Project 2: Launching an EC2 Instance

**What is Amazon EC2?**
- Amazon EC2 is a web service that provides secure, resizable compute capacity in the cloud. It is designed to make scaling web applications on the cloud much easier for developers.

Objective of this Project:
- We'll be launching an EC2 instance where we walk you through the steps to launch and configure a virtual machine in AWS. We will then log into our EC2 instance using SSH on the Terminal.
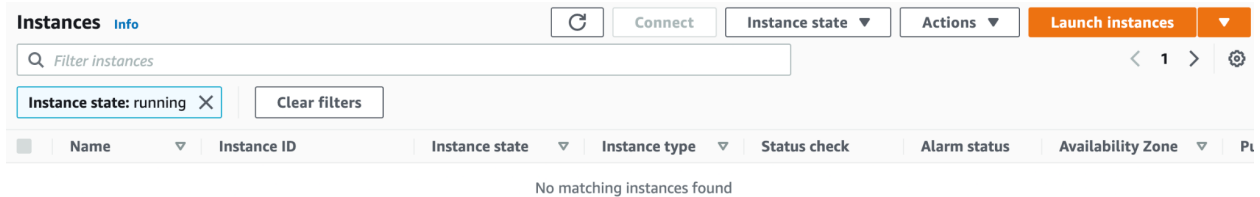
Architecture Diagram
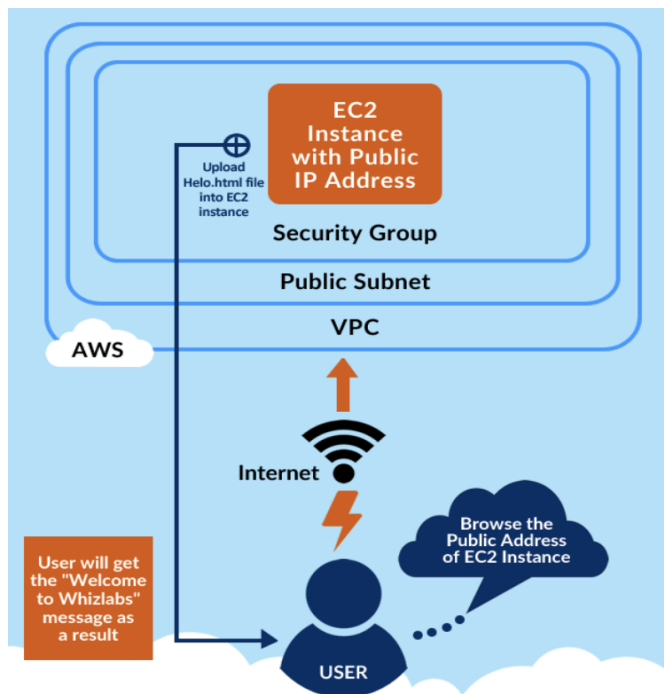
We start with launching, we make sure we are in the intended Availability Zone and then we click on EC2 under services.
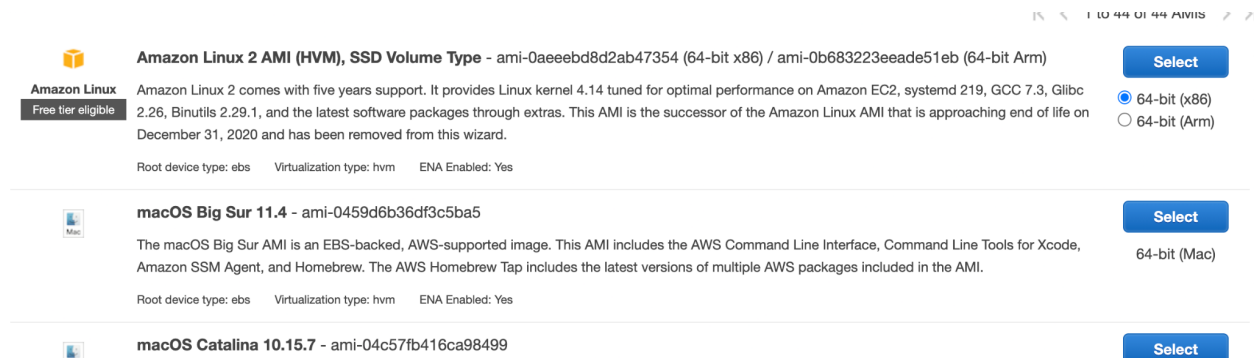
Step 1: Go to Instances

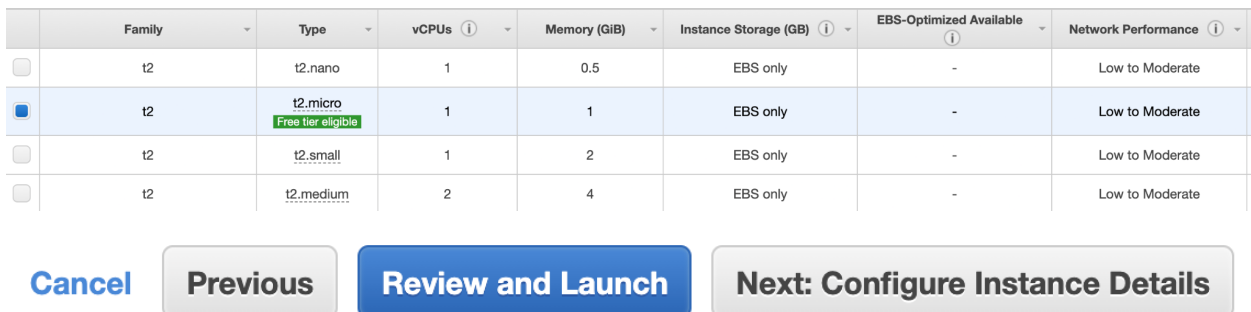- When we're on the EC2 section, we click on Instances. On this section, we select Launch Instances

Instances Info				Connect	Instance state ▼	Actions ▼	Launch instances ▼

Q Filter instances   < 1 > ⚙

Instance state: running ✕   Clear filters

☐	Name	▽	Instance ID	Instance state ▽	Instance type ▽	Status check	Alarm status	Availability Zone ▽	Pu

No matching instances found

Step 2: Choose An Amazon Machine Image (AMI)

- Depending on the scale of the application, you can which AMI would work for you. We select the Amazon Linux 2 AMI due to it providing five years of support for instance and run on Linux.

1 to 44 of 44 AMIs

Amazon Linux 2 AMI (HVM), SSD Volume Type - ami-0aeeebd8d2ab47354 (64-bit x86) / ami-0b683223eeade51eb (64-bit Arm)

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. This AMI is the successor of the Amazon Linux AMI that is approaching end of life on December 31, 2020 and has been removed from this wizard.

Root device type: ebs   Virtualization type: hvm   ENA Enabled: Yes

Amazon Linux — Free tier eligible

Select
- ● 64-bit (x86)
- ○ 64-bit (Arm)

macOS Big Sur 11.4 - ami-0459d6b36df3c5ba5

The macOS Big Sur AMI is an EBS-backed, AWS-supported image. This AMI includes the AWS Command Line Interface, Command Line Tools for Xcode, Amazon SSM Agent, and Homebrew. The AWS Homebrew Tap includes the latest versions of multiple AWS packages included in the AMI.

Root device type: ebs   Virtualization type: hvm   ENA Enabled: Yes

Select
64-bit (Mac)

macOS Catalina 10.15.7 - ami-04c57fb416ca98499

Select

Step 3: Choose an Instance Type

- We decide to select the t2.micro due to it being free tier eligible. After choosing the instance type, we then Configure Instance Details

	Family	Type	vCPUs ⓘ	Memory (GiB)	Instance Storage (GB) ⓘ	EBS-Optimized Available ⓘ	Network Performance ⓘ
☐	t2	t2.nano	1	0.5	EBS only	-	Low to Moderate
☑	t2	t2.micro Free tier eligible	1	1	EBS only	-	Low to Moderate
☐	t2	t2.small	1	2	EBS only	-	Low to Moderate
☐	t2	t2.medium	2	4	EBS only	-	Low to Moderate

Cancel   Previous   **Review and Launch**   Next: Configure Instance Details

Step 4: Configure the Instance Details

We configure the Instance details that suit the requirements that we want. We can launch multiple instances from the same AMI and request spot instance if we were to reduce the pricing.

Istance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage of the lower pricing, assi

Number of instances (i)	1	Launch into Auto Scaling Group (i)
Purchasing option (i)	☐ Request Spot instances	
Network (i)	vpc-7795210d | Default VPC (default) ⬍	↻ Create new VPC
Subnet (i)	No preference (default subnet in any Availability Zone ⬍	Create new subnet
Auto-assign Public IP (i)	Use subnet setting (Enable) ⬍	
Placement group (i)	☐ Add instance to placement group	
Capacity Reservation (i)	Open ⬍	
Domain join directory (i)	No directory	↻ Create new directory
IAM role (i)	None ⬍	↻ Create new IAM role
	⚠ You do not have permissions to list instance profiles. Contact your administrator, or check your IAM permissions.	

Cancel   Previous   **Review and Launch**   Next: Add Storage

Step 5: Add Storage

We leave the storage settings as default for now. But, we can always add additional EBS volumes and instances or edit the settings of the root volume.

Volume Type (i)	Device (i)	Snapshot (i)	Size (GiB) (i)	Volume Type (i)	IOPS (i)	Throughput (MB/s) (i)	Delete on Termination (i)	Encryptio
Root	/dev/xvda	snap-02d2a0614e5ce0ce4	8	General Purpose SSD (gp2)	100 / 3000	N/A	☑	Not Encry

Add New Volume

Cancel   Previous   **Review and Launch**   Next: Add Tags

Step 6: Add Tags

We then create a case-sensitive key-value pair. To help manage instances, images, and other Amazon EC2 resources, you can assign your own metadata to each resource in the form of tags.

Name	MyEC2Server	☑	☑	☑	⊗

Add another tag   (Up to 50 tags maximum)

Cancel   Previous   **Review and Launch**   Next: Configure Security Group

Step 7: Configure Security Group

When we configure our security group, we have our security group name and description for it. We then add in the various network protocols that we need in order for our application to be accessible.

○ Select an **existing** security group

Security group name: My EC2 Security Group

Description: Security Group for EC2 Instance

Type ⓘ	Protocol ⓘ	Port Range ⓘ	Source ⓘ		Description ⓘ	
SSH	TCP	22	Custom	CIDR, IP or Security Group	e.g. SSH for Admin Desktop	⊗
HTTP	TCP	80	Custom	0.0.0.0/0, ::/0	e.g. SSH for Admin Desktop	⊗
HTTPS	TCP	443	Custom	0.0.0.0/0, ::/0	e.g. SSH for Admin Desktop	⊗

Add Rule

Cancel   Previous   **Review and Launch**

Step 8: Review Instance Launch and Create A Key Pair

We make sure the instances we are launching have all the elements that we need from security groups, to tags, to storage, etc.

Before we launch, we create a key pair. This can enable us to log into our instance from the CLI.

```
Create a new key pair                                          ▾
```

Key pair name

```
youareawesome
```

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

Instances Launched

☐   MyEC2Server   **i-08db61ed0a6ef21ec**   ⊘ Running   ⊕⊖   t2.micro

Step 9: Log into Instance from CLI

- With the use of our key pair, we log into the EC2 instance from the Command Line Interface. It shows that we can make changes, add new services to our application without having to log in to the Management Console.

```
(base) STs-MacBook-Pro:Downloads sttangirala$ chmod 400 youareawesome.pem
(base) STs-MacBook-Pro:Downloads sttangirala$ ssh -i youareawesome.pem ec2-user@
54.146.93.182
The authenticity of host '54.146.93.182 (54.146.93.182)' can't be established.
ECDSA key fingerprint is SHA256:CgjdDG8kR6Vm6oMewJ9MA/H+UADbYDNFHcRtdNQi2PI.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '54.146.93.182' (ECDSA) to the list of known hosts.

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

https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-172-31-70-222 ~]$ ▮
```