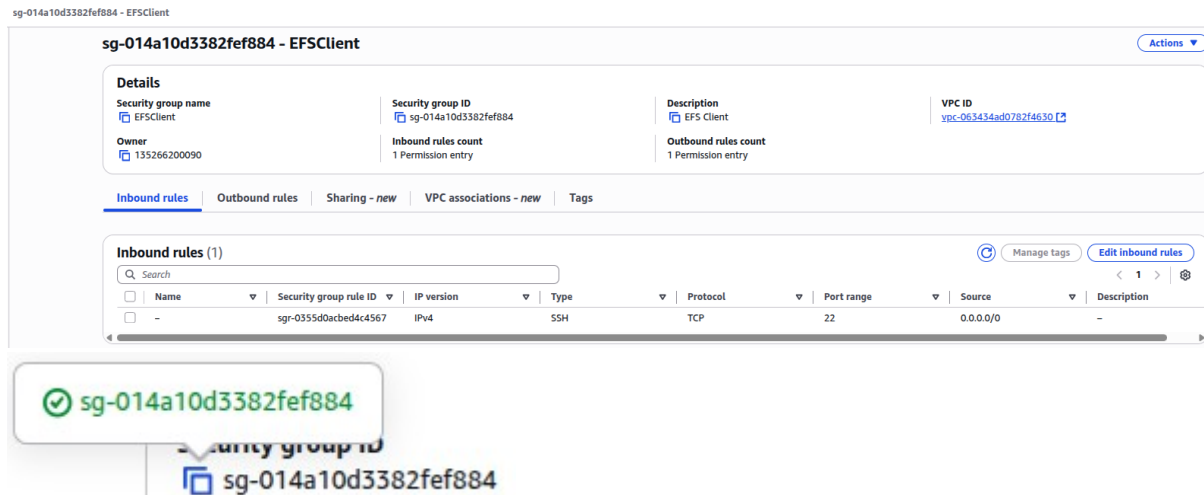


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## Lab-4. B (Module 5): Introducing Amazon Elastic File System.

### Task1 : Creating a security group to access your EFS file system

View the security group and copy EFD Client Security group ID to clipboard



sg-014a10d3382fef884 - EFSClient

**Details**

Security group name EFSClient	Security group ID sg-014a10d3382fef884	Description EFS Client	VPC ID vpc-063434ad0782f4630
Owner 135266200090	Inbound rules count 1 Permission entry	Outbound rules count 1 Permission entry	

**Inbound rules (1)**

Name	Security group rule ID	IP version	Type	Protocol	Port range	Source	Description
-	sg-0355d0acbed4c4567	IPv4	SSH	TCP	22	0.0.0.0/0	-

sg-014a10d3382fef884

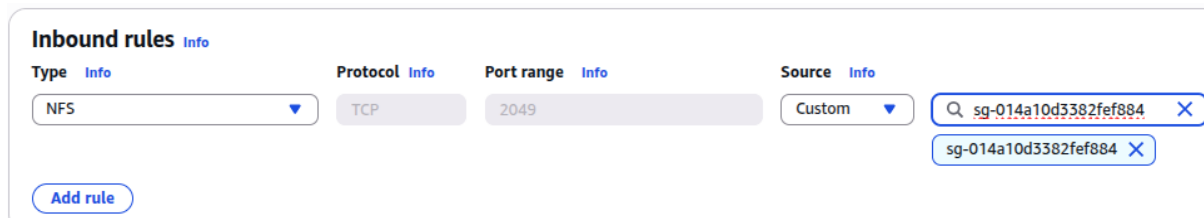
Now create a new security group with below specifications

**Security group name:** EFS Mount Target

**Description:** Inbound NFS access from EFS clients

**VPC:** Lab VPC

Also add an inbound rule to the target



**Inbound rules** Info

Type Info Protocol Info Port range Info Source Info

NFS TCP 2049 Custom

sg-014a10d3382fef884

sg-014a10d3382fef884

Add rule

Security group is created successfully



✓ Security group (sg-0b034742b3c607607 | EFS Mount Target) was created successfully

▼ Details

- Creating security group
- Create inbound rule

### Task2: Creating an EFS file system

In customize screen of new EFS file system

Step 1:

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Uncheck ☐ Enable Automatic backups.

### Lifecycle management:

- for **Transition into IA** Select *None*.

In the **Tags optional** section, configure:

- **Key:** `Name`
- **Value:** `My First EFS File System`

Step 2:

### Network access

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

vpc-063434ad0782f4630  
Lab VPC

**Mount targets**  
A mount target provides an NFSv4 endpoint at which you can mount an Amazon EFS file system. We recommend creating one mount target per Availability Zone. [Learn more](#)  

Availability zone	Subnet ID	IP address type	IPv4 address	IPv6 address	Security groups	
us-east-1a	subnet-09f9...	IPv4 only	Optional	-	Choose secur...	<div>Remove</div>
					<div>sg-0b034742b3c607607 EFS Mount Target</div>	
us-east-1b	subnet-0d0...	IPv4 only	Optional	-	Choose secur...	<div>Remove</div>
					<div>sg-0b034742b3c607607 EFS Mount Target</div>	

Now choose create

Success  
File system (fs-0bd7e974aa2937bd7) is available.

View file system

**File systems (1)**  

Filter by property values

	Name	File system ID	Encrypt	Total size	Size in Standard	Size in IA	Size in Archive	Provisioned Throughput (MiB/s)	File system state	Creation time	Availability Zone	Replication over time protection
<input type="radio"/>	<a href="#">My First EFS File System</a>	<a href="#">fs-0bd7e974aa2937bd7</a>	<input checked="" type="checkbox"/> Encrypted	6.00 KiB	6.00 KiB	0 Bytes	0 Bytes	-	<input checked="" type="checkbox"/> Available	Sun, 31 Aug 2025 07:53:25 GMT	Regional	<input checked="" type="checkbox"/> Enabled

### Task3: Connecting to your EC2 instance

Click on **AWS Details** to reveal our Instance session URL. Open it

**InstanceSessionURL** `https://us-east-1.console.aws.amazon.com/systems-manager/session-manager/i-0839df43fdddca186`

Terminal windows will be opened on the new tab. You are now be connected to the instance

### Task4: Creating a new directory and mounting the EFS file system

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Run below command in terminal session to install required utilities

```
sudo su -l ec2-user
sudo yum install -y amazon-efs-utils
```

```
sh-5.2$ sudo su -l ec2-user
sudo yum install -y amazon-efs-utils
[ec2-user@ip-10-0-1-23 ~]$
```

Create a new directory efs. This will be our mount point

```
[ec2-user@ip-10-0-1-23 ~]$ sudo mkdir efs
[ec2-user@ip-10-0-1-23 ~]$
```

We need to attach First EFS file system with NFS client

Using the NFS client:

```
sudo mount -t nfs4 -o nfsvers=4.1,rsize=1048576,wsz=1048576,hard,timeo=600,retrans=2,noresvport fs-0bd7e974aa2937bd7.efs.us-east-1.amazonaws.com:/ efs
```

```
[ec2-user@ip-10-0-1-23 ~]$ sudo mount -t nfs4 -o nfsvers=4.1,rsize=1048576,wsz=1048576,hard,timeo=600,retrans=2,noresvport fs-0bd7e974aa2937bd7.efs.us-east-1.amazonaws.com:/ efs
[ec2-user@ip-10-0-1-23 ~]$
```

Now get Info about Disk Space

```
[ec2-user@ip-10-0-1-23 ~]$ sudo df -hT
```

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
devtmpfs	devtmpfs	4.0M	0	4.0M	0%	/dev
tmpfs	tmpfs	475M	0	475M	0%	/dev/shm
tmpfs	tmpfs	190M	436K	190M	1%	/run
/dev/xvda1	xfs	8.0G	1.6G	6.4G	20%	/
tmpfs	tmpfs	475M	0	475M	0%	/tmp
/dev/xvda128	vfat	10M	1.3M	8.7M	13%	/boot/efi
tmpfs	tmpfs	95M	0	95M	0%	/run/user/0
fs-0bd7e974aa2937bd7.efs.us-east-1.amazonaws.com:/	nfs4	8.0E	0	8.0E	0%	/home/ec2-user/efs

## Task5: Examining the performance behavior of your new EFS file system

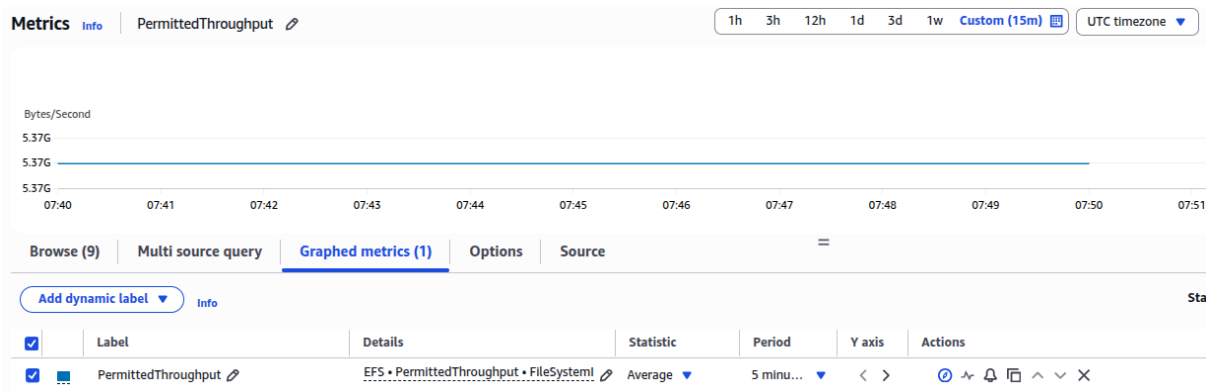
Examine write performance characteristics by below command

```
sudo fio --name=fio-efs --filesize=10G --filename=./efs/fio-efs-test.img --bs=1M --nrfiles=1 --direct=1 --sync=0 --rw=write --iodepth=200 --ioengine=libaio
```

```
[ec2-user@ip-10-0-1-23 ~]$ sudo fio --name=fio-efs --filesize=10G --filename=./efs/fio-efs-test.img --bs=1M --nrfiles=1 --direct=1 --sync=0 --rw=write --iodepth=200 --ioengine=libaio
fio-efs: (g=0): rw=write, bs=(R) 1024KiB-1024KiB, (W) 1024KiB-1024KiB, (T) 1024KiB-1024KiB, ioengine=libaio, iodepth=200
fio-3.32
Starting 1 process
fio-efs: Laying out IO file (1 file / 10240MiB)
Jobs: 1 (f=1): [W(1)][98.8%][w=23.0MiB/s][w=23 IOFS][eta 00m:01s]
fio-efs: (groupid=0, jobs=1): err= 0: pid=27588: Sun Aug 31 07:52:38 2025
write: IOPS=121, BW=121MiB/s (127MB/s) (10.0GiB/84552msec); 0 zone resets
slat (usec): min=64, max=387, avg=116.10, stdev=33.92
clat (msec): min=39, max=3290, avg=1650.70, stdev=192.88
lat (msec): min=40, max=3290, avg=1650.82, stdev=192.88
clat percentiles (msec):
| 1.00th=[ 776], 5.00th=[ 1620], 10.00th=[ 1636], 20.00th=[ 1636],
| 30.00th=[ 1636], 40.00th=[ 1636], 50.00th=[ 1636], 60.00th=[ 1636],
| 70.00th=[ 1636], 80.00th=[ 1670], 90.00th=[ 1670], 95.00th=[ 1687],
| 99.00th=[ 2433], 99.50th=[ 2869], 99.90th=[ 3202], 99.95th=[ 3239],
| 99.99th=[ 3272]
bw ( KIB/s): min=96256, max=135168, per=99.89%, avg=123879.33, stdev=3476.58, samples=166
iops : min= 94, max= 132, avg=120.98, stdev= 3.40, samples=166
lat (msec): 30=0.01%, 100=0.09%, 250=0.27%, 500=0.29%, 750=0.31%
lat (msec): 1000=0.29%, 2000=97.22%, >=2000=1.51%
cpu : usr=0.81%, sys=0.73%, ctx=12380, majf=0, minf=9
IO depths : 1=0.1%, 2=0.1%, 4=0.1%, 8=0.1%, 16=0.2%, 32=0.3%, >=64=99.4%
submit : 0=0.0%, 4=100.0%, 8=0.0%, 16=0.0%, 32=0.0%, 64=0.0%, >=64=0.0%
complete : 0=0.0%, 4=100.0%, 8=0.0%, 16=0.0%, 32=0.0%, 64=0.0%, >=64=0.1%
issued rwts: total=0,10240,0,0 short=0,0,0,0 dropped=0,0,0,0
latency : target=0, window=0, percentile=100.00%, depth=200

Run status group 0 (all jobs):
WRITE: bw=121MiB/s (127MB/s), 121MiB/s-121MiB/s (127MB/s-127MB/s), io=10.0GiB (10.7GB), run=84552-84552msec
[ec2-user@ip-10-0-1-23 ~]$
```

Monitor Permitted Throughput value



Lab Completed

Total score	15/15
[Task 1] Security Group created	5/5
[Task 2] EFS file system created	5/5
[Task 5] Flexible IO was run	5/5