-04 15:36:17      4 b.txt
[ec2-user@ip-172-31-88-180 ~]$ time aws s3 cp s3://stat196k-data-examples/20190203.csv ./ --no-sign-request
download: s3://stat196k-data-examples/20190203.csv to ./20190203.csv

real    0m1.745s
user    0m0.780s
sys     0m0.112s
[ec2-user@ip-172-31-88-180 ~]$ ls
20190203.csv  README  stat196K

azhu@DESKTOP-L04AJ0L:/mnt/c/Users/Andy/downloads$ time wget https://stat196k-data-examples.s3.amazonaws.com/20190203.csv
--2021-02-04 16:41:17-- https://stat196k-data-examples.s3.amazonaws.com/20190203.csv
Resolving stat196k-data-examples.s3.amazonaws.com (stat196k-data-examples.s3.amazonaws.com)... 52.217.12.204
Connecting to stat196k-data-examples.s3.amazonaws.com (stat196k-data-examples.s3.amazonaws.com)|52.217.12.204|:443... co
nnected.
HTTP request sent, awaiting response... 200 OK
Length: 41328290 (39M) [text/csv]
Saving to: '20190203.csv'

20190203.csv          100%[=====] 39.41M  4.33MB/s   in 13s

2021-02-04 16:41:30 (3.13 MB/s) - '20190203.csv' saved [41328290/41328290]

real    0m13.188s
user    0m0.366s
sys     0m0.618s
azhu@DESKTOP-L04AJ0L:/mnt/c/Users/Andy/downloads$
```

1. SSH to an EC2 instance.

`ssh ec2-user@ec2-54-91-113-242.compute-1.amazonaws.com`

2. Find which files are in the bucket `stat196k-data-examples`.

Variety of .csv files

3. How large are these files?

The two larger .csv files are around 40MB and 65 MB.

4. How many files are in the bucket?

Initially there were two files but currently, there are seven.

5. Time how long it takes to download one of the files from S3 to your EC2 instance. What is a lower bound for the network bandwidth?

It took 1.745s to download the 20190203.csv file to the EC2 instance.

6. How long does it take to download the same file to your local machine?

It took 13.188s to download the 20190203.csv file to my local machine.

7. How much faster is it to access the data in S3 from an EC2 instance versus downloading it?

You can download at least seven copies of the 20190203.csv files to your EC2 instance in the same amount of time it takes to download one copy to your local machine.