

CLOUD DEPLOYMENT MODELS

1. Public Cloud:

A public cloud is a platform that uses the standard cloud computing model to make resources -- such as virtual machines, applications or storage available to users remotely. Public cloud services may be free or offered through a variety of subscription or on-demand pricing schemes, including a pay-per-usage model. It is an alternative application development approach to traditional on-premises IT architectures. In the basic public cloud computing model, a third-party provider hosts scalable, on-demand IT resources and delivers them to users over a network connection, either over the public internet or a dedicated network.

Example:

Amazon EC2 , Blue Cloud by IBM & Mic Azure.

Advantages:

Low Cost

As the public cloud itself portrayed the meaning of general public that is would be low cost than any other cloud models.

Independency of the location

Totally independent of the physical location to be accessible for the public.

Reliability & Scalability

It offers scalable (ease of management setup) and reliable (24 x 7) services to its customers.

Business Agility

It offers the ability of increasing the resources according to the needs for an individual.

Disadvantages:

Low Security

As the resources are shared among the general public, so accessibility to means high risk and low-level security.

Performance

The performance is based on the internet connectivity.

Less Customizable

There is not much option provided for customization due to cheapness making it less customizable than private cloud.

2. Private Cloud:

Private cloud as it sounds private made for the secure and workable organization to carry out with their work, to hide their infrastructure from the actual public whereas, only the authorized users have access to the resources of that organization.

Example:

HP Data Centers, Microsoft, Elastra-private cloud, and Ubuntu.

Advantages:

Security

There is high notch security for the organization's data than other cloud deployment models.

Highly customizable

It is made for the organizations to use and set according to their requirement thus provides extra customization option

Reliability

Enhanced reliability and greater control over managing the servers.

Disadvantages:

Cost

Not affordable for everyone due to its expensive cost.

Location Independent

Simply difficult for the workers to access data from the remote locations.

Scalability

Not a proper scalable solution due to the internal limited hosted resources.

3. Hybrid Cloud:

A hybrid cloud connects public cloud and private cloud conditions by permitting information and applications to be divided among them. This assists organizations with downsizing administrations and forward between their own foundation and the public cloud.

Example:

U.S.-based dedicated IBM SoftLayer cloud for federal agencies Dropbox, SugarSync and Trend Micro's SafeSync and Google Drive

Advantages:

Flexibility

Flexible solution for the organization to move data from private to public instance for the users to access them.

High Speed

It empowers associations to move quicker to DevOps – a bunch of practices for incorporating improvement, tasks, and insightful groups.

Data Security

It enhances data and system security by allowing sensitive info to be stored in the private environment.

Disadvantages:

Implementation

It's hard to implement and manage the infrastructure dealing with both the clouds resources. It can for sure be intricate to execute and hard to keep up.

Compatibility

Records utilized in the private cloud and the public cloud can be a major headache when utilizing a hybrid cloud.

Security

The misuse of the foundation shrunk by another organization can put yours in danger as a fruitful assault on the primary worker opens a penetrate for every customer's framework.

4. Community Cloud:

Community cloud is a cloud infrastructure that allows systems and services to be accessible by a group of several organizations to share the information. It is owned, managed, and operated by one or more organizations in the community, a third party, or a combination of them.

Example:

U.S.-based dedicated IBM SoftLayer cloud for federal agencies.

Advantages:

Cost Effective

It is cost-effective solution for most organizations as it is managed among the organizations.

Flexible and Scalable

It is compatible with the individual of each organization making it flexible to use and manage other requirements according to their needs.

Security

More secure than the public cloud but less secure than private cloud.

Disadvantages:

Shared Resources

It makes things difficult when some community is consuming more resources, making disorder in the whole. Mostly the storage quota and bandwidth problem arise, a challenging for the whole community to prioritize.

Data accessibility within the community

Since data will be accessible to everyone in the community between organizations gives rise to the security concerns.

OPTIMISTIC APPROACH

Optimistic concurrency control:

Optimistic concurrency control (OCC) is a concurrency control method applied to transactional systems such as relational database management systems and software transactional memory. OCC assumes that multiple transactions can frequently complete without interfering with each other.

1. Validation Concurrency Control:

The optimistic approach is based on the assumption that the majority of the database operations do not conflict. The optimistic approach requires neither locking nor time stamping techniques. Instead, a transaction is executed without restrictions until it is committed. Using an optimistic approach, each transaction moves through 2 or 3 phases, referred to as read, validation and write.

- (i) During read phase, the transaction reads the database, executes the needed computations and makes the updates to a private copy of the database values. All update operations of the transactions are recorded in a temporary update file, which is not accessed by the remaining transactions.
- (ii) During the validation phase, the transaction is validated to ensure that the changes made will not affect the integrity and consistency of the database. If the validation test is positive, the transaction goes to a write phase. If the validation test is negative, the transaction is restarted and the changes are discarded.
- (iii) During the write phase, the changes are permanently applied to the database.

2. Multi version Concurrency Control:

Multi version Concurrency Control (MVCC) MVCC provides concurrent access to the database without locking the data. This feature improves the performance of database applications in a multiuser environment. Applications will no longer hang because a read cannot acquire a lock.

Multi version schemes keep old versions of data item to increase concurrency.

Each successful write results in the creation of a new version of the data item written. Timestamps are used to label the versions. When a read(X) operation is issued, select an appropriate version of X based on the timestamp of the transaction.

Multi version Technique Based on Timestamp Ordering In this method, several versions of each data item X are maintained. For each version, the value of version and the following two timestamps are kept: 1. Read-Timestamping: The read timestamp of is the largest of all the timestamps of transactions that have successfully read version. 2. Write-Timestamping: The write timestamp of is the timestamp of the transaction that wrote the value of version.

Transaction T may be aborted and rolled back, If the conflict occurs, T is rolled back; otherwise, a new version of item X, written by transaction T, is created.