

1.

利用率	速度	基准速度:	2.30 GHz
9%	3.98 GHz	插槽:	1
进程	线程	内核:	14
	句柄	逻辑处理器:	20
329	6045	虚拟化:	已启用
167663		L1 缓存:	1.2 MB
正常运行时间		L2 缓存:	11.5 MB
0:00:54:47		L3 缓存:	24.0 MB

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 reasons for cloud success: Technological Advancements: The development and maturation of key technologies like virtualization (which allows for the creation of multiple simulated environments from a single physical hardware system), distributed computing, and automated management tools have provided the foundational capabilities for cloud computing.

Cost Efficiency & Business Model Innovation: The pay-as-you-go model significantly reduces upfront capital investment (CapEx) in hardware and software for businesses, converting it to operational expenditure (OpEx). This efficient resource utilization and sharing model lowers the comprehensive cost for users compared to maintaining their own systems.

High Network Bandwidth and Accessibility: The widespread availability and affordability of high-speed internet enable reliable and efficient access to cloud services from anywhere.

Three Pros of Cloud:

Cost Savings: Reduces or eliminates upfront costs for physical infrastructure and lowers ongoing maintenance expenses.

Scalability and Flexibility: Allows businesses to easily and quickly scale resources up or down based on demand.

Reliability and Disaster Recovery: Cloud providers often offer robust data backup, disaster recovery, and business continuity solutions.

Three Cons of Cloud:

Security and Privacy Concerns: Storing data on remote servers managed by third parties introduces risks of data breaches and unauthorized access.

Network Dependency: Cloud services require a stable and fast internet connection. Performance can suffer, and access can be lost during network outages or slowdowns.

Potential for Vendor Lock-in and Limited Control: Migrating between cloud providers can be difficult and costly due to technological differences and transfer expenses. Users also have less control over the underlying infrastructure and must rely on the provider's policies and capabilities.

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

The primary function of a hypervisor (also known as a Virtual Machine Monitor - VMM) is to create and manage virtual machines (VMs). It acts as a software layer that abstracts and isolates the physical hardware resources (like CPU, memory, storage) of a host computer, allowing these resources to be allocated and shared among multiple guest virtual machines. It coordinates access to the server's physical devices for the VMs.

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 as if it were a standalone physical machine, but it shares the underlying physical hardware resources (CPU, memory, storage, network) with other VMs on the same host, thanks to a hypervisor.

5. What are the benefits of using virtual machines?

Key benefits of using VMs include:

Isolation: VMs are isolated from each other and the host system, enhancing security and stability.

Resource Efficiency and Consolidation: Multiple VMs can run on a single physical server, improving hardware utilization and reducing costs.

Portability and Flexibility: VMs can be easily migrated, copied, backed up, and deployed across different physical hosts with compatible hypervisors.

Legacy Application Support: VMs can run older operating systems and applications that might not be compatible with newer hardware.

Testing and Development: VMs provide safe, isolated environments for testing software, configurations, or operating systems without risk to the host machine.

6. List five use cases of virtual machines.

Server Consolidation: Running multiple applications or services on separate VMs on a single physical server to improve resource utilization.

Development and Testing: Creating isolated environments for coding, debugging, and testing software across different OSes and configurations.

Running Legacy Software: Supporting older applications that require outdated operating systems no longer supported on modern hardware.

Security and Malware Analysis: Safely studying malicious software in an isolated VM environment without risking the host system.

Education and Training: Providing students with safe, consistent, and easily configurable environments to learn about operating systems, networking, and security.

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

b) The operating system installed on a virtual machine

8. What does virtual machine isolation mean?

c) Virtual machines run independently and are isolated from each other and the host system.

9. What is the benefit of virtual machine portability?

c) It allows virtual machines to be moved between different physical machines with compatible hypervisors.

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

The primary purpose of cloning a virtual machine is to quickly create an identical copy (clone) of an existing VM

. This is useful for:

Rapid Deployment: Quickly provisioning new environments without manually installing and configuring the OS and applications.

Backup and Recovery: Creating a known good state that can be restored if needed.

Testing and Development: Replicating consistent environments for testing software updates, patches, or new configurations.