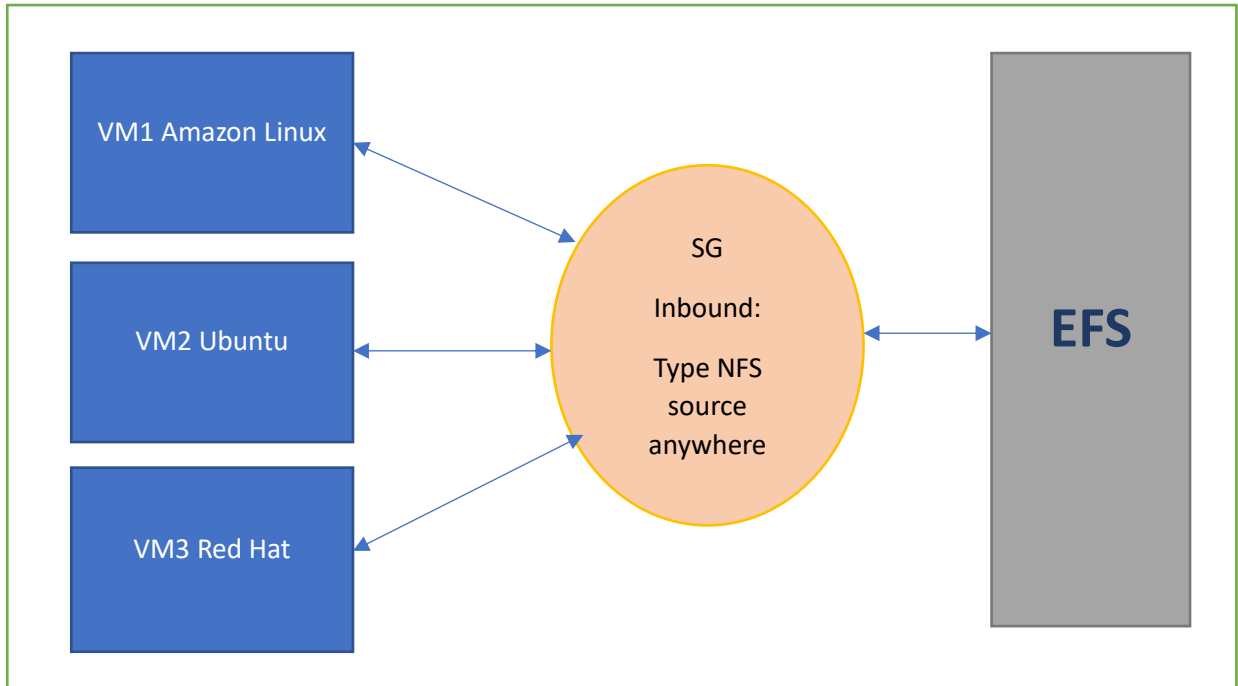


Module2: EC2 and EFS Assignment - 3

1. Create an EFS and connect it to 3 different EC2 instances. Make sure the all instances have different Operating System. For instance, Ubuntu, Red Hat Linux and Amazon Linux 2.



SG Creation:

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 security group, complete the fields below.

Basic details

Security group name [Info](#)

EFSSG

Name cannot be edited after creation.

Description [Info](#)

Allows inbound Type NFS Source anywhere

VPC [Info](#)

Q vpc-0fab1c85235d6abf7

Inbound rules [Info](#)

Type Info	Protocol Info	Port range Info	Source Info	Description - optional Info
NFS	TCP	2049	Anywh... 0.0.0.0/0	

Add rule

Delete

Module2: EC2 and EFS Assignment - 3

EFS Creation:

Amazon EFS

Step 1
File system settings

Step 2
Network access

Step 3 - optional
File system policy

Step 4
Review and create

File system settings

General

Name - optional
Name your file system.

MYEFS

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

Storage class [Learn more](#)

☒ **Standard**
Stores data redundantly across multiple AZs

☐ **One Zone**
Stores data redundantly within a single AZ

Automatic backups
Automatically backup your file system data with AWS Backup using recommended settings. Additional pricing applies. [Learn more](#)

☒ **Enable automatic backups**

Lifecycle management
EFS Intelligent-Tiering uses Lifecycle Management to automatically achieve the right price and performance blend for your application by moving your files between the Standard and SI Infrequent Access storage classes. [Learn more](#)

Transition into IA
Transition files from Standard to Standard-Infrequent Access.

30 day(s) since last access

Transition out of IA
Transition files from Standard-Infrequent Access to Standard.

None

Mount target: adding EFSSG custom SG

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	Security groups	
us-east-1a	subnet-0eace2b88f1...	Automatic	<div>Choose security groups</div> <div>sg-075e8f0d2405c4d53 EFSSG</div>	Remove
us-east-1b	subnet-05e33dfdb8e...	Automatic	<div>Choose security groups</div> <div>sg-075e8f0d2405c4d53 EFSSG</div>	Remove
us-east-1c	subnet-0c1f226fc76...	Automatic	<div>Choose security groups</div> <div>sg-075e8f0d2405c4d53 EFSSG</div>	Remove
us-east-1d	subnet-052cace3acf...	Automatic	<div>Choose security groups</div> <div>sg-075e8f0d2405c4d53</div>	Remove

Module2: EC2 and EFS Assignment - 3

Success!

File system (fs-002abfb43cbdd85ec) is available

View file system

Amazon EFS

File systems (1)

Filter by property values

< 1 >

Name	File system ID	Encrypted	Total size	Size in Standard / One Zone	Size in Standard-IA / One Zone-IA	Provisioned Throughput (MiB/s)	File system state	Creation time
MYEFS	fs-002abfb43cbdd85ec	Encrypted	6.00 KiB	6.00 KiB	0 Bytes	-	Available	Thu, 16 Feb 2023 10:12:36 GMT

EC2 Instances Creation:

Instances (1/3) Info

Find instance by attribute or tag (case-sensitive)

< 1 >

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public
VM1-Amazon	i-09bb42217dab5473b	Running	t2.micro	2/2 checks passed	No alarms	us-east-1d	ec2-3-
VM3-Red Hat	i-055c5a025460d2c45	Running	t2.micro	Initializing	No alarms	us-east-1e	ec2-52
VM2-Ubuntu	i-0b79ac0d70e9e1a51	Running	t2.micro	2/2 checks passed	No alarms	us-east-1e	ec2-52

Instance: i-09bb42217dab5473b (VM1-Amazon)

Details Security Networking Storage Status checks Monitoring Tags

Instance summary Info

Instance ID

i-09bb42217dab5473b (VM1-Amazon)

IPv6 address

-

Hostname type

IP name: ip-172-31-10-229.ec2.internal

Answer private resource DNS name

Public IPv4 address

52.16.126.51 | open address

Instance state

Running

Private IP DNS name (IPv4 only)

ip-172-31-10-229.ec2.internal

Instance type

Private IPv4 addresses

172.31.10.229

Public IPv4 DNS

ec2-3-216-126-51.compute-1.amazonaws.com | open address

Elastic IP addresses

Instances (1/3) Info

Find instance by attribute or tag (case-sensitive)

< 1 >

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS
VM1-Amazon	i-09bb42217dab5473b	Running	t2.micro	2/2 checks passed	No alarms	us-east-1d	ec2-3-216-126-5
VM3-Red Hat	i-055c5a025460d2c45	Running	t2.micro	Initializing	No alarms	us-east-1e	ec2-52-91-121-5
VM2-Ubuntu	i-0b79ac0d70e9e1a51	Running	t2.micro	2/2 checks passed	No alarms	us-east-1e	ec2-52-87-255-1

Instance: i-0b79ac0d70e9e1a51 (VM2-Ubuntu)

Details Security Networking Storage Status checks Monitoring Tags

Instance summary Info

Instance ID

i-0b79ac0d70e9e1a51 (VM2-Ubuntu)

IPv6 address

-

Hostname type

IP name: ip-172-31-61-182.ec2.internal

Answer private resource DNS name

Public IPv4 address

52.87.255.110 | open address

Instance state

Running

Private IP DNS name (IPv4 only)

ip-172-31-61-182.ec2.internal

Instance type

Private IPv4 addresses

172.31.61.182

Public IPv4 DNS

ec2-52-87-255-110.compute-1.amazonaws.com | open address

Elastic IP addresses

Module2: EC2 and EFS Assignment - 3

Instances (1/3) Info Refresh Connect Instance state Actions Launch instances

Find instance by attribute or tag (case-sensitive)

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 I
<input type="checkbox"/>	VM1-Amazon	i-09bb42217dab5473b	Running	t2.micro	2/2 checks passed	No alarms	us-east-1d	ec2-3-216-1.
<input checked="" type="checkbox"/>	VM3-Red Hat	i-055c5a025460d2c45	Running	t2.micro	2/2 checks passed	No alarms	us-east-1e	ec2-52-91-1.
<input type="checkbox"/>	VM2-Ubuntu	i-0b79ac0d70e9e1a51	Running	t2.micro	2/2 checks passed	No alarms	us-east-1e	ec2-52-87-2.

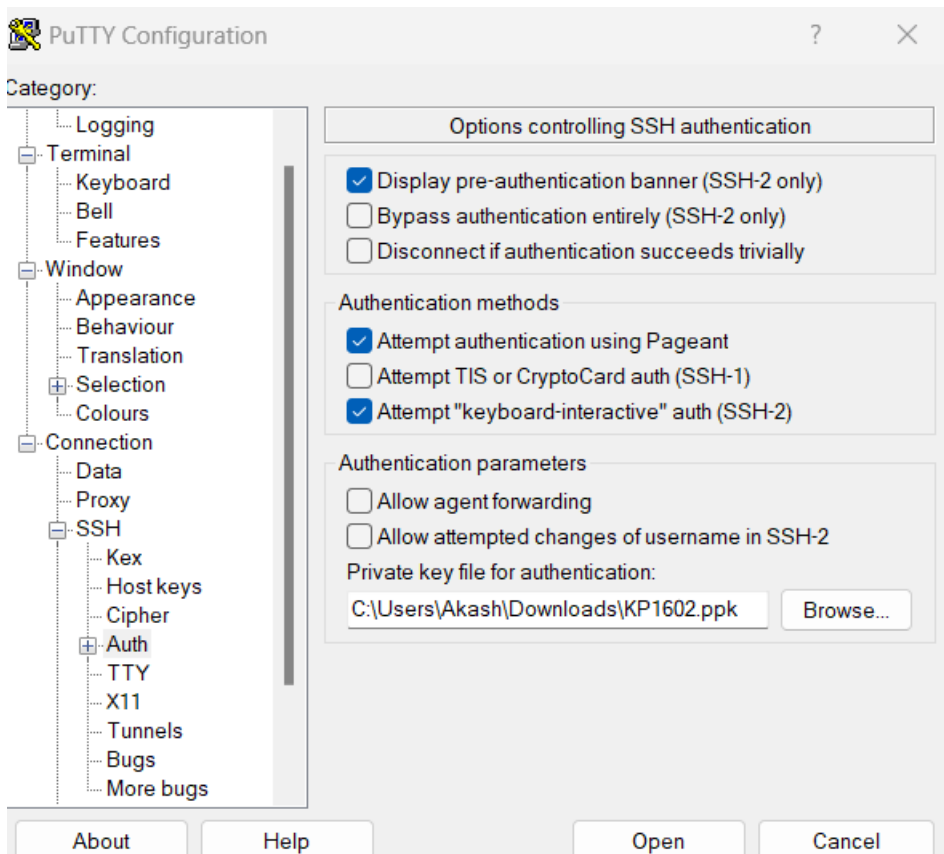
Instance: i-055c5a025460d2c45 (VM3-Red Hat)

Details | Security | Networking | Storage | Status checks | Monitoring | Tags

▼ Instance summary Info

Instance ID i-055c5a025460d2c45 (VM3-Red Hat)	Public IPv4 address 52.91.121.55 open address	Private IPv4 addresses 172.31.63.14
IPv6 address -	Instance state Running	Public IPv4 DNS ec2-52-91-121-55.compute-1.amazonaws.com open address
Hostname type IP name: ip-172-31-63-14.ec2.internal	Private IP DNS name (IPv4 only) ip-172-31-63-14.ec2.internal	Elastic IP addresses
Answer private resource DNS name	Instance type	

Connecting EC2 Instance:



Module2: EC2 and EFS Assignment - 3

Mounting EFS on all EC2 Instances:

us-east-1.console.aws.amazon.com/efs/home?region=us-east-1#/file-systems/fs-002abfb43cbdd85ec?tabId=size

MYEFS (fs-002abfb43cbdd85ec)

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-002abfb43cbdd85ec:/ efs
```

NFS client:

```
sudo mount -t nfs4 -o nfsvers=4.1,rsize=1048576,wsiz=1048576,hard,timeo=600,retrans=2,noresvport fs-002abfb43cbdd85ec.efs.us-east-1.amazonaws.com:/ e
```

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

1. VM1-Amazon:

```
root@ip-172-31-10-229:/home/ec2-user/efsDemo
Using username "ec2-user".
Authenticating with public key "KP1602"

 _ _ | _ _ | _ _ )
 _ | ( _ _ /   Amazon Linux 2 AMI
 _ _ | \ _ _ | _ _ |

https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-172-31-10-229 ~]$ sudo su
[root@ip-172-31-10-229 ec2-user]# ls
[ec2-user@ip-172-31-10-229 ~]$ mkdir efsDemo
[ec2-user@ip-172-31-10-229 ~]$ ls
efsDemo
[ec2-user@ip-172-31-10-229 ~]$ sudo mount -t nfs4 -o nfsvers=4.1,rsize=1048576,wsiz=1048576,hard,timeo=600,retrans=2,noresvport fs-002abfb43cbdd85ec.efs.us-east-1.amazonaws.com:/ efsDemo
[ec2-user@ip-172-31-10-229 ~]$ cd efsDemo/
[ec2-user@ip-172-31-10-229 efsDemo]$ nano file1
[ec2-user@ip-172-31-10-229 efsDemo]$ cat file1
this file is created in VM1

[ec2-user@ip-172-31-10-229 efsDemo]$
```

Module2: EC2 and EFS Assignment - 3

2. VM2-Ubuntu: Installing nfs-common first

```

root@ip-172-31-61-182:/home/ubuntu# sudo mount -t nfs4 -o nfsvers=4.1,rsize=1048576,wsize=1048576,hard,timeo=600,retrans=2,noresvport fs-002abfb43cbdd85ec.efs.us-east-1.amazonaws.com:/efsDemo
mount: /home/ubuntu/efsDemo: bad option; for several filesystems (e.g. nfs, cifs) you might need a /sbin/mount.<type> helper program.
root@ip-172-31-61-182:/home/ubuntu# sudo apt-get install nfs-common -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  keyutils libnfsidmap1 rpcbind
Suggested packages:
  watchdog
The following NEW packages will be installed:
  keyutils libnfsidmap1 nfs-common rpcbind
0 upgraded, 4 newly installed, 0 to remove and 7 not upgraded.
Need to get 381 kB of archives.
After this operation, 1447 kB of additional disk space will be used.
Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libnfsidmap1 amd64 1:2.6.1-1ubuntu1.2 [42.9 kB]

```

i-Ob79ac0d70e9e1a51 (VM2-Ubuntu)

PublicIPs: 52.87.255.110 PrivateIPs: 172.31.61.182

Mounting efs and file1 created in VM1 is visible in VM2-ubuntu

```

Processing triggers for libc-bin (2.35-0ubuntu3.1) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
root@ip-172-31-61-182:/home/ubuntu# sudo mount -t nfs4 -o nfsvers=4.1,rsize=1048576,wsize=1048576,hard,timeo=600,retrans=2,noresvport fs-002abfb43cbdd85ec.efs.us-east-1.amazonaws.com:/efsDemo
root@ip-172-31-61-182:/home/ubuntu# ls
efsDemo
root@ip-172-31-61-182:/home/ubuntu# cd efsDemo/
root@ip-172-31-61-182:/home/ubuntu/efsDemo# ls
file1
root@ip-172-31-61-182:/home/ubuntu/efsDemo# cat file1
this file is created in VM1
root@ip-172-31-61-182:/home/ubuntu/efsDemo#

```

i-Ob79ac0d70e9e1a51 (VM2-Ubuntu)

PublicIPs: 52.87.255.110 PrivateIPs: 172.31.61.182

3. VM3-Red Hat

Update Red Hat machine: sudo yum update -y

```

ec2-user@ip-172-31-63-14:~/efsDemo
* Using username "ec2-user".
* Authenticating with public key "KP1602"
Register this system with Red Hat Insights: insights-client --register
Create an account or view all your systems at https://red.ht/insights-dashboard
Last login: Thu Feb 16 11:33:14 2023 from 106.193.186.218
[ec2-user@ip-172-31-63-14 ~]$ sudo yum update -y
Updating Subscription Management repositories.
Unable to read consumer identity

This system is not registered with an entitlement server. You can use subscription-manager to register.

Red Hat Enterprise Linux 9 for x86_64 - AppStream from RHUI (RPMs)
Red Hat Enterprise Linux 9 for x86_64 - BaseOS from RHUI (RPMs)
Red Hat Enterprise Linux 9 Client Configuration
Dependencies resolved.
=====
Package                                Architecture      Version           Repository
=====
Installing:
kernel                                x86_64            5.14.0-162.12.1.el9_1  rhel-9-baseos-
kernel-core                           x86_64            5.14.0-162.12.1.el9_1  rhel-9-baseos-
kernel-modules                         x86_64            5.14.0-162.12.1.el9_1  rhel-9-baseos-
Upgrading:
NetworkManager                       x86_64            1:1.40.0-1.el9       rhel-9-baseos-

```

Module2: EC2 and EFS Assignment - 3

Install mount helper:

```
sudo yum install nfs-utils -y
```

```
Complete!
[ec2-user@ip-172-31-63-14 ~]$ sudo yum install nfs-utils -y
Updating Subscription Management repositories.
Unable to read consumer identity

This system is not registered with an entitlement server. You can use subscription-manager to register.

Last metadata expiration check: 0:06:07 ago on Thu 16 Feb 2023 12:13:55 PM UTC.
Dependencies resolved.
=====
Package                                Architecture                               Version
=====
Installing:
nfs-utils                              x86_64                                    1:2.5.4-15.el9
Installing dependencies:
gssproxy                               x86_64                                    0.8.4-4.el9
keyutils                               x86_64                                    1.6.1-4.el9
libev                                   x86_64                                    4.33-5.el9
libnfsidmap                            x86_64                                    1:2.5.4-15.el9
libtirpc                               x86_64                                    1.3.3-0.el9
libverto-libev                         x86_64                                    0.3.2-3.el9
quota                                  x86_64                                    1:4.06-6.el9
=====
```

EFS mounted on Red Hat instance and able to access file1 created in VM1:

```
Complete!
[ec2-user@ip-172-31-63-14 ~]$ ls
efsDemo
[ec2-user@ip-172-31-63-14 ~]$ sudo mount -t nfs4 -o nfsvers=4.1,rsize=1048576,wsize=1048576,hard,timeo=600,retrans=2,noresvport fs-002abfb43cbdd5ec.efs.us-east-1.amazonaws.com:/ efsDemo
[ec2-user@ip-172-31-63-14 ~]$ cd efsDemo/
[ec2-user@ip-172-31-63-14 efsDemo]$ ls
file1
[ec2-user@ip-172-31-63-14 efsDemo]$ cat file1
this file is created in VM1
[ec2-user@ip-172-31-63-14 efsDemo]$ nano file3
bash: nano: command not found
[ec2-user@ip-172-31-63-14 efsDemo]$ touch file3
touch: cannot touch 'file3': Permission denied
[ec2-user@ip-172-31-63-14 efsDemo]$ sudo touch file3
[ec2-user@ip-172-31-63-14 efsDemo]$ ls
file1 file3
[ec2-user@ip-172-31-63-14 efsDemo]$
```