

Implementing Amazon Elastic Block Store (EBS)

PROVISIONING AND CONFIGURING EBS VOLUMES



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Overview



Different storage options in AWS

- Object (S3, Glacier)
- Block (Instance store, EBS)
- File (EFS)

Introducing Elastic Block Store (EBS)

Why use EBS for EC2 instances?

Introducing our case study, *Globomantics*

Provisioning an EBS volume

- AWS console
- AWS CLI

Demo: Provisioning EBS volumes

Summary



An Introduction to EBS



Different Storage Options in AWS

Object storage

Ideal for applications that require scale and flexibility, no OS, can be used by multiple clients or EC2 instances

File storage

Applications that need shared files or require a Network Attached Storage (NAS) file system, several EC2 instances

Block storage

Databases or OS that require dedicated, low latency storage provisioned with each virtual server, single EC2 instance



AWS Object Storage

Durable, Available, & Scalable, Data is automatically distributed across multiple facilities that are geographically separated

Accessible from anywhere, no need to mount to an EC2 instance

Not suitable for installing operating systems, database server or any application needing dedicated, low latency storage

Amazon S3 & Amazon Glacier



AWS File Storage

File systems that are accessible to Amazon EC2 instances via a file system interface (using standard OS file I/O APIs)

Amazon file systems can automatically scale (or shrink) from gigabytes to petabytes of data without needing to provision storage

Tens, hundreds, or even thousands of Amazon EC2 instances can access an Amazon file system at the same time

**Amazon Elastic File System
(EFS)**



AWS Block Storage

Provides persistent
block storage
volumes for Amazon
EC2 instances

(Explicitly) scale
usage/size up or
down within
minutes

Big Data engines,
relational and
NoSQL databases
and OS installations

Provides four
current generation
and one legacy
volume types

Point-in-time
snapshots providing
long-term durability
for your data

Amazon Elastic
Block Store
(Amazon EBS)



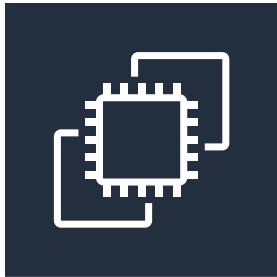
Amazon Elastic Block Store
(Amazon EBS) provides
persistent block storage volumes
for use with Amazon EC2
instances in the AWS Cloud.



Why Use EBS for EC2 Instances?



AWS Cloud



Amazon EC2



Instance
Volume



Instance
Volume



Instance Volume

Bound to
a single EC2
instance

Not persistent

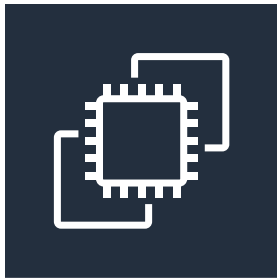
No single click
encryption and
backup solution



Why Use EBS for EC2 Instances?



AWS Cloud



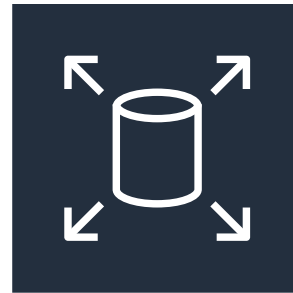
Amazon EC2



Amazon
Elastic Block
Store



Amazon
Elastic Block
Store



Amazon
Elastic Block
Store

Used by a single EC2
Instance as
an independent entity



Snapshot



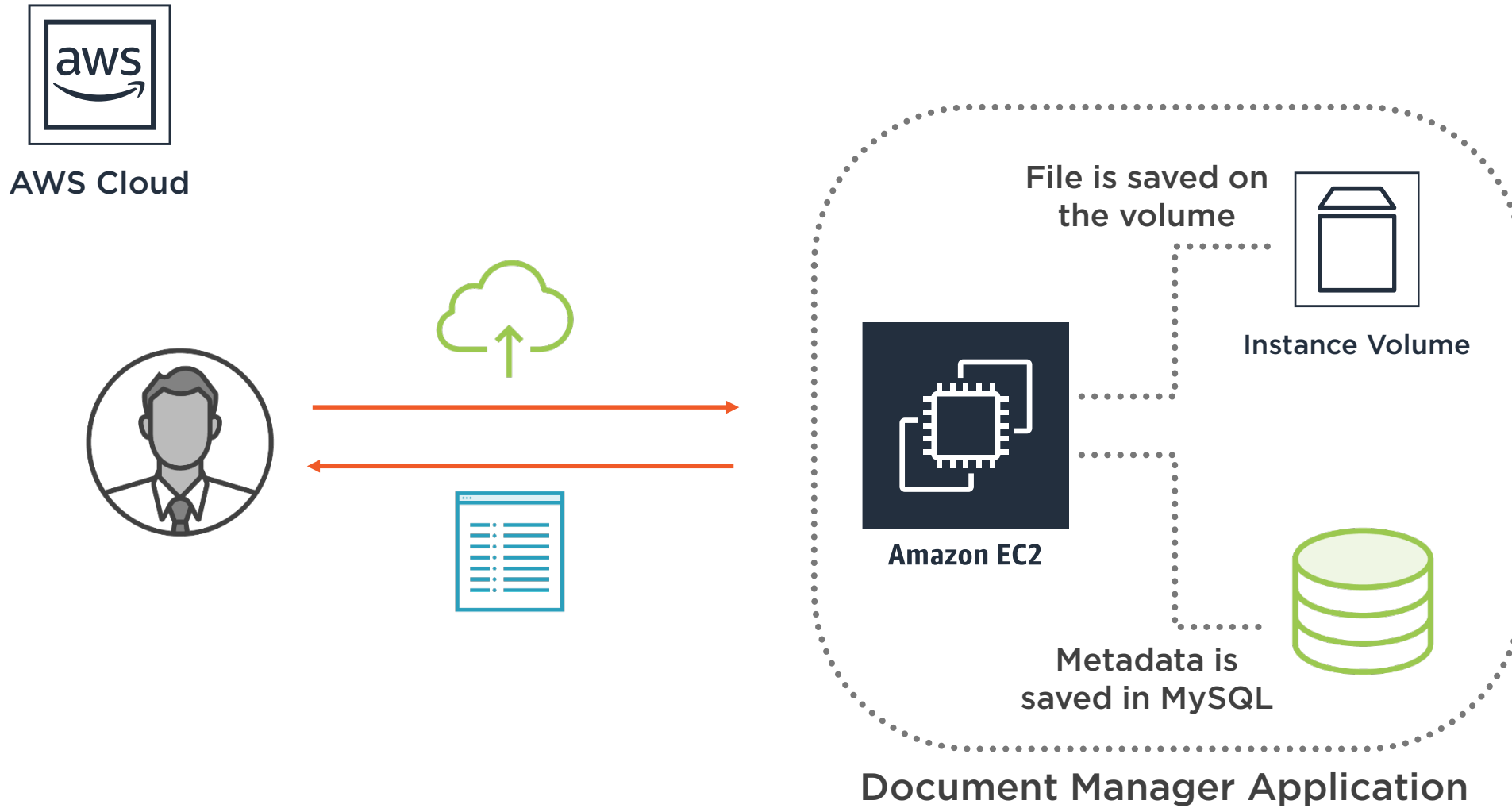
Amazon S3



One-click
encryption



Globomantics



Globomantics' Concerns

Documents are not persisted after the TEST machine stops, testers need to redo testing

The team needs to choose the best volume performance and spin up a new TEST machine

Volumes need to get backed up regularly and stored in AWS S3 for disaster recovery

Load testing results in poor I/O despite using SSD volumes, need better I/O performance

Sensitive documents are uploaded to the TEST environment which need to be protected

System administrator needs to get notified after a new volume backup is created



EBS volumes are persistent.
Stopping or terminating the
EC2 instance does not
necessarily reset the
associated EBS volume.



Provisioning an EBS Volume



Provisioning an EBS Volume (AWS Console)

aws

Services

Resource Groups

Volumes > Create Volume

Create Volume

Volume Type

General Purpose SSD (gp2)

Size (GiB)

500

(Min: 1 GiB, Max: 16384 GiB)

IOPS

1500 / 3000

(Baseline of 3 IOPS per GiB with a minimum of 100 IOPS, burstable to 3000 IOPS)

Availability Zone*

us-east-1a

Throughput (MB/s)

Not applicable

Snapshot ID

Select a snapshot

Encryption

☐ Encrypt this volume

Key

(127 characters maximum)

Value

(255 characters maximum)

This resource currently has no tags

Choose the [Add tag](#) button or [click to add a Name tag](#)

Add Tag

50 remaining

(Up to 50 tags maximum)

Cancel

Create Volume

```
aws ec2 create-volume --size 80 --region us-east-1  
--availability-zone us-east-1a --volume-type gp2
```

Provisioning an EBS Volume (AWS CLI)



Demo



Creating an AWS account

- Free tier

Showcasing a *Globomantics* TEST machine

- Deploying and testing the Document Manager application
- Instance volumes

Provisioning multiple EBS volumes for the TEST machine

- Confirming data persistence

Cleanup



Summary



Different storage options in AWS

Elastic Block Store (EBS)

EBS over EC2

Our case study, *Globomantics*

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Demo: Provisioning EBS volumes

