



AMAZON ELASTIC FILE SYSTEM

Amazon Elastic File System (Amazon EFS) is a scalable and fully managed cloud-based file storage service provided by Amazon Web Services (AWS). It is designed to provide scalable and elastic file storage for use with AWS Cloud services and on-premises resources. Amazon EFS is built on a distributed architecture that allows it to grow and shrink automatically as you add or remove files, making it suitable for a wide range of applications and workloads.

Key features of Amazon EFS include:

1. **Scalability:** Amazon EFS can scale horizontally to petabytes of data, allowing you to accommodate growing storage needs without manual intervention.
2. **Performance:** It is designed to provide low-latency, high-throughput performance, making it suitable for a variety of applications, including big data analytics, media processing, and content management.
3. **Shared File System:** Amazon EFS allows multiple Amazon EC2 instances to access the same file system simultaneously. This makes it well-suited for workloads that require shared access to data.
4. **Fully Managed:** AWS takes care of the operational aspects of the file system, such as hardware provisioning, software configuration, and maintenance. This allows you to focus on your applications and data.
5. **Integration:** Amazon EFS can be easily integrated with other AWS services, such as Amazon EC2 instances, AWS Lambda, and more. It supports the Network File System version 4 (NFSv4) protocol.
6. **Multi-AZ Durability:** Amazon EFS is designed for high durability by storing data across multiple availability zones (AZs), providing fault tolerance and redundancy.

Amazon EFS is suitable for a wide range of use cases, including web serving and content management, big data analytics, database backups, development and testing, and container storage. It's a flexible and reliable option for applications that require shared file storage in the AWS cloud environment.



TO BEGIN WITH THE LAB:



STEP 1: CREATE EFS

1. On the console search for Elastic file system (EFS) service. Open this service accordingly.

Services

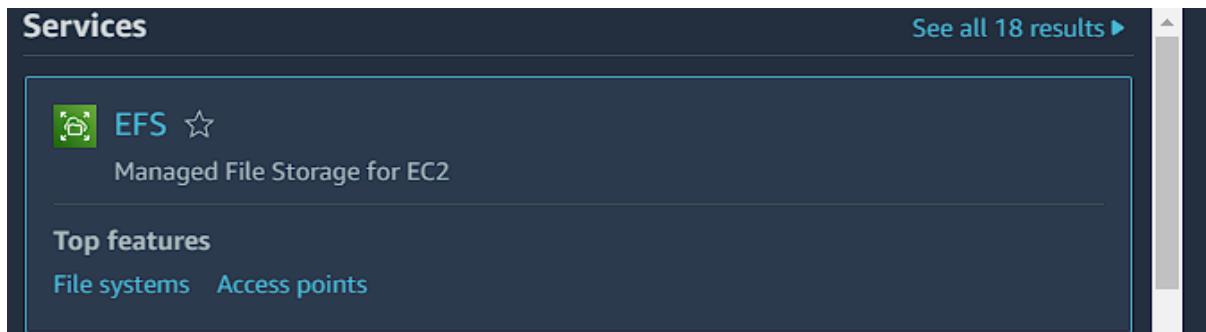
EFS ☆

Managed File Storage for EC2

Top features

File systems Access points

See all 18 results ▶



2. This is the dashboard for EFS.



The screenshot shows the Amazon Elastic File System (EFS) landing page. On the left, there's a sidebar with links for 'File systems', 'Access points', 'AWS Backup', 'AWS DataSync', and 'AWS Transfer'. The main content area has a dark header with the title 'Amazon Elastic File System' and the subtitle 'Scalable, elastic, cloud-native NFS file system'. Below the header is a brief description: 'Amazon Elastic File System (Amazon EFS) provides a simple, scalable, elastic file system for general purpose workloads for use with AWS Cloud services and on-premises resources.' To the right of the description is a 'Create file system' button. Further down, there's a section titled 'Pricing' with a note about no minimum fees and a link to the AWS Pricing Calculator. At the bottom, there's a 'Get started' section with links for 'What is Amazon Elastic File System?', 'Get started', and 'How it works'.

3. Now click on Create file system.

4. Give it a name and choose default VPC. Then click on Create.

Create file system

X

Create an EFS file system with recommended settings. [Learn more](#)

Name - optional

Name your file system.

central-file-system

Name can include letters, numbers, and +-=._:/ symbols, up to 256 characters.

Virtual Private Cloud (VPC)

Choose the VPC where you want EC2 instances to connect to your file system.

vpc-037cc333342fff6f0
default

Cancel

Customize

Create

5. Now your file system is available.

File systems (1)											
<input type="button" value="Create file system"/>											
<input type="text"/> Filter by property values											
Name	File system ID	Encrypted	Total size	Size in Standard	Size in IA	Size in Archive	Provisioned Throughput (MiB/s)	File system state	Creation time	Availability Zone	Region
central-file-system	fs-030b5b34d25193b17	Encrypte d	6.00 KiB	6.00 KiB	0 Bytes	0 Bytes	-	Available	Thu, 11 Jan 2024 17:49:04 GMT	Regional	US East (N. Virginia)



STEP 2: LAUNCH EC2 INSTANCE AND INSTALL EFS

1. Now go to EC2 and log in to one of your instances using Putty.

```
ubuntu@ip-172-31-18-153: ~
login as: ubuntu
Authenticating with public key "imported-openssh-key"
Welcome to Ubuntu 22.04.3 LTS (GNU/Linux 6.2.0-1017-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

System information as of Thu Jan 11 17:54:04 UTC 2024

System load: 0.0          Processes: 107
Usage of /: 20.8% of 7.57GB  Users logged in: 0
Memory usage: 22%          IPv4 address for eth0: 172.31.18.153
Swap usage: 0%             IPv6 address for eth0: fe80::41d9:1ff:fe11:153%1

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

Last login: Thu Jan 11 15:00:30 2024 from 192.140.153.103
ubuntu@ip-172-31-18-153:~$
```

2. Now you have to install EFS on this instance for that use this link to go to AWS official documentation and copy the commands to install EFS.
<https://docs.aws.amazon.com/efs/latest/ug/installing-amazon-efs-utils.html#installing-other-distro>
3. So, these are the set of commands, you can find them on the link.
4. You have to run each of these commands one by one.
5. Once your installation is completed and the EFS is installed on your instance.

2. (Optional) Apply updates before installing the package with the following command:

```
sudo apt-get update
```

Install updates as needed.

3. Install git and binutils, using the following command. binutils is required for building DEB packages,

```
sudo apt-get -y install git binutils
```

4. Clone `amazon-efs-utils` from GitHub using the following command.

```
git clone https://github.com/aws/efs-utils
```

To build and install the `amazon-efs-utils` DEB package

1. Navigate to the directory that contains the `amazon-efs-utils` package.

```
cd /path/efs-utils
```

2. Build `amazon-efs-utils` using the following command:

```
./build-deb.sh
```

3. Install the package with the following command.

```
sudo apt-get -y install ./build/amazon-efs-utils*deb
```

6. Now you have to create a directory as a mount point so the EFS can connect onto this machine.

```
ubuntu@ip-172-31-18-153: ~/efs-utils
ubuntu@ip-172-31-18-153:~/efs-utils$ sudo mkdir /efs-central
ubuntu@ip-172-31-18-153:~/efs-utils$
```

7. Once the directory is created now you have to mount the EFS to your instance. For that copy your DNS of the EFS and paste it here. Then press enter.
8. Here as you can see that the mount attempt is failing. It is because the default security group does not have the proper inbound rule assigned.

```
ubuntu@ip-172-31-18-153: ~/efs-utils
ubuntu@ip-172-31-18-153:~/efs-utils$ sudo mkdir /efs-central
ubuntu@ip-172-31-18-153:~/efs-utils$ sudo mount -t efs fs-030b5b34d25193b17.efs.eu-west-2.amazonaws.com /efs-central
Mount attempt 1/3 failed due to timeout after 15 sec, wait 0 sec before next attempt.
Mount attempt 2/3 failed due to timeout after 15 sec, wait 0 sec before next attempt.
```

9. So, now go back to the console and go to your default security group. There you need to allow all traffic from everywhere.

- Once you have adjusted the security the group you will see that the mounting has been successful.

```
ubuntu@ip-172-31-18-153:~/efs-utils$ sudo mkdir /efs-central
ubuntu@ip-172-31-18-153:~/efs-utils$ sudo mount -t efs fs-030b5b34d25193b17.efs.eu-west-2.amazonaws.com /efs-central
Mount attempt 1/3 failed due to timeout after 15 sec, wait 0 sec before next attempt.
Mount attempt 2/3 failed due to timeout after 15 sec, wait 0 sec before next attempt.
ubuntu@ip-172-31-18-153:~/efs-utils$
```

- Now come out of the utils folder and go to efs-central folder.
- There you need to change some settings, then create a .txt file.
- Then list that file and you will be able to see the content of the files.

```
ubuntu@ip-172-31-18-153:~/efs-utils$ cd ..
ubuntu@ip-172-31-18-153:~$ cd /efs-central
ubuntu@ip-172-31-18-153:/efs-central$ sudo chmod 777 /efs-central
ubuntu@ip-172-31-18-153:/efs-central$ echo "This is the EFS system" > file.txt
ubuntu@ip-172-31-18-153:/efs-central$ ls
file.txt
ubuntu@ip-172-31-18-153:/efs-central$ more file.txt
This is the EFS system
ubuntu@ip-172-31-18-153:/efs-central$
```

- Now you are going to log in to another instance which in another availability zone and install the EFS in it too.
- The steps are the same as before.
- After installing you have to mount the EFS too.
- Once you have done that you will be able to see this .txt file on that instance too.

```
ubuntu@ip-172-31-37-157:/efs-central$ ls
file.txt
ubuntu@ip-172-31-37-157:/efs-central$ more file.txt
This is the EFS system
ubuntu@ip-172-31-37-157:/efs-central$
```