# Data Encryption

[Encryption](http://en.wikipedia.org/wiki/Encryption) is a process whose goal is to make data usable only by those who are authorized to do so. When you encrypt a file you use a specific key to make a copy that is generally unreadable. The file can only be decoded using a matching decryption protocol and an appropriate decryption key. In essence, encryption is a form of digital lock that prevents anyone from accessing data without one of these keys. If a computer is stolen or used by someone without permission, encrypted files and folders will be inaccessible.

## Encryption at rest options

### Using a program to encrypt files in a folder

AxCrypt is a free product which allows the user to right click the file to encrypt and simply double-click to open and decrypt the file:

<http://www.axantum.com/AxCrypt/>

Other options include PGP and VeraCrypt.

### Using an encrypted Flash Drive

Encrypted flash drives should use 256-bit AES encryption to store files securely. Most are usable on all operating systems (Windows, Mac, Linux, Android). The cost is ~$60 for 4 GB of storage.

One possible option is:

Apricorn Aegis Secure Key FIPS Validated 4 GB USB 2.0 256-bit AES-CBC Encrypted Flash Drive ASK-256-4GB (Black)

[http://www.amazon.com/gp/product/B00741U31E/ref=pd\_lpo\_sbs\_dp\_ss\_3?pf\_rd\_p=1944687682&pf\_rd\_s=lpo-top-stripe-1&pf\_rd\_t=201&pf\_rd\_i=B008BYYZOY&pf\_rd\_m=ATVPDKIKX0DER&pf\_rd\_r=13526WKNZ6N6TQF2C1AT](http://www.amazon.com/gp/product/B00741U31E/ref%3Dpd_lpo_sbs_dp_ss_3?pf_rd_p=1944687682&pf_rd_s=lpo-top-stripe-1&pf_rd_t=201&pf_rd_i=B008BYYZOY&pf_rd_m=ATVPDKIKX0DER&pf_rd_r=13526WKNZ6N6TQF2C1AT)

### Using operating systems with built in encryption

Many operating systems have encryption built into them. Windows OS 8.1 or higher allows device encryption. Mac OS 10.10 or higher offers FileVault protection. iOS 8 or higher uses encryption by default, but only when you are using passcodes. Android 5.0 or higher does the same, but you also need to enable passcodes for it to be effective. Linux OSes have encryption available, but it varies by distribution. There is a good explanation of all of these, here:

<http://www.howtogeek.com/200211/6-popular-operating-systems-offering-encryption-by-default/>