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

STP210-R1

AWS optimization: Actionable steps for immediate results

David Solomon (he/him/his)

Cloud Optimization Specialist, Startups
AWS

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Agenda

The importance of optimization

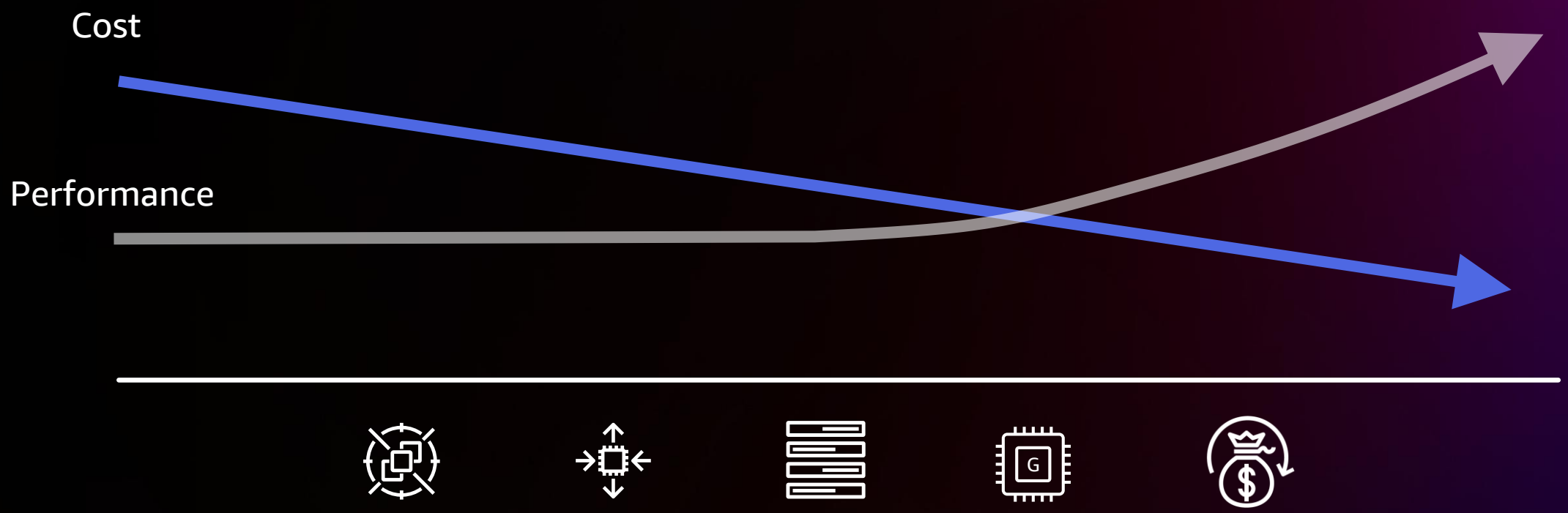
Compute, database, and storage optimization

Staying optimized with Cloud Intelligence Dashboards

Next steps

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Optimization lowers costs and increases performance, resulting in higher velocity of innovation



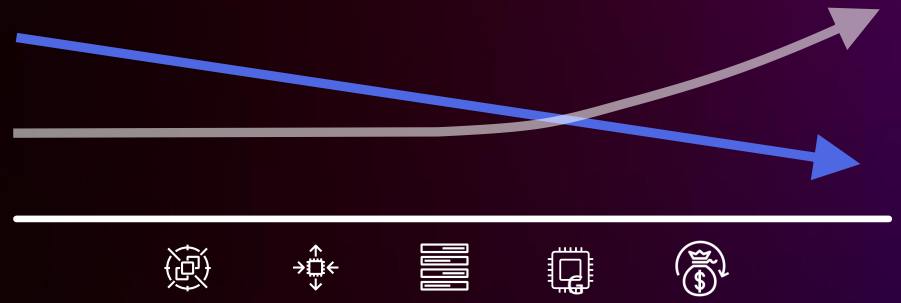
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Optimization

Cloud optimization ensures you're running the **infrastructure best suited to deliver your business outcomes**

This helps you by maximizing your investment into your business – **leading to increased efficiency, better performance, and faster growth**

Our goal is to ensure AWS customers are always in a fully optimized state, achieving the **greatest value from AWS products and services at the lowest possible cost**



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From our customers

“At Timescale, we’re building the high-performance database cloud for time-series and analytics. It’s PostgreSQL with superpowers. Collaborating with AWS enabled us to create a flexible, reliable, and cost-efficient cloud platform for all our customers.

The **3-year Compute Savings Plan** we have from AWS – especially given how much Amazon EC2, Amazon EBS, and Amazon S3 we consume with every new customer – **has allowed us to reinvest in even further R&D.**

This **creates more room for us to develop new, modern database cloud features so our customers can build the next wave of computing.”**

Mike Freedman, CTO & Co-Founder, Timescale



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From our customers

“Zype simplifies video distribution, making it easier than ever before for brands and enterprises to solve mission-critical streaming video challenges.

AWS has both commercial and technical programs, such as **Private Pricing and Graviton processors,** that we’ve leveraged within our video content management platform, **reducing operating cost by 30%, while also increasing performance.**

These programs allow us to reinvest in the development of our evolving product roadmap to meet our end customers’ needs.”

Ed Laczynski, CEO, Zype, a Backlight Business



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From our customers

“Following AWS’ guidance by focusing on **migrating to Graviton, optimizing our instances, and leveraging Savings Plans**, we closed the month with **30% less in cost** compared to the beginning of the quarter.

Whereas we usually would expect an increase QoQ of ~10%.”

Han Xiao, Director of Engineering, Seated

SEATED

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From our customers

"The **Cloud Intelligence Dashboard** helped us visualize our AWS Trusted Advisor flag checks alongside our AWS Cost and Usage Report.

The visibility into our **right-sizing recommendations and Amazon EC2 usage** patterns enabled us to **uncover so many opportunities to save costs without compromising performance or resiliency!"**

Alexandr Revko, Cost Optimization Initiative Lead, PandaDoc



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Diving into optimization



What



How

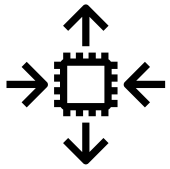


How often

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Main optimization areas

Compute



Database



Storage



aws

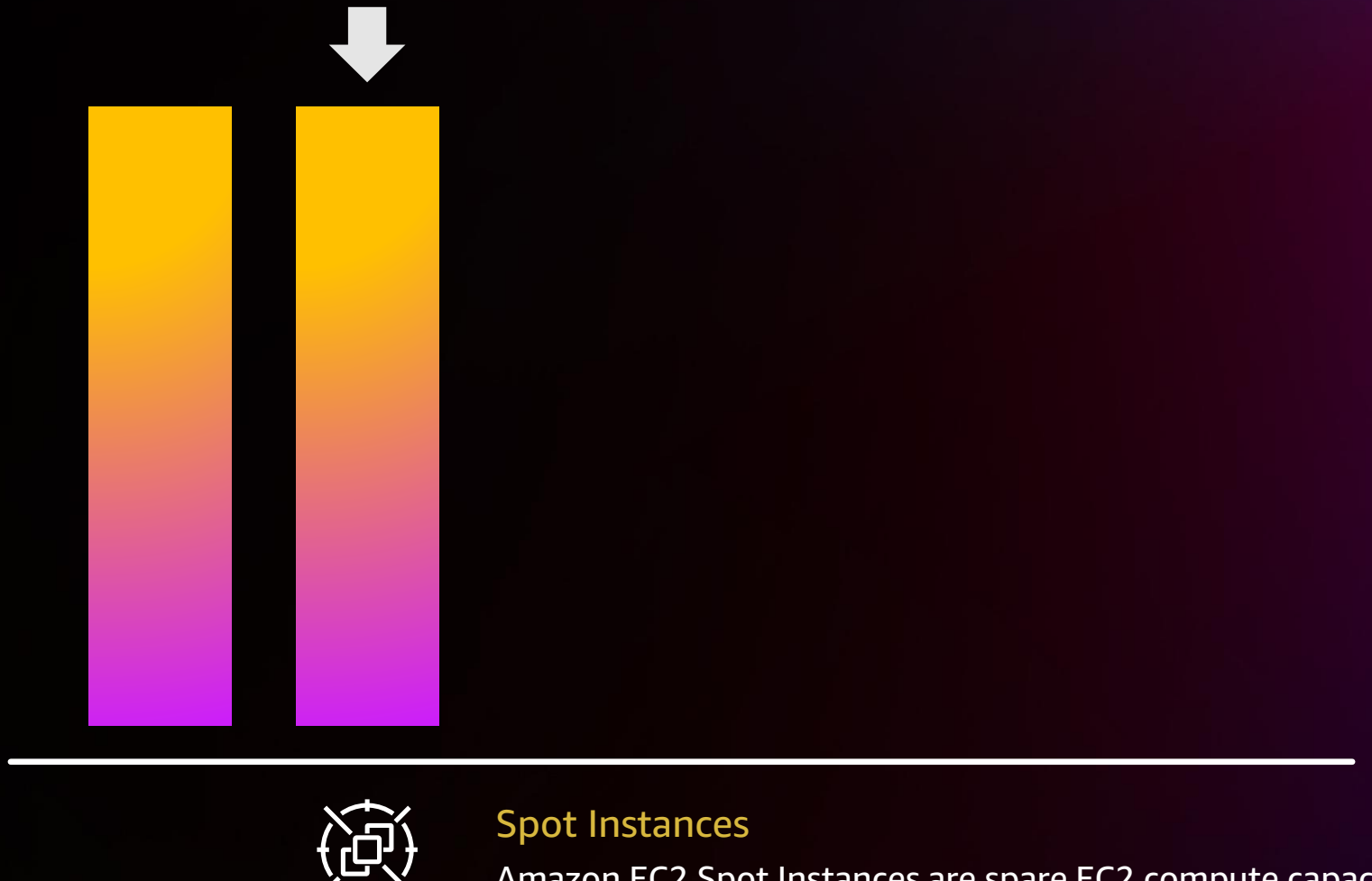
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Compute optimization



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Compute optimization



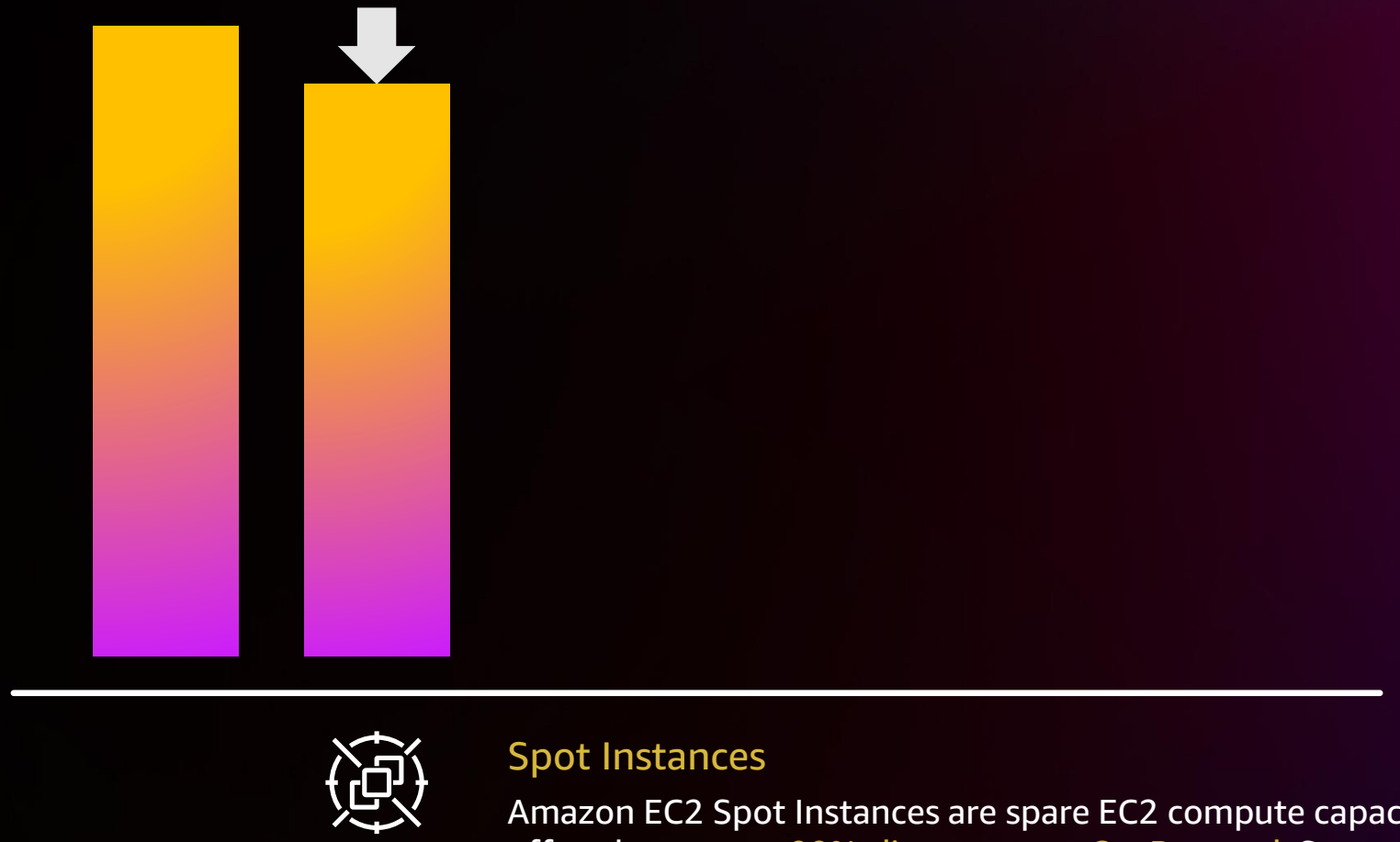
Spot Instances

Amazon EC2 Spot Instances are spare EC2 compute capacity offered at up to a 90% discount over On-Demand. Spot Instances are ideal for flexible fault-tolerant workloads.

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Compute optimization



Spot Instances

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Compute optimization

On-Demand costs



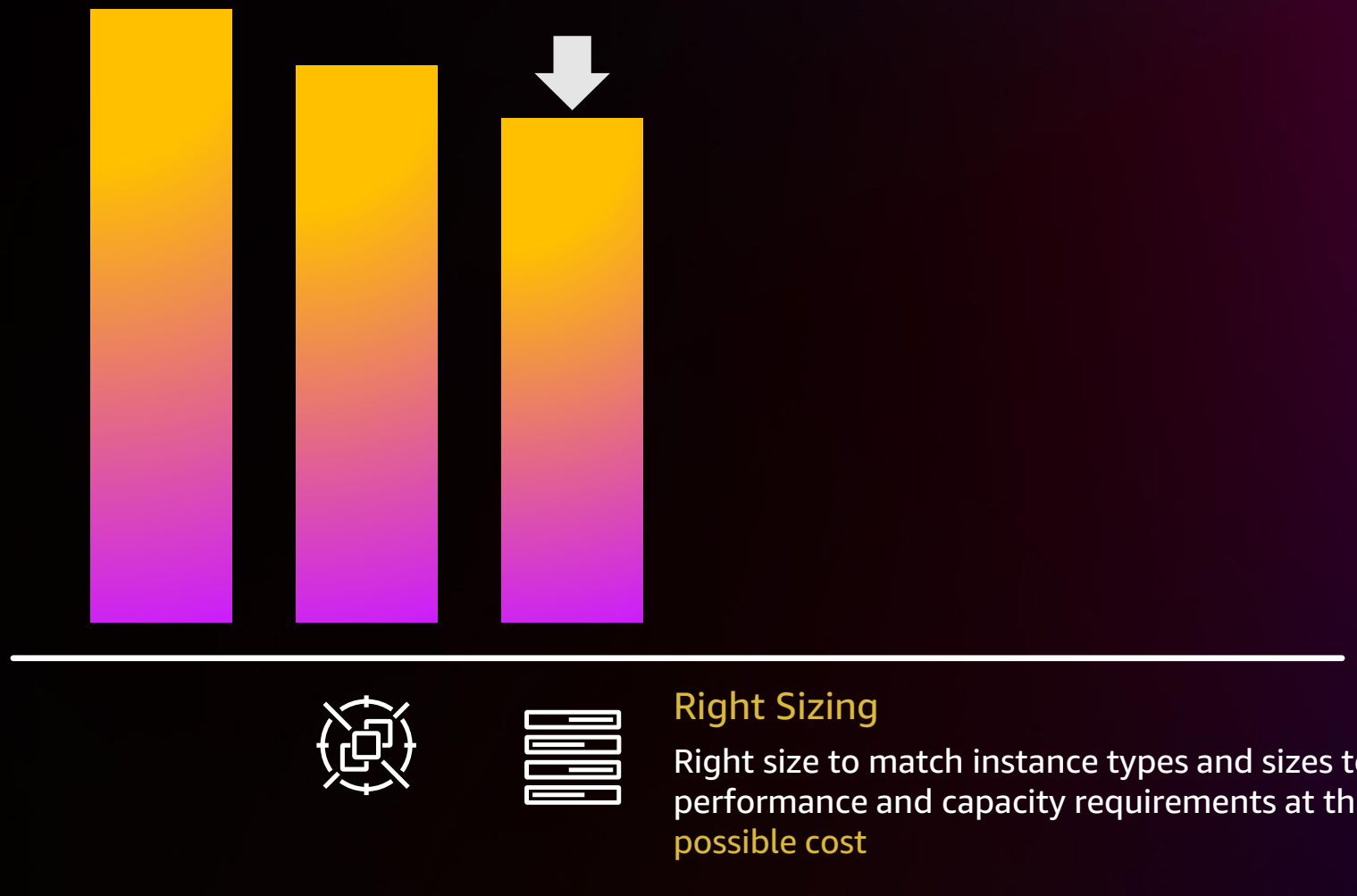
Right Sizing

Right size to match instance types and sizes to workload performance and capacity requirements at the lowest possible cost

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Compute optimization

On-Demand costs



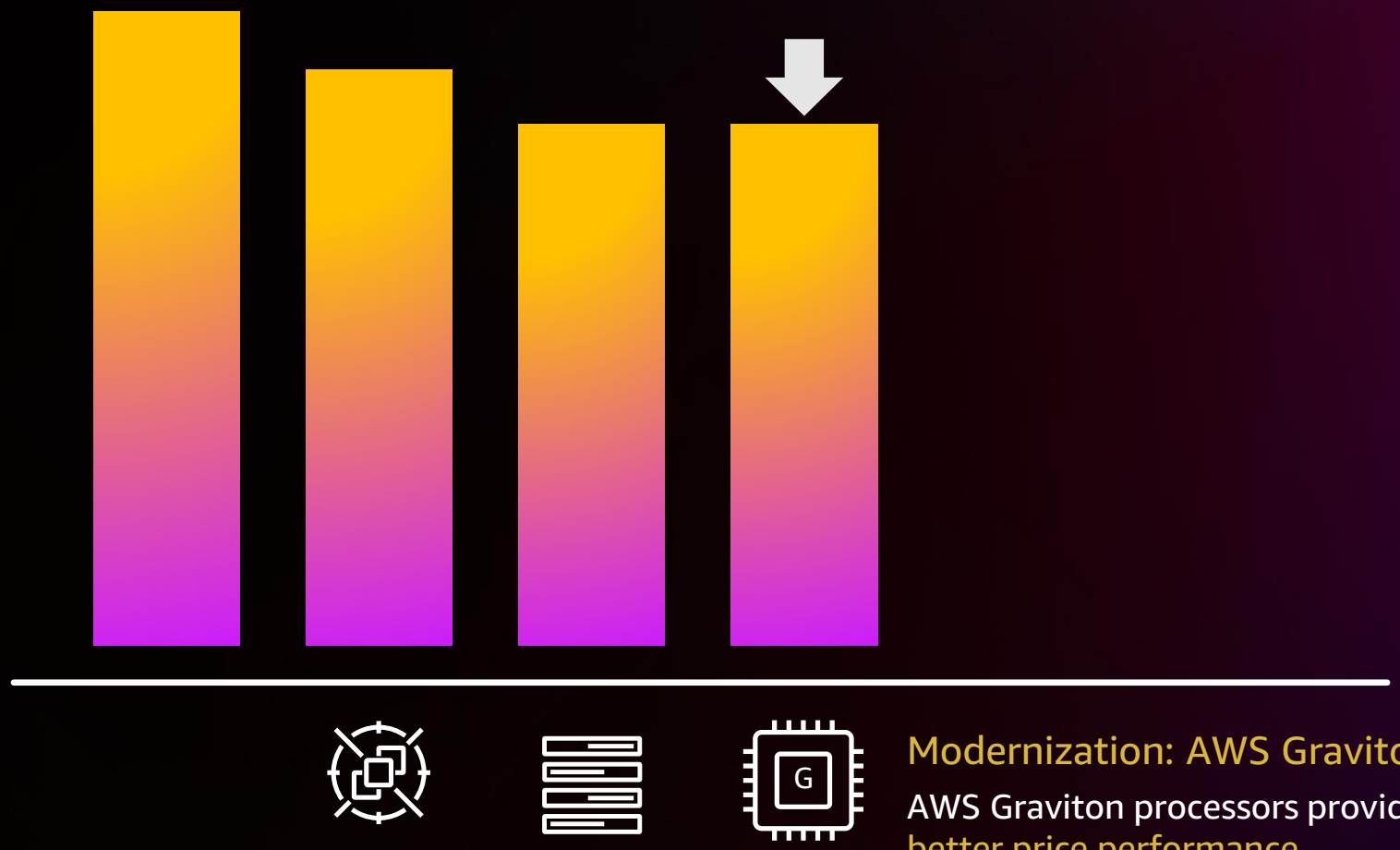
Right Sizing

Right size to match instance types and sizes to workload performance and capacity requirements at the lowest possible cost

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Compute optimization

On-Demand costs



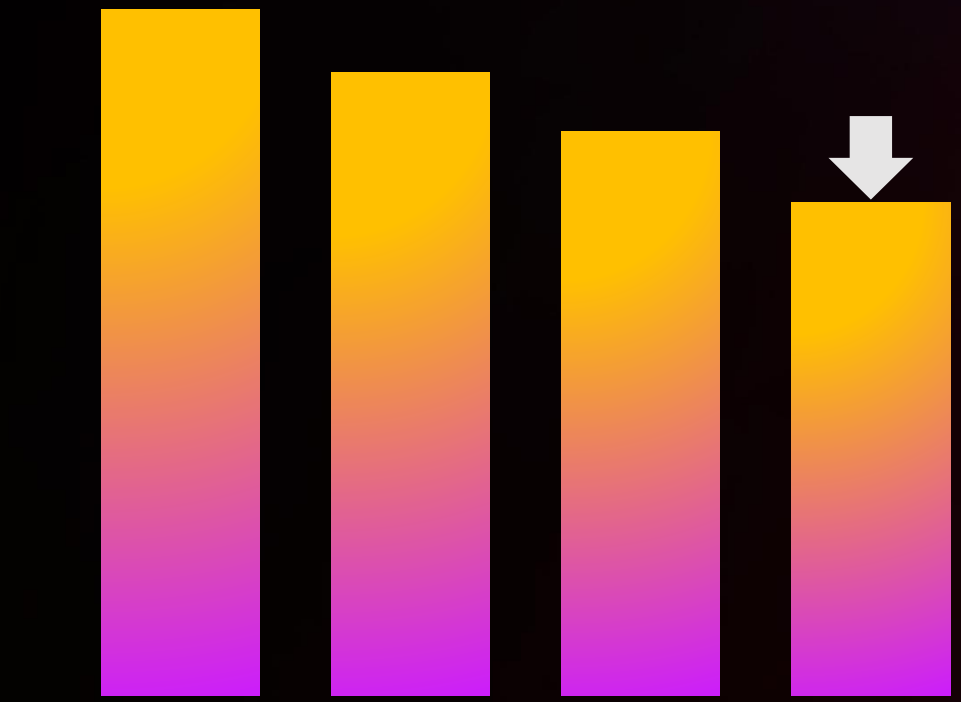
Modernization: AWS Graviton

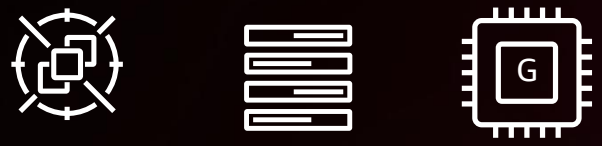
AWS Graviton processors provide up to 40% better price performance

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Compute optimization

On-Demand costs





Modernization: AWS Graviton

AWS Graviton processors provide up to 40% better price performance

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Compute optimization

On-Demand costs



Elasticity (auto scaling)

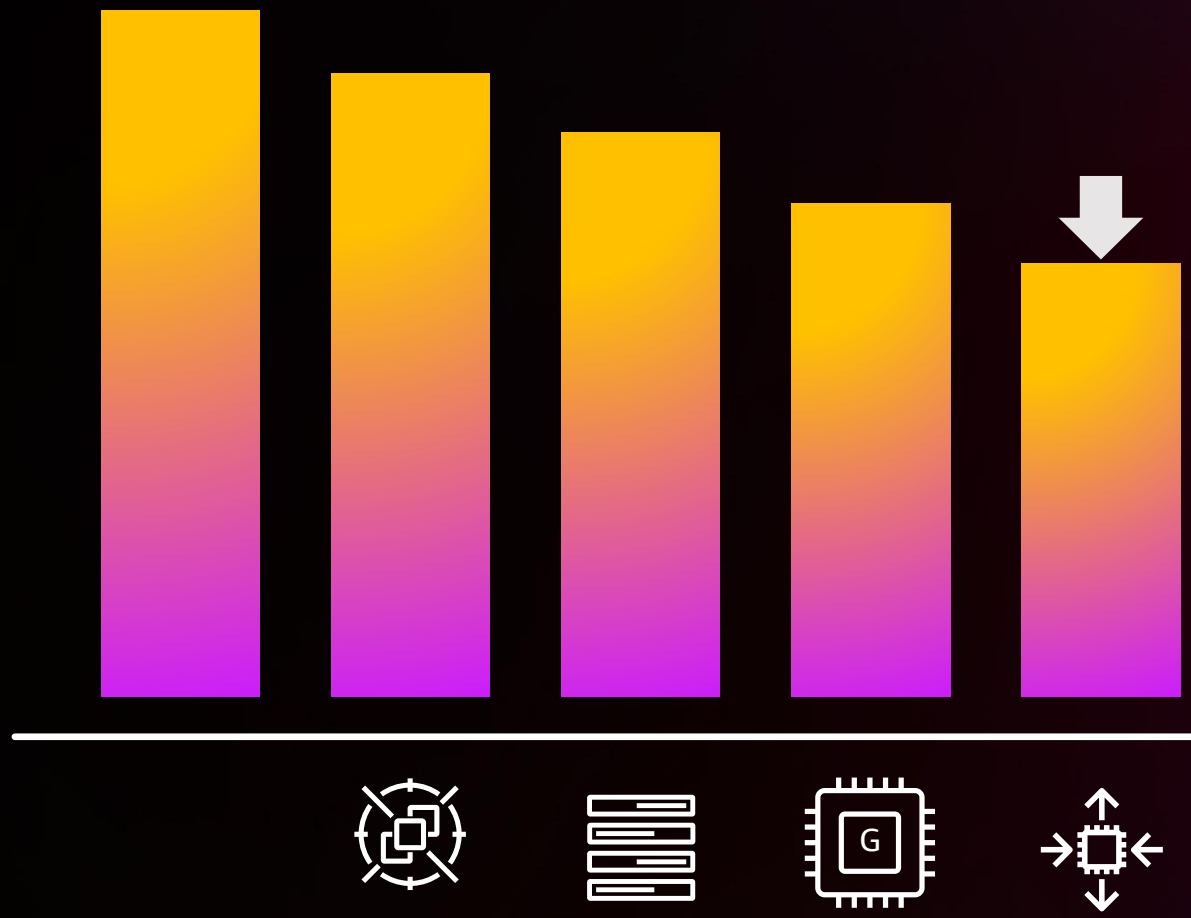
AWS Auto Scaling monitors your applications and automatically adjusts capacity to maintain steady, predictable performance at the lowest possible cost

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Compute optimization

On-Demand costs



Elasticity (auto scaling)

AWS Auto Scaling monitors your applications and automatically adjusts capacity to maintain steady, predictable performance at the lowest possible cost

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Compute optimization

On-Demand costs



Savings Plans

Commitment-based pricing (1- or 3-year period), providing up to 72% lower pricing

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Compute optimization

On-Demand costs



Savings Plans

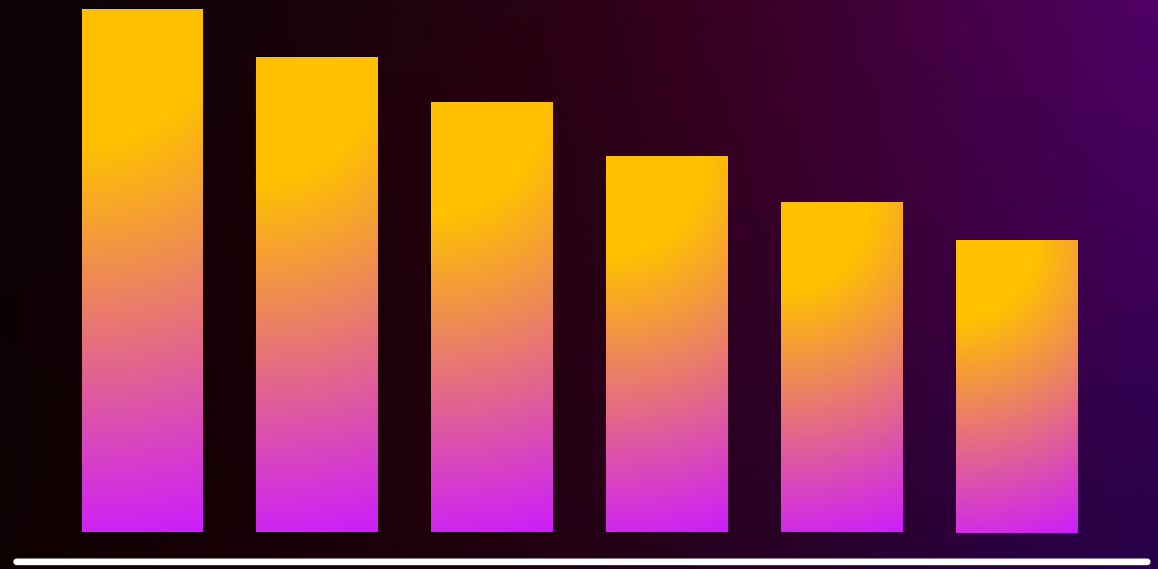
Commitment-based pricing (1- or 3-year period), providing up to 72% lower pricing

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Compute optimization

- Spot Instances
- Right Sizing
- Modernization: AWS Graviton
- Elasticity
- Savings Plans



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Database optimization



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Database optimization

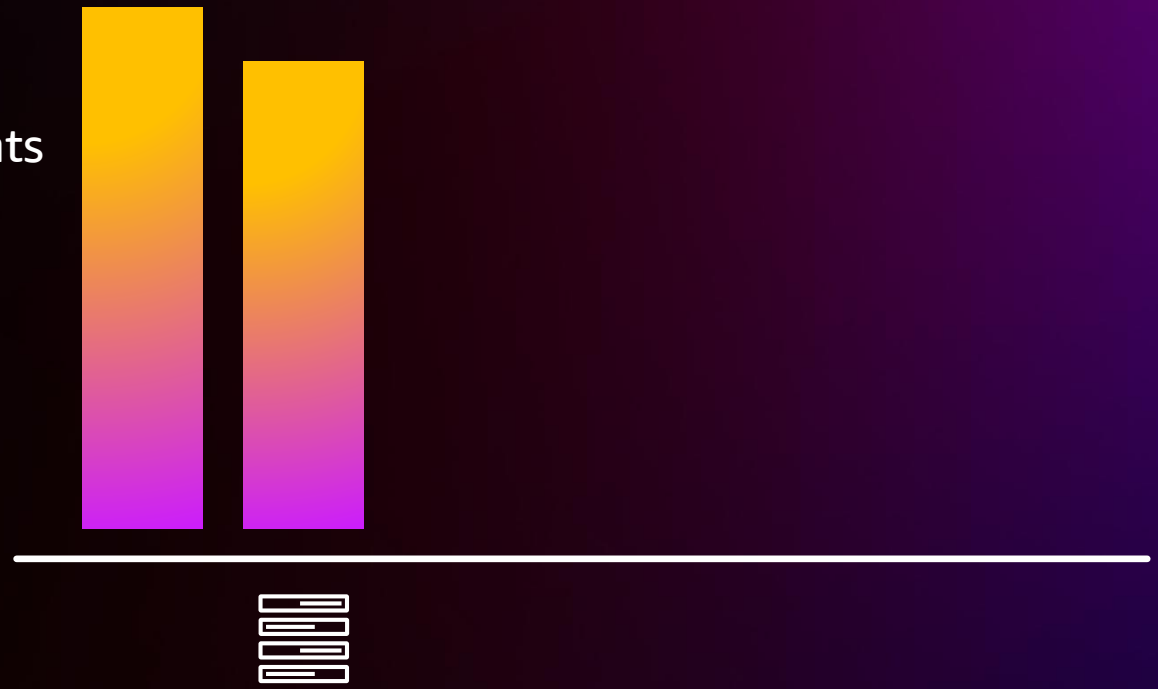


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Database optimization

Right Sizing

Right size to match database instance types and sizes to workload performance and capacity requirements at the lowest possible cost



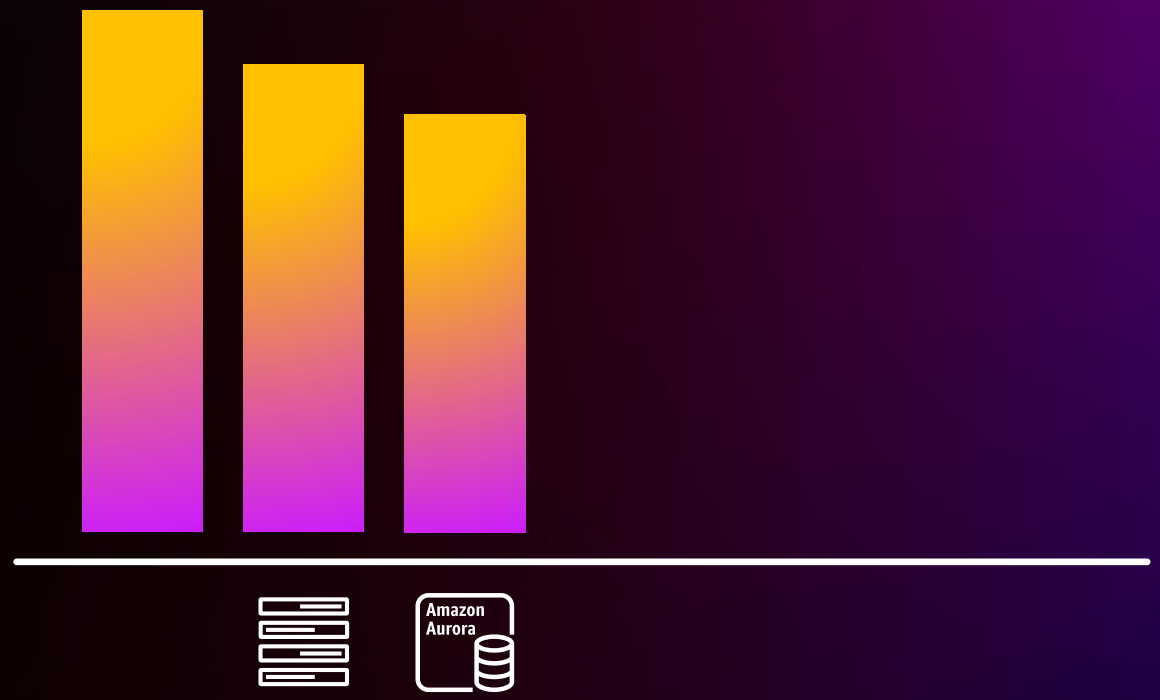
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Database optimization

Right Sizing

Amazon Aurora

Aurora is a fully managed relational database with 5 times the performance of MySQL, 3 times the performance of PostgreSQL, and 1/10th the cost of commercial databases.



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Database optimization

Right Sizing

Amazon Aurora

Caching

Leverage caching to boost database performance



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Database optimization

Right Sizing

Amazon Aurora

Caching

Modernization: Graviton

Graviton2 instances provide up to 35% performance improvement and up to 52% price/performance improvement for RDS open-source databases



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Database optimization

Right Sizing

Amazon Aurora

Caching

Modernization: Graviton

Reserved Instances

Commitment-based pricing (1- or 3- year period), providing up to 69% lower pricing



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Database optimization

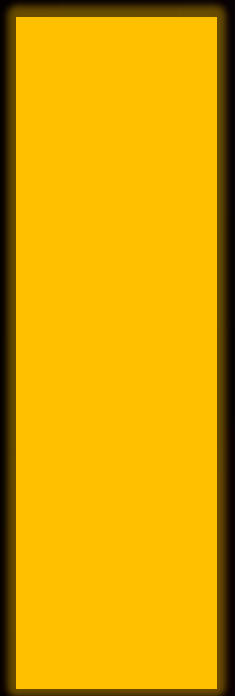
- Right Sizing
- Amazon Aurora
- Caching
- Modernization: Graviton
- Reserved Instances



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Storage (Amazon S3) optimization

Standard





Amazon S3 Standard

Use Amazon S3 Standard for frequently accessed data. Low latency and high throughput.

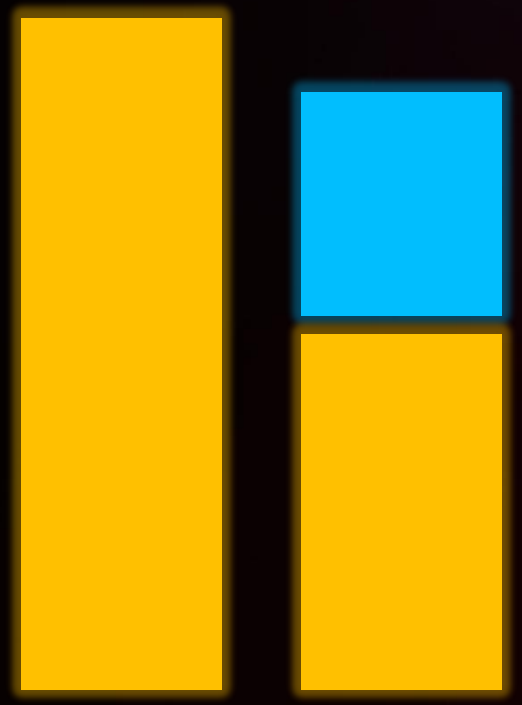
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Storage (Amazon S3) optimization

Standard

Infrequent Access





S3 Standard-Infrequent Access

S3 Standard-IA offers the high durability, high throughput, and low latency of S3 Standard, with a low per-GB storage price and per-GB retrieval charge

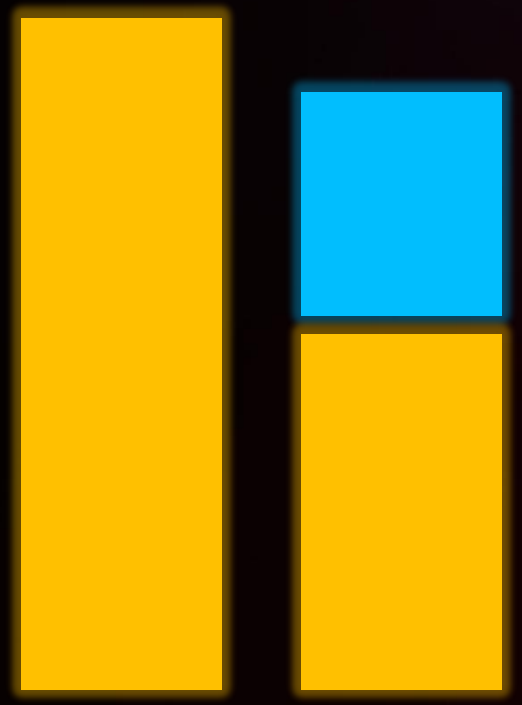
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Storage (Amazon S3) optimization

Standard

Infrequent Access





S3 One Zone-Infrequent Access

S3 One Zone-IA stores data in a single AZ and costs 20% less than S3 Standard-IA

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Storage (Amazon S3) optimization

- Standard
- Infrequent Access
- Glacier Instant Retrieval



S3 Glacier Instant Retrieval

Save up to 68% on storage costs compared to using the S3 Standard-IA storage class, when your data is accessed once per quarter

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Storage (Amazon S3) optimization

- Standard
- Infrequent Access
- Glacier Instant Retrieval
- Glacier Flexible Retrieval



S3 Glacier Flexible Retrieval

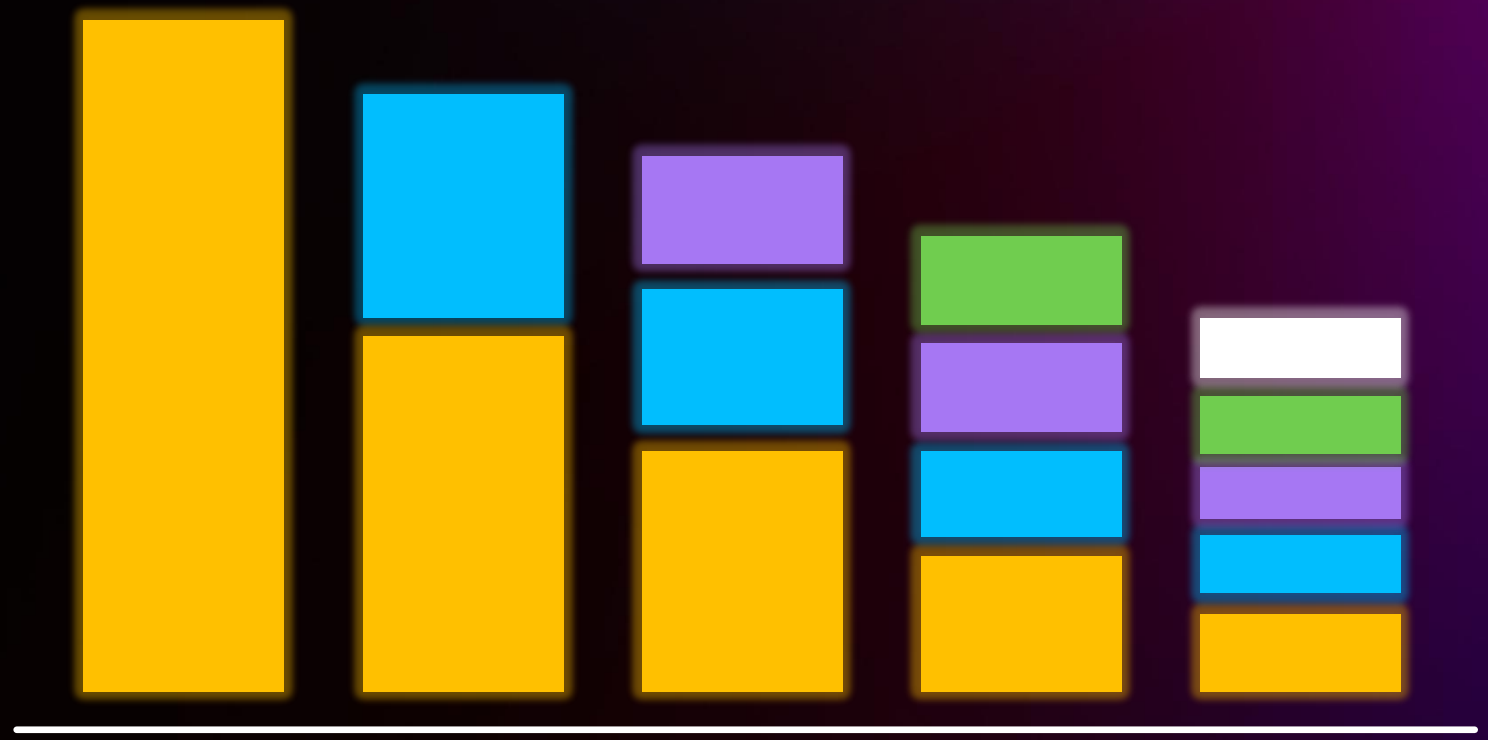
S3 Glacier Flexible Retrieval delivers low-cost storage, up to 10% lower cost than S3 Glacier Instant Retrieval, for archive data that is accessed 1-2 times per year and is retrieved asynchronously

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Storage (Amazon S3) optimization

- Standard
- Infrequent Access
- Glacier Instant Retrieval
- Glacier Flexible Retrieval
- Glacier Deep Archive



S3 Glacier Deep Archive

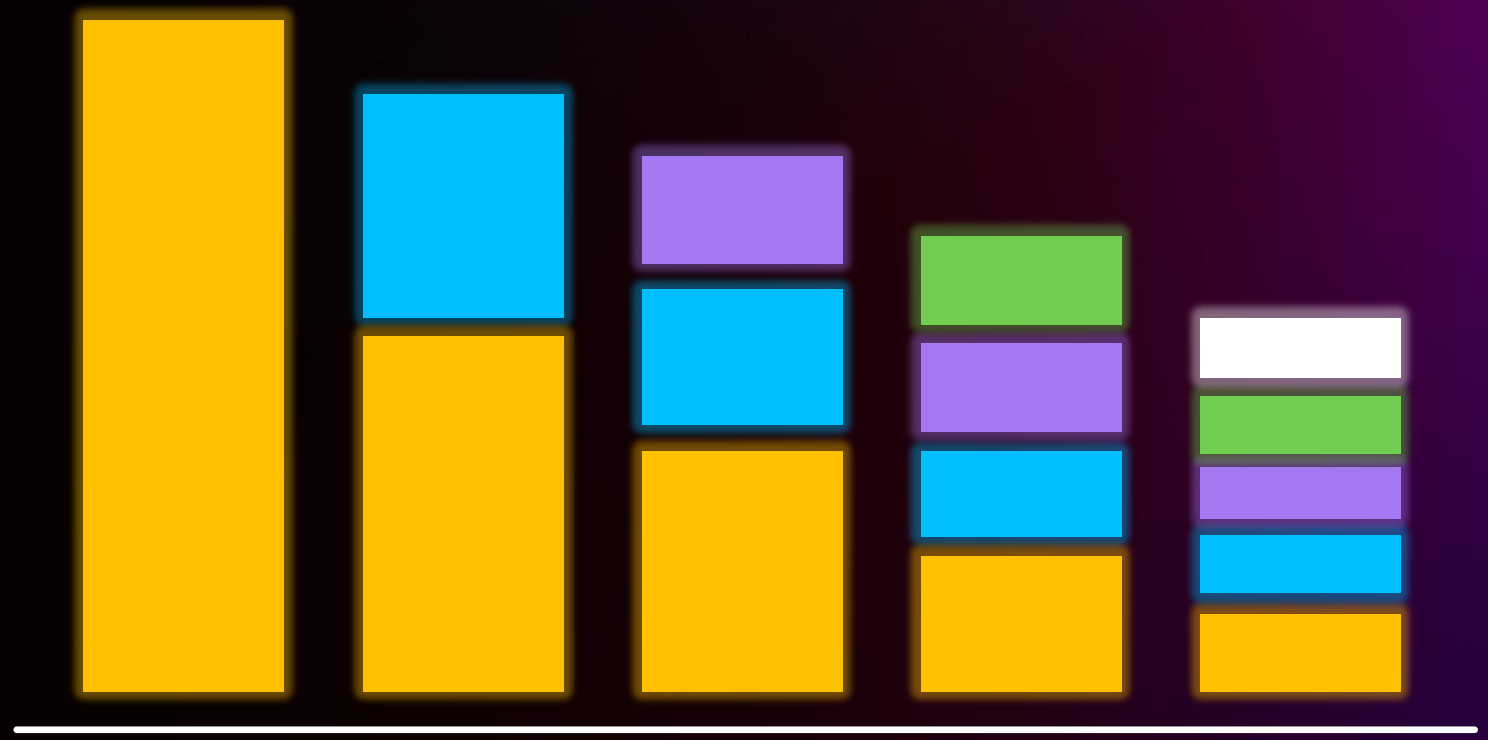
S3 Glacier Deep Archive is the lowest-cost Amazon S3 storage class and supports long-term retention and digital preservation for data that may be accessed once or twice in a year

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Storage (Amazon S3) optimization

- Standard
- Infrequent Access
- Glacier Instant Retrieval
- Glacier Flexible Retrieval
- Glacier Deep Archive



Amazon S3 Storage Lens

Use Amazon S3 Storage Lens and receive recommendations for optimizing storage costs

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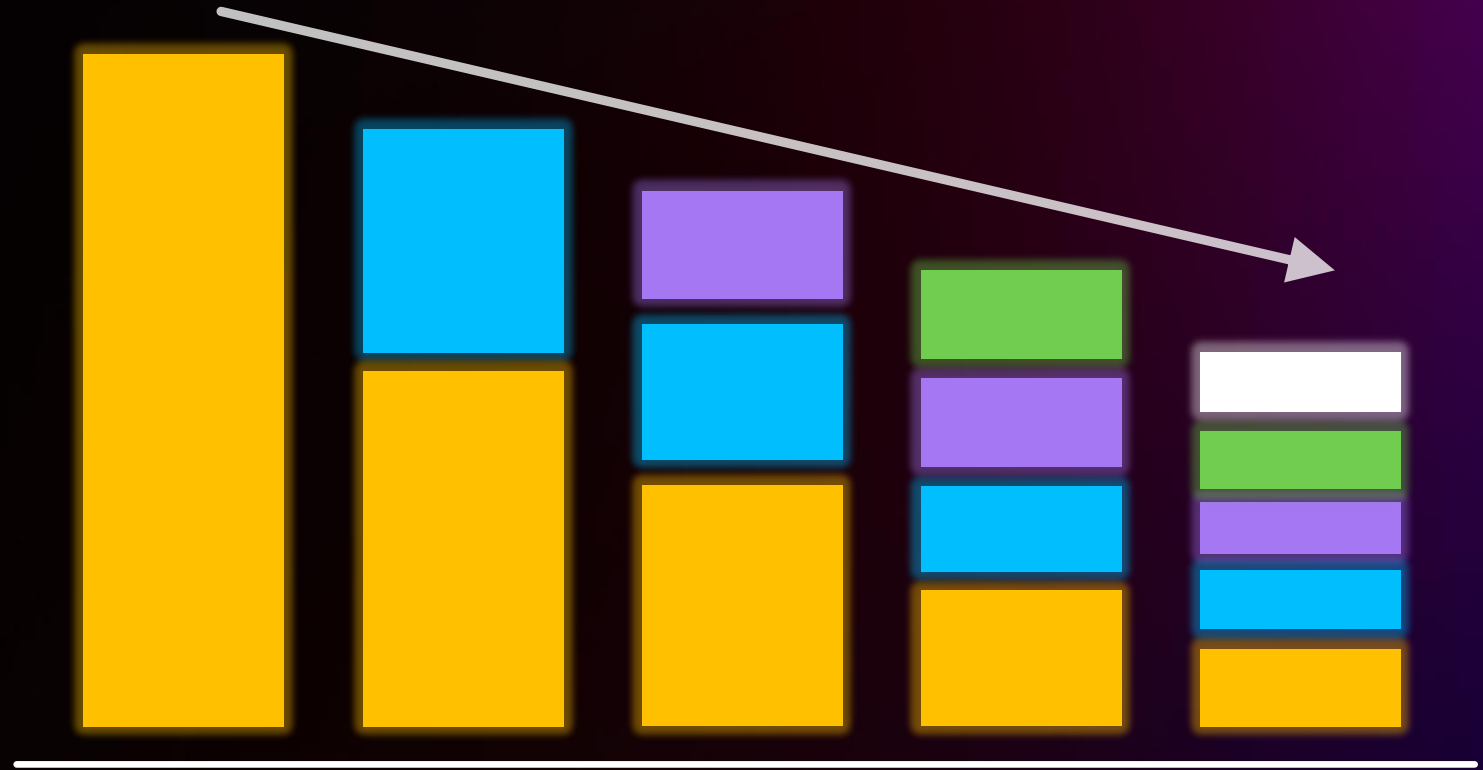
Storage (Amazon S3) optimization



S3 Intelligent-Tiering

Reduces your storage costs on a granular object level by automatically moving data to the most cost-effective access tier based on access frequency

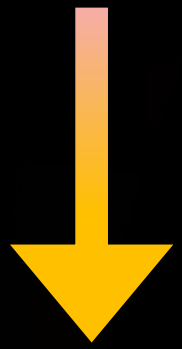
- Standard
- Infrequent Access
- Glacier Flexible Retrieval
- Glacier Instant Retrieval
- Glacier Deep Archive



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Storage (Amazon EBS) optimization



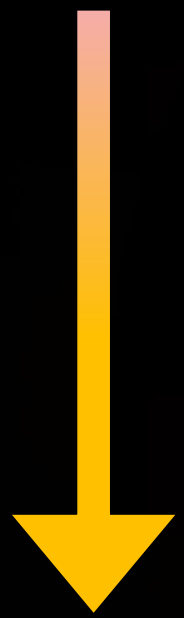


Amazon EBS cleanup

Clean up the backups that are no longer required to save costs. Use AWS Backup and Amazon Data Lifecycle Manager.

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Storage (Amazon EBS) optimization





Amazon EBS cleanup

Clean up the backups that are no longer required to save costs. Use AWS Backup and Amazon Data Lifecycle Manager.



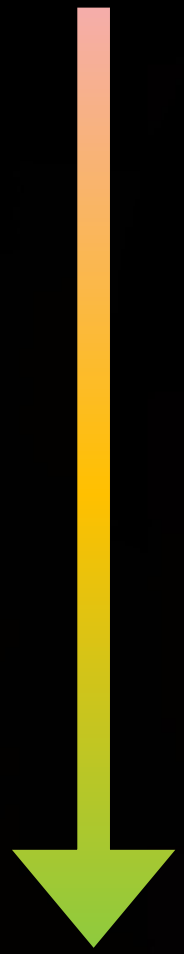
Modernization: Amazon EBS gp3

Amazon EBS gp3 volumes enable customers to provision performance independent of storage capacity, while providing up to 20% lower price per GB than gp2 volumes.

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Storage (Amazon EBS) optimization





Amazon EBS cleanup

Clean up the backups that are no longer required to save costs. Use AWS Backup and Amazon Data Lifecycle Manager.



Modernization: Amazon EBS gp3

Amazon EBS gp3 volumes enable customers to provision performance independent of storage capacity, while providing up up to 20% lower price per GB than gp2 volumes.



Amazon EBS Snapshots Archive tier

Amazon EBS Snapshots Archive tier provides low storage cost for long-term retention of rarely accessed EBS Snapshots.

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Optimization summary

Compute

- Spot Instances
- Right Sizing
- Modernization: Graviton
- Elasticity
- Savings Plan

Database

- Right Sizing
- Aurora
- Caching
- Modernization: Graviton
- Reserved Instances

Storage

- S3 Storage Lens
- S3 Tiers
- S3 Intelligent-Tiering
- Amazon EBS cleanup
- Modernization: Amazon EBS gp3
- Amazon EBS Snapshots Archive tier

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Diving into optimization



What



How



How often

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Diving into optimization



What



How



How often

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Key use cases for optimization

MONITOR OPTIMIZATION RESULTS AND IDENTIFY ONGOING OPTIMIZATION OPPORTUNITIES

Which account(s) are optimized the best/least?

How do I track optimization results?

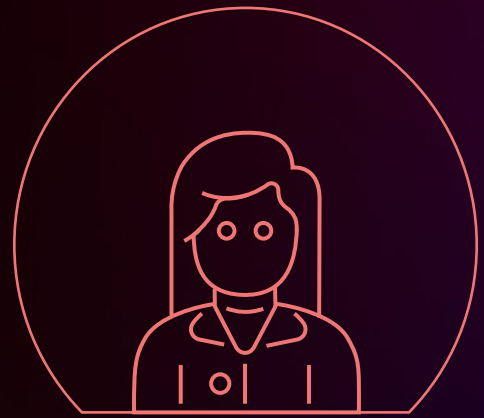
Where should I focus for further optimization?

How much more could I save with Spot, Graviton … ?

Where should my team focus for the most savings?







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Cloud Intelligence Dashboards

A set of in-depth and customizable dashboards to help you optimize cost, track usage goals, and achieve operational excellence

Trends Dashboards



Cost Intelligence Dashboard



CUDOS Dashboard



KPI Dashboard



Trusted Advisor Organizational Dashboard



Compute Optimizer Dashboard



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Cloud Intelligence Dashboards

Trends Dashboards



Cost Intelligence Dashboard



CUDOS Dashboard



KPI Dashboard



Trusted Advisor Organizational Dashboard



Compute Optimizer Dashboard



Executives

Finance/procurement

Business/product owners

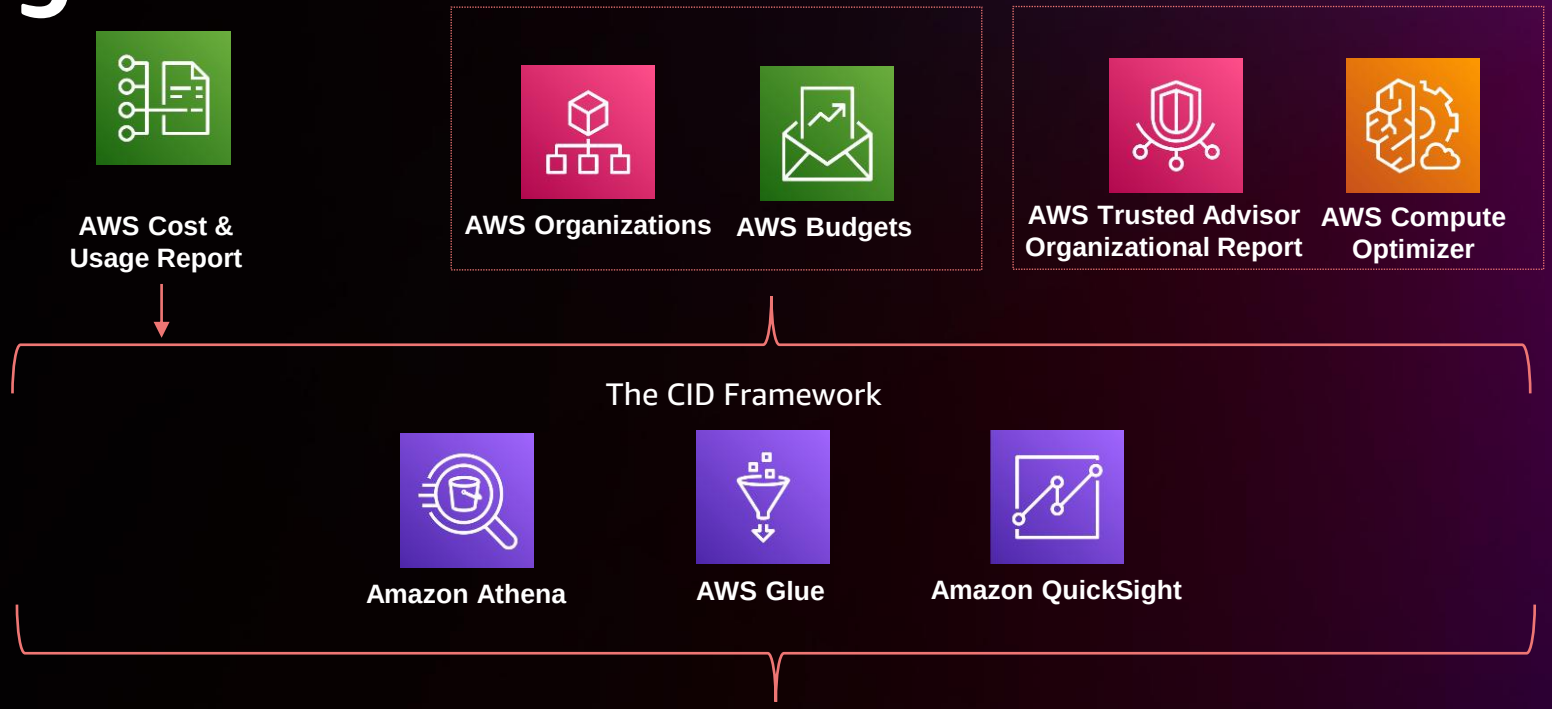
FinOps practitioners

Engineering and operations

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Cloud Intelligence Dashboards Framework

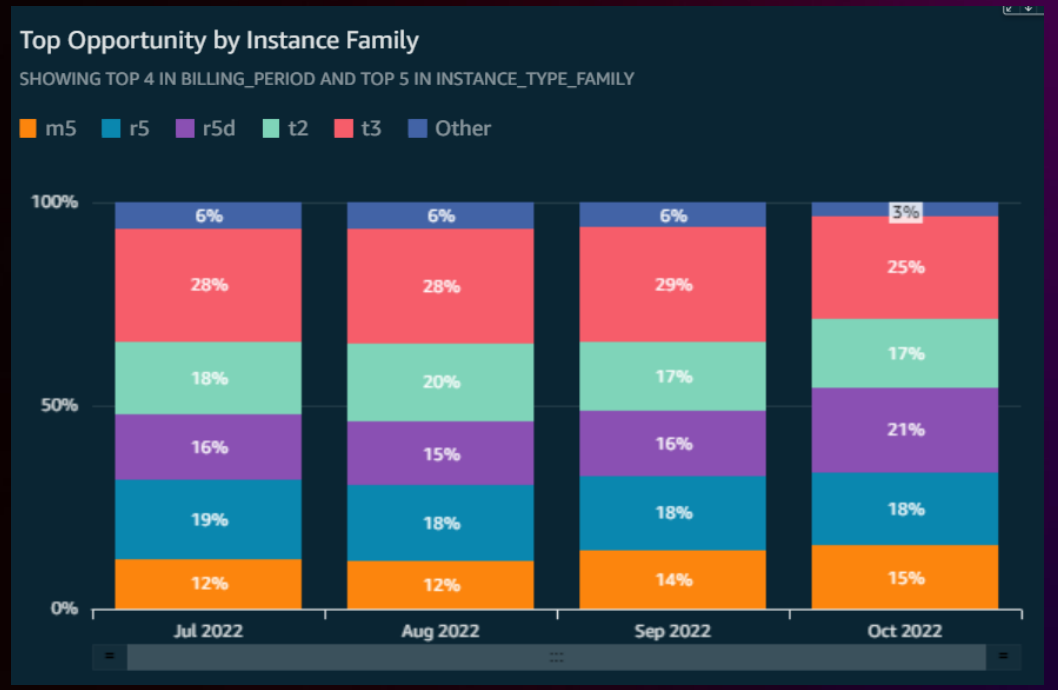


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KPI dashboard shows how much you can save

- See potential savings for meeting optimization goals
- Identify top optimization opportunities

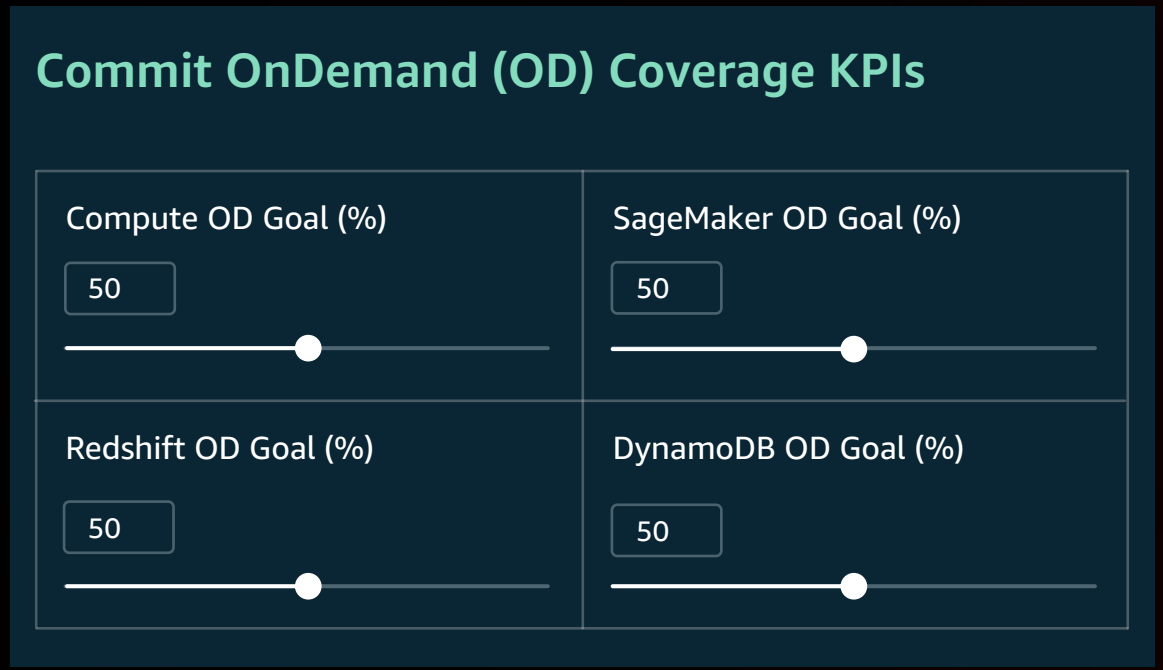


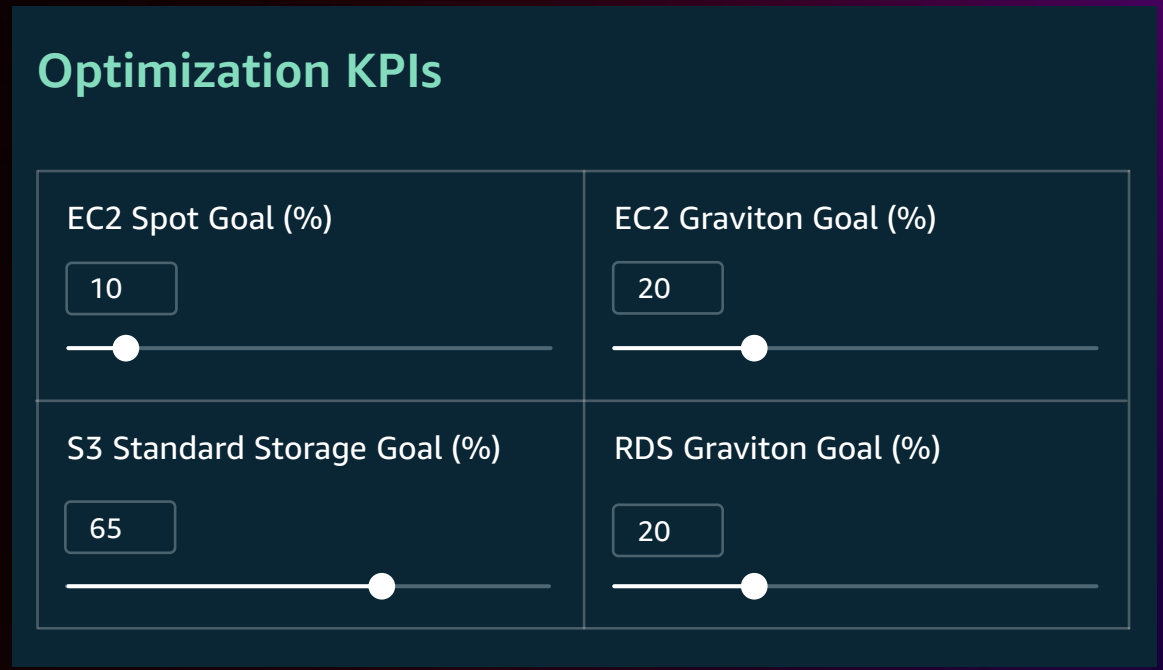


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KPI dashboard: Set goals & identify savings opportunities

- Set custom KPI goals based on your business needs.
- Use 18 optimization KPIs.

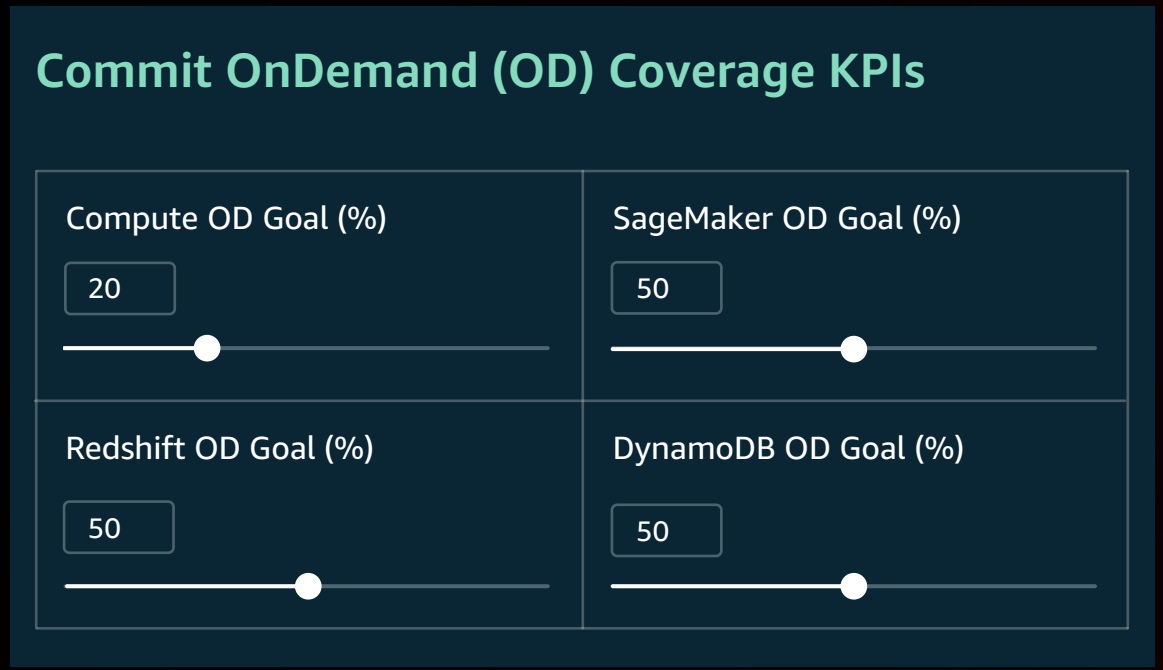


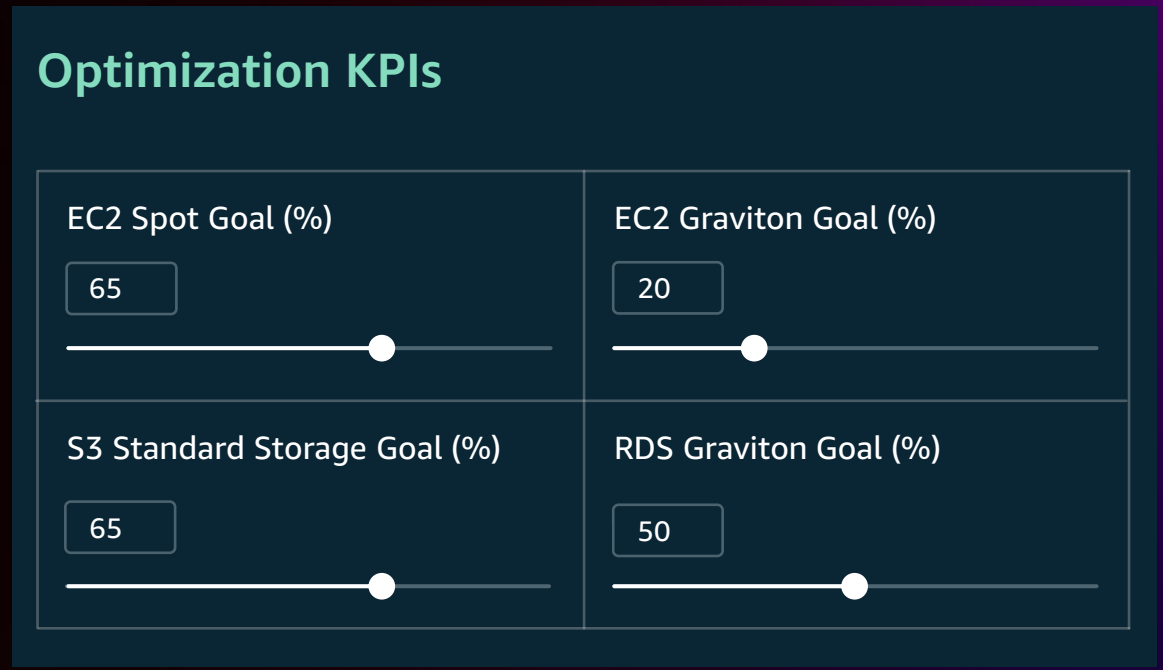


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KPI dashboard: Set goals & identify savings opportunities

- Set custom KPI goals based on your business needs.
- Use 18 optimization KPIs.





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KPI Dashboard: Compute OD example

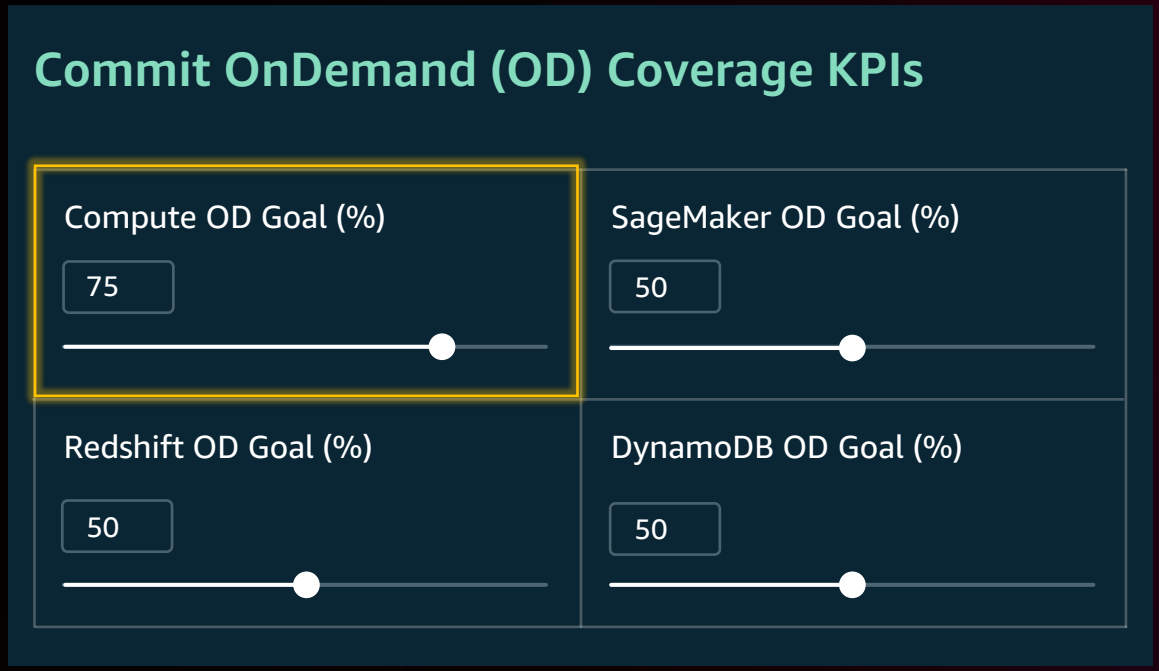
- View Compute OnDemand Coverage over last 3 months

	Aug 2022	Sept 2022	Oct 2022
Compute OD Coverage	100%	75%	75%

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KPI Dashboard: Compute OD example

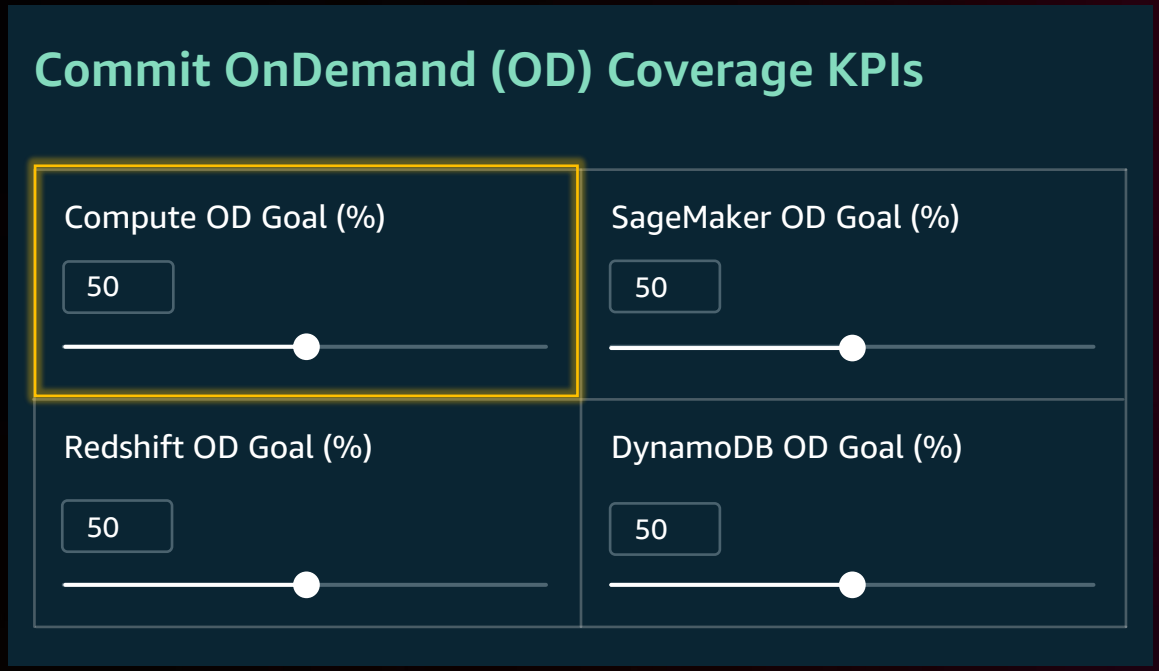
- Set Compute OD Goal to 50%



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KPI Dashboard: Compute OD example

- Set Compute OD Goal to 50%



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KPI Dashboard: Compute OD example

- After setting the goal, KPD dashboard estimates potential savings when achieving the goal
  - Review recent Compute OD spend
  - See how much Compute savings by meeting the goal

	All
Spend	$375k
Compute OD Spend	$153k
Compute Savings at Goal	$51k

	Aug 2022	Sept 2022	Oct 2022
Total Spend	$100k	$125k	$150k
Compute OD Spend	$50k	$47k	$56k
Compute Savings at Goal	$25k	$12k	$14k

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KPI Dashboard: Compute OD example

- After setting the goal, KPD dashboard estimates potential savings when achieving the goal
  - Review recent Compute OD spend
  - See how much Compute savings by meeting the goal

	All
Spend	$375k
Compute OD Spend	$153k
Compute Savings at Goal	$51k

	Aug 2022	Sept 2022	Oct 2022
Total Spend	$100k	$125k	$150k
Compute OD Spend	$50k	$47k	$56k
Compute Savings at Goal	$25k	$12k	$14k

Take action and purchase a Compute Savings Plan.



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KPI Dashboard: RDS Graviton example

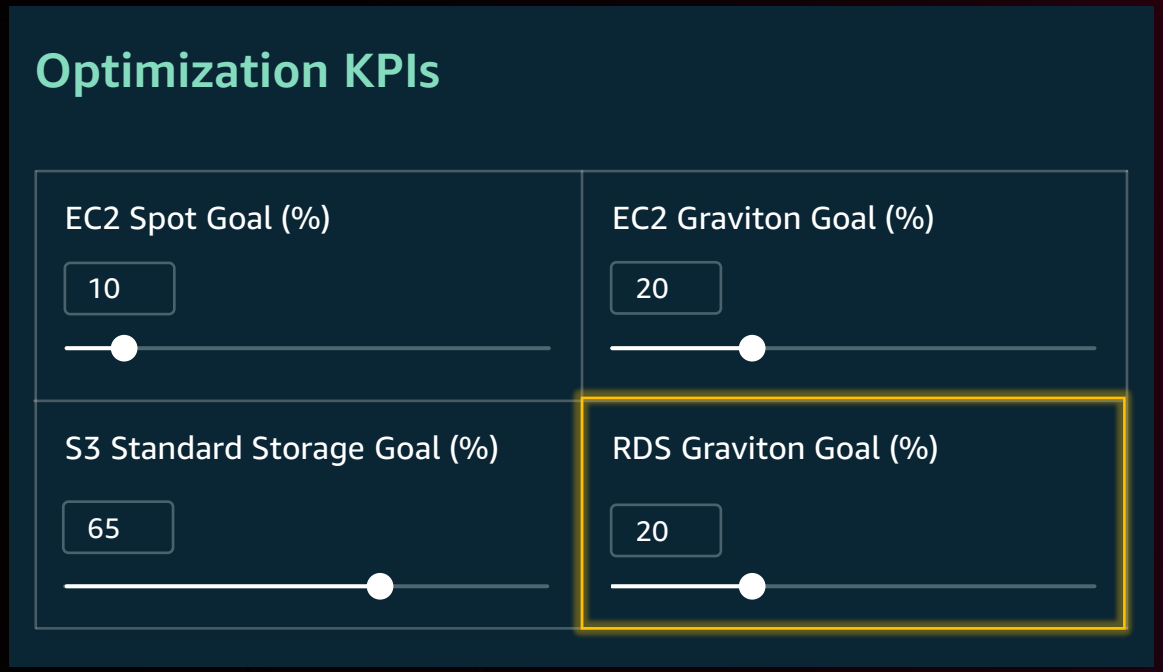
- View RDS Graviton coverage over last 3 months

	Aug 2022	Sept 2022	Oct 2022
RDS Graviton Coverage	20%	20%	20%
ElastiCache Graviton Coverage	0%	0%	0%
OpenSearch Graviton Coverage	10%	10%	10%
Lambda Graviton Coverage	0%	0%	0%

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KPI Dashboard: RDS Graviton example

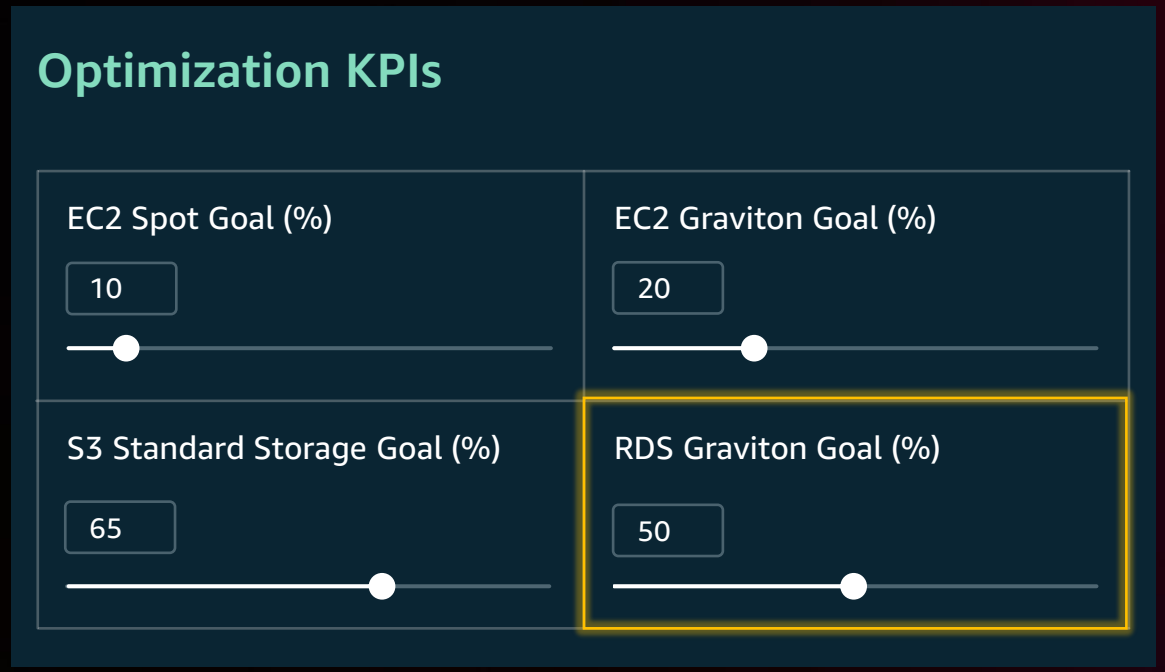
- Set RDS Graviton Goal to 50%



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KPI Dashboard: RDS Graviton example

- Set RDS Graviton Goal to 50%



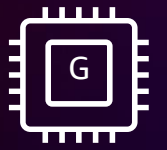
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KPI Dashboard: RDS Graviton example

- After setting the RDS Graviton goal, the dashboard estimates potential savings by meeting the goal
  - Review RDS graviton opportunities for migration

						billing_period	
						Oct 2022	
product_code	region	Instance Family	latest_graviton	Instance_type	resource_id_anon	Cost	Graviton Potential Savings
AmazonRDS	us-east-1	t3	t4g	db.t3.large	**mm:**wsrds:**s-…	$11.7K	$1.17K
	us-west-2	r5	r6g	db.r5.xlarge	**mm:**wsrds:**s-…	$22.5K	$2.25K

Take action and migrate to RDS Graviton to save.



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Cloud Intelligence Dashboards

"We regularly use Cloud Intelligence Dashboards to optimize our spend across different cost categories and accounts; it's our favorite tool" said Mike Graff, Infrastructure Architecture Director at Dolby. "Previously, we spent a percentage of our AWS bill on a third-party cloud financial management tool. But since switching to Cloud Intelligence Dashboards we have realized huge savings — we get all the functionality we need plus so much more, at the cost of just a few pizzas per month."

Mike Graff, Infrastructure Architecture Director, Dolby Laboratories

Trends Dashboards



Cost Intelligence Dashboard



CUDOS Dashboard



KPI Dashboard



Trusted Advisor Organizational Dashboard



Compute Optimizer Dashboard



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Next steps

- Deploy KPI dashboard for initial optimization insights
- Take action on compute, database, and storage optimization
- Periodically reassess progress via the KPI dashboard
  - Fine-tune KPI goals
  - Identify top optimization opportunities
- Stay optimized
- Engage with your AWS account team, cloud optimization specialist, or partner for assistance

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AWS re:Invent

Request an Optimization Consult

Thank you!

David Solomon
dasolo@amazon.com



Please complete the session survey in the **mobile app**

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