Explain S3 Lifecycle Policies. Why do you need this ?

S3 Lifecycle Policies

Amazon S3 Lifecycle Policies allow you to **automate the management of objects** stored in an S3 bucket throughout their lifecycle. A **lifecycle policy** defines rules that automatically **transition objects** between storage classes or **expire (delete)** them after a specific period.

Key Features of S3 Lifecycle Policies:

1. **Transition Actions**:
    - Move objects to **cheaper storage classes** as they age:
        - ➤ After 30 days → move to **S3 Standard-IA (Infrequent Access)**
        - ➤ After 60 days → move to **S3 Glacier**
        - ➤ After 180 days → move to **S3 Glacier Deep Archive**
2. **Expiration Actions**:
    - Automatically **delete** objects after a defined period (e.g., delete logs after 365 days).
3. **Version Management**:
    - Apply rules separately for **current** and **previous versions** if versioning is enabled.
4. **Filter by prefix or tag**:
    - Apply lifecycle rules only to certain folders (`logs/`, `backup/`) or tagged objects.

Why Do You Need S3 Lifecycle Policies?

Purpose	Benefit
Cost optimization	Automatically move data to cheaper storage tiers or delete it.
Operational efficiency	Reduces manual work in managing object lifecycle.
Regulatory compliance	Helps enforce data retention and deletion policies.
Performance optimization	Keeps active data in high-performance tiers, archives cold data.

Example Use Case

You store daily logs in S3. You want to:

- Keep them in Standard for 30 days,
- Move to Glacier for 6 months,
- Delete them after 1 year.

A lifecycle policy will automate this without you having to write scripts or monitor dates manually.

🔷 Demo 1: Lifecycle Policy (Auto Transition/Deletion)

Steps:

1. Go to your S3 bucket → Management → Lifecycle Rules → Create Rule.
2. Example Rule:
   - Transition objects to **S3 Glacier** after **30 days**.
   - **Expire/delete** objects after **365 days**.

✅ Result:
S3 moves your files to cheaper storage or deletes them automatically.

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1. What is the primary purpose of an S3 Lifecycle policy?

A. To control network traffic between S3 buckets
B. To automatically manage objects during their lifetime
C. To encrypt S3 objects
D. To change S3 bucket regions

Answer: ✅ B. To automatically manage objects during their lifetime

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2. Which of the following actions can be performed using an S3 Lifecycle policy?

A. Resize S3 buckets
B. Move objects to Glacier or Glacier Deep Archive
C. Increase object size automatically
D. Convert objects to JSON

Answer: ✅ B. Move objects to Glacier or Glacier Deep Archive

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3. Why would you use an S3 Lifecycle rule to transition data to cheaper storage classes like Glacier?

A. To increase performance
B. To reduce storage cost over time
C. To improve upload speed
D. To enable encryption

Answer: ✅ B. To reduce storage cost over time

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4. Which storage class is most suitable for data that is rarely accessed and can tolerate retrieval delays of several hours?

A. S3 Standard
B. S3 Intelligent-Tiering
C. S3 Glacier Deep Archive
D. S3 One Zone-IA

Answer: ✅ C. S3 Glacier Deep Archive

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5. What happens when an S3 object reaches the expiration date defined in a Lifecycle policy?

A. It is moved to another bucket
B. It is permanently deleted
C. It is encrypted
D. It is made public

Answer: ✅ B. It is permanently deleted