Study on Cloud Storage and its Issues in Cloud Computing

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Abstract

Cloud Computing has been one of the hottest buzzwords over the last few years but it is surprisingly known that the people have been using it for more than 10 years. Gmail, Facebook, Dropbox, Skype, PayPal, and Salesforce.com are all examples of cloud solutions which was not thinking about them in these terms. The main idea behind the cloud is that the information can be accessed over the internet without having any exhaustive familiarity of the communications used to enable it. The major services existing in Cloud computing is the Cloud storage. With the cloud storage, data can be stored on multiple third party servers which is not cared by the user and no one knows where exactly data saved. With the increase in size of the data every day, there is a need to handle, manage and mainly to store data, is a major problem faced by the people or organization. This article specifies the various approaches in storing data in cloud.

Keywords: *Cloud computing, Cloud Storage*

1. Introduction

Cloud computing is the on-demand delivery of compute power, database storage, applications, and other IT resources through a cloud services platform via the internet with pay-as-you-go pricing[1].Cloud computing provides various services in which data storage is the main cloud service. Cloud computing works behind the scene in our day to day activities such as to watch movies, play games, sending mails and listen to music etc, With Cloud computing, we can store, recover and backup data, create new applications, deliver software on demand, host websites and so on. Whenever there is a demand, user can access the services of cloud dynamically via internet[2].

There are three types of cloud computing services models namely SaaS (Software as a service), PaaS (Platform as a service) and IaaS (Infrastructure as a service). SaaS is a cloud computing offering that provides users with access to a vendor's cloud-based software. PaaS is a cloud computing offering that provides users a cloud environment in which they can develop, manage and deliver applications. IaaS is a cloud computing offering in which a vendor provides users access to computing resources such as servers, storage, and networking[3].

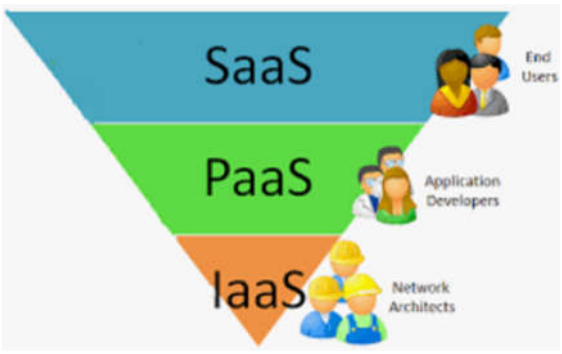

Figure 1: Cloud Service Models

Big data storage is a compute-and-storage architecture that collects and manages large data sets and enables real-time data analytics. As the technology is mounting, the size of data is also growing accordingly. So people are living in the world of big data. The term big data refers to the dataset of huge size which are incapable to store in typical database[4]. Big data often lacks structure and comes from various sources, making it a poor fit for processing with a relational database.

2. Related Work

There are many cloud computing and cloud storage providers, such as IBM, Google, Sun Microsystems, Microsoft, Amazon, EMC, NetApp, HP, Nirvanix, HDS, Symantec, etc. Other than this some more storage platforms available are cloud storage platforms, e.g., HDFS, GFS, Sun Network.com, SkyDrive, Amazon S3, EMC Atoms, Data ONTAP, HP Upline, CloudNAS, Hitachi Content Platform, FileStore, and KFS, etc

Takahiro proposed a live storage migration mechanism over WAN, which can be referred in storage distributed migration[6].

Albert Greenberg et. al [7] discussed the cost of cloud service of data center including servers (45%), infrastructure (25%), power draw (15%) and networks (15%). All resources would be pooled to be dynamically drawn from the pools to meet demand and pay by use. To reduce the cost and improve agility, the policies are location-independent addressing, uniform bandwidth and latency, and security and performance isolation, etc. And the market mechanism for resource consumption shaping is adopted to increase efficiency, and geo-diversifying data center is adopted to improve end to end performance and improve reliability. These ideas can be referred by cloud storage.

Cloud storage enables new application types [8] through SOA, Web services APIs and unified service interface via virtualization over a network at low cost, and can provide anytime and anywhere access, massive data storing, sharing and collaboration via a single namespace, and policy management of storage, etc.

3.Basic Concept of Cloud Storage

Cloud Data Storage is made out of thousands of distributed storage gadgets grouped by system, disseminated document frameworks and other stockpiling middleware to give distributed storage administration to clients. The normal structure of CDS incorporates capacity asset pool, circulated record framework, benefit level assentions (SLAs), and administration interfaces, and so on. Comprehensively,

they can be isolated by physical and sensible capacities limits and connections to give more compatibilities and communications. Compact discs is having a tendency to joined with CDSS, which will give progressively vigorous security.

Cloud storage is one of the primary use of cloud computing. With the cloud storage, data is stored on multiple third party servers, rather than on the dedicated servers used in traditional networked data storage. When storing data, the user sees a virtual server which is called that it appears as if the data is stored. But it does not exist in reality which is just a pseudonym used to reference virtual space carved out of the cloud. In reality, the user's data could be stored on any one or more of computers used to create the cloud [5].

The basic level in cloud storage system is that it needs one data server connected to the internet. A client sends copies of files over internet to the data server, which then records the information. When 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.

4. Types of Cloud

There are three common types of clouds storage available namely, Private, Public and Hybrid cloud. A private cloud is based upon a pool of shared resources, whose access is limited within organizational boundaries. The resources are accessed over a private and secured intranet, and are all owned and controlled by the company's IT organization. In essence, the cloud computing business model [7] is brought and managed in-house to enable shared IT services. A public cloud is a domain where the public Internet is used to obtain cloud services. The resources that make up those services are owned by the respective cloud service providers. Some examples include Salesforce.com, Google App Engine and Google search, Microsoft Azure, and Amazon Web services such as EC2. A Hybrid cloud is a combination of private and public clouds, where services from each domain are consumed in an integrated fashion and include an extended relationship with the selected external service providers.

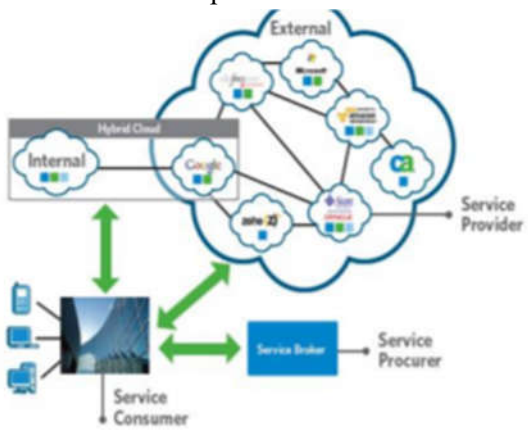

Figure 2:Types of Cloud computing

Cloud storage models [9] are principally about conveyance of capacity on interest in an exceptionally adaptable and multitenant way. Conventionally, Cloud storage models comprise of a front end that trades an API to get to the capacity. In customary capacity frameworks, this API is the SCSI

convention; yet in the cloud, these conventions are developing. There, the person can discover Web benefit front closures, record based front finishes, and much increasingly conventional front closures, (for example, Internet SCSI, or iSCSI). Behind the front end is a layer of middleware that I call the capacity rationale. This layer executes an assortment of highlights, for example, replication and information decrease, over the customary information arrangement calculations (with thought for geographic situation). At long last, the back end actualizes the physical stockpiling for information. This might be an interior convention that actualizes explicit highlights or a customary back end to the physical plates.

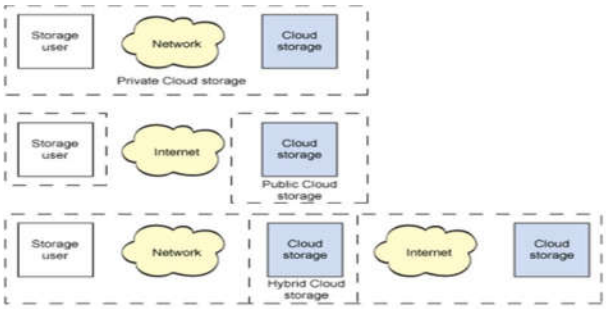

Figure 3: Cloud Storage Model

5. Cloud storage

Considering the immense development potential in cloud storage, various cloud suppliers are putting forth data storage and reinforcement administrations. To pull in the endeavors and individual clients, cloud suppliers are additionally offering a portion of the capacity free of expense. The best cloud providers are as follows

5.1. Dropbox

Dropbox offers 2GB of free storage, but this can be increased up to 6GB free of charge by linking the user Dropbox to social media and referring friends to join the service.

5.2. Google Drive

Google Drive is a natural choice for owners of Android devices as it's already integrated, but users of other platforms may appreciate the generous free storage too.

5.3. Mega

Mega claims that all data stored in its cloud is encrypted on the user device before it reaches the firm's servers.

5.4. OneDrive

OneDrive (formerly SkyDrive) is integrated into Windows 10's file explorer. it's there to use out of the box, which is obviously very convenient for those who have made the jump to Microsoft's newest operating system.

5.5. iCloud

The Mac Finder app integrates iCloud Drive, where the can store any files the user wish. Documents created in the iWork office suite are also saved to iCloud and can sync across the devices. Windows users can also sync their files with iCloud Drive using the official client, and access the iWork apps on the iCloud website.

5.6. Box

Box has been around for a while, it is supported by a number of mainstream apps such as Google Docs and Office 365. It's also integrated with G-Suite, which means Docs, Sheets and Slides are automatically saved and managed in Box. The Box Sync client is available from the Downloads page for Mac and Windows, plus there's also an official Android client.

5.7. NextCloud

NextCloud is not an online cloud storage provider, but it offers free software to download and install a cloud storage service on the user own server. Using a server on the home network for cloud storage is much faster and also enable encryption and make sure the information never leaves the home network, which is far safer.

5.8. SpiderOak

SpiderOak is part of a new trend of zero knowledge cloud storage providers. The website claims that after installing the client your data is encrypted before syncing. The SpiderOakOne client is available for Windows, Mac and Linux as well as Android and iOS.

5.9. IDrive

IDrive offers continuous syncing of the files, even those on network drives. The web interface supports sharing files by email, Facebook and Twitter. Drive also offers IDrive Express – a service whereby if the data is lost, they will ship a physical hard drive out to the user, allowing for the swift restoration of all the backed up files.

5.10. pCloud

The service is available for all desktop and mobile platforms where the users can also log in via the website.

Among the available cloud storage Google Drive, pCloud, Microsoft OneDrive, DropBox and MediaFire are best free cloud storage[11].

6.Issues in Cloud storage

Cloud storage is widely used by the various enterprises and the individual users. It is appreciated due to its wide, anytime and anywhere accessibility. However, a number of issues are prevailing in cloud storage and need immediate attention. Major issues that are applicable for the cloud storage are due to following reasons

- Not choosing the right cloud storage provider.
- Not getting the Service Level Agreement (SLA) .
- Connectivity problem between users through internet.
- Failing to monitor user SLA effectively.
- Failing to get a clear understanding of how to get the data back or move it to another provider if something went wrong.
- Fixating on costs without considering other factors.

7. Conclusions

Cloud storage has the enormous potential to develop as the substitute for legacy storage. However, before subscribing to the cloud storage incredible consideration is to be noted with security and execution to keep away from any misfortune later on. It will be similarly critical that cloud supplier

ought not just hold the expense to the reasonableness of the cloud clients rather additionally deal with security and execution issue so the individuals who have received the cloud are progressively fulfilled. Cloud storage strategies and service models are still in its early stages. Standardization of service provide's service levels should be improved by opting better load balancing methodology to overcome the issues faced by the cloud storage.

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