Lab Exercise: Managing Azure Virtual Machines and Virtual Networks

Objective:

This lab is designed to provide comprehensive hands-on experience with Azure Virtual Machines (VMs) and Virtual Networks, covering creation, management, scaling, and securing VMs and networks. Participants will learn to efficiently manage VMs, implement load balancing, configure virtual networks through various interfaces, and apply network security and monitoring.

Expected Outcome:

- Ability to create, configure, and manage Azure Virtual Machines and VM Scale Sets.
- Proficiency in managing disks and creating custom VM images.
- Skills in creating and managing Azure Virtual Networks, subnets, and peering.
- Understanding of network traffic filtering, routing, and security within Azure Virtual Networks.
- Experience with network monitoring and the implementation of security measures.

Prerequisites:

- An active Microsoft Azure account.
- Basic knowledge of cloud computing concepts and familiarity with the Azure portal, PowerShell, and CLI.

Lab Exercise Details:

Part 1: Azure Virtual Machines

- **Task 1.1:** Create a Virtual Machine using the Azure Portal. Install a web server and host a simple webpage.
- **Task 1.2:** Manage the created Virtual Machine, demonstrating how to start, stop, and resize the VM.
- **Task 1.3:** Create and manage disks for a VM, showcasing how to add and resize disks.
- **Task 1.6:** Configure a Load Balancer to distribute traffic across the VMs in the Scale Set.

Part 2: Azure Virtual Networks

- **Task 2.1:** Create a Virtual Network through the Azure Portal, PowerShell, and CLI. Document the steps for each method.
- **Task 2.2:** Add, change, and delete a subnet within the created Virtual Network.
- **Task 2.3:** Connect two Virtual Networks and demonstrate communication between VMs in each network.

Part 3: Network Traffic Management and Security

- **Task 3.1:** Apply Network Security Groups (NSGs) to filter inbound and outbound network traffic to VMs.
- **Task 3.2:** Create and configure Application Security Groups (ASGs) to group VMs for network security policies.

Submission Guidelines:

- Document the execution of each task, including screenshots, configurations, and command-line scripts used. Highlight any challenges encountered and how they were resolved.
- Reflect on the significance of each task in managing and securing Azure Virtual Networks and VMs. Discuss the implications of different configurations and security measures.
- Submit your comprehensive report through the designated submission platform or email to your instructor by the deadline.