

Optimising S3 performance:



S3 Performance

S3 has extremely low latency. You can get the first byte out of S3 within **100-200 milliseconds**.

You can also achieve a high number of requests: **3,500 PUT/COPY/POST/DELETE** and **5,500 GET/HEAD** requests per second, per prefix.

S3 Performance

1

You can get better performance by spreading your reads across **different prefixes**. For example, if you are using **2 prefixes**, you can achieve **11,000 requests per second**.

2

If we used all **4 prefixes** in the last example, you would achieve **22,000 requests per second**.

S3 LIMITATIONS WHEN USING KMS

- If you are using **SSE-KMS** to encrypt your objects in S3, you must keep in mind the **KMS limits**.
- When you **upload** a file, you will call `GenerateDataKey` in the KMS API.
- When you **download** a file, you will call `Decrypt` in the KMS API.

KMS Request Rates

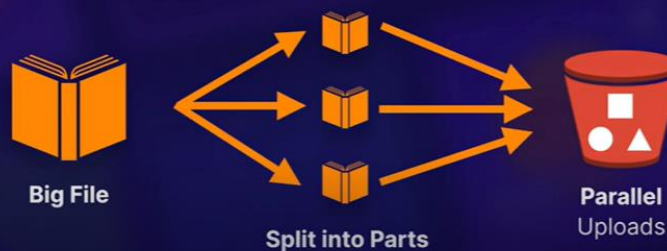
✓ Uploading/downloading will count toward the **KMS quota**.

✓ Region-specific, however, it's either **5,500, 10,000, or 30,000** requests per second.

✓ Currently, you **cannot** request a quota increase for KMS.

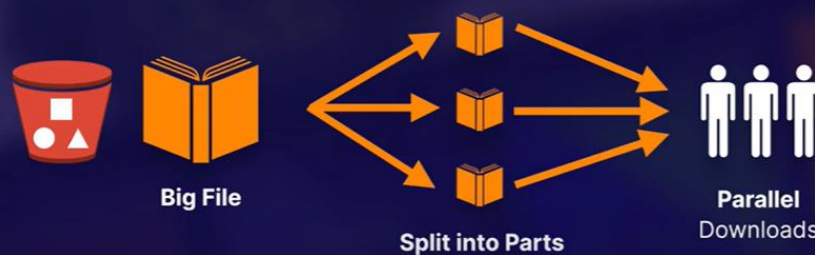
Multipart Uploads

- Recommended for files **over 100 MB**
- Required for files **over 5 GB**
- Parallelize uploads (increases **efficiency**)



S3 Byte-Range Fetches

- Parallelize **downloads** by specifying byte ranges.
- If there's a failure in the download, it's only for a specific byte range.



S3 Byte-Range Fetches



Can be used to
speed up
downloads



Can be used to
download **partial**
amounts of the
file (e.g., header
information)



`mybucketname/folder1/subfolder1/myfile.jpg > /folder1/subfolder1`



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You can get better performance by spreading your reads across **different prefixes**. For example, if you are using **2 prefixes**, you can achieve **11,000 requests per second**.



Use **multipart uploads** to increase performance when **uploading files** to S3.



Should be used for any files **over 100 MB** and must be used for any file **over 5 GB**.



Use **S3 byte-range fetches** to increase performance when **downloading files** to S3.

S3 Replication:

S3 Replication

1 **You can replicate objects from one bucket to another.**

Versioning must be enabled on both the source and destination buckets.

2 **Objects in an existing bucket are not replicated automatically.**

Once replication is turned on, all subsequent updated objects will be replicated automatically.

AWS announced a new **Amazon S3 Batch Replication** feature on 08 FEB 2022, which allows replication of existing objects to different buckets on demand. Note that new AWS products, services or features must be generally available (GA) for at least 6 months prior to it appearing on certification exams. Check the resources section of the lesson for more details.

S3 Replication

1 **You can replicate objects from one bucket to another.**

Versioning must be enabled on both the source and destination buckets.

2 **Objects in an existing bucket are not replicated automatically.**

Once replication is turned on, all subsequent updated objects will be replicated automatically.

3 **Delete markers are not replicated by default.**

Deleting individual versions or delete markers will not be replicated.

Remember What S3 Replication Is

- ✓ **Tip 1:** You can **replicate objects** from one bucket to another.
- ✓ **Tip 2:** Objects in an existing bucket are **not replicated automatically**.
- ✓ **Tip 3:** Delete markers are **not replicated by default**.