Practice: Configure Local Peering

In these practices, you will:

- Create Two VCNs
- Create Compute Instances
- Create Local VCN Peering
- Test Local VCN Peering

Practice: Create Two VCNs

Try this hands-on lab with the Oracle Cloud Free Tier. If you do not have a free account, click here to get one.

Overview

In this practice, you will create the following VCNs and create resources in each of them:

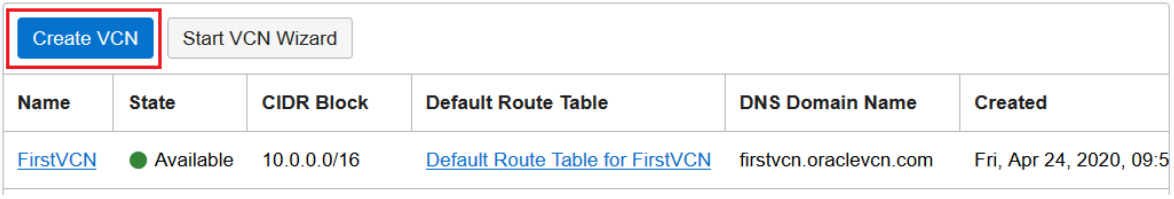
1. ManagementVCN
2. MarketingVCN

Let's first create the **ManagementVCN**.

Tasks

1. Log in to your Oracle Cloud Free Tier Account.
2. Terminate the previously created VCN and Compute instances to continue with this practice.
3. In the OCI console, click **Menu > Networking > Virtual Cloud Networks**.

   Note: Ensure your compartment is selected.
4. Click the **Create VCN option. *(Note: Not the Start VCN Wizard option we used earlier)***.

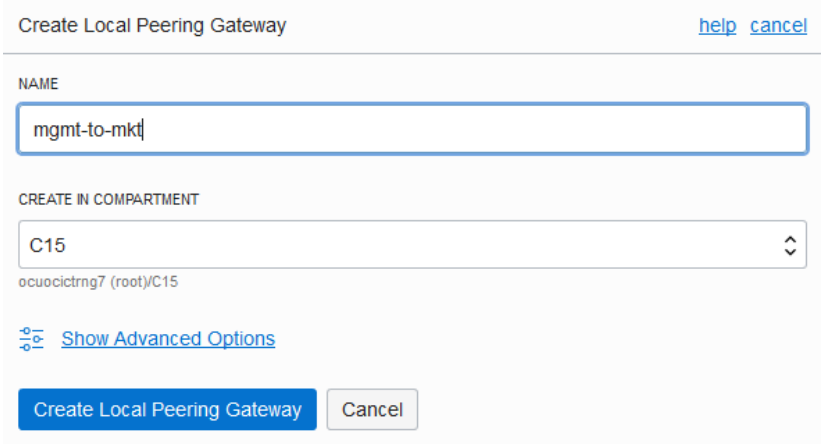


5. In the dialog box, enter the following details:
   - **VCN Name**: ManagementVCN
   - **Compartment**: *Ensure your Compartment has been selected.*
   - **CIDR Block**: Enter 10.0.0.0/24
   - *Accept the default for the remaining options.*
   - Click **Create VCN**.

You will now create the additional resources required for the instances in this **ManagementVCN**.

6. Create **Internet Gateways.**
    - On the left side panel under Resources, click **Internet Gateways**.
    - Click **Create Internet Gateway**.
    - Provide a name. Example: **InternetGW**
    - **Compartment**: *Ensure your Compartment has been selected.*
    - Click **Create Internet Gateway**.
7. Add a new **Route Rule** to the default Route Table of the newly created VCN.
    a. On the left side panel under Resources, click **Route tables**.
    b. Click **Default Route Table for ManagementVCN.**
    c. Click **Add Route Rules.**
    d. **Target Type:** Internet Gateway
    e. **Destination CIDR Block:** 0.0.0.0/0
    f. **Target Internet Gateway:** InternetGW
    g. Click **Add Route Rules**.
8. Create the **subnets**.
    - Navigate back to your VCN page, click **Create Subnet**, and enter the following details:
    - **Name:** mgmt-subnet
    - **Subnet Type:** Availability Domain-Specific
    - **Availability Domain**: AD-1
    - **CIDR BLOCK:** 10.0.0.0/24 (Make a note of the AD)
    - **Route Table:** Select Default Route Table.
    - **Subnet Access:** Public Subnet
    - **DNS Resolution**: Accept the default (Selected).
    - **DHCP Options:** Default DHCP Options for ManagementVCN
    - **Security Lists:** Default Security List for ManagementVCN
    - Click **Create Subnet**.
9. Create a **Local Peering** in **ManagementVCN** as you need to create Peering connections with the other VCN (**MarketingVCN**, which will be created in the following steps).

10. Ensure you are on the **ManagementVCN** VCN details page:
    - Click the **Local Peering Gateways** link under the Resources section.
    - Click **Create Local Peering Gateway** (LPG) and create two LPGs one by one:
        a) **Name:** mgmt-to-mkt
        b) Ensure your Compartment is selected and click **Create.**



11. Repeat the previous instructions to create the second VCN, **MarketingVCN**, with the following resources:
    a. VCN:
        – **Name:** MarketingVCN
        – **CIDR:** 10.10.0.0/24
    b. Internet Gateway:
        – **Name:** InternetGW
    c. Add a new **Route Rule** for **Internet Gateway** in the default Route Table, with Destination CIDR Block: 0.0.0.0/0.
    d. Subnet:
        – **Name:** mkt-subnet
        – *Availability Domain-Specific*, choose the same AD where you created the earlier subnet.
        – **CIDR:** 10.10.0.0/24
    e. Choose default options for the remaining fields.
    f. Create one Local Peering Gateway.
        – **Name:** mkt-to-mgmt

This is the end of this practice. In the next practice, you will create Compute instances in each of these VCNs to test traffic connectivity.

Practice: Create Compute Instances

Overview

In this practice, you will create Compute instances in each of the two VCNs:

1. Create **ManagementVM** in ManagementVCN
2. Create **MarketingVM** in MarketingVCN

Tasks

1. Navigate to **Menu** > **Compute** > **Instances**. Ensure your Compartment is selected.
2. Click **Create Instance.**
3. In the Create Instance dialog box, enter the following:
   - **Name:** ManagementVM
   - **Image or Operating System:** Select the default Oracle Linux image.
   - **Availability Domain:** Select the AD in which you have your VCNs.
   - **Shape:** VM.Standard2.1 (Virtual Machine)
   - **Networking:** *(Virtual Cloud Network – VCN)*
     - **VCN Compartment:** Ensure your Compartment has been selected.
     - **VCN:** ManagementVCN
     - **Subnet Compartment:** Ensure your Compartment has been selected.
     - **Subnet:** mgmt-subnet
     - Select **Assign a public IP address.**
   - **Boot Volume Size:** Use the default.
   - **SSH Key:** Select the Paste SSH keys option and paste the contents of your Public SSH key copied in the previous practice (Also available in `~/.ssh/id_rsa.pub`).
   - Leave the rest as default and click **Create**.
4. Make note of the **Public and Private IP** addresses of the Compute instance after it gets created.
5. Repeat the previous step to create a Compute instance in the remaining VCN and note down the Public and Private IP address.

Practice: Create Local VCN Peering

Overview

In this practice, you will create Peering connections between the VCNs:

ManagementVCN <------> MarketingVCN

Tasks

1. Navigate to **Menu** > **Networking** > **Virtual Cloud Networks**. Ensure your Compartment is selected.
2. Navigate to the **ManagementVCN** details page and click **Local Peering Gateways** under the resources section.
3. Click the action menu for **mgmt-to-mkt** and click the **Establish Peering Connection** option. Enter the following details:
   a. **VCN Compartment:** *Ensure your Compartment has been selected.*
   b. **VCN:** MarketingVCN
   c. **Local Peering Gateway Compartment:** *Ensure your Compartment has been selected.*
   d. **Unpeered Peer Gateway:** mkt-to-mgmt
   e. Click **Establish Peering Connection**.
4. When the connections are successfully peered, you need to modify the route tables and security lists associated with each subnet to route and allow traffic.
   a. Modify the route tables for **ManagementVCN:**
      - Navigate to Route Tables, click Default Routing Table and Add Route Rules with the following:
        - **Target Type:** Local Peering Gateway
        - **Destination CIDR:** 10.10.0.0/24 (MarketingVCN)
        - **Target Compartment:** *Ensure your Compartment has been selected.*
        - **Target Local Peering Gateway:** mgmt-to-mkt
        - Click **Add Route Rules**.
5. Navigate to Security Lists and add an Ingress security list rule in the default Security lists for ICMP traffic.
   - Navigate to **Security Lists**, click **Default Security List for ManagementVCN**, and perform the following steps:
     – Click **Add Ingress Rules**.

- Add the following:
    - **Source Type:** CIDR
    - **Source CIDR:** 10.10.0.0/24
    - **IP Protocol**: ICMP
    - **Type**: All
    - **Code**: All
    - Click **Add Ingress Rules**.
- Add a second rule:
    - **Source Type:** CIDR
    - **Source CIDR:** 10.20.0.0/24
    - **IP Protocol**: ICMP
    - **Type**: All
    - **Code**: All
    - Click **Add Ingress Rules**.

(In this example, you are only testing ICMP traffic so you are adding an ICMP rule. For TCP traffic, relevant TCP rules can be added.)

a. Modify the route tables for **MarketingVCN:**
    - Navigate to **Route Tables** and click the **Default Routing Table**.
    - Click **Add Route Rules**:
        - **Target Type:** Local Peering Gateway
        - **Destination CIDR:** 10.0.0.0/24 (ManagementVCN)
        - **Target Compartment:** *Ensure your Compartment has been selected.*
        - **Target Local Peering Gateway:** mkt-to-mgmt
        - **Click Add Route Rules**.

6. Navigate to Security Lists and add an Ingress security list rule in the default Security lists for ICMP traffic.
    - Navigate to **Security Lists**, click **Default Security List for MarketingVCN**, and perform the following steps:
        - Click **Add Ingress Rules**.
        - Add the following:
            - **Source Type:** CIDR
            - **Source CIDR:** 10.0.0.0/24
            - **IP Protocol:** ICMP
            - **Type:** All
            - **Code:** All
            - Click **Add Ingress Rules**.

This completes the task of creating local peering connections between the VCNs.

Practice: Test Local VCN Peering

Overview

After the VCN peering connections are established, and all the related security lists and route table entries are populated, you can perform a test using the test Compute instances in your VCNs.

Tasks

1. Ensure you have the Public and Private IP addresses of the following Compute instances:
   - ManagementVM
   - MarketingVM
2. Launch Cloud Shell using the Public IP ssh into the **ManagementVM** Compute instance in the **ManagementVCN**.

```
$ ssh opc@<PublicIPAddress of ManagementVM>
```

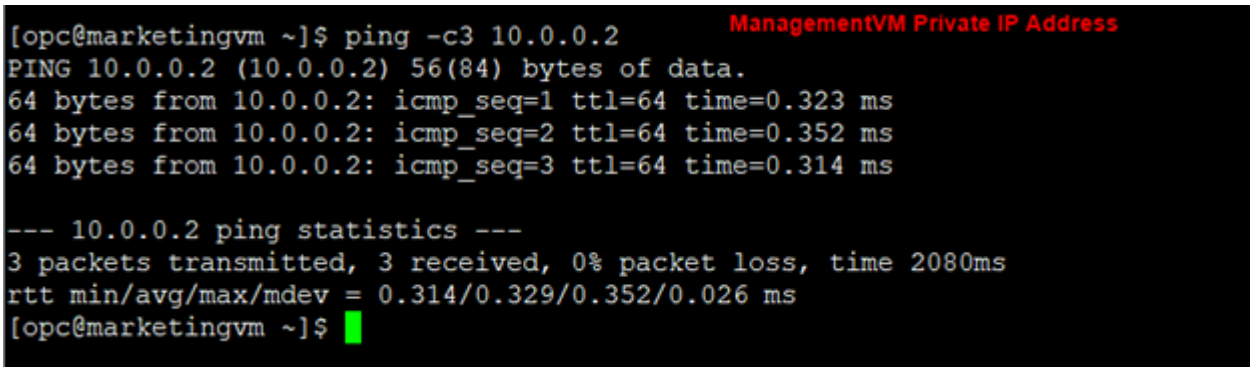
3. After you are logged in to **ManagementVM**, try pinging the **Private IP** of other Compute instances running in MarketingVCN. Observe the following output. You are able to ping and get a response because of the way you have set up local peering in the VCNs.

   Command reference:

```
[opc@managementvm ~]$ ping -c3 <Private-IP of MarketingVM>
```

```
[opc@managementvm ~]$ ping -c3 10.10.0.2        MarketingVM Private IP Address
PING 10.10.0.2 (10.10.0.2) 56(84) bytes of data.
64 bytes from 10.10.0.2: icmp_seq=1 ttl=64 time=0.352 ms
64 bytes from 10.10.0.2: icmp_seq=2 ttl=64 time=0.348 ms
64 bytes from 10.10.0.2: icmp_seq=3 ttl=64 time=0.325 ms
```

4. Now try and perform a similar ping test using the **Private IP** from **MarketingVM**.



This completes the task of testing and confirming that the local VCN peering setup works as expected.