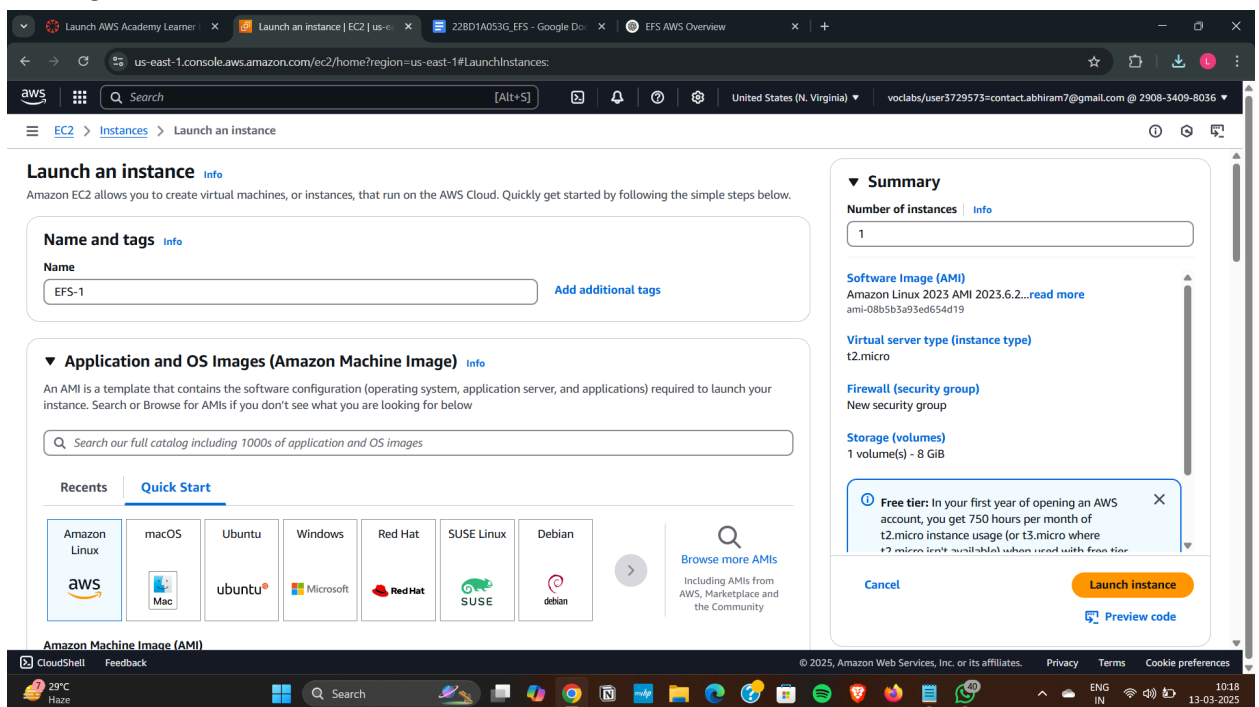


EFS

Amazon Elastic File System (EFS) is a scalable, fully managed file storage service for use with AWS cloud and on-premises resources. It provides a simple, serverless, and elastic file system that automatically grows and shrinks as files are added or removed, eliminating the need for capacity management. EFS supports NFS (Network File System) protocol, making it ideal for applications requiring shared access to data across multiple instances. It is highly available, durable, and offers different performance modes, including standard and infrequent access, to optimize cost and performance.

1. Create the First Instance (EFS - 1) and give it a name and use default settings.



2. Edit Network Settings by selecting a subnet and give it a security group name and description.

The screenshot shows the 'Launch instance' page in the AWS Management Console, specifically the 'Network settings' tab. The 'VPC' is set to 'vpc-010b5ea5995cd4d89' (default). The 'Subnet' is set to 'subnet-05b355ab7cacbf748'. The 'Auto-assign public IP' is set to 'Enable'. The 'Firewall (security groups)' section shows 'Create security group' selected. The 'Security group name' is 'cse-53g' and the 'Description' is 'Security Group name'. The 'Summary' panel on the right shows 'Number of instances' as 1, 'Firewall (security group)' as 'New security group', and 'Storage (volumes)' as '1 volume(s) - 8 GiB'. A 'Free tier' notification is visible in the summary panel.

Network settings [Info](#)

VPC - required [Info](#)

vpc-010b5ea5995cd4d89 (default) [Refresh](#)

Subnet [Info](#)

subnet-05b355ab7cacbf748 [Refresh](#) [Create new subnet](#)

VPC: vpc-010b5ea5995cd4d89 Owner: 290834098036 Availability Zone: us-east-1a
Zone type: Availability Zone IP addresses available: 4090 CIDR: 172.31.16.0/20

Auto-assign public IP [Info](#)

Enable

[Additional charges apply when outside of free tier allowance](#)

Firewall (security groups) [Info](#)

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.

☒ Create security group ☐ Select existing security group

Security group name - required

cse-53g

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 [Info](#)

Security Group name

Inbound Security Group Rules

Summary

Number of instances [Info](#)

1

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 8 GiB

Free tier: In your first year of opening an AWS account, you get 750 hours per month of t2.micro instance usage (or t3.micro where t2.micro isn't available) when used with free tier AMIs, 750 hours per month of public IPv4 address usage, 30 GiB of EBS storage, 2 million I/Os, 1 GiB of snapshots, and 100 GiB of bandwidth to the internet.

[Cancel](#) [Launch instance](#) [Preview code](#)

3. Add security group Rule and select NFS and source as 0.0.0.0/0 and launch the instance.

The screenshot shows the 'Launch instance' page in the AWS Management Console, specifically the 'Security group rules' tab. The 'Security group name' is 'cse-53g'. The 'Inbound Security Group Rules' section shows two rules: 'Security group rule 1 (TCP, 22, 0.0.0.0/0)' and 'Security group rule 2 (TCP, 2049, 0.0.0.0/0)'. The first rule has 'Type' as 'ssh', 'Protocol' as 'TCP', 'Port range' as '22', 'Source type' as 'Anywhere', 'Source' as '0.0.0.0/0', and 'Description' as 'e.g. SSH for admin desktop'. The second rule has 'Type' as 'NFS', 'Protocol' as 'TCP', 'Port range' as '2049', 'Source type' as 'Custom', 'Source' as '0.0.0.0/0', and 'Description' as 'e.g. SSH for admin desktop'. The 'Summary' panel on the right shows 'Number of instances' as 1, 'Firewall (security group)' as 'New security group', and 'Storage (volumes)' as '1 volume(s) - 8 GiB'. A 'Free tier' notification is visible in the summary panel.

Description - required [Info](#)

Security Group name

Inbound Security Group Rules

Security group rule 1 (TCP, 22, 0.0.0.0/0) [Remove](#)

Type [Info](#)

ssh

Protocol [Info](#)

TCP

Port range [Info](#)

22

Source type [Info](#)

Anywhere

Source [Info](#)

[Add CIDR, prefix list or security group](#)

0.0.0.0/0

Description - optional [Info](#)

e.g. SSH for admin desktop

Security group rule 2 (TCP, 2049, 0.0.0.0/0) [Remove](#)

Type [Info](#)

NFS

Protocol [Info](#)

TCP

Port range [Info](#)

2049

Source type [Info](#)

Custom

Source [Info](#)

[Add CIDR, prefix list or security group](#)

0.0.0.0/0

Description - optional [Info](#)

e.g. SSH for admin desktop

Summary

Number of instances [Info](#)

1

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 8 GiB

Free tier: In your first year of opening an AWS account, you get 750 hours per month of t2.micro instance usage (or t3.micro where t2.micro isn't available) when used with free tier AMIs, 750 hours per month of public IPv4 address usage, 30 GiB of EBS storage, 2 million I/Os, 1 GiB of snapshots, and 100 GiB of bandwidth to the internet.

[Cancel](#) [Launch instance](#) [Preview code](#)

[Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to](#)

4. Create another instance EFS-2

Launch an instance [Info](#)

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

Name and tags [Info](#)

Name
EF2-2 [Add additional tags](#)

▼ 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**

Amazon Linux macOS Ubuntu Windows Red Hat SUSE Linux Debian

Summary

Number of instances [Info](#)
1

Software Image (AMI)
Amazon Linux 2023 AMI 2023.6.2... [read more](#)
ami-08b5b3a93ed654d19

Virtual server type (instance type)
t2.micro

Firewall (security group)
-

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

Free tier: In your first year of opening an AWS account, you get 750 hours per month of t2.micro instance usage (or t3.micro where t2.micro isn't available) when used with free tier

[Cancel](#) [Launch instance](#) [Preview code](#)

5. In the Network Settings, Select the existing Security Group as specified in previous instance

Network settings [Info](#) [Edit](#)

Network [Info](#)
vpc-010b5ea5995cd4d89

Subnet [Info](#)
No preference (Default subnet in any availability zone)

Auto-assign public IP [Info](#)
Enable
Additional charges apply when outside of free tier allowance

Firewall (security groups) [Info](#)
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.

☐ Create security group ☒ Select existing security group

Common security groups [Info](#)
Select security groups
cse-53g sg-0b3749d2d8823205e [X](#)
VPC: vpc-010b5ea5995cd4d89

[Compare security group rules](#)

Configure storage [Info](#) [Advanced](#)
1x 8 GiB gp3 Root volume, 3000 IOPS, Not encrypted

Summary

Number of instances [Info](#)
1

Software Image (AMI)
Amazon Linux 2023 AMI 2023.6.2... [read more](#)
ami-08b5b3a93ed654d19

Virtual server type (instance type)
t2.micro

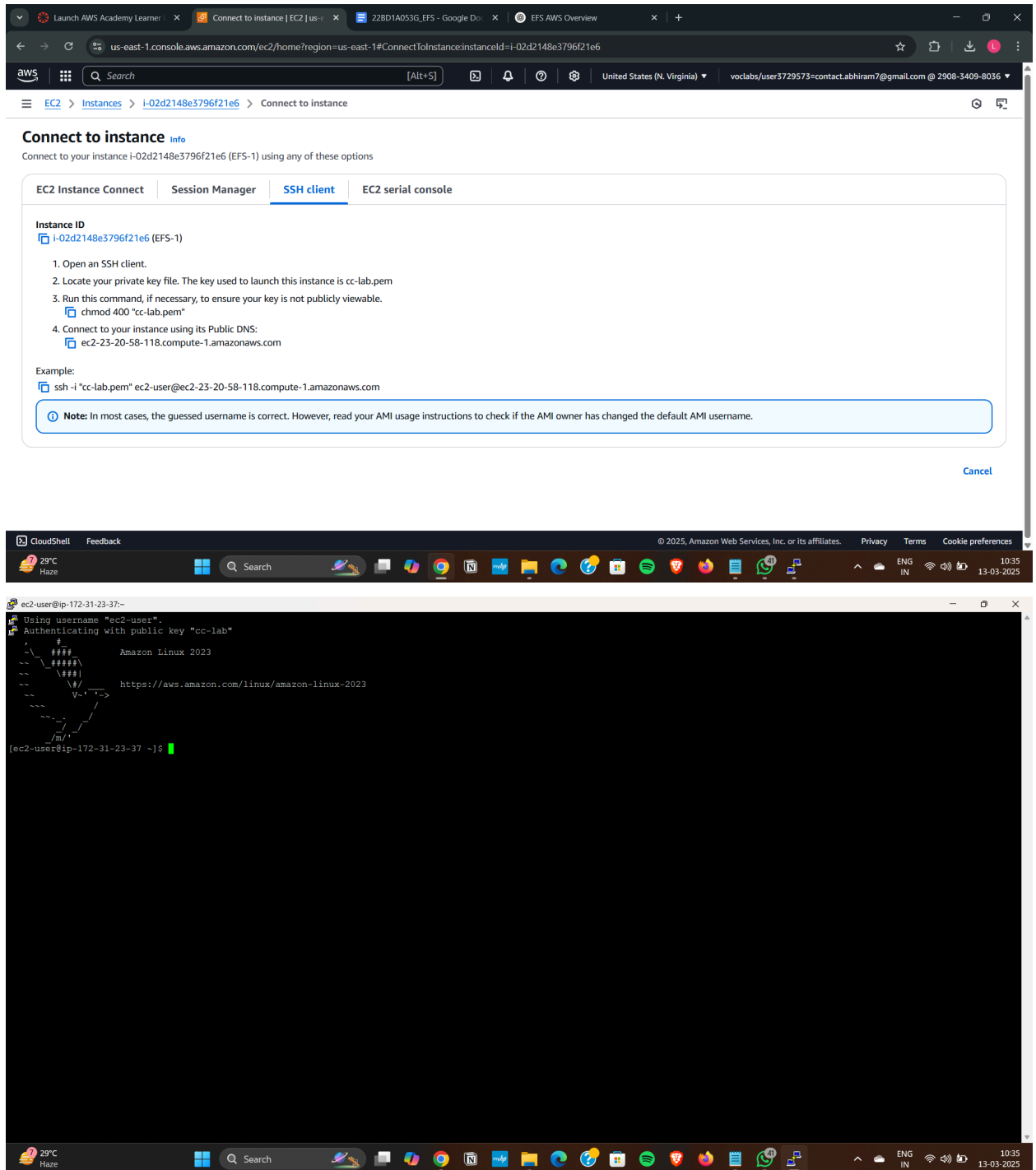
Firewall (security group)
cse-53g

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

Free tier: In your first year of opening an AWS account, you get 750 hours per month of t2.micro instance usage (or t3.micro where t2.micro isn't available) when used with free tier

[Cancel](#) [Launch instance](#) [Preview code](#)

6. Then Connect to the EFS- 1 instance using putty



7. Connect to the EFS-2 Instance using Putty

[illegible]

8. After connecting to the instance, execute the following commands in both the instances.

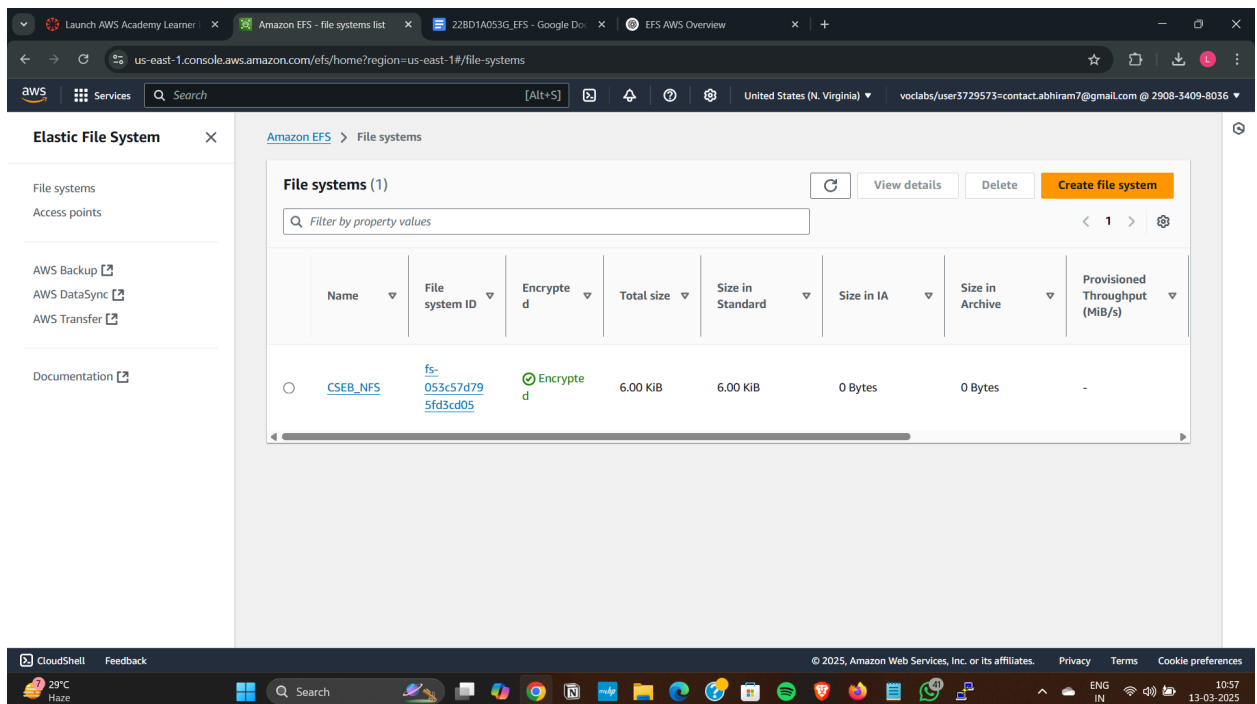
- sudo su
- mkdir efs
- yum install -y amazon-efs-utils

The image shows two terminal windows side-by-side, both running on Amazon Linux 2023. The left window is for instance ip-172-31-23-37/home/ec2-user and the right window is for instance ip-172-31-86-189/home/ec2-user. Both windows show the execution of the following commands: `sudo su`, `mkdir efs`, and `yum install -y amazon-efs-utils`. The output of the `yum install` command is displayed in both windows, showing the installation of `amazon-efs-utils` and `stunnel` from the Amazon Linux 2023 Kernel Livepatch repository. The transaction summary indicates that 2 packages will be installed, with a total download size of 1.4 M. The transaction check and test both succeed, and the transaction is completed.

```
root@ip-172-31-23-37/home/ec2-user https://aws.amazon.com/linux/amazon-linux-2023
[ec2-user@ip-172-31-23-37 ~]$ sudo su
[root@ip-172-31-23-37 ec2-user]# mkdir efs
[root@ip-172-31-23-37 ec2-user]# yum install -y amazon-efs-utils
Amazon Linux 2023 Kernel Livepatch repository 106 kB/s | 14 kB 00:00
Dependencies resolved.
=====
Package Architecture Version Repository Size
-----
Installing:
amazon-efs-utils x86_64 2.1.0-1.amzn2023 amazonlinux 1.2 M
Installing dependencies:
stunnel x86_64 5.58-1.amzn2023.0.2 amazonlinux 156 k
Transaction Summary
-----
Install 2 Packages
Total download size: 1.4 M
Installed size: 4.5 M
Downloading Packages:
(1/2): amazon-efs-utils-2.1.0-1.amzn2023.x86_64.rpm 15 MB/s | 1.2 MB 00:00
(2/2): stunnel-5.58-1.amzn2023.0.2.x86_64.rpm 1.4 MB/s | 156 kB 00:00
-----
Total 9.5 MB/s | 1.4 MB 00:00
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
Preparing : 1/1
Installing : stunnel-5.58-1.amzn2023.0.2.x86_64 1/2
Running scriptlet: stunnel-5.58-1.amzn2023.0.2.x86_64 1/2
Installing : amazon-efs-utils-2.1.0-1.amzn2023.x86_64 2/2
Running scriptlet: amazon-efs-utils-2.1.0-1.amzn2023.x86_64 2/2
Verifying : amazon-efs-utils-2.1.0-1.amzn2023.x86_64 1/2
Verifying : stunnel-5.58-1.amzn2023.0.2.x86_64 2/2
Installed:
amazon-efs-utils-2.1.0-1.amzn2023.x86_64 stunnel-5.58-1.amzn2023.0.2.x86_64
Complete!
[root@ip-172-31-23-37 ec2-user]#
```

```
root@ip-172-31-86-189/home/ec2-user https://aws.amazon.com/linux/amazon-linux-2023
[ec2-user@ip-172-31-86-189 ~]$ sudo su
[root@ip-172-31-86-189 ec2-user]# mkdir efs
[root@ip-172-31-86-189 ec2-user]# yum install -y amazon-efs-utils
Amazon Linux 2023 Kernel Livepatch repository 120 kB/s | 14 kB 00:00
Dependencies resolved.
=====
Package Architecture Version Repository Size
-----
Installing:
amazon-efs-utils x86_64 2.1.0-1.amzn2023 amazonlinux 1.2 M
Installing dependencies:
stunnel x86_64 5.58-1.amzn2023.0.2 amazonlinux 156 k
Transaction Summary
-----
Install 2 Packages
Total download size: 1.4 M
Installed size: 4.5 M
Downloading Packages:
(1/2): stunnel-5.58-1.amzn2023.0.2.x86_64.rpm 3.6 MB/s | 156 kB 00:00
(2/2): amazon-efs-utils-2.1.0-1.amzn2023.x86_64.rpm 19 MB/s | 1.2 MB 00:00
-----
Total 14 MB/s | 1.4 MB 00:00
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
Preparing : 1/1
Installing : stunnel-5.58-1.amzn2023.0.2.x86_64 1/2
Running scriptlet: stunnel-5.58-1.amzn2023.0.2.x86_64 1/2
Installing : amazon-efs-utils-2.1.0-1.amzn2023.x86_64 2/2
Running scriptlet: amazon-efs-utils-2.1.0-1.amzn2023.x86_64 2/2
Verifying : amazon-efs-utils-2.1.0-1.amzn2023.x86_64 1/2
Verifying : stunnel-5.58-1.amzn2023.0.2.x86_64 2/2
Installed:
amazon-efs-utils-2.1.0-1.amzn2023.x86_64 stunnel-5.58-1.amzn2023.0.2.x86_64
Complete!
[root@ip-172-31-86-189 ec2-user]#
```

9. Create a new File System



10. Go to the network settings of EFS and click on Manage

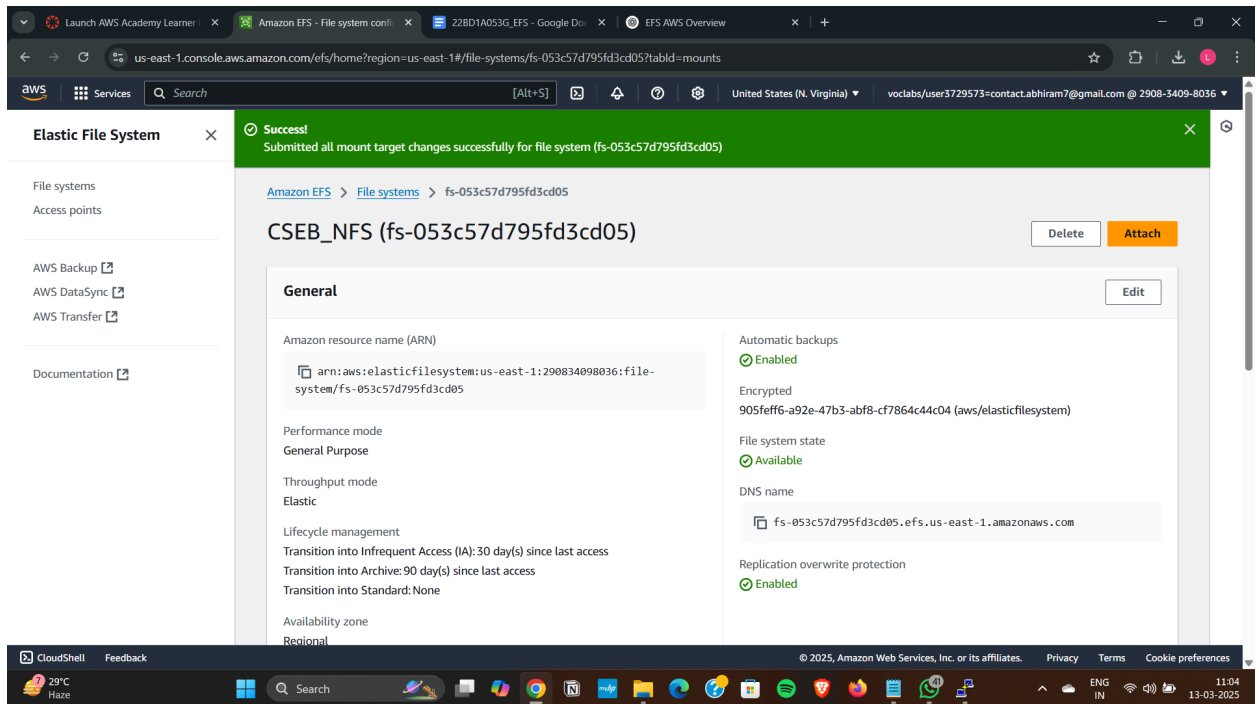
The screenshot shows the AWS Management Console for an Elastic File System. The left sidebar contains the 'Elastic File System' menu with options for 'File systems', 'Access points', 'AWS Backup', 'AWS DataSync', 'AWS Transfer', and 'Documentation'. The main content area is titled 'Network' and features a 'Manage' button. Below the title is a table with the following columns: Availability zone (AZ-ID), Mount target ID, Subnet ID, Mount target state, IP address, Network interface ID, and Security groups. The table lists five availability zones, each with a corresponding mount target, subnet, and network interface. The 'Mount target state' column shows 'Available' for all entries. The 'Security groups' column lists the default security group for each zone.

Availability zone (AZ-ID)	Mount target ID	Subnet ID	Mount target state	IP address	Network interface ID	Security groups
us-east-1a (use1-az4)	fsmt-08f7a3286410bb9fe	subnet-05b355ab7cacbf748	Available	172.31.22.21	eni-0b7085b9f6954fd06	sg-015490490c4fc8acc (default)
us-east-1b (use1-az6)	fsmt-05379c276b4cf31a8	subnet-0fe83ed4b6b68dc23	Available	172.31.32.82	eni-0ab73a602bafcb8be	sg-015490490c4fc8acc (default)
us-east-1c (use1-az1)	fsmt-0391f1237b2f9b0e3	subnet-0ada23ab884394bfd	Available	172.31.3.232	eni-047c90875682bfe94	sg-015490490c4fc8acc (default)
us-east-1d (use1-az2)	fsmt-0bcb662d42527816c	subnet-0b1eac7065c46ec62	Available	172.31.93.206	eni-09d701bed50d8c267	sg-015490490c4fc8acc (default)
us-east-1f (use1-az5)	fsmt-0ac112719181861f6	subnet-090e549a092134a3d	Available	172.31.70.218	eni-06c815d2f4b08e3de	sg-015490490c4fc8acc (default)

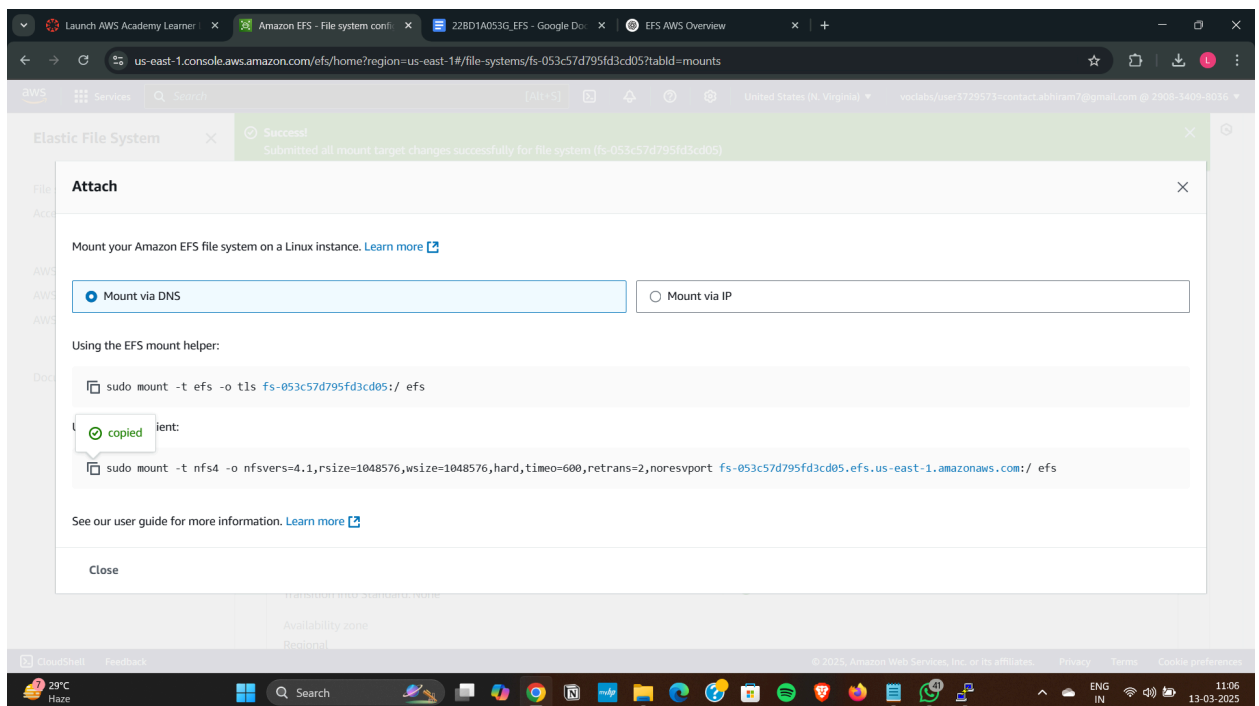
11. Now Select the security groups for the particular regions and click on save and click on attach

The screenshot shows the AWS Management Console for the Elastic File System, specifically the 'Network access' page. The left sidebar is the same as in the previous screenshot. The main content area shows a table with columns for 'Availability zone', 'Subnet ID', 'IP address', and 'Security groups'. The 'Security groups' column has a dropdown menu open for each availability zone, showing the default security group 'sg-015490490c4fc8acc' and a 'Choose security groups' button. The 'Remove' button is also visible for each row.

Availability zone	Subnet ID	IP address	Security groups
us-east-1a	subnet-05b355ab7cacbf748	172.31.22.21	Choose security groups sg-0b3749d2d8823205e cse-53g Remove
us-east-1b	subnet-0fe83ed4b6b68dc23	172.31.32.82	Choose security groups sg-015490490c4fc8acc default Remove
us-east-1c	subnet-0ada23ab884394bfd	172.31.3.232	Choose security groups sg-015490490c4fc8acc default Remove
us-east-1d	subnet-0b1eac7065c46ec62	172.31.93.206	Choose security groups sg-0b3749d2d8823205e cse-53g Remove
us-east-1f	subnet-090e549a092134a3d	172.31.70.218	Choose security groups sg-015490490c4fc8acc default Remove



12. Copy the second command and paste it in the terminal of the instance



13. Paste the command in both the instances and run the following commands in instance EFS-1 and check in EFS-2

- cd efs
- touch file1.txt

```
[root@ip-172-31-23-37:/home/ec2-user/efs]# mkdir efs
[root@ip-172-31-23-37:/home/ec2-user/efs]# yum install -y amazon-efs-utils
Amazon Linux 2023 Kernel Livepatch repository 106 kB/s | 14 kB 00:00
Dependencies resolved.
=====
Package Architecture Version Repository Size
-----
Installing:
amazon-efs-utils x86_64 2.1.0-1.amzn2023 amazonlinux 1.2 M
Installing dependencies:
stunnel x86_64 5.58-1.amzn2023.0.2 amazonlinux 156 k
=====
Transaction Summary
-----
Install 2 Packages
Total download size: 1.4 M
Installed size: 4.5 M
Downloading Packages:
(1/2): amazon-efs-utils-2.1.0-1.amzn2023.x86_64.rpm 15 MB/s | 1.2 MB 00:00
(2/2): stunnel-5.58-1.amzn2023.0.2.x86_64.rpm 1.4 MB/s | 156 kB 00:00
-----
Total 9.5 MB/s | 1.4 MB 00:00
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
Preparing : stunnel-5.58-1.amzn2023.0.2.x86_64 1/1
Installing : stunnel-5.58-1.amzn2023.0.2.x86_64 1/2
Running scriptlet: stunnel-5.58-1.amzn2023.0.2.x86_64 1/2
Installing : amazon-efs-utils-2.1.0-1.amzn2023.x86_64 2/2
Running scriptlet: amazon-efs-utils-2.1.0-1.amzn2023.x86_64 2/2
Verifying : amazon-efs-utils-2.1.0-1.amzn2023.x86_64 1/2
Verifying : stunnel-5.58-1.amzn2023.0.2.x86_64 2/2
Installed:
amazon-efs-utils-2.1.0-1.amzn2023.x86_64 stunnel-5.58-1.amzn2023.0.2.x86_64
Complete!
[root@ip-172-31-23-37:/home/ec2-user/efs]# "[[200-sudo mount -t nfs4 -o nfsvers=4.1,rsize=1048576,wsiz
e=1048576,hard,timeo=600,retrans=2,noresvport fs-053c57d795fd3cd05.efs.us-east-1.amazonaws.com
:/ efs->C
[root@ip-172-31-23-37:/home/ec2-user/efs]# sudo mount -t nfs4 -o nfsvers=4.1,rsize=1048576,wsiz
e=1048576,hard,timeo=600,retrans=2,noresvport fs-053c57d795fd3cd05.efs.us-east-1.amazonaws.com:/ efs
[root@ip-172-31-23-37:/home/ec2-user/efs]# cd efs
[root@ip-172-31-23-37:/home/ec2-user/efs]# touch file1.txt
[root@ip-172-31-23-37:/home/ec2-user/efs]#
```

```
[ec2-user@ip-172-31-86-189:/home/ec2-user/efs]# sudo su
[ec2-user@ip-172-31-86-189:/home/ec2-user/efs]# mkdir efs
[ec2-user@ip-172-31-86-189:/home/ec2-user/efs]# yum install -y amazon-efs-utils
Amazon Linux 2023 Kernel Livepatch repository 120 kB/s | 14 kB 00:00
Dependencies resolved.
=====
Package Architecture Version Repository Size
-----
Installing:
amazon-efs-utils x86_64 2.1.0-1.amzn2023 amazonlinux 1.2 M
Installing dependencies:
stunnel x86_64 5.58-1.amzn2023.0.2 amazonlinux 156 k
=====
Transaction Summary
-----
Install 2 Packages
Total download size: 1.4 M
Installed size: 4.5 M
Downloading Packages:
(1/2): stunnel-5.58-1.amzn2023.0.2.x86_64.rpm 3.6 MB/s | 156 kB 00:00
(2/2): amazon-efs-utils-2.1.0-1.amzn2023.x86_64.rpm 19 MB/s | 1.2 MB 00:00
-----
Total 14 MB/s | 1.4 MB 00:00
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
Preparing : stunnel-5.58-1.amzn2023.0.2.x86_64 1/1
Installing : stunnel-5.58-1.amzn2023.0.2.x86_64 1/2
Running scriptlet: stunnel-5.58-1.amzn2023.0.2.x86_64 1/2
Installing : amazon-efs-utils-2.1.0-1.amzn2023.x86_64 2/2
Running scriptlet: amazon-efs-utils-2.1.0-1.amzn2023.x86_64 2/2
Verifying : amazon-efs-utils-2.1.0-1.amzn2023.x86_64 1/2
Verifying : stunnel-5.58-1.amzn2023.0.2.x86_64 2/2
Installed:
amazon-efs-utils-2.1.0-1.amzn2023.x86_64 stunnel-5.58-1.amzn2023.0.2.x86_64
Complete!
[ec2-user@ip-172-31-86-189:/home/ec2-user/efs]# sudo mount -t nfs4 -o nfsvers=4.1,rsize=1048576,wsiz
e=1048576,hard,timeo=600,retrans=2,noresvport fs-053c57d795fd3cd05.efs.us-east-1.amazonaws.com:/ efs
[ec2-user@ip-172-31-86-189:/home/ec2-user/efs]# cd efs
[ec2-user@ip-172-31-86-189:/home/ec2-user/efs]# ls
file1.txt
[ec2-user@ip-172-31-86-189:/home/ec2-user/efs]#
```