Compute: Create a Web Server on an OCI Compute Instance

Lab 4-1 Practices

Get Started

Overview

The Oracle Cloud Infrastructure (OCI) Compute lets you provision and manage compute hosts, known as instances. You can launch instances as needed to meet your compute and application requirements. In this lab, you will create a web server on a compute instance.

In this lab, you will:

- Launch Cloud Shell
- Generate SSH keys
- Create a Virtual Cloud Network and its components
- Create a compute instance
- Install an Apache HTTP server on the instance
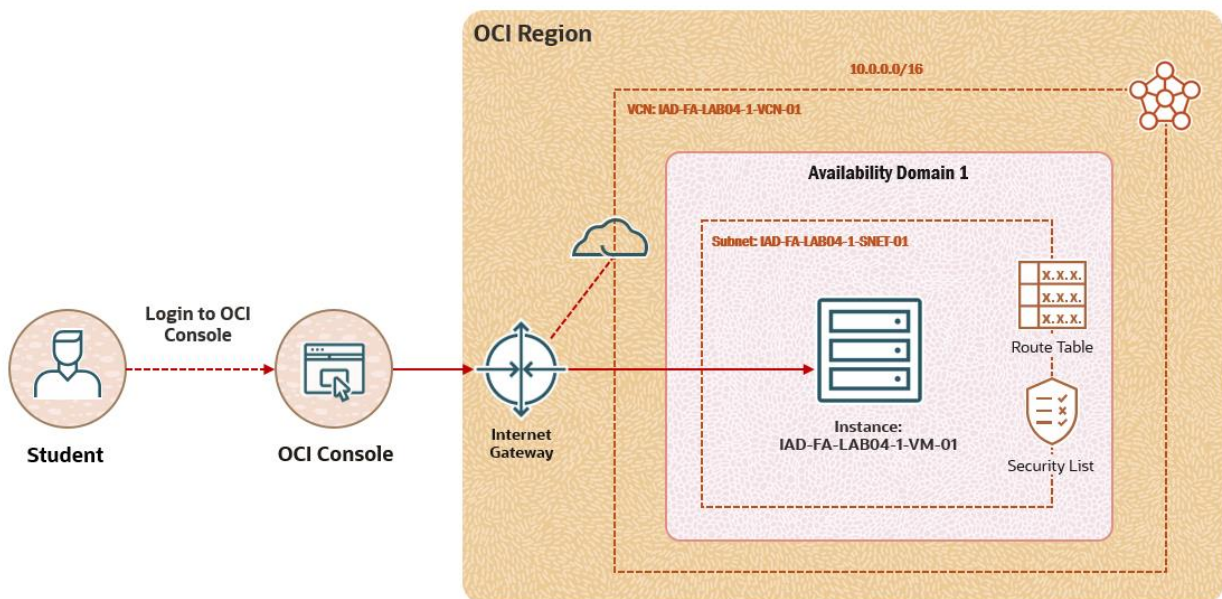
Prerequisites

- You have access to the OCI Console.

Assumptions

- In this lab, we are considering US East (Ashburn, Region Key – IAD) as your region.
- You must be familiar with navigating the OCI Console.

Launch Cloud Shell

The OCI Cloud Shell is a web browser–based terminal accessible from the OCI Console. It provides access to a Linux shell, with a pre-authenticated OCI CLI.

In this practice, you will access Cloud Shell via the OCI Console.

Tasks

1. Sign in to your Oracle Cloud Infrastructure Console.

2. In the Console ribbon at the top of the screen, click the Region icon to expand the menu. Ensure that you are in the correct region, **US East (Ashburn)**.

3. Click the **Cloud Shell** icon next to the Region in the Console ribbon.

    Note: The OCI CLI running in the Cloud Shell will execute commands against the region selected in the Console's region selection menu when the Cloud Shell is started.

    This displays the Cloud Shell in a "drawer" at the bottom of the console.

4. You can use the icons in the top-right corner of the Cloud Shell window to minimize, maximize, and close your Cloud Shell session.

Generate SSH Keys

In this practice, you will generate SSH keys using Cloud Shell.

Tasks

1. From the OCI Console, click the **Cloud Shell** icon next to the region in the Console ribbon.

2. After the Cloud Shell has started, run the following commands:

    ```
    $ mkdir .ssh
    ```

    Important: In case you get an error that says "cannot create director: File exists", you can skip running the first command.

    ```
    $ cd .ssh
    ```

    ```
    $ ssh-keygen -b 2048 -t rsa -f <<sshkeyname>>
    ```

    Replace <<*sshkeyname*>> with **ocifalab4key**. Select the key name you can remember. This will be the key name you will use to connect to the compute instance you create.

    Note: If you receive an error message for the above command, enter the command manually.

    Remember:

    - After entering the third command, press **Enter** twice for no passphrase.

    - Do not include the angle brackets «» and $ symbol when pasting code into Cloud Shell.

3. Examine the two files that you just created by running the following command:

    ```
    $ ls
    ```

    Note: In the output, there are two files, a private key *<<sshkeyname>>* and a public key *<<sshkeyname>>.pub*. Keep the private key safe and don't share its contents with anyone. The public key will be needed for various activities and can be uploaded to certain systems as well as copied and pasted to facilitate secure communications in the cloud.

Create a Web Server on a Compute Instance

4. To list the contents of the public key, run the following command:

```
$ cat <<sshkeyname>>.pub
```

Replace <<*sshkeyname*>> with **ocifalab4key**.

Note: The angle brackets «» should not appear in your code.

5. Copy the contents of the public key as you will require this in a subsequent step. Make sure that you remove any hard returns that may have been added when copying. The `.pub` key should be one line.

Create a Virtual Cloud Network and Its Components

In this practice, you will create a Virtual Cloud Network (VCN), subnet, and Internet gateway and add route rules in the route table.

Tasks

1. From the **Main Menu**, under **Networking**, click **Virtual Cloud Networks**.

2. Click **Create VCN**.

3. In the **Create a Virtual Cloud Network** dialog box, populate the following information:

   a. **Name:** IAD-FA-LAB04-1-VCN-01

   b. **Create in Compartment:** *<your compartment>*

   c. **IPv4 CIDR Blocks:** 10.0.0.0/16 (Press **Enter** to add.)

4. Keep the other options default and click **Create VCN**.

   You can see that the VCN is created successfully.

5. Click **IAD-FA-LAB04-1-VCN-01** VCN to view the details page.

6. Click **Create Subnet**.

7. In the **Create Subnet** dialog box, populate the following information:

   a. **Name:** IAD-FA-LAB04-1-SNET-01

   b. **Create in Compartment:** *<your compartment>*

   c. **Subnet Type:** Regional

   d. **IPv4 CIDR Blocks:** 10.0.1.0/24

   e. **Subnet Access:** Public Subnet

8. Keep the other options default and click **Create Subnet**.

   You can see that the subnet is created successfully, and the state is **Available**.

9. Under **Resources** in the left navigation panel, click **Internet Gateways**.

10. Click **Create Internet Gateway**.

11. In the **Create Internet Gateway** dialog box, populate the following information:

    a. **Name:** IAD-FA-LAB04-1-IG-01

    b. **Create In Compartment:** <*your compartment*>

12. Click **Create Internet Gateway**.

    You can see that the Internet gateway is created successfully and the state is **Available**.

13. Under **Resources** in the left navigation panel, click **Route Tables**.

14. Click **Default Route Table** for IAD-FA-LAB04-1-VCN-01.

15. Click **Add Route Rules**.

16. In the **Add Route Rules** dialog box, populate the following information:

    a. **Target Type:** Internet Gateway

    b. **Destination CIDR Block:** 0.0.0.0/0

    c. **Target Internet Gateway:** IAD-FA-LAB04-1-IG-01

17. Click **Add Route Rules**.

    You can see that the route rule is successfully added in the default Route Table.

18. Navigate back to the **Virtual Cloud Networks** page from the **Main Menu**.

19. Click **IAD-FA-LAB04-1-VCN-01** VCN to view the details page.

20. Under **Resources** in the left navigation panel, click **Security Lists**.

21. Click **Default Security List** for IAD-FA-LAB04-1-VCN-01.

22. Here, you need to open port 80. Click **Add Ingress Rules**.

23. In the **Add Ingress Rules** dialog box, populate the following information:

   a. **Source Type**: CIDR

   b. **Source CIDR**: 0.0.0.0/0

   c. **IP Protocol**: TCP

   d. **Destination Port Range**: 80

   Note: Do not select the **Stateless** check box. The **Source Port Range** field is set to **All** by default.

24. Click **Add Ingress Rule**.

   You can see that the route rule is successfully added.

Create a Compute Instance

In this practice, you will launch a compute instance and connect to it.

Tasks

1. From the OCI Console **Main Menu**, under **Compute**, click **Instances**.

2. Click **Create instance**.

3. In the **Create compute instance** dialog box, populate the following information:

   a. **Name**: IAD-FA-LAB04-1-VM-01

   b. **Create in compartment**: *<your compartment>*

   c. **Placement (Availability domain)**: AD 1

      Click **Show advanced options** and select **On-demand capacity** under Capacity type.

   d. **Image**: Oracle Linux 8

   e. **Shape:** Click **Change Shape** and select the following:

      1) **Instance Type:** Virtual Machine

      2) **Shape Series**: Ampere

      3) **Shape Name:** VM.Standard.A1.Flex

      4) Leave **Number of OCPU** at one.

      5) Leave **Amount of memory (GB)** at six.

      6) Click **Select Shape**.

   f. **Primary network:** Select an existing Virtual Cloud Network.

      1) **Virtual cloud network in *<your compartment>*:** IAD-FA-LAB04-1-VCN-01

      2) **Subnet:** Select an existing subnet.

      3) **Subnet in *<your compartment>*:** IAD-FA-LAB04-1-SNET-01 (regional)

      4) **Public IP address:** Assign a public IPv4 address.

g. **Add SSH keys:** Paste public keys.

h. **SSH Keys:** *<public key>* (Paste the public key which you copied in Step 5 of Generate SSH Keys practice.)

Note: Keep the default option for **Boot volume**.

4. Click **Create**.

   You will see that the instance is created successfully, and the state is **Running**.

5. Copy the public IP corresponding to the **IAD-FA-LAB04-1-VM-01** instance and paste it in the Notepad.

6. Click the **Cloud Shell** icon next to Region at the top of the screen.

7. Run the following command using SSH to connect to your instance:

   `$ ssh -i <private_key_file> <username>@<public-ip-address>`

   a. The */home/username/.ssh/private_key_file* is the full path and name of the file that contains the private key associated with the instance you want to access.

   b. The *<username>* is the default user `opc`.

   c. The *<public-ip-address>* is the public IP address of the instance.

   Note: Enter **yes** in response to "Are you sure you want to continue connecting (yes/no)?"

You are now connected to the instance IAD-FA-LAB04-1-VM-01.

Create a Web Server on a Compute Instance

Install an Apache HTTP Server on the Instance

The HTTP server is an open-source web server developed by the Apache Software Foundation. The Apache server hosts web content and responds to requests for this content from web browsers such as Chrome or Firefox.

In this practice, you will install an Apache HTTP web server and connect to it over the public Internet.

Tasks

1. On the OCI Console, click the **Cloud Shell** icon at the top of the screen.

2. While connected to your compute instance via SSH, run the following commands:

    a. Install Apache HTTP:

        ```
        $ sudo yum install httpd -y
        ```

    b. Start the Apache server and configure it to start after system:

        ```
        $ sudo apachectl start
        ```

        ```
        $ sudo systemctl enable httpd
        ```

    c. Run a quick check on Apache configurations:

        ```
        $ sudo apachectl configtest
        ```

    d. Create firewall rules to allow access to the ports on which the HTTP server listens:

        ```
        $ sudo firewall-cmd --permanent --zone=public --add-
        service=http
        ```

        ```
        $ sudo firewall-cmd --reload
        ```

    e. Create an index file for your web server.

        ```
        $ sudo bash -c 'echo This is my Web-Server running on Oracle
        Cloud Infrastructure >> /var/www/html/index.html'
        ```

3. Open your browser and enter `http://Public-IPAddress` in the address bar (the IP address of the compute instance).

You should see the index page of the web server we created in the second step (last point).

```
This is my Web-Server running on Oracle Cloud Infrastructure
```