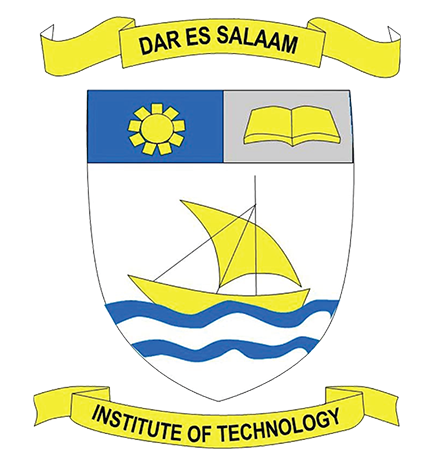
**DAR ES SALAAM INSTITUTE OF TECHNOLOGY**



**DEPARTMENT OF COMPUTER STUDIES**

**MODULE: CLOUD COMPUTING**

**MODULE CODE: 05217**

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**QUESTION: EXPLAIN THE CONDITION THAT HAPPENED BEFORE CLOUD COMPUTING AND AFTER CLOUD COMPUTING**

**A. BEFORE CLOUD COMPUTING**

**1. TIME CONSUMING SETUP**

Before the widespread adoption of cloud computing, organizations had to manage their own on-premises infrastructure. This involved purchasing and maintaining physical servers, storage systems, and networking equipment. Setting up this infrastructure was a time-consuming process, requiring careful planning, procurement, installation, and configuration. Additionally, scaling up or down often meant purchasing new hardware or decommissioning existing equipment, which could take weeks or even months to implement.

**2. HIGH COSTS**

In terms of costs, organizations had to make significant upfront investments in hardware, software licenses, and IT staff to manage and maintain the infrastructure. This capital expenditure could be a barrier for smaller companies or startups with limited financial resources. Furthermore, ongoing operational expenses, such as electricity, cooling, and maintenance, added to the total cost of ownership.

**3. SECURITY CONCERNS**

Security was another concern with on-premises infrastructure. Organizations were responsible for implementing and maintaining their own security measures, including firewalls, intrusion detection systems, and data encryption. However, ensuring robust security could be challenging, especially for organizations with limited expertise or resources.

**4. INEFFICIENCIES**

In terms of efficiency, managing on-premises infrastructure required a dedicated IT team to monitor and troubleshoot hardware and software issues. This reactive approach to IT management often resulted in downtime and productivity losses. Additionally, the static nature of on-premises infrastructure made it difficult to quickly adapt to changing business requirements or fluctuating workloads.

Overall, before the widespread adoption of cloud computing, organizations faced challenges related to time-consuming setup, high costs, security concerns, and inefficiencies associated with managing their own on-premises infrastructure.

**B. AFTER CLOUD COMPUTING**

1. **REDUCED PROVISIONING TIME**

Cloud computing drastically reduced the time required to provision and scale IT resources. With cloud services, organizations can spin up virtual servers, storage, and networking resources within minutes, compared to the weeks or months it might take to deploy physical infrastructure. This rapid provisioning enables faster time-to-market for applications and services, allowing organizations to respond more quickly to changing business needs and customer demands.

2. **LOWER COSTS**

Cloud computing shifted the cost model from upfront capital expenditure (CapEx) to operational expenditure (OpEx). Instead of investing in expensive hardware and software licenses, organizations pay for cloud services on a pay-as-you-go or subscription basis. This pay-per-use model allows organizations to scale resources up or down as needed, paying only for the resources they consume. This cost-effective approach eliminates the need for large upfront investments and reduces overall IT costs, especially for smaller organizations or startups with limited budgets.

3. **IMPROVED DATA SECURITY**

While security concerns initially hindered cloud adoption, modern cloud providers have invested heavily in robust security measures. Cloud providers offer comprehensive security features, such as encryption, identity and access management (IAM), network firewalls, and threat detection services. Additionally, many cloud providers adhere to industry compliance standards and certifications, providing assurance that data stored in the cloud is protected and compliant with regulatory requirements. With proper configuration and management, cloud environments can be as secure, if not more secure, than traditional on-premises infrastructure.

4. **GREATER EFFICIENCY**

Cloud computing enables greater efficiency in IT operations through automation, scalability, and resource optimization. Cloud services often include built-in management tools and APIs that allow organizations to automate repetitive tasks, such as provisioning, configuration, and monitoring. Additionally, the scalability of cloud resources allows organizations to dynamically adjust capacity to match workload demands, ensuring optimal performance and cost-efficiency. Furthermore, cloud platforms offer advanced analytics and monitoring capabilities, providing insights into resource utilization, performance trends, and cost optimization opportunities. Overall, cloud computing enables organizations to streamline IT operations, improve resource utilization, and enhance overall efficiency.

In summary, after the adoption of cloud computing, organizations benefited from reduced provisioning time, lower costs, improved security, and greater efficiency in IT operations. These advantages have transformed the way organizations build, deploy, and manage IT infrastructure, driving innovation and accelerating digital transformation initiatives.