Creating VPCs and Establishing a VPC Peering Connection

Purpose: This report outlines the steps taken to create two Virtual Private Clouds (VPCs) on Amazon Web Services (AWS) and establish a VPC peering connection between them. VPC peering allows instances in different VPCs to communicate with each other securely without requiring a VPN or other transit gateway.

Steps:

1. **Create VPCs:**
    - Two VPCs were created:
        - VPC1 with a CIDR block of 10.0.0.0/16 and tagged as "VPC1".
        - VPC2 with a CIDR block of 172.31.0.0/16 and tagged as "VPC2".
2. **Create Subnets:**
    - Two subnets were created in each VPC:
        - In VPC1:
            - A subnet with a CIDR block of 10.0.0.0/24 in the `us-east-1a` availability zone.
            - A subnet with a CIDR block of 10.0.1.0/24 in the `us-east-1b` availability zone.
        - In VPC2:
            - A subnet with a CIDR block of 172.31.0.0/24 in the `us-east-1a` availability zone.
            - A subnet with a CIDR block of 172.31.1.0/24 in the `us-east-1b` availability zone.
3. **Create VPC Peering Connection:**
    - A VPC peering connection was initiated by VPC1 to VPC2 using the `aws ec2 create-vpc-peering-connection` command.
    - The peering connection was accepted by VPC2 using the `aws ec2 accept-vpc-peering-connection` command.
    - The status of the VPC peering connection was verified using the `aws ec2 describe-vpc-peering-connections` command.

Result:

Two VPCs with subnets were successfully created, and a VPC peering connection was established between them. This allows instances in VPC1 to communicate with instances in VPC2 and vice versa over a private network.

Additional Considerations:

- **Route Propagation:** To enable communication between instances in the peered VPCs, route propagation should be configured. This allows each VPC to learn about the routes in the other VPC.
- **Security Groups:** Security groups should be configured to control traffic flow between the peered VPCs.
- **NAT Gateways or VPN Connections:** If you need to connect to the internet or other external networks from instances in the peered VPCs, you may need to use NAT gateways or VPN connections.

Diagram: