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Subject: CC

Practical No. : 2

Practical Name: Lab 3: Introduction to Amazon EC2

Amazon Elastic Compute Cloud (Amazon EC2)

Definition :

Amazon Web Services provides scalable virtual server for hosting applications this virtual server are called **INSTANCES.**

EC2 instance is a virtual machine running on AWS.

Why EC2 ?

1). **Scalability** – Scale Resource

2). **Flexibility** - Choose instance type, operating system, and software.

3). **Cost Effective** – Pay for your use.

4). **Global Reach** - Deploy applications in multiple geographic regions for low latency.

5). **Storage** - Use Elastic Block Storage (EBS) for persistent data storage.

6). **Networking** - Attach your instance to a Virtual Private Cloud (VPC) for secure communication.

Example Use Case :

There are four steps

1). Launch an EC2 Instance

2). Install web server

3). Configure security groups

4). Monitor and Scale

1). Launch an EC2 Instance

Instance Types:

- **General Purpose:** For web servers and development environments (e.g., t2, t3).

- **Compute Optimized:** For compute-intensive tasks (e.g., c5, c6g).

- **Memory Optimized:** For large in-memory databases (e.g., r5, x2idn).

- **Storage Optimized:** For high read/write access to data (e.g., i3, d2).

Steps to launch EC2 :

1). EC2 > Instances > Launch an instance.

Give instance name "Web Server"

2). Select Instance type :

Here we have to host a website for that select t2

What is t2.micro ?

T is...

T (Burstable Performance): Economical, designed for workloads with occasional peaks in usage.

M (General Purpose): Balanced CPU and memory for general use cases.

C (Compute Optimized): High CPU for compute-intensive tasks.

R (Memory Optimized): High memory for memory-intensive applications.

I (Storage Optimized): High disk throughput for data-intensive tasks.

2 is the generation of instance family.

Micro is size. (ex. Xlarge, small, medium, large etc..)

3).Select VPC and Security Group :

4).Pass User data :

- **Install an Apache web server (httpd)**

- **Configure the web server to start on boot automatically**

- **Run the Web server once it has finished installing**

- **Create a simple web page**

Successfully created instance...

Monitor and Scale :

Get instance screenshot Info

Instance screenshot

i-056d8ddad25a709c5 (Web Server) on 2025-01-15 at T09:16:43.142 +05:30

Download

```
Amazon Linux 2023.6.20250114
Kernel 6.1.119-129.201.amzn2023.x86_64 on an x86_64 (-)

ip-10-0-1-8 login: [   29.028534] zram_generator::config[2270]: zram0: system ha
s too much memory (949MB), limit is 800MB, ignoring.
[   30.072066] zram_generator::config[3425]: zram0: system has too much memory (
949MB), limit is 800MB, ignoring.
_
```

Privacy   Terms   Cookie preferences
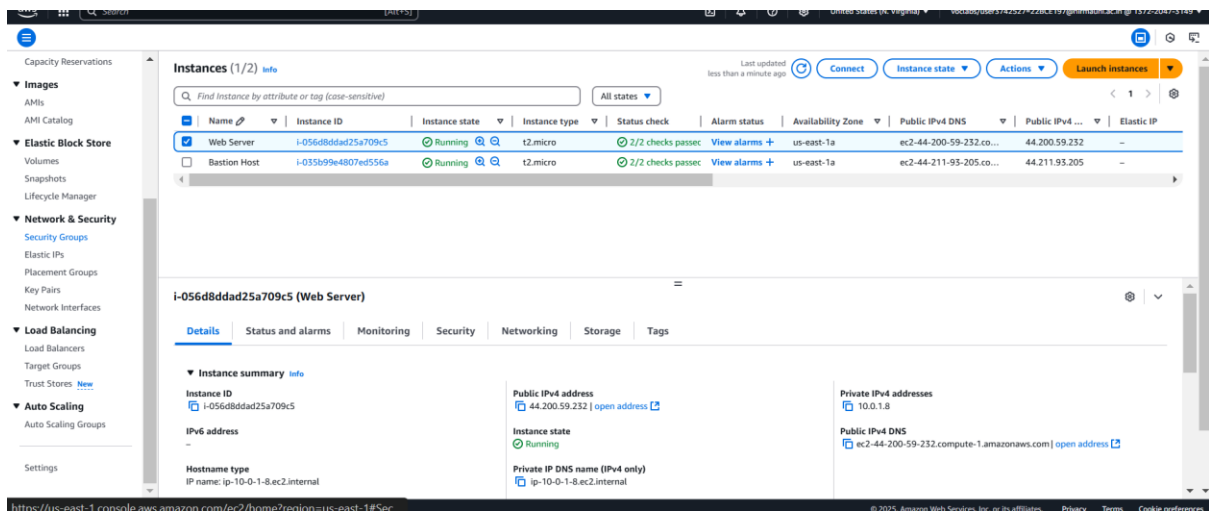
Create Security Groups :

Successfully hosted website...

Hello From Your Web Server!

Now lets change instance type for better performance , storage etc...

Change instance type Info | Get advice

You can change the instance type only if the current instance type and the instance type that you want are compatible.

Instance ID
📋 i-056d8ddad25a709c5 (Web Server)

Current instance type
t2.micro

New instance type
🔍 t2.small ✕

☐ EBS-optimized
EBS-optimized is not supported for this instance type

▼ Instance type comparison

How to avoid instances accidentally stopped :

Change Stop Protection

Modify volume Info

Modify the type, size, and performance of an EBS volume.

Volume details

Volume ID

vol-08058b0a8c354cf5a

Volume type | Info

General Purpose SSD (gp3) ▼

Size (GiB) | Info

10

Min: 1 GiB, Max: 16384 GiB.

IOPS | Info

3000

Min: 3000 IOPS, Max: 16000 IOPS.

Throughput (MiB/s) | Info

125

Min: 125 MiB, Max: 1000 MiB. Baseline: 125 MiB/s.

Cancel   Modify

Instances (2) Info   Last updated less than a minute ago   Connect   Instance state ▼   Actions ▼   Launch instances ▼
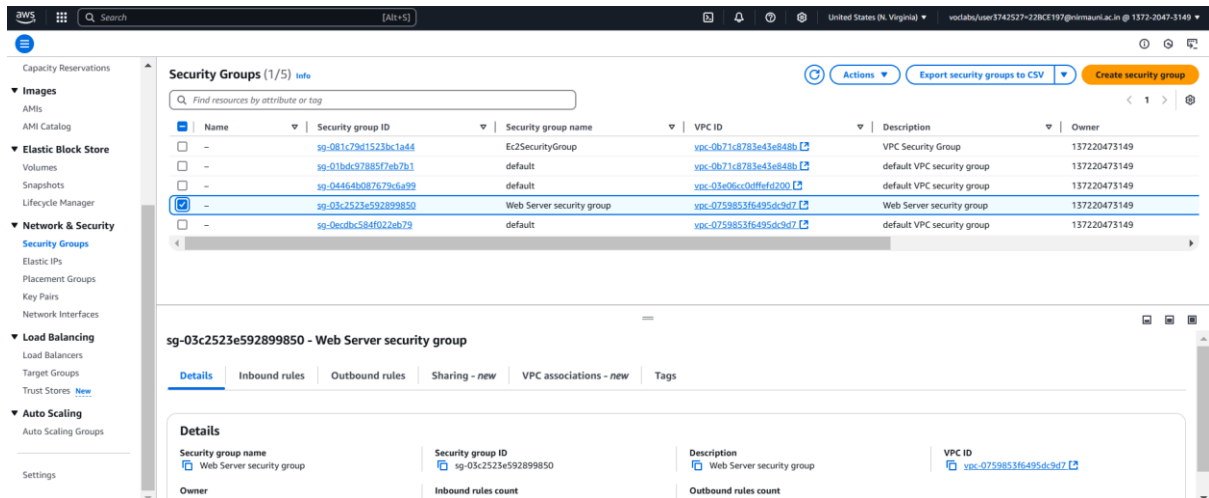
	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...	Elastic IP
	Bastion Host	i-035b99e4807ed556a	⊘ Running	t2.micro	⊘ 2/2 checks passed	View alarms +	us-east-1a	ec2-44-211-93-205.co...	44.211.93.205	–
	Web Server	i-056d8ddad25a709c5	⊘ Running	t2.small	⊘ 2/2 checks passed	View alarms +	us-east-1a	ec2-3-80-12-30.comput...	3.80.12.30	–

⊗ **Failed to stop the instance i-056d8ddad25a709c5**   Diagnose with Amazon Q   ✕
The instance 'i-056d8ddad25a709c5' may not be stopped. Modify its 'disableApiStop' instance attribute and try again.

Instances (1/2) Info   Last updated 1 minute ago   Connect   Instance state ▼   Actions ▼   Launch instances ▼

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...	Elastic IP
	Bastion Host	i-035b99e4807ed556a	⊘ Running	t2.micro	⊘ 2/2 checks passed	View alarms +	us-east-1a	ec2-44-211-93-205.co...	44.211.93.205	–
✓	Web Server	i-056d8ddad25a709c5	⊘ Running	t2.small	⊘ 2/2 checks passed	View alarms +	us-east-1a	ec2-3-80-12-30.comput...	3.80.12.30	–

i-056d8ddad25a709c5 (Web Server)

Details   Status and alarms   Monitoring   Security   Networking   Storage   Tags

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Instances (2) Info   Last updated less than a minute ago   Connect   Instance state ▼   Actions ▼   Launch instances ▼

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...	Elastic IP
	Bastion Host	i-035b99e4807ed556a	⊘ Running	t2.micro	⊘ 2/2 checks passed	View alarms +	us-east-1a	ec2-44-211-93-205.co...	44.211.93.205	–
	Web Server	i-056d8ddad25a709c5	⊖ Stopped	t2.small	–	View alarms +	us-east-1a	–	–	–

Select an instance

Marks :

AWS ●

01:06 ▶ Start Lab ■ End Lab i AWS Details i Details ✕

Submit | Submission Report | Grades

Amazon EC2 provides different resources that you can use. These resources include images, instances, volumes, and snapshots. When you create an AWS account, there are default limits on these resources on a per-region basis.

Total score	25/25
Task 1 - EC2 instance created correctly	5/5
Task 2 - get system log requested	5/5
Task 3 - security group updated	5/5
Task 4 - EC2 instance updated	5/5
Task 6 - Instance stopped on second try	5/5

51. In the AWS Management Console, in the search box next to ⊞ **Services**, search for and choose `Service Quotas`

52. Choose **AWS services** from the navigation menu and then in the AWS services *Find services* search bar, search for `ec2` and choose **Amazon Elastic Compute Cloud (Amazon EC2)**.

53. In the *Find quotas* search bar, search for `running on-demand`, but do not make a selection. Instead, observe the filtered list of service quotas that match the criteria.

Notice that there are limits on the number and types of instances that can run in a region. For example, there is a limit on the number of *Running On-Demand Standard...* instances that you can launch in this region. When launching instances, the request must not cause your usage to exceed the instance limits currently defined in that region.

If you are the AWS account owner, you can request an increase for many of these limits.

Task 6: Test Stop Protection