

Optimizing EBS Instances



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Overview



Does *Globomantics* need to back up its EBS volumes?

- Understanding high availability for EBS volumes

Load testing the *Document Manager* application

- Understanding EBS-optimized instances
- Using metrics to determine if you are using the right instance
- EBS-optimized instance types

Demo: Provisioning an EBS-optimized instance

Summary



EBS Volumes' High Availability



“Each Amazon EBS volume is automatically replicated within its Availability Zone to protect you from component failure, offering high availability and durability..”

- *Amazon*



Do I Need to Backup My EBS Volumes?

Point-in-time
restore for data
loss not caused by
Amazon

To comply with
company standards
or government
regulations

To move EBS
volumes across
regions to
configure load
balancers



Take regular, automated snapshots from your EBS volumes to prevent data loss caused by you or your clients.



Working with EBS-optimized Instances



Amazon EBS-optimized Instances

EBS-optimized instance provides additional, dedicated capacity for Amazon EBS I/O

Its capacity is between 425 Mbps and 14,000 Mbps, depending on the instance type

General Purpose & Provisioned IOPS SSD (gp2 & io1)
Throughput Optimized & Cold HDD (st1 & sc1)



EBS SSD Performance Comparison

General Purpose SSD

Recommended for most general workloads such as boot drives

1 GB - 16 TB

Max. 16,000 IOPS

Earns I/O credits over time. More I/O credits equals more time to burst beyond the baseline (burst-bucket model)

Baseline performance is 3 IOPS per GB of volume size (e.g. 300 IOPS for a 100GB volume)

Provisioned IOPS SSD

Critical business applications that require sustained IOPS performance

4 GB - 16 TB

Max. 64,000 IOPS

No I/O credits needed. Fixed IOPS is requested at the time of provisioning

Maximum ratio of IOPS to volume size (GB) is 50:1 (e.g. a 100 GB volume can be provisioned with up to 5,000 IOPS)



When Attached to an EBS-optimized Instance:



General Purpose SSD (gp2) volumes are designed to deliver over 90% of their baseline and burst performance 99% of the time in a given year



Provisioned IOPS SSD (io1) volumes are designed to deliver over 90% of their provisioned performance 99.9% of the time in a given year



Both Throughput Optimized HDD (st1) and Cold HDD (sc1) guarantee performance consistency of 90% of burst throughput 99% of the time in a given year



EBS-optimized Instance Provisioning



Choose an EBS-optimized instance that provides more dedicated Amazon EBS throughput than your application needs



For instance types that are EBS-optimized by default, there is no need to enable EBS optimization and no effect if you disable EBS optimization



For instances that are not EBS-optimized by default, you can enable EBS optimization when you launch the instances, or after the instances are running



Instances must have EBS optimization enabled to achieve the level of performance described



When you enable EBS optimization for an instance that is not EBS-optimized by default, you pay an additional low, hourly fee for the dedicated capacity.



Determine if Your Instances Are Sized Correctly

**EBSIOBalance% and
EBSByteBalance% metrics**

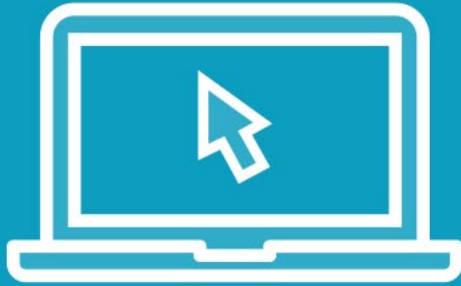
**View these metrics in the
CloudWatch console and set
an alarm**

**Instances with a consistently
low balance percentage are
candidates for upsizing**

**Instances where the balance
never drops below 100% are
candidates for downsizing**



Demo



Provisioning a new EBS-optimized instance for *Globomantics*

Enabling EBS-optimization on a running EC2 instance

Using CloudWatch metrics to monitor I/O performance on EBS volumes

- EBSIOBalance%
- EBSByteBalance%

Review instance types which support EBS optimization



Summary



High availability for EBS volumes

EBS-optimized instances

- List of EBS-optimized instance sizes
- Using metrics to determine if you are using the right instance

Demo: Provisioning an EBS-optimized instance

