

# Microsoft Certified: Azure Database Administrator Associate – 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).

## Plan and Implement Data Platform Resources

### Deploy resources by using manual methods

- deploy database offerings on selected platforms
- configure customized deployment templates
- apply patches and updates for hybrid and IaaS deployment

### Recommend an appropriate database offering based on specific requirements

- evaluate requirements for the deployment
- evaluate the functional benefits/impact of possible database offerings
- evaluate the scalability of the possible database offering
- evaluate the HA/DR of the possible database offering
- evaluate the security aspects of the possible database offering

### Configure resources for scale and performance

- configure Azure SQL database/elastic pools for scale and performance
- configure Azure SQL managed instances for scale and performance
- configure SQL Server in Azure VMs for scale and performance
- calculate resource requirements
- evaluate database partitioning techniques, such as database sharding

### Evaluate a strategy for moving to Azure

- evaluate requirements for the migration
- evaluate offline or online migration strategies
- evaluate requirements for the upgrade
- evaluate offline or online upgrade strategies

### Implement a migration or upgrade strategy for moving to Azure

- implement an online migration strategy
- implement an offline migration strategy
- implement an online upgrade strategy
- implement an offline upgrade strategy

## **Implement a Secure Environment**

### **Configure database authentication by using platform and database tools**

- configure Azure AD authentication
- create users from Azure AD identities
- configure security principals

### **Configure database authorization by using platform and database tools**

- configure database and object-level permissions using graphical tools
- apply principle of least privilege for all securables

### **Implement security for data at rest**

- implement Transparent Data Encryption (TDE)
- implement object-level encryption
- implement Dynamic Data Masking
- implement Azure Key Vault and disk encryption for Azure VMs

### **Implement security for data in transit**

- configure SQL DB and database-level firewall rules
- implement Always Encrypted
- configure Azure Data Gateway

### **Implement compliance controls for sensitive data**

- apply a data classification strategy
- configure server and database audits
- implement data change tracking
- perform vulnerability assessment

## **Monitor and Optimize Operational Resources**

### **Monitor activity and performance**

- prepare an operational performance baseline
- determine sources for performance metrics
- interpret performance metrics

- assess database performance by using Azure SQL Database Intelligent Performance
- configure and monitor activity and performance at the infrastructure, server, service, and database levels

### **Implement performance-related maintenance tasks**

- implement index maintenance tasks
- implement statistics maintenance tasks
- configure database auto-tuning
- automate database maintenance tasks
  - Azure SQL agent jobs, Azure automation, SQL server agent jobs
- manage storage capacity

### **Identify performance-related issues**

- configure Query Store to collect performance data
- identify sessions that cause blocking
- assess growth/fragmentation of databases and logs
- assess performance-related database configuration parameters
  - including AutoClose, AutoShrink, AutoGrowth

### **Configure resources for optimal performance**

- configure storage and infrastructure resources
  - optimize IOPS, throughput, and latency
  - optimize tempdb performance
  - optimize data and log files for performance
- configure server and service account settings for performance
- configure Resource Governor for performance

### **Configure a user database for optimal performance**

- implement database-scoped configuration
- configure compute resources for scaling
- configure Intelligent Query Processing (IQP)

## **Optimize Query Performance**

### **Review query plans**

- determine the appropriate type of execution plan
  - live Query Statistics, Actual Execution Plan, Estimated Execution Plan, Showplan
- identify problem areas in execution plans
- extract query plans from the Query Store

## **Evaluate performance improvements**

- determine the appropriate Dynamic Management Views (DMVs) to gather query performance information
- identify performance issues using DMVs
- identify and implement index changes for queries
- recommend query construct modifications based on resource usage
- assess the use of hints for query performance

## **Review database table and index design**

- identify data quality issues with duplication of data
- identify normal form of database
- assess index design for performance
- validate data types defined for columns
- recommend table and index storage including filegroups
- evaluate table partitioning strategy
- evaluate the use of compression for tables and indexes

## **Perform Automation of Tasks**

### **Create scheduled tasks**

- manage schedules for regular maintenance jobs
- configure multi-server automation
- configure notifications for task success/failure/non-completion

### **Evaluate and implement an alert and notification strategy**

- create event notifications based on metrics
- create event notifications for Azure resources
- create alerts for server configuration changes
- create tasks that respond to event notifications

### **Manage and automate tasks in Azure**

- perform automated deployment methods for resources
- automate Backups
- automate performance tuning and patching
- implement policies by using automated evaluation modes

## **Plan and Implement a High Availability and Disaster Recovery (HADR) Environment**

## **Recommend an HADR strategy for a data platform solution**

- recommend HADR strategy based on RPO/RTO requirements
- evaluate HADR for hybrid deployments
- evaluate Azure-specific HADR solutions
- identify resources for HADR solutions

## **Test an HADR strategy by using platform, OS and database tools**

- test HA by using failover
- test DR by using failover or restore

## **Perform backup and restore a database by using database tools**

- perform a database backup with options
- perform a database restore with options
- perform a database restore to a point in time
- configure long-term backup retention

## **Configure DR by using platform and database tools**

- configure replication
- configure Azure Site Recovery for a database offering

## **Configure HA using platform, OS and database tools**

- create an Availability Group
- integrate a database into an Availability Group
- configure quorum options for a Windows Server Failover Cluster
- configure an Availability Group listener

## **Perform Administration by Using T-SQL**

### **Examine system health**

- evaluate database health using DMVs
- evaluate server health using DMVs
- perform database consistency checks by using DBCC

### **Monitor database configuration by using T-SQL**

- assess proper database autogrowth configuration
- report on database free space
- review database configuration options

## **Perform backup and restore a database by using T-SQL**

- prepare databases for AlwaysOn Availability Groups
- perform transaction log backup
- perform restore of user databases
- perform database backups with options

## **Manage authentication by using T-SQL**

- manage certificates
- manage security principals

## **Manage authorization by using T-SQL**

- configure permissions for users to access database objects
- configure permissions by using custom roles