

Storage Assignment-EFS

Amazon Elastic File System (Amazon EFS) provides serverless, fully elastic file storage so that you can share file data without provisioning or managing storage capacity and performance. Amazon EFS is built to scale on demand to petabytes without disrupting applications, growing and shrinking automatically as you add and remove files. Because Amazon EFS has a simple web services interface, you can create and configure file systems quickly and easily. The service manages all the file storage infrastructure for you, meaning that you can avoid the complexity of deploying, patching, and maintaining complex file system configurations.

Amazon EFS supports the Network File System version 4 (NFSv4.1 and NFSv4.0) protocol, so the applications and tools that you use today work seamlessly with Amazon EFS. Amazon EFS is accessible across most types of Amazon Web Services compute instances, including Amazon EC2, Amazon ECS, Amazon EKS, AWS Lambda, and AWS Fargate.

Continue reading if you are interested to learn more about EFS. [Click here](#).

Let's see what EFS is and create an EFS (just like EBS) along with the EC2.

- a) We will create **two** ec2 servers with the below configurations. Most of them are same except few.

Observe that we are creating two servers at a time.

The screenshot displays the AWS Management Console interface for launching an EC2 instance. The breadcrumb navigation at the top indicates the path: [EC2](#) > [Instances](#) > Launch an instance. The main heading is "Launch an instance" with an "Info" link. Below this, a brief description states: "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."

The "Name and tags" section is active, showing a text input field for the instance name, which contains "EC2-EFS-Server-1". To the right of this field is a link to "Add additional tags".

The "Summary" section on the right provides a overview of the configuration. It includes a dropdown menu for the number of instances, which is currently set to "2". Below this, a note reads: "When launching more than 1 instance, consider EC2 Auto Scaling". The "Software Image (AMI)" is listed as "Amazon Linux 2023 AMI 2023.3.2..." with a "read more" link and the AMI ID "ami-0f403e3180720dd7e". The "Virtual server type (instance type)" is specified as "t2.micro".

▼ Network settings Info

VPC - required Info

vpc-04c8225ab0993706c (my-first-vpc)
10.0.0.0/16

Subnet Info

subnet-0221cc7de703d33a8
my-public-subnet-1
VPC: vpc-04c8225ab0993706c Owner: 506960532205
Availability Zone: us-east-1a IP addresses available: 250 CIDR: 10.0.10.0/24

Create new subnet

Auto-assign public IP Info

Enable

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

See that We have added the NFS type in the second security group rule. This allows communication from NFS to EC2.

Security group name - *required*

my-efs-sg

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](#)

Allow EFS and SSH Communication

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](#)

Q Add CIDR, prefix list or security

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](#)

Anywhere ▼

Source [Info](#)

Q Add CIDR, prefix list or security

Description - *optional* [Info](#)

e.g. SSH for admin desktop

Click on the Edit Button below.

▼ **Configure storage** [Info](#) [Advanced](#)

1x 8 GiB gp3 ▼ Root volume (Not encrypted)

Add new volume


⌚ Click refresh to view backup information

The tags that you assign determine whether the instance will be backed up by any Data Lifecycle Manager policies.


↺

0 x File systems [Edit](#)

Click on the Create new shared file system.

 Click refresh to view backup information

The tags that you assign determine whether the instance will be backed up by any Data Lifecycle Manager policies.




File systemsHide details

☒ EFS

☐ FSx


You currently have no file systems on this instance. To add a file system, choose **Add shared file system**.


Add shared file system

 [Create new shared file system](#)

5 remaining (Up to 5 file systems maximum).

Amazon EFS Quick Create×

Create a file system with standard storage using service recommended settings.
To use customized settings, use the [Amazon EFS console](#) 

Additional charges apply, see [EFS pricing](#) 

File system name

Name must not be longer than 256 characters, and must only contain letters, numbers, and these characters: +-=_._:/

Cancel

Create file system

Data Lifecycle Manager policies.

File systems Hide details

☒ EFS

☐ FSx

▼ Shared file system 1

Remove

File system [Info](#)

fs-00f0129b4664d56c8
Name: my-first-efs Availability: Regional

Mount point [Info](#)

/mnt/efs/fs1

Add shared file system

[Create new shared file system](#)

4 remaining (Up to 5 file systems maximum).

☒ **Automatically create and attach security groups**
To enable access to the file system, the required security groups will be automatically created and attached to this instance and the selected file system. To manually manage the security groups, clear the checkbox. [Learn more.](#)




☒ **Automatically mount shared file system by attaching required user data script**
Automatically mount your file system by updating your user data to install efs-utils. If you would like to manually mount your file system, clear the checkbox.

Once the file system is created, launch the instances.





b) We have to change the name of the second server for identification.





Instances (1/2) Info							
<input type="text" value="Find Instance by attribute or tag (case-sensitive)"/>				<input type="button" value="Refresh"/>	<input type="button" value="Connect"/>	Instance state ▼	Actions ▼
<input type="text" value="Running"/>				<div style="text-align: right;"> < 1 > </div>			
<input type="checkbox"/>	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
<input type="checkbox"/>	EC2-EFS-Server-1	i-0b1e4794c145b7098	Running	t2.micro	2/2 checks passed	View alarms	us-east-1a
<input checked="" type="checkbox"/>	EC2-EFS-Server-1	i-057393f37136dde9a	Running	t2.micro	2/2 checks passed	View alarms	us-east-1a

Hover your mouse exactly as shown(left to instance-id) to see the pencil icon. Click on that and

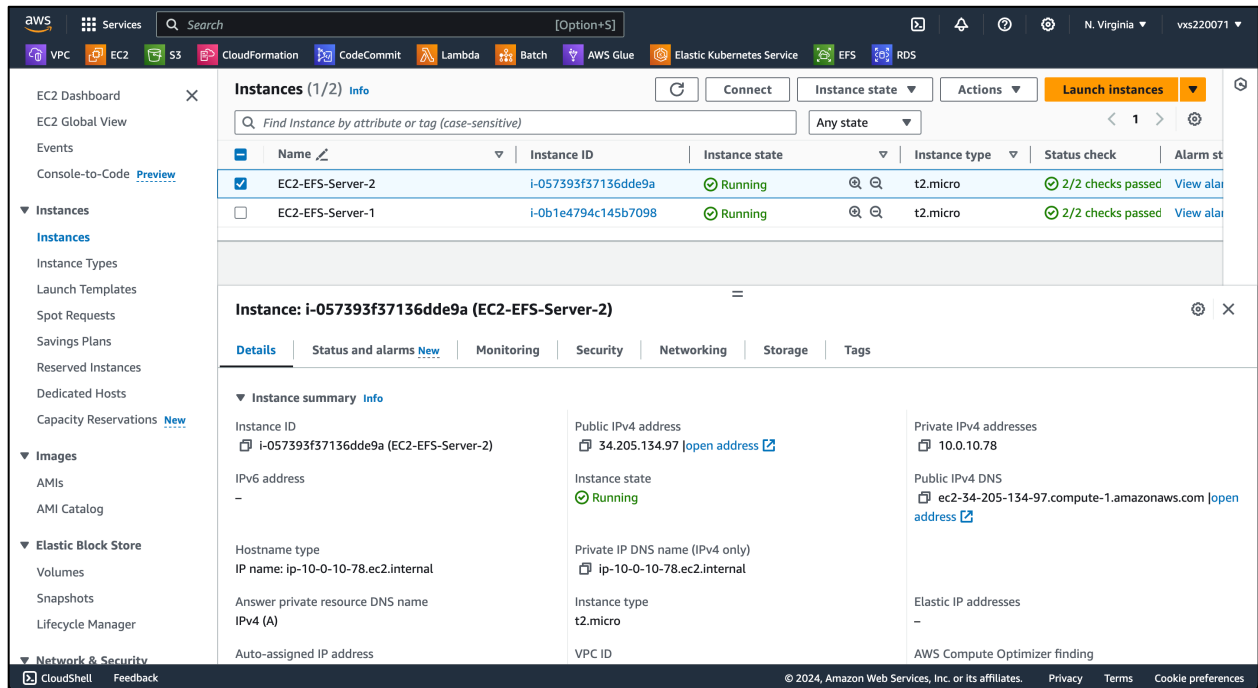
Instances (1/2) Info		
<input type="text"/> Find Instance by attribute or tag (case-sensitive)		
	Name 	Instance ID
<input type="checkbox"/>	EC2-EFS-Server-1	i-0b1e4794c145b7098
<input checked="" type="checkbox"/>	EC2-EFS-Server-1 	i-057393f37136dde9a

You will see the option to change the name. Change it to server-2.

<input type="text"/> Find Instance by attribute or tag (case-sensitive)	
	Name 
<input type="checkbox"/>	EC2-EFS-Server-1
<input checked="" type="checkbox"/>	<input type="text" value="EC2-EFS-Server-1"/>  
<input type="button" value="Submit"/>	

	Name 	Instance ID
<input type="checkbox"/>	EC2-EFS-Server-1	i-0b1e4794c145b7098
<input checked="" type="checkbox"/>	EC2-EFS-Server-2  	i-057393f37136dde9a

Note: After the successful creation of two servers, share the screenshot of each server. The below screenshot can be taken as reference.



c) Login to the server, we have learned how to login to the first ec2 server in the EBS assignment.

After successful login, run the below command as shown. You will see that the EFS is attached and mounted to the directory `/mnt/efs/fs2`. You can store any amount of data in this folder as EFS virtually provides unlimited storage.

The stored data can be viewed/used in our second ec2 server. Let's test and see how this works.

- e) Now, let's login to the second server and see if the same test file is there or not. Open a new tab and login to the second server. (same process)

Run the commands as shown in the below screenshot.

Here,

ls (is to list files in the directory)

```
[ec2-user@ip-10-0-10-41 ~]$ df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        4.0M   0    4.0M   0% /dev
tmpfs           475M   0    475M   0% /dev/shm
tmpfs           190M  2.9M   188M   2% /run
/dev/xvda1       8.0G  1.6G   6.5G  20% /
tmpfs           475M   0    475M   0% /tmp
/dev/xvda128     10M   1.3M   8.7M  13% /boot/efi
127.0.0.1:/      8.0E   0    8.0E   0% /mnt/efs/fs1
tmpfs           95M   0    95M   0% /run/user/1000
[ec2-user@ip-10-0-10-41 ~]$ cd /mnt/efs/fs1/
[ec2-user@ip-10-0-10-41 fs1]$ ls
testfile
[ec2-user@ip-10-0-10-41 fs1]$ cat testfile
This is Cloud Computing Class.
EFS is a great application isn't it?
[ec2-user@ip-10-0-10-41 fs1]$
```

Note: This is a deliverable. The above screenshot is of the second server.

Observe that we have not created any file or have saved any data in this second server.

We were still able to see the data. This is the Use of file systems. (Ex: university labs work the similar way)

Important:

Once the lab is finished, make sure to terminate the two EC2 instances and the EFS.

Search for EFS in the AWS console and delete it.

