

AZ-900T01

Module 04:

Azure pricing and support



Lesson 01: Learning objectives



Module 4 – Learning objectives

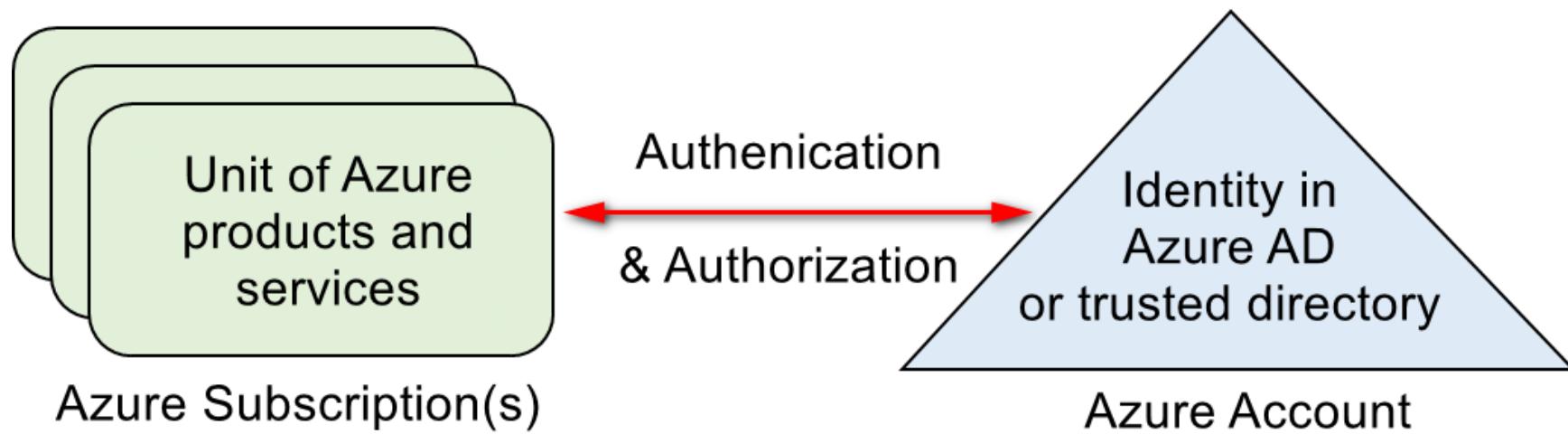
- Understand and describe Microsoft Azure subscriptions and management groups
- Recognize ways to plan and manage Azure costs
- Understand Azure support options
- Understand and describe features of Azure Service Level Agreements (SLAs)
- Understand and describe the service lifecycle in Azure

Lesson 02: Azure subscriptions



Azure subscriptions

- An Azure subscription provides you with authenticated and authorized access to Azure products and services and allows you to provision resources on Azure. It is a logical unit of Azure services that links to an Azure account.



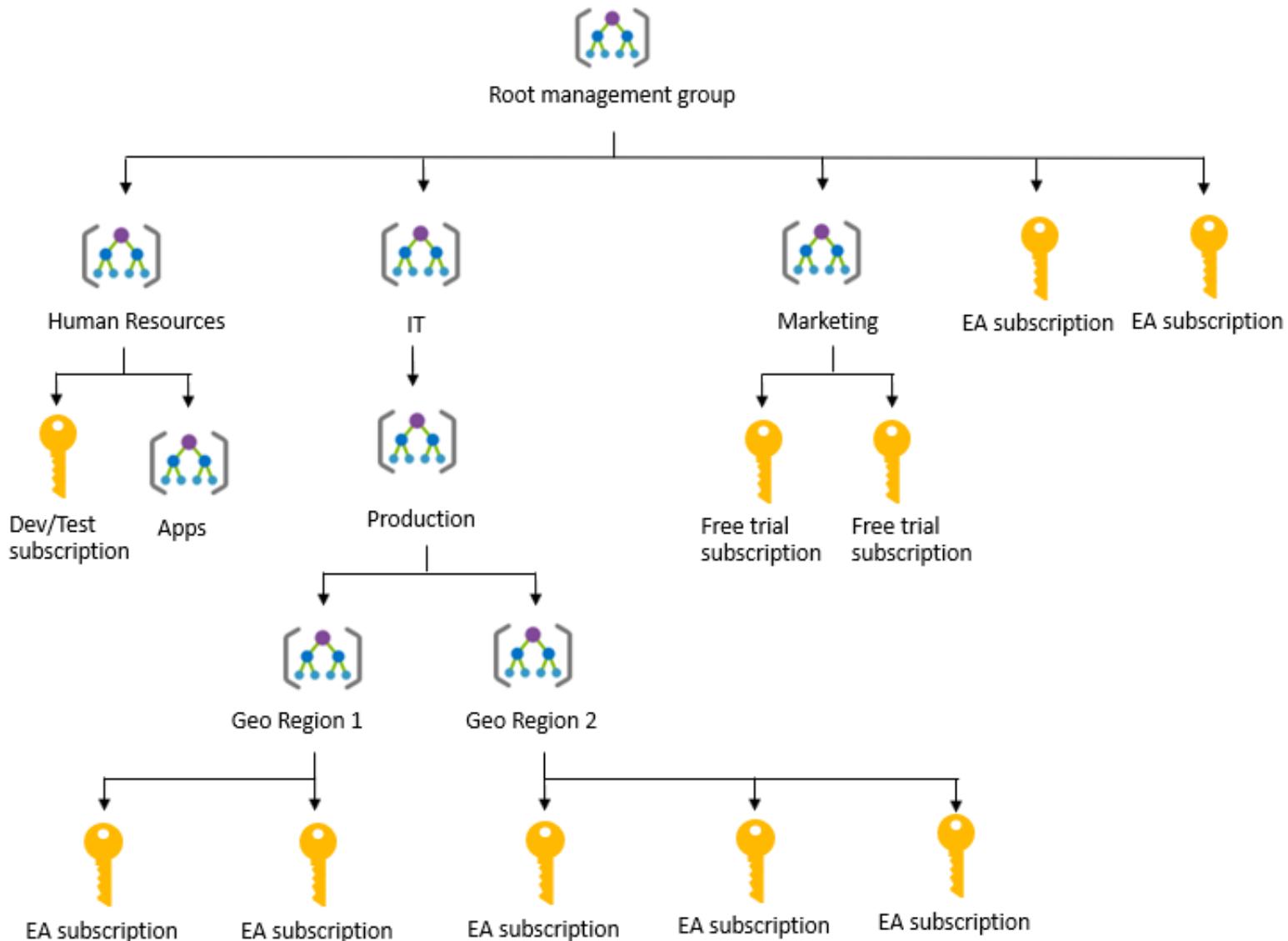
- Azure offers free and paid subscription options to suit different needs and requirements. An account can have one subscription or multiple subscriptions that have different billing models, and to which you apply different access-management policies.

Subscription uses and options

- You can use Azure subscriptions to define boundaries around Azure products, services, and resources.
- Two types of subscription boundaries that you can use:
 - Billing boundary. This subscription type determines how an Azure account is billed for using Azure. You can create multiple subscriptions for different types of billing requirements.
 - Access control boundary. Azure will apply access management policies at the subscription level, and you can create separate subscriptions to reflect different organizational structures.
- Several other subscription types to choose from include the Free account and Pay-As-You-Go.

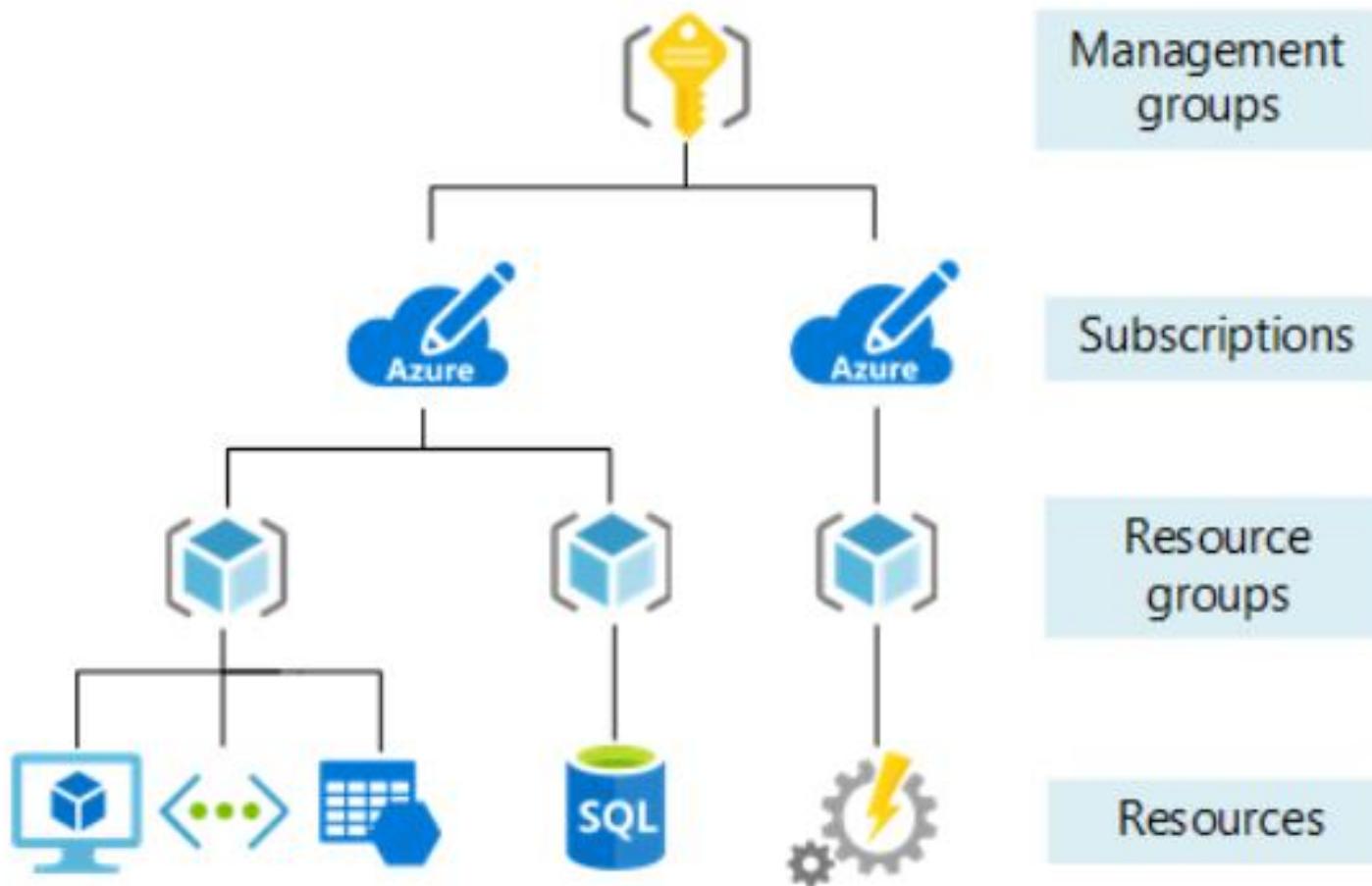
Management groups

- *Azure Management groups* are containers for managing access, policies, and compliance across multiple Azure subscriptions
- *Management groups* allow you to order your Azure resources hierarchically into collections, which provide a further level of classification beyond subscriptions.



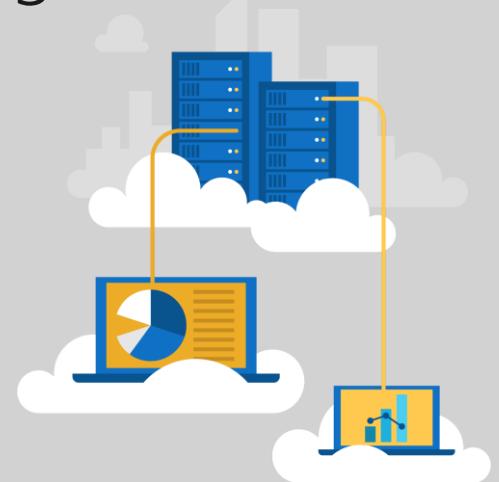
Object Hierarchy

The organizing structure for resources in Azure has four levels:



Walkthrough-Manage Subscriptions and Management groups

- In this walkthrough task we will create Azure Subscriptions and create Management groups to manage those subscriptions. We will then elevate the logged in user account access and add our subscriptions to our Management groups. We will then assign an Azure Policy for allowed locations to a Management group and subscription. We will then delete an Azure Subscription and delete the Management groups.
- You can complete this walkthrough task by completing the steps outlined below, or you can simply read through them, depending on your available time



Lesson 03: Planning and managing costs

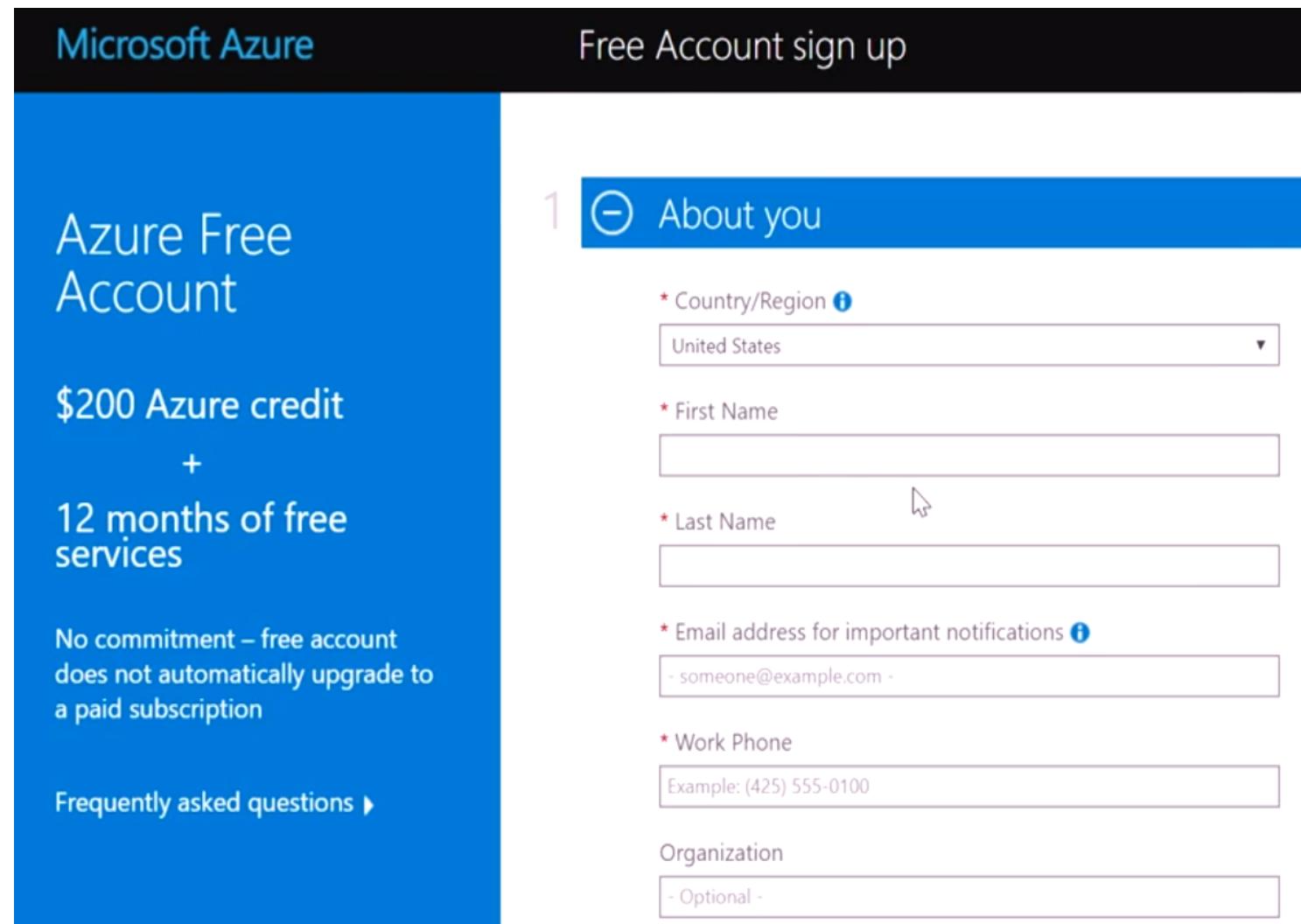


Purchasing Azure products and services

- Three main customer types on which the available purchasing options for Azure products and services are contingent are:
 - **Enterprise:** Enterprise customers sign an Enterprise Agreement with Azure that commits them to spending a negotiated amount on Azure services, which they typically pay annually.
 - **Web direct:** Web direct customers sign up for Azure through [the Azure website](#).
 - **Cloud solution providers (CSPs):** Typically are Microsoft partner companies that a customer hires to build solutions on top of Azure. Payment and billing for Azure usage occurs through the customer's CSP.
- Products and services in Azure are arranged by category, such as compute and networking, which have various resources that you can provision.

Azure free account

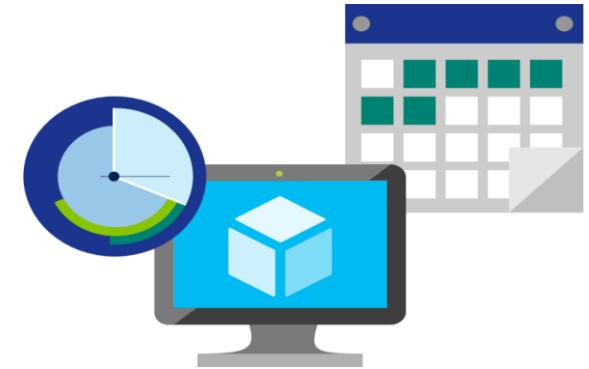
- An *Azure free account* provides subscribers with a \$200 USD Azure credit that they can use for paid Azure products during a 30-day trial period.
- Once you use that \$200 USD credit or reach your trial's end, Azure suspends your account unless you sign up for a paid account.



Factors affecting costs

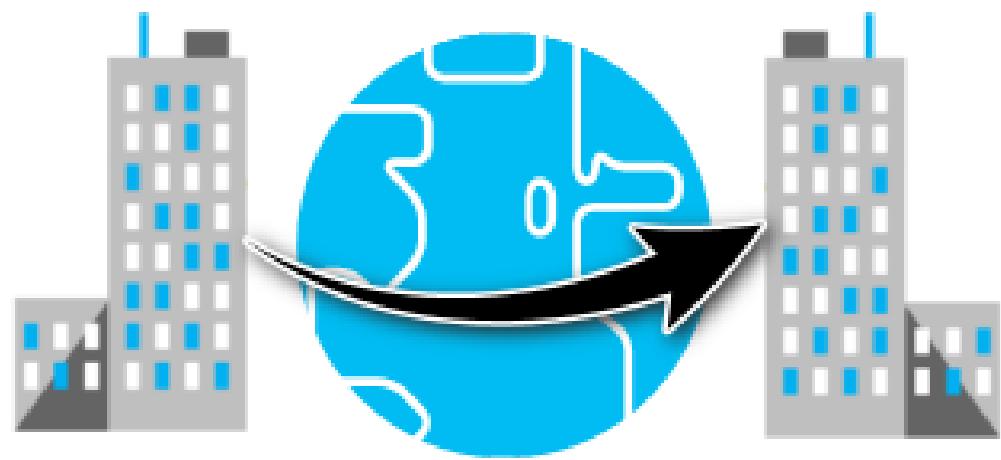
There are three primary factors affect costs:

- **Resource Type:** 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.
- **Services:** Azure usage rates and billing periods can differ between Enterprise, Web Direct, and CSP customers.
- **Location:** The Azure infrastructure is globally distributed, and usage costs might vary between locations that offer particular Azure products, services, and resources.



Zones for Billing Purposes

- *Bandwidth* refers to data moving in and out of Azure datacenters. Some inbound data transfers are free, such as data going into Azure datacenters. For outbound data transfers—such as data going out of Azure datacenters—pricing is based on Zones.
- A *zone* is a geographical grouping of Azure Regions for billing purposes. Zones are:
 - Zone 1. Includes West US, East US, West Europe, and others.
 - Zone 2 . Includes Australia Central, Japan West, Central India, and others.
 - Zone 3. Includes Brazil South only.
 - DE Zone 1. Includes Germany Central and Germany Northeast.



Pricing calculator

- Helps you estimate the resources you need and configure them according to your specific requirements

Your Estimate

Virtual Machines + 1 D2 v3 (2 vCPU(s), 8 GB RAM) x 730 Hours; \$188.57

Virtual Machines

REGION: West US OPERATING SYSTEM: Windows TYPE: (OS Only)

TIER: Standard

INSTANCE: D2 v3: 2 vCPU(s), 8 GB RAM, 50 GB Temporary storage, \$0.209/hour

Clone Delete

More info

\$ Pricing details i Product details d Documentation

Demo: Generate an Azure Pricing Calculator estimate



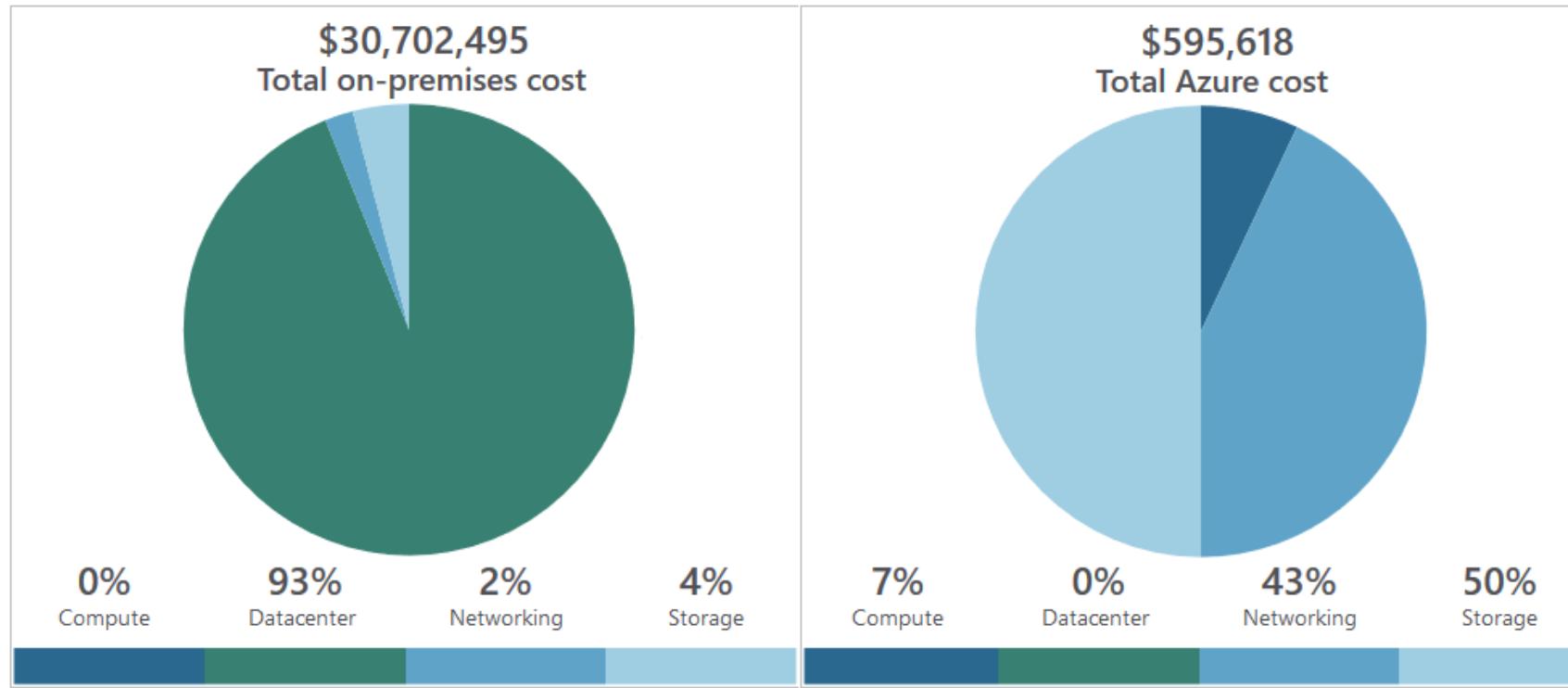
Walkthrough-Generate an Azure Pricing Calculator estimate

- In this walkthrough, you will generate and then download a cost estimate for a specific resource configuration in Azure, using the Azure Pricing Calculator. The estimate will outline the costs of running a Virtual Machine (VM) and related network resources in Azure.
- You can complete this walkthrough task by completing the steps outlined below, or you can simply read through them, depending on your available time



Total cost of ownership (TCO) calculator

- A tool that you use 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 to host infrastructure in the cloud



Demo: Generate an Azure TCO Calculator
cost comparison report



Walkthrough-Generate an Azure TCO Calculator cost comparison report

- In this walkthrough, you will generate and then download a cost comparison report for workloads running in an on-premises environment versus running in Azure, using the *Total Cost of Ownership (TCO) Calculator*. The TCO Calculator will use information that you provide about your on-premises infrastructure and workloads to recommend cost savings that you can make with Azure.
- You can complete this walkthrough task by completing the steps outlined below, or you can simply read through them, depending on your available time



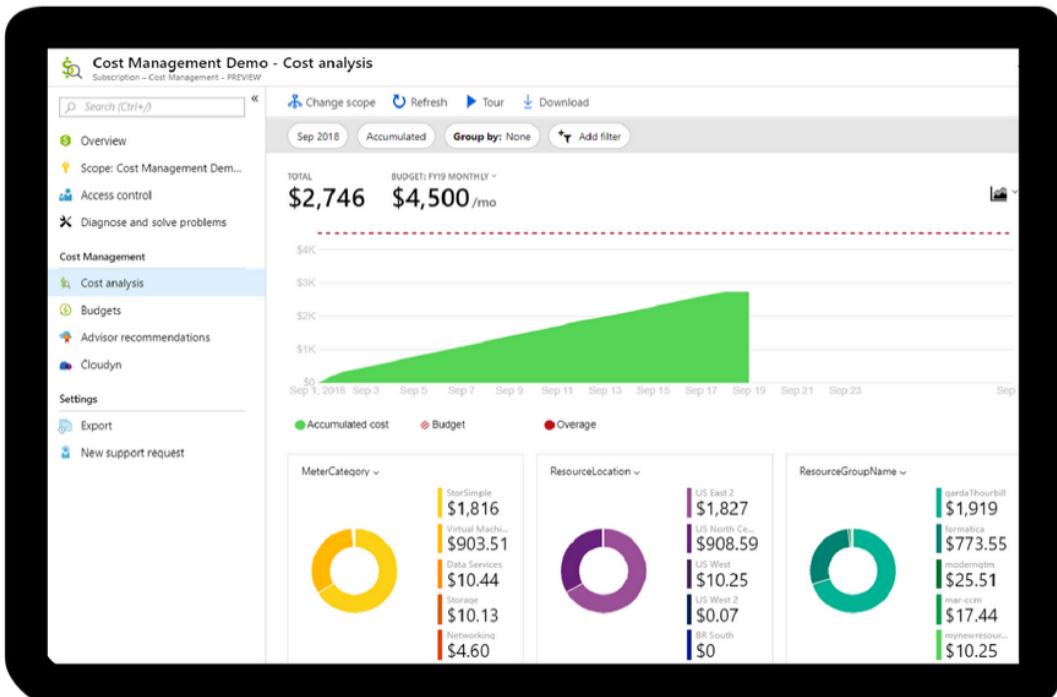
Minimizing costs

The following best practice guidelines can help minimize your Azure costs:

- Perform cost analyses: Use the Azure Pricing and TCO calculators
- Monitor usage with Azure Advisor: Implement recommendations
- Use spending limits: Use via free trial customers and some credit-based Azure subscriptions
- Use Azure Reservations: To get a discount, reserve products and resources by paying in advance. Prepay for 1 or 3 years, and achieve up to 72% savings over pay-as-you-go costs
- Choose low-cost locations and regions: If possible, use low-cost locations
- Apply tags to identify cost owners: Identify usage owners with tags

Azure Cost Management

Azure Cost Management is an Azure product that provides a set of tools for monitoring, allocating, and optimizing Azure costs, it provides the following:



- **Reporting:** Generates reports
- **Data enrichment:** Improves accountability by categorizing resources with tags
- **Budgets:** Monitors resource demand trends, consumption rates, and cost patterns
- **Alerting:** Provides alerts based on your cost and usage budgets
- **Recommendations:** Provides recommendations to eliminate idle resources and to optimize provisioned Azure resources

Lesson 04: Support options available with Azure



Support plan options

- Every Azure subscription includes:
 - Free access to billing and subscription support
 - Azure products and services documentation
 - Online self-help documentation
 - Community support forums
- Paid Azure support plans:
 - *Developer*. For Azure use in trial and nonproduction environments
 - *Standard*. Appropriate for Azure use in production environments
 - *Professional Direct*. Appropriate for organizations with business-critical dependence on Azure
 - *Premier*. Ideal for organizations with substantial dependence on Microsoft products, including Azure.

Alternative support channels

- Other support channels available outside of the Azure official support plans:

- [Microsoft Developer Network \(MSDN\) Azure Forums.](#)



- [Stack Overflow](#)



- [Server Fault](#)



- Azure Feedback Forums at [Microsoft Azure general feedback](#)



- Twitter. Tweet [@AzureSupport](#) to get answers and support



Knowledge Center

- *Azure Knowledge Center* is a searchable database that contains support questions and answers from a community of Azure experts, developers, customers, and users
- Browse through all answers within the Azure Knowledge Center by entering keyword search terms into the text-entry field and further refine your search results by selecting products or tags from the dropdown lists
- See [Azure Knowledge Center](#) for more information

Walkthrough-Open a Support Request

- In this walkthrough task we will view available support plan options and then create a new support request. Once created we will then see how to monitor and interact with a support request.
- You can complete this walkthrough task by completing the steps outlined below, or you can simply read through them, depending on your available time



Lesson 05: Azure Service Level Agreements (SLAs)



Service Level Agreements (SLAs)

- SLAs document the specific terms that define Azure performance standards
- SLAs define Microsoft's commitment to an Azure service or product
- Individual SLAs are available for each Azure product and service
- SLAs also define what happens if a service or product fails to meet the designated availability commitments

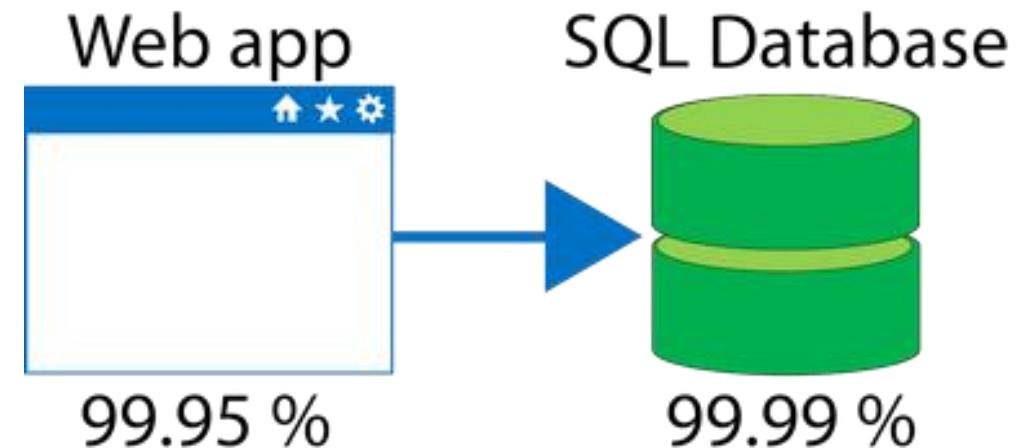


SLAs for Azure products and services

- Three key characteristics of SLAs for Azure products and services:
 - Performance targets, uptime and connectivity guarantees: Uptime or connectivity rates, such as availability
 - Performance targets range: Typical SLAs specify performance-target commitments ranging from 99.9 percent (*three nines*) to 99.99 percent (*four nines*)
 - Service credits: Percentage of the applicable monthly service fees credited to you if a service fails to meet ALS uptime guarantee
- For more information about specific Azure SLAs for individual products and services, see [Service Level Agreements](#)

Composite SLAs

- At the time of this writing, an App Service web app that writes to Azure SQL Database has the following SLAs:
 - App Service Web Apps is 99.95 percent
 - SQL Database is 99.99 percent
- Question: What is the maximum downtime you would expect for this application, as across?
- Answer: The composite SLA for this application is $99.95\% \times 99.99\% = 99.94\%$.
- This is lower than the individual SLAs. However, you can construct SLAs to improve overall application SLA.



Improving application SLAs

- Azure customers can use SLAs to evaluate how their Azure solutions meet their business requirements, and the needs of their clients and users. By creating their own SLAs, organizations can set performance targets to suit their specific Azure application. This is known as an *application SLA*.
- Considerations for defining application SLAs:
 - **Self Healing:** Your Azure solution should be self-diagnosing and self-healing
 - **Response Time:** Responding to failures quickly enough to meet SLA performance targets above four 9's are difficult to meet
 - **Realistically Achievable:** The smaller the time window for recovery (for example, hourly or daily) the tighter the tolerances and higher the cost

Improving application SLAs - *continued*

The following table lists the potential cumulative downtime for various SLA levels over different durations

SLA	Downtime per week	Downtime per month	Downtime per year
99%	1.68 hours	7.2 hours	3.65 days
99.9%	10.1 minutes	43.2 minutes	8.76 hours
99.95%	5 minutes	21.6 minutes	4.38 hours
99.99%	1.01 minutes	4.32 minutes	52.56 minutes
99.999%	6 seconds	25.9 seconds	5.26 minutes

Walkthrough-Calculate Composite SLA for an Application

- In this walkthrough task we will determine the SLA uptime percentages for each of the services in a sample application and then calculate the composite SLA uptime percentage for our application.
- You can complete this walkthrough task by completing the steps outlined below, or you can simply read through them, depending on your available time



Lesson 06: Service lifecycle in Azure



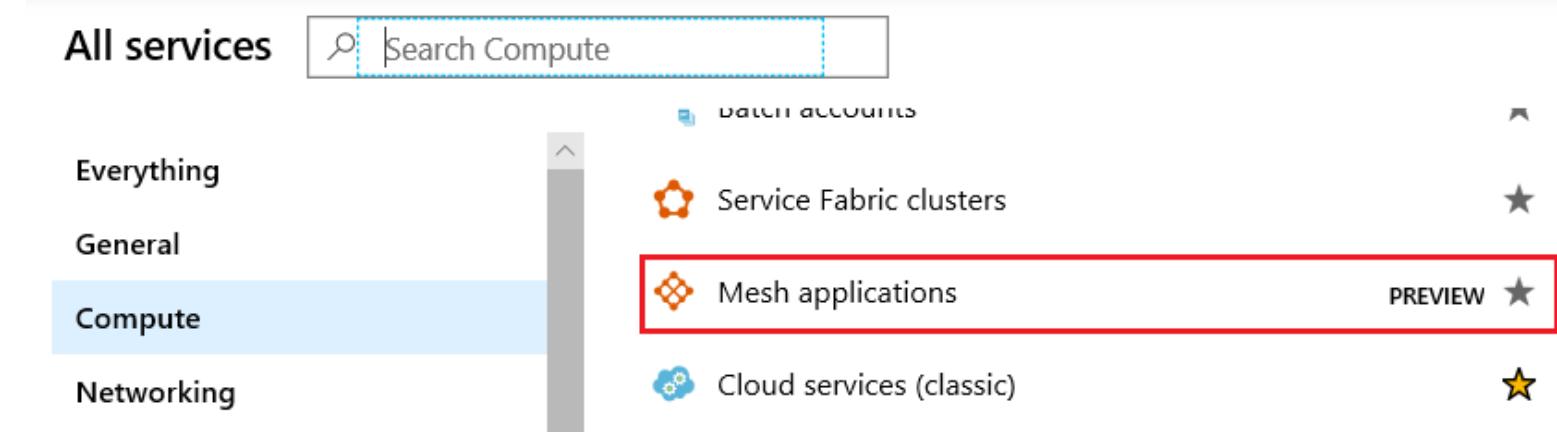
Public and private preview features

- Microsoft offer previews of Azure features for evaluation purposes.
- With Azure previews, you can test beta and other pre-release features, products, services, software, and regions.
- There are two types of Azure preview modes:
 - **Private Preview:** An Azure feature is available to certain Azure customers for evaluation purposes
 - **Public Preview:** An Azure feature is available to all Azure customers for evaluation purposes

Accessing preview features

Preview - New Services:

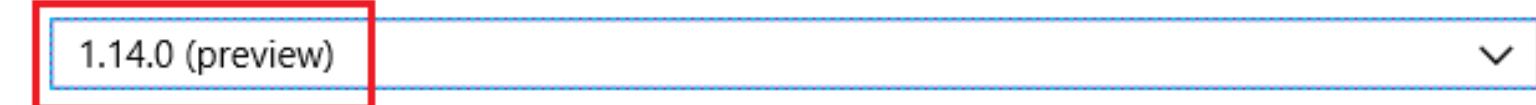
- Accessible via the Azure Portal
- Indicated by the presence of a Preview label on the service



Preview - New Functionality/Features within an existing service:

- Some preview features are accessible as you deploy, configure and manage an existing service for example Azure Kubernetes cluster version

* Kubernetes version ⓘ



Accessing Azure Portal Preview

- You can access preview features that are specific to the Azure Portal from the <https://preview.portal.azure.com> page.
- Typical portal preview features provide performance, navigation, and accessibility improvements to the Azure portal interface.

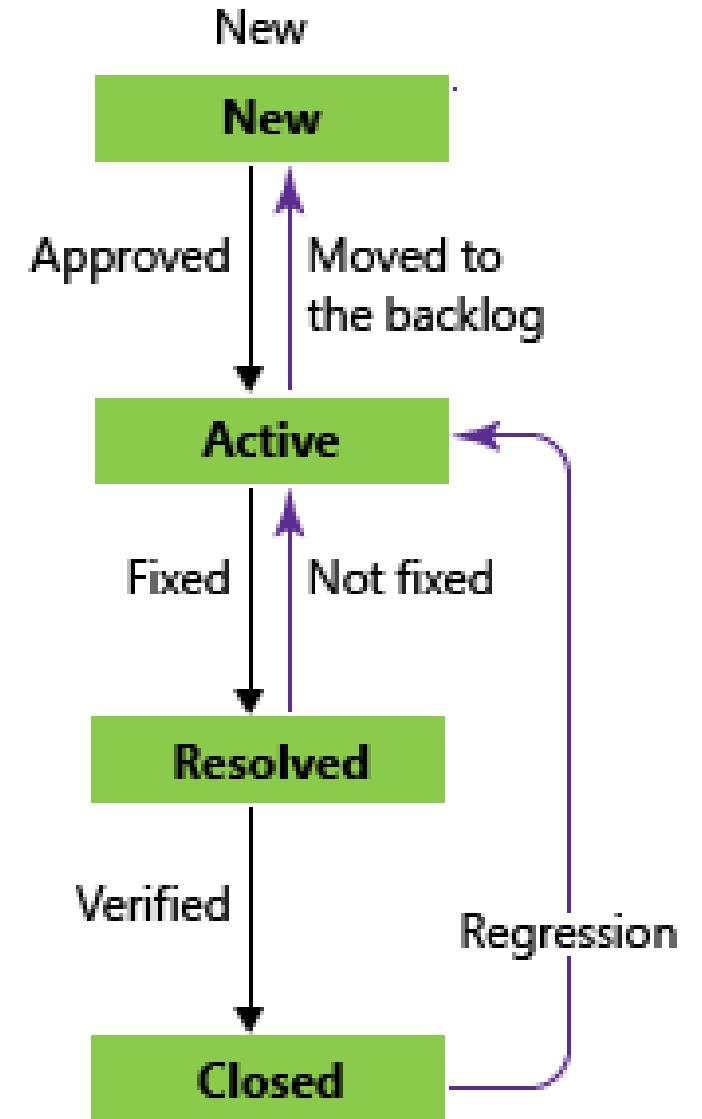
Providing Feedback

- Typical portal preview features provide performance, navigation, and accessibility improvements to the Azure portal interface
- Feedback on the portal preview features can be submitted by sending a smile in the portal or by posting ideas and suggestions on the Azure Portal Feedback Forum



General Availability

- Once a feature is evaluated and tested successfully, it might be released to customers as part of Azure's default product, service, or feature set
- Bugs for features and products go through their lifecycle as in the graphic across.
- Once the feature meets a specific criteria the feature is released to all Azure customers, and this release is referred to *general availability*.



Monitoring feature updates

- Information about the latest updates to Azure products, services, and features, and product roadmaps, and announcements are available at [Azure updates](#)
- Azure updates page:
 - View details about all Azure updates
 - See which updates are in general availability, preview, or development
 - Subscribe to Azure update notifications by RSS

Walkthrough-Access Azure Preview features

- In this walkthrough task we will access preview services and features in Azure and then identify preview service and feature information, and latest information on the Azure Updates.
- You can complete this walkthrough task by completing the steps outlined below, or you can simply read through them, depending on your available time



Lesson 07: Module 4 review questions



Module 4 review questions

1. What is an Azure subscription?
2. What are some of the factors affecting costs?
3. What four paid plan types are available with Azure?