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

SUP307

Cloud optimization with Trusted Advisor and AWS Well-Architected Tool

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AWS

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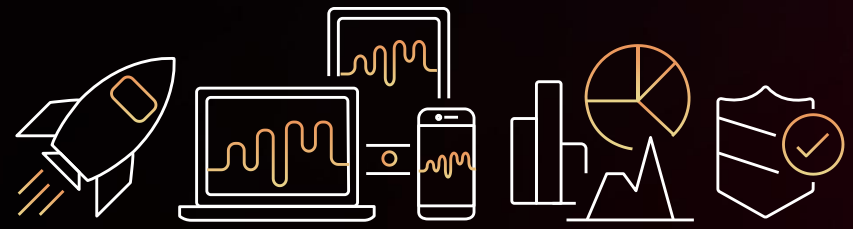
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Agenda

- What is cloud optimization in AWS
- How to accelerate optimization outcome
- Customer story – S&P Global Market Intelligence

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Common questions



Is my workload optimized ?



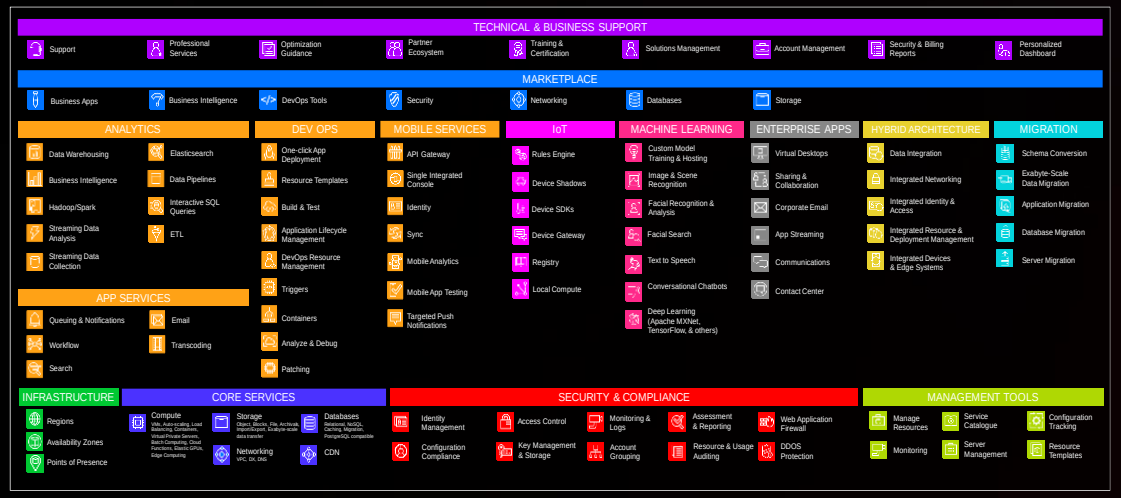
Optimization

An act of making something (design, system, or decision) as fully perfect, functional, effective as possible.

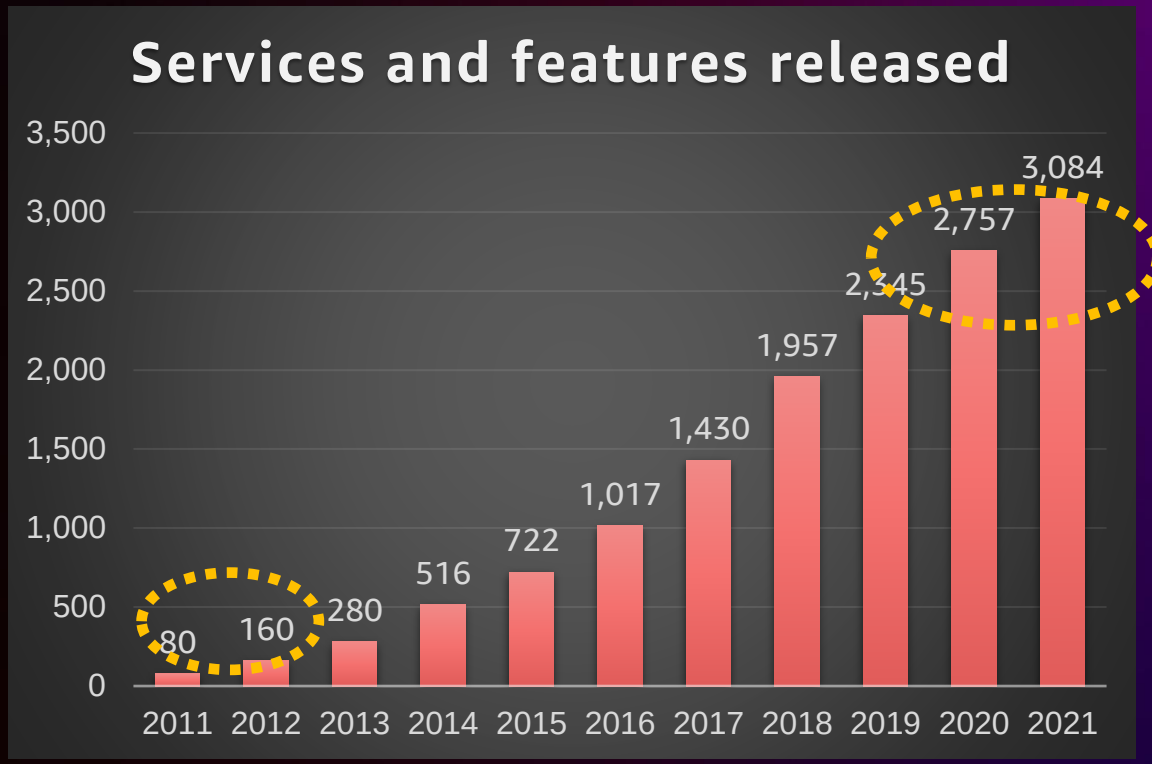
https://www.merriam-webster.com/dictionary/optimization

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AWS services growth

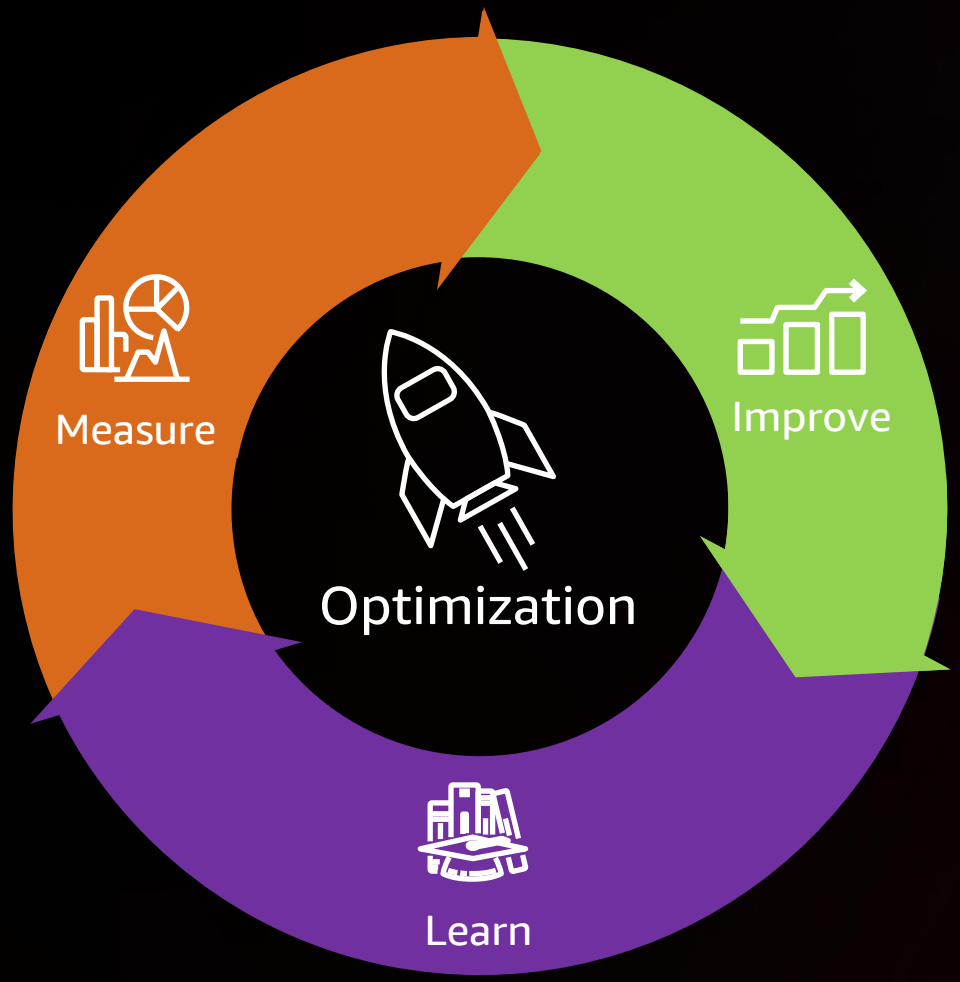


AWS services
200+



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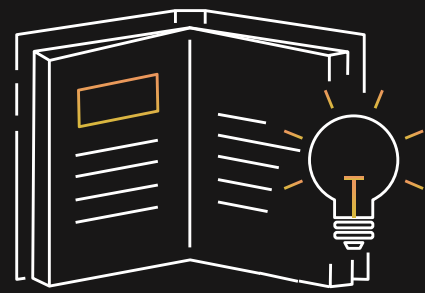
Continuous cycle of cloud optimization



Learn from

Measure against

Improve towards



Best practices

aws

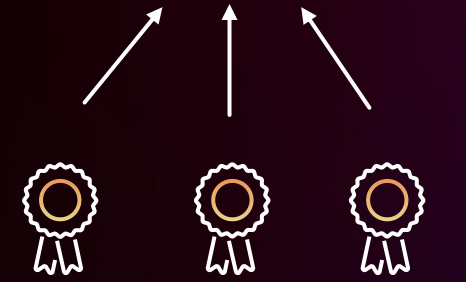
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AWS Well-Architected Framework





Design principles



Best practices

Best practices

Best practices

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AWS Well-Architected Framework



Design principle

Automatically recover from failure

Disaster recovery

RTO, RPO

DR strategy

Active/active
Active/passive
Backup restore

Automate

AWS Elastic Disaster Recovery

AWS Backup

Test & validate

AWS Resilience Hub

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AWS Well-Architected Framework



Design principle

Automatically recover from failure

Disaster Recovery

- RTO, RPO
- DR strategy
- Automate
- Test & validate

People

Process

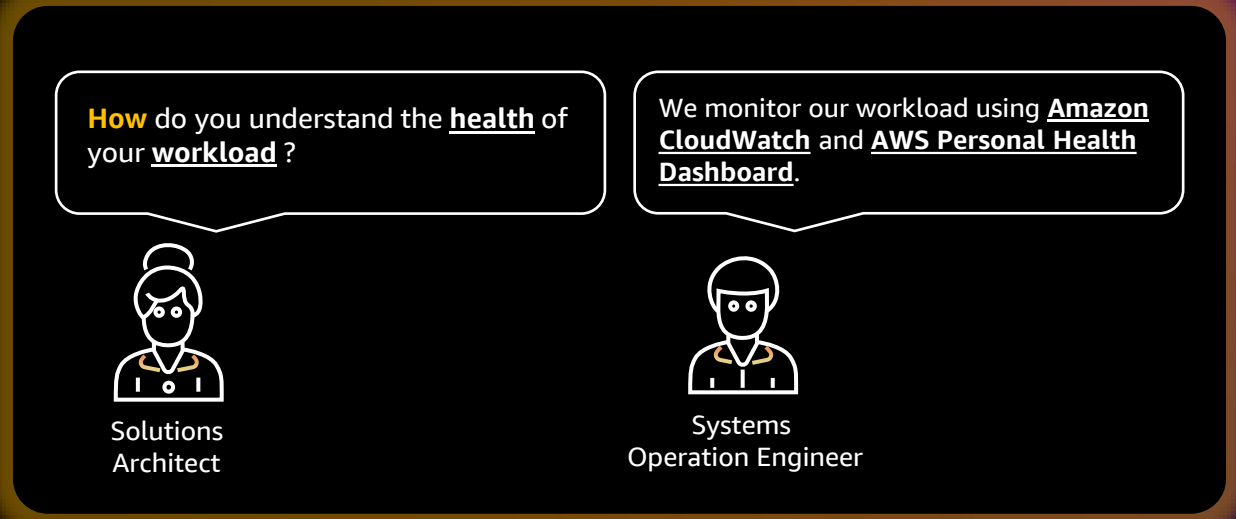
Technology

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Measuring your cloud optimization



Well-Architected Framework
Review



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Measuring your cloud optimization



Well-Architected Framework
Review

AWS
Well-Architected Tool

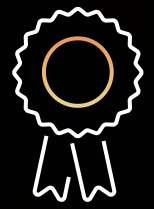
- Access to **questions** and **best practices**
- Measure **alignments** against best practices
- Track **improvements** and optimizations

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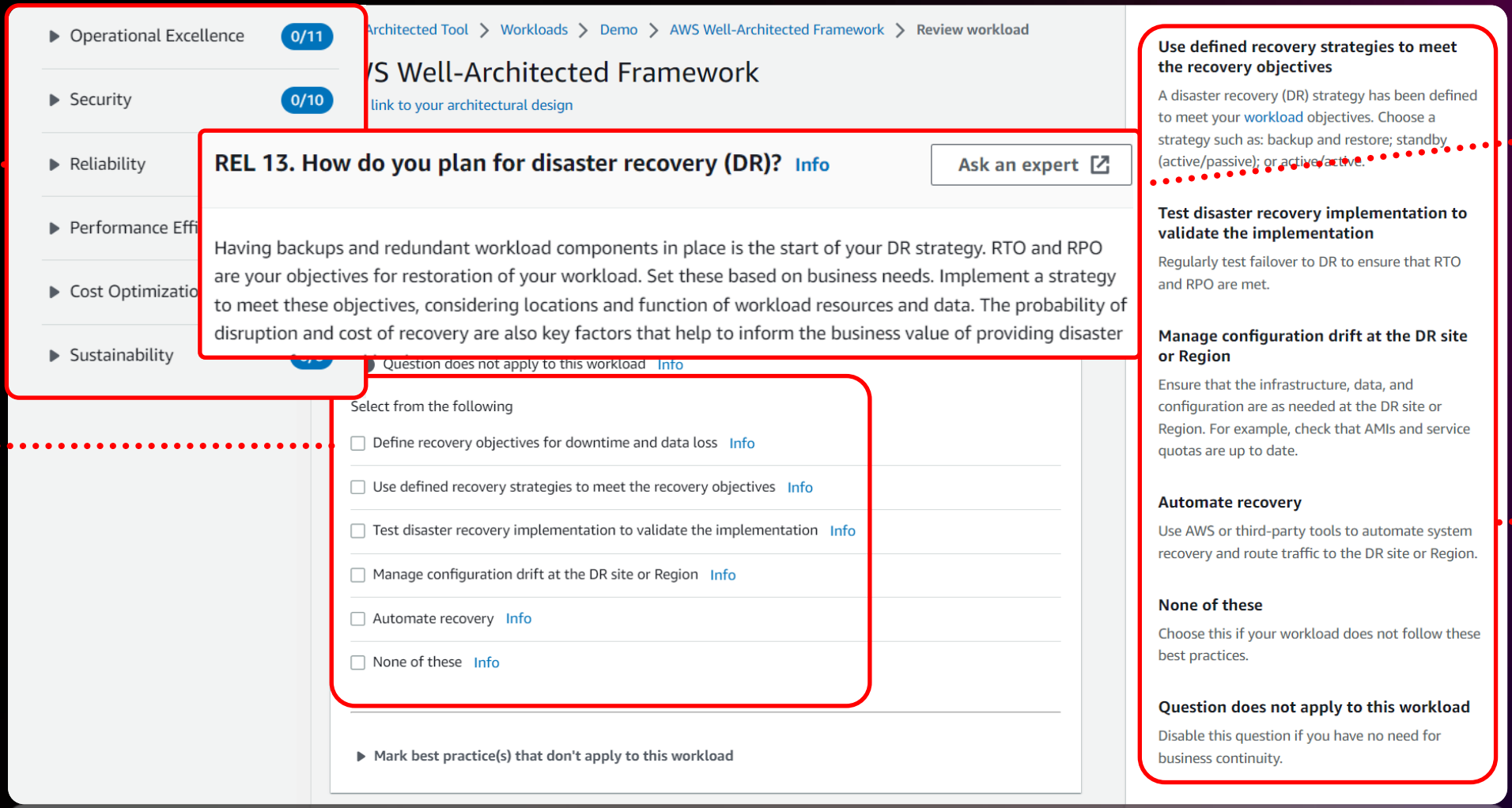
AWS Well-Architected Tool overview



Pillars



Best practice





Questions

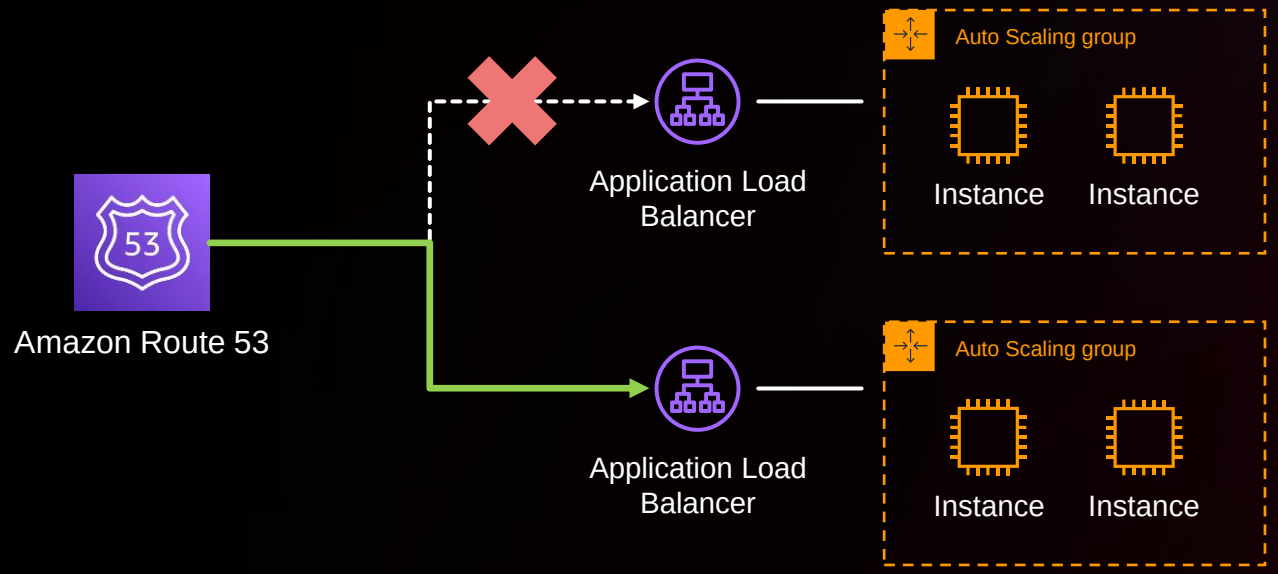


Resources

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Best practice - Automate recovery



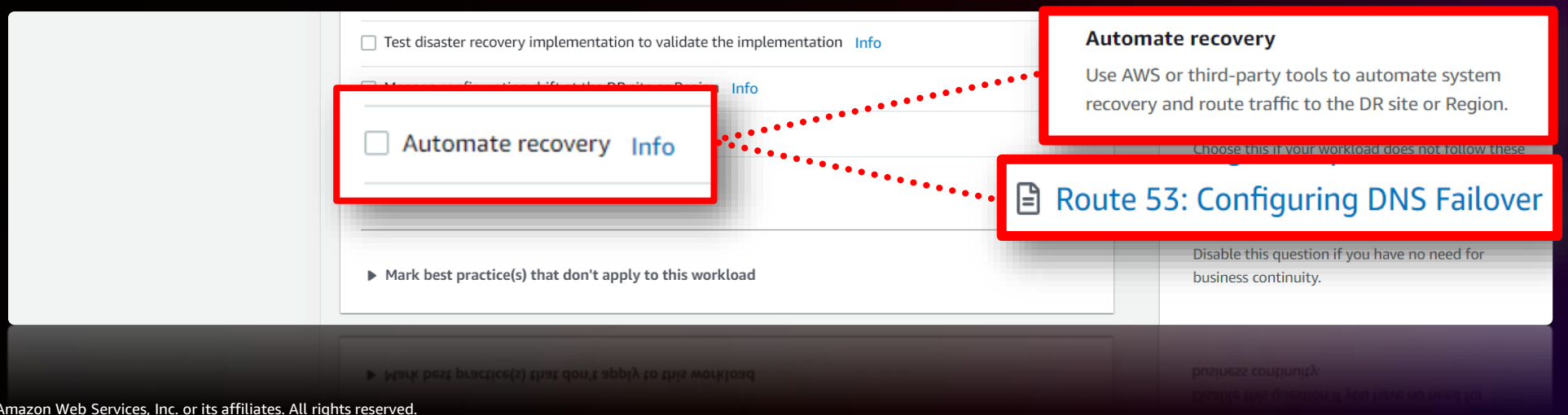
Route 53 DNS failover

Routing policies:

- Geolocation
- Latency
- IP based
- Weighted

Active-active failover

Active-passive failover



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Tracking progress with Milestones

Risks ↓ = Optimized ↑



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Well-Architected
Tool



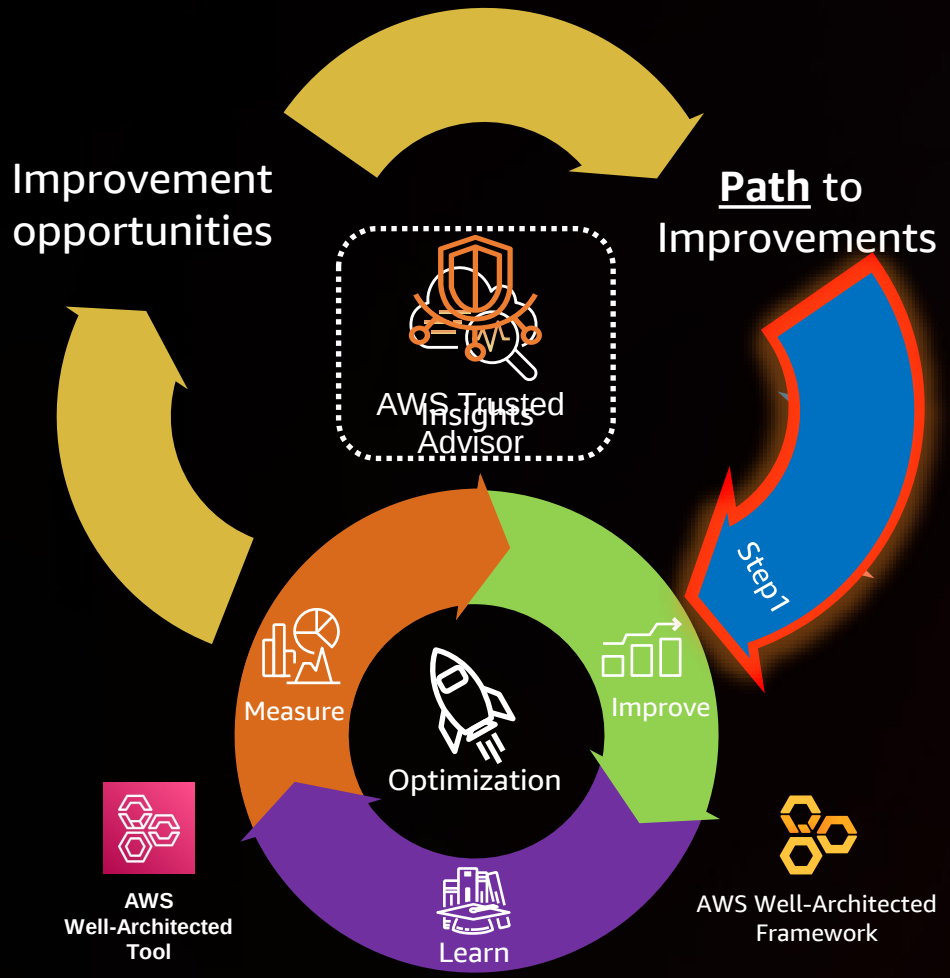
Milestones

	Name	Questions answered	High risks	Medium risks
○	Design Phase - Q1	58/58	43	14

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Cloud optimization cycle acceleration



How to **accelerate** outcome ?

Insights = AWS Trusted Advisor

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AWS Trusted Advisor



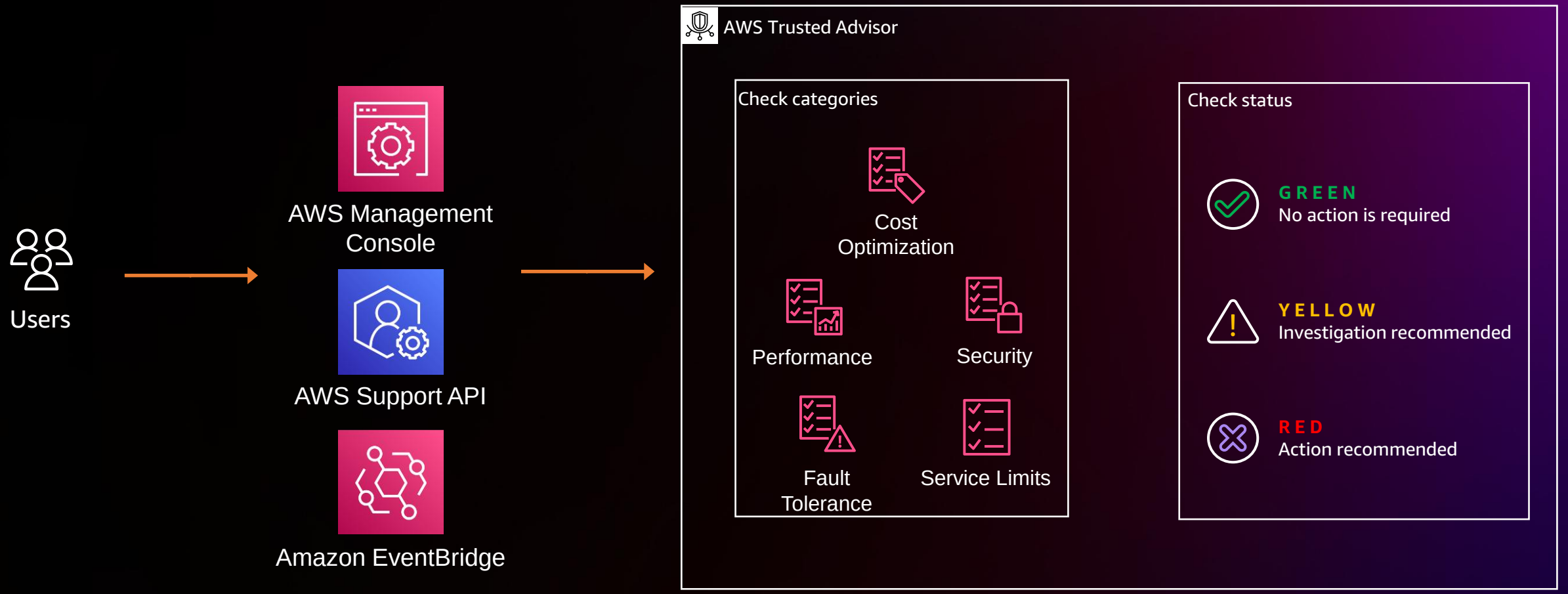
AWS Trusted Advisor

HOME OF AWS BEST PRACTICE RECOMMENDATIONS

Inspects your AWS environment and makes recommendations when opportunities exist to save money, improve resilience and performance, or help close security gaps

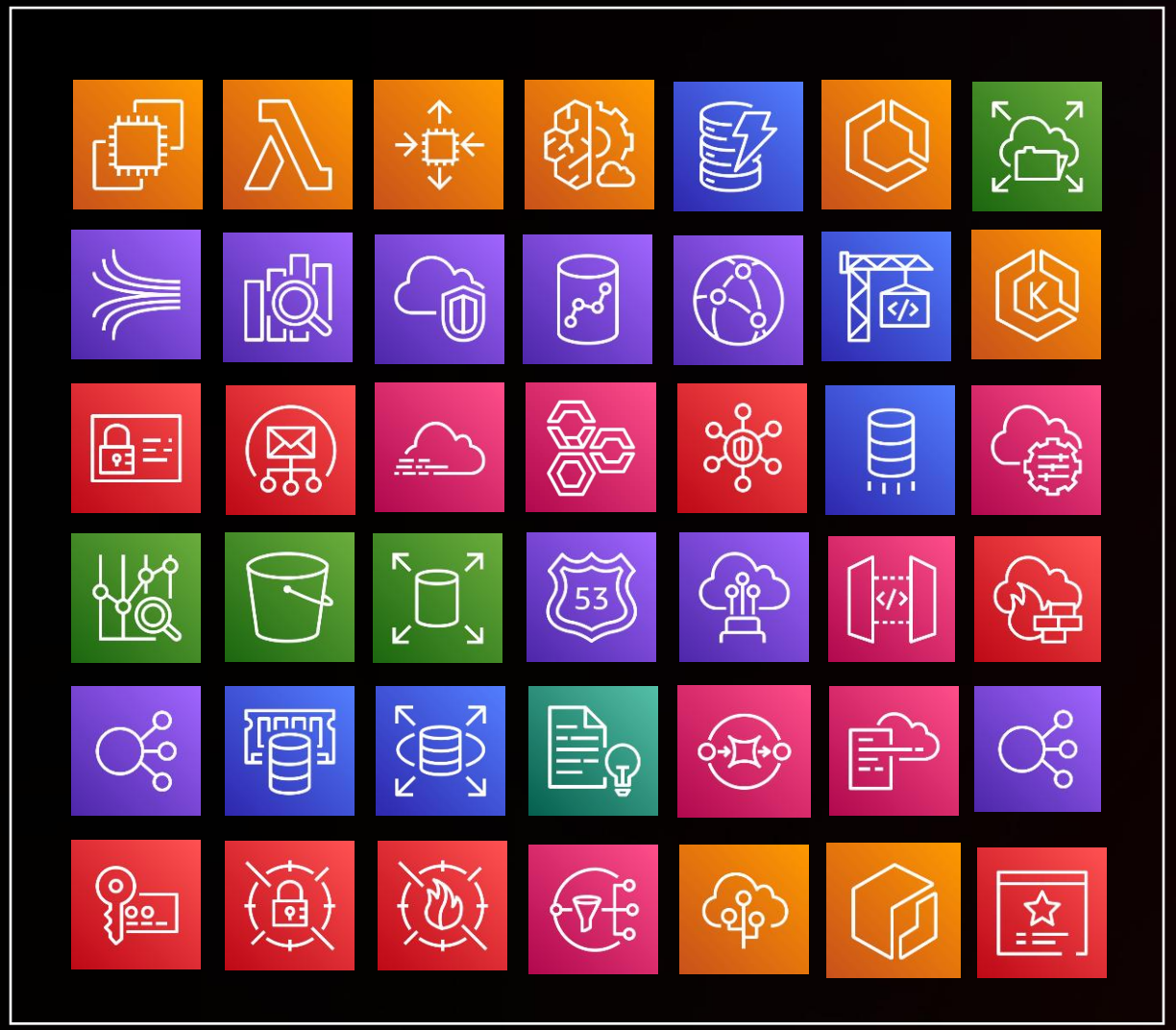
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AWS Trusted Advisor



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AWS Trusted Advisor – Coverage





272 checks

across

45 AWS services

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Well-Architected review without Insights

PERF 2 How do you **select** your **compute** solution?

COST 6 How do you meet cost targets when you **select resource type, size and number**?



Reviewer

PERF 6

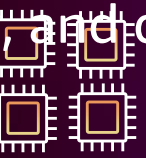
COST 6

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Well-Architected review without Insights

Do you know if **Lambda function** mem config is **optimal** for the performance you need, while keeping **cost** low?

No, we don't know that. We go with an estimate when we deploy, and don't revisit.



More memory = **More** compute





Pay per use



Reviewer



Application Owner

Optimization **need**

Configure monitoring

Establish baseline

Identify optimal memory configuration

Outcome
Achieved

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AWS Trusted Advisor Checks



Checks Description



Data Source



Recommendation

AWS Lambda over-provisioned functions for memory size Last updated: a day ago

Checks the AWS Lambda functions that were invoked at least once during the lookback period. This check alerts you if any of your Lambda functions were over-provisioned for memory size. When you have Lambda functions that are over-provisioned for memory sizes, you're paying for unused resources. Although some scenarios can result in low utilization by design, you can often lower your costs by changing the memory configuration of your Lambda functions. Estimated monthly savings are calculated by using the current usage rate for Lambda functions.

Source
AWS Compute Optimizer

Alert Criteria
Yellow: A Lambda function that was over-provisioned for memory size during the lookback period. To determine if a Lambda function is over-provisioned, we consider all default CloudWatch metrics for that function. The algorithm used to identify over-provisioned Lambda functions for memory size follows AWS best practices. The algorithm is updated when a new pattern has been identified.

Recommended Action
Consider reducing the memory size of your Lambda functions.

Additional Resources
For more information about this recommendation, see the Trusted Advisor documentation page.

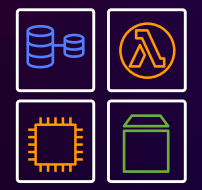
AWS Lambda over-provisioned functions for memory size (1)
checks-COr6dfpM05-summary

Exclude & Refresh | Included items | 1

Status	Function Name	Memory Size(MB)	Recommended Memory Size(MB)	Savings Opportunity(%)	Estimated Monthly Savings
⚠	OverProvisioned:$LATEST	1024	848	6.38	0.1661166



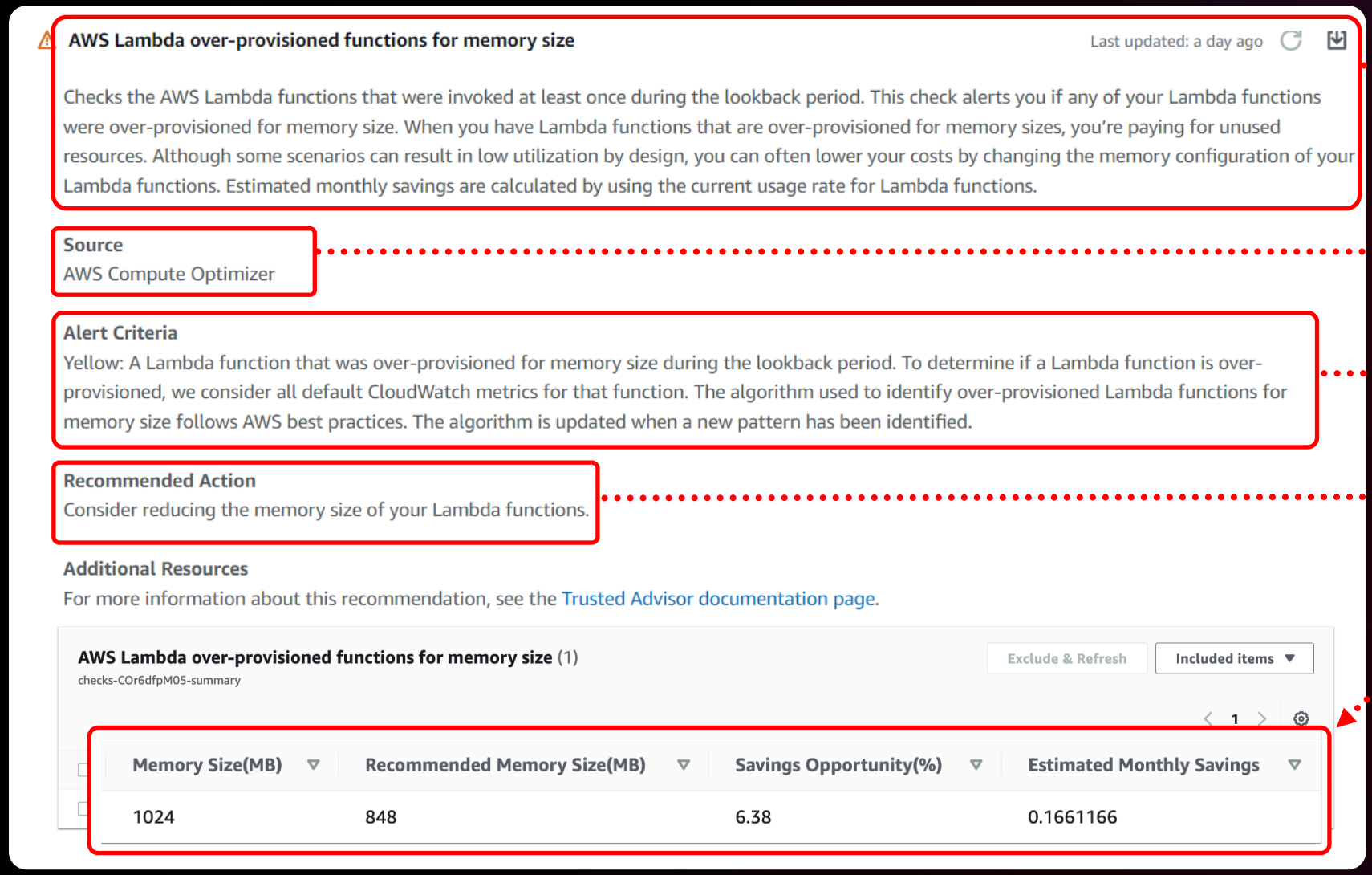
Alert Criteria



Resource Details

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Optimize AWS Lambda for memory size




Description


Lambda function memory


Source


AWS Compute Optimizer


Alert criteria

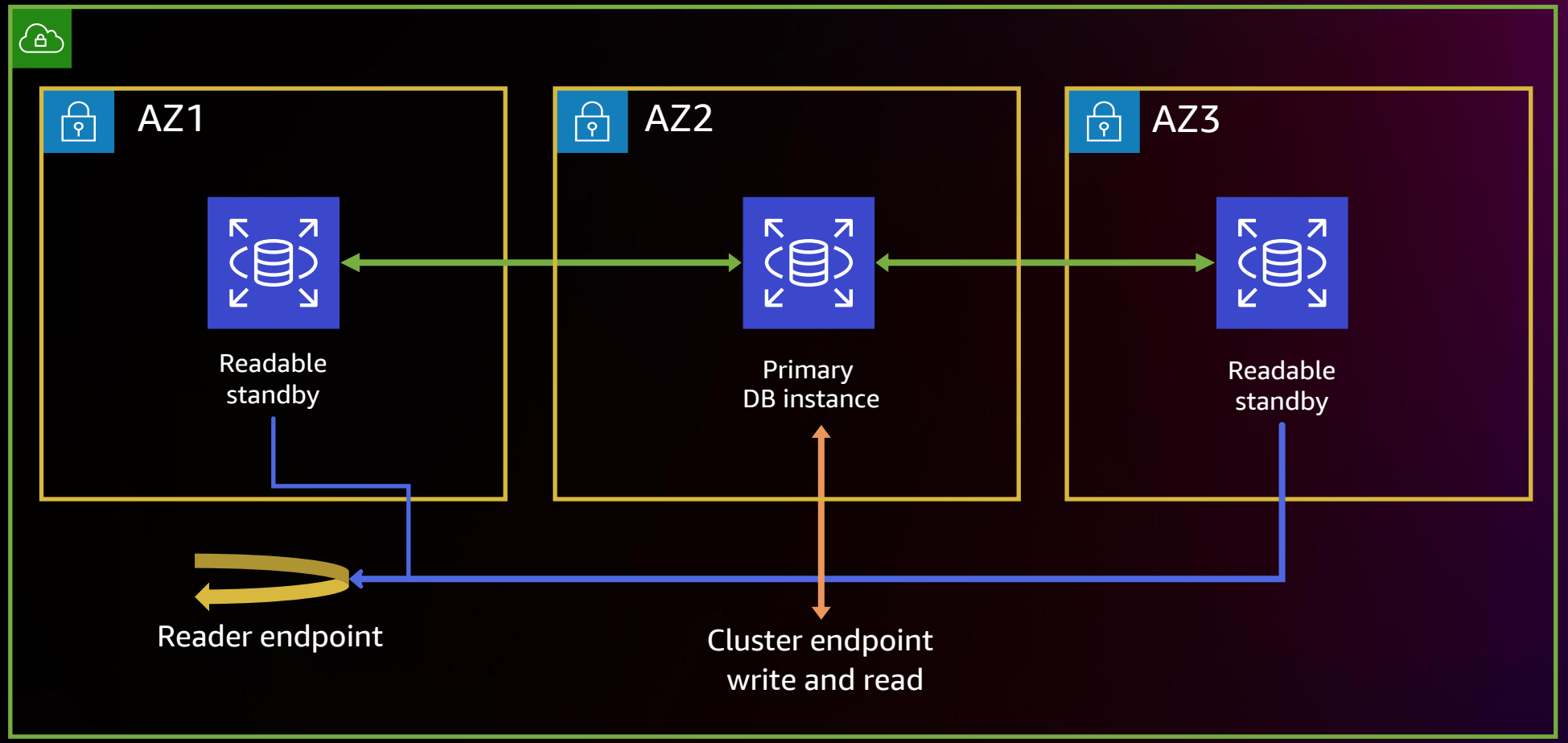

Amazon CloudWatch


Recommendation


AWS Lambda over-provisioned memory check

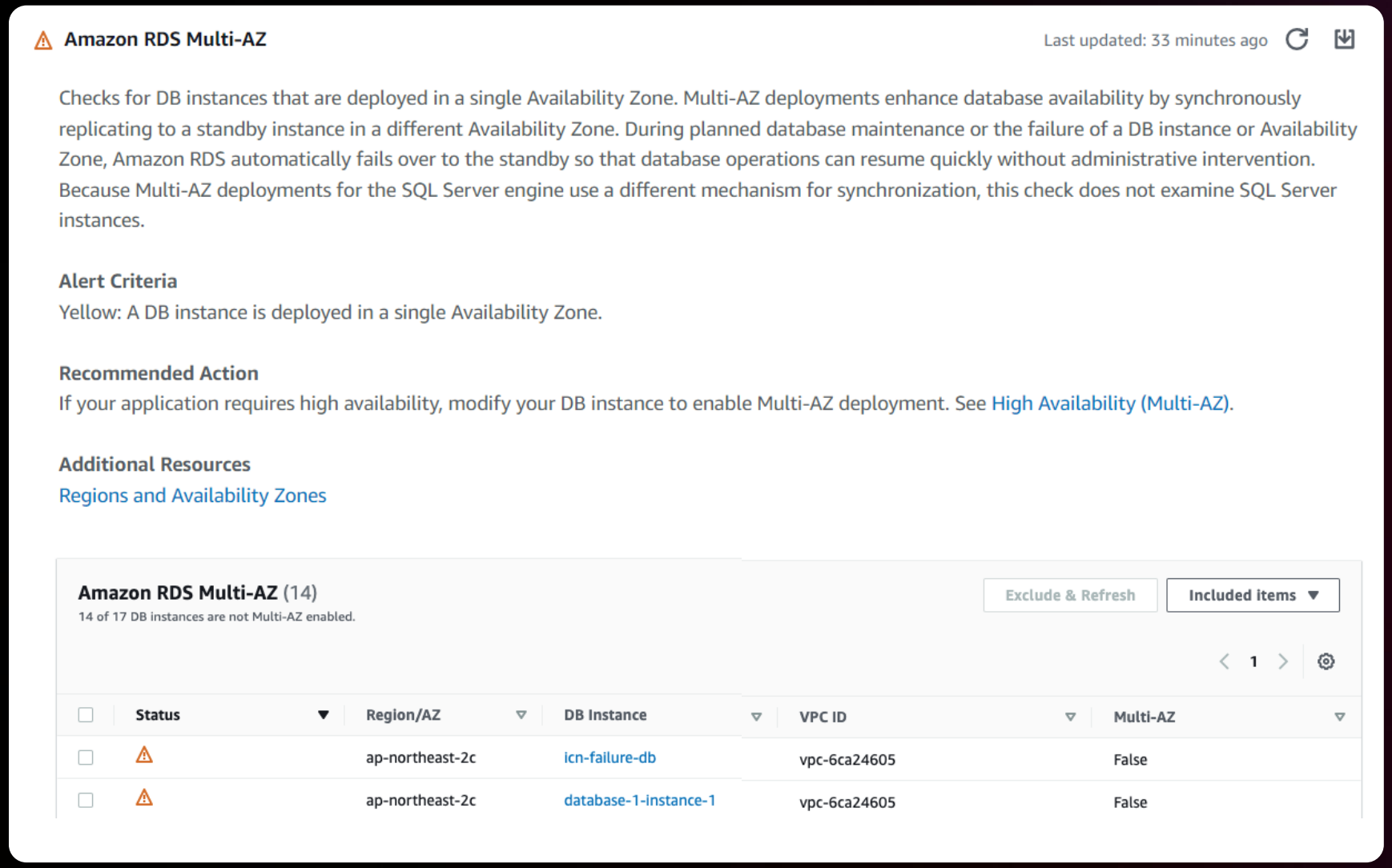
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Resiliency with Amazon RDS



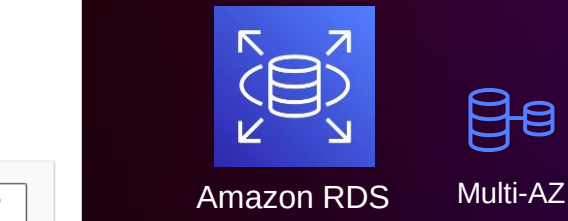
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Detect single AZ Amazon RDS deployments











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Detect risks from AWS Well-Architected Framework review

AWS Well-Architected high risk issues for reliability

Last updated: an hour ago

Checks for high risk issues (HRIs) for your workloads in the Reliability pillar. This check is based on your AWS-Well Architected reviews. Your check results depend on whether you completed the workload evaluation with AWS Well-Architected.

Alert Criteria

Red: At least one active high risk issue was identified in the reliability pillar for AWS Well-Architected.
Green: No active high risk issues were detected in the reliability pillar for AWS Well-Architected.

Recommended Action

AWS Well-Architected detected high risk issues during your workload evaluation. These issues present opportunities to reduce risk and save money. Sign in to the AWS Well-Architected tool to review your answers and take action to resolve your active issues.

AWS Well-Architected high risk issues for reliability (1)

1 of 1 workloads have at least one high risk issue in the reliability pillar.

Exclude & Refresh | Included items

1

Status	Region	Workload Name	Workload Type	Workload Last Modified Date	Number of identified HRIs for Reliability
⊗	us-east-1	test-workload	Pre-production	2021-11-04	1



AWS Trusted Advisor



Overall Workload
Fault tolerance optimization



AWS Well-Architected Tool



Workload review



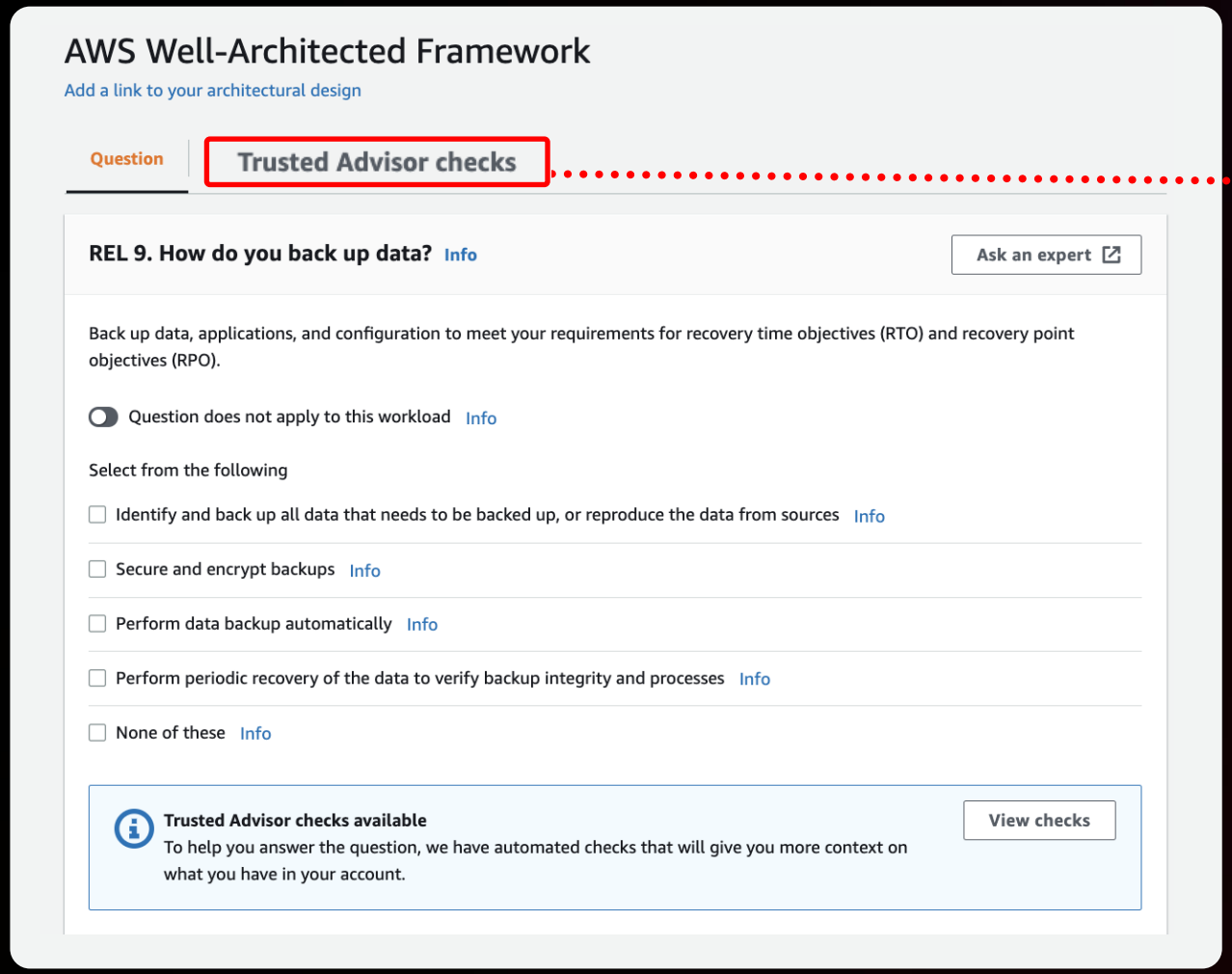


AWS Well-Architected high risk issues for reliability

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NEW! AWS Well-Architected Tool integration with AWS Trusted Advisor

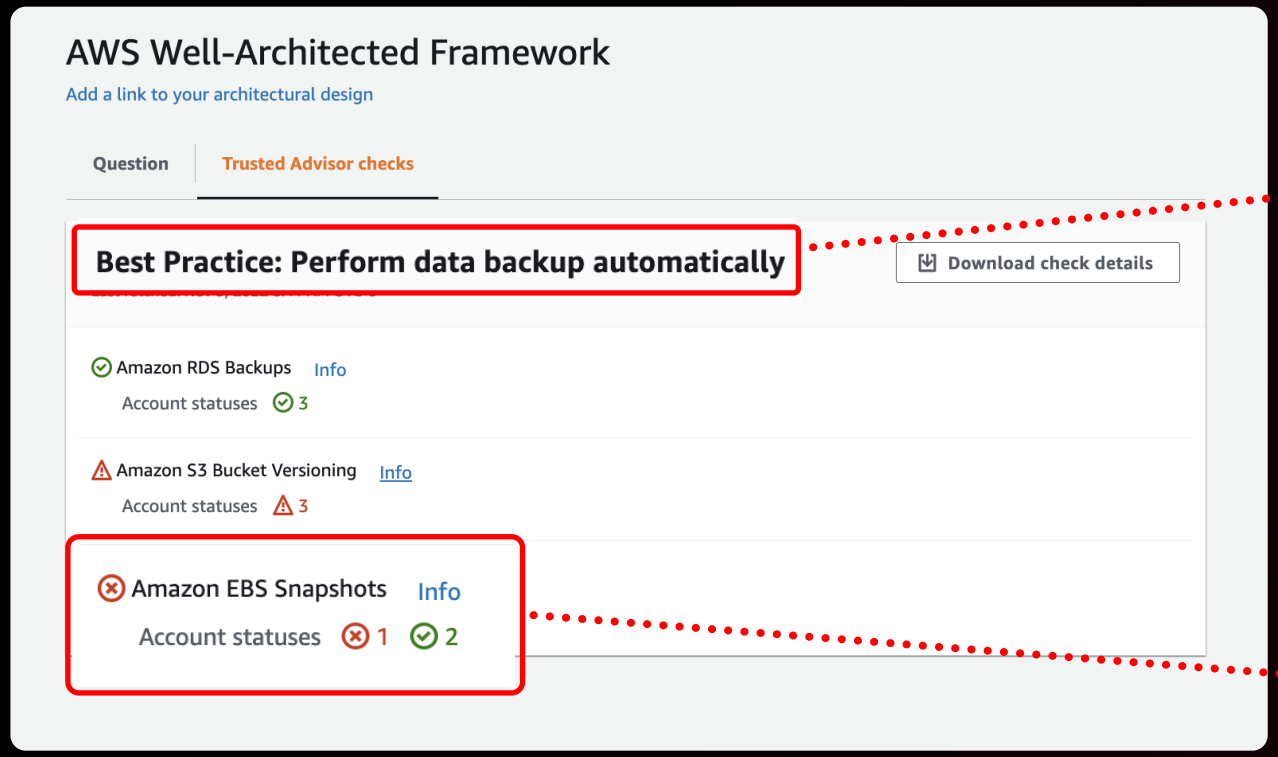


AWS Trusted Advisor checks

AWS Well-Architected Tool
AWS Trusted Advisor Integration

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NEW! AWS Well-Architected Tool integration with AWS Trusted Advisor



AWS Well-Architected best practice

Amazon EBS snapshots

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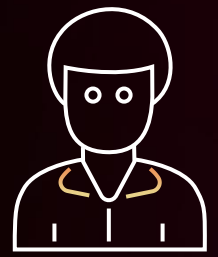
Optimization review without insights

Do you know if **Lambda function** mem config is **optimal** for the performance you need, while keeping **cost** low?

No, we don't know. We could use AWS Trusted Advisor to identify and apply optimal memory configuration for Lambda functions.



Reviewer



Application Owner

Optimization need

Setup monitoring → Establish baseline → Identify optimal memory configuration

Outcome
Achieved

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S&P Global
Market Intelligence

We are a world-leading provider of financial information and solutions.

Data & analytics

Our breadth and depth of data, from comprehensive fundamentals to sector-specific performance metrics, M&A to credit risk, lets customers uncover new insights to make decisions with conviction.

Enterprise technology

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IssueBook

- Market leading primary issuance platform
- Rapid exchange of orders and allocations between syndicate banks
- Multi-tenant, multi-region, real-time trading platform managing concurrent transactions

Key statistics :

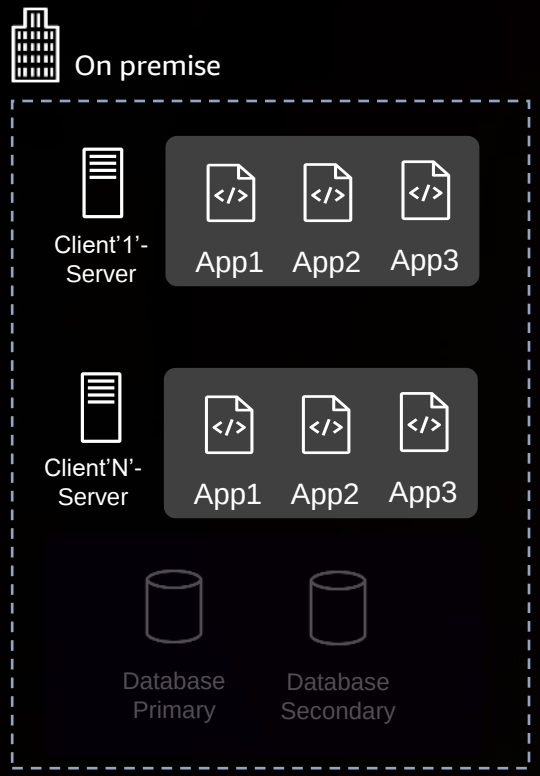
- **97%** of all € issuance
- **93%** of all G3 Asia issuance
- **96%** of all US IG issuance
- **4.3** trillion+ issuance in 2020
- **200 +** banks

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Agility





Well-Architected Framework
Review



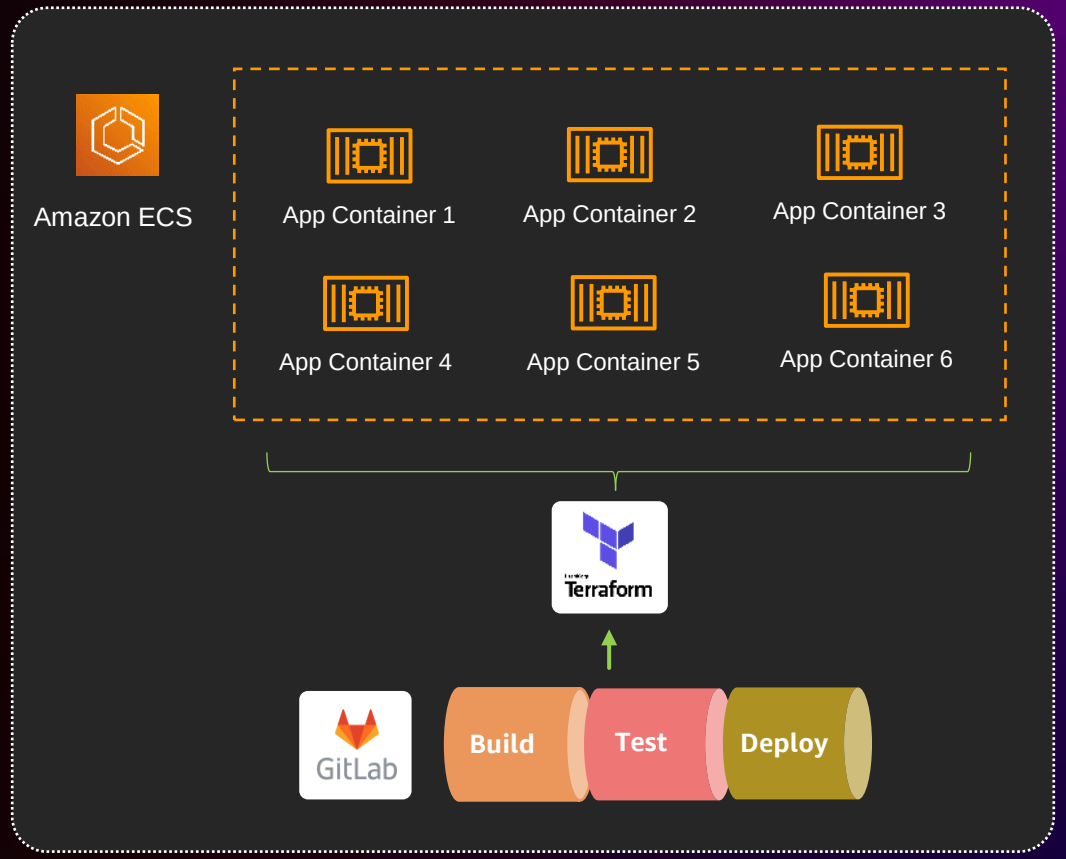
Operation

Deployment speed
"how do you mitigate deployment risk ?"

Infrastructure as code

Continuous integration / deployment

Outcome :
Frequent production deployment



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Reliability



Well-Architected Framework
Review



Reliability

Disaster recovery

"how do you plan for disaster recovery ?"

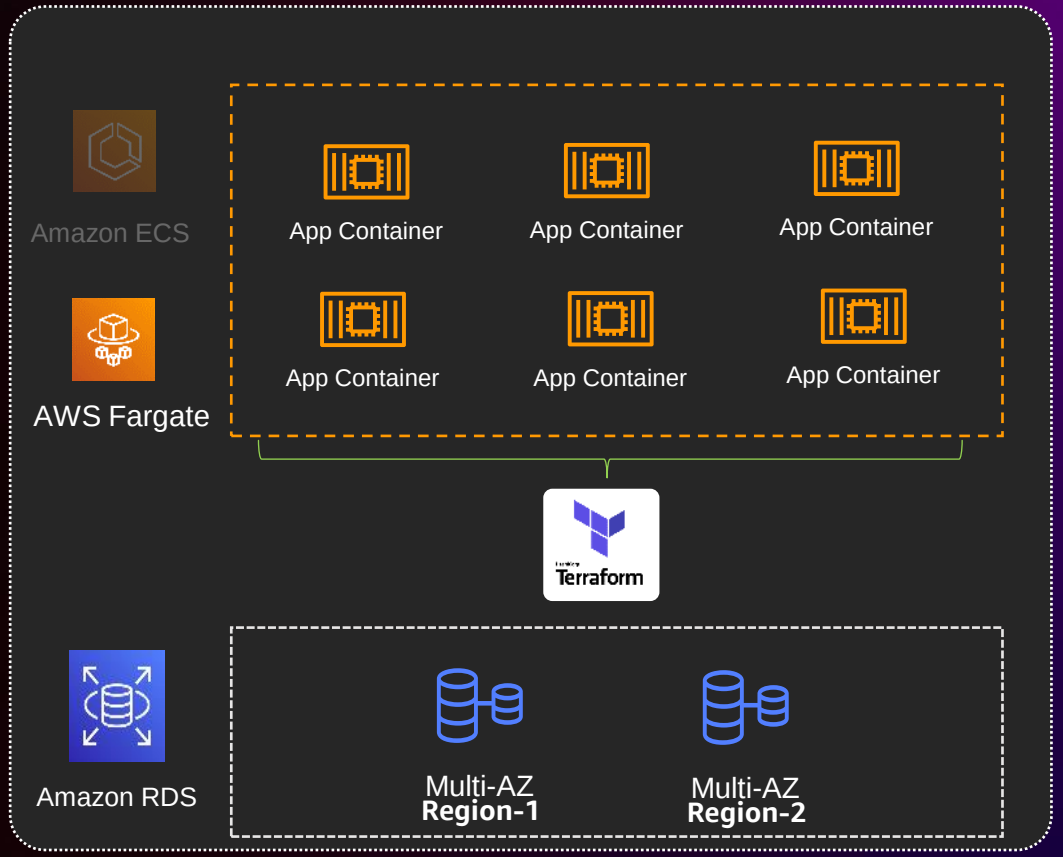
Automated resource provisioning

Leverage managed services.

- AWS Fargate
- Amazon RDS Multi AZ

Outcome :
High availability in same Region
improved resiliency

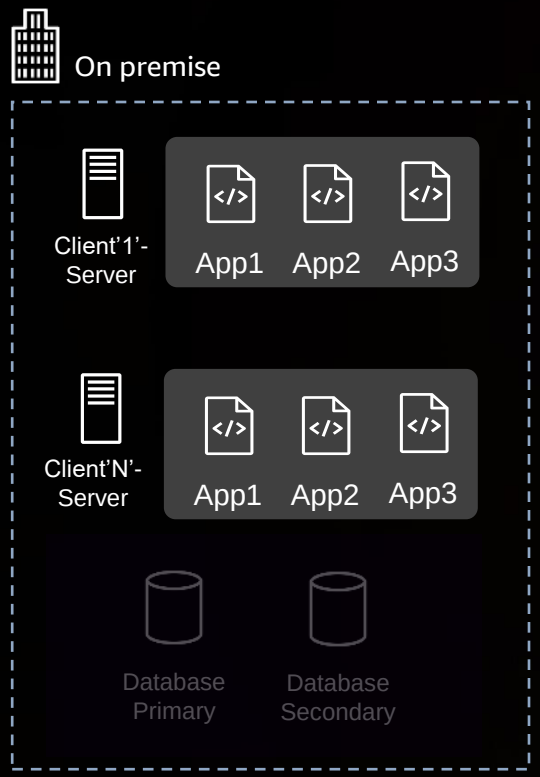




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Cost Optimized





Well-Architected Framework
Review



Resource management

"How do you decommission resources?"
"How do you meet cost target ?"

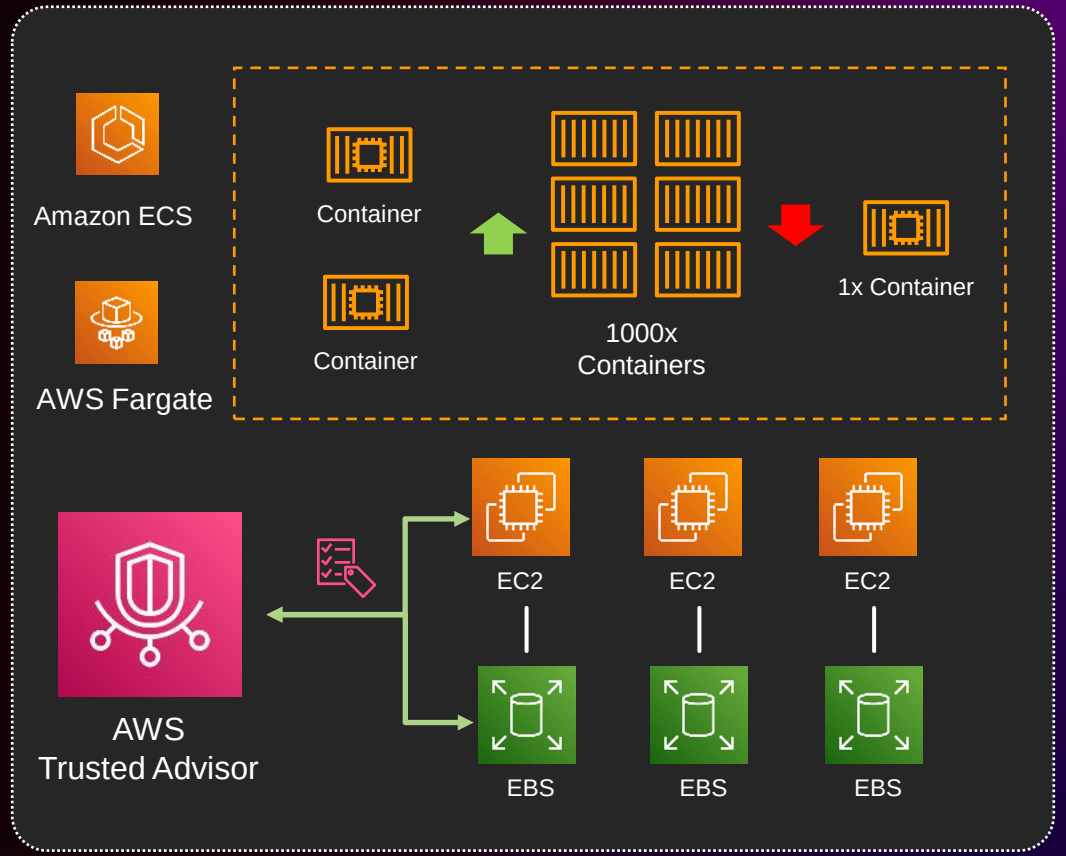
Adopt cloud consumption model.

AWS Trusted Advisor checks:

- Low EC2 Instance utilization
- Underutilized Amazon EBS Volumes

Outcome :

Optimized cost footprint



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Learning

On-premise

Shared IT services

Build teams

Operational excellence

*"How to **operate** in the cloud?"*

TechOps - Shared support

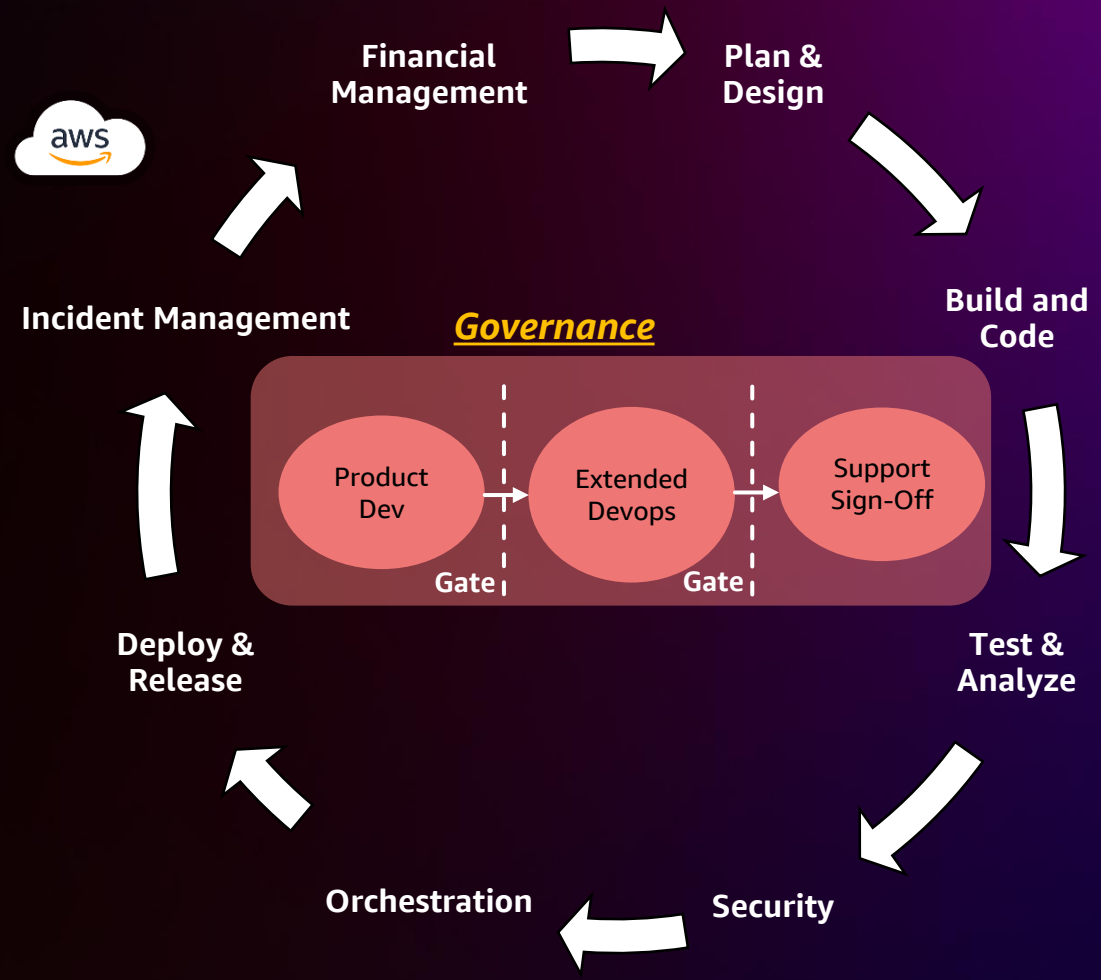
DEVELOPMENT TEAMS

Program Ops - Implementations

DevOps - Patterns and Blueprints

Outcome:

Established cloud operating model



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Summary

- Cloud optimization is a journey of **learn, measure, improve**
- Aws Well-Architected Framework for **AWS best practices guide**
- AWS Well-Architected Tool for **measure and track improvement**
- AWS Trusted Advisor insights to **accelerate** outcome

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Additional resources



AWS Well-Architected Framework

AWS best practices guide to build and run workload.



AWS Well-Architected Tool

Help measure workload towards AWS best practices.



AWS Trusted Advisor

Resources best practice insights and recommendation.

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Additional resources



AWS Well-Architected Lab

Collection of hands on lab of Well-Architected best practices.



AWS Blog

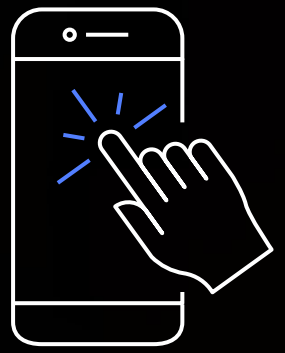
Accelerating reviews using AWS Trusted Advisor insights.

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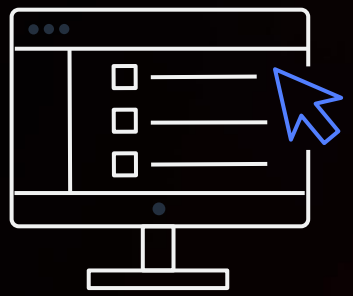
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Community-driven, knowledge sharing site for your AWS questions

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Machine learning drives smart content recommendations



Follow specific questions, topics, and community experts

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Thank you!

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