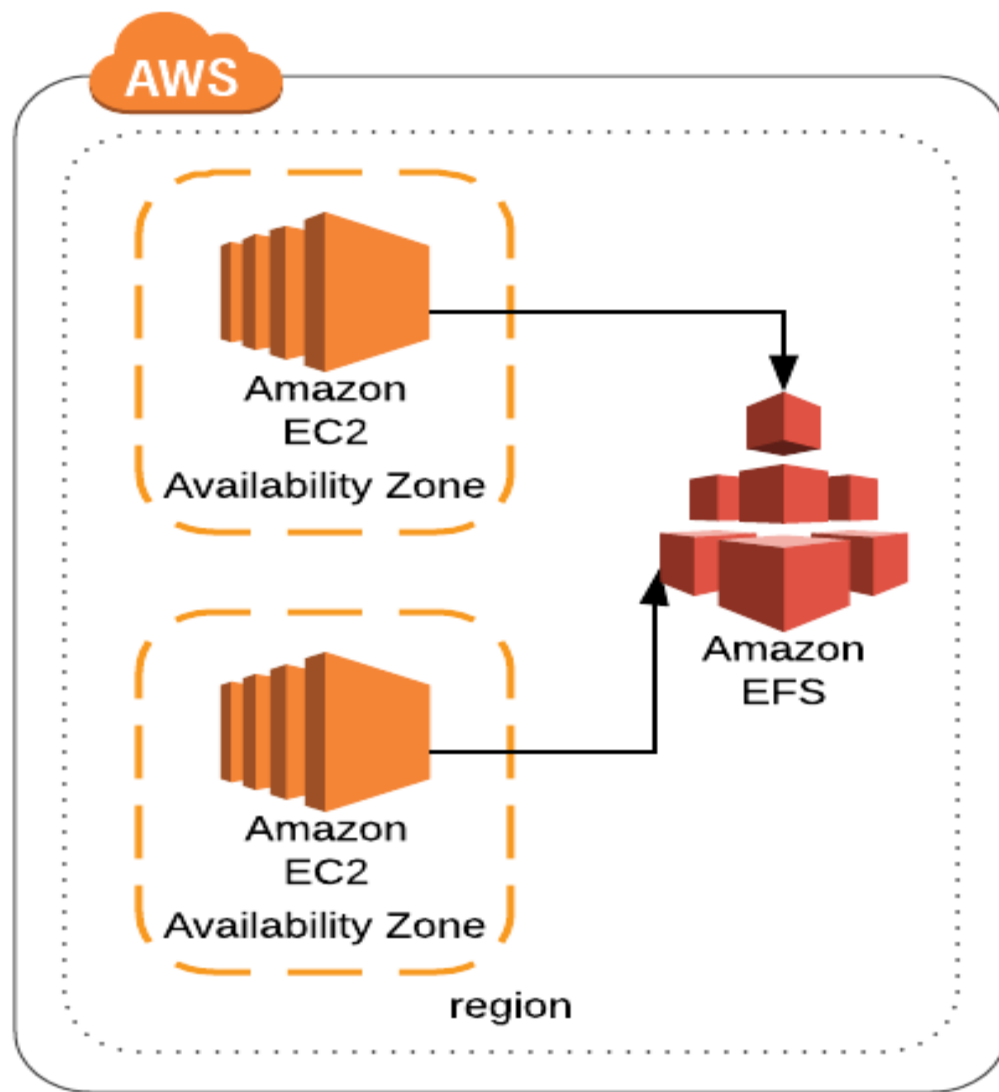
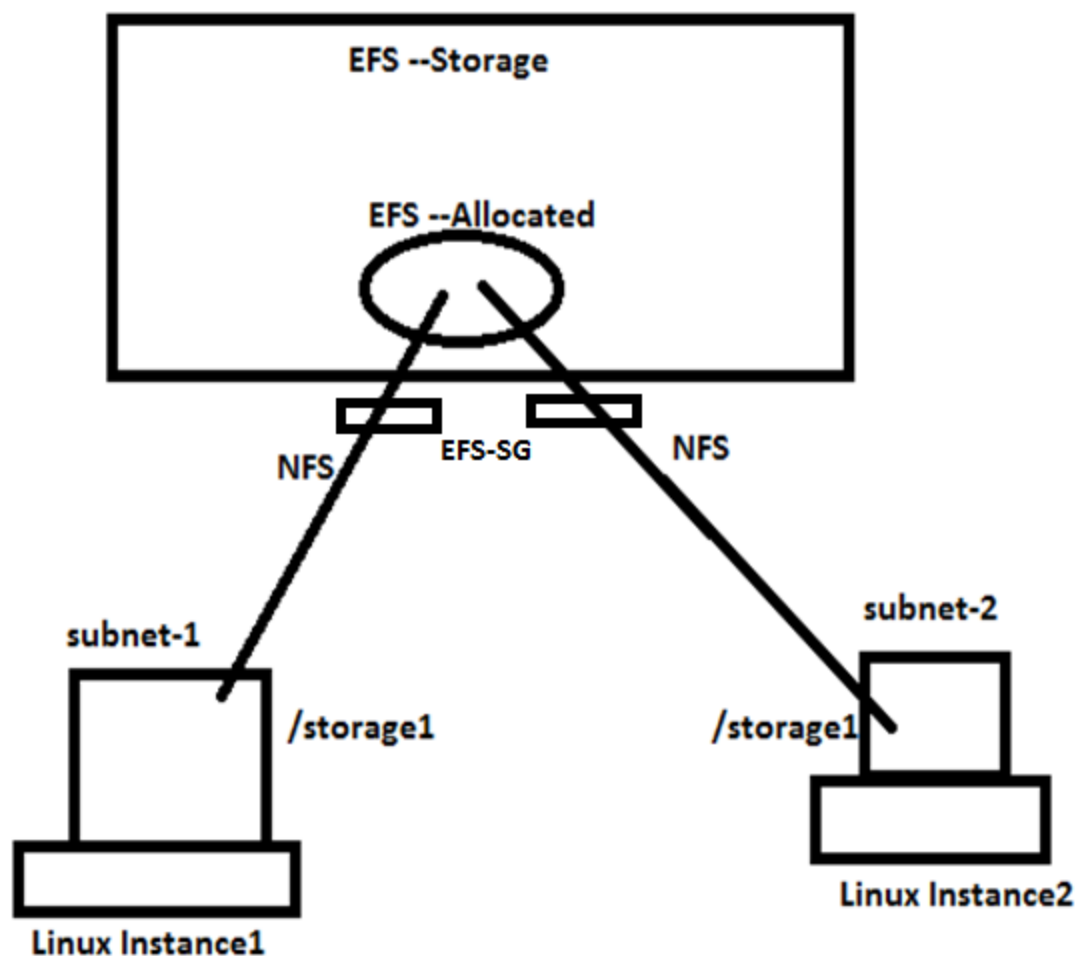


**AWS**



**EFS**





#### EFS Advantages

- 1) Centralised Storage
- 2) Flexible in Capacity
- 3) pay for the space what you are using
- 4) Multi-AZ and multi region support
- 5) Max 8 EB space supporting

# Topics to be covered--EFS

- 1) EFS Introduction
- 2) Creating EFS
- 3) Manage Network
- 4) Attach to EC2 Instance manually
- 5) Attach to EC2 Instance through script
- 6) Attach to EC2 Instance aws console

# Amazon EFS

- ✓ Amazon Elastic File System provides file storage in the AWS Cloud.
- ✓ With Amazon EFS, you can create a file system, mount the file system on an Amazon EC2 instance, and then read and write data to and from your file system.
- ✓ You can mount an Amazon EFS file system in your VPC, through the Network File System versions 4.0 and 4.1 (NFSv4) protocol.
- ✓ Amazon EFS file systems can automatically scale from gigabytes to petabytes of data without needing to provision storage. Tens, hundreds, or even thousands of Amazon EC2 instances can access an Amazon EFS file system at the same time, and Amazon EFS provides consistent performance to each Amazon EC2 instance.
- ✓ Amazon EFS is designed to be highly durable and highly available. With Amazon EFS, there is no minimum fee or setup costs, and you pay only for what you use.

# Storage Classes

- **Infrequent Access** – The Infrequent Access (IA) storage class is a lower-cost storage class that's designed for storing long-lived, infrequently accessed files cost-effectively.
- **Standard** – The Standard storage class is used to store frequently accessed files.

The EFS IA storage class reduces storage costs for files that aren't accessed every day. It does this without sacrificing the high availability, high durability, elasticity, and POSIX file system access that EFS provides.

We recommend EFS IA storage if you need your full dataset to be readily accessible and want to automatically save on storage costs for files that are less frequently accessed. Examples include keeping files accessible to satisfy audit requirements, perform historical analysis, or perform backup and recovery

## EFS lifecycle management

- Amazon EFS lifecycle management automatically manages cost-effective file storage for your file systems. When enabled, lifecycle management migrates files that have not been accessed for a set period of time to the Infrequent Access (IA) storage class. You define that period of time by using a *lifecycle policy*.
- After lifecycle management moves a file into the IA storage class, the file remains there indefinitely. Amazon EFS lifecycle management uses an internal timer to track when a file was last accessed. It doesn't use the POSIX file system attributes that are publicly viewable. Whenever a file in Standard storage is written to or read from, the lifecycle management timer is reset.
- Metadata operations, such as listing the contents of a directory, don't count as file access. During the process of transitioning a file's content to IA storage, the file is stored in the Standard storage class and billed at the Standard storage rate.



## Amazon Elastic File System

Create your file system



## EFS Lifecycle Management

Automatically moves data



## EFS Infrequent Access

Stores file data at a lower cost



# Amazon EFS pricing

- ✓ With Amazon EFS, you pay only for the resources that you use. There is no minimum fee and there are no set-up charges.
- ✓ Amazon EFS offers two storage classes: the Standard storage class, and the Infrequent Access storage class (EFS IA). EFS IA provides price/performance that's cost-optimized for files not accessed every day. To load data into EFS IA, simply enable Lifecycle Management for your file system and reduce your storage costs by up to 92%.
- ✓ Industry research and customer analysis shows that on average, 20% of files are actively used and 80% are infrequently accessed. Using that estimate, you can store your files on Amazon EFS at an effective price of \$0.08/GB-month\*

# Pricing Table

Region: Asia Pacific (Mumbai) ▾

Standard Storage (GB-Month)	\$0.33
Infrequent Access Storage (GB-Month)	\$0.0272
Infrequent Access Requests (per GB transferred)	\$0.011
Provisioned Throughput (MB/s-Month)	\$6.60

Within your first 12 months on AWS, you can use up to 5 GB/month on the EFS Standard storage class for free.

Category	S3	EBS	EFS
Storage Type	Object Storage	Block Storage	File Storage
Pricing	Pay as you Use	Pay for provisioned capacity	Pay as you Use
Storage Size	Unlimited Storage	Limited storage	Unlimited Storage
Scalability	Unlimited Scalability	Increase/decrease size manually	Unlimited Scalability
Durability	Stored redundantly across multiple Azs	Stored redundantly in a Single AZ	Stored redundantly across multiple Azs
Availability	Max is 99.99% with S3 Standard	99.99%	No SLAs
Security	Supports Data at Rest and Data in Transit encryption	Supports Data at Rest and Data in Transit encryption	Supports Data at Rest and Data in Transit encryption
Back up and Restore	Use Versioning or cross-region replication	Automated Backups and Snapshots	EFS to EFS replication
Performance	Slower than EBS and EFS	Faster than S3 and EFS	Faster than S3, Slower than EBS
Accessibility	Publicly and Privately accessible	Accessible only via the attached EC2 instance	Accessible simulatenously from multiple EC2 and on-premises instance
Interface	Web Interface	File System Interface	Web and File System Interface
Use cases	Media, Entertainment, Big data analytics, backups and archives, web serving and content management	Boot volumes, transactional and NoSQL databases, data warehousing ETL	Media, Entertainment, Big data analytics, backups and archives, web serving and content management, home directories

# EFS Lab

## 1) Create one security group and allow NFS there

EC2 > Security Groups > Create security group

### Create security group [Info](#)

A security group acts as a virtual firewall for your instance to control inbound and outbound traffic. To create a new s

#### Basic details

Security group name [Info](#)  
  
Name cannot be edited after creation.

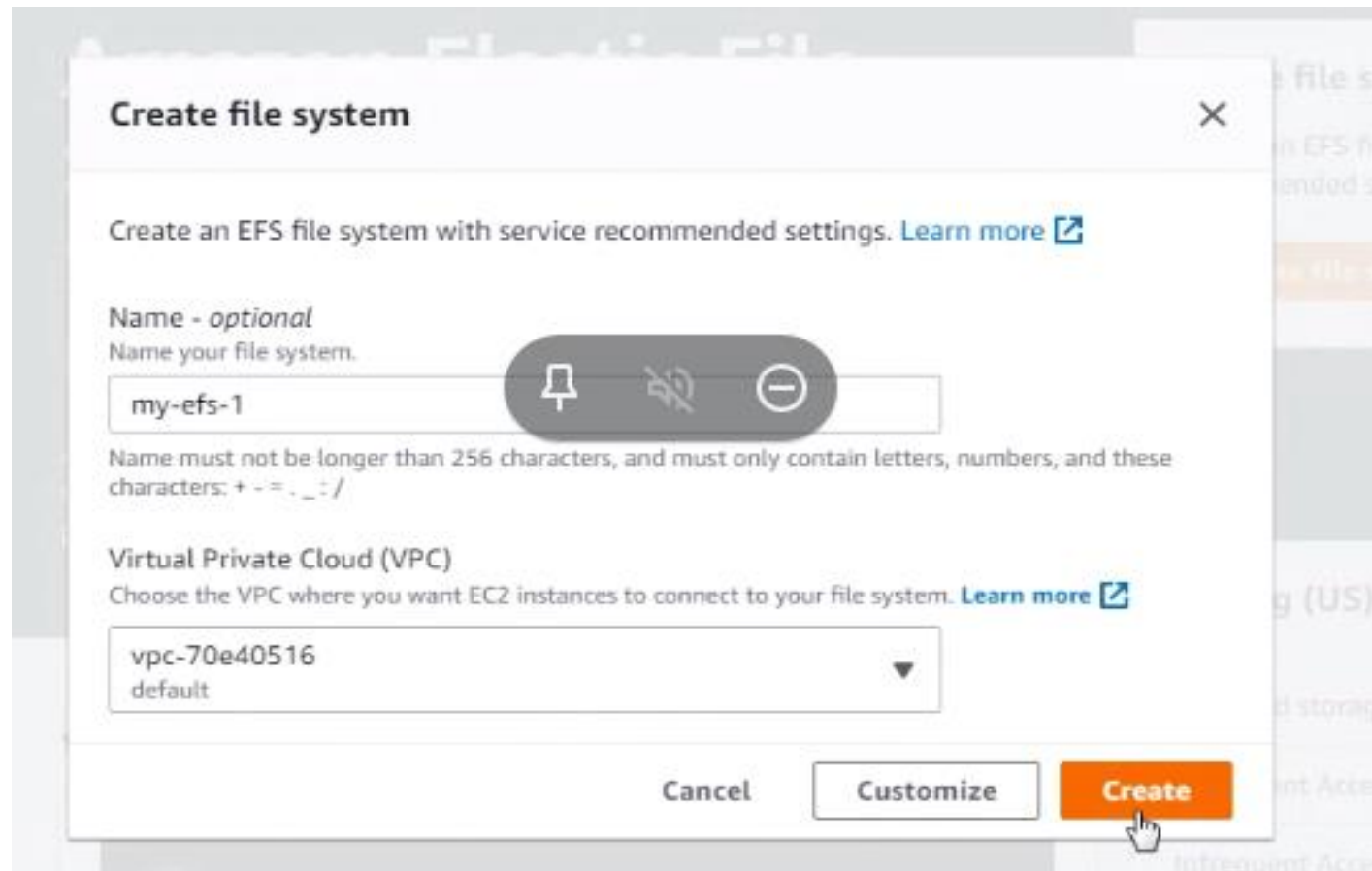
Description [Info](#)

VPC [Info](#)

Type <a href="#">Info</a>	Protocol <a href="#">Info</a>	Port range <a href="#">Info</a>	Source <a href="#">Info</a>	Description - optional <a href="#">Info</a>
<input type="text" value="NFS"/>	<input type="text" value="TCP"/>	<input type="text" value="2049"/>	<div><input type="text" value="Anywh..."/><input type="button" value="Q"/><div><input type="text" value="0.0.0.0/0"/><input type="button" value="X"/> <input "::="" 0"="" type="text" value=""/><input type="button" value="X"/></div></div>	<input type="text"/>

# EFS Lab

## 2) EC2—Open EFS- create EFS -



The screenshot shows the 'Create file system' dialog box in the AWS Management Console. The dialog has a title bar with a close button (X). Below the title bar, there is a message: 'Create an EFS file system with service recommended settings. [Learn more](#)'. The first section is 'Name - optional', with the instruction 'Name your file system.' and a text input field containing 'my-efs-1'. To the right of the input field are three icons: a pin, a slash, and a minus sign. Below the input field, a note states: 'Name must not be longer than 256 characters, and must only contain letters, numbers, and these characters: + - = . \_ : /'. The second section is 'Virtual Private Cloud (VPC)', with the instruction 'Choose the VPC where you want EC2 instances to connect to your file system. [Learn more](#)'. Below this is a dropdown menu showing 'vpc-70e40516' and 'default'. At the bottom of the dialog are three buttons: 'Cancel', 'Customize', and 'Create'. A mouse cursor is pointing at the 'Create' button.

**Create file system** [X]

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

**Name - optional**  
Name your file system.

my-efs-1

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

**Virtual Private Cloud (VPC)**  
Choose the VPC where you want EC2 instances to connect to your file system. [Learn more](#)





vpc-70e40516  
default

Cancel Customize **Create**


# EFS Lab



3) After creating EFS open it

File systems (1)



< 1 >



Name ▾	File system ID ▾	Encrypted ▾	Total size ▾	Size in EFS Standard ▾	Size in EFS IA ▾	Provisioned Throughput (MiB/s) ▾
 my-efs-1	<a href="#">fs-5fb8be1e</a>	 Encrypted	6 KiB	6 KiB	0 Bytes	-

# EFS Lab

4) After opening –click on network--manage

Metered size

Monitoring

Tags

File system policy

Access points

Network

Network

↻

Manage

⚙

Availability zone ▲	Mount target ID ▼	Subnet ID ▼	Mount target state ▼	IP address ▼	Network interface ID ▼
ap-southeast-1a	fsmt-6427a025	subnet-6f418b09	✓ Available	172.31.31.178	eni-0ca7d0261a069a68b
ap-southeast-1b	fsmt-6627a027	subnet-4ed32906	✓ Available	172.31.39.157	eni-0adc2784d758cbe7f
ap-southeast-1c	fsmt-6327a022	subnet-c752d39e	✓ Available	172.31.6.191	eni-0cb3a6f61dfafb9d0

# EFS Lab

5) Delete the selected default security group and select created EFS-SG

Availability zone	Subnet ID	IP address	Security groups	
ap-southeast-1a	subnet-6f418b09	172.31.31.178	Choose security g... ▼	Remove
			sg-0c2cd1ae6d7866a0e efs-sg	
ap-southeast-1b	subnet-4ed32906	172.31.39.157	Choose security g... ▼	Remove
			sg-0c2cd1ae6d7866a0e efs-sg	
ap-southeast-1c	subnet-c752d39e	172.31.6.191	Choose security g... ▼	Remove
			sg-0c2cd1ae6d7866a0e efs-sg	



# EFS Lab

6) Open EFS –click on attach –here we can get mounting EFS link with instance

## Attach



Mount your Amazon EFS file system on a Linux instance. [Learn more](#)

☒ Mount via DNS

☐ Mount via IP

Using the EFS mount helper:

```
sudo mount -t efs -o tls fs-5fb8be1e:/ efs
```

Using the NFS client:

```
sudo mount -t nfs4 -o nfsvers=4.1,rsize=1048576,wsiz=1048576,hard,timeo=600,retrans=2,noresvport fs-5fb8be1e.efs.ap-southeast-1.amazonaws.com:/ efs
```

See our user guide for more information. [User guide](#)

Close

# EFS Lab

7) Now launch Amazon Linux2 AMI----open it –run same command in both server

```
# yum install nfs\* -y
```

```
# mkdir /efs1
```

```
# sudo mount -t nfs4 -o
```

```
nfsvers=4.1,rsize=1048576,wsiz=1048576,hard,timeo=600,retrans=2,noresvport  
fs-cdb0221c.efs.ap-south-1.amazonaws.com:/ /efs1
```

```
# cd /efs1
```

create some files here and check in both system

## Adding Linux Instance with EFS

```
#!/bin/bash
```

```
yum install nfs\* -y
```

```
mkdir /efs1
```

```
sudo mount -t nfs4 -o
```

```
nfsvers=4.1,rsiz=1048576,wsiz=1048576,hard,timeo=600,retrans=2,noresvpor  
t fs-d7118f06.efs.ap-south-1.amazonaws.com:/ /efs1
```