How To use the CS50 Appliance in your AWS environment

Under Construction, sorry for the inconvenience

This is a guide for those students having an AWS Educate account to run an instance out of the CS50 appliance that SEAS Computing put in the AWS cloud.

Step-by-step guide

Once you get your aws educate account, please follow these steps to get the instance running:

1. Go to the EC2 part of your AWS account in the upper left corner:

2. Choose the community AMI and search for “SEAS CS50”
3. Once in the EC2 console, choose Launch Instance and choose the size

Step 2: Choose an Instance Type

Amazon EC2 provides a wide selection of instance types optimized to fill different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capability, and give you the flexibility to choose the appropriate mix of resources for your applications. Learn more about instance types and how they can meet your computing needs.

Filter by: All instance types  Current generation  Shareable Colocation

Currently selected: 12 mini (Notable: EC2, 2 CPU, 2 GB, 2 x 1 GB memory, 1 GB storage, 1x1.75 GB)

<table>
<thead>
<tr>
<th>Family</th>
<th>Type</th>
<th>vCPUs</th>
<th>Memory (GB)</th>
<th>EBS only</th>
<th>EBS-Optimized Available</th>
<th>Network Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>General purpose</td>
<td>m1.small</td>
<td>1</td>
<td>1</td>
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<td>-</td>
<td>Low to Moderate</td>
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<td>4</td>
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<td>-</td>
<td>Low to Moderate</td>
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<tr>
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<td>2</td>
<td>6</td>
<td>EBS only</td>
<td>-</td>
<td>Low to Moderate</td>
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<tr>
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<td>6</td>
<td>EBS only</td>
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<td>Moderate</td>
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<td>10 GigE</td>
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<td>6</td>
<td>EBS only</td>
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<td>General purpose</td>
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<td>6</td>
<td>EBS only</td>
<td>-</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

4. REMEMBER that the bigger the instance is, the more money will consume, take a look at the aws_calculator

5. Next step is to configure the instance settings, your VPC default configuration is going to be simpler

1. Choose your default VPC and default Subnet

2. Enable the Auto-assign Public IP or you will not be able to access it!

3. By selecting the “Enable Termination protection”, you will have to double check when terminating the instance

4. Leave the tenancy as it is (shared) and make sure you scroll down to get the advanced part of the configuration!

5. Here you can find some tips on how to create your keys from windows ssh_keys_windows You will need to add here your ssh PUBLIC key

MAKE sure you add this lines in the User Data or you will not be able to access your instance!!

#cloud-config
hostname: cs50
manage_etc_hosts: false
users:
  - name: ubuntu
    ssh-authorized-keys:
      - ssh-rsa < PASTE YOUR PUBLIC ssh key>

6. Leave this setting as it is, magnetic is fast enough
Step 4: Add Storage
Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and instance store volumes to your instance, or add the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. Learn more about storage options in Amazon EC2.

<table>
<thead>
<tr>
<th>Type</th>
<th>Device</th>
<th>Snapshot</th>
<th>Size (GiB)</th>
<th>Volume Type</th>
<th>IOPS</th>
<th>Delete on Termination</th>
<th>Encrypted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Root</td>
<td>/dev/sda1</td>
<td>snap-4da8483f</td>
<td>20</td>
<td>Magnetic</td>
<td>N/A</td>
<td>✓</td>
<td>Not Encrypted</td>
</tr>
</tbody>
</table>

- **General Purpose (SSD)** volumes provide the ability to burst to 3000 IOPS per volume, independent of volume size, to meet the performance needs of most applications and also deliver a consistent baseline of 3 IOPS/GiB. Set my root volume to General Purpose (SSD).
- Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. Learn more about free usage tier eligibility and usage restrictions.

7. Add a name for your instance so that you can find it easily among the others

8. On a regular basis, machines are attacked, please make sure your firewall (security group) is set to protect your machine from unwanted access.

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Here you have the list of network addresses from Harvard (you at class)

- 65.112.10.0/23 is Harvard University wireless network
- 65.134.204.0/24 is eduroam wireless
- 65.112.14.0/24 is classroom
- 140.247.0.0/16 is for the cabled ones
- 128.103.0.0/16 are the vpn networks

Save this security group for later use.
9. Next you will be able to change the storage type, SSD is more expensive, this appliance would not really benefit from it, but it is your decision

10. This is an important step, since you already put your keys in the clout init configuration, you don't need to do it again and you can safely choose NO KEY PAIR

11. You will get a confirmation and if you click on the instance id, you will be able to see in the console the status of the creation
You can see the public ip of the machine and after the status checks are passed, you'll be able to ssh to it with a simple 

1. `ssh ubuntu@<IP_ADDRESS>`

2. You may need to type your passphrase now

You can access the instance using VNC, you will get the full desktop experience issuing the following command against the instance:

1. From a terminal issue:
   1. `ssh -i .ssh/your_private_key ubuntu@<IP_ADDRESS>`
   2. Then from your favorite vncviewer, set it up as:
      1. server : localhost
      2. port : 5901
      3. password : crimson
   3. You can kill the server as:
      1. `ssh -i .ssh/your_private_key ubuntu@<IP_ADDRESS>`

3. Once you are done with your work, you should stop the machine so that it doesn't consume money.

4. If you want to terminate the instance (if you selected the termination protection, you will need to disable it)
Terminate Instances

Warning
On an EBS-backed instance, the default action is for the root EBS volume to be deleted when the instance is terminated. Storage on any local drives will be lost.

Are you sure you want to terminate these instances?

These instances have Termination Protection and will not be terminated. Use the Change Termination Protection option from the instances screen Actions menu to allow termination of these instances.

i-1fda3bc (mycs50, ec2-54-236-229-36.compute-1.amazonaws.com)
Now you can terminate the instance.

Related articles

- How To use the CS50 Appliance in your AWS environment