Lab1

2. The cloud is almost everywhere in our lives now. What do you think are the fundamental reasons behind its success? Name three pros and three cons of cloud.

Fundamental Success Reasons

Cost Efficiency: Eliminates the need for upfront investment in expensive physical hardware and reduces maintenance costs.

Scalability: Allows users to quickly adjust computing resources (storage, CPU, memory) up or down based on real-time demand.

Accessibility: Enables access to data and applications from any device with an internet connection, supporting remote work and collaboration.

Three Pros of Cloud

On-demand resource allocation (pay-as-you-go model).

Automatic updates and maintenance handled by cloud providers.

Built-in disaster recovery and data backup capabilities.

Three Cons of Cloud

Dependence on internet connectivity (no internet = no access).

Potential data security and privacy risks (data stored on third-party servers).

Long-term costs may exceed on-premises setups for large, stable workloads.

1. What is the primary function of a hypervisor in virtualization?

A hypervisor (also called a virtual machine monitor, VMM) is software, firmware, or hardware that creates and manages virtual machines (VMs). Its core function is to:

Allocate physical hardware resources (CPU, memory, storage, network) to multiple VMs.

Ensure VMs run independently without interfering with each other or the host system.

4. What is a virtual machine (VM)?

A virtual machine (VM) is a software-based emulation of a physical computer. It acts like a separate computer, with its own virtual CPU, memory, storage, and network interface, and can run its own operating system and applications—all within a host physical machine.

5. What are the benefits of using virtual machines?

Resource Efficiency: Multiple VMs can run on a single physical machine, maximizing the use of hardware resources.

Isolation: If one VM crashes or is infected with malware, it does not affect other VMs or the host system.

Cost Savings: Reduces the number of physical servers needed, lowering hardware purchase, energy, and maintenance costs.

Flexibility: Easily create, delete, or modify VMs to test new software, run legacy applications, or handle temporary workloads.

6.List five use cases of virtual machines.

Software Testing: Test new apps, updates, or malware in an isolated VM without risking the host system.

Legacy Application Support: Run old software (e.g., Windows XP apps) on a VM when the host OS no longer supports it.

Development Environments: Create consistent, isolated dev environments for teams to avoid "it works on my machine" issues.

Server Consolidation: Replace multiple physical servers with VMs on a single host to save space and reduce energy use.

Education & Training: Let students practice system administration, cybersecurity, or OS setup in a safe, disposable VM.

7. Answer: b

8. Answer: c

9. Answer: c

10.What is the purpose of cloning a virtual machine?

Cloning creates an exact, ready-to-use copy of an existing VM (including its OS, apps, settings, and data). Its main purposes are:

Save time: Avoid recreating a VM from scratch (e.g., cloning a preconfigured dev environment for multiple team members).

Ensure consistency: All clones have identical setups, which is critical for testing, development, or standardized deployments.