

## Module 4: Ansible on Cloud

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### Demo Document - 2

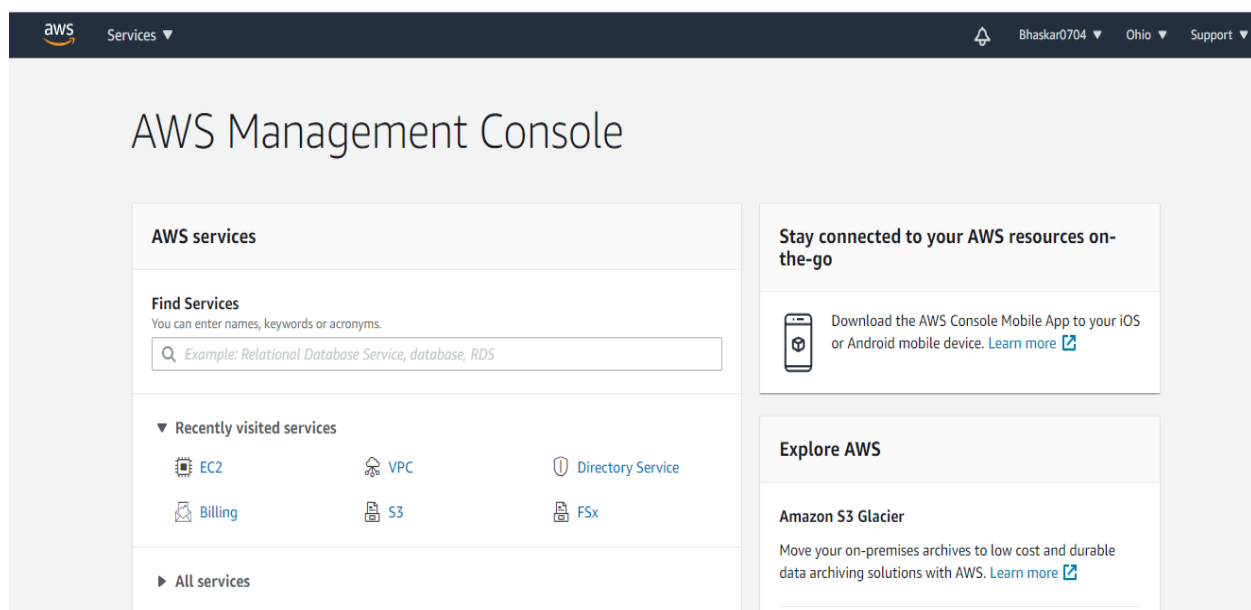
## Demo: Configuration of Ansible on EC2 Amazon Linux EC2.

### Problem Statement:

### Part 1 – How to create and launch Amazon Linux EC2 Host.

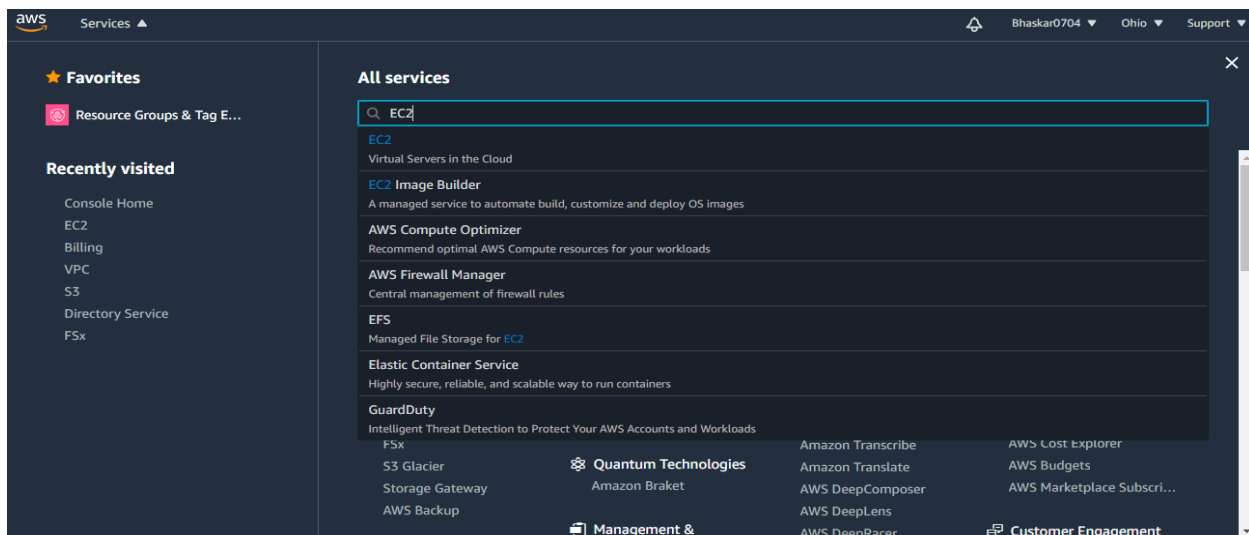
#### Steps

1. Login to **AWS** console using URL - <http://aws.amazon.com/> with your USER ID and Password and select '**Ohio**' region (**us-east-2**) from the list.

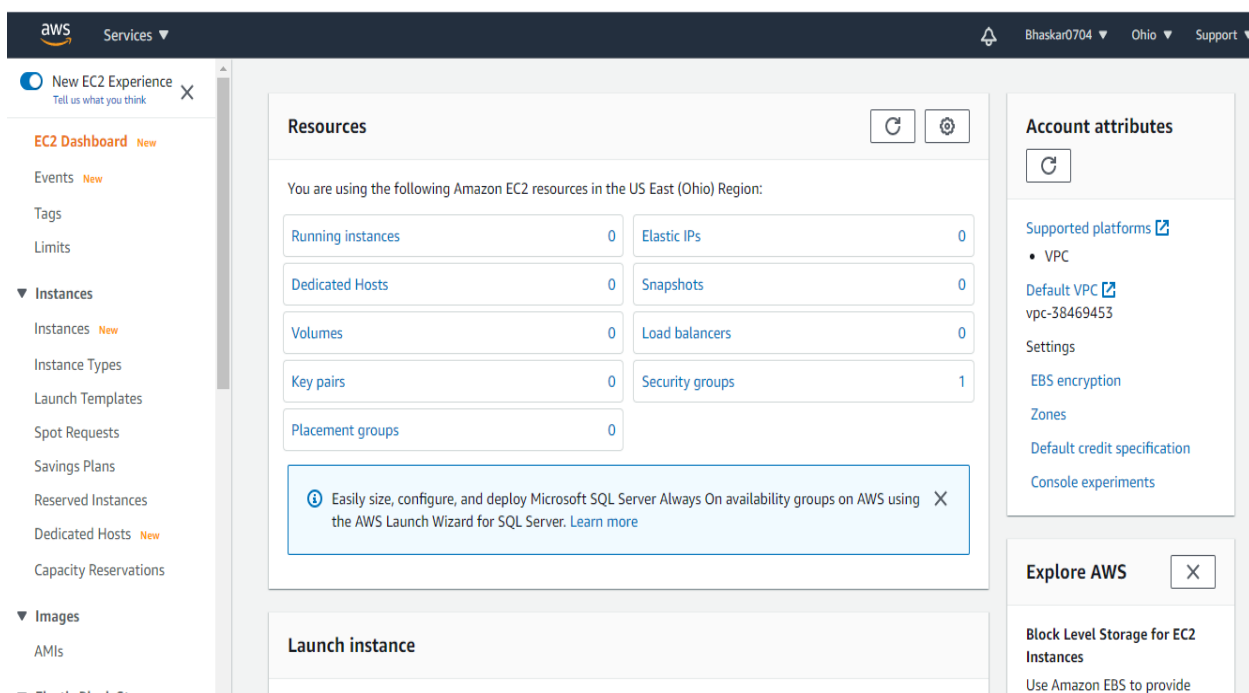


2. Search for “**EC2**” service in Services panel and select it.

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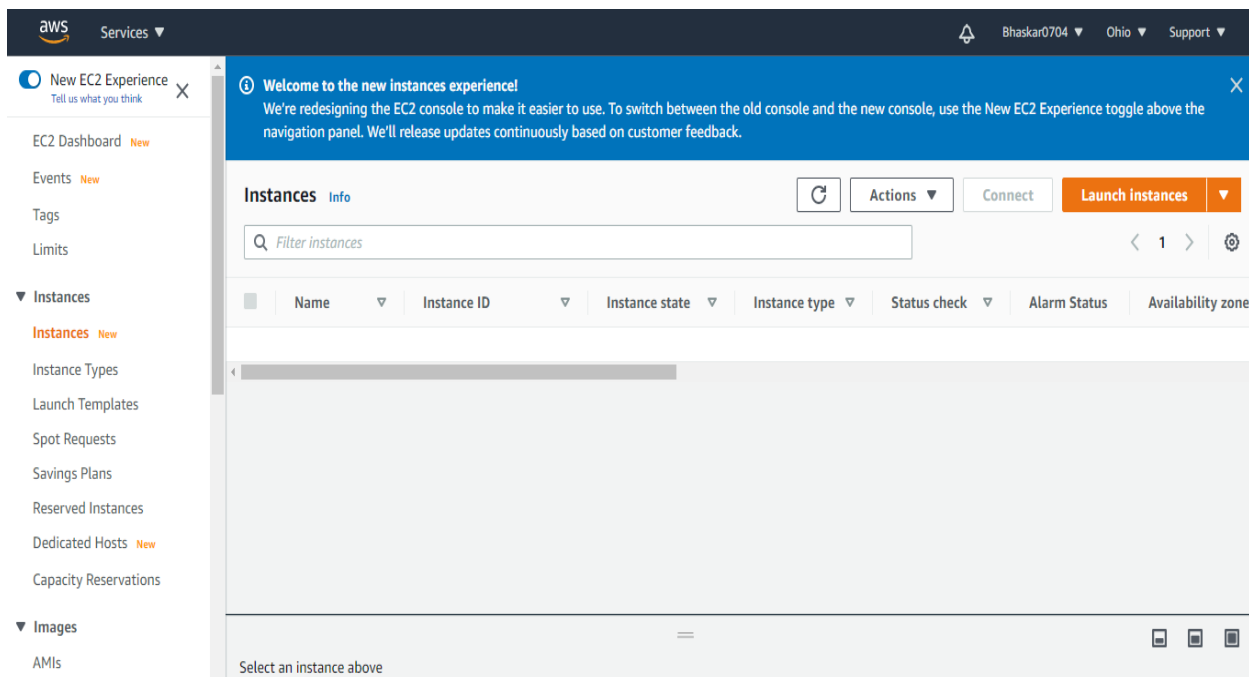


3. You will be navigated to EC2 Home page. Click on **'Instances'** from EC2 Dashboard item list.

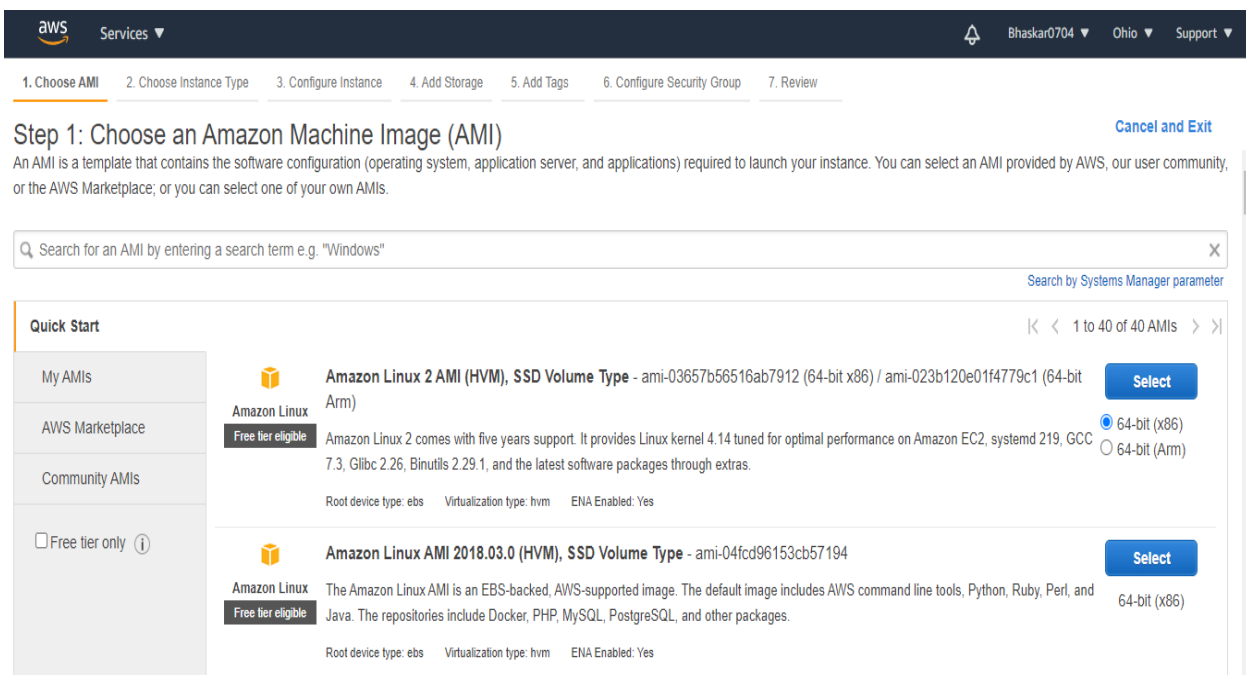


4. You are now on EC2 Instance home page, click on **'Launch Instance'** .

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### 5. Select 'Amazon Linux 2 AMI (HVM)' image from the AWS AMI options.



### 6. Select 't2.micro' instance type from the listed options and click **NEXT**.

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Ohio

Support

1. Choose AMI

2. Choose Instance Type

3. Configure Instance

4. Add Storage

5. Add Tags

6. Configure Security Group

7. Review

### Step 2: Choose an Instance Type

Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, 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 [Show/Hide Columns](#)

Currently selected: t2.micro (Variable ECUs, 1 vCPUs, 2.5 GHz, Intel Xeon Family, 1 GiB memory, EBS only)

	Family	Type	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance	IPv6 Support
<input type="checkbox"/>	General purpose	t2.nano	1	0.5	EBS only	-	Low to Moderate	Yes
<input checked="" type="checkbox"/>	General purpose	t2.micro Free tier eligible	1	1	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.small	1	2	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.medium	2	4	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.large	2	8	EBS only	-	Low to Moderate	Yes

Cancel Previous Review and Launch Next: Configure Instance Details

### 7. Fill the Instance configuration details as mentioned in screenshot.

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1. Choose AMI

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7. Review

### Step 3: Configure Instance Details

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

Number of instances

1

[Launch into Auto Scaling Group](#)

Purchasing option

☐ Request Spot instances

Network

vpc-38469453 (default)

Create new VPC

Subnet

subnet-fd5c6f87 | Default in us-east-2b

Create new subnet

Auto-assign Public IP

Use subnet setting (Enable)

Placement group

☐ Add instance to placement group

Capacity Reservation

Open

Domain join directory

No directory

Create new directory

IAM role

None

Create new IAM role

8. Complete the remaining Instance configuration details as mentioned in screenshot and click on **NEXT** button.

**Step 3: Configure Instance Details**

**Shutdown behavior** ⓘ Stop

**Stop - Hibernate behavior** ⓘ ☐ Enable hibernation as an additional stop behavior

**Enable termination protection** ⓘ ☒ Protect against accidental termination

**Monitoring** ⓘ ☐ Enable CloudWatch detailed monitoring  
Additional charges apply.

**Tenancy** ⓘ Shared - Run a shared hardware instance  
Additional charges will apply for dedicated tenancy.

**Elastic Inference** ⓘ ☐ Add an Elastic Inference accelerator  
Additional charges apply.

**Credit specification** ⓘ ☐ Unlimited  
Additional charges may apply

**File systems** ⓘ Add file system [Create new file system](#)

9. Now add 'Storage' for your EC2 Instance and click '**NEXT**'.

**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 edit 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.

Volume Type ⓘ	Device ⓘ	Snapshot ⓘ	Size (GiB) ⓘ	Volume Type ⓘ	IOPS ⓘ	Throughput (MB/s) ⓘ	Delete on Termination ⓘ	Encryption ⓘ
Root	/dev/xvda	snap-05741358b44a33b45	8	General Purpose SSD (gp2)	100 / 3000	N/A	<input checked="" type="checkbox"/>	Not Encrypt

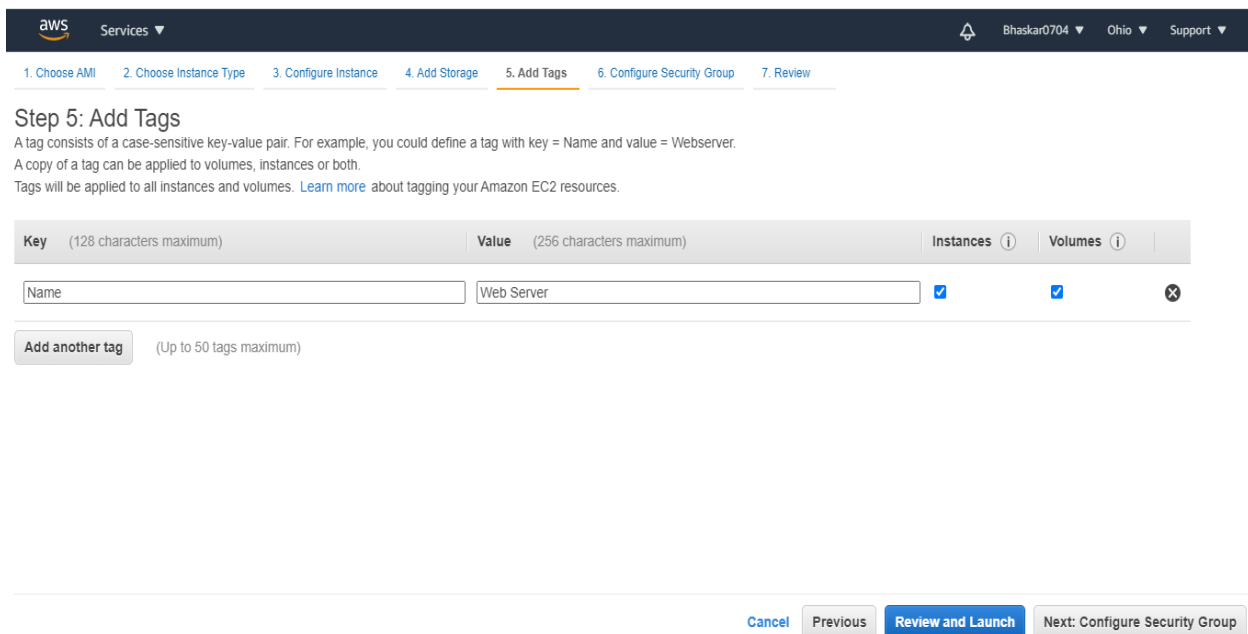
Add New Volume

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.

[Cancel](#) [Previous](#) [Review and Launch](#) [Next: Add Tags](#)

10. Add 'Tags' to your EC2 Instance and click '**NEXT**'.

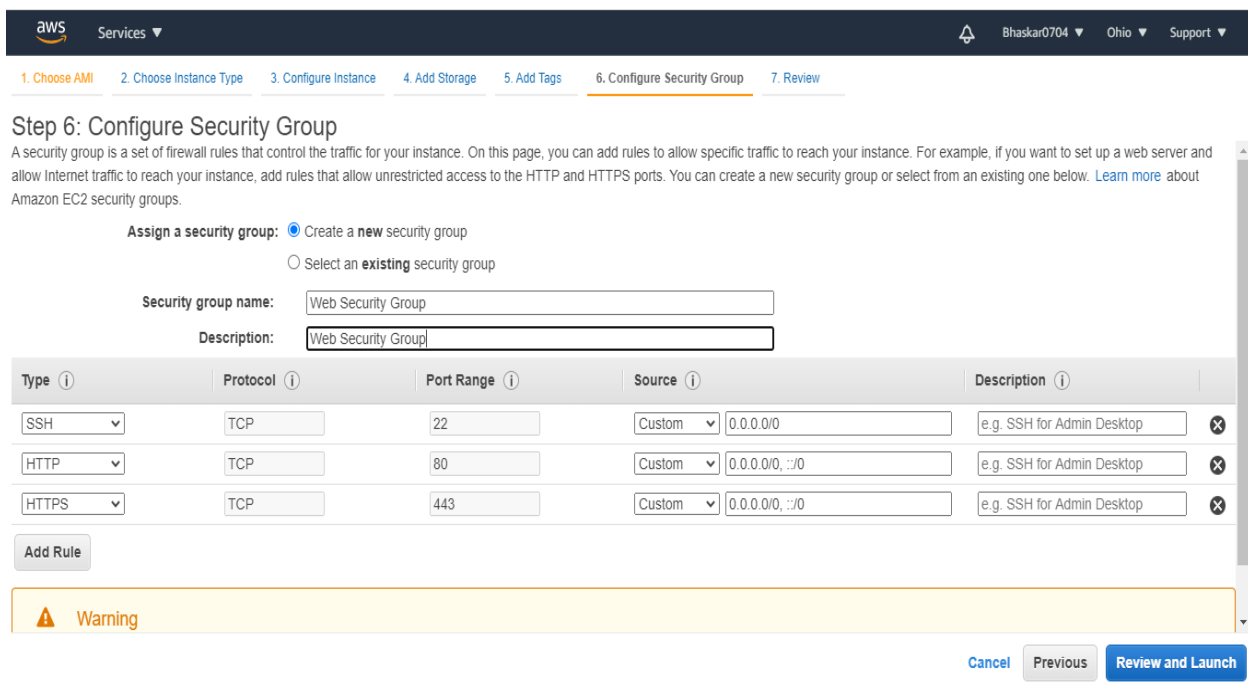
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The screenshot shows the 'Step 5: Add Tags' page in the AWS Management Console. The breadcrumb trail at the top includes: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Add Tags (highlighted), 6. Configure Security Group, and 7. Review. The page title is 'Step 5: Add Tags'. Below the title, there is explanatory text: 'A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver. A copy of a tag can be applied to volumes, instances or both. Tags will be applied to all instances and volumes. [Learn more](#) about tagging your Amazon EC2 resources.'

The main form area has two columns: 'Key' (128 characters maximum) and 'Value' (256 characters maximum). There are also checkboxes for 'Instances' and 'Volumes'. A single tag is added with the key 'Name' and value 'Web Server'. Below the form, there is a button 'Add another tag' with the note '(Up to 50 tags maximum)'. At the bottom right, there are navigation buttons: 'Cancel', 'Previous', 'Review and Launch' (highlighted in blue), and 'Next: Configure Security Group'.

11. Create new 'Security group' for you EC2 Instance. Provide security group name, description and Add **SSH**, **HTTP** and **HTTPS** rules and click on 'Review and Launch' button.



The screenshot shows the 'Step 6: Configure Security Group' page in the AWS Management Console. The breadcrumb trail at the top includes: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Add Tags, 6. Configure Security Group (highlighted), and 7. Review. The page title is 'Step 6: Configure Security Group'. Below the title, there is explanatory text: 'A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. [Learn more](#) about Amazon EC2 security groups.'

The 'Assign a security group' section has two radio buttons: 'Create a new security group' (selected) and 'Select an existing security group'. Below this, there are input fields for 'Security group name' (containing 'Web Security Group') and 'Description' (containing 'Web Security Group').

The main table lists the configured rules:

Type	Protocol	Port Range	Source	Description
SSH	TCP	22	Custom 0.0.0.0/0	e.g. SSH for Admin Desktop
HTTP	TCP	80	Custom 0.0.0.0, ::0	e.g. SSH for Admin Desktop
HTTPS	TCP	443	Custom 0.0.0.0, ::0	e.g. SSH for Admin Desktop

Below the table is an 'Add Rule' button. At the bottom, there is a yellow warning box with a triangle icon and the text 'Warning'. At the bottom right, there are navigation buttons: 'Cancel', 'Previous', and 'Review and Launch' (highlighted in blue).

12. Review the Instance details and click on 'Launch' Button.

aws Services

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1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

### Step 7: Review Instance Launch

▼ AMI Details [Edit AMI](#)

**Amazon Linux 2 AMI (HVM), SSD Volume Type - ami-03657b56516ab7912**

**Free tier eligible** Amazon Linux 2 comes with five years support. It provides Linux kernel 4.14 tuned for optimal performance on Amazon EC2, systemd 219, GCC 7.3, Glibc 2.26, Binutils 2.29.1, and the latest software packages through extras.

Root Device Type: ebs Virtualization type: hvm

▼ Instance Type [Edit instance type](#)

Instance Type	ECUs	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance
t2.micro	Variable	1	1	EBS only	-	Low to Moderate

▼ Security Groups [Edit security groups](#)

Security group name: Web Security Group  
Description: Web Security Group

Type	Protocol	Port Range	Source	Description

[Cancel](#) [Previous](#) [Launch](#)

13. Create a new **Key pair** and provide Key pair name. Then **download** the Key Pair and click on '**Launch Instances**' Button.

launch

Select an existing key pair or create a new key pair

A key pair consists of a **public key** that AWS stores, and a **private key file** that you store. Together, they allow you to connect to your instance securely. For Windows AMIs, the private key file is required to obtain the password used to log into your instance. For Linux AMIs, the private key file allows you to securely SSH into your instance.

Note: The selected key pair will be added to the set of keys authorized for this instance. Learn more about [removing existing key pairs from a public AMI](#).

Create a new key pair

**Key pair name**

OHIO\_Key\_Pair\_01

[Download Key Pair](#)

You have to download the **private key file** (\*.pem file) before you can continue. **Store it in a secure and accessible location.** You will not be able to download the file again after it's created.

[Cancel](#) [Launch Instances](#)

14. Now you can see your launch status. Scroll down and click on '**View Instance**' Button.



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### Launch Status

✓

Your instances are now launching

The following instance launches have been initiated: [i-070ae0bc7b7af5d94](#) [View launch log](#)

ℹ

Get notified of estimated charges

Create billing alerts to get an email notification when estimated charges on your AWS bill exceed an amount you define (for example, if you exceed the free usage tier).

#### How to connect to your instances

Your instances are launching, and it may take a few minutes until they are in the **running** state, when they will be ready for you to use. Usage hours on your new instances will start immediately and continue to accrue until you stop or terminate your instances.

Click **View instances** to monitor your instances' status. Once your instances are in the **running** state, you can **connect** to them from the Instances screen. [Find out](#) how to connect to your instances.

▼ Here are some helpful resources to get you started

- How to connect to your Linux instance
- Learn about AWS Free Usage Tier
- Amazon EC2: User Guide
- Amazon EC2: Discussion Forum

While your instances are launching you can also

15. After few seconds you will see your **EC2 Linux machine** will be up and running. Scroll down to see Instance Details.

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New EC2 Experience

EC2 Dashboard

Events

Tags

Limits

Instances

Instances

Instance Types

Launch Templates

Spot Requests

Savings Plans

Reserved Instances

Dedicated Hosts

Capacity Reservations

Images

AMIs

Elastic Block Store

Instances (1/1)

Info

Filter instances

1

Actions

Connect

Launch instances

<input checked="" type="checkbox"/>	Name	Instance ID	Instance state	Instance type	Status check	Alarm Status	Availability zone
<input checked="" type="checkbox"/>	Web Server	i-070ae0bc7b7af5d94	Running	t2.micro	Initializing	No alarms	us-east-2b

Instance: i-070ae0bc7b7af5d94 (Web Server)

Details

Security

Networking

Storage

Status Checks

Monitoring

Tags

▼ Instance summary

Instance ID

i-070ae0bc7b7af5d94 (Web Server)

Public IPv4 address

18.218.221.248 | [open address](#)

Private IPv4 addresses

172.31.16.139

Instance state

Running

Public IPv4 DNS

ec2-18-218-221-248.us-east-2.compute.amazonaws.com | [open address](#)

Private IPv4 DNS

ip-172-31-16-139.us-east-2.compute.internal

## Part 2 - Install Ansible on Amazon Linux EC2 Host.

## Steps

1. Login to Amazon Linux EC2 which you have recently created using you public and private key .

```
root@DESKTOP-IDDOUJF:~/sanju# ssh -i sanjeevkey.pem ec2-user@3.17.73.254
The authenticity of host '3.17.73.254 (3.17.73.254)' can't be established.
ECDSA key fingerprint is SHA256:stc30luNVWUe18Rav380zfdtIDP0jJMPYoesFP6J0oM.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '3.17.73.254' (ECDSA) to the list of known hosts.
Last login: Sun Jun 20 06:40:18 2021 from 175.100.148.61

  _ | _ | _ )
  _ | ( _ /   Amazon Linux 2 AMI
 _ | \ _ | _ |

https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-172-31-45-67 ~]$
```

2. Amazon Linux EC2 repository is updated with latest updates as shown below.

**yum update -y**

```
[root@master ~]# sudo yum update -y
```

3. EPEL repository is downloaded as shown below. It is used to install ansible in further steps.

**wget https://dl.fedoraproject.org/pub/epel/epel-release-latest-7.noarch.rpm**

```
[root@master ~]# wget https://dl.fedoraproject.org/pub/epel/epel-release-latest-7.noarch.rpm
--2021-06-17 16:40:38-- https://dl.fedoraproject.org/pub/epel/epel-release-latest-7.noarch.rpm
Resolving dl.fedoraproject.org (dl.fedoraproject.org)... 38.145.60.23, 38.145.60.24, 38.145.60.22
Connecting to dl.fedoraproject.org (dl.fedoraproject.org)|38.145.60.23|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 15448 (15K) [application/x-rpm]
Saving to: 'epel-release-latest-7.noarch.rpm.1'

100%[=====]
2021-06-17 16:40:38 (1.34 MB/s) - 'epel-release-latest-7.noarch.rpm.1' saved [15448/15448]

[root@master ~]#
```

4. EPEL repos downloaded in the above step are installed as shown below.

```
yum install epel-release-latest-7.noarch.rpm
```

```
root@DESKTOP-IDD0UJF:~# yum install epel-release-latest-7.noarch.rpm
```

5. Install the below dependency packages using the below command.

```
yum install python python-devel python-pip openssl ansible -y
```

```
[root@master ~]# sudo yum install python python-devel python-pip openssl ansible -y
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
amzn2-core
231 packages excluded due to repository priority protections
Package python-2.7.18-1.amzn2.0.3.x86_64 already installed and latest version
Package python-devel-2.7.18-1.amzn2.0.3.x86_64 already installed and latest version
Package python2-pip-20.2.2-1.amzn2.0.2.noarch already installed and latest version
Package 1:openssl-1.0.2k-19.amzn2.0.6.x86_64 already installed and latest version
```

6. Using amazon-Linux extras ansible is installed as shown below.

```
amazon-linux-extras install ansible2
```

```
[root@master ~]# amazon-linux-extras install ansible2
Installing ansible
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
Cleaning repos: amzn2-core amzn2extra-ansible2 amzn2extra-docker epel
24 metadata files removed
8 sqlite files removed
0 metadata files removed
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
amzn2-core
amzn2extra-ansible2
amzn2extra-docker
epel/x86_64/metalink
epel
(1/10): amzn2-core/2/x86_64/group_gz
```

7. Ansible version installed is verified using the below command.

```
ansible --version
```

```
[root@master ~]# ansible --version
ansible 2.9.21
  config file = /etc/ansible/ansible.cfg
  configured module search path = [u'/root/.ansible/plugins', u'/usr/share/ansible/plugins']
  ansible python module location = /usr/lib/python2.7/site-packages/ansible
  executable location = /usr/bin/ansible
  python version = 2.7.18 (default, Feb 18 2021, 06:07:59)
[root@master ~]#
```