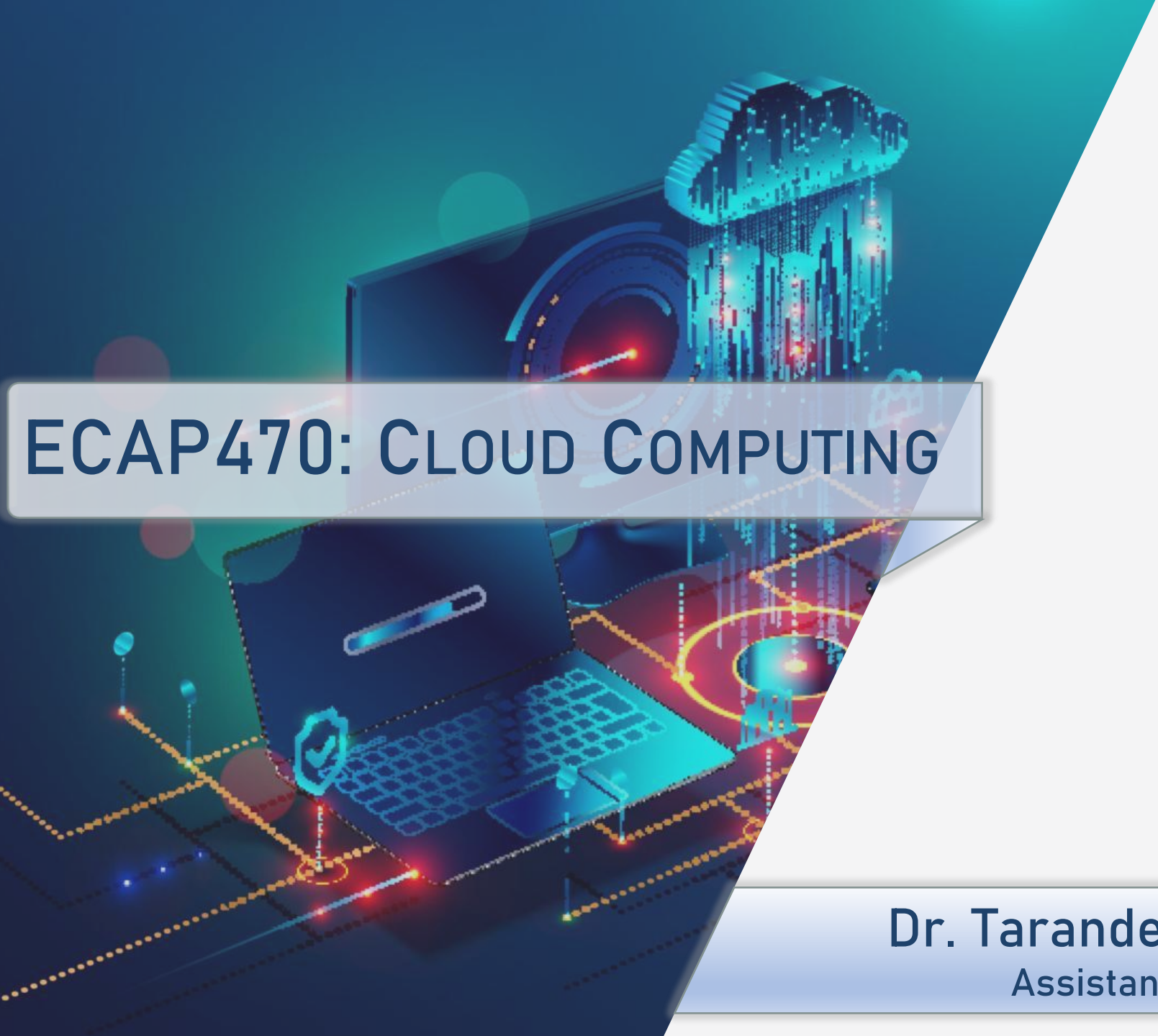

ECAP470: Cloud Computing

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Assistant Professor

Learning Outcomes

After this lecture, you will be able to

- ✓ Explore the Cloud Architecture.
- ✓ Understand about Cloud Storage.

Cloud Architecture

- How individual technologies are integrated to create clouds—IT environments that abstract, pool, and share scalable resources across a network.

Cloud Architecture

- How individual technologies are integrated to create clouds—IT environments that abstract, pool, and share scalable resources across a network.
- How all the components and capabilities necessary to build a cloud are connected in order to deliver an online platform on which applications can run.

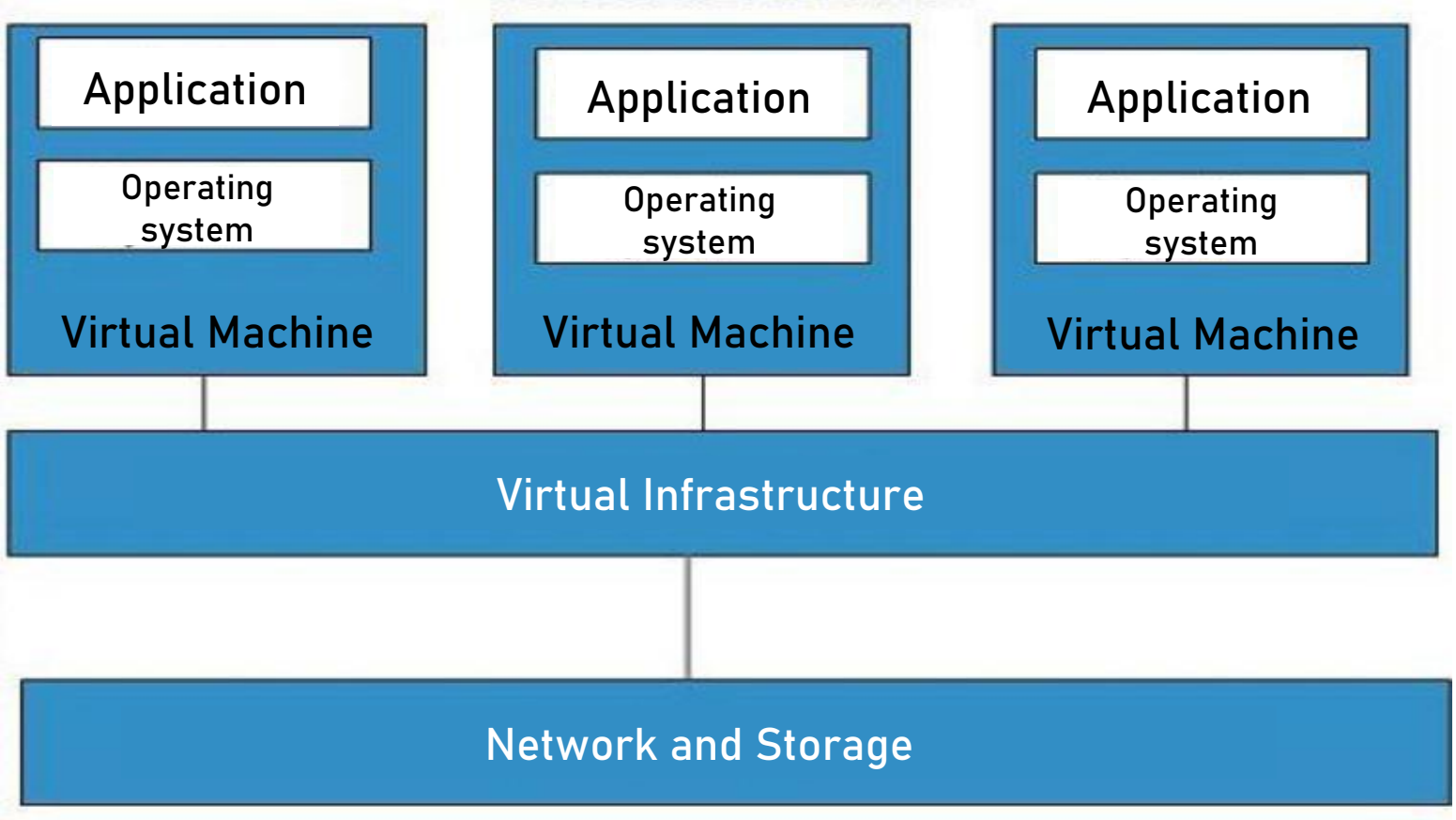
Cloud Computing Technologies

- Certain technologies that are working behind the cloud computing platforms make cloud computing flexible, reliable, usable. These include:
  - Virtualization.
  - Service-Oriented Architecture (SOA).
  - Grid Computing.
  - Utility Computing.

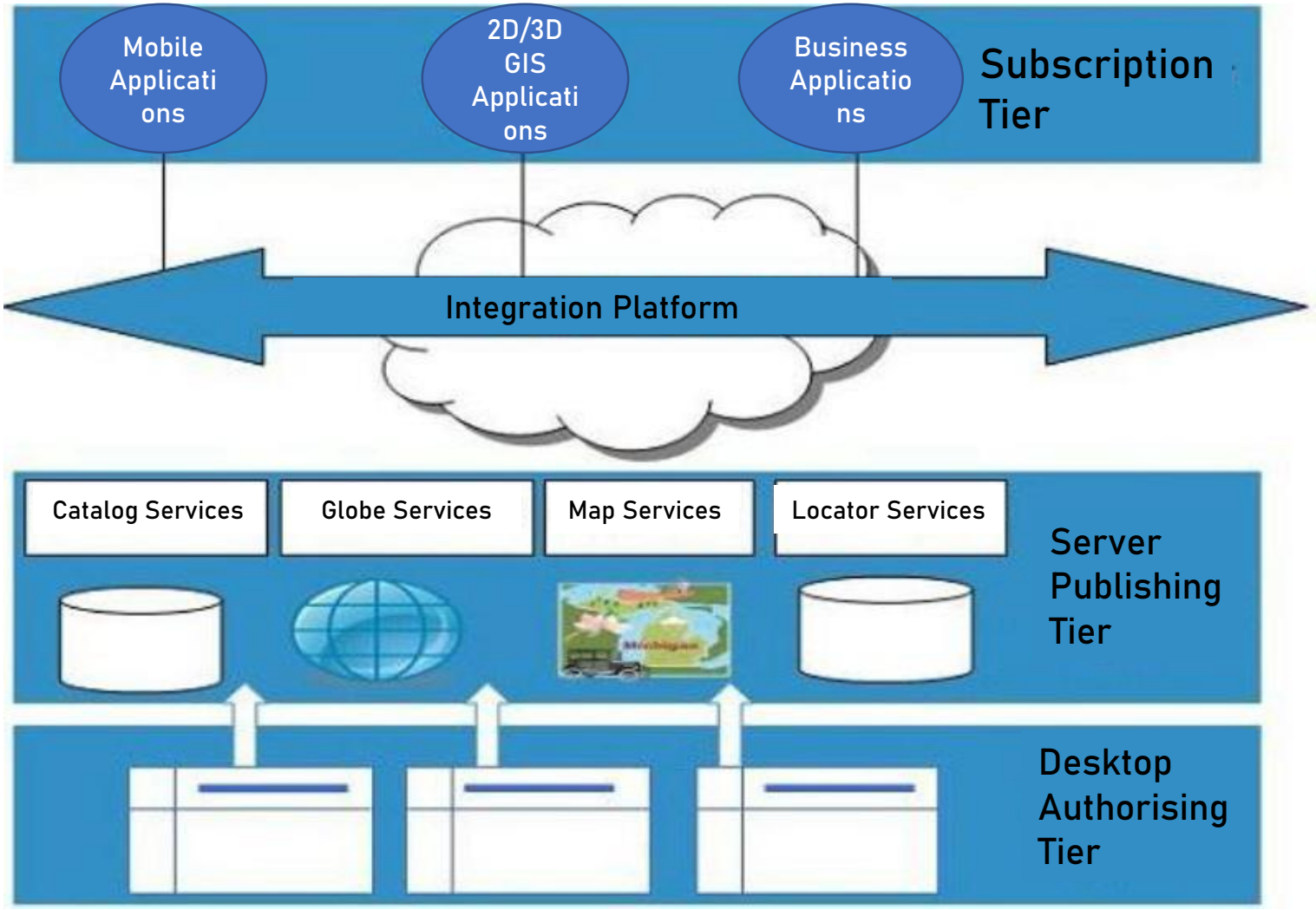
Virtualization

- Virtualization.
- Multitenant architecture.

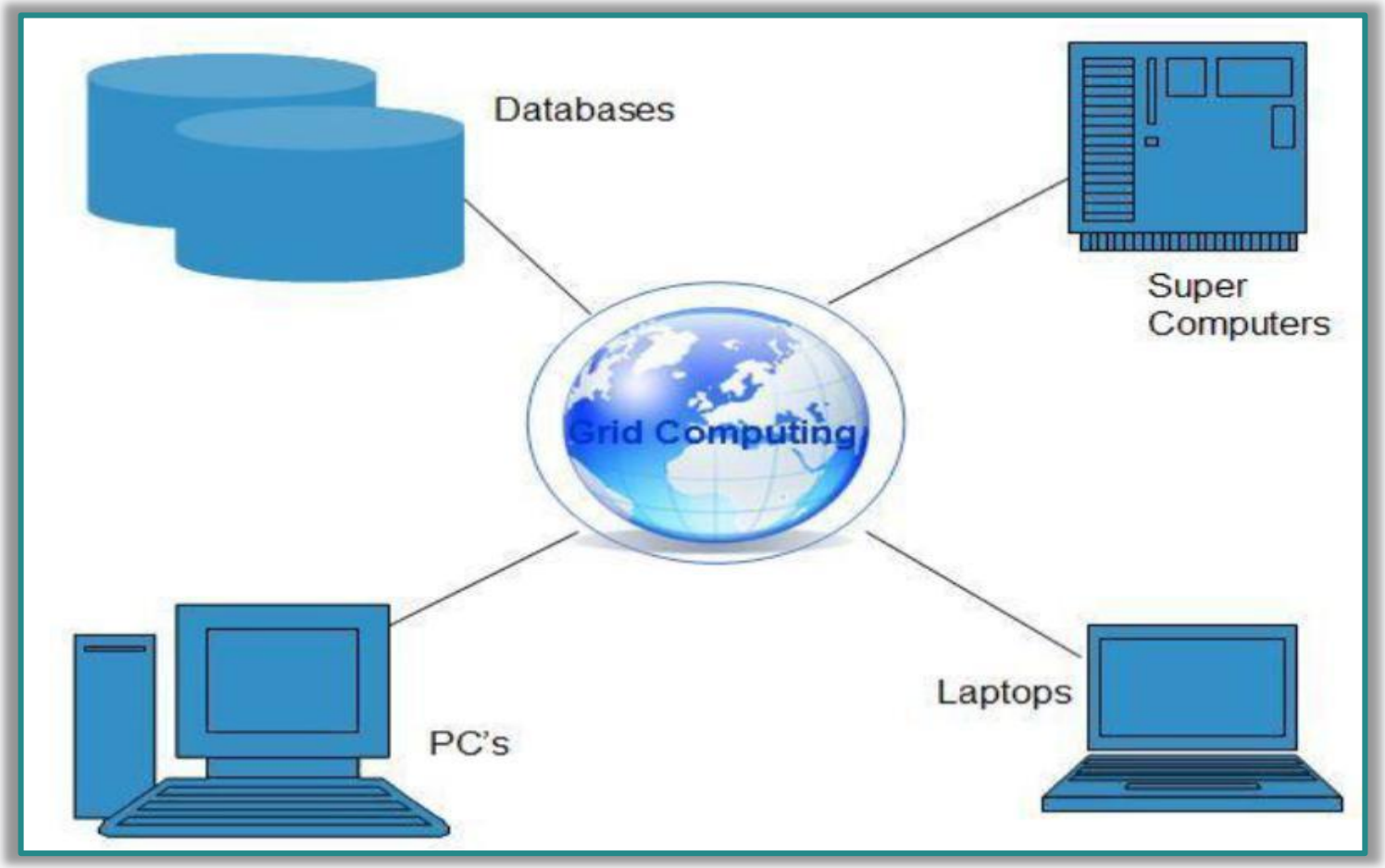
Virtualization



Service-Oriented Architecture (SOA)



Grid Computing



Utility Computing

- Based on Pay per Use model.

Cloud Computing-Architecture

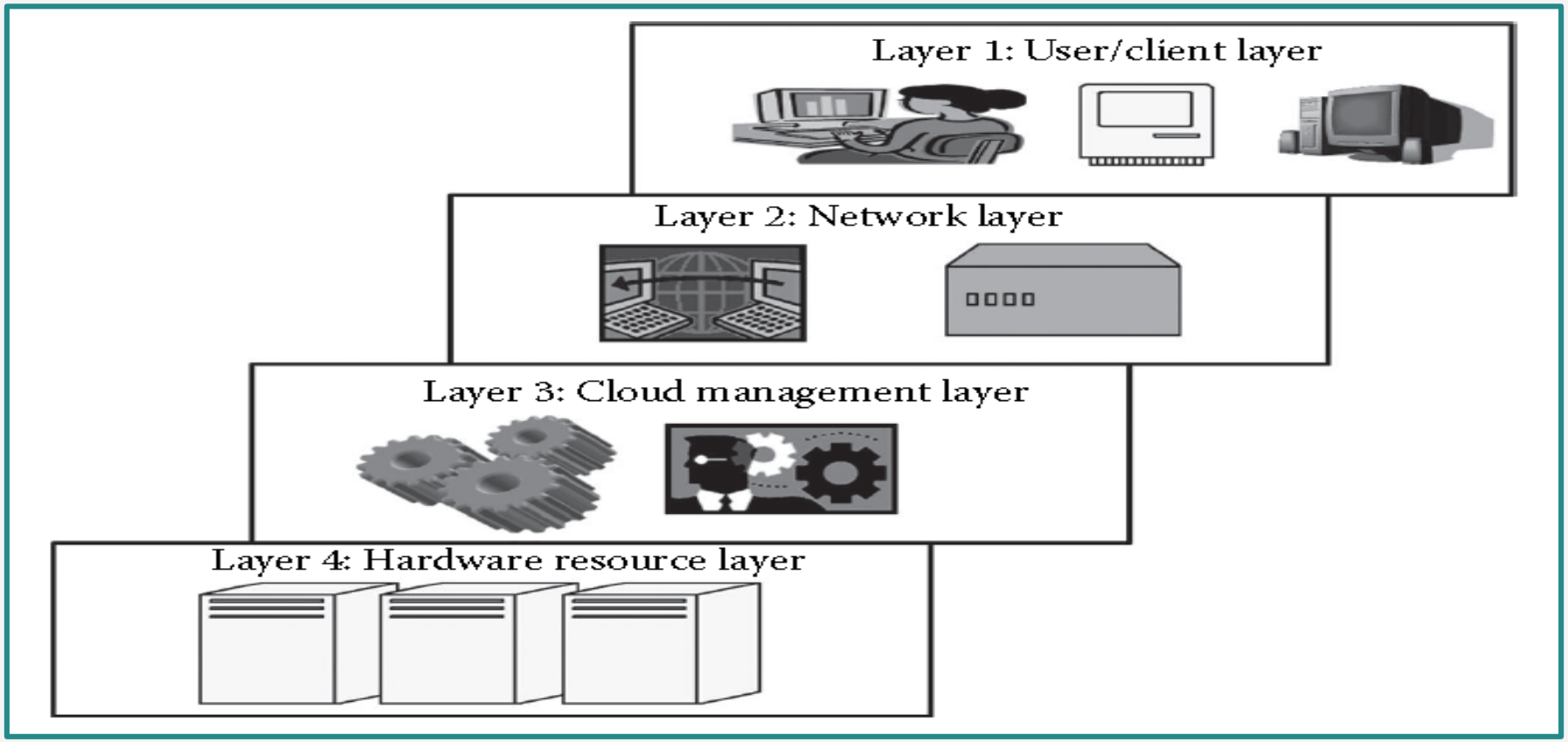
- Cloud computing architecture comprises of many cloud components, each of them are loosely coupled.
- We can broadly divide the cloud architecture into two parts:
  - Front End.
  - Back End.

Cloud Layered Architecture

- Cloud architecture describes its working mechanism.
- Includes the dependencies on which it works and the components that work over it.
- Cloud is a recent technology that is completely dependent on the Internet for its functioning.

Cloud Layered Architecture

- Cloud architecture can be divided into four layers based on the access of the cloud by the user.

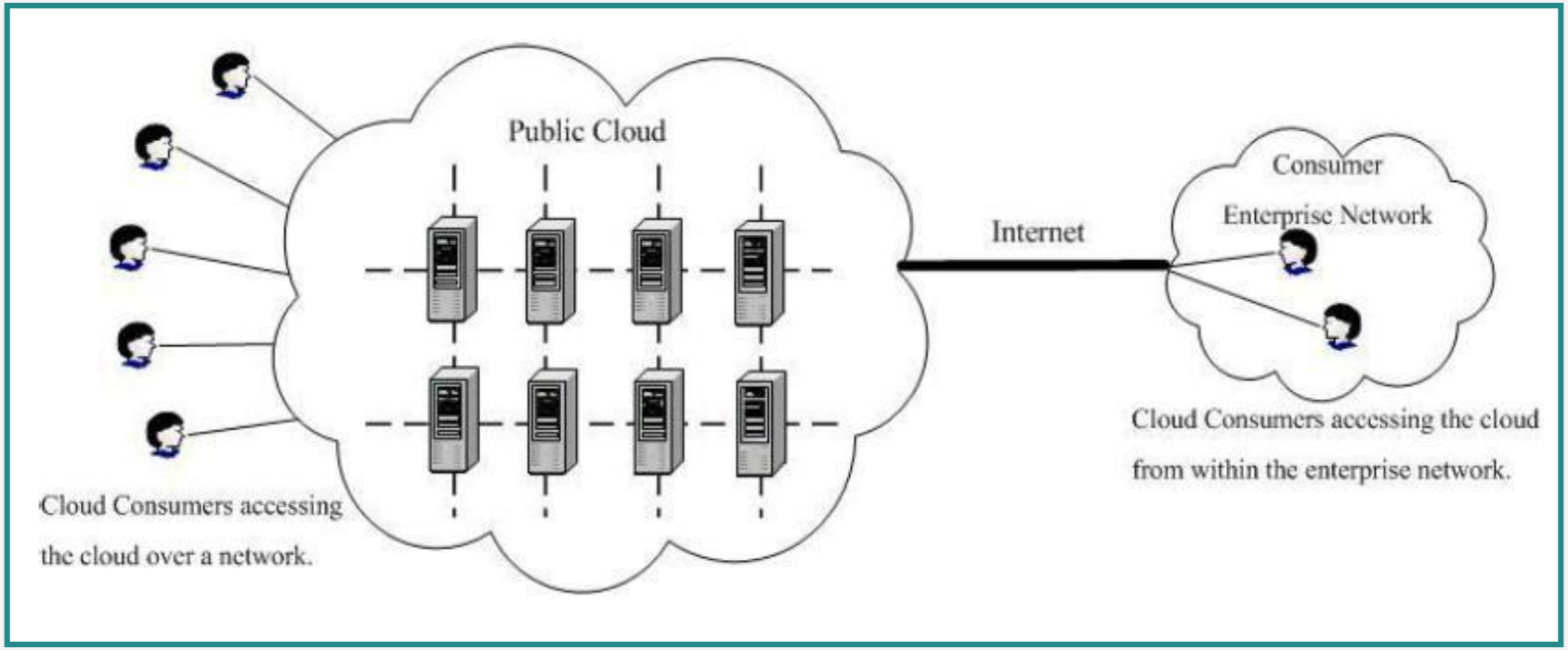


Cloud Deployment Models

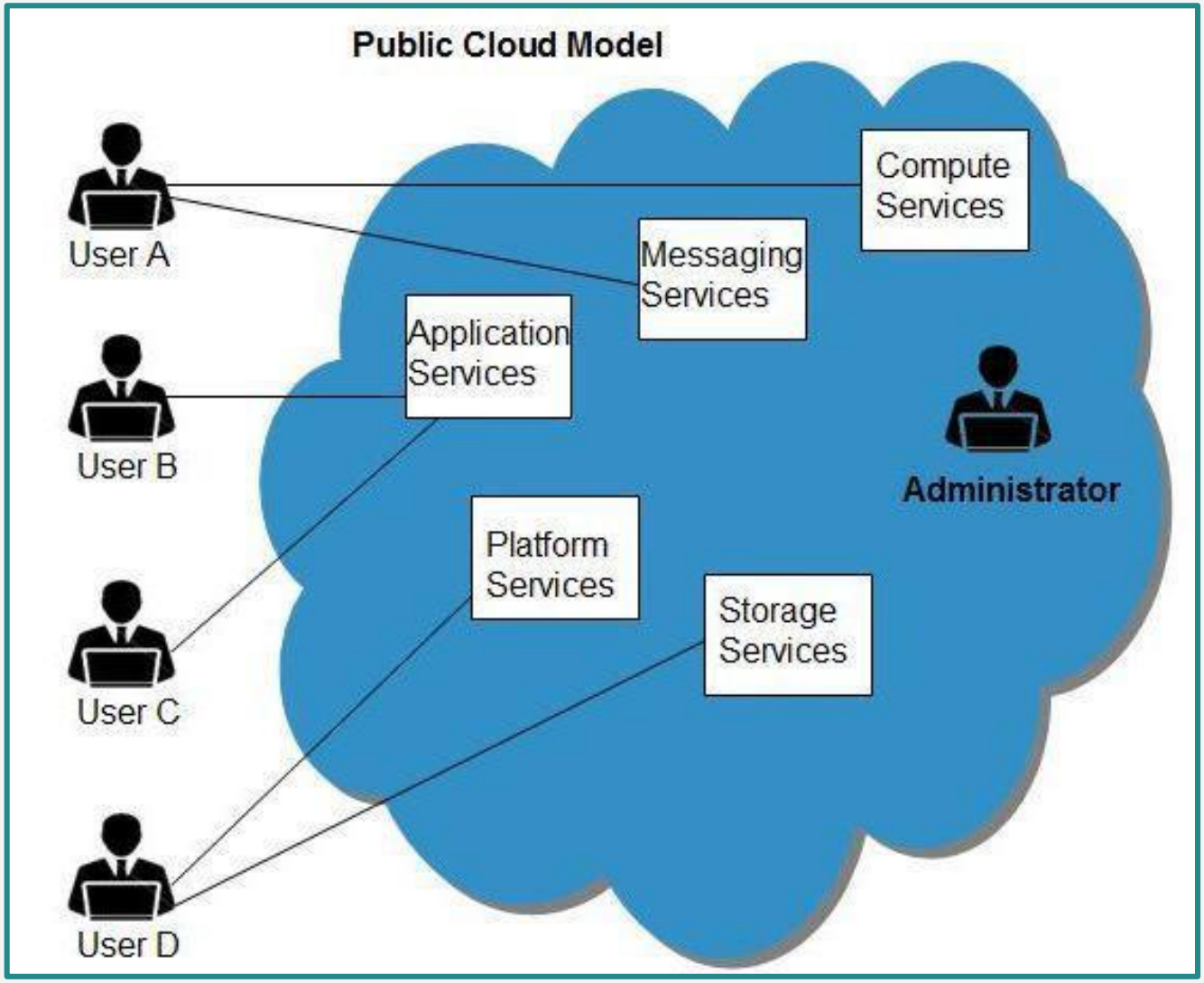
Cloud infrastructure may be operated in one of the following deployment models:

- Public cloud.
- Private cloud.
- Community cloud.
- Hybrid cloud.

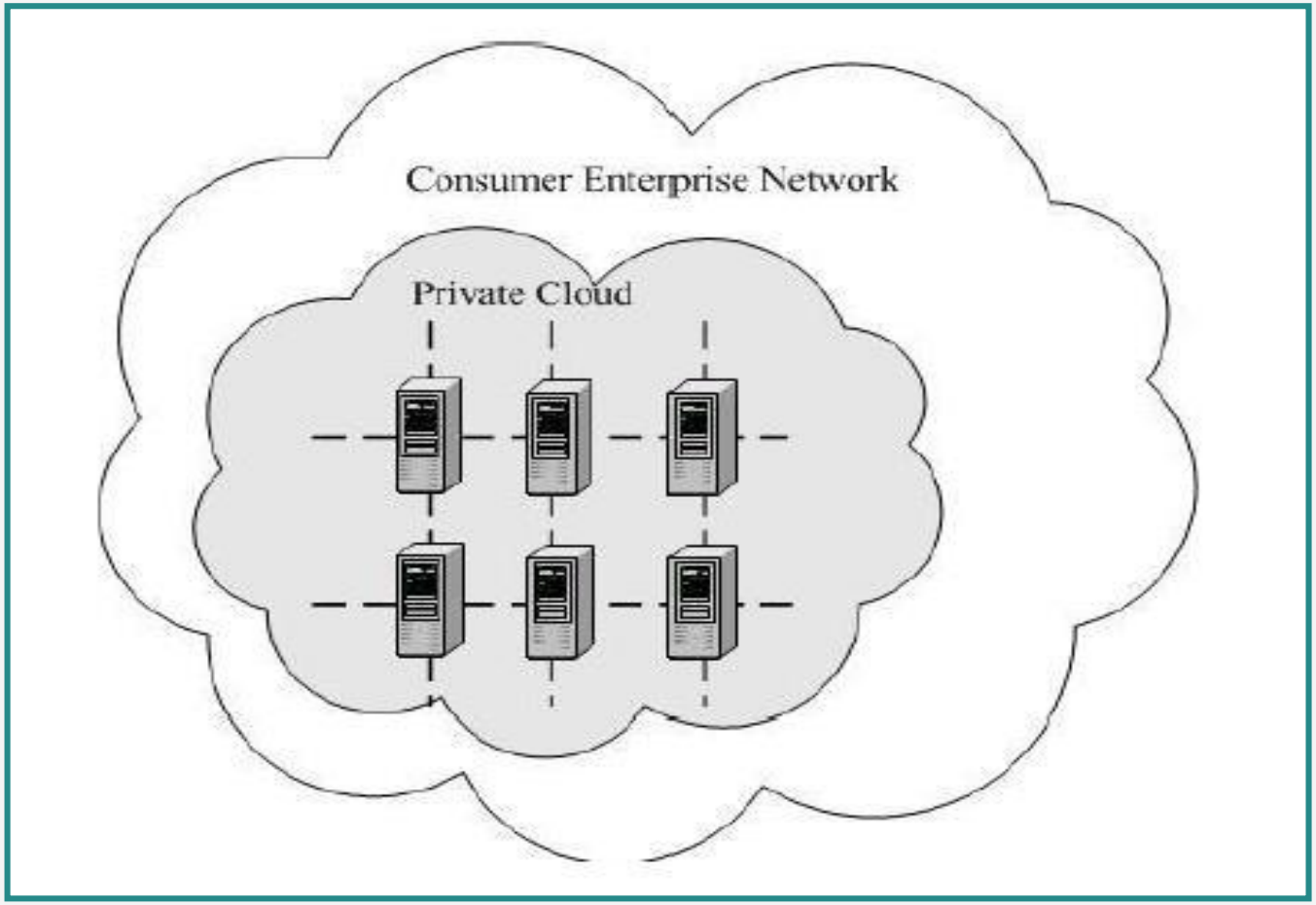
Public Cloud



Public Cloud



Private Cloud

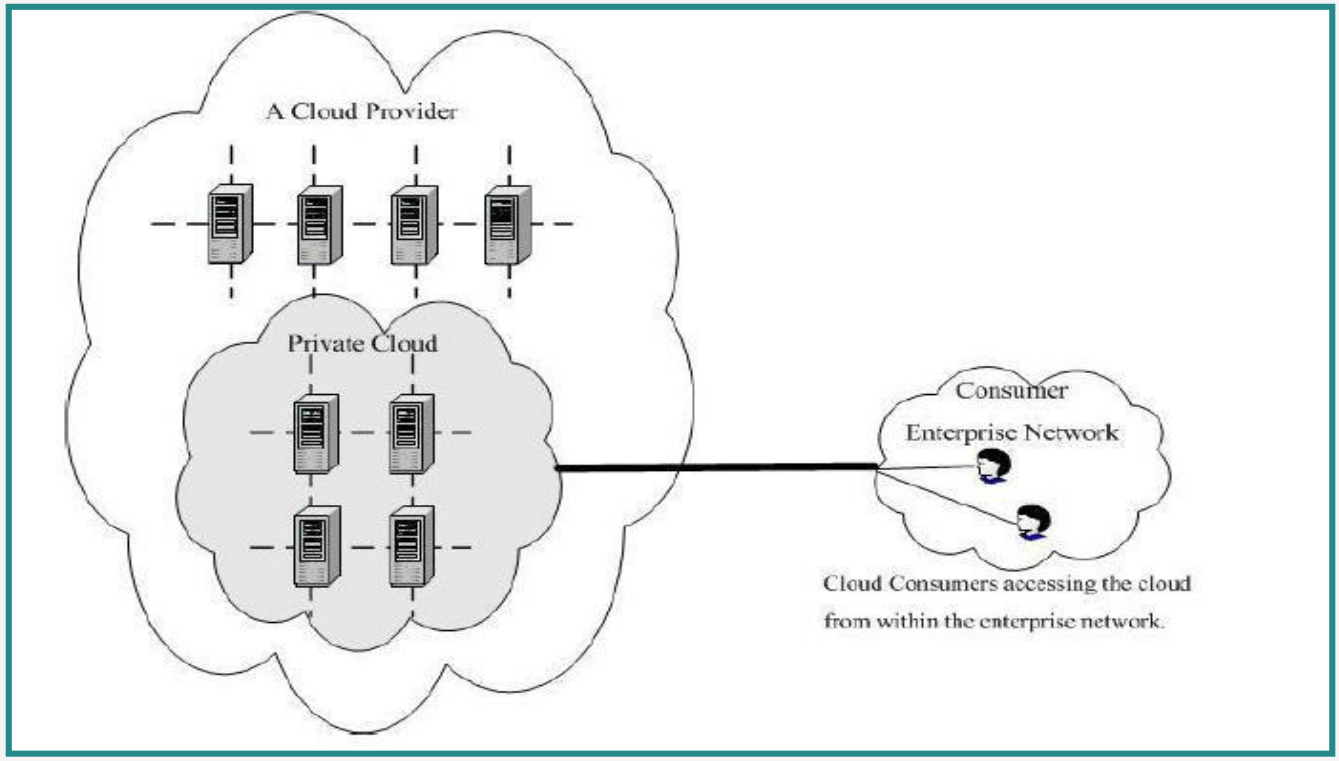


On-site Private Cloud

Private Cloud

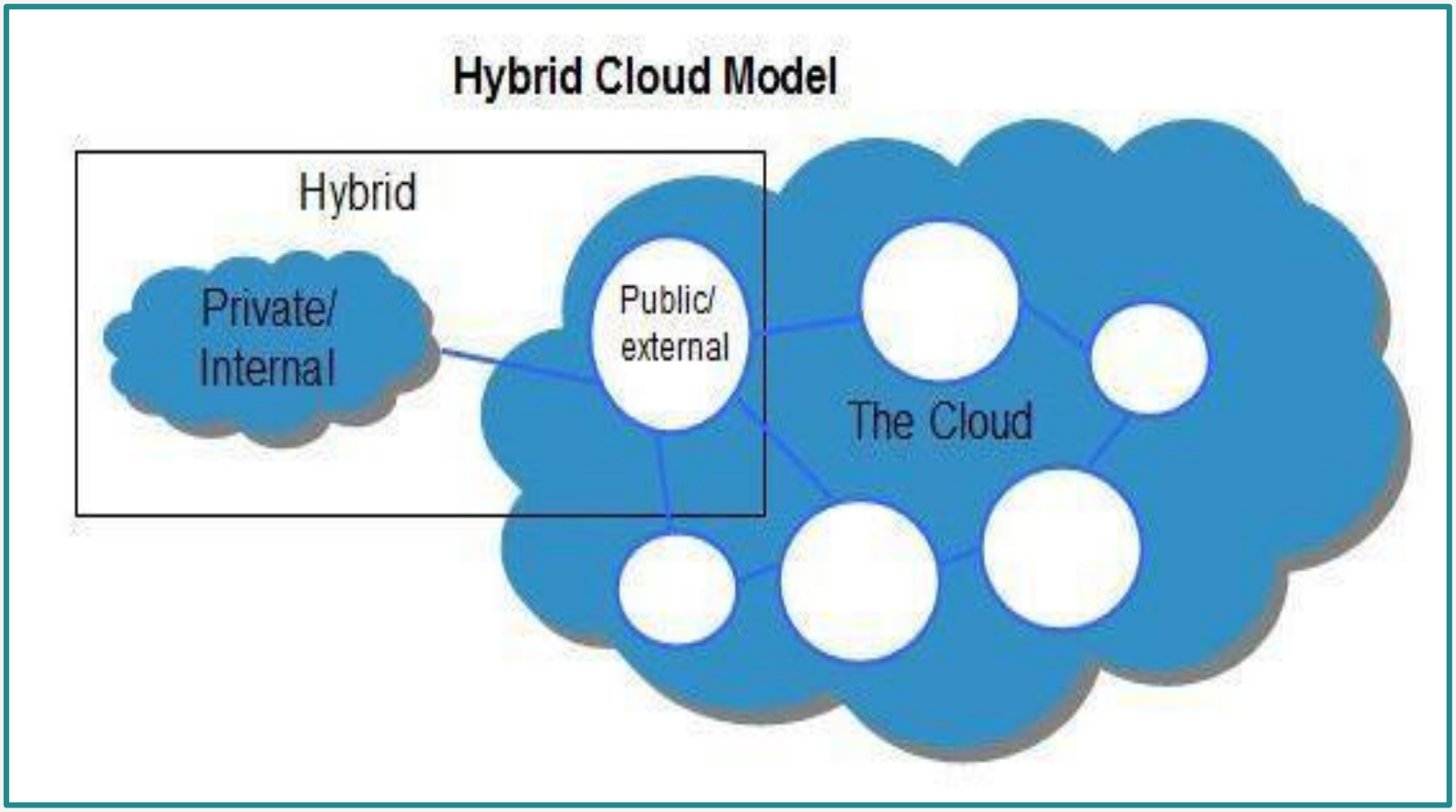
Outsourced Private Cloud: Third party cloud, outsourced to a hosting company.

Outsourced Private Cloud

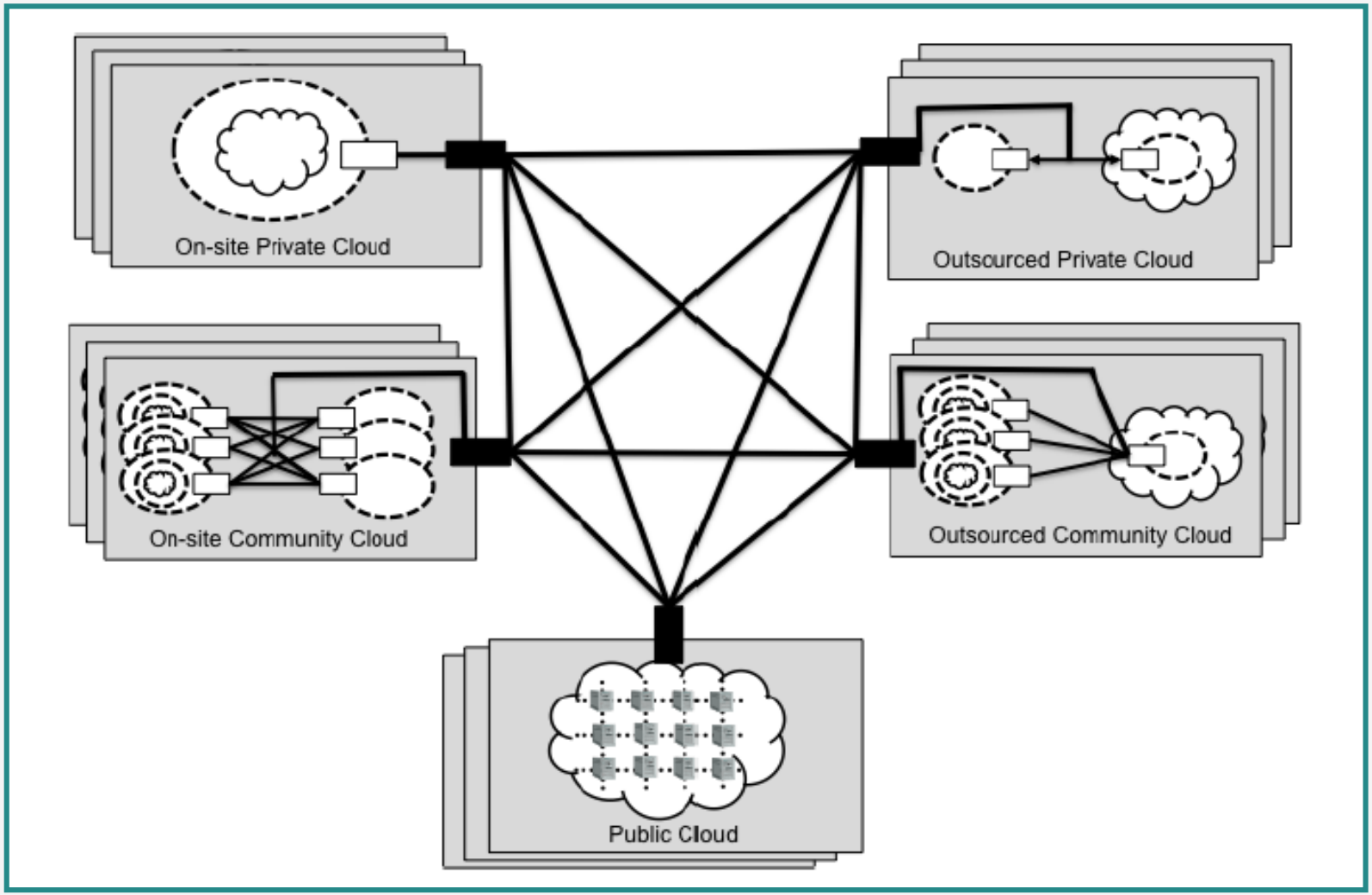


Hybrid Cloud

Hybrid Cloud Model

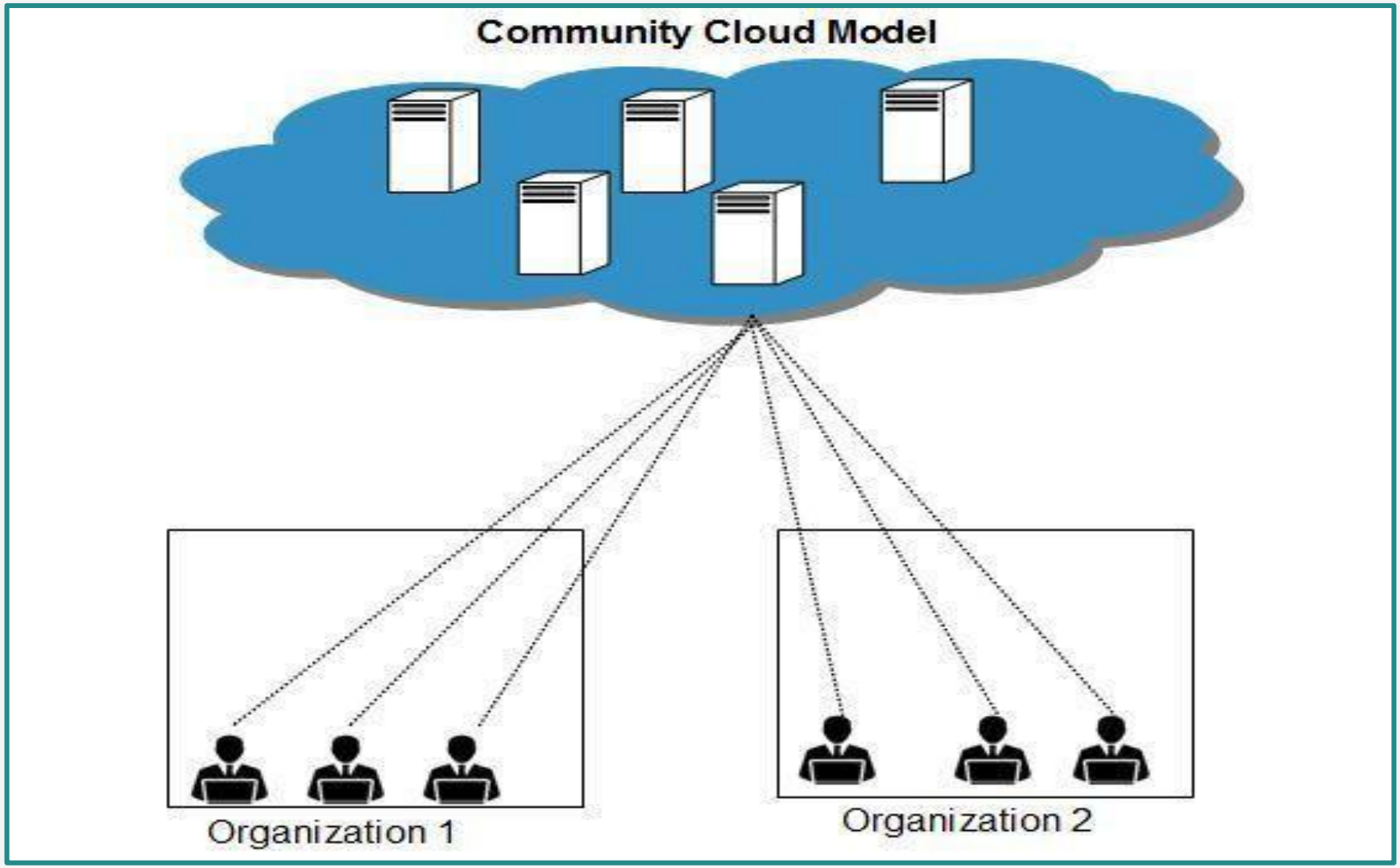


Hybrid Cloud

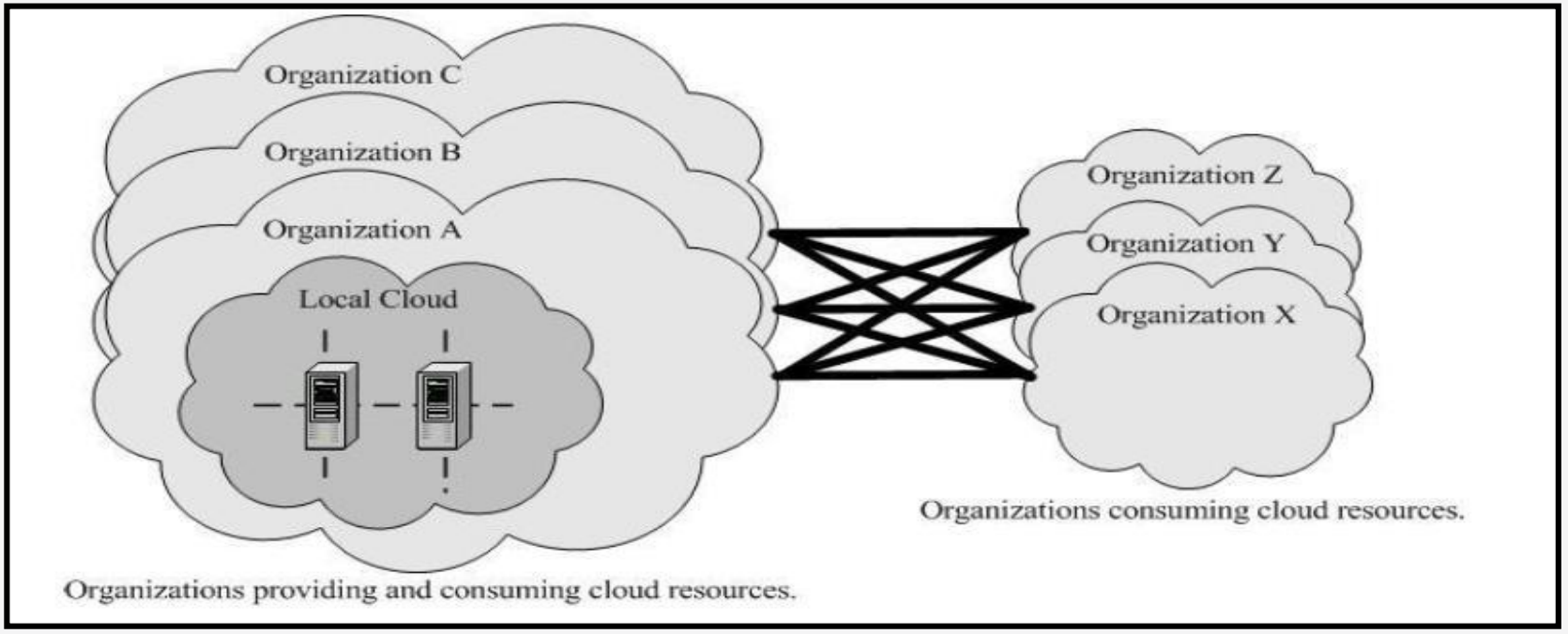


Hybrid Cloud

Community Cloud

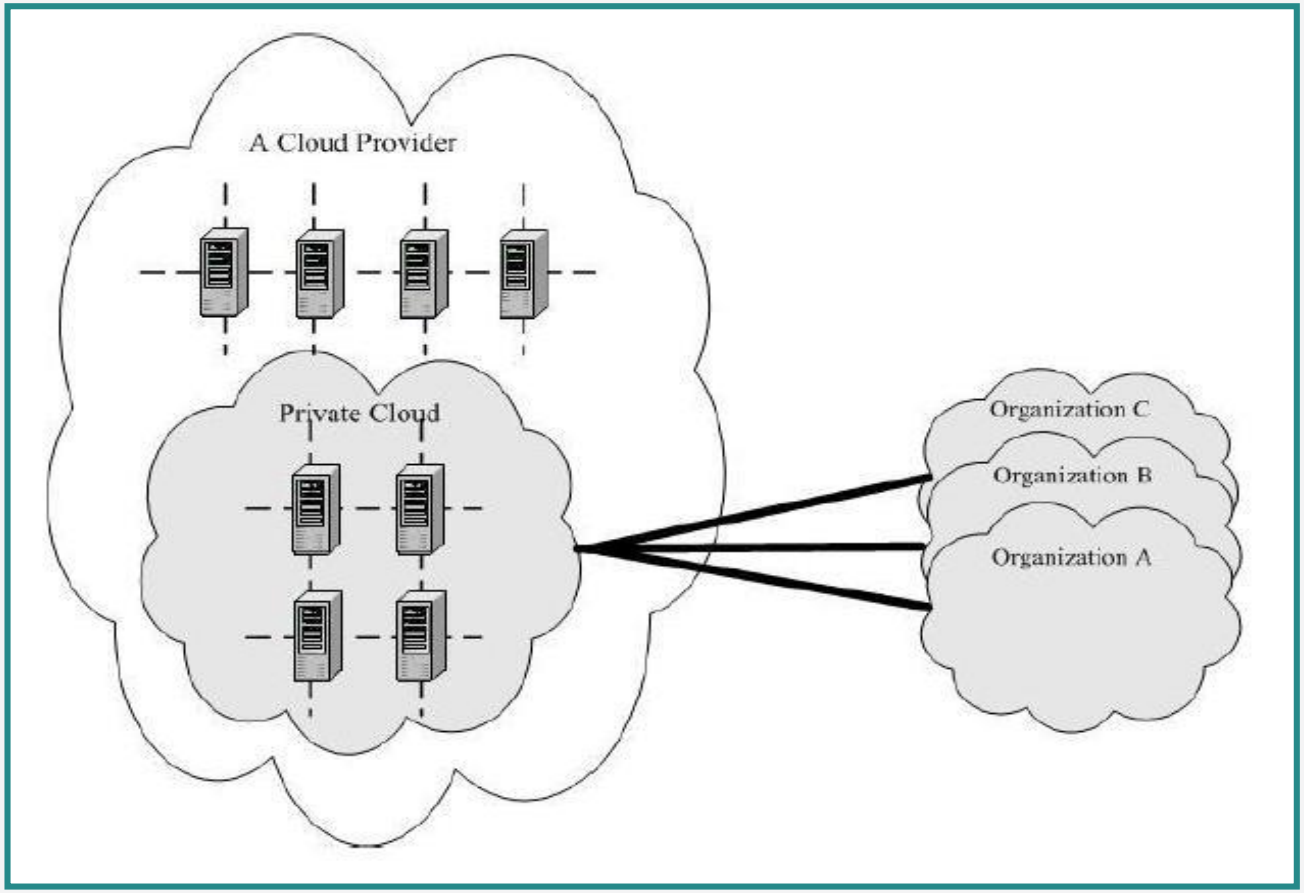


Community Cloud



On-site Community Cloud

Community Cloud



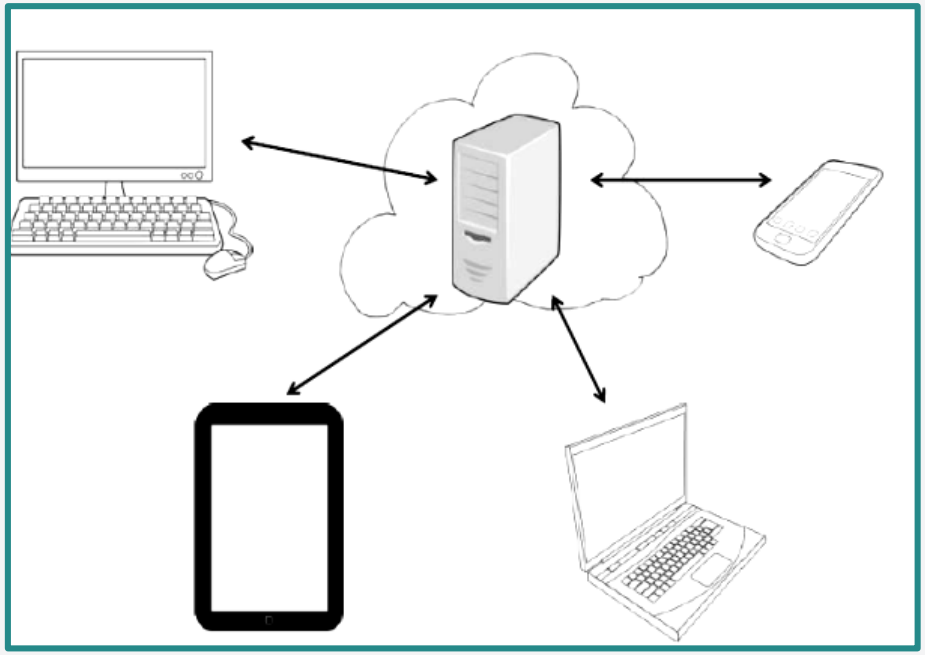
Outsourced Community Cloud

Cloud Storage

- Most innovative technology to store, access, and collaborate through scalable cloud technology.
- Cloud computing model that stores valuable data through the web and operates it through a storage as a device service.

Cloud Storage

- Delivered on-demand.
- Pay-as-you-go model.
- Third-party vendors.



Traditional Storage

- Storage option in which we use local physical drives to store the data at the primary location of the client.
- User generally uses the disk-based hardware to store data and these are used for copying, managing, and integrating the data to software.
- Features of Traditional Storage

Cloud Storage vs Traditional Storage

- Cloud Storage vs Traditional Storage.

Cloud Storage

Cloud Storage can be broadly classified into two categories:

- Unmanaged Cloud Storage.
- Managed Cloud Storage.

Cloud Storage

Cloud storage is a service that allows to save data on offsite storage system managed by third-party and is made accessible by a web services API.

- Storage devices can be broadly classified into two categories:
  - Block Storage Devices.
  - File Storage Devices.

Creating Cloud Storage System

- Cloud storage system stores multiple copies of data on multiple servers and in multiple locations.
- If one system fails, then it only requires to change the pointer to stored object's location.
- To aggregate storage assets into cloud storage systems, the cloud provider can use storage virtualization software, StorageGRID.

Creating Cloud Storage System

- It creates a virtualization layer that fetches storage from different storage devices into a single management system.

Features of Cloud Storage

- All platforms can easily be accessed via a web browser.
- Offer apps for ease of access from a smartphone or tablet.

Features of Cloud Storage

- Feature a directory structure similar to that of a computer drive; this facilitates navigation and organisation.
- Ease of Access.
- Online Editing.
- Online Collaboration.

Considerations for Storing Data to Cloud

Various parameters that need to be taken into account whilst saving data on the cloud include:

- Security.
- Availability.

Examples of Cloud Storage

Google Drive

Dropbox

iCloud

Examples of Cloud Storage

- Google Drive.
- Dropbox.
- Apple iCloud.

Common Features of Google Drive, Dropbox, iCloud

- All three platforms are third party services.
- All offer a basic amount of free storage:
  - Dropbox: 5 GB
  - OneDrive (linked to Microsoft live account): 7 GB
  - Google Drive (linked to Gmail account): 15 GB

Common Features of Google Drive, Dropbox, iCloud

- Post, user has to pay yearly or monthly subscription fee.
- Example: Google Drive: 100 GB- $4.99/month; 200 GB - $9.99/month.

Challenges in Cloud Storage

- Storing the data in cloud is not that simple task.
- Apart from its flexibility and convenience, it also has several challenges faced by the consumers.
- Consumers require ability to do several things.

That's all for now...