

cloud computing . Holiday Assignment

29/11/2020/3/19

1. Explain about p roots of cloud computing?

The four roots of cloud computing refer to the fundamental principles or concepts that form the foundation of modern cloud computing. These roots are:

1. Distributed Systems:-

• It involves multiple computers working together as a single system to share resources and tasks.

In cloud computing, this ensures scalability.

2. Virtualization:-

• It allows multiple virtual machines (or environments) to run on a single physical machine.

3. Web Technologies:-

• It is HTTP, APIs and browser enable users to access cloud services over the internet.

2. Explain about any 2 Internet technologies, how they are useful in cloud computing?

i) HTTP:-

- It allows users and application to access cloud services over the internet securely.

Usefulness:-

- enables communication between users and cloud services through browsers or APIs.

ii) RESTful APIs:-

- APIs are a lightweight, standardized way for systems to communicate over the internet using HTTP methods like GET, POST, PUT and DELETE.

Usefulness:-

- provides a simple interface for interacting with cloud services, enabling developers to integrate cloud functionalities into their applications easily.

3. Analyze cloud computing challenges?

i) Data security and privacy:-

Storing sensitive data on the cloud increases the risk of data breaches and unauthorized access.

Impact:- Breaches can harm an organization's reputation and lead to legal consequences.

i) Down time and Reliability:-

Cloud services depend on internet connectivity and Service provider responsibility.

ii) Vendor lock-in:-

Organisations may face difficulties migrating their applications and data if they heavily rely on a specific cloud provider.

iv) Cost management:-

Uncontrolled usage of cloud resources can lead to unexpected costs. Understanding and managing pricing models is complex.

(v) Performance Issues:-

Network latency and bandwidth limitations can affect the performance of cloud-based applications, especially for real-time systems.

4. What are features of Cloud Computing?

i) On-demand self-service:-

Users can provision and manage computing resources like storage and applications as needed without requiring human intervention.

ii) pay-as-you-go model :-

users pay only for the resources they consume such as storage, processing, power (or) bandwidth offering cost efficiency.

(iii) Resource pooling :-

cloud providers use multiplexing to serve multiple customers with shared resources while ensuring data isolation and security for each user.

(iv) Global network Access :-

cloud services can be accessed over the internet from a variety of devices such as laptops, smartphones and tablets ensuring accessibility anywhere.

5. Focus on cloud Infrastructure management:

Resource provisioning :-

Allocating and configuring resources like virtual machines, storage and networks based on application requirements.

→ Ensures resources are readily available when needed

monitoring and performance management :-

Continuous tracking of cloud resources and services to ensure optimal performance

→ Tools like Amazon CloudWatch, Azure Monitor help identify bottlenecks, latency (or) downtime issues.

Cost management:-

→ Tracking and optimizing cloud spending to avoid unnecessary costs.

→ Includes right sizing resources and monitoring usage patterns to align with budgets.

Security and Compliance:-

→ Implementing measures like encryption, identity management and access controls to safeguard data.

Data management:-

→ Handling storage, backups and disaster recovery for data integrity and availability.

6. Briefly explain about the cloud deployment models.

1) public cloud:-

Cloud resources are owned and operated by third-party providers and shared among multiple users.

Advantages:-

→ Ideal for small and medium sized business.

→ cost-effective

→ Highly scalable.

disadvantages:-

- limited control.
- potential security concerns.

2. private cloud:-

- cloud resources are dedicated to a single organization and can be hosted on-premise.
- suitable for organizations requiring high security, compliance or control.

Advantages:-

- Greater control.
- Enhanced security.

disadvantages:-

- Higher costs.
- management responsibilities.

3. Hybrid cloud:-

- combines public and private clouds, allowing data and applications to be shared between them.
- Best for organizations needing flexibility. Such as running sensitive workloads on a private cloud while leveraging public cloud scalability.

2). Explain about Infrastructure as a service.

Infrastructure as a service is a cloud computing service model where provider's deliver virtualized computing resources over the internet.

→ these resources include servers, storage, networking and operating systems.

→ IaaS allows users to build and manage their own IT infrastructure without the need to purchase (or) maintain physical infrastructure.

Key features of IaaS:-

• Scalability:-

→ resources can be scaled up (or) down based on demand.

• pay-as-you-go:-

→ users pay only for the resources they use, making it cost-efficient.

• Self-service:-

→ users can provision and manage resources independently through a web interface (or) API.

• Virtualization:-

→ underlying physical resources are virtualized, enabling multiple users to share the same infrastructure securely.

8). Explain about platform as a service.

PaaS is a cloud computing model where providers deliver a platform that includes hardware, software and tools over the internet.

→ PaaS allows developers to build, deploy and manage applications without worrying about the underlying infrastructure.

Key features:-

Development tools:-

Includes pre-configured tools for coding, testing and deployment.

Scalability:-

Automatically scales resources to meet application demands.

Database management:-

Offers built-in database services to manage and store data.

Multi-tenancy:-

Allows multiple users to access the platform simultaneously while maintaining data security.

9). What are the cloud challenges and risks of cloud computing. Explain in detail?

Ans:-

Data security and privacy risks & challenges :-

→ Storing sensitive data on a third party cloud provider can lead to unauthorized access breaches (or) data theft.

Risks :-

→ Non-compliance with privacy laws like GDPR (or) HIPAA

Downtime and Reliability challenges :-

→ cloud services depend on the provider's uptime and outages can disrupt operations

Risks :-

→ financial losses due to downtime

Vendor lock-in challenges :-

→ moving data and applications from one cloud provider to another can be difficult and costly due to incompatible platforms.

Risks :-

→ Reduced flexibility

→ High switching costs.

Cost management challenges :-

challenges :-

→ Organizations may struggle to predict and control cloud spending.

10). Illustrate the difference between Traditional computing & cloud computing?

Infrastructure	Relies on physical hardware.	utilizes virtualized resources.
Deployment	Requires manual installation of software and hardware.	services are deployed and accessed over internet.
Cost Structure	High cost	pay-as-you-go pricing model.
Scalability	limited	easily Scalable.
Flexibility	less flexibility	Highly flexible.
Reliability	less Reliable	High Reliability.
collaboration	limited Collaboration tools.	facilitates Easy Collaboration.
Performance	Performance can be affected by hardware configuration.	optimized performance.