Planning and managing costs

UNDERSTANDING MICROSOFT AZURE MANAGEMENT AND GOVERNANCE

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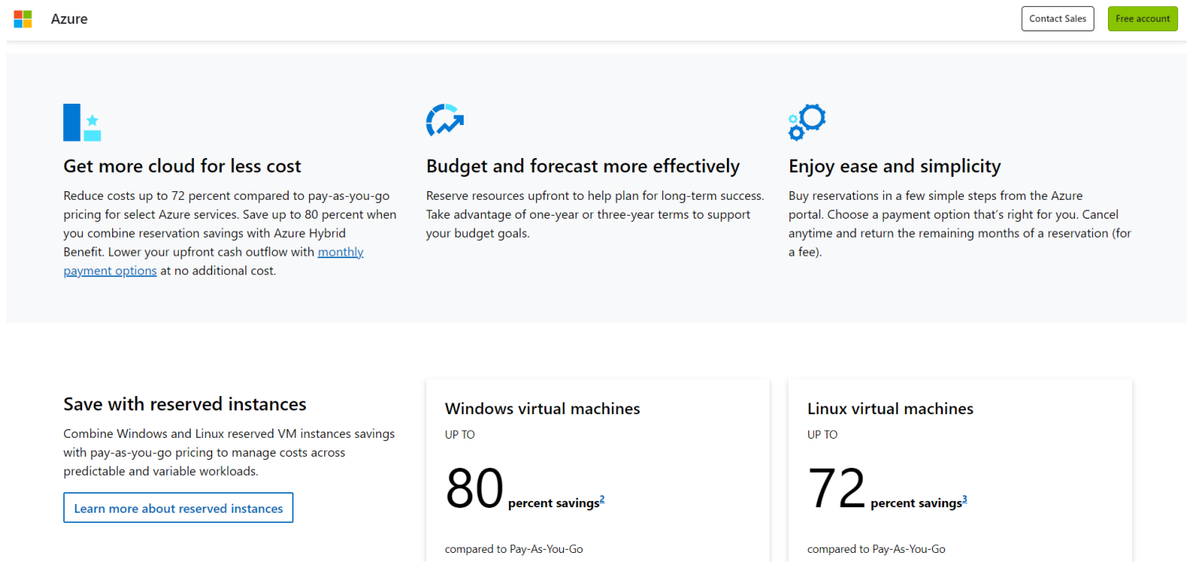
Factors that affect costs

- **Consumption**
  - Using resources leads to costs
- **Subscription type**
  - Depending on subscription type, there might be allowances or free products
- **Resource type and settings**
  - Resources can have higher tiers that increase costs
- **Azure region**
  - Regional pricing differs, and data transfers to other regions are more expensive

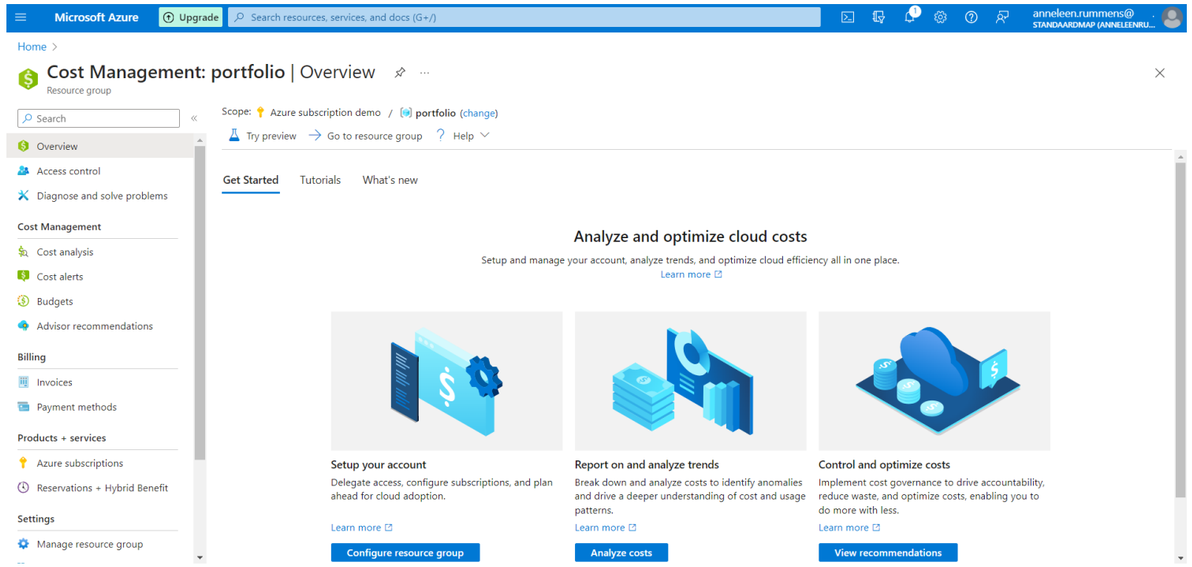
Ways to manage costs

- **Maintenance and monitoring:** find underused or over-expensive resources
- **Other pricing models:** short-term flexibility vs. long-term engagement
- **Geography:** minimize inter-regional data transfers
- **Cost management tools:** cost estimation, budgets, and alerts



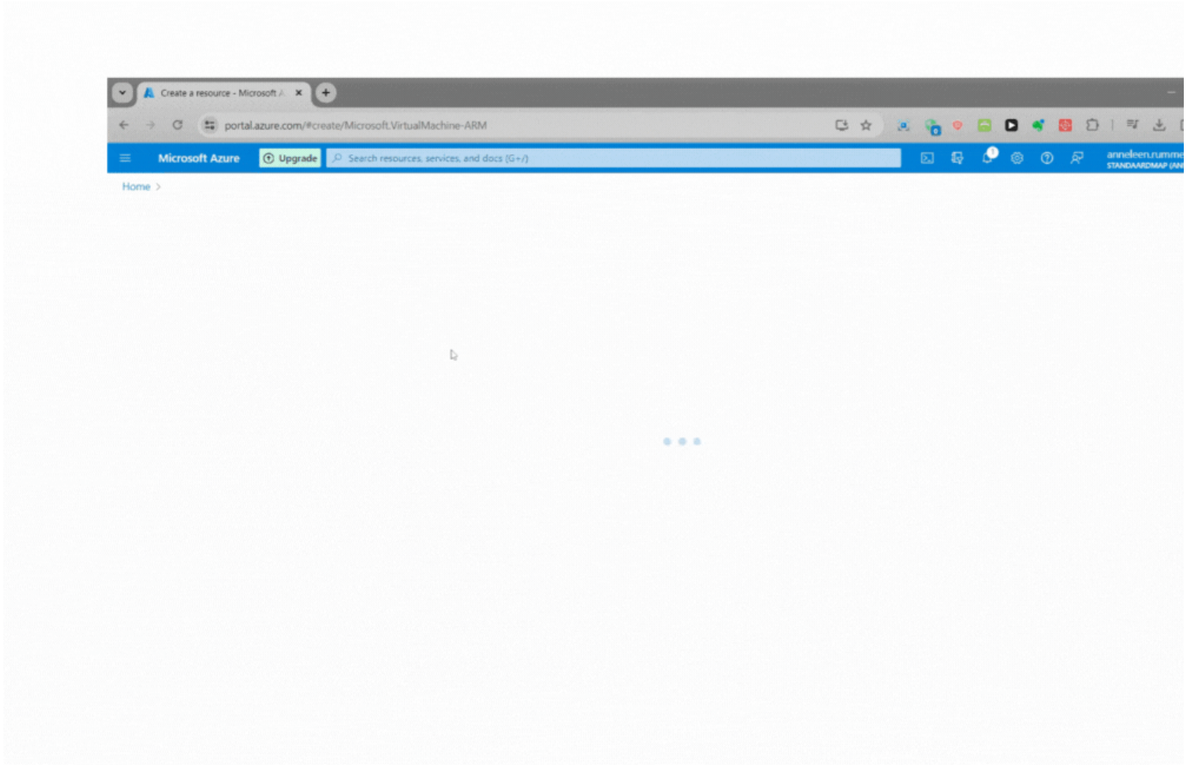
Cost management tasks

- Compare costs for running on-premises infrastructure vs. Azure cloud
- Estimate cost for provisioning resources in Azure
- Analyze costs
- Set up budgets and automatic alerts



Example use case: costs of a virtual machine (VM)

> *For your data project, you create a new VM in Azure, balancing the requirements for the project with budget limits*



- You can estimate the costs of the VM and other needed resources beforehand
- Azure informs you of the cost per month when creating the VM and choosing its size
- Once the VM is created, you can also monitor costs and usage

Let's practice!

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Cost management tools

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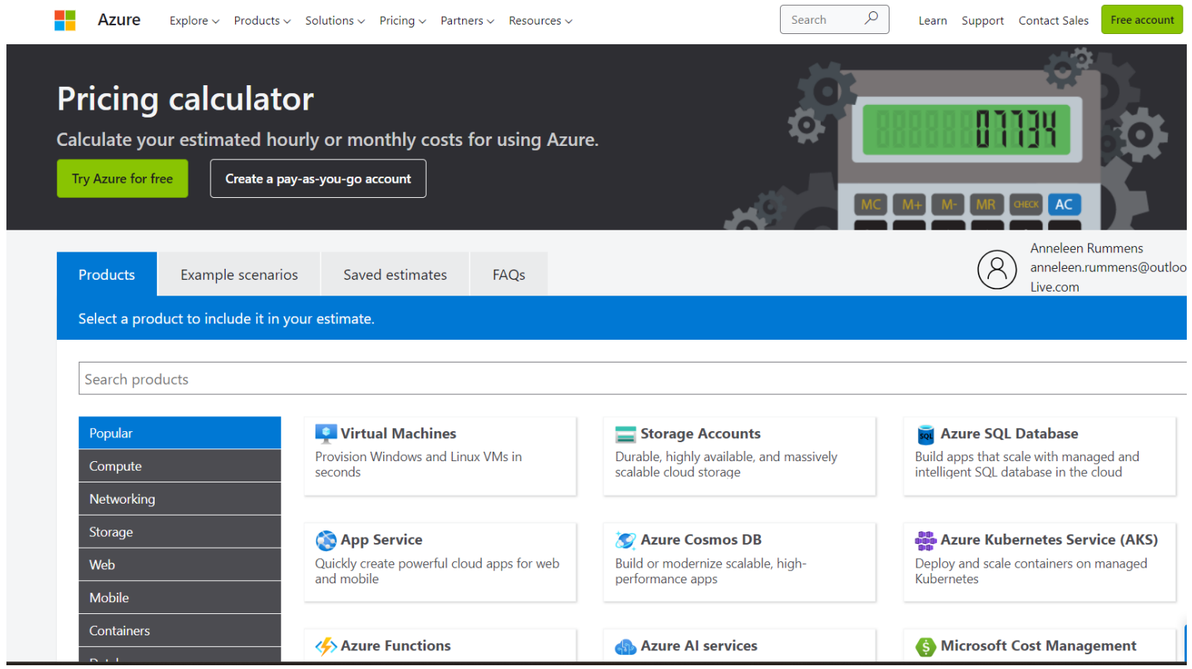
Cost management tools overview

Tool	Use
Pricing Calculator	Estimate costs of a specific resource configuration in Azure
TCO Calculator	Compare the total cost of on-premises infrastructure with the same configuration in Azure Cloud
Cost Management	Provides users with insights and controls to monitor, analyze, and optimize costs

Pricing Calculator

Used to estimate costs of a specific resource configuration in Azure

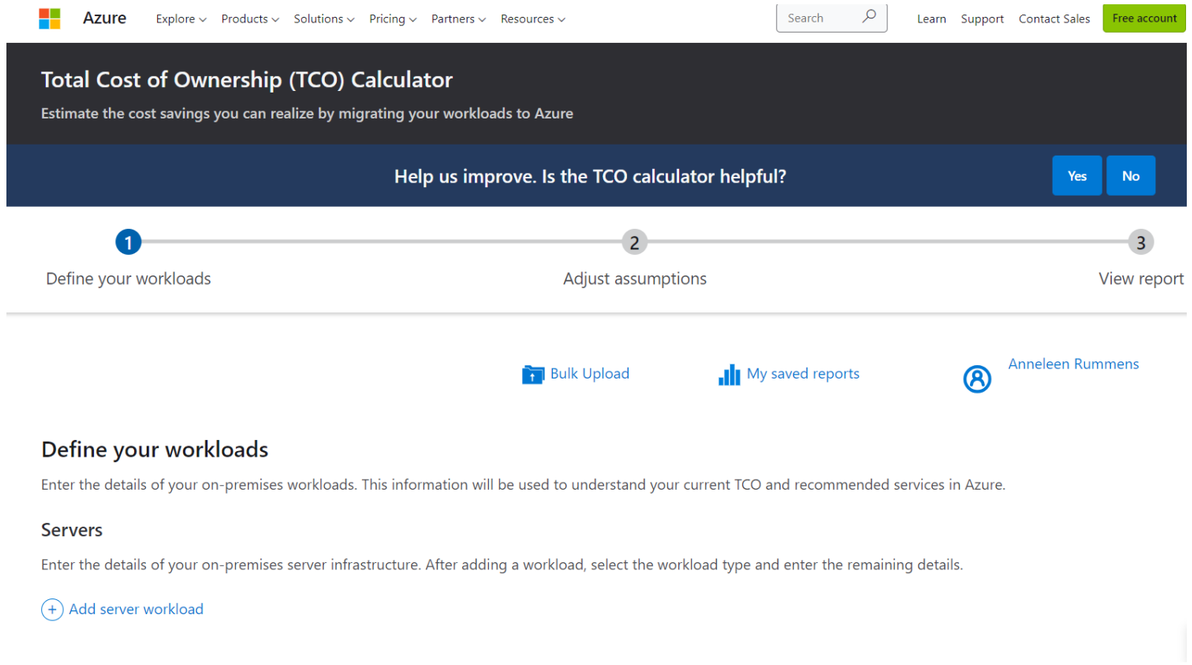
- Freely available
- Estimates costs of individual resources or services or a specific combination
- Template scenarios: e.g., big data analytics set-up



TCO calculator

Compare the total cost of on-premises infrastructure with the same configuration in Azure Cloud

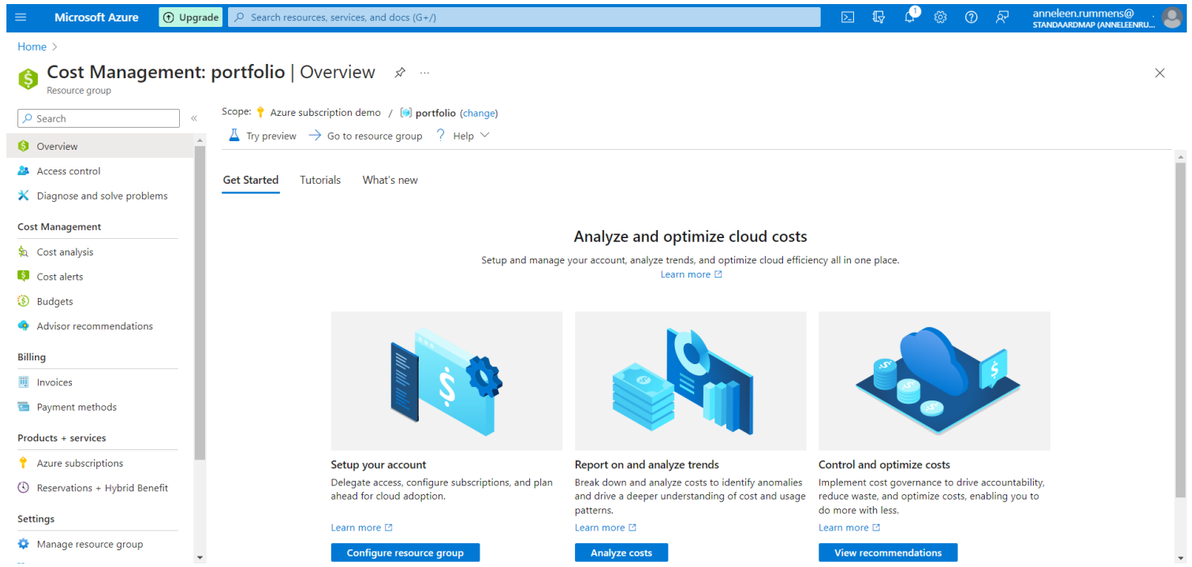
- TCO = total cost of ownership including hidden costs like operating costs
- Freely available
- Used to support migration to Azure



Cost Management

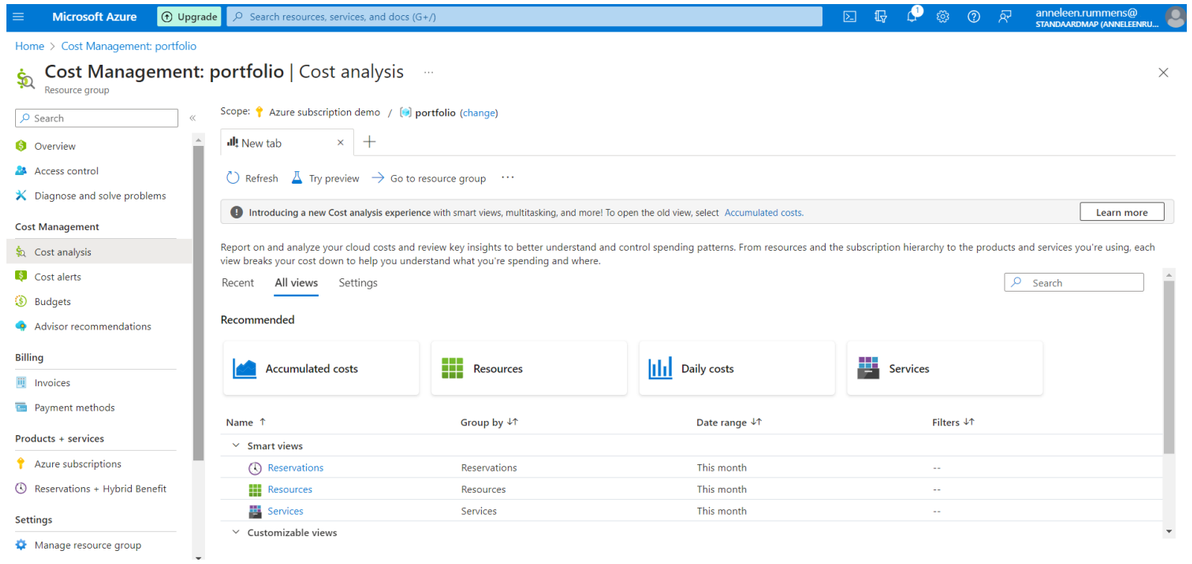
Central hub in Azure for all things cost-related

- Set up budgets and cost alerts
- Manage billing options and invoices
- API for exporting cost details to external systems
- Analyze costs with **Cost Analysis** tool



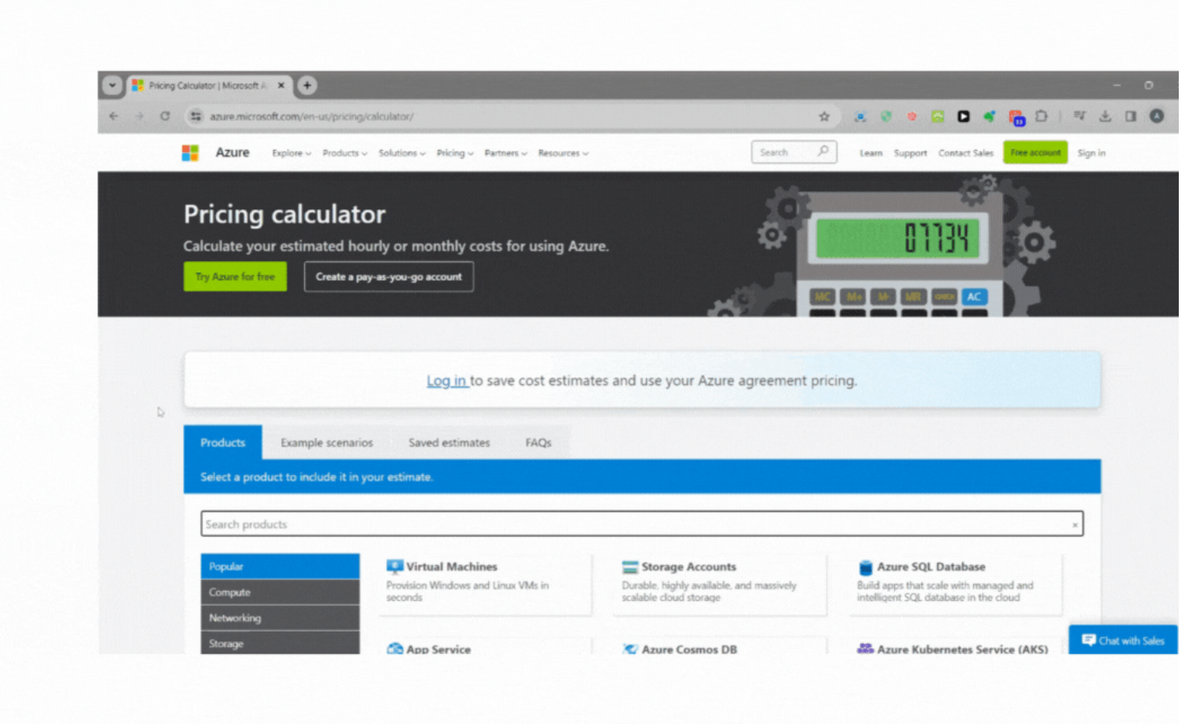
Cost Management: Cost Analysis tool

- Tool for ad-hoc cost exploration
- Custom visualization and filters
- Cost forecasts
- For more advanced analysis: connect to Power BI



Example use case: costs of a virtual machine (cont.)

> *For your data project, you create a new VM in Azure, balancing the requirements for the project with budget limits*



- **Pricing calculator**: estimate VM and other resource costs beforehand
- Cost per month is given when creating the VM and choosing its size
- Monitor costs and usage in **Cost Management**

Let's practice!

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Governance and compliance implementation

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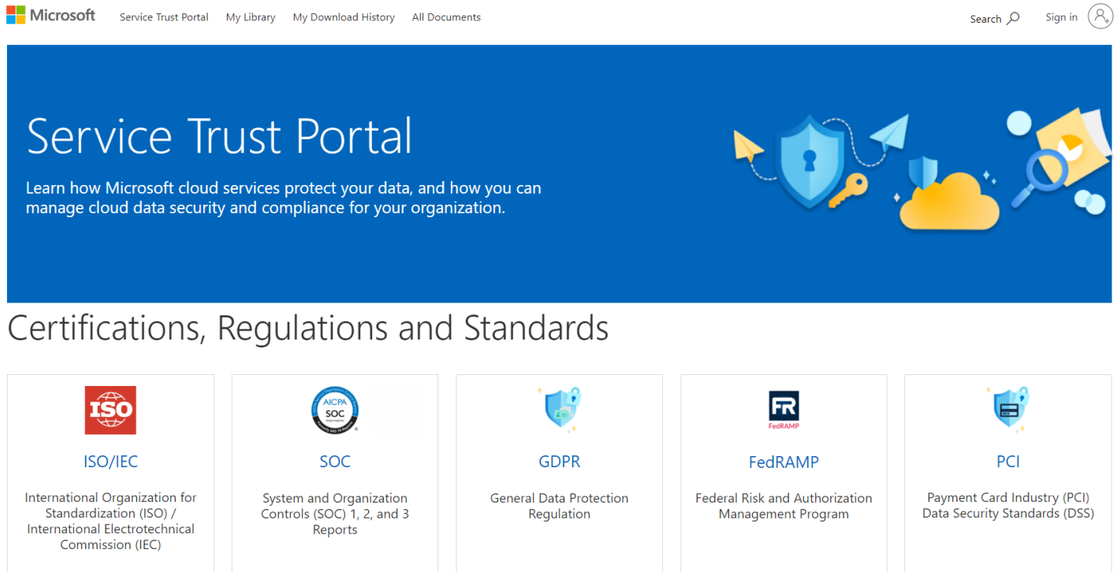
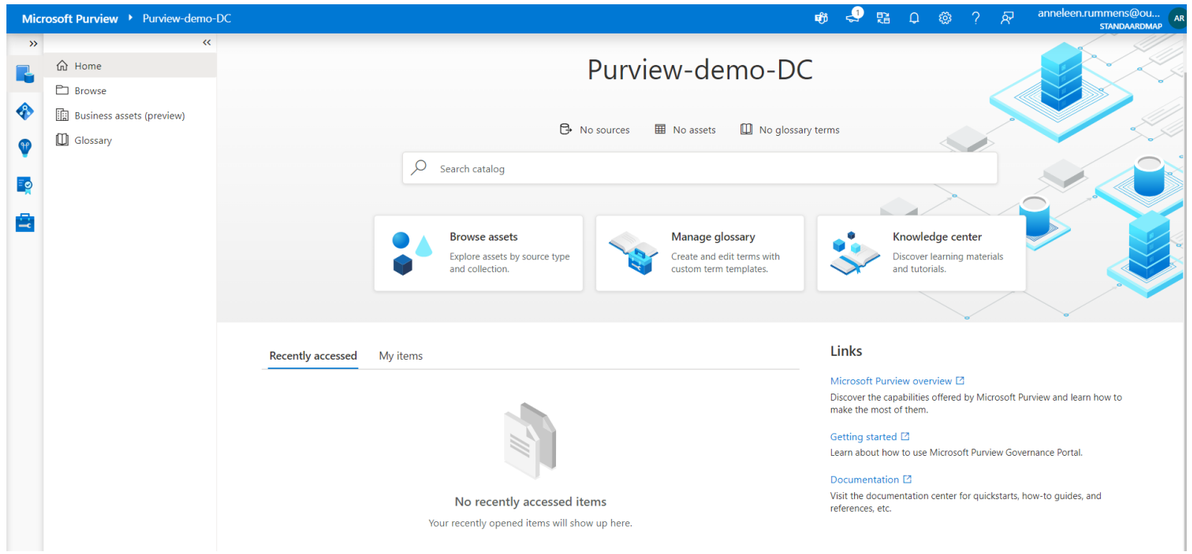
Service Trust Portal

- Details Microsoft's security, privacy and compliance practices related to the Azure cloud environment
- Resources and documentation on risk assessment and compliance best practices
  - Certifications (e.g., ISO, GDPR)



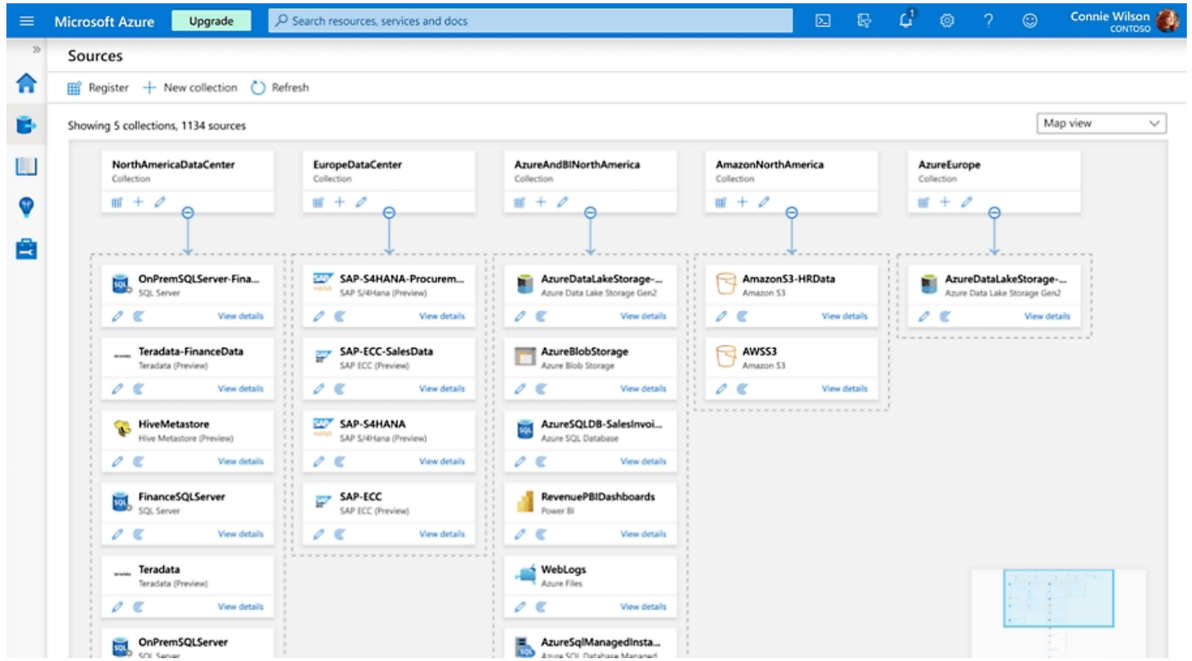
Microsoft Purview

- Comprehensive data management service for Azure and other Microsoft products
- Combination of previous Azure Purview with Microsoft 365 Compliance
- Specific focus on managing data assets:
  - Data security
  - Data governance
  - Data risk & compliance



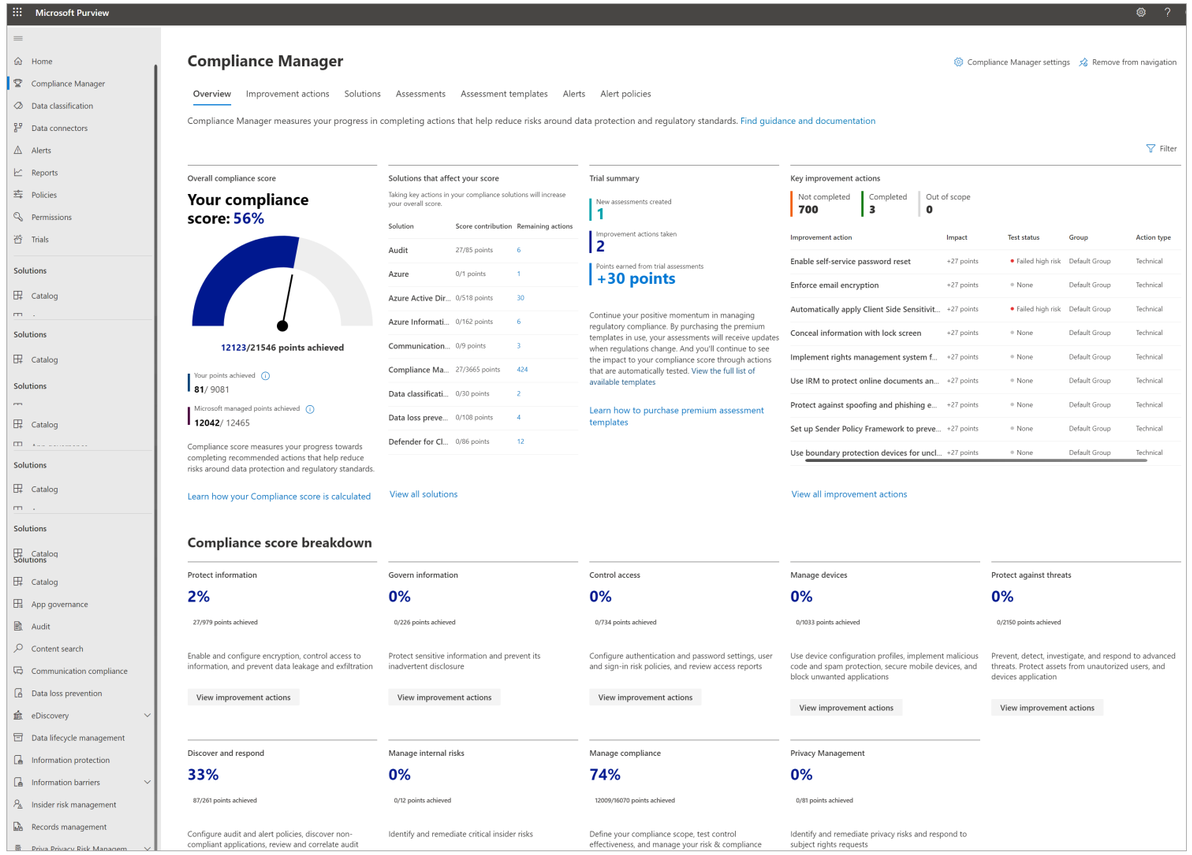
Microsoft Purview use cases

- **Data Catalog:** centralized overview of all data assets and their metadata
- **Data Map:** visual representation of data flows through systems and applications
- Data labeling, classification, and **metadata** enrichment
- Support for **data transfer and sharing**



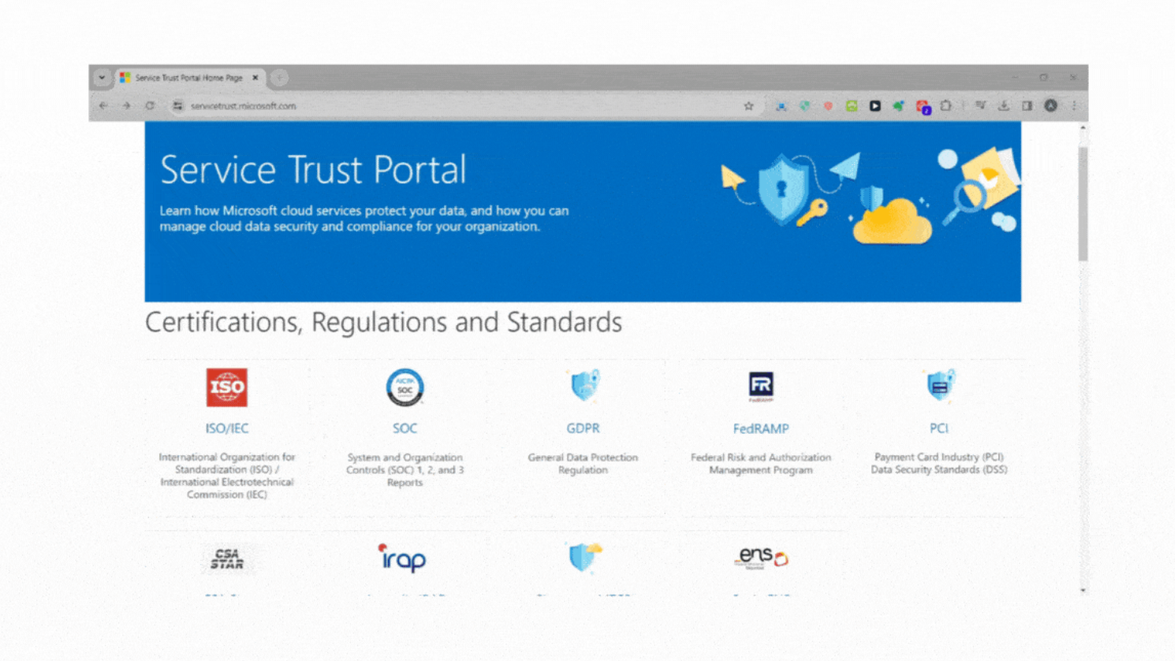
Microsoft Purview: Compliance Manager

- Dashboard to assess current compliance status with a specific set of regulations
  - Current compliance status summarized with a scoring system
  - Recommendations to improve compliance and reduce risks



Example use case: using the Service Trust Portal

> *You are responsible for handling customer data subject requests (DSRs), i.e., the right to review, correct, or delete personal data, according to the GDPR (General Data Protection Regulation)*



With the help of the Service Trust Portal, you can:

- look up the rules for DSRs in the GDPR
- look up documentation for how to handle such requests in Azure

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Governance and compliance tools

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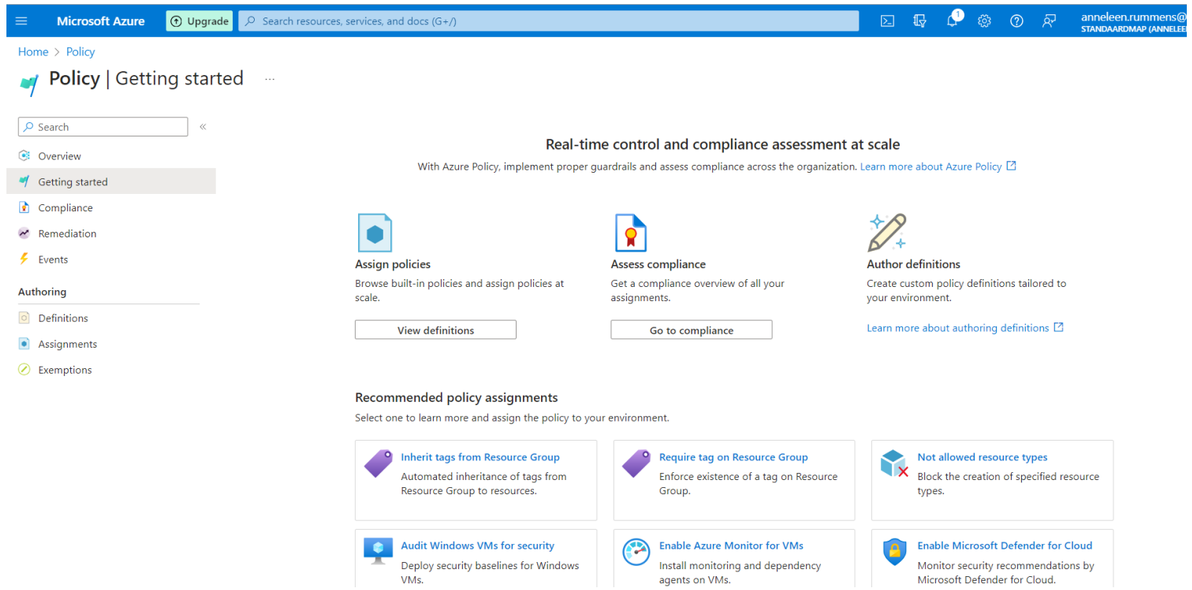
Governance and compliance tools overview

Tool	Use
Azure Policy	Enforce standards and best practices by defining and applying rules and policies to resources
Azure Blueprints	Standardize deployments, replicate configurations from existing environments

Azure Policy

Used to set rules and standards for resources

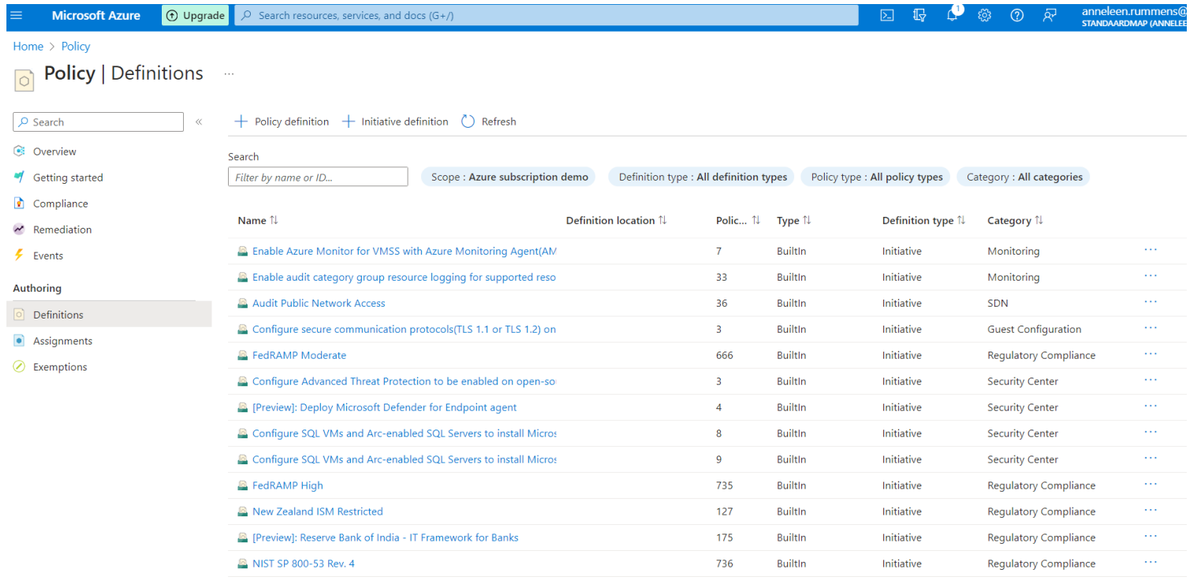
- Enforces compliance to applicable standards and regulations
- Can be set at any level and automatically be inherited by sublevels (e.g., resources take the policy of the resource group)
- Automatic remediation: e.g., applying missing tags



Azure Policy: Initiatives

Azure Policies can be grouped into **Initiatives:**

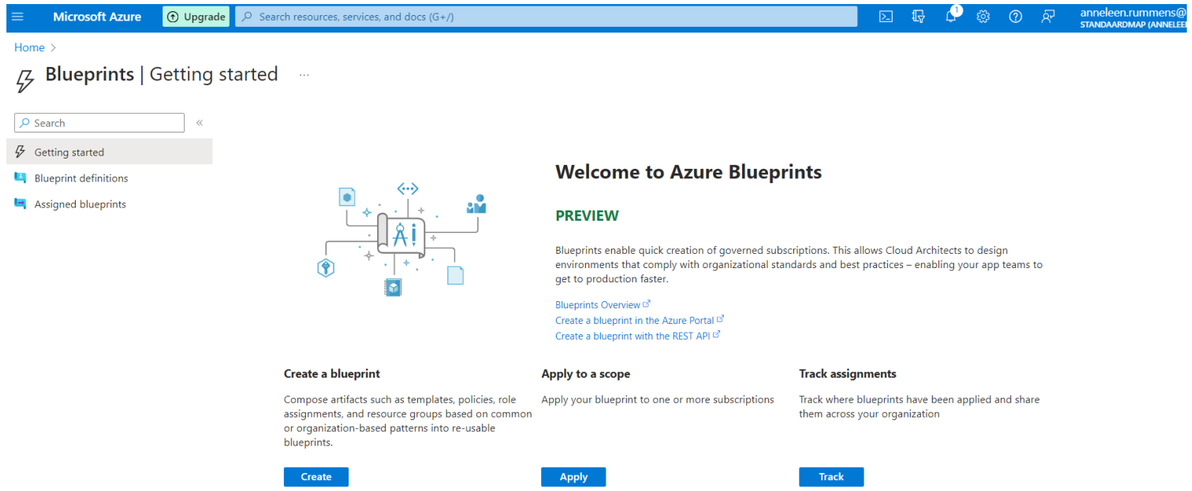
- Groups of related policies for a larger goal
- User-defined or built-in for common scenarios or regulations
- Example: HIPAA/HITRUST built-in initiative
  - MFA (multi-factor authentication) should be enabled
  - There should be more than one owner assigned to a subscription
  - Automatic check for missing members in the Administrators group



Azure Blueprints

Standardize new cloud subscriptions or deployments

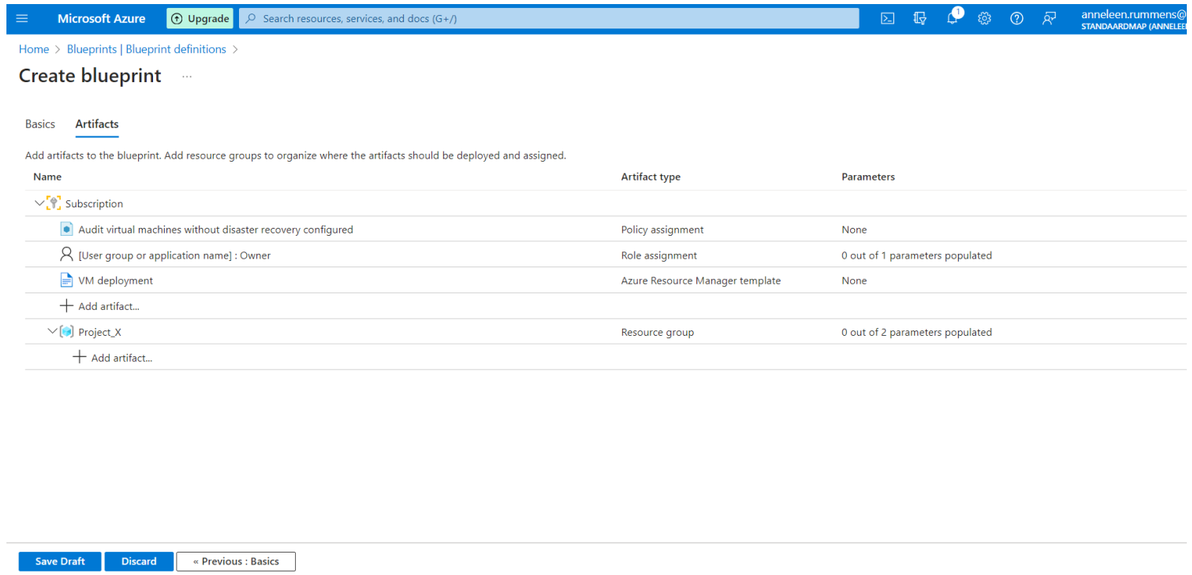
- Link between blueprint (what should be deployed) and resources (what was deployed)
- Versioning: keep track of updates or revert to a previous working version



Azure Blueprints: Artifacts

Each component of a blueprint is called an **Artifact**

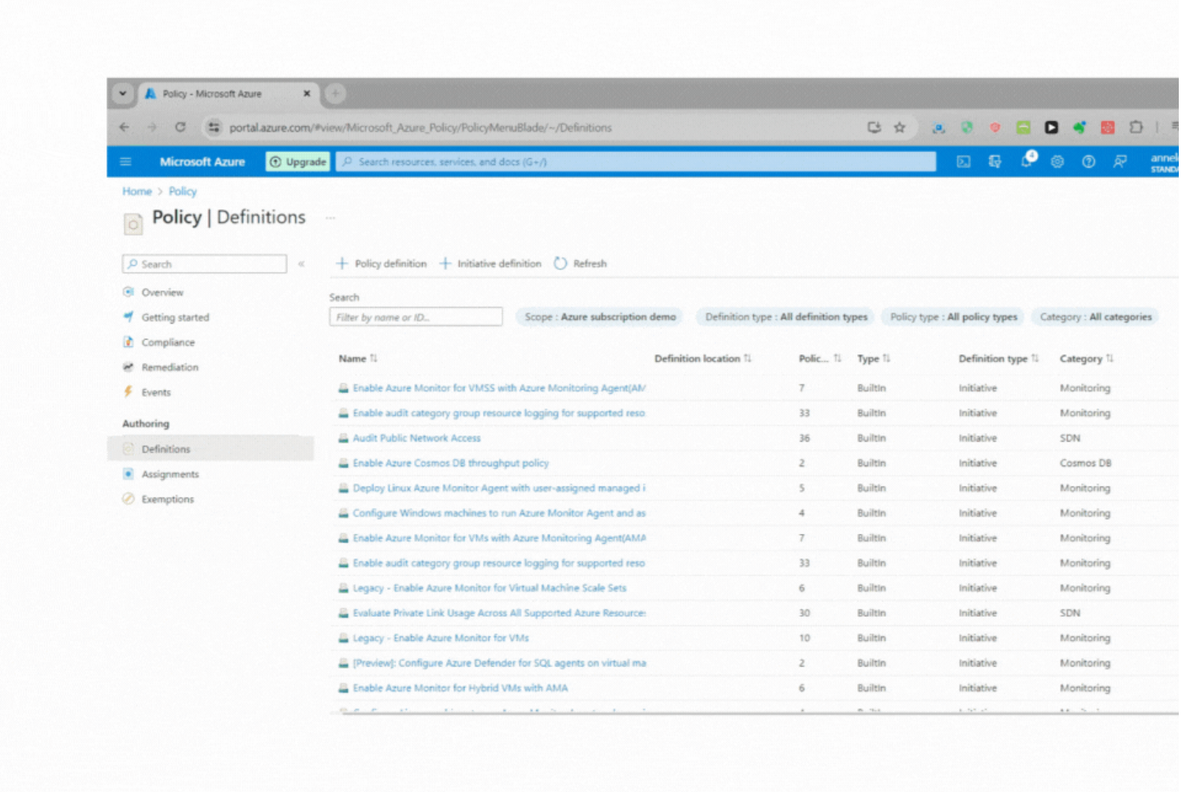
- Contain parameters that can be specified
- Configuration either in blueprint or at deployment
- Examples:
  - Role assignments
  - Policy assignments
  - Resource group configuration
  - Predefined resource templates



Example use case: network security policy

> *You are responsible for implementing best practices for network security, such as disabling public Internet access based on specific rules*

- With **Azure Policy**: implement a set of rules that blocks or restricts public Internet access
- With **Azure Blueprints**: assign above policy as an Artefact to automatically include it in new deployments



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Using the Pricing Calculator

UNDERSTANDING MICROSOFT AZURE MANAGEMENT AND GOVERNANCE

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