Cloud Computing Exercise #2

Launch, connect to, stop, restart and terminate an EC2 instance

Prerequisites:

* AWS account and a web browser
* PUTTY (or another SSH client) installed on your local machine.

A. Launch an EC2 instance

1. Sign in to your account as the non-root admin user at https://console.aws.amazon.com/ (select “IAM user”) and provide your account ID, username and password that you created last class.
2. Go to the search bar and click on EC2 and select “Launch instance”.
3. Give a name to your instance. In “Applications and OS Images”, Select an AMI, e.g. “Amazon Linux 2023 AMI”. Make sure it is free tier eligible to avoid extra charges.
4. Choose an instance type. For the free tier, pick t2.micro.
5. Scroll down to see “Configure Storage”. See the options for the EBS root volume setup (and possibly additional volumes). Set the “Delete on Termination” box to “Yes” so that the EBS volume would be deleted when the instance is terminated. Then select “Add Tags”.
6. Create a new tag with key “Name” and value “My test VM”. Then select “Configure security group”.
7. Review the settings, click “Launch” and select your EC2 key pair you created previously (in last class) This key pair will be used to log into the instance. If you haven’t created it already, select the option : “Create a new key pair” in.ppk (for Windows) and .pem (for Linux)
8. Click on the instance id (starts with “i-…”) that you just created and click on “security”. Look at the security group settings to see the format of the firewall rules. You do not need to change anything here. Make sure port 22 is open for SSH utility.
9. Go back to the EC2 dashboard and select “Instances”. Check the status of your instance – after a while, it should say “Running”. If you click on the instance ID, you will see the details of your instance. Note the public and the private IP addresses (write them down).

B. Connect to the EC2 instance via SSH

1. Click on “Connect” to get to the information necessary to connect to your instance. Note the important information: public IP address and login (user) name.
2. Click on “SSH Client” and there must be instructions on how to access your instance on your local machine.
3. Windows users: Download Putty (64 but x86 installer) at <https://www.putty.org/>

Start PUTTY on your local machine and provide the instance’s public IP address (or public hostname). Make sure that the protocol is SSH and the port number is 22. Next, go to Connection/SSH/Auth and locate the .ppk key file under “Private key file for authentication” by clicking on the “Browse” button and finding the key file. Finally, click “Open” to start your SSH session with your instance. You can create a saved session and “save” so that you don't have to follow the above steps again. It should seem something like this:

A computer screen shot of a computer

Description automatically generated

A computer screen shot of a black screen

Description automatically generated

Linux Method:

Create a Key Pair in .pem format when you have linux while launching the instance

Right click and select the open terminal in the path wherever your key pair is stored.

Make sure you have the permissions for the key file. Use command “chmod 0400 xyz.pem”

To ssh, run the command: “*ssh -i xyz.pem ec2-user@public-ip”*

A screenshot of a computer

Description automatically generated

Apple Mac users: Mac is a UNIX-like OS, and has a command-line SSH client already installed on it. It will be assumed that the name and location of the EC2 key file (downloaded and stored in the previous lab) is ~/aws/mykey.pem. If the location/name of your key file is different, adjust the below shell commands accordingly.

* Start a terminal window on your machine.
* Change the permissions on your key file such that only you can access it.

Type: chmod go-r ~/aws/mykey.pem

* Use the command line SSH client to connect to your instance.

Type: ssh -i ~/aws/mykey.pem centos@<instance IP address>

Here, <instance IP address> is the public IP address of your EC2 instance.

1. You should see the OS prompt and should be able to issue commands like “pwd” or “ls”.

C. Monitor the EC2 instance

1. Go back to the instance summary page, scroll down, and review the instance details. Then, select the “Monitoring” tab and go through the available instance metrics provided by AWS. Check the displayed time period length and set it to 2/15/30 minutes. You may have to wait a few minutes and may have to reload the webpage before the metrics are updated. You can also check/modify the metric refresh interval and manually refresh the graphs.
2. Issue a number of commands that generate some CPU usage and network traffic (For example you can use the command “stress”. Make sure you have installed it. For Windows: sudo yum install stress, For Linux: sudo get-apt install stress). Then, wait a little and check the CPU utilization and network traffic metrics and see how they have changed.
3. Select the CPU utilization metric graph, click on the menu icon (upper right corner of the mini-graph) and select “View in metrics”. A new browser tab will open with an enlarged graph. Do the same for the “Network packets in (bytes)” metric. Look at the graphs, hover over them with the mouse and read off the metric values.
4. Leave the SSH session, by entering “exit” on the command line or closing the SSH window.

D. Stop, restart and terminate the EC2 instance

1. Go back to the instance summary page in AWS, and stop your instance by clicking on “Instance State” and selecting “Stop Instance”. Your instance will stop in a few seconds. You may have to reload the webpage to see your instance in stopped state.
2. Start your instance again (“Instance state/Start instance”). Your instance will start in a few seconds. You may have to reload the webpage to see your instance’s running parameters.
3. Note the public and private IP addresses for the new running instance. Are they different from the addresses during the previous (first) run?
4. Start PUTTY on your local machine and log into your instance similar to Step 12 (user the new public IP address). After logging in, poke around a little and then close the SSH session.
5. The last step is to terminate your instance. Click on “Instance state” and select “Terminate”. Your instance should shut down and get terminated in a few seconds. The status of the instance will become “Terminated” in a few seconds.

D. Clean up after yourself

1. Verify that your instance has been terminated successfully.
2. Log out of AWS.