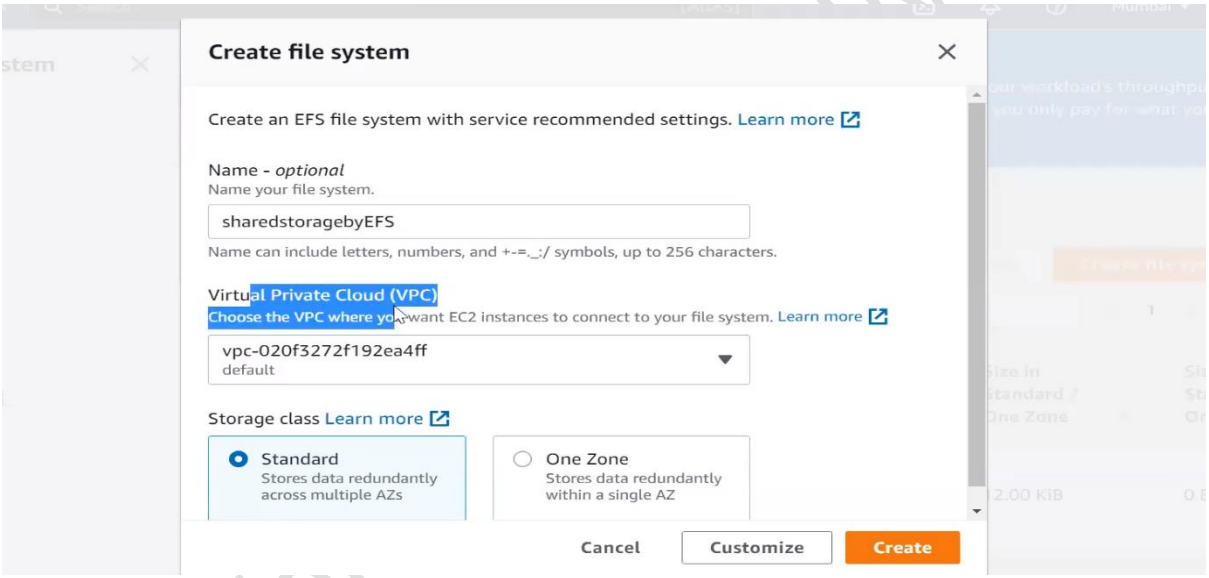
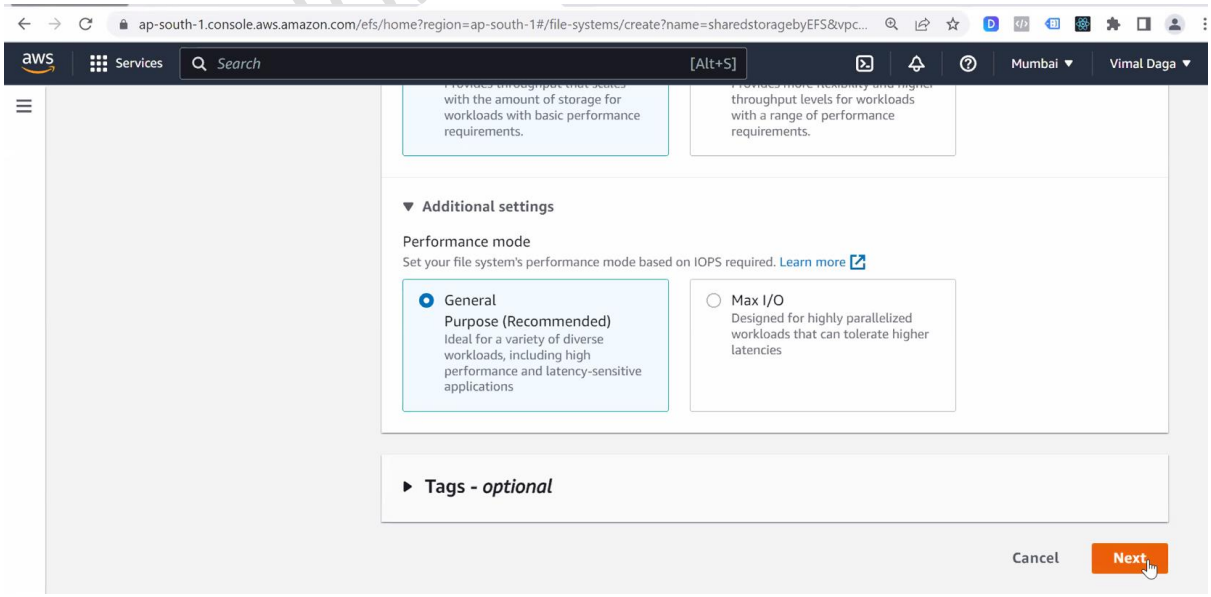
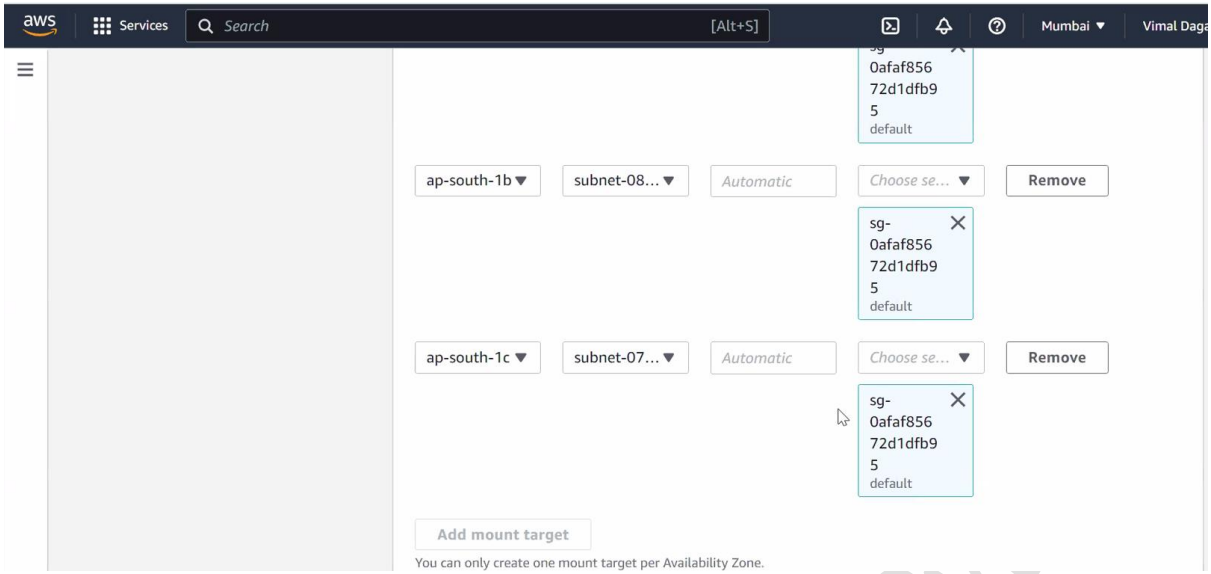
AWS Session

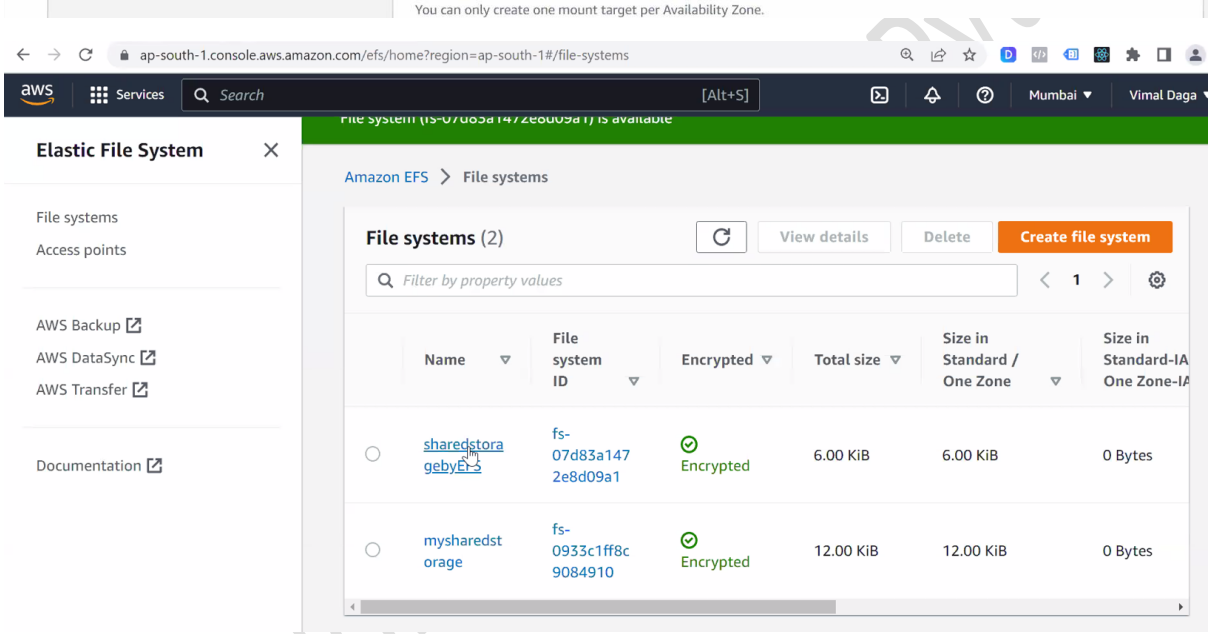
Summary – 24-3-2023

- Wherever EFS System running that is called Target or mount target.
- To provide same data we give centralized storage.
- Any storage if we want to access then we have to always mount.
- Now create an EFS filesystem.



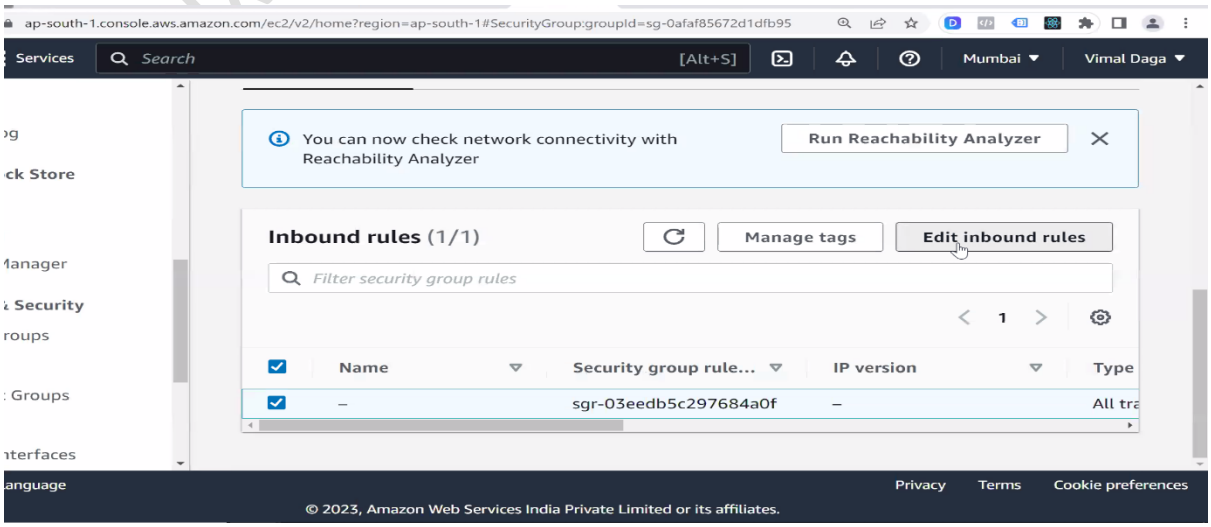


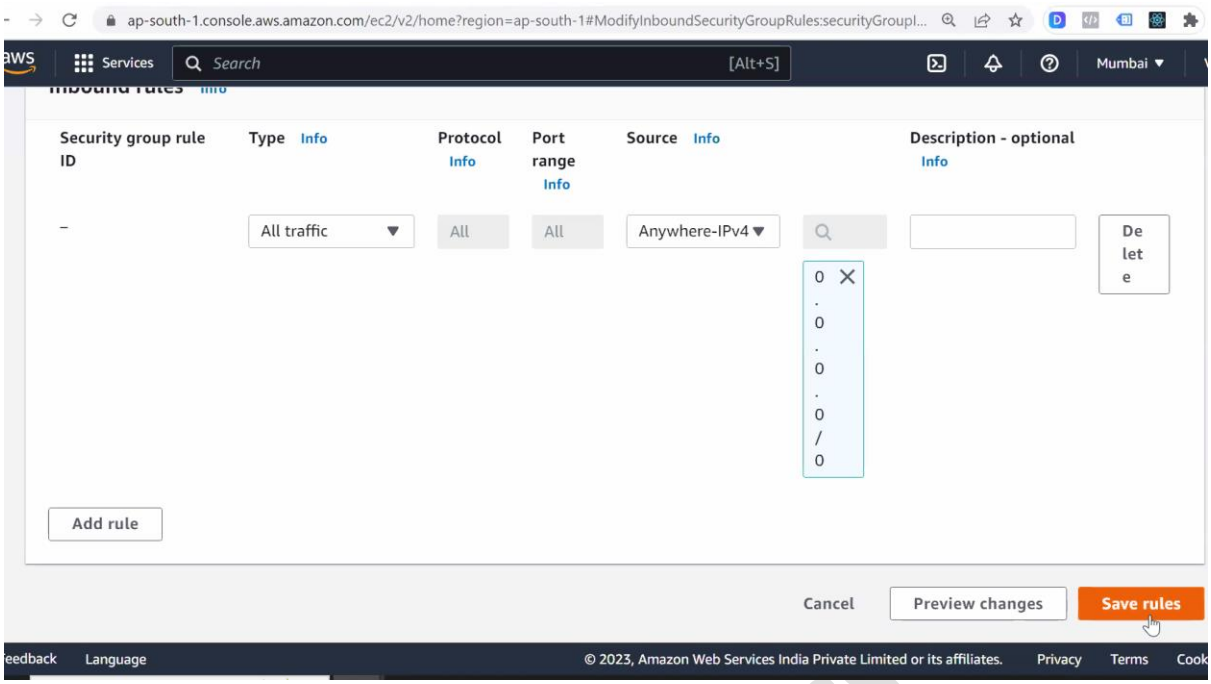


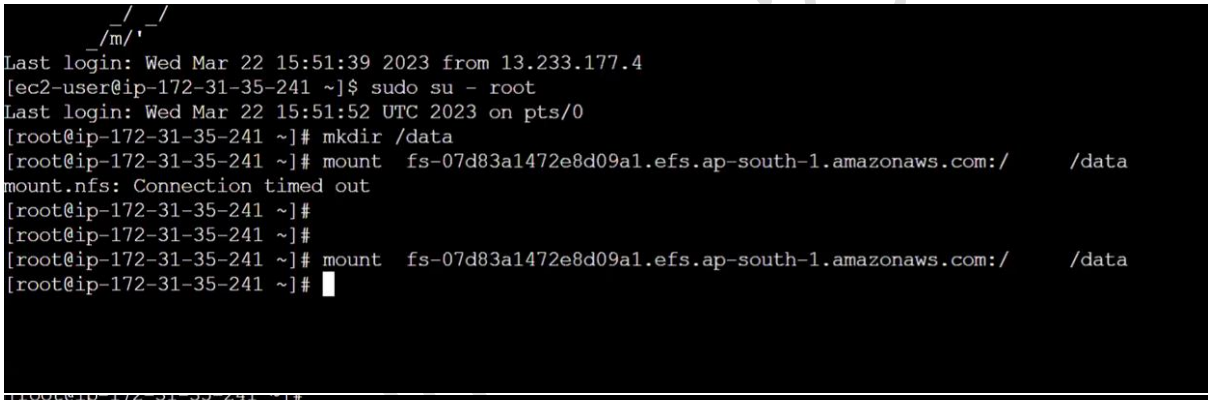


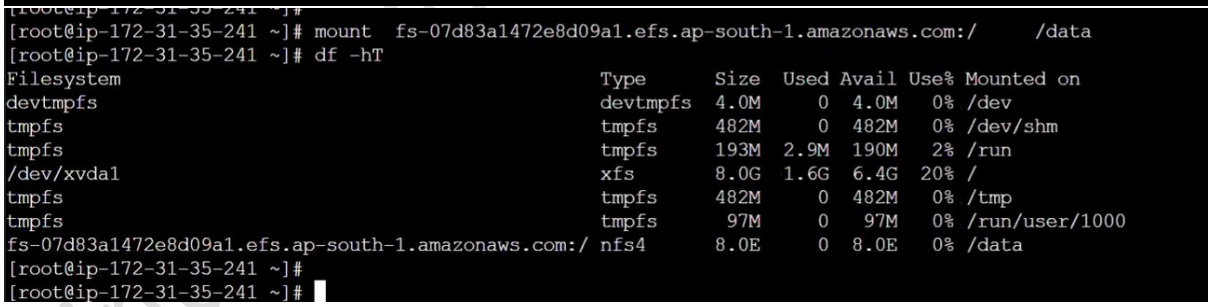
Since we wanted both webservers to launch same website.

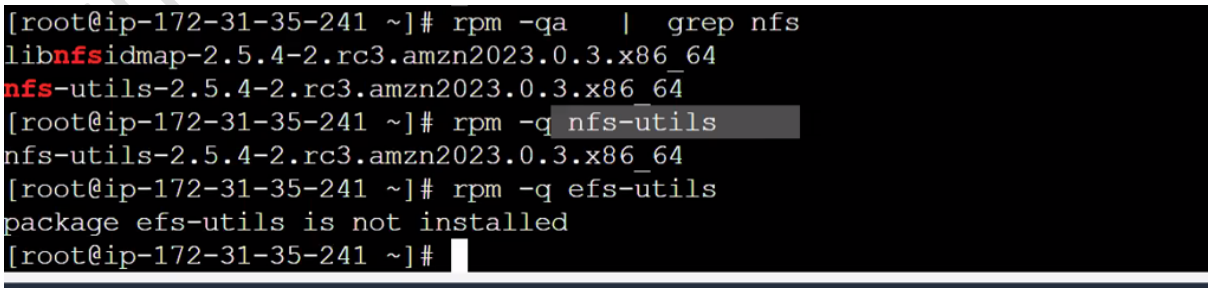
Now before mounting we will create edit rule.











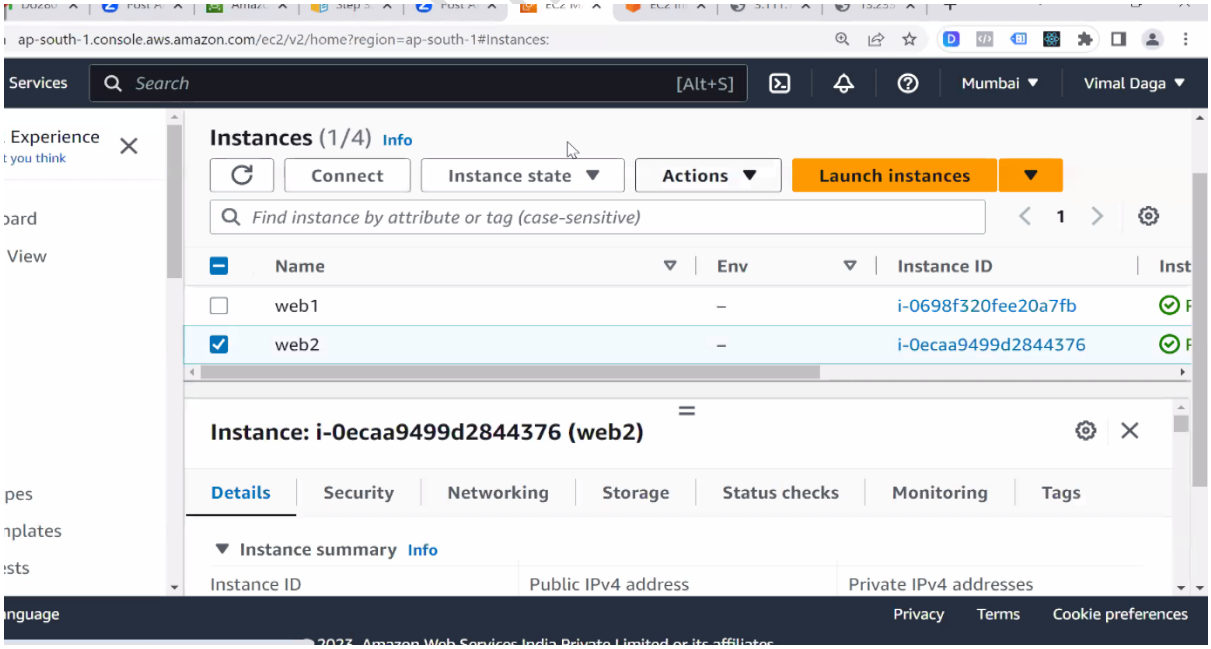
- To connect the NFS server we need NFS Driver.
- To share data in multiple computers we use EFS.

- We can also create replication in EFS. Geo-replication can be done by EFS

```
[root@ip-172-31-35-241 ~]# history
    1  mkdir /data
    2  mount  fs-07d83a1472e8d09a1.efs.ap-south-1.amazonaws.com:/     /data
    3  df -hT
    4  rpm -qa
    5  rpm -qa   |  grep nfs
    6  rpm -q nfs-utils
    7  rpm -q efs-utils
    8  history
```

```
    8  history
[root@ip-172-31-35-241 ~]# umount /data
[root@ip-172-31-35-241 ~]# df -hT
Filesystem     Type      Size  Used Avail Use% Mounted on
devtmpfs       devtmpfs  4.0M     0  4.0M   0% /dev
tmpfs          tmpfs     482M     0  482M   0% /dev/shm
tmpfs          tmpfs     193M  2.9M  190M   2% /run
/dev/xvda1     xfs       8.0G  1.6G  6.4G  20% /
tmpfs          tmpfs     482M     0  482M   0% /tmp
tmpfs          tmpfs      97M     0   97M   0% /run/user/1000
[root@ip-172-31-35-241 ~]# mount  fs-07d83a1472e8d09a1.efs.ap-south-1.amazonaws.com:/     /var/www/html/
[root@ip-172-31-35-241 ~]# df -hT
Filesystem                                      Type      Size  Used Avail Use% Mounted on
devtmpfs                                        devtmpfs  4.0M     0  4.0M   0% /dev
tmpfs                                           tmpfs     482M     0  482M   0% /dev/shm
tmpfs                                           tmpfs     193M  2.9M  190M   2% /run
/dev/xvda1                                      xfs       8.0G  1.6G  6.4G  20% /
tmpfs                                           tmpfs     482M     0  482M   0% /tmp
tmpfs                                           tmpfs      97M     0   97M   0% /run/user/1000
fs-07d83a1472e8d09a1.efs.ap-south-1.amazonaws.com:/ nfs4      8.0E     0  8.0E   0% /var/www/html
[root@ip-172-31-35-241 ~]#
```

Now login to the instance named web2



```
Last login: Wed Mar 22 15:52:33 UTC 2023 on pts/0
[root@ip-172-31-44-233 ~]# mount  fs-07d83a1472e8d09a1.efs.ap-south-1.amazonaws.com:/     /var/www/html
[root@ip-172-31-44-233 ~]# df -hT
Filesystem                                      Type      Size  Used Avail Use% Mounted on
devtmpfs                                        devtmpfs  4.0M     0  4.0M   0% /dev
tmpfs                                           tmpfs     482M     0  482M   0% /dev/shm
tmpfs                                           tmpfs     193M  2.9M  190M   2% /run
/dev/xvda1                                      xfs       8.0G  1.6G  6.4G  20% /
tmpfs                                           tmpfs     482M     0  482M   0% /tmp
tmpfs                                           tmpfs      97M     0   97M   0% /run/user/1000
fs-07d83a1472e8d09a1.efs.ap-south-1.amazonaws.com:/ nfs4      8.0E     0  8.0E   0% /var/www/html
[root@ip-172-31-44-233 ~]# cd /var/www/html/
[root@ip-172-31-44-233 html]# ls
[root@ip-172-31-44-233 html]# cat > index.html
first line
[root@ip-172-31-44-233 html]# pwd
/var/www/html
[root@ip-172-31-44-233 html]# ls
index.html
[root@ip-172-31-44-233 html]# cat index.html
first line
[root@ip-172-31-44-233 html]#
```

```
[root@ip-172-31-35-241 html]# cat index.html
first line
sec lone
[root@ip-172-31-35-241 html]#
```

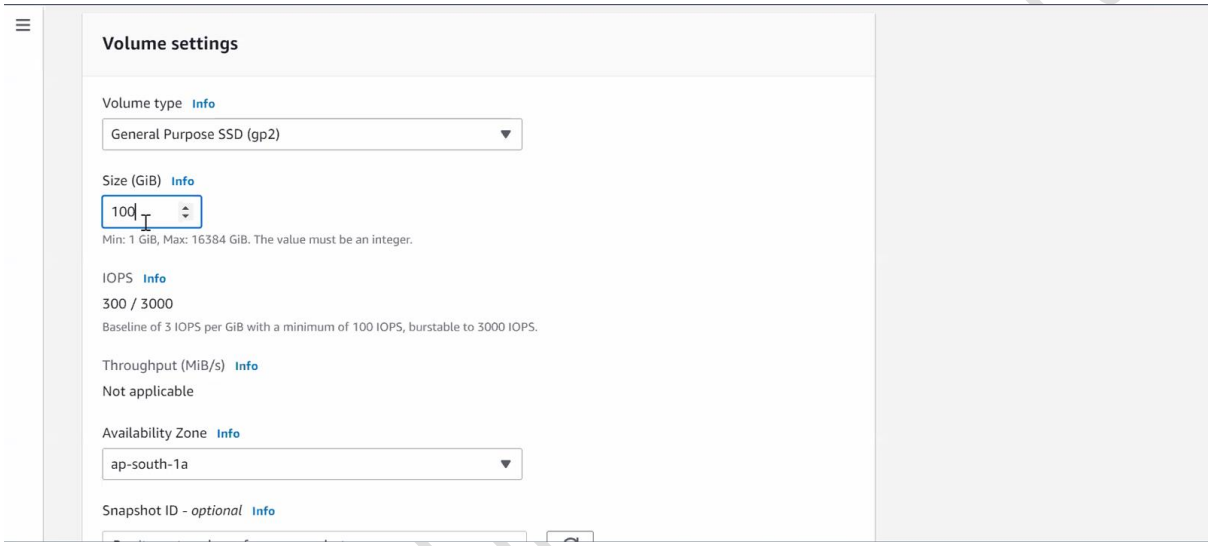
Now checking the webserver.

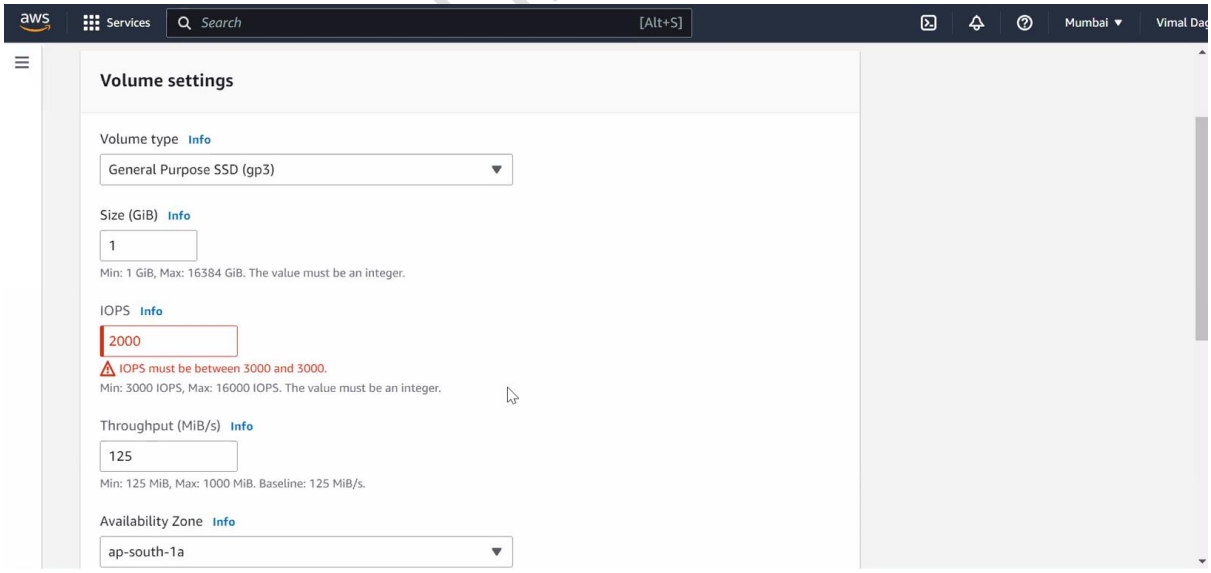
first line sec lone nnnnnn

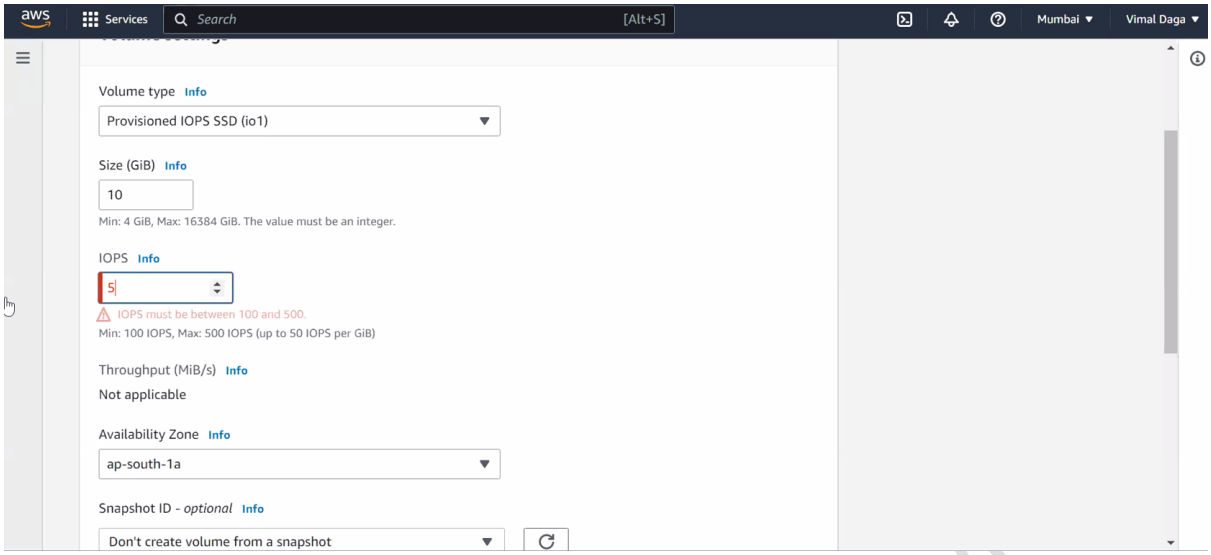
PERFORMANCE

- Using storage (AFS, EBS, S3) is complex as a cloud engineer, we need to plan about cost and performance.
- In System design we should increase performance and decrease cost.
- Performance storage – IOPS, Throughput.
- HDD Hard disk
  Every platter is divided into tracker and every tracker divided into sector. Header will create holes in HD, faster the header rotates faster will be the read and write.
- In HD we write or read something is called I/O operation, depends on how fast that needle rotates called RAM Speed.
- Challenge in HDD is that they read in one direction, very slow in random read and write.
- Electronic HD has no kind of rotation it is a kind of chip/flash drive. Great in random read/write.
- If application has to read/write called I/O Operation and it do everything randomly so for that we use SSD HD.

- In 1 second there are 1000 IOPS. More IOPS faster the jumps and faster data can be read. Therefore, more IOPS, better will be the performance. But for more HD we have to buy a quality HD so this will increase the cost.
- Throughput is at one point of time how bigger chunk of data can be read. Bigger chunk and faster read operation is called throughput.
- If we have to read random data for that we use IOPS, but if data to be read continuously and read/write fast then we use Throughput.
- File system mostly used for data like log files, videos, and images.






Services
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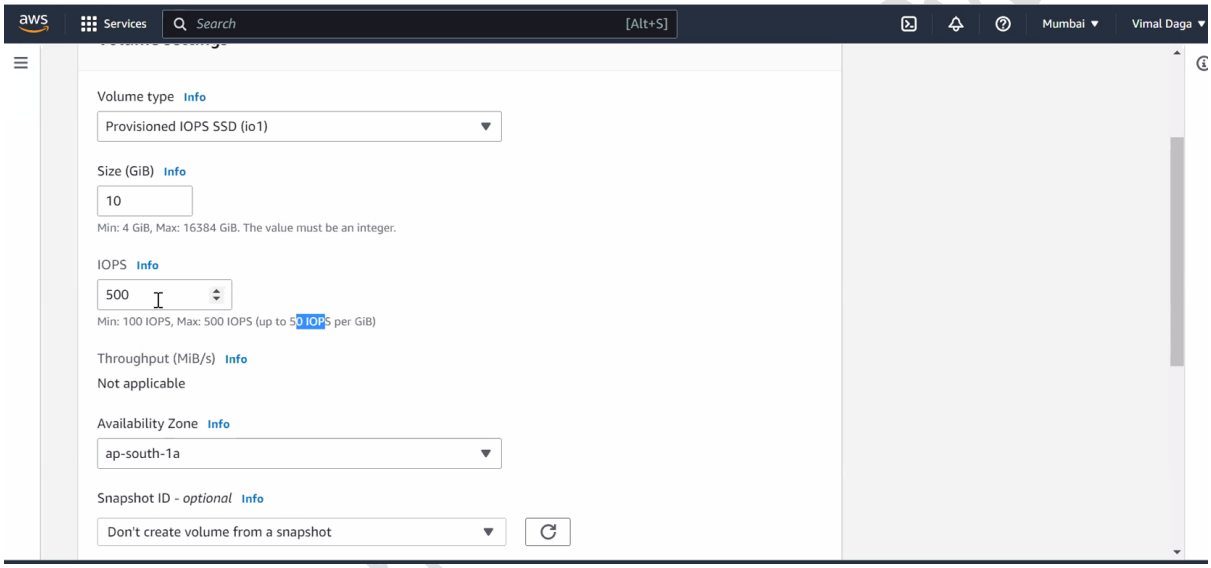
Mumbai
Vimal Daga
Volume type Info
Provisioned IOPS SSD (io1)
Size (GiB) Info
10
Min: 4 GiB, Max: 16384 GiB. The value must be an integer.
IOPS Info
5
IOPS must be between 100 and 500.
Min: 100 IOPS, Max: 500 IOPS (up to 50 IOPS per GiB)
Throughput (MiB/s) Info
Not applicable
Availability Zone Info
ap-south-1a
Snapshot ID - optional Info
Don't create volume from a snapshot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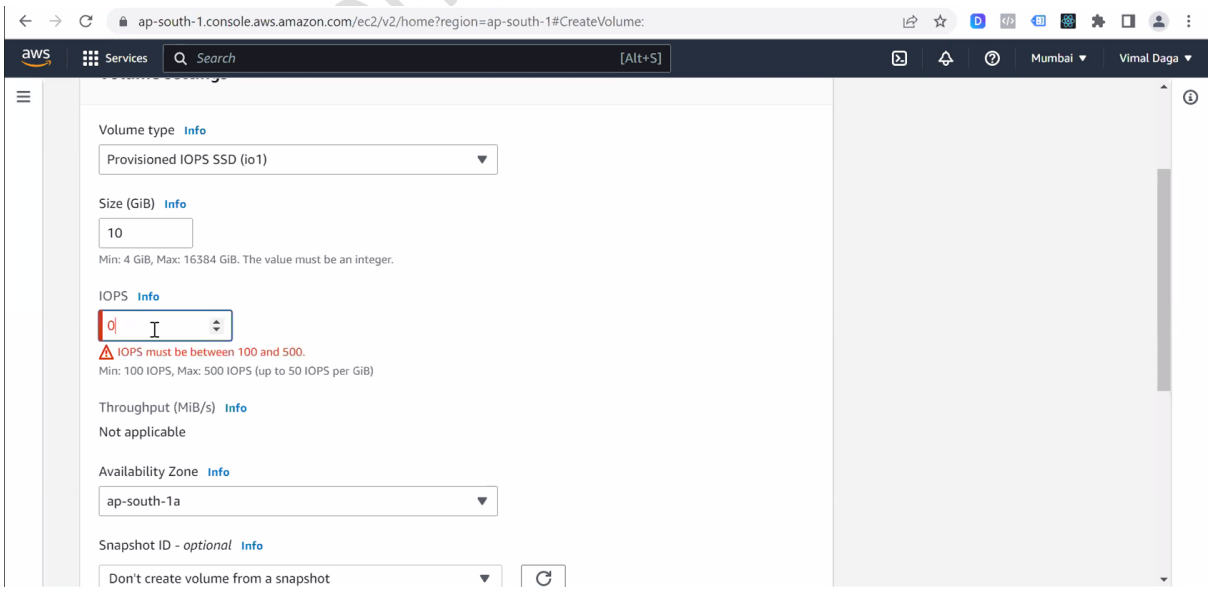
Vimal Daga
Volume type Info
Provisioned IOPS SSD (io1)
Size (GiB) Info
10
Min: 4 GiB, Max: 16384 GiB. The value must be an integer.
IOPS Info
500
Min: 100 IOPS, Max: 500 IOPS (up to 50 IOPS per GiB)
Throughput (MiB/s) Info
Not applicable
Availability Zone Info
ap-south-1a
Snapshot ID - optional Info
Don't create volume from a snapshot


ap-south-1.console.aws.amazon.com/ec2/v2/home?region=ap-south-1#CreateVolume:
Services
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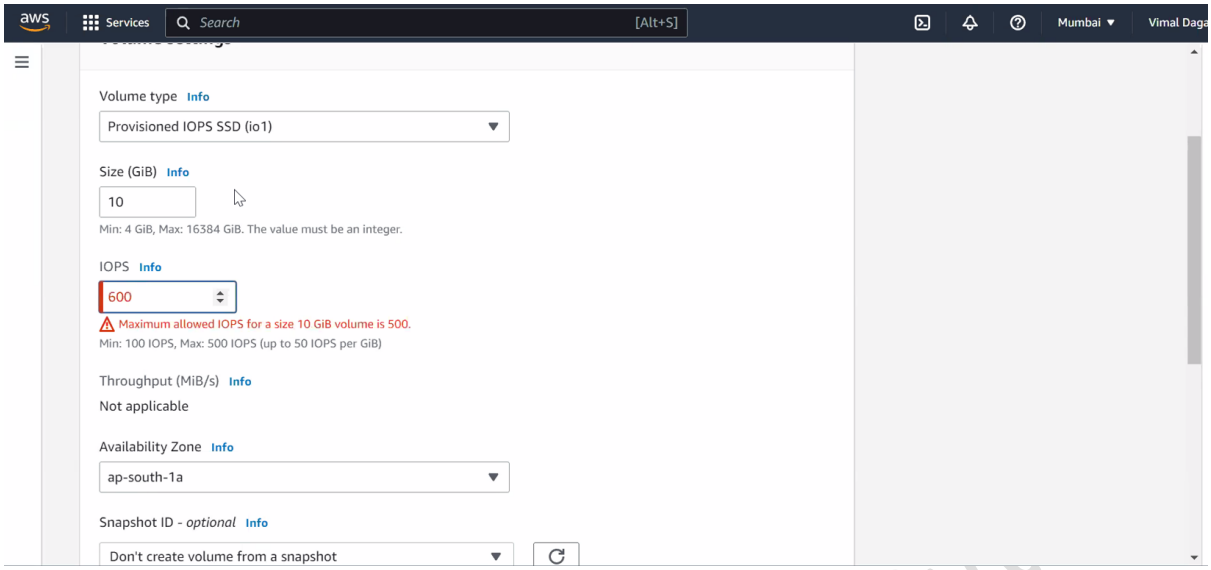
Vimal Daga
Volume type Info
Provisioned IOPS SSD (io1)
Size (GiB) Info
10
Min: 4 GiB, Max: 16384 GiB. The value must be an integer.
IOPS Info
0
IOPS must be between 100 and 500.
Min: 100 IOPS, Max: 500 IOPS (up to 50 IOPS per GiB)
Throughput (MiB/s) Info
Not applicable
Availability Zone Info
ap-south-1a
Snapshot ID - optional Info
Don't create volume from a snapshot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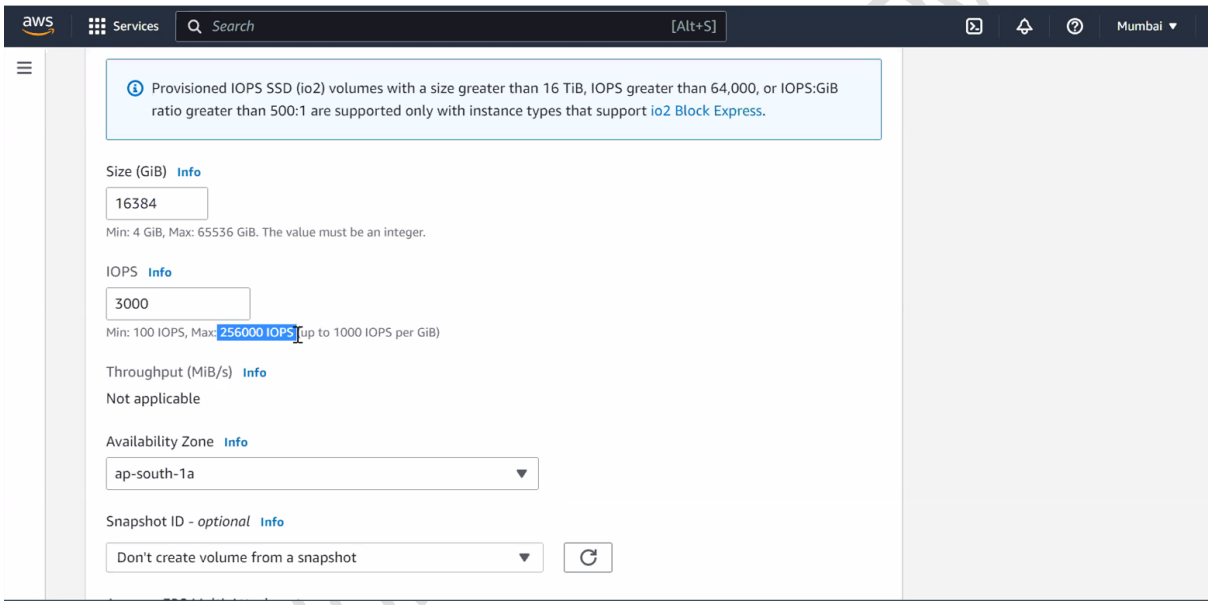
Volume type Info
Provisioned IOPS SSD (io1)
Size (GiB) Info
10
Min: 4 GiB, Max: 16384 GiB. The value must be an integer.
IOPS Info
600
Maximum allowed IOPS for a size 10 GiB volume is 500.
Min: 100 IOPS, Max: 500 IOPS (up to 50 IOPS per GiB)
Throughput (MiB/s) Info
Not applicable
Availability Zone Info
ap-south-1a
Snapshot ID - optional Info
Don't create volume from a snapshot


Services
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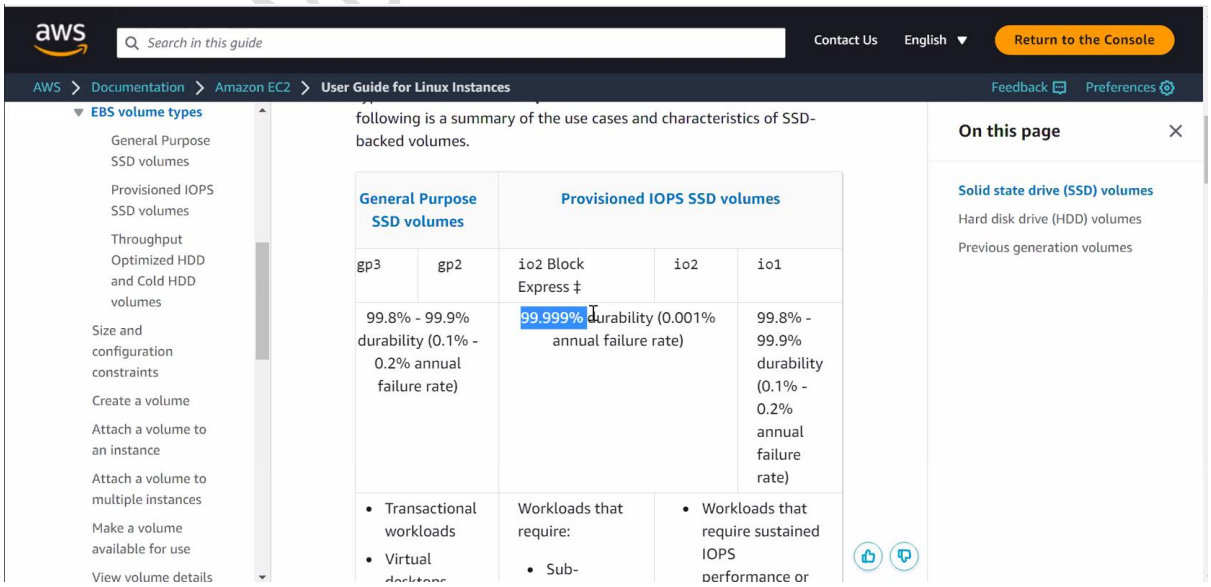
Provisioned IOPS SSD (io2) volumes with a size greater than 16 TiB, IOPS greater than 64,000, or IOPS:GiB ratio greater than 500:1 are supported only with instance types that support io2 Block Express.
Size (GiB) Info
16384
Min: 4 GiB, Max: 65536 GiB. The value must be an integer.
IOPS Info
3000
Min: 100 IOPS, Max: 256000 IOPS (up to 1000 IOPS per GiB)
Throughput (MiB/s) Info
Not applicable
Availability Zone Info
ap-south-1a
Snapshot ID - optional Info
Don't create volume from a snapshot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Make a volume available for use
View volume details
following is a summary of the use cases and characteristics of SSD-backed volumes.
General Purpose SSD volumes
Provisioned IOPS SSD volumes
gp3
gp2
io2 Block Express ‡
io2
io1
99.8% - 99.9% durability (0.1% - 0.2% annual failure rate)
99.999% durability (0.001% annual failure rate)
99.8% - 99.9% durability (0.1% - 0.2% annual failure rate)
Transactional workloads
Virtual
Workloads that require:
Sub-
Workloads that require sustained IOPS performance or
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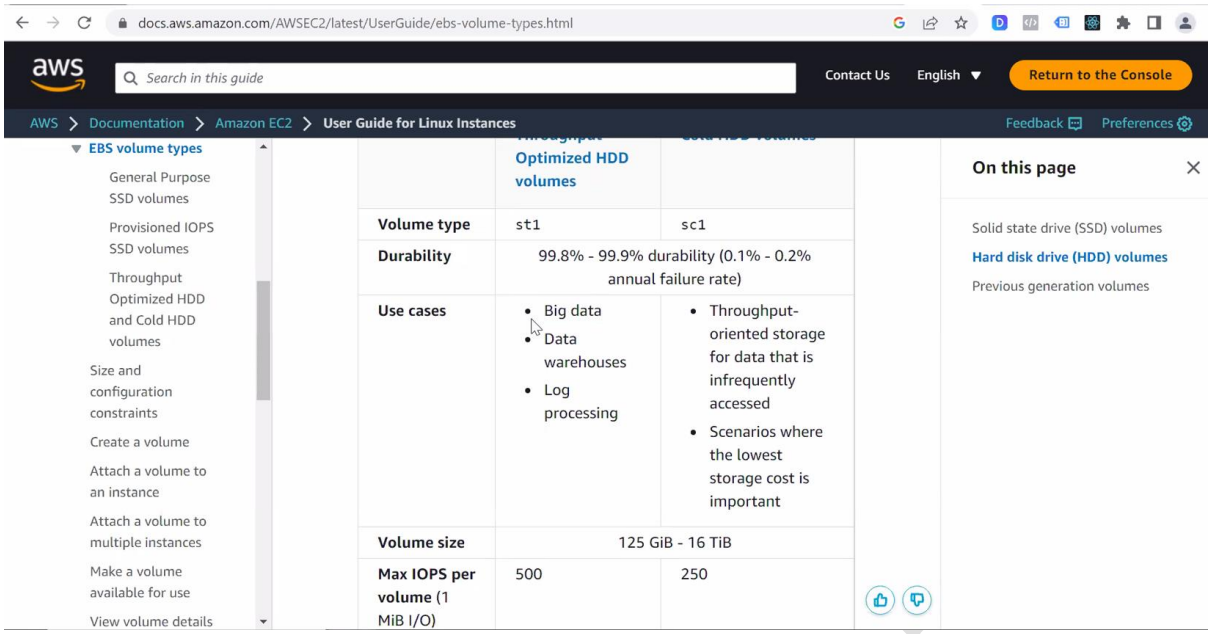
Solid state drive (SSD) volumes
Hard disk drive (HDD) volumes
Previous generation volumes


docs.aws.amazon.com/AWSEC2/latest/UserGuide/ebs-volume-types.html
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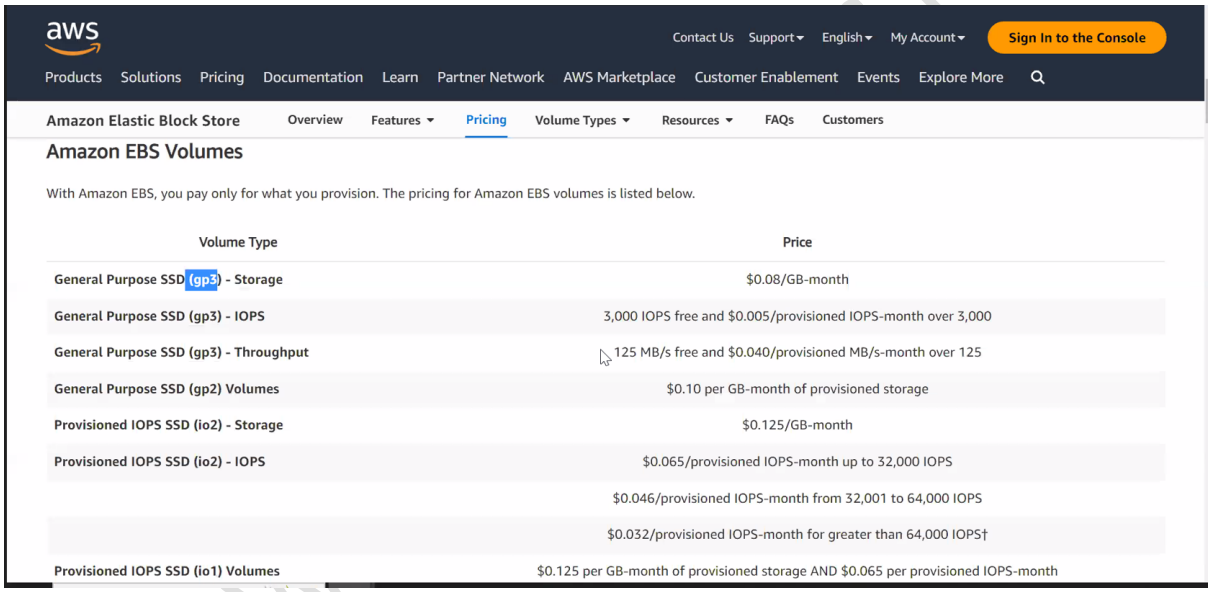
Size and configuration constraints
Create a volume
Attach a volume to an instance
Attach a volume to multiple instances
Make a volume available for use
View volume details
Optimized HDD volumes
Volume type
st1
sc1
Durability
99.8% - 99.9% durability (0.1% - 0.2% annual failure rate)
Use cases
Big data
Data warehouses
Log processing
Throughput-oriented storage for data that is infrequently accessed
Scenarios where the lowest storage cost is important
Volume size
125 GiB - 16 TiB
Max IOPS per volume (1 MiB I/O)
500
250
On this page
Solid state drive (SSD) volumes
Hard disk drive (HDD) volumes
Previous generation volumes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Resources
FAQs
Customers
Amazon EBS Volumes
With Amazon EBS, you pay only for what you provision. The pricing for Amazon EBS volumes is listed below.
Volume Type
Price
General Purpose SSD (gp3) - Storage
$0.08/GB-month
General Purpose SSD (gp3) - IOPS
3,000 IOPS free and $0.005/provisioned IOPS-month over 3,000
General Purpose SSD (gp3) - Throughput
125 MB/s free and $0.040/provisioned MB/s-month over 125
General Purpose SSD (gp2) Volumes
$0.10 per GB-month of provisioned storage
Provisioned IOPS SSD (io2) - Storage
$0.125/GB-month
Provisioned IOPS SSD (io2) - IOPS
$0.065/provisioned IOPS-month up to 32,000 IOPS
$0.046/provisioned IOPS-month from 32,001 to 64,000 IOPS
$0.032/provisioned IOPS-month for greater than 64,000 IOPS†
Provisioned IOPS SSD (io1) Volumes
$0.125 per GB-month of provisioned storage AND $0.065 per provisioned IOPS-month

Linux