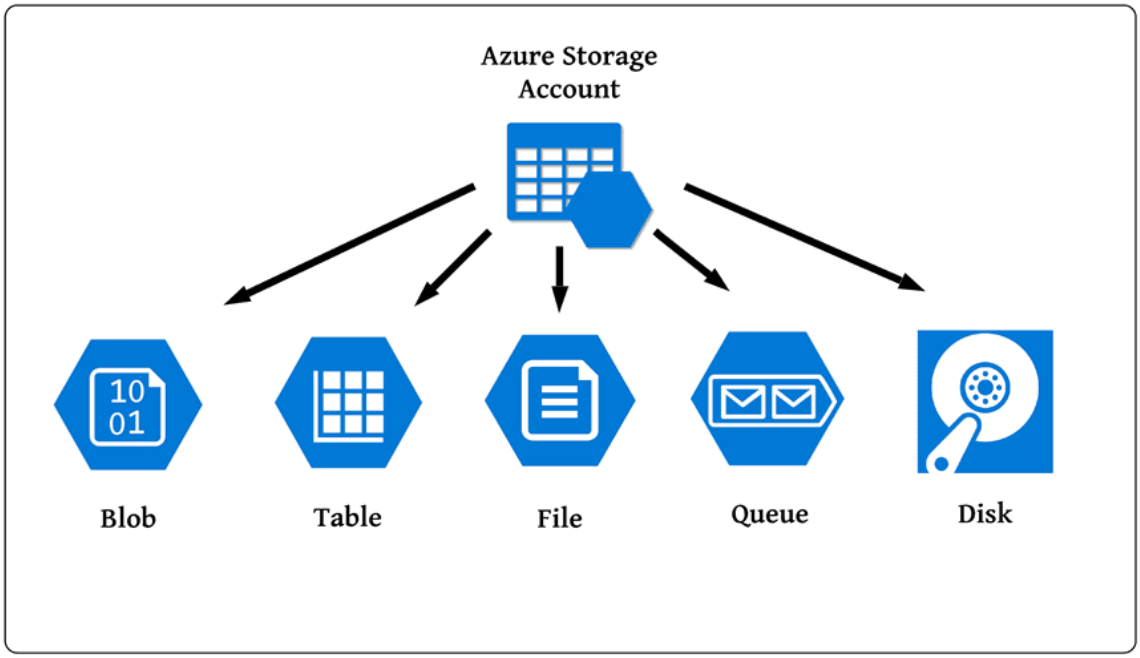
TYPES OF STORAGES IN AZURE

- Azure provides multiple storage services to handle structured, semi-structured, and unstructured data with scalability, durability, and security. It is designed to support everything from small application needs to enterprise-level workloads.
    - Blob Storage
    - Table Storage
    - File Storage
    - Queue Storage
    - Disk Storage

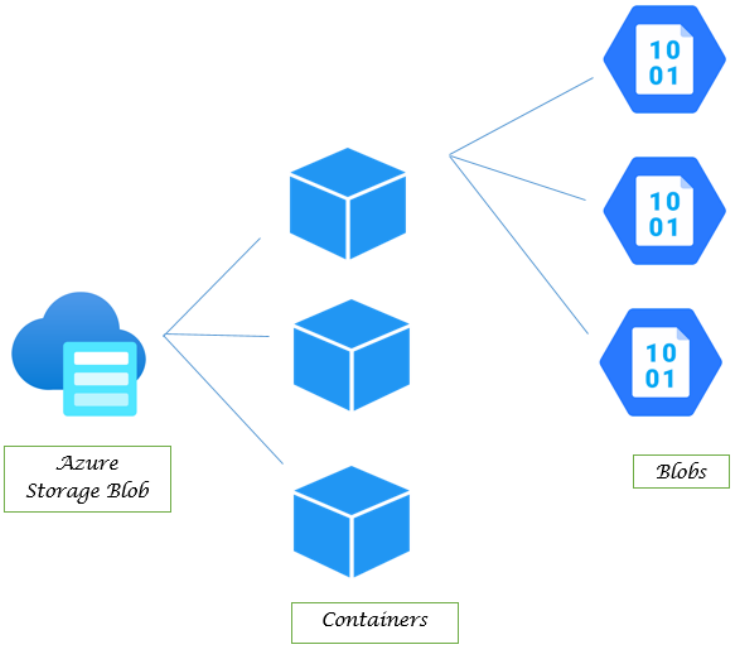


Source: www.partech.nl

1. Azure Blob Storage

- Azure Blob Storage is designed to store massive amounts of unstructured data, meaning data that doesn't follow a fixed schema such as documents, images, videos, backups, or logs.
- The storage is organized hierarchically: a storage account contains containers, and each container holds multiple blobs (files).

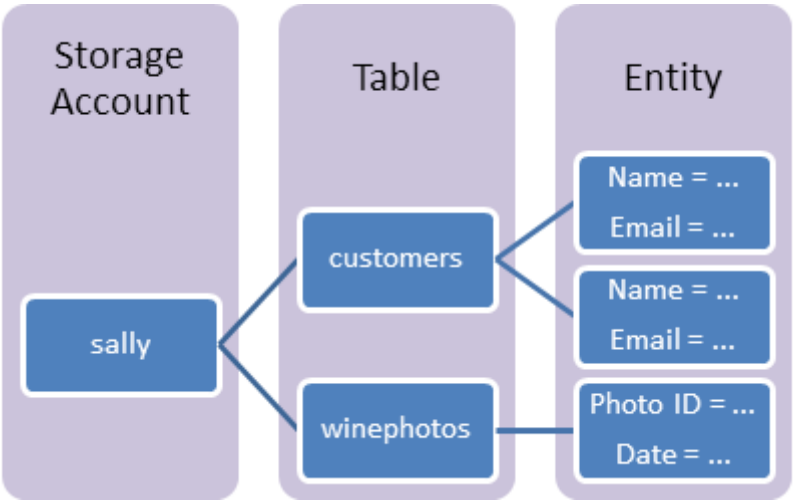
- Blob storage supports three main types: Block Blobs, which are optimized for large files like media and documents; Append Blobs, which allow continuous addition of data at the end, making them perfect for logging; and Page Blobs, which are used for random read and write operations, commonly for virtual machine disks.
- Blob storage also integrates with Azure Data Lake Storage Gen2, making it a popular choice for big data analytics pipelines. Its scalability, durability, and global access make it ideal for scenarios like media hosting, backups, archiving, and real-time data analytics.



2. Azure Table Storage

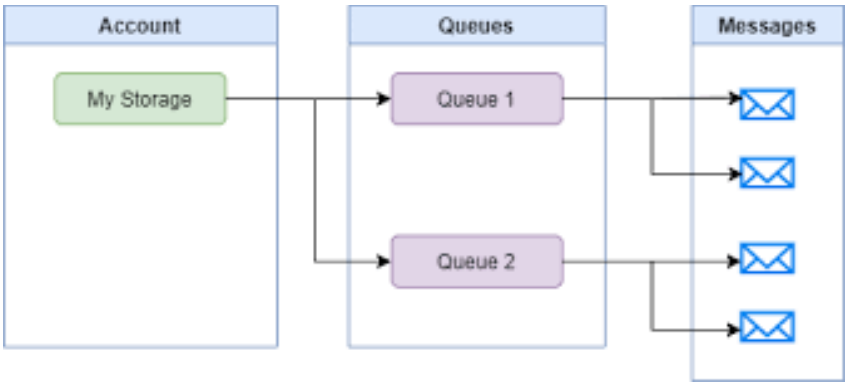
- Azure Table Storage is a NoSQL key-value store that allows applications to store and retrieve structured but schema-less data. Unlike relational databases, it doesn't enforce table structures with fixed columns, which provides flexibility when handling large and varied datasets.
- Each record in Table Storage is known as an entity, and entities are grouped into tables. Data is accessed using a partition key and a row key, which together provide fast lookups and efficient queries.

- Since it is designed for massive scale, Table Storage can handle billions of records cost-effectively. It is commonly used to store metadata, user profiles, IoT device logs, or application configurations where the data structure can change over time. Developers can query it using OData and LINQ, and it integrates smoothly with other Azure services.



3. Azure Queue Storage

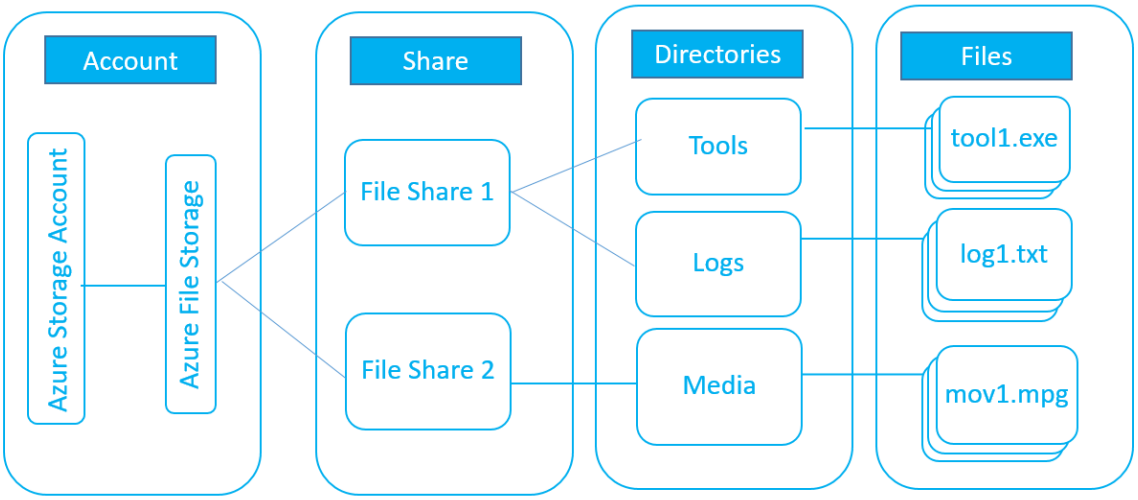
- Azure Queue Storage is a messaging service that enables reliable communication between different components of an application. It is especially useful in distributed systems, where one process generates work items and another process consumes them.
- A queue can hold millions of messages, each up to 64 KB in size, and messages can be retrieved asynchronously by consumers. This allows for load balancing and ensures that the system can handle spikes in workload without failures.



- For example, in an e-commerce system, when a customer places an order, the order details can be added as a queue message, and a separate backend service can process it later. This decoupling improves system reliability and scalability.
- Queue Storage is also used in scenarios like background processing, workflow pipelines, and task scheduling, often in combination with Azure Functions for serverless execution.

4. Azure File Storage

- Azure File Storage provides cloud-based file shares that can be accessed using the standard SMB (Server Message Block) or NFS (Network File System) protocols. This makes it possible to mount Azure File shares directly on Windows, Linux, or macOS machines, just like a traditional file server.
- A key advantage is its compatibility with existing applications that rely on file systems, which means companies can lift and shift their on-premises workloads to the cloud without major changes.
- Additionally, Azure File Storage works with Azure File Sync, a service that keeps on-premises file servers synchronized with cloud storage, enabling hybrid scenarios. This service is commonly used for centralized file repositories, team collaboration, application configuration storage, and replacing on-premises file servers.
- It ensures high availability and redundancy, making it a secure and scalable alternative to traditional file servers.

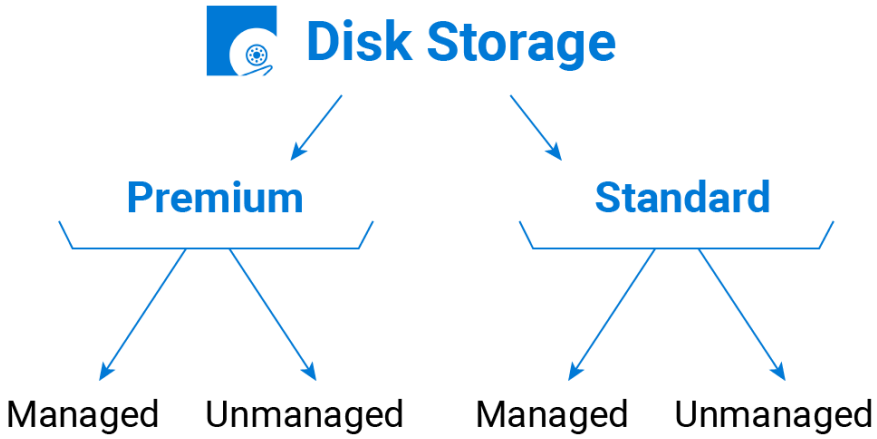


5. Azure Disk Storage

- Azure Disk Storage provides block-level storage volumes that can be attached to virtual machines for persistent and high-performance storage.
- Unlike Blob or File storage, which are more general-purpose, Disk Storage is specifically optimized for running operating systems, databases, and enterprise applications.
- There are different disk types based on performance and cost: Ultra Disks provide extremely low latency and high throughput for mission-critical workloads;

- Premium SSDs offer high performance for production databases and applications; Standard SSDs are more affordable for general-purpose workloads; and Standard HDDs are cost-effective for dev/test or less critical systems.

- Since these disks are durable and can automatically replicate across availability zones, they ensure data reliability. They are typically used for VM operating system disks, database storage, or any scenario requiring fast, persistent block storage.



Storage Type	Data Type	Access Method	Typical Use Case
Blob	Unstructured	REST, SDK, Azure Storage Explorer	Media, backups, data lakes
Table	Semi-structured (NoSQL)	REST, OData, SDK	Metadata, user data, IoT logs
Queue	Messages	REST, SDK, Azure Functions	Decoupling, background processing
File	File shares (SMB/NFS)	SMB, REST API	Shared drives, lift-and-shift apps
Disk	Block storage	Attached to VM	OS disks, DB storage