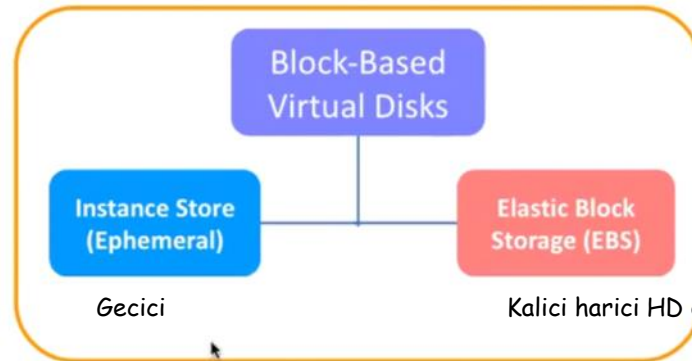


AWS EC2 Volumes

EC2 Volumes What is Volumes?



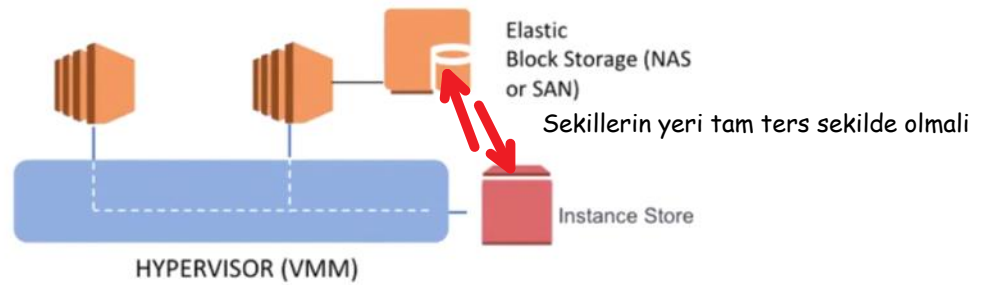
- Volumes are durable **storage devices (virtual)** that can be attached to EC2 instances.
- They are location in which the associated machine **stores its data or loads its applications**.
- There are two volume types in the block storage category. These are **Instance Stores (Ephemeral)** and **Elastic Block Storage (EBS)**.

- Volume denildiginde storage yani harddisk algilayabiliriz.
- Block-Based ==> Elimizdeki buyuk parcayi kucuk parcalara boluyoruz. Mesela 32 gb yi 4 e boluyoruz ve elimizde 4 adet 8 gb bulunacak

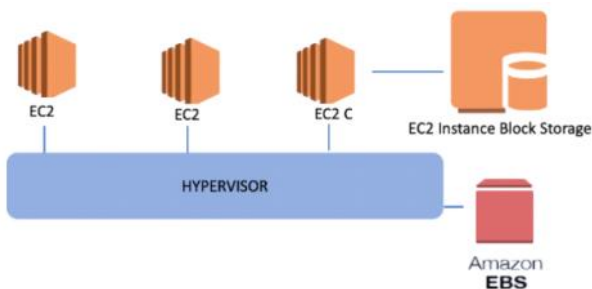


► EC2 Volumes

Instance Store and Elastic Block Storage



- The storage connected directly to the hypervisor and accessible to each machine associated with the hypervisor is called the Instance Store.
- Instance Storage can be connected to only one instance. And is the closest storage device to your instance.



► EC2 Volumes

Instance Store (Ephemeral) vs. Elastic Block Storage (EBS).

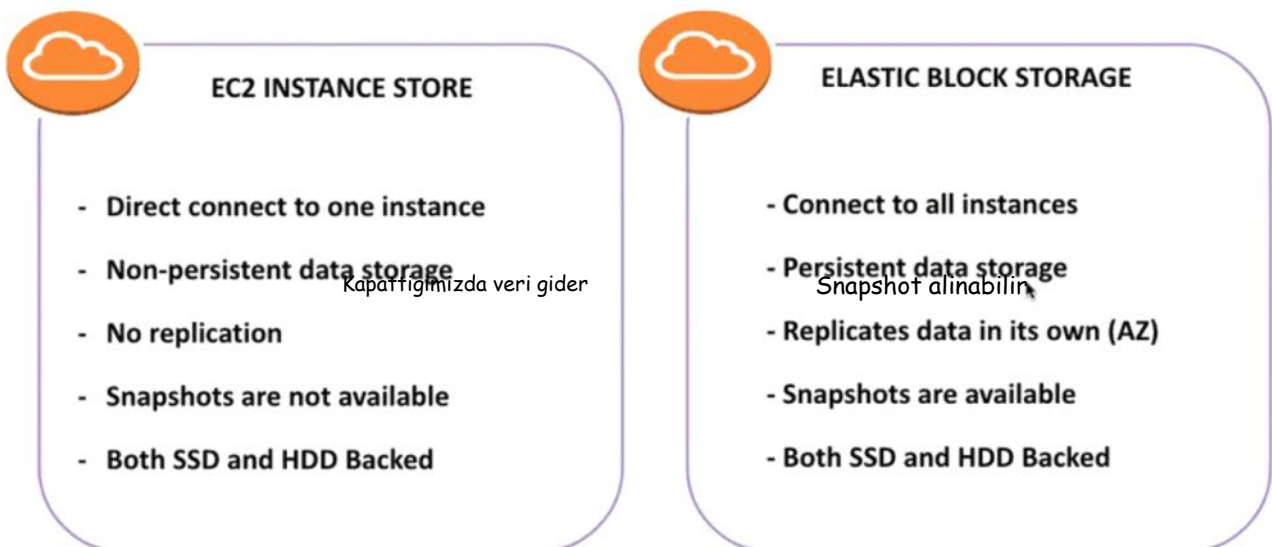
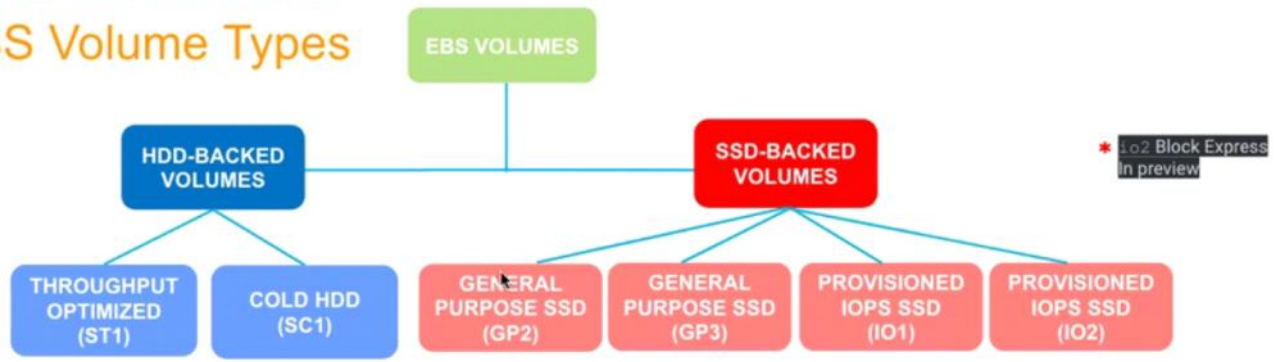


Image snapshot in bir sonraki hali. Ikea dan gelen koliler snapshot ama kurulum sonrasi ise image olabilir.



EC2 Volumes

EBS Volume Types



- There are 6 types of volumes in 2 categories for the different use cases.
- HDD-backed volumes are used for large streaming workloads where throughput is a better performance measure than IOPS.
- SSD-backed volumes are used for frequent read/write operations where the dominant performance attribute is IOPS.



IOPS



Throughput

IOPS ==> HIZ
THROUGHPUT ==> Debisi yuksek

IOPS is related to the functional **speed** of the disk
Throughput is related to processing **capacity**

EC2 Volumes

Let's get our hands dirty!

- Managing EBS Volumes on Console and Terminal

- attaching
- detaching
- mounting montaj
- partition
- resizing (single-partition)

- Bir volume ayağa kaldıracagız ve bu volume hem OP de hemde AWS de bağlanmasına yönelik hareket edeceğiz. Bir instancemiz olacak ve birden fazla volume olacak.
- EC2 instance ayağa kaldıracagız.

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 2: Choose an Instance Type

Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have vary capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. [Learn more](#) about instance types and how they can meet your needs.

Filter by: All instance families Current generation Show/Hide Columns

Currently selected: t2.micro (1 vCPU, 2.5 GHz, ~ 1 GiB memory, EBS only)

Family	Type	vCPUs	Memory (GiB)	Instance Storage (GiB)	EBS-Optimized A
t2	t2.nano	1	0.5	EBS only	-
t2	t2.micro <small>Free tier eligible</small>	1	1	EBS only	-

Sadece EBS kullanabilirsin demektedir.

- Yani her cihazın kendisine ait default özellikleri mevcuttur.
- Hiz ihtiyacımız varsa ve güvenlik de vazgeçilmezse **instance store** kullanılabilir.
- Wifi ile alınan internet **EBS** ama kablolu alınan internet **instance store** olarak betimlenebilir.
- Volume spesifik bir zone da oluşturacagız. Instance ile volume aynı yerde olması gerekir ki bu sayede bağlayabilelim. (**US-EAST-1A**)

Subnet (i) No preference (default subnet in any Availability Zone) Create new subnet

Auto-assign Public IP (i) No preference (default subnet in any Availability Zone)

Placement group (i) subnet-222d3d6f | Default in us-east-1d

Capacity Reservation (i) subnet-5f652800 | Default in us-east-1a

subnet-fb69f0ca | Default in us-east-1e

subnet-46521220 | Default in us-east-1b

subnet-e4251f6a | Default in us-east-1f

subnet-06eda227 | Default in us-east-1c

Subnet (i) subnet-5f652800 | Default in us-east-1a

4091 IP Addresses available

- Bir instance ve bir volume mutlaka snapshottan yaratılır ve AWS havuzdan alır.

Step 4: Add Storage

Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. [Learn more](#) about storage options in Amazon EC2.

Volume Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Throughput (MB/s)	Delete on Termination	Encryption
Root	/dev/xvda	snap-03e9050b362f59715	8	General Purpose SSD (gp2)	100 / 3000	N/A	<input checked="" type="checkbox"/>	Not Encrypted
Add New Volume								

- Root bizim local c miz eger add eklersem d olur.

Step 5: Add Tags

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver. A copy of a tag can be applied to volumes, instances or both. Tags will be applied to all instances and volumes. [Learn more](#) about tagging your Amazon EC2 resources.

Key	Value	Instances	Volumes	Network Interfaces
Name	root	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Add another tag (Up to 50 tags maximum)				

- Yukaridaki mavi tiklerin mantigi tag olarak ayni ismi vermektir.

Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. [Learn more](#) about Amazon EC2 security groups.

Assign a security group: ☐ Create a new security group
☒ Select an existing security group

Security Group ID	Name	Description	Actions
<input type="checkbox"/> sg-0a33562c2971fa6ba	Cloudformation_sec_group	SSH_&_HTTP	Copy to new
<input type="checkbox"/> sg-f114b1e8	default	default VPC security group	Copy to new
<input checked="" type="checkbox"/> sg-065f093787f66e56	SSH_&_HTTP	SSH_&_HTTP	Copy to new

- Instance ekranina geliyoruz.

root i-0fa496a208a1eddc6 Pending t2.micro No alarms us-east-1a

Instance: i-0fa496a208a1eddc6 (root)

Details Security Networking Storage Status checks Monitoring Tags

Root device details

Root device name /dev/xvda Root device type EBS EBS optimization disabled

Block devices

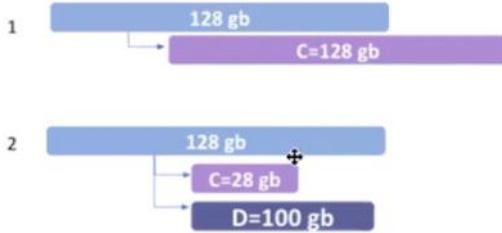
Filter block devices

Volume ID	Device name	Volume size (GiB)	Attachment status	Attachment time	Encrypted	KMS key ID
vol-044d90c23112f037	/dev/xvda	8	Attached	Sun Jul 04 2021 02:23:35 G...	No	-

Daha sonra olusturacagi c yi b,c,d,e... Olarak devam edecektir.

- Instance baglantisini yapalim
- Sudo yum update -y
- Lsblk ==> device olarak hangi volumlerin oldugunu gosterecek

Attach new volume and make Partition



- Hardisk tek part olduğu anlaşıyor

```
[ec2-user@ip-172-31-43-208 ~]$ lsblk
NAME        MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
xvda        202:0    0   8G  0 disk
└─xvda1     202:1    0   8G  0 part /
[ec2-user@ip-172-31-43-208 ~]$
```

- **Df-h** ==> file sistemin içerisinde ne olduğunu göstermektedir. File sistem kitaplıktaki kitapların nasıl düzenleneceği şeklinde örneklendirilebilir.

```
└─xvda1 202:1    0   8G  0 part /
[ec2-user@ip-172-31-43-208 ~]$ df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        482M   0   482M   0% /dev
tmpfs           492M   0   492M   0% /dev/shm
tmpfs           492M 408K   492M   1% /run
tmpfs           492M   0   492M   0% /sys/fs/cgroup
/dev/xvda1       8.0G  1.6G   6.5G  20% /
tmpfs           99M   0    99M   0% /run/user/1000
[ec2-user@ip-172-31-43-208 ~]$
```

- AWS consolundan extra volume oluşturalım

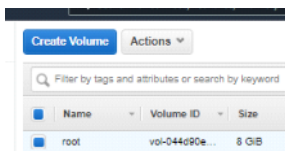
▼ Elastic Block Store

Volumes

Snapshots

Lifecycle Manager

- İstiyoruz ki bir adet **harici harddisk** takacağız. Bu sebeple create volume diyoruz.



- **Size** 5 olarak belirliyoruz
- Availability ilk instance açarken zone ne seçtiysek aynısı olmalı yoksa bağlantı sağlayamayız.
- Tag kısmını da görsel deki gibi yapacağız.

Create Volume

Volume Type: General Purpose SSD (gp2) ⓘ

Size (GiB): 5 (Min: 1 GiB, Max: 16384 GiB) ⓘ

IOPS: 100 / 3000 (Baseline of 3 IOPS per GiB with a minimum of 100 IOPS, burstable to 3000 IOPS) ⓘ

Throughput (MB/s): Not applicable ⓘ

Availability Zone*: us-east-1a ⓘ

Snapshot ID: Select a snapshot ⓘ

Encryption: ☐ Encrypt this volume

Key (128 characters maximum): Value (256 characters maximum)

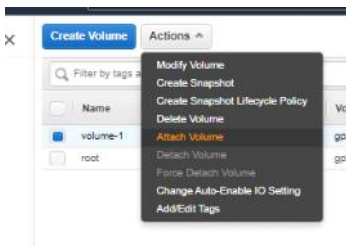
Name: volume-1

Add Tag 49 remaining (Up to 50 tags maximum)

* Required

Cancel Create Volume

- Olusturdugumuz 5 gb volume attach etmek icin Action menusunden attach volume yi tikliyoruz.



- Bolge uyustugu icin instance kolaylikla bulunacaktır. Asagidaki uyarı isimlendirmenin degisebilecegini soylemektedir.

Attach Volume

Volume ⓘ: vol-0f8d77261cecaec9 (volume-1) in us-east-1a

Instance ⓘ: i-0fa496a208a1eddc8 in us-east-1a

Device ⓘ: /dev/sdf

Linux Devices: /dev/sdf through /dev/sdp

Note: Newer Linux kernels may rename your devices to /dev/xvdf through /dev/xvdp internally, even when the device name entered here (and shown in the details) is /dev/sdf through /dev/sdp.

Cancel Attach

- Attach ve volume in-use olacak

Availability Zone	State
us-east-1a	in-use
us-east-1a	in-use

- Tekrar `lsblk` komutunu calistiralim. Yeni volume gorunecek ama bir yere eklenmemis.

```
[ec2-user@ip-172-31-43-208 ~]$ lsblk
NAME        MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
xvda        202:0    0  8G  0 disk
└─xvda1     202:1    0  8G  0 part /
xvdf        202:80   0  5G  0 disk
[ec2-user@ip-172-31-43-208 ~]$
```

- `Sudo file -s /dev/xvdf` ==> cihazın durumunu sorguluyoruz. Data cikmasi bende bir file sistemi yok demektir. Formatlamadan linux dunyasina atilamaz.

```
[ec2-user@ip-172-31-43-208 ~]$ sudo file -s /dev/xvdf
/dev/xvdf: data
[ec2-user@ip-172-31-43-208 ~]$
```

- Asagidaki komutla yeni ekledigimiz volume hakkında bir sey olmadigi gormus oluyoruz niye formatlanmamis ve mount edilmemis bu sebeple formatlayacagiz.

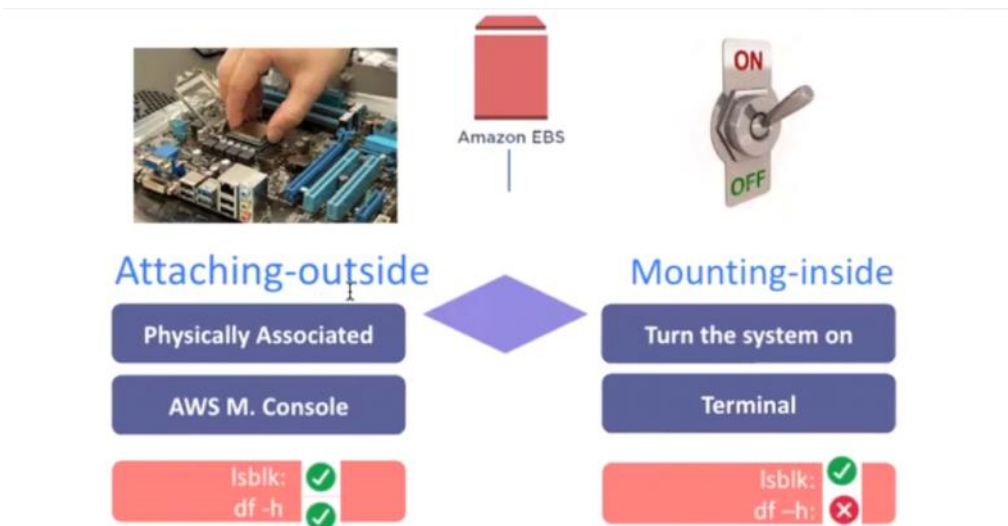
```
[ec2-user@ip-172-31-43-208 ~]$ df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        482M   0    482M   0% /dev
tmpfs           492M   0    492M   0% /dev/shm
tmpfs           492M 412K   492M   1% /run
tmpfs           492M   0    492M   0% /sys/fs/cgroup
/dev/xvda1      8.0G  1.6G   6.5G  20% /
tmpfs           99M   0     99M   0% /run/user/1000
```

- Sudo mkfs -t ext4 /dev/xvdf ==> formatlayacagiz.

```
[ec2-user@ip-172-31-43-208 ~]$ sudo mkfs -t ext4 /dev/xvdf
mke2fs 1.42.9 (28-Dec-2013)
Filesystem label=
OS type: Linux
Block size=4096 (log=2)
Fragment size=4096 (log=2)
Stride=0 blocks, Stripe width=0 blocks
```

- sudo file -s /dev/xvdf
- Lsblk
- Dh -f

Biz cihazı formatladık ama file sistemi hala kabul etmedi. Onemli olan mount edilmeli yani prize takma islemini yapmamiz gerekmektedir.

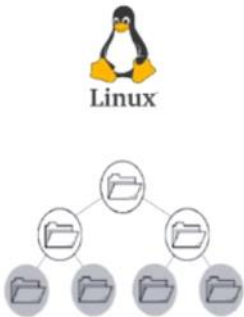


- sudo mkdir /mnt/mp1==> create a mounting point path for new volume (volume-1) yeni bir mp1 diye klasor olusturuyoruz.
- sudo mount /dev/xvdf /mnt/mp1/ ==> xvdf cihazini baglama islemini gerceklestirecegiz.
- Lsblk

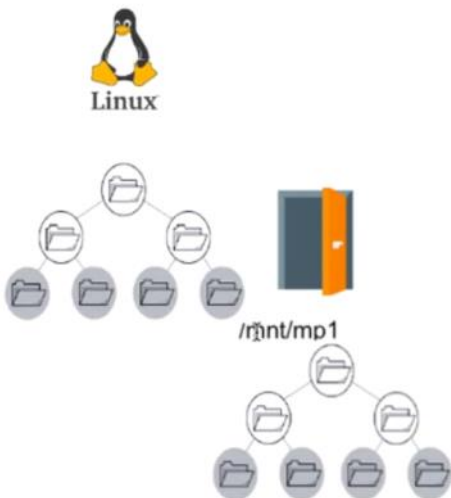
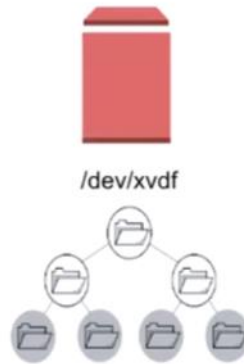
```
[ec2-user@ip-172-31-43-208 ~]$ sudo file -s /dev/xvdf
/dev/xvdf: Linux rev 1.0 ext4 filesystem data, UUID=e7edea01-46b2-458d-b763-55e3c4f5c120 (extent
s) (64bit) (large files) (huge files)
[ec2-user@ip-172-31-43-208 ~]$ sudo mkdir /mnt/mp1
[ec2-user@ip-172-31-43-208 ~]$ sudo mount /dev/xvdf /mnt/mp1/
[ec2-user@ip-172-31-43-208 ~]$ lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
xvda        202:0    0    8G  0 disk
└─xvda1    202:1    0    8G  0 part /
xvdf        202:80   0    5G  0 disk /mnt/mp1
```

- Df -h ==> cihazı gorecegiz


```
[ec2-user@ip-172-31-43-208 ~]$ df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        482M   0    482M   0% /dev
tmpfs           492M   0    492M   0% /dev/shm
tmpfs           492M  412K    492M   1% /run
tmpfs           492M   0    492M   0% /sys/fs/cgroup
/dev/xvda1      8.0G  1.6G   6.5G  20% /
tmpfs           99M   0     99M   0% /run/user/1000
/dev/xvdf       4.8G  20M   4.6G   1% /mnt/mp1
[ec2-user@ip-172-31-43-208 ~]$
```

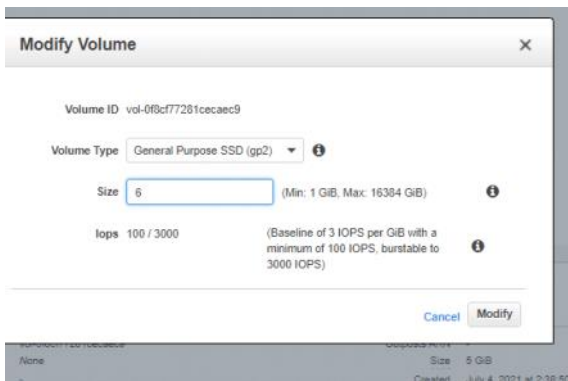
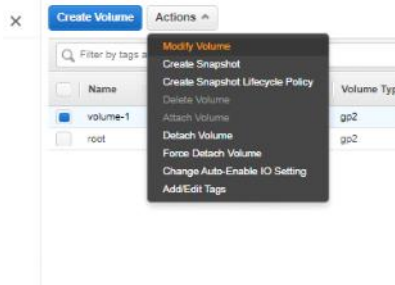


+



- `cd /mnt/mp1`

- Ls
- sudo touch hello.txt
- Ikinci bolume geciyoruz. ==> az onceki volume yetmemesi sebebiyle arttirma islemini gerceklestirecegiz.
- Aws ekrani / volume / volume-1 tikla / actions / modify volume ==> 5 i 6 yapacagiz



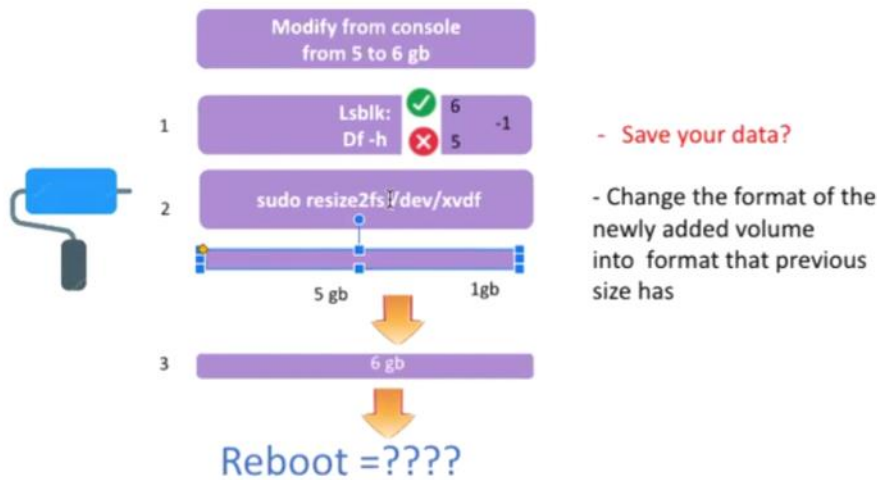
Volume 6 oldugunu gorecegiz

Filter by tags and attributes or search by keyword					
Name	Volume ID	Size	Volume Type	IOPS	TI
volume-1	vol-0f6cf772...	6 GiB	gp2	100	-
root	vol-044c90e...	8 GiB	gp2	100	-

- Lsblk ==> yeni volume yi gorecek
- Df -h ==> raf duzenlemesi olmadigindan 5 gorunecek

```
[ec2-user@ip-172-31-43-208 mp1]$ lsblk
NAME        MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
xvda        202:0    0  8G  0 disk
└─xvda1     202:1    0  8G  0 part /
xvdf        202:80   0  6G  0 disk /mnt/mp1
[ec2-user@ip-172-31-43-208 mp1]$ df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        482M   0  482M   0% /dev
tmpfs           492M   0  492M   0% /dev/shm
tmpfs           492M 468K  492M   1% /run
tmpfs           492M   0  492M   0% /sys/fs/cgroup
/dev/xvda1      8.0G  1.6G  6.5G  20% /
tmpfs           99M   0   99M   0% /run/user/1000
/dev/xvdf       4.8G  20M  4.6G   1% /mnt/mp1
tmpfs           99M   0   99M   0% /run/user/0
[ec2-user@ip-172-31-43-208 mp1]$
```

Resizing



- `sudo resize2fs /dev/xvdf`

```
[ec2-user@ip-172-31-43-208 mp1]$ sudo resize2fs /dev/xvdf
resize2fs 1.42.9 (28-Dec-2013)
Filesystem at /dev/xvdf is mounted on /mnt/mp1; on-line resizing required
old_desc_blocks = 1, new_desc_blocks = 1
The filesystem on /dev/xvdf is now 1572864 blocks long.

[ec2-user@ip-172-31-43-208 mp1]$ df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        482M   0  482M   0% /dev
tmpfs           492M   0  492M   0% /dev/shm
tmpfs           492M  468K  492M   1% /run
tmpfs           492M   0  492M   0% /sys/fs/cgroup
/dev/xvda1      8.0G  1.6G  6.5G  20% /
tmpfs           99M    0   99M   0% /run/user/1000
/dev/xvdf       5.8G   20M  5.5G   1% /mnt/mp1
tmpfs           99M    0   99M   0% /run/user/0
[ec2-user@ip-172-31-43-208 mp1]$
```

- `Df -h`

- `Ls /mnt/mp1` ==> daha once olusturdugumuz datanin durup durmadigini gorebiliriz

```
tmpfs           99M    0   99M   0% /run/user/0
[ec2-user@ip-172-31-43-208 mp1]$ ls /mnt/mp1/
hello.txt  lost+found
[ec2-user@ip-172-31-43-208 mp1]$
```

MKDF / RESIZE2FS komutlari farki

- `sudo reboot now` ==> show that mounting point path will be gone when instance rebooted (ayni ssh ile baglanabiliriz ama stop etseydik ssh degisirdi)

- Tekrar ssh ile EC2 ya baglanacagiz

- Statik IP kullanirsak IP degismez ama elastik IP de degisir

- `Lsblk`

- `Df -h`

```
[ec2-user@ip-172-31-43-208 ~]$ lsblk
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
xvda  202:0    0  8G  0 disk
└─xvda1 202:1    0  8G  0 part /
xvdf  202:80    0  6G  0 disk
[ec2-user@ip-172-31-43-208 ~]$ df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        482M   0  482M   0% /dev
tmpfs           492M   0  492M   0% /dev/shm
tmpfs           492M  412K  492M   1% /run
tmpfs           492M   0  492M   0% /sys/fs/cgroup
/dev/xvda1      8.0G  1.5G  6.6G  19% /
tmpfs           99M    0   99M   0% /run/user/1000
[ec2-user@ip-172-31-43-208 ~]$
```

- Mp1 dosyasini mnt klasorunun icerisinden kontrol edelim.

```
[ec2-user@ip-172-31-43-208 mp1]$ ls
[ec2-user@ip-172-31-43-208 mp1]$ ls /mnt
mp1
[ec2-user@ip-172-31-43-208 mp1]$ sudo file -s /dev/xvdf
/dev/xvdf: Linux rev 1.0 ext4 filesystem data, UUID=e7edea01-46b2-458d-b763-55e3c4f5c120 (extent
s) (64bit) (large files) (huge files)
[ec2-user@ip-172-31-43-208 mp1]$
```

- Sudo file -s /dev/xvdf
- Sudo mount /dev/xvdf /mnt/mp1 ==> yeni volumeyi eski yere mount edecegiz
- Lsblk
- Df -h
- Ls /mnt/mp1/ ==> datanin hala olup olmadigini kontrol ediyoruz

- Part 2 bolumundeyiz.
- 5gb lik yeni volume olusturacagiz. Create volume

Volume Type: General Purpose SSD (gp2)

Size (GiB): 5 (Min: 1 GiB, Max: 16384 GiB)

IOPS: 100 / 3000 (Baseline of 3 IOPS per GiB with a minimum of 100 IOPS, burstable to 3000 IOPS)

Throughput (MB/s): Not applicable

Availability Zone: us-east-1a

Snapshot ID: Select a snapshot

Encryption: ☐ Encrypt this volume

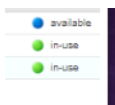
Key (128 characters maximum): Value (256 characters maximum)

Name: volume-2

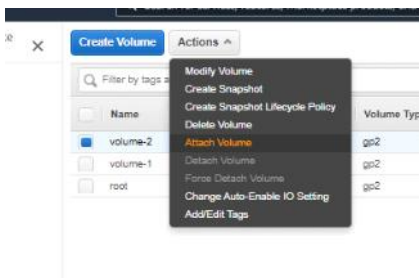
Add Tag: 49 remaining (Up to 50 tags maximum)

Cancel Create Volume

Volume available ama attach yani fiziksel olarak baglamak gerekmektedir.



Bu sebeple volume-2 yi secip actions dan attach etmeliyiz



- Lsblk
- Df -h

```

xvda 202:96 0 5G 0 disk
[ec2-user@ip-172-31-43-208 mp1]$ df -h
-bash: df-h: command not found
[ec2-user@ip-172-31-43-208 mp1]$ df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        482M  0  482M   0% /dev
tmpfs           492M  0  492M   0% /dev/shm
tmpfs           492M  416K  492M   1% /run
tmpfs           492M  0  492M   0% /sys/fs/cgroup
/dev/xvda1      8.0G  1.5G  6.6G  18% /
tmpfs           99M  0  99M   0% /run/user/1000
/dev/xvdf       5.8G  20M  5.5G   1% /mnt/mp1
[ec2-user@ip-172-31-43-208 mp1]$ lsblk
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
xvda 202:0  0  8G  0 disk
└─xvda1 202:1  0  8G  0 part /
xvdf 202:80  0  6G  0 disk /mnt/mp1
xvdg 202:96  0  5G  0 disk
[ec2-user@ip-172-31-43-208 mp1]$

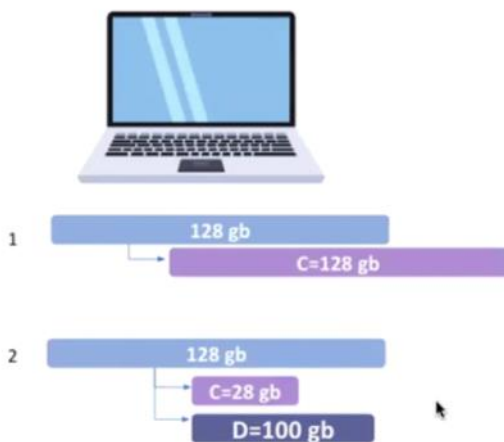
```

Attach new volume and make Partition



Kaynakları ihtiyaca göre uyarlama / silinmeye korumak için

Attach new volume and make Partition



- `sudo fdisk /dev/xvdg` ==> hali hazirdaki harddisklerin donanimsal olarak gorunusu

```
xvdg 202.90 0 30 0 disk
[ec2-user@ip-172-31-43-208 mp1]$ sudo fdisk /dev/xvdg

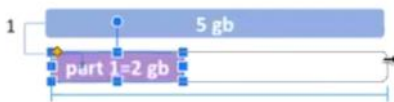
Welcome to fdisk (util-linux 2.30.2).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Device does not contain a recognized partition table.
Created a new DOS disklabel with disk identifier 0x29ea5894.

Command (m for help):
```

- n ye basiyoruz (Anket mantigi)
- p
- 1 den 4 e bolebilirim der (harddisk araligini olusturmak icin)

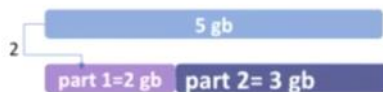
```
Command (m for help): n
Partition type
  p   primary (0 primary, 0 extended, 4 free)
  e   extended (container for logical partitions)
Select (default p): p
Partition number (1-4, default 1):
First sector (2048-10485759, default 2048):
```



- Nereye kadar uzatmak istedigimizi ve bolunmenin hangi birimde olabilecegini belirleyecegiz (2Gb cinsinden)

```
Partition number (1-4, default 1):
First sector (2048-10485759, default 2048):
Last sector, +sectors or +size{K,M,G,T,P} (2048-10485759, default 10485759): +2G
```

2. Partiyi baslatacayiz sirayla ==> n p enter(default) 3 defa otomatik 3gb ayarladi. Ve son olarak w (write) yaziyoruz ve enter



- **Lsblk** ==> 2 ve 3 gb olustugunu gorduk ve format atacagiz
- **Df -h**



- **Sudo mkfs -t ext4 /dev/xvdg1**

- **Sudo mkfs -t ext4 /dev/xvdg2** sirayla ikisini formatladik

=> Rafların aralıkları değişiyor ext4 ext2 windowsta ntfs

- Mounting point oluşturmamız gerekmektedir

- **sudo mkdir /mnt/mp2** ==> create a mounting point path for new volume
- **sudo mkdir /mnt/mp3** ==> create a mounting point path for new volume

- **sudo mount /dev/xvdg1 /mnt/mp2/** ==> mount the new volume to the mounting point path
- **sudo mount /dev/xvdg2 /mnt/mp3/** ==> mount the new volume to the mounting point path

- **Lsblk**
- **Df -h**

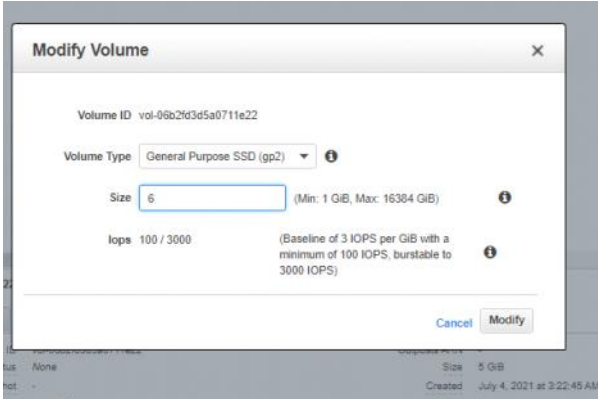
- **sudo touch /mnt/mp3/helloguys.txt** ==> if there is no data on it, create a new file to show persistence in later steps
- **ls /mnt/mp3/**

```
[ec2-user@ip-172-31-43-208 mp1]$ ls
[ec2-user@ip-172-31-43-208 mp1]$ sudo touch /mnt/mp3/helloguys.txt
[ec2-user@ip-172-31-43-208 mp1]$ ls /mnt/mp3/
helloguys.txt  lost+found
```

- Birinci kisminda volumeyi partitionsuz arttirdik. Burada baska islemler yapmak gerekiyor ve bu sebeple modify edecegiz.



5 ten 6 ya cikardik ==> azaltmayi ve bir kac defa modify etmeyi izin vermez (6 saat kurali)

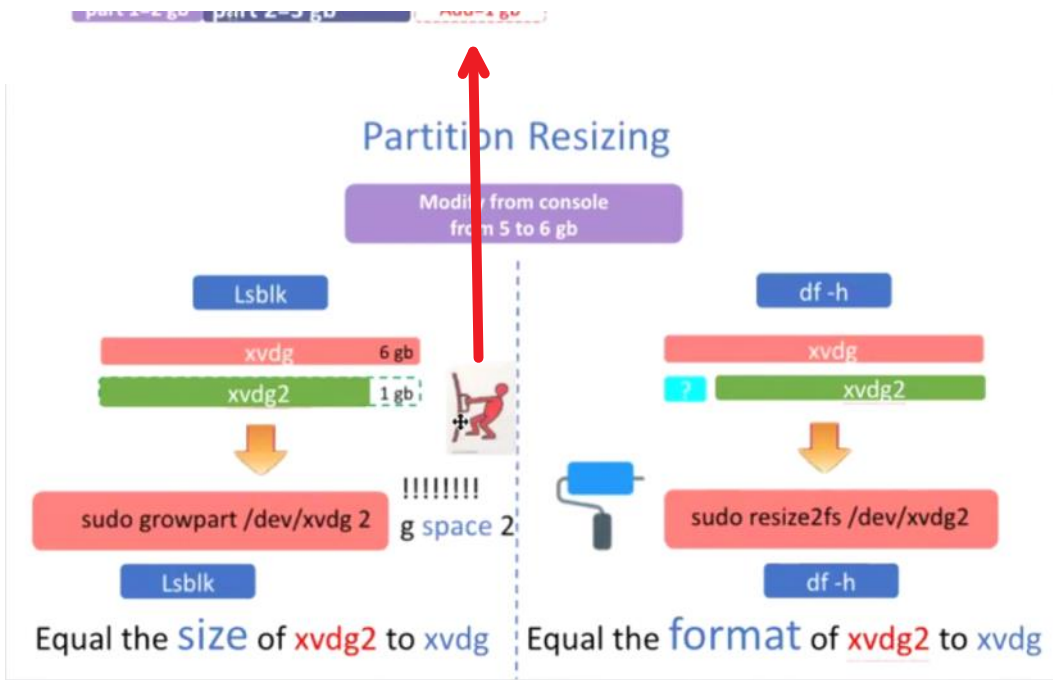


- **Lsblk** ==> 6 gb harddisk in 2+3 kismi gornmektedir

```
[ec2-user@ip-172-31-43-208 mp1]$ lsblk
NAME        MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
xvda        202:0    0  8G  0 disk 
└─xvda1     202:1    0  8G  0 part /
xvdf        202:80   0  6G  0 disk /mnt/mp1
xvdg        202:96   0  6G  0 disk 
├─xvdg1     202:97   0  2G  0 part /mnt/mp2
└─xvdg2     202:98   0  3G  0 part /mnt/mp3
[ec2-user@ip-172-31-43-208 mp1]$
```

- **Df -h** ==> yine 5 gb olarak gorunmektedir





- `sudo growpart /dev/xvdg 2` ==> extend the partition 2 and occupy all newly available space. Warning for space !!!!!!! (iki nolu kullan demektir yani isimlendirme degil)

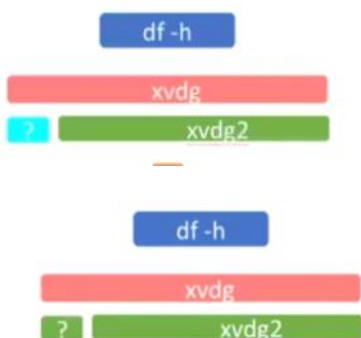
- `lsblk`

```
xvdg 202:96 0 6G 0 disk
└─xvdg1 202:97 0 2G 0 part /mnt/mp2
   └─xvdg2 202:98 0 4G 0 part /mnt/mp3
```

- `Df -h`

```
tmpfs 99M 0 99M 0% /run/user/1000
/dev/xvdf 5.8G 20M 5.5G 1% /mnt/mp1
/dev/xvdg1 2.0G 6.0M 1.8G 1% /mnt/mp2
/dev/xvdg2 2.9G 9.0M 2.8G 1% /mnt/mp3
```

- `sudo resize2fs /dev/xvdg2` ==> gorseldeki gibi file sisteme dahil edecegiz



Acik mavi olan alanin formatini kalan kisma benzetecegiz.

- `Df -h`

```
tmpfs 99M 0 99M 0% /run/user/1000
/dev/xvdf 5.8G 20M 5.5G 1% /mnt/mp1
/dev/xvdg1 2.0G 6.0M 1.8G 1% /mnt/mp2
/dev/xvdg2 3.9G 12M 3.7G 1% /mnt/mp3
```

- `ls /mnt/mp3/` ==> dosyamiz yerinde mi kontrol edecegiz

- `sudo reboot now` ==> reboot edecegiz. Mounting pointler gidecek yani goremeyecegiz.

Bundan sonra her reboot edilince kayip yasanıyor ve bu sebeple automount etmek gerekmektedir. Hangi volumelerin hangi mountlarda oldugu bilgisi veren dosyaya kayıt yaparsak sorun yasamayiz.

- Lsblk
- Df -h

```
[ec2-user@ip-172-31-43-208 ~]$ lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
xvda        202:0    0   8G  0 disk 
└─xvda1     202:1    0   8G  0 part /
xvdf        202:80   0   6G  0 disk 
xvdg        202:96   0   6G  0 disk 
└─xvdg1     202:97   0   2G  0 part 
  └─xvdg2    202:98   0   4G  0 part
[ec2-user@ip-172-31-43-208 ~]$ df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        482M   0   482M   0% /dev
tmpfs           492M   0   492M   0% /dev/shm
tmpfs           492M 480K   492M   1% /run
tmpfs           492M   0   492M   0% /sys/fs/cgroup
/dev/xvda1      8.0G  1.5G   6.6G  19% /
tmpfs           99M   0    99M   0% /run/user/1000
tmpfs           99M   0    99M   0% /run/user/0
[ec2-user@ip-172-31-43-208 ~]$
```

- `sudo cp /etc/fstab /etc/fstab.bak` ==> komutu ile yedekleme yapacagiz. Fstab i fstab.bak icerisine yedekliyoruz
- `sudo nano /etc/fstab` ==> dosyanin icerisinde degisiklik yapacagiz ve kaydedecegiz

universally unique identifier

<device>	<dir>	<type>	<options>	<dump>	<fsck>
UUID=55da5202-8008-43e8-8ade-2572319d9185	/	xfs	defaults,noatime	1	1
/dev/xvdf	/mp3	ext4	defaults,nofail	0	0

option

nofail allows the boot sequence to continue **even if the drive fails** to mount.

noatime will tell the filesystem **not to record the last accessed date** of the file. it increases speed

dump

Enable or disable **backing up** of the device/partition. 0 , disables

fsck

Sets the order for **filesystem checks** at boot time; For the **root device** it should be **1**. For other partitions it should be 2, or 0 to disable checking.

0 = Do not check.
1 = First file system (partition) to check; / (root partition) should be set to 1.
2 = All other filesystems to be checked.

PROBLEMS 32 OUTPUT TERMINAL DEBUG CONSOLE 1: ssh

GNU nano 2.9.8 /etc/fstab

```
#
UUID=8562e9fb-f45b-4a09-99778-bde97be4afb3 / xfs defaults,noatime 1 1
```

```
/dev/xvdf mnt/mp1 ext4 defaults,nofail 0 0
/dev/xvdg1 mnt/mp2 ext4 defaults,nofail 0 0
/dev/xvdg2 mnt/mp3 ext4 defaults,nofail 0 0
```

```
[ec2-user@ip-172-31-43-208 ~]$ sudo cp /etc/fstab /etc/fstab.bak
[ec2-user@ip-172-31-43-208 ~]$ sudo nano /etc/fstab
[ec2-user@ip-172-31-43-208 ~]$ cat /etc/fstab
#
UUID=8562e9fb-f45b-4a09-9778-bde97be4afb3 / xfs defaults,noatime 1 1
/dev/xvdf mnt/mp1 ext4 defaults,nofail 0 0
/dev/xvdg1 mnt/mp2 ext4 defaults,nofail 0 0
/dev/xvdg2 mnt/mp3 ext4 defaults,nofail 0 0
```

- **sudo reboot now** ==> sistemi tekrar reboot edecegiz degisikliklerin kayit edilip edilmedigini kontrol etmek icin
- EC2 ya tekrar baglanalim
- Lsblk

```
https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-172-31-43-208 ~]$ lsblk
NAME        MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
xvda        202:0    0  8G  0 disk
└─xvda1     202:1    0  8G  0 part /
xvdf        202:80   0  6G  0 disk /mnt/mp1
xvdg        202:96   0  6G  0 disk
└─xvdg1     202:97   0  2G  0 part /mnt/mp2
   xvdg2     202:98   0  4G  0 part /mnt/mp3
```

- Df -h

```
[ec2-user@ip-172-31-43-208 ~]$ df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        482M   0   482M   0% /dev
tmpfs           492M   0   492M   0% /dev/shm
tmpfs           492M 436K   492M   1% /run
tmpfs           492M   0   492M   0% /sys/fs/cgroup
/dev/xvda1       8.0G  1.5G   6.6G  19% /
/dev/xvdg1       2.0G  6.0M   1.8G   1% /mnt/mp2
/dev/xvdg2       3.9G  12M   3.7G   1% /mnt/mp3
/dev/xvdf       5.8G  20M   5.5G   1% /mnt/mp1
tmpfs           99M   0    99M   0% /run/user/1000
```

- Ls /mnt/mp1 ==> dosyalarin kontrolu
- Ls /mnt/mp3 ==> dosyalarin kontrolu

```
[ec2-user@ip-172-31-43-208 ~]$ ls /mnt/mp1/
hello.txt lost+found
[ec2-user@ip-172-31-43-208 ~]$ ls /mnt/mp3/
helloguys.txt lost+found
[ec2-user@ip-172-31-43-208 ~]$
```

NOTE: You can use "sudo mount -a" to mount volumes and partitions after editing fstab file without rebooting.

Instance terminate edelim.

**Instance kapaninca root volume olur ama digerlerini delete volume dememiz gerekir
Ama volume leri detach veya force detach volume yapmaliyiz en sonda delete volume :)**

Volume ler silinmeseydi hello file lar sabit kalacakti

