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 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 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 9s).

- Tiered Storage Available

- Lifecycle Management

- Versioning

- Encryption

- Secure your data using Access Control Lists and Bucket Policies

S3 - Storage Tiers/Classes

- **S3 Standard** : 99.99% availability, 99.999999999% 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.

- **S3 One Zone - IA:** want a lower-cost option for infrequently accessed data, but do not require the multiple Availability Zone data resilience.

- **Glacier:** Very cheap, but used for archival only. Expedited, Standard or Bulk. A Standard retrieval time takes 3 - 5 hours.

S3 - Storage Tiers/Classes

	S3 Standard	S3 Standard-IA	S3 One Zone-IA	Amazon Glacier
Designed for Durability	99.999999999%	99.999999999%	99.999999999%†	99.999999999%
Designed for Availability	99.99%	99.9%	99.5%	N/A
Availability SLA	99.9%	99%	99%	N/A
Availability Zones	≥3	≥3	1	≥3
Minimum Capacity Charge per Object	N/A	128KB*	128KB*	N/A
Minimum Storage Duration Charge	N/A	30 days	30 days	90 days
Retrieval Fee	N/A	per GB retrieved	per GB retrieved	per GB retrieved**
First Byte Latency	milliseconds	milliseconds	milliseconds	select minutes or hours***
Storage Type	Object	Object	Object	Object
Lifecycle Transitions	Yes	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
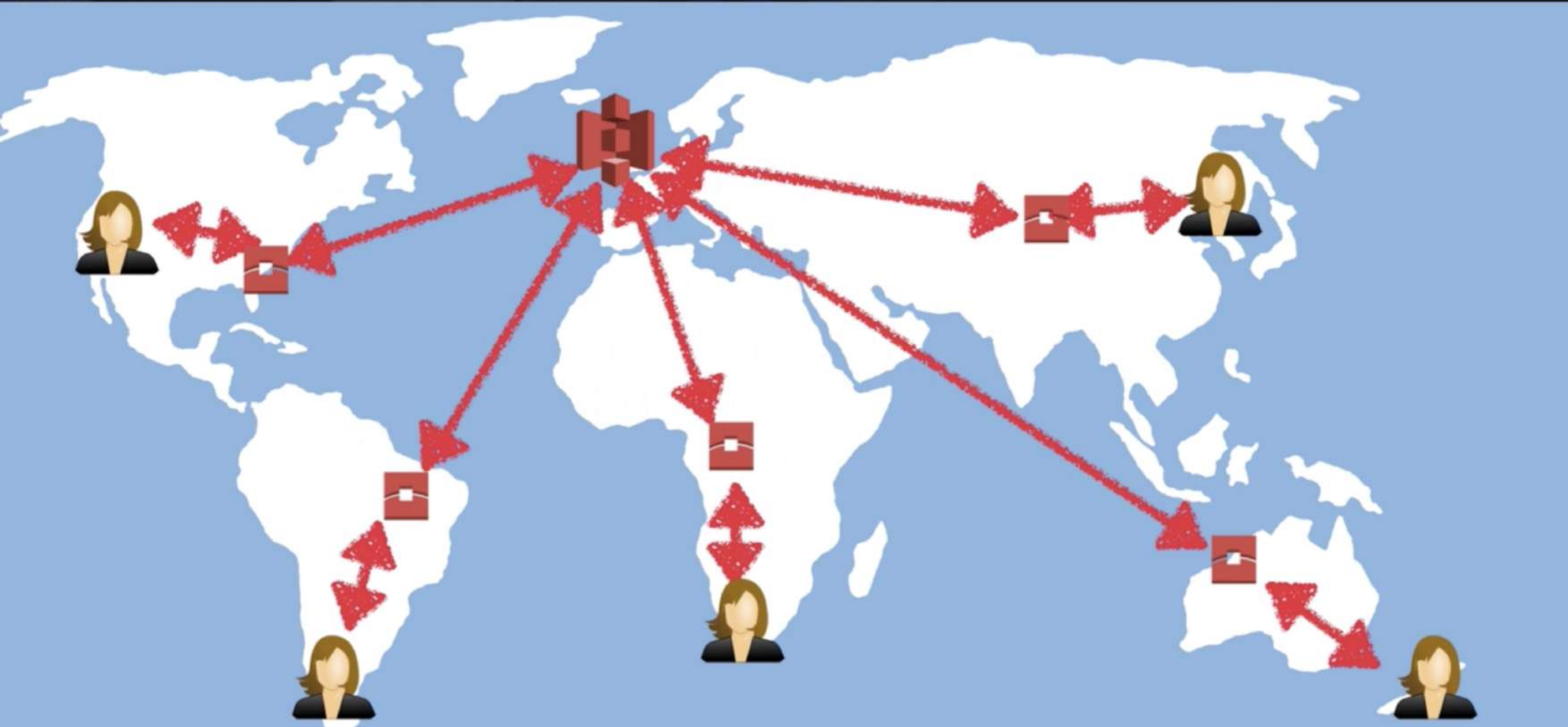
S3 - Exam Tips For S3 101

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- Read after Write consistency for PUTS of new Objects
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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 One Zone - IA (even cheaper than IA, but only in one availability zone.)
  - 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.

Create an S3 Bucket - Exam Tips

- Buckets are a universal name space
- Upload an object to S3 receive a HTTP 200 Code
- S3, S3 - IA, S3 Reduced Redundancy Storage
- Encryption
  - Client Side Encryption
  - Server Side Encryption
    - Server side encryption with Amazon S3 Managed Keys (SSE-S3)
    - Server side encryption with KMS (SSE-KMS)
    - Server side encryption with Customer Provided Keys (SSE-C)
- Control access to buckets using either a bucket ACL or using Bucket Polices
- BY DEFAULT BUCKETS ARE PRIVATE AND ALL OBJECTS STORED INSIDE THEM ARE PRIVATE