

MINOR!

ASSIGNMENT

1) Define cloud computing ? write briefly about grid computing ? challenges and risks of cc.

cloud computing:

Cloud computing is the delivery of on-demand computing services over the internet, including computing power, storage, databases, software, and analytics. Instead of owning and maintaining physical servers and infrastructure, cloud computing allows individuals and businesses to access computing resources from a remote provider, typically through a subscription based model.

grid computing:

Grid computing is a distributed computing model that enables the sharing of computing resources, such as processing power, storage, and applications, among a large number of computers connected over a network.

→ A grid computing network mainly consist of these three types of machines.

1. control Node:

A computer, usually a server or a group of servers which administrates the whole network and keeps the account of the resources in the network pool.

2. Provider:

The computer contributes its resources to the network resource pool.

3. User:

The computer that uses the resources on the network.

→ challenges and risks in cloud computing:

1. Security:

Cloud computing offers numerous benefits involves storing and processing data on servers that are owned and managed by third party service providers.

2. Data privacy:

Data privacy is a major concern in cloud computing. Service providers have access to sensitive data, and there is always the risk of data being accessed, stolen, or lost.

3. Vendor lock-in: Cloud service providers use proprietary technologies and software, making it difficult for users to switch providers.

4. Downtime: Cloud services are dependent on Internet. Organisations need to ensure that they have backups and redundancy in place to minimize the impact of outages.

5. Lack of control: With cloud computing, organizations are dependent on their cloud service provider for the security, availability and performance of their applications and data.

2Q. what is need of virtualization ? write briefly about virtual based hardware.

Ans. Virtualization:

virtualization is a key technology that enables cloud computing to deliver its benefits of agility , scalability , and cost efficiency .

Virtualization is the process of creating a virtual version of something , such as a server , storage device , or network .

Need of virtualization :

1. Enhanced performance :

Currently , the end user system i.e PC is sufficiently powerful to fulfill all the basic computation requirements of the user , with additional capabilities which are rarely used by the user .

2. Efficient resource utilization :

Virtualization enables multiple virtual machines (vms) to run on a single physical server , allowing for better utilization of

hardware resources.

3. scalability:

Virtualization enables rapid and flexible scalability, allowing cloud providers to quickly spin up new VMs in response to changing demand.

4. isolation:

Virtualization provides better isolation between VMs, which improves security and stability. By isolating applications and services within their own VMs, cloud providers can reduce the risk of security breaches and minimize the impact of software failures.

→ Virtual based hardware or Hardware Based virtualization:

In cloud computing, virtual based hardware refers to the virtualization of hardware resources, such as CPUs, memory, storage and network interfaces.

Virtual based hardware is created by software called a hypervisor, which creates virtual machines (VMs) that can be used to run applications and services.

Advantage of hardware-based virtualization

It reduces the maintenance overhead of paravirtualization as it reduces the modification in the guest operating system.

It also significantly convenient to attain enhanced performance.

Disadvantage of hardware-based virtualization:

Hardware-based virtualization requires explicit support in the host CPU, which may not available on all x86/x86-64 processors.

This performance hit can be mitigated by the use of para-virtualized drivers; the combination has been called "hybrid virtualization".

Q. Explain briefly about distributed computing system model and their labelling technologies.

A distributed computing system is a network of independent computers that work together to solve a common task. In this model, the workload is divided and executed in parallel on multiple interconnected computers, called nodes, which communicate and coordinate each other to achieve the desired result.

The working of a distributed computing system typically involves the following steps:

1. Task decomposition
2. Resource allocation
3. Task coordination
4. Result aggregation.

→ there are several technologies used to label distributed computing systems, including.

1. Message passing Interface (MPI): This is a standard communication protocol used in parallel

computing systems to enable nodes to exchange data and synchronize their activities

2. Remote procedure call (RPC):

This technology allows nodes to execute remote procedures on other nodes over a network, as if they were local procedures.

3. Publish-Subscribe Messaging System:

This technology enables nodes to publish data and subscribe to data updates from other nodes, allowing for efficient and scalable data exchange.

4. Apache Hadoop:

This is a distributed computing platform that implements the MapReduce programming model and provides a distributed file system for storing and managing large datasets.

Write shortnote on Integration as a service

Integration as a service (IaaS) is a cloud computing service that enables businesses to integrate different applications and systems across their organizations.

Cloud computing has revolutionized the way businesses operate, providing scalable, cost-effective solutions that are easy to implement and maintain.

IaaS enables businesses to connect different systems and applications, including legacy systems, cloud-based systems, and on-premise systems, in a seamless and efficient manner. This integration allows businesses to automate processes, streamline workflows, and gain insights into their operations.

IaaS is provided by cloud service providers (CSPs), who host the integration platform in their data centers and offers it as a subscription

based service to customers. The integration platform is typically based on a middleware architecture that includes connectors, adaptors and other software components that enable seamless integration between different systems and applications.

IaaS offers several benefits to business including:

1. Scalability: This means that businesses can easily add or remove resources as required.
2. Flexibility: This allows businesses to choose the integration approach that best suits their needs.
3. Cost-effectiveness: This is because businesses do not have to invest in expensive hardware and software, and can instead pay for only the resources they need.
4. Reliability: IaaS platforms are designed to be highly available and fault-tolerant so the systems & applications running smoothly.

Ques
How to migrate app's to the cloud?

→ steps model of migration, explain.

Migrate apps to the cloud using cloud migration strategy.

- 5R's Represents the cloud migration strategy

1. Rehost: It refers to take the application to the new hosted cloud and framework cloud environment by selection IaaS.

2. Refactor: It refers to reuse the application code and framework and running the application on a PaaS.

3. Revise: It refers to expanding code base and then deploying it either by rehosting or refactoring.

4. Rebuild: It refers to re-architecting the application from the beginning up on PaaS provider's platform.

5. Replace: It refers to replacing the old application with a new built SaaS.

→ 7 step model for migration:

1. Assess: The assessment will help you determine which applications are best suited for the cloud and what changes need to be made before migration.
2. plan: plan that outlines the steps involved in the migration process, including timelines, resource requirements and testing procedures.
3. Prepare: Before the start of migration process, should prepare infrastructure, including configuring your cloud environment, setting up security policies and optimizing the network for the cloud.
4. Migrate: the next step is to migrate your applications, data, and infrastructure to the cloud.
5. Test: Once your applications have been migrated, you need to test them to ensure that they are working properly and meeting your performance and security requirements.

6. Optimize:

After testing, you need to optimize your applications for the cloud environment.

7. Manage:

Once your applications are running in the cloud, you need to manage them to ensure that they are running smoothly and meeting your business needs.