**Implement the Azure IaaS**

OSS Corporation, a globally distributed firm with headquarters in the East US and a branch office in the West US, is evaluating Azure as a deployment platform for their latest project. The project requires the application tier to reside in the branch region, while the data tier remains in the headquarters region for security reasons. To achieve this, the company needs to deploy IaaS v2 virtual networks in both regions and establish secure communication between them. The deployment involves the following key steps:

### **Step 1: Create Virtual Networks**

**Headquarters Region (East US):**

1. Sign in to the Azure portal.
2. select **Create a resource**.
3. Search for **Virtual Network** and select **Create**.
4. Fill in the following details:
   1. **Resource Group**: Select an existing resource group or create a new one (e.g., HQResourceGroup).
   2. **Name**: HeadQVNet
   3. **Region**: East US
   4. **Address space**: 10.0.0.0/16
   5. **Subnet name**: DatabasehqSubnet
   6. **Subnet address range**: 10.0.1.0/24
5. Click **Review + create** and then **Create**.

**Branch Region (West US):**

1. Repeat the steps above but with the following details:
   1. **Resource Group**: BranchResourceGroup
   2. **Name**: BranchqVNet
   3. **Region**: West US
   4. **Address space**: 10.1.0.0/16
   5. **Subnet name**: AppbranchSubnet
   6. **Subnet address range**: 10.1.1.0/24

### **Step 2: Create Test Virtual Machines**

**Headquarters Region:**

1. In the Azure portal, select **Create a resource**.
2. Search for **Virtual Machine** and select **Create**.
3. Fill in the details:
   1. **Resource Group**: HQResourceGroup
   2. **Virtual machine name**: headqVM
   3. **Region**: East US
   4. **Image**: Choose a suitable image
   5. **Size**: Standard\_B1ms
   6. **Administrator account**: Set up username and RDP public key
4. Under **Networking**, select HeadQVNet for the virtual network and DatabasehqSubnet for the subnet.
5. Click **Review + create** and then **Create**.

**Branch Region:**

1. Repeat the steps above but with the following details:
   1. **Resource Group**: BranchResourceGroup
   2. **Virtual machine name**: BranchqVM
   3. **Region**: West US
   4. **Image**: Same as used for HQVM
   5. **Size**: Standard\_B1ms
   6. **Administrator account**: Set up username and SSH public key
2. Under **Networking**, select BranchqVNet for the virtual network and AppbranchSubnet for the subnet.
3. Click **Review + create** and then **Create**.

### **Step 3: Establish Connectivity via VNet Peering**

1. **Headquarters to Branch Peering:**
   1. Navigate to **HQVNet**.
   2. Select **Peerings** under Settings and click **+ Add**.
   3. Fill in the following details:
      1. **Name**: HQtoBranchPeering
      2. **Peering link name (remote virtual network)**: BranchtoHQPeering
      3. **Subscription**: Select your subscription.
      4. **Virtual network**: Choose BranchVNet.
      5. **Allow virtual network access**: Enabled
   4. Click **Add**.
2. **Branch to Headquarters Peering:**
   1. Navigate to **BranchVNet**.
   2. Select **Peerings** under Settings and click **+ Add**.
   3. Fill in the following details:
      1. **Name**: BranchtoHQPeering
      2. **Peering link name (remote virtual network)**: HQtoBranchPeering
      3. **Subscription**: Select your subscription.
      4. **Virtual network**: Choose HQVNet.
      5. **Allow virtual network access**: Enabled
   4. Click **Add**.

### **Step 4: Create Route table**

1. **Create Route Table for HQ Network:**
   1. Name: HQRouteTable
   2. Region: East US
2. **Add Route to HQ Route Table:**
   1. Route name: HQToBranchRoute
   2. Address prefix: 10.1.0.0/16 (Branch network)
   3. Next hop type: Virtual network gateway
3. **Associate HQ Route Table with Database Subnet:**
   1. Virtual network: HQVNet
   2. Subnet: DatabaseSubnet

### **Example: Creating a Route Table for Branch Network**

1. **Create Route Table for Branch Network:**
   1. Name: BranchRouteTable
   2. Region: West US
2. **Add Route to Branch Route Table:**
   1. Route name: BranchToHQRoute
   2. Address prefix: 10.0.0.0/16 (HQ network)
   3. Next hop type: Virtual network gateway
3. **Associate Branch Route Table with Application Subnet:**
   1. Virtual network: BranchVNet
   2. Subnet: AppSubnet

### **Step 5: Validate Connectivity**

1. **Ping Test:**
   1. **From the Branch VM to the HQ VM:**
      1. RDP into the Branch VM using its public IP address.
      2. Use the ping command to test connectivity to the private IP address of the HQ VM

Successful responses to the ping requests indicate that the connectivity is correctly established.

By following these steps, OSS Corporation can set up and validate their infrastructure, ensuring secure and private communication between the application and data tiers.