S3 lifecycle management

S3 Storage Classes (the cost decreases as you go down the list):

- **S3 Standard** – The default storage class. If you don't specify the storage class when you upload an object, Amazon S3 assigns the S3 Standard storage class.

- **Reduced Redundancy** – The Reduced Redundancy Storage (RRS) storage class is designed for noncritical, reproducible data that can be stored with less redundancy than the S3 Standard storage class.

- **S3 Intelligent-Tiering** is an Amazon S3 storage class that's designed to optimize storage costs by automatically moving data to the most cost-effective access tier, without performance impact or operational overhead.

- **Amazon S3 Standard-Infrequent Access** (S3 Standard-IA): This storage class is designed for data that is accessed less frequently, but still requires immediate access when needed

- **Amazon S3 One Zone-Infrequent Access (S3 One Zone-IA)**: This storage class is similar to S3 Standard-IA, but stores data in only one availability zone instead of three. This makes it less durable than the other storage classes, but also less expensive.

- **S3 Glacier Instant Retrieval** – Use for archiving data that is rarely accessed and requires milliseconds retrieval.

- **S3 Glacier Flexible Retrieval** – Use for archives where portions of the data might need to be retrieved in minutes. Data stored in the S3 Glacier Flexible Retrieval storage class has a minimum storage duration period of 90 days and can be accessed in as little as 1-5 minutes by using an expedited retrieval.

- **S3 Glacier Deep Archive** – Use for archiving data that rarely needs to be accessed. Data stored in the S3 Glacier Deep Archive storage class has a minimum storage duration period of 180 days and a default retrieval time of 12 hours.

Managing your storage lifecycle

To manage your objects so that they are stored cost effectively throughout their lifecycle, configure their Amazon S3 Lifecycle. An S3 Lifecycle configuration is a set of rules that define actions that Amazon S3 applies to a group of objects. There are two types of actions:

- **Transition actions** – These actions define when objects transition to another storage class. For example, you might choose to transition objects to the S3 Standard-IA storage class 30 days after creating them, or archive objects to the S3 Glacier Flexible Retrieval storage class one year after creating them.

- **Expiration actions** – These actions define when objects expire. Amazon S3 deletes expired objects on your behalf.

With S3 Lifecycle configuration rules, you can tell Amazon S3 to transition objects to less-expensive storage classes, or archive or delete them.

Here is some information about S3 Lifecycle management based on different needs and use cases:

Cost optimization:

- S3 Lifecycle management can help you optimize costs by transitioning objects to lower-cost storage classes based on their age or access patterns. For example, you can set up a rule to transition objects that haven't been accessed in 30 days from the Standard storage class to the Infrequent Access (IA) storage class. This can help reduce storage costs for objects that are not frequently accessed.

Compliance:

- S3 Lifecycle management can help you meet compliance requirements by automatically deleting objects after a specified retention period. For example, you can set up a rule to delete objects 7 years after their creation date to comply with regulatory requirements.

Data archiving:

- S3 Lifecycle management can help you archive data for long-term storage by transitioning objects to the Glacier or Glacier Deep Archive storage classes. These classes are designed for long-term storage and can help you reduce storage costs for infrequently accessed data. For example, you can set up a rule to transition objects that haven't been accessed in 180 days from the IA storage class to the Glacier Deep Archive storage class.

Performance optimization:

- S3 Lifecycle management can help you optimize performance by transitioning objects to faster storage classes based on their access patterns. For example, you can set up a rule to transition objects that are accessed frequently from the IA storage class to the Standard storage class to improve performance.

Disaster recovery:

- S3 Lifecycle management can help you protect your data in the event of a disaster by replicating objects to a different region. For example, you can set up a rule to replicate objects to a different region for disaster recovery purposes.

In conclusion, S3 Lifecycle management is a powerful feature of Amazon S3 that can help you manage the lifecycle of your objects automatically based on your organization's needs and use cases. By defining rules to transition objects between different storage classes or delete them when they are no longer needed, you can optimize costs, meet compliance requirements, archive data for long-term storage, optimize performance, and protect your data in the event of a disaster.

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