**Data Centre or Cloud for Dynamic Storage: In Modern Perspective**.

**\*Vikas Kumar Choudhary \*\* Dr. Sanjay Chaudhary**

**Abstract**

Now a days we heard everywhere that businesses needs the cloud. Businesses needs a data center and then data center needs the cloud or/and cloud needs Data Center. Yet no one has told you why Data Centre and Cloud are two are fundamentally different ideas.

Run Time Dynamic Data storage is a very important and valuable research field in cloud computing. This paper introduces the concept of cloud computing with respect to run time cloud storage as well as the architecture of cloud storage with Dynamic Storage and Access.

In the last part, it was illustrated that, how to choose distributed storage and fault-tolerant control though technology of Cloud Computing and Cloud Storage.

**Keywords**: - Data Centre, Storage, Cloud Computing, SaaS, PaaS,

**Introduction**

In latest years, the concept of cloud computing becomes more and more popular. Cloud computing as a new business model is developed from distributed processing, parallel processing and grid computing. At present, Google, Amazon, IBM, Microsoft, Sun and other IT giants are all seeking to develop cloud computing technologies and products. For example, Google has been dedicated to promoting application engines based on the techniques of (Google File System), MapReduce and so on, which provide users methods and means to process massive data. In this paper, we introduce the concept of cloud computing and cloud storage as well as the architecture of cloud storage firstly, analyze the cloud and data storage technology

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\*Vikas Kumar Choudhary, Ph.D., Computer Science, Pacific Academy of Higher Education and Research University, Udaipur (Raj.).

\*\* Dr. Sanjay Chaudhary, Professor, Dept. of CSE, Madhav University, Sirohi (Raj).

**Data Centre Storage Technology**.

Data Centre may have following things maintained in-house.

* Servers, Networking Infrastructures.
* Communication Media, and Protocol
* Storage Devices, Security Devices
* Backup Mechanism fully redundant with power, power backup, cooling solutions,
* Safety devices, Mainframes, Servers, Disks, Routers/Switches

The capacity of data centre is scaled only by purchasing and installing hardware equipment. Hence businesses using a third-party data center can have huge savings on power costs and are saved from purchasing the expensive infrastructure.

Hence it can be said that a data-center is a facility composed of networked computers and storage that businesses use to organize, process, store and disseminate large amounts of data.

**Cloud computing and Cloud storage**

**Cloud computing** arises from the combination of the traditional computer technology and network technology, such as grid computing, distributed computing, parallel computing, utility computing, and virtualization. One of the core concept of cloud computing is reducing the processing burden on user’s terminals through continuously enhancing the clouds’ handling capacity. Eventually user’s terminals are simplified into a simple input and output devices. Users can use the powerful computing and processing function on clouds and they can order service from the cloud according to their own needs.

Cloud computing technology includes distributed file system, distributed data storage, etc. This architecture, can achieve high concurrent processing system to deal with a huge number of requests and can set up to store huge amounts of data in the cloud storage. Cloud computing architecture has a great design of flexibility, because physical resources are virtualized (abstract and object oriented), such that can be easily configured and managed.

**Cloud storage** is a system that provides functions such as data storage and business access. It assembles a large number of different types of storage devices through the application software which are based on the functions of the cluster applications, grid techniques, distributed file systems, etc. Cloud storage can be simply understood as the storage in cloud computing, and also can be considered to be a cloud computing system equipped with large capacity storage. Cloud storage system architecture mainly includes storage layer, basic management layer, application interface layer and access layer.

Hence it can be understand as cloud storage is a service model in which data is maintained, managed, backed up remotely and made available to users over a network (typically the Internet). Google File System, Hadoop, AWS, Dropbox, iBox, iCloud ,Next Cloud, PCloud, IDrive, One Drive, and In-house Cloud Storage Systems (Dev Cloud) Machines are some examples of enterprises of cloud storage technology

**Similarities and differences between cloud and data centre -**

**Similarities:**

* Both cloud and data centres provides data storage and dynamic access, but difference is the way they offer services.
* Cloud is a resource for data storage that is accessed over internet, while a data center is essentially a part of on in house IT infrastructure of an organization
* Cloud and Data centres both store data and information and provides infrastructure for any additional services.

**Differences:**

* Data center can be setup within organizational premises for greater control on IT and Infrastructure operations. They are managed by large corporate organizations and involve huge investments in terms of purchasing of hardware, software, technical manpower, maintenance, and other overheads such as power and bandwidth expenses. While Cloudproviders depend on data centres for establishing their servers at different geographical locations. Hence it’s an added advantage of ensuring various services in any event with a single data centre location.
* Data centre suffers from several restrictions. It is not possible to scale the number of servers in a data canter if requirements comes. However cloud services gives power to users to scale up number of resources because of dynamic scalability of cloud hosting services.
* Cloudsystems can be built within moments and can also be de-commissioned instantly. This cannot be applied to data centres that may require months or years to come into existence.
* A data canter, has limited capacity unless an investment has made on more storage. Whereas a cloud system has virtual unlimited storage based on vendor’s offerings and service.
* Cloud-based resources need to be housed in data centres. Cloud resources can be shared with the other users of the same provider, if the private cloud is not used.

Best analogy is any utility distribution. There is a grid that produces gas/electricity/water - assume it’s a data-center. Cloud is nothing but the utilities used at home. We don’t need and maintain infrastructure. We just need to pay for the number of units consumed and the service provider ensures things up and running 99.99x% of the time. Hence we can say that Data center is a network of specific devices for global collaboration to deliver, accelerate, display, compute, and store data information on the Internet infrastructure.

**Application of Data Centre with Cloud**.

Before Internet infrastructure, cloud computing didn’t/couldn’t exists. It’s booming and in near future, data centers will begin to decline and cloud storage will take over. So the reason behind it is:-

Cloud being virtual infrastructure which may be accessed or delivered with a local network or to remote location through internet. Hence here user can access Computing resources, Networking services and storage and Software. In cloud computing terminologies it’s called as Infrastructure as a service and Software as a Service. It is an Off-premise form of computing which can be accessed from the internet, its maintenance and updates is maintained and controlled by the [third-party](http://www.ironsystems.com/services/Iron-Cloud-Integration-Center?utm_campaign=23+Feb+2017&utm_source=SMO). No physical Infrastructure is presented anytime with user. But in actual this is stored somewhere on real Data Centres. And that layer is hidden from user.

The cloud is an online storage system designed to fragment and duplicate your data across multiple data centre locations. In case of sudden failures, a cloud system always ensures a backup of the backup. Hence the only way anything ever put on the cloud can ever be destroyed is if the Internet/base itself no longer exists. In a cloud based system provider just gets fee to deliver a service and in return he manage the facilities, hardware, software and configurations, platform and ensures the delivery.

Cloud needs data centres to house the equipment and storage devices, but all data centres do not support cloud based services. A data centre is a place where the servers and other hardware are kept. It may be on the corporate network and located anywhere, run by a service provider. Most providers offer redundancy by creating multiple data centres. Cloud services provider’s market cloud computing as a utility or a service. This model allows customers to buy only what they require and to scale up or down services as and when needed.

Cloud works with multiple servers called as grid computing so in case of failure at some point, resources are fetched and accessed automatically from the other points in the network. Cloud is scalable on demand. The level of scalability depends on the cloud vendors. The only issue is the users do not have control i.e. they do not know where their data is stored.

**In business perspective**

If businesses needs customizable and wholly dedicated system, a data center is more appealing. Space is not shared with another organization. However, if needed more space or computing power, it translates into purchasing more equipment, staff to maintain it, and electricity.

It will cost less, if sharing the space with other organizations hiring the third party to maintain their data. There is a coexistence side by side. There is a way to optimize usage of both a data center and a cloud computing system by placing the most essential and critical data in a data canter.

**Pros and Cons of Data Centre**

**Pros:**

1. Organizations able to have an in-house data storage center are far less reliant on maintaining an Internet connection.
2. Data will be accessible as long as the local network remains stable.
3. Remote storage has its advantages as well. If any organization’s place is compromised via natural calamity, the data will remain safe and unharmed at its remote location.

**Cons:**

1. Having all or most of your data stored in one location makes it more easily accessible, both virtually and physically, it may be unsecure.
2. Depending on budget, it could prove too expensive to maintain, own and operated data center.

**Pros and Cons of Cloud Computing/Storage**.

**Pros:** Cloud comes with some advantages in interconnected world

1. Services like Microsoft Office 365 and Google Drive and one drive have embraced its ability to store data online and have created services to capitalize on its potential.
2. Businesses can do the same thing with data by making it accessible 24X7. And with online access, data will always be accessible as long as you have Internet.

**Cons:**

1. Anything online is more susceptible to virtual attack. A hacker is can hook up and isolate a cloud storage system than a data center.
2. Cloud systems also typically don’t have as much power as a data center because of their online nature.
3. Cloud security continues to be a concern among users. Providers need to build security capabilities, such as encryption and authentication.

**Comparison between Cloud and Data Centre**

**Efficiency:** Since each machine has its own individual network, therefore dedicated server is more efficient in handling greater workloads. Cloud servers handles a network traffic hence performance get affected.

**Maintainability:**dedicated server need a minimum of two scaling procedure, that is migration and hardware upgrades. If there is a cluster of dedicated server then there is a downtime connected to server dedicated servers are great.

**Provisioning:**It's nice experience while using cloud server when compared to dedicated server in provisioning. The self-services provided by cloud server is definitely a plus point where things take place in actual time.

**Reliability:**If dedicated server and cloud server are running on the same hardware then their reliability would be equal. Nothing is left to be compared then.

**Security:**Dedicated server would be on one level up when compared to cloud server for security purpose only when businesses needs total isolation.

**Actual Value:** Value is something about services are provided in defined cost. While using dedicated server, consistent amount of sum need to be spend even if same is not being used continuously. Whereas on the other hand cloud server made charges on timey basis and only for the resources consumed. Thus, which is better in terms of value depends on usage.

**Conclusions**:

Cloud computing is the inevitable product with the development of the internet, and it also brings more rich applications to the internet. In this paper, we introduce the related concepts of cloud computing and cloud storage. Then we pose a cloud storage architecture based on OS web operating system in our computers. Experiments verified the system is well. Acknowledgements. There are factors affecting decision and those are: business needs, data security and system costs. A [Data centre](https://www.go4hosting.in/services/data-center-india) is perfect for who require a devoted framework that gives them full control over their information and hardware.

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