

Table of contents

- [Table of contents](#)
- [EC2 day 2 :](#)
 - [Elastic ip](#)
 - [Creating EIP](#)
 - [ENI](#)
 - [Creating an ENI](#)
 - [EBS volume](#)
 - [Snapshot And AMIs](#)
 - [Creating snapshot](#)
 - [Creating an AMI](#)
 - [Lifecycle manager](#)
 - [Creating lifecycle policy](#)
 - [FAQ](#)

EC2 day 2 :

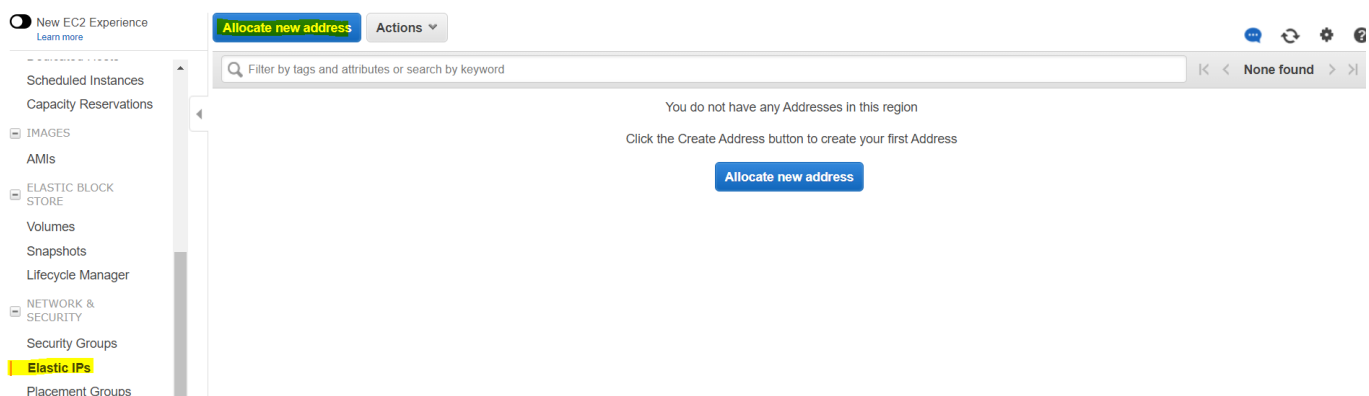
- We have seen in our last session that we can configure and create an ec2 machine in aws and use it for various purposes for ex. installing a web server
- Today we have to focus on smaller components of ec2 as a service and how to utilize them

Elastic ip

- Elastic ips are static public ips that persist independent of the ec2 machine
- If there is a use case where external traffic is referring to the public ip of our instance then we can utilize elastic ip
- Usually the public ip that is given to use by aws by default is taken away when instance is stopped and is replaced when we start it again with a different ip address
- With elastic ip we can make sure that it stays constant
- Elastic ips are not billed separately if they are attached to a running instance . However when we stop the instance or if the EIP is sitting idle , we have to pay for the same .

Creating EIP

- In order to create an EIP , navigate to the ec2 dashboard and click on elastic ips



- Once we click on allocate new address , we simply need to click on allocate to get an EIP

[Addresses](#) > Allocate new address

Allocate new address

Allocate a new Elastic IP address by selecting the scope in which it will be used

Scope **VPC**

Network Border Group **us-east-1** ⓘ

IPv4 address pool ☒ Amazon pool ☐ Owned by me

* Required [Cancel](#) [Allocate](#)

- Once the EIP is created , it can be associated with an instance by going to actions and clicking on associate
- Remember , in order to delete an EIP , we first need to Disassociate the EIP from an instance and then click on release address to give it back to aws . Post which our billing would be stopped

ENI

- ENIs are similar to our EIPs but they carry extra importance from the networking perspective
- Just like EIPs are static public ip addresses, ENIs are static private ip address
- Whenever an instance is created , it creates a eni in the background which late gets released after instance termination
- We can also create our own eni to keep our private ip address static
- ENI is responsible for network level properties like security group , subnet , private ip etc.
- Once EC2 can have 2 enis . Once an eni is attached to the ec2 , it will carry over all the network related settings assigned to that eni

Creating an ENI

- Navigate to ec2 dashboard and go to Network interfaces
- Click on create Network interface

[Create Network Interface](#)

Description **test-eni** ⓘ

Subnet* **subnet-a2c1f3e8** ⓘ

IPv4 Private IP ☒ Auto-assign ⓘ ☐ Custom

Elastic Fabric Adapter ☐ ⓘ

Security groups* **sg-00632f202bbe2610b** ⓘ

Group ID	Group name	Description
sg-00632f202b...	devops-6	launch-wizard-59 created 2021-03-14T09:34:37.585+05:30
sg-00b8706b4...	launch-wizard-47	launch-wizard-47 created 2021-03-06T15:48:05.679+05:30
sg-00c25a637...	launch-wizard-1	launch-wizard-1 created 2019-06-21T10:41:25.786+05:30
sg-00d55fb8d5...	jenkins	launch-wizard-33 created 2021-03-05T13:19:14.242+05:30
sg-011361f9dd...	ElasticMapRe...	Master group for Elastic MapReduce created on 2019-07-23T17:41:24.614Z
sg-011cb627c...	docker	launch-wizard-30 created 2021-02-26T13:24:57.846+05:30
sg-0118b40d4c...	SecurityFirewall	launch-wizard-11 created 2020-03-21T20:10:17.343+05:30

- Select the subnet (this should be the same as the one you'd want your instances to be in)
- Select appropriate security group and click create
- Once created it can be attached and detached to instances

- An ENI can be attached to only one ec2 instance at a time

EBS volume

- EBS volumes are storage for your EC2 machines . Imagine them to be similar to your hard discs
- EBS volume come with multiple types to support various use cases in terms for performance requirement (magnetic ,ssd, provisioned IOPS etc)
- EBS volumes can be created during the launch of the ec2 or seperately .
- A volume can be modified when it comes to scaling up the storage . We cannot decrease the capacity of the volume once it is created . We can only increase it
- One ec2 instance can have multiple EBS volumes attached to it , however one ebs volume can only be attached to one instance at a time .
- EBS volume can also be detached and attached similar to EIP
- EBS volumes persist independent of EC2 instances
- These are high performance block storage devices which are designed to compliment high end workloads
- In order to scale the storage of the ec2 , there are 2 ways it could be acheived
 - Modify the current EBS volume
 - Navigate to Volume , select your volume and click on actions
 - Edit the capacity with new value and click on modify . It will take some time to reflect
 - Create a new volume and attach to the instance
 - Navigate to Volume , click on Create volume

Create Volume

Volume Type: General Purpose SSD (gp2) ⓘ

Size (GiB): 10 (Min: 1 GiB, Max: 16384 GiB) ⓘ

IOPS: 100 / 3000 (Baseline of 3 IOPS per GiB with a minimum of 100 IOPS, burstable to 3000 IOPS) ⓘ

Throughput (MB/s): Not applicable ⓘ

Availability Zone*: us-east-1d ⓘ

Snapshot ID: Select a snapshot ⓘ ⓘ

Encryption: Encryption is set by default ⓘ

Master Key: aws/ebs ⓘ

KMS Key Description: Default master key that protects my EBS volumes when no other key is defined

KMS Key Account: This account (384395217903)

KMS Key ID: 5e1b8692-de20-452c-a2da-425e3541c03b

- Remember to select the AZ in which your instance is running . EBS volume cannot be attached to instance running in other az
- Select the desired capacity and create the volume
- Once volume is created , you can go to actions and attach it to the desired instance
- There other steps we have to perform from linux end for storage scaling which we will see later

Snapshot And AMIs

- Since EC2 is IAAS , we have to configure the backups ourselves
- AWS gives us few options to carry out the backup activity in a flawless manner
- Snapshots are cold backup of your EBS volume or EC2 instance .
- In the background these are stored in S3 (We dont see them in S3 . This is just for our understanding)

- These are point in time backups which means they only store data till the time when the backup was initiated .
- Once the backup is taken and then if there are any changes then the snapshot doesnt record it

Creating snapshot

- Navigate to snapshot screen from ec2 dashboard and click on create snapshot

[Snapshots](#) > Create Snapshot

Create Snapshot

Select resource type ☒ Volume ☐ Instance

Volume* vol-0445a48ab2881357d

Description Test-snapshot

Encrypted ☒ Encrypted

Key (128 characters maximum) Value (256 characters maximum)

This resource currently has no tags

Choose the Add tag button or [click to add a Name tag](#)

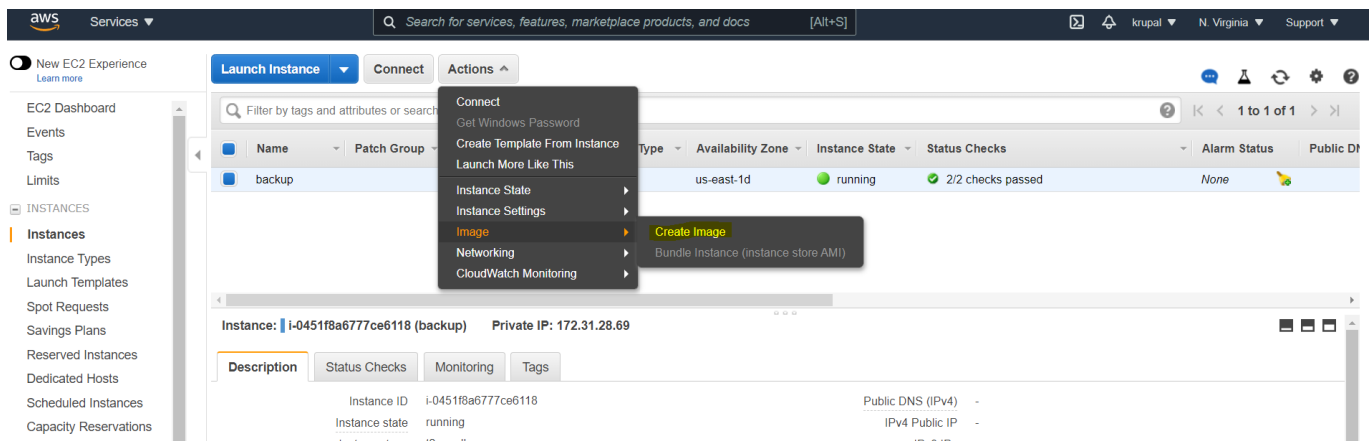
Add Tag 50 remaining (Up to 50 tags maximum)

* Required Cancel Create Snapshot

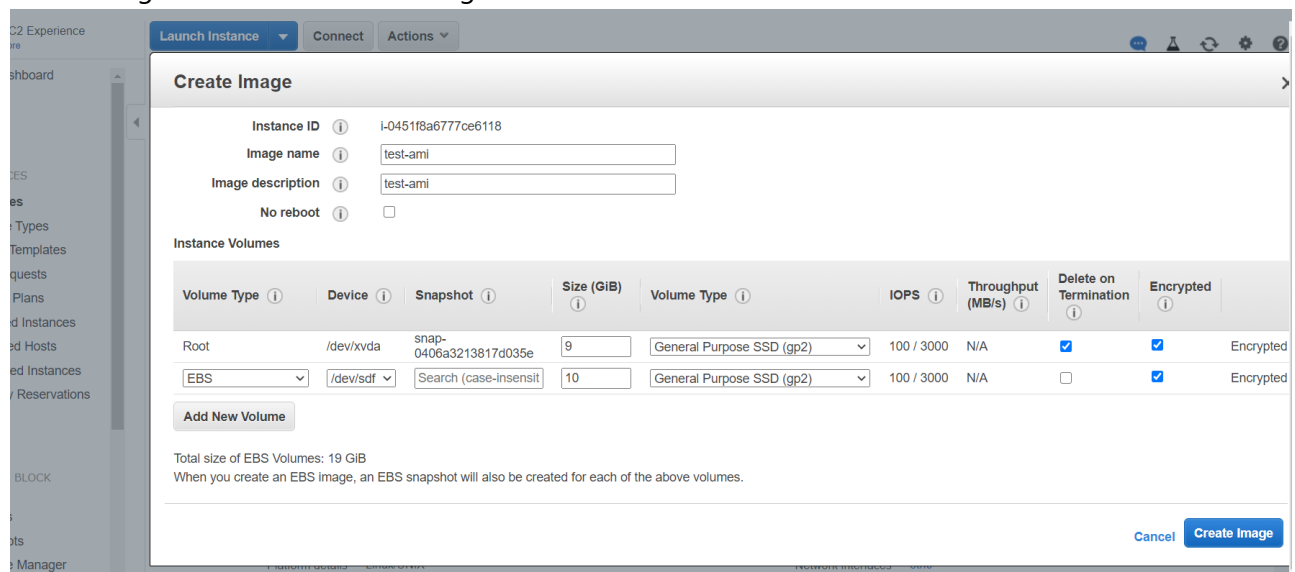
- Select appropriate volume and click on create snapshot
- It will take some to become available . Once it does , it can be used to create volume or AMI
- Since snapshots cannot be directly attached to a instance , you either need to create a volume or image out of it in order to use it
- Also snapshot approach can become tedious if there are multiple ebs volumes attached to an instance .
- This limitation is the reason companies stick with AMI
- AMI is a image of your machine . It contains OS as well as additional packages .
- We have seen default AMIs till now for ex . amazon linux , ubuntu etc
- We can create our own AMI which can either be used as a backup or can be used as template to avoid reinstallation of service or packages.
- AMIs also use snapshots in the background . These are just a wrapper over the snpashots
- Since we take AMI of the instane , it records every volume that is attached to the machine and gives us the complete bundle so we do not have to create seperate snapshots .
- These are the most common method to take backup of the EC2 machines

Creating an AMI

- Select your instance and click on actions



- Select Image and click on create image



- Give appropriate name for the ami and click on create image . It will take some time to reflect and you will be able to see it under AMIs tab in EC2
- You can use the same AMI to launch EC2 machine. It will contain the same data as the instance which was used to create this AMI

Lifecycle manager

- Since backups are a part of the compliance for organizations , we need to have some automation to avoid manual intervention
- Lifecycle manager lets us schedule backups for our machines
- This feature also helps us retain only specific amount of backups to avoid unnecessary cost

Creating lifecycle policy

- Navigate to EC2 and click on create lifecycle policy

[Policies](#) > Create Lifecycle Policy

Create Lifecycle Policy

Data Lifecycle Manager enables you to automate the creation, retention, copy and deletion of EBS snapshots and EBS-backed AMIs. It also enables you to automate cross-account snapshot copy actions for snapshots that are shared with you, based on Amazon CloudWatch events.

Policy type

- ☐ EBS snapshot policy
- ☒ EBS-backed AMI policy
- ☐ Cross-account copy event policy

Description* ⓘ

Target with these tags This policy will apply to instances that have any of the following tags.

* ⓘ

Policy Tags

Key	Value
(128 characters maximum)	(256 characters maximum)

This resource currently has no tags

[Add Tag](#) 50 remaining (Up to 50 tags maximum)

- Select the policy type as EBS-backed AMI policy
- Give appropriate description
- Target with tags option gives us option to specify the tag . Every ec2 which has that specific tag key and value , those will be backed up under this policy
- For the schedule , we can define the frequency at which we want our backups to be taken

Policy Schedule 1

Schedules define how often the policy is triggered, and the specific actions that are to be performed. The policy must have at least one schedule. This schedule is mandatory, while schedules 2, 3, and 4 are optional.

Schedule name* ⓘ

Frequency ⓘ

Every Hours

Starting at UTC

Retention type*

Retain* ⓘ

When an AMI reaches the retention threshold, it is deregistered and its backing snapshots are automatically deleted.

- Also we can mention the retention . Here we have mentioned 7 . Which means it will maintain straight 7 backups , for the 8th occasion it will delete the oldest backup . So at any point in time , we will have 7 backups .
- These backups are incremental , which basically means for the first backup it will be taken from scratch . From there onwards for next backups , it will just observe the changes that were done since last backup , it will only record those and create a new backup . This takes significantly lesser amount of time
-

FAQ

- What's the use case for EIP and ENI
 - EIP and ENI can be used to keep the IP addresses constant . So that in case of disaster , we shouldn't have to change any code or inform the users

- Are there other methods for backup
 - Customized scripts can be created . Also aws has introduced aws backups service for the same
- How to scale computing power of EC2 machine
 - We have to change the instance type to scale the computation power . For this we need to stop the instance and change the instance type from instance settings