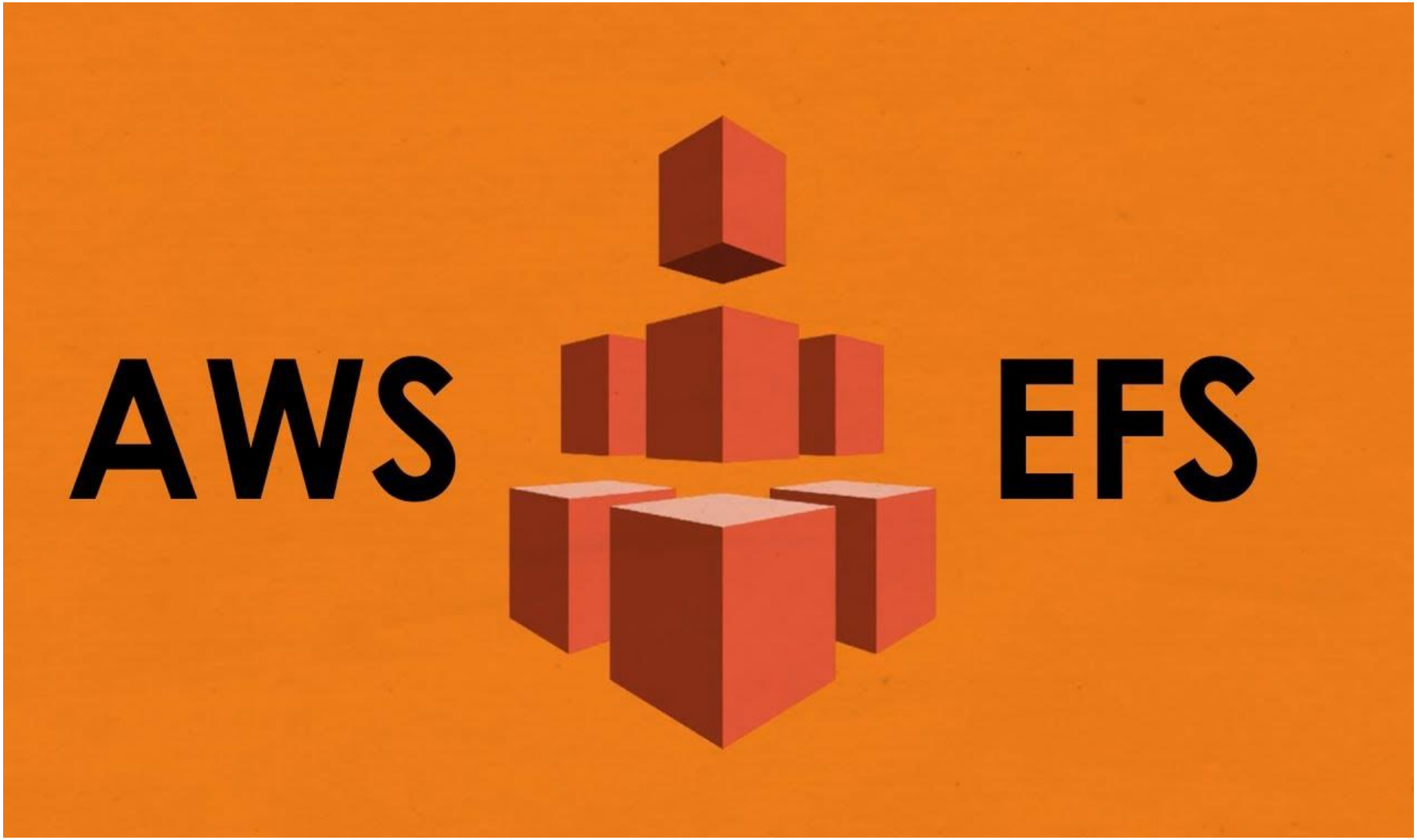
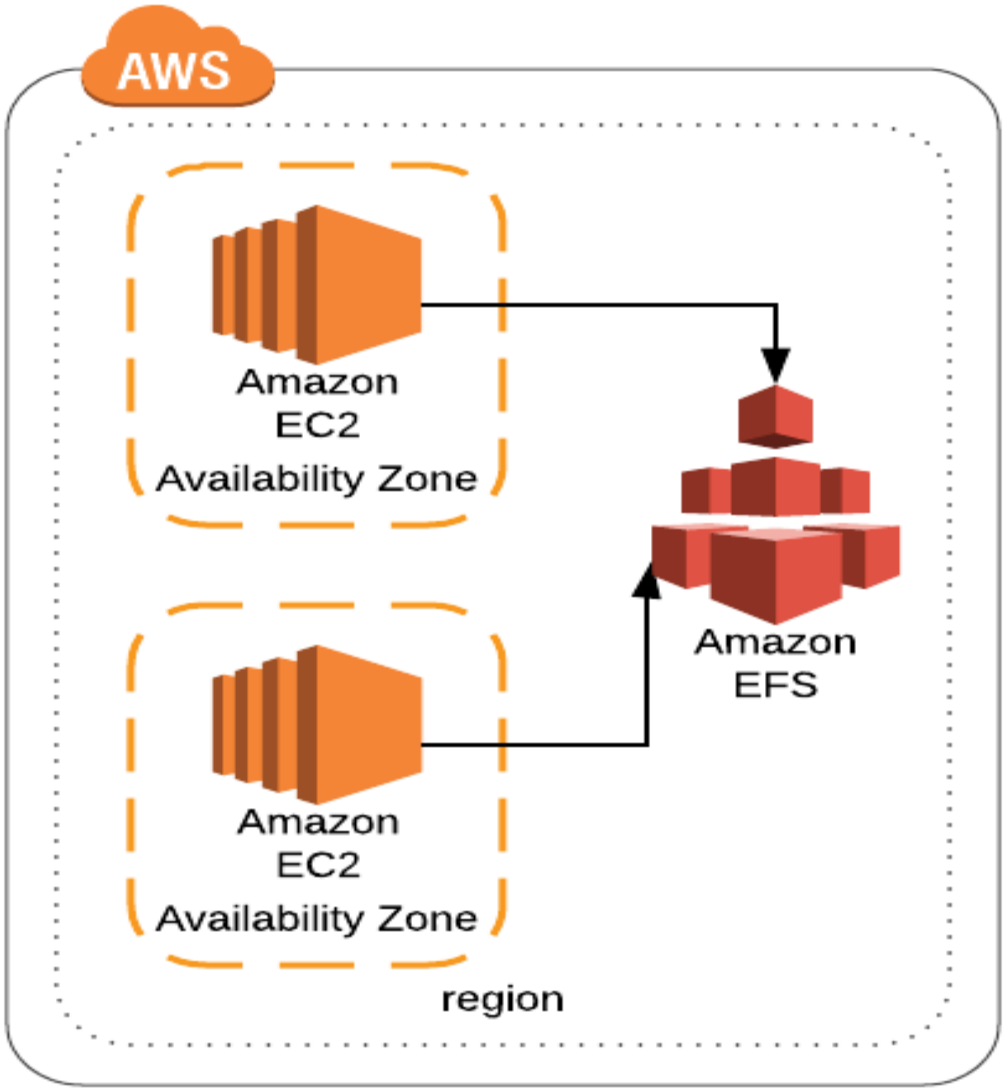
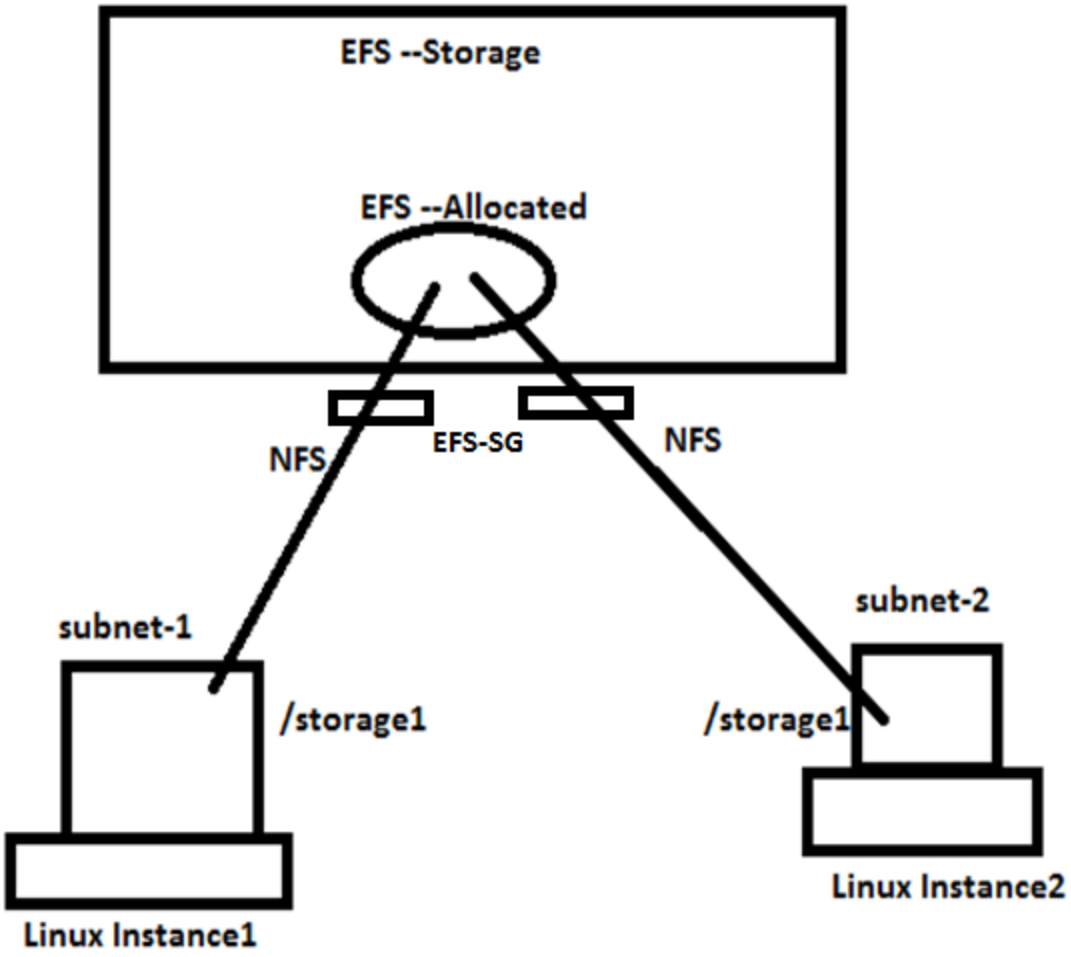

AWS
EFS


AWS
Amazon
EC2
Availability Zone
Amazon
EFS
Amazon
EC2
Availability Zone
region



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.

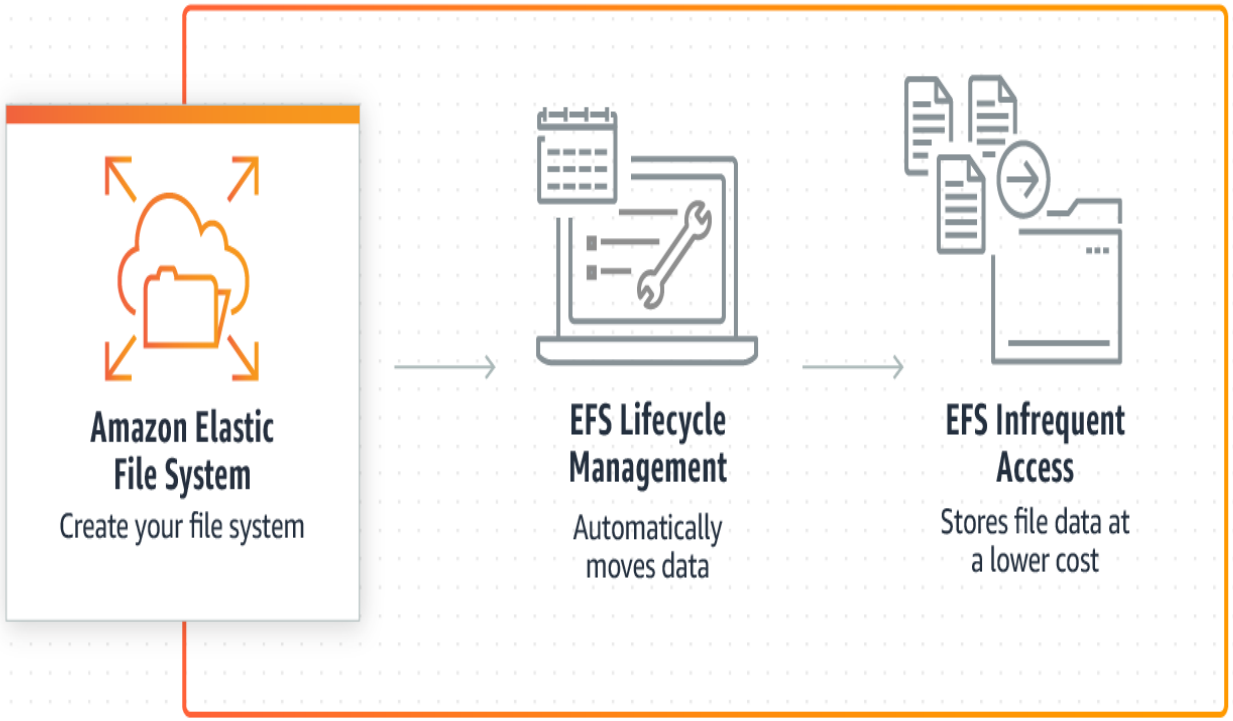
We recommend EFS IA storage if you need your full dataset to be readily accessible and want to automatically save on storage costs for files that are less frequently accessed. Examples include keeping files accessible to satisfy audit requirements, perform historical analysis, or perform backup and recovery

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)

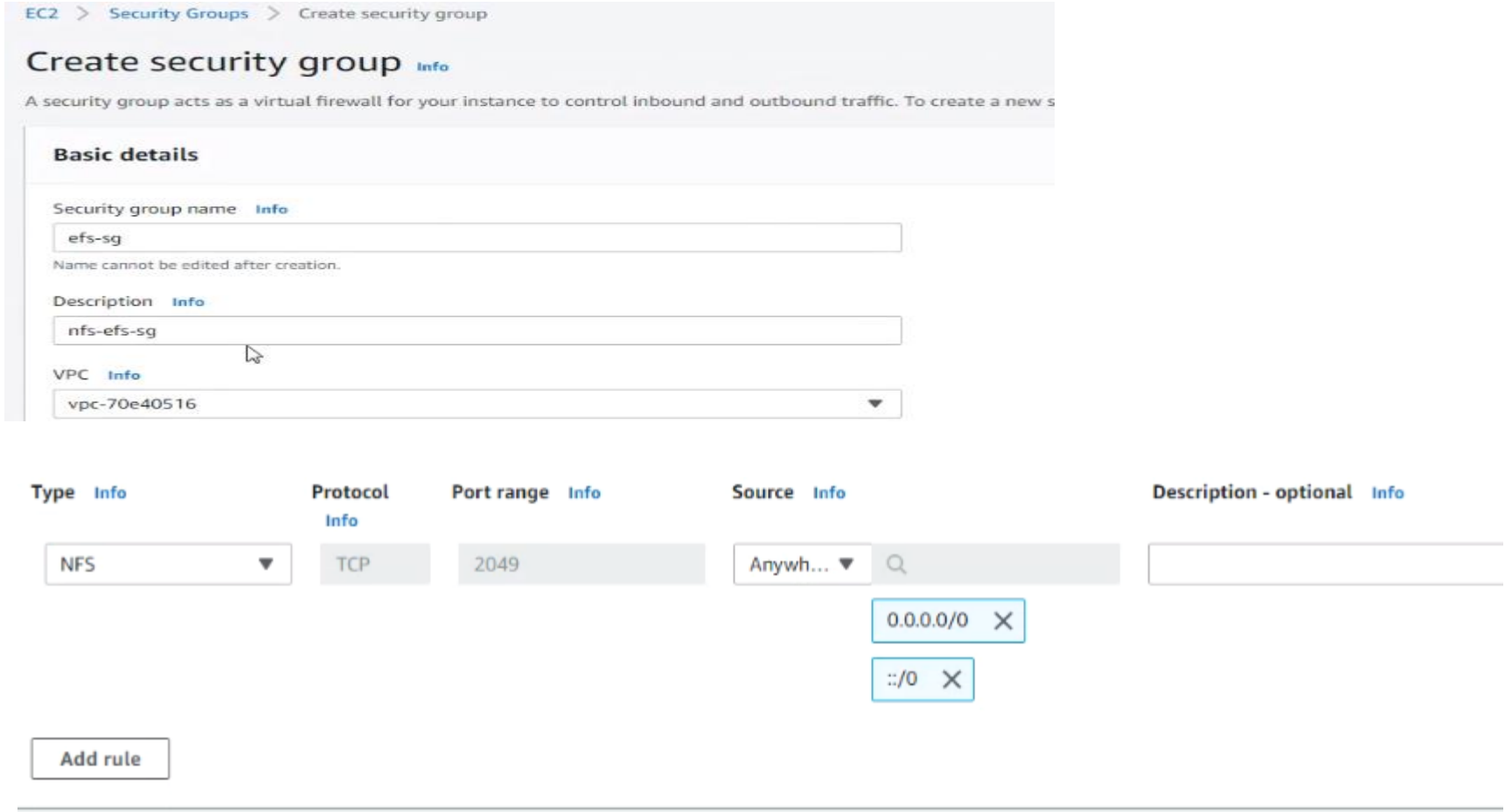
Standard Storage (GB-Month)	$0.33
Infrequent Access Storage (GB-Month)	$0.0272
Infrequent Access Requests (per GB transferred)	$0.011
Provisioned Throughput (MB/s-Month)	$6.60

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 manaually	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

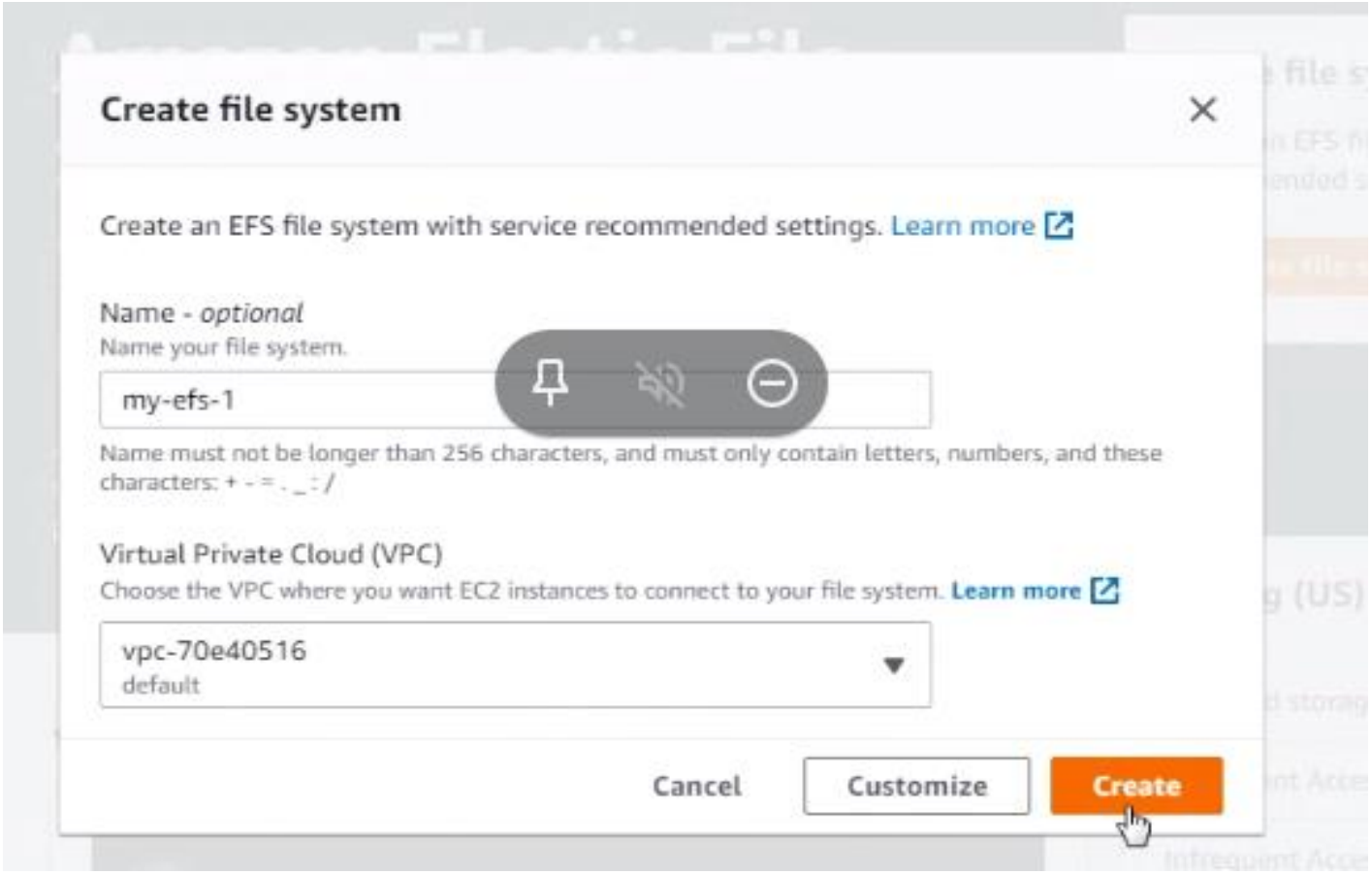
EFS Lab

1) Create one security group and allow NFS there



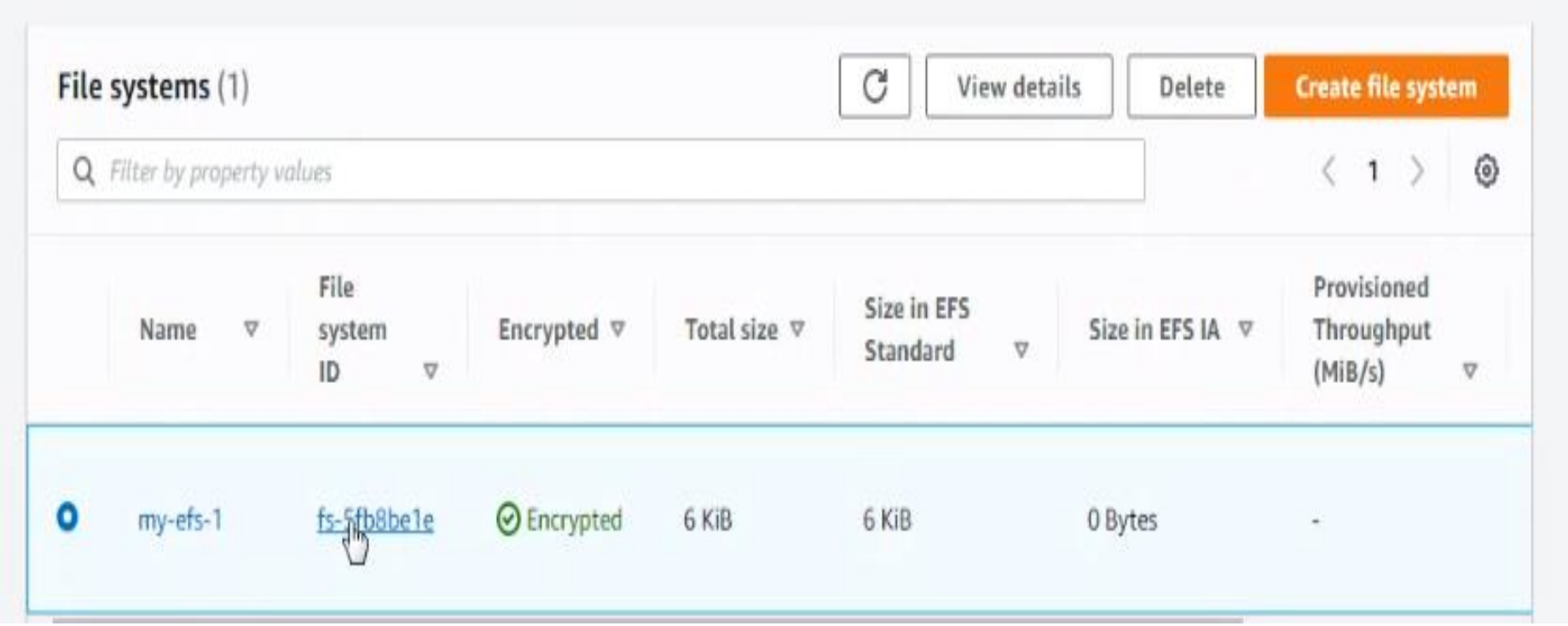
EFS Lab

2) EC2—Open EFS- create EFS -



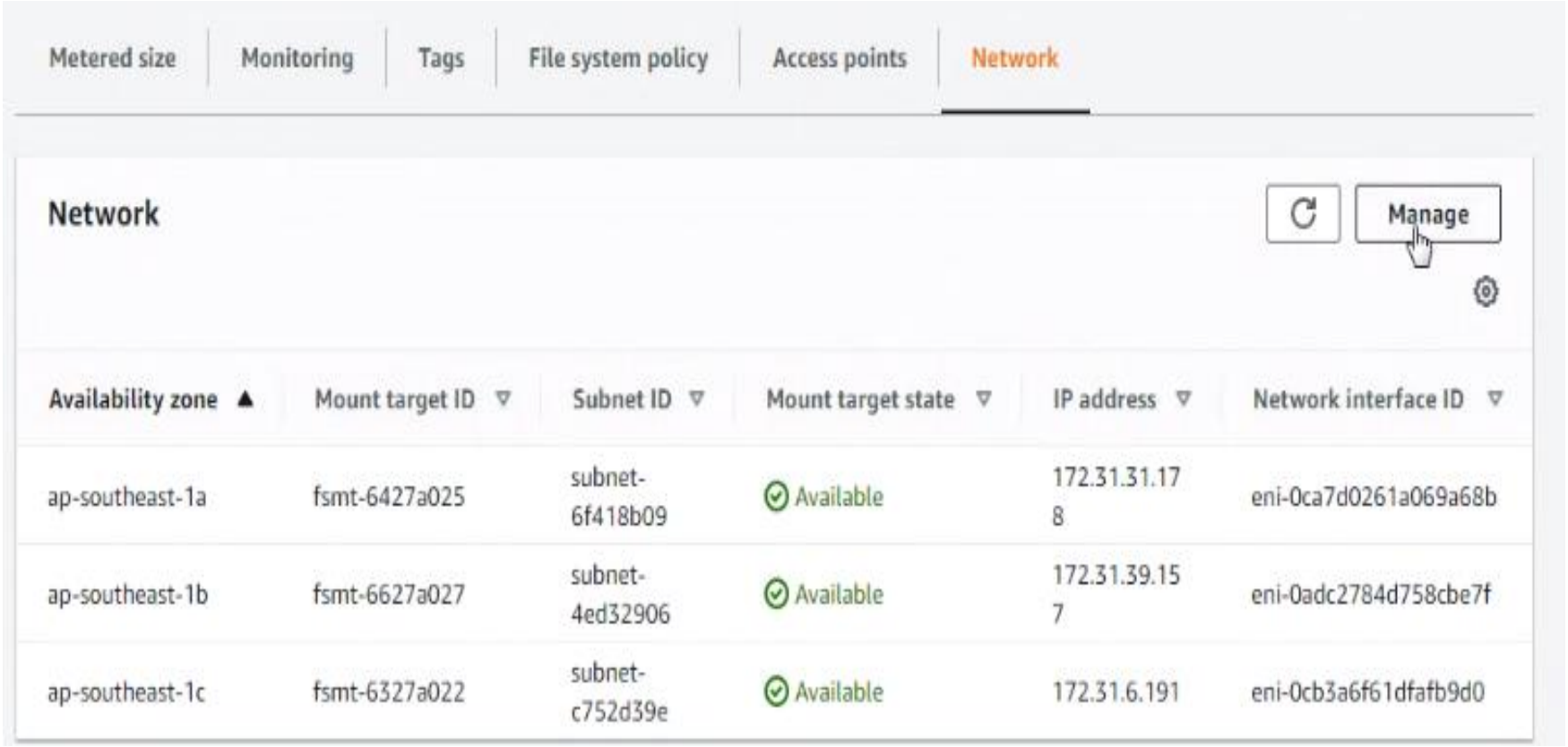
EFS Lab

3) After creating EFS open it



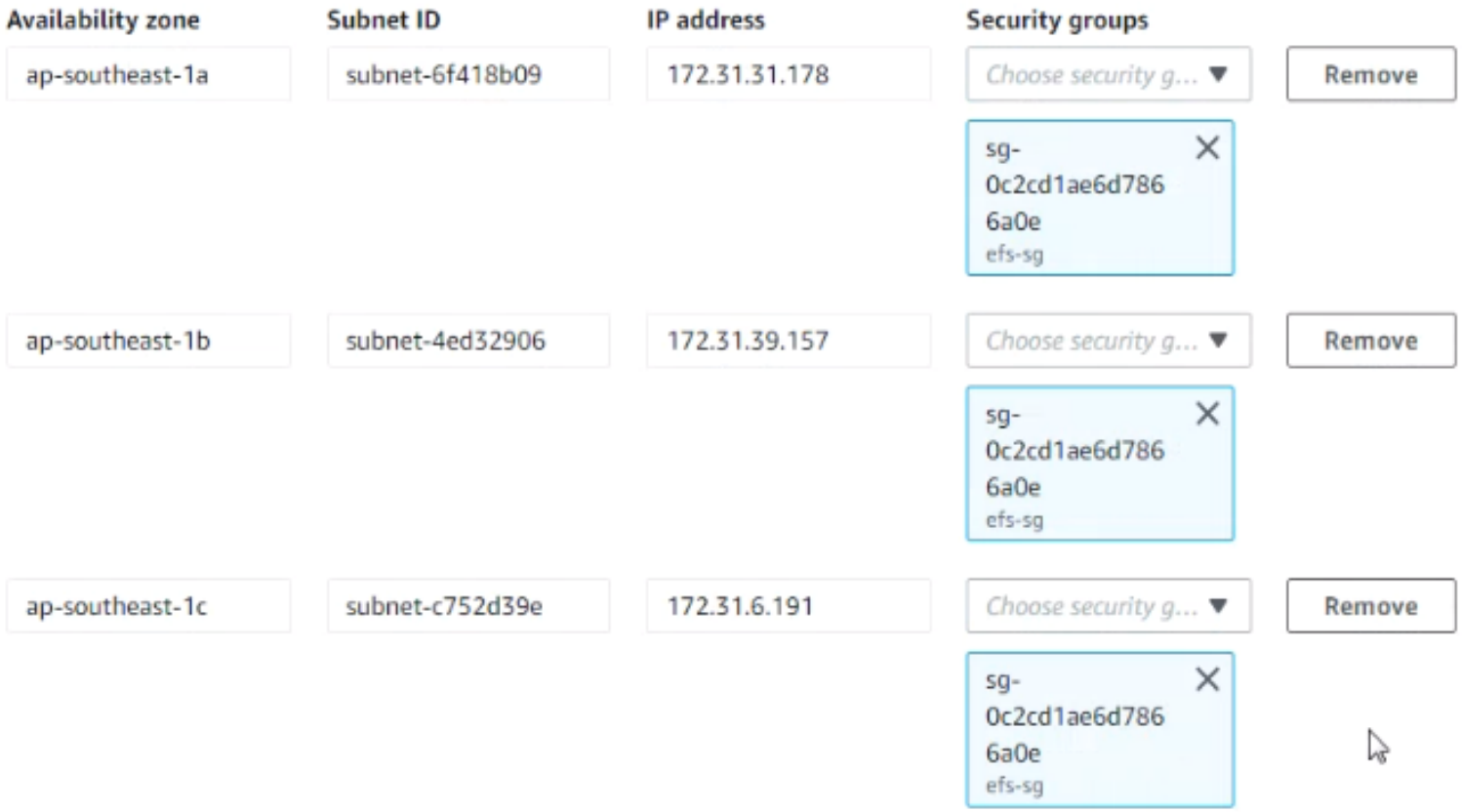
EFS Lab

4) After opening –click on network--manage



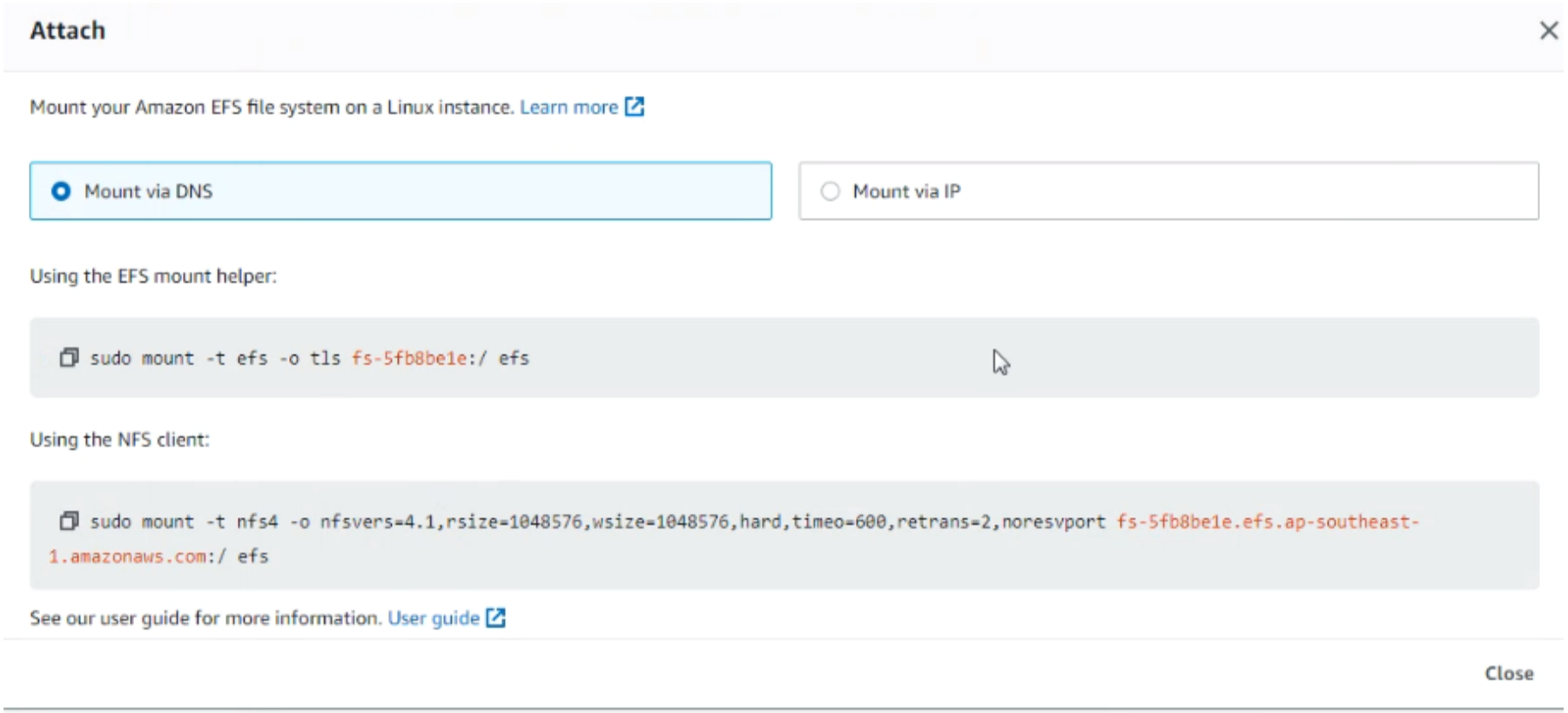
EFS Lab

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



EFS Lab

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



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