

Introduction

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Access to Azure resources and services is obtained through Azure subscriptions. Payment for services is done through Microsoft Cost Management and Billing. Azure Administrators must understand how to choose the Azure subscriptions that support the company's business needs. Financial controllers for the company need to know how to manage the costs of the subscription services for the organization.

In this module, your company is moving to the Azure cloud platform. As a first step, you need to identify which Azure subscriptions are needed to support the work scenarios in the organization. You're responsible for obtaining the Azure subscriptions, and for providing input about how to effectively manage the service costs.

Learning objectives

In this module, you learn how to:

- Determine the correct region to locate Azure services.
- Review features and use cases for Azure subscriptions.
- Obtain an Azure subscription.
- Understand billing and features for different Azure subscriptions.
- Use Microsoft Cost Management and Billing for cost analysis.
- Discover when to use Azure resource tagging.
- Identify ways to reduce costs.

Skills measured

The content in the module helps you prepare for [Exam AZ-104: Microsoft Azure Administrator](#). The module concepts are covered in:

Manage identities and governance in Azure (15-20%)

- Manage subscriptions and governance
 - Apply resource tags
 - Manage subscriptions
 - Configure costs with Microsoft Cost Management

Prerequisites

None.

Next unit: Identify Azure regions

Identify Azure regions

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Microsoft Azure is made up of datacenters located around the globe. These datacenters are organized and made available to end users by region. A [region](#) is a geographical area on the planet containing at least one, but potentially multiple datacenters. The datacenters are in close proximity and networked together with a low-latency network. A few examples of regions are West US, Canada Central, West Europe, Australia East, and Japan West.

Things to know about regions

Here are some points to consider about regions:

- Azure is generally available in more than 60 regions in 140 countries.
- Azure has more global regions than any other cloud provider.
- Regions provide you with the flexibility and scale needed to bring applications closer to your users.
- Regions preserve data residency and offer comprehensive compliance and resiliency options for customers.

Things to know about regional pairs

Most Azure regions are paired with another region within the same geography to make a *regional pair* (or *paired regions*). Regional pairs help to support always-on availability of Azure resources used by your infrastructure. The following table describes some prominent characteristics of paired regions:

Characteristic	Description
Physical isolation	Azure prefers at least 300 miles of separation between datacenters in a regional pair. This principle isn't practical or possible in all geographies. Physical datacenter separation reduces the likelihood of natural disasters, civil unrest, power outages, or physical network outages affecting both regions at once.
Platform-provided replication	Some services like Geo-Redundant Storage provide automatic replication to the paired region.
Region recovery order	During a broad outage, recovery of one region is prioritized out of every pair. Applications that are deployed across paired regions are guaranteed to have one of the regions recovered with priority.
Sequential updates	Planned Azure system updates are rolled out to paired regions sequentially (not at the same time). Rolling updates minimizes downtime, reduces bugs, and logical failures in the rare event of a bad update.
Data residency	Regions reside within the same geography as their enabled set (except for the Brazil South and Singapore regions).

Things to consider when using regions and regional pairs

You've reviewed the important considerations about regions and regional pairs. Now think about how you might implement regions in your organization.

- **Consider resource and region deployment.** Plan the regions where you want to deploy your resources. For most Azure services, when you deploy a resource in Azure, you choose the region where you want your resource to be deployed.
- **Consider service support by region.** Research region and service availability. Some services or Azure Virtual Machines features are available only in certain regions, such as specific Virtual Machines sizes or storage types.
- **Consider services that don't require regions.** Identify services that don't need region support. Some global Azure services that don't require you to select a region. These services include Azure Active Directory, Microsoft Azure Traffic Manager, and Azure DNS.
- **Consider exceptions to region pairing.** Check the Azure website for current region availability and exceptions. If you plan to support the Brazil South region, note this region is paired with a region outside its geography. The Singapore region also has an exception to standard regional pairing.

- **Consider benefits of data residency.** Take advantage of the benefits of data residency offered by regional pairs. This feature can help you meet requirements for tax and law enforcement jurisdiction purposes.

Find regions for your business geography

Visit the Azure global infrastructure website to find supported regions for your business geography. You can search by country name or by Microsoft product. A list of supported region pairs and exceptions is also available.

By geography

Search [Azure regions](#) by geography.

By product

Search [Azure products](#) by region or geography.

Paired regions

Search for [paired regions](#)

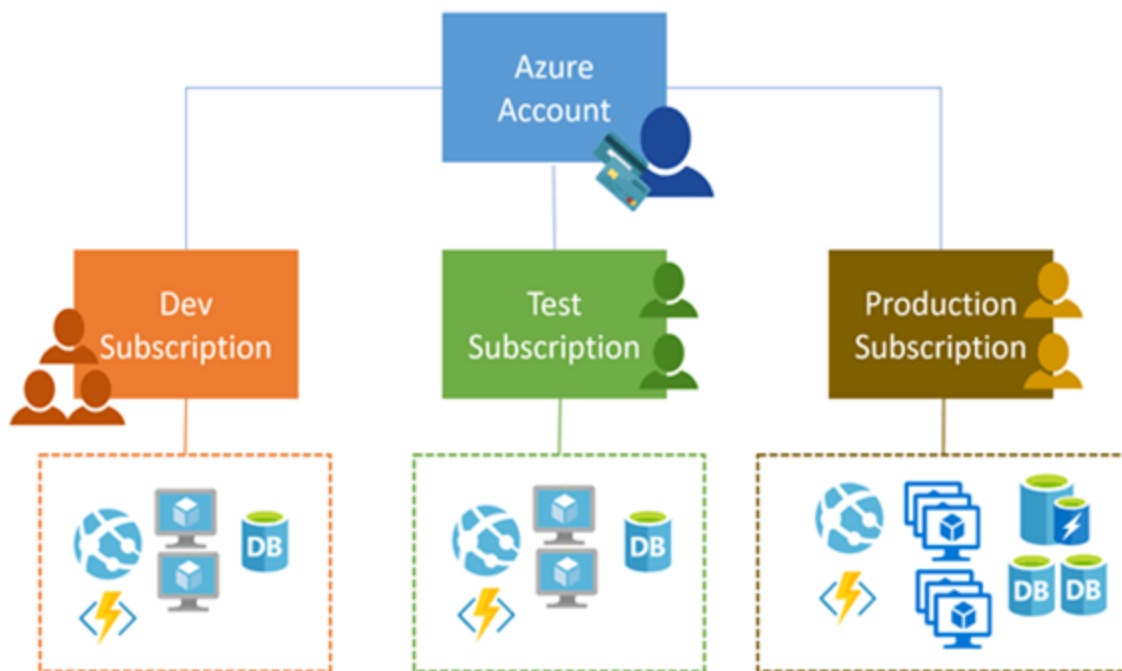
Next unit: Implement Azure subscriptions

Implement Azure subscriptions

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An Azure subscription is a logical unit of Azure services that's linked to an Azure account. An Azure account is an identity in Azure Active Directory (Azure AD) or a directory that's trusted by Azure AD, such as a work or school account. Subscriptions help you organize access to Azure cloud service resources, and help you control how resource usage is reported, billed, and paid.



Things to know about subscriptions

As you think about the subscriptions to implement for your company, consider the following points:

- Every Azure cloud service belongs to a subscription.
- Each subscription can have a different billing and payment configuration.
- Multiple subscriptions can be linked to the same Azure account.
- More than one Azure account can be linked to the same subscription.
- Billing for Azure services is done on a per-subscription basis.
- If your Azure account is the only account associated with a subscription, you're responsible for the billing requirements.
- Programmatic operations for a cloud service might require a subscription ID.

Things to consider when using subscriptions

Consider how many subscriptions your organization needs to support the business scenarios. As you plan, think about how you can organize your resources into resource groups.

- **Consider the types of Azure accounts required.** Determine the types of Azure accounts your users will link with Azure subscriptions. You can use an Azure AD account or a directory that's trusted by Azure AD like a work or school account. If you don't belong to one of these organizations, you can sign up for an Azure account by using your Microsoft Account, which is also trusted by Azure AD.
 - **Consider multiple subscriptions.** Set up different subscriptions and payment options according to your company's departments, projects, regional offices, and so on. A user can have more than one subscription linked to their Azure account, where each subscription pertains to resources, access privileges, limits, and billing for a specific project.
 - **Consider a dedicated shared services subscription.** Plan for how users can share resources allocated in a single subscription. Use a shared services subscription to ensure all common network resources are billed together and isolated from other workloads. Examples of shared services subscriptions include Azure ExpressRoute and Virtual WAN.
 - **Consider access to resources.** Every Azure subscription can be associated with an Azure AD. Users and services authenticate with Azure AD before they access resources.
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Next unit: Obtain an Azure subscription

Obtain an Azure subscription





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To use Azure, you must have an Azure subscription. There are several ways to procure an Azure subscription. You can obtain an Azure subscription as part of an Enterprise agreement, or through a Microsoft reseller or Microsoft partner. Users can also open a personal free account for a trial subscription.

Things to know about obtaining an Azure subscription

Review the following ways to obtain an Azure subscription and consider which options would work for your organization.

Procurement option	Description
	<p>Enterprise agreement</p> <p>Any Enterprise Agreement customer can add Azure to their agreement by making an upfront monetary commitment to Azure. The commitment is consumed throughout the year by using any combination of the wide variety of cloud services Azure offers.</p>
	<p>Microsoft reseller</p> <p>Buy Azure through the Open Licensing program, which provides a simple, flexible way to purchase cloud services from your Microsoft reseller. If you already purchased an Azure in Open license key, activate a new subscription or add more credits now.</p>
	<p>Microsoft partner</p> <p>Find a Microsoft partner who can design and implement your Azure cloud solution. These partners have the business and technology expertise to recommend solutions that meet the unique needs of your business.</p>
	<p>Personal free account</p> <p>Any user can sign up for a free trial account. You can get started using Azure right away, and you won't be charged until you choose to upgrade.</p>

Next unit: Identify Azure subscription usage

Identify Azure subscription usage

Completed 100 XP

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We reviewed the ways you can obtain an Azure subscription. Now let's look at the types of Azure subscriptions that are available.

Azure offers free and paid subscription options to meet different needs and requirements. The most common subscriptions are **Free**, **Pay-As-You-Go**, **Enterprise Agreement**, and **Student**. For your organization, you can choose a combination of procurement options and subscription choices to meet your business scenarios.

Things to consider when choosing Azure subscriptions

As you think about which types of Azure subscriptions would work for your organization, consider these scenarios:

- **Consider trying Azure for free.** An Azure free subscription includes a monetary credit to spend on any service for the first 30 days. You get free access to the most popular Azure products for 12 months, and access to more than 25 products that are always free. An Azure free subscription is an excellent way for new users to get started.
 - To set up a free subscription, you need a phone number, a credit card, and a Microsoft account.
 - The credit card information is used for identity verification only. You aren't charged for any services until you upgrade to a paid subscription.
- **Consider paying monthly for used services.** A Pay-As-You-Go (PAYG) subscription charges you monthly for the services you used in that billing period. This subscription type is appropriate for a wide range of users, from individuals to small businesses, and many large organizations as well.
- **Consider using an Azure Enterprise Agreement.** An Enterprise Agreement provides flexibility to buy cloud services and software licenses under one agreement. The agreement comes with discounts for new licenses and Software Assurance. This type of subscription targets enterprise-scale organizations.
- **Consider supporting Azure for students.** An Azure for Students subscription includes a monetary credit that can be used within the first 12 months.
 - Students can select free services without providing a credit card during the sign-up process.
 - You must verify your student status through your organizational email address.

Note

For a complete list of Azure subscription options, see the current [Microsoft Azure offers](#).

Next unit: Implement Microsoft Cost Management

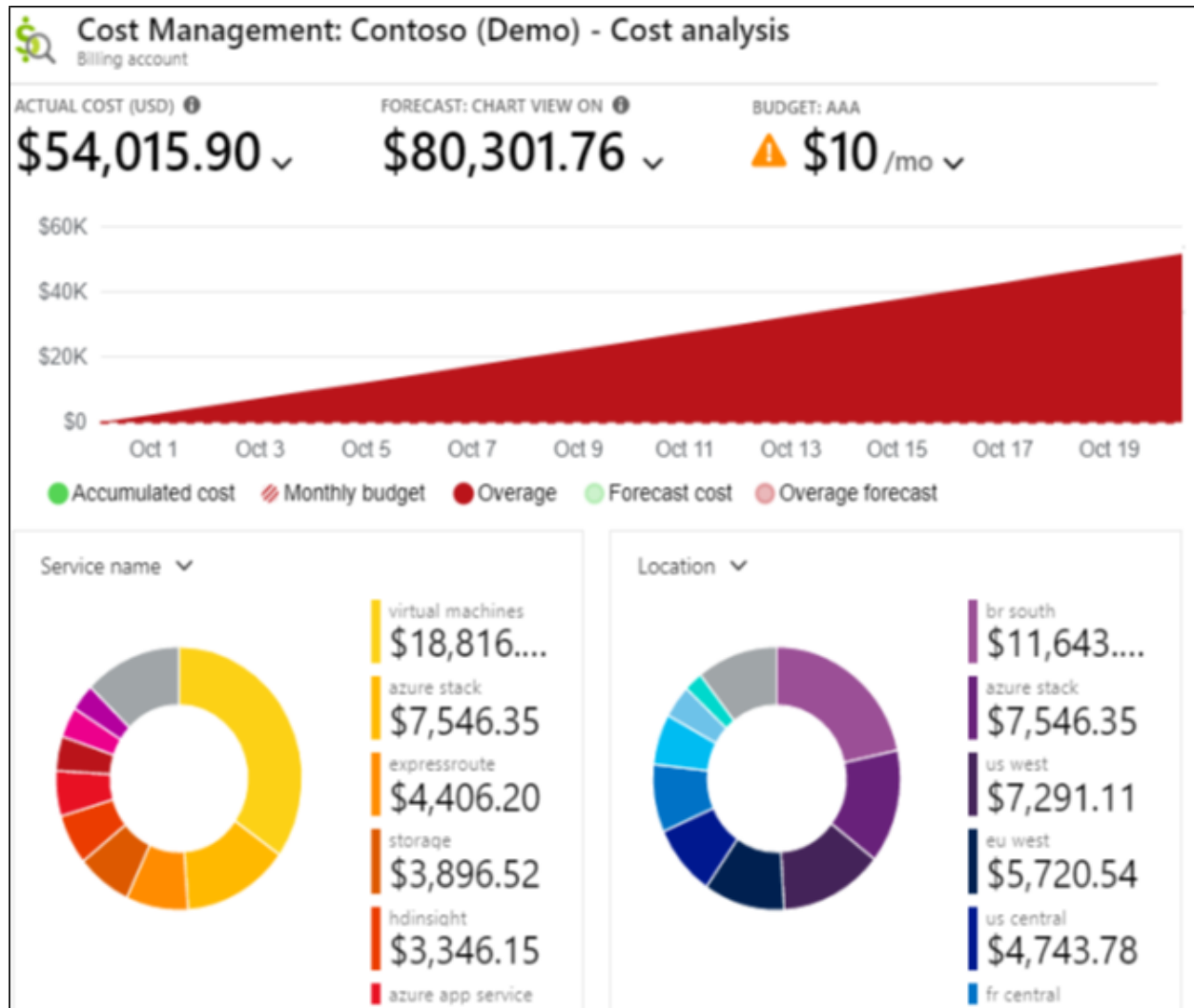
Implement Microsoft Cost Management

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With Azure products and services, you pay only for what you use. As you create and use Azure resources, you're charged for the resources.

Microsoft Cost Management provides support for administrative billing tasks and helps you manage billing access to costs. You can use the product to monitor and control Azure spending, and optimize your Azure resource usage.



Things to know about Microsoft Cost Management

Your organization is interested in the benefits of using Microsoft Cost Management to monitor their subscription billing and resource usage. As you plan for your implementation, review the following product characteristics and features:

- Microsoft Cost Management shows organizational cost and usage patterns with advanced analytics. Costs are based on negotiated prices and factor in reservation and Azure Hybrid Benefit discounts. Predictive analytics are also available.
- Reports in Microsoft Cost Management show the usage-based costs consumed by Azure services and third-party Marketplace offerings. Collectively, the reports show your internal and external costs for usage and Azure Marketplace charges. The reports help you understand your spending and resource use, and can help find spending anomalies. Charges, such as reservation purchases, support, and taxes might not be visible in reports.
- The product uses Azure management groups, budgets, and recommendations to show clearly how your expenses are organized and how you might reduce costs.
- You can use the Azure portal or various APIs for export automation to integrate cost data with external systems and processes. Automated billing data export and scheduled reports are also available.

Things to consider when using Microsoft Cost Management

Microsoft Cost Management can help you plan for and control your organization costs. Consider how the product features can be implemented to support your business scenarios:

- **Consider cost analysis.** Take advantage of Microsoft Cost Management cost analysis features to explore and analyze your organizational costs. You can view aggregated costs by organization to understand where costs are accrued, and to identify spending trends. Monitor accumulated costs over time to estimate monthly, quarterly, or even yearly cost trends against a budget.
- **Consider budget options.** Use Microsoft Cost Management features to establish and maintain budgets. The product helps you plan for and meet financial accountability in your organization. Budgets help prevent cost thresholds or limits from being surpassed. You can utilize analysis data to

inform others about their spending to proactively manage costs. The budget features help you see how company spending progresses over time.

- **Consider recommendations.** Review the Microsoft Cost Management recommendations to learn how you can optimize and improve efficiency by identifying idle and underutilized resources. Recommendations can reveal less expensive resource options. When you act on the recommendations, you change the way you use your resources to save money. Using recommendations is an easy process:
 1. View cost optimization recommendations to see potential usage inefficiencies.
 2. Act on a recommendation to modify your Azure resource use and implement a more cost-effective option.
 3. Verify the new action to make sure the change has the desired effect.
 - **Consider exporting cost management data.** Microsoft Cost Management helps you work with your billing information. If you use external systems to access or review cost management data, you can easily export the data from Azure.
 1. Set a daily scheduled export in comma-separated-value (CSV) format and store the data files in Azure storage.
 2. Access your exported data from your external system.
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Next unit: Apply resource tagging

Apply resource tagging

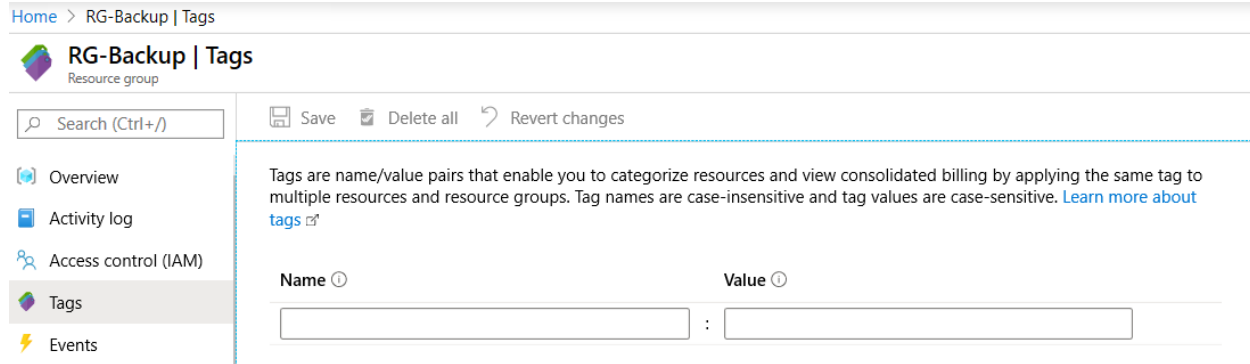
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- 3 minutes

You can apply tags to your Azure resources to logically organize them by categories. Tags are useful for sorting, searching, managing, and doing analysis on your resources.

Each resource tag consists of a name and a value. You could have the tag name `Server` and the value `Production` or `Development`, and then apply the tag/value pair to your Engineering computer resources.

Here's an example that shows how to add tags for a resource group in the Azure portal:



Things to know about resource tags

As you plan your Azure subscriptions, resources, and services, review these characteristics of Azure resource tags:

- Each resource tag has a name and a value.
- The tag name remains constant for all resources that have the tag applied.
- The tag value can be selected from a defined set of values, or unique for a specific resource instance.
- A resource or resource group can have a maximum of 50 tag name/value pairs.
- Tags applied to a resource group aren't inherited by the resources in the resource group.

Things to consider when using resource tags

Here are a few things you can do with resource tags:

- **Consider searching on tag data.** Search for resources in your subscription by querying on the tag name and value.
- **Consider finding related resources.** Retrieve related resources from other resource groups by searching on the tag name or value.
- **Consider grouping billing data.** Group resources like virtual machines by cost center and production environment. When you download the resource usage comma-separated values (CSV) file for your services, the tags appear in the Tags column.
- **Consider creating tags with PowerShell or the Azure CLI.** Create many resource tags programatically by using Azure PowerShell or the Azure CLI.

Next unit: Apply cost savings

Apply cost savings

Completed100 XP

- 2 minutes

Azure has several options that can help you gain significant cost savings for your organization. As you prepare your implementation plan for Azure subscriptions, services, and resources, consider the following cost saving advantages.

Cost saving	Description
Reservations	Save money by paying ahead. You can pay for one year or three years of virtual machine, SQL Database, Azure Cosmos DB throughput, or other Azure resources. Pre-paying allows you to get a discount on your Azure resources. Reservations can significantly reduce your virtual machine, SQL database compute, Azure Cosmos DB throughput costs up to 72% on pay-as-you-go prices. Reservations provide a billing discount and don't affect the availability of your resources.
Azure Hybrid Benefits	Access pricing benefits if you have a license that includes <i>Software Assurance</i> . Azure Hybrid Benefit allows you to use the value of existing on-premises Windows Server or SQL Server license investments when migrating to Azure. Use the Azure Hybrid Benefit Savings Calculator to help you determine your savings.
Azure Credits	Use the monthly credit benefit to develop, test, and experiment with new solutions on Azure. As a new Azure subscriber, you could use Microsoft Azure at no extra charge. With your monthly Azure credit, Azure provides a sandbox for development and testing.
Azure regions	Compare pricing across regions. Pricing can vary from one region to another, even in the US. Double-check pricing in various regions to see if you can save by selecting a different region for your subscription.
Budgets	Apply the budgeting features in Microsoft Cost Management to help plan and drive organizational costs. With budgets, you can account for the Azure services you consume or subscribe to during a specific period of time and inform others about their spending to proactively manage costs. Use budgets to control spending as you analyze costs.
Pricing Calculator	The Pricing Calculator provides estimates in all areas of Azure, including compute, networking, storage, and databases.

The following image shows a scenario for using the Pricing Calculator. The customer has an instance of a D1 series VM on Windows. The instance is running in the West US region at the standard tier level.

Your Estimate

Virtual Machines

1 D1 (1 vCPU(s), 3.5 GB RAM) x 730 Hours; Windows – (...)



Virtual Machines

REGION:

West US

OPERATING SYSTEM:

Windows

TYPE:

(OS Only)

TIER:

Standard

INSTANCE:

D1: 1 Cores(s), 3.5 GB RAM, 50 GB Temporary storage

Next unit: Knowledge check

Knowledge check

Completed 200 XP

- 3 minutes

Your company is moving to the Azure cloud platform. You're researching how to implement Azure subscriptions to support the business regions and work scenarios. In your deployment plan, you're considering how to preserve data residency and apply resource tagging. The company financial controller has asked to know more about cost management and billing for Azure services.

Answer the following questions

Choose the best response for each of the questions below. Then select **Check your answers**.

1.

The company financial controller wants to be notified whenever the company is half-way to spending the money allocated for cloud services. Which approach supports this request?



Create an Azure reservation.



Create a budget and a spending threshold.

Correct. Create a budget and a spending threshold. Billing Alerts help your monitor and manage billing activity for your Azure accounts. Budget thresholds can be evaluated and are reset automatically at the end of a period.



Create a management group.

2.

The company financial controller wants to identify which billing department each Azure resource belongs to. Which approach enables this requirement?



Track resource usage in a spreadsheet.



Place the resources in different regions.



Apply a tag to each resource that includes the associated billing department.

Correct. Tags provide extra information, or metadata, about your resources. The team might create a tag named BillingDept, where the value is the name of the billing department. Azure Policy ensures that the proper tags are assigned when resources are provisioned.

3.

Which option preserves data residency, and offers comprehensive compliance and resiliency options?



Azure Active Directory (Azure AD) Account



Regions

Correct. Regions preserve data residency, and offer comprehensive compliance and resiliency options for customers.



Subscriptions

Next unit: Summary and resources

Summary and resources

Completed 100 XP

- 1 minute

Azure Administrators commonly obtain and manage Azure subscriptions. Azure subscriptions help you effectively identify and manage costs for your organization, so you can provide services and resources for specific scenarios.

In this module, you learned about supported Azure regions, and how to locate Azure services. You reviewed the features and use cases for Azure subscriptions, and how to obtain subscriptions. You explored features and billing for different types of Azure subscriptions, and how to apply resource tagging. You discovered how Microsoft Cost Management can be used for cost analysis, and learned how to identify ways you can reduce your billing costs.

Learn more with Azure documentation

- Read more about [Microsoft Cost Management](#) and billing for Azure.
- Explore how to [create an additional Azure subscription](#).

Learn more with self-paced training

- Practice using [Microsoft Cost Management to analyze costs and create budgets](#).

Learn more with optional hands-on exercises

- Plan and manage [your Azure costs \(sandbox\)](#).

Module complete:

