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# 1. Cloud Infrastructure vs Traditional IT Infrastructure

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- Information Technology (IT) infrastructure is the **backbone** of any organization. It includes **hardware, software, networking** devices, **storage** systems, and **data** centers that support business operations.
- There are **two main approaches** to managing IT infrastructure: **Traditional IT Infrastructure** and **Cloud Infrastructure**. Both serve the same purpose but differ greatly in management, cost, scalability, and flexibility.

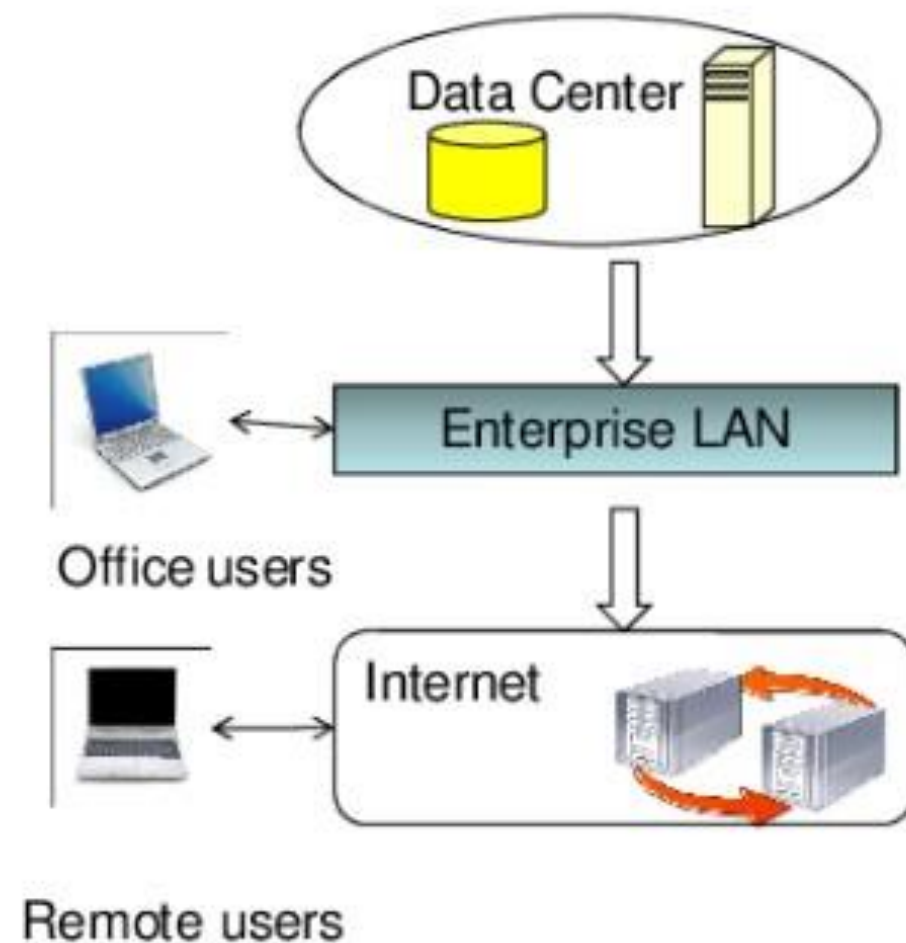
## 1. Traditional IT Infrastructure

- Traditional IT infrastructure refers to the conventional method where an organization **purchases, installs, and maintains its own IT resources**.
- All hardware and software are **physically located within the organization's premises**, such as in an office server room or data center.

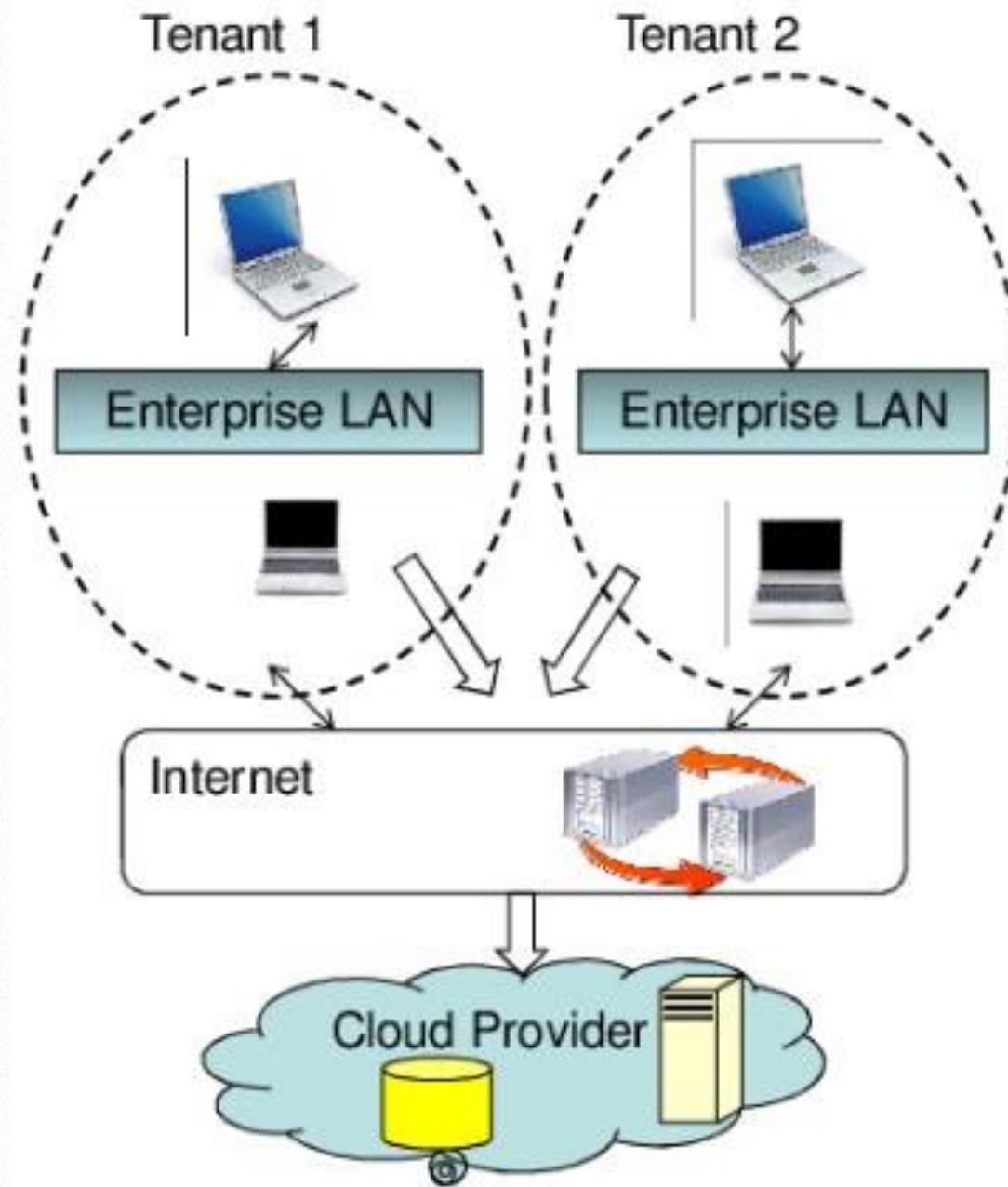
## 2. Cloud Infrastructure

- Cloud infrastructure refers to IT resources that are **delivered over the internet by cloud service providers** such as AWS, Microsoft Azure, or Google Cloud.
- Instead of owning hardware, users **rent computing services** as needed.

# 1. Cloud Infrastructure vs Traditional IT Infrastructure



(a) Traditional Data Center



(b) Data Center in Cloud Computing

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## Key Characteristics of Traditional IT Infrastructure

### 1. On-Premises Setup

Servers, storage devices, networking equipment, and software are installed locally. The organization is fully responsible for managing and protecting these resources.

### 2. High Initial Investment

A large amount of money is required to buy servers, networking devices, power systems, cooling equipment, and licensed software.

### 3. Maintenance Responsibility

The organization must hire skilled IT staff to handle maintenance, troubleshooting, upgrades, backups, and security.

## Key Characteristics of Cloud Infrastructure

### 1. Internet-Based Services

Servers, storage, databases, and applications are hosted in remote data centers and accessed through the internet.

### 2. Low Initial Cost

There is no need to buy physical hardware. Users pay only for the resources they use, making it cost-effective.

### 3. Managed by Cloud Providers

Cloud service providers handle hardware maintenance, system updates, security patches, and backups.

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## 4. Limited Scalability

If more computing power or storage is needed, new hardware must be purchased, installed, and configured, which takes time and increases cost.

## 5. Restricted Accessibility

Access to systems is usually limited to office networks. Remote access requires special configurations like VPNs.

### Example

- A company installs its own email server and database server in its office. All data is stored locally, and the IT team is responsible for maintenance and security.

## 4. High Scalability and Flexibility

Resources can be increased or reduced instantly based on demand. This makes cloud infrastructure ideal for growing businesses.

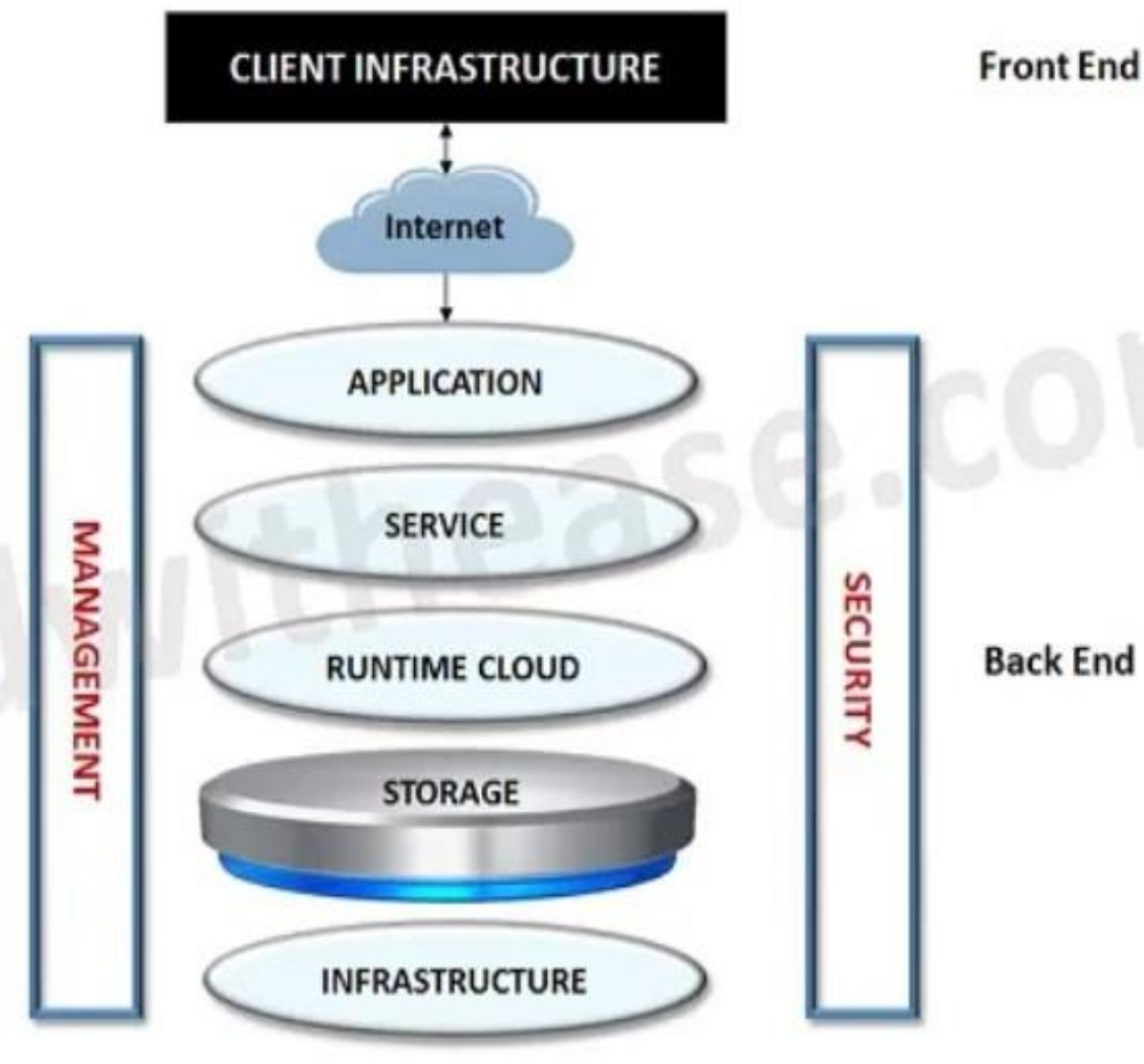
## 5. Global Accessibility

Data and applications can be accessed from anywhere at any time using internet-connected devices.

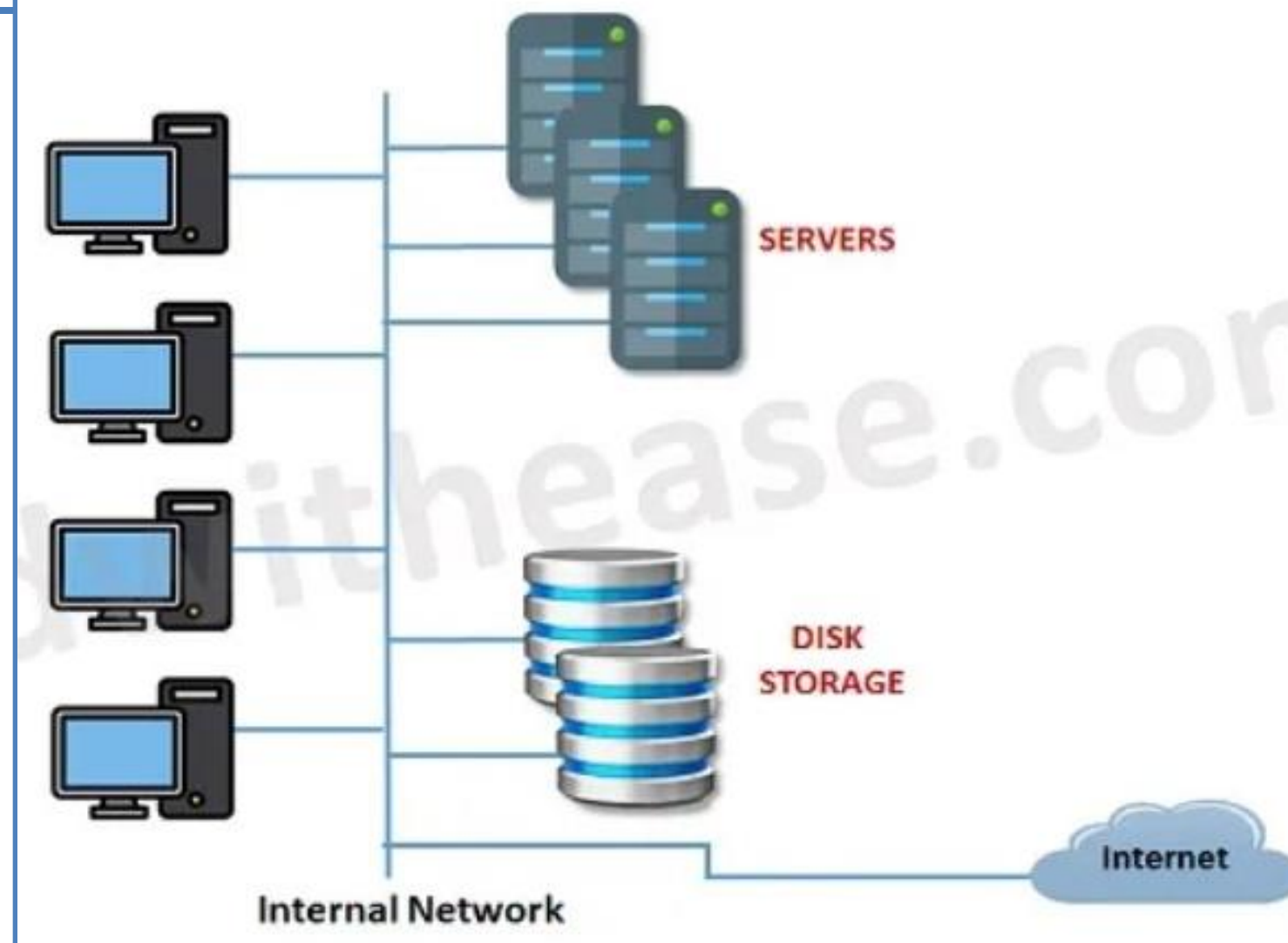
### Example

- An online learning platform hosts its website and student data on cloud servers. During exam periods, it increases server capacity and reduces it later.

# Cloud Computing



# Traditional Computing



**Front end** is used by the **end user** and it contains **client-side interfaces** and applications that are **required to access cloud computing platforms**. The front end comprises **web servers** including Chrome, Firefox, Internet explorer **browsers** etc., thin clients, tablets and mobile devices.

**The back end** is used by **service providers** to manage all resources required to provide cloud computing services including **data stores, security components, virtual machines, servers**, traffic management mechanisms etc.

## 2. Comparison Table: Cloud Computing vs Traditional Computing

| Function       | Cloud Computing                                                                                                                    | Traditional Computing                                                                     |
|----------------|------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| Business Model | Pay for use (subscription model),<br>Administrative overhead is reduced                                                            | Pay for assets, administrative costs.                                                     |
| Concept        | Delivery of different services such as data and applications though internet on different servers                                  | Delivery of different services on local server.                                           |
| Data access    | Ability to access data anywhere at any time by end user.                                                                           | User can access data only on system in which it is stored.                                |
| Costs          | Most cost effective as operations and maintenance of server is shared among several parties which reduces cost of public services. | Less cost effective as one has to buy expensive equipment to operate and maintain server. |
| Connectivity   | Requires fast, reliable, and stable internet connection to access data and application.                                            | Does not require internet connectivity to access data or application                      |

## 2. Comparison Table: Cloud Computing vs Traditional Computing

| Function                   | Cloud Computing                                                                                          | Traditional Computing                                                                                                          |
|----------------------------|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Scalability and Elasticity | It is highly scalable and elastic one can increase or decrease computing resources as per business need. | Scalability and elasticity are dependent on hardware, architecture and there is a limit to scope of expansion.                 |
| Resiliency and redundancy  | Resiliency and redundancy are built in by cloud providers                                                | Resiliency and redundancy levels depend on architecture, additional cost are involved to built a high resiliency architecture. |