AWS re:Invent

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CMP220

Optimizing resource efficiency with AWS Compute Optimizer

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Agenda

- Types of resource optimization
- Overview of AWS Compute Optimizer
- Importance of rightsizing
- Dimensions to consider when rightsizing
- Rightsizing Amazon EC2 instances, Amazon EC2 Auto Scaling groups, Amazon EBS volumes, and AWS Lambda functions
- New features

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What is resource optimization?

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Types of resource optimization



Cost

Maximize value you derive from your spend



Performance

Ensure your provisioned capacity meets workload requirements

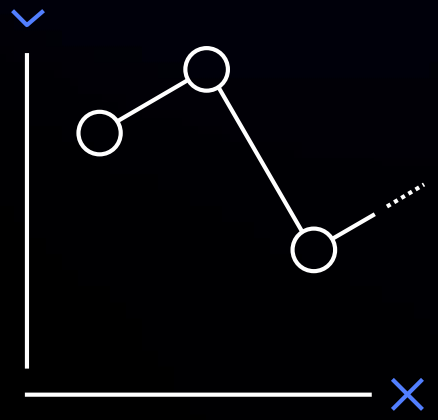
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What is rightsizing?

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Rightsizing



Match instance types and sizes to your workload at the lowest cost



Downsize without compromising performance

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Why can rightsizing be challenging?

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What is Compute Optimizer?

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Why should you use Compute Optimizer?

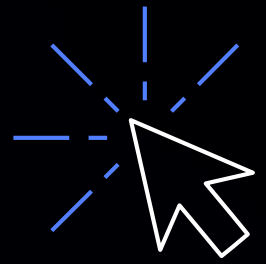
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Simplify your rightsizing journey with AWS Compute Optimizer

1 Make the right choice

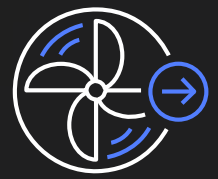


Applies insights from millions of workloads to make recommendations



Saves time comparing and selecting optimal resources for your workload

2 Ensure you are **consistently** making the right choice



Continuously scan your resource usage and match your workload to optimal resources

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How does Compute Optimizer work?

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How does it work?



Analyzes configuration and utilization metrics of your AWS resources



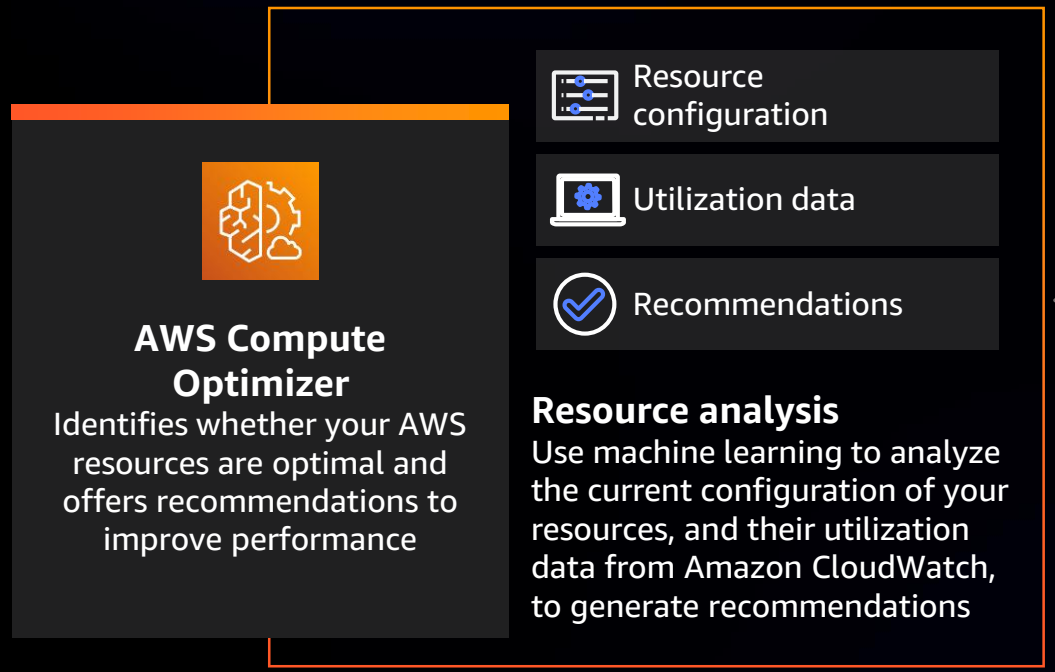
Reports whether your resources are optimal from a cost and performance standpoint



Recommends optimizations to reduce the cost and performance bottlenecks

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How does it work?

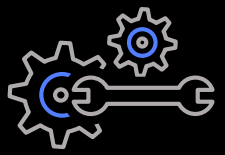


AWS Compute Optimizer
Identifies whether your AWS resources are optimal and offers recommendations to improve performance

Resource analysis
Use machine learning to analyze the current configuration of your resources, and their utilization data from Amazon CloudWatch, to generate recommendations



Cross-service integration
Recommendations can be exported to Amazon S3 and are integrated with AWS Cost Explorer and AWS Systems Manager



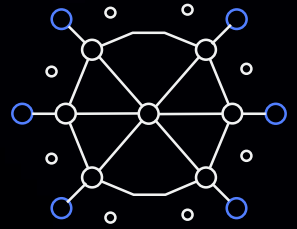
Reconfigure resources
Use the recommendations to reconfigure your resources for cost reduction and performance improvements

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Amazon EC2 rightsizing considerations



Compute capabilities



Memory capabilities



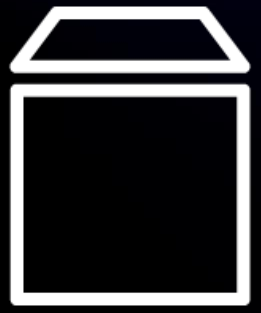
Network performance



Amazon EBS & local storage performance

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Example: Amazon EC2 instances



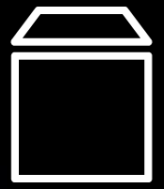
M5.2xlarge

vCPU: 8
RAM: 32 GiB
Instance storage: EBS only
Network: Up to 10 Gbps
Estimated monthly cost: $280.32



- ~40% CPU utilization during the day
- ~10% CPU utilization during the night
- ~30% RAM usage throughput
- <1 Mbps network usage more than 99% of the time
- <2 IOPS more than 99% of the time

Option 1



M5.xlarge

vCPU: 4
RAM: 16 GiB
Instance storage: EBS only
Network: Up to 10 Gbps
Estimated monthly cost: $140.16
Savings: 50.0%
Risk: Low

Option 2



T3.xlarge

vCPU: 4
RAM: 16 GiB
Instance storage: EBS only
Network: Moderate
Estimated monthly cost: $121.47
Savings: 56.7%
Risk: Medium

Option 3



R5.large

vCPU: 2
RAM: 16 GiB
Instance storage: EBS only
Network: Up to 10 Gbps
Estimated monthly cost: $91.98
Savings: 67.2%
Risk: Medium

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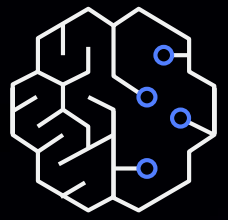
EBS recommendations by Compute Optimizer

Recommends optimal Amazon EBS volume performance settings for General Purpose (SSD) and Provisioned IOPS (SSD) volumes

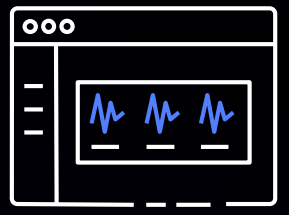
- Provisioned IOPS and throughput recommendations for gp3 volumes
- Provisioned IOPS recommendations for io1 and io2 volumes



AWS Compute Optimizer scans through your default EBS metrics



Feeds your data into machine learning models to identify the best matches for your workloads



Helps you visualize what-if scenarios based on the recommended resources



Optimizes your EBS volume choices without specialized knowledge or substantial time

aws

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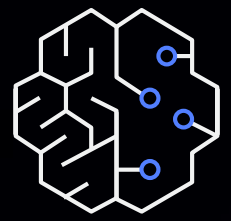
Lambda recommendations

Recommends optimal memory configuration for Lambda functions

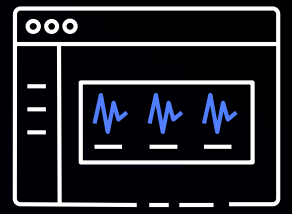
- Identifies Lambda functions that may be overprovisioned in memory size and can be downsized
- Identifies compute-intensive Lambda functions that may benefit from memory to increase CPU and reduce run time



AWS Compute Optimizer scans through your Lambda memory configuration



Feeds your data into machine learning models to identify the best matches for your workloads



Helps you visualize what-if scenarios based on the recommended resources



Optimizes your Lambda functions without specialized knowledge or substantial time

aws

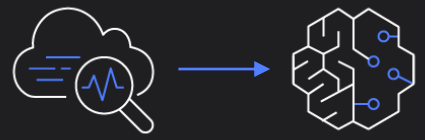
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Example: Amazon EBS volumes



Io1

Current size:
4,096 GB
Provisioned IOPS:
20,000
Estimated monthly cost:
$1,162.00



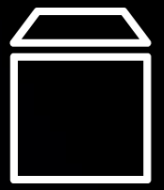
Apache Cassandra workload

Average IOPS ~2,700

IOPS sometimes up to 5,000

Current IOPS headroom is ~400%

Option 1



Io2
Current size: 4,096 GB
Provisioned IOPS: 10,000
Estimated monthly cost: $487.50
Savings: 35.87%
Risk: Very low

Option 2



Io1
Current size: 4,096 GB
Provisioned IOPS: 10,000
Estimated monthly cost: $585.00
Savings: 35.87%
Risk: Very low

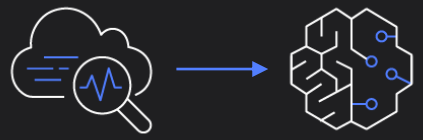
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Example: AWS Lambda functions



Current memory
128 MB





Number invocations: 19,768

Finding: not optimized –
memory under provisioned

Recommendation



Current memory: 128 MB
Risk: Medium
Recommended memory: 160 MB

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Regional availability

North America

US East (Ohio)

US East (N. Virginia)

US West (N. California)

US West (Oregon)

Canada (Central)

Europe

Europe (Frankfurt)

Europe (Ireland)

Europe (London)

Europe (Paris)

Europe (Stockholm)

Asia Pacific

Asia Pacific (Seoul)

Asia Pacific (Singapore)

Asia Pacific (Sydney)

Asia Pacific (Tokyo)

Asia Pacific (Mumbai)

Mainland China (Ningxia)

Mainland China (Beijing)

South America

South America (Sao Paulo)

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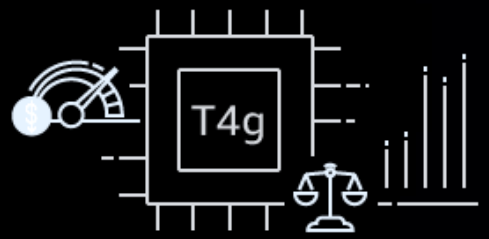
New features

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Your feedback

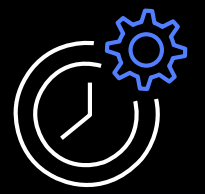
We’ve heard from you that you want Compute Optimizer to support:

- Recommendations for **AWS Graviton (aws-arm64)** instances
- Clearer visibility into top savings and performance improvement opportunities
- Longer metrics look-back









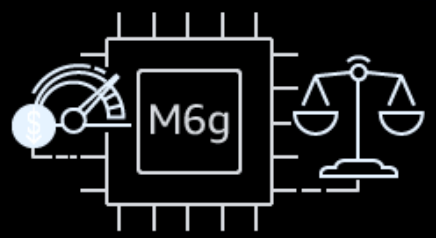
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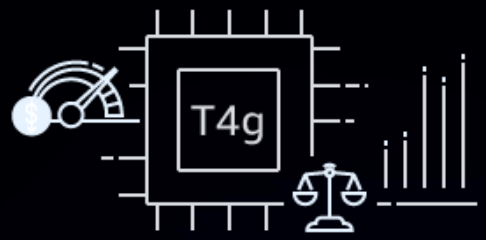
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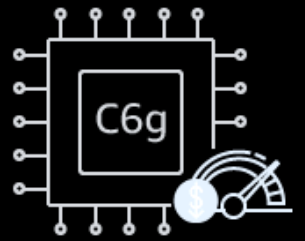
Introducing AWS Graviton recommendations

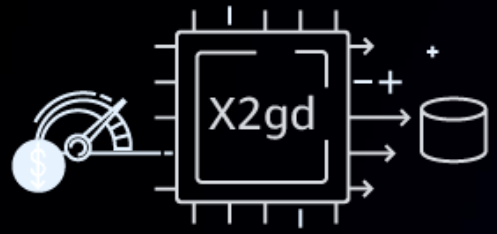
Helps you understand cost and performance impact of migrating from x86-based instances to AWS Graviton–based instances

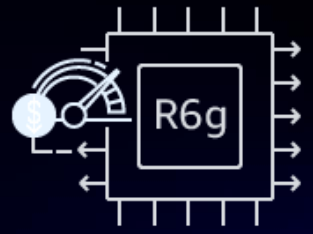
- Select **Graviton (aws-arm64)** as the preferred CPU architecture
- Support x86-based Linux instance (excluding Linux with SQL Server instances)







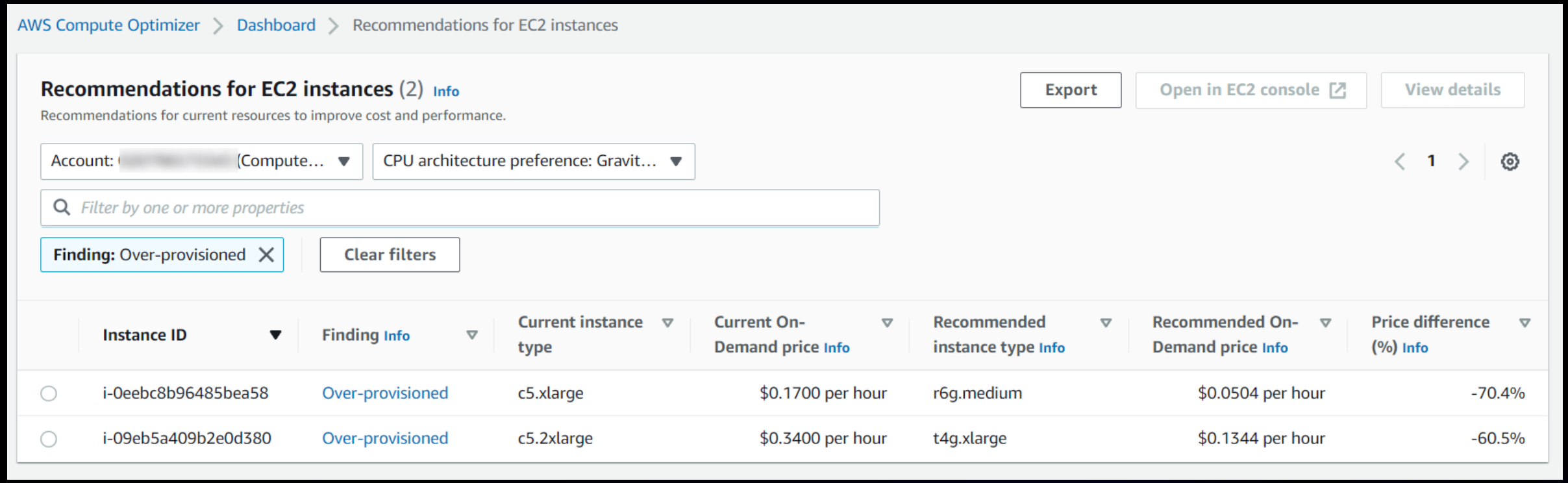




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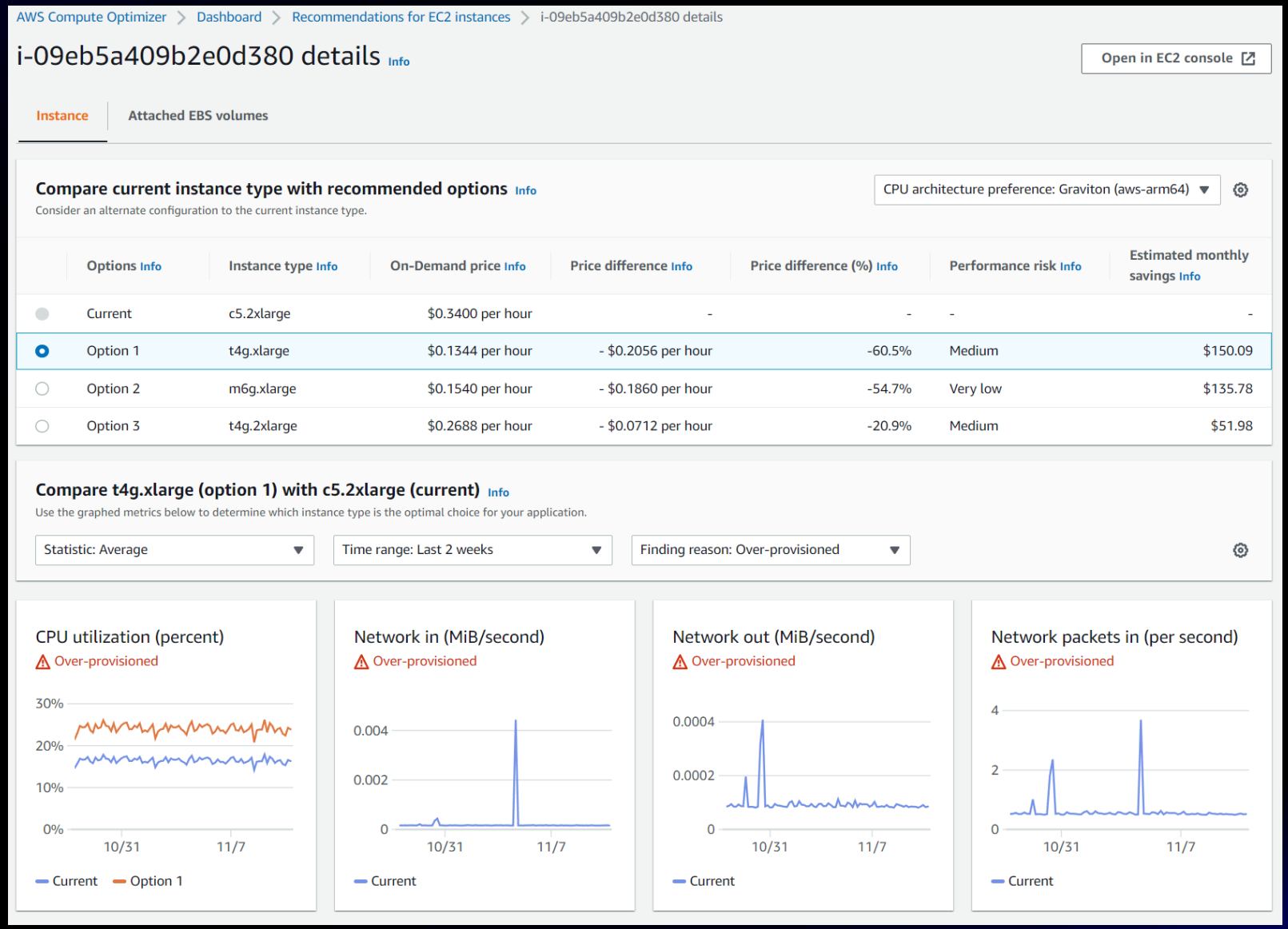
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AWS Graviton recommendations



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AWS Graviton recommendations



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Introducing resource efficiency metrics

Identify your biggest cost and performance improvement opportunities quickly and easily



Savings opportunity



Performance improvement opportunity

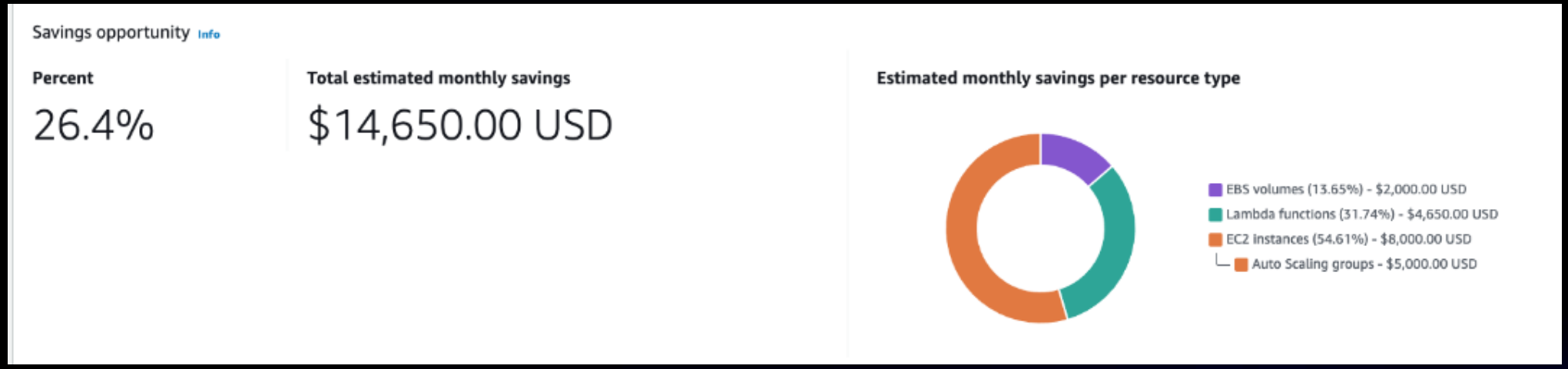
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Resource efficiency metrics

Savings opportunity metrics highlight achievable savings

- See estimated savings you can achieve as a dollar value or as a percentage of current cost at account level
- See resource type breakdown, and drill into individual resources with large potential savings

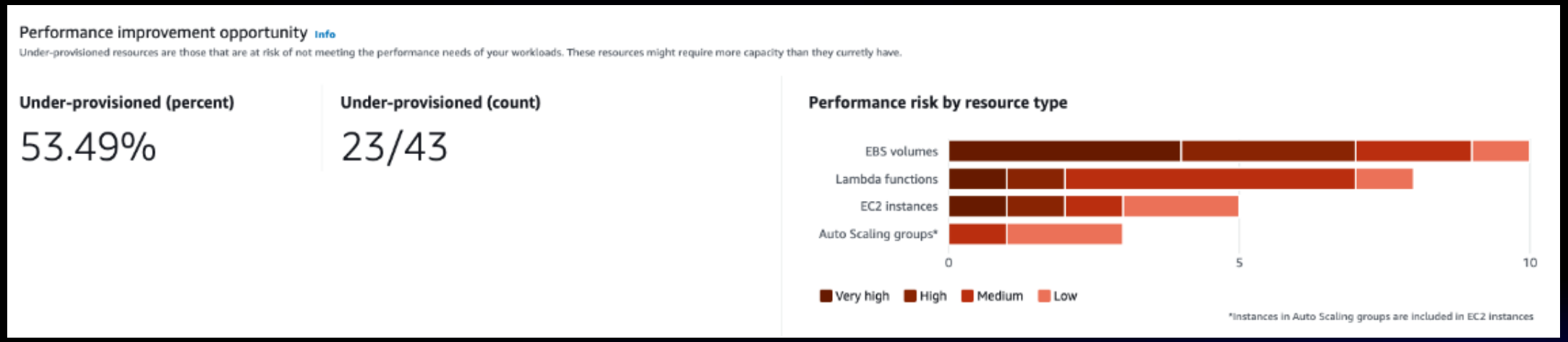


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Resource efficiency metrics

Performance improvement opportunity metrics highlight underprovisioned resources and relative performance risk

- See underprovisioned resources according to resource type
- Prioritize recommendations based on risk level



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Introducing enhanced infrastructure metrics

Enhance Amazon EC2 and EC2 Auto Scaling group recommendations with analysis of 6x more CloudWatch metrics (3 months vs. 14 days)



Capture monthly and quarterly peaks with extended look-back

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Recap

- Rightsizing can help you save on resource cost and reduce performance bottlenecks
- Compute Optimizer can help you quickly identify your top rightsizing opportunities and estimated impact across EC2 instances, Auto Scaling groups, Lambda functions, and EBS volumes

For more information: https://aws.amazon.com/compute-optimizer

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Before you go

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Before you go

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Cloud Financial Management Kiosk

Expo Hall

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Learn!

Strategic IT planning and evaluation

[ENT214] Wednesday, Dec 1 @ 7 pm

8 ways to control and manage AWS costs

[COP204-R2] Friday, Dec 3 @ 8:30 am (Chalk Talk)

Quantify and maximize your cloud business value

[ENT213-R2] Friday, Dec 3 @ 10:45 am (Chalk Talk)

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Thank you!

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