
AWS
re:Invent
NOV. 28 – DEC. 2, 2022 | LAS VEGAS, NV

STG405-R

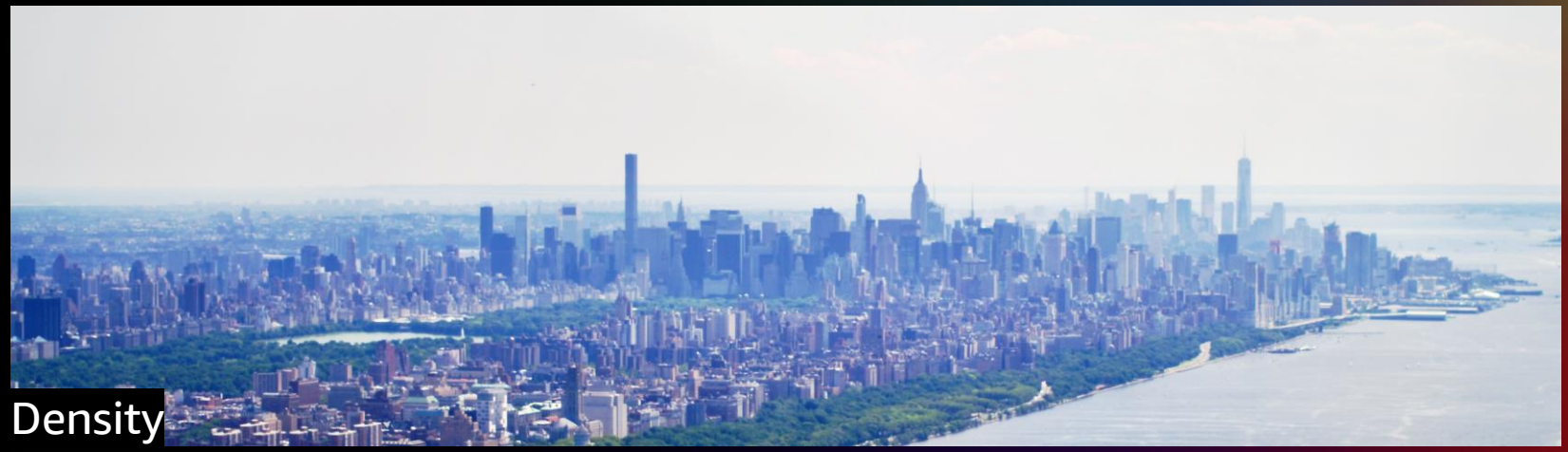
Best practices for operating at scale with Amazon EBS and EBS snapshots

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What does scale mean?



Density



Size



Performance

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Scale considerations

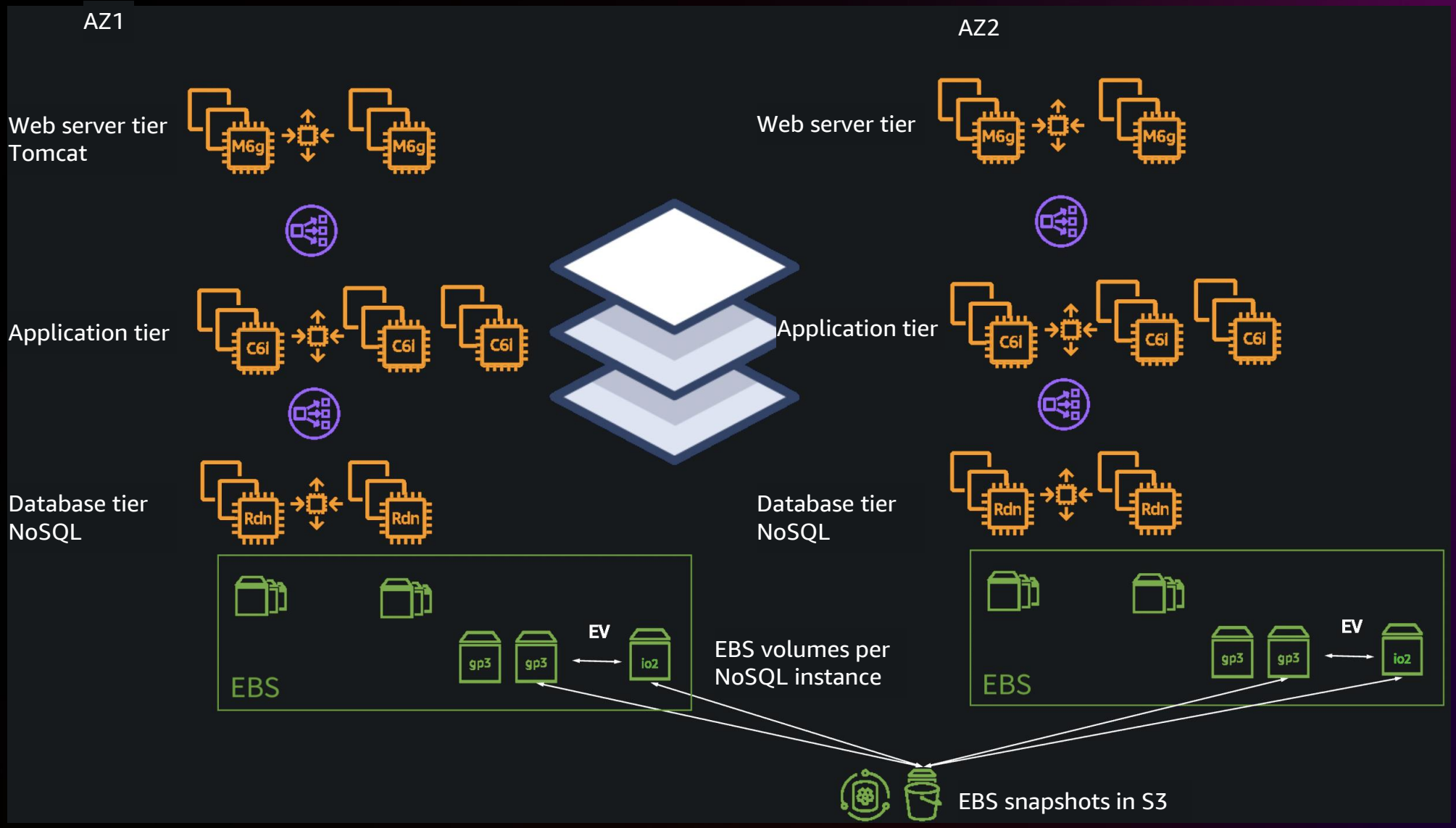
- Capacity
- Performance
- Agility
- Cost efficiency
- Automation
- Ease of management
- Reliability
- Predictability

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Whiteboard: distributed multi-tier application architecture

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Architecture diagram

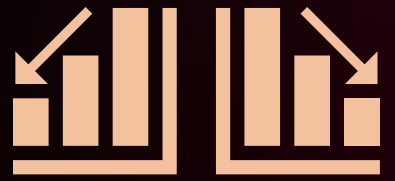


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EBS service quotas

What and why

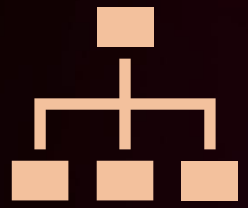




Quota adjustment

Monitor





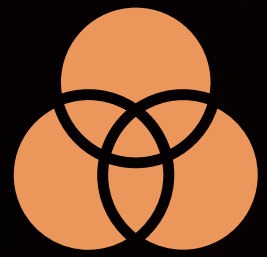
Types of quotas

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Multiple account benefits

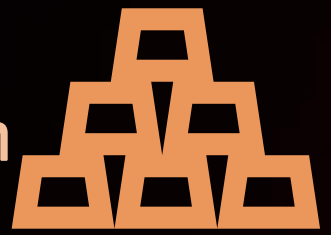
Logical account separation





Security and governance

Cost consolidation





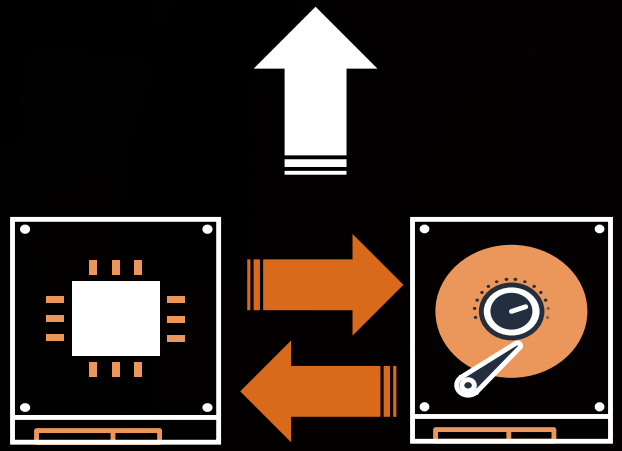
Blast radius reduction

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Elastic volumes

Increase volume size



Increase/decrease provisioned IOPS

100x more durability, 10x more scale performance and lower cost at higher IOPs compared to gp3

Approx. 43% cheaper than gp3; HDD suited to sequential workloads

Provisioned IOPS SSD (io2)

Throughput optimized HDD (st1)

General purpose SSD (gp3)

Cold HDD (sc1)

Default for balanced workloads

About 81% cheaper than gp3

Provision EBS for minimum required size and expand as needed; maintenance is easy with zero downtime

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Preserving performance for gp2 -> gp3 EV

Before:

awscli: `aws ec2 modify-volume $volume-id --volume-type gp3 --iops $iops --throughput $throughput`

CloudFormation:

```
”VolumeType”: gp3
“Iops”: <%= ... %>
“Throughput: <%= ... %>
```

Terraform:

```
type = "gp3”
iops = min(max(size*3,16000),3000)
throughput = min(max(min(max(... ))))
```

Now:

awscli: `aws ec2 modify-volume $volume-id --volume-type gp3`

CloudFormation: `“VolumeType”: gp3`

Terraform: `type = “gp3”`

> Throughput has been automatically calculated for the gp3 volume to deliver the same performance as the source gp2 volume. You can specify a different value if needed. For more information, please see the Elastic Volume user guide.

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Whiteboard: working with tightly coupled scale systems

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Whiteboard: migration of 100k gp2 volumes to gp3

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Automation

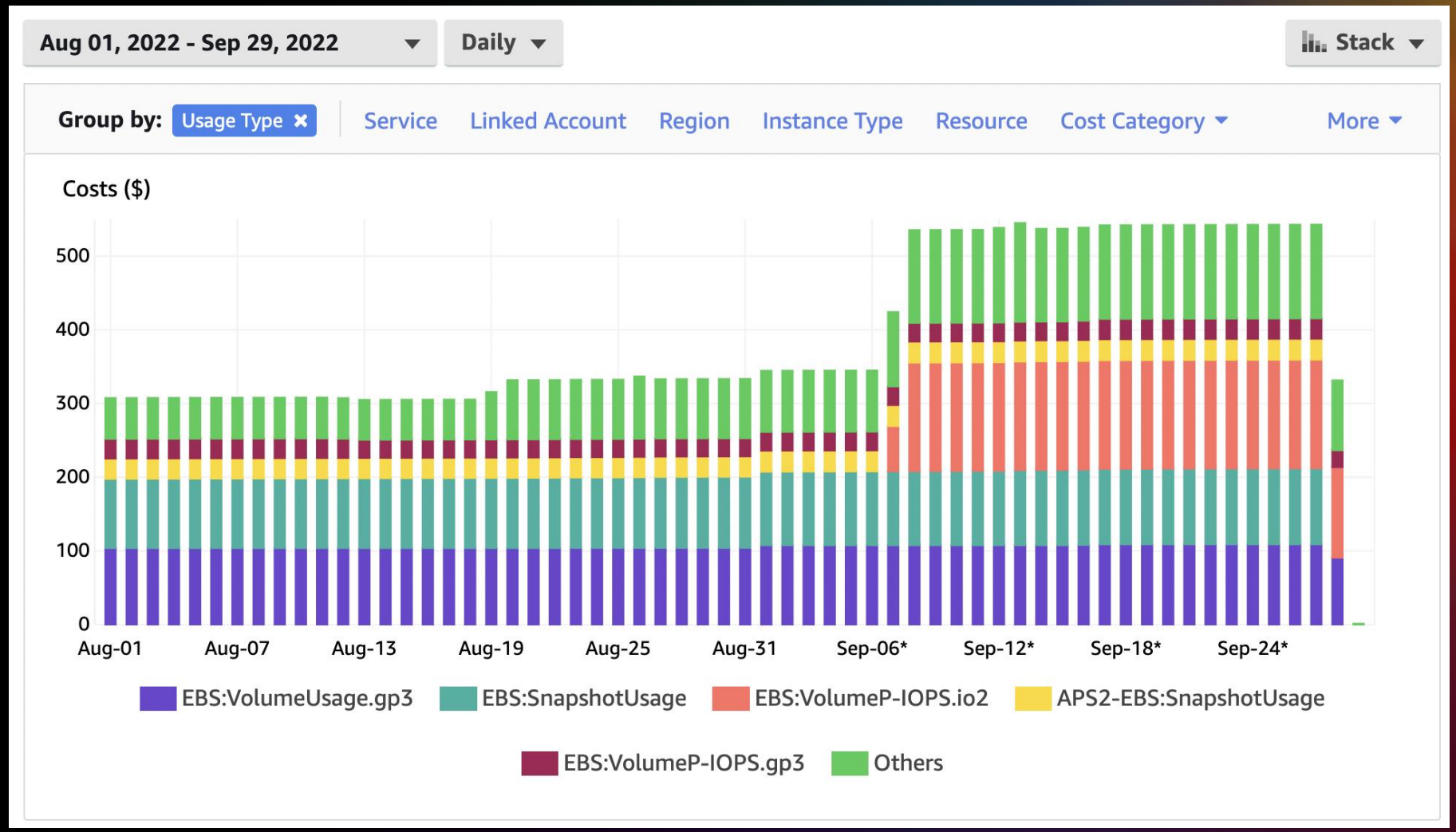
```
 for vol in vol_list:
                volume = ec2.Volume(vol)
                if volume.volume_type == 'gp2':
                    try:
                        vol_mod = ec2_client.modify_volume(
                                    VolumeId = vol,
                                    VolumeType = 'gp3'
                        )
                    except ClientError as e:
                        print(vol + ': ' +
e.response['Error']['Message'])
```

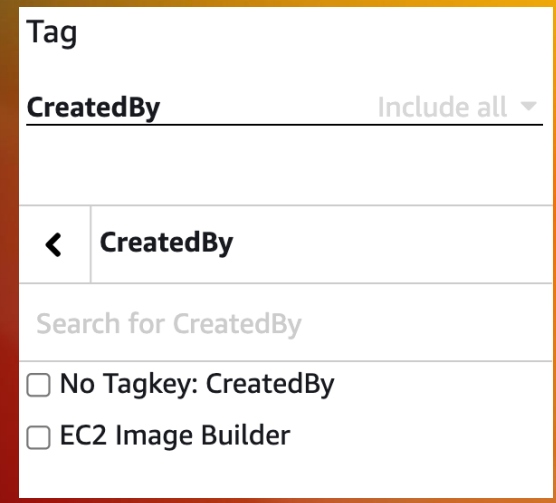
https://github.com/aws-samples/amazon-ebs-migration-utility

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Cost optimization/tagging





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Whiteboard: hydrating a subset of a volume

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Migration best practices

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EBS at re:Invent

Date	Time		Session Title
Tuesday, November 29	5:45 PM	STG212	Protect data and lower costs with Amazon EBS Snapshots
Tuesday, November 29	12:30 PM	STG307	Amazon Elastic Block Store: a tech deep dive
Tuesday, November 29	4:15 PM	STG404	Explore the power of Amazon EBS Direct APIs with Flexible Snapshot Proxy
Wednesday, November 30	8:30 AM	STG314	Amazon EBS snapshots: Build protection and cost-optimize
Wednesday, November 30	9:15 AM	STG220	Best practices for on-premises applications moving to Amazon EBS
Wednesday, November 30	12:15 PM	STG406	Build automated data protection and backup compliance with EBS Snapshots
Wednesday, November 30	1:45 PM	STG219	Build resilient architectures with Amazon EBS
Wednesday, November 30	5:30 PM	STG306	Best practices for Amazon EBS volumes & performance monitoring using CloudWatch
Wednesday, November 30	6:15 PM	STG405-R1	Best practices on operating at scale with Amazon EBS and EBS Snapshots (Repeat)
Thursday, December 1	1:15 PM	STG307-R1	Amazon Elastic Block Store: a tech deep dive (Repeat)
Friday, December 2	8:30 AM	STG314-R1	Amazon EBS snapshots: Build protection and cost-optimize (Repeat)

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Thank you!

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