What is the difference between EBS and Instance store ? When will you use Instance store ?

What is Amazon EBS?

Amazon **EBS (Elastic Block Store)** is durable, high-performance block storage used with EC2 instances. It behaves like a virtual hard drive that can persist independently of the instance.

What is the default storage option for EC2?

The default storage option is Amazon EBS (Elastic Block Store). When you launch an EC2 instance, a root EBS volume is attached to it. You can also attach additional EBS volumes.

What is **Instance Store?**

Instance Store in AWS EC2 refers to temporary block-level storage that is physically attached to the host machine running your EC2 instance.

SSD-Based Instance Store: Many EC2 instance types offer instance store volumes backed by solid-state drives (SSDs), including NVMe SSDs.

HDD-Based Instance Store: Some older or specific instance types use hard disk drives (HDDs) for instance store volumes.

How is EBS different from Instance Store?

Feature	Amazon EBS	Instance Store
Persistence	**Data persists** after instance stop	**Data is lost** when instance stops

Feature	Amazon EBS	Instance Store
Durability	Backed by **replicated storage**	No replication; tied to physical host
Use Case	Databases, logs, critical apps	Temp data, caches, buffers
Detach & Attach	Can be attached/detached from instances	**Tied to a specific instance**
Backup	Supports snapshots	No snapshot support

✅ Instance Store – *Physically Attached*

- It is **directly attached** to the host hardware where your EC2 instance runs.
- Think of it like a **local hard drive** on that physical server.
- That's why:
    - It offers **very low latency and high IOPS**.
    - But the **data is lost** when the instance stops, terminates, or fails.
    - It's also **tied to that specific instance** — you can't detach/reattach it.

✅ Amazon EBS (Elastic Block Store) – *Network Attached*

- EBS is like a **remote, network-attached disk**.
- Your EC2 instance accesses it over the AWS network.
- That's why:
    - EBS volumes **persist independently** of the EC2 instance.
    - They can be **detached from one instance and attached to another**.
    - They support **snapshots** and **replication**, making them more **durable**.

Use Case for EC2 Instance Store (Ephemeral Storage)

Scenario: You are running a **big data processing** application (like Hadoop or Spark) on an EC2 instance.

- **Why Instance Store?**
    - You need **high-speed temporary storage** for intermediate files or shuffle data.
    - You don't care if the data is lost after the instance is terminated.

Example:
You're processing 100 GB of log files with Apache Spark. Spark creates temporary files during execution. You use **Instance Store** for these temp files to get faster performance and save on costs, since you don't need the data after the job completes.

Use Case for EBS (Elastic Block Store)

Scenario: You are hosting a **MySQL database** on an EC2 instance.

- **Why EBS?**
    - You need **persistent storage** that will survive instance stop or termination.
    - You may want to **back up data** via snapshots or **move the volume** to another instance.

Example:
Your MySQL database stores customer information for an e-commerce site. You use **EBS volumes** to store the database files. Even if the instance crashes or is stopped, your data is safe and can be reattached to a new instance.

- Use **EC2 Instance Store** for:
    - Temporary storage (e.g., caches, temp files, buffers)
    - High I/O workloads that don't need data persistence
- Use **EBS** for:
    - Databases, web servers, or applications needing reliable, long-term storage
    - Any data that **must survive** instance restarts or failures

Which of the following is a key difference between Amazon EBS and Instance Store in terms of data persistence?
A) EBS loses data when the instance stops, but Instance Store retains it
B) EBS supports snapshots; Instance Store does not
C) Instance Store persists data across instance stops
D) Both EBS and Instance Store provide persistent storage

Correct Answer: B

Which storage option is best suited for temporary data such as caches and buffers?
A) Amazon EBS
B) Amazon S3
C) Instance Store
D) Amazon Glacier

Correct Answer: C
