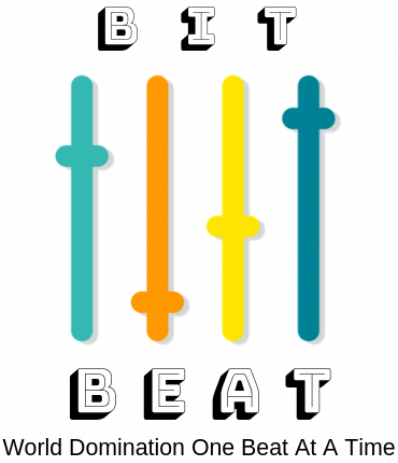
Lab 1: Launching, Configuring and Login KVM instance

Version: 1.0

READ ME



As one of the newest employees at **BitBeat** you've been asked to provision a webserver for your company to deploy the newest version of its product **BitBanger** which is set to take the record industry and the world by storm.

The product team is currently building the **BitBanger** application and has asked you for some help. At this point, they need to be able to deploy the early versions of their product to a virtual machine so they can test out if everything works.

The Product Team sent you the following requirements:

- We need a webserver
- It must be a Linux machine
- It must be configured as an Apache HTTP Server ("httpd")
- We want it to be inexpensive
- The webserver must be publicly accessible (Public IP)

BEFORE GETTING STARTED

Here's some important information to know before starting this hands-on activity.

Activity time: 60 min

Requirements: You must have to be a part of a n active project in Chameleon cloud account. You can find the link for Chameleon Cloud portal here link.

Getting help: If you experience any issues as you complete this activity, please ask your instructor for assistance.

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DID YOU KNOW

Chameleon is an NSF-funded testbed system for Computer Science experimentation. Main purpose, it is designed to be deeply reconfigurable, with a wide variety of capabilities for researching systems, networking, distributed and cluster computing and security. It's features include Bare metal access via cloud, wide variety of hardware like NVMe, GPUs/FPGAs, SDN/OpenFlow etc.

Task overview:

Roll up your sleeves. In this hands-on activity you are going to build a proof of concept (POC) cloud webserver. In order to deliver this POC, you will need to: **Create and Launch a m1.small KVM instance** using a **CentOS** source that is configured to be a webserver.

An instance source is the template used to create an instance. You can use an image, a snapshot of an instance (image snapshot), a volume or a volume snapshot. When you launch an instance, you can choose any flavor for respective soPurce. Flavors manage the sizing for the compute, memory and storage capacity of the instance you need to run your workloads, apps and services.

Task objectives:

- Launch and configure an KVM instance
- Create Floating IP for public access
- Update the security groups
- Create and test a rule

Learning outcomes

Once you've completed this activity you should be able to:

- Build a Chameleon KVM webserver
- Create a key pair
- Know how to login into the KVM instance using console

Let's Get Started!

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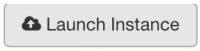
DID YOU KNOW

To effectively support Computer Science experiments, Chameleon offers bare metal reconfigurability on most of the hardware. To provide easy access to educational users, two SCUs at TACC (one sixth of the testbed) are configured with OpenStack KVM.

Launch KVM instance

Follow the below steps to complete this lab.

1. In chameleoncloud.org portal find and select **Dashboard**
2. Select and click on **active project**
3. Select **KVM** drop **Experiment** dropdown list.
4. Click on **Compute** from **Project** dropdown
5. Select and click on **Instances**
6. Click on **Launch Instance** button 

then configure
7. Give instance name **BitBeatServer** and click on **Next**.
8. Select **CC-CentOS7** source by clicking on respective up arrow button  and click on **Next**.
9. Select **m1.small** from **Flavor** and click **Next**.
10. Select **sharednet1** from **Networks** and click **Next**.
11. Click on **Next**.
12. Select **default security group** and click on **Next**.
13. Click on **Create Key Pair**, give the key name as **BeatKVMkey** and choose **SSH key** as key type. Click on **Create Keypair** at bottom, select **done** and then click on **Next**. Or you can use any existing Key Pair.
14. Copy the following code in **customization script** under **configuration** and click **Next**.
    a. This is #bash

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```
#!/bin/bash
yum -y install httpd
systemctl enable httpd
systemctl start httpd
echo '<html><h1>Hello Earthling, Take me to your
leader! </h1></html>' > /var/www/html/index.html
```

Here's what this bash script does, see if you can identify which actions each line of script executes:

I. Installs, enables, and starts the Apache HTTP Server.
II. Creates an index.html page with a message.

15. Click Next, Next, Next then click on **Launch Instance** button.

Wait for your Instance Task to display as **Running**. It will take few minutes.

Important Info
Chameleon only stores the public key for each SSH key pair. Do not upload your private key to the portal!

DID YOU KNOW

Instances on Chameleon are assigned a fixed IP address that can be used for local connectivity as well as NAT access to the public Internet. A publicly accessible IPv4 address (Floating IP address) is required in order to access Chameleon instances from the Internet or host public services.

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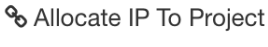
Create Floating IP

1. Click in Floating IPs under Project dropdown.
2. Click on Allocate IP To Project button 

.
3. Add **IP for BitBeatServer** in **description** and click on **Allocate IP**.
4. Click on **Associate** under Actions.
5. Select a port (**BitBeatServer: IP**) from dropdown and click on Associate.

Test 1

Copy the public IP of **BitBeatServer** and paste in browser tab.

You should see the message ***Hello Earthling! Take me to your leader!***

Login into KVM instance

1. Navigate instances and click on **BitBeatServer** instance.
2. Click on **BitBeatServer** instance.
3. Click on **console** and you will be inside this KVM instance.
4. Copy the public IP of this instance.
5. Type **ifconfig** command in the console and you will see configuration of network interface.

Now ping your **BitBeatServer** instance with its **Public IP** from your laptop's terminal /command prompt with the help of below command.

ping (public IP)

We successfully launched our **BitBeatServer Webserver** but when we tried to ping the **Public IP** address, you won't be able to access this from terminal. It is our job to figure out how to fix this issue.

Look back at the previous steps and read about Security Groups. By default, firewalls rules do not allow any ingress ports to access. To create any firewall rule in security group, you have to update it externally.

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Update your Security Group

1. Click on Security Groups under Network.
2. Select default security group and click on **Manage Rules.**
3. Click in **Add Rule** and choose **All ICMP** from **Rules** dropdown and select **CIDR** under **Remote** and click on **Add**.

Test 2

Test your rule

Open your terminal or command prompt and type

ping (public IP)

Now, you should be able to ping it successfully.

Great job!

Let's review

You have completed the activity and have successfully launched KVM instance in Chameleon cloud.
In this activity you:

- Launched and configured an KVM instance
- Created Floating IP for public access
- Updated the security groups

Test your knowledge

1. What is the purpose of **Chameleon Cloud**? _____
2. What is instance source? _____
3. What is the purpose of Floating IP address? _____
4. Do firewall rules allow any ingress ports to access, by default? _____
5. What would you do if you are unable to ping the instance's IP?_____

Important Info
The Chameleon floating IP address pool is a

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Bonus Activity – Clean Up Your Environment

You are requested to get rid of the testing machine you created.

Steps-

1. Find and select your **BitBeatServer**
2. Click on Delete instance.
3. Find your Floating IP and click on Release Floating IPs