

## AWS CSA TASK: 2



### **TASK DESCRIPTION :**

#### **Creating High Availability Architecture with AWS CLI**

- 1) Document Root(/var/www/html) made persistent by mounting on EBS Block Device.**
- 2) Static objects used in code such as pictures stored in S3**
- 3) Setting up Content Delivery Network using CloudFront and using the origin domain as S3 bucket.**
- 4) Finally , place the CloudFront URL on the webapp code for security and low latency.**

#### **1) Creating the EC2**

C:\Users\hp

```
aws ec2 run-instances --image-id ami-0e306788ff2473ccb  
--instance-type t2.micro --subnet-id subnet-d8b1b8b0  
--security-group-ids sg-08e55d1c6b7898612--key-name  
awsclass2020key --count 1
```

The screenshot shows the AWS EC2 Instances page. On the left, there's a navigation sidebar with options like New EC2 Experience, EC2 Dashboard, Events, Tags, Limits, Instances (with sub-options like Instances, Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Capacity Reservations), Images (with sub-options like AMIs), and Elastic Block Store (with sub-options like Volumes, Snapshots, Lifecycle Manager). The main content area has a blue header bar with the message: "Welcome to the new instances experience! We're redesigning the EC2 console to make it easier to use. To switch between the old console and the new console, use the New EC2 Experience toggle above the navigation panel. We'll release updates continuously based on customer feedback." Below this is a table titled "Instances (1/1) Info". The table has columns: Name, Instance ID, Instance state, Instance type, Status check, Alarm Status, Availability zone, and Public IPv4 DNS. One row is listed: Name is "-", Instance ID is "i-083734fb126d62c", Instance state is "Running" (green), Instance type is "t2.micro", Status check is "2/2 checks ...", Alarm Status is "No alarms", Availability zone is "ap-south-1a", and Public IPv4 DNS is "ec2-13-235-114-". At the bottom of the main content area, there's a detailed view for the selected instance "i-083734fb126d62c" with tabs for Details, Security, Networking, Storage, Status Checks, Monitoring, and Tags. The Details tab shows an "Instance summary" section with fields: Instance ID (i-083734fb126d62c), Instance state (Running), Public IPv4 address (15.235.114.61 | open address), Private IPv4 addresses (172.31.44.142), Public IPv4 DNS (ec2-13-235-114-61.ap-south-1), and Private IPv4 DNS (ip-172-31-44-142.ap-south-1.compute.internal).

## 2) Adding a volume

```
C:\Users\hp>aws ec2 create-volume --availability-zone ap-south-1a  
--volume-type gp2 --size 10
```

## 3) Attaching the volume

```
C:\Users\hp>aws ec2 attach-volume --volume-id  
vol-0585ad3cca052c5ba --instance-id i-083734fb126d62c --device  
/dev/sdf
```

Name	Volume ID	Size	Volume Type	IOPS	Snapshot	Created	Availability Zone	State	Alarm Status	Attachment
vol-09162ce...	8 GiB	gp2	100	snap-027b63b...	October 27, 2020 at...	ap-south-1a	in-use	None	i-0ff16ed10	
vol-0585ad3...	10 GiB	gp2	100		October 27, 2020 at...	ap-south-1a	in-use	None	i-0ff16ed10	

**Volumes:** vol-0585ad3cca052c5ba

Description

Volume ID: vol-0585ad3cca052c5ba	Outposts ARN: -
Alarm status: None	Size: 10 GiB
Snapshot: -	Created: October 27, 2020 at 5:35:11 PM UTC+5:30
Availability Zone: ap-south-1a	State: in-use
Encryption: Not Encrypted	Attachment information: i-0ff16ed10694747ffa (/dev/sdf attached)

#### 4) Making a Partition

```
C:\Users\hp\Downloads>ssh -l ec2-user 13.235.114.61 -i awsclass2020key.pem sudo fdisk /dev/xvdf
```

#### 5) Formatting Partition

```
C:\Users\hp\Downloads>ssh -l ec2-user 13.235.114.61 -i awsclass2020key.pem sudo mkfs.ext4 /dev/xvdf
```

```
C:\Users\hp\Downloads>ssh -l ec2-user 13.235.114.61 -i awsclass2020key.pem sudo mkfs.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
655360 inodes, 2621440 blocks
131072 blocks (5.00%) reserved for the super user
First data block=0
Maximum filesystem blocks=2151677952
80 block groups
32768 blocks per group, 32768 fragments per group
8192 inodes per group
Superblock backups stored on blocks:
    32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632

Allocating group tables: done
Writing inode tables: done
Creating journal (32768 blocks): done
Writing superblocks and filesystem accounting information: done
```

## 6) Mount a directory

```
C:\Users\hp\Downloads>ssh -l ec2-user 13.235.114.61 -i
awsclass2020key.pem sudo mount /dev/xvdf /var/www/html
```

## 7) Installing apache web server

```
C:\Users\hp\Downloads>ssh -l ec2-user 13.235.114.61 -i
awsclass2020key.pem sudo yum install httpd -y
```

```
C:\Users\hp\Downloads>ssh -l ec2-user 13.235.114.61 -i awsclass2020key.pem sudo yum install httpd -y
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
Resolving Dependencies
--> Running transaction check
--> Package httpd.x86_64 0:2.4.46-1.amzn2 will be installed
--> Processing Dependency: httpd-tools = 2.4.46-1.amzn2 for package: httpd-2.4.46-1.amzn2.x86_64
--> Processing Dependency: httpd-filesystem = 2.4.46-1.amzn2 for package: httpd-2.4.46-1.amzn2.x86_64
--> Processing Dependency: system-logos-httpd for package: httpd-2.4.46-1.amzn2.x86_64
--> Processing Dependency: mod_http2 for package: httpd-2.4.46-1.amzn2.x86_64
--> Processing Dependency: httpd-filesystem for package: httpd-2.4.46-1.amzn2.x86_64
--> Processing Dependency: /etc/mime.types for package: httpd-2.4.46-1.amzn2.x86_64
--> Processing Dependency: libaprutil-1.so.0()(64bit) for package: httpd-2.4.46-1.amzn2.x86_64
--> Processing Dependency: libapr-1.so.0()(64bit) for package: httpd-2.4.46-1.amzn2.x86_64
--> Running transaction check
--> Package apr.x86_64 0:1.6.3-5.amzn2.0.2 will be installed
--> Package apr-util.x86_64 0:1.6.1-5.amzn2.0.2 will be installed
--> Processing Dependency: apr-util-bdb(x86-64) = 1.6.1-5.amzn2.0.2 for package: apr-util-1.6.1-5.amzn2.0.2.x86_64
--> Package generic-logos-httpd.noarch 0:18.0.0-4.amzn2 will be installed
--> Package httpd-filesystem.noarch 0:2.4.46-1.amzn2 will be installed
--> Package httpd-tools.x86_64 0:2.4.46-1.amzn2 will be installed
--> Package mailcap.noarch 0:2.1.41-2.amzn2 will be installed
--> Package mod_http2.x86_64 0:1.15.14-2.amzn2 will be installed
--> Running transaction check
--> Package apr-util-bdb.x86_64 0:1.6.1-5.amzn2.0.2 will be installed
--> Finished Dependency Resolution

Dependencies Resolved
```

**8) Start httpd and check the status** C:\Users\hp\Downloads>ssh -l ec2-user 13.235.114.61 -i awsclass2020key.pem sudo systemctl start httpd

C:\Users\hp\Downloads>ssh -l ec2-user 13.235.114.61 -i awsclass2020key.pem sudo systemctl status httpd

```
C:\Users\hp\Downloads>ssh -l ec2-user 13.235.114.61 -i awsclass2020key.pem sudo mount /dev/xvdf /var/www/html
C:\Users\hp\Downloads>ssh -l ec2-user 13.235.114.61 -i awsclass2020key.pem sudo systemctl start httpd
C:\Users\hp\Downloads>ssh -l ec2-user 13.235.114.61 -i awsclass2020key.pem sudo systemctl status httpd
● httpd.service - The Apache HTTP Server
  Loaded: loaded (/usr/lib/systemd/system/httpd.service; disabled; vendor preset: disabled)
  Active: active (running) since Thu 2020-10-29 13:33:02 UTC; 5s ago
    Docs: man:htcpd.service(8)
  Main PID: 3817 (httpd)
  Status: "Processing requests..."
  CGroup: /system.slice/httpd.service
          ├ 3817 /usr/sbin/httpd -DFOREGROUND
          ├ 3818 /usr/sbin/httpd -DFOREGROUND
          ├ 3819 /usr/sbin/httpd -DFOREGROUND
          ├ 3820 /usr/sbin/httpd -DFOREGROUND
          ├ 3821 /usr/sbin/httpd -DFOREGROUND
          └ 3822 /usr/sbin/httpd -DFOREGROUND

Oct 29 13:33:02 ip-172-31-44-142.ap-south-1.compute.internal systemd[1]: Starting The Apache HTTP Server...
Oct 29 13:33:02 ip-172-31-44-142.ap-south-1.compute.internal systemd[1]: Started The Apache HTTP Server.
```

**Here status is active as shown in the above pic**

**8) Login in to the instance via cli**

C:\Users\hp\Downloads>ssh -l ec2-user 13.235.114.61 -i awsclass2020key.pem

```
/dev/xvda128 2048      4095      2048   1M BIOS boot

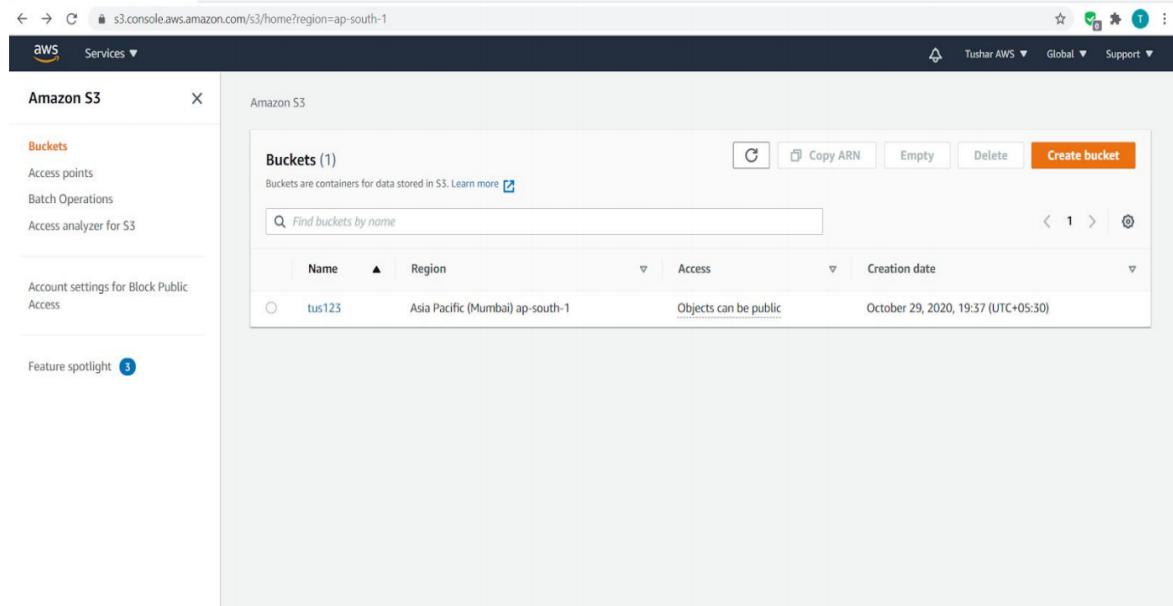
Partition table entries are not in disk order.

Disk /dev/xvdf: 10 GiB, 10737418240 bytes, 20971520 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
[root@ip-172-31-44-142 ~]# df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        474M    0  474M   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  1.4G  6.7G  17% /
/dev/xvdf     9.8G  37M  9.2G   1% /var/www/html
tmpfs          99M    0   99M   0% /run/user/1000
[root@ip-172-31-44-142 ~]# cd /var/www/html
[root@ip-172-31-44-142 html]# ls
lost+found
[root@ip-172-31-44-142 html]# vim home.html
[root@ip-172-31-44-142 html]# chmod +x home.html
[root@ip-172-31-44-142 html]# ls
home.html  lost+found
[root@ip-172-31-44-142 html]#
```

**We will create a S3 bucket and insert an object into it**

## **10) Create S3 bucket**

**C:\Users\hp\Downloads>aws s3api create-bucket --bucket tus123  
--region ap-south-1 --create-bucket-configuration  
LocationConstraint=ap-south-1**



Amazon S3

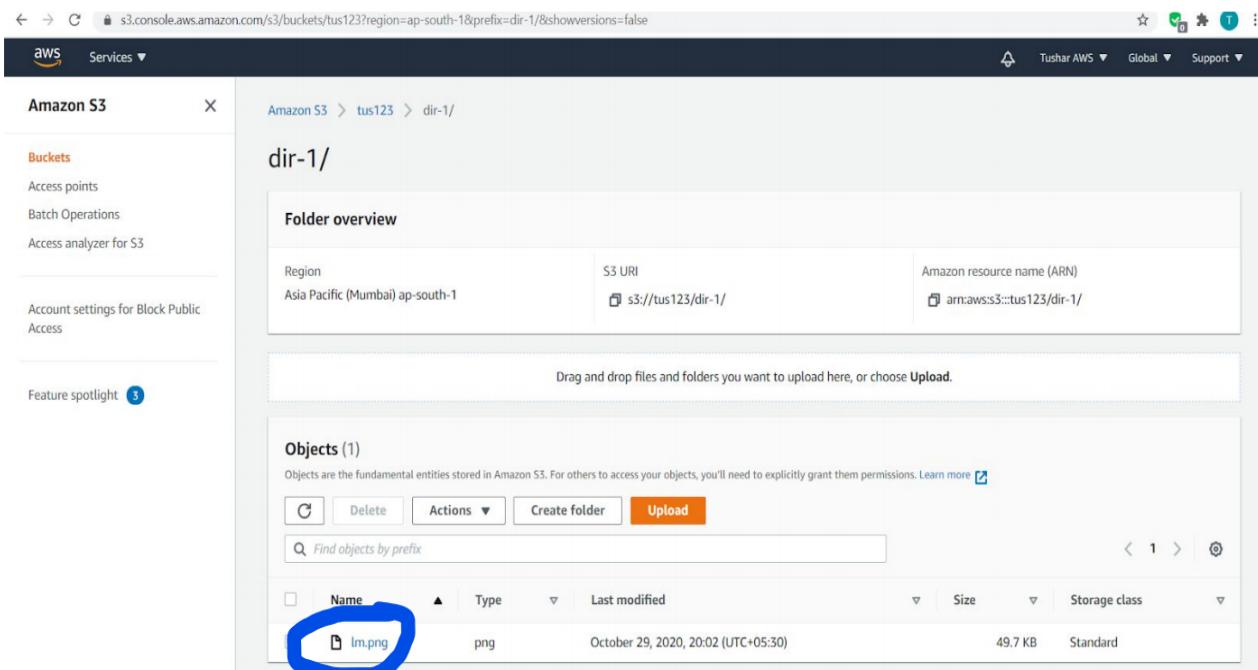
Buckets (1)

Buckets are containers for data stored in S3. Learn more

Name	Region	Access	Creation date
tus123	Asia Pacific (Mumbai) ap-south-1	Objects can be public	October 29, 2020, 19:37 (UTC+05:30)

## 12) Putting object in bucket:

```
C:\Users\hp\Downloads>aws s3api put-object --bucket tus123 --key dir-1/lm.png --body C:\Users\hp\Downloads\lm.png
```



Amazon S3 > tus123 > dir-1/

dir-1/

Folder overview

Region	S3 URI	Amazon resource name (ARN)
Asia Pacific (Mumbai) ap-south-1	s3://tus123/dir-1/	arn:aws:s3:::tus123/dir-1/

Drag and drop files and folders you want to upload here, or choose Upload.

Objects (1)

Objects are the fundamental entities stored in Amazon S3. For others to access your objects, you'll need to explicitly grant them permissions. Learn more

Name	Type	Last modified	Size	Storage class
lm.png	png	October 29, 2020, 20:02 (UTC+05:30)	49.7 KB	Standard

## 14) Creating CloudFront Distributions

```
C:\Users\hp\Downloads>aws cloudfront create-distribution  
--origin-domain-name tus123.s3.amazonaws.com --default-root-object  
dir-1/lm.png
```

The screenshot shows the AWS CloudFront console interface. On the left, there's a navigation sidebar with sections like 'Distributions', 'Policies', 'What's new', 'Telemetry', 'Logs', 'Reports & analytics', and 'Security'. The main area is titled 'CloudFront Distributions' and contains a table with one item. The table columns are: Delivery Method, ID, Domain Name, Comment, Origin, CNAMEs, Status, State, and Last Modified. The single row shows 'Web' as the delivery method, ID 'E2M3YHZMOS3ZFQ', Domain Name 'dnhqwxr0426kd.cloudfront.net', Origin 'tus123.s3.amazonaws.com', and Status 'In Progress'. The 'State' column shows 'Enabled' and the 'Last Modified' timestamp is '2020-10-29 20:34 UT'. Two specific cells are circled in red: the 'Delivery Method' cell ('Web') and the 'Status' cell ('In Progress').

Delivery Method	ID	Domain Name	Comment	Origin	CNAMEs	Status	State	Last Modified
Web	E2M3YHZMOS3ZFQ	dnhqwxr0426kd.cloudfront.net	-	tus123.s3.amazonaws.com	-	In Progress	Enabled	2020-10-29 20:34 UT

The screenshot shows the AWS CloudFront console with the 'CloudFront Distributions' section highlighted by a red box. A blue box highlights the 'Web' delivery method in the first row of the table. Another blue box highlights the 'Status' column, which shows 'Deployed' for the first item. The table has columns for Delivery Method, ID, Domain Name, Comment, Origin, CNAMEs, Status, State, and Last Modified.

Delivery Method	ID	Domain Name	Comment	Origin	CNAMEs	Status	State	Last Modified
Web	E2M3YHZMOS3ZFQ	dnhqwxr0426kd.cloudfront.net	-	tus123.s3.amazonaws.com	-	Deployed	Enabled	2020-10-29 20:34 UT

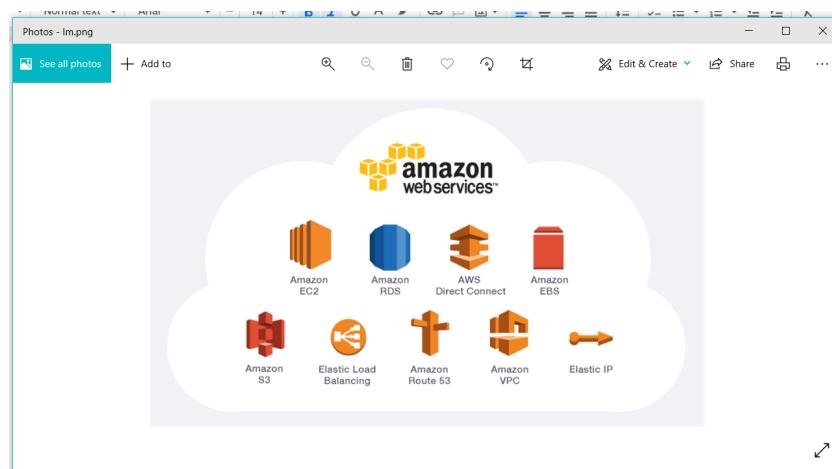
***Now you can see here we successfully deployed the cloud front***

***We have now successfully downloaded the image***



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***Thank you***