## ****Task 1 - Setup Virtual Networks****

### ****Subtask 1: Create Virtual Network****

#### ****Step 1: Create EastUS VNet****

1. Go to **Azure Portal** → **Virtual Networks** → **Create**.
2. Set the following:
   1. **Name**: EastUS VNet
   2. **Region**: East US
   3. **Address Space**: 10.0.0.0/16
   4. **Subnet**: WebSubnet (10.0.1.0/24)
3. Click **Review + Create** → **Create**.

#### ****Step 2: Create EastUS2 VNet****

1. Repeat the above steps, but change:
   1. **Name**: EastUS2 VNet
   2. **Region**: East US 2
   3. **Address Space**: 10.1.0.0/16
   4. **Subnet**: AppSubnet (10.1.1.0/24)
2. Click **Review + Create** → **Create**.

### ****Subtask 2: VNet-to-VNet Peering****

#### ****Step 1: Peer EastUS VNet with EastUS2 VNet****

1. Go to **EastUS VNet** → **Peerings** → **Add**.
2. Set:
   1. **Name**: EastUS-to-EastUS2
   2. **Remote VNet**: EastUS2 VNet
   3. **Allow traffic between VMs**: ✅ Yes
   4. **Allow Gateway Transit**: ✅ Yes
   5. **Enable encryption**: ✅ Yes
3. Click **OK**.

#### ****Step 2: Peer EastUS2 VNet with EastUS VNet****

1. Go to **EastUS2 VNet** → **Peerings** → **Add**.
2. Set:
   1. **Name**: EastUS2-to-EastUS
   2. **Remote VNet**: EastUS VNet
   3. **Allow traffic between VMs**: ✅ Yes
   4. **Allow Gateway Transit**: ✅ Yes
   5. **Enable encryption**: ✅ Yes
3. Click **OK**.

## ****Task 2 - Deploy Virtual Machines****

### ****Subtask 1: Web Servers in EastUS****

#### ****Step 1: Deploy w1 and w2****

1. Go to **Azure Portal** → **Virtual Machines** → **Create a VM**.
2. Set:
   1. **VM Name**: w1
   2. **Region**: East US
   3. **VNet**: EastUS VNet
   4. **Subnet**: WebSubnet
   5. **Availability Set**: Create a new **Availability Set**
   6. **Size**: Standard B2s
3. Click **Next** until you reach **Review + Create** → **Create**.
4. Repeat the steps for w2.

#### ****Step 2: Configure Load Balancer****

1. Go to **Azure Portal** → **Load Balancers** → **Create**.
2. Set:
   1. **Name**: EastUS-LB
   2. **Type**: Public
   3. **Region**: East US
   4. **Virtual Network**: EastUS VNet
   5. **Backend Pool**: Add w1, w2
3. Configure **Health Probes** and **Load Balancing Rules**.

#### ****Step 3: Set Up Remote Desktop Gateway****

1. Deploy an **Azure Bastion** service to allow secure RDP access:
   1. **Virtual Network**: EastUS VNet
   2. **Subnet**: Create AzureBastionSubnet
   3. **Size**: /26
2. This allows web administrators to securely connect without using public IPs.

### ****Subtask 2: Deploy WS11 in EastUS2****

#### ****Step 1: Deploy WS11 VM****

1. Go to **Azure Portal** → **Virtual Machines** → **Create a VM**.
2. Set:
   1. **VM Name**: WS11
   2. **Region**: East US 2
   3. **VNet**: EastUS2 VNet
   4. **Subnet**: AppSubnet
3. Click **Next** until **Review + Create** → **Create**.

#### ****Step 2: Restrict Outbound Traffic****

1. Go to **Azure Firewall** → **Create**.
2. Set:
   1. **Region**: East US 2
   2. **VNet**: EastUS2 VNet
3. Add firewall rules:
   1. **Deny Rule**: Block outbound traffic to social media sites (\*.facebook.com, \*.instagram.com).

## ****Task 3 - Implement Secure Connectivity****

### ****Subtask 1: Site-to-Site VPN or Azure Private Link****

#### ****Step 1: Configure Site-to-Site VPN Gateway****

1. Go to **Virtual Network Gateway** → **Create**.
2. Select:
   1. **Region**: East US
   2. **Virtual Network**: EastUS VNet
   3. **Gateway Type**: VPN
   4. **SKU**: Basic
3. Repeat the steps for EastUS2 VNet.

#### ****Step 2: Connect the VPN Gateways****

1. Go to **EastUS Gateway** → **Connections** → **Add**.
2. Select:
   1. **Destination Gateway**: EastUS2 Gateway
   2. **Pre-Shared Key**: <your-key>.
3. Click **OK**.

### ****Subtask 2: Network Security Groups (NSGs)****

1. Go to **NSGs** → **Create**.
2. Set:
   1. **Inbound Rule**: Allow HTTP, HTTPS, RDP from trusted IPs.
   2. **Outbound Rule**: Deny all except essential services.
3. Associate the NSGs with EastUS VNet and EastUS2 VNet.

## ****Task 4 - Setup Storage Solutions****

### ****Subtask 1: Configure Storage in EastUS****

1. Go to **Azure Storage Accounts** → **Create**.
2. Set:
   1. **Name**: eastusstorage
   2. **Region**: East US
   3. **Replication**: Zone-Redundant Storage (ZRS)
3. Enable access using:
   1. **Shared Access Signatures (SAS)**
   2. **Access Keys**
   3. **Role-Based Access Control (RBAC)**

### ****Subtask 2: Configure Storage in EastUS2****

1. Create a new **Storage Account**:
   1. **Name**: eastus2storage
   2. **Replication**: Geo-Redundant Storage (GRS)
2. Map storage to the **S:** drive on WS11:
   1. Use **Azure File Share**.
   2. Secure it with **Storage Account Keys**.

## ****Guidelines Implementation****

### ****Guideline 1: ARM Templates****

1. Create an ARM Template defining:
   1. VNets, Subnets, VNet Peering
   2. Virtual Machines & Availability Set
   3. Load Balancer
   4. Azure Firewall & NSGs
   5. Storage Accounts
2. Deploy the template via Azure CLI:

bash

CopyEdit

az deployment group create --resource-group MyResourceGroup --template-file template.json

### ****Guideline 2: Visual Diagram****

1. Use **Microsoft Visio** or **Azure Architecture Center** to create a diagram showing:
   1. Virtual Networks, Peering
   2. Virtual Machines, Availability Sets, Load Balancer
   3. Storage Accounts and Access Controls

### ****Guideline 3: Screenshots****

1. Capture the following:
   1. Virtual Networks and Peering
   2. Virtual Machines and Availability Set
   3. Load Balancer
   4. Network Security Groups and Firewall Rules
   5. Storage Account Configurations