EFS (*Elastic File System)*

What is EFS used for in AWS?

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.

Steps for EFS ::

Step1: Sign in to AWS Management Console

- Navigate to the AWS Console and sign in using the IAM Username and Password provided.
- Ensure your selected AWS Region is US East (N. Virginia) us-east-1.

Step2: Launching two EC2 Instances

- **Instance type:**
- Select t2. From the top menu, navigate to Services > Compute > EC2.
- Click on Instances in the left navigation pane, then click the Launch instances button.

- **Name and tags**:
- For Name, enter myec2.
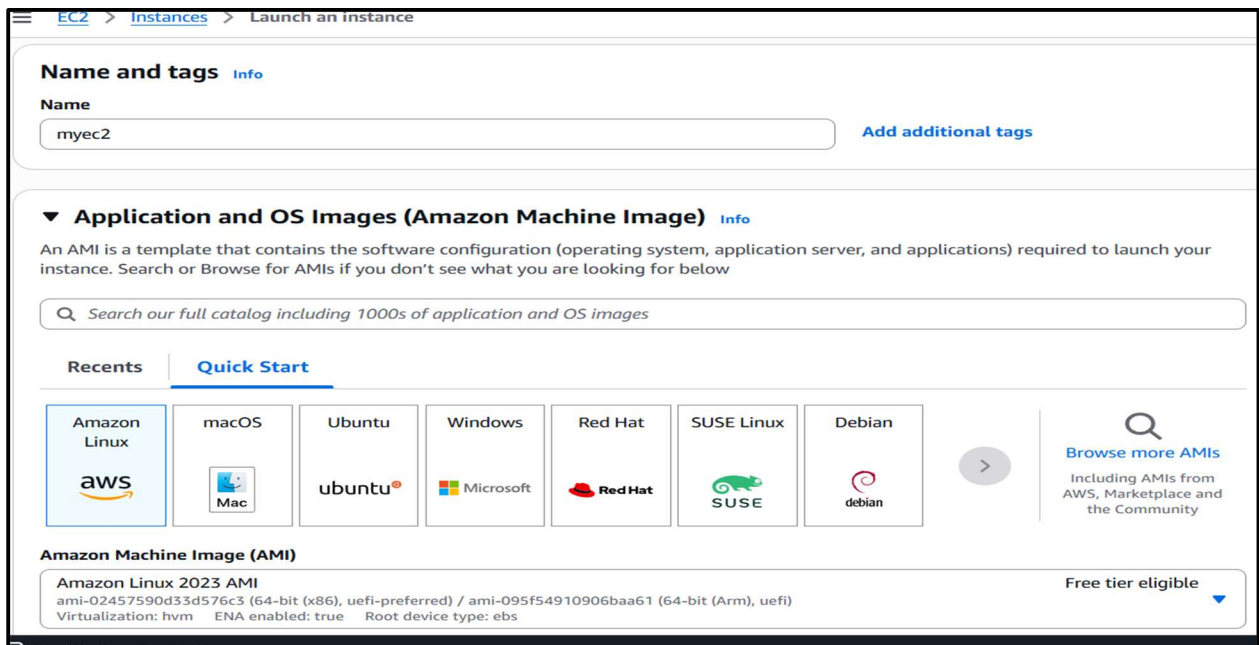
- **Application and OS Images (AMI):**
- In the search bar, type Amazon Linux and select the Amazon Linux 2023 AMI. It is free tier eligible.

EFS (*Elastic File System)*

➢ micro (Free tier eligible) from the dropdown list.
➢ Key pair (login)
➢ Click Create new key pair
➢ Key pair name: *myec2key*
➢ Key pair type*: RSA*
➢ Private key file format: *pem*
➢ Click Create key pair and save the downloaded file.

▼ **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 - *required*

| myec2key | ▼ | C   **Create new key pair** |

▼ **Network settings** Info

VPC - *required* | Info

| vpc-04145a1273dee2ce4 | (default) ▼ | C |
| 172.31.0.0/16 | | |

Subnet | Info

| No preference | ▼ | C   Create new subnet [↗] |

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*

➢ **Network settings:**
➢ Click Edit.
➢ For Auto-assign public IP, select Enable.
➢ Under Firewall (security groups), select Create security group.
➢ Security group name: EFS Security Group
➢ The SSH rule should be present by default. Set its Source type to Anywhere.
➢ Click Add security group rule.
➢ Type: Choose NFS.
➢ Source: Choose Anywhere.

EFS (*Elastic File System)*

- ➤ **Summary panel:**
- ➤ Find Number of instances and enter 2

- ➤ *Click Launch Instance.*
- ➤ *Click View all Instances to see your instances being created.*
- ➤ *Select each instance and give them unique names in the "Name" column: myec2-1 and myec2-2.*
- ➤ *Note the IPv4 Public IP addresses for both instances for later use. N*

Step3: Creating an Elastic File System

EFS (*Elastic File System)*

- ***Navigate to Services > Storage > EFS.***
- ***Click Create file system.***

- **Configure the file system:**
- Name: myefs

- ***Virtual Private Cloud (VPC): Ensure the default VPC is selected.***
- ***Storage class: Leave as Standard***

- **Click Customize :**
- On the File system settings page, uncheck Enable automatic backups and click Next.
- **On the Network access page:**
- Under Mount targets, the default VPC should already be selected.
- For each Availability Zone listed, remove the default security group by clicking the **'X'.**
- In the now-empty Security groups box for each Availability Zone, select the **EFS Security Group** you created earlier.
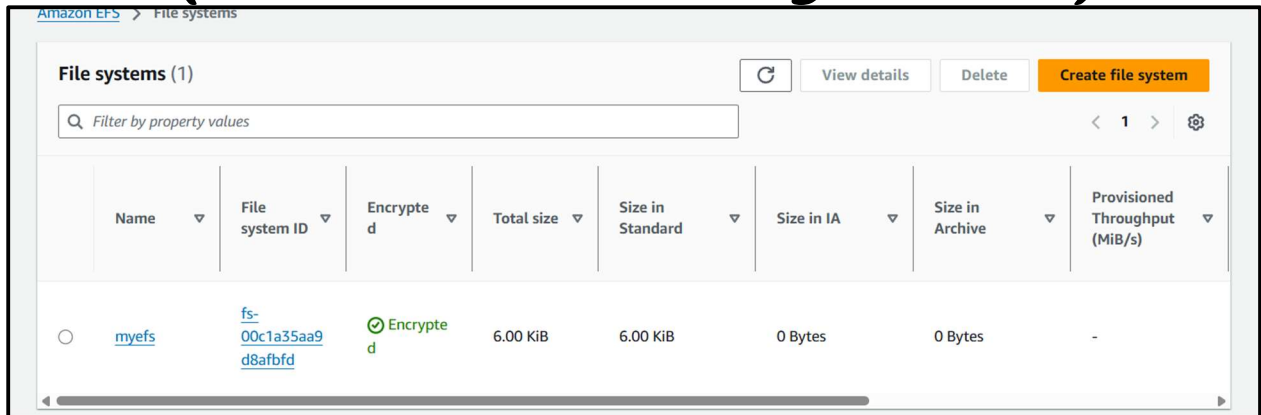- Click Next.

- On the File system policy page, leave the policy empty and click Next.
- Review your settings and click Create

EFS (*Elastic File System*)

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Step4: Mount the File System to myec2-1 Instance

- ➢ SSH into the myec2-1 instance using its public IP address and the **.pem** key you downloaded.
- ➢ **Once connected, switch to the root user:** sudo -s
- ➢ **Update the instance and install the EFS utilities package:**
- ➢ Yum -y update
- ➢ Yum install -y amazon-efs-utils
- ➢ **Create a directory to mount the file system to**: mkdir efs

- ➢ *In the AWS EFS Console, select your EFS-Demo file system and click the Attach button in the top-right.*
- ➢ A window will pop up. Copy the command shown under Using the EFS mount helper. It will look similar to this:
- ➢ Sudo mount -t efs -o tls fs-xxxxxxxxxxxxxxxxx:/ efs
- ➢ Paste and run this command in your SSH session.
- ➢ Verify the mount was successful by running df -h. You should see the EFS file system listed at the bottom.

EFS (*Elastic File System)*

```
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing       :
  Installing      : stunnel-5.58-1.amzn2023.0.2.x86_64
  Running scriptlet: stunnel-5.58-1.amzn2023.0.2.x86_64
  Installing      : amazon-efs-utils-2.3.0-1.amzn2023.x86_64
  Running scriptlet: amazon-efs-utils-2.3.0-1.amzn2023.x86_64
  Verifying       : amazon-efs-utils-2.3.0-1.amzn2023.x86_64
  Verifying       : stunnel-5.58-1.amzn2023.0.2.x86_64

Installed:
  amazon-efs-utils-2.3.0-1.amzn2023.x86_64                              stunnel-5.58-1.amzn2023.0.2.x86_64

Complete!
[root@ip-172-31-89-247 ec2-user]# mkdir efs
[root@ip-172-31-89-247 ec2-user]# sudo mount -t efs -o tls fs-00c1a35aa9d8afbfd:/ efs
[root@ip-172-31-89-247 ec2-user]# 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  500K  190M   1% /run
/dev/xvda1      8.0G  1.6G  6.4G  20% /
tmpfs           475M     0  475M   0% /tmp
/dev/xvda128     10M  1.3M  8.7M  13% /boot/efi
tmpfs            95M     0   95M   0% /run/user/1000
127.0.0.1:/     8.0E     0  8.0E   0% /home/ec2-user/efs
[root@ip-172-31-89-247 ec2-user]#
```

Step5: Mount the File System to MyEC2-2 Instance

- **Follow the exact same steps as in Step4, but for the MyEC2-2 instance.**
- SSH into MyEC2-2.
- Switch to root user (sudo -s).
- Install EFS utilities (yum install -y amazon-efs-utils).
- Create the mount directory (mkdir efs).
- *Use the same mount command you copied from the EFS console's Attach button.*
- Verify with df -h.

Step6: Testing the File System

- ➢ *Have two terminal windows open, one connected to MyEC2-1 and the other to MyEC2-2.*

- ➢ In both terminals, switch to the root user (sudo -s) and navigate into the shared EFS directory: cd efs
- ➢ **In the MyEC2-1 terminal, create a test file:** touch hello.txt
- ➢ **List the files:** ls -ltr
- ➢ You should see hello.txt.

- ➢ *In the MyEC2-2 terminal, list the files without creating anything: ls -ltr*
- ➢ *You should see the hello.txt file appear automatically. This confirms both instances are sharing the same EFS file system*

EFS (*Elastic File System)*

```
root@ip-172-31-91-46 ec2-user]# sudo -s
root@ip-172-31-91-46 ec2-user]# cd efs
root@ip-172-31-91-46 efs]# touch hallo.txt
root@ip-172-31-91-46 efs]# ls -lrt
otal 4
rw-r--r--. 1 root root 0 Jun 10 15:46 hallo.txt
root@ip-172-31-91-46 efs]# cd efs
ash: cd: efs: No such file or directory
root@ip-172-31-91-46 efs]# touch my-first-efs
root@ip-172-31-91-46 efs]# ls -l
otal 8
rw-r--r--. 1 root root 0 Jun 10 15:46 hallo.txt
rw-r--r--. 1 root root 0 Jun 10 15:48 my-first-efs
root@ip-172-31-91-46 efs]#
```