

## Homework 2: VPC Network, Load Balancer, and Cloud Architectures

Q1: Which of the following statement about Virtual Private Cloud (VPC) is NOT correct?

- A. A virtual private cloud (VPC) is a virtualized private cloud within a public cloud (GCP, AWS) for an organization.
- B. To access a VPC network, Virtual Private Network can be used to build an encrypted tunnel between on-premises IT resources and the VPC.
- C. VPC is a global resource in GCP, while VPC is a regional one in AWS.
- D. Every user can access an established VPC without authentication.

Q2: Which of the following statements is correct?

- A. There are many regions and zones for both GCP and AWS.
- B. In each region, there will be a number of zones. In each zone, there will be one or more discrete data centers with redundant power, networking, and connectivity.
- C. Normally, zones in a region are interconnected with high-bandwidth, low-latency networking, over fully redundant, dedicated metro fiber providing high-throughput, low-latency networking between AZs.
- D. All of the above.

Q3: Which of the following statements is NOT correct?

- A. In GCP, VPC routes define paths for packets leaving instances to a destination.
- B. Firewall rules apply to both outgoing (egress) and incoming (ingress) traffic in the network.
- C. In GCP, every default VPC network has implied firewall rules and you could delete them.
- D. GCP firewall rules are stateful, meaning they track the state of network connections and automatically allow return traffic regardless of the rules for ingress or egress.

Q4: Which one of the following is FALSE about load balancing?

- A. Load balancing improves the distribution of workloads across multiple computing resources.
- B. Load balancing aims to optimize resource use, maximize throughput, minimize response time, and avoid overload of any single resource.
- C. Using multiple components with load balancing instead of a single component may increase reliability and availability through redundancy.
- D. All are true.

Q5: Given two servers A and B, which of the following Load Balancing algorithm should be considered if A has more CPU cores than B?

- A. Round Robin.
- B. Weighted Round Robin.
- C. Least Connections.
- D. Random.

Q6: Which of the following statements about load balancer is correct?

- A. To determine the destination, the layer 4 load balancer considers the IP address and ports, as well as the contents in the package.
- B. The layer 7 load balancer cannot direct Internet traffic based on the contents in the packet.
- C. The layer 4 load balancer has a faster-transferring performance than the layer 7 load balancer in terms of latency.
- D. None of the above.