Table of contents

EC2 day 2 :

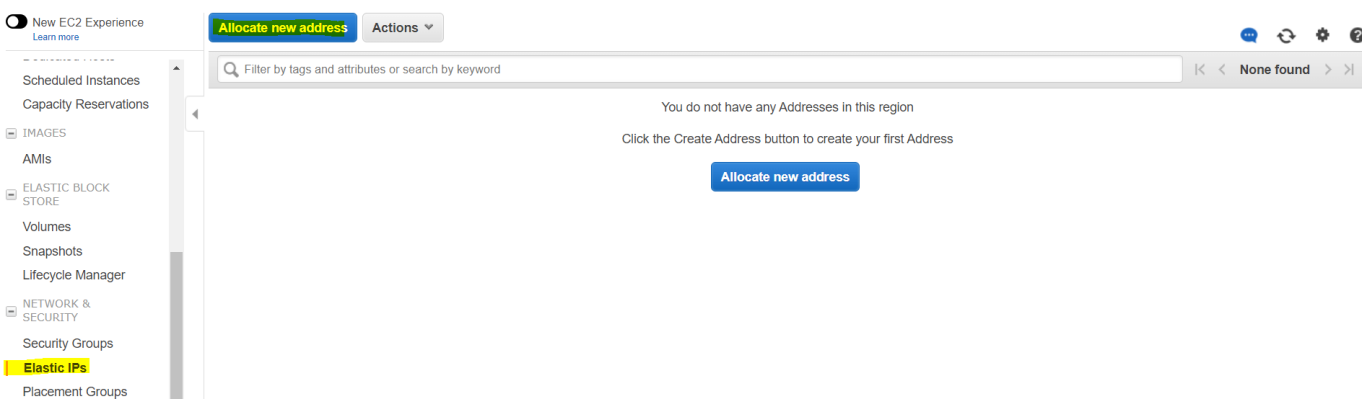
- We have see in our last session that we can coonfigure and create an ec2 machine in aws and use it for various pruposes for ex. installing a web server
- Today we have to focus on smaller components of ec2 as a service and how to utulize them

Elastic ip

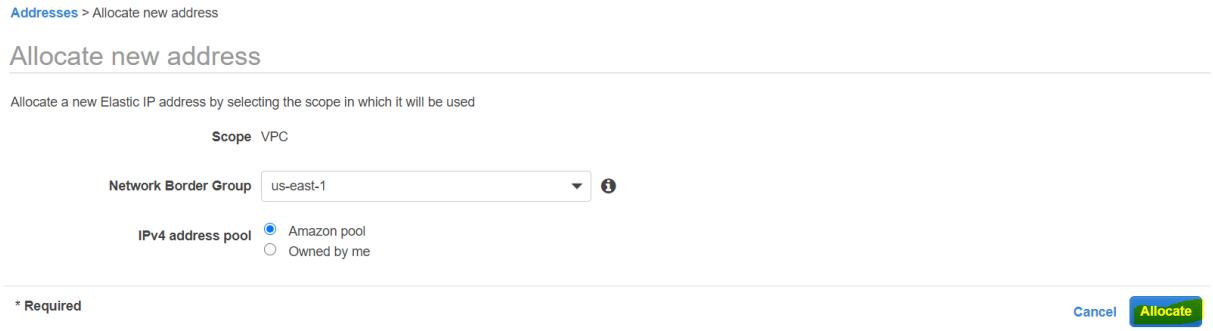
- Elastic ips are static public ips that persist independent of the ec2 machine
- If there is a use case where external traffic is reffaring to the public ip of our instance then we can utlize elastic ip
- Usually the public ip that is given to use by aws by default is taken away when instance is stopped 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 seperately 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



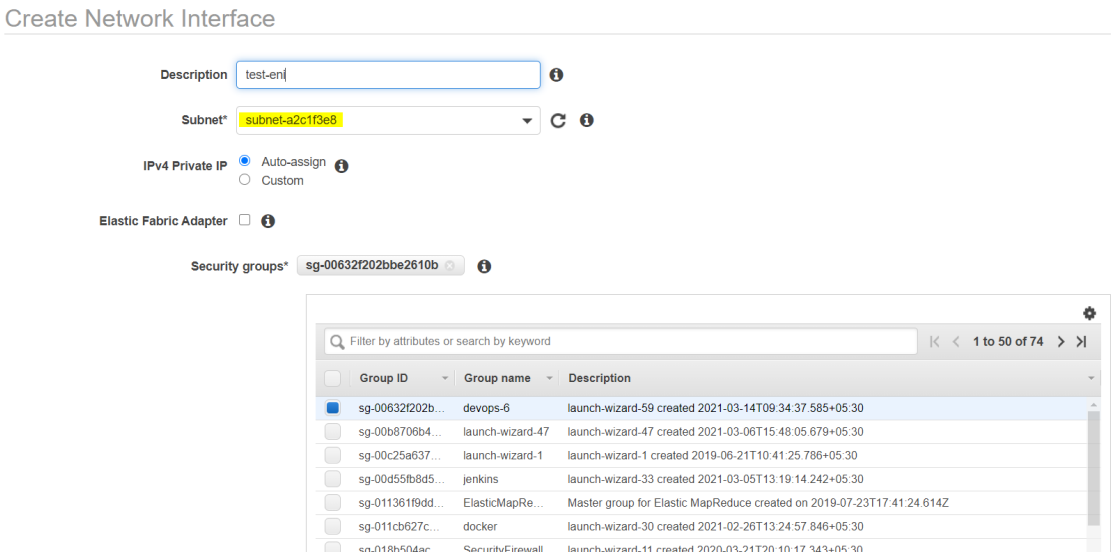
- Once the EIP is created , it can be associated with an instance by going to actions and clicking on associate
- Remember , in order to delete an EIP , we first need to Disassociate the EIP from an instance and then click on release address to give it back to aws . Post which our billing would be stopped

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

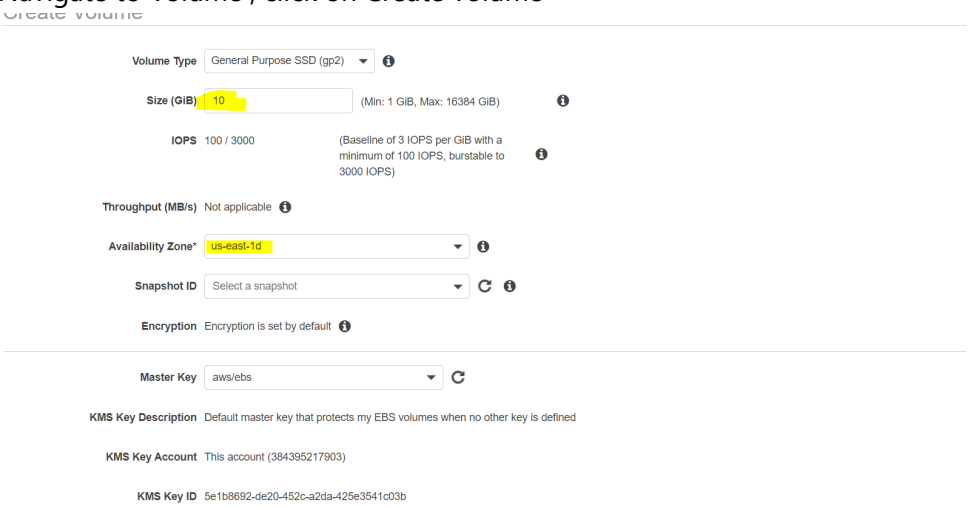


- Select the subnet (this should be the same as the one you'd want your instances to be in)
- Select appropriate security group and click create
- Once created it can be attached and detached to instances

- 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 instace
        - Navigate to Volume , click on Create volume



        - Remember to select the AZ in which your instance is running . EBS volume cannot be atatched 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

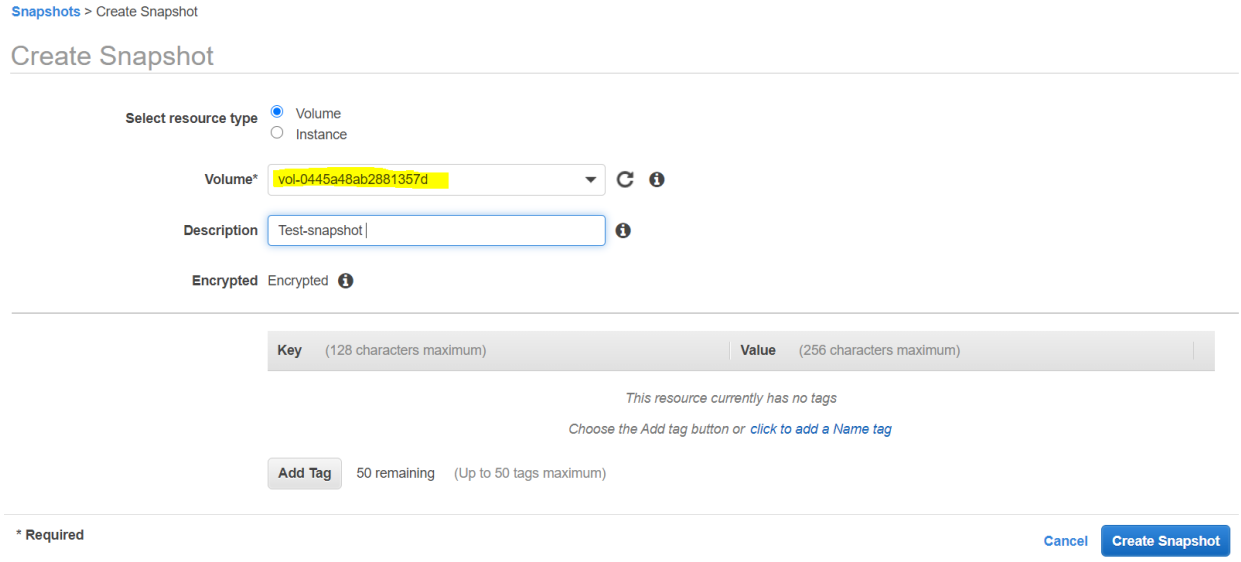
Snapshot And AMIs

- 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 clold 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

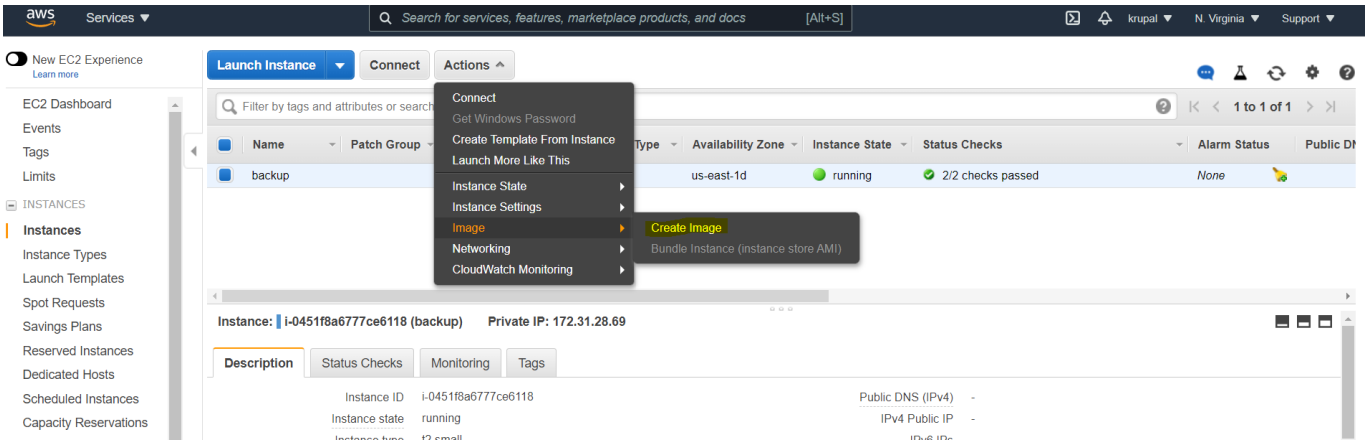
- Navigate to snapshot screen from ec2 dashboard and click on create snapshot



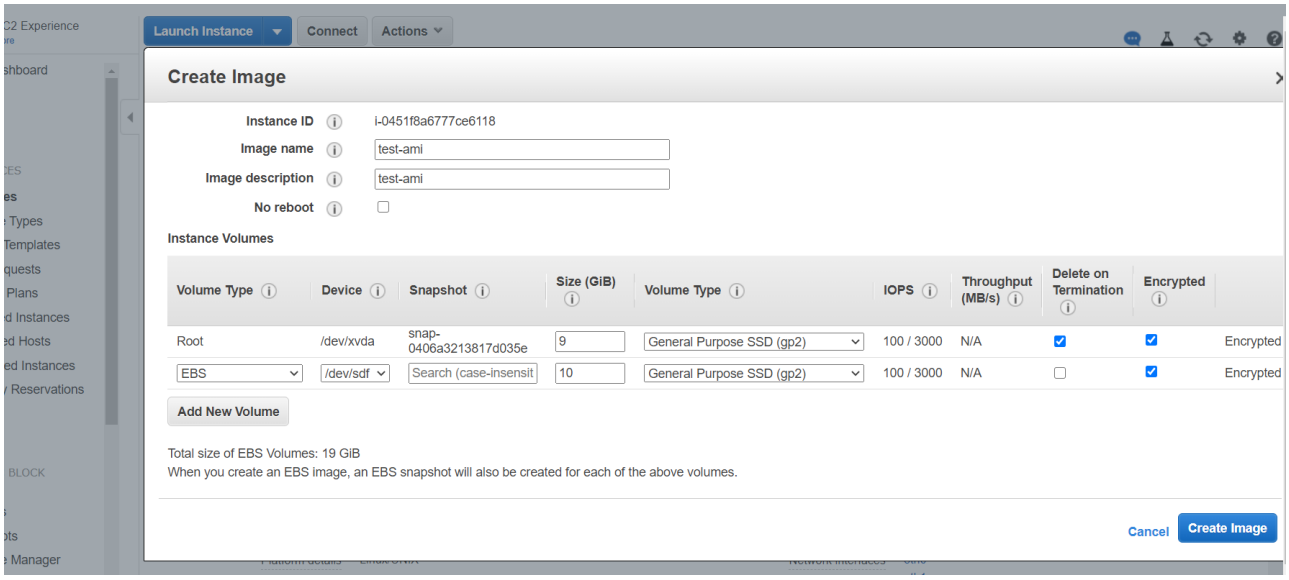
- Select appropriate volume and click on create snapshot
- It will take some to become available . Once it does , it can be used to create volume or AMI
- Since snapshots cannot be directly attached to a instance , you either need to create a volume or image out of it in order to use it
- Also snapshot 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

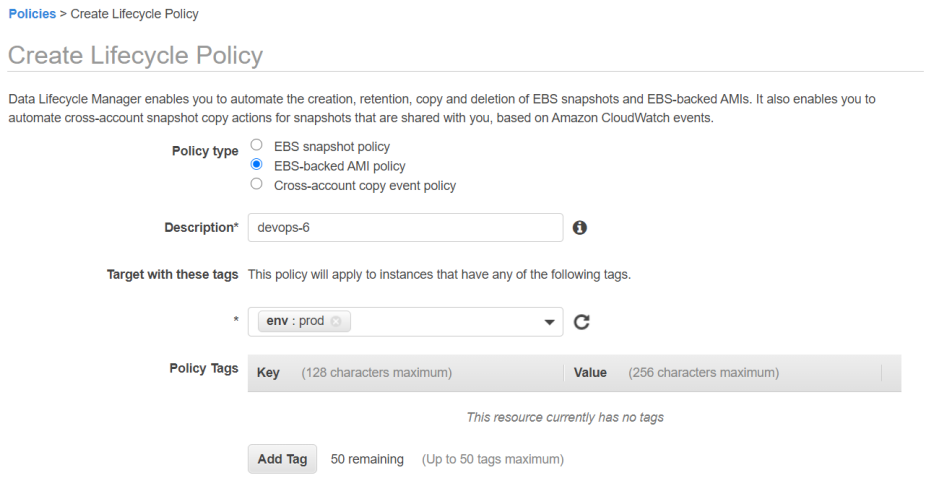
- You can use the same AMI to launch EC2 machine. It will contain the same data as the instance which was used to create this AMI

Lifecycle manager

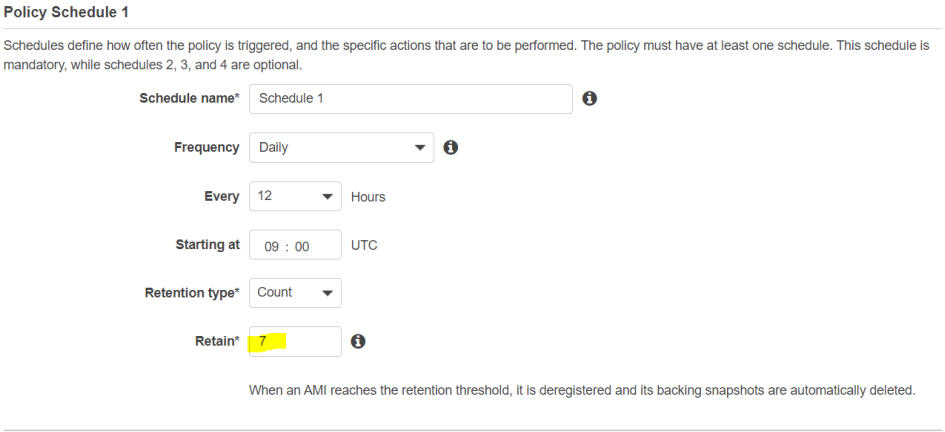
- Since backups are a part of the compliance for organizations , we need to have some automation to avoid manual intervention
- Lifecycle manager lets us schedule backups for our machines
- This feature also helps us retain only specific amount of backups to avoid unnecessary cost

Creating lifecycle policy

- Navigate to EC2 and click on create lifecycle policy



- Select the policy type as EBS-backed AMI polic
- 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



- 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 increamental , 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 significanlty lesser amount of time

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FAQ

- Whats 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 shoudnt 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 comupting 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