UNIT I

Introduction to Cloud Computing

Introduction

- Cloud Computing is the delivery of computing services such as servers, storage, databases, networking, software, analytics, intelligence, and more, over the Cloud (Internet).
- Cloud computing is a virtualization-based technology that allows us to create, configure, and customize applications via an internet connection. The cloud technology includes a development platform, hard disk, software application, and database.
- The term cloud refers to a network or the internet. It is a technology that uses remote servers on the internet to store, manage, and access data online rather than local drives. The data can be anything such as files, images, documents, audio, video, and more.

Introduction

These are the following operations that we can do using cloud computing:

1. Developing new applications and services
2. Storage, back up, and recovery of data
3. Hosting blogs and websites
4. Delivery of software on demand
5. Analysis of data
6. Streaming videos and audios

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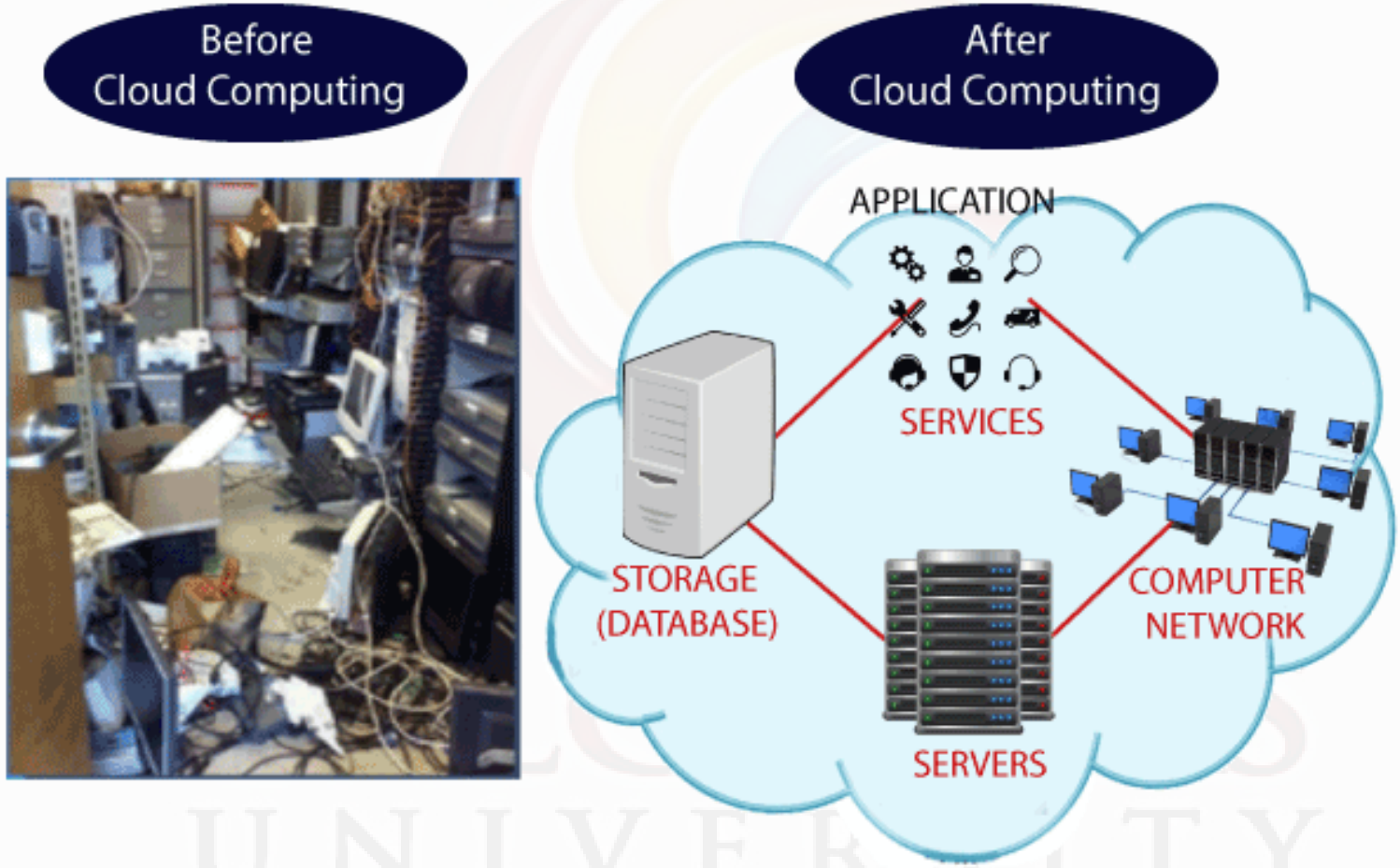

History of Cloud Computing

- Before emerging the cloud computing, there was Client/Server computing which is basically a centralized storage in which all the software applications, all the data and all the controls are resided on the server side.
- If a single user wants to access specific data or run a program, he/she need to connect to the server and then gain appropriate access, and then he/she can do his/her business.
- Then after, distributed computing came into picture, where all the computers are networked together and share their resources when needed.

History of Cloud Computing

- On the basis of above computing, there was emerged of cloud computing concepts that later implemented.
- At around in 1961, John MacCharty suggested in a speech at MIT that computing can be sold like a utility, just like a water or electricity. It was a brilliant idea, but like all brilliant ideas, it was ahead if its time, as for the next few decades, despite interest in the model, the technology simply was not ready for it.
- But of course time has passed and the technology caught that idea and after few years we mentioned that:
- In 1999, Salesforce.com started delivering of applications to users using a simple website. The applications were delivered to enterprises over the Internet, and this way the dream of computing sold as utility were true.

History of Cloud Computing

- In 2002, Amazon started Amazon Web Services, providing services like storage, computation and even human intelligence. However, only starting with the launch of the Elastic Compute Cloud in 2006 a truly commercial service open to everybody existed.
- In 2009, Google Apps also started to provide cloud computing enterprise applications.
- Of course, all the big players are present in the cloud computing evolution, some were earlier, some were later. In 2009, Microsoft launched Windows Azure, and companies like Oracle and HP have all joined the game. This proves that today, cloud computing has become mainstream.

Need for Cloud Computing

- Small as well as large IT companies, follow the traditional methods to provide the IT infrastructure. That means **for any IT company, we need a Server Room that is the basic need of IT companies**.
- In that server room, there should be a database server, mail server, networking, firewalls, routers, modem, switches, QPS (Query Per Second means how much queries or load will be handled by the server), configurable system, high net speed, and the maintenance engineers.
- To establish such IT infrastructure, we need to spend lots of money. To overcome all these problems and to reduce the IT infrastructure cost, Cloud Computing comes into existence.

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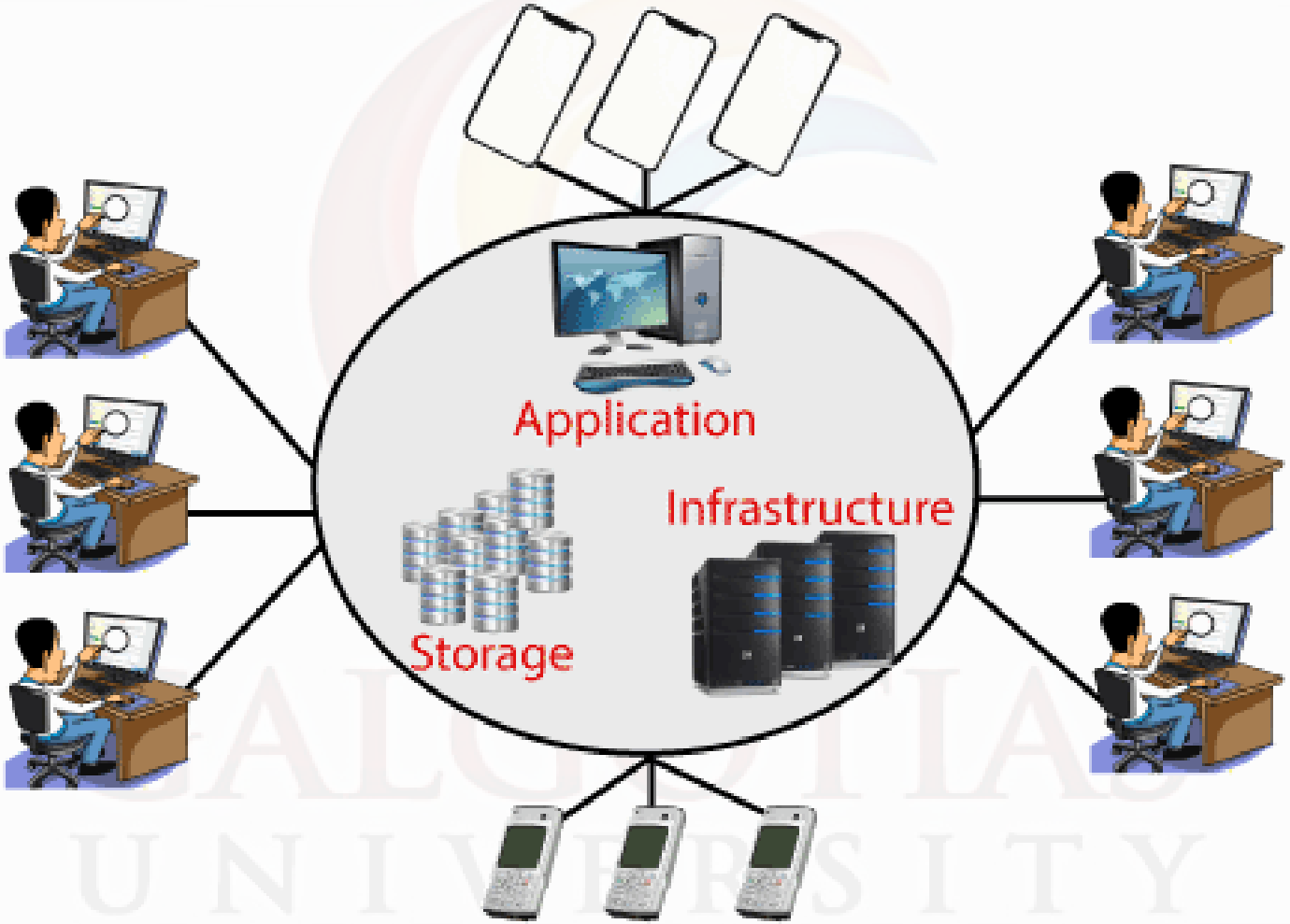

Characteristics of Cloud Computing

1) Agility: The cloud works in a distributed computing environment. It shares resources among users and works very fast.
2) High availability and reliability: The availability of servers is high and more reliable because the chances of infrastructure failure are minimum.
3) High Scalability: Cloud offers "on-demand" provisioning of resources on a large scale, without having engineers for peak loads.
4) Multi-Sharing: With the help of cloud computing, multiple users and applications can work more efficiently with cost reductions by sharing common infrastructure.
5) Maintenance: Maintenance of cloud computing applications is easier, since they do not need to be installed on each user's computer and can be accessed from different places. So, it reduces the cost also.

Characteristics of Cloud Computing

6) Device and Location Independence: Cloud computing enables the users to access systems using a web browser regardless of their location or what device they use e.g. PC, mobile phone, etc. As infrastructure is off-site (typically provided by a third-party) and accessed via the Internet, users can connect from anywhere.

7) Low Cost: By using cloud computing, the cost will be reduced because to take the services of cloud computing, IT company need not to set its own infrastructure and pay-as-per usage of resources.

8) Services in the pay-per-use mode: Application Programming Interfaces (APIs) are provided to the users so that they can access services on the cloud by using these APIs and pay the charges as per the usage of services.

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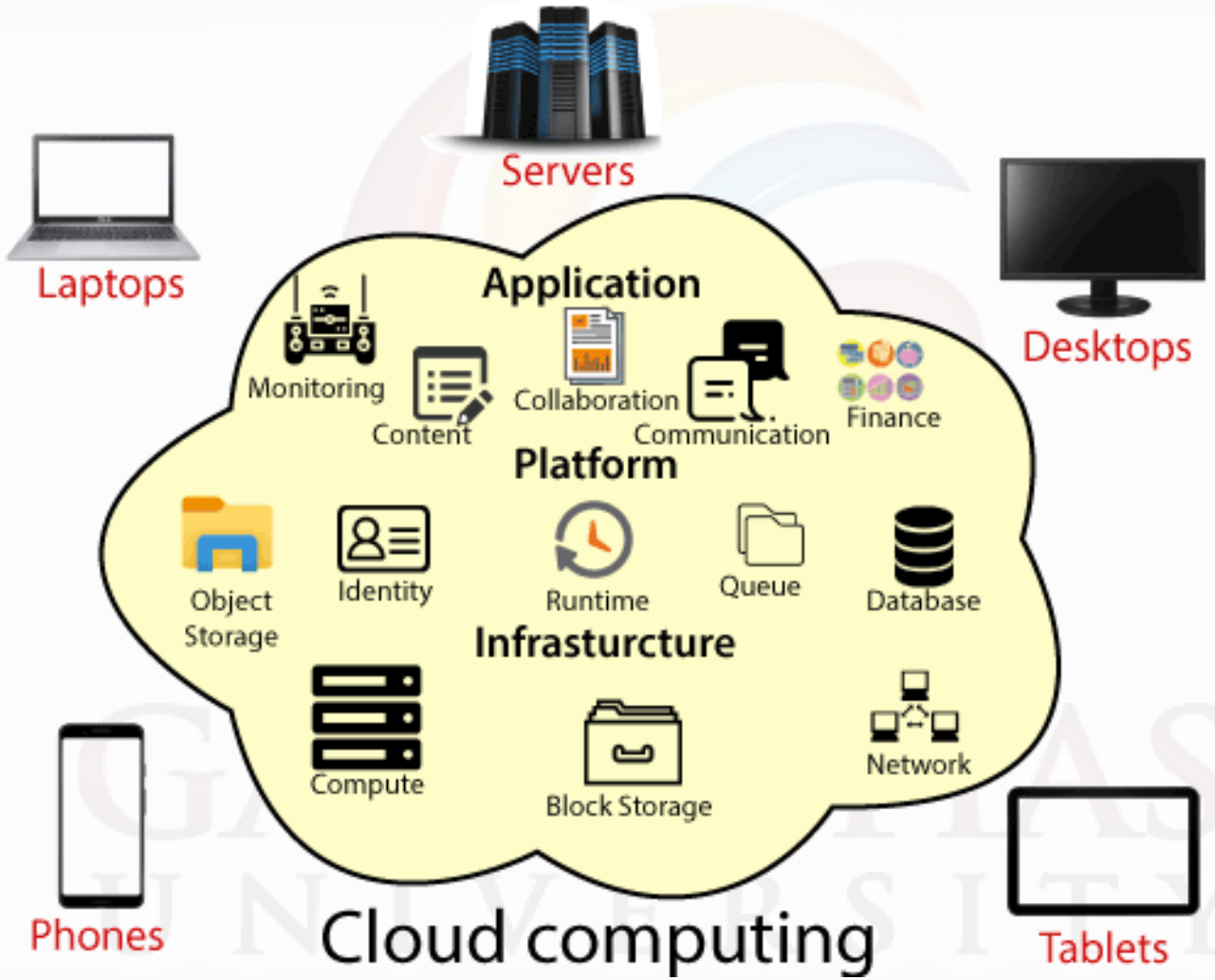

Introduction to Cloud Computing

- Cloud Computing provides an alternative to the on-premises data-centre.
- With an on-premises data-centre, we have to manage everything, such as purchasing and installing hardware, virtualization, installing the operating system, and any other required applications, setting up the network, configuring the firewall, and setting up storage for data.
- After doing all the set-up, we become responsible for maintaining it through its entire lifecycle.
- But if we choose Cloud Computing, a cloud vendor is responsible for the hardware purchase and maintenance. They also provide a wide variety of software and platform as a service. We can take any required services on rent. The cloud computing services will be charged based on usage.

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Advantages of cloud computing

- **Cost:** It reduces the huge capital costs of buying hardware and software.
- **Speed:** Resources can be accessed in minutes, typically within a few clicks.
- **Scalability:** We can increase or decrease the requirement of resources according to the business requirements.
- **Productivity:** While using cloud computing, we put less operational effort. We do not need to apply patching, as well as no need to maintain hardware and software. So, in this way, the IT team can be more productive and focus on achieving business goals.
- **Reliability:** Backup and recovery of data are less expensive and very fast for business continuity.
- **Security:** Many cloud vendors offer a broad set of policies, technologies, and controls that strengthen our data security.

References:

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Thank You