Project2(b): Auto-Scaling as accordance with cpu-utillization:

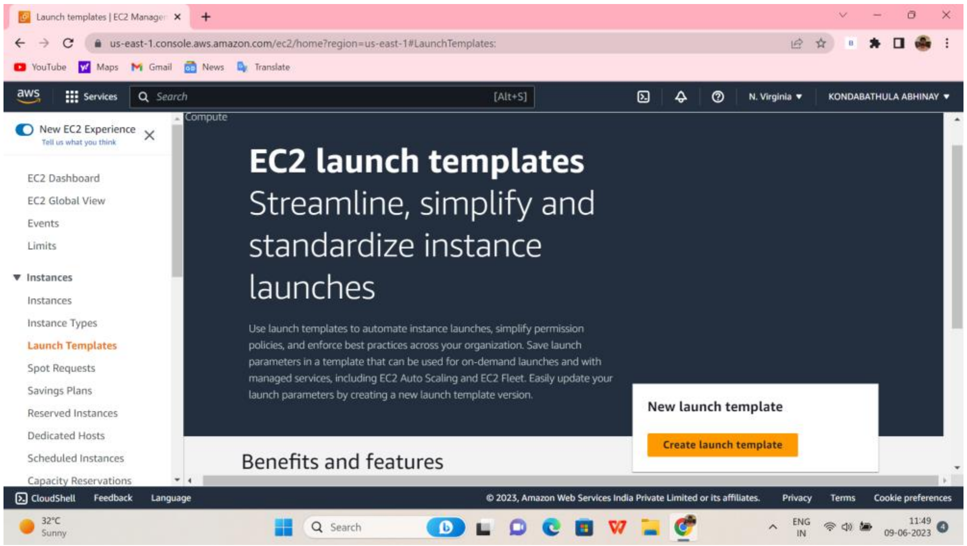
Min: 2

Desired: 2

Max: 5

Step1: Open you AWS Management Console

Step2: Go to Launch Template and Launch one.



EC2 launch templates

Streamline, simplify and standardize instance launches

Use launch templates to automate instance launches, simplify permission policies, and enforce best practices across your organization. Save launch parameters in a template that can be used for on-demand launches and with managed services, including EC2 Auto Scaling and EC2 Fleet. Easily update your launch parameters by creating a new launch template version.

Benefits and features

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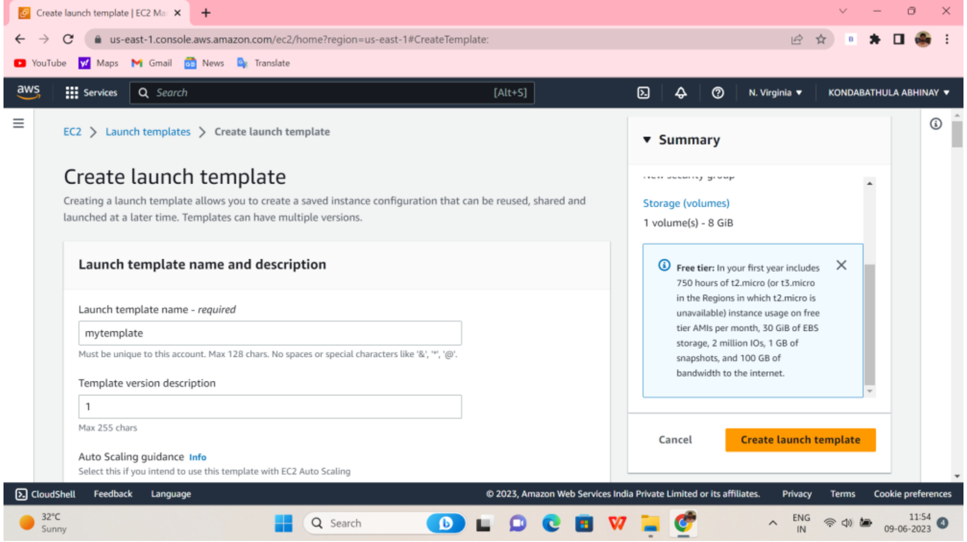
Step 3: Give a name as “my template”, and type “1” in version.



Create launch template

Creating a launch template allows you to create a saved instance configuration that can be reused, shared and launched at a later time. Templates can have multiple versions.

Launch template name and description

Launch template name - *required*

mytemplate

Must be unique to this account. Max 128 chars. No spaces or special characters like '&', '*', '@'.

Template version description

1

Max 255 chars

Auto Scaling guidance Info

Select this if you intend to use this template with EC2 Auto Scaling

1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

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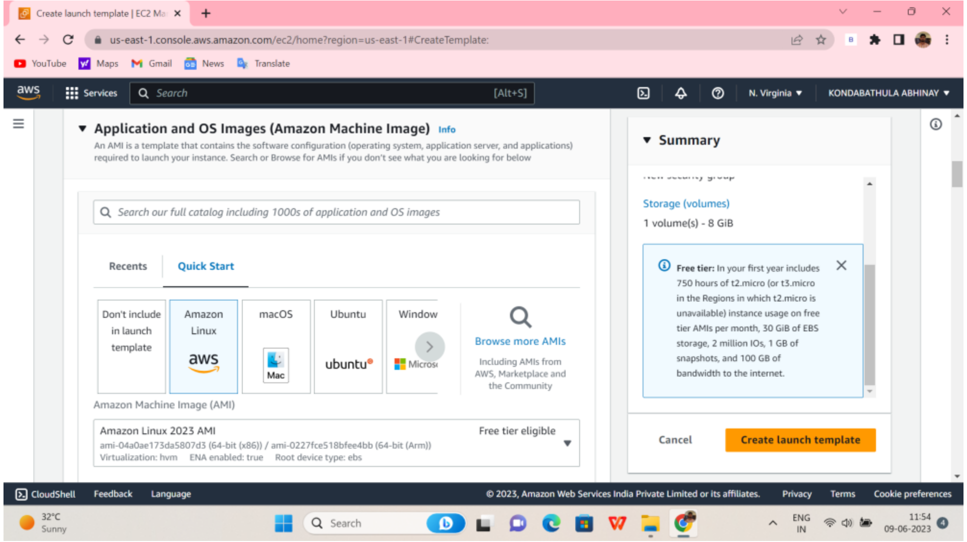
Step4: select “AWS Linux” for OS.



Application and OS Images (Amazon Machine Image) Info

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

Search our full catalog including 1000s of application and OS images

Recents | Quick Start

Don't include in launch template | Amazon Linux | macOS | Ubuntu | Window

Browse more AMIs

Including AMIs from AWS, Marketplace and the Community

Amazon Machine Image (AMI)

Amazon Linux 2023 AMI — Free tier eligible
ami-04a0ae173da5807d3 (64-bit (x86)) / ami-0227fce518bfee4bb (64-bit (Arm))
Virtualization: hvm ENA enabled: true Root device type: ebs

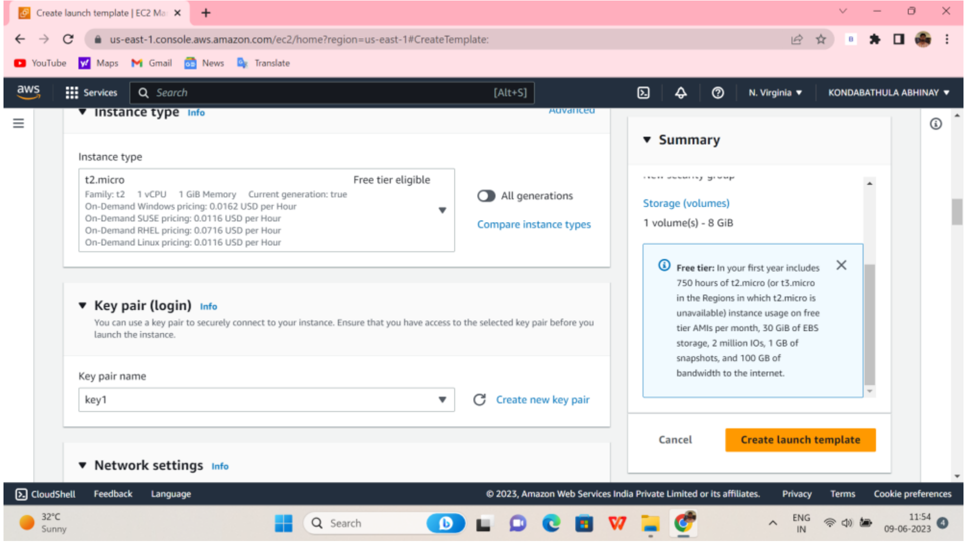
Summary

Storage (volumes)
1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Cancel | Create launch template

Step5: select “t2 micro” at instance and select a keypair “key1”.



Instance type Info

Instance type

t2.micro — Free tier eligible
Family: t2 1 vCPU 1 GiB Memory Current generation: true
On-Demand Windows pricing: 0.0162 USD per Hour
On-Demand SUSE pricing: 0.0116 USD per Hour
On-Demand RHEL pricing: 0.0716 USD per Hour
On-Demand Linux pricing: 0.0116 USD per Hour

All generations

Compare instance types

Key pair (login) Info

You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.

Key pair name

key1

Create new key pair

Network settings Info

Summary

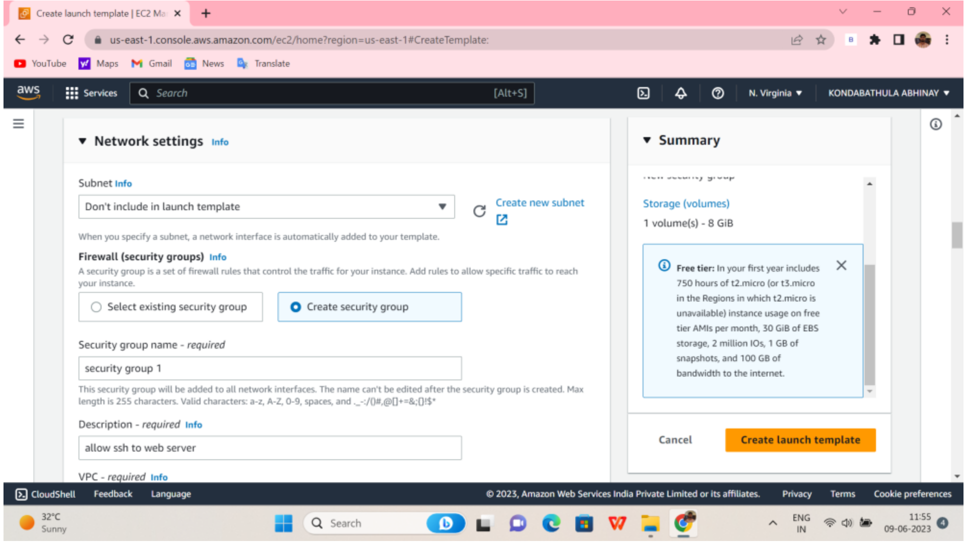
Storage (volumes)
1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Cancel | Create launch template

Step6: Create a security group and give it a name as “security group 1”

And add discription.



Network settings

Subnet: Don't include in launch template

When you specify a subnet, a network interface is automatically added to your template.

Firewall (security groups)

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

○ Select existing security group ● Create security group

Security group name - *required*: security group 1

This security group will be added to all network interfaces. The name can't be edited after the security group is created. Max length is 255 characters. Valid characters: a-z, A-Z, 0-9, spaces, and ._-:/()#,@[]+=&;{}!$*

Description - *required*: allow ssh to web server

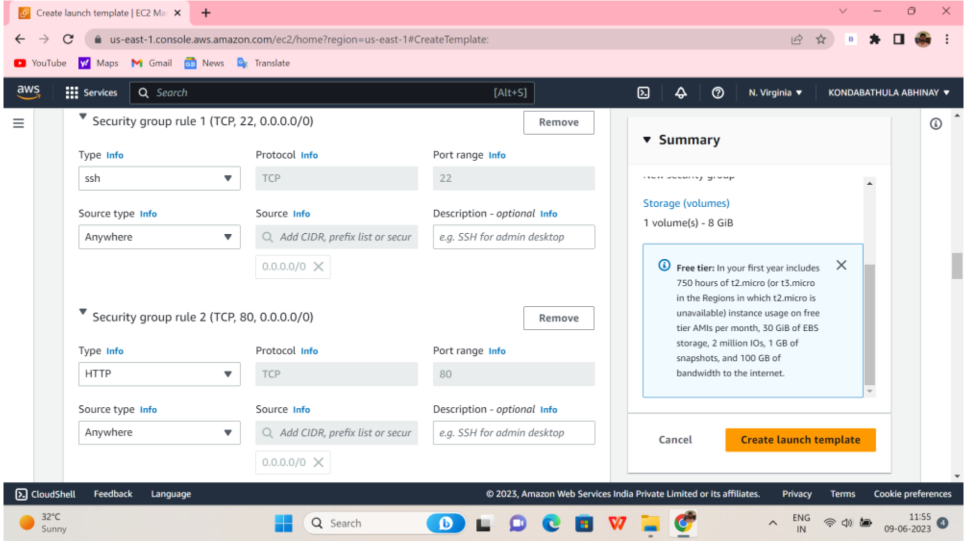
VPC - *required*

Summary

Storage (volumes)
1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Step 7: Add two inbound rules 1. HTTP and 2. SSH.



Security group rule 1 (TCP, 22, 0.0.0.0/0)

Type	Protocol	Port range
ssh	TCP	22

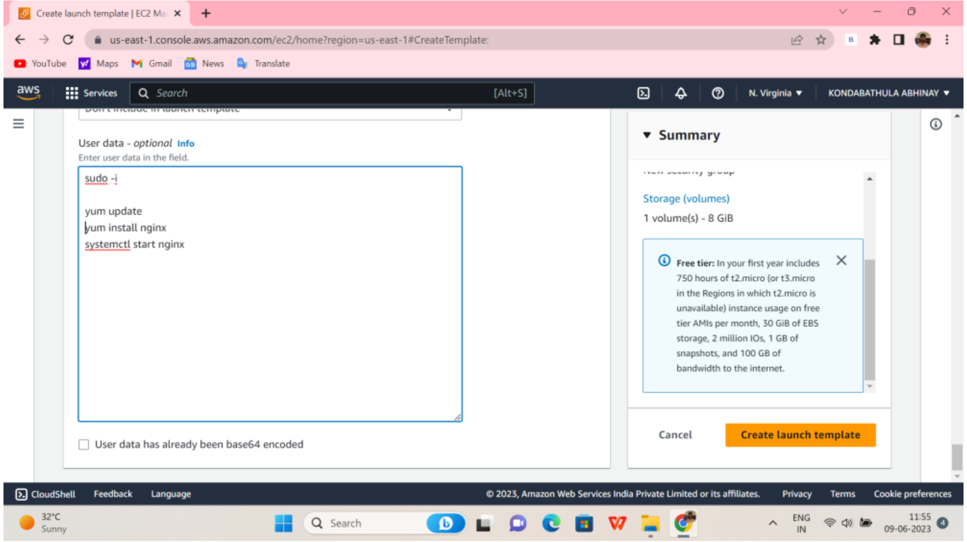
Source type	Source	Description - *optional*
Anywhere	0.0.0.0/0	e.g. SSH for admin desktop

Security group rule 2 (TCP, 80, 0.0.0.0/0)

Type	Protocol	Port range
HTTP	TCP	80

Source type	Source	Description - *optional*
Anywhere	0.0.0.0/0	e.g. SSH for admin desktop

Step 8: In additional settings add this script and click on “Create launch template”.


Create launch template | EC2 Ma
us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateTemplate:
Services
Search
N. Virginia
KONDABATHULA ABHINAY
Summary
Cancel
Create launch template
CloudShell
Feedback
Language
© 2023, Amazon Web Services India Private Limited or its affiliates.
Privacy
Terms
Cookie preferences

User data - *optional* Info

Enter user data in the field.

```
sudo -i

yum update
yum install nginx
systemctl start nginx
```

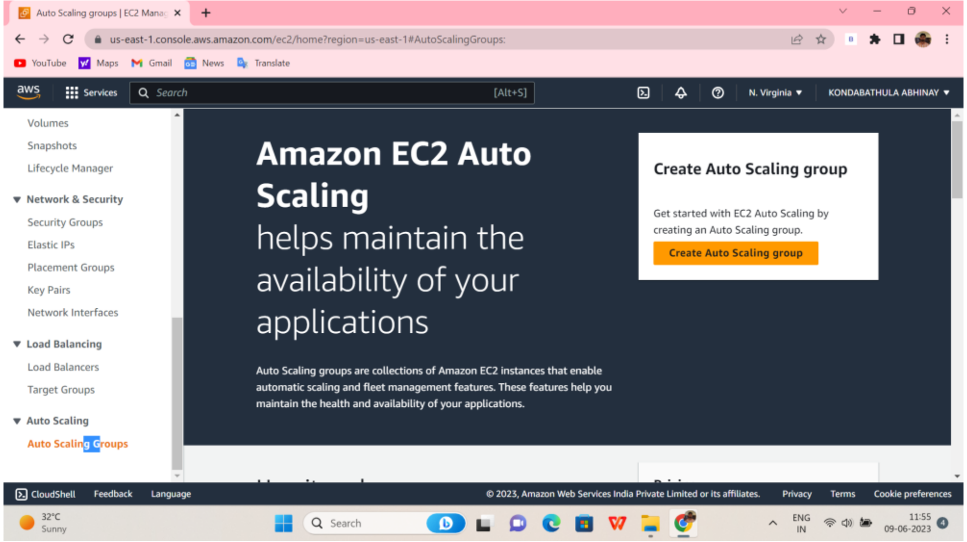
□ User data has already been base64 encoded

Storage (volumes)

1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Step 9: Now go to Auto-Scaling and click on “create Auto Scaling group”.



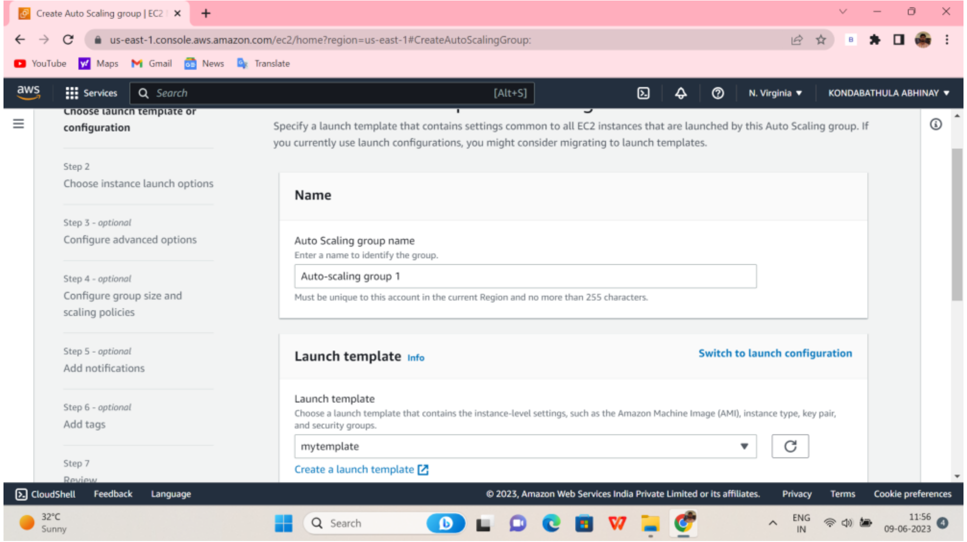
Amazon EC2 Auto Scaling helps maintain the availability of your applications

Auto Scaling groups are collections of Amazon EC2 instances that enable automatic scaling and fleet management features. These features help you maintain the health and availability of your applications.

Create Auto Scaling group

Get started with EC2 Auto Scaling by creating an Auto Scaling group.

Step10: Give a name as “Auto scaling group 1” and select the template you just created.


Create Auto Scaling group | EC2
us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateAutoScalingGroup:
YouTube
Maps
Gmail
News
Translate
Services
Search
[Alt+S]
N. Virginia
KONDABATHULA ABHINAY
CloudShell
Feedback
Language
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Privacy
Terms
Cookie preferences
32°C
Sunny
Search
ENG
IN
11:56
09-06-2023

Choose launch template or configuration

Step 2
Choose instance launch options

Step 3 - *optional*
Configure advanced options

Step 4 - *optional*
Configure group size and scaling policies

Step 5 - *optional*
Add notifications

Step 6 - *optional*
Add tags

Step 7
Review

Specify a launch template that contains settings common to all EC2 instances that are launched by this Auto Scaling group. If you currently use launch configurations, you might consider migrating to launch templates.

Name

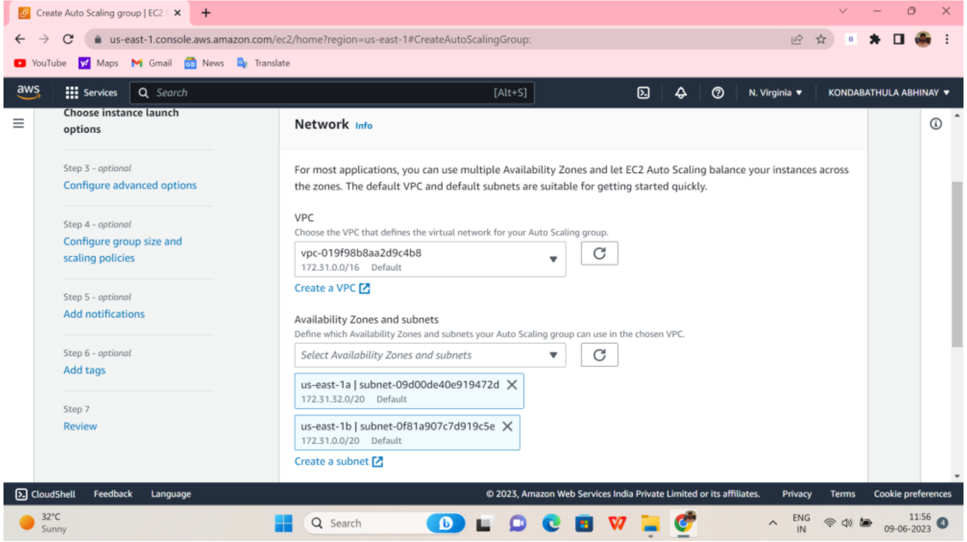
Auto Scaling group name
Enter a name to identify the group.
Auto-scaling group 1
Must be unique to this account in the current Region and no more than 255 characters.

Launch template Info

Switch to launch configuration

Launch template
Choose a launch template that contains the instance-level settings, such as the Amazon Machine Image (AMI), instance type, key pair, and security groups.
mytemplate
Create a launch template

Step11: select "us-east 1a" and "us-east 1b" zones and click next.


Create Auto Scaling group | EC2
us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateAutoScalingGroup:
YouTube
Maps
Gmail
News
Translate
Services
Search
[Alt+S]
N. Virginia
KONDABATHULA ABHINAY
CloudShell
Feedback
Language
© 2023, Amazon Web Services India Private Limited or its affiliates.
Privacy
Terms
Cookie preferences
32°C
Sunny
Search
ENG
IN
11:56
09-06-2023

Choose instance launch options

Step 3 - *optional*
Configure advanced options

Step 4 - *optional*
Configure group size and scaling policies

Step 5 - *optional*
Add notifications

Step 6 - *optional*
Add tags

Step 7
Review

Network Info

For most applications, you can use multiple Availability Zones and let EC2 Auto Scaling balance your instances across the zones. The default VPC and default subnets are suitable for getting started quickly.

VPC
Choose the VPC that defines the virtual network for your Auto Scaling group.
vpc-019f98b8aa2d9c4b8
172.31.0.0/16 Default
Create a VPC

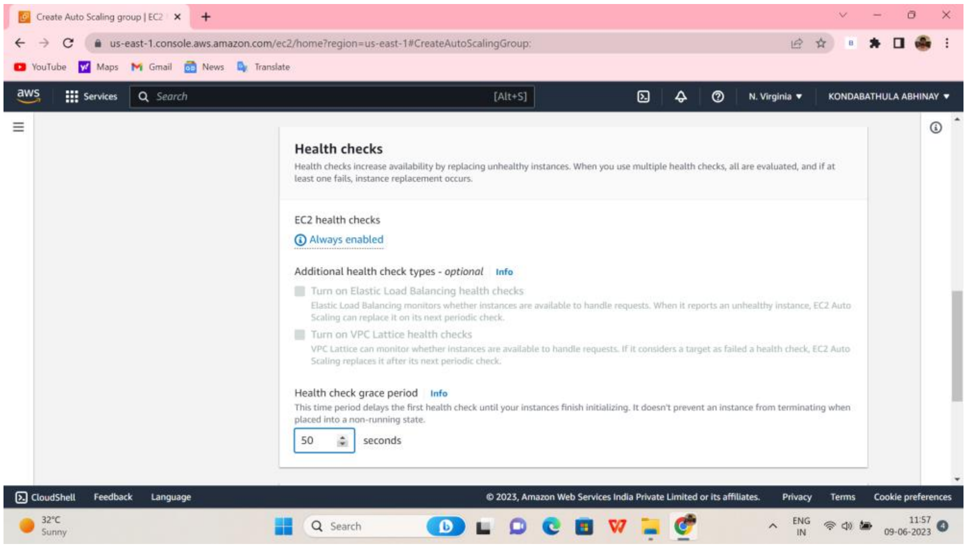
Availability Zones and subnets
Define which Availability Zones and subnets your Auto Scaling group can use in the chosen VPC.
Select Availability Zones and subnets

us-east-1a | subnet-09d00de40e919472d
172.31.32.0/20 Default

us-east-1b | subnet-0f81a907c7d919c5e
172.31.0.0/20 Default

Create a subnet

Step12: Reduce health period to "50" seconds .


Create Auto Scaling group | EC2
us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateAutoScalingGroup:
YouTube
Maps
Gmail
News
Translate
Services
Search
[Alt+S]
N. Virginia
KONDABATHULA ABHINAY
CloudShell
Feedback
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09-06-2023

Health checks

Health checks increase availability by replacing unhealthy instances. When you use multiple health checks, all are evaluated, and if at least one fails, instance replacement occurs.

EC2 health checks

Always enabled

Additional health check types - *optional* Info

□ Turn on Elastic Load Balancing health checks
Elastic Load Balancing monitors whether instances are available to handle requests. When it reports an unhealthy instance, EC2 Auto Scaling can replace it on its next periodic check.

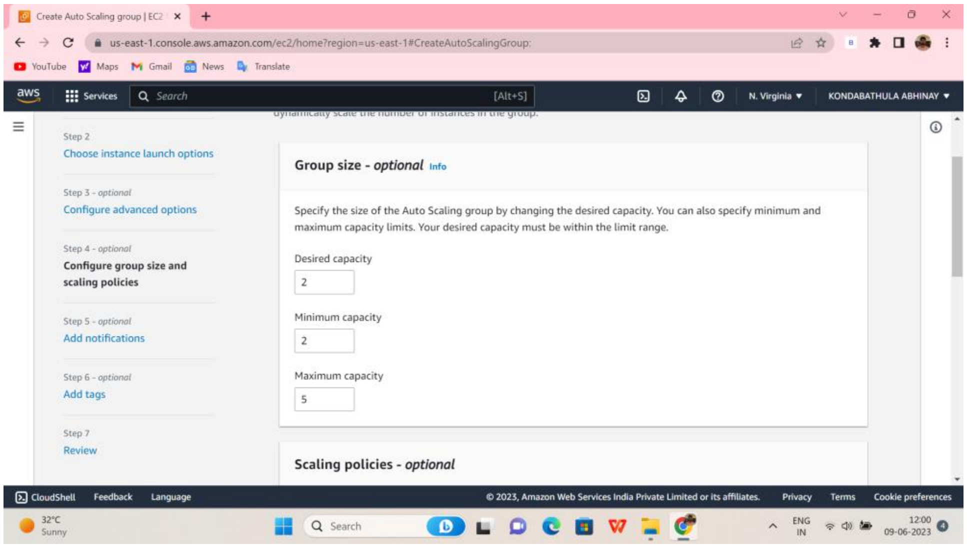
□ Turn on VPC Lattice health checks
VPC Lattice can monitor whether instances are available to handle requests. If it considers a target as failed a health check, EC2 Auto Scaling replaces it after its next periodic check.

Health check grace period Info

This time period delays the first health check until your instances finish initializing. It doesn't prevent an instance from terminating when placed into a non-running state.

50 seconds

Step 13: Select Group size as –>minimum: 2 -->desired:2 --> maximum:5


Create Auto Scaling group | EC2
us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateAutoScalingGroup:
YouTube
Maps
Gmail
News
Translate
Services
Search
[Alt+S]
N. Virginia
KONDABATHULA ABHINAY
Step 2
Choose instance launch options
Step 3 - optional
Configure advanced options
Step 4 - optional
Configure group size and scaling policies
Step 5 - optional
Add notifications
Step 6 - optional
Add tags
Step 7
Review
CloudShell
Feedback
Language
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12:00
09-06-2023

dynamically scale the number of instances in the group.

Group size - *optional* Info

Specify the size of the Auto Scaling group by changing the desired capacity. You can also specify minimum and maximum capacity limits. Your desired capacity must be within the limit range.

Desired capacity: 2

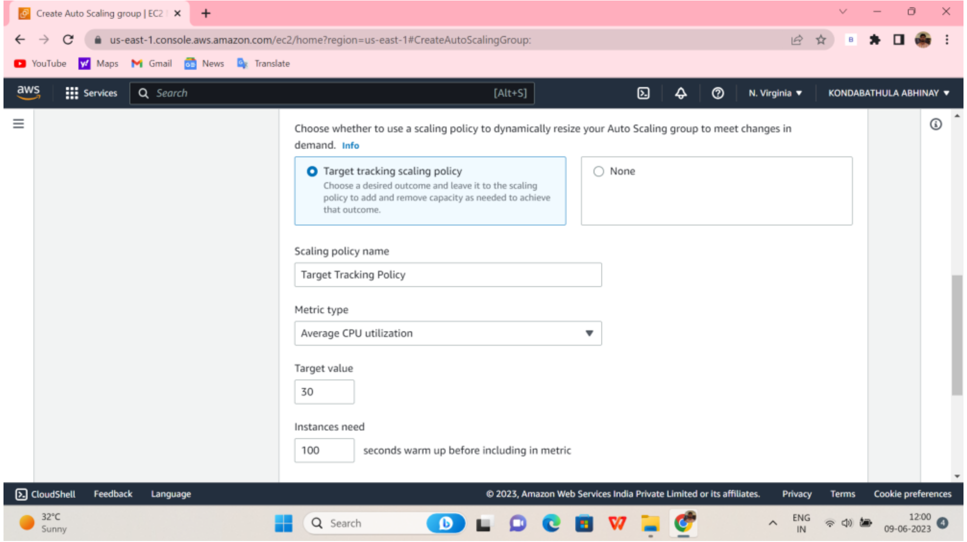
Minimum capacity: 2

Maximum capacity: 5

Scaling policies - *optional*

Step 14: Select “Target Tracking scaling policy”

And set Target Value at 30.



Choose whether to use a scaling policy to dynamically resize your Auto Scaling group to meet changes in demand. Info

● Target tracking scaling policy
Choose a desired outcome and leave it to the scaling policy to add and remove capacity as needed to achieve that outcome.

○ None

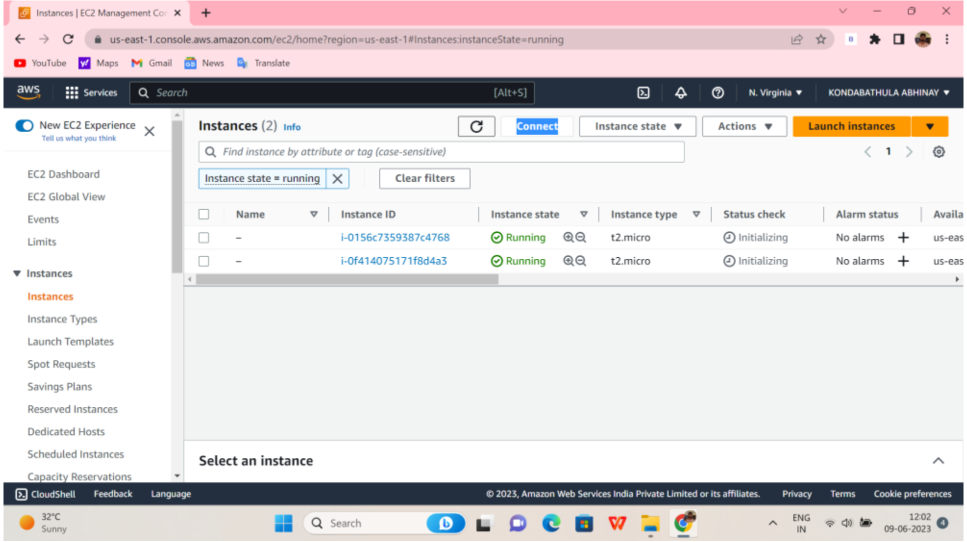
Scaling policy name: Target Tracking Policy

Metric type: Average CPU utilization

Target value: 30

Instances need: 100 seconds warm up before including in metric

Step 15: Go back to instances you will find two unnamed instances running.



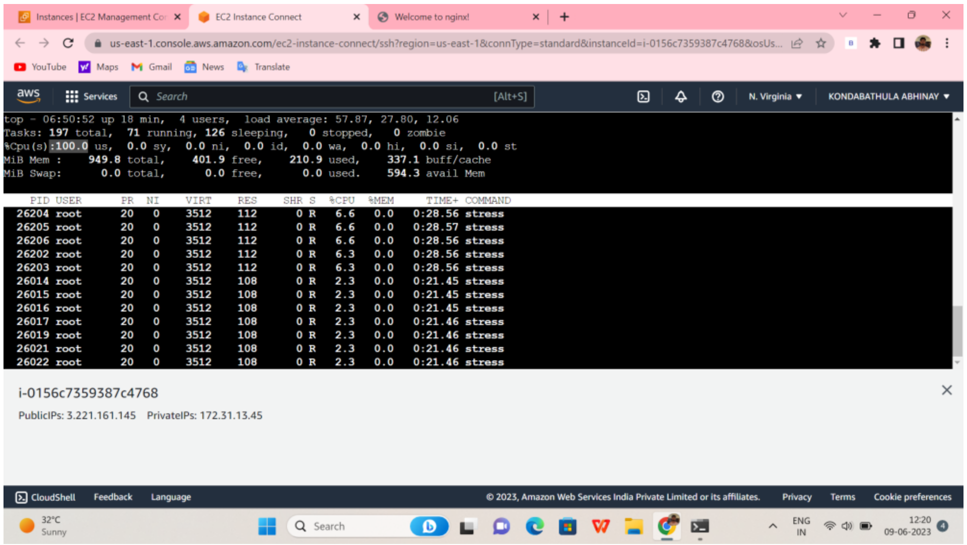
Instances (2) Info

Instance state = running

☐	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availa
☐	–	i-0156c7359387c4768	Running	t2.micro	Initializing	No alarms	us-eas
☐	–	i-0f414075171f8d4a3	Running	t2.micro	Initializing	No alarms	us-eas

Select an instance

Step 16: Launch one of the instances and check the cpu capacity running by typing “top” command.


Instances | EC2 Management Co
EC2 Instance Connect
Welcome to nginx!
us-east-1.console.aws.amazon.com/ec2-instance-connect/ssh?region=us-east-1&connType=standard&instanceId=i-0156c7359387c4768&osUs...
YouTube
Maps
Gmail
News
Translate
aws
Services
Search
[Alt+S]
N. Virginia
KONDABATHULA ABHINAY

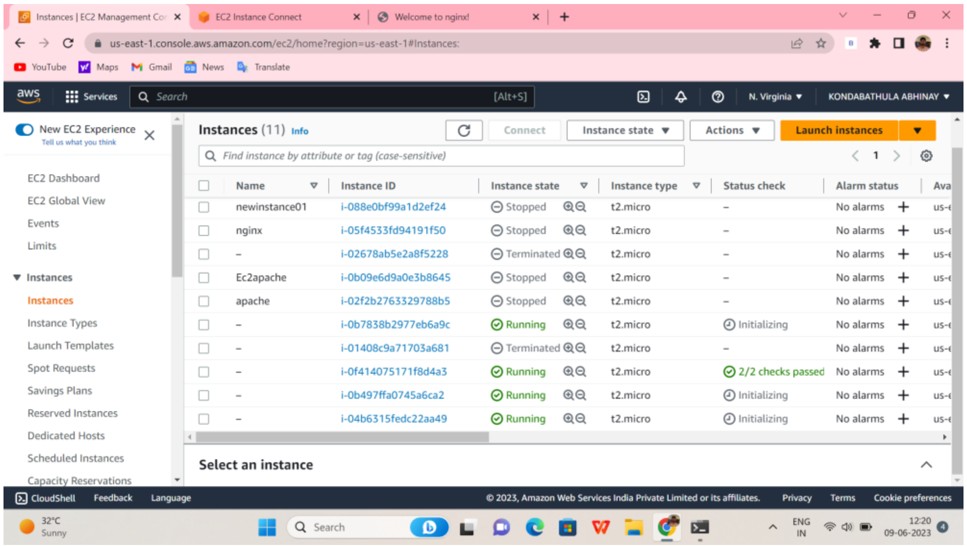
```
top - 06:50:52 up 18 min,  4 users,  load average: 57.87, 27.80, 12.06
Tasks: 197 total,  71 running, 126 sleeping,   0 stopped,   0 zombie
%Cpu(s):100.0 us,  0.0 sy,  0.0 ni,  0.0 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem :    949.8 total,    401.9 free,    210.9 used,    337.1 buff/cache
MiB Swap:      0.0 total,      0.0 free,      0.0 used.    594.3 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM     TIME+ COMMAND
26204 root      20   0    3512    112      0 R   6.6   0.0   0:28.56 stress
26205 root      20   0    3512    112      0 R   6.6   0.0   0:28.57 stress
26206 root      20   0    3512    112      0 R   6.6   0.0   0:28.56 stress
26202 root      20   0    3512    112      0 R   6.3   0.0   0:28.56 stress
26203 root      20   0    3512    112      0 R   6.3   0.0   0:28.56 stress
26014 root      20   0    3512    108      0 R   2.3   0.0   0:21.45 stress
26015 root      20   0    3512    108      0 R   2.3   0.0   0:21.45 stress
26016 root      20   0    3512    108      0 R   2.3   0.0   0:21.45 stress
26017 root      20   0    3512    108      0 R   2.3   0.0   0:21.46 stress
26019 root      20   0    3512    108      0 R   2.3   0.0   0:21.46 stress
26021 root      20   0    3512    108      0 R   2.3   0.0   0:21.46 stress
26022 root      20   0    3512    108      0 R   2.3   0.0   0:21.46 stress
```

i-0156c7359387c4768

PublicIPs: 3.221.161.145   PrivateIPs: 172.31.13.45

Step 17: Install stress command by using the command: “yum install stress” and type “stress -c 15” this will increase the load on cpu and makes to launch few more web servers to handle.



□	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Ava
□	newinstance01	i-088e0bf99a1d2ef24	Stopped	t2.micro	–	No alarms +	us-e
□	nginx	i-05f4533fd94191f50	Stopped	t2.micro	–	No alarms +	us-e
□	–	i-02678ab5e2a8f5228	Terminated	t2.micro	–	No alarms +	us-e
□	Ec2apache	i-0b09e6d9a0e3b8645	Stopped	t2.micro	–	No alarms +	us-e
□	apache	i-02f2b2763329788b5	Stopped	t2.micro	–	No alarms +	us-e
□	–	i-0b7838b2977eb6a9c	Running	t2.micro	Initializing	No alarms +	us-e
□	–	i-01408c9a71703a681	Terminated	t2.micro	–	No alarms +	us-e
□	–	i-0f414075171f8d4a3	Running	t2.micro	2/2 checks passed	No alarms +	us-e
□	–	i-0b497ffa0745a6ca2	Running	t2.micro	Initializing	No alarms +	us-e
□	–	i-04b6315fedc22aa49	Running	t2.micro	Initializing	No alarms +	us-e

Select an instance

-You can see in my instances that few more instances are added at us-east 1a or us-east 1b locations right after I increased the stress on cpu.

- Now you can decrease the stress by using the same command: “stress -c 1” and observe that the instances will terminate themselves.

This is the Demonstration of Auto-Scaling.