Lab 4 Report – Backups  
CS3670

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1. Considering the additional time that verification adds to a backup session, justify its use.

The increase in relative time using verification after a backup was 36%, from 5.26 hours to 7.16 hours per 1TB data. Since verifying is still relatively fast compared to other options, for critical data backups, using a verification could be a great option to have a peace of mind.

1. Considering the time and size differences that compression has on a backup session, describe the circumstances under which compression should be used.

The compression allows to reduce the backup size by 53% at a cost of 131% increased time. It takes more than double the time to produce a file roughly half the size. If a backup file size is large but the task is not time sensitive, using a compression might be a good option to reduce storage usage.

1. Considering the time and size differences that encryption has on a backup session, what recommendation(s) would you give about using encryption? Justify your recommendation(s).

Encryption has the lowest performance impact among all other options, adding only 18% of time. Per 1TB, it is from 5.26 hours to 6.22 hours. The time difference is marginal compared to other options with almost no change to the file size (32 bytes increased). Since practicing security is always a good habit I could recommend to use encryption all the time when possible to protect the data.

1. Describe any extra experimentation you performed.

I tested other encryption methods, such as AES 256 CTR and Blowfish.

Blowfish(0.224s) was slower than AES 256 CBC (0.195s), while AES 256 CTR (0.079s) being the fastest. Interestingly, all of the file sizes were similar with only a couple bytes difference. This could show that encryption strength or speed has no or minimal relation to the file size.

1. What did you learn in this lab assignment?

How to create a backup and compare various options to alternate its form via compression or encryption to achieve specific needs.

1. How could this lab be improved?

Maybe more compression methods or encryption methods would be nice to learn.