

Subscription:

In Microsoft Azure, a subscription refers to an agreement with Microsoft to use one or more Azure services. When you sign up for Azure, you create an Azure account, which is associated with one or more subscriptions.

Each subscription has its own billing and management scope, and it serves as the billing entity for Azure usage. Subscriptions also provide access to Azure services and resources, such as virtual machines, storage accounts, databases, and more.

Azure subscriptions can be structured to meet the needs of different organizations, with options for pay-as-you-go pricing, enterprise agreements, and various levels of support and service. Within a subscription, you can create and manage multiple resource groups to organize and manage your Azure resources effectively.

Resource group:

In Microsoft Azure, a resource group is a logical container that holds related Azure resources for an application or a solution. These resources can include virtual machines, storage accounts, databases, web apps, and more. Organizing resources into resource groups helps manage and govern them collectively.

Here are some key points about resource groups in Azure:

1. **Organizational Unit:** Resource groups are used to organize resources within Azure, providing a way to group them based on their lifecycle, such as development, testing, or production.
2. **Management Scope:** Resource groups provide a scope for applying role-based access control (RBAC), policies, and tags, allowing you to manage access, compliance, and billing at the resource group level.
3. **Deployment and Lifecycle Management:** Resources within a resource group can be deployed, updated, and deleted together, making it easier to manage the lifecycle of related resources.
4. **Billing and Cost Management:** Billing for Azure services is typically based on the resources within a resource group, providing a clear understanding of costs associated with specific applications or projects.
5. **Cross-Resource Dependencies:** Resources within a resource group can reference each other, simplifying configuration and management of cross-resource dependencies.
6. **Region:** All resources within a resource group are deployed to the same Azure region, ensuring that they are located close to each other for optimal performance.

Overall, resource groups are a fundamental organizational construct in Azure, helping users to manage and govern their Azure resources effectively.

```
resource "azurerm_resource_group" "example" {  
  name      = "example"  
  location = "West Europe"  
}
```

Storage Account:

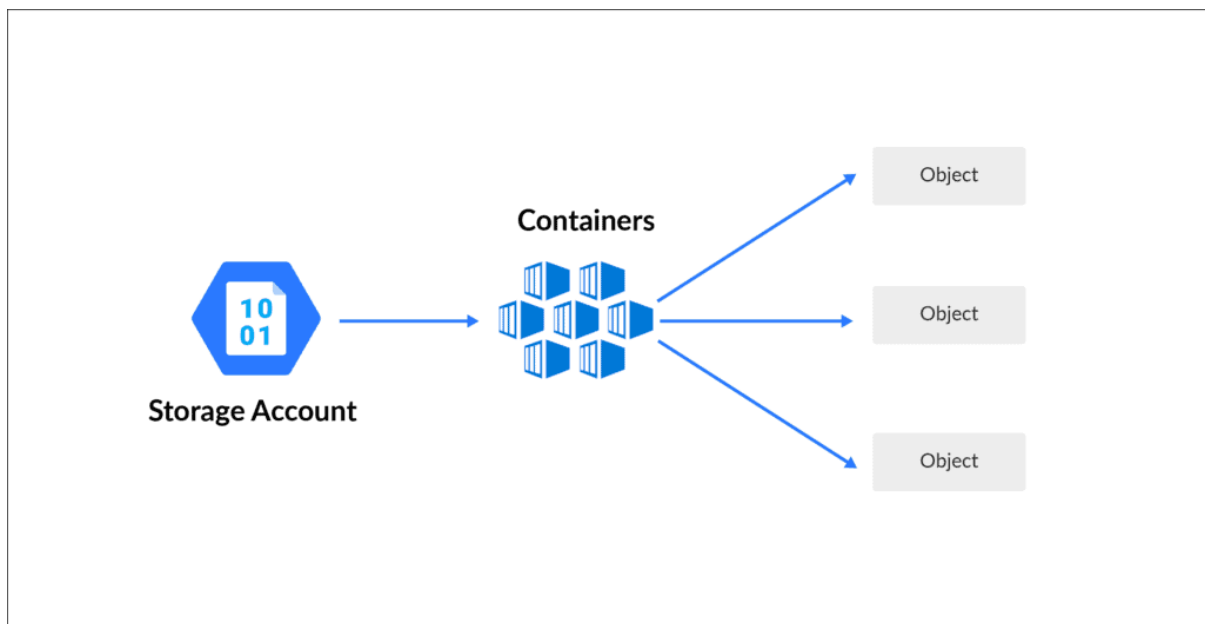
Storage account in Azure is a method of creating a storage service for storing data in it. It contains all the Azure storage objects decided into a single resource group. It contains Blob, queue, tables, and files with disk images. It uniquely provides namespace and service access to functions of storage.

The Azure storage account is durable, highly available, and scalable. By using Azure storage account services, we don't need to worry about space because it will be scaled upon our demand. The Azure storage account is a container that groups a set of Azure storage services together. Only data services from Azure storage can be included in a storage account.

A) Azure Blob Storage

Azure Blob Storage is a Microsoft Azure cloud-based object storage solution. It is intended to store and manage unstructured data at scale, such as text or binary data such as photos, videos, documents, and other file formats.

1. It is an object storage solution in Azure.
2. It is used to store unstructured data.
3. This is ideal when you have storage solutions for files, videos, log files, and images
4. It has different tier levels:
 1. **Hot storage tier:** It is ideal for objects that are accessed frequently
 2. **Cool storage tier:** It is optimized for data that are infrequently accessed. This is a less expensive option than the hot storage tier
 3. **Archive storage tier:** It is optimized for data that is rarely accessed. Mostly used for archiving or backup data. It is the least expensive service

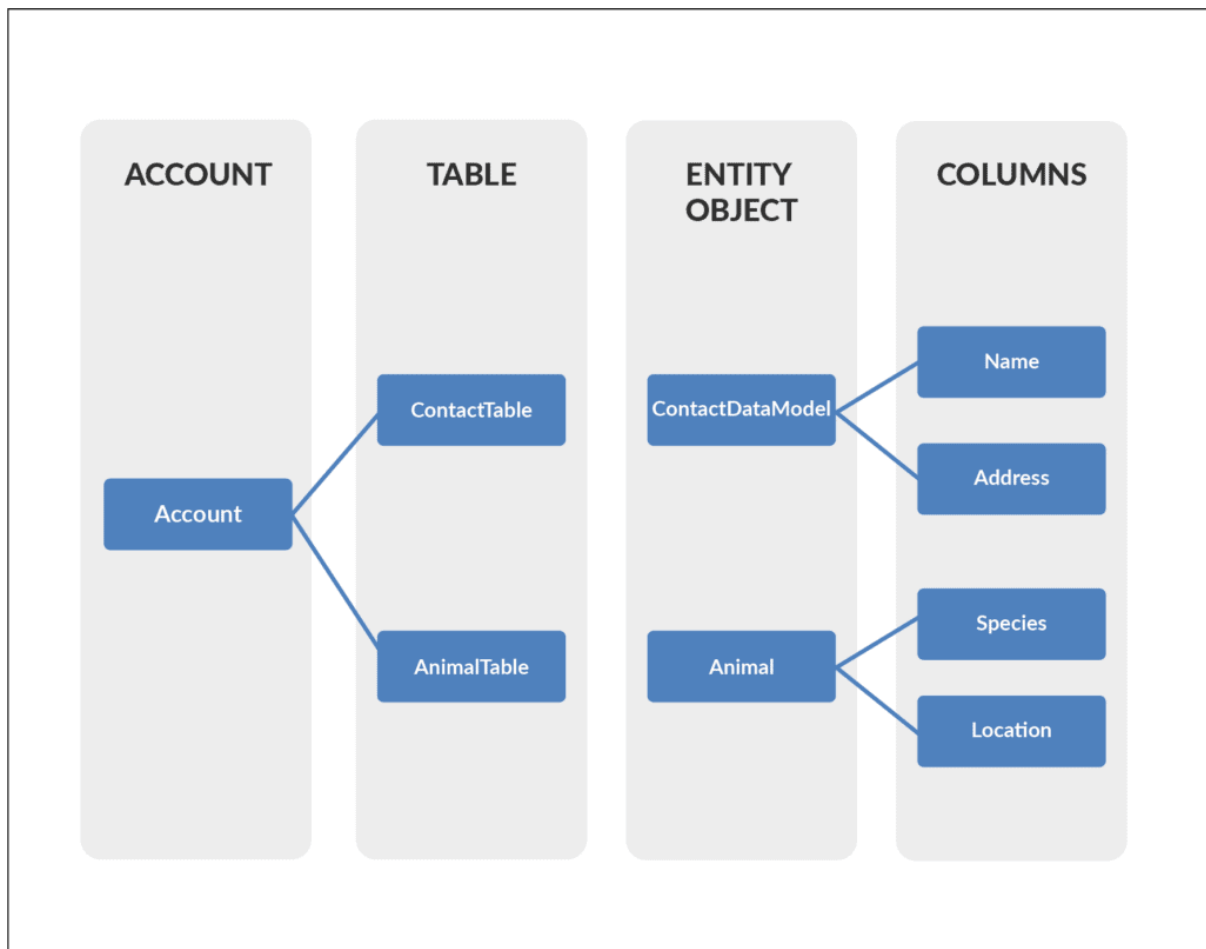


B) Azure Table Storage

Microsoft Azure Table Storage was made to store structured NoSQL data. The storage is very scalable and, at the same time, very cheap to keep data in. However, it set off more expensive when you access files frequently.

1. It is used for storing structured NoSQL data
2. It is a key attribute store
3. It is a cost-effective option for the storage of table-like data for applications

Instead of using [SQL database](#) to store data, you can use Azure table storage in a more cost-effective manner

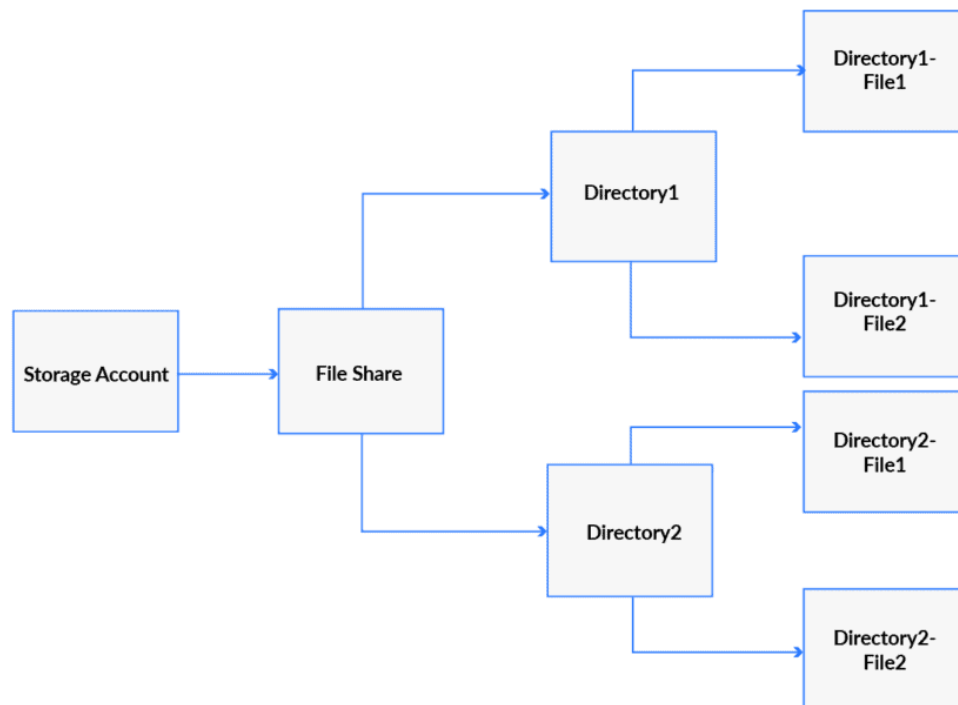


C) Azure File Storage

Microsoft Azure File storage is a type of Azure service that was designed to support the needs of the Azure VM environment. That storage is, in essence, a network share. You can store files there that can be accessed from different Virtual Machines. It is similar to Amazon EFS and is its direct competitor.

1. It allows for the retrieval of files via the server message block protocol
2. Using file storage, you can mount file shares on Windows, Linux, and Mac-based machines
3. Here you don't need to manage file servers

Azure File Storage- Example



D) Azure Queue Storage

Queue Storage is a type of storage that is built to connect components of your application. It allows you to build flexible applications with decoupled and independent components that rely on asynchronous message queuing.

1. This service used for the storage and retrieval of messages
2. This service is good when you want to decouple components of an application
3. A single message in the queue can be up to 64kb in size
4. You can store millions of messages in the queue

```
resource "azurerm_storage_account" "example" {
  name                        = "storageaccountname"
  resource_group_name        = azurerm_resource_group.example.name
  location                   = azurerm_resource_group.example.location
  account_tier               = "Standard"
  account_replication_type   = "GRS"

  tags = {
    environment = "staging"
  }
}
```

Storage Account Type	Supported Services	Supported Performance Tiers	Replication Options
BlobStorage	Blob (block blobs and append blobs only)	Standard	LRS, GRS, RA-GRS
General-purpose V1	Blob, File, Queue, Table, and Disk	Standard premium	LRS, GRS, RA-GRS
General-purpose V2	Blob, File, Queue, Table, and Disk	Standard premium	LRS, GRS, RA-GRS, ZRS, ZGRS (preview), RA-ZGRS (preview)
Block blob storage	Blob (block blobs and append blobs only)	premium	LRS, ZRS (limited regions)
FileStorage	Files only	premium	LRS, ZRS (limited regions)

Types of Azure Storage Replication

By default, Azure Storage replicates data three times within a primary region. Additionally, Azure offers the following options you can configure for replication within the primary region:

- **Locally redundant storage (LRS)**—synchronously replicates data to three disks within a data centre in the primary region. Offers a moderate level of availability at a lower cost.
- **Zone-redundant storage (ZRS)**—synchronously replicates data among three Azure availability zones in the primary region. Provides a higher level of resilience at higher cost.

Beyond these two basic types of replications, there are three additional types available in Azure Storage:

- **Geo-Redundant storage (GRS)**—stores another three copies of data in a paired Azure region
- **Read-Access Geo-Redundant (RA-GRS)**—same as GRS, but allows data to be read from both Azure regions
- **Object Replication for Block Blob Storage**—a special type of replication used only for block blobs, replicating them between a source and target storage account.

