

Lab 1: Virtualization and Cloud Computing

1. Check processor virtualization support

The command `sysctl kern.hv_support` returned '1', which indicates that the processor has virtualization support enabled.

2. The success of the cloud

Fundamental Reasons for Success

- **Scalability:** Cloud computing allows users to easily scale their resources up or down as needed.
- **Cost-Effectiveness:** It eliminates the need for large upfront investments in hardware and infrastructure.
- **Accessibility:** Cloud services can be accessed from anywhere with an internet connection.

Three Pros of Cloud

- **Cost Savings:** Pay-as-you-go models reduce capital expenditure.
- **High Availability:** Cloud providers offer robust infrastructure with high uptime.
- **Scalability:** Easily adjust resources to meet changing demands.

Three Cons of Cloud

- **Security and Privacy Concerns:** Entrusting data to a third-party provider can be a risk.
- **Downtime:** Outages can occur, impacting business operations.
- **Limited Control:** Users have less control over the underlying infrastructure compared to on-premises solutions.

3. Primary function of a hypervisor

The primary function of a hypervisor is to create and manage virtual machines (VMs) by abstracting the underlying physical hardware and allocating resources to each VM.

4. What is a virtual machine (VM)?

A virtual machine (VM) is a software-based emulation of a physical computer. It runs its own operating system and applications, and it is completely isolated from the host system and other VMs.

5. Benefits of using virtual machines

- **Resource Optimization:** Multiple VMs can run on a single physical server, maximizing hardware utilization.
- **Cost Savings:** Reduced hardware and maintenance costs.
- **Improved Disaster Recovery:** VMs can be easily backed up and migrated to other servers.
- **Isolation:** VMs are isolated from each other, providing a secure environment for running applications.

6. Five use cases of virtual machines

1. Server consolidation.
2. Software development and testing.
3. Running legacy applications.
4. Disaster recovery and business continuity.
5. Cloud computing.

7. In virtualization, what is the guest operating system?

The correct answer is (b) The operating system installed on a virtual machine.

8. What does virtual machine isolation mean?

The correct answer is (c) Virtual machines run independently and are isolated from each other and the host system.