To What Extent Online Storage is better than Offline Storage?

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Abstract— Data is most important part of digital world. In other words, data is backbone of companies. Without data companies are bodies without life. They will be lifeless; companies will not be having any aim or agenda. Basically companies can't run without adequate data. Storing data is one of difficult task now a day. The work which we are doing on any digital device viz. laptop, smart phone, tablet, computer system, etc need place to store. The amount of work done stores in the form of data (A raw information), data is processed and termed to information. Storing data of companies with security and safety, many companies have started to provide place where users / companies can keep their data safe and secure. It is termed as online storage or cloud storage. User or company need to register on the company's website and they need to either pay for storage, some companies provide certain amount of data (up to 20GB) free to attract user. Authentication for the account is must and authorization can be given once the verification process is done. Every day lot of data is generated by the users and only 15% data is useful, which needs to be saved but it can be decided by the owner of data, whether to keep data or scrap it. Companies which provide space have policy to provide space; they keep integrity and security of data. They don't disclose / reveal the information with anyone except government (if asked for security issues).

Key words: Data, Storage

I. INTRODUCTION

Computer System is one of the major parts of technology; in other words, it is a form of technology. It has made our lives much easier. This unique device has many advance options that can help us to do lot of things such as, using internet to find information, in this process you can also store your information in your computer system or electronic device or gadgets. Some of the information / data that you store in your device might be personal data or the company data and that data / information cannot be shared with public and other competitors. In that case you want to protect / secure your data, Secondary storage devices are used for it. Companies and professionals usually use hard-drives to store basic or small data, important data and huge data is stored on the cloud. Many companies use security software's to store their data but the main question is, which is the better way to store the data? In this research, I will discuss and elaborate, which method is the best to store the data explaining through examples and specifying its importance. The major part that will be discussed here is to specify cloud storage. Cloud storage is the great source which helps keep out data safe and secure, it is a kind of hosted network that can be accessed using internet from anywhere. In simple words, I am going to compare Online and Offline storage of data in present era. Pros and cons will be discussed on the same and also future development and trends will be part of this research. Latest technologies, made our life easier and now storing information is must because we are in need of data / information everywhere.

1) IT Background and System

Storage is something that helps us to keep the data safe and reuse it when needed. There are different ways of storing data. Some of them are discussed in next section.

B. External Hard Drive

External hard Drive is the device that is not attached with the computer. This device helps to store the data from 160GB to 3TB (approx. 3000GB). The data will be safe until the hard Drive is with you. Hard Drive storage is one of the cheapest ways to store Data.

C. USB Thumb Drive / Flash Drive

It is a tiny device that has a storage capacity of 2GB to 64GB to 1TB. This flash Drive is a good source to transfer or backup small amount of data. It is portable so that the data can be easily transferred.

D. Network Attached Storage (NAS)

It is the network such as local area network that is secure; this network storage helps us share the data to different kind of processor. Network storage data is basically network that stores data but slight different than cloud computing.

E. Solid state Drive

This device is more like USB but with higher storage capacity that is 4GB to 256GB to 1TB.they are termed as SSD, very reliable and popular now. They are costly but secure and we can rely on it. It has very high capacity of storing data, portable in nature, easily accessible and connects through USB to TV, LED, Laptops, Tablets, and Smartphones etc.

F. Optical Drive (CD/ DVD)

This device is generally used to store songs, movies and other media files or software this is a circular disk that has very cheap cost per disk. But the capacity of these disks is really low, CD capacity 650MB to 900 MB DVD capacities 4.7GB to 17.08GB.

G. Cloud Storage

This kind of storage is mostly used by many companies. In this the data is stored in the cloud and only can be accessed using Internet. For this there is a service provider. This storage system is the most expensive one compared to other storage methods.

H. Online and Offline Storage

Online storage is when the data is stored on internet, hosted network or any cloud network. Google drive and OneDrive are the examples of online storage.

Offline storage is done when the data is stored in the backup drives and other devices which don't have need of the use of internet. Best example is HDD i.e. hard disc drive. When it comes to storing your data, you have some

significant decisions to make. The initial of those decisions has to do with where you're obtainable to store your data. While the conventional respond has always been some domestic elucidation, such as an external hard drive. Over the earlier period, however, the online storage world has exploded, and lots of people are looking to cloud storage solutions to store their data.

Let us look at quite a lot of aspects of storage, and observe how they match up to the online storage world vs. offline options:

1) Security

Data security is important for almost every person. This is clearly the case with education, corporate & businesses, but many persons are anxious about shielding their data as well. In the region of security, there are a number of special considerations you call for to take into account.

- With offline storage, you need to be worried about the substantial security of your data. If you store information on a Universal Serial Bus drive (USB), e.g., that drive can be pulled out by someone else and used. Online storage does not have that concern.
- With online storage, most services have world-class security measures. Your part in security becomes ID and password management, rather than keeping track of a physical device.

Both options can be very secure, as long as you do your part.

2) Accessibility

This is where online storage shines. With many online storage services, you can access your data from just about any device with an Internet connection. That means your home computer, your work computer, or even a smartphone or tablet. Offline storage is limited to the physical device that the storage medium is connected to at the time. You have to have the DVD disc with you, for example, to access data stored on a DVD. In terms of accessibility, the clear winner is online storage.

3) Cost

Here's an area where it's a bit more difficult to compare. Online storage options typically offer you free data storage for about two to five gigabytes. You can then pay a small monthly fee for additional space. Some offline storage options, such as an external hard drive that holds up to a terabyte of information, may be more expensive over a 12-month period than the same amount of data via a cloud service. On the other hand, USB drives might be less expensive. If cost is your main concern, you can probably find an online or offline solution that meets your needs.

4) Data Integrity

Here's one area where online storage provides significant benefits. If you have a hard drive crash, the data on that hard drive is gone for good. Online storage providers have redundant hardware that makes sure your data is intact, no matter what. Both are susceptible to human error, of course, and if you delete a file you may be out of luck either way. Barring that, online storage is the clear winner here. In most cases, it's worth looking into online storage. It offers you greater accessibility, more security, and more options overall.

II. PROS AND CONS OF OFFLINE STORAGE

A. Pros

1) Fast Backup and Restore

If you have tons of data, you will know exactly what this means. Even with a really fast Internet connection, backing up and restoring 200GB of data isn't always that fast. Even at small data storage amount such as 3GB, having a local backup at hand is always much faster for both purposes.

2) Easily Accessible

Another advantage of local offline backups is that they are readily available at your office or home. You just need to plug them in and start backing up, or do the restoring if necessary.

3) Better Safety

This one is in fact quite ambiguous. If you let everybody in your office or household have access to your offline backup media, then it won't be safe. Not at all. However, offline backup media do enjoy protection from cyber security breaches (provided that they are not networked drives with an internet connection, of course).

4) Mobility

All of these offline backup media also let you carry them around. This is not really a good idea if we are talking about external hard drives, but still, you can easily move them around and store them at other locations, or just carry them with you for safety purposes.

B. Cons

Natural disasters can kill them. It's true. Even if you buy the world's best and most protected external hard drive or Bluray discs, they are still prone to disasters like fire, tornadoes, thunderstorms (seriously, a power surge due to thunderstorms can fry all of your hard drives), floods and whatnot. Those vulnerabilities just make offline data backup less desirable to use exclusively.

C. Prone to Theft

There are always going to be cases of theft, and the thieves won't think about you losing thousands of irreplaceable photos, they're just interested in how much they can sell the drive for on the black market. What if you are away from home or the office one day and get all of your valuable items including offline backup media stolen? Or worse, what if the thief opens your backup and finds valuable pieces of information which they can use to blackmail you steal your identity, steal your bank account information and such? Then you are practically doomed.

Hard drive failures. Seeing that external hard drives are the most common media used for local offline backups, this is one legit worry. Hard drives fail. All the time. Even the best drives do fail. Reasons? They vary, and if I have to list them down here, the list will be endless so I will skip the boring part for you. So if your setup is only using hard drives, then it can bite you back one day. I have had 5 hard drives failure in the past 3 years. It is not a pleasant experience, I tell you.

1) Tape Backup Failures

Even tapes, one of the most durable offline backup media, can fail. Most common reason is magnetic. Any kind of magnetic field can destroy tape backups. Someone once recounted on Reddit about a backup disaster. He had tape backups at his

office and home for redundancy, but the ones at office failed due to humidity. Then the ones at home also failed since his wife placed magnetic stickers on the box where he stored the tapes. Heartbreaking

III. PROS AND CONS OF ONLINE STORAGE

A. Pros

- It can vastly benefit many business one of its benefit is lowering the cost of all vast data can be lessened.
- You don't have to pay costs for external software and its updates for storing the data.
- Most of the cloud service providers provide backup facility in case you lose your data it also provides recovery storage space.
- Easy access to the data, you can access your data from anyplace just by using internet.
- Automatic upgrade and easy personalized settings for the user to operate and get access to the cloud data.
- Data Storage Saving

By storing your data online you are reducing the burden of your hard disk, which means you are eventually saving disk space.

- World Wide Accessibility

This is the main advantage of online data storage. You can access your data anywhere in the world. You don't have to carry your hard disk, pen drive or any other storage device.

- Data Safety

You cannot trust your HDD and storage device every time because it can crash anytime. In order to make your data safe from such hazards you can keep it online.

- Security

Most of the online storage sites provide better security. Here is a list of free online storage sites, on which you can trust. If you are looking for free high storage online site then here is the another site which.

- Easy Sharing

You can share data with your friends' faster, easy and secure manner, which makes you can your close ones happy!! Isn't it good?

- Data Recovery

Online data storage sites provide quick recovery of your files and folders. This makes them more safe and secure.

- Automatic backup

You can even schedule automatic backup of your personal computer in order to avoid manual backup of files.

B. Cons:

- You must have particular hardware which can run accurately without any technical issues to access the information.
- The major concern when you use cloud service is privacy and security, while you use this service you know that you are giving away your sensitive (private or important) data to the third party.
- There is a possibility of unauthorized user to hack and access your data in today's world.
- None of the thing in this world doesn't have disadvantage. There are few disadvantages there while using online data storage but if you handle things with care then you can surely avoid them. Some of them are as follows-
- Improper handing can cause trouble: You must need your user-id and password safe to protect your data as if someone knows or even guess your credentials, it may result in loss of data. Use complex passwords and try to avoid storage them in your personal storage devices such as pen drive and HDD.
- Choose trustworthy source to avoid any hazard: There are many online storage sites out there but you have to choose the one, on which you can trust. You can always refer the list of free online data storage sites, which I shared above
- Internet connection sucks!! To access your files everywhere the only thing you need is internet connection. If you don't get internet connection somewhere then you will end up with no access of data even though it is safely stored online.

IV. ORIGIN OF THE WORD CLOUD COMPUTING

Intergalactic Computer Network was a network similar to internet which was first introduced by a great computing master J. C. R. Licklider in the year 1969, later on many others added up to develop that idea resulting to form a private network for the business which was a great success for the computing engineers. Computer scientist John McCarthy also contributed many ideas for the improvement of the cloud concept. All this started in mid 19s and was successful to provide this service all over the world within few years.

Different types of cloud computing and for what is this used.

According to the history of the cloud computing there are basically seven types known as cloud service. Cloud service is the service provided on internet and the most common services provided are as follows:

A. Infrastructure as a Service (IaaS)

It is a service in which the service provider will provide the software, hardware, support operations, storage space and networking components. All these components and equipment are owned by the service provider himself. Service provider will be held as responsible for the housing, working and maintaining of the components. Clients are just expected to pay the price for all the usage of service along with the components provided on the computing basis by service provider. This service is also known as hardware as a service (Haas).

B. Software as a Service (SaaS)

This is a service that can only be accessed by using internet. This provides access to the software and its functions known as software as a service. These days software as a service is in high demand making it use for the users, clients and in various ways such as management software, for business applications and development software. By performing a survey a group found that software as a service sales in the year 2010 reached $10 billion.

C. Web based Cloud Computing (WBCC)

It is likely similar to cloud computing. When we open any e-mail websites such as g-mail, webmail, or yahoo you have to login through web based e-mail account and the mail information is basically stored on the cloud not in your computer making it as cloud storage with the help of web.

D. Platform as a Service (PaaS)

In this service the client is the dominant to control all the configurations, software developments and modify it. In this the service provider just provides hardware, operating system, network and storage capacity which can be used by the help of internet. User just has to pay for the use.

E. Utility Service

This service helps every client to minimize their costs for storing their data. Utility service is also known as utility computing in this the provider provides the service to customers as needed. Utility service has many hopes for some form of visualization so that the amount of storage is high. Utility cloud frequently requires a cloud similar to infrastructure and this is often used for the business purpose. It asks customers to only pay for their computing resources to need.

F. Managed Service

It involves monitoring, reporting, improving, remote supporting, pro-active supporting and maintaining of the operations and helps the clients to cut down the expenses. Managed service provider is third party supplier of equipment and applications to business, houses and other service providers. Although it is still a fragment of software as a service.

G. Service Commerce

It is also distinguished as service commerce platform and it is fusion of both Software as a service and managed service, this sells automated services for business to buy or sell.

V. POPULAR CLOUD COMPUTING SERVICES

A. iCloud

- Apple's iCloud allows you to store music, documents, photos, and other files via Wi-Fi. You can then access them from all of your devices. When you sign up for iCloud, you automatically get 5GB of free storage. Should you need additional storage, fees are as follows: $20 per year for 10GB, $40 per year for 20GB, and $100 per year for 50GB. All the other Apple apps (calendar, mail, and more) are integrated to work seamlessly with iCloud.
- Google Cloud Connect for Microsoft Office. Google Cloud Connect allows various users to interact using Microsoft Office. This includes simultaneous sharing and editing of Microsoft Word, PowerPoint, and Excel documents. You can also save secure copies of each document. The flexible plan, which you can terminate at any time, is priced at $5 per user account per month, while the annual plan is priced at $50 per user account per year.
- IBM Smart Cloud. IBM Smart Cloud provides numerous services for IT companies, such as developing applications in the cloud or using the cloud as a backup for your company files. Use the price estimator to estimate the cost for your particular needs – you need to select the software, size, and times that you want to use, plus any additional requirements your company might have. A 12-month commitment, for example, is priced at $1,300 per month for each unit.

B. Choosing the Best Option

Whether you use your devices as an individual or as a company, you can take advantage of cloud computing. Individuals will find Apple's iCloud particularly useful if you are using Apple devices. Small businesses, in turn, can opt to share documents via Google Cloud Connect, Google Docs, or Dropbox. IT and application development teams should opt for more complex services, such as those provided by IBM Smart Cloud.

C. Final Word

Cloud computing is a relatively new technology that will only become more widespread. It offers many advantages that could immediately benefit you and your business – be aware, however, that initial developments come with frequent drawbacks. If you wait a while, the service will likely develop more fully as problems are ironed out. Plus, cost will go down as more people adopt the technology, which is great news for any frugal-minded businessperson.

D. How does Cloud Storage Works and its Functions

Cloud computing, in turn, refers to sharing resources, software, and information via a network, in this case the Internet. The information is stored on physical servers maintained and controlled by a cloud computing provider, such as Apple in regards to iCloud. As a user, you access your stored information on the cloud via the Internet.

By using cloud storage, you don't have to store the information on your own hard drive. Instead, you can access it from any location and download it onto any device of your choice, including laptops, tablets, or smartphones. Moreover, you can also edit files, such as Word documents or PowerPoint presentations, simultaneously with other users, making it easier to work away from the office.

There are different types of cloud computing services available to suit different needs. While some cater to individual users who want to store photos, documents, and videos, others are destined for companies that need extensive platforms to develop IT applications, for example.

Depending on your needs, the prices will vary. As an individual user, you can get an initial amount of storage for free, such as 5GB with iCloud. If you need additional storage, you will have to pay a fee. Fees are usually set at monthly or yearly rates, depending on the services you are using.

VI. CONCLUSION

Now that you have a enhanced thoughtful of your storage options, how can you choose which is most excellent for your business? As it's mentioned prior to, there's no such thing as a "one-size-fits-all" storage clarification, which is why it's so

significant to evaluate and review your company's storage requirements and financial plan in order to come to the correct wrapping up.

Initiate by bearing in mind the types of data you covenant with and who wants to have entrée to it. E. g, if you deal with a lot of files and documents on a day by day basis, then on-site storage may be unwieldy and luxurious. Additionally, if you have a huge number of employees who need expected access to files (particularly if they work distantly), an online storage solution may be healthier because of the superior convenience obtainable. Not to talk about, online data storage platforms have unrestricted data storage to accommodate your business when your storage needs alter and nurture.

You'll want to consider your company's precise server/IT budget when considering which option is best for you. If you're leaning towards offline storage, for example, you'll need to consider the potential costs associated with this-extra office space, equipment, and supplies plus additional staff to manage the documentation. What may seem like the cheaper option now may actually end up being more expensive when all factors are considered.

And finally, be sure to consider risk factors when deciding on a data storage option. For example, limiting access to certain employees or groups of employees can be crucial to the security of your documents. Permissions can be taken away, additional access can be granted and programmed easily in order to make sure human error doesn't cause any sensitive data leaks.

Duplicated documents can also cause headaches or even the derailing of your most sensitive business deals. Virtual data storage allows for seamless collaboration and ensures documents that undergo numerous revisions are always current and marked as such.

And if your physical business location (and its data) are located in a floodplain, then you're definitely going to want to have online data storage (either for primary use or even as a back-up) so that you don't lose your files. And remember that a disaster can strike at any time, so having only one physical copy of your important files and documents is never a good idea. You want to make sure that, in the event of a disaster, you'll never have to worry about your data being completely lost.

As you can see, there's a lot to keep in mind when it comes to choosing a storage solution that's right for your business. Certainly, online data storage tends to be the more advantageous option for many business owners, but every company's needs are unique. For this reason, it's important to evaluate a few key factors so you can make an informed decision as to which is right for your business.

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