

# **MCSA: SQL 2016 Database Administration – Skills Measured**

NOTE: The bullets that appear below each of the skills measured are intended to illustrate how we are assessing that skill. This list is not definitive or exhaustive.

NOTE: In most cases, exams do NOT cover preview features, and some features will only be added to an exam when they are GA (General Availability).

## **Exam 70-764: Administering a SQL Database Infrastructure**

### **Configure data access and auditing (20–25%)**

#### **Configure encryption**

- implement cell-level encryption, implement Always Encrypted, implement backup encryption, configure transparent data encryption, configure encryption for connections, troubleshoot encryption errors

#### **Configure data access and permissions**

- manage database object permissions, create and maintain users, create and maintain custom roles, configure user options for Azure SQL Database, configure row-level security, configure dynamic data masking

#### **Configure auditing**

- configure an audit on SQL Server, query the SQL Server audit log, manage a SQL Server audit, configure an Azure SQL Database audit, analyze audit logs and reports from Azure SQL Database

### **Manage backup and restore of databases (20–25%)**

#### **Develop a backup strategy**

- back up very large databases, configure alerting for failed backups, back up databases to Azure, manage transaction log backups, configure database recovery models, configure backup automation

#### **Restore databases**

- perform piecemeal restores, perform page recovery, perform point-in-time recovery, restore file groups, develop a plan to automate and test restores

### **Manage database integrity**

- implement database consistency checks, identify database corruption, recover from database corruption

## **Manage and monitor SQL Server instances (35–40%)**

### **Monitor database activity**

- monitor current sessions, identify sessions that cause blocking activity, identify sessions that consume tempdb resources, configure the data collector

### **Monitor queries**

- manage the Query Store, configure Extended Events and trace events, identify problematic execution plans, troubleshoot server health using Extended Events

### **Manage indexes**

- identify and repair index fragmentation, identify and create missing indexes, identify and drop underutilized indexes, manage existing columnstore indexes

### **Manage statistics**

- identify and correct outdated statistics, implement Auto Update Statistics, implement statistics for large tables

### **Monitor SQL Server instances**

- create and manage operators, create and manage SQL Agent alerts, define custom alert actions, define failure actions, configure database mail, configure Policy-Based Management, identify available space on data volumes, identify the cause of performance degradation

## **Manage high availability and disaster recovery (20–25%)**

### **Implement log shipping**

- configure log shipping, monitor log shipping

### **Implement AlwaysOn Availability Groups**

- configure Windows clustering, create an availability group, configure read-only routing, manage failover, create distributed availability groups

### **Implement failover cluster instances**

- manage shared disks, configure cluster shared volumes

## **Exam 70-765: Provisioning SQL Databases**

### **Implement SQL in Azure (40–45%)**

#### **Deploy a Microsoft Azure SQL Database**

- choose a service tier, create servers and databases, create a sysadmin account, configure elastic pools

#### **Plan for SQL Server installation**

- plan for an IaaS or on-premises deployment, select the appropriate size for a virtual machine, plan storage pools based on performance requirements, evaluate best practices for installation, design a storage layout for a SQL Server virtual machine

#### **Deploy SQL Server instances**

- deploy a SQL Server instance in IaaS and on-premises, manually install SQL Server on an Azure Virtual Machine, provision an Azure Virtual Machine to host a SQL Server instance, automate the deployment of SQL Server databases, deploy SQL Server by using templates

#### **Deploy SQL Server databases to Azure virtual machines**

- migrate an on-premises SQL Server database to an Azure virtual machine, generate benchmark data for performance needs, perform performance tuning on Azure IaaS, support availability sets in Azure

### **Manage databases and instances (30-35%)**

#### **Configure secure access to Microsoft Azure SQL Databases**

- configure firewall rules, configure Always Encrypted for Azure SQL Database, configure cell-level encryption, configure dynamic data masking, configure transparent data encryption (TDE)

### **Configure SQL Server performance settings**

- configure database performance settings, configure max server memory, configure the database scope, configure operators and alerts

### **Manage SQL Server instances**

- create databases, manage files and file groups, manage system database files, configure tempdb

## **Manage Storage (30–35%)**

### **Manage SQL Storage**

- manage SMB file shares, manage stretch databases, configure Azure storage, change service tiers, review wait statistics, manage storage pools, recover from failed storage

### **Perform database maintenance**

- monitor DMVs, maintain indexes, automate maintenance tasks, update statistics, verify database integrity, recover from database corruption