Unit 2: Core Azure Services

Unit Objectives

In this unit, you will be introduced to the Core Architectural components and the core services available in Azure. Upon successful completion of this unit, you should be able to understand the following:

- ☐ Core Azure Architectural Components
- ☐ Azure Compute Services
- ☐ Azure Networking Services
- ☐ Azure Storage Services
- ☐ Azure Database and Analytics Services

Lesson 1: Core Azure Architectural Components

Lesson Objectives

In this lesson, you will be introduced to the Core Azure Architectural Components, learn how they work, and understand how to use and configure them. Upon completion of this lesson, you should be able to understand and configure the following:

- ☐ Azure Resource Management
- ☐ Azure Resource Manager
- ☐ Azure Regions and Zones

Azure Resource Management

A ***resource*** is an item available through the Azure platform that you can create/configure an instance of. For example, a virtual machine (VM) is an available Compute item in Azure. You use this available item to create and configure a VM to host your web application.

A ***resource group*** is a logical grouping of resources. You may group your web apps, database, and storage account in one resource group. Grouping resources makes them easier to manage. A resource must be part of a resource group. Once you delete a resource group all the resources within this resource group will be deleted as well.

The following figure illustrates how Resource groups encapsulate resources as logical containers.

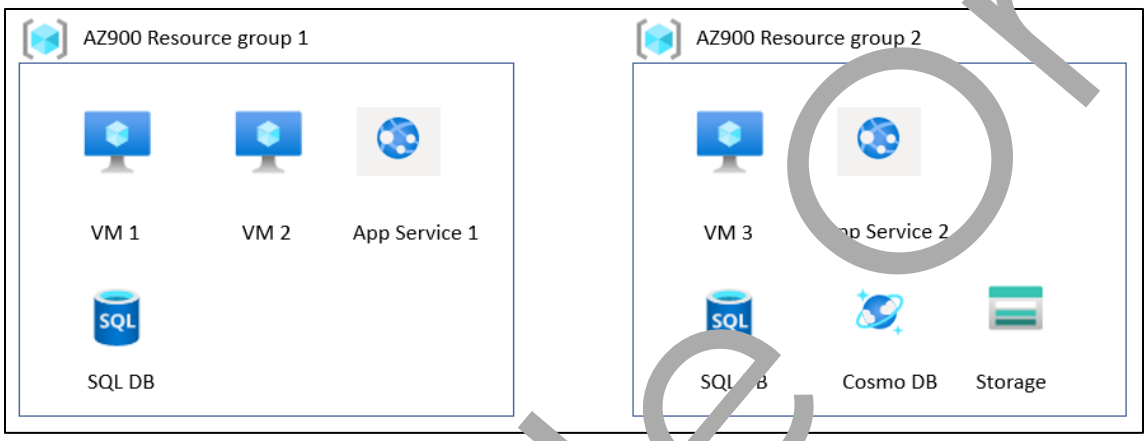


Figure 1-1: Resource groups

The consumption model in Azure cloud is a pay-as-you-go model. The Azure resources you create consume Azure services as you use them, which translates into money. You want to set quotas for your resources, so you do not end up paying money beyond your budget. You have a fixed budget for your project, and you want your spending to be within the limits of your budget. Azure introduces ***Subscriptions*** to enable you to control your spending. Subscriptions group the resource groups and the user accounts that created them. They enable you to set quotas for the consumption of the resources within these resource groups.

The following figure illustrates the relationship between subscriptions, resource groups and resources.

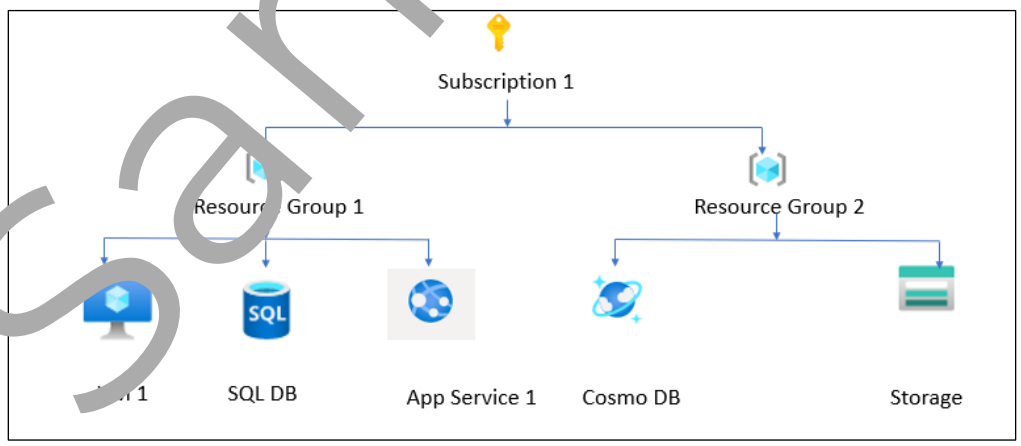


Figure 1-2: Subscriptions

Microsoft Azure also offers ***Management groups*** where you can manage multiple subscriptions.

The following figure illustrates the relationship between resources, resource groups, subscriptions, and Management groups. A management group has a single parent and a subscription can have only one parent.

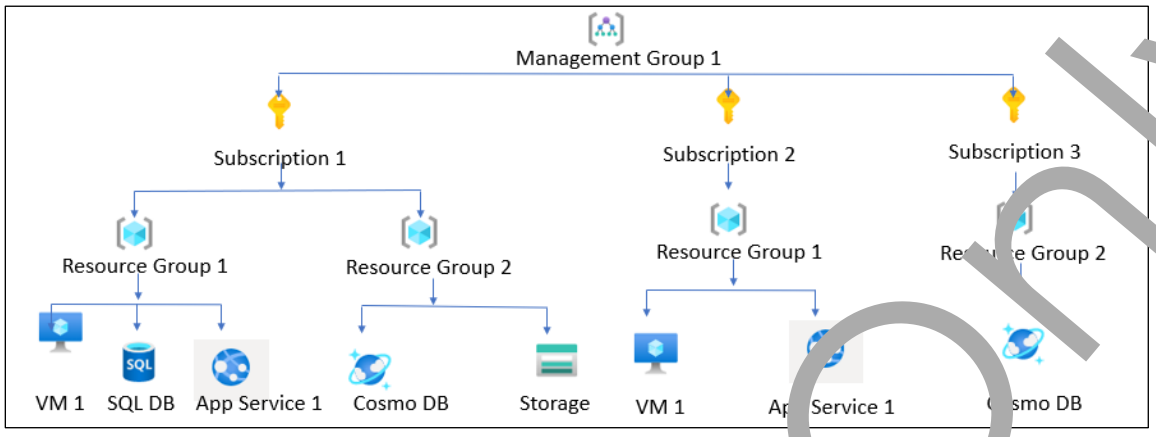


Figure 1-3: Management groups

Learn the Skill

Review the following terms and descriptions and match the terms to the correct description.

- Subscription
- Management groups
- Resource group
- Resource

A _____ is an item available through the Azure platform that you can create/configure an instance of. A _____ is a logical grouping of resources. _____ to enable you to control your spending and they group the resource groups and the user accounts that created them. _____ where you can manage multiple subscriptions.

Azure Resource Manager

The ***Azure Resource Manager (ARM)*** is a management layer providing deployment and management service for Azure. Azure Resource Manager allows you to manage your resources, including creating, updating, and deleting resources on Azure. The Azure Resource Manager authenticates requests from any Azure tool or APIs and sends them to the appropriate service.

The following diagram illustrates the relationship between the Azure Resource Manager, Subscriptions and Resource groups. Requests to create resources come from the cloud users through Azure Portal, Azure CLI, Azure PowerShell, Azure Rest API and Azure SDK. Azure Resource Manager manages and directs these requests to create resources through Subscriptions and Resource groups.

Availability of Storage

Understanding Azure regions and geographies is critical when considering storage replication choices. You have many replication choices depending on the storage type.

Managed Disks in Azure

- Locally redundant storage (LRS)
- Duplicates your data three times inside the region where your storage account was created

Disks with Storage Accounts

- Locally redundant storage (LRS) - Duplicates your data three times inside the region where you set up your storage account
- Zone redundant storage (ZRS) - Duplicates your data three times across one to three facilities, either within the same region or across two areas
- Geo-redundant storage (GRS) - Duplicates your data in a secondary location hundreds of kilometers away from the primary location
- Read-access geo-redundant storage (RA-GRS) - As with GRS, it duplicates your data in a secondary region but also allows read-only access to the data in the secondary location

Learn the Skill

1. What is the geographical location across the continents where Microsoft has at least one datacenter?
    a. Region Pairs
    b. Regions
    c. Multiple Choice

2. A single region is composed of multiple datacenters. Within most of the regions, what are these datacenters are grouped into?
    a. Region Pairs
    b. Availability Zones

3. Regions are grouped into pairs within the same geography e.g., in US, Europe or Asia. They are called *Region Pairs*.
    a. True
    b. False

4. All regions are for public use.
    a. True
    b. False

Lesson Summary

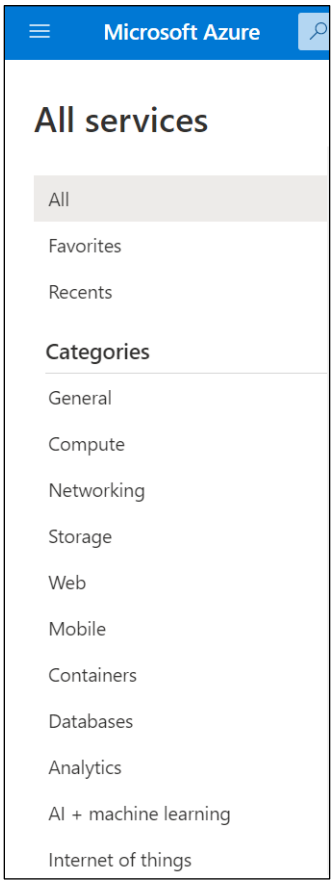
In this lesson, you were introduced to the Core Azure Architectural Components, learned how they work, and understand how to use and configure them. You should now be able to understand and configure the following:

- ☑ Azure Resource Management
- ☑ Azure Resource Manager
- ☑ Azure Regions and Zones

Practice Exercise 1

Open and watch the "**U2L1_PracticeExercise.mp4**", located in the Exercise Data Files folder, then answer the following questions.

1. To create a Resource Group, circle the category you would select:



Practice Exercise 2

Review the following service options and then insert the correct option to match the icon.

- Management Groups
- Resource Groups
- Subscriptions

Icon	Service
	
	
	

Practice Questions

1. What is an item available through the Azure platform that you can create/configure an instance of?
    a. Resource group
    b. Subscriptions
    c. Resource
    d. Containers
2. When you delete a resource group, the resources within the resource group are deleted.
    a. True
    b. False
3. Once you create a resource it must be part of a resource group.
    a. True
    b. False
4. Multiple subscriptions can be part of the same management group.
    a. True
    b. False
5. A Subscription can have multiple parents.
    a. True
    b. False
6. Management groups can belong to multiple parents.
    a. True
    b. False
7. Azure resource manager helps in the process of creating, configuring, and deleting resources.
    a. True
    b. False
8. Each of the data centers have separate resources, e.g., networking, power, etc. What are at multiple datacenters?
    a. Regions
    b. Region pairs
    c. Availability Zones
    d. Datacenters
9. Microsoft cloud services in China is run by 21Vianet.
    a. True
    b. False