Module -2

1 -What is virtualization and virtualization type?

Ans:Virtualization is creating virtual versions of physical resources like servers, storage, or networks, enabling multiple systems to share the same physical hardware.

Types of Virtualization:

- **Hardware Virtualization**: Creates virtual machines on a host machine.

OS Virtualization: Allows multiple isolated user-space instances (containers).

Storage Virtualization: Pools storage resources across devices.

- **Network Virtualization**: Combines network resources into a single software-managed entity.

2. Type of Hypervisor and How to Manage It?

Hypervisors are software that manage virtual machines.

Ans:

Types:

- ❖ Type 1 (Bare-Metal): Runs directly on hardware (e.g., VMware ESXi).
- ❖ Type 2 (Hosted): Runs on an OS (e.g., VMware Workstation).
- ❖ Management: Managed through interfaces like VMware vSphere or Hyper-V Manager, enabling VM creation, configuration, and monitoring.

3. Roles of Virtualization in Cloud Computing

Ans:

- ❖ Efficiency: Maximizes resource use by running multiple VMs on a single server.
- ❖ Scalability: Easily scales up or down with demand.
- ❖ Isolation: Keeps applications and data secure in separate VMs.
- ❖ Disaster Recovery: Supports quick recovery by replicating environments.

4. What is a Container?

Ans: container is a lightweight, standalone package that includes an application and its dependencies, running consistently across different environments. Containers share the host OS kernel but are isolated from each other.

5. What is High Availability and Live Migration in Virtualization?

Ans: Availability (HA): Ensures continuous VM availability by automatically restarting VMs on another host if the original host fails.

Live Migration: Moves a running VM from one host to another with no downtime, maintaining service availability.

6. Storage Configuration:

Ans: Block Storage, File Storage, Object Storage; DAS, NAS, SAN

- Block Storage: Stores data in fixed-size blocks, used for databases and VMs.
- File Storage: Stores data as files in a directory structure, used for shared drives.
- Object Storage: Stores data as objects, suitable for unstructured data like images or videos.

Storage Architectures:

- DAS (Direct-Attached Storage): Storage directly attached to a computer.
- NAS (Network-Attached Storage): File-based storage accessible over a network.
- SAN (Storage Area Network): High-speed network providing block-level storage to multiple servers.

7. Describe Storage Allocation and Provisioning

Ans:Storage Allocation: Assigns storage resources to users or applications based on their needs.

- Provisioning: Pre-allocates storage resources, with thick provisioning allocating full capacity upfront, and thin provisioning allocating as needed, optimizing resource usage.