
AWS
re:Invent
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STG220

Best practices for moving on-premises applications to Amazon EBS

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Agenda

On-premises vs. cloud operating model

Amazon EBS Overview

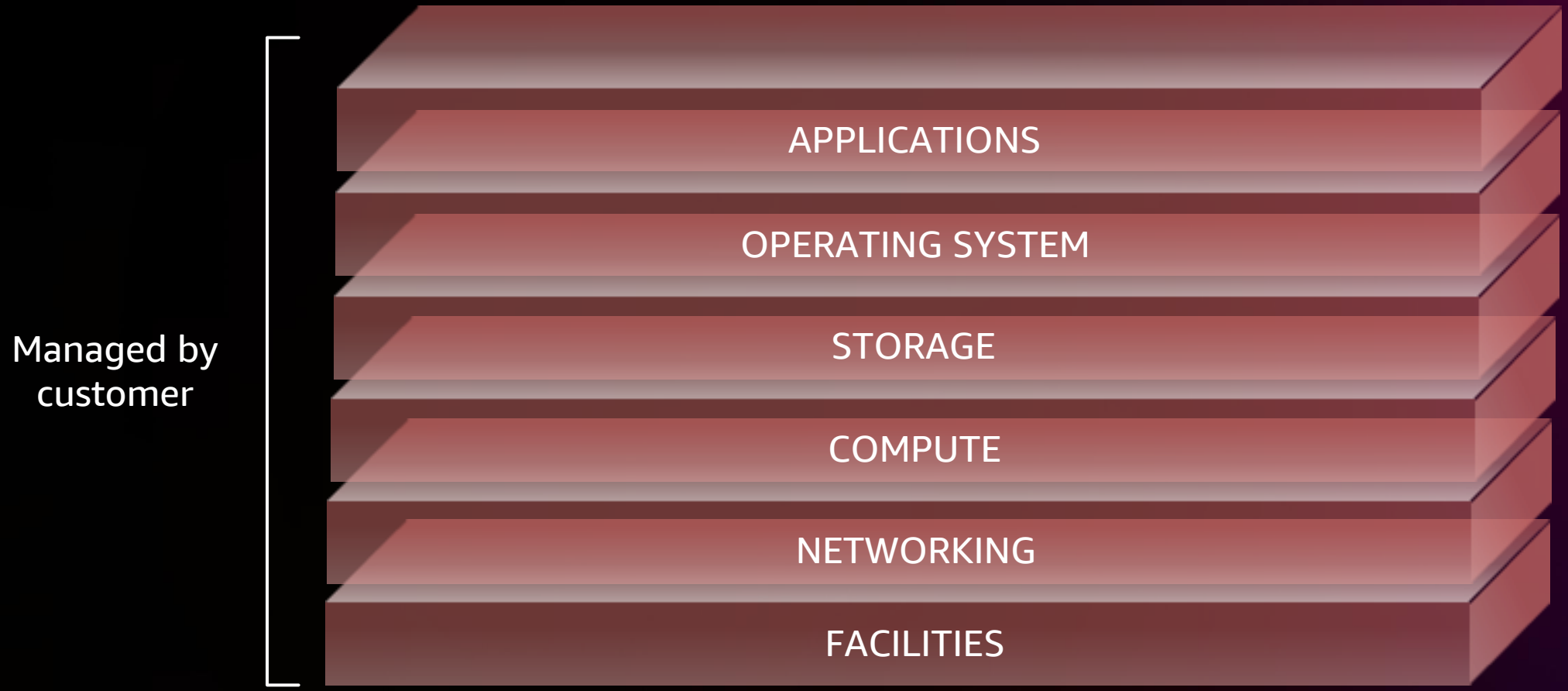
Choosing the right Amazon EBS volume type

Best practices for high availability

Monitoring and Testing

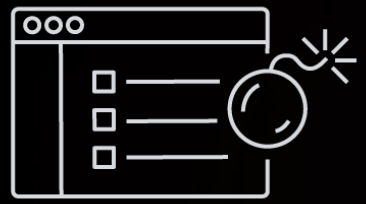
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On-premises environment



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On-premises challenges

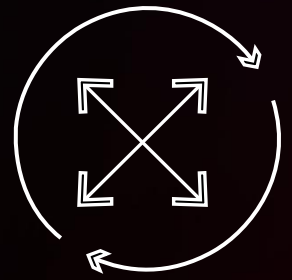


Risks

Network equipment

Hardware

Resource saturation



Scope of impact

Redundancy is expensive

Geographical expansion

Unintended shared fate



Recovery

Hardware replacement

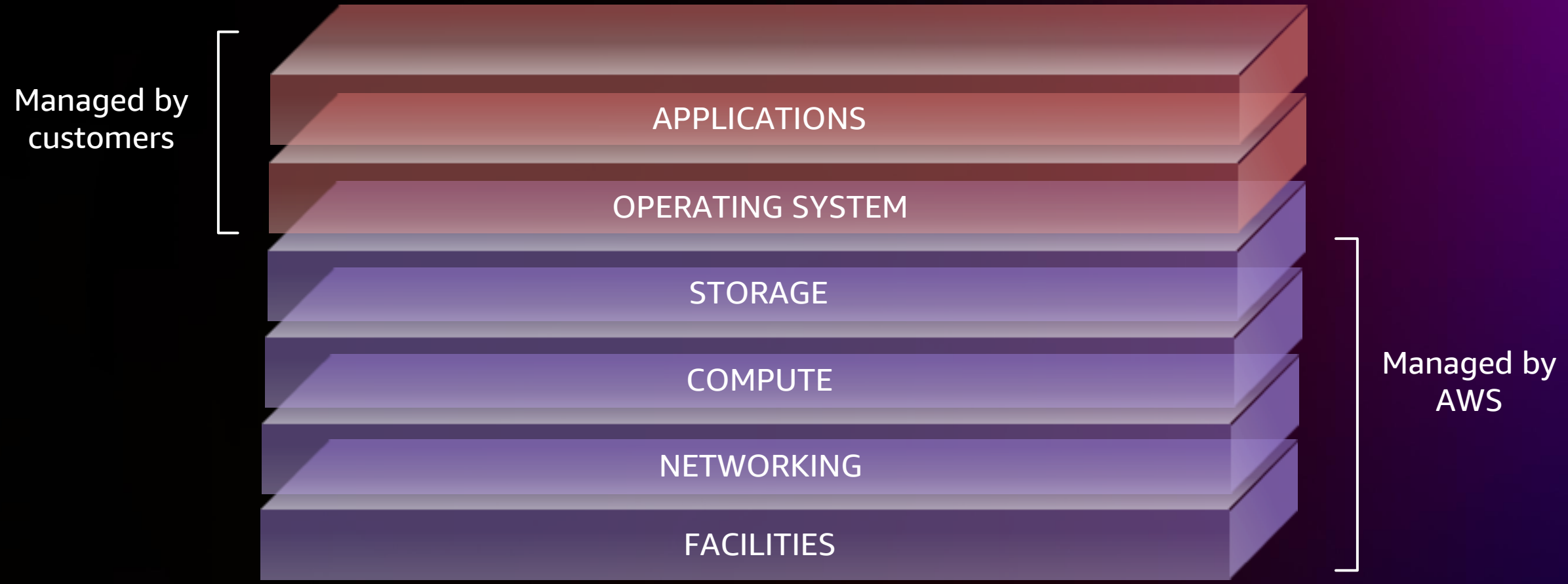
Procurement

Manual procedures

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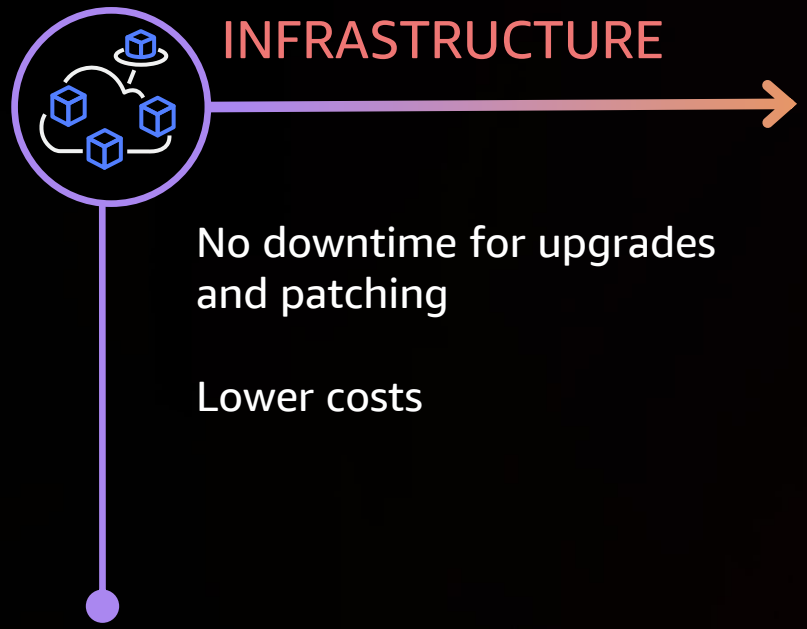
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Shared responsibility



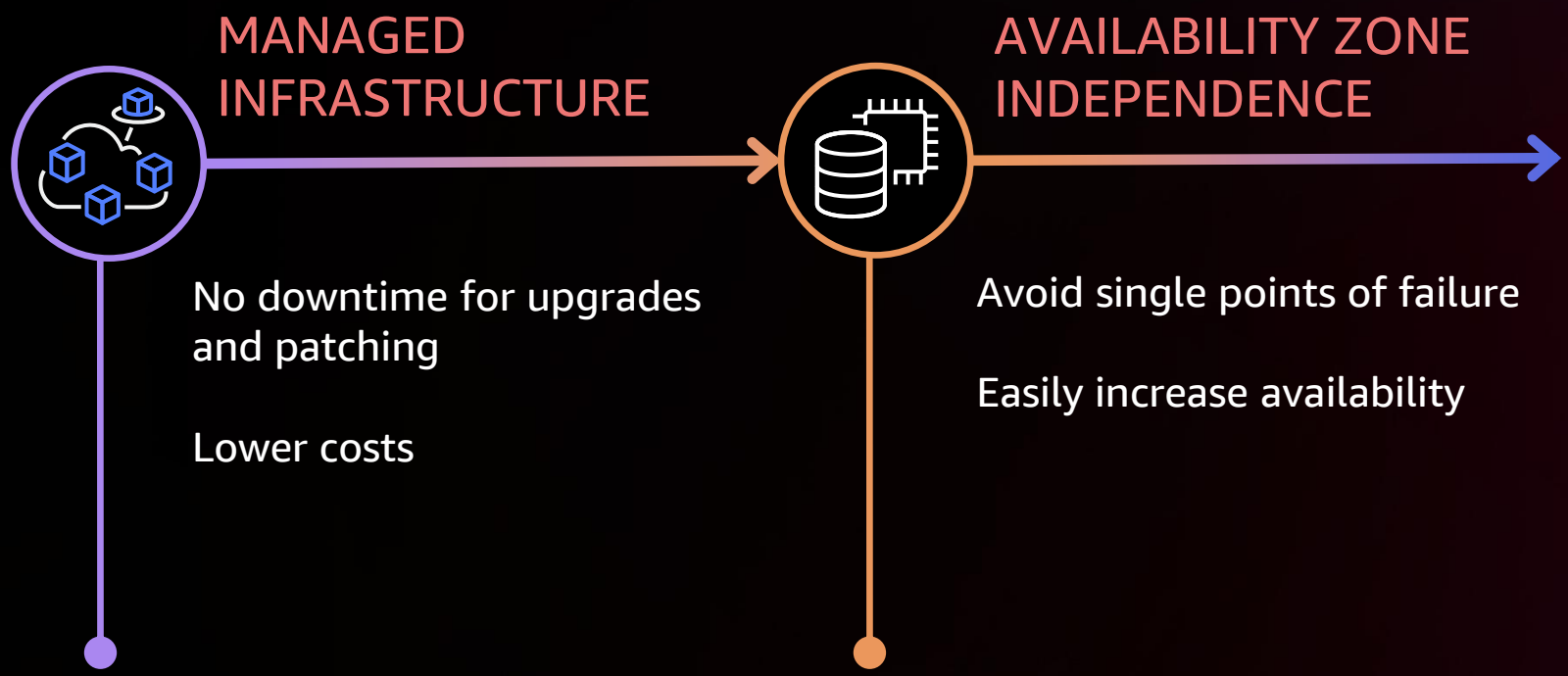
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Overcome on-premises challenges



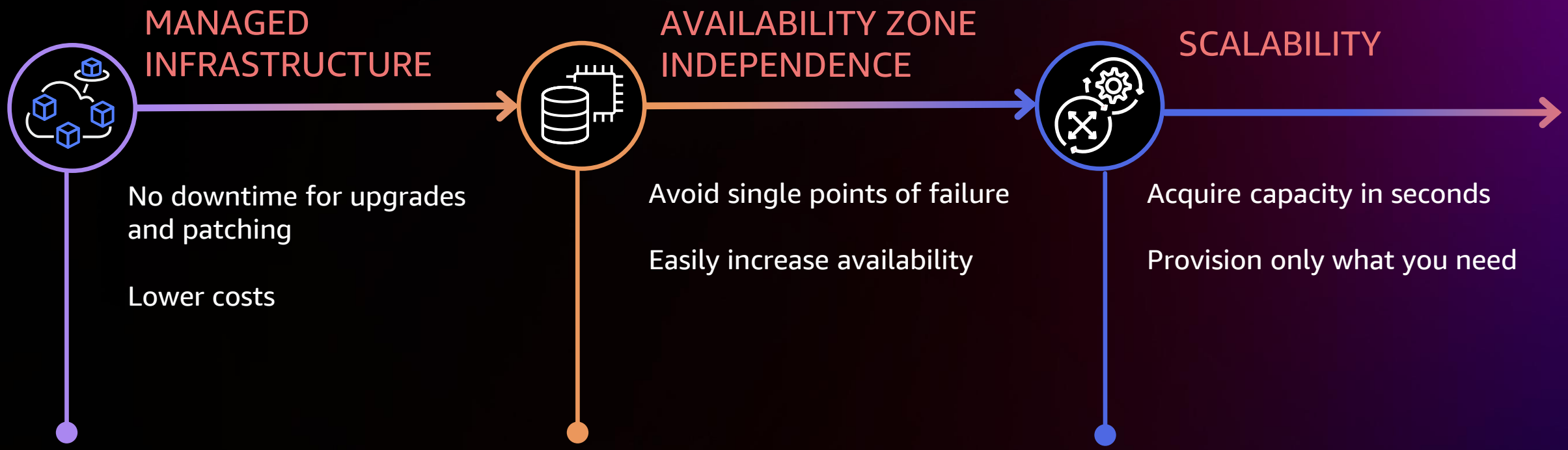
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Overcome on-premises challenges



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Overcome on-premises challenges



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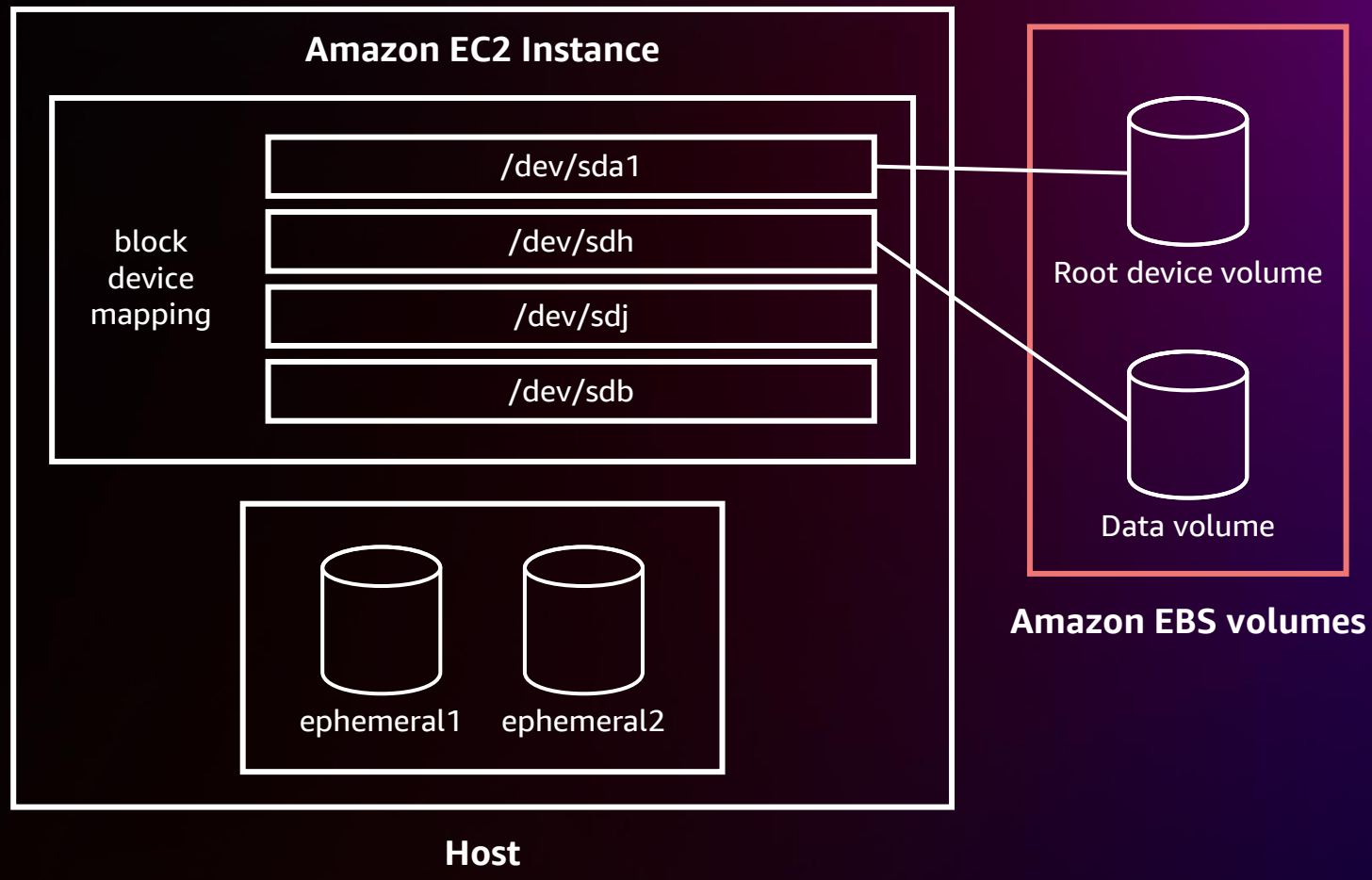
Amazon EBS Overview

Network-attached block storage volumes as a service

Attach to any Amazon EC2 instance in the same Availability Zone

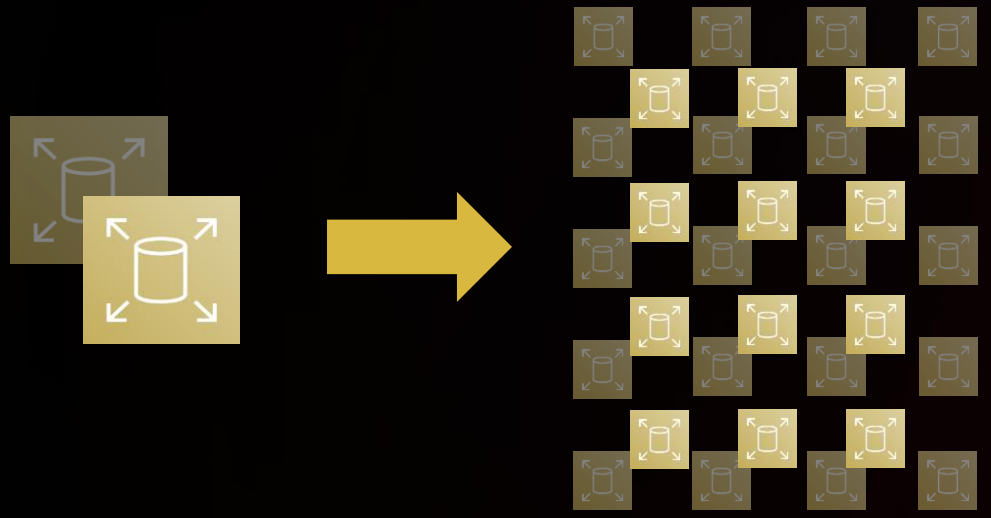
Data volumes and boot volumes (Amazon EBS-backed AMIs)

Persistent storage (vs. ephemeral local Instance storage)



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Amazon EBS volumes



Volumes are split into shards

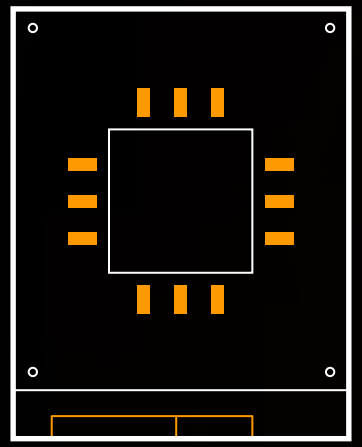
Not constrained by individual storage nodes

Faster to replicate in failure

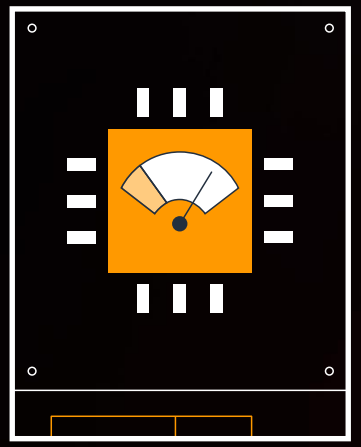
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Amazon EBS volume types

SSD



gp3
General Purpose



io2
Block Express

HDD



st1
Throughput Optimized



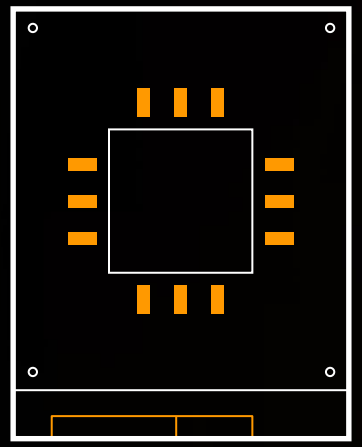
sc1
Cold HDD

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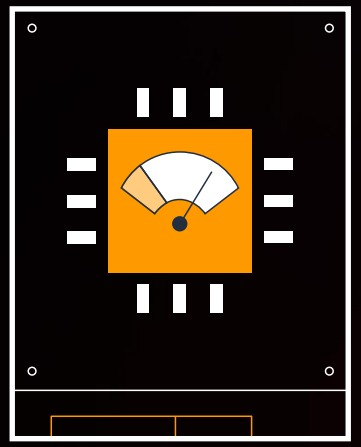
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Amazon EBS volume types

SSD



gp3
General Purpose



io2
Block Express

HDD



st1
Throughput Optimized



sc1
Cold HDD

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Understand your mission



Would my customers or my business be impacted by degradation or an outage?

Mission critical workloads should run on io2/Block Express

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Amazon EBS is designed for

99.999%

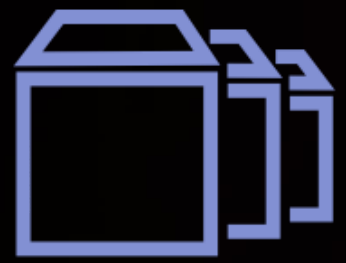
service availability

up to

99.999%

durability

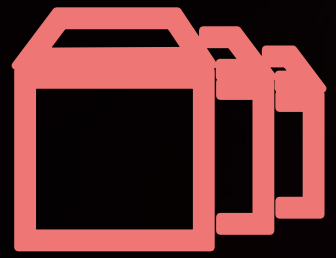
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Avoid RAID1

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Build for high availability



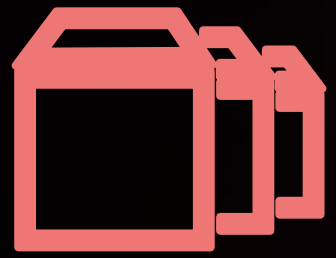
Replicate across Availability Zones



Make periodic backups using Amazon EBS snapshots

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Build for high availability



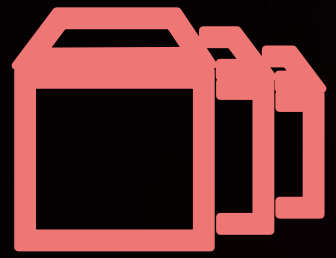
Replicate across Availability Zones



Make periodic backups using Amazon EBS snapshots

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Build for high availability



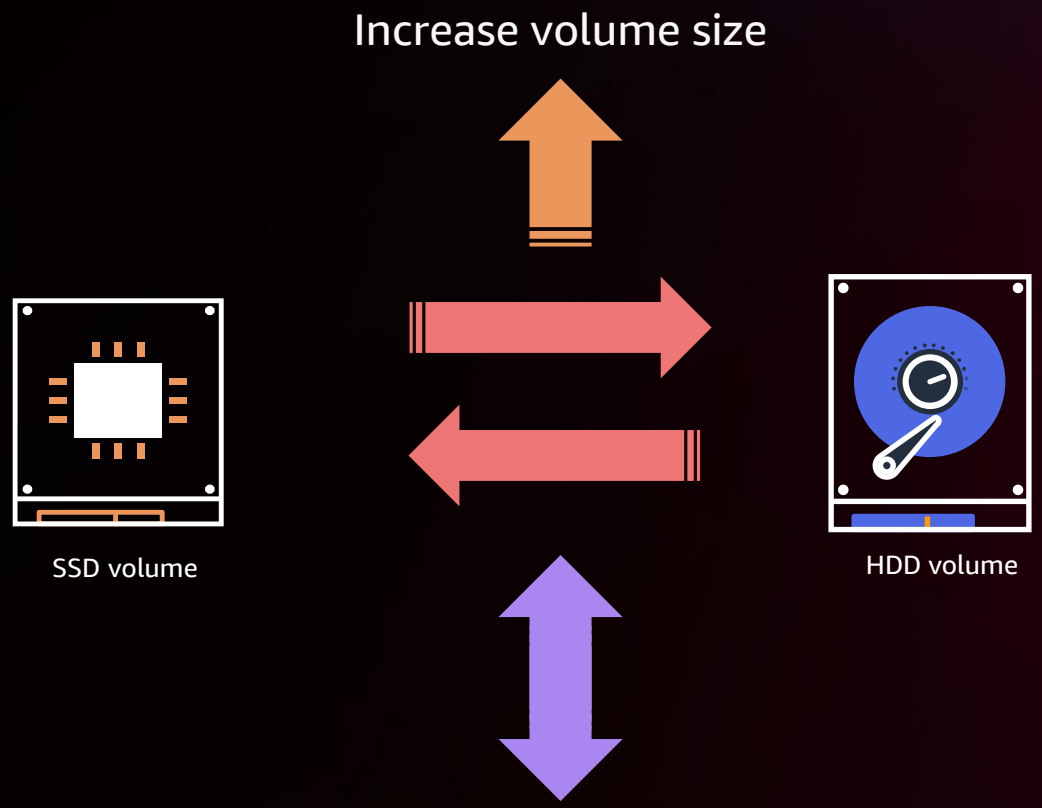
Replicate across Availability Zones



Make periodic backups using Amazon EBS snapshots

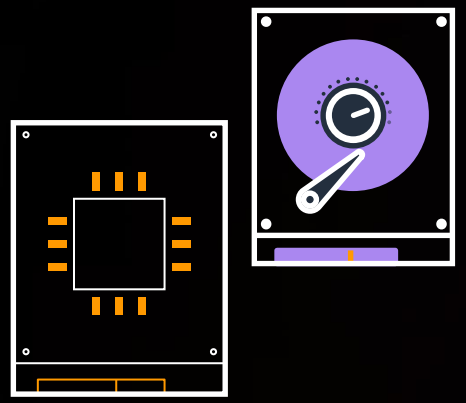
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Elastic Volumes

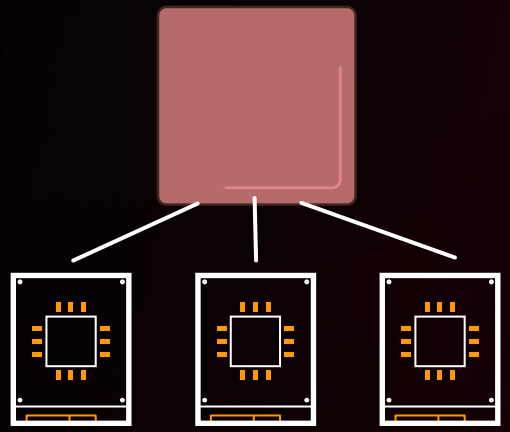


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Monitoring



Individual volumes



Volume performance at Amazon EC2 instance level

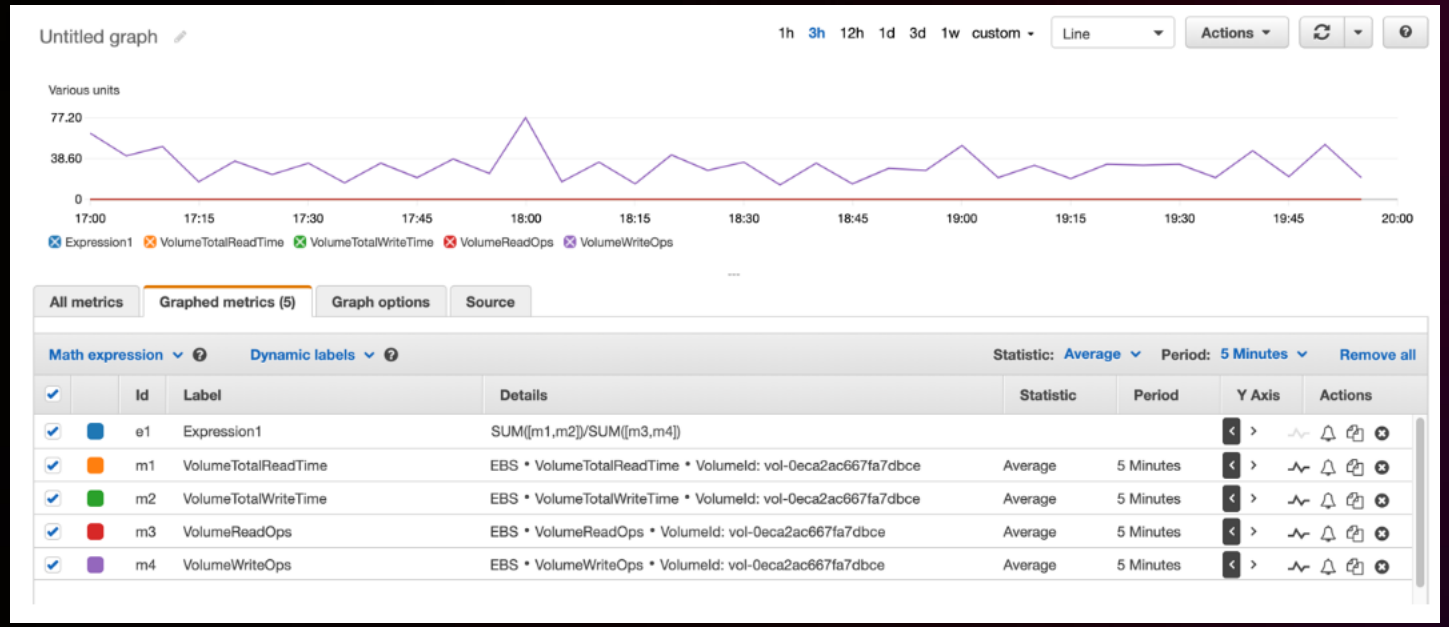


OS layer using custom metrics

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Monitor volume latency

(VolumeTotalReadTime + VolumeTotalWriteTime) / (VolumeReadOps + VolumeWriteOps)



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Monitor volume IOPS and throughput

IOPS = (VolumeReadOps + VolumeWriteOps) / Time [seconds]

Throughput MBps = (VolumeReadBytes + VolumeWriteBytes) / 1024 / Time [seconds]



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Testing



Run tests in a different account

Copy snapshots and create volumes in different accounts

Test continuously as your application changes

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Questions?

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Amazon EBS at re:Invent

Time		Session Title
12:15 PM	STG406	Automated data protection & backup compliance with Amazon EBS snapshots
1:45 PM	STG219	Build resilient architectures with Amazon EBS
5:30 PM	STG306	Best practices for Amazon EBS volumes & performance monitoring using CloudWatch

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Thank you!

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