

# Amazon Web Services

## Simple Storage Service (S3)



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# S3 Intro

- Storage Solution
- Launched - March 14, 2006
- One of the secure, mature and reliable AWS services
- Content is grouped and stored in:



**S3 Buckets**

## S3 Intro (Cont..)

- Popular and widely used service
  - Likes of Netflix, Dropbox, Tumblr

Example REA Use Cases are:

- Property Images
- Hipster Batch
- Async Data Sharing between Systems
- Static Websites

## Quick Facts

- Maximum File Size: 5TB
- Largest Object in a Single Put: 5GB
- Multipart Upload Facility Available
- Object Store, not Filesystem
- Buckets and their limitations:
  - Name constraints, account limits

# Why its so useful

- Natively Integrates with other AWS Services

- Lambda
- CloudFormation
- CloudFront
- API Gateway
- SNS



# Console Sneak Peak



Amazon S3



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[Delete bucket](#)

[Empty bucket](#)

35 Buckets

3 Regions



Bucket name 	Region 	Date created 
 rea-aws-training	Asia Pacific (Sydney)	May 29, 2017 8:10:43 AM
 rea-training-stuff	Asia Pacific (Sydney)	May 24, 2017 11:40:00 AM
 planetlist-reaio	US East (N. Virginia)	May 23, 2017 5:13:39 PM
 devopsgirls-buildkite-managedsecretsbucket-ar3sx69apryd	Asia Pacific (Sydney)	May 17, 2017 4:12:35 PM
 devopsgirls-cd-pipeline	Asia Pacific (Sydney)	May 17, 2017 3:46:20 PM
 dev-ops-girls	Asia Pacific (Sydney)	May 17, 2017 11:53:31 AM
 tina-rea-world-bucket	Asia Pacific (Sydney)	Apr 12, 2017 2:59:08 PM
 viviantestredshift	Asia Pacific (Sydney)	Mar 22, 2017 4:38:53 PM

# S3 Storage Classes

- Storage Classes
  - Standard
  - Standard (Infrequent Access)
  - Reduced Redundancy
- Association on Object Level
- Class you choose defines cost and durability

# S3 Storage Classes

	Standard	Standard - Infrequent Access	Reduced Redundancy Storage
Durability	99.999999999%	99.999999999%	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



# S3 Glacier

- AWS service providing low cost storage solution for archival purpose (logs, backups)
- Storage costs 80% cheaper than S3 Standard in ap-southeast-2 region
- Same durability as S3 standard, but no SLAs around availability
- Minimum Storage Duration: 90 days
- Retrieval Costs:
  - Retrieval policies regulate how soon to get the data and how much it would cost

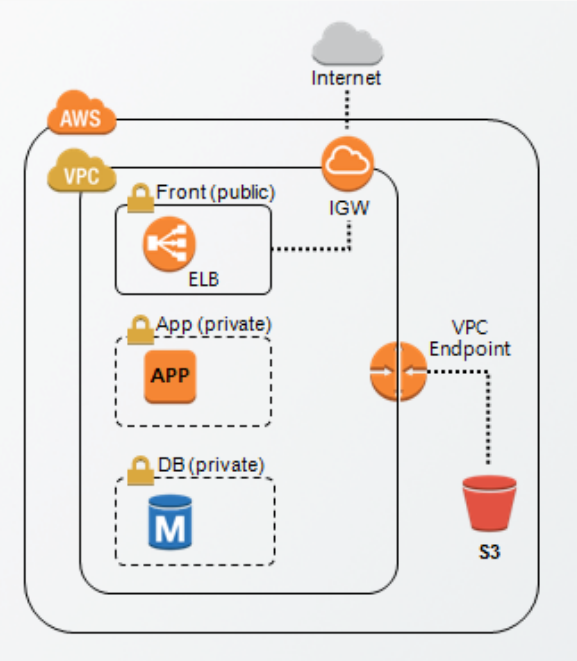
# S3 Costs

- Storage Costs
  - Depends on the storage class you choose
- Data Transfer Out Cost
- No of Requests Cost
- Archival Retrieval Requests (For Glacier Only)

✧ Prices vary by region

# VPC Endpoints

- VPC component allowing interaction with S3 without traversing the internet
  - Can be useful to reduce data transfer costs to/from S3 from within AWS ecosystem.
  - Can apply IAM Policies to control access



# Lifecycle Policies

- Policies which can be defined to:
  - Automatically change object class
  - Transition objects to glacier
  - Delete objects from S3 buckets

Helps ensure S3 sanity and reduce cost

# Security & Access Control




- Leverage IAM Roles
- Bucket Policies
- ACLs
  - Legacy access control, predates IAM
  - Still can be used, but shouldn't be
- Versioning and MFA Delete

# S3 Bucket Policy Example



```
{
  "Version": "2012-10-17",
  "Id": "S3PolicyId1",
  "Statement": [
    {
      "Sid": "IPAllow",
      "Effect": "Allow",
      "Principal": {"AWS": "arn:aws:iam::1234567890:root"},
      "Action": "s3:GetObject",
      "Resource": "arn:aws:s3:::examplebucket/*",
      "Condition": {
        "IpAddress": {"aws:SourceIp": "203.17.253.249/24"}
      }
    }
  ]
}
```

# Versioning and MFA Delete

- Versioning can be enabled on bucket-level
  - Multiple versions of the same object is stored
  - Any version is accessible and restorable to the main version
  - Can provide easy rollback
  - Additional cost
- MFA Delete 
  - Needs versioning turned on
  - Only person with root credentials and MFA device can permanently delete an object version

# Encryption



## Server Side Encryption for Data at Rest:

- SSE-S3
  - ✧ Each Object Encrypted with its Own Key managed by AWS
- SSE-C
  - ✧ Clients provide Encryption Keys
- SSE-KMS
  - ✧ Integrates with and Inherits benefits from KMS, like Key Rotation

**OR**

If the situation demands, you can use your own keys, encrypt and upload data to S3

Note: Server-side encryption encrypts only the object data. Any object metadata is not encrypted.



# Static Website Endpoint

- S3 provides built in support at bucket-level for hosting static websites
  - Reliability
  - Durability
  - Cost Effectiveness
  - Low Maintenance Overhead

## Downside

- No HTTPS Support by default, use Akamai or CloudFront to work around it 😊.

## Sample URLs

- `http://<bucket>.s3-website-<region>.amazonaws.com`
- `http://<dns-compliant-bucketname>` (If CNAME/Alias to above address exists in DNS)

**S3 Web Console Feature Overview**

**&**

**Question/Answer Time**