Azure Architects Connect:
Azure Kosten im Blick
Synergien für den Einkauf

Herzlich Willkommen zur heutigen Veranstaltung!
In wenigen Minuten geht es los….

Speaker:
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Moderation:
Christoph Harding

26. April 2023 – 14:00 Uhr

AGENDA

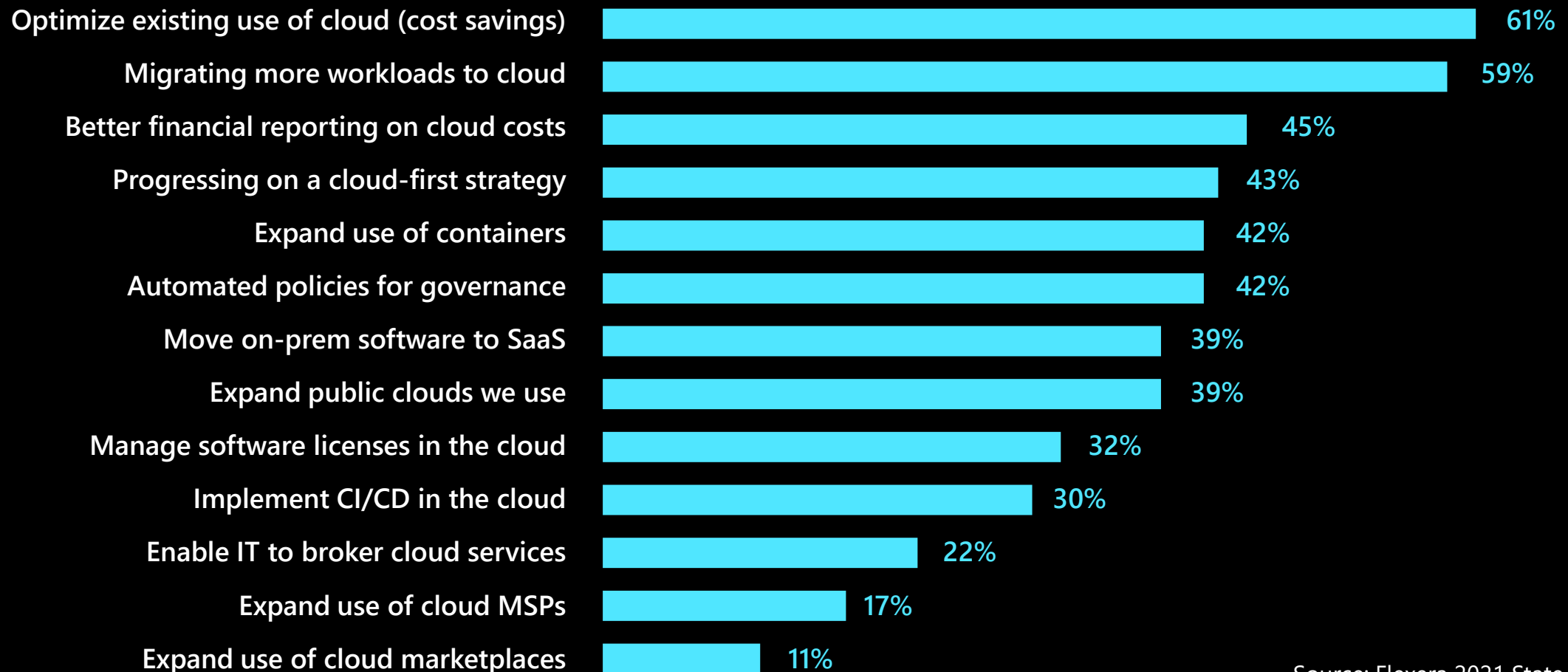| |
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| Begrüßung |
| Wie kann man Azure beziehen? |
| Wie funktioniert Azure Billing? |
| Einsparungspotentiale |
| Kosten Management |
| Q & A |

Cost optimization = top cloud initiative for the fifth year running

Top Cloud Initiatives for 2021
Percent of all respondents

Initiative	Percent
Optimize existing use of cloud (cost savings)	61%
Migrating more workloads to cloud	59%
Better financial reporting on cloud costs	45%
Progressing on a cloud-first strategy	43%
Expand use of containers	42%
Automated policies for governance	42%
Move on-prem software to SaaS	39%
Expand public clouds we use	39%
Manage software licenses in the cloud	32%
Implement CI/CD in the cloud	30%
Enable IT to broker cloud services	22%
Expand use of cloud MSPs	17%
Expand use of cloud marketplaces	11%

N=750
Source: Flexera 2021 State of the Cloud Report

Microsoft
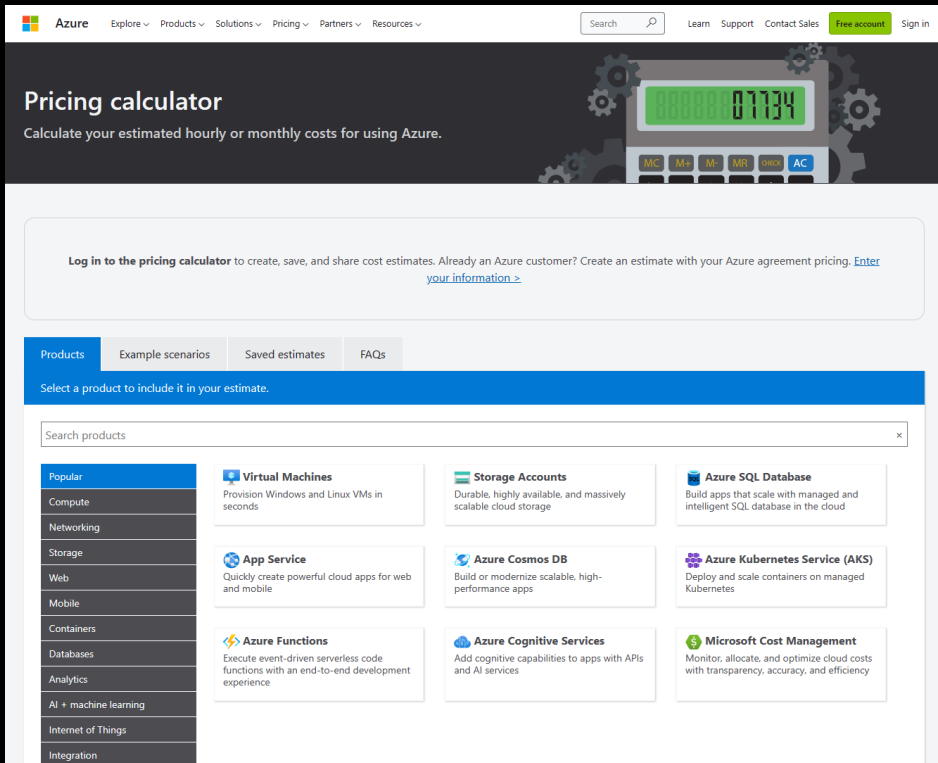
Wie kann man Azure beziehen?

Bezugswege für Azure Dienste

- PAYG (Pay-as-you-Go)

- MCA-E (Microsoft Customer Agreement - Enterprise)

- EA (Enterprise Agreement)

- MCA (Cloud Solution Provider)

Microsoft

Wie funktioniert Azure Billing?

How Azure Services Are Being Billed

- Most resources are **billed for each minute the service ran** for a given hour (up to 6 decimals of accuracy)

- A service (e.g., VM) often consists of **multiple resource types** (e.g., Disk, Network Interface etc.) which are being billed differently

- Some resources **do not incur costs when they are turned off** (e.g., VMs), others do (e.g., Disks)

- Prices may vary depending on your **Azure region**

- Prices may vary depending on your **Microsoft contract, country, and currency**

Azure Pricing Calculator

Cost Management

Microsoft

"Cost management" is the continuous process of **planning and controlling** costs
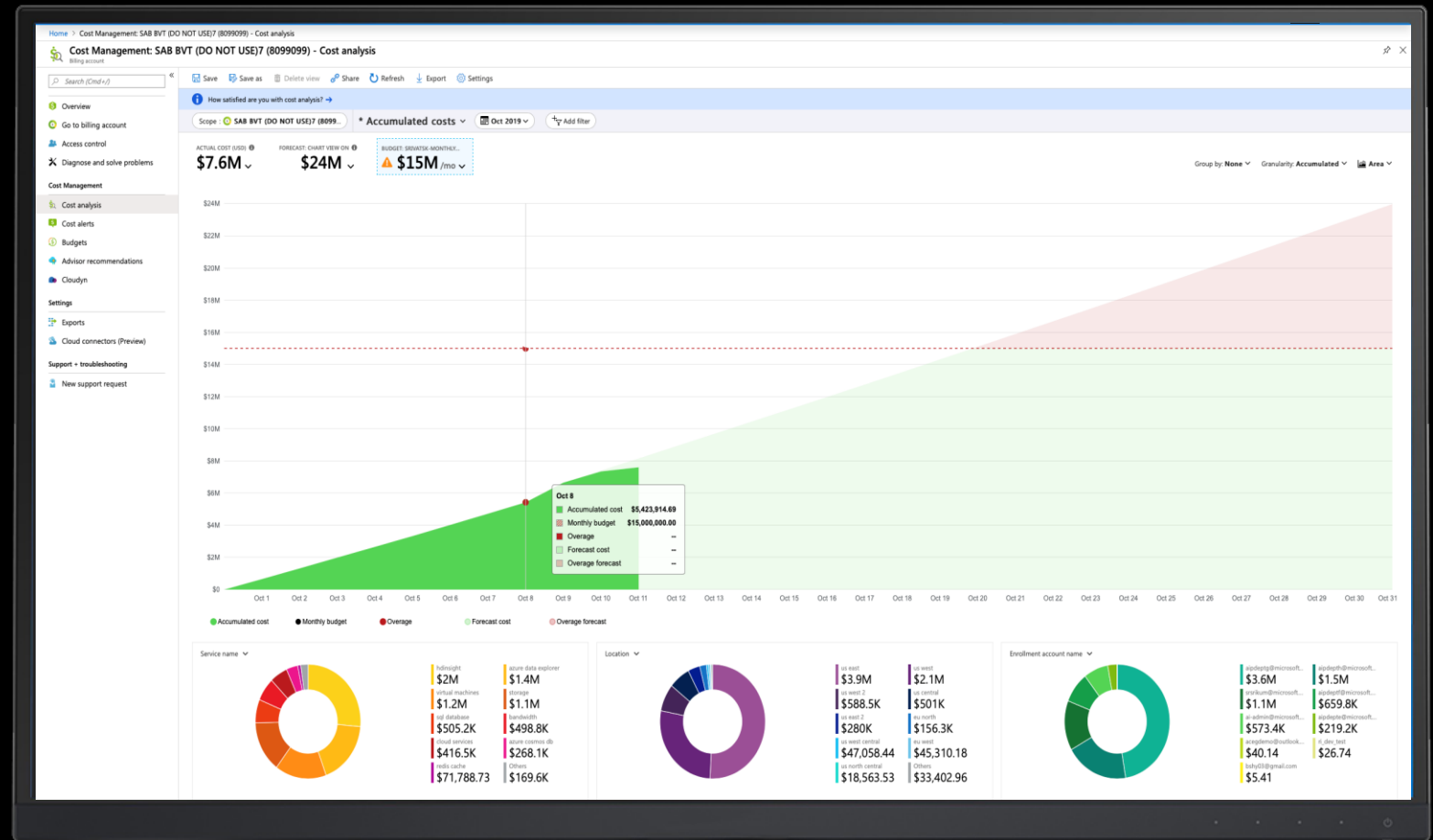
Visibility

Accountability

Optimization

Azure Cost Management

Built into Azure

- On by default

- Richer analysis, budget alerting, forecasting

- Integrated with Azure Advisor

- Reduced data latency by up to 80%

- Free to manage Azure costs

- Least privileged access with RBAC

- Multi cloud capable

Cost Analysis

- Detailed Cost Exploration

- Group, filter and view by 20+ dimensions

- Date Ranges

- Daily, accumulated, monthly grain

- Saved and share reports

- Integrated with Budgets

- Enrollment, subscription, management group and resource group scopes
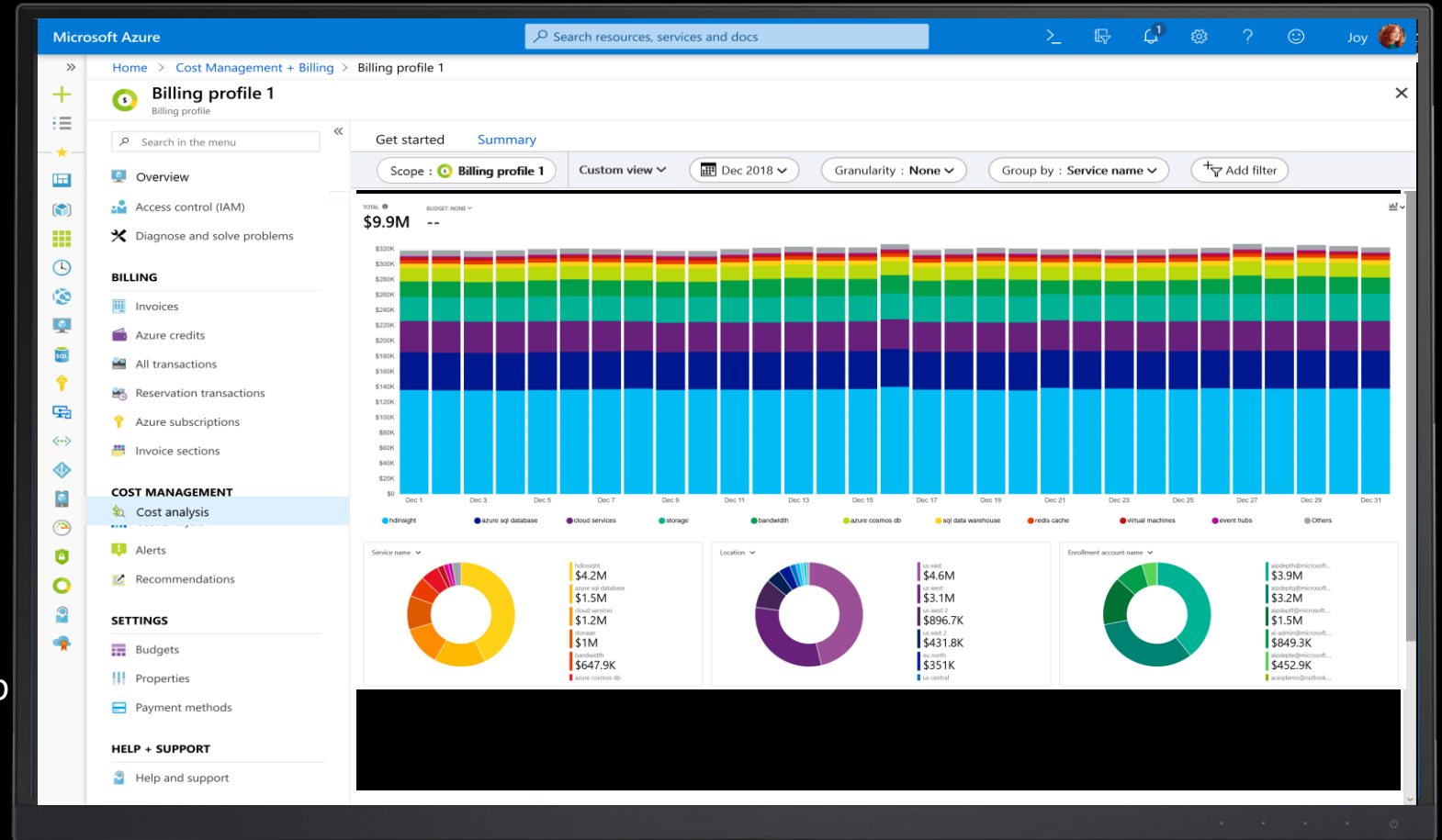
* Azure Cost Management + Billing Power BI App + RI Recommendations Dashboard

Reports included:

- Account overview
- Usage by Subscriptions and Resource Groups
- Top 5 Usage drivers
- Usage by Services
- Windows Server AHB Usage
- VM RI Coverage (shared recommendation)
- VM RI Coverage (single recommendation)
- RI Recommendations for all eligible services (Single/shared scope and 1Yr/3Yr terms)
- RI Savings
- RI Chargeback
- RI purchases
- Pricesheet

Analyze Azure costs with the Power BI App - Microsoft Cost Management | Microsoft Learn
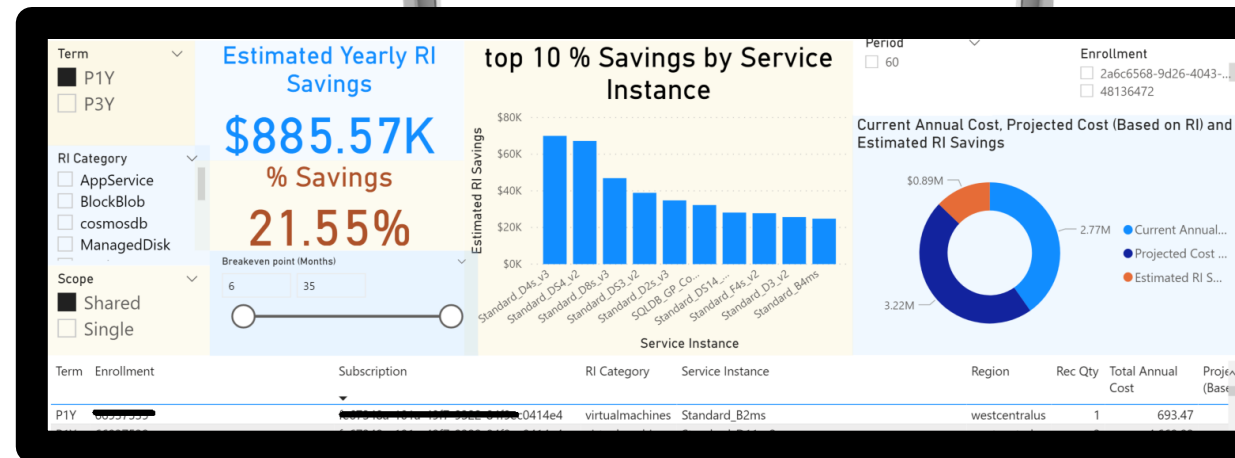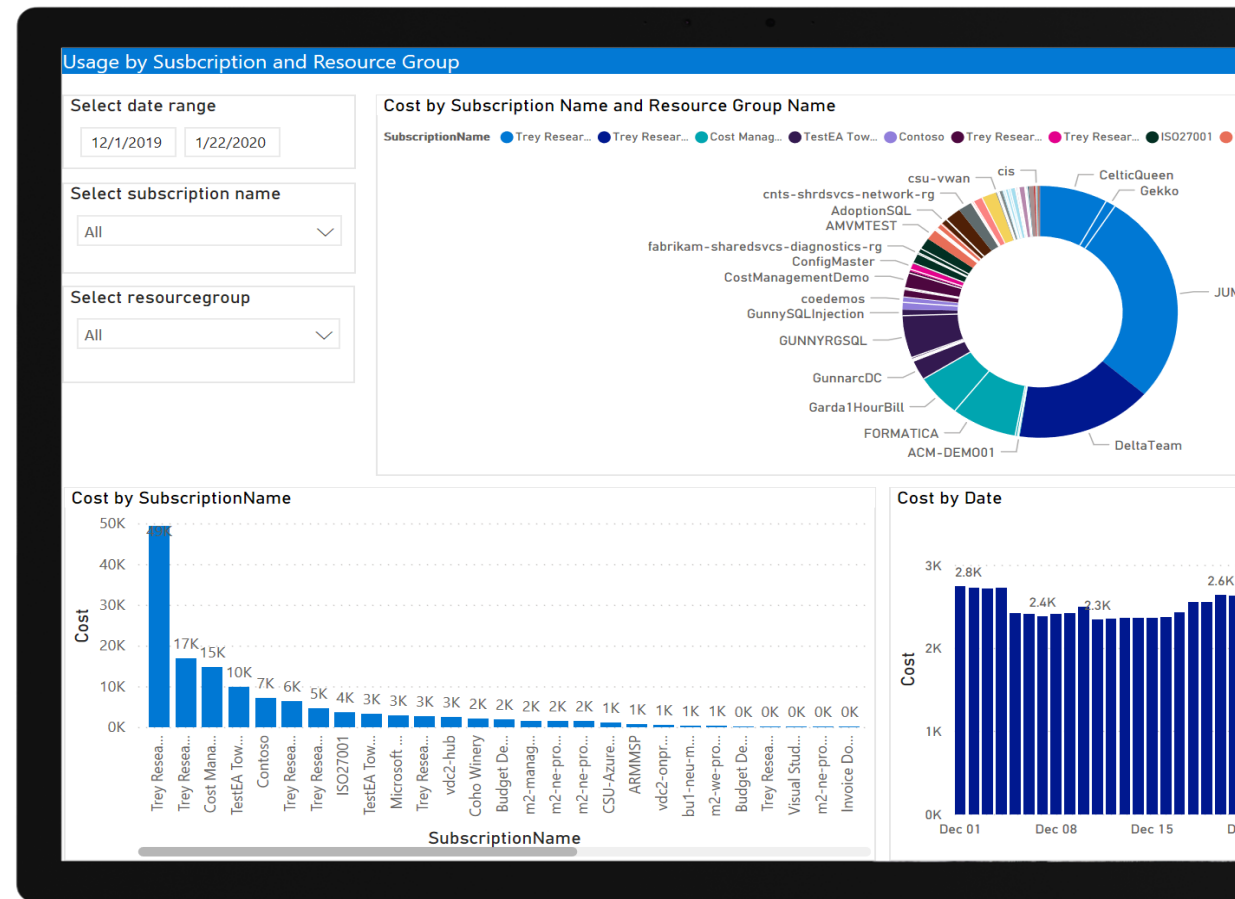
Budgets for monitoring and notifications

- Monitor your costs using budgets

- Get notified when threshold are met

- Automate with Action Groups

- Integrated into cost analysis

- Integrated with forecasts

Keys to accountability

Management teams

Extend visibility to stakeholders
Management groups, RBAC, and tagging

Finance teams

Set clear goals
Budgets and alerts

App teams

Hold teams accountable for improvement

Cost Optimization

The Three Levers

Commercial Lever

- Reservations
- Azure Hybrid Benefit (AHB) for Windows and SQL Server
- Discounted Azure rates
- Combine them all

Technical Lever

- Rightsizing
- Remove unused resources
- Remove orphaned resources
- Application tuning
- Leverage serverless plans
- Use Azure Advisor

Business Lever

- Appropriate Business Continuity SLA
- Appropriate Data Retention and Backup requirements
- Performance Level Agreements

Cloud billing models and offers differ from on-premises but create meaningful savings opportunities

Azure Hybrid Benefit

A licensing benefit that helps you to **significantly reduce the costs** of running your workloads in the cloud.

Azure Reservations

Save up to 72% compared to pay as you go pricing

Spot Virtual Machines

Scale compute at deep discounts, up to 90% vs. pay as you go pricing

Cost saving options for different compute usage needs and patterns

	Compute savings plan Most flexible savings for dynamic workloads while accommodating for planned or unplanned changes	**Reserved instances** Greatest cost savings for stable, predictable workloads with no planned changes
Savings compared to pay-as-you-go	Save up to 65%	Save up to 72%
Commitment type	Spend a fixed hourly dollar amount on compute services collectively (e.g. Spend $5/hour on compute services for 1 year)	Usage of a specific virtual machine type in a particular Azure region (e.g. D2v4 virtual machine in Japan East for 1 year)
Savings apply	Across select services globally, up to the hourly commitment	Directly to the identified compute service in a particular region
Term	1 or 3 year	1 or 3 year
Payment options	Upfront or monthly	Upfront or monthly
Cancellation	No cancellations	Up to $50,000 USD

Optimizing compute costs at scale | example

Your compute cost totals $1,000,000 billed on a pay-as-you-go basis

By allocating spend to the appropriate savings options based on usage needs, you can take your budget further.

Purchase reserved instances for your most stable resource needs.

Optimizes $300,000 costs to $150,000

→

Purchase an Azure savings plan for compute to cover your dynamic resource needs.

Optimizes $500,000 costs to $200,000

→

Continue paying only for what you use for your most inconsistent resource needs.

No commitment required.
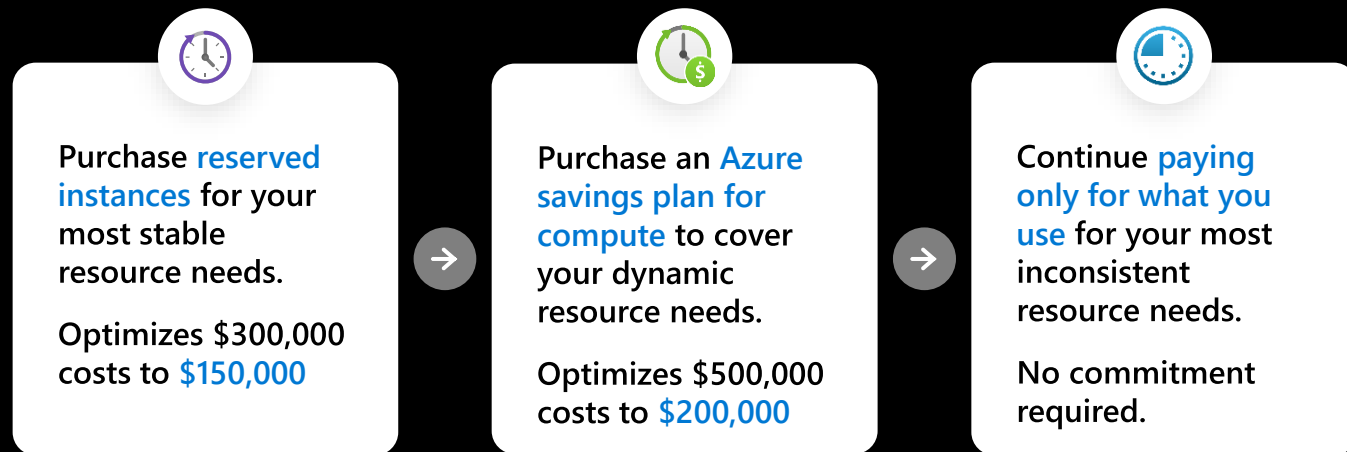
→ Your optimized compute cost totals $550,000 with savings options

→ With $450,000 savings, you may fund additional new projects on your IT transformation journey.

Example presented for illustrated purposes only, not actual pricing and spend

$1,000,000 total

$200,000
Unpredictable usage

$500,000
Dynamic resources with steady spend

$300,000
Stable compute resources

Without savings options
(pay-as-you-go pricing)

$550,000 total
($450,000 savings)

$200,000
Pay-as-you-go

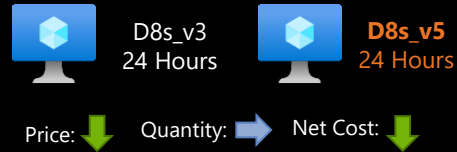**$200,000**
Azure savings plan for compute

$150,000
Reserved instance

With savings options

Azure Optimization – Key Levers

Migrate to newer SKU's

- Latest Azure SKU's offer better performance at lower price point.
- Leverage technology evolution benefits passed on through modern SKU's.

D8s_v3 24 Hours → **D8s_v5** 24 Hours

Price: ↓   Quantity: → Net Cost: ↓

More apps on PaaS

- Reduced app TCO – Patching, Backups etc.
- Save CAPEX on software licenses. Sophisticated tools at affordable price point, Pay-as-you-go.
- Enhanced Eng productivity. Deliver apps faster, secure with Azure native scale & resiliency.
- Leverage inbuilt auto scale capabilities available with most PaaS services.

SQL D8s_v4 24 Hours → SQL **Gen 5 Serverless Auto Pause / Auto Scale**

Price: ↑   Quantity: ↓   Net Cost: ↓
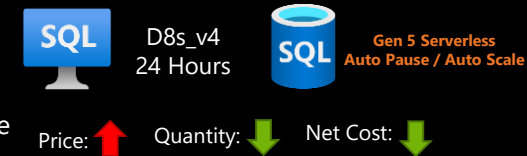
Right-size resources

- Adopt optimal SKU's based on historic resource utilization & business sensitivity.
- Start with good enough SKU to accommodate 95th percentile workloads.
- Leverage Azure advisor cost saving recommendations.

D8s_v5 24 Hours → **D4s_v5** 24 Hours

Price: ↓   Quantity: → Net Cost: ↓
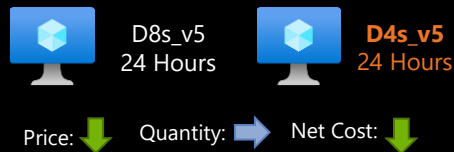
Premium tiers for Prod, Standard for Non-Prod*

- Establish directional policies to limit Premium tier SKU's for production and handle exceptions.
- Optimize non-prod footprint and leverage dynamic scale across Premium/Standard tiers, as needed.
- Maintain healthy distribution of cloud spend between Production and Non-production environments.

Premium Disk 1 TB → **Standard Disk** 1 TB

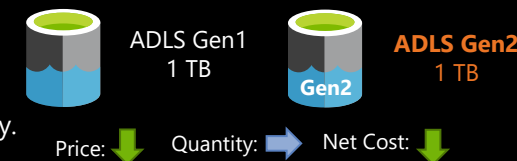Price: ↓   Quantity: → Net Cost: ↓
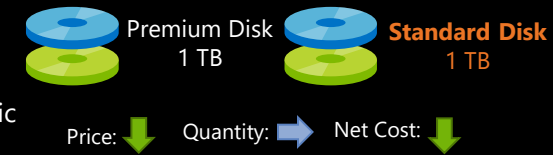
Snooze resources when not in use

- Releases expensive compute, stops billing meters.
- Persisted data state, resume stateful resources with ease.
- Leverage Azure Native, Marketplace automation solutions.

D8s_v5 24 Hours → **D8s_v5** 8 Hours
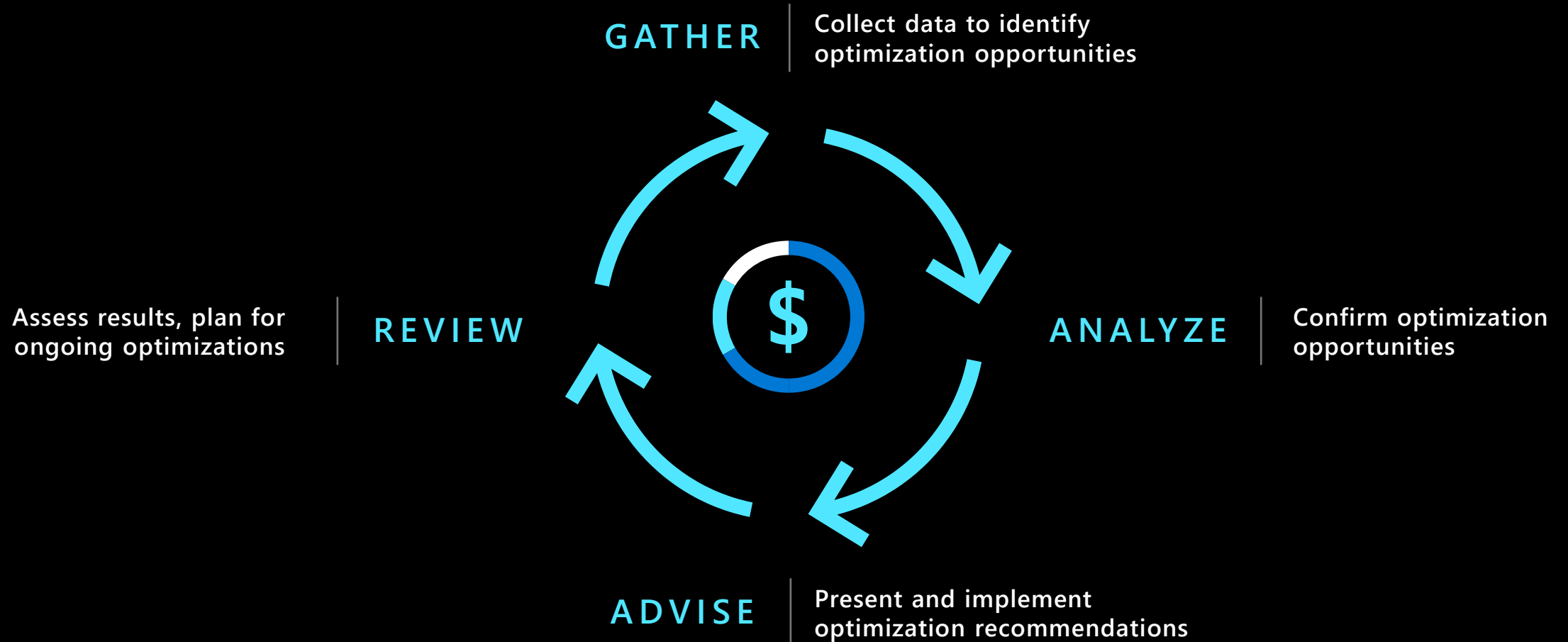
Price: →   Quantity: → Net Cost: ↓
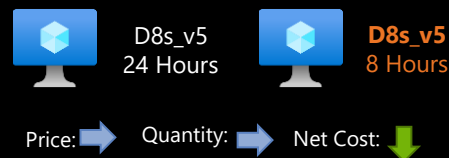
Modernize apps

- Short term engineering investments yields long term savings.
- Continuous evolution of Azure services surface new avenues to deliver business outcomes more efficiently.
- Consider decoupled & Serverless architectures, tiered data stores*.

ADLS Gen1 1 TB → **ADLS Gen2** 1 TB

Price: ↓   Quantity: → Net Cost: ↓

*where possible

Cost optimization process

GATHER | Collect data to identify optimization opportunities

ANALYZE | Confirm optimization opportunities

ADVISE | Present and implement optimization recommendations

REVIEW | Assess results, plan for ongoing optimizations

$

What to do (immediately) after our session ...

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-Architected 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**

Azure Advisor

Get cost recommendations based on your usage and configurations, such as:

- Shut down unused VMs
- Rightsize underused VMs
- Buy Reserved Instances for consistent resources
- Delete idle network gateways

Remediate recommendations easily with step-by-step guidance
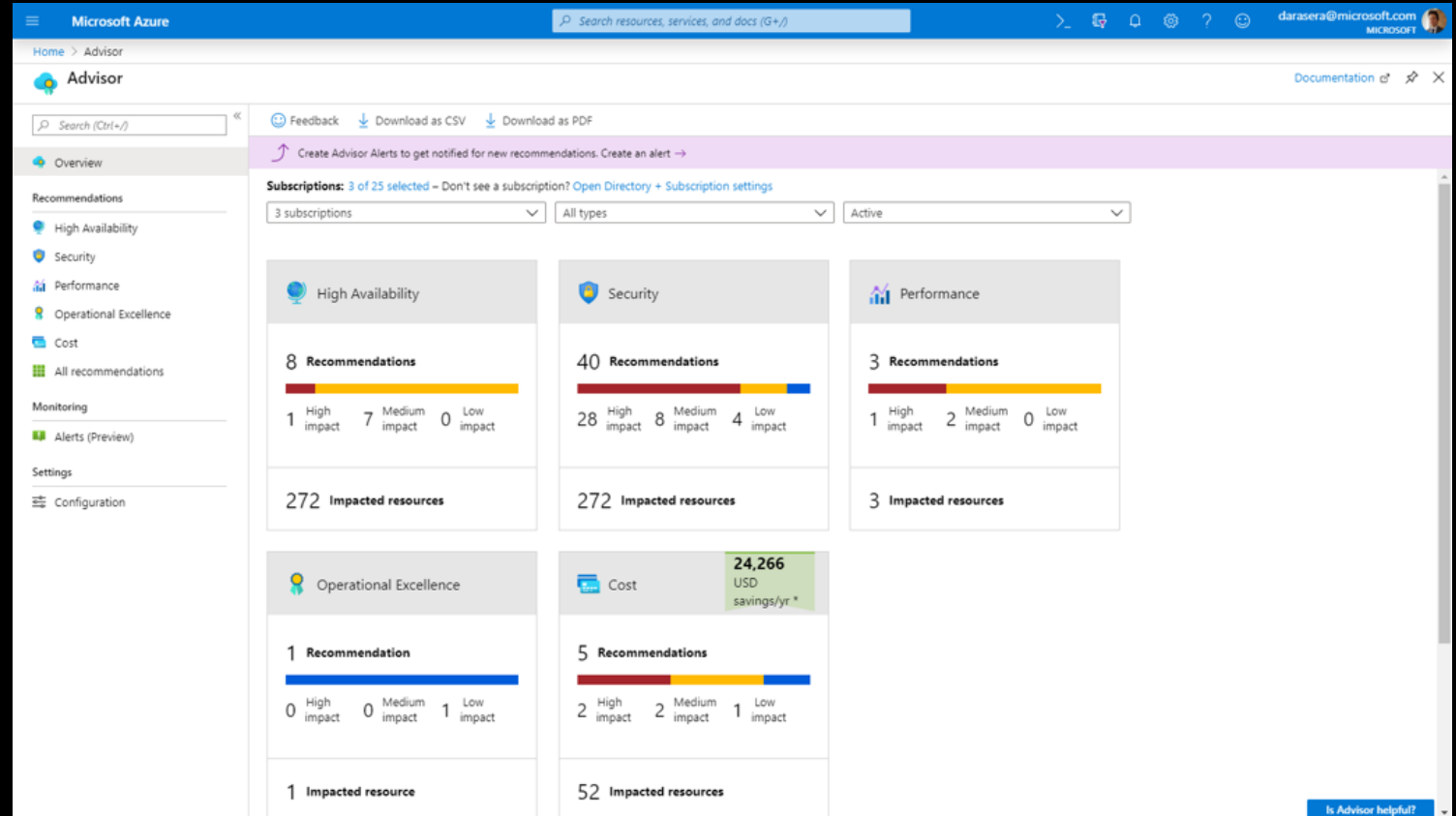
Review your Advisor recommendations in the Azure portal: aka.ms/azureadvisor

Q&A

Microsoft

Tools and resources, we use

Azure Cost Management + Billing Power BI Template
aka.ms/costmgmt/ACMApp

Azure Advisor
https://aka.ms/azureadvisor

Microsoft Azure Well-Architected Framework
aka.ms/architecture/framework

Microsoft Azure Well-Architected Review
https://aka.ms/architecture/review

Microsoft Cloud Adoption Framework for Azure
https://aka.ms/adopt/overview

Reservations available for ...

- App Service

- Azure Cache for Redis

- Cosmos DB

- Databricks

- Data Explorer

- Disk Storage

- Dedicated Host

- Software plans

- Storage

- SQL Database

- Azure Database for PostgreSQL

- Azure Database for MySQL

- Azure Database for MariaDB

- Azure Synapse Analytics

- Virtual machines

Optimizations

Data	Source
Results from Azure Well-Architected Review	Customer (Azure Well-Architected Review)
Azure Usage	Customer (Azure Cost Management)
Right Sizing	Customer (Azure Advisor)
Unused Resourced & Unattached Disks SQL Database PaaS AHB Counts SQL MI AHB Counts	Customer (Azure Graph Queries)
RI Recommendations	Customer (Azure Cost Management portal) / Microsoft (RI Recommendations)
Subscription Organization	Customer (Azure Cost Management portal)
Charge/Show Back Model	Customer
Onboarding Process	Customer
Tagging Taxonomy	Customer

Microsoft provides principles, tools and billing constructs to help you manage your cost

Microsoft Azure

Principles

Cloud Adoption Framework

Well Architected Framework

Billing Constructs

Reservations

Hybrid Benefit

Spot Instances

Tools

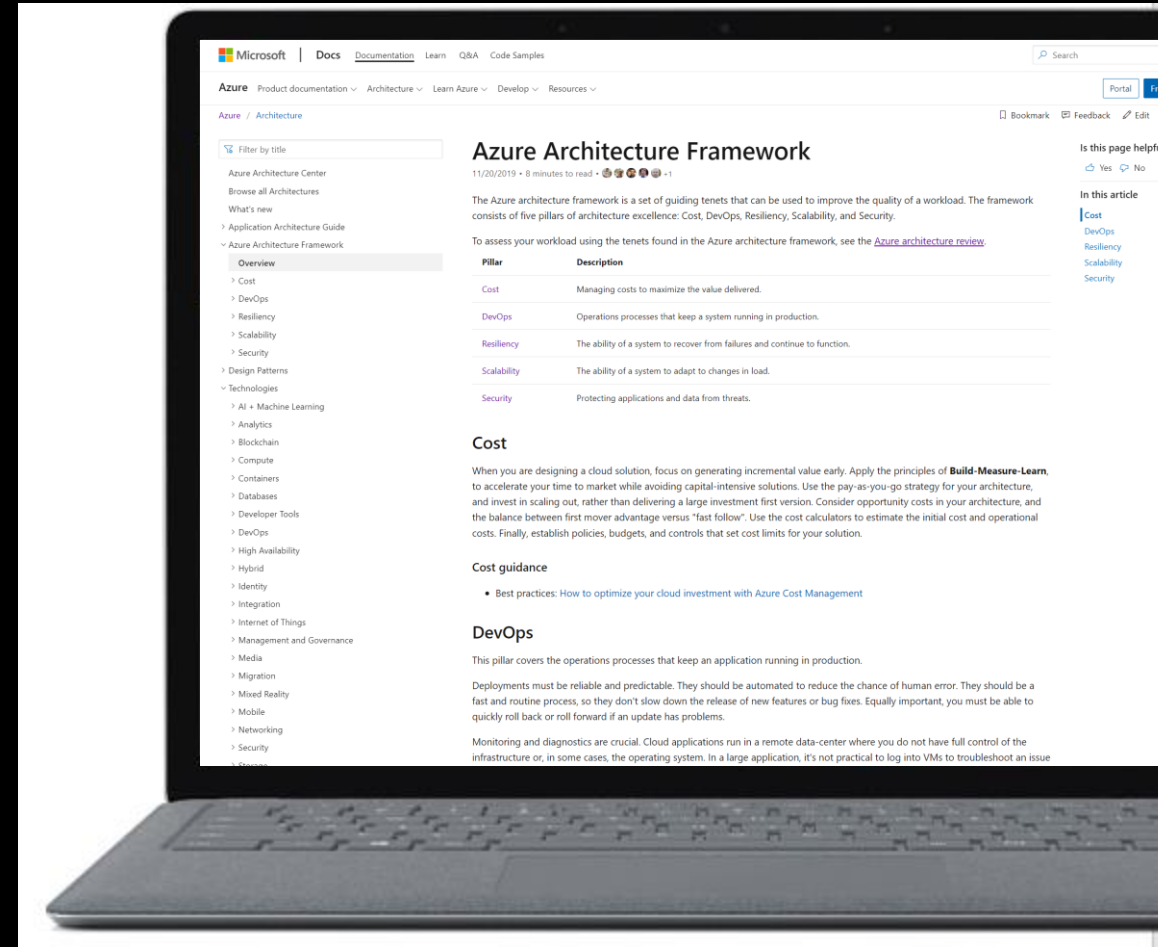Azure Cost Management

Azure Advisor

Azure Management Group

Azure Policy

Documentation
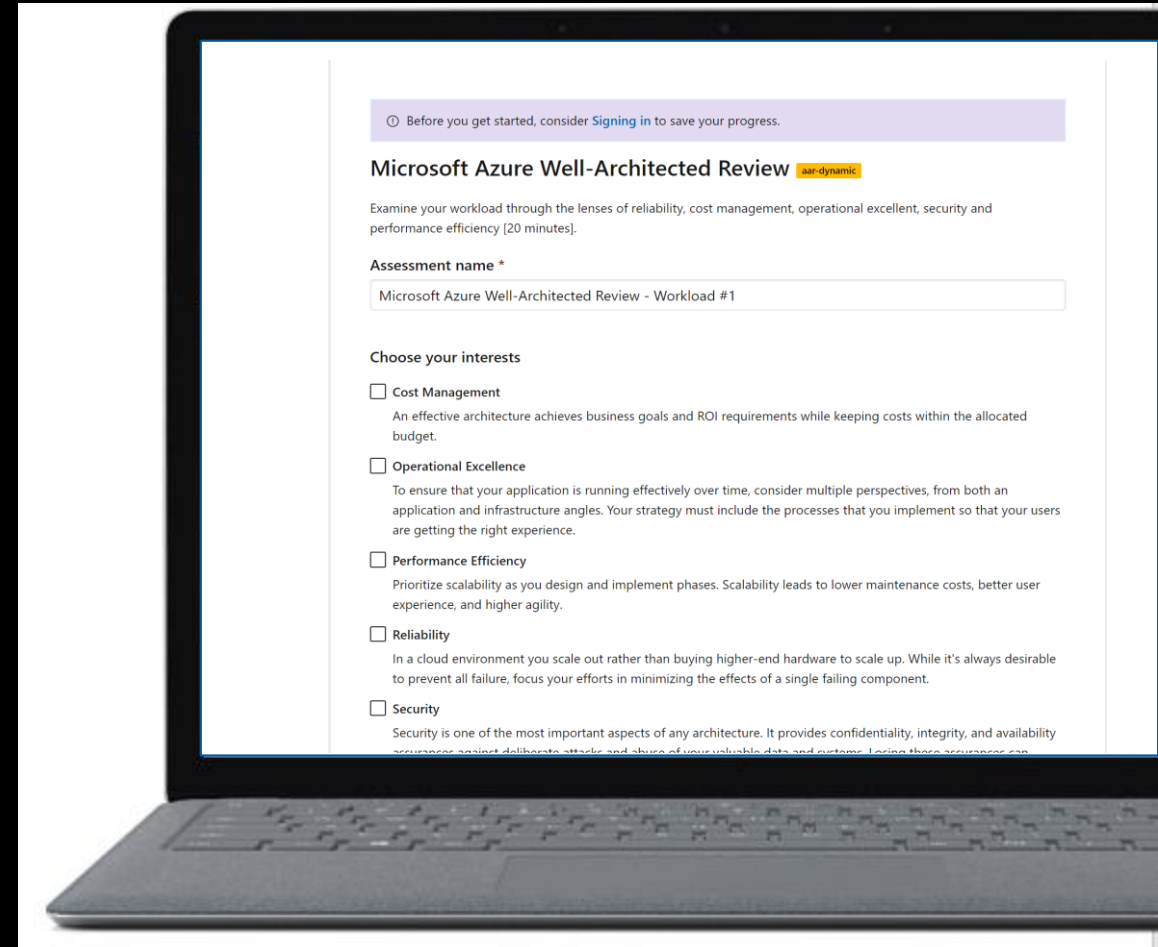
Microsoft Azure Well-Architected Framework

https://aka.ms/architecture/framework

Resources

Microsoft Azure Well-Architected Review

https://aka.ms/architecture/review

Documentation

Microsoft Cloud Adoption Framework for Azure

https://aka.ms/adopt/overview