Cloud Computing Assignment

Module -1 (Fundamentals)

1- What is cloud computing?

Cloud computing is the on-demand access of computing resources—physical servers or virtual servers, data storage, networking capabilities, application development tools, software, AI-powered analytic tools and more—over the internet with pay-per-use pricing.

The cloud computing model offers customers greater flexibility and scalability compared to traditional on-premises infrastructure.

Cloud computing plays a pivotal role in our everyday lives, whether accessing a cloud application like Google Gmail, streaming a movie on Netflix or playing a cloud-hosted video game.

2-Describe cloud computing deploy model

In cloud computing, we have access to a shared pool of computer resources (servers, storage, programs, and so on) in the cloud. You simply need to request additional resources when you require them. Getting resources up and running quickly is a breeze thanks to the clouds. It is possible to release resources that are no longer necessary. This method allows you to just pay for what you use. Your cloud provider is in charge of all upkeep.

Cloud Deployment Model functions as a virtual computing environment with a deployment architecture that varies depending on the amount of data you want to store and who has access to the infrastructure.

3-Describe different type of cloud service

deployment models, there are four main services: infrastructure as a service (IaaSThe main three types of cloud computing are public cloud, private cloud, and hybrid cloud.

Within these ), platform as a service (PaaS), software as a service (SaaS), and serverless computing.

Within the cloud deployment models, there are several types of cloud services, including infrastructure, platforms, and software applications. Cloud service models are not mutually exclusive, and you can choose to use more than one in combination or even all of them at once.

Here are the three main cloud service models:

1 - Infrastructure as a Service (IaaS) :

IaaS delivers on-demand infrastructure resources, such as compute, storage, networking, and virtualization. With IaaS, the service provider owns and operates the infrastructure, but customers will need to purchase and manage software, such as operating systems, middleware, data, and applications.

2 - Platform as a Service (PaaS) :

PaaS delivers and manages hardware and software resources for developing, testing, delivering, and managing cloud applications. Providers typically offer middleware, development tools, and cloud databases within their PaaS offerings.

3 - Software as a Service (SaaS) :

SaaS provides a full application stack as a service that customers can access and use. SaaS solutions often come as ready-to-use applications, which are managed and maintained by the cloud service provider.

4 - Describe cloud computing Architect

A cloud architect is an IT professional who is responsible for overseeing a company's cloud computing strategy. This includes cloud adoption plans, cloud application design, and cloud management and monitoring. Cloud architects oversee application architecture and deployment in cloud environments, including public cloud, private cloud and hybrid cloud. One of their primary objectives is to guarantee that the cloud infrastructure aligns with the business needs concerning scalability, performance, security and cost efficiency.

Additionally, cloud architects act as consultants to their organization and need to stay current on the latest trends and issues. Companies that hire cloud architects either use cloud services or are planning to move to the cloud.

Cloud architects can also be involved in the legal areas of cloud computing and can negotiate contracts and work with legal and procurement departments .

5 - What is components of cloud computing?

Client infrastructure, application, service, runtime cloud, storage, infrastructure, management and security all these are the components of cloud computing architecture.

1 - Client Infrastructure

Client infrastructure is a significant part of the frontend system that offers a graphical user interface (GUI) for seamless cloud communication.

2 - Application

It can either be a piece of software or a platform. The application delivers the outcome to the user along with the resources in the back end, depending on the client’s needs.

3 - Service

Based on the client’s needs, a cloud computing architecture service controls the type of service you can access. Cloud architecture computing provides three types of services, including: Understand the 3 major types of cloud service models.

Software as a Service (SaaS): SaaS is also called cloud application services. SaaS apps typically run immediately via the web browser, eliminating the need for download and installation. Cisco WebEx, Google Apps, HubSpot, and Salesforce are a few examples of SaaS.

Platform as a Service (PaaS): It is also called Service for Cloud Platforms. It has much resemblance with SaaS. While PaaS offers a platform for seamless software development, SaaS allows you to access the software through the Internet without any hassle. OpenShift and Magento Commerce Cloud are two good examples.

Infrastructure as a Service (IaaS): it is also referred to as cloud infrastructure services. It is in charge of overseeing the runtime, middleware, and data environments for applications. AWS EC2, Cisco Metapod, and Google Compute Engine are a few examples of IaaS.

Want to learn more about cloud computing deployment? Check this out: Introduction to Cloud Deployment Models.

4 - Runtime Cloud

Virtual machines can access a runtime and execution environment via the runtime cloud.

5 - Storage

Storage is yet another crucial element of cloud computing architecture. It offers a sizable quantity of cloud storage space for managing and storing data.

6 - Infrastructure

Cloud architecture offers network-level, application-level, and host-level services. To support the concept of cloud computing architecture, cloud infrastructure comes with software and hardware elements, including storage, virtualization software network devices, and other storage resources.

7 - Management

This component oversees the management of backend components such as storage infrastructure, runtime clouds, storage applications, and other security-related issues. Also, it promotes coordination among them.

8 - Security

Security is a core component of a backend cloud architecture. It offers users secure access to cloud architecture, resources, information, and systems. Also, it leverages virtual firewalls to deploy security management services to the cloud server. This aids in data loss prevention.

9 - Internet

A backend and frontend can interact and communicate with one another thanks to an internet connection, which serves as a mediator or bridge between them.

6 - cloud computing advantage and disadvantage

\* - Advantages of Cloud Computing

Cloud computing offers a number of benefits to users, including:

1 - Scalability

One of the biggest advantages of cloud computing is its scalability. Users can scale their resources up or down as needed based on changes in their workload or business needs. This makes it easy to manage fluctuations in demand without having to invest in additional infrastructure.

Cloud computing resources can be quickly and easily scaled up or down in response to changes in demand, allowing users to avoid over-provisioning and to pay only for the resources they actually use.

2 - Accessibility

Cloud computing data resources & apps can be accessed from anywhere with an internet connection. This makes it easy to collaborate with others, work remotely, or access important files while on the go.

3 - Cost-effectiveness

Another advantage of cloud computing is that it can be very cost-effective. Users can avoid the upfront costs of building and maintaining their own infrastructure and instead pay only for what they use. This can result in significant savings over time, especially for small businesses or startups.

Cloud computing allows users to avoid upfront capital expenditures and to pay only for the resources they actually use, which can be more cost-effective than purchasing and maintaining their own hardware and software infrastructure.

4 - Flexibility

Cloud computing allows users to choose from a wide range of services and deployment models, including public, private, and hybrid clouds.

5 - Security

Generally, cloud providers invest heavily in security measures to protect their users' data. This can include measures such as encryption, access controls, and monitoring. Additionally, the cloud providers are often better equipped to handle security threats than individual users or organizations.

\* - Disadvantages of Cloud Computing

1 - Dependence on the internet

Perhaps the biggest disadvantage of cloud computing is its reliance on the internet. If there are connectivity issues or disruptions, users may be unable to access their data or applications. This can be especially problematic for mission-critical applications.

2 - Privacy concerns

While cloud providers generally take security very seriously, there are still concerns about the privacy of user data. Users may be hesitant to trust their data to a third-party provider, especially if they are subject to strict regulations or compliance requirements.

3 - Limited control

Cloud providers generally handle all aspects of infrastructure management, which can limit the amount of control users have over their data and applications. Users may have to rely on the provider to make updates or upgrades and may not have the ability to customize the environment to their specific needs.

4 - The Conclusion

Overall, the key features of cloud computing are designed to provide flexibility, scalability, and cost-effectiveness for users while allowing cloud providers to offer services that are easy to manage and operate. By understanding these features, users can better evaluate the benefits and risks of cloud computing and choose the right solutions to meet their needs.