Hi All,

Please find the Azure Infrastructure Assignment.

The objective of this assignment is to explore and gain hands-on experience with Azure services such as Azure Active Directory (Azure AD), Azure Virtual Machines (VMs), Azure Storage, and Azure Networking.

Tasks: 1

1.       **Azure Active Directory (Azure AD)**

      a. Create an Azure AD tenant and configure the basic settings.

      b. Add and manage users and groups within the Azure AD.

      c. Configure and enforce multi-factor authentication for a specific user.

2.       **Azure Virtual Machines (VMs)**  
  
      a. Create a virtual network (VNet) with appropriate subnets and security groups.   
      b. Provision of a Windows or Linux-based Azure VM using the Azure portal or Azure CLI.

             c. Configure VM networking, including public and private IP addresses, load balancers, and network          security   groups.

             d. Implement VM auto-scaling based on predefined conditions.

3.       **Azure Storage**  
      a. Create an Azure Storage account and configure the account settings.   
      b. Create and manage Azure storage containers and blobs.   
      c. Implement shared access signatures (SAS) for secure access to storage resources.

             d. Configure Azure Storage replication options for redundancy and disaster recovery.

4.       **Azure Networking**  
      a. Create and configure a virtual network (VNet) with multiple subnets.   
      b. Implement a site-to-site VPN connection between an Azure VNet and an on-premises network.   
      c. Implement Azure Application Gateway for load balancing and traffic management.

      d. Configure Azure Traffic Manager for global load balancing and failover.

Tasks: 2

**Highly Available Web Application Deployment:**

* Design and deploy a highly available web application on Azure VMs. Utilize Azure Availability Sets or Azure Availability Zones to ensure redundancy and fault tolerance. Configure load balancing using Azure Load Balancer or Azure Application Gateway to distribute traffic across VM instances. Implement auto-scaling based on CPU utilization to handle varying levels of traffic. Ensure seamless deployment and rolling updates without downtime.

**Remote Desktop Services (RDS) Deployment:**

* Deploy a Remote Desktop Services (RDS) infrastructure on Azure VMs for remote desktop and application virtualization. Set up a virtual network with Azure Active Directory (Azure AD) integration for user authentication and access control. Deploy RDS roles such as Remote Desktop Gateway, Remote Desktop Session Host, and Remote Desktop Web Access on VM instances. Implement RemoteApp for publishing virtualized applications to end-users.

Tasks: 3

**Building a Scalable Web Application on Azure.**

create a scalable web application using Azure services. The application should be able to handle varying levels of traffic and provide a reliable user experience. You will need to utilize various Azure services to achieve scalability, reliability, and performance.

1. **Implementation:**
   * Set up a virtual network in Azure for your application.
   * Deploy virtual machines to host your web application.
   * Utilize Azure App Services or Azure Kubernetes Service (AKS) for deploying and managing your application.
   * Use Azure SQL Database or Azure Cosmos DB as your backend database.
   * Implement Azure Blob Storage for storing static assets like images, videos, etc.
   * Configure Azure CDN to deliver content faster to users across the globe.
   * Implement Azure Traffic Manager or Azure Front Door for load balancing and routing traffic to different regions.
   * Implement Azure Monitor to monitor the performance and health of your application.
2. **Scalability:**
   * Implement auto-scaling for your virtual machines or application instances based on CPU usage or other metrics.
   * Utilize Azure Cosmos DB's global distribution for scaling out your database globally.
3. **Security:**
   * Implement Azure Key Vault to securely store and manage application secrets and keys.
   * Configure Azure Firewall or Azure DDoS Protection to protect your application from cyber threats.
4. **Monitoring and Logging:**
   * Set up Azure Application Insights for monitoring your application's performance and detecting issues.
   * Configure logging for your application components using Azure Log Analytics.

**Deliverables:**

* High-level architecture diagram.
* Azure Resource Manager (ARM) templates or Terraform scripts for deploying infrastructure.
* Code for the web application.
* Documentation including deployment guide, configuration guide, and any other relevant information.