**DAR ES SALAAM INSTITUTE OF TECHNOLOGY (DIT)**



**DEPARTMENT:**  COMPUTER STUDIES

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# General Overview

Before cloud computing, people and businesses had to rely on their own physical computer servers to store data, run applications, and perform computing tasks. This meant they had to buy, set up, and maintain expensive hardware and software infrastructure on-site.

# Before Cloud Computing

Before the advent of cloud computing, businesses relied on on-premises infrastructure, which involved owning and managing physical servers and hardware within their own facilities. This traditional approach required significant upfront investment, maintenance overhead, and limited scalability. While it provided control and customization, it also posed challenges such as high costs, slower scalability, and increased maintenance burden.

## Key features of before cloud computing

1. Physical Servers: Organizations had to purchase and maintain their own physical servers, which required space, cooling, and power.

2. Limited Scalability: If a business needed more computing power or storage, they had to buy additional hardware, which could be costly and time-consuming.

3. High Upfront Costs: Setting up on-premises infrastructure required a significant initial investment in hardware, software, and IT staff.

4. Maintenance Burden: Managing and updating servers, software, and security measures required dedicated IT resources and expertise.

## Advantages of before computing:

1. Control: With on-premises infrastructure, businesses have full control over their hardware, software, and data, which can be crucial for certain industries with strict compliance requirements.

2. Predictable Costs: While there are upfront costs, businesses can budget more accurately since they own the infrastructure outright.

3. Low Latency: For applications that require fast response times, having servers on-site can reduce latency since data doesn't need to travel over the internet.

4. Customization: On-premises solutions allow for greater customization and optimization of hardware and software configurations to meet specific business needs.

## Disadvantages of before computing:

1. High Initial Investment: Setting up and maintaining on-premises infrastructure requires a significant upfront investment in hardware, software licenses, and IT staff.

2. Limited Scalability: Scaling infrastructure can be slow and costly, requiring additional hardware purchases and setup time.

3. Maintenance Overhead: Managing servers, performing updates, and troubleshooting issues can be time-consuming and require specialized IT expertise.

4. Risk of Downtime: Hardware failures, power outages, or natural disasters can result in downtime, potentially impacting business operations and revenue.

# After Cloud Computing:

At the heart of this transformation is cloud computing, a revolutionary approach to delivering computing resources and services over the internet. Unlike traditional on-premises infrastructure, where businesses maintain their own physical servers and data centers, cloud computing offers a flexible and scalable alternative, allowing users to access computing resources on-demand from cloud service providers.

The advent of cloud computing has unleashed a wave of possibilities, empowering businesses to accelerate their digital transformation efforts, streamline operations, and unlock new opportunities for innovation. From startups to enterprises, organizations of all sizes and industries are harnessing the power of the cloud to drive agility, efficiency, and competitiveness in today's fast-paced digital economy.

## Key features of after cloud computing

1. Virtual Servers: With cloud computing, companies can rent virtual servers and storage space from cloud service providers like Amazon Web Services (AWS), Microsoft Azure, or Google Cloud Platform (GCP). These servers are hosted off-site in data centers.

2. Scalability: Cloud services offer flexible scalability, allowing businesses to easily increase or decrease their computing resources based on demand. They can quickly provision additional servers or storage space as needed.

3. Pay-as-You-Go Model: Instead of large upfront costs, cloud computing operates on a pay-as-you-go model, where businesses only pay for the resources they use. This can lead to significant cost savings, especially for smaller companies or startups.

4. Managed Services: Cloud providers often offer managed services, taking care of routine maintenance tasks like software updates, security patches, and backups. This frees up businesses to focus on their core activities.

### Example:

Imagine a small e-commerce startup that sells handmade jewelry. Before cloud computing, they would need to buy their own servers to host their website, manage customer data, and process transactions. They would also need to hire IT staff to set up and maintain the servers.

With cloud computing, the startup can instead use a service like AWS or Azure to host their website and database. They can easily scale up their resources during busy shopping seasons like the holidays, and scale down during quieter periods. They only pay for the computing resources they use, which helps keep costs low. Plus, the cloud provider handles the maintenance and security of the servers, allowing the startup to focus on designing and selling their jewelry.

Certainly! Let's outline the advantages and disadvantages of both before and after cloud computing:

## Advantages of After Cloud Computing:

1. Scalability: Cloud computing offers virtually unlimited scalability, allowing businesses to quickly scale resources up or down based on demand without upfront investment.

2. Cost Efficiency: Cloud services operate on a pay-as-you-go model, reducing upfront costs and allowing businesses to only pay for the resources they use.

3. Managed Services: Cloud providers handle routine maintenance tasks, such as updates, backups, and security, reducing the burden on internal IT staff and freeing up resources for innovation.

4. Global Reach: Cloud services are accessible from anywhere with an internet connection, enabling global collaboration and expanding market reach.

## Disadvantages of After Cloud Computing:

1. Dependency on Internet Connectivity: Cloud computing relies on stable internet connectivity, so businesses may experience disruptions if they lose connection.

2. Security Concerns: Entrusting sensitive data to a third-party provider raises security and privacy concerns, although cloud providers invest heavily in security measures.

3. Vendor Lock-In: Moving data and applications between cloud providers can be challenging, leading to vendor lock-in and potential difficulties in switching providers.

4. Potential for Hidden Costs: While cloud services can be cost-effective, businesses need to carefully monitor usage to avoid unexpected charges for exceeding resource limits or underutilizing reserved instances.

Overall, both on-premises infrastructure and cloud computing have their own sets of advantages and disadvantages, and the choice between them depends on factors such as business requirements, budget, scalability needs, and security considerations.