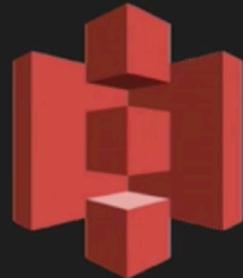


S3

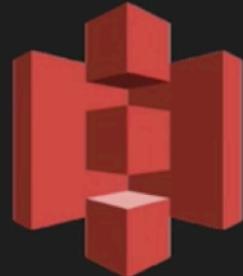
Simple Store Service

What is S3?



S3 provides developers and IT teams with secure, durable, highly-scalable object storage. Amazon S3 is easy to use, with a simple web services interface to store and retrieve any amount of data from anywhere on the web.

What is S3?



S3 is a safe place to store your files.

It is Object based storage.

The data is spread across multiple devices and facilities

S3 - The Basics

- S3 is Object based i.e. allows you to upload files.
- Files can be from 0 Bytes to 5 TB.
- There is unlimited storage
- Files are stored in Buckets.
- S3 is a universal namespace, that is, names must be unique globally.
- <https://s3-eu-west-1.amazonaws.com/acloudguru>
- When you upload a file to S3 you will receive a HTTP 200 code if the upload was successful.

Data Consistency Model For S3

- Read after Write consistency for PUTS of new Objects
- Eventual Consistency for overwrite PUTS and DELETES (can take some time to propagate)

S3 - S3 is a simple key, value store

- S3 is Object based. Objects consist of the following;
 - Key (This is simply the name of the object)
 - Value (This is simply the data and is made up of a sequence of bytes).
 - Version ID (Important for versioning)
 - Metadata (Data about the data you are storing)

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 - Metadata (Data about the data you are storing)
 - Subresources
 - Access Control Lists
 - Torrent

S3 - The Basics

- Built for 99.99% availability for the S3 platform.
- Amazon Guarantee 99.9% availability
- Amazon guarantees 99.999999999% durability for S3 information.
(Remember 11 x 9's).
- Tiered Storage Available
- Lifecycle Management
- Versioning
- Encryption
- Secure your data using Access Control Lists and Bucket Policies

S3 - Storage Tiers/Classes

- S3 - 99.99% availability, 99.99999999% durability, stored redundantly across multiple devices in multiple facilities and is designed to sustain the loss of 2 facilities concurrently.
- S3 - IA (Infrequently Accessed) For data that is accessed less frequently, but requires rapid access when needed. Lower fee than S3, but you are charged a retrieval fee.
- Reduced Redundancy Storage - Designed to provide 99.99% durability and 99.99% availability of objects over a given year.
- Glacier - Very cheap, but used for archival only. It takes 3 - 5 hours to restore from Glacier.

S3 - Storage Tiers/Classes

	Standard	Standard - Infrequent Access	Reduced Redundancy Storage
Durability	99.99999999%	99.99999999%	99.99%
Availability	99.99%	99.9%	99.99%
Concurrent facility fault tolerance	2	2	1
SSL support	Yes	Yes	Yes
First byte latency	Milliseconds	Milliseconds	Milliseconds
Lifecycle Management Policies	Yes	Yes	Yes

What is Glacier?



Glacier is an extremely low-cost storage service for data archival. Amazon Glacier stores data for as little as \$0.01 per gigabyte per month, and is optimized for data that is infrequently accessed and for which retrieval times of 3 to 5 hours are suitable.

S3 vs Glacier

	Standard	Standard - IA	Amazon Glacier
Designed for Durability	99.999999999%	99.999999999%	99.999999999%
Designed for Availability	99.99%	99.9%	N/A
Availability SLA	99.9%	99%	N/A
Minimum Object Size	N/A	128KB*	N/A
Minimum Storage Duration	N/A	30 days	90 days
Retrieval Fee	N/A	per GB retrieved	per GB retrieved**
First Byte Latency	milliseconds	milliseconds	select minutes or hours***
Storage Class	object level	object level	object level
Lifecycle Transitions	yes	yes	yes

S3 - Charges

- Charged for;
- Storage
- Requests
- Storage Management Pricing
- Data Transfer Pricing
- Transfer Acceleration

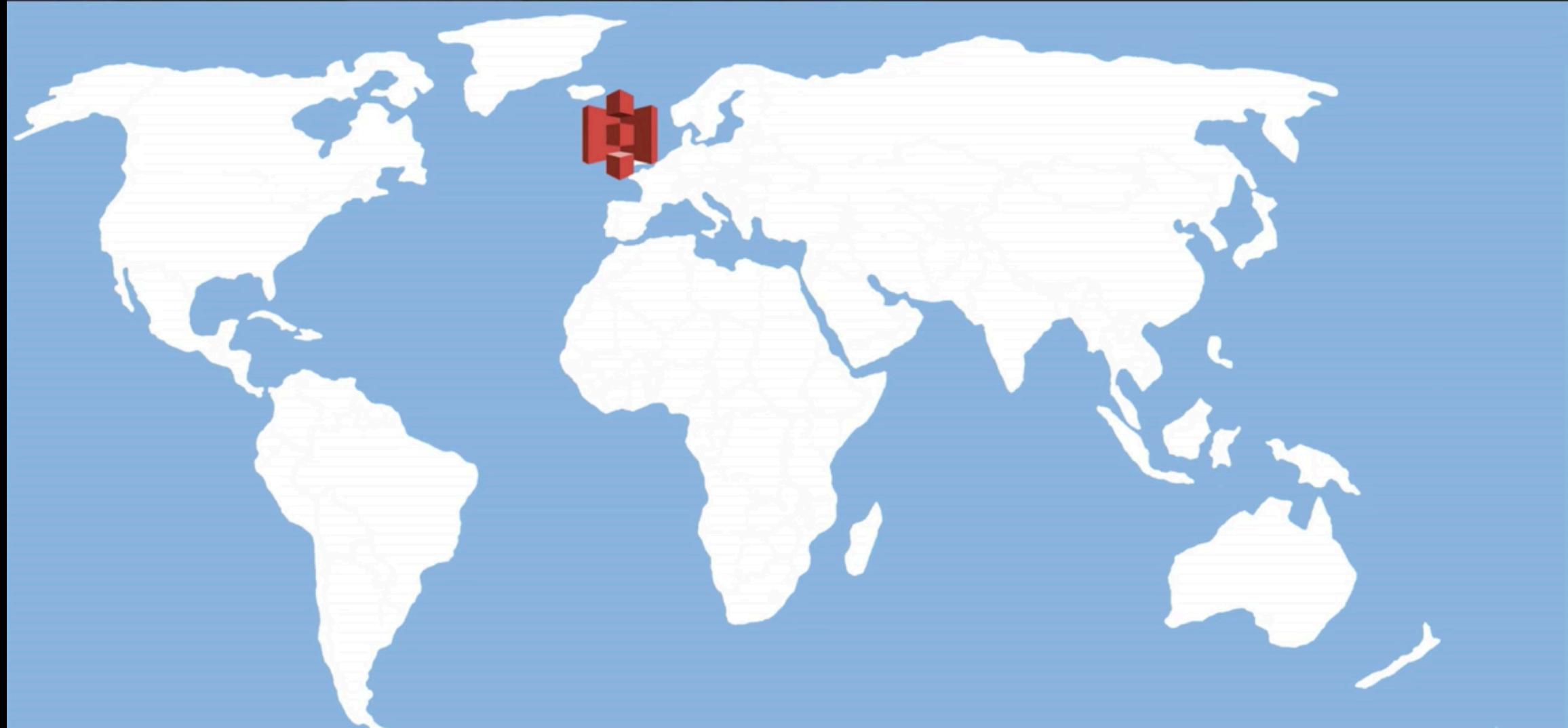
What is S3 Transfer Acceleration?



Amazon S3 Transfer Acceleration enables fast, easy, and secure transfers of files over long distances between your end users and an S3 bucket.

Transfer Acceleration takes advantage of Amazon CloudFront's globally distributed edge locations. As the data arrives at an edge location, data is routed to Amazon S3 over an optimized network path.

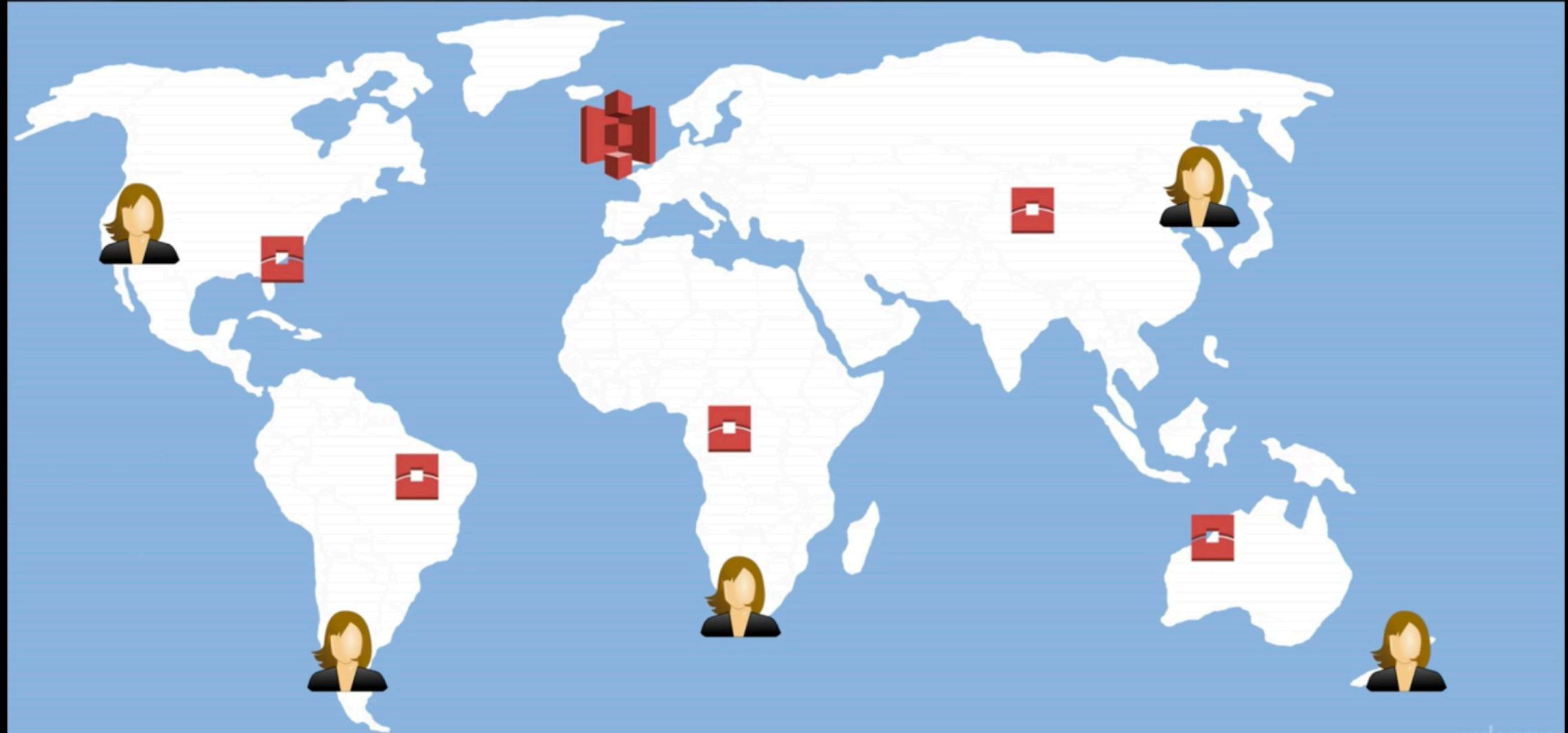
S3 Transfer Acceleration



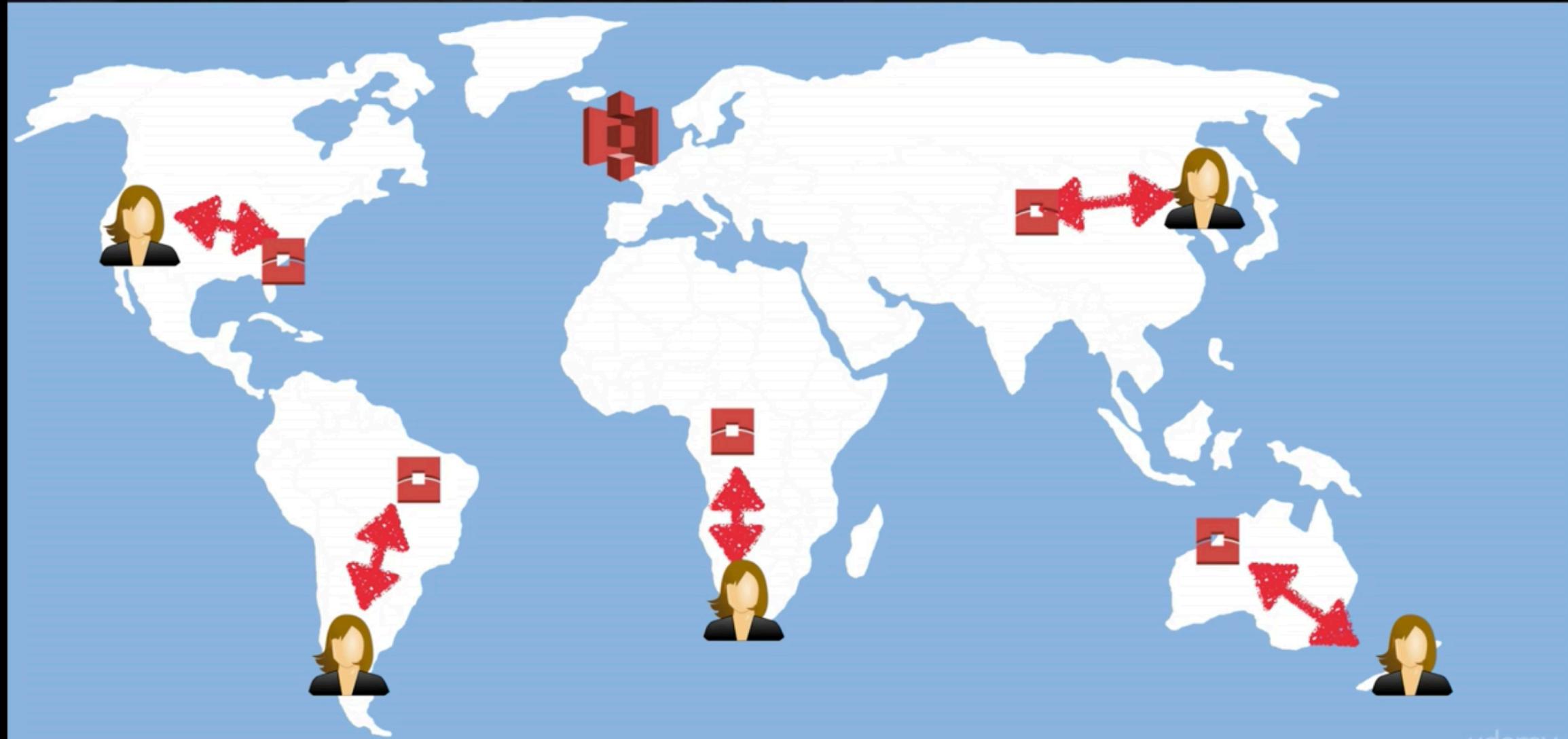
S3 Transfer Acceleration



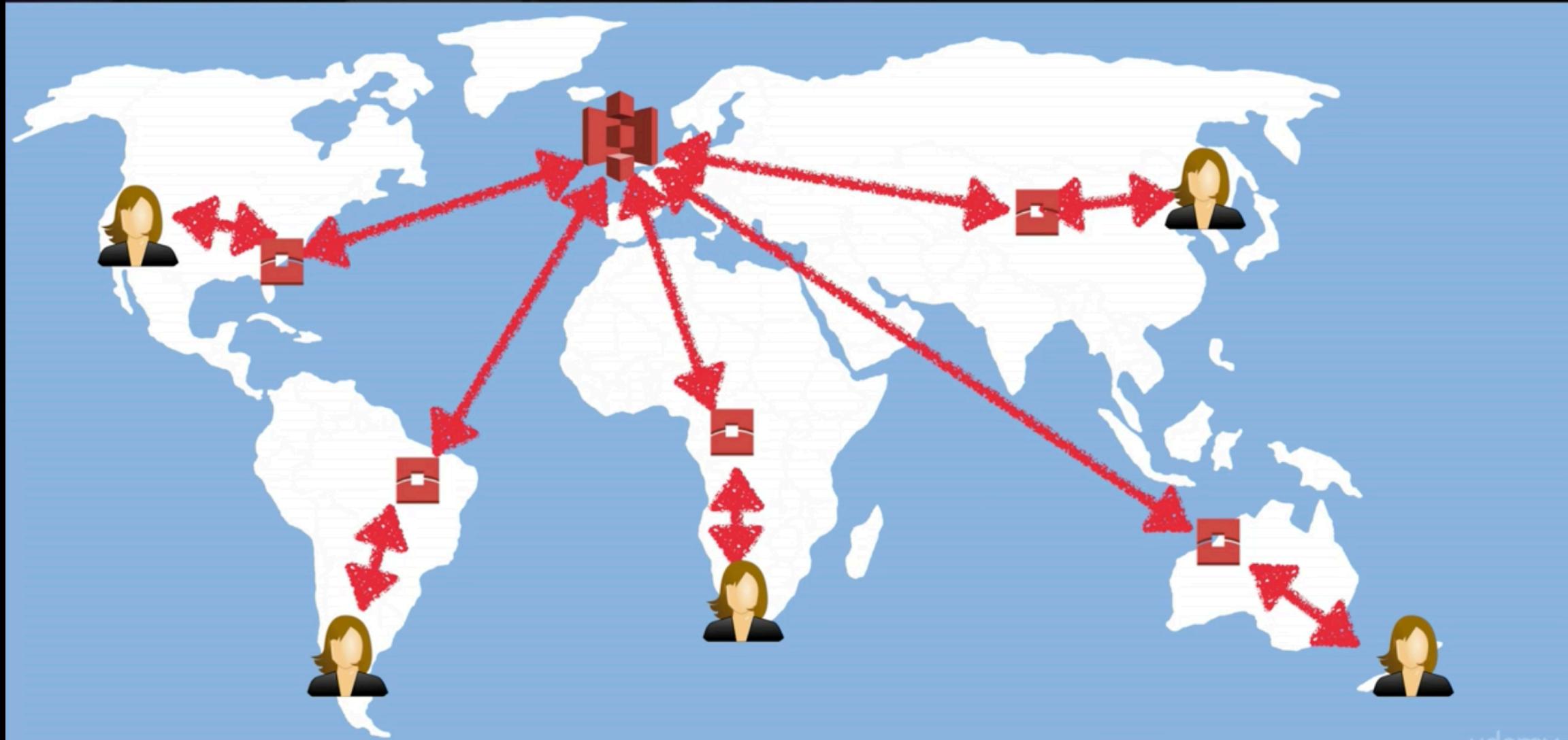
S3 Transfer Acceleration



S3 Transfer Acceleration



S3 Transfer Acceleration



S3 - Exam Tips for S3 101

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S3 - Exam Tips for S3 101

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S3 - Exam Tips for S3 101

- S3 Storage Classes/Tiers
 - S3 (durable, immediately available, frequently accessed)
 - S3 - IA (durable, immediately available, infrequently accessed)
 - S3 - Reduced Redundancy Storage (data that is easily reproducible, such as thumb nails etc).
 - Glacier - Archived data, where you can wait 3 - 5 hours before accessing.

S3 - Exam Tips for S3 101

- Remember the core fundamentals of an S3 object;
 - Key (name)
 - Value (data)
 - Version ID
 - Metadata
 - Subresources
 - ACL
 - Torrent

S3 - Exam Tips for S3 101

- Object based storage only (for files).
- **Not suitable to install an operating system on.**
- Successful uploads will generate a HTTP 200 status code.

Read the S3 FAQ before doing the exam!

- Read the S3 FAQ before taking the exam. It comes up A LOT!

S3 - Versioning Exam Tips

- Stores all versions of an object (including all writes and even if you delete an object)
- Great backup tool.
- Once enabled, Versioning cannot be disabled, only suspended.
- Integrates with Lifecycle rules
- Versioning's MFA Delete capability, which uses multi-factor authentication, can be used to provide an additional layer of security.

S3 - Cross Region Replication Exam Tips

- Versioning must be enabled on both the source and destination buckets.
- Regions must be unique.
- Files in an existing bucket are not replicated automatically. All subsequent updated files will be replicated automatically.
- You cannot replicate to multiple buckets or use daisy chaining (at this time.)
- Delete markers are replicated.
- Deleting individual versions or delete markers will not be replicated.
- Understand what Cross Region Replication is at a high level.

S3 - Lifecycle Management Lab

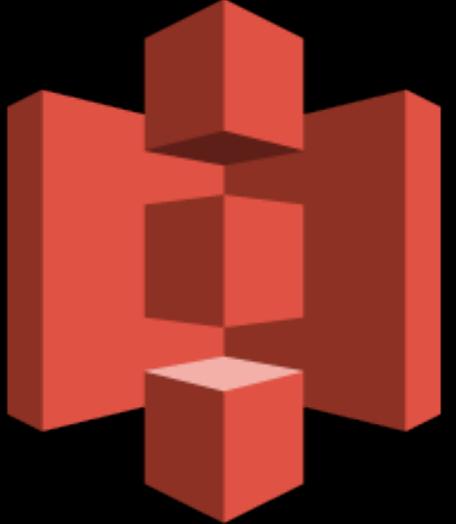
- Can be used in conjunction with versioning.
- Can be applied to current versions and previous versions
- Following actions can now be done;
 - Transition to the Standard - Infrequent Access Storage Class (128Kb and 30 days after the creation date).
 - Archive to the Glacier Storage Class (30 days after IA, if relevant)
 - Permanently Delete

Securing your buckets

- By default, all newly created buckets are PRIVATE
- You can setup access control to your buckets using;
 - Bucket Policies
 - Access Control Lists
- S3 buckets can be configured to create access logs which log all requests made to the S3 bucket. This can be done to another bucket.

Encryption

- In Transit;
 - SSL/TLS
- At Rest
 - Server Side Encryption
 - S3 Managed Keys - **SSE-S3**
 - AWS Key Management Service, Managed Keys - **SSE-KMS**
 - Server Side Encryption With Customer Provided Keys - **SSE-C**
 - Client Side Encryption



DEMO