Cloud Storage: Keep Your Data on Clouds

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Abstract— **Cloud Storage is a technology that uses the internet and central remote servers to maintain data and applications. Cloud storage allows consumers and businesses to use applications without installation and access their personal files at any computer with internet access. This technology allows for much more efficient computing by centralizing storage, memory, processing and bandwidth.**

Keywords— **Cloud, Storage, Data, System, Design, Technique, Internet**

I. INTRODUCTION

Information Technology always needs a way to increase capacity or add capabilities without investing in new infrastructure, training new personnel, or licensing new software. Cloud computing encompasses any subscription-based or pay-per-use service that, in real time over the Internet, extends IT's existing capabilities. Cloud computing is at an early stage, with a diverse group of providers large and small delivering cloud-based services, from full-blown applications to storage services to spam filtering. Today, for the most part, IT must plug into cloud-based services individually, but cloud computing aggregators and integrators are already emerging.

From the past events, computing in its purest form has changed hands multiple times. At the time of starting when mainframes were expecting to be the future of computing. Indeed mainframes and large scale machines were built and used, and in some circumstances are used similarly today. The trend is now turned from bigger and more expensive, to smaller and more affordable PCs and servers.

Most of our data is stored on local networks with servers that may be clustered and sharing storage. This approach has had time to be developed into stable architecture, and provide decent redundancy when deployed right. A newer emerging technology, cloud computing, has shown up demanding attention and quickly is changing the direction of the technology landscape. Whether it is Google's unique and scalable Google File System, or Amazon's robust Amazon S3 cloud storage model, it is clear that cloud computing has arrived with much to be gleaned from.

As new technologies emerge, they often tend to build on the success of previous developments. Cloud computing and storage, benefit from years of development and testing of large scale infrastructure. The most important take away is cloud storage is for everyone and every organization. From big to small, groups to individual, the use of grid infrastructure can be deployed for maximum return and efficiency.

II. 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 centres.

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."

III. HOW CLOUD STORAGE WORKS

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.
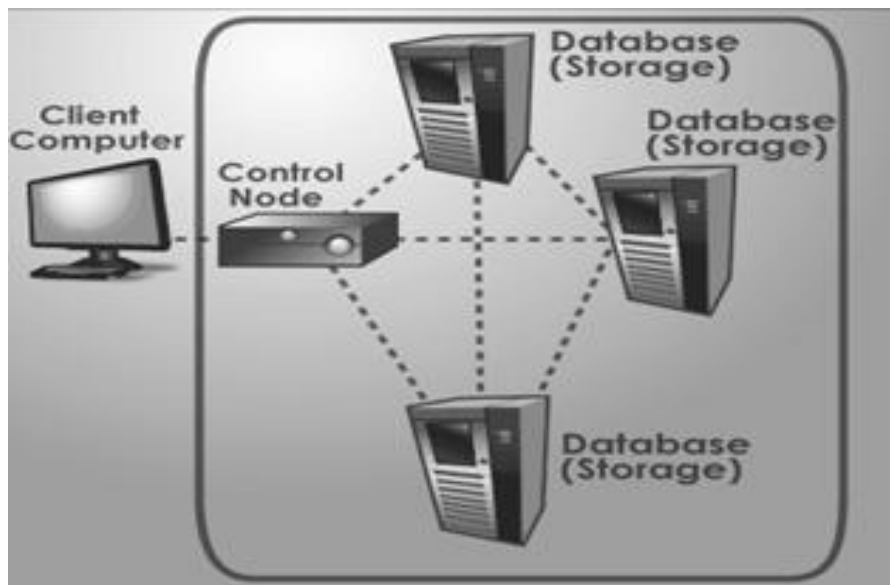

Figure 1: A Typical Cloud Storage System Architecture

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.¬ so cloud storage is convenient and offers more flexibility.

IV. EXAMPLE 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 are 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:

A. 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.

B. 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.

C. Sites like Flickr and Picasa host millions of digital photographs. Their users create online photo albums by uploading pictures directly to the services servers.

D. YouTube hosts millions of user-uploaded video files.

E. Web site hosting companies like StartLogic, Hostmonster and GoDaddy store the files and data for client Web sites.

F. 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.

G. 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.

V. CONCERN ABOUT CLOUD STORAGE

The two biggest concerns about cloud storage are reliability and security. Clients are not likely to entrust their data to another company without a guarantee that they will 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 creating 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 is 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 dissatisfied 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 is not financially stable. While most cloud storage systems try to address this concern through redundancy techniques, there is 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 is 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.

VI. COMPARISON OF DIFFERENT CLOUDS SERVICES

There is a wide range of features available when considering various cloud storage options, but this is just the tip of a growing iceberg.

Vendor	Account Type	Cost	Focus	File Size Limit	Total Capacity Limit	Sharing?
Box.net	Individual	$9.95/month	Productivity	1 GB	10 GB	Yes
Box.net	Business	$15/user/month	Productivity	2 GB	15 GB / User	Yes
Carbonite	(3 year)	$3.61/month	Backup	Unlimited	Unlimited	No
Google	Docs, etc..	Free to 1GB, $1 per 4GB after	Productivity	1 GB	1 GB For Docs	Yes
i365	EVaults SaaS	Variable, $99 setup, starts at $285/month for 100GB	Backup	Unlimited	Unlimited	No
Mediafire	Free	Free	Hosting / Streaming	200 MB	Unlimited	Yes
MediaFire	Gold	$49.97 For 1TB Bandwith	Hosting / Streaming	2 GB	Unlimited	Yes
Microsoft	Live Mesh	free	Synchronization	5 GB	5 GB	Yes
Microsoft	SkyDrive	Free	Storage	50 MB	25 GB	Yes

Table 1: Comparison between cloud vendors

For today, we suspect that using two or three cloud storage services for different parts of your life is the way to go. Just in this office alone, we use Docs, Mesh, SkyDrive, MobileMe, and Mozy. In time, we expect this to consolidate, but it's a workable mix, even now. We encourage you to find your own best blend of cloud services. The utility is great, and having that online resource guarding your data might just save your digital life sooner than you'd like to think.

VII. Cloud Storage Decisions: Cost Versus Value

The marketplace for cloud storage services is already a hotly contested space – there are literally dozens of companies fighting it out in a variety of different verticals. As the market for these services continues to evolve, a new and important distinction is occurring, which is call "cost versus value."

Since storage itself is rapidly becoming a commodity (courtesy of bulk providers like Amazon S3, Rackspace, Microsoft Azure, and Google), the features, performance, and price of services is where end users will have to make their choices. And the trade offs of are real and interesting. A recent article captured this well comparing the services at Mozy and ElephantDrive. After breaks down the relative strengths and finds that Mozy costs less but ElephantDrive offers more value. The take aways are pretty clear – if you are looking for the lowest priced option you go one way, but if you are looking for the most functionality or the fastest performance you go another. A home user with lots of data, you should consider the Mozy option but if you are running a small business or operating as a "power user" (and have an understanding of your actual data footprint) you will want to choose ElephantDrive.

VIII. Disadvantages of Cloud Storage

Biggest disadvantage is if it's down you are down. Other problems is that bandwidth cost is very high; if you are having very large size public keys and someone gets holds of url of those keys; he may make you bankrupt by continuously fetching data. So you should be very careful about access specifier and key distribution. Whenever possible, hide your keys. Also you have to trust other with your critical data; it's outside your firewall.

IX. conclusion

With the use of cloud storage, there is the ever present risk of data security, connectivity, and malicious actions interfering with the computing processes. However, with a carefully thought out plan and methodology of selecting the service provider, and an astute perspective on general risk management, most companies can safely leverage this technology. The point is that there is now a cloud storage tool for everyone and every need. As you can see, there is a wide range of features available when considering various cloud storage options, but this is just the tip of a growing iceberg.

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