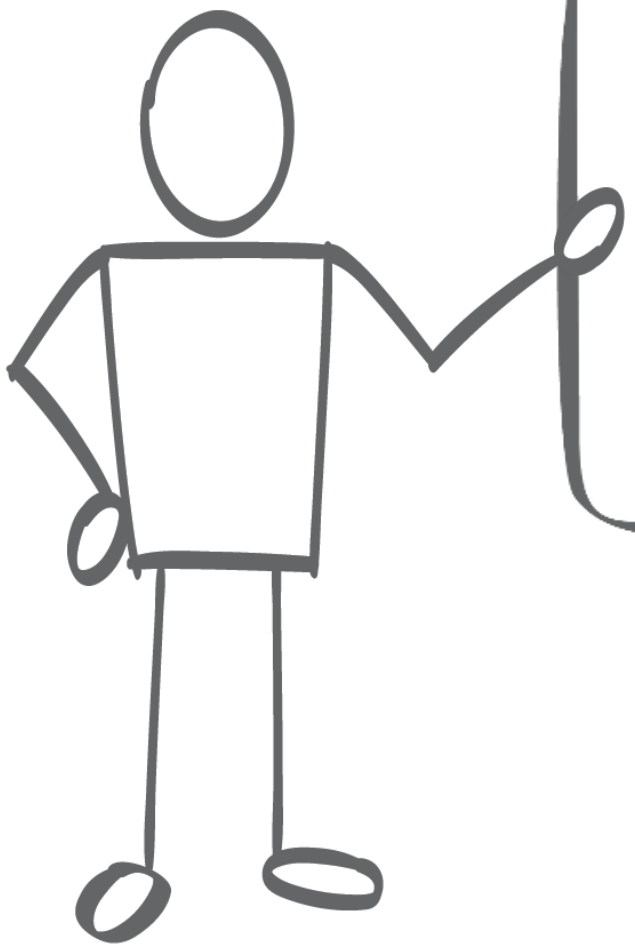
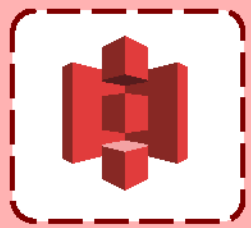


Storage Service - Amazon S3

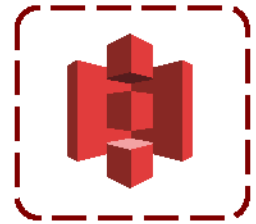
Amazon Simple Storage Service (S3)



Amazon S3

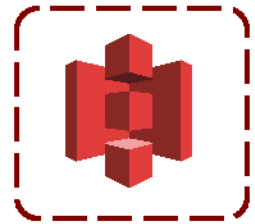
- Storage for the Internet
- Natively online, HTTP access
- Storage that allows you to store and retrieve **any amount of data**, any time, from anywhere on the web
- **Highly scalable**, reliable, fast and durable

Amazon S3 Facts



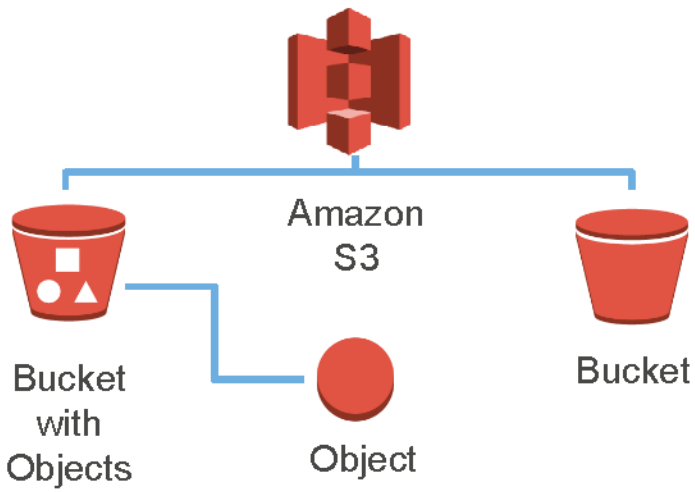
- Can store an **unlimited number of objects** in a bucket
- Objects can be **up to 5 TB**; no bucket size limit
- Designed for **99.999999999%** durability and **99.99%** availability of objects over a given year
- Can use **HTTP/S** endpoints to store and retrieve any amount of data, at any time, from anywhere on the web
- Is highly scalable, reliable, fast, and inexpensive
- Can use optional server-side **encryption** using AWS or customer-managed provided client-side encryption
- Auditing is provided by access logs
- Provides standards-based **REST** and SOAP interfaces

Common Use Scenarios



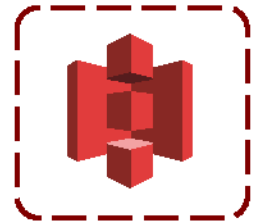
- Storage and backup
- Application file hosting
- Media hosting
- Software delivery
- Store AMIs and snapshots

Amazon S3 Concepts



- Amazon S3 stores data as objects within **buckets**
- An object is composed of a file and optionally any **metadata** that describes that file
- You can have **up to 100 buckets** in each account
- You can **control access** to the bucket and its objects

Object Keys



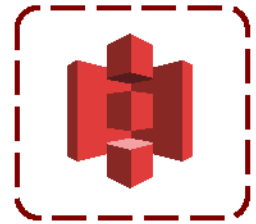
An object key is the unique identifier for an object in a bucket.

http://doc.s3.amazonaws.com/2006-03-01/AmazonS3.html

Bucket

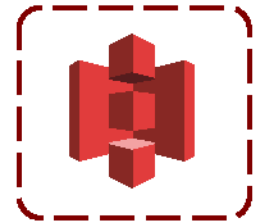
Object/Key

Amazon S3 Security



- You can **control access** to buckets and objects with:
  - Access Control Lists (ACLs)
  - Bucket policies
  - Identity and Access Management (IAM) policies
- You can upload or download data to Amazon S3 via **SSL** encrypted endpoints.
- You can **encrypt data** using AWS SDKs.

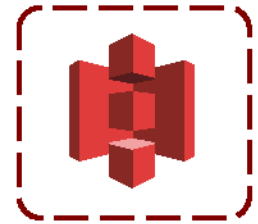
Amazon S3 Versioning



- Protects from **accidental overwrites and deletes** with no performance penalty.
- Generates a **new version with every upload**.
- Allows easily retrieval of deleted objects or **roll back** to previous versions.
- Three states of an Amazon S3 bucket
  - Un-versioned (default)
  - Versioning-enabled
  - Versioning-suspended

Versioning Enabled

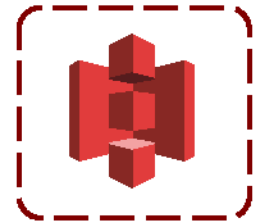
Amazon S3 Object Lifecycle



Lifecycle management defines how Amazon S3 manages objects during their lifetime. Some objects that you store in an Amazon S3 bucket might have a well-defined lifecycle:

- Log files
- Archive documents
- Digital media archives
- Financial and healthcare records
- Raw genomics sequence data
- Long-term database backups
- Data that must be retained for regulatory compliance

Amazon S3 Pricing



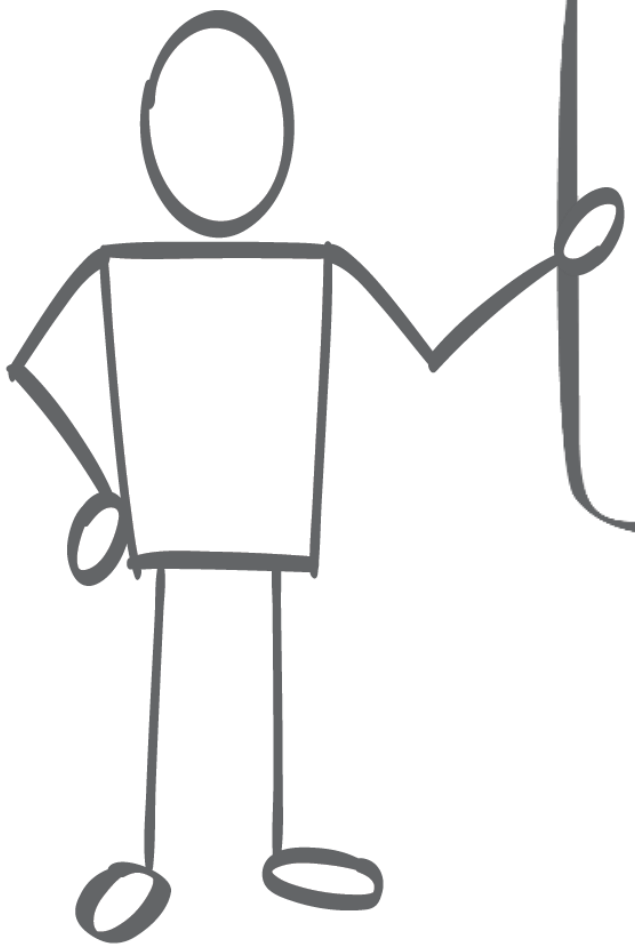
- Pay only for what you use
- No minimum fee
- Prices based on location of your Amazon S3 bucket
- Estimate monthly bill using the **AWS Simple Monthly Calculator**
- Pricing is available as:
  - Storage Pricing
  - Request Pricing
  - Data Transfer Pricing: data transferred out of Amazon S3

Amazon Glacier

- Long term low-cost archiving service
- Optimal for infrequently accessed data
- Designed for 99.999999999% durability
- Three to five hours' retrieval time
- Less than $0.01 per GB/month (depending on region)

Amazon S3 Storage Classes

Storage Class	Durability	Availability	Other Considerations
Amazon S3 Standard	99.999999999%	99.99%	
Amazon S3 Standard - Infrequent Access (IA)	99.999999999%	99.9%	• Retrieval fee associated with objects • Most suitable for infrequently accessed data
Glacier	99.999999999%	99.99% (once restored)	• Not available for real-time access • Must restore objects before you can access them • Restoring objects can take 3-5 hours



Amazon S3 – Hands on

Exercise 1: Create an Amazon Simple Storage Service (Amazon S3) Bucket

- Login to the AWS Management Console
- Choose an appropriate region, such as Asia Pacific (Mumbai).
- Navigate to the Amazon S3 console. Notice that the region indicator now says Global. Remember that Amazon S3 buckets form a global namespace , even though each bucket is created in a specific region.
- Start the create bucket process

Exercise 1 continued…

- When prompted for Bucket Name, use mybucket
- Choose a region, such as Asia Pacific (Mumbai).
- Try to create the bucket. You almost surely will get a message that the requested bucket name is not available. Remember that a bucket name must be unique globally.
- Try again using your surname followed by hyphen and then today’s date in a six-digit format as the bucket name (a bucket name that is not likely to exist already)
- You should now have a new Amazon S3 bucket.
- Click on ‘Edit public access settings’. Keep all options unselected, and click save.

Exercise 2: Upload, Make Public, Rename, and Delete Objects in Your Bucket

- Upload an Object
  - Load your new bucket in the Amazon S3 console
  - Select upload, then Add Files
  - Locate a file on your PC that you are okay with uploading to Amazon S3 and making public to the internet
  - Select a suitable file, then Start Upload. You will see the status of Your file in the Transfer section
  - After your file is uploaded, the status should change to Done.

Exercise 2 continued…

- Open the Amazon S3 URL
  - Now open the properties for the object . The properties should include bucket name and link.
  - Copy the Amazon S3 URL for the object
  - Paste the URL in the address bar of new browser window or tab

Exercise 2 continued…

- Open the Amazon S3 URL contd…
  - You should get a message with an XML error code AccessDenied. Even though the object has a URL, it is private by default, so it cannot be accessed by a web browser

Exercise 2 continued…

- Make the Object Public
  - Go back to the Amazon S3 console and select Make Public
  - Copy the Amazon S3 URL again and try to open it in a browser or tab.
  - Your public image file should now display in the browser.

Exercise 2 continued…

- Rename the Object
  - In the Amazon S3 console, select Rename
  - Rename the object, but keep the same file extension
  - Copy the new Amazon S3 URL and try to open it in a new browser or tab.
  - You should see the same image.

Exercise 2 continued…

- Delete the Object
  - In the Amazon S3 console, select Delete.
  - Select OK when prompted if you want to delete the object
  - The object has now been deleted.
  - To verify, try to reload the deleted object’s Amazon S3 URL.
  - You should again get the XML AccessDenied error message

Exercise 3: Enable Version Control

- Enable Versioning
  - In the Amazon S3 console, load the properties of your bucket. Don’t open the bucket
  - Enable versioning in the properties and select Ok to verify.
  - Your bucket now has versioning enabled.
  - Please note that versioning can be suspended but not turned-off.

Exercise 3: Enable Version Control continued…

- Create Multiple Versions of an Object
  - Create a text file named *manish.txt* on your computer and write the word **blue** in the text file.
  - Save the text file to a location of your choosing.
  - Upload the text file to your bucket. This will be version 1.
  - After you have uploaded the text file to your bucket, open the copy on your local computer and append the word **red** in the next line after **blue**. Save the text file with the original filename.
  - Upload the modified file to your bucket
  - Select Show Versions on the uploaded object.

Exercise 4: Delete an Object and Then Restore It

- Delete the Object
  - Open the bucket containing the text file for which you now have two versions
  - Select Hide Versions
  - Select Delete, and then select OK to verify
  - Your object will now be deleted, and you can no longer see the object.
  - Select Show Versions
  - Both versions of the object now show their version IDs

Exercise 4: Delete an Object and Then Restore It contd…

- Restore an Object
  - Open your bucket
  - Select Show Versions
  - Select the oldest version and download the object.
  - Note that the filename is simply *manish.txt* with no version indicator.
  - Upload manish.txt to the same bucket
  - Select Hide Versions, and the file *manish.txt* should re-appear

Exercise 5: Enable Static Hosting on Your Bucket

- Select your bucket in the Amazon S3 console
- In the properties section, select Enable Website Hosting
- For the Index document name, enter ***index.txt*** and for the error document name, enter ***error.txt***
- Use a text editor to create two text files and save them as index.txt and error.txt
- In index.txt file, write the phrase “Hello World”, and in the error.txt file, write the phrase “Error Page”. Save both files and upload them to your bucket

Exercise 5: Enable Static Hosting on Your Bucket contd…

- Make the two objects public
- Copy the Endpoint: link under static website hosting and paste it in a browser window or tab. You should see the phrase “Hello World” displayed
- In the address bar in your browser, try adding a forward slash followed by made-up filename (for example, /test.html). You should now see the phrase “Error Page” displayed
- To clean up, delete all of the objects in your bucket and then delete the bucket itself

Thank You