**Week-5**

Task 1: Set up a domain, setup a server on a VM and use the DNS server for traffic

**Step 1: Set Up a Domain**

1. **Purchase a Domain**: Buy a domain from a domain registrar like GoDaddy, Namecheap, etc.
2. **Configure DNS Records**: Use your domain registrar's control panel to manage DNS records.

**Step 2: Set Up a Server on a VM**

1. **Create a Virtual Machine**:
   * Log in to the [Azure portal](https://portal.azure.com/).
   * Create a resource group:

az group create --name MyResourceGroup --location eastus

* + Create a Linux VM:

az vm create \

--resource-group MyResourceGroup \

--name MyWebServer \

--image UbuntuLTS \

--admin-username azureuser \

--generate-ssh-keys

1. **Install and Configure a Web Server**:
   * SSH into your VM:

ssh azureuser@<VM\_Public\_IP>

* + Install Nginx on Ubuntu:

sudo apt update

sudo apt install nginx -y

sudo systemctl start nginx

sudo systemctl enable nginx

* + Ensure the firewall allows HTTP traffic:

sudo ufw allow 'Nginx Full'

**Step 3: Configure DNS to Point to Your VM**

1. **Get the Public IP of Your VM**:
   * Obtain the public IP of your VM from the Azure portal or using the Azure CLI:

az vm show -d -g MyResourceGroup -n MyWebServer --query publicIpAddress -o tsv

1. **Set Up DNS Records**:
   * In your domain registrar's DNS management, create an A record pointing to your VM's public IP.
     + **Type**: A
     + **Name**: @ (or www for subdomain)
     + **Value**: VM\_Public\_IP
     + **TTL**: 3600

**Task -2 : Create and test Azure Application gateway**

### Step 1: Create Azure Application Gateway

1. **Create Resource Group** (if not already created):

az group create --name MyResourceGroup --location eastus

**Create Application Gateway**:

az network public-ip create --resource-group MyResourceGroup --name MyAppGatewayPublicIP --sku Standard --allocation-method Static

az network application-gateway create \

--resource-group MyResourceGroup \

--name MyAppGateway \

--sku Standard\_v2 \

--capacity 2 \

--vnet-name MyVNet \

--subnet AppGatewaySubnet \

--public-ip-address MyAppGatewayPublicIP

R eplace MyVNet and AppGatewaySubnet with your existing virtual network and subnet names.

 **Configure Backend Pools**:

* Backend pools define where the Application Gateway routes traffic. You can configure VMs or other backend services here.

# Example for VM backend pool

az network application-gateway address-pool create \

--gateway-name MyAppGateway \

--resource-group MyResourceGroup \

--name MyBackendPool

az network application-gateway address-pool backend-address create \

--gateway-name MyAppGateway \

--resource-group MyResourceGroup \

--pool-name MyBackendPool \

--address 10.0.1.4 # Replace with your backend VM's private IP

**Configure HTTP Settings and Routing Rules**:

* HTTP settings define how the Application Gateway communicates with the backend.

az network application-gateway http-settings create \

--gateway-name MyAppGateway \

--resource-group MyResourceGroup \

--name MyHttpSettings \

--port 80 \

--protocol Http \

--cookie-based-affinity Disabled \

--timeout 60

az network application-gateway url-path-map create \

--gateway-name MyAppGateway \

--resource-group MyResourceGroup \

--name MyUrlPathMap \

--default-backend-address-pool MyBackendPool \

--default-http-settings MyHttpSettings \

--rule-name MyUrlPathRule \

--paths /myapp/\*=/MyBackendPool/myapp/\*

**Configure Listener**:

* Listeners define how traffic is received by the Application Gateway.

az network application-gateway http-listener create \

--gateway-name MyAppGateway \

--resource-group MyResourceGroup \

--name MyHttpListener \

--frontend-ip MyAppGatewayFrontendIP \

--frontend-port 80 \

--protocol Http

**Step 2: Test Azure Application Gateway**

1. **Access Application Gateway Public IP**:
   * Once the Application Gateway is deployed, get its public IP address from the Azure portal or CLI.
2. **Test Access from Browser**:
   * Open a web browser and navigate to the public IP of your Application Gateway (e.g., http://<AppGateway\_Public\_IP>).
3. **Verify Routing**:
   * Check that requests are correctly routed based on the configured rules and backend pools.
4. **Monitor and Troubleshoot**:
   * Use Azure Monitor or Application Gateway diagnostics to monitor performance and troubleshoot any issues.

**Additional Configuration (Optional)**

1. **SSL Offloading**:
   * Configure SSL termination at the Application Gateway for HTTPS traffic.
2. **WAF (Web Application Firewall)**:
   * Enable the Azure Application Gateway WAF to protect your web applications from common threats.