Cloud Computing

Assignment- Week 10

TYPE OF QUESTION: MCQ/MSQ

Number of questions: **10** **Total mark: 10 X 1 = 10**

QUESTION 1:

Why is VM migration important in cloud computing environments?

a) To centralize all virtual machines on a single server.
b) To efficiently distribute VM load across servers, allowing for system maintenance and operational efficiency.
c) To permanently shut down under-utilized servers.
d) To increase the number of servers in a data center.

Correct Answer: (b)

Detailed Solution: VM migration is crucial in cloud computing for balancing the workload across servers, enabling maintenance without downtime, and managing operational parameters like power consumption. It allows for dynamic allocation of resources to ensure efficient operation and maintain service quality.

QUESTION 2:

What is the difference between cold (non-live) and hot (live) VM migration?

a) Cold migration turns off the VM during migration, while hot migration keeps the VM running.
b) Cold migration keeps the VM running during migration, while hot migration turns off the VM.
c) Both cold and hot migration suspend the VM during the process.
d) Cold migration requires more resources than hot migration.

Correct Answer: (a)

Detailed Solution: Cold (non-live) migration involves turning off or suspending the VM during the migration process, whereas hot (live) migration allows the VM to continue running and providing services while being migrated.

QUESTION 3:

Which of the following approaches are commonly used in live VM migration?

a) Cold-copy and Hot-copy.
b) Pre-copy and Post-copy.
c) Suspend-copy and Resume-copy.

d) Start-copy and End-copy.

Correct Answer: (b)
Detailed Solution: In live VM migration, the two main approaches are pre-copy, where the VM's memory pages are copied to the destination before the VM is transferred, and post-copy, where the VM is first transferred to the destination, and then its memory pages are copied over as needed. These methods help minimize downtime during the migration process.

QUESTION 4:

Which of the following is a primary concern during VM migration to ensure service continuity?

a) Maximizing downtime and total migration time
b) Minimizing both downtime and total migration time, and avoiding unnecessary disruption of active services
c) Allowing resource contention with the migrating OS to speed up the process
d) Ensuring that the migration process takes as long as possible to ensure stability

Correct Answer: (b)
Detailed Solution: During VM migration, it's crucial to minimize both the downtime (time services are unavailable) and the total migration time (time to complete the migration). Additionally, the process should avoid disrupting active services by managing resource contention effectively.

QUESTION 5:

Which phase of live VM migration involves suspending the execution of the VM at the source and copying the remaining dirty pages and CPU state to the destination?

a) Pre-Copy Phase
b) Post-Copy Phase
c) Stop-and-Copy Phase
d) On-Demand Copy Phase

Correct Answer: (c)
Detailed Solution: In the Stop-and-Copy Phase of live VM migration, the VM's execution is suspended at the source, and the remaining dirty pages along with the CPU state are copied to the destination before resuming the VM.

QUESTION 6:

What is the primary advantage of the post-copy live memory migration strategy?

a) It avoids copying any memory pages from the source to the destination.
b) It ensures that memory pages are only copied on demand, potentially reducing unnecessary data transfer.
c) It copies all memory pages before stopping the VM at the source.
d) It immediately restarts the VM at the source after copying the CPU state.

Correct Answer: (b)
Detailed Solution: Post-copy live memory migration copies memory pages only when they are needed by the VM at the destination, reducing the amount of unnecessary data transfer compared to other strategies.

QUESTION 7:

Which of the following is NOT a requirement for live VM migration?

a) Load balancing
b) Fault tolerance
c) Power management
d) Data replication

Correct Answer: (d)
Detailed Solution: Live VM migration involves requirements such as load balancing, fault tolerance, power management, and resource sharing to ensure seamless operation and system maintenance. Data replication is not a specific requirement for live VM migration.

QUESTION 8:

In serial VM migration, what happens to the remaining VMs when the first VM enters the stop-and-copy phase?

a) They continue to provide services
b) They are suspended to prevent memory dirtying
c) They start their pre-copy cycle
d) They are migrated simultaneously

Correct Answer: (b)
Detailed Solution: In serial VM migration, when the first VM enters the stop-and-copy phase, the remaining VMs are suspended to prevent them from dirtying memory, ensuring a smooth migration process.

QUESTION 9:

What is a key advantage of using containers in cloud computing?

a) Containers virtualize the hardware to run multiple operating systems
b) Containers are heavyweight virtual machines with extensive resource requirements
c) Containers package code and dependencies, allowing applications to run consistently across different environments
d) Containers require specific hardware configurations to function properly

Correct Answer: (c)
Detailed Solution: Containers are lightweight virtualization techniques that package application code along with all its dependencies, enabling consistent performance across various computing environments.

QUESTION 10:

What is the main function of a Docker container image?

a) To create a virtual machine with its own operating system
b) To package an application along with its code, runtime, system tools, libraries, and settings
c) To manage physical hardware resources for applications
d) To execute applications directly on the host operating system without isolation

Correct Answer: (b)
Detailed Solution: A Docker container image is a lightweight, standalone package that includes everything needed to run an application, such as code, runtime, system tools, libraries, and settings, ensuring consistent operation across different environments.