

## Managing Data in Azure SQL Database

### Introduction to Data Warehousing

- Introduction/Overview of SQL Database.
- Comparing Single Database vs Managed Instance
- Creating and Using SQL Server and SQL Database Services.
- Azure SQL Database Tools.
- Migrating on premise database to SQL Azure.
- Purchasing Models
  - DTU service tiers
  - vCore based Model
  - Serverless compute tier
- Service Tiers
  - General purpose / Standard
  - Business Critical / Premium
  - Hyperscale
- Planning the Deployment of an Azure SQL Database
- Elastic Pools.
  - What is SQL elastic pools
  - When to use
  - Choosing the correct pool size
  - Creating a New Pool
  - Manage Pools
- Monitoring and Tuning Azure SQL Database
- Configure SQL Database Auditing
- Export and Import of Database
- Manage Business Continuity
  - Automated Backup
  - Point in Time Restore
  - Restore deleted databases
  - Long-term backup retention
  - Active Geo Replication
  - Auto Failover Group
- Security Features
  - Server and Database Level IP firewall rules.

- SQL Authentication
- Azure AD Authentication
- Advanced data Security
- Dynamic Data Masking
- Transparent Data Encryption
- Azure SQL Database Features
  - Multi-model capabilities
  - In-memory
  - Transactional replication
  - SQL Data Sync
  - Temporal tables
  - Job Automation
  - Linked Servers
  - Service Broker
  - Database mail
  - Server-side CRL / .NET Integration
- Backup and Recovery options in SQL Database.
- Implement PolyBase
- Implement SQL Database monitoring

### Azure Storage Service

- About Storage Service and Account
- Creating a Storage Account
- Standard and Premium Performance
- Understanding Replication
- Hot, Cold and Archive Access Tiers
- Working with Containers and Blobs
- Types of Blobs (Block, Append, Page)
- Blob Metadata
- Soft Delete
- Azure Storage Explorer
- Transfer Data with AzCopy
- Async Blob Copy

- Access blobs securely
  - Access Key
  - Account Shared Access Token
  - Service Shared Access Token
  - Shared Access Policy
- Storage Service Encryption
  - Azure Key Vault
  - Customer Managed Keys
- Configure Custom Domain with SSL
- Scale Blob Storage
- BLOB storage monitoring

## Azure Data Lake

### Overview of Azure Data Lake

- What is Data Lake?
- What is Azure Data Lake?
- Data Lake Architecture?

### Working with Azure Data Lake

- Provisioning Azure Data Lake.
- Explore Data Lake Analytics
- Explore Data Lake Store
- Uploading Sample File
- Using Azure Portal
- Using Storage Explorer
- Using Azure CLI

### Azure Data Lake and U-SQL

- First U-SQL Script
- First Data Lake Analytics Job
- Overview of Job Graph

### Working With U-SQL

- Introduction to U-SQL

- Extractors and Outputters
- Azure Data Lake Schema on Read
- Rowset
- U-SQL Datatypes
- Process data From Multiple Files and Filter it

### **Using Visual Studio for Development**

- Tools Required
- U-SQL Project
- Local Execution
- Cloud Execution
- FileSets and Virtual Column

### **Working With U-SQL Catalog**

- U-SQL Catalog
- Create / Drop Database, Schema and Table
- Create / Drop Schema
- Create / Drop Table
- Create / Drop Index
- Working with Table Valued Function
- Insert Data
- Query Table
- Working with View

### **Using C# to extend U-SQL Capabilities**

- Using Inline Function and operators
- Using Code-Behind Class
- Using Custom Assembly
- Using Visual Studio to create and register assembly

### **Understanding U-SQL JOB**

- U-SQL JOB Architecture
- Understanding Job Graph
- Understanding Job Heat Map

- Monitoring and Optimizing U-SQL Jobs

## Azure Data Factory

### Introduction to Data Factory

- What is Data Factory?
- Data Factory Key Components
  - Pipeline and Activity
  - Linked Service
  - Data Set
  - Integration Runtime

### Provision Required Azure Resources

- Create Resource Group
- Create Storage Account
- Provision SQL Server and Create Database
- Provision Data Factory

### Working with Copy Activity

- Understanding Data Factory UI
- Copy Data from Blob Storage to SQL Database (Use Copy Data Wizard)
- Copy data from storage account to storage account
  - Create Linked service
  - Create Dataset
  - Create Pipeline
- Integration Service
- Copy Data from on-premise SQL Server to Blob Storage

### Working with Activities

- Understanding Lookup Activity
- Understanding for Each Activity
- Filter Activity
- Get Metadata Activity

### Azure Lift and Shift

- Provisioning Azure - SSIS Integration Runtime
- Execute SSIS Packages from Azure
- Execute SSIS Packages from SSISDB

#### **Triggers, Monitoring Pipeline**

- Debug Pipeline
- Trigger pipeline manually
- Monitor pipeline
- Trigger pipeline on schedule

## SQL Data Warehouse

### **Introduction to SQL Data Warehouse**

- SQL DW Introduction
- Provisioning and Configuring SQL DW

### **Designing and Querying Data Warehouse**

- Table Design and Implementation
- Partitioning Tables
- Indexes and Statistics
- Monitoring Queries

### **Integrating and Ingesting Data**

- Loading Data
- Integrating with other Azure and third-party tools
- Migrating to SQL DW

### **Managing Data Warehouse**

- SQL DW Performance
- SQL DW Security
- Managing Compute
- SQL DW Backup
- Monitoring SQL DW