Week-6 Assignment

Create an Internal & External Load balancer (Verify It's working).

Prerequisites

1. Ensure you have the Azure CLI installed and configured.
2. Ensure you have created and configured VMs in Azure.
3. You need to know your resource group name, virtual network name, and subnet name.

Step 1: Create Resource Group

az group create --name myResourceGroup --location eastus

Step 2: Set Up VMs and Network Security Group

1. **Create a Network Security Group**:

   az network nsg create --resource-group myResourceGroup --name myNSG

2. **Create NSG Rule to Allow HTTP Traffic**:

   az network nsg rule create --resource-group myResourceGroup --nsg-name myNSG --name allow-http --protocol tcp --priority 1000 --destination-port-range 80 --access allow

3. **Create a Virtual Network and Subnet**:

   az network vnet create --resource-group myResourceGroup --name myVNet --subnet-name mySubnet

4. **Create Public IP Addresses for VMs**:

   az network public-ip create --resource-group myResourceGroup --name myPublicIP1

   az network public-ip create --resource-group myResourceGroup --name myPublicIP2

5. **Create Network Interfaces for VMs**:

   az network nic create --resource-group myResourceGroup --name myNic1 --vnet-name myVNet --subnet mySubnet --network-security-group myNSG --public-ip-address myPublicIP1

   az network nic create --resource-group myResourceGroup --name myNic2 --vnet-name myVNet --subnet mySubnet --network-security-group myNSG --public-ip-address myPublicIP2

6. **Create VMs**:

   az vm create --resource-group myResourceGroup --name myVM1 --nics myNic1 --image UbuntuLTS --admin-username azureuser --generate-ssh-keys

   az vm create --resource-group myResourceGroup --name myVM2 --nics myNic2 --image UbuntuLTS --admin-username azureuser --generate-ssh-keys

7. **Install Web Server on VMs**: SSH into each VM and install a web server:

   # For Ubuntu

   sudo apt-get update

   sudo apt-get install -y apache2

   echo "This is VM1" | sudo tee /var/www/html/index.html

   Repeat for VM2, changing the message to "This is VM2".

Step 3: Create External Load Balancer

1. **Create Public IP for Load Balancer**:

   az network public-ip create --resource-group myResourceGroup --name myPublicIPLB --allocation-method Static --sku Standard

2. **Create Load Balancer**:

   az network lb create --resource-group myResourceGroup --name myExternalLB --sku Standard --public-ip-address myPublicIPLB --frontend-ip-name myFrontEnd --backend-pool-name myBackEndPool

3. **Create Health Probe**:

   az network lb probe create --resource-group myResourceGroup --lb-name myExternalLB --name myHealthProbe --protocol tcp --port 80 --path /

4. **Create Load Balancer Rule**:

   az network lb rule create --resource-group myResourceGroup --lb-name myExternalLB --name myLoadBalancerRuleWeb --protocol tcp --frontend-port 80 --backend-port 80 --frontend-ip-name myFrontEnd --backend-pool-name myBackEndPool --probe-name myHealthProbe

5. **Add VMs to Backend Pool**:

   az network nic ip-config address-pool add --address-pool myBackEndPool --ip-config-name ipconfig1 --nic-name myNic1 --resource-group myResourceGroup --lb-name myExternalLB

   az network nic ip-config address-pool add --address-pool myBackEndPool --ip-config-name ipconfig1 --nic-name myNic2 --resource-group myResourceGroup --lb-name myExternalLB

Step 4: Verify External Load Balancer

1. **Get Load Balancer Public IP**:

   az network public-ip show --resource-group myResourceGroup --name myPublicIPLB --query ipAddress --output tsv

2. **Access the Load Balancer**: Use the IP address in a web browser or via curl to verify:

   curl http://<external-load-balancer-ip>

Step 5: Create Internal Load Balancer

1. **Create Internal Load Balancer**:

   az network lb create --resource-group myResourceGroup --name myInternalLB --sku Standard --vnet-name myVNet --subnet mySubnet --frontend-ip-name myFrontEndInternal --backend-pool-name myBackEndPoolInternal --private-ip-address 10.0.0.10

2. **Create Health Probe**:

   az network lb probe create --resource-group myResourceGroup --lb-name myInternalLB --name myHealthProbeInternal --protocol tcp --port 80 --path /

3. **Create Load Balancer Rule**:

   az network lb rule create --resource-group myResourceGroup --lb-name myInternalLB --name myLoadBalancerRuleWebInternal --protocol tcp --frontend-port 80 --backend-port 80 --frontend-ip-name myFrontEndInternal --backend-pool-name myBackEndPoolInternal --probe-name myHealthProbeInternal

4. **Add VMs to Backend Pool**:

   az network nic ip-config address-pool add --address-pool myBackEndPoolInternal --ip-config-name ipconfig1 --nic-name myNic1 --resource-group myResourceGroup --lb-name myInternalLB

   az network nic ip-config address-pool add --address-pool myBackEndPoolInternal --ip-config-name ipconfig1 --nic-name myNic2 --resource-group myResourceGroup --lb-name myInternalLB

Step 6: Verify Internal Load Balancer

1. **Get Internal Load Balancer IP**:

   az network lb frontend-ip show --resource-group myResourceGroup --lb-name myInternalLB --name myFrontEndInternal --query privateIpAddress --output tsv

2. **Access the Internal Load Balancer**: SSH into a client instance within the same VNet and use curl:

   curl http://<internal-load-balancer-ip>

These commands will help to create and verify both internal and external load balancers in Azure.