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Student: Piotr Artman

StudentID: C00220223

Subject: Cloud Data Centres Y4 (2023 – 2024)

Content: Lab 1

1. Check if your processor supports Intel/AMD virtualization technology. Enable Intel virtualization technology in BIOS if possible.

DONE

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.

Reasons behind success of cloud:

- Cost of cloud is seen as OPEx (Operational Expenditure) instead CAPEx (Capital Expenditure), therefore reduces base for corporation tax
- Better cost/benefit ratio for companies
- Ability to better adoption by organisations to business situation (scaling up or down)

Pros:

- In general - better utilisation existing hardware resources
- Enables organisation to better adopt to business situation (scaling up or down)
- Enabled faster prototyping and reduced time-to-market

Cons:

- Data privacy, security and control issues
- Legal complexity (SLA , T&S, etc.)
- Possibility of vendor lock-in

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

A hypervisor enables management of multiple virtual machines (called guests) on single physical server (called host).

4. What is a virtual machine (VM)?

Guest machine emulated on the host.

5. What are the benefits of using virtual machines?

- better security and cost effectiveness
- better flexibility for business

6. List five use cases of virtual machines.

- machines used by students in the college (security and cost effective)

- machines virtualised in call centre (cost effective)
- virtual mobile operator on physical mobile network infrastructure
- server consolidation for better efficiency
- developer use Linux virtual machine on Windows host for development purposes

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

a) The main operating system running on the physical machine

**b) The operating system installed on a virtual machine**

c) The operating system running on a remote server

d) The operating system running on a mobile device

8. What does virtual machine isolation mean?

a) Virtual machines can communicate directly with the physical hardware.

b) Virtual machines share the same resources and cannot be isolated.

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

d) Virtual machines can only be accessed locally.

9. What is the benefit of virtual machine portability?

a) It allows virtual machines to communicate with each other easily.

b) It ensures faster boot times for virtual machines.

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

d) It reduces the need for hardware virtualization.

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

Cloning a virtual machine involves creating an identical copy of an existing virtual machine (VM). This is done for:

- deployment to new hardware (i.e. for development and testing )
- backup and recovery
- template creation
- configuration consistency
- resource isolation
- quick recovery from failures: