

AZ-900T00

Learning path 03: Management and governance



Learning path outline



Learning path 03—outline

You will learn the following concepts:

- 1** Cost management
 - Cost and pricing calculators
 - Cost management and tags
- 2** Governance and compliance
 - Blueprints, policies, and resource locks
 - Service Trust portal
- 3** Resource deployment tools
 - Portal, PowerShell, CLI, and others
 - Azure Arc and Azure Resource Manager
- 4** Monitoring tools
 - Azure Advisor, Azure Service Health, and Azure Monitor



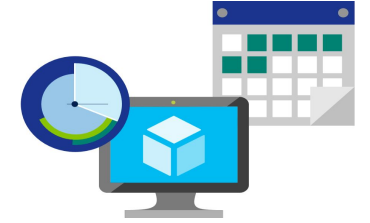
Cost management



Cost management—objective domain

- Describe factors that can affect costs in Azure.
- Compare the pricing calculator and Total Cost of Ownership (TCO) calculator.
- Describe the Azure Cost Management Tool.
- Describe the purpose of tags.

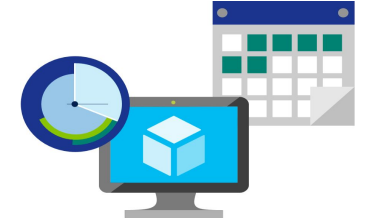
Factors affecting costs (part 1)



These are some of the factors affecting costs:

1) Resource type	2) Consumption	3) Maintenance
<p>Costs are resource-specific, so the usage that a meter tracks and the number of meters associated with a resource, depend on the resource type.</p>	<p>With a pay-as-you-go model, consumption is one of the biggest drivers of costs.</p>	<p>Monitoring your Azure footprint and maintaining your environment can help you identify and mitigate costs that aren't necessary, such as shutting down underused virtual machines.</p>

Factors affecting costs (part 2)



These are some of the factors affecting costs:

4) Geography	5) Network traffic	6) Subscription
<p>The same resource type can cost different amounts depending on the geographic area, which has an impact on Azure costs.</p>	<p>While some inbound data transfers are free, the cost for outbound data or data between Azure resources is impacted by billing zones.</p>	<p>The type and configuration of your subscription can also impact your cost. For example, the free trial lets you explore some Azure resources for free.</p>

Explore Azure Marketplace

Azure Marketplace allows customers to find, try, purchase, and provision applications and services from hundreds of leading service providers, which are all certified to run on Azure.

- Open-source container platforms.
- Virtual machine and database images.
- Application build and deployment software.
- Developer tools.
- And much more, with 10,000-plus listings!



Pricing calculator

The **pricing calculator** is a tool that helps you estimate the cost of Azure products. The options that you can configure in the pricing calculator vary between products, but basic configuration options include:

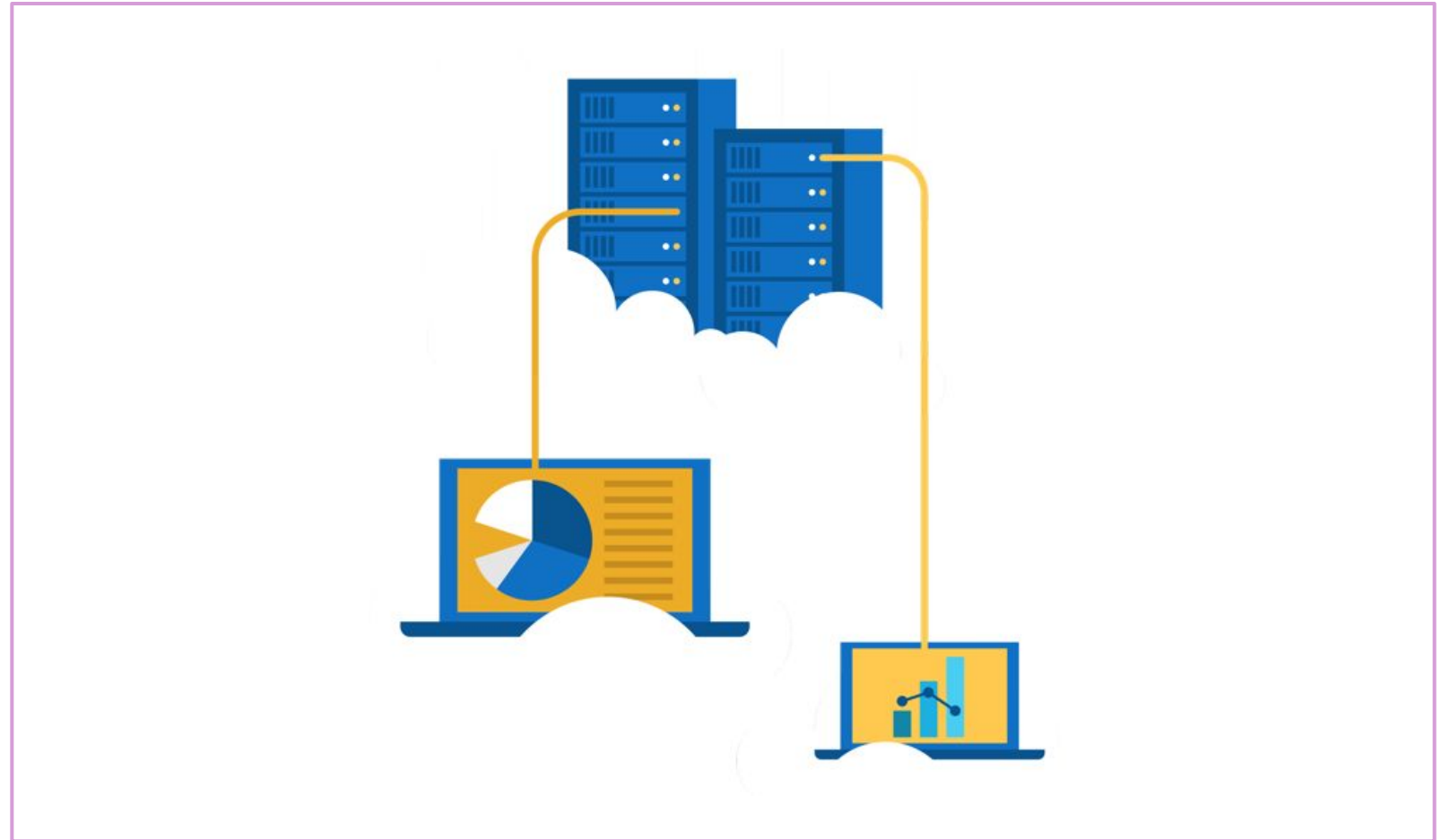
- Region
- Tier
- Billing options
- Support options
- Programs and offers
- Azure dev/test pricing

The screenshot shows the 'Your Estimate' section of the Azure Pricing Calculator. At the top, it displays 'Virtual Machines' with a summary: '1 D2 v3 (2 vCPUs, 8 GB RAM) x 730 Hours (...)' and 'Upfront: USD 0.00' and 'Monthly: USD'. Below this, there are several dropdown menus for configuration: 'REGION: West US', 'OPERATING SYSTEM: Windows', 'TYPE: (OS Only)', 'TIER: Standard', 'CATEGORY: All', 'INSTANCE SERIES: All', and 'INSTANCE: D2 v3: 2 vCPUs, 8 GB RAM, 50 GB Temporary storage, USD 0.209/hour'. At the bottom, there is a quantity selector showing '1' virtual machine and a duration selector showing '730 Hours'.

Exercise—use the Azure pricing calculator

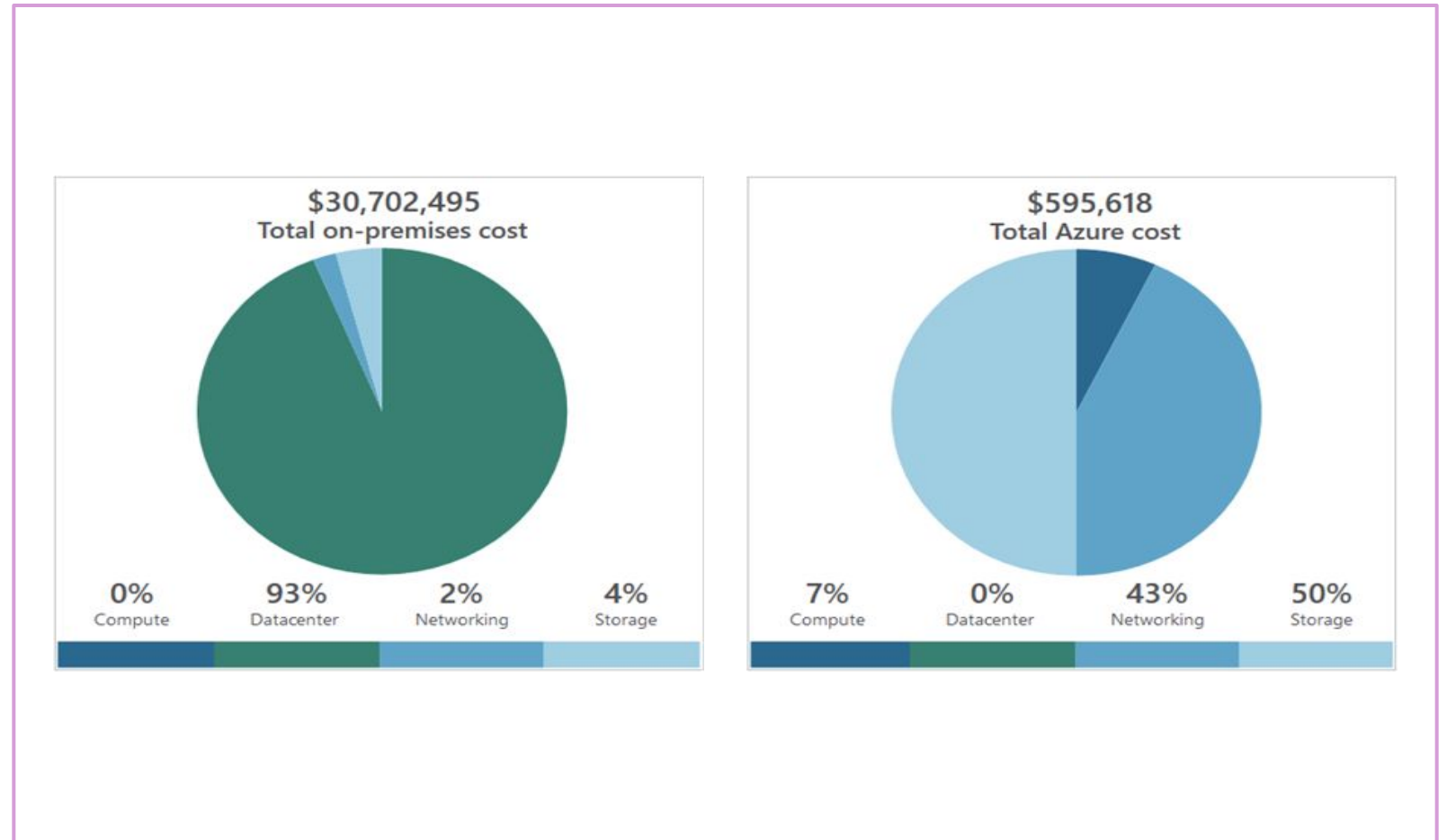
Use the Azure pricing calculator to generate a cost estimate for an Azure virtual machine and related network resources.

1. Configure the pricing calculator.
2. Review the pricing estimate.



Total Cost of Ownership (TCO) calculator

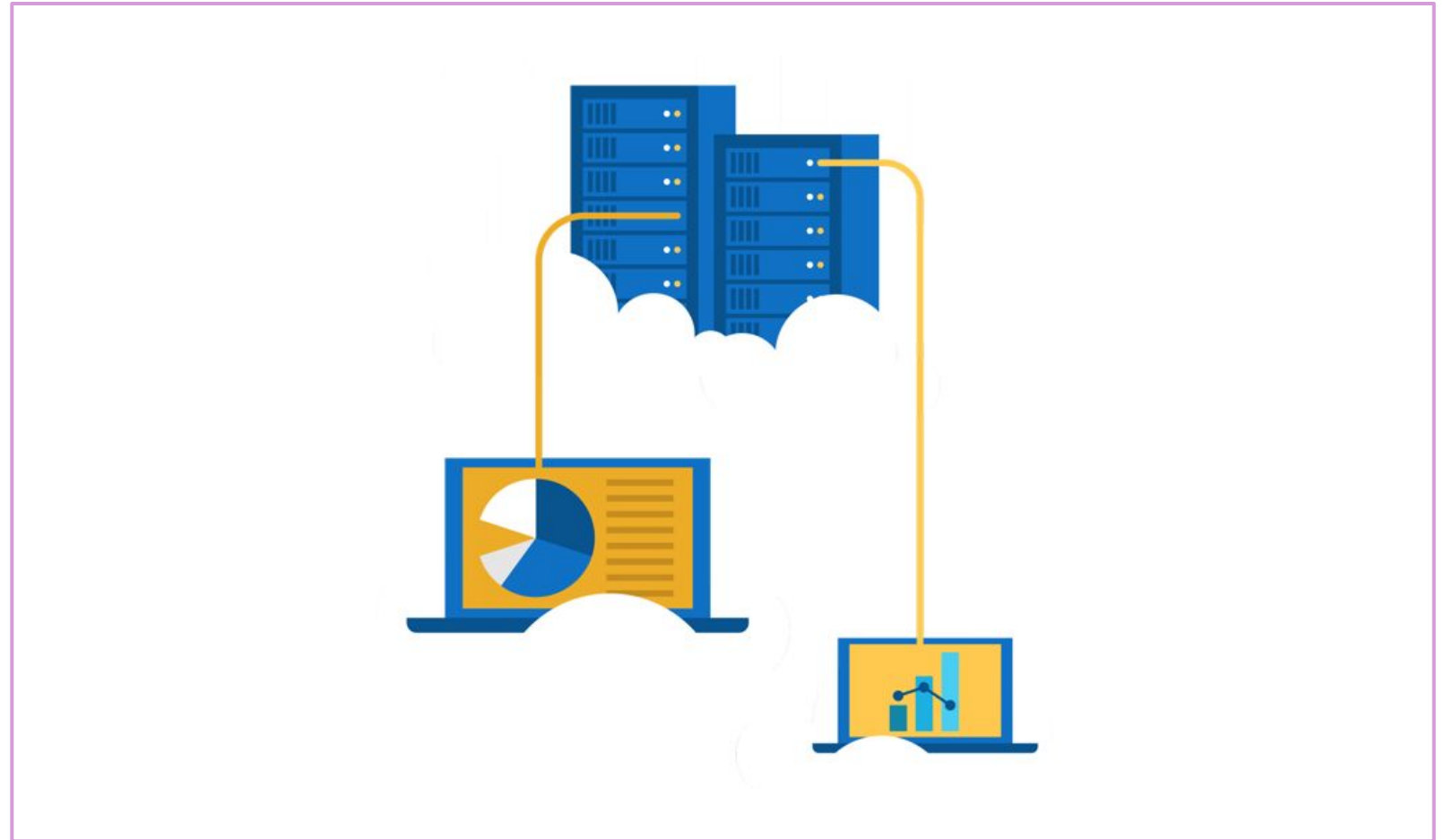
- A tool to estimate cost savings you can realize by migrating to Azure.
- A report compares the costs of on-premises infrastructures with the costs of using Azure products and services in the cloud.



Exercise—use the Azure TCO calculator

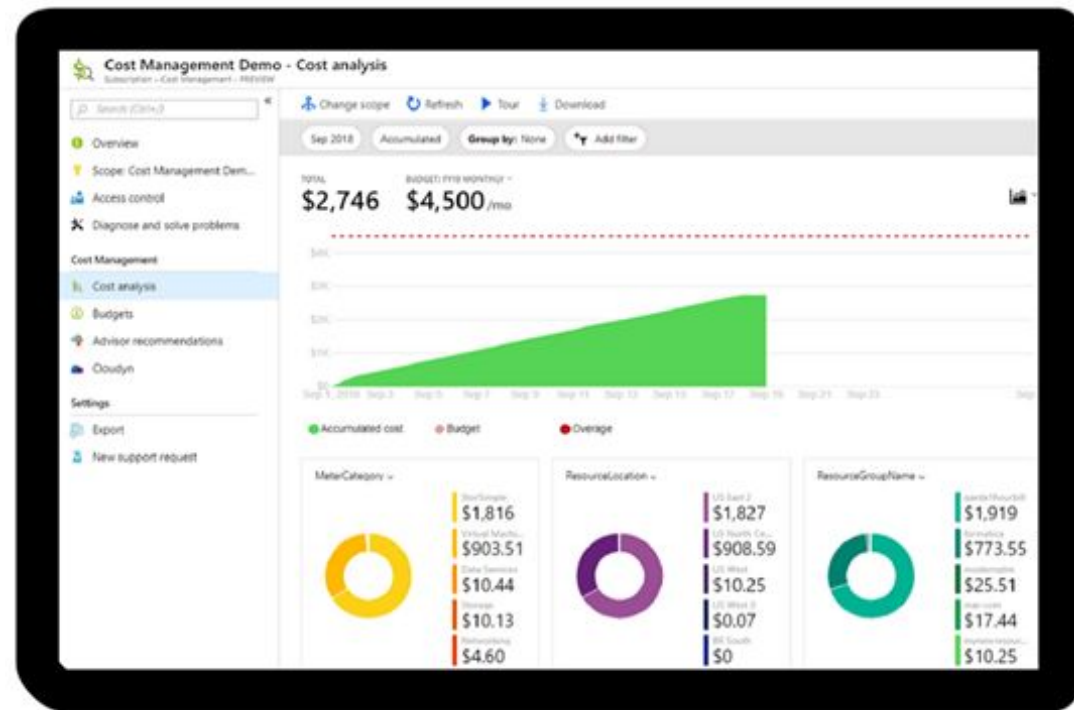
Use the Total Cost of Ownership (TCO) calculator to generate a cost comparison report for an on-premises environment.

1. Configure the TCO calculator.
2. Review the results and save a copy.



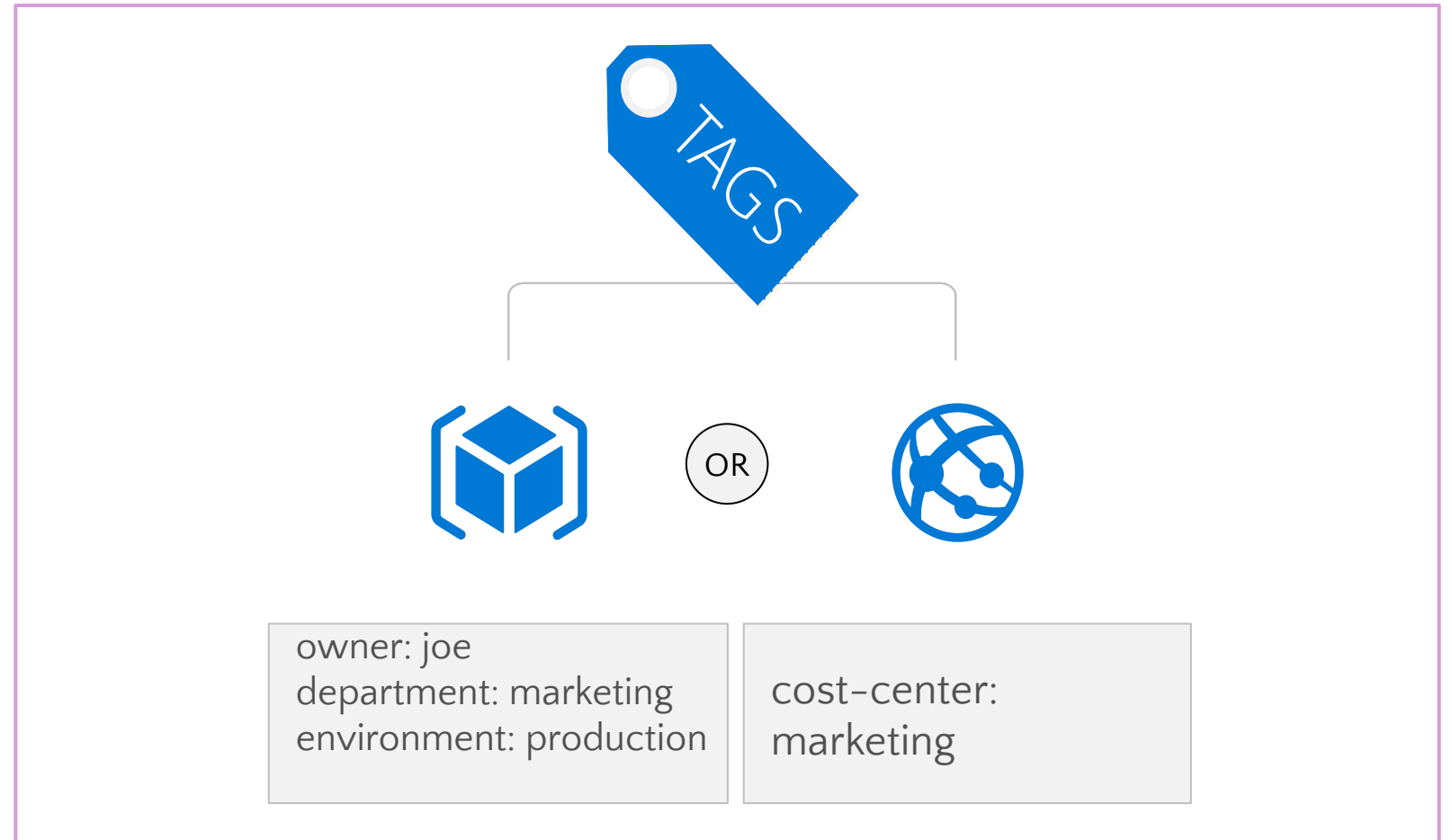
Azure Cost Management

- Reporting: Billing reports
- Data enrichment
- Budgets: Set spend budget
- Alerting: When cost exceed limits
- Recommendation: Cost recommendations



Tags

- Provides metadata for your Azure resources.
- Logically organizes resources into a taxonomy.
- Consists of a name-value pair.
- Very useful for rolling up billing information.



Governance and compliance



Governance and compliance—objective domain

- Describe the purpose of Azure Policy.
- Describe the purpose of resource locks.
- Describe the purpose of the Service Trust portal.
- Describe the purpose of Microsoft Purview.

Azure Policy

Azure Policy helps to enforce organizational standards and to assess compliance at scale. Provides governance and resource consistency with regulatory compliance, security, cost, and management.

- Evaluates and identifies Azure resources that do not comply with your policies.
- Provides built-in policy and initiative definitions, under categories such as Storage, Networking, Compute, Security Center, and Monitoring.



Resource locks

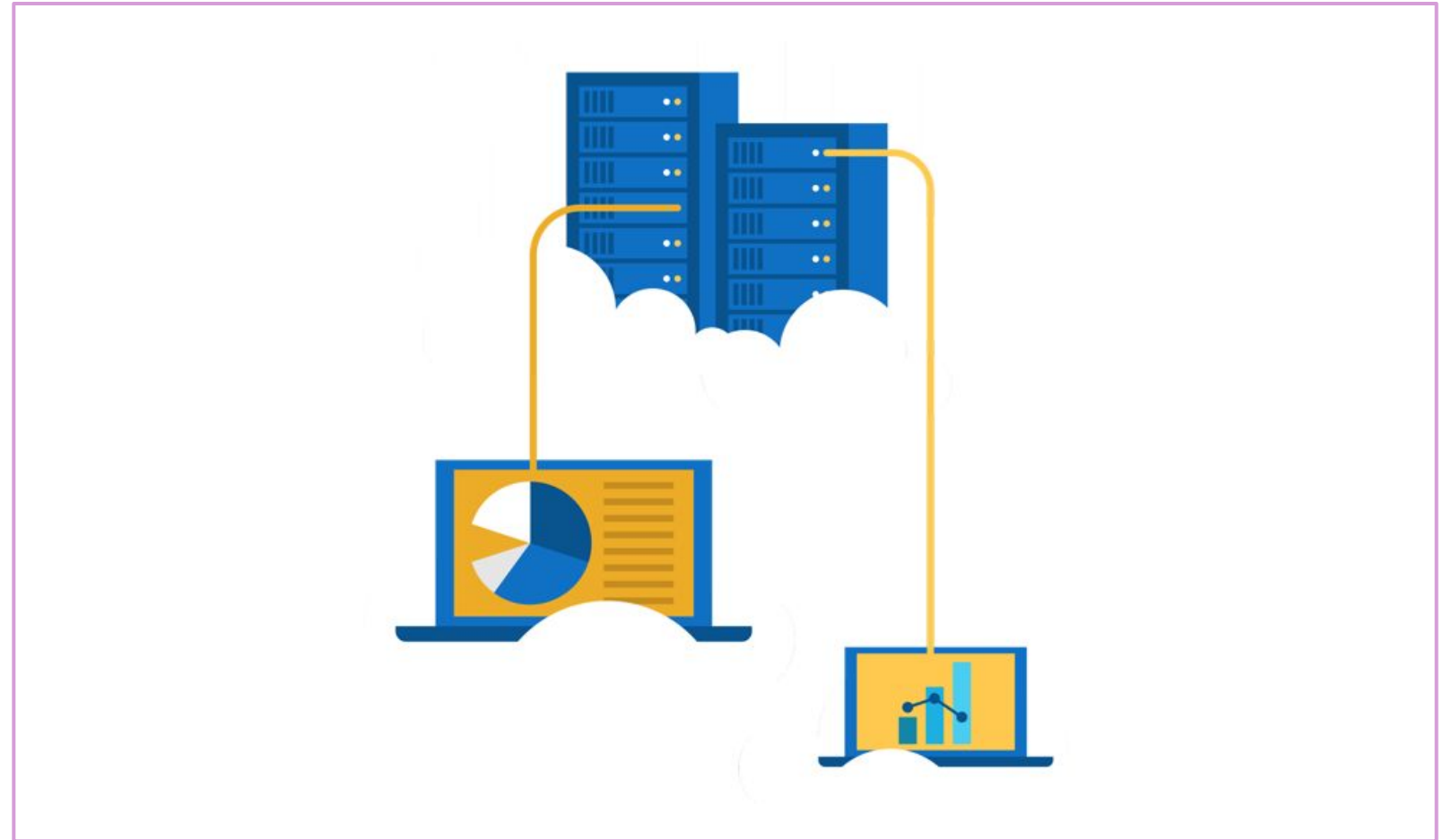
- Protect your Azure resources from accidental deletion or modification.
- Manage locks at subscription, resource group, or individual resource levels within the Azure portal.

Lock Types	Read	Update	Delete
Delete	Yes	Yes	No
ReadOnly	Yes	No	No

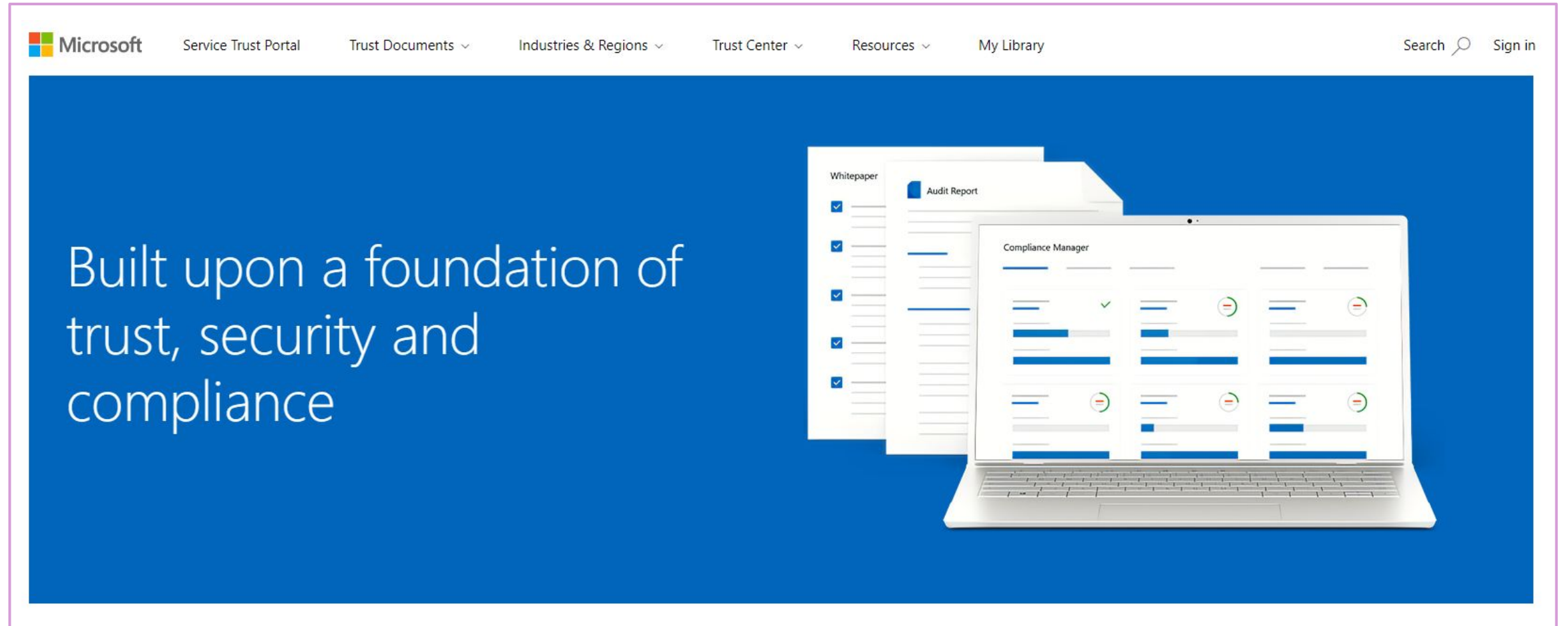
Walkthrough—manage resource locks

Create a resource and add a lock to prevent modification

1. Create a resource.
2. Add a ReadOnly resource lock to prevent resource modification.
3. Update lock and retest.
4. Remove the resource lock.
5. Delete the resource.



Service Trust portal



Microsoft Purview

Microsoft Purview is a family of data governance, risk, and compliance solutions that helps you get a single, unified view into your data. Microsoft Purview brings insights about your on-premises, multicloud, and software as a service data together.

- Automated data discovery
- Sensitive data classification
- End-to-end data lineage



Management and deployment tools



Management and deployment tools—objective domain

- Describe Azure portal.
- Describe Azure Cloud Shell, including Azure CLI and Azure PowerShell.
- Describe the purpose of Azure Arc.
- Describe Azure Resource Manager (ARM) and Azure ARM templates.

Tools for interacting with Azure



Azure portal



Azure PowerShell

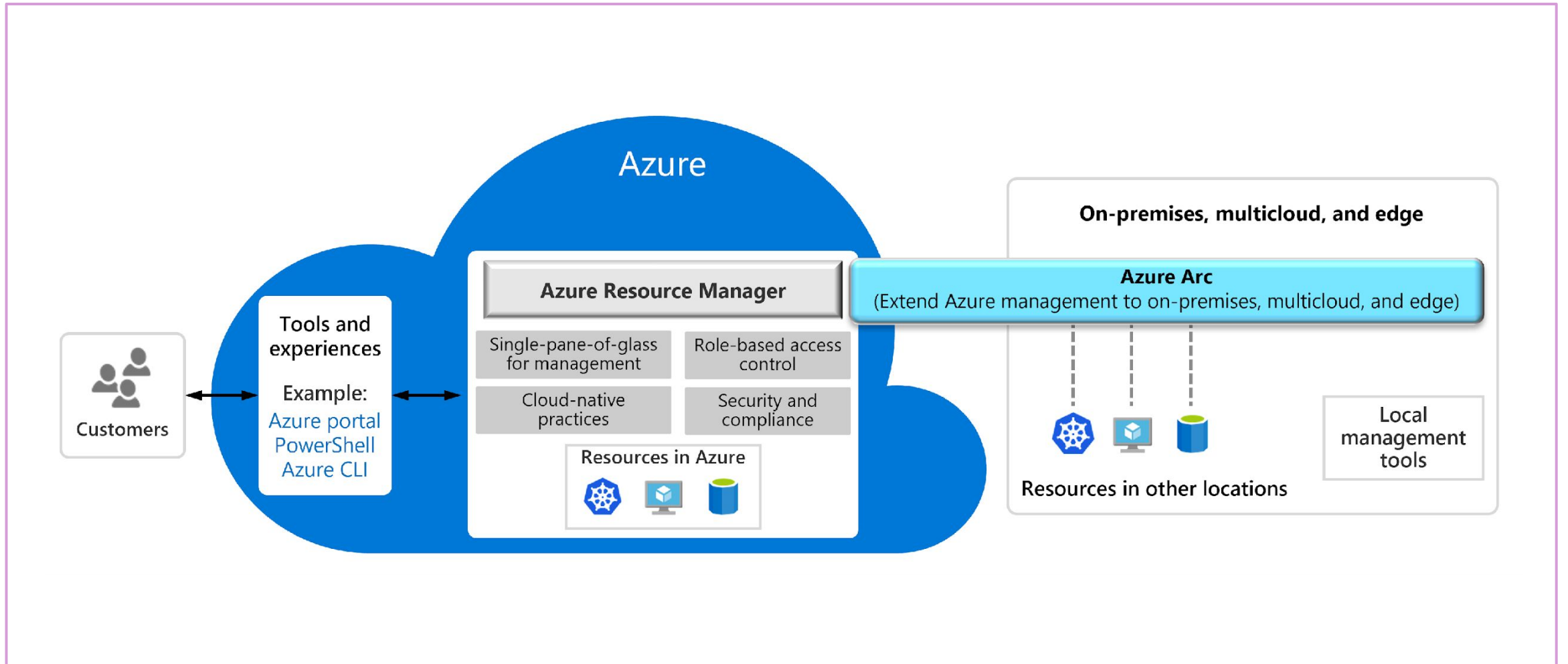


Azure Cloud Shell



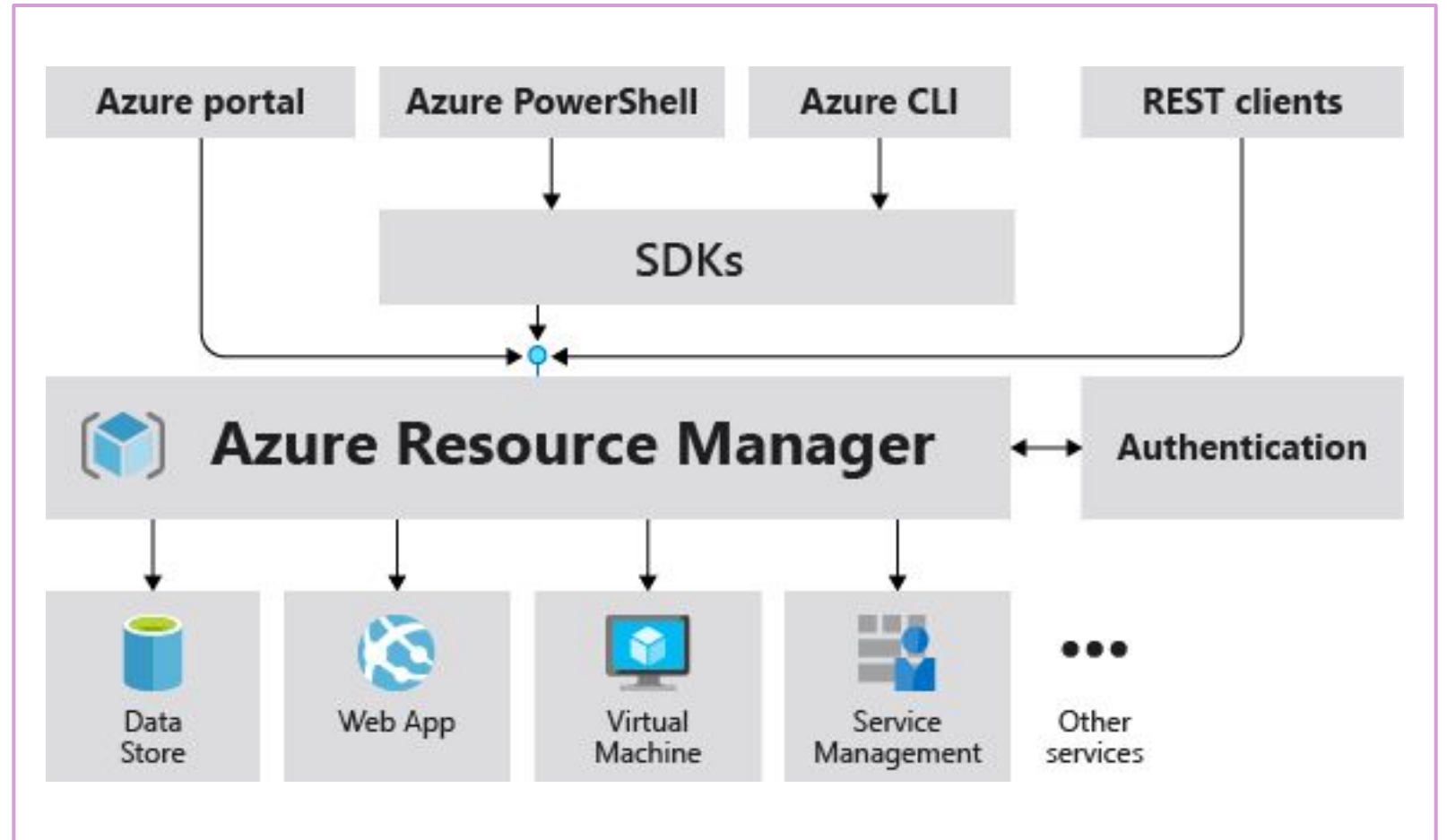
Command-Line
Interface (CLI)

Azure Arc



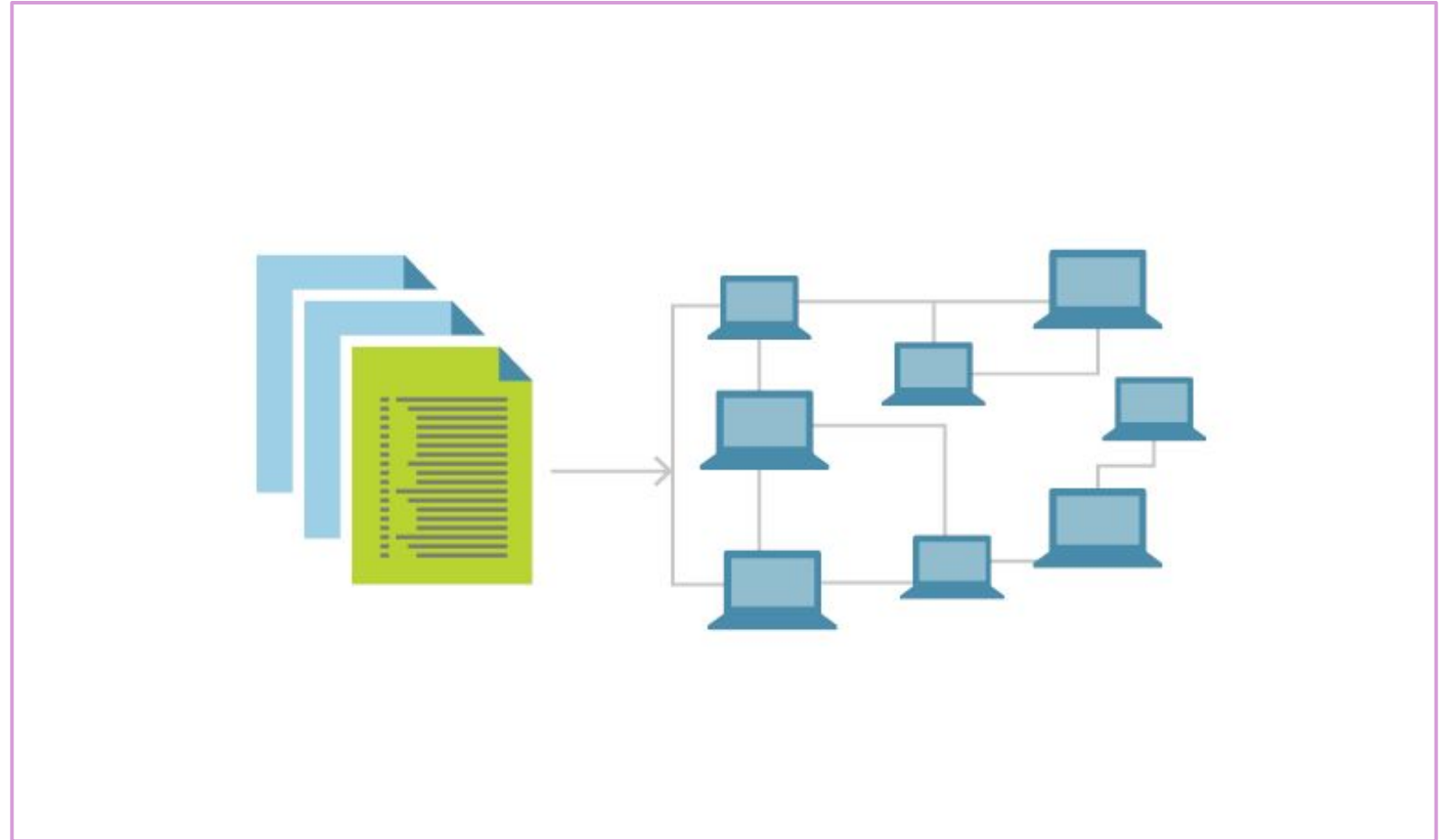
Azure Resource Manager

The **Azure Resource Manager (ARM)** provides a management layer that enables you to create, update, and delete resources in your Azure subscription.



Infrastructure as code

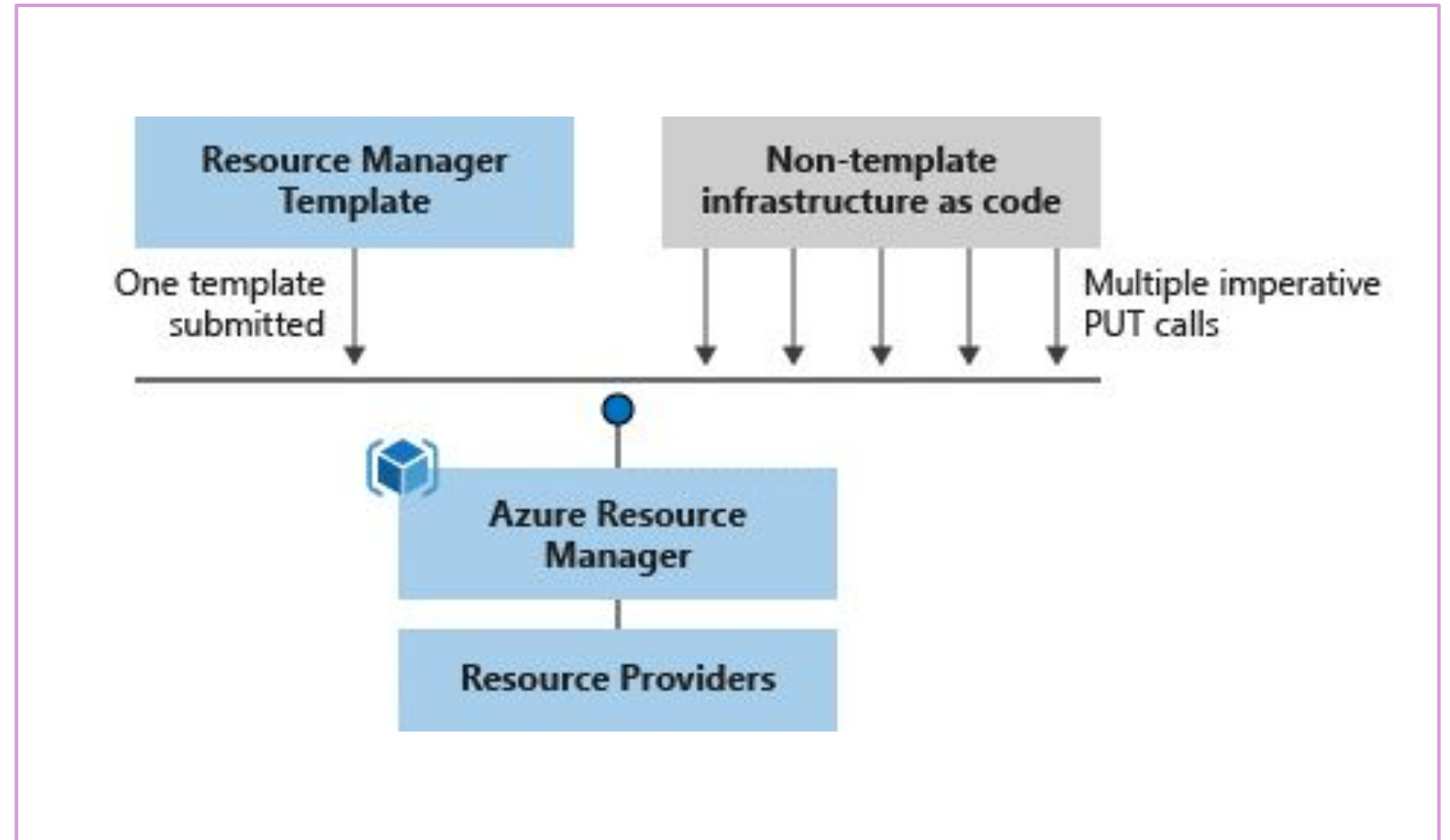
- Ensure consistency in deployment across your cloud ecosystem.
- Manage configuration at scale.
- Rapidly provision additional environments based on a standard configuration and build.



Azure Resource Manager (ARM) templates

Azure Resource Manager (ARM) templates are JavaScript Object Notation (JSON) files that can be used to create and deploy Azure infrastructure without having to write programming commands.

- Declarative syntax
- Repeatable results
- Orchestration
- Modular files
- Built-in validation
- Exportable code



Bicep

Bicep

```
param location string = resourceGroup().location
param storageAccountName string = 'toyllaunch${uniqueString(resourceGroup().id)}'

resource storageAccount 'Microsoft.Storage/storageAccounts@2021-06-01' = {
  name: storageAccountName
  location: location
  sku: {
    name: 'Standard_LRS'
  }
  kind: 'StorageV2'
  properties: {
    accessTier: 'Hot'
  }
}
```

Azure monitoring tools



Azure management tools—objective domain

Describe the functionality and usage

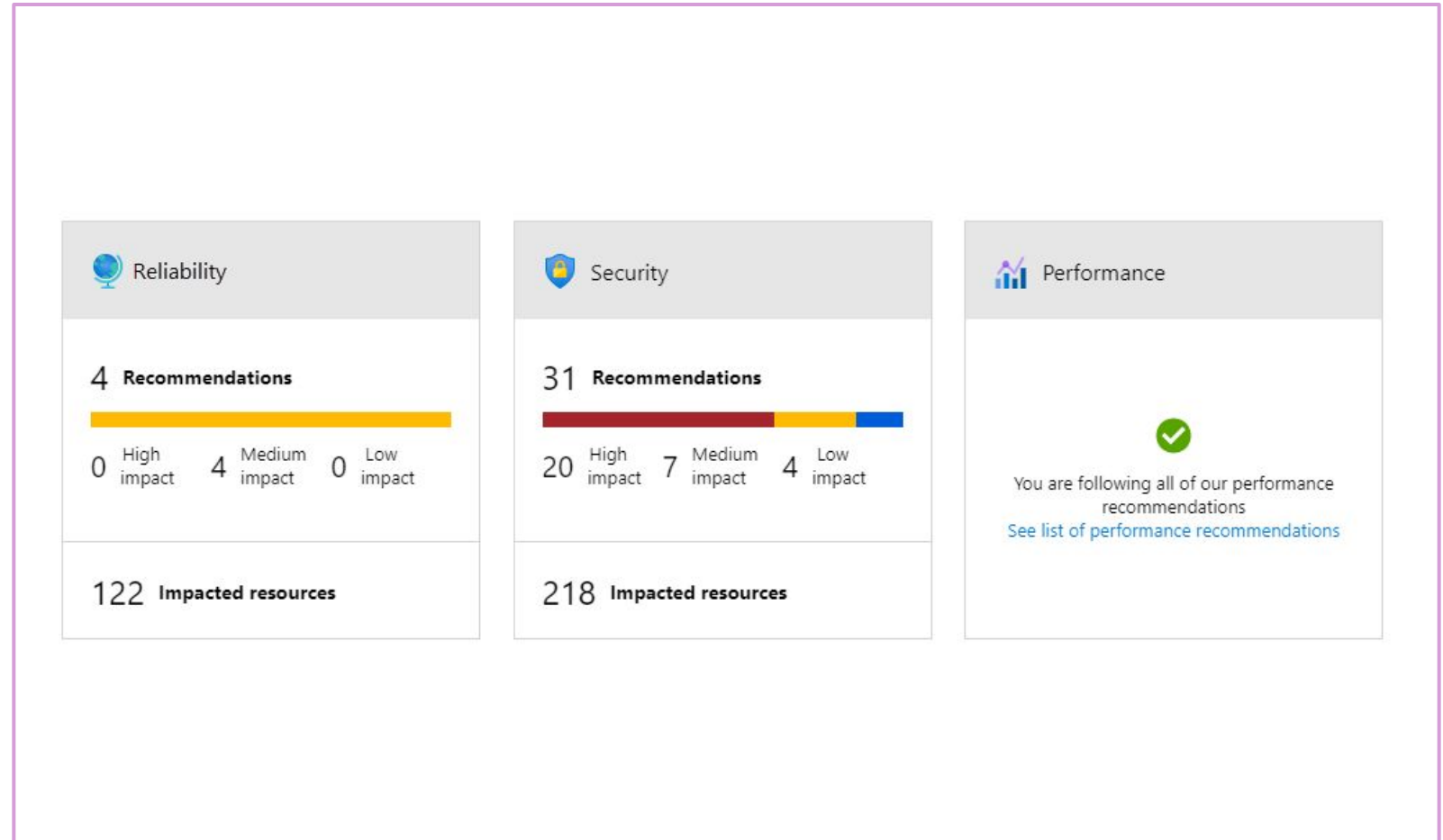
- Describe the purpose of Azure Advisor.
- Describe Azure Service Health.
- Describe Azure Monitor, including Azure Log Analytics, Azure Monitor Alerts, and Application Insights.



Azure Advisor

Azure Advisor analyzes deployed Azure resources and makes recommendations based on best practices to optimize Azure deployments.

- Reliability
- Security
- Performance
- Cost
- Operational excellence



Azure Service Health

Azure Service Health is a collection of services that keep you informed of general Azure status, service status that may impact you, and specific resource status that is affecting you.

Azure Status: Global view of the health of all Azure services across all Azure regions.

Service Health: Focused view on only the services and regions that you're using. If a service is experiencing a problem in a region you're not using, it won't show up here.

Resource Health: Tailored view of your actual Azure resources. It provides information about the health of your individual cloud resources.



Azure Monitor

Azure Monitor maximizes the availability and performance of applications and services by collecting, analyzing, and acting on telemetry from cloud and on-premises environments.

- Application Insights
- Log Analytics
- Smart alerts
- Automation actions
- Customized dashboards

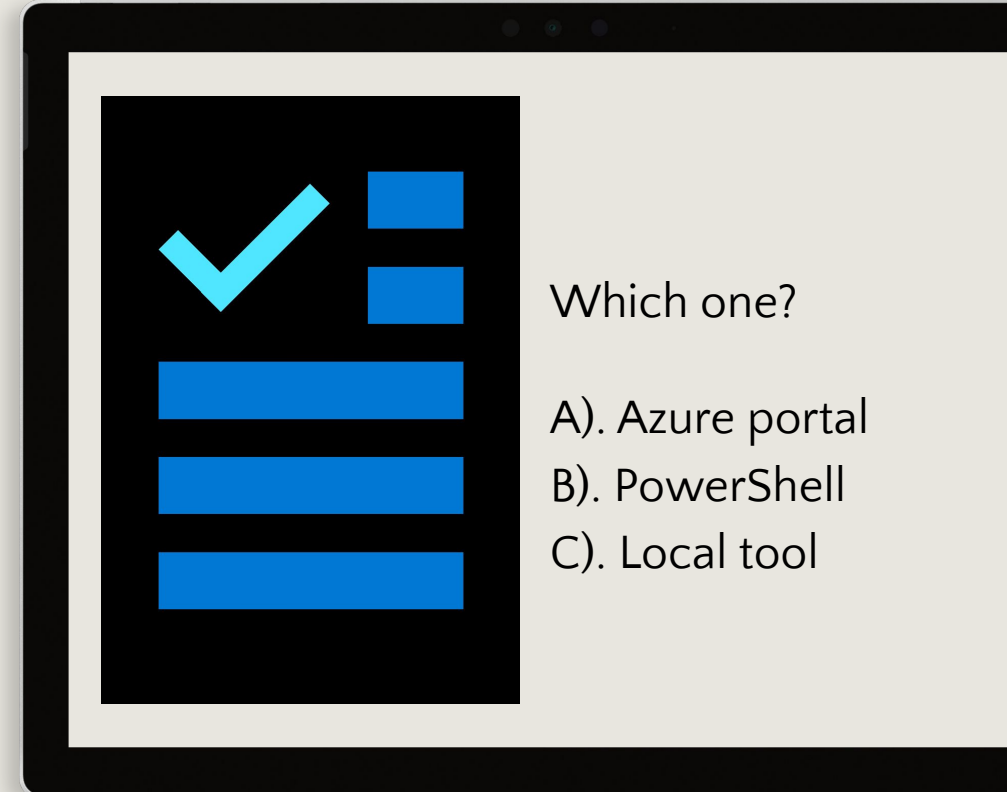


Knowledge check

Populate with instructions to use the polling tool of your choice

Learning path 03

1. Use your smartphones or mobile devices.
2. Go to (*insert polling app link of your choice*).
3. Enter code: **123-45-678**.
4. Please participate in the quiz for this section.



Knowledge check



Q1

What tools can you use for cost estimation and pricing in Azure?

- A. Azure Explorer
- B. Cost and Pricing Calculators
- C. Azure Evaluator

Q2

Which Azure service provides a platform for managing costs through budgeting and policies using tags?

- A. Azure Billing Hub
- B. Cost Management and Tags
- C. Azure Financial Planner

Q3

What Azure features contribute to governance and compliance?

- A. Azure Governance and Trust Center
- B. Blueprints, Policies, and Resources Locks.
- C. Azure Compliance Suite

Knowledge check



Q4

Which portal can be used for deploying and managing Azure resources interactively?

- A. Command Line Interface (CLI)
- B. PowerShell
- C. Azure Portal

Q5

What is Azure Arc used for in resource deployment?

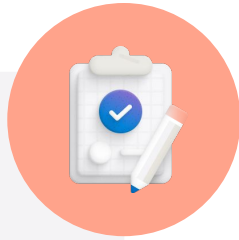
- A. Virtual Machine Scaling
- B. Extending Azure services to on-premises and multi-cloud environments.
- C. Database Management

Q6

Which tool provides recommendations to optimize and improve the efficiency of Azure resources?

- A. Azure Health Advisor
- B. Azure Service Health
- C. Azure Advisor

Learning path 03 review



Microsoft Learn Modules (learn.microsoft.com/training)

- Cost management
- Governance and compliance
- Resource deployment tools
- Monitoring tools