Microsoft Azure Fundamentals Training Bootcamp

Encryption Fundamentals and Azure Key Vault

Encryption Overview

- Encryption is the process of encoding a message or information in such a way that only authorized parties can access it

- To use or read the encrypted data, it must be decrypted, which requires the use of a secret key

- Two types of encryption are available: symmetric and asymmetric; the difference between the two is related to the encryption key

Encryption Types

- Symmetric Encryption
  - Same encryption key is used to both encrypt and decrypt the data

- Asymmetric encryption
  - Public key and private key pair used; both can encrypt, but you can only decrypt with the "paired key"
  - More secure
  - Used in HTTPS environments (PKI and certificates)

Encryption at Rest and In Transit

- Encryption at rest
  - Data at rest is the data that has been stored on a physical medium; data is not moving or traveling
  - Encryption of data at rest ensures that data stored is unreadable without the decryption keys

- Encryption in transit
  - Data in transit is the data actively moving from one location to another; to on-prem DC, through the internet
  - Protects the data from outside observers and provides a mechanism to transmit data securely

Encryption in Azure

- Azure Storage Service Encryption
  - Protect data at rest
  - Data is automatically encrypted before storing it to Azure Storage and decrypted before retrieval

- Azure Transparent Data Encryption (TDE)
  - Real-time encryption and decryption for databases - Azure SQL Database and Azure Data Warehouse
  - Enabled by default

- Azure Key Vault – encrypt the actual keys

Key Vault

Azure Key Vault

- With Azure Key Vault we can ensure that the keys themselves are secure and store them in a centralized cloud service (AKV)

- Common use cases for Azure Key Vault:
  - Secrets Management – store tokens, passwords, certs.
  - Key Management – create and control encryption keys
  - Certificate Management – provision, manage and deploy private or public certificates

Key Vault

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Thank you