

# Storage in AWS

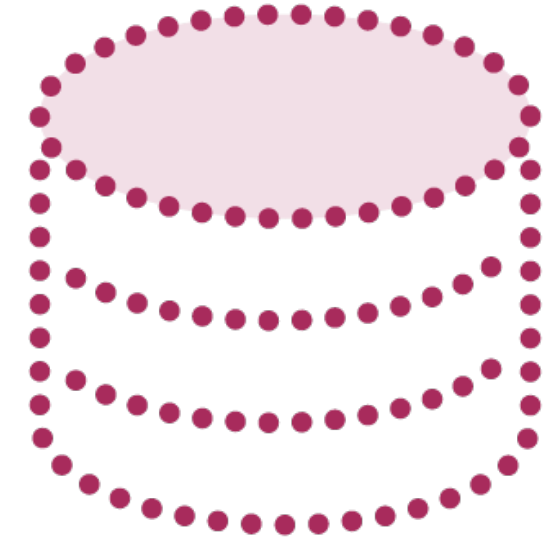
---



**Ryan Lewis**

CLOUD ENGINEER

@ryanmurakami ryanlewis.dev



Storage Evolves

# Overview

**EBS, EFS, instance, I'll take them all!**

**Sharing EBS volumes is caring**

**Buckets of hamsters**

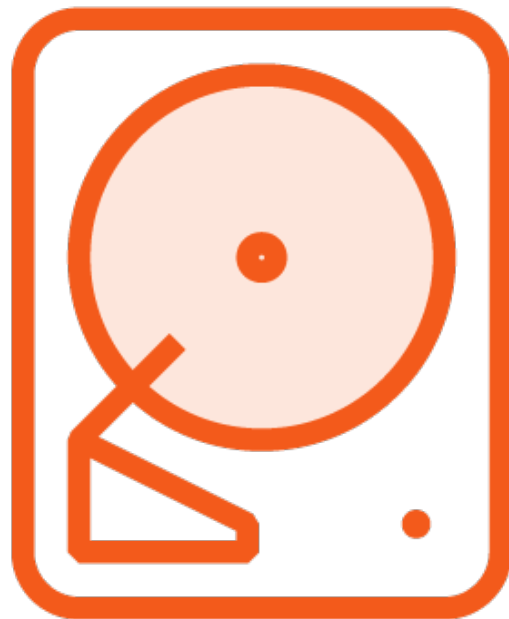
**Static assets love S3 buckets**

**EBS attachment is picky**

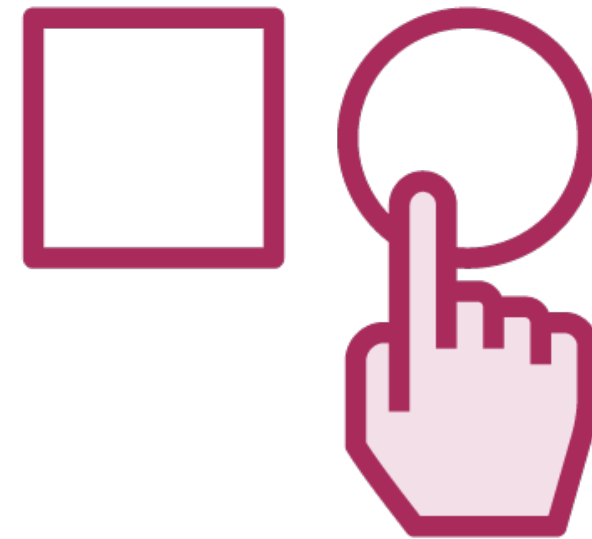
# Considerations with EBS, EFS, and Instance Volumes

---

# EC2 Instance Store Volumes



**Physically connected  
hard drives**



**Previous default  
storage option**

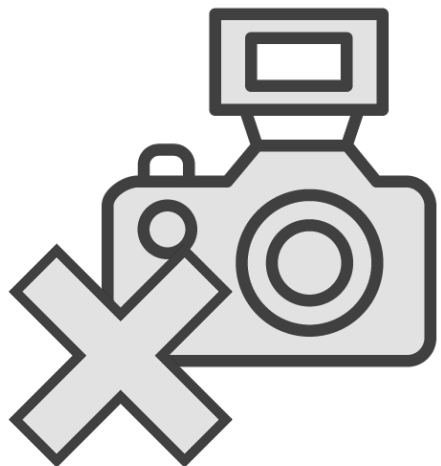
# Why Not Instance Store?



**Data is gone if EC2 instance is stopped or terminated**



**Can't move data off instance store volume easily**



**Can't create a data snapshot from instance store**

# Elastic Block Store Volumes

**Can back up  
with snapshot**

**Can detach  
and reuse**

**EC2 instance can  
be stopped**

**Independent from  
EC2 instance**


# EBS Volume Types

Amazon EBS Features - Amazon

← → ↺ 🏠

https://aws.amazon.com/ebs/features/

⋮ 📄 🌐 ☰

Contact SalesSupport ▾English ▾My Account ▾[Sign In to the Console](#)

re:InventProductsSolutionsPricingDocumentationLearnPartner NetworkAWS MarketplaceCustomer EnablementEventsExplore More 🔍

Amazon Elastic Block Store

OverviewFeaturesPricingGetting StartedResourcesFAQs

## Amazon EBS volume types

The following table shows use cases and performance characteristics of current generation EBS volumes:

	Solid State Drives (SSD)		Hard Disk Drives (HDD)	
Volume Type	EBS Provisioned IOPS SSD (io1)	EBS General Purpose SSD (gp2)*	Throughput Optimized HDD (st1)	Cold HDD (sc1)
Short Description	Highest performance SSD volume designed for latency-sensitive transactional workloads	General Purpose SSD volume that balances price performance for a wide variety of transactional workloads	Low cost HDD volume designed for frequently accessed, throughput intensive workloads	Lowest cost HDD volume designed for less frequently accessed workloads
Use Cases	I/O-intensive NoSQL and relational databases	Boot volumes, low-latency interactive apps, dev & test	Big data, data warehouses, log processing	Colder data requiring fewer scans per day

⏪ PAGE CONTENT

Amazon EBS volume types

Amazon data lifecycle manager for EBS snapshots

Amazon EBS Elastic Volumes

Amazon EBS Snapshots

Amazon EBS-Optimized instances

Amazon EBS availability and durability

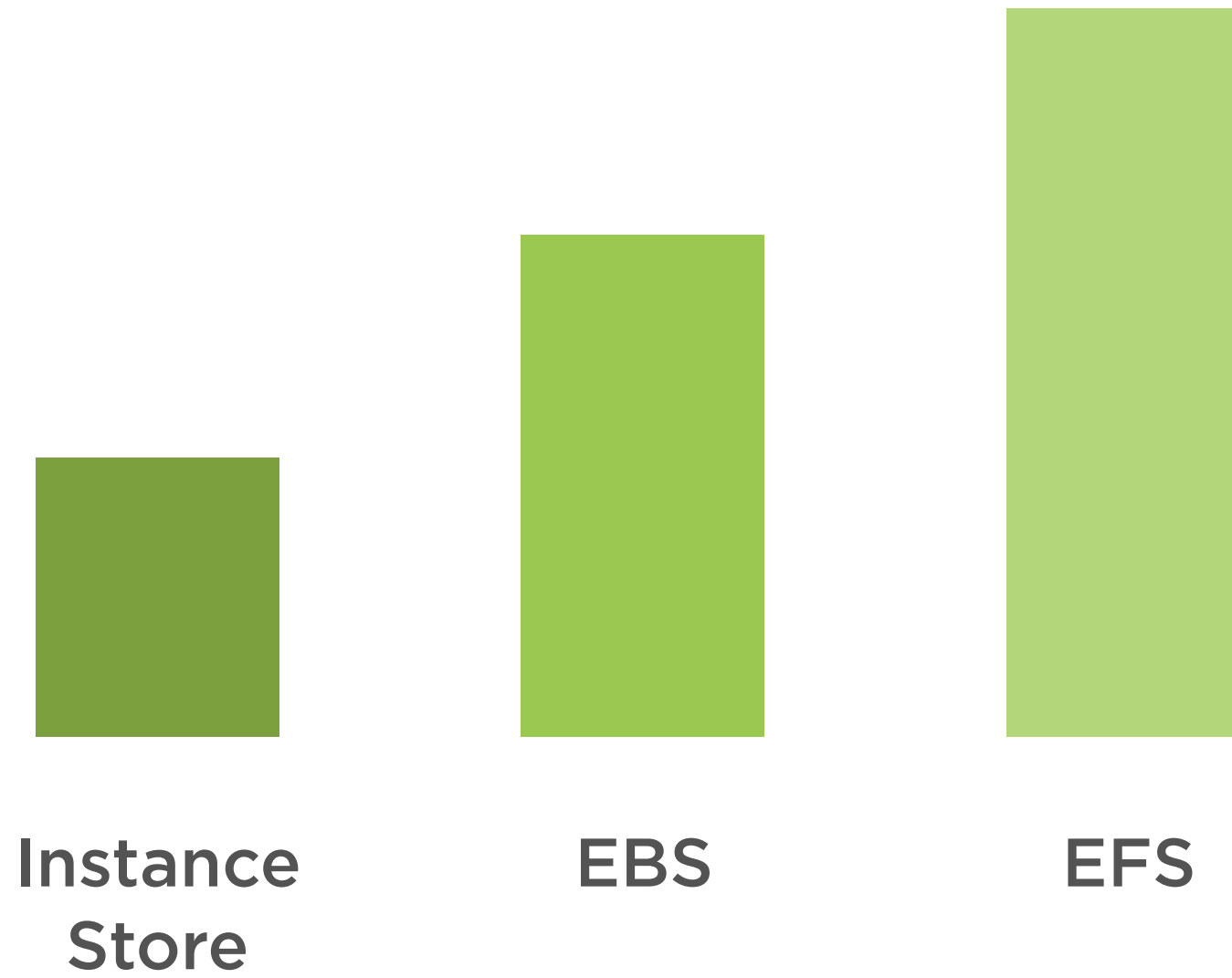
Amazon EBS encryption and AWS Identity and Access Management

<https://aws.amazon.com/ebs/details/>

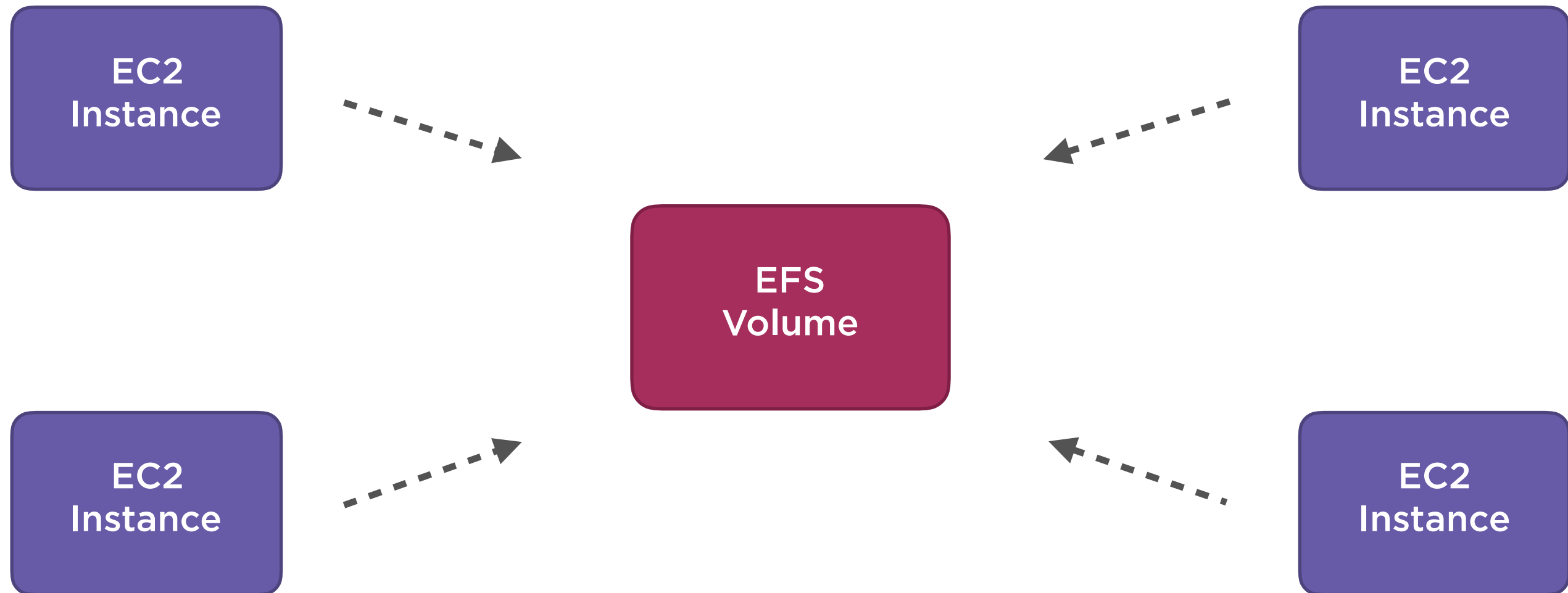


EBS volumes are replicated  
across Availability Zones for  
maximum data durability

# Evolution of EC2 Storage



# Elastic File System Volumes

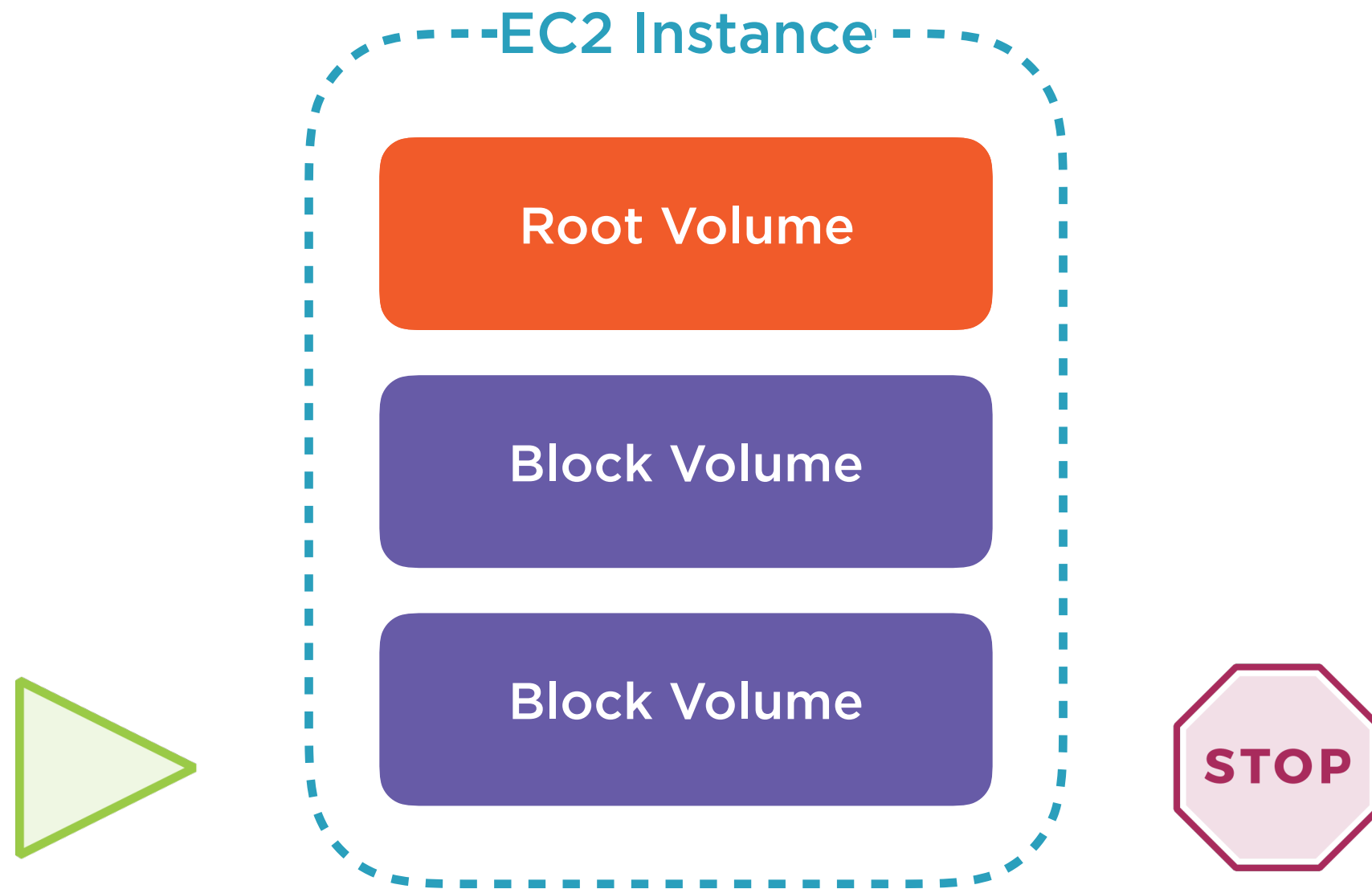


Use EFS to solve Big Data  
storage problems

# Reusing EBS Volumes with EC2

---

# When to Stop an EC2 Instance



EBS volumes with product codes can only be attached to stopped instances

# Versioning and Lifecycle Events in S3

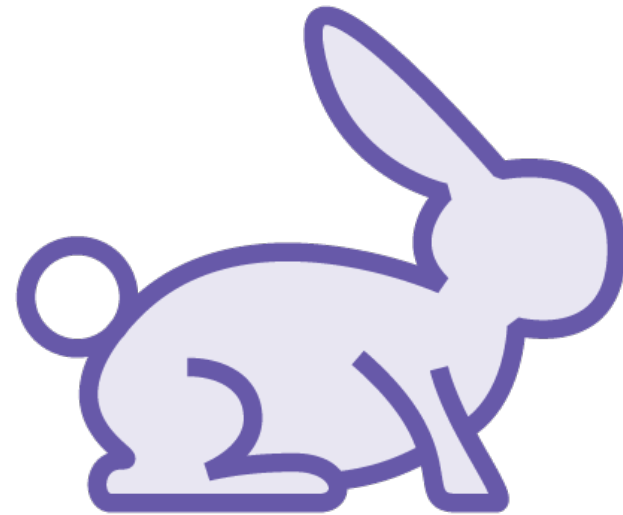
---



# The Secrets to S3's Success



**Reliable**



**Fast**



**Easy to use**

# S3 Advanced Features

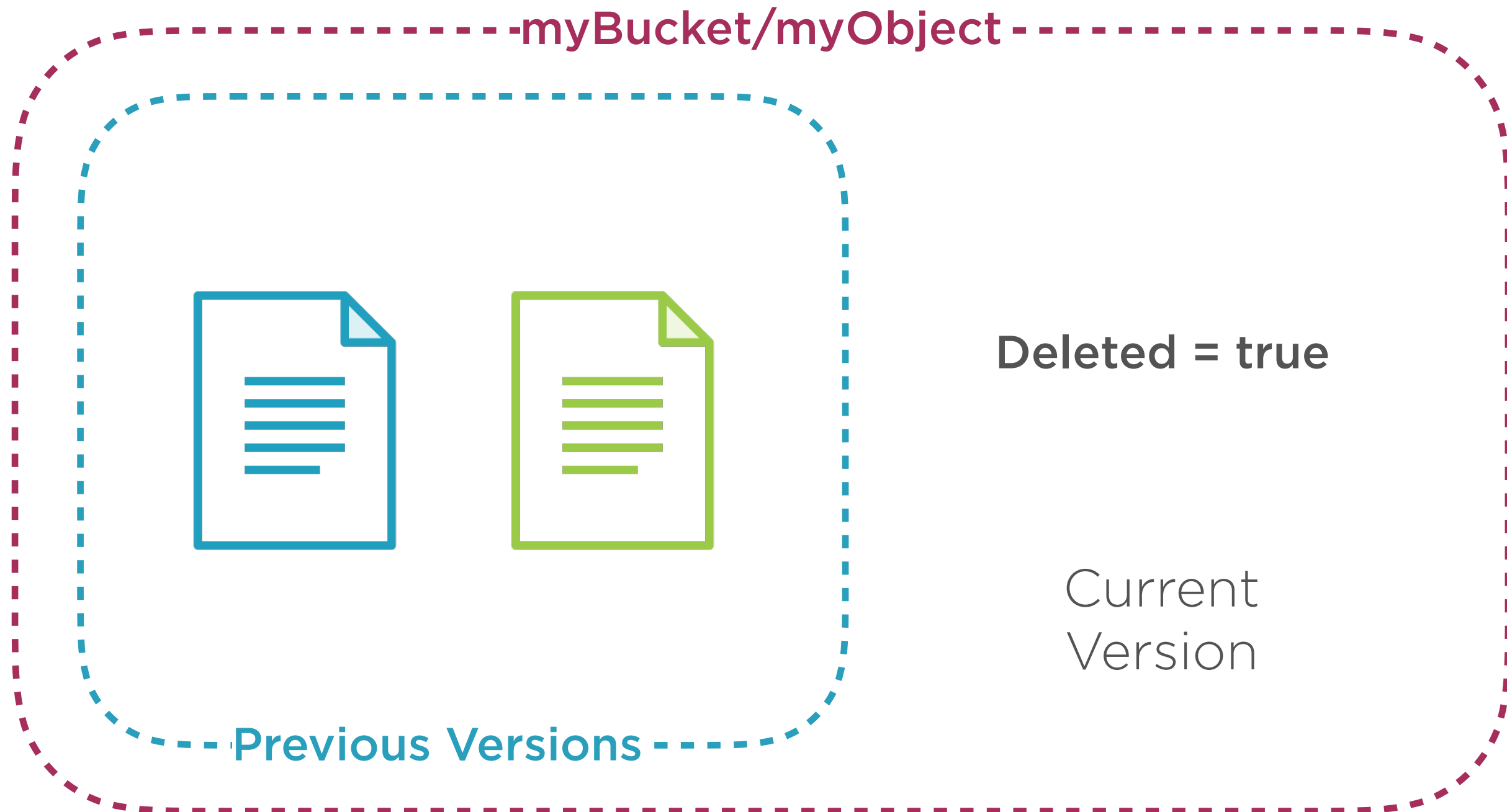
Versioning

Lifecycle Events

# S3 Versioning

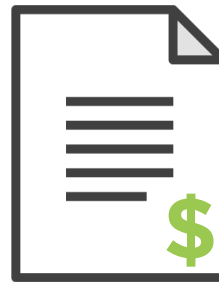
Store previous versions of an object any time it's modified in any way.

# S3 Versioning Example



# The True Cost of S3 Versioning

Current Version



Previous Versions



# S3 Lifecycle Events

Define rules for objects according to how long since an object's creation.

Lifecycle Event

Moving S3  
Objects to  
Cheaper  
Storage

**Can be triggered a certain amount of time  
after an object has been created**

**Move to S3 Infrequent Access or Glacier**

**Can be triggered only for previous versions  
of objects**

Lifecycle Event

Object  
Expiration

**Delete files a certain amount of time after they were created**

**Can be applied to previous versions only**



# Creating an S3 Bucket

---

# Uploading Objects to S3

---

# Limits with EBS and S3

---

## Elastic Block Store Limit

EC2 instance must be stopped before removing root EBS volume

## Elastic Block Store Limit

EBS volumes with product codes can only be attached to stopped instances

## Elastic Block Store Limit

EBS volumes can only attach to EC2 instances in the same region

## Simple Storage Service Limit

Soft limit of 100 buckets per account

## Simple Storage Service Limit

S3 bucket names must be globally unique



# Conclusion

---

# Summary

**Where to put all those EC2 files**

**Detach, reattach, redetach, rereattach**

**Sample sticker staples**

**Uploading a bucket full of assets**

**Limited S3 exposure**

Up Next

# Persistence in AWS