ECS (Elastic container service)

1) **Setup a highly available ecs cluster with load balancer and dynamic port mapping.**

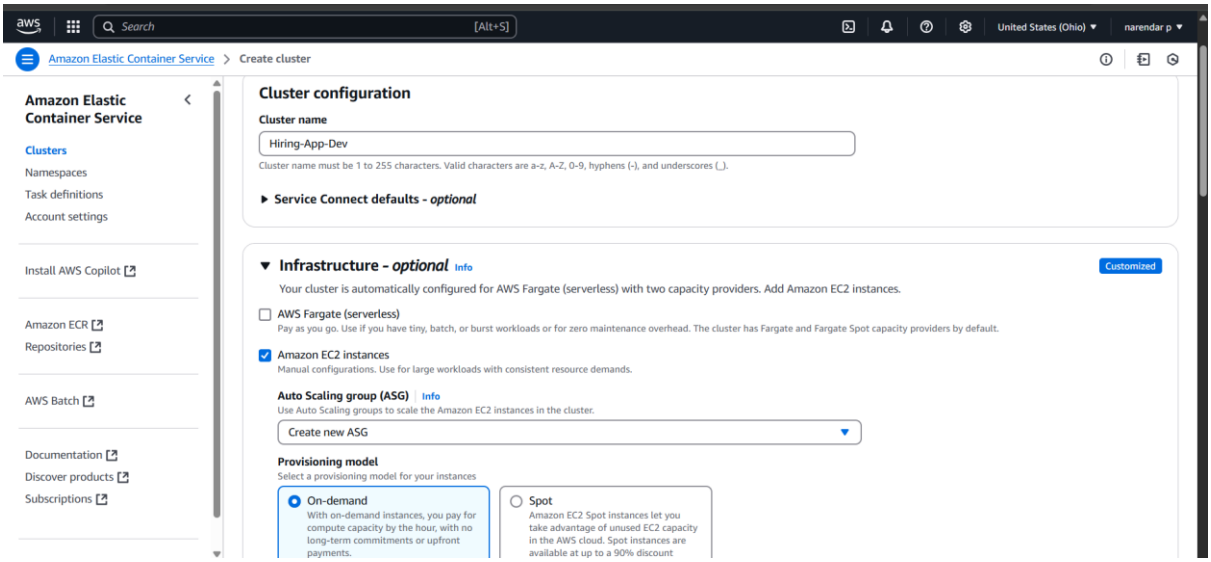
   NOTE:

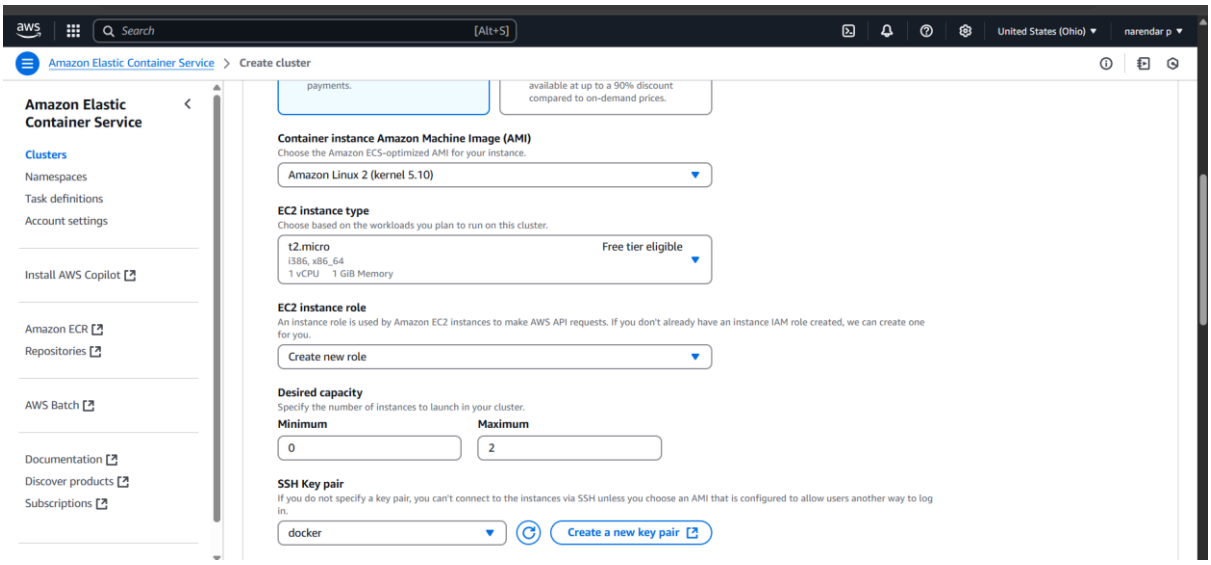
   Your cluster should maintain atleast 6 tasks at any point of time and should be highly availble across multiple AZ's.

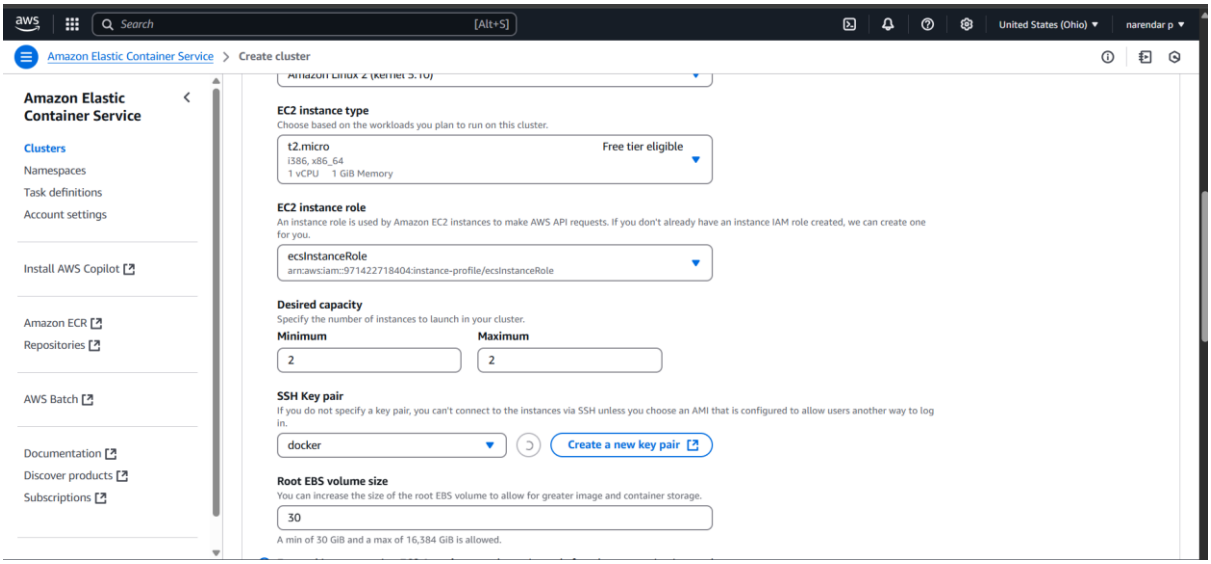
   Use the below image from deployment:

   sabair0509/hiring-app:works

   →Create ECS cluster:



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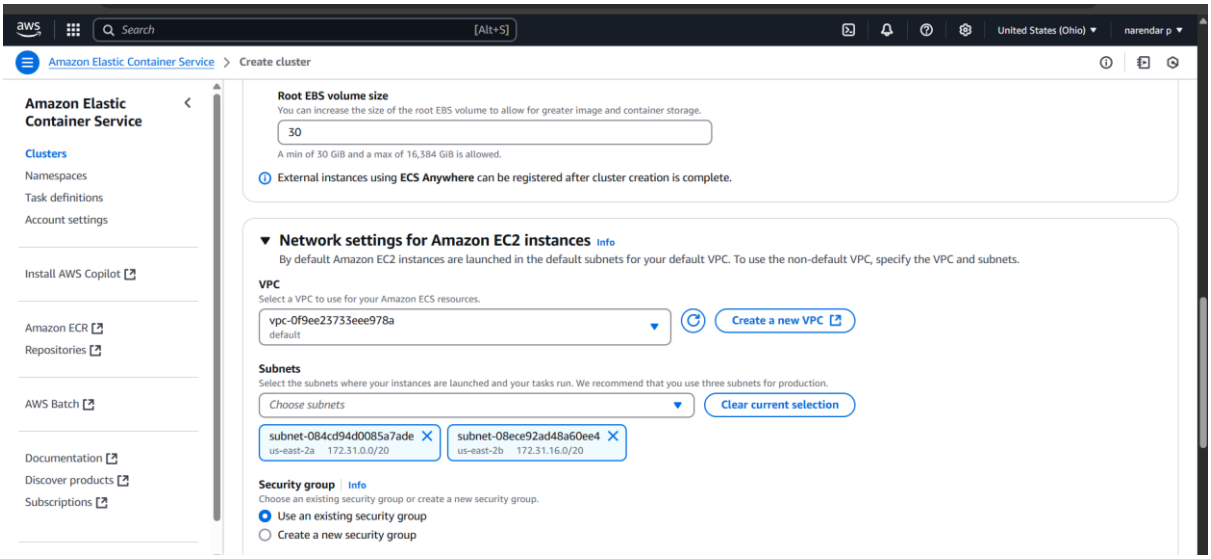
EC2 instance type
Choose based on the workloads you plan to run on this cluster.
t2.micro
Free tier eligible
i386, x86_64
1 vCPU 1 GiB Memory
EC2 instance role
An instance role is used by Amazon EC2 instances to make AWS API requests. If you don't already have an instance IAM role created, we can create one for you.
ecsInstanceRole
arn:aws:iam::971422718404:instance-profile/ecsInstanceRole
Desired capacity
Specify the number of instances to launch in your cluster.
Minimum
Maximum
2
2
SSH Key pair
If you do not specify a key pair, you can't connect to the instances via SSH unless you choose an AMI that is configured to allow users another way to log in.
docker
Create a new key pair
Root EBS volume size
You can increase the size of the root EBS volume to allow for greater image and container storage.
30
A min of 30 GiB and a max of 16,384 GiB is allowed.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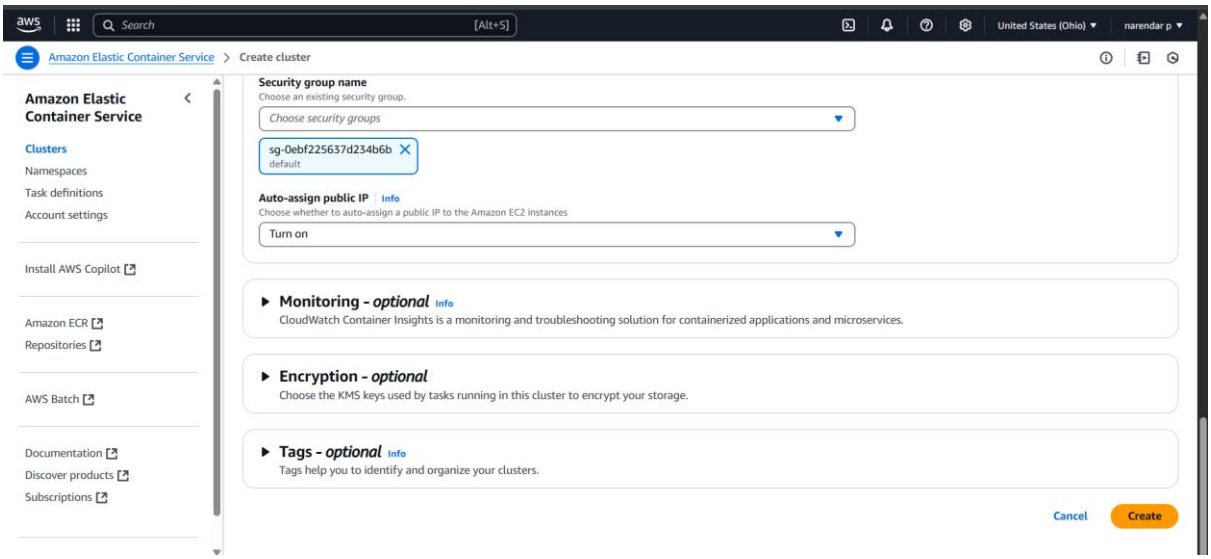
30
A min of 30 GiB and a max of 16,384 GiB is allowed.
External instances using ECS Anywhere can be registered after cluster creation is complete.
Network settings for Amazon EC2 instances Info
By default Amazon EC2 instances are launched in the default subnets for your default VPC. To use the non-default VPC, specify the VPC and subnets.
VPC
Select a VPC to use for your Amazon ECS resources.
vpc-0f9ee23733eee978a
default
Create a new VPC
Subnets
Select the subnets where your instances are launched and your tasks run. We recommend that you use three subnets for production.
Choose subnets
Clear current selection
subnet-084cd94d0085a7ade
us-east-2a 172.31.0.0/20
subnet-08ece92ad48a60ee4
us-east-2b 172.31.16.0/20
Security group Info
Choose an existing security group or create a new security group.
Use an existing security group
Create a new security group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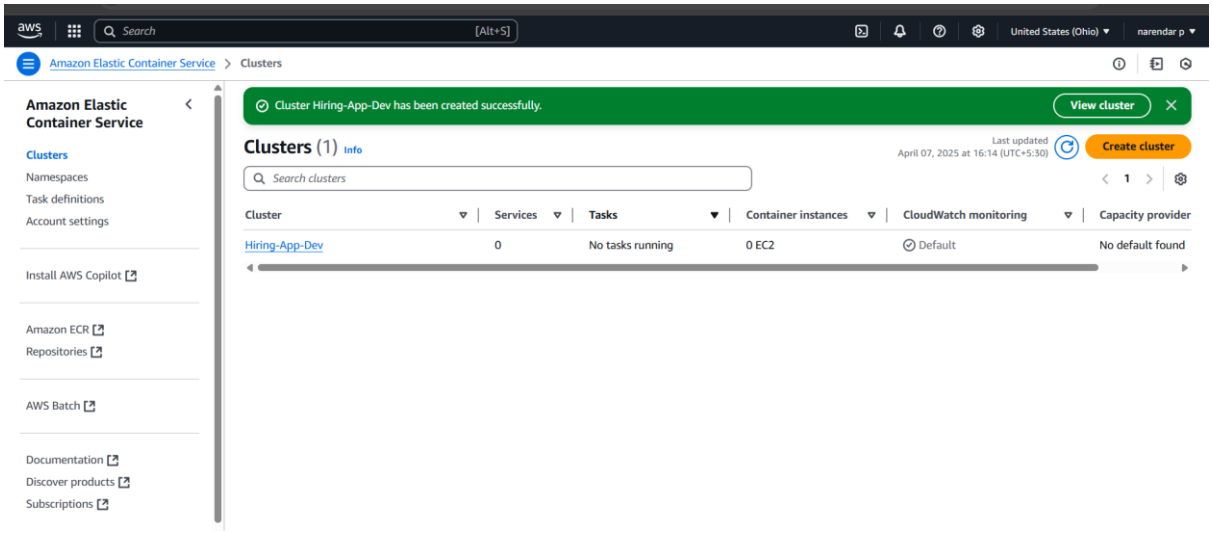
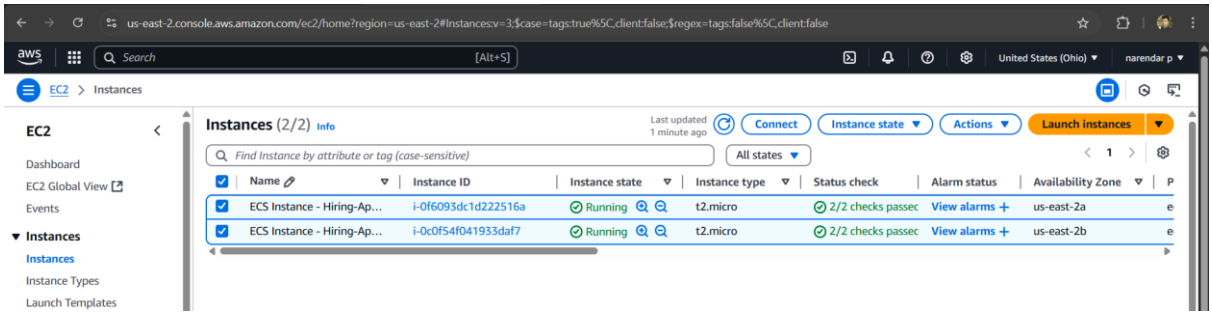
Security group name
Choose an existing security group.
Choose security groups
sg-0ebf225637d234b6b
default
Auto-assign public IP Info
Choose whether to auto-assign a public IP to the Amazon EC2 instances
Turn on
Monitoring - optional Info
CloudWatch Container Insights is a monitoring and troubleshooting solution for containerized applications and microservices.
Encryption - optional
Choose the KMS keys used by tasks running in this cluster to encrypt your storage.
Tags - optional Info
Tags help you to identify and organize your clusters.
Cancel
Create

→created ecs cluster with 2 ec2s:



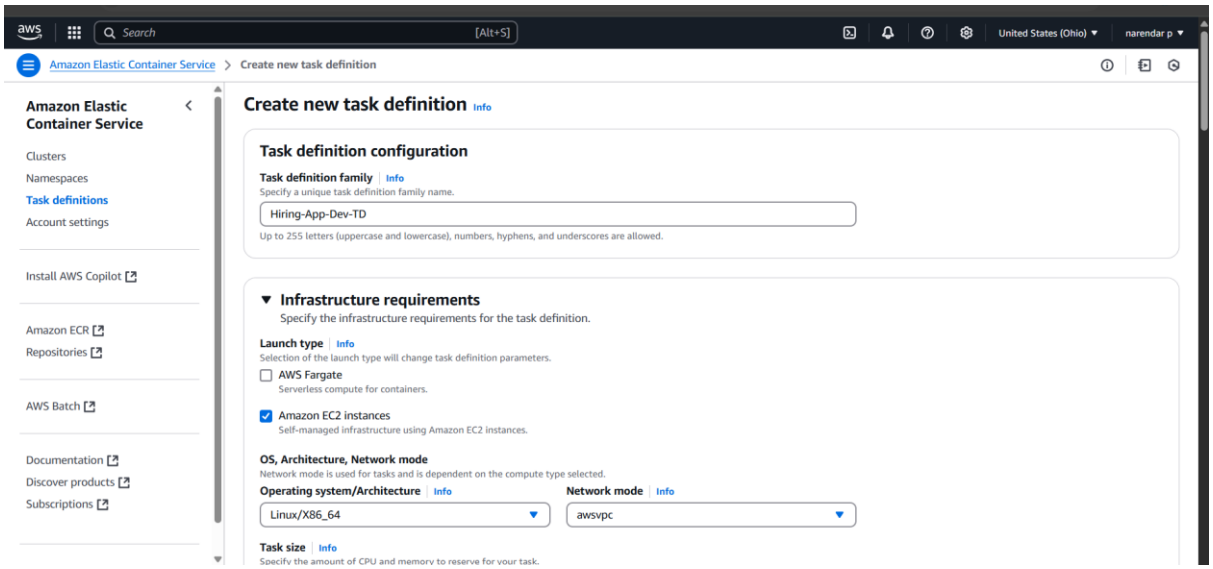
→Two ec2s are created:

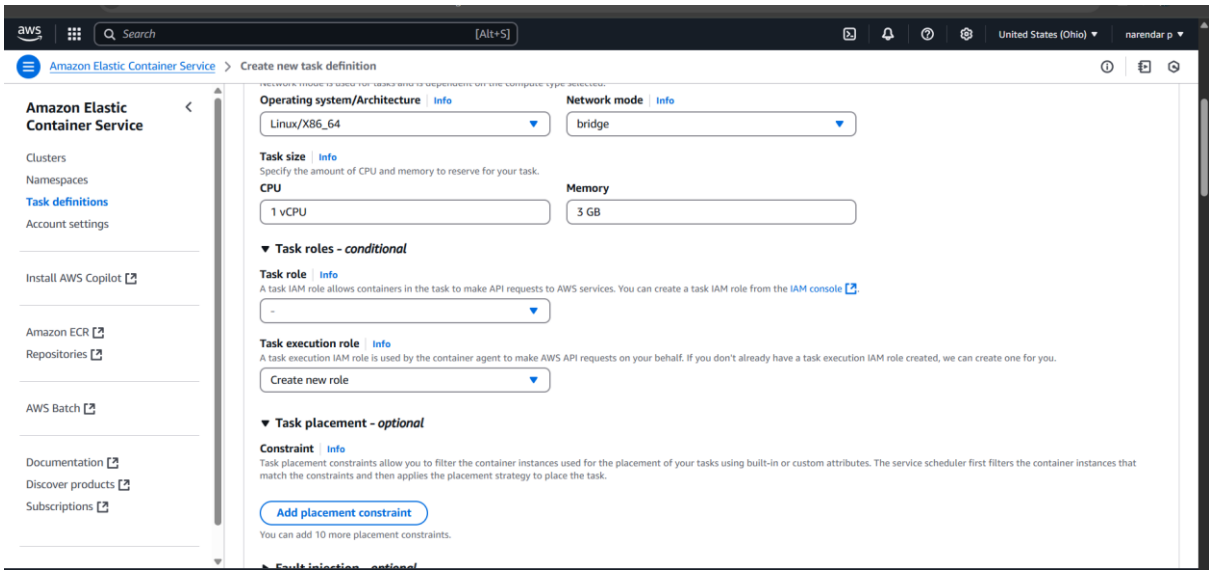


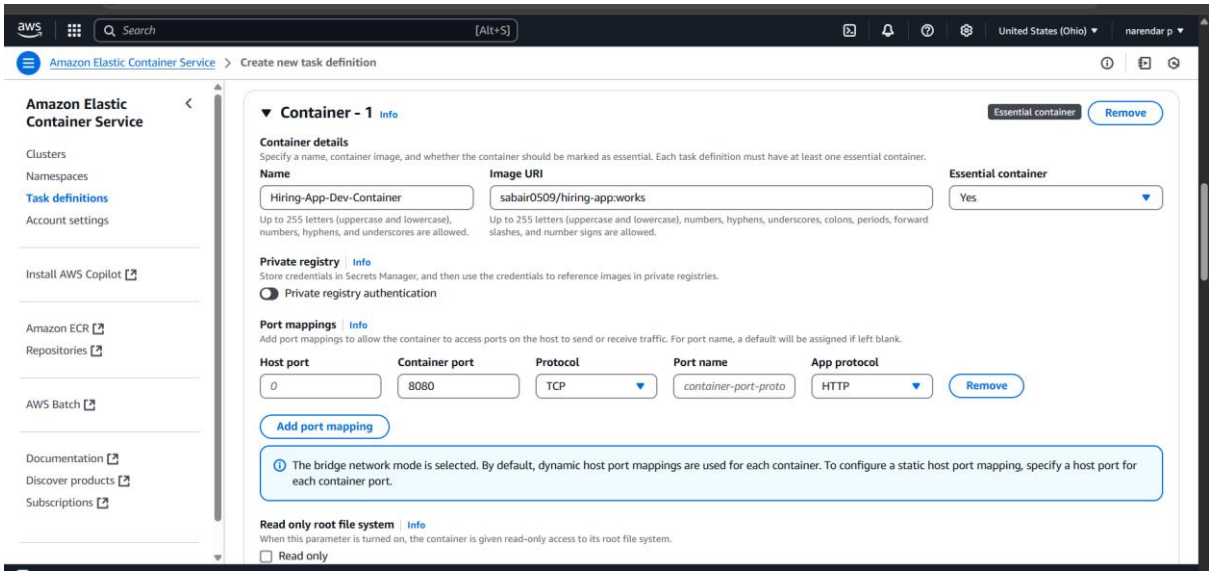
→connected to ec2:

```
root@ip-172-31-2-153:~

aren@narendar MINGW64 /c/Users/Public/Downloads
$ ssh -i "docker.pem" ec2-user@ec2-3-15-208-110.us-east-2.compute.amazonaws.com
The authenticity of host 'ec2-3-15-208-110.us-east-2.compute.amazonaws.com (3.15.208.110)' can't be established.
ED25519 key fingerprint is SHA256:yrl38H+NLGZxGfy3ccXl+odMZLM3h6exsjyNsl8eVZg.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-3-15-208-110.us-east-2.compute.amazonaws.com' (ED25519) to the list of known hosts.

   __|  __|  __|
   _|  (   \__ \   Amazon Linux 2 (ECS Optimized)
 ____|\___|____/

For documentation, visit http://aws.amazon.com/documentation/ecs
8 package(s) needed for security, out of 11 available
Update to the latest ECS-Optimized AMI for all updates, including security
Run "sudo yum update --security" to apply security updates in place
Run "sudo yum update" to apply all updates in place
[ec2-user@ip-172-31-2-153 ~]$ sudo -i
[root@ip-172-31-2-153 ~]# docker --version
Docker version 25.0.8, build 0bab007
[root@ip-172-31-2-153 ~]# docker images
REPOSITORY                     TAG             IMAGE ID       CREATED        SIZE
amazon/amazon-ecs-agent        latest          7ffb112b782a   2 weeks ago    106MB
ebs-csi-driver                 latest          b8dd02981995   2 weeks ago    57.1MB
ecs-service-connect-agent      interface-v1    e1f354809f1d   2 months ago   168MB
amazon/amazon-ecs-pause        0.1.0           9dd4685d3644   10 years ago   702kB
[root@ip-172-31-2-153 ~]# docker container ps
CONTAINER ID   IMAGE                                COMMAND     CREATED         STATUS                   PORTS     NAMES
2f1aeb29482b   amazon/amazon-ecs-agent:latest   "/agent"   7 minutes ago   Up 7 minutes (healthy)             ecs-agent
[root@ip-172-31-2-153 ~]#
```

→coming to tasks first create Task Defination by adding container (Add nginx image):



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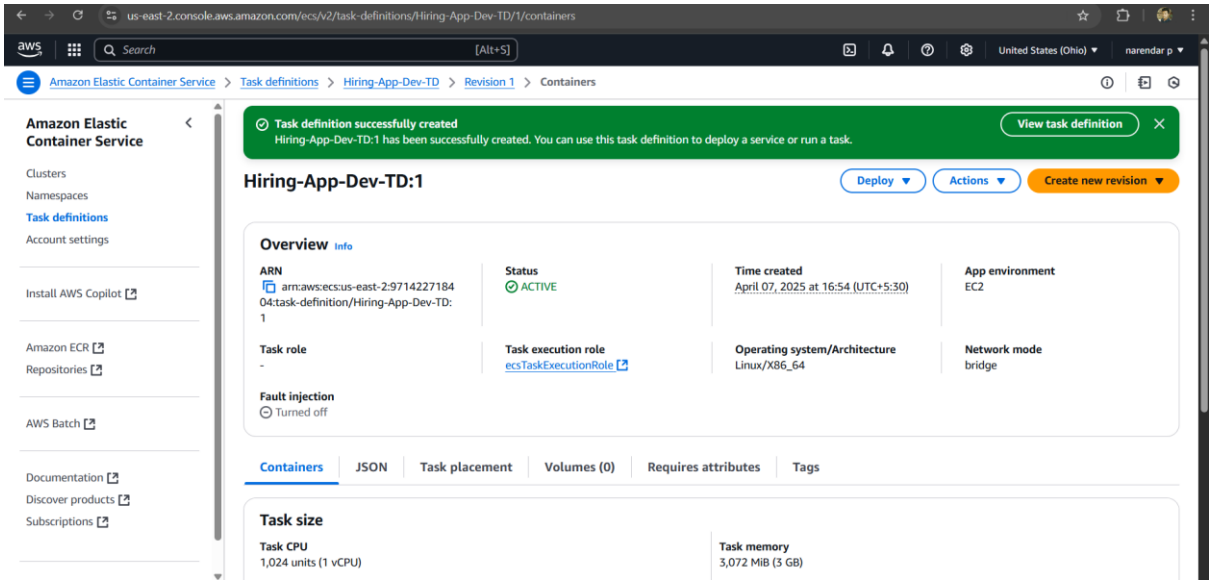
Container - 1 Info
Essential container
Remove
Container details
Specify a name, container image, and whether the container should be marked as essential. Each task definition must have at least one essential container.
Name
Hiring-App-Dev-Container
Up to 255 letters (uppercase and lowercase), numbers, hyphens, and underscores are allowed.
Image URI
sabair0509/hiring-app:works
Up to 255 letters (uppercase and lowercase), numbers, hyphens, underscores, colons, periods, forward slashes, and number signs are allowed.
Essential container
Yes
Private registry Info
Store credentials in Secrets Manager, and then use the credentials to reference images in private registries.
Private registry authentication
Port mappings Info
Add port mappings to allow the container to access ports on the host to send or receive traffic. For port name, a default will be assigned if left blank.
Host port
0
Container port
8080
Protocol
TCP
Port name
container-port-proto
App protocol
HTTP
Remove
Add port mapping
The bridge network mode is selected. By default, dynamic host port mappings are used for each container. To configure a static host port mapping, specify a host port for each container port.
Read only root file system Info
When this parameter is turned on, the container is given read-only access to its root file system.
Read only

→Ctreated TD:


us-east-2.console.aws.amazon.com/ecs/v2/task-definitions/Hiring-App-Dev-TD/1/containers
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Amazon Elastic Container Service > Task definitions > Hiring-App-Dev-TD > Revision 1 > Containers
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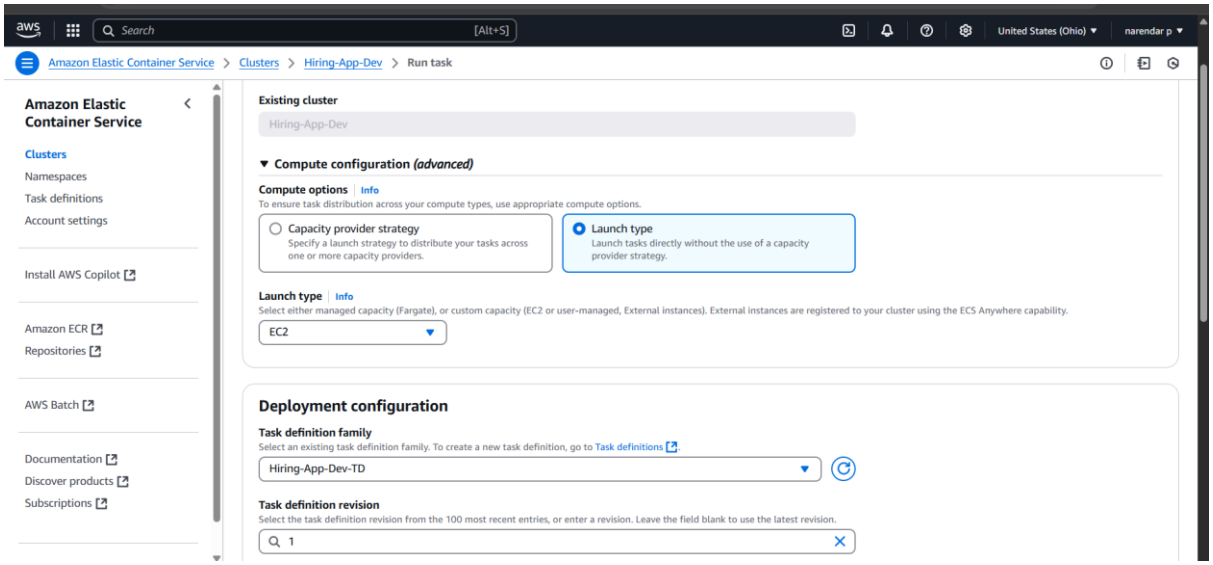
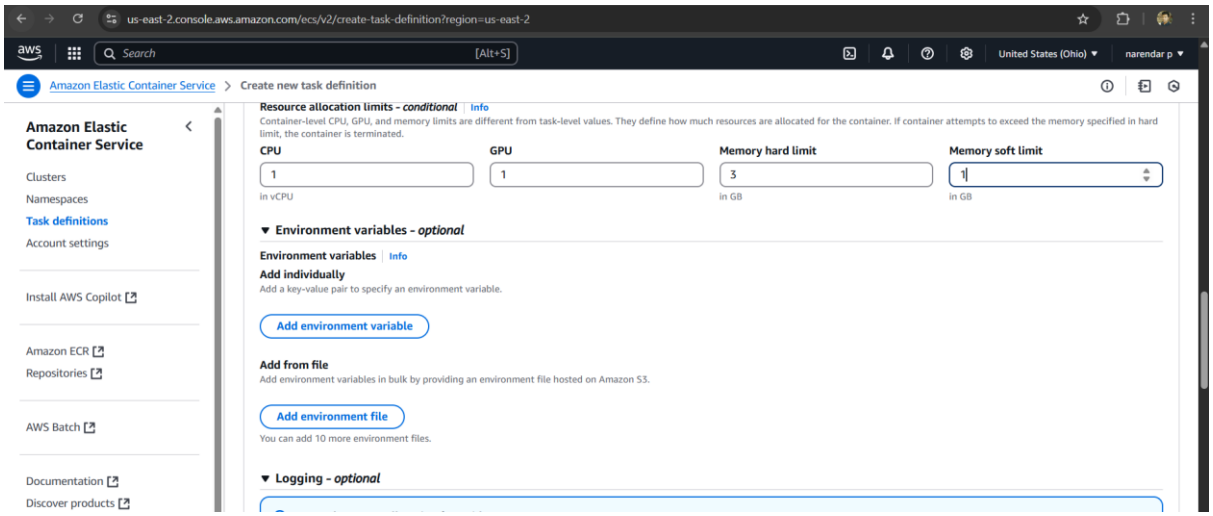
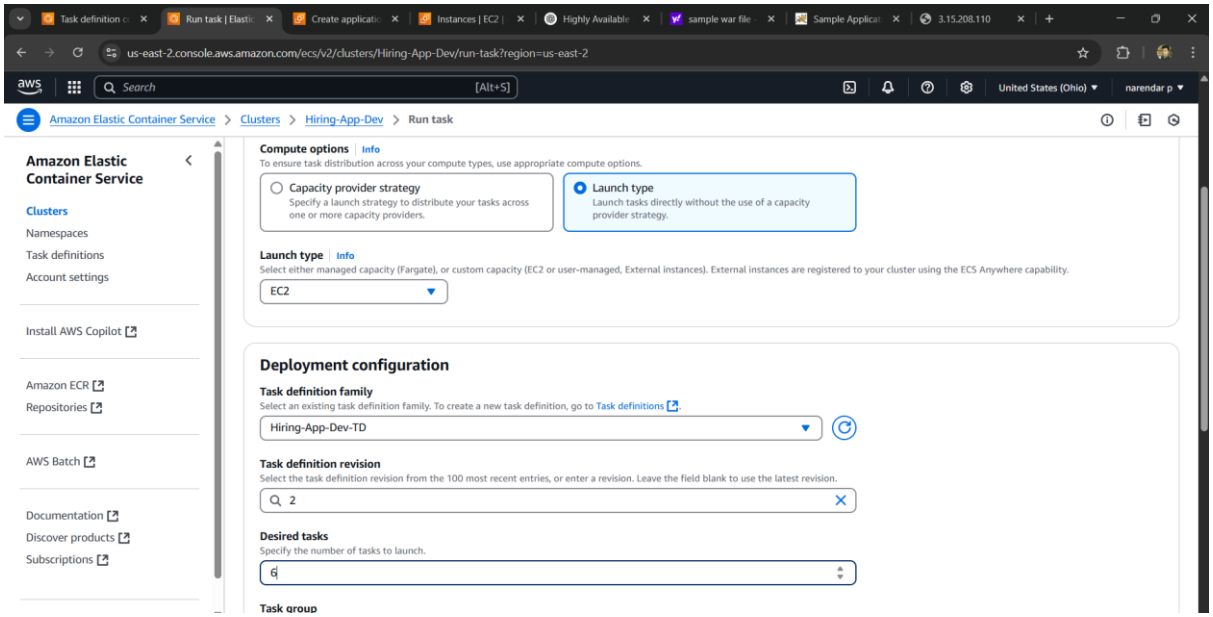
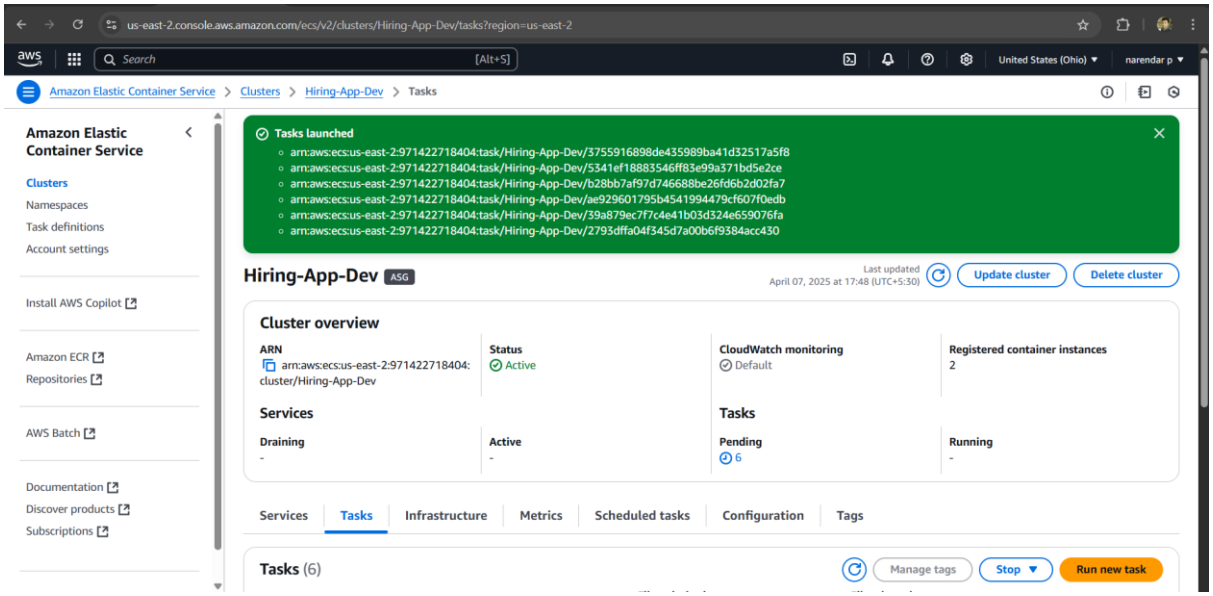
Task definition successfully created
Hiring-App-Dev-TD:1 has been successfully created. You can use this task definition to deploy a service or run a task.
View task definition
Hiring-App-Dev-TD:1
Deploy
Actions
Create new revision
Overview Info
ARN
arn:aws:ecs:us-east-2:971422718404:task-definition/Hiring-App-Dev-TD:1
Status
ACTIVE
Time created
April 07, 2025 at 16:54 (UTC+5:30)
App environment
EC2
Task role
-
Task execution role
ecsTaskExecutionRole
Operating system/Architecture
Linux/X86_64
Network mode
bridge
Fault injection
Turned off
Containers
JSON
Task placement
Volumes (0)
Requires attributes
Tags
Task size
Task CPU
1,024 units (1 vCPU)
Task memory
3,072 MiB (3 GB)

→create tasks:

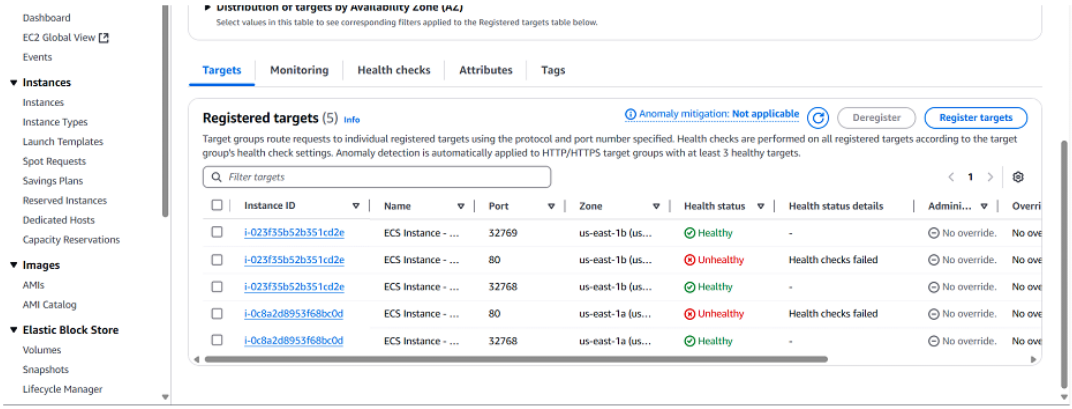




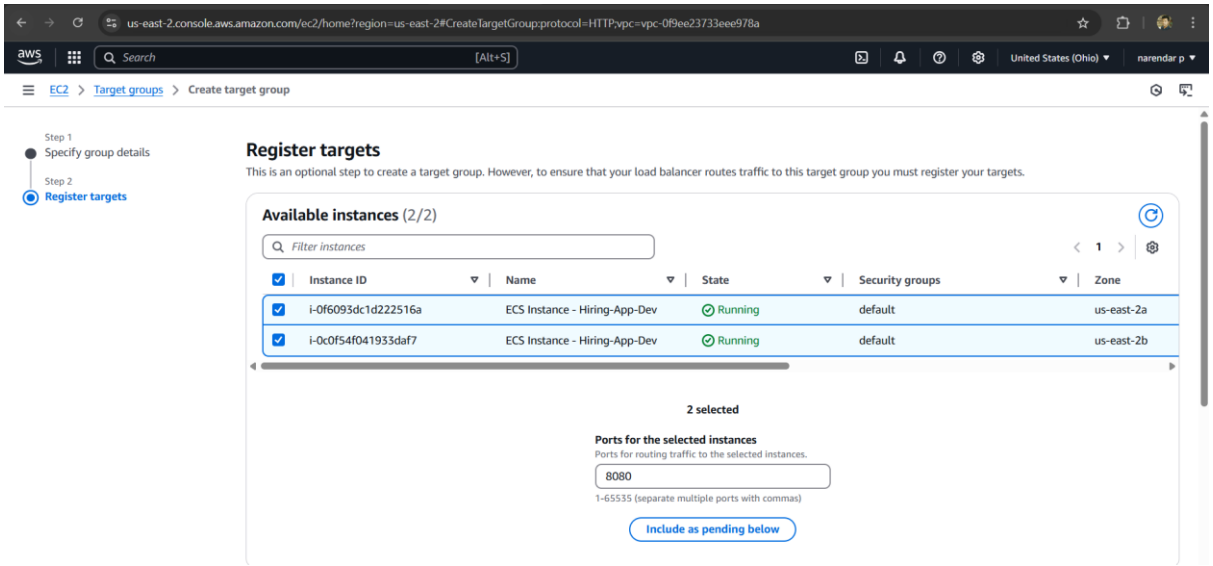


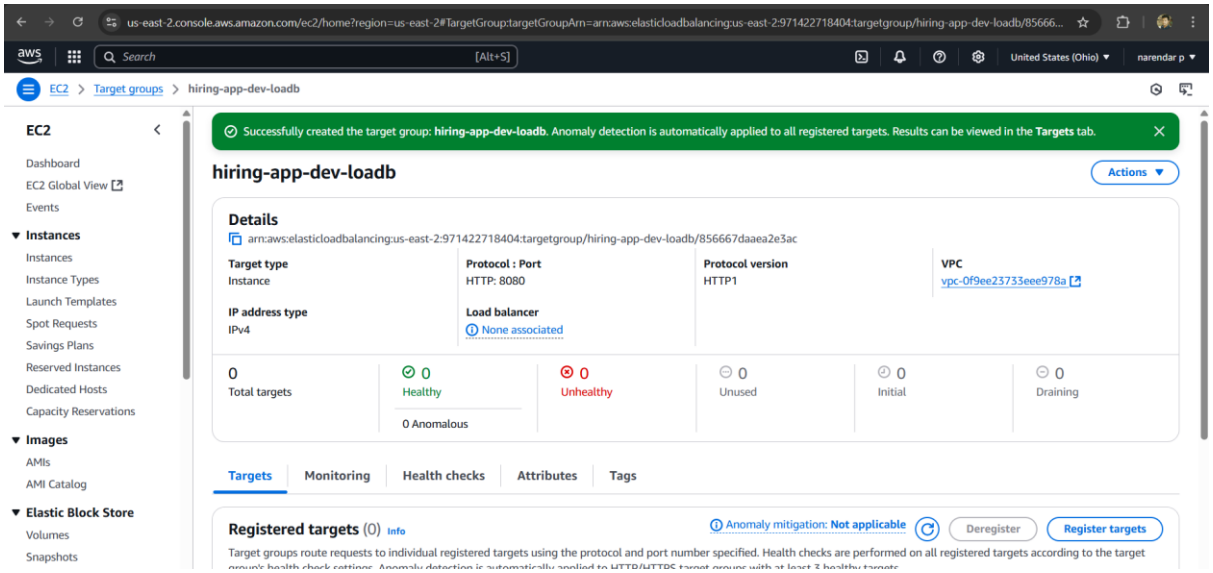


→tasks created:

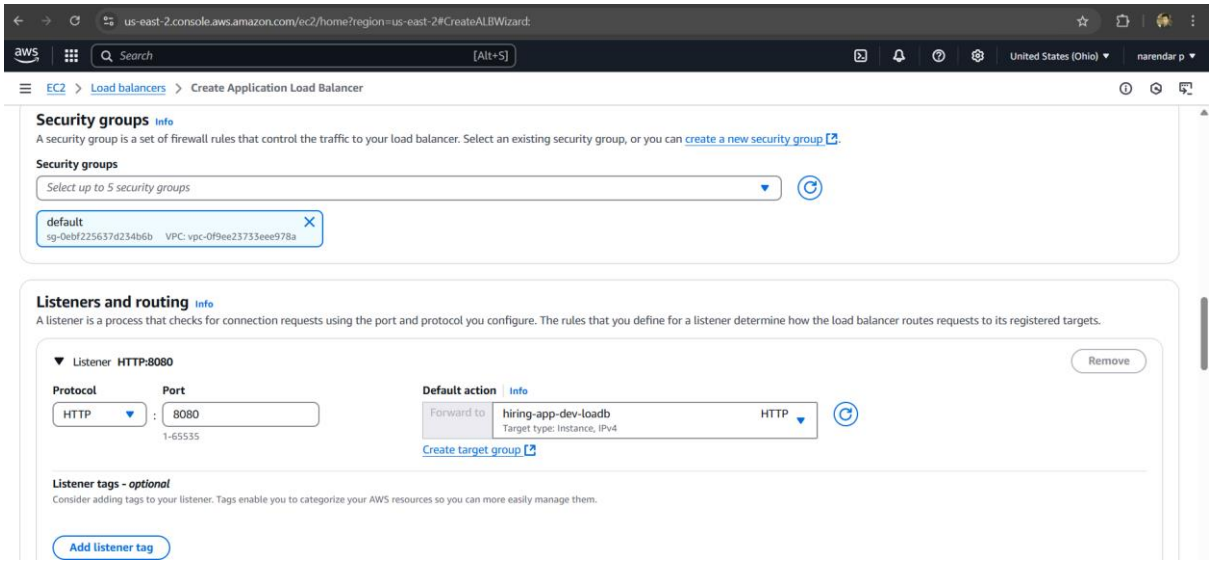


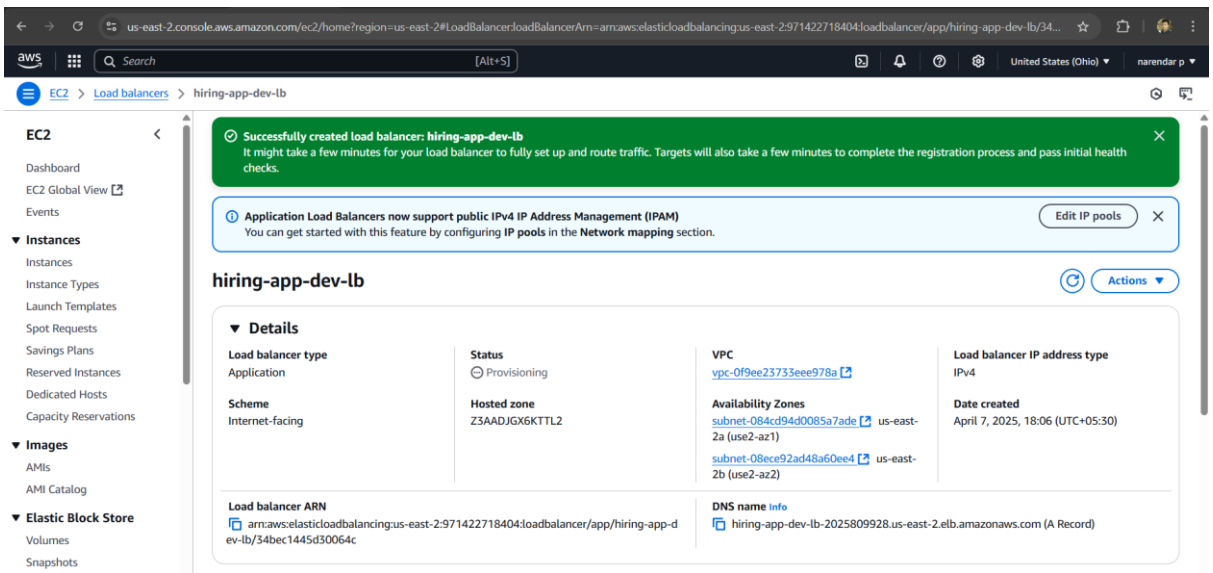
→Created target groups for loadbalancer:



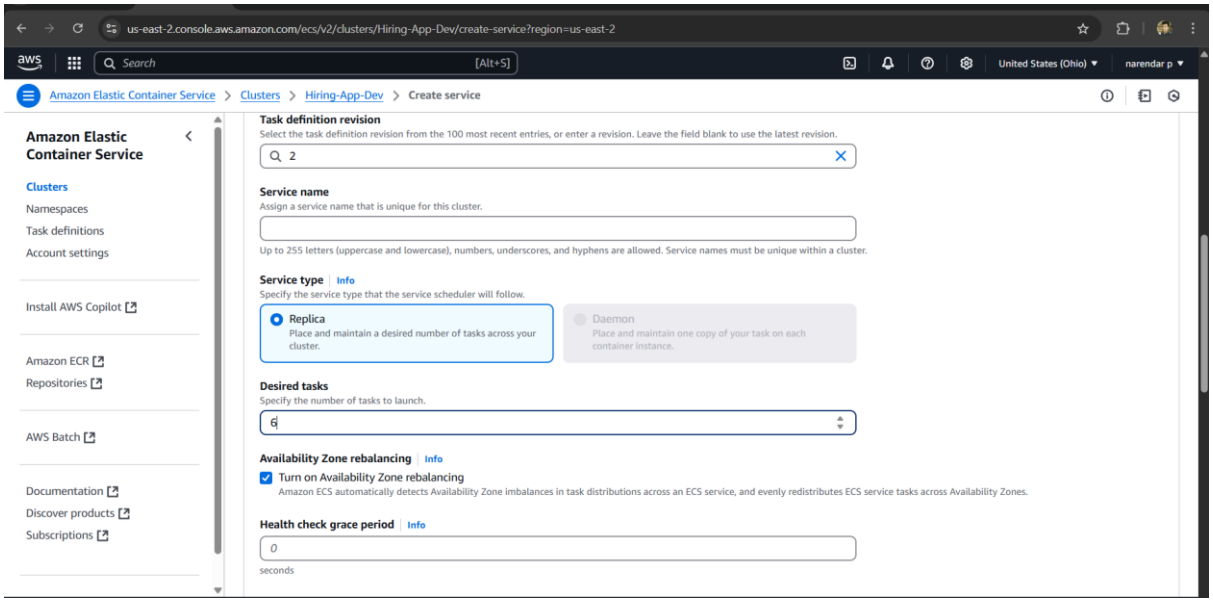


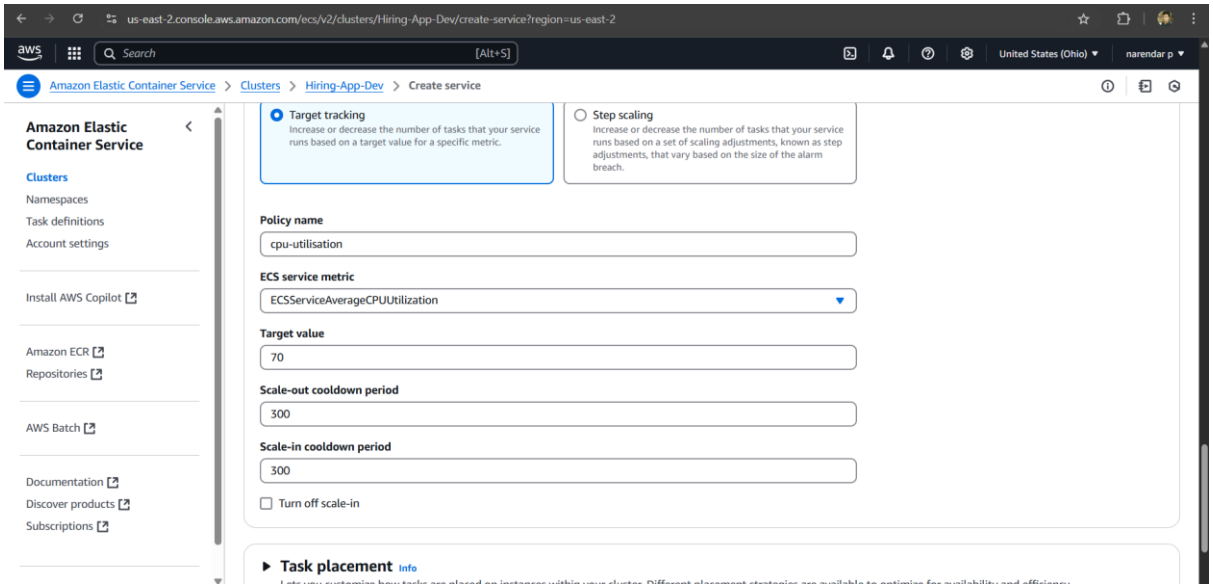
→load balancer:

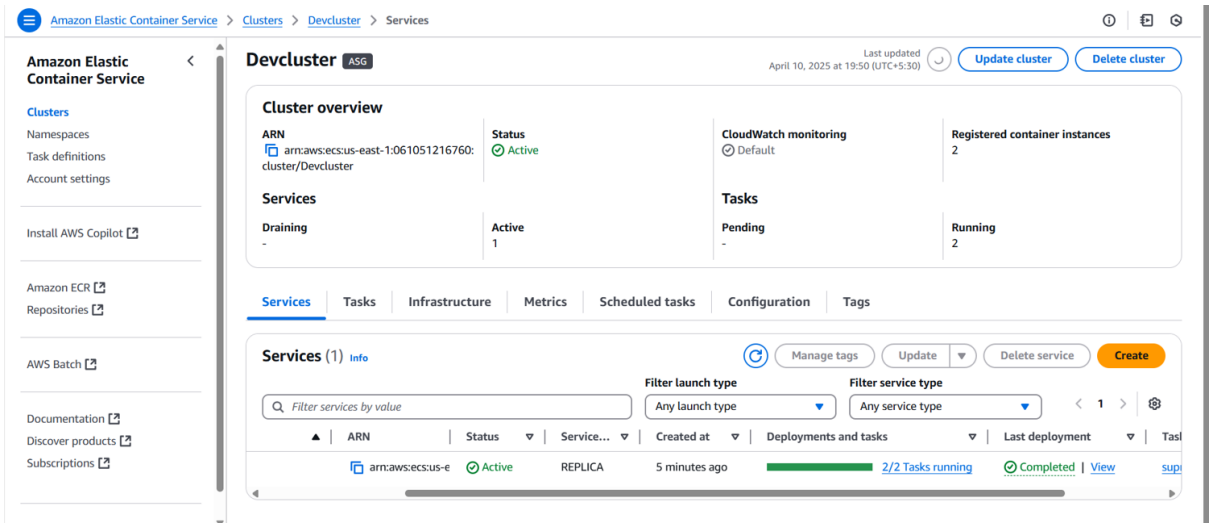




→Create Service:







→access the service by using load balancer ARN on the browser: