DP300: Administering Relational Databases on Microsoft Azure

Course ID #: 7000-374-ZZ-Z

Hours: 28

Course Content

Course Description:

This course provides students with the knowledge and skills to administer a SQL Server database infrastructure for cloud, on-premises, and hybrid relational databases and who work with the Microsoft PaaS relational database offerings. Additionally, it will be of use to individuals who develop applications that deliver content from SQL-based relational databases.

At Course Completion:

After competing this course, student will be able to:
- Plan, deploy and configure Azure SQL offerings
- Monitor database performance and tune a database and queries for optimum performance
- Plan and configure a High Availability Solution

Prerequisites:

In addition to their professional experience, students who take this training should have technical knowledge equivalent to the following courses:
- Azure Fundamentals
- Azure Data Fundamentals

Target Student:

The audience for this course is data professionals managing data and databases who want to learn about administering the data platform technologies that are available on Microsoft Azure. This course is also valuable for data architects and application developers who need to understand what technologies are available for the data platform with Azure and how to work with those technologies through applications.

Topics:

Module 1: The Role of the Azure Database Administrator
- Azure Data Platform Roles
- Azure Database Platforms and Options
- SQL Server Compatibility Levels
- Azure Preview Features

- Lab : Using the Azure Portal and SQL Server Management Studio
- Provision a SQL Server on an Azure Virtual Machine
- Connect to SQL Server and Restore a Backup

Module 2: Plan and Implement Data Platform Resources

- Deploying SQL Server using IaaS
- Deploying SQL Server using PaaS
- Deploying Open Source Database Solutions on Azure
- Lab : Deploying Azure SQL Database
- Deploy a VM using an ARM template
- Configure resources needed prior to creating a database
- Deploy an Azure SQL Database
- Register the Azure SQL Database instance in Azure Data Studio and validate connectivity
- Deploy PostgreSQL or MySQL using a client tool to validate connectivity

Module 3: Implement a Secure Environment

- Configure Database Authentication
- Configure Database Authorization
- Implement Security for Data at Rest
- Implement Security for Data in Transit
- Implement Compliance Controls for Sensitive Data
- Lab : Implement a Secure Environment
- Configure a server-based firewall rule using the Azure Portal
- Authorize Access to Azure SQL Database with Azure Active Directory
- Enable Advanced Data Security and Data Classification
- Manage access to database objects

Module 4: Monitor and Optimize Operational Resources

- Baselines and Performance Monitoring
- Major Causes of Performance Issues
- Configuring Resources for Optimal Performance
- User Database Configuration
- Performance-related Maintenance Tasks
- Lab : Monitor and Optimize Resources
- Isolate CPU Problems
- Use Query Store observe blocking problems
- Detect and correct fragmentation issues

Module 5: Optimize Query Performance

- Understanding SQL Server Query Plans
- Explore Performance-based Database Design
- Evaluate Performance Improvements
- Lab : Query Performance Troubleshooting
- Identify issues with database design AdventureWorks2017
- Isolate problem areas in poorly performing queries in AdventureWorks2017
- Use Query Store to detect and handle regression in AdventureWorks2017
- Use query hints to impact performance in AdventureWorks2017

Module 6: Automation of Tasks
- Setting up Automatic Deployment
- Defining Scheduled Tasks
- Configuring Extended Events
- Managing Azure PaaS resources Using Automated Methods
- Lab : Automating Tasks
- Deploy an Azure template from a Quickstart template on GitHub
- Configure notifications based on performance metrics
- Deploy an Azure Automation Runbook (or elastic job) to rebuild indexes on an Azure SQL Database

Module 7: Plan and Implement a High Availability and Disaster Recovery Environment
- High Availability and Disaster Recovery Strategies
- IaaS Platform and Database Tools for HADR
- PaaS Platform and Database Tools for HADR
- Database Backup and Recovery
- Lab : Plan and Implement a High Availability and Disaster Recovery Environment
- Create an Always On Availability Group
- Enable Geo-Replication for Azure SQL Database
- Backup to URL and Restore from URL