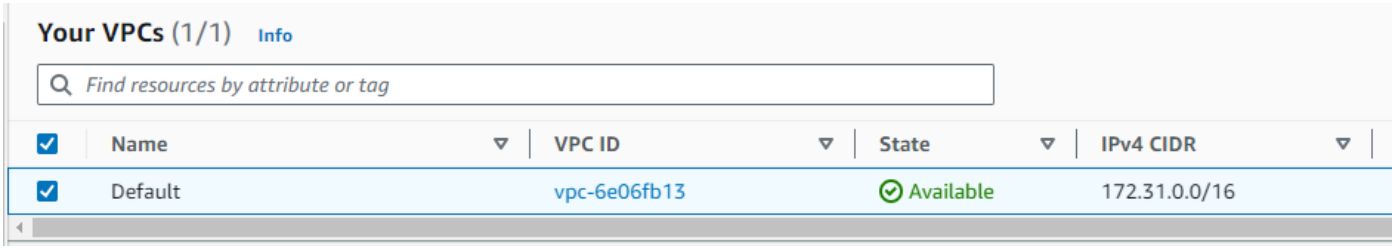
> **Note**
>
> **Tasks To Be Performed:**
>
> 1. Create an EFS and connect it to 3 different EC2 instances. Make sure that all instances have different operating systems. For instance, Ubuntu, Red Hat Linux and Amazon Linux 2.

First I'll create 2 **Security Groups**

Security group ID	Security group name	VPC ID
sg-08f157e3635e53c67	SSH	vpc-6e06fb13
sg-04c9680134251a99f	EFS/NFS	vpc-6e06fb13

SSH - Allows SSH connection from anywhere
EFS/NFS - Allows NFS traffic (typically on port 2049) from default VPC's CIDR `172.31.0.0/16`. This is aimed at enabling the instance to communicate with the EFS **mount target**.



I'll create an **EFS** filesystem called **EFS_for3Instance** at `Amazon EFS > Filesystems > Create file system`

Name	File system ID	Encrypted	Total size	Size in Standard / One Zone
EFS_for3Instance	fs-035a12e0097bf3b55	Encrypted	6.00 KiB	6.00 KiB

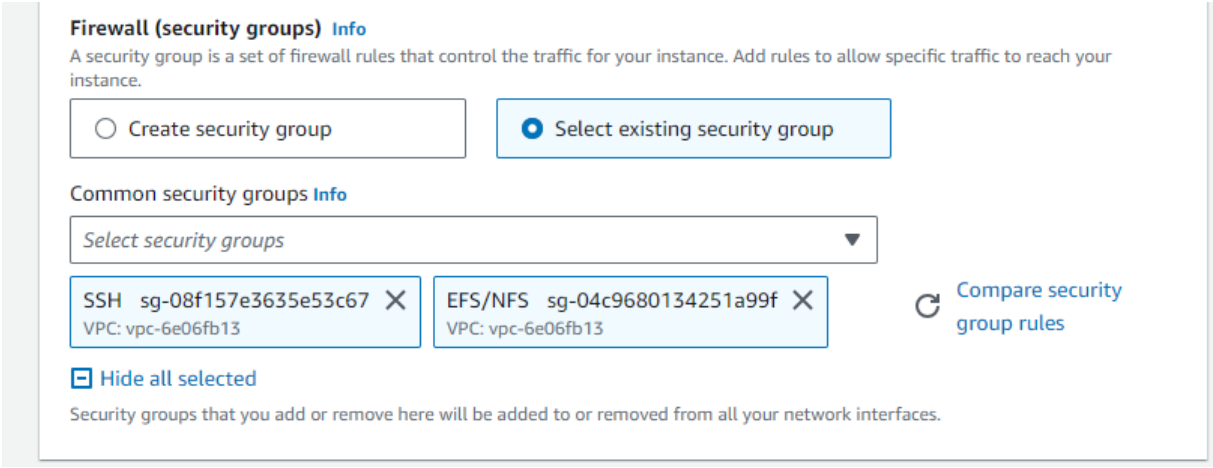
I'll click on **EFS_for3Instance** and navigate to **Network** tab to replace the **Security Group** associated with **Mount Targets** with the one I create **EFS/NFS**

Mount target state	IP address	Network interface ID	Security groups
Available	172.31.46.11	eni-03d739a4e3de4df65	sg-04c9680134251a99f (EFS/NFS)
Available	172.31.12.118	eni-0db2128f2e1ea5633	sg-04c9680134251a99f (EFS/NFS)
Available	172.31.92.220	eni-0f9f6cefde5809c2d	sg-04c9680134251a99f (EFS/NFS)
Available	172.31.23.143	eni-04aacad85afab368d	sg-04c9680134251a99f (EFS/NFS)
Available	172.31.56.138	eni-0d4ca5a76228ab710	sg-04c9680134251a99f (EFS/NFS)
Available	172.31.65.40	eni-0fa4eb63a599577d5	sg-04c9680134251a99f (EFS/NFS)

I click the button **Attach** to get the **EFS**'s mount command. In this case is the following:

```
sudo mount -t nfs4 -o
nfsvers=4.1,rsize=1048576,wsize=1048576,hard,timeo=600,retrans=2,noresvport fs-
035a12e0097bf3b55.efs.us-east-1.amazonaws.com:/ efs
```

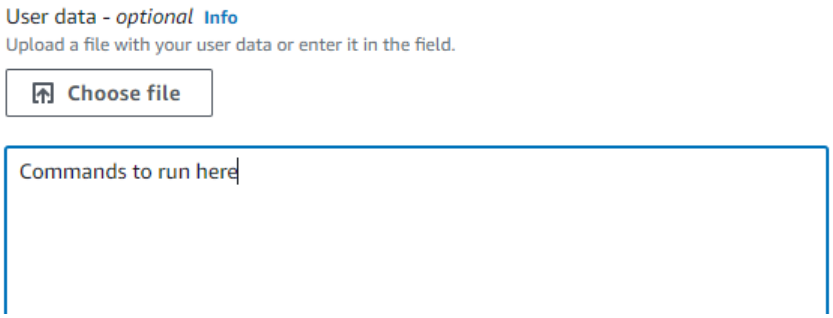
I will now create 3 EC2 Instances Ubuntu, Red Hat and Amazon Linux.
They will all have the same **Security Groups** that I created attached



For the EC2 instance to work I need to install **Amazon EFS client** in them. Sense all 3 instances have different OS the commands are different

> Followed AWS Doc:
> https://docs.aws.amazon.com/efs/latest/ug/installing-amazon-efs-utils.html#installing-other-distro

I'll do this installation at the time I launch the Instance through Advance details - User data



Ubuntu's - *User data*

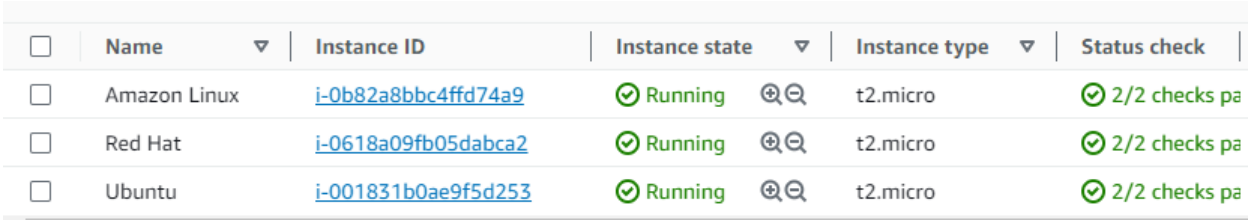
```
#!/bin/bash
sudo apt-get update
sudo apt-get -y install git binutils
git clone https://github.com/aws/efs-utils
cd /efs-utils
./build-deb.sh
sudo apt-get -y install ./build/amazon-efs-utils*deb

# Create the directory where the EFS will be mounted
sudo mkdir /efs

# Mount the EFS filesystem
sudo mount -t nfs4 -o
nfsvers=4.1,rsize=1048576,wsize=1048576,hard,timeo=600,retrans=2,noresvport fs-
035a12e0097bf3b55.efs.us-east-1.amazonaws.com:/ /efs
```

Red Hat's - *User data*

```
#!/bin/bash
sudo yum -y install git
git clone https://github.com/aws/efs-utils
cd /efs-utils
sudo yum -y install make
sudo yum -y install rpm-build
sudo make rpm
sudo yum -y install ./build/amazon-efs-utils*rpm

# Create the directory where the EFS will be mounted
sudo mkdir /efs

# Mount the EFS filesystem
sudo mount -t nfs4 -o
nfsvers=4.1,rsize=1048576,wsize=1048576,hard,timeo=600,retrans=2,noresvport fs-
035a12e0097bf3b55.efs.us-east-1.amazonaws.com:/ /efs
```

Amazon Linux 2's - *User data*

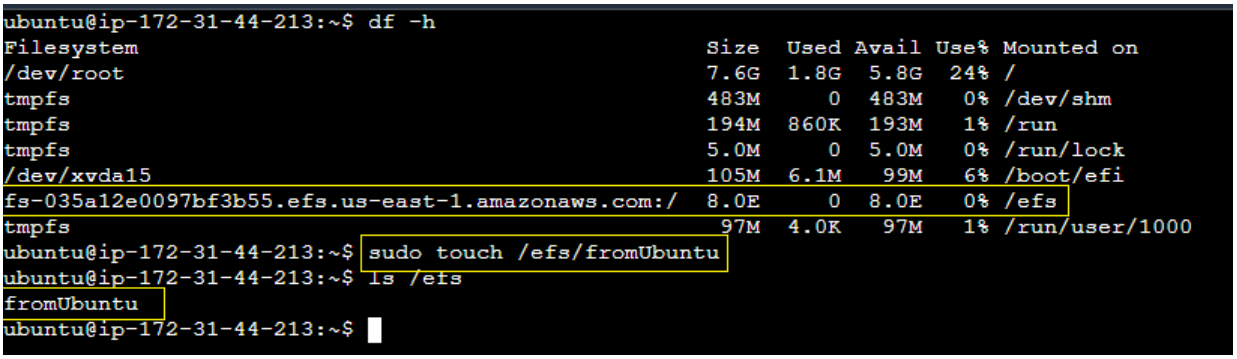
```
#!/bin/bash

# Install amazon-efs-utils
sudo yum install -y amazon-efs-utils

# Create the directory where the EFS will be mounted
sudo mkdir /efs

# Mount the EFS filesystem
sudo mount -t nfs4 -o
nfsvers=4.1,rsize=1048576,wsize=1048576,hard,timeo=600,retrans=2,noresvport fs-
035a12e0097bf3b55.efs.us-east-1.amazonaws.com:/ /efs
```



Name	Instance ID	Instance state	Instance type	Status check
Amazon Linux	i-0b82a8bbc4ffd74a9	Running	t2.micro	2/2 checks pa
Red Hat	i-0618a09fb05dabca2	Running	t2.micro	2/2 checks pa
Ubuntu	i-001831b0ae9f5d253	Running	t2.micro	2/2 checks pa

Now I'll connect to each instance to check:

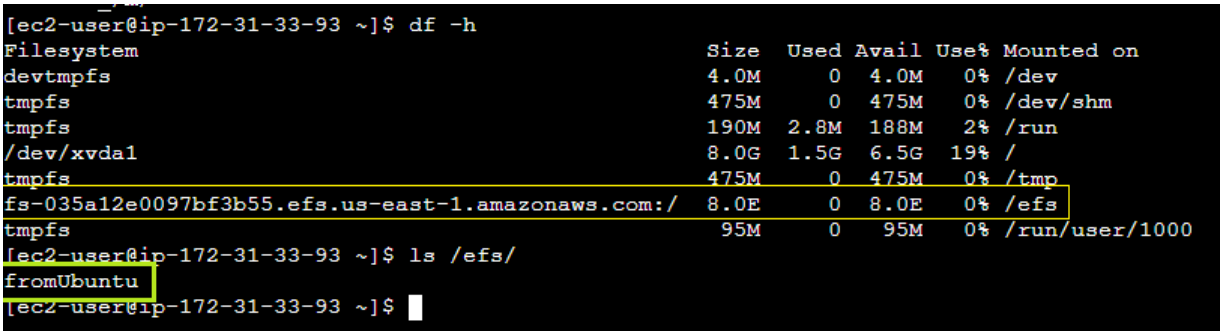
Ubuntu:



```
ubuntu@ip-172-31-44-213:~$ df -h
Filesystem                                      Size  Used Avail Use% Mounted on
/dev/root                                       7.6G  1.8G  5.8G  24% /
tmpfs                                           483M     0  483M   0% /dev/shm
tmpfs                                           194M  860K  193M   1% /run
tmpfs                                           5.0M     0  5.0M   0% /run/lock
/dev/xvda15                                     105M  6.1M   99M   6% /boot/efi
fs-035a12e0097bf3b55.efs.us-east-1.amazonaws.com:/  8.0E     0  8.0E   0% /efs
tmpfs                                            97M  4.0K   97M   1% /run/user/1000
ubuntu@ip-172-31-44-213:~$ sudo touch /efs/fromUbuntu
ubuntu@ip-172-31-44-213:~$ ls /efs
fromUbuntu
ubuntu@ip-172-31-44-213:~$
```

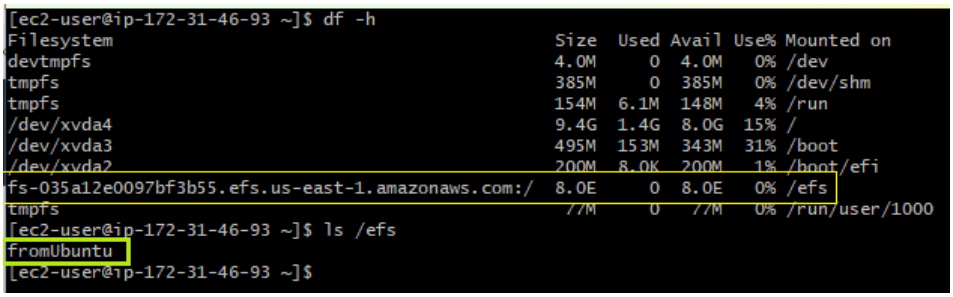
I see the mounted EFS and create a test file `fromUbuntu` inside

Amazon Linux:



```
[ec2-user@ip-172-31-33-93 ~]$ 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  2.8M  188M   2% /run
/dev/xvda1                                      8.0G  1.5G  6.5G  19% /
tmpfs                                           475M     0  475M   0% /tmp
fs-035a12e0097bf3b55.efs.us-east-1.amazonaws.com:/  8.0E     0  8.0E   0% /efs
tmpfs                                            95M     0   95M   0% /run/user/1000
[ec2-user@ip-172-31-33-93 ~]$ ls /efs/
fromUbuntu
[ec2-user@ip-172-31-33-93 ~]$
```

Red Hat:



Everything works as expected