

Describe cost management in Azure

1. Introduction

<https://learn.microsoft.com/en-us/training/modules/describe-cost-management-azure/1-introduction>

Introduction

Completed

In this module, you'll be introduced to factors that impact costs in Azure and tools to help you both predict potential costs and monitor and control costs. You'll also review cost optimization choices for different workload patterns.

Learning objectives

After completing this module, you'll be able to:

- Describe factors that can affect costs in Azure.
- Describe the Azure Pricing calculator.
- Describe the Microsoft Cost Management Tool.
- Describe the purpose of tags.
- Describe cost optimization options, including Reservations, savings plans, and Spot pricing.

2. Describe factors that can affect costs in Azure

<https://learn.microsoft.com/en-us/training/modules/describe-cost-management-azure/2-describe-factors-affect-costs-azure>

Describe factors that can affect costs in Azure

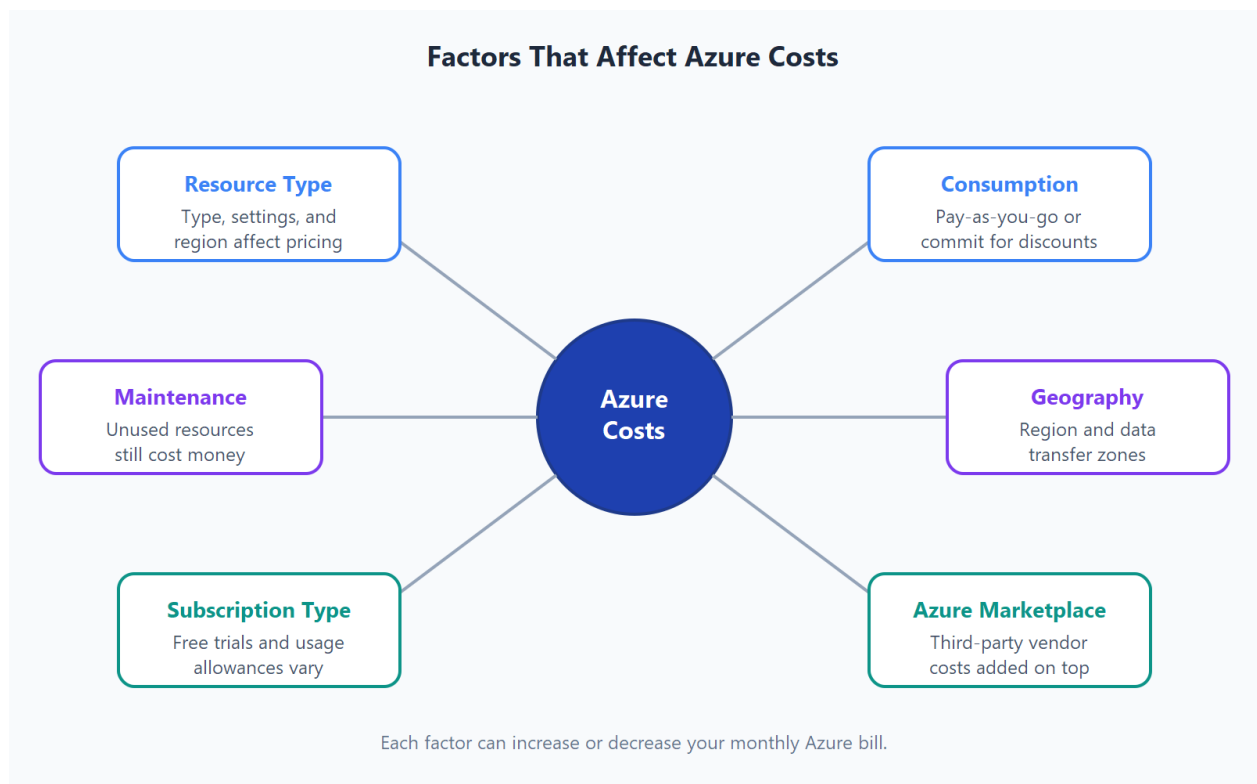
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The following video provides an introduction to things that can impact your costs in Azure.

With Azure, you pay for IT resources as you use them instead of purchasing and maintaining your own infrastructure. Whether it's compute, storage, or networking, you rent what you need and release it when you're done. This consumption-based approach means your costs scale with your actual usage.

Many factors affect how much you pay. Some of the factors that affect cost are:

- Resource type
- Consumption
- Maintenance
- Geography
- Subscription type
- Azure Marketplace



Resource type

A number of factors influence the cost of Azure resources. The type of resources, the settings for the resource, and the Azure region will all have an impact on how much a resource costs. When you provision an Azure resource, Azure tracks how much of each resource you use and charges you based on that usage.

Examples

With a storage account, you choose options that affect the price, such as the type of data stored (for example, blob storage for files and images), how fast you need to access it, how many backup copies to keep, and which region to use. Creating the same storage account in different regions may show different costs and changing any of the settings may also impact the price.

With a virtual machine (VM), you may have to consider licensing for the operating system or other software, the processor and number of cores for the VM, the attached storage, and the network interface. Just like with storage, provisioning the same virtual machine in different regions may result in different costs.

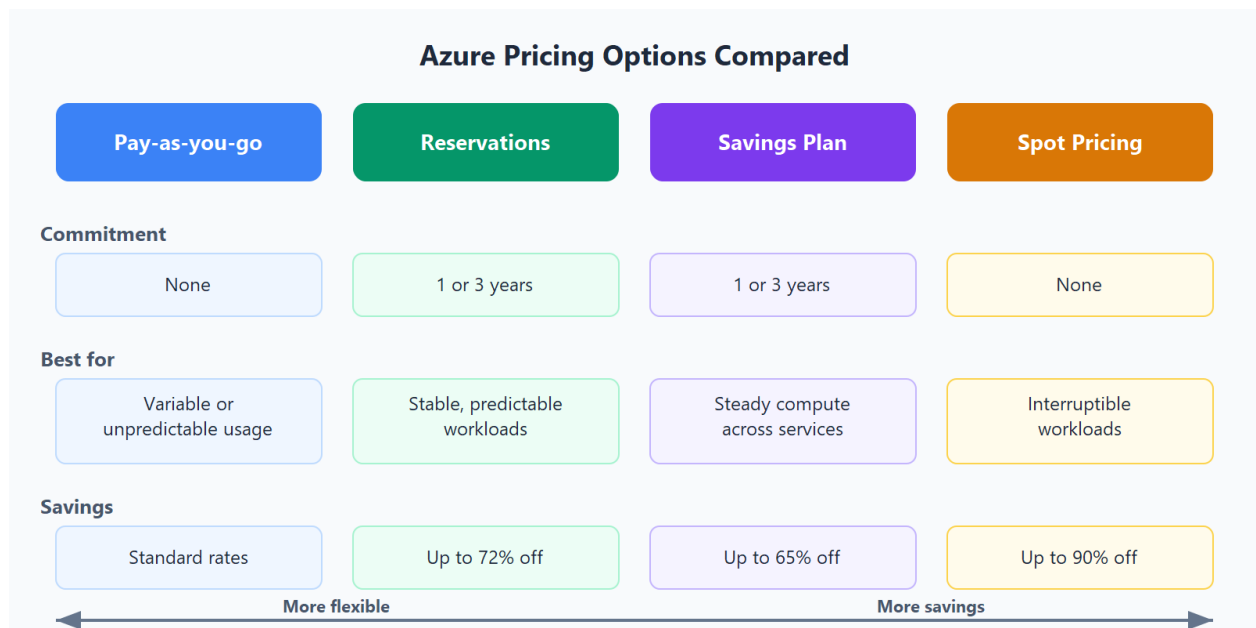
Consumption

Pay-as-you-go has been a consistent theme throughout, and that's the cloud payment model where you pay for the resources that you use during a billing cycle. If you use more compute this cycle, you pay more. If you use less in the current cycle, you pay less. It's a straightforward pricing mechanism that allows for maximum flexibility.

Azure also offers discount options for predictable workloads. With Reservations, you can commit to specific resources for one- or three-year terms to reduce cost. Reservations can apply to services such as virtual machines, databases, and storage.

If you want flexibility in which compute resources you use, Azure savings plan for compute is another option. Instead of committing to a specific VM type, you commit to an hourly spend amount on eligible compute services for one or three years, and Azure automatically applies the best available price as usage occurs.

If you have workloads that can handle interruptions, such as a batch data processing job, Azure Spot Virtual Machines can help reduce cost further. Spot pricing uses unused Azure capacity at lower prices, but those workloads can be evicted when Azure needs the capacity back.



Maintenance

The flexibility of the cloud makes it possible to rapidly adjust resources based on demand. Using resource groups can help keep all of your resources organized. To control costs, it's important to maintain your cloud environment. For example, every time you provision a VM, additional resources such as storage and networking are also provisioned. If you deprovision the VM, those additional resources may not deprovision at the same time, either intentionally or unintentionally. By keeping an eye on your resources and making sure you're not keeping around resources that are no longer needed, you can help control cloud costs.

Geography

When you provision most resources in Azure, you need to define a region where the resource deploys. Azure infrastructure is distributed globally, which enables you to deploy your services centrally or closest to your customers, or something in between. With this global deployment comes global pricing differences. The cost of power, labor, taxes, and fees vary depending on the location. Due to these variations, Azure resources can differ in costs to deploy depending on the region.

Network traffic is also impacted based on geography. For example, it's less expensive to move information within Europe than to move information from Europe to Asia or South America.

Network traffic

Billing zones are a factor in determining the cost of some Azure services. Billing zones are different from availability zones; a billing zone is a geographical grouping of Azure regions used specifically for data-transfer pricing.

Bandwidth refers to data moving in and out of Azure datacenters. Some inbound data transfers (data going into Azure datacenters) are free. For outbound data transfers (data leaving Azure datacenters),

data transfer pricing is based on zones.

A zone is a geographical grouping of Azure regions for billing purposes. The [bandwidth pricing page](#) has additional information on pricing for data ingress, egress, and transfer.

Subscription type

Some Azure subscription types also include usage allowances, which affect costs.

For example, an Azure free trial subscription provides access to a number of Azure products that are free for 12 months. It also includes credit to spend within your first 30 days of sign-up. You'll get access to more than 25 products that are always free (based on resource and region availability).

Azure Marketplace

Azure Marketplace lets you purchase Azure-based solutions and services from third-party vendors. This could include a preconfigured web server, a virtual machine with specialized software already installed, or a managed backup solution. When you purchase products through Azure Marketplace, you may pay for not only the Azure services that you're using, but also the services or expertise of the third-party vendor. Billing structures are set by the vendor.

All solutions available in Azure Marketplace are certified and compliant with Azure policies and standards. The certification policies may vary based on the service or solution type and Azure service involved. [Commercial marketplace certification policies](#) has additional information on Azure Marketplace certifications.

3. Explore the pricing calculator

<https://learn.microsoft.com/en-us/training/modules/describe-cost-management-azure/3-compare-pricing-total-cost-of-ownership-calculators>

Explore the pricing calculator

Completed

The pricing calculator helps you estimate potential Azure expenses. You can access it online and build out a configuration. The Total Cost of Ownership (TCO) calculator has been retired.

Pricing calculator

The pricing calculator is designed to give you an estimated cost for provisioning resources in Azure. You can get an estimate for individual resources, build out a solution, or use an example scenario to see an estimate of the Azure spend.

Note

The Pricing calculator is for information purposes only. The prices are only an estimate. Nothing is provisioned when you add resources to the pricing calculator, and you won't be charged for any services you select.

With the pricing calculator, you can estimate the cost of any provisioned resources, including compute, storage, and associated network costs. You can also account for different storage options like storage type, access tier, and redundancy.

Practical example

If you're planning a new web application, you can model one App Service plan, a managed database, and required storage options in the pricing calculator. You can then compare monthly estimates across regions, service tiers, and redundancy options before deployment.

Teams often use this estimate as a baseline for budget approval, then revisit it when architecture decisions change so planned spend stays aligned with implementation.

The screenshot displays the Azure Pricing Calculator interface. At the top, there are tabs for 'Products', 'Example scenarios', 'Saved estimates', and 'FAQs'. Below the tabs is a blue bar with the text 'Select a product to include it in your estimate.' Underneath this is a search bar labeled 'Search products'. To the left of the main content area is a vertical sidebar with a list of categories: Popular, Compute, Networking, Storage, Web, Mobile, Containers, Databases, Analytics, and AI + machine learning. The main content area displays a grid of service cards. Each card includes an icon, the service name, and a brief description. The services shown are: Azure Advisor (Your personalized Azure best practices recommendation engine), Azure Backup (Simplify data protection with built-in backup management at scale), Azure Cost Management and Billing (Manage your cloud spending with confidence), Azure Policy (Implement corporate governance and standards at scale), Azure Monitor (Full observability into your applications, infrastructure, and network), Azure Site Recovery (Keep your business running with built-in disaster recovery service), Automation (Simplify cloud management with process automation), Traffic Manager (Route incoming traffic for high performance and availability), and Network Watcher (Network performance monitoring and diagnostics solution).

4. Describe the Microsoft Cost Management tool

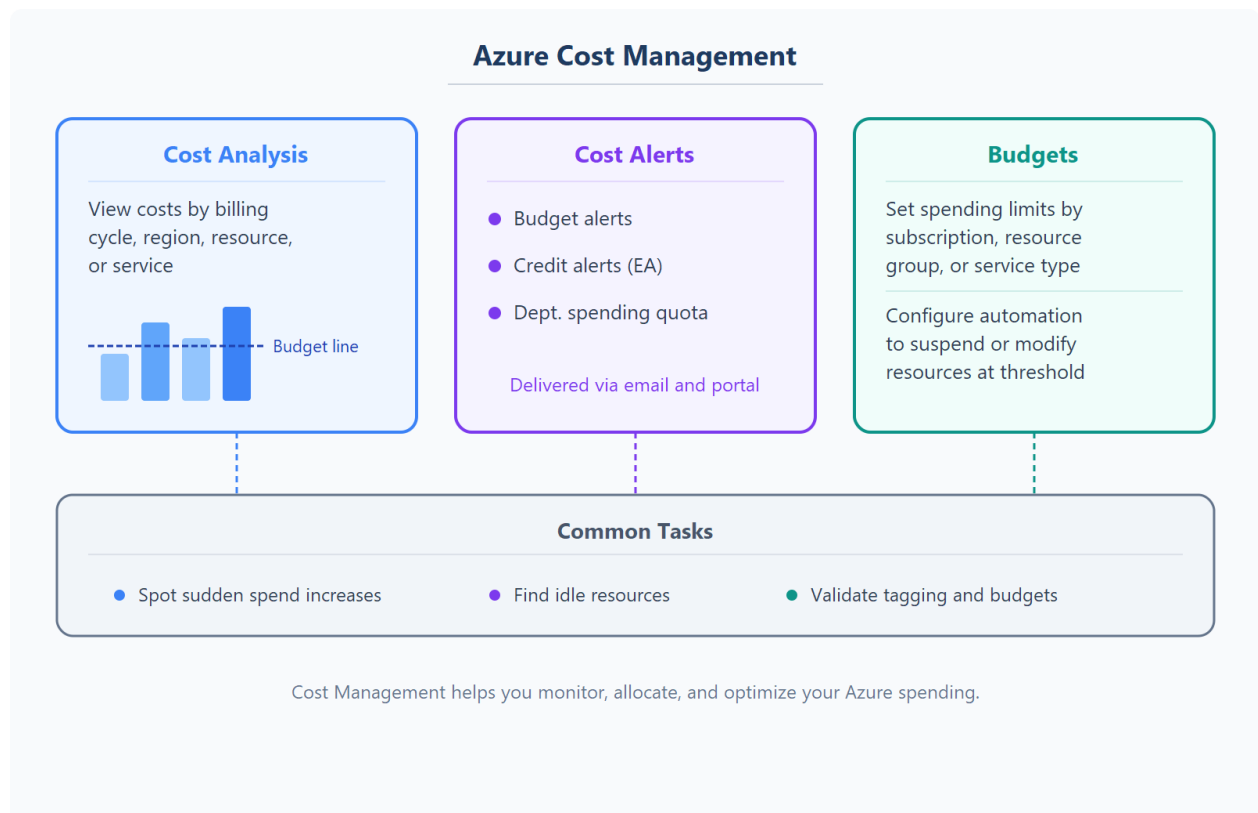
Describe the Microsoft Cost Management tool

Completed

Microsoft Azure is a global cloud provider, meaning you can provision resources anywhere in the world. You can provision resources rapidly to meet a sudden demand, to test out a new feature, or accidentally. If you accidentally provision new resources, you may not be aware of them until it's time for your invoice. Cost Management is a service that helps avoid those situations.

What is Cost Management?

Cost Management provides the ability to quickly check Azure resource costs, create alerts based on resource spend, and create budgets that can be used to automate management of resources.



Cost analysis is a feature within Cost Management that provides a quick visual for your Azure costs. Using cost analysis, you can quickly view the total cost in a variety of different ways, including by billing cycle, region, resource, and so on.

You use cost analysis to explore and analyze your cloud costs. You can view aggregated costs by subscription, resource group, or service to understand where costs accrue and identify spending trends. You can also see accumulated costs over time to estimate monthly, quarterly, or yearly cost trends against a budget.

Common tasks with Cost Management include spotting a sudden spend increase after a deployment, identifying idle resources in nonproduction subscriptions, and validating whether tagging and budgets are working as expected.

Cost alerts

Cost alerts provide a single location to quickly check on all of the different alert types that may show up in the Cost Management service. The three types of alerts that may show up are:

- Budget alerts
- Credit alerts
- Department spending quota alerts.

Budget alerts

Budget alerts notify you when spending reaches or exceeds a threshold you define. You can create budgets in the Azure portal or through the Azure Consumption API.

In the Azure portal, budgets are defined by cost. If you use the Azure Consumption API, you can also define budgets by consumption usage. Budget alerts are generated automatically whenever the budget alert conditions are met. You can view all cost alerts in the Azure portal. Whenever an alert is generated, it appears in cost alerts, and an alert email is also sent to the people in the alert recipients list of the budget.

For example, you might set an alert at 80% of a monthly dev/test budget so your team can investigate and right-size resources before costs exceed target.

Credit alerts

Credit alerts notify you when your Azure credit monetary commitments are consumed. Monetary commitments are for organizations with Enterprise Agreements (EAs). Credit alerts are generated automatically at 90% and at 100% of your Azure credit balance. Whenever an alert is generated, it's reflected in cost alerts, and in the email sent to the account owners.

Department spending quota alerts

Department spending quota alerts are specific to Enterprise Agreement customers. They notify you when department spending reaches a fixed threshold of the quota. Spending quotas are configured in the EA portal. Whenever a threshold is met, it generates an email to department owners, and appears in cost alerts. For example, 50 percent or 75 percent of the quota.

Budgets

A budget is where you set a spending limit for Azure. You can set budgets based on a subscription, resource group, service type, or other criteria. When you set a budget, you will also set a budget alert. When the budget hits the budget alert level, it will trigger a budget alert that shows up in the cost alerts area. If configured, budget alerts will also send an email notification that a budget alert threshold has been triggered.

You can also configure budgets to trigger automation that suspends or modifies resources when a spending threshold is reached. For instance, you can automate shutdown of nonproduction resources when a budget threshold is reached.

5. Describe the purpose of tags

<https://learn.microsoft.com/en-us/training/modules/describe-cost-management-azure/7-describe-purpose-of-tags>

Describe the purpose of tags

Completed

As your cloud usage grows, it's increasingly important to stay organized. A good tagging strategy helps you understand your cloud usage and helps you manage costs.

One way to organize related resources is to place them in their own subscriptions. You can also use resource groups to manage related resources. Resource tags are another way to organize resources. Tags provide extra information, or metadata, about your resources. This metadata is useful for:

Resource Tag Use Cases

Resource Management

Locate and act on resources by workload, environment, or owner

Cost Management

Group resources to report costs, allocate cost centers, and budget

Operations Management

Group by availability to formulate service-level agreements (SLAs)

Security

Classify data by security level, such as public or confidential

Governance

Identify resources that align with compliance requirements (ISO 27001)

Workload Automation

Visualize resources in complex deployments and automate tasks

Recommended starter tags: Environment, Owner, CostCenter, Workload

- **Resource management** Tags enable you to locate and act on resources that are associated with specific workloads, environments, teams, and owners.
- **Cost management and optimization** Tags enable you to group resources so that you can report on costs, allocate internal cost centers, track budgets, and forecast estimated cost.
- **Operations management** Tags enable you to group resources according to how critical their availability is to your operations. This grouping helps you formulate service-level agreements (SLAs). An SLA is an uptime or performance guarantee between you and your users.
- **Security** Tags enable you to classify data by its security level, such as public or confidential.
- **Governance and regulatory compliance** Tags enable you to identify resources that align with governance or regulatory compliance requirements, such as ISO 27001. Tags can also be part of your standards enforcement efforts. For example, you might require that all resources be tagged with an owner or department name.
- **Workload optimization and automation** Tags can help you visualize all of the resources that participate in complex deployments. For example, you might tag a resource with its associated workload or application name and use software such as Azure DevOps to perform automated tasks on those resources.

A practical starter tag set for many teams is `Environment`, `Owner`, `CostCenter`, and `Workload`. This set supports common day-to-day tasks such as filtering costs, finding service owners, and scoping automation.

How do I manage resource tags?

You can add, modify, or delete resource tags through the Azure portal, PowerShell, the Azure CLI, Azure Resource Manager templates, or the REST API.

You can use Azure Policy to enforce tagging rules and conventions. For example, you can require that certain tags be added to new resources as they're provisioned. You can also define rules that reapply tags that have been removed. Resources don't inherit tags from subscriptions and resource groups, meaning that you can apply tags at one level and not have those tags automatically show up at a different level, allowing you to create custom tagging schemas that change depending on the level (resource, resource group, subscription, and so on).

An example tagging structure

A resource tag consists of a name and a value. You can assign one or more tags to each Azure resource.

Name	Value
AppName	The name of the application that the resource is part of.
CostCenter	The internal cost center code.
Owner	The name of the technical or service owner who's responsible for the resource.
Environment	An environment name, such as "Prod," "Dev," or "Test."
Impact	How important the resource is to operations, such as "Mission-critical," "High-impact," or "Low-impact."

Keep in mind that you don't need to enforce that a specific tag is present on all of your resources. For example, you might decide that only mission-critical resources have the Impact tag. All non-tagged resources would then not be considered as mission-critical.

6. Describe cost optimization options in Azure

<https://learn.microsoft.com/en-us/training/modules/describe-cost-management-azure/7a-describe-cost-optimization-options>

Describe cost optimization options in Azure

Completed

After estimating and monitoring costs, the next step is choosing the right pricing option for each workload profile.

Reservations

Reservations are best for stable, predictable workloads. You commit to specific resource capacity for a one-year or three-year term, and Azure applies discounted pricing to matching usage.

Azure savings plan for compute

Azure savings plan for compute is another commitment-based option for compute services. Instead of committing to a specific VM family or instance type, you commit to an hourly spend amount for one or three years, and savings are applied to eligible compute usage.

Spot pricing

Spot Virtual Machines use unused Azure capacity at reduced prices. Spot is most appropriate for interruptible workloads because Azure can reclaim that capacity when needed.

Decision guide

Use this quick decision pattern:

- Choose Reservations for predictable, long-running workloads with stable resource needs.
- Choose Azure savings plan for compute when usage is steady but you need more flexibility across compute services.
- Choose Spot pricing for fault-tolerant or interruptible workloads where lowest cost is the top priority.

For example, a production SQL workload that runs 24/7 might align with Reservations, while a mixed web/API workload that shifts among compute services might fit an Azure savings plan for compute. Batch rendering or test jobs that can restart are common Spot pricing candidates.

Review these choices regularly as usage patterns change. A workload that starts as interruptible might become business-critical later and need to move from Spot to a more predictable pricing model.

Likewise, if a workload becomes more stable over time, shifting from on-demand usage to a commitment model can improve long-term cost efficiency.

7. Module assessment

<https://learn.microsoft.com/en-us/training/modules/describe-cost-management-azure/8-knowledge-check>

Module assessment

Completed

8. Summary

<https://learn.microsoft.com/en-us/training/modules/describe-cost-management-azure/9-summary>

Summary

Completed

In this module, you learned about factors that impact costs in Azure and tools to help you both predict potential costs and monitor and control costs. You also reviewed cost optimization options for different workload profiles.

Learning objectives

You should now be able to:

- Describe factors that can affect costs in Azure.
- Describe the Azure Pricing calculator.
- Describe the Microsoft Cost Management Tool.
- Describe the purpose of tags.
- Describe cost optimization options, including Reservations, savings plans, and Spot pricing.

Additional resources

The following resources provide more information on topics in this module or related to this module.

- [Control Azure spending and manage bills with Microsoft Cost Management + Billing](#) is a learning path designed to give you a deeper understanding of cost management tools and strategies in Azure.

Explore with Copilot

Tip

Try one of these prompts in Copilot Chat:

- "Estimate monthly cost for a sample workload, identify the top cost drivers, and show which assumptions matter most in the pricing calculator."

- "Create a monthly FinOps routine using Cost Management, tags, budgets, and alerts to control spend and reduce waste."
- "Given three workload patterns, choose between reservations, savings plans, and Spot pricing and justify each recommendation."