

Useful Bits & Pieces #6

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Computers 1,000 Times Faster?

Today the speed of CPUs is measured in GHz. Typically, modern CPUs are clocked at 1-3 GHz. The CPU of the IBM PC of 1981 had a clock speed of 4.8 MHz, or a bit faster than 1/1000th of today's CPUs. Now imagine CPUs with clock speeds of 1000 times the speed of today's hardware. Investigators at the University of Pittsburgh have excited a silicon crystal with a laser pulse to reflect light that oscillates at 15.6 THz, which the highest known mechanical frequency of atoms to date. See <http://www.news.pitt.edu/terahertz> and <http://www.nature.com/nphoton/journal/v6/n4/full/nphoton.2012.35.html> for more information. This important finding points the way to what we might expect in the future, but the availability of CPUs with THz clock speeds is years away.

- MHz (megahertz—million cycles per second; 10^6 cps)
- GHz (gigahertz—billion cycles per second; ; 10^9 cps)
- THz (terahertz—trillion cycles per second; ; 10^{12} cps)

Cloud Backup:

Two maxims: (1) any backup is better than no backup and (2) there are pros and cons to every backup scheme. You may wish to consider backing-up your computer(s) to the cloud. There are numerous companies offering this service. The pros of cloud backup are: (a) off-site storage, (b) the provider is responsible for maintaining your backup, (c) generally easy to set up and backups are automatic, and (d) no extra hardware is required. The cons are: (a) some concern, but manageable, for security of your information, (b) the provider may go out of business, (c) the first backup is slow, and (d) cloud backup is more expensive than backup to local storage. Cloud backup is “file” oriented rather than “image” oriented, i.e., it isn't practical to create and store an image of a computer's hard disk drive, thus full system recovery is more complex and time consuming than backup schemes that include disk imaging. In Table 1 are a number of companies that provide backup services. There are many others available. No recommendation or endorsement is made or implied. Be sure to carefully read the terms-of-service.

Table 1: Cloud Backup Services

Provider	Reference	Computer	Price
Acronis True Image Online	http://www.acronis.com/homecomputing/products/online-backup/	PC only	\$4.95/month for 250 GB
Carbonite	http://www.carbonite.com/en/3 http://www.carbonite.com/en/home/online-backup	PC & Mac	Three plans: \$59/year, \$99/year and \$149/year. See http://www.carbonite.com/en/home/online-backup-pricing
Code 42 CrashPlan	http://www.crashplan.com/consumer/crashplan-plus.html	PC, Mac, Linux, Solaris	\$1.50 to \$6.00/month 10 to unlimited GB, 1-10 computers

Provider	Reference	Computer	Price
JustCloud	http://www.justcloud.com/	PC only	\$4.95 to \$9.95/month. Unlimited storage
Livedrive	http://www.livedrive.com/ForHome	PC & Mac	\$7.95/month 1 computer, unlimited storage \$15.95/month, 2 TB, files on all devices \$24.95/month, unlimited, 5 computers
Mozy	http://mozy.com/home/	PC & Mac	\$5.99/month for 50 GB \$9.99/month for 125 GB Add \$2.00/month for each additional 20 GB
MyPCBackup	http://www.mypcbackup.com/	PC only	\$9.95/month, unlimited storage
Rebit	http://rebit.com/	PC only	\$6.67/month for 50 GB \$10.83/month for 100 GB
SOS Online Backup	http://www.sosonlinebackup.com/	PC & Mac & other devices	\$6.66/month for 50 GB \$8.33/month for 100 GB \$12.50/month for 150 GB
ZipCloud	http://www.zipcloud.com/	PC & Mac	\$6.95/month for 75 GB \$7.95/month for 250 GB \$9.95/month unlimited GB

Synchronization via the Cloud:

Other companies offer a Cloud service that makes files available across multiple devices. Thus you could have a collection of PowerPoint presentations, photos, Word documents, etc., accessible on your desktop computer, iPad, laptop and other devices. Of course such a service could also be used for backup, but the emphasis on the services in Table 2 is on sharing and synchronizing files. There are many companies providing this service. Again, no recommendation or endorsement is made or implied. Carefully read the terms-of-service keeping in mind you probably will be storing unencrypted information.

Table 2: File Synchronization and Sharing

Provider	Reference	Computer	Storage	Comments
Dropbox	https://www.dropbox.com/ https://www.dropbox.com/help	PC, Mac, Linux, & Mobile	2 GB free +50 GB/yr \$99 +100 GB/yr \$199	
Box	https://www.box.com/ https://www.box.com/personal/ http://blog.box.com/	PC, Mac, Linux, Mobile, & iPad	5 GB free 1000 GB/yr \$180	Minimum 3 users. Oriented toward businesses
Google Drive	https://drive.google.com/start#home	PC, Mac & Android	5 GB free +25 GB/yr \$29.88 +100 GB/yr \$59.88	
Microsoft SkyDrive	http://windows.microsoft.com/en-us/skydrive/home	PC, Mac, iPhone, iPad, Windows phone & others	7 GB free +20 GB/yr \$10 +50 GB/yr \$25 +100 GB/yr \$50	

Provider	Reference	Computer	Storage	Comments
Apple iCloud	http://www.apple.com/icloud/	PC & Mac	5 GB free +10 GB/yr \$20 +20 GB/yr \$40 +50 GB/yr \$100	

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