**Step-by-Step Instructions for Setting Up a Site-to-Site VPN Connection between Azure and AWS**

**Step 1: Create a Resource Group in Azure**

1. **Log in to the Azure Portal**:
   * Navigate to the [Azure Portal](https://portal.azure.com/).
   * Sign in with your Azure account credentials.
2. **Create a Resource Group**:
   * In the Azure portal, select **Resource groups** from the left-hand menu or search for "Resource groups" in the search bar.
   * Click on **+ Create**.
   * **Resource Group Name**: Enter rsg-azuretoaws.
   * **Region**: Select East US.
   * Click **Review + create** and then **Create**.

**Step 2: Create a Virtual Network (VNet) and Subnet in Azure**

1. **Navigate to Virtual Networks**:
   * In the Azure portal, search for and select **Virtual networks**.
   * Click **+ Create**.
2. **Configure the VNet**:
   * **Resource Group**: Select rsg-azuretoaws from the dropdown.
   * **Name**: Enter vnet-azure.
   * **Region**: Select East US.
   * **IPv4 Address Space**: Enter 10.0.0.0/16.
   * Click **Next: IP Addresses**.
3. **Add a Subnet**:
   * In the **Subnets** section, click **+ Add subnet**.
   * **Subnet Name**: Enter subnetA.
   * **Subnet Address Range**: Enter 10.0.0.0/24.
   * Click **Add** and then **Review + create**.
   * After the validation passes, click **Create**.

**Step 3: Create a VPN Gateway in Azure**

1. **Navigate to Virtual Network Gateways**:
   * In the Azure portal, search for and select **Virtual network gateways**.
   * Click **+ Create**.
2. **Configure the VPN Gateway**:
   * **Resource Group**: Select rsg-azuretoaws.
   * **Name**: Enter vpn-azure-aws.
   * **Region**: Select East US.
   * **Gateway Type**: Select VPN.
   * **VPN Type**: Select Route-based.
   * **SKU**: Select VpnGw1.
   * **Generation**: Select Generation 1.
   * **Virtual Network**: Select vnet-azure.
   * **Public IP Address**: Click on **Create New**.
     + **Public IP Address Name**: Enter pub-vpn-azure-aws.
     + **SKU**: Select Basic.
     + **Assignment**: Select Dynamic.
   * **Gateway Subnet**: Ensure it's set to 10.0.1.0/24.
   * Leave **Enable active-active mode** and **Configure BGP** unchecked.
   * Click **Review + create** and then **Create**.

**Step 4: Set Up the Default Virtual Private Cloud (VPC) in AWS**

1. **Log in to AWS Management Console**:
   * Navigate to the [AWS Management Console](https://aws.amazon.com/).
   * Sign in with your AWS account credentials.
2. **Use the Default VPC**:
   * In the AWS console, navigate to the **VPC Dashboard**.
   * Ensure you have a **Default VPC** created in your desired region. If not, create one.

**Step 5: Create a Customer Gateway in AWS**

1. **Navigate to Customer Gateways**:
   * In the AWS console, go to **VPC Dashboard**.
   * Under **VPN Connections**, select **Customer Gateways**.
   * Click **Create Customer Gateway**.
2. **Configure the Customer Gateway**:
   * **Name**: Enter cust-gw-aws-azure.
   * **IP Address**: Enter the Public IP Address of the Azure VPN Gateway (found in Step 3).
   * Leave the rest of the settings as default.
   * Click **Create Customer Gateway**.

**Step 6: Create a Virtual Private Gateway in AWS**

1. **Navigate to Virtual Private Gateways**:
   * In the AWS console, go to **VPC Dashboard**.
   * Select **Virtual Private Gateways**.
   * Click **Create Virtual Private Gateway**.
2. **Configure the Virtual Private Gateway**:
   * **Name**: Enter vpg-aws-azure.
   * Click **Create Virtual Private Gateway**.
   * After creation, **Attach** the Virtual Private Gateway to your VPC (created in Step 4).

**Step 7: Create a Site-to-Site VPN Connection in AWS**

1. **Navigate to VPN Connections**:
   * In the AWS console, go to **VPC Dashboard**.
   * Under **VPN Connections**, select **Site-to-Site VPN Connections**.
   * Click **Create VPN Connection**.
2. **Configure the VPN Connection**:
   * **Name**: Enter vpn-connection-aws-azure.
   * **Target Gateway Type**: Select Virtual private gateway.
   * **Virtual Private Gateway**: Select the Virtual Private Gateway created in Step 6.
   * **Customer Gateway**: Select Existing and choose the Customer Gateway created in Step 5.
   * **Routing Options**: Select Static.
   * **Static IP Prefixes**: Enter 10.0.0.0/24 (Azure subnet).
   * Leave the rest of the settings as default and click **Create VPN Connection**.

**Step 8: Download the VPN Configuration File**

1. **Download Configuration**:
   * Once the VPN connection is created, select it from the list.
   * Click on **Download Configuration**.
   * **Vendor**: Select Generic.
   * **Platform**: Select Generic.
   * **Software**: Select Vendor Agnostic.
   * Download the configuration file. This file contains the **Shared Keys** and **Public IP Address** for the two IPsec tunnels.

**Step 9: Create a Local Network Gateway in Azure**

1. **Navigate to Local Network Gateways**:
   * In the Azure portal, search for and select **Local network gateways**.
   * Click **+ Create**.
2. **Configure the Local Network Gateway**:
   * **Name**: Enter lng-azure-aws.
   * **Resource Group**: Select rsg-azuretoaws.
   * **Region**: Select East US.
   * **IP Address**: Enter the Public IP Address from the AWS Virtual Private Gateway found in the configuration file (35.171.119.214).
   * **Address Space(s)**: Enter 172.31.0.0/16 (AWS VPC subnet).
   * Click **Review + create** and then **Create**.

**Step 10: Create the Site-to-Site VPN Connection in Azure**

1. **Navigate to Connections**:
   * In the Azure portal, search for and select **Connections**.
   * Click **+ Add**.
2. **Configure the Connection**:
   * **Name**: Enter connection-azure-aws.
   * **Connection Type**: Select Site-to-Site (IPsec).
   * **Virtual Network Gateway**: Select vpn-azure-aws.
   * **Local Network Gateway**: Select lng-azure-aws.
   * **Shared Key**: Enter the Pre-Shared Key from the configuration file (zN6CtPjQlfJDIZz8LdOGlyYofZEsswSK).
   * Click **OK** to create the connection.

**Step 11: Add Routes to the Subnets**

1. **Update Route Table in AWS**:
   * In the AWS console, navigate to **Route Tables** under the VPC Dashboard.
   * Select the Route Table associated with the subnet.
   * **Destination**: Enter 10.0.0.0/24 (Azure Subnet).
   * **Target**: Select the Virtual Private Gateway created in Step 6.
   * Click **Save**.
2. **Check Connection Status**:
   * In the Azure portal, navigate to the **Connections**.
   * Wait until the status changes to **Connected**.
   * Similarly, check in the AWS Console if the first tunnel of the Virtual Private Gateway is UP.