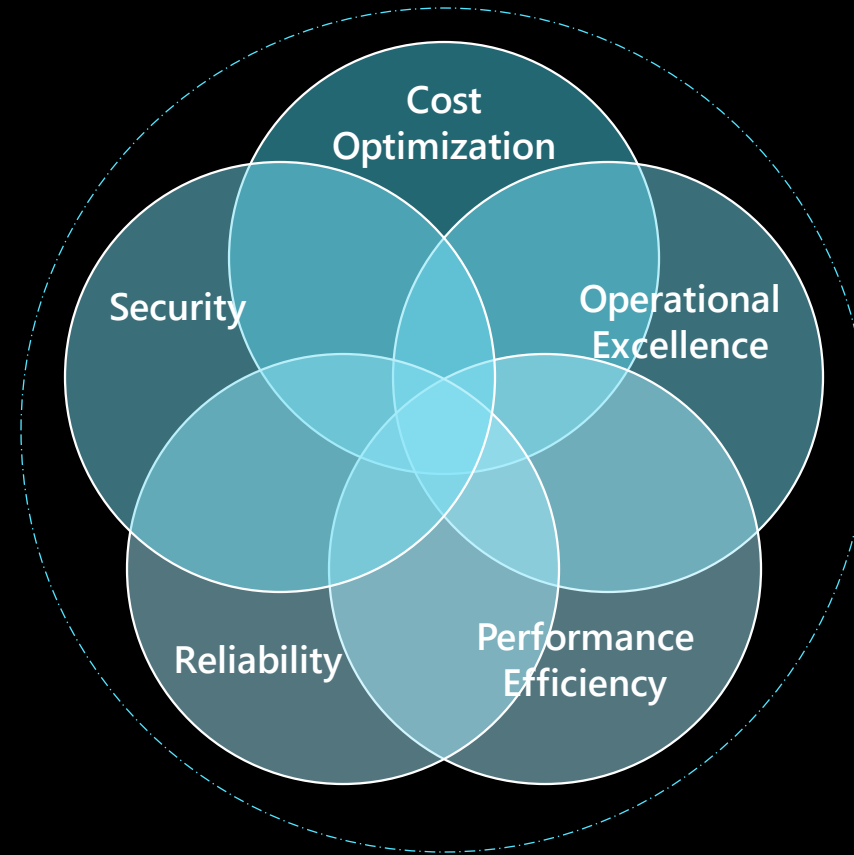


Cost Optimization

Joni Leskinen / Sr. Cloud Solution Architect,
OCP @ MSFT

Microsoft Azure Well-Architected Framework



Technical Levers

- **Rightsizing** Matching the allocated resource to the actual usage profile.
- **Removing No Longer Used Resources** Removing resources that are no longer in use but are still deployed.
- **Removing Orphaned Resources** Removing resources that have become orphaned from their parent resource and are no longer used but are still incurring charges such as Public IPs or Disks.
- **Application Tuning** - Ensuring applications consume their resources as efficiently as possible, for example correct Indexes are being used in a relational database.
- **Snoozing/Shutting Down** – For example running a Server from 8am to 6pm Monday to Friday will save more than 70% of the costs of leaving that server running 24x7.
- **Leverage serverless and elastic resources** Do you really need that VM could you host on serverless technology?



Commercial Levers

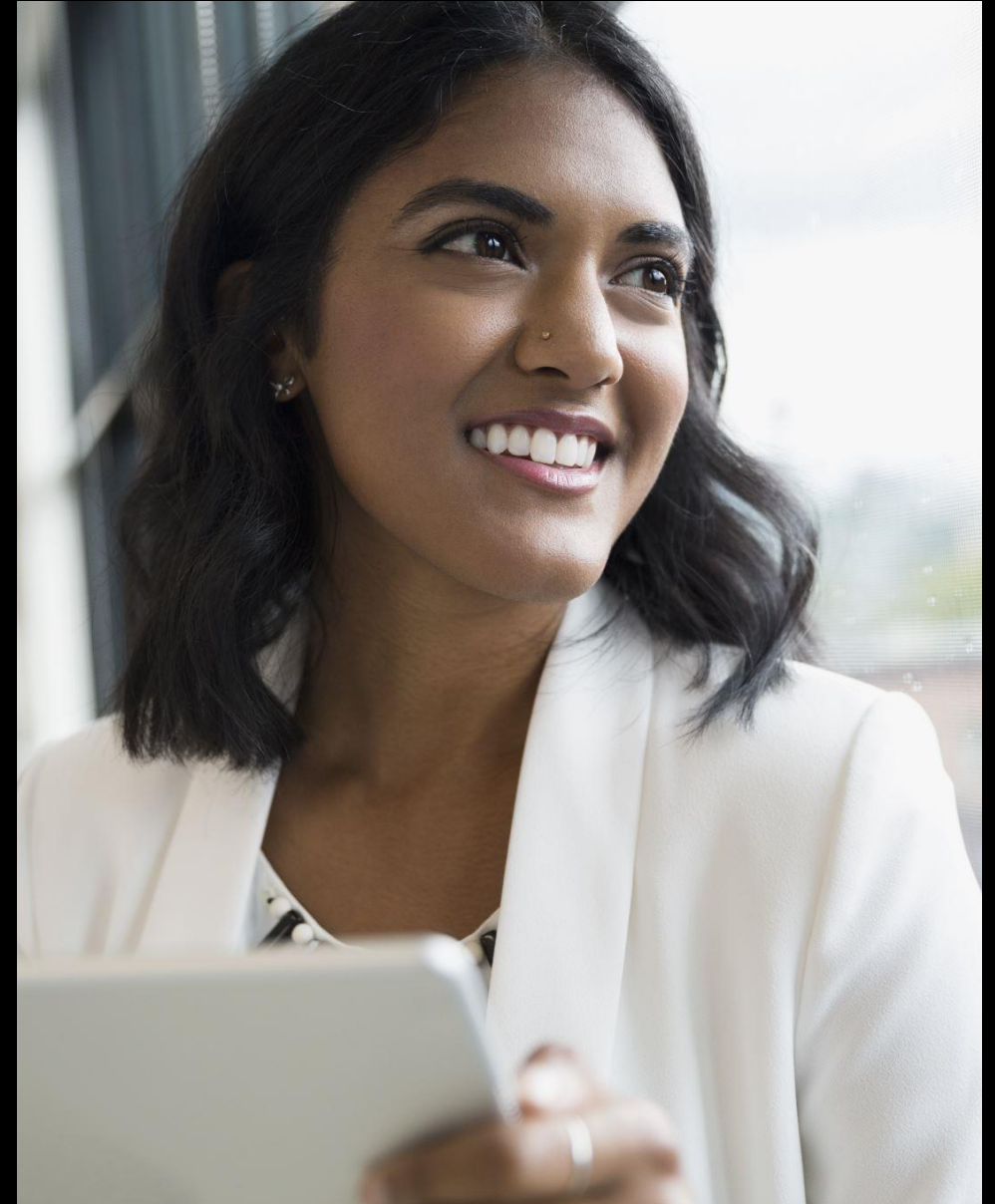
- **Reservations** Significantly reduce costs—up to 72 percent compared to pay-as-you-go prices—with one-year or three-year terms on Windows and Linux virtual machines (VMs), CosmosDB, Azure Synapse, Azure Databricks and Storage etc.
- **Azure Hybrid Benefit (AHB) for Windows and SQL Server**
The Azure Hybrid Use Benefit helps you get more value from your Windows Server licenses and save up to 40 percent on virtual machines
- **Dev/Test Pricing** Discounted rates on Azure to support your ongoing development and testing. Includes no Microsoft software charges on Virtual Machines and significant pricing discounts on a variety of other Azure services.
- **Spot VM Pricing (Preview)**. With Azure Spot Virtual Machines (Spot VMs), you'll be able to access unused Azure compute capacity at deep discounts – up to 90 per cent compared to pay-as-you-go prices.



Business Levers

Engaging with the business to understand if the current Service Level Agreement (SLA) is delivering appropriate business value

- **Appropriate Business Continuity SLA** – Re-assess the business appetite for risk and if appropriate re-negotiate the RTO (Recovery Time Objective) and RPO (Recovery Point Objective). In some instances this can save significant costs moving from Active/Hot Standby systems to on-demand standby instantiation.
- **Appropriate Data Retention and Backup requirements** – Review with the business whether data is backed-up appropriately. Backing up duplicate data or data that is no longer required can be detrimental to system performance and overall cost.
- **Performance Level Agreements** – Work with the business to understand if aspects such as report performance, data freshness and reporting complexity are appropriate and identify areas where processing is being expended to process data which is not valuable to the business.



Cost optimization categories

Organizational

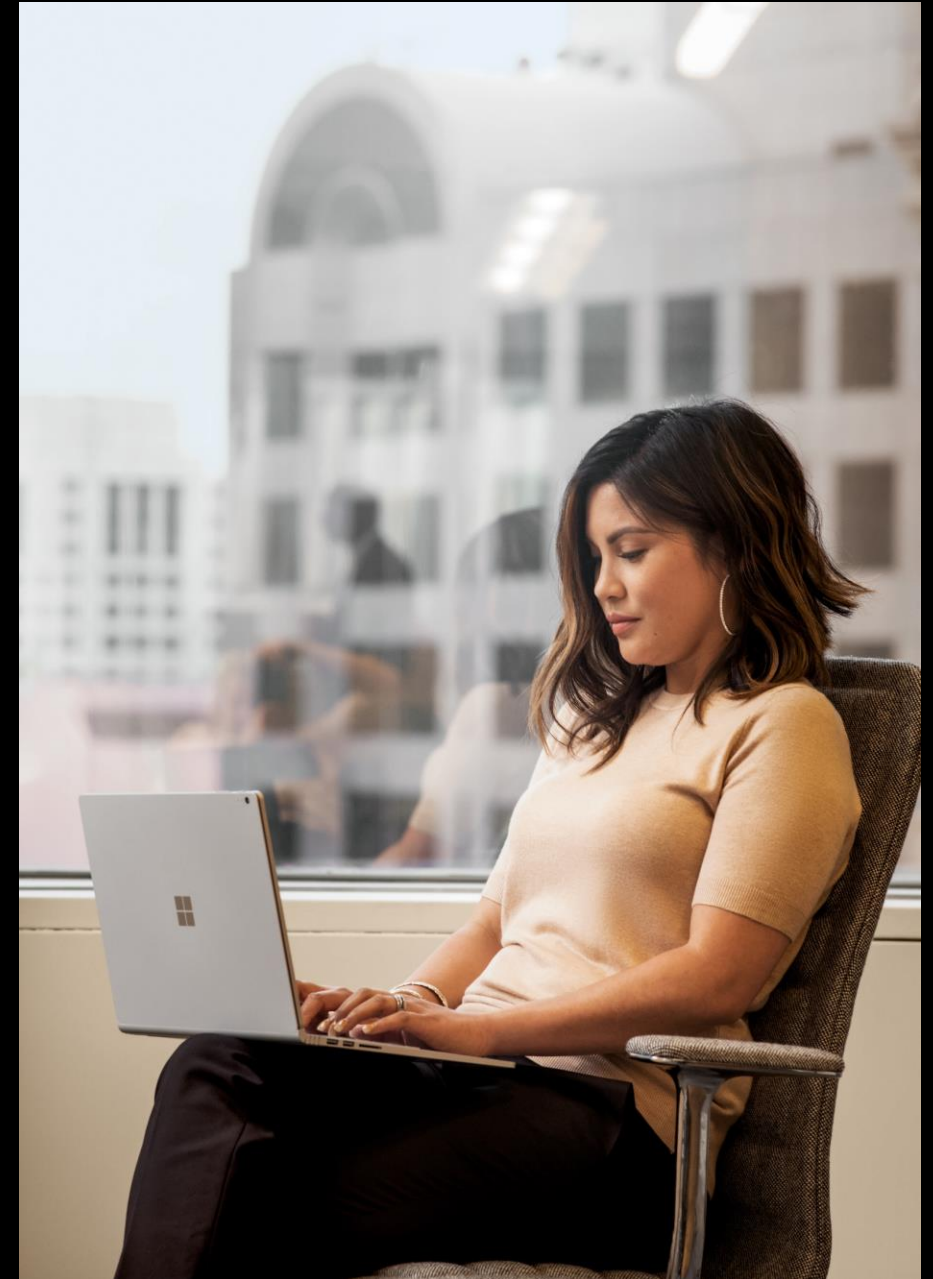
- **Tagging**
- **Charge/Show back models**
- **ACM Budgets and Alerts**

Architectural

- **Azure Hybrid Benefit (AHB) for SQL and Windows**
- **PaaS and serverless considerations**

Tactical

- **Auto-shutdown**
- **Right Sizing**
- **Reserved Instances**
- **Change VM SKU's**



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-Architected Framework**
- Save with Azure offers and licensing terms like the **Azure Hybrid Benefit** and **Reservations**

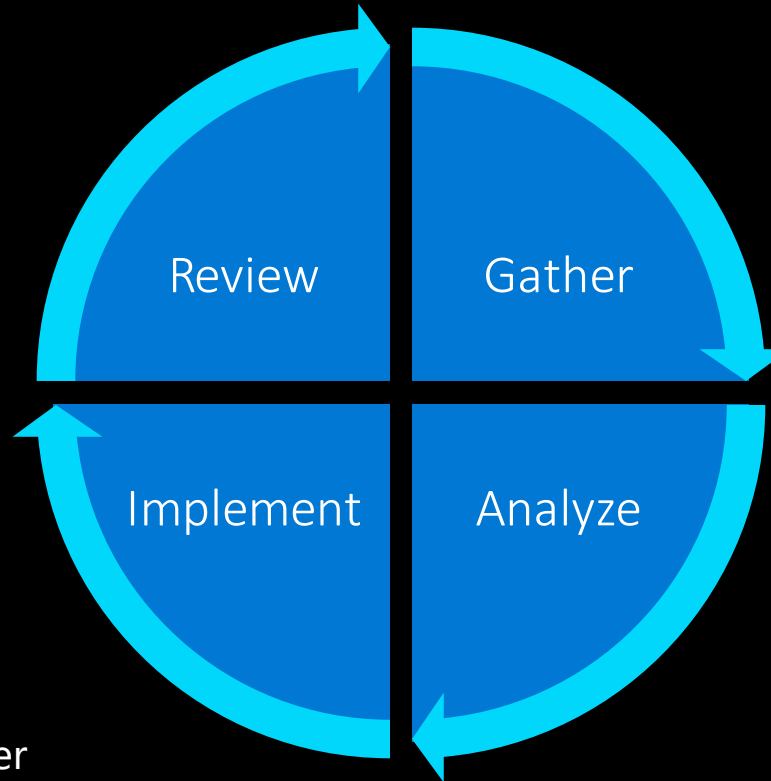


Control your costs

- 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

Cost optimization process

Assess results
plan for ongoing optimizations



Right Sizing
Resource Cleanup
Reservations for Workloads
Azure Hybrid Benefit (AHB)
Propose changes to service operation
hours, data refresh frequencies and other
application centric optimizations

Azure Usage
Current Reservation Purchases
Advisor Recommendations
Tag Taxonomy
Management Group Organization
Budgets & Alerts
Review non-functional requirements

Advisor
Azure Usage
Budgets & Alerts
Reservation Recommendations
Azure Hybrid Benefit (AHB)
Subscription Organization
Analyze how any changes to applications
might impact business users

Azure reservations

Azure Reservations help you save money by committing to one-year or three-year plans for multiple products.

Buying reservations via Azure portal / Azure API

How is a reservation billed

- You can pay for a reservation up front or monthly.
- The reservation is charged to the payment method tied to the subscription

Reserved Virtual Machine Instance
Azure Storage reserved capacity
Azure Cosmos DB reserved capacity
SQL Database reserved vCore
Azure Synapse Analytics
Azure Databricks
App Service stamp fee
Azure Database for MySQL
Azure Database for PostgreSQL
Azure Database for MariaDB
Azure Data Explorer
Azure Cache for Redis
Azure Dedicated Host
Azure Disk reservations
* Any Azure service which uses VM instances like Azure Kubernetes Service

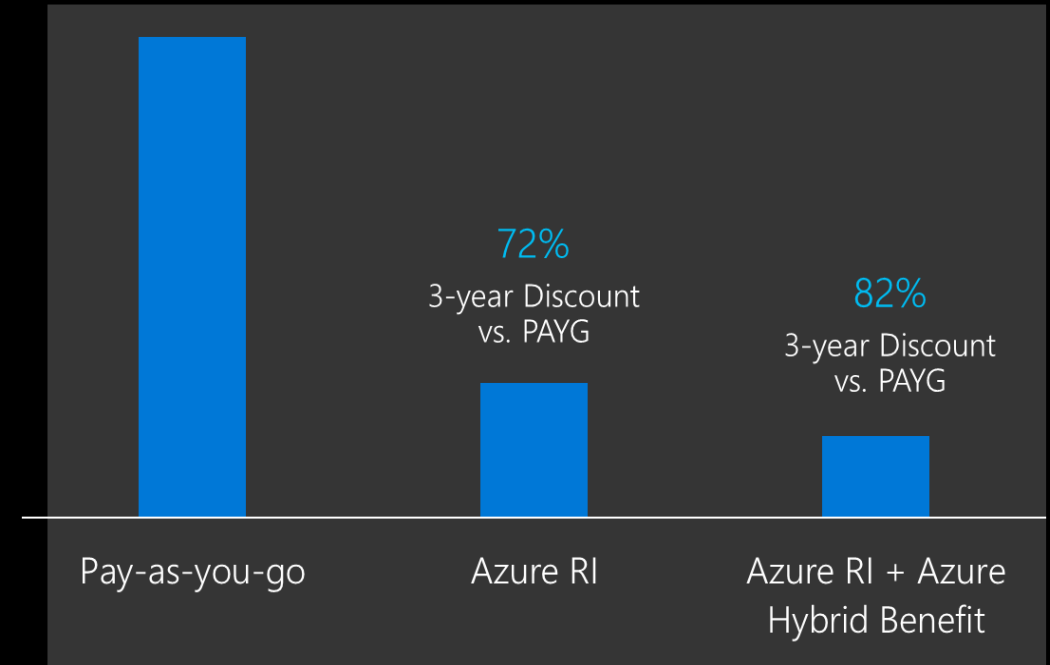
Azure Reserved example : VM Instances

Azure Reserved VM Instances (RIs) is a new offer that will allow Microsoft customers to reserve capacity for an offering (say D1 series VMs) in a region for a predefined period. In exchange for this commitment, customers will receive a discount and prioritized capacity.

Attributes of a Reservation: Region, VM-SKU, Quantity, Term (1 vs. 3 years) , Paid External customers, floating at Azure enrollment or tied to subscription ID

Key Benefits:

1. Save up to 72% over pay-as-you-go pricing (M-series instance)
2. Save up to 82% with the Azure Hybrid Use Benefit (AHUB) for Windows Server
3. Use existing Monetary Commitment to purchase RI





Azure Advisor

Azure Advisor recommendations

Guides you to improve your Azure resources across four categories

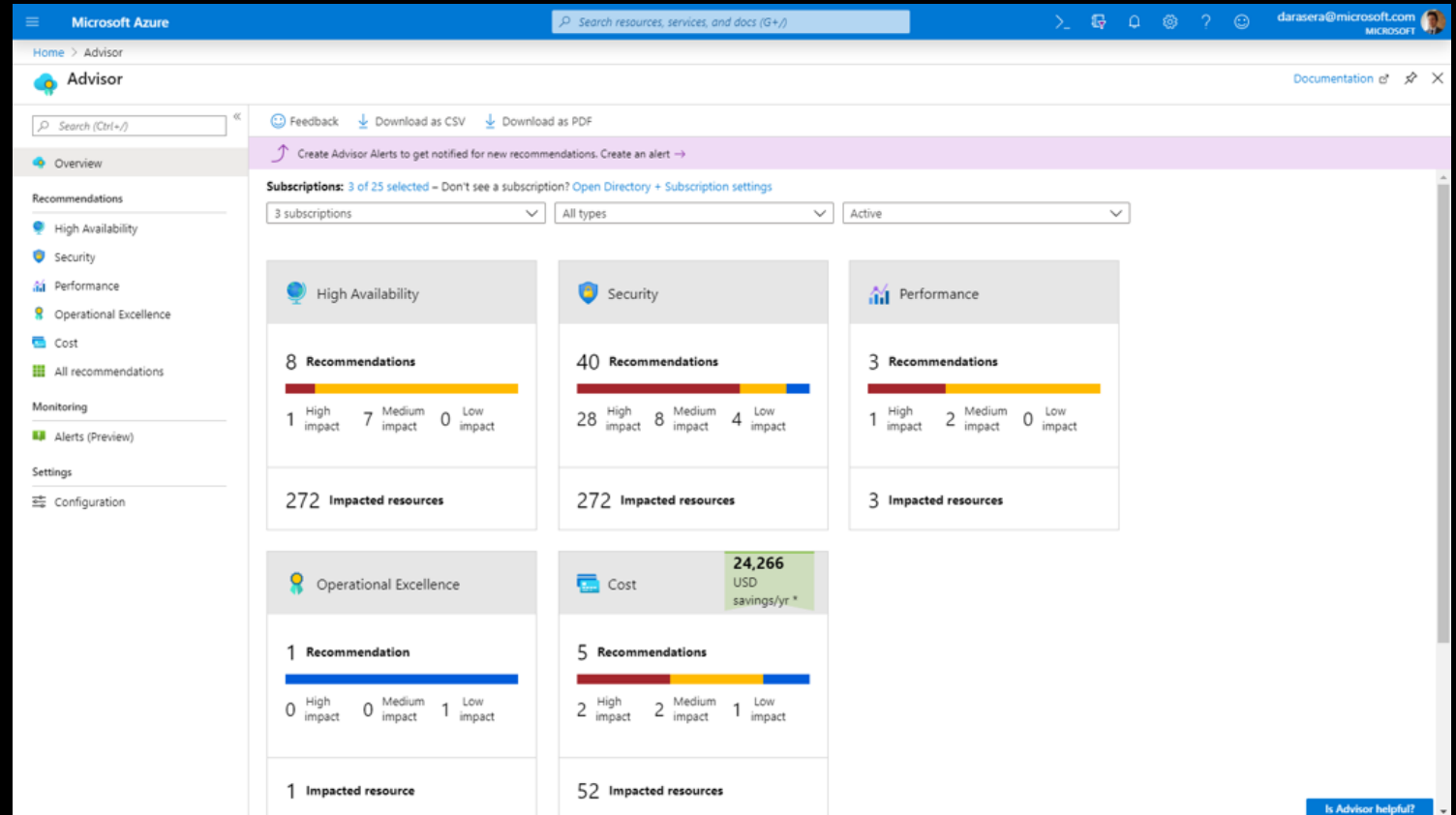
High Availability	Security	Performance	Cost
Improve resource availability to ensure continuity of your mission critical applications	Enhance security to protect your deployments from potential security threats	Boost performance to make the most of your Azure resources	Optimize your Azure resource cost to get more from your IT budget

Cost Optimization

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

Online Learning

Get the most out of Microsoft Azure with Azure Advisor

<https://channel9.msdn.com/Blogs/Azure/Azure-Advisor-your-personalized-guide-to-optimal-resource-configuration?term=azure%20advisor&lang-en=true>

How to re-use your Windows Server licenses in Azure with Azure Hybrid Benefit

<https://www.youtube.com/watch?v=5ZrC82PjnHI>

Make the most out of your Visual Studio Subscription (Azure DevTest Pricing)

<https://www.youtube.com/watch?v=Coi89RxMxxs>

Control Azure spending and manage bills with Azure Cost Management + Billing

<https://docs.microsoft.com/en-us/learn/paths/control-spending-manage-bills/>

Azure Cost Management + Billing YouTube Channel

[QuickStart](#), [Configure Cost Management](#), [Gain visibility into your Azure costs](#), [Enforce Accountability for your Azure costs](#)

Resources

Azure Hybrid Benefit

<https://azure.microsoft.com/en-us/pricing/hybrid-benefit/>
<https://docs.microsoft.com/en-us/azure/virtual-machines/windows/hybrid-use-benefit-licensing>

Azure Reservations

<https://azure.microsoft.com/en-us/reservations/>
<https://docs.microsoft.com/en-us/azure/billing/billing-save-compute-costs-reservations>

Azure Dev/Test Pricing

<https://azure.microsoft.com/en-us/pricing/dev-test/>
Visual Studio Subscription Pricing: <https://visualstudio.microsoft.com/vs/pricing/>

Azure Advisor Documentation

Review your Advisor recommendations in the Azure portal: <https://aka.ms/azureadvisor>
<https://azure.microsoft.com/en-us/services/advisor/>
<https://docs.microsoft.com/en-us/azure/advisor/>

Azure Cost Management

Review Cost Management in the Azure portal: <https://aka.ms/costanalysis>
<https://azure.microsoft.com/services/cost-management/>
<https://docs.microsoft.com/azure/cost-management/>

Cost Calculators

Azure Pricing Calculator: <https://azure.microsoft.com/pricing/calculator/>
Azure TCO Calculator: <https://azure.microsoft.com/en-us/pricing/tco/calculator/>

Azure Consumption Insights Power BI Connector

For Power BI Desktop: <https://docs.microsoft.com/en-us/power-bi/desktop-connect-azure-consumption-insights>
For Power BI Service: <https://docs.microsoft.com/en-us/power-bi/service-connect-to-azure-consumption-insights>

Azure Cost & Consumption API reference

<https://docs.microsoft.com/rest/api/cost-management/>
<https://docs.microsoft.com/en-us/rest/api/consumption/>

Governance / Cloud Adoption Framework

<https://docs.microsoft.com/en-us/azure/architecture/cloud-adoption/governance/overview>

Other Resources

[Azure Cost Management Forum](#)
[Azure General Forums](#)

Summary

1. Take advantage of Azure Advisor's recommendations regarding performance, security, and cost.
2. Right size your workloads for their needs, no need to have resources allocated that you don't need.
3. Look at utilising different regions to make use of cheaper services if that makes sense for your workloads.
4. Use Azure Reservations.
5. Leverage existing software license or subscription investments and see if you can enable Azure Hybrid Use.
6. Spot Virtual Machines take advantage of unused capacity within the Azure datacenters, see if you can incorporate them into your workload design.
7. If you're not using a virtual machine for days, or even weeks at a time, shut it down.
8. Look for alternative VM SKU's which cover your performance needs, but be cheaper. (VM SKU price varies between regions, and SKU's lifecycle).

Thank you!



Kehitä Azure osaamistasi ja tuo osaamisesi näkyväksi sertifioinnilla!

Ronja Hjulberg

Partner Channel Marketing Manager – Enablement

t-rhjulberg@microsoft.com

[Ronja Hjulberg](#) | [LinkedIn](#)

Benefits for an individual of getting certified



Stand out

Certified employees **get greater recognition** of skills due to validation ¹

Earn more

23% of Microsoft certified technologists **earn up to 20% more** ²

Advance

49% believe cloud certifications **increase employability** ³

¹ [2017 IDC-Microsoft, Cloud Skills and Organizational Influence: How Cloud Skills Are Accelerating the Careers of IT Professionals](#) white paper

² [2017 Pearson VUE, Value of Certification](#) white paper

³ 2017 [Nigel Frank International Microsoft Technology for Business Salary Survey](#)

microsoft.com/certifications
microsoft.com/traincertposter

Microsoft Azure Certifications Public

Role-based

Expand your technical skill set

▼ Associate

- Azure Administrator (AZ-104)
- Azure Developer (AZ-204)
- Azure Security Engineer (AZ-500)
- Azure Stack Hub Operator (AZ-600*)
- Azure Data Scientist (DP-100)
- Azure AI Engineer (AI-100)
- Azure Data Engineer (DP-200 + DP-201)
- Azure Database Administrator (DP-300)
- Data Analyst (DA-100)

▼ Expert

- Azure Solutions Architect (AZ-303 + AZ-304)
- DevOps Engineer (AZ-400)

Specialty

Deepen your technical skills
and manage industry solutions

- Azure for SAP Workloads (AZ-120)
- Azure IoT Developer (AZ-220)

Fundamentals

Master the basics

- Azure Fundamentals (AZ-900)
- Azure AI Fundamentals (AI-900)
- Azure Data Fundamentals (DP-900)

Pomintoja tulevista Azure koulutuksista

aka.ms/kumppanikoulutukset

aka.ms/kumppanifoorumi

- [What's New on Azure – April 30.4. 11:00-12:00](#)
- [Fasttrack On-boarding to Microsoft WVD with Liquidware Essentials](#) 22.4. 15:00-16:00
- [Azure Migration and Enablement Bootcamp](#) 3.5.-7.5. 11:00-13:30
 - Viisipäiväinen koulutus ja yhtenä pääteemana juurikin Azure Cost Optimization
- [Azure VMware Solution: the Hybrid Cloud Journey for every VMware workload](#) 1.7 saakka
- [Exam Prep: AZ-104 Microsoft Azure Administrator](#) nauhoite
- [Exam Prep: AZ-120 Planning and Administering Microsoft Azure for SAP Workloads](#) nauhoite
- [Exam Prep: AZ-204 Developing Solutions for Microsoft Azure](#) nauhoite
- [Partner Skills Experience – training towards certifications](#)
 - New approach to certification renewals: [Read the announcement](#)

Laita nämä itselle suosikeiksi!

- **Partner training calendar** aka.ms/kumppanikoulutukset
- **Virtual Instructor Led Trainings:** aka.ms/enablevilt
- **Microsoft Learn** - itseopiskelumateriaalit: aka.ms/learn
- **Kumppanifoorumi** -
suomenkielinen viestintä ja keskustelukanava kumppaneille: aka.ms/kumppanifoorumi

Seuraava Kumppanitunti 23.4.2021 klo 9-10

Quantum

Vesa-Matti "Vesku" Paananen, Senior Partner Tech Manager

aka.ms/kumppanitunti

KIITOS!