Lesson 1.3: What is Cloud Computing?

Unit 1: Introduction to Smart Expert Solution and the Technologies which Enable it

Module 3: Remote Expert Solution for Vocational Technical Training Programmes

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CLOUD COMPUTING

What is Cloud Computing?

Cloud Computing is the **delivery of different services through the Internet. These resources include tools and applications like data storage, servers, databases, networking, and software.**

Cloud computing is named as such because the information being accessed is found remotely in the cloud or a virtual space. Companies that provide cloud services enable users to store files and applications on remote servers and then access all the data via the Internet. This means that the user is not required to be in a specific place to gain access to it, allowing the user to work remotely.

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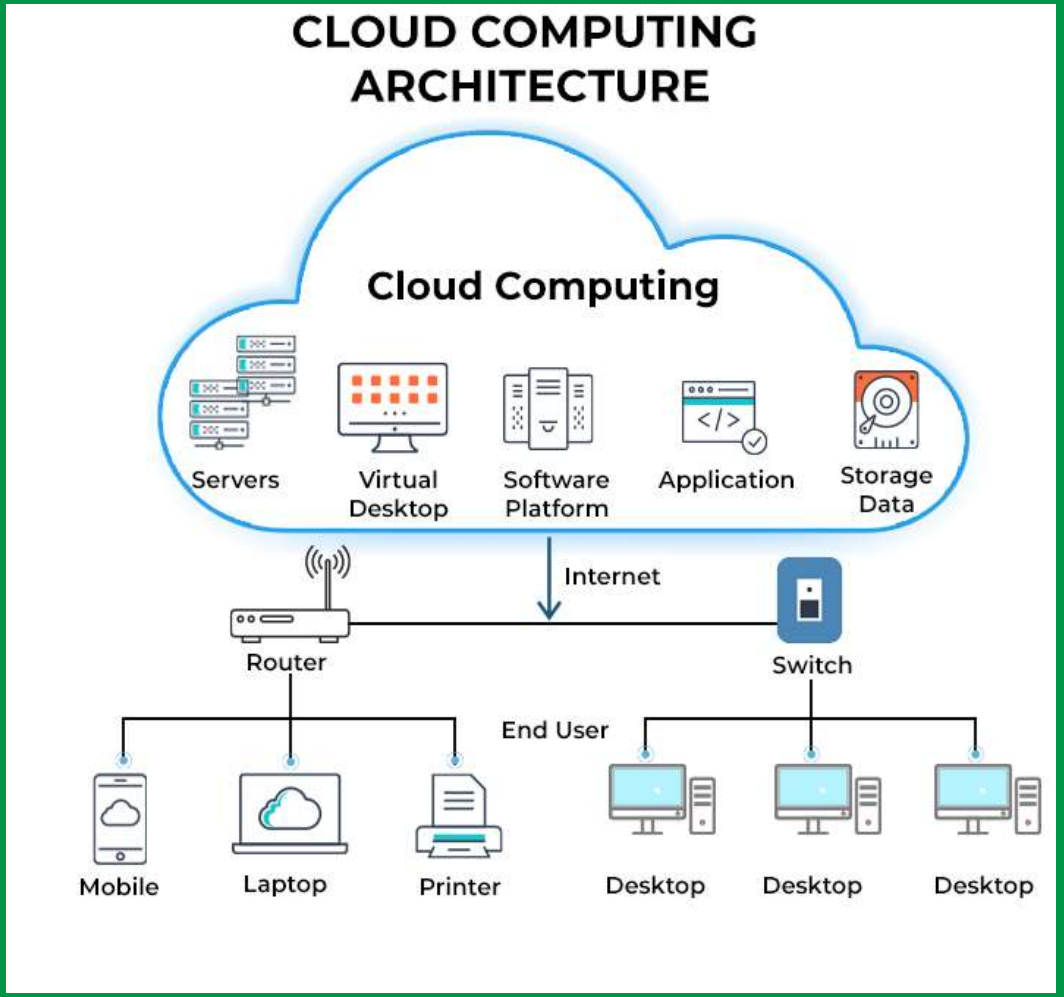
CLOUD COMPUTING ARCHITECTURE

Rather than keeping files on a proprietary hard drive or local storage device, **cloud-based storage makes it possible to save them to a remote database**. As long as an electronic device has access to the web, it has access to the data and the software programs to run it.

Cloud computing is a popular option for people and businesses for a number of reasons including:

- **Cost savings**
- **Increased productivity**
- **Speed and efficiency**
- **Performance and security**



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Cloud computing takes all the heavy lifting involved in crunching and processing data away from the device you carry around or sit and work at. It also moves all of that work to huge computer clusters far away in cyberspace. The Internet becomes the cloud, and voilà—your data, work, and applications are available from any device with which you can connect to the Internet, anywhere in the world.

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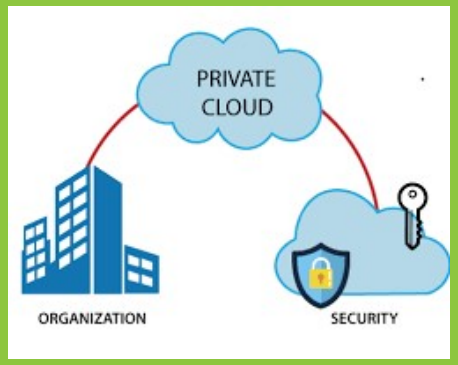
TYPES OF CLOUD COMPUTING

Private Cloud / Public Cloud / Hybrid Cloud / Multi Cloud

1. Private Clouds: A private cloud is a specially designed platform for a single enterprise with dedicated resources and higher security. Private cloud environment is dedicated to a single end user or group. All clouds become private clouds when the underlying IT infrastructure is dedicated to a single customer with completely isolated access. There are two subtype of private cloud. These are;

- Managed Private Clouds
- Dedicated Private Clouds



2. Public Clouds: A public cloud is a cloud environment typically created from IT infrastructure. All clouds become public clouds when the environments are partitioned and redistributed to multiple tenants. Some of the largest public cloud providers include;

- Alibaba Cloud
- Amazon Web Services (AWS)
- Google Cloud,
- IBM Cloud, and
- Microsoft Azure

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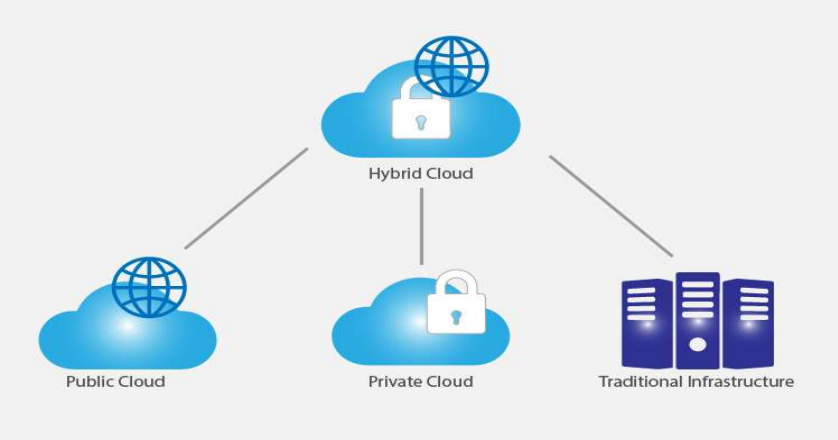
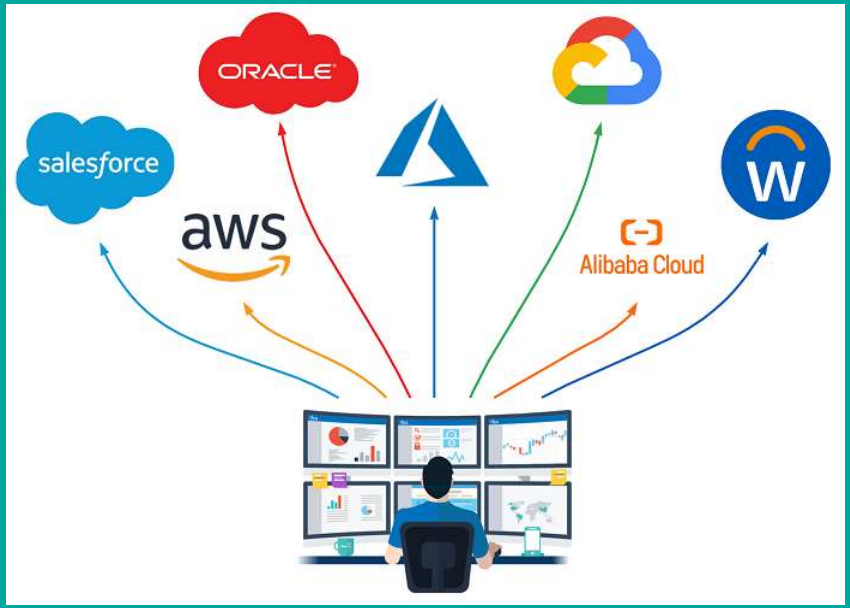
3. Hybrid Clouds: A hybrid cloud combines Public and Private clouds, to create a unified, automated, and well-managed computing environment.



4. Multiclouds: Multiclouds are a cloud approach made up of more than one cloud service, from more than one cloud vendor either public or private. All hybrid clouds are multiclouds, but not all multiclouds are hybrid clouds. Multiclouds become hybrid clouds when multiple clouds are connected by some form of integration or orchestration.



CLOUD COMPUTING SERVICES

What is a Cloud Computing Service?

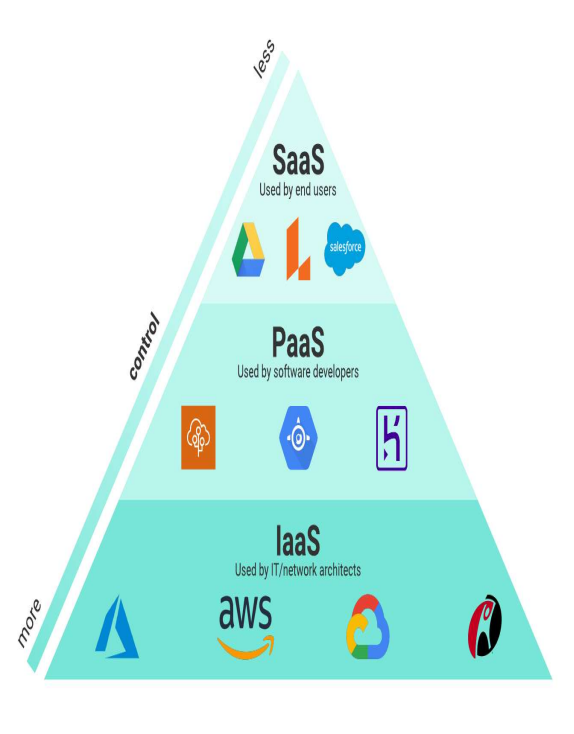
Cloud services are infrastructure, platforms, or software's that are hosted by third-party providers and made available to users through the internet. There are three main types of as-a-Service solutions. Therse are:

I. Infrastructure-as-a-Service (IaaS)

II. Platforms-as-a-Service (PaaS)

III. Software-as-a-Service (SaaS)

Each facilitates the flow of user data from front-end clients through the internet, to the cloud service provider’s systems, and back—but vary by what’s provided.



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Infrastructure-as-a-service (IaaS): IaaS means that a cloud service provider manages the infrastructure for you. The actual servers, network, virtualisation, and data storage through an internet connection. The user has access through an API or dashboard, and essentially rents the infrastructure. The user manages things like the operating system, apps, and middleware while the provider takes care of any hardware, networking, hard drives, data storage, and servers; and has the responsibility of taking care of outages, repairs, and hardware issues. This is the typical deployment model of cloud storage providers.

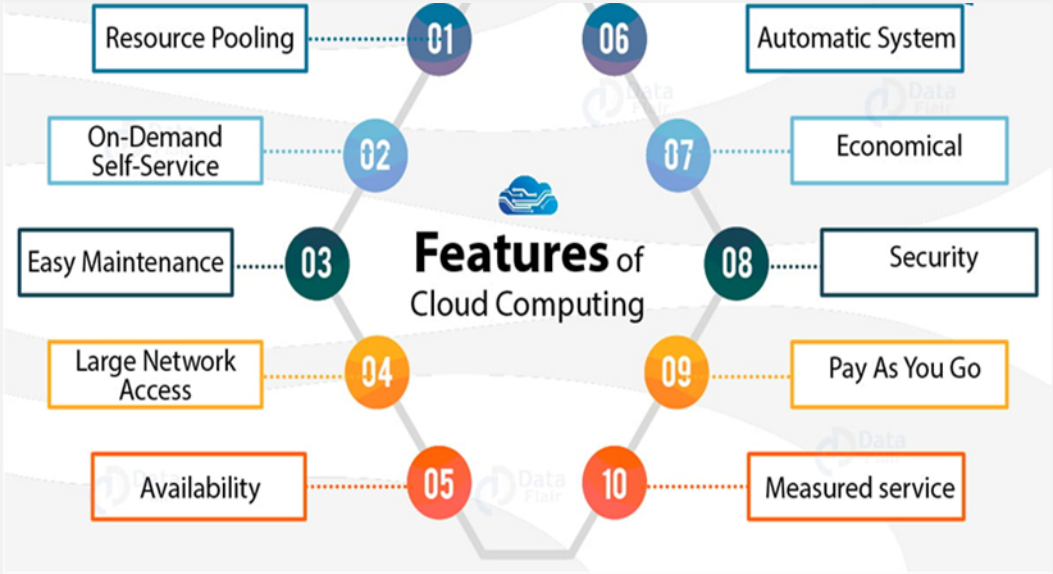
Platform-as-a-service (Paas): PaaS means the hardware and an application-software platform are provided and managed by an outside cloud service provider, but the user handles the apps running on top of the platform and the data the app relies on. Primarily for developers and programmers, PaaS gives users a shared cloud platform for application development and management (an important DevOps component) without having to build and maintain the infrastructure usually associated with the process.

Software-as-a-Service (SaaS): SaaS is a service that delivers a software application which the cloud service provider manages to its users. Typically, SaaS apps are web applications or mobile apps that users can access via a web browser. Software updates, bug fixes, and other general software maintenance are taken care of for the user, and they connect to the cloud applications via a dashboard or API. SaaS also eliminates the need to have an app installed locally on each individual user's computer, allowing greater methods of group or team access to the software.

FEATURES OF CLOUD COMPUTING

It has been found that Cloud Computing is a model for enabling ubiquitous, convenient, on-demand network access to the computing resources. There are many services and features of cloud computing. Some of the features are ;

1. Resources Pooling
2. On-Demand Self-Service
3. Easy Maintenance
4. Large Network Access
5. Availability
6. Automatic System
7. Economical
8. Security
9. Pay as you go
10. Measured Service



Resources Pooling: It means that the Cloud provider pulled the computing resources to provide services to multiple customers with the help of a multi-tenant model.

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On-Demand Self-Service: It is one of the important and valuable features of Cloud Computing as the user can continuously monitor the server uptime, capabilities, and allotted network storage. With this feature, the user can also monitor the computing capabilities.

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Easy Maintenance: The servers are easily maintained and the down time is very low, and in some cases, there is no down time. Cloud computing comes up with an update every time by gradually making it better.

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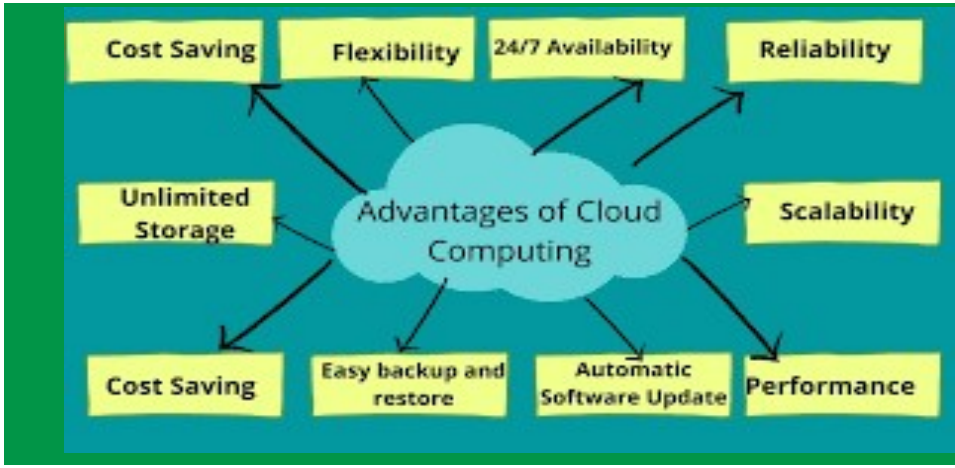
ADVANTAGES OF CLOUD COMPUTING

- Cloud computing services make it possible for users to back up their music, files, and photos, ensuring those files are immediately available in the event of a hard drive crash.
- Users can check their email on any computer and store files using services such as Dropbox and Google Drive.
- It also offers big businesses huge cost-saving potential.



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DISADVANTAGES OF CLOUD COMPUTING

- Sensitive information like medical history or financial information can stole by hackers.
- Servers maintained by cloud computing companies may fall victim to natural disasters, internal bugs, and power outages.
- Encryption protects vital information, but if the encryption key is lost, the data disappears

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CLOUD COMPUTING AND BUSINESS

Businesses can employ cloud computing in different ways. Some users maintain all apps and data on the cloud, while others use a hybrid model, keeping certain apps and data on private servers and others on the cloud.

Example of a cloud computing include data storage platforms like Google Drive, Dropbox, OneDrive, etc.

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