Azure Data Storage Options

1 Benefits of storing data in the cloud

- Automated backup and recovery
- Replication across the globe
- Support for data analytics
- Encryption capabilities
- Multiple data types
- Data storage in virtual disks
- Storage tiers

1.1 Types of data

Definition: Structured data

Data that adheres to a schema. Relational data

Definition: Semi-strutured data

Using tags and keys to provide hierarchy. Used in NoSQL databases

Definition: Unstructured data

Data with no designated structure

2 Azure Data storage

2.1 Azure SQL database

Relational Database as a service. Based on Microsoft SQL Server database engine.

Uses the Microsoft Data Migration Assistant to generate reports to guide through migration.

2.2 Azure Cosmos DB

Globally distributed database service supporting schema-less data (NoSQL). Used for highly responsive and always on applications

2.3 Azure Blob storage

Holds unstructured data

2.4 Azure data lake

Allows you to perform analytics on your data usage and prepare reports. Data lake is a large repository that stores both structured and unstructured data.

2.5 Azure Files

Offers fully managed file shares in the cloud over SMB (Server Message Block).

2.6 Azure Queue

Used for storing large numbers of messages

Can be used to:

- Create a backlog of work and to pass messages between different Azure web servers
- Distribute load among different web servers/infrastructure and to manage bursts of traffic
- Build resilience against component failure when multiple users access your data at the same time

2.7 Disk storage

Provides disks for virtual machines and other services to access as they need. Come in many different sizes and performance levels, from SSDs to HDDs.

2.8 Storage tiers

Azure offers 3 storage tiers for blob object storage

1. Hot storage - Accessed frequently
2. Cool storage - Infrequent access
3. Archive storage - Rarely accessed

2.9 Encryption and replication

The following encryption types are available for your resources:

- Azure Storage Service Encryption (SSE) - For data at rest. Encrypts before storing and decrypts during retrieval
- Client side encryption - Data already encrypted by the client libraries. Decrypted during retrieval

3 Comparison with on premises storage

Needs	On Premises	Azure data storage
Compliance and security	Dedicated servers required for privacy and security	Client side encryption and encryption at rest
Store structured and unstructured data	Additional IT resources with dedicated servers required	Azure data lake and portal analyses and manages all types of data
Replication and high availability	More resources, licensing and servers required	Built in replication and redundancy features available
Application sharing and access to shared resources	File sharing requires additional administration resources	File sharing options without additional license
Relational data storage	Needs a database server with database admin role	Offers DBaaS options
Distributed storage and data access	Expensive storage, networking and compute resources needed	Azure Cosmos DB provides distributed access
Messaging and load balancing	Hardware redundancy impacts budget and resources	Azure Queue provides effective load balancing
Tiered storage	Management of tiered storage needs technology and labour skill set	Azure offers automated tiered storage of data