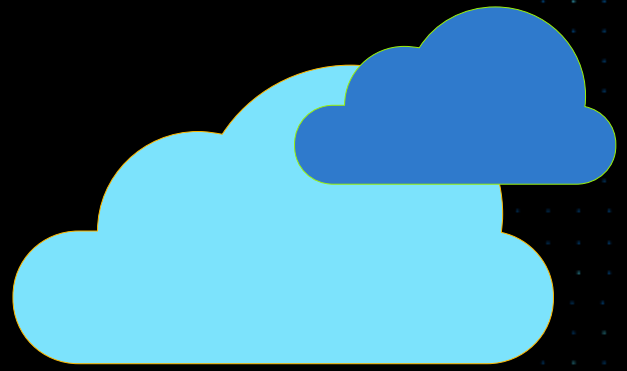
Microsoft

Microsoft Azure Well-Architected Framework Overview



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CEE Sr Cloud Architect

Agenda

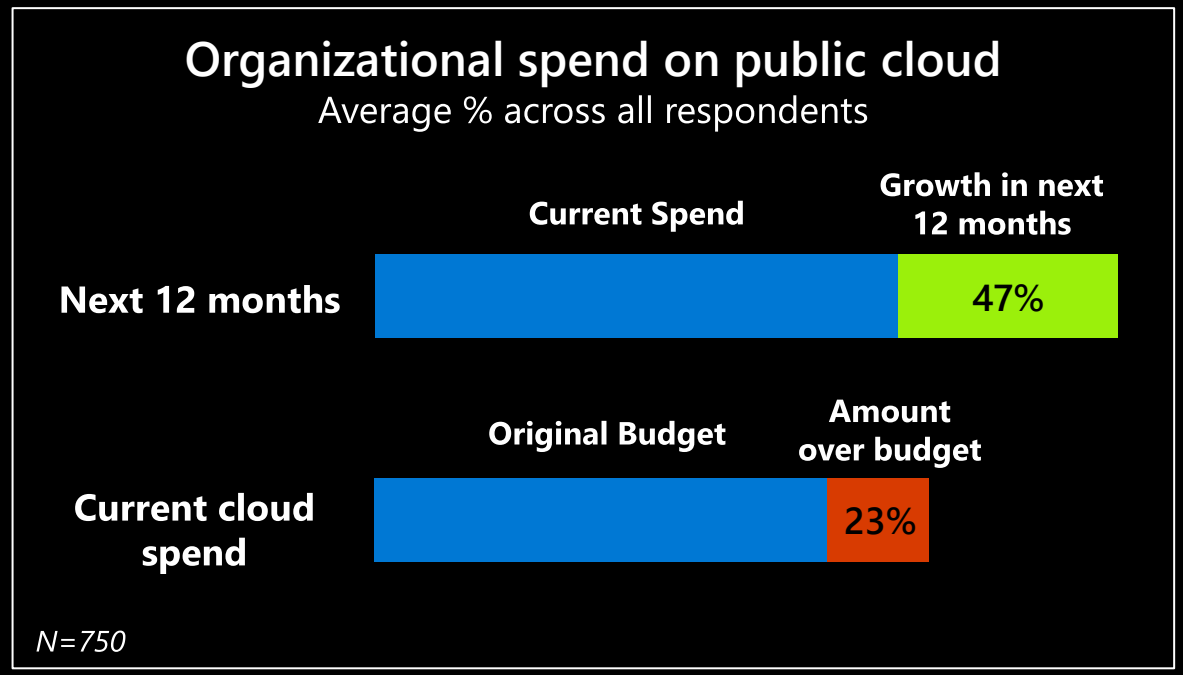
- Why is being well-architected important?
- Overview: Microsoft Azure Well-Architected Framework
- Overcoming workload quality inhibitors
- Resources & Amplification

Why is being well-architected important?

Well-architected solutions enable—cost optimization

It's more critical than ever for customers to get a handle on forecasting and cost optimization[1]

- Customers reported their public cloud spend was over budget by an average of 23 percent[1]
- Respondents expect their cloud spend to further increase by 47 percent in the next 12 months.



[1] *Flexera 2020 State of the Cloud Report*

Well-architected solutions enable—cost savings in security spend

In 2019, encryption, business continuity management, DevSecOps, and threat intelligence sharing **mitigated cost**[1]

- Encryption reduced breach costs by an average of $360,000.
- Business continuity management reduced the total cost of a data breach by an average of $280,000.

1 The Cost of a Data Breach Report, IBM Security, 2019. Conducted by Ponemon Institute LLC

Well-architected solutions enable—
cost savings with resiliency, high-availability, and security automation strategies

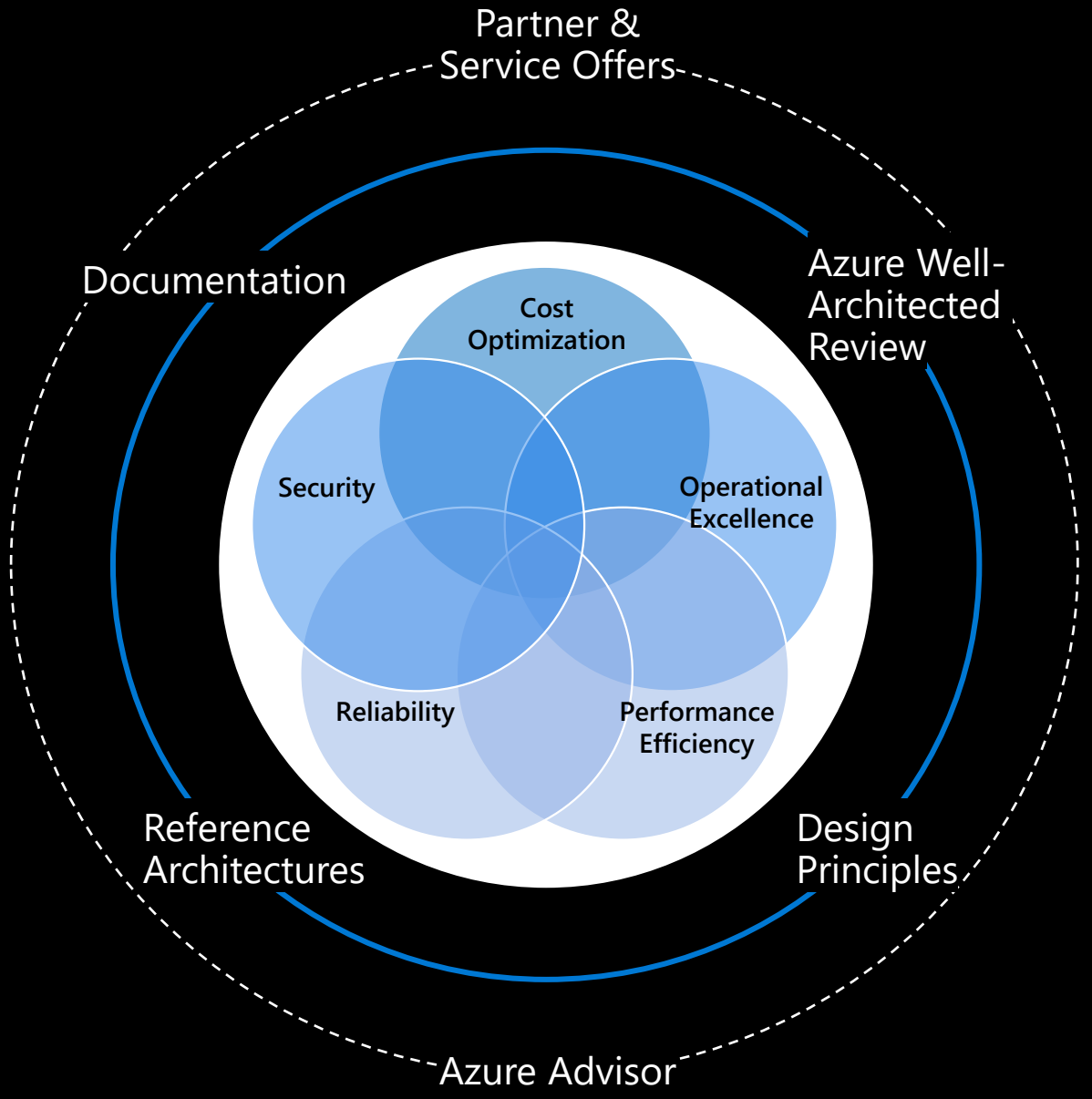
Companies with incident response teams with testing of IR plans —**saved over $1.2 million[1].**

Organizations without security automation experienced breach costs 95 percent higher

- Breach costs rose above 16 percent at organizations without automation deployed, going up from an average of $4.43 million in 2018 to $5.16 million in 2019.
- Breach costs decreased by 8 percent at organizations with fully deployed automation, from 2018 to 2019, from an average of $2.88 million in 2018 to $2.65 million in 2019.

1 The Cost of a Data Breach Report, IBM Security, 2019. Conducted by Ponemon Institute LLC

Well-Architected at Microsoft



Overview:
Azure Well-Architected Framework

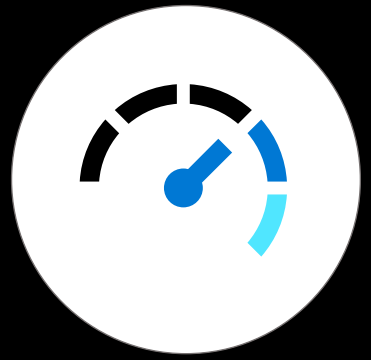
Microsoft Azure Well-Architected Framework

Architecture guidance and best practices, created for architects, developers and solution owners, to improve the quality of their workloads, based on 5 aligned and connected pillars

Cost Optimization

Operational Excellence

Performance Efficiency



Reliability

Security

https://aka.ms/architecture/framework

Manage and optimize your Azure costs with tools, offers, and guidance from Microsoft

Understand and forecast your costs

- Monitor your bill, set budgets, and allocate spending to teams and projects with Azure Cost Management + Billing
- Forecast costs for future investments with the Azure pricing and TCO calculator

Cost optimize your workloads

- Optimize your resources with Azure Advisor
- Follow workload design best practices with the Azure Well-Architecture Framework
- Save with Azure offers and licensing terms like the Azure Hybrid Benefit and Reservations

Control your costs

- Establish spending objectives and policies using the Microsoft Cloud Adoption Framework for Azure
- Implement cost controls in Azure Policy so your teams can go fast while complying with policy

Learn more: aka.ms/costoptimization

Design cloud workloads able to adapt to changes and maintain performance levels

Performance Efficiency offers you the knowledge to improve the performance of your workloads by optimizing network and storage resources, monitoring processes, and designing efficient and scalable applications.

Active response to performance issues

- Evaluate workload quality levels with Azure Monitor and Log Analytics
- Assess and remediate deep application performance issues and trends with Azure Application Insights.
- Adopt optimal performance recommendations with Azure Advisor.

Optimal service execution

- Manage resource scaling with Azure SQL Database and Azure App Services
- Optimize your network and storage with Azure Cosmos DB, Azure Traffic Manager and Azure Cache for Redis, etc.
- Select the right type of resources for your business needs.

Efficient trade-offs within applications

- Design cost-efficient data management and storage processes facilitated by Azure Advisor.
- Develop and implement queueing processes with Azure Functions to hand-off processing work to a service.

Build, deploy, and manage workloads with trustworthy processes

Operational Excellence offers you the guidelines to create a sustainable application environment within building, deploying and maintaining workloads, while relying on automation, monitoring and testing.

Agile and Accurate Processes

- Apply DevOps to break down barriers between development and operations within the cloud journey.
- Reduce process risks by automating workloads with Azure Automation, Azure CLI and Azure PowerShell.
- Enjoy the flexibility of creating agile and independent workloads with Microservices.

Focused and assertive application monitoring

- Dive deep into your workloads' information with Log Analytics for infrastructure and with Azure Application Insights for application trends.
- Manage the health of your system and activity logging by consuming core monitoring insights provided by Azure Monitor.

Continuous Improvement

- Build and test workloads with Continuous Integration and Continuous Delivery (CI/CD) both in development and production stages.
- Perform extensive automated testing with Azure Pipelines or manual testing with Azure Testing Plans.

Reliability

Enable systems to recover from failures and continue to function

Define availability and recovery requirements based on decomposed workloads and business needs

Use architectural best practices to identify possible failure points in your proposed/existing architecture and determine how the application will respond to failure

Test with simulations and forced failovers to test both detection and recovery from various failures

Deploy the application consistently using reliable and repeatable processes

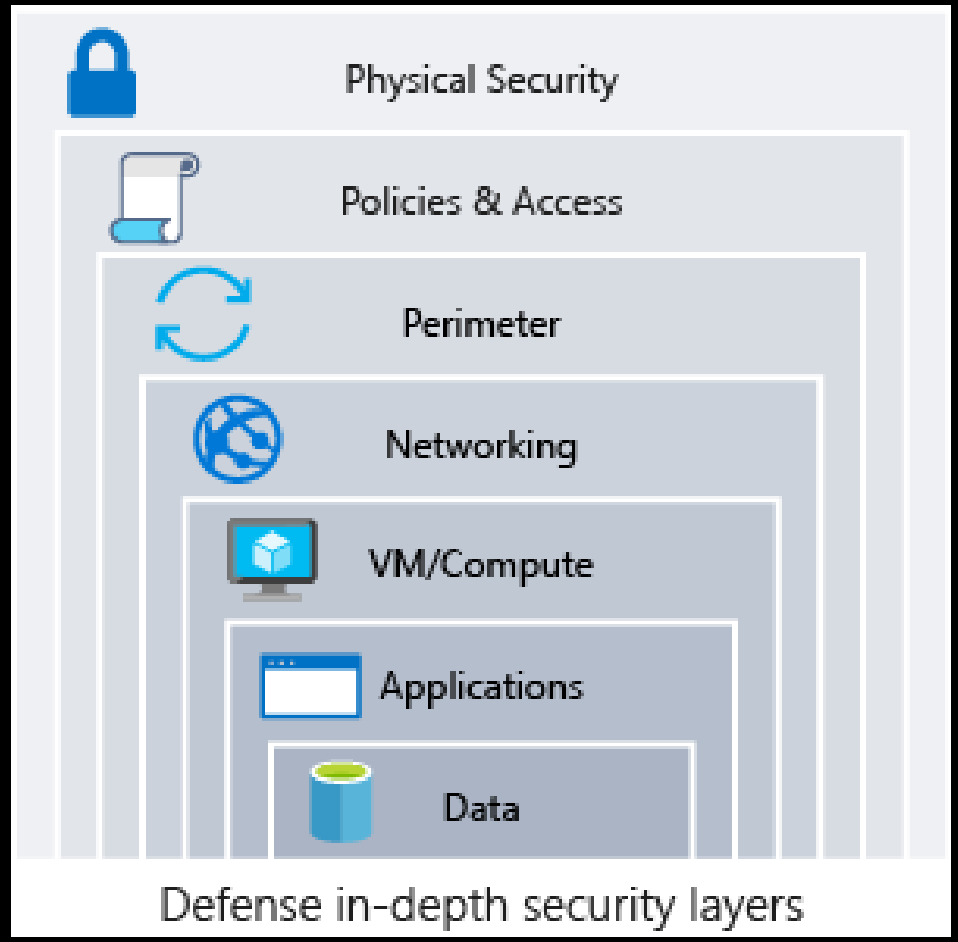
Monitor application health to detect failures, monitor indicators of potential failures, and gauge the health of your applications

Respond to failures and disasters by determining how best to address it based on established strategies

Security

Responsibility	On-prem	IaaS	PaaS	SaaS
Data governance & rights management	Customer	Customer	Customer	Customer
Client endpoints	Customer	Customer	Customer	Customer
Account & access management	Customer	Customer	Customer	Customer
Identity & directory infrastructure	Customer	Customer	Shared	Shared
Application	Customer	Customer	Shared	Microsoft
Network controls	Customer	Customer	Shared	Microsoft
Operating system	Customer	Customer	Microsoft	Microsoft
Physical hosts	Customer	Microsoft	Microsoft	Microsoft
Physical network	Customer	Microsoft	Microsoft	Microsoft
Physical datacenter	Customer	Microsoft	Microsoft	Microsoft

Microsoft Customer

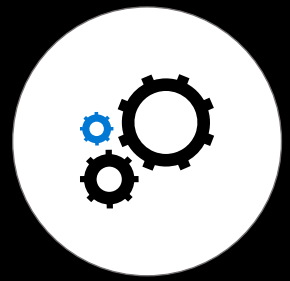


Best practices to drive workload quality

Cost Optimization

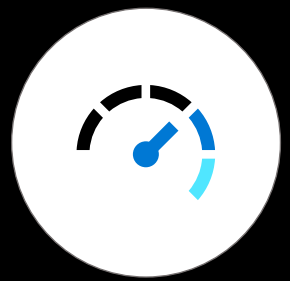
- ✓ Azure Hybrid Benefit
- ✓ Reserve Instances
- ✓ Shutdown
- ✓ Resize
- ✓ Move to PAAS

Operational Excellence



- ✓ DevOps
- ✓ Deployment
- ✓ Monitor
- ✓ Processes and cadence

Performance Efficiency



- ✓ Design for scaling
- ✓ Monitor performance

Reliability

- ✓ Define requirements
- ✓ Test with simulations and forced failovers
- ✓ Deploy consistently
- ✓ Monitor health
- ✓ Respond to failure and disaster

Security

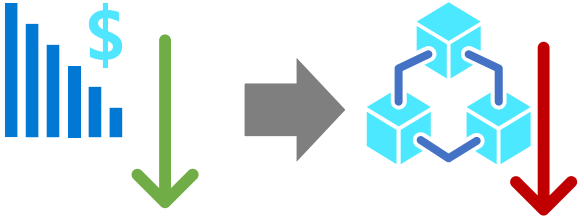
- ✓ Identity and access management
- ✓ Infra protection
- ✓ App security
- ✓ Data encryption and sovereignty
- ✓ Security operations

https://aka.ms/architecture/framework

Doing business means making trade-offs

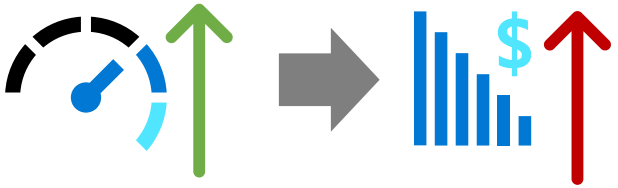
Business requirements influence workload architecture decisions

Development workloads



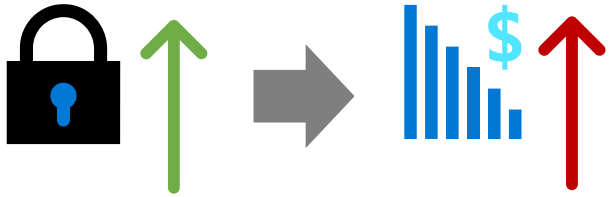
Optimizing costs in dev workloads may be the right approach, even when it may impact reliability, if it is in line with business expectations

Mission-critical workloads



Improving performance for a mission-critical workload may be the right business decision, even at the expense of increased costs.

Securing all workloads



Surge in cyber attacks drive workload security investments, as organizations attempt to protect their most valuable asset: data

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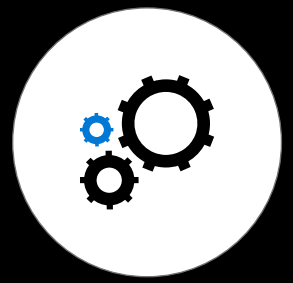
Overcoming workload quality inhibitors

Overcoming workload quality inhibitors

Cost Optimization

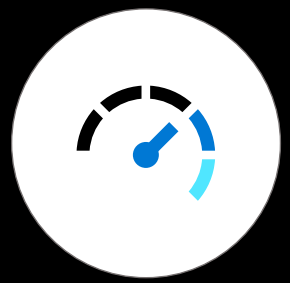
- No cost and usage monitoring
- Unclear on underused or orphaned resources
- Lack of structure billing management
- Budget reductions due to lack of support for cloud adoption by LT/board

Operational Excellence



- Lack of rapid issue identification
- No deployment automation
- Absence of communication mechanisms and dashboards
- Unclear expectations and business outcomes
- No visibility on root cause for events

Performance Efficiency



- No monitoring new services
- No monitoring current workloads health
- No design for scaling
- Lack of rigor and guidance for technology and architecture selection

Reliability

- Unclear on resiliency features/capabilities for better architecture design
- Lack of data back up practices
- No monitoring current workloads health
- No resiliency testing
- No support for disaster recovery

Security

- No access control mechanism (authentication)
- No security thread detection mechanism
- Lack of security thread response plan
- No encryption process

https://aka.ms/architecture/framework

Azure Well-Architected Review

Assessment

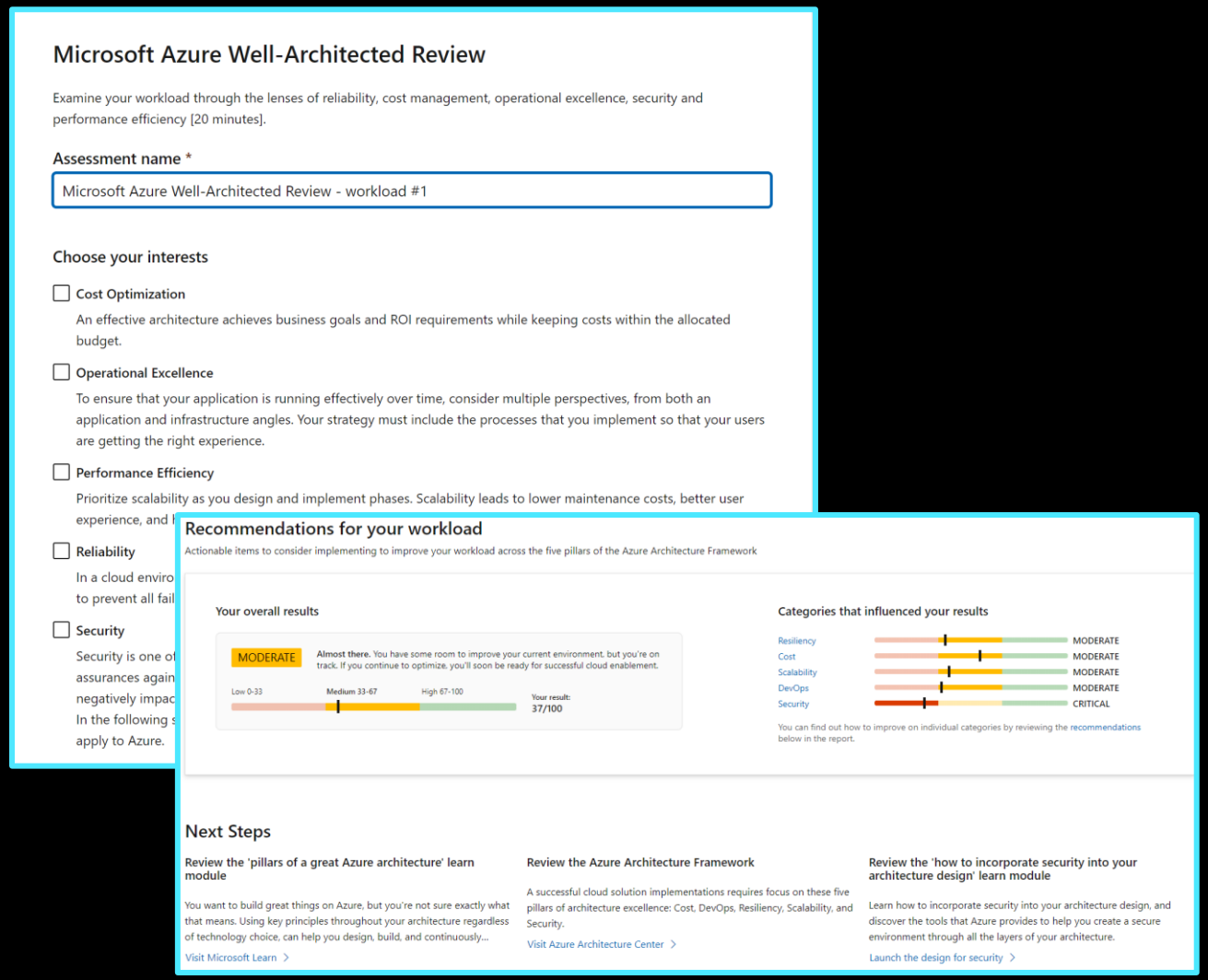
Microsoft Azure Well-Architected Review

https://aka.ms/architecture/review

Using the Azure Well-Architected Review

This web-based assessment helps improve the quality of a workload by

- **Examining the workload** across the 5 pillars of the Azure Well Architected Framework (Reliability, Cost Optimization, Security, Operations Excellence, and Performance Efficiency)
- **Providing specific guidance** to improve architecture and overcome detected hurdles effectively
- **Proactively focusing** on the pillar where most attention is needed

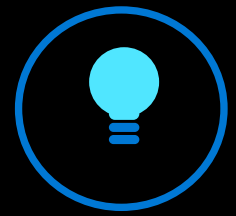


https://aka.ms/architecture/review

Architect & optimize workloads for success

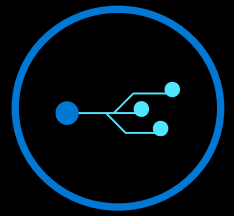
Take assessment
Microsoft Azure Well-Architected Review

Read Documentation
Well-Architected Framework



Complete Training
Well-Architected Learn module

Browse Reference Architectures
Azure Architectures



Review Design Principles
Well-Architected design patterns

Thank you!