Amazon EBS Snapshots & AMI – Full Explanation (2025)

Amazon EBS Snapshot – Full Explanation

An EBS snapshot is a point-in-time backup of an Amazon EBS volume.

• Snapshots are incremental
• Stored automatically in Amazon S3 (AWS managed)
• You are billed only for changed blocks
• Can be used to restore volumes, create new EBS volumes, or create AMIs
• You never directly see snapshots in S3 – AWS manages them internally

Key Properties of EBS Snapshots

■ Point-in-time backup
■ Incremental after first snapshot
■ Region-specific
■ Can be encrypted
■ Can be copied to another region

Practical Scenario – Hands-on Flow

Goal: Understand snapshots by creating two EC2 instances in different AZs, attaching an EBS volume, and restoring it.

Step 1: Launch Two EC2 Instances

• instance-1 in AZ-1
• instance-2 in AZ-2
• Same VPC and same region

Step 2: Create an EBS Volume

• Create an EBS volume (example: 10 GB gp3)
• Availability Zone must match instance-1

Step 3: Attach EBS to Instance-1

Verify attachment using:

```
lsblk
```

You will see the new EBS volume listed, but it will not appear in df -h because it is attached but not mounted.

```
df -TH
```

Step 4: Format & Mount the Volume

```
sudo mkfs.ext4 /dev/nvme1n1
sudo mkdir /data
sudo mount /dev/nvme1n1 /data
```

Create test data:

```
echo "Hello from EBS Snapshot Demo" | sudo tee /data/test.txt
```

Step 5: Take an EBS Snapshot

Go to EC2 → Volumes → Select volume → Create snapshot. This snapshot captures all data inside /data.

Step 6: Restore Snapshot to Another Instance

Create a new EBS volume from the snapshot and ensure its AZ matches instance-2.

Mount restored volume:

```
lsblk
sudo mkdir /data
sudo mount /dev/nvme1n1 /data
cat /data/test.txt
```

Output: Hello from EBS Snapshot Demo
Snapshot restore successful.

Snapshot vs AMI (Image)

Feature	EBS Snapshot	AMI
Backup level	Volume only	Entire EC2
OS included	No	Yes
Application included	No	Yes
Bootable	No	Yes
Used to launch EC2	No	Yes

AMI Example with One Application (Nginx)

Install application:

```
sudo apt update
sudo apt install -y nginx
curl localhost
```

Create AMI:

EC2 → Instance → Actions → Create Image (AMI). This creates a snapshot of the root volume and a bootable image.

Launch new EC2 from AMI:

Launch EC2 using the AMI and verify Nginx is already installed using curl.

Relationship Between Snapshot & AMI

AMI = One or more EBS snapshots + metadata.
Snapshot is the building block, and AMI is the final bootable image.

Interview-Ready One-Liners

EBS Snapshot: “Incremental, point-in-time backup of an EBS volume stored in S3.”
AMI: “A bootable image created from EBS snapshots used to launch EC2 instances.”
lsblk vs df: “lsblk shows attached disks, df shows mounted filesystems.”