Programming Azure Storage and Azure SQL

Agenda

- Azure Storage Accounts
- Blob Storage and File Storage
- Creating a CDN using Azure Storage
- Azure Storage using Tables and Queues
- Creating Azure SQL Databases
- Developing with the Entity Framework

Azure Storage

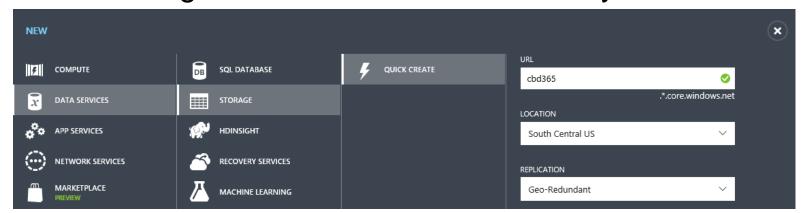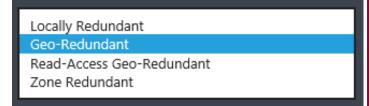Reliable and scalable storage service for data of all types and sizes.

Features:
- Select a datacenter for storage
- Configure geo-replication options
- Manage blobs and files
- Secure a container
- Upload files
- Access files

Storage Accounts

- Use of storage requires storage account
    - Requires unique domain *.core.windows.net
    - Storage account name must be lowercase letters
    - Created with location and replication setting
    - Storage account has associated keys for access

Blob Storage

- Blobs store unstructured data
  - Binary data stored as single entity
  - Blobs used to store files, documents & content streams
  - Blobs must be stored within a container

- Container defines access level
  - Private
  - Public blob
  - Public container

Blob Types

- Block blobs
  - Stored and loaded in 4MB blocks
  - Block blobs can be stored up to 200GB
- Page blobs
  - Stored and loaded in 512-byte pages
  - Mimics behavior of hard drive for an OS
  - Used for storing VHDX files for Azure VMs
  - Page blobs can be up to 1TB n size

Tools for Uploading & Downloading Blobs

- AzCopy utility
  - http://aka.ms/downloadazcopy
- Azure REST Storage API
- Storage Client Library (.NET)
- Azure Windows PowerShell cmdlets
- Using Windows Azure storage Explorer
  - https://azurestorageexplorer.codeplex.com/
- 3rd Party - e.g. CloudBerry Azure Storage Explorer
  - http://www.cloudberrylab.com/free-microsoft-azure-explorer.aspx

Creating a CDN using Blob Storage

- Blob storage can be used to create a CDN
  - CDN = Content Delivery Network
  - CDN distributes content across geographical regions
  - Used to distribute static files (e.g. images, CSS, etc.)
  - Users download CDN content with lower latency levels

Other Blob Features

- Creating Blob Hierarchies
- Using metadata with blobs and containers
    - Metadata can be read and or written to blobs
    - Metadata can be read and or written to containers

Azure File Storage

- Used to provide SMB-style file shares
  - Not too important for developers
  - For legacy application that use local-mapped drives

Azure Storage Tables

- Non-relational entity storage
  - Key-value stores
  - Document databases
  - Columnar stores
  - Graph databases

- Each table entry contains
  - Partition key
  - Row key
  - Timestamp
  - ETag

Azure Storage Queue

- Used for reliable inter-application communication
  - Messages can be added to queue
  - Messages can be read and removed from queue

Azure SQL Database

SQL Database is a Database-as-a-Service

Makes SQL databases accessible to developers in cloud

Features:

- Create a logical SQL Server or SQL Database instance
- Configure a SQL Server instance firewall
- Compare the SQL Database service and Standalone SQL Server in an Azure virtual machine
- Use SQL Server Data Tools, Azure SQL Database Management Portal, and SQL Server Management Studio to connect to a database instance