

## Personal File Storage

Personal file storage services are aimed at private individuals, offering a sort of "network storage" for personal backup, file access, or file distribution. Users can upload their files and share them publicly or keep them password-protected.

Prior to the advent of personal file storage services, off-site backup services were not typically affordable for individual and small office computer users.

Sometimes people prefer hosting their files on a publicly accessible HTTP server. In this case, they generally choose paid hosting, and use their hosting for this purpose. Many free hosting providers do not allow the storage of files for non-website-related use.

Common file hosting services include:

Amazon Cloud Drive, Box.net, Dropbox, FileServe, Gladwinput, Google Drive, Hotfile, Humyo, Jungle Disk, Apple's iCloud, iDisk, MediaFire, Mozy, RapidShare, Microsoft's SkyDrive, Softonic, SpiderOak, SugarSync, SwissDisk, Ubuntu One, Wuala, Yousendit, ZShare, and many more

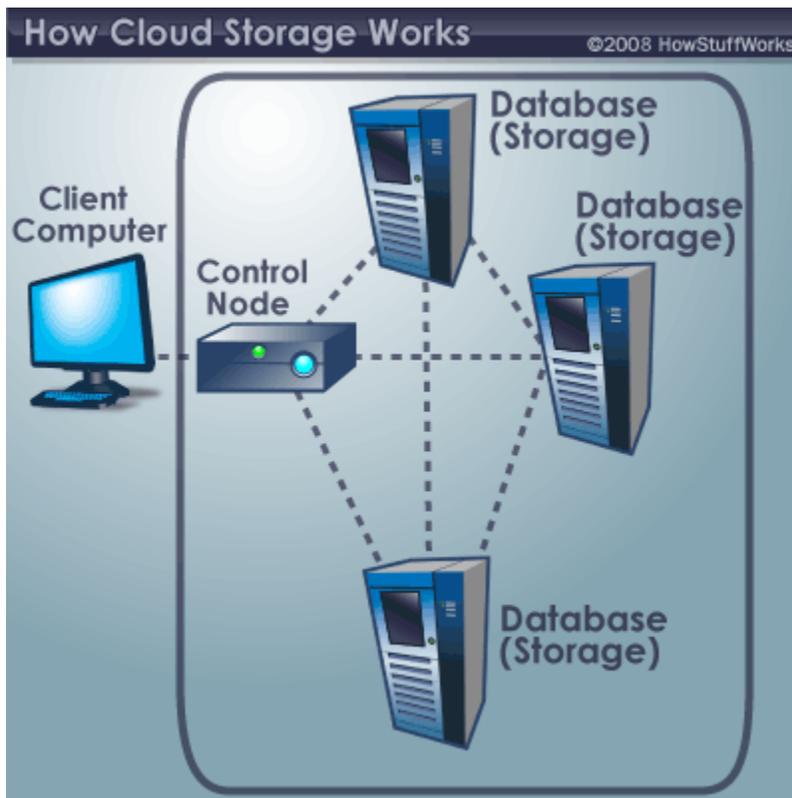
Scribd, Docstoc, Google Docs, Issuu, wePapers and Yumpu are document-sharing services.

## How Cloud Storage Works

Typical cloud storage system architecture includes a master control server and several storage servers.

Comedian George Carlin has a routine in which he talks about how humans seem to spend their lives accumulating "stuff." Once they've gathered enough stuff, they have to find places to store all of it. If Carlin were to update that routine today, he could make the same observation about computer information. It seems that everyone with a computer spends a lot of time acquiring data and then trying to find a way to store it.

For some computer owners, finding enough storage space to hold all the data they've acquired is a real challenge. Some people invest in larger hard drives. Others prefer external storage devices like thumb drives or compact discs. Desperate computer owners might delete entire folders worth of old files in order to make space for new information. But some are choosing to rely on a growing trend: cloud storage.



While cloud storage sounds like it has something to do with weather fronts and storm systems, it really refers to saving data to an off-site storage system maintained by a third party. Instead of storing information to your computer's hard drive or other local storage device, you save it to a remote database.

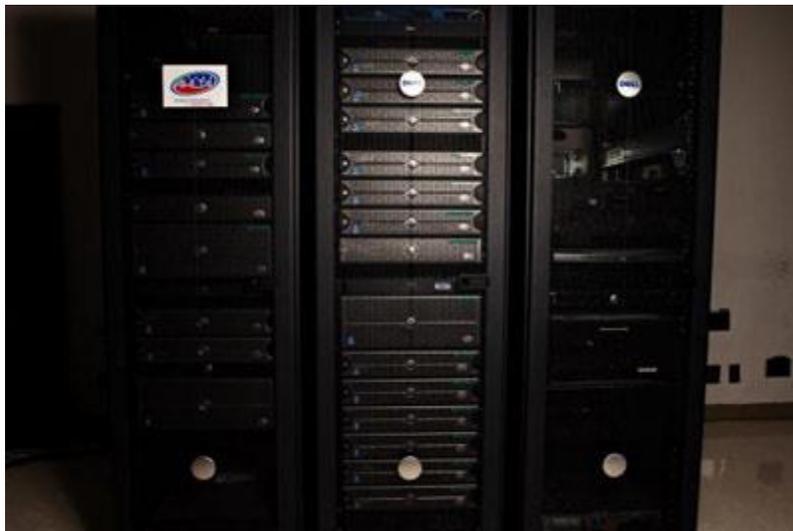
The Internet provides the connection between your computer and the database.

On the surface, cloud storage has several advantages over traditional data storage. For example, if you store your data on a cloud storage system, you'll be able to get to that data from any location that has Internet access. You wouldn't need to carry around a physical storage device or use the same computer to save and retrieve your information. With the right storage system, you could even allow other people to access the data, turning a personal project into a collaborative effort.

## Cloud Storage Basics

There are hundreds of different cloud storage systems. Some have a very specific focus, such as storing Web e-mail messages or digital pictures. Others are available to store all forms of digital data. Some cloud storage systems are small operations, while others are so large that the physical equipment can fill up an entire warehouse. The facilities that house cloud storage systems are called data centers.

At its most basic level, a cloud storage system needs just one data server connected to the Internet. A client (e.g., a computer user subscribing to a cloud storage service) sends copies of files over the Internet to the data server, which then records the information. When the client wishes to retrieve the information, he or she accesses the data server through a Web-based interface. The server then either sends the files back to the client or allows the client to access and manipulate the files on the server itself.



Cloud storage systems generally rely on hundreds of data servers. Because computers occasionally require maintenance or repair, it's important to store the same information on multiple machines. This is called redundancy. Without redundancy, a cloud storage system couldn't ensure clients that they could access their information at any given time. Most systems store the same data on servers that

use different power supplies. That way, clients can access their data even if one power supply fails.

Not all cloud storage clients are worried about running out of storage space. They use cloud storage as a way to create backups of data. If something happens to the client's computer system, the data survives off-site. It's a digital-age variation of "don't put all your eggs in one basket."

## Examples of Cloud Storage

There are hundreds of cloud storage providers on the Web, and their numbers seem to increase every day. Not only are there a lot of companies competing to provide storage, but also the amount of storage each company offers to clients seems to grow regularly.

You're probably familiar with several providers of cloud storage services, though you might not think of them in that way. Here are a few well-known companies that offer some form of cloud storage:

- Google Docs allows users to upload documents, spreadsheets and presentations to Google's data servers. Users can edit files using a Google application. Users can also publish documents so that other people can read them or even make edits, which means Google Docs is also an example of cloud computing.
- Web e-mail providers like Gmail, Hotmail and Yahoo! Mail store e-mail messages on their own servers. Users can access their e-mail from computers and other devices connected to the Internet.
- Sites like Flickr and Picasa host millions of digital photographs. Their users create online photo albums by uploading pictures directly to the services' servers.
- YouTube hosts millions of user-uploaded video files.
- Web site hosting companies like StartLogic, Hostmonster and GoDaddy store the files and data for client Web sites.
- Social networking sites like Facebook and MySpace allow members to post pictures and other content. All of that content is stored on the respective site's servers.
- Services like Xdrive, MediaMax and Strongspace offer storage space for any kind of digital data.

Some of the services listed above are free. Others charge a flat fee for a certain amount of storage, and still others have a sliding scale depending on what the client needs. In general, the price for online storage has fallen as more companies have entered the industry. Even many of the companies that charge for digital storage offer at least a certain amount for free.

Is there enough of a demand for storage to support all the companies jumping into the market? Some people think that if there's space to be filled, someone will fill it. Others think the industry is destined to experience a crash not unlike the dot-com bubble burst in 2000. We'll have to wait and see.

## Potential Cloud Storage Problems

### Data Center Design

- Physical security is just as important as network security. Data servers are valuable not only because the machines themselves are expensive, but also because the data stored on them could include sensitive information. Malicious hackers don't rely solely on cracking into a computer system electronically -- sometimes they try to infiltrate a system by gaining access to its physical computers.
- A single data server's power requirements aren't very taxing. But when a data center has hundreds of servers, it's crucial that the center's electric wiring can support the workload.
- Like all computers, data servers generate heat. Too much heat can impair or damage servers, so the data center needs an effective cooling system to prevent such problems.

### Concerns about Cloud Storage

The two biggest concerns about cloud storage are reliability and security. Clients aren't likely to entrust their data to another company without a guarantee that they'll be able to access their information whenever they want and no one else will be able to get at it.

To secure data, most systems use a combination of techniques, including:

- Encryption, which means they use a complex algorithm to encode information. To decode the encrypted files, a user needs the encryption key. While it's possible to crack encrypted information, most hackers don't have access to the amount of computer processing power they would need to decrypt information.
- Authentication processes, which require to create a user name and password.
- Authorization practices -- the client lists the people who are authorized to access information stored on the cloud system. Many corporations have multiple levels of authorization. For example, a front-line employee might have very limited access to data stored on a cloud system, while the head of human resources might have extensive access to files.

Even with these protective measures in place, many people worry that data saved on a remote storage system is vulnerable. There's always the possibility that a hacker will find an electronic back door and access data. Hackers could also attempt to steal the physical machines on which data are stored. A disgruntled employee could alter or destroy data using his or her authenticated user name and password. Cloud storage companies invest a lot of money in security measures in order to limit the possibility of data theft or corruption.

The other big concern, reliability, is just as important as security. An unstable cloud storage system is a liability. No one wants to save data to a failure-prone system, nor do they want to trust a company that isn't financially stable. While most cloud storage systems try to address this concern through redundancy techniques, there's still the possibility that an entire system could crash and leave clients with no way to access their saved data.

Cloud storage companies live and die by their reputations. It's in each company's best interests to provide the most secure and reliable service possible. If a company can't meet these basic client expectations, it doesn't have much of a chance -- there are too many other options available on the market.



<b>\$119.88</b>	<b>\$59.50</b> iDrive	<b>\$59.99</b> Code42	<b>\$5.99</b> CertainSafe	<b>\$37.49</b> 50% off for PCMag users	<b>\$83.88</b>	<b>\$60</b>	<b>\$99</b>	<b>\$239.88</b>	<b>\$191.88</b> HighTail
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Rating										
Area of Specialization	Collaboration	Backup	Backup	Security	Simplicity, Ease of Use	Collaboration; Microsoft Office 365 Included With 1TB Purchase	Compatibility With Other Services; Business Use	Compatibility With Other Services	Apple Device Users	E-Signatures and File Delivery
Storage	1TB (\$119.88)	1TB (\$59.50)	Unlimited (\$59.99)	5GB (\$105.24)	100GB (\$74.99)	1TB (\$83.88)	100GB (\$60)	1TB (\$99)	1TB (\$239.88)	Unlimited (\$191.88)
File Size Limit	5TB	None	None	2GB	None	10GB	250MB With Free Account; 2GB With Starter Account	10GB; Unlimited With Desktop Client	15GB	250MB With Free Account; 10GB With Professional Account
Free Storage	15GB	5GB	Supplied by User	None	5GB 90-day free trial	15GB	10GB	2GB	5GB	2GB

Do you remember the days of emailing yourself files so you could work on one document from two different computers? In college, I used to draft essays in the computer lab, then email myself the Word document so that when I got home, I log onto my roommate's computer, download the paper, and finish it there. It's a highly error-prone and now outdated system thanks to online cloud storage and file-syncing.

If you don't yet have a service for storing and syncing your data in the cloud, you need one. You might even need more than one.

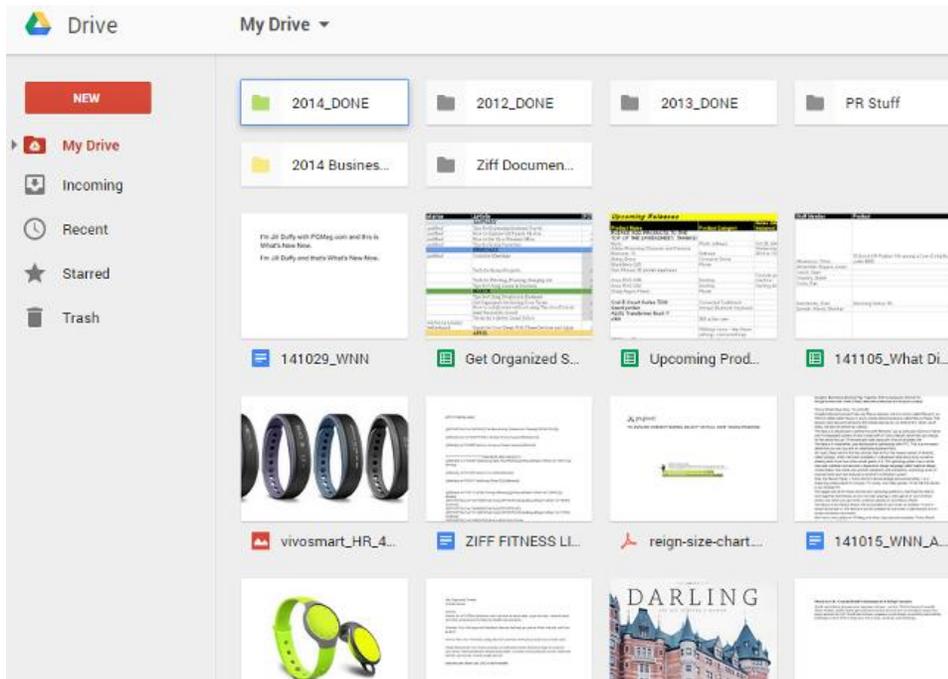
These days, you can sign up for an online cloud storage service, such as Dropbox, Box, or Google Drive, and have all your files made available to you no matter where you are or which device you're using. The very best cloud storage solutions play nicely with other apps and services to make the experience of *doing something* with your files relatively seamless to you.

Some cloud storage services are niche, such as one on this list that specializes in e-signatures, so your collaborators can sign all those documents that you're storing and sharing via the cloud. Other cloud services specialize in online backup, while still others shine for their file-syncing capabilities. File-syncing has become an integral part of online backup.

Many great cloud storage services have a free account that usually comes with a few limitations. Sometimes, however, it's worth paying for a service to get a lot more storage space or the ability to upload really big files. Other perks often include increased access to file-version history (meaning you could restore an important business proposal to the version you had before your colleague made a bunch of erroneous changes), more security, or more features for collaboration and working with teams.

If you want the utmost in comparisons, take a look at the [insane chart of cloud backup services](#) on Wikipedia.

Here are the best online cloud storage solutions we've tested.



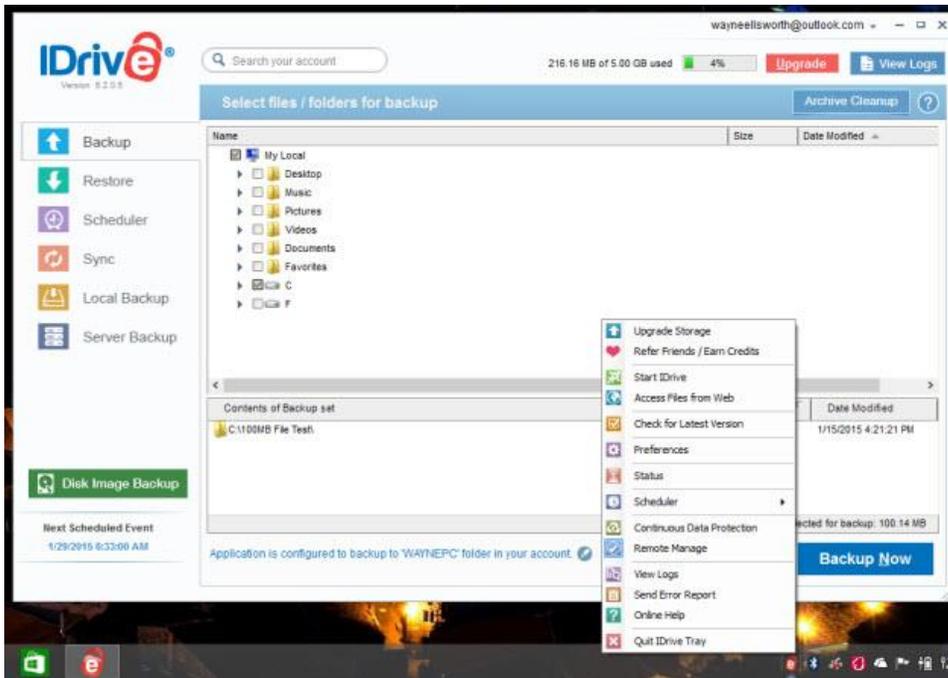
## Google Drive



**119.88**

Part online collaborative office suite, and part cloud storage platform, Google Drives offers everything you need to stay productive. Google Drive also has downloadable desktop programs that enable file syncing. Another perk is that files you create in Google Drive, as opposed to those you upload, don't count toward your already-generous, free 15GB storage allotment. Paid accounts start at \$1.99 per month for 100GB, and you can get 1TB for \$9.99 per month. For collaborative projects, it's one sweet package. It is Google, though, and some people may not be comfortable with its privacy terms and conditions.

**Available on:** Windows, Mac, Web, Chrome, Android, iOS



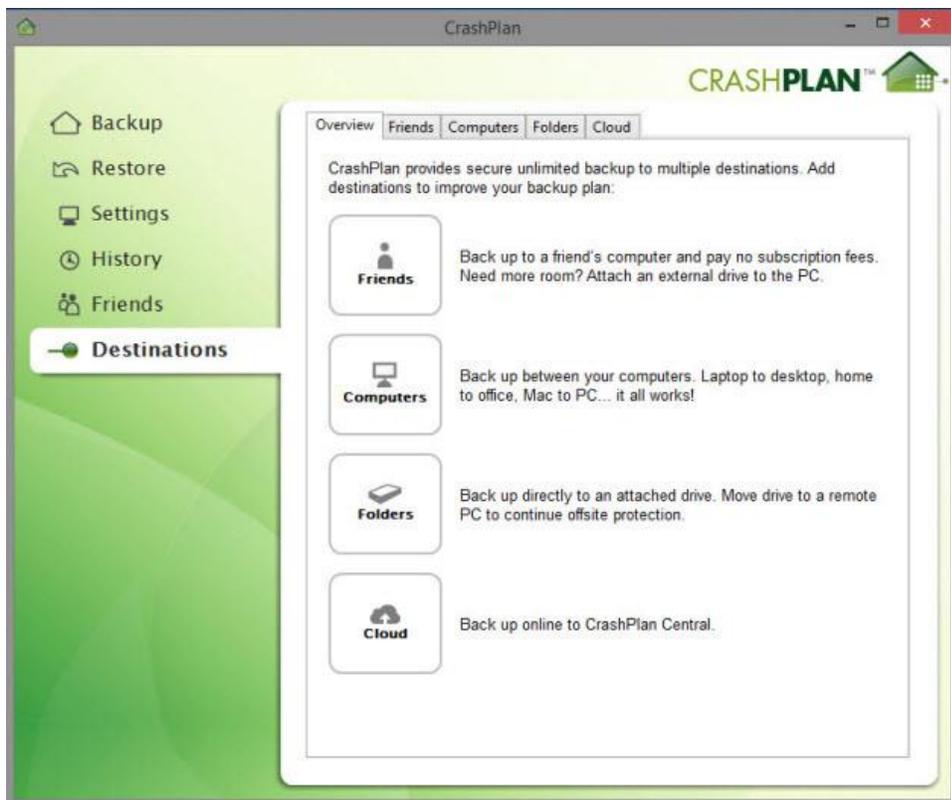
## IDrive

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59.50

You'd be hard-pressed to find an online backup solutions with as many features as IDrive. For \$59.50 per year, IDrive gives you 1TB of storage, apps for just about every platform, file syncing, and more. A free account offers 5GB of space, which isn't too shabby for anyone interested in trying out this wonderful online backup service.

**Available on:** Windows, Mac, Web, Android, iOS, Windows Phone, Linux/Unix



**Code42**

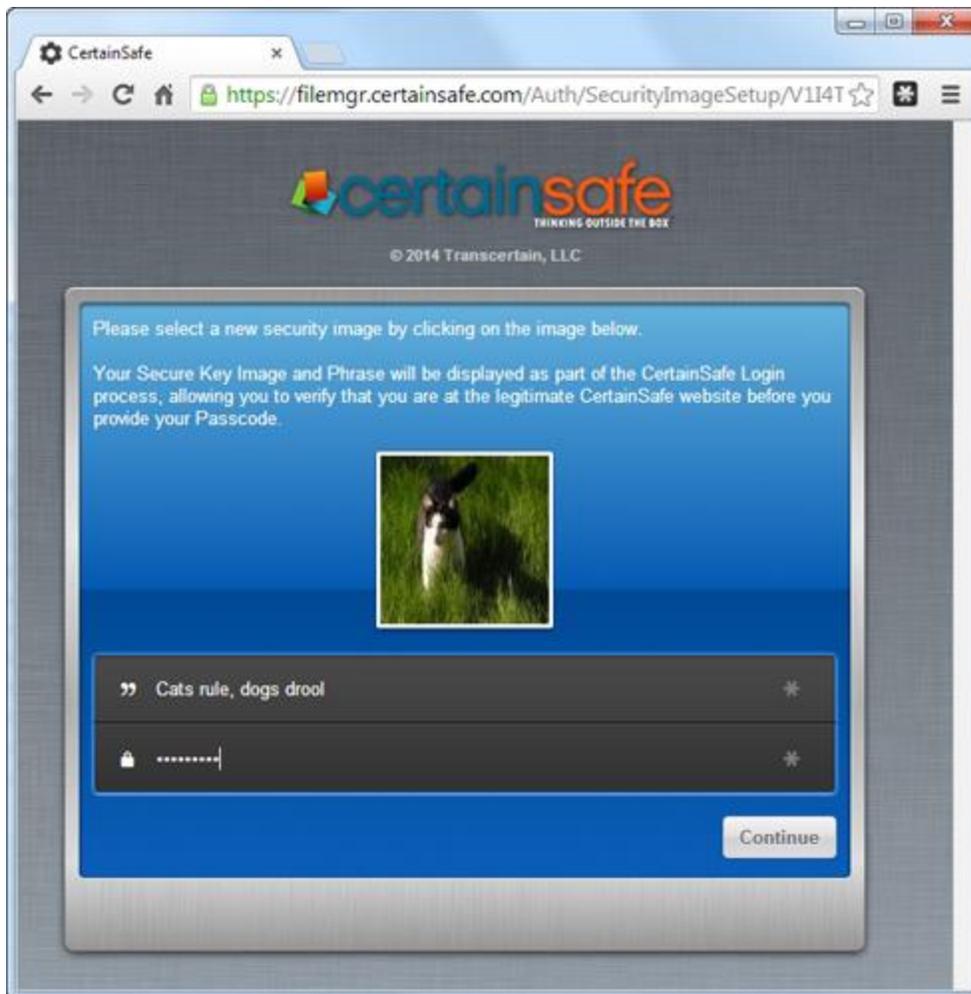
## **CrashPlan**

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**59.99**

CrashPlan by Code42 is an online backup service that offers a neat twist to those who don't necessarily want to keep their files in the cloud. It lets you choose a personal computer, either your own or a friend's, to use for storage place instead of CrashPlan's own servers. If you use the online cloud storage, you can get unlimited space for \$59.99 per year. CrashPlan is fast, easy to use, and very flexible.

**Available on:** Windows, Mac, Linux, Web, Android, iOS, Windows Phone



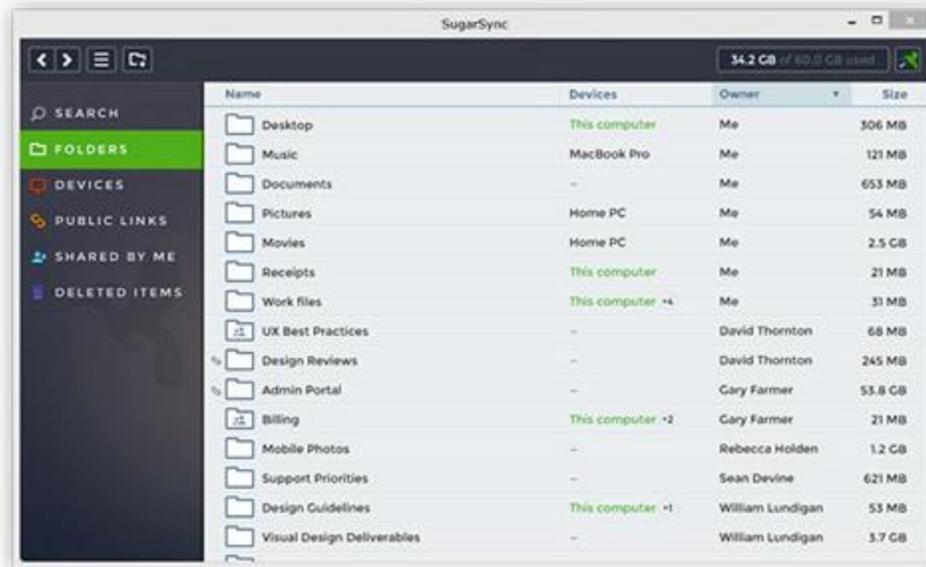
## CertainSafe

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CertainSafe's angle is that it provides encrypted cloud storage that's extremely secure, although it's positioned more for business users than home users. Nevertheless, you can sign up for \$8.77 per month per user and get 5GB storage that you can share with others. CertainSafe is so secure, it's HIPAA-compliant.

**Available on:** Windows, Mac, Linux, Web, Android, iOS



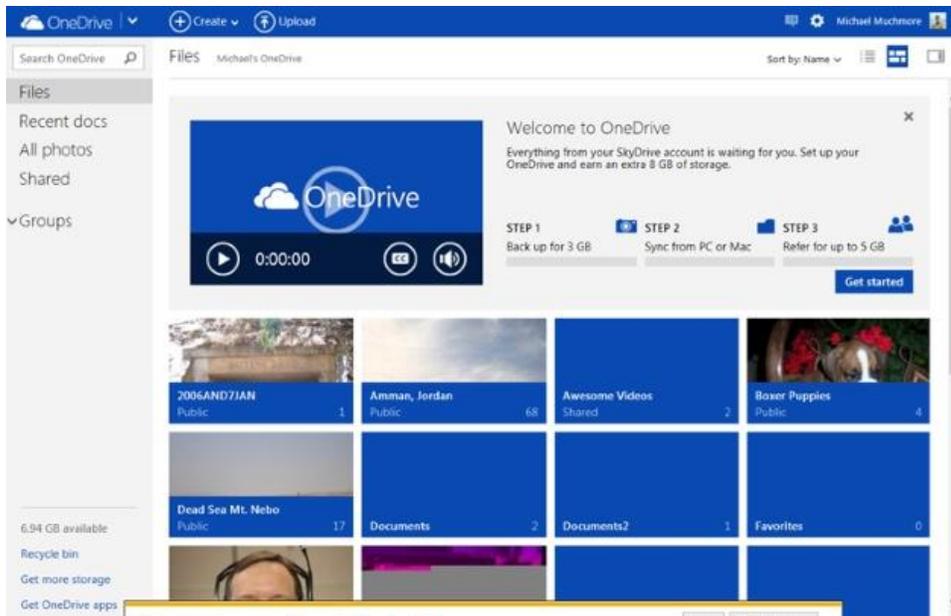
## SugarSync



74.99

Among file-syncing services, SugarSync remains the most intuitive. SugarSync is similar to Dropbox, only it lets you sync any files and folders you want while preserving your folder structure. There's no need to move all your content for syncing into a Dropbox-like folder, although if you're more comfortable with that method, SugarSync's Magic Briefcase will do the trick. There is no truly free account with SugarSync, although you can try it out for 90 days. Among paid plans, a 100GB account costs \$9.99 per month or \$74.99 per year. A 500GB account costs \$39.99 per month or \$249.99 per year, with the first year discounted to \$124.99. SugarSync also has excellent and intuitive mobile apps.

**Available on:** Windows, Mac, iOS, and Android



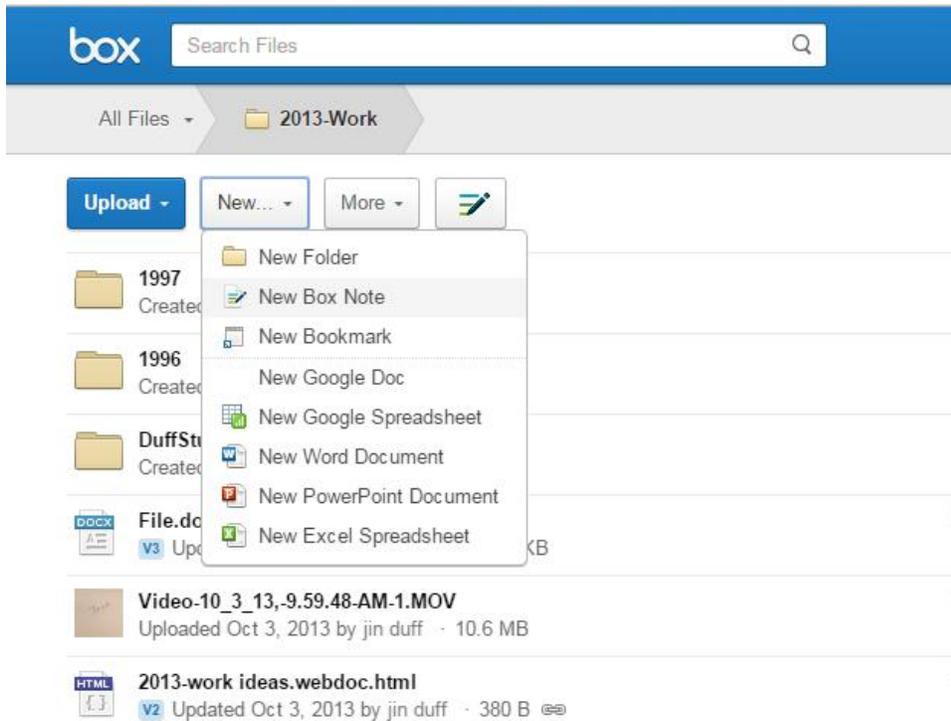
## Microsoft OneDrive



**83.88**

Microsoft's OneDrive has been quietly hosting people's documents and photos for years. And all the while Microsoft has been honing the service. You'll get 15GB just for signing up, plus the ability to earn more free space through actions and referrals. The company has made OneDrive a cornerstone of **Windows 8**, so users of that platform may find it one of the most convenient services.

**Available on:** Windows, Mac, Web, Android, iOS, Windows Phone, Windows Tablet, Xbox



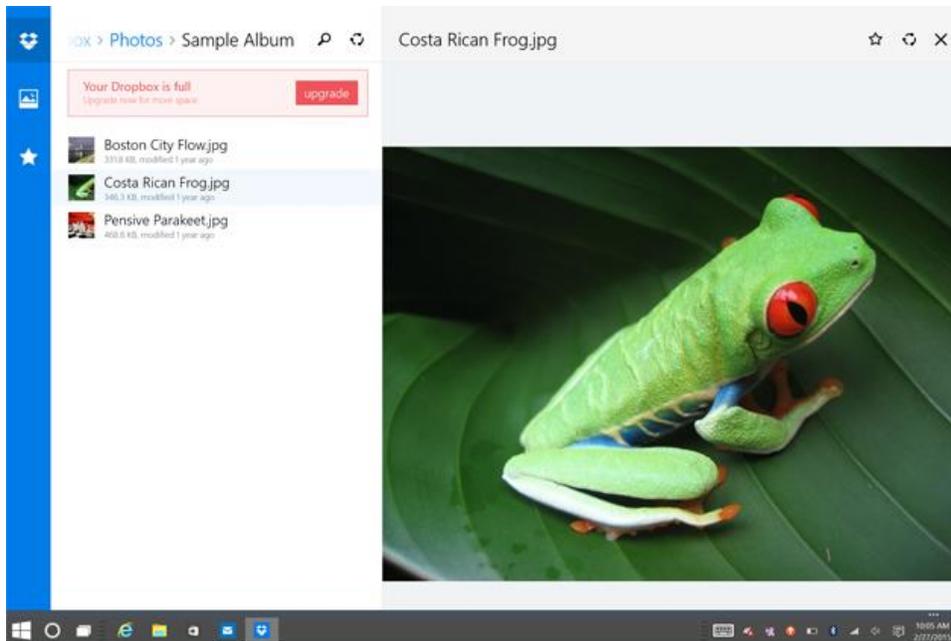
## Box (Personal)

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60

One of the first names in cloud storage and file-syncing, Box makes your files available to you across multiple computers and mobile devices. A free account comes with 10GB of space, which is pretty generous. Box has a lot of collaboration features included, and so paid plans are charged by the user, start at \$5 per user per month for 100GB of storage space. One of Box's specialties is its ability to let you make comments on files from mobile devices, whereas many other file-syncing and backup apps only let you view them.

**Available on:** Windows, Mac, Web, Android, iOS, BlackBerry



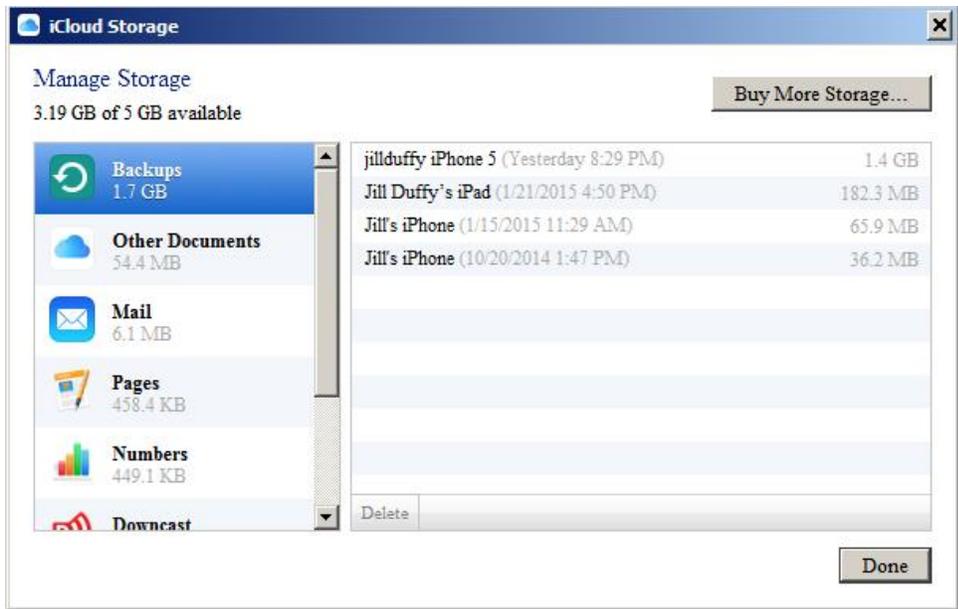
## Dropbox



99

Dropbox, alongside Box, made file-syncing a household term. Dropbox remains a superbly implemented, cloud-based, automatic, file-synchronization service that's ideal for accessing and sharing data from nearly anywhere. You only get 2GB free to start, but you can earn more space through referrals and other tasks. Dropbox Pro plans cost \$9.99 per month or \$99 per year for 1TB.

**Available on:** Windows, Mac, Linux, Web, Android, iOS, BlackBerry, Kindle Fire

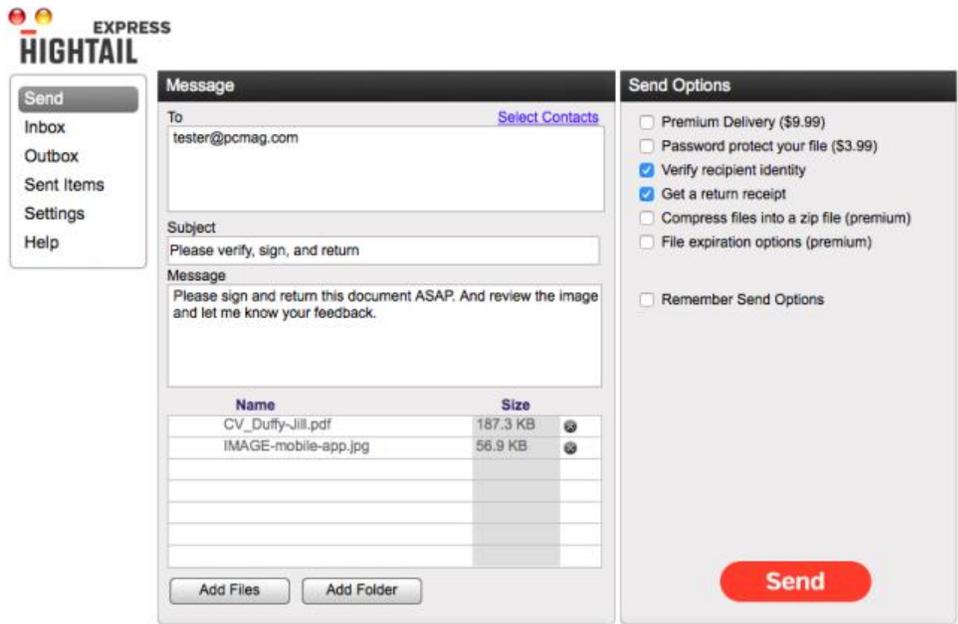


**Apple iCloud Drive**

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**239.88**

Veteran file-syncing users may be thrown for a loop by the confusing nature of Apple iCloud Drive. It's a good service for avid Apple app users, but at \$19.99 per month for 1TB and only 5GB free, it's expensive and not the easiest service to use. The baked-in features that work seamlessly with iOS and Mac OS X are useful, however.

**Available on:** Mac, Windows, Web, iOS



## Hightail



191.88

Hightail bundles document signing and delivery with a file-syncing service, and offers a very good range of options and features for both free and paid accounts. If you're in a pinch and need to send a large file quickly, Hightail works.