# Administering Relational Databases on Microsoft Azure Study Guide Exam DP-300



#### **CHAPTER 1 AZURE FUNDAMENTALS AND CONCEPTS**

**CLOUD COMPUTING CONCEPTS** 

CLOUD COMPUTING MODELS

**CLOUD COMPUTING SERVICES TYPES** 

AZURE ARCHITECTURAL COMPONENTS

Azure Compute Service

Azure Network Services

Azure Storage Services

SUMMARY

#### **CHAPTER 2 EXPLORE AZURE DATA PLATFORM ROLES**

Azure Data Engineer

AZURE DATABASE ADMINISTRATOR

Azure Data Analyst

Azure Data Scientist

Azure Artificial Intelligence Engineer



ON-PREMISE DATABASE ADMINISTRATOR

How to move to Azure Database Administrator role

MIGRATE TO THE CLOUD

UNDERSTAND THE TCO (TOTAL COST OF OWNERSHIP) AND ROI (RETURN ON

**INVESTMENT**)

**SUMMARY** 

#### **CHAPTER 3 AZURE DATABASE PLATFORM CHOICES IN AZURE**

Azure database services

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## CHAPTER 4 PLAN AND IMPLEMENT DATA PLATFORMS RESOURCES IN AZURE

EXPLAIN IAAS OPTIONS FOR DEPLOYING SQL SERVER IN AZURE

DEPLOY SQL SERVER ON AZURE VM

**SQL** Server Licensing models

VIRTUAL MACHINE FAMILIES

PROVISION AND DEPLOY SQL SERVER TO AZURE VIRTUAL MACHINES

SQL Server to SQL Server on Azure VMs migrations

PAAS OPTIONS FOR DEPLOYING SQL SERVER IN AZURE

LAB 2: DEPLOY A SINGLE SQL DATABASE

LAB 3: DEPLOYING AN AZURE SQL DATABASE VIA POWERSHELL/CLI

LAB 4: DEPLOYING AZURE SQL DATABASE USING AZURE RESOURCE MANAGER

**TEMPLATES** 

**SQL** ELASTIC POOLS

Lab 5: Deploy an elastic pool for Azure SQL Database

SQL MANAGED INSTANCE

DEPLOY MARIADB, MYSQL, AND POSTGRESQL ON AZURE

Lab 6: Create an Azure Database for the MariaDB server by using the



Azure Portal

Lab 7: Deploy a PostgreSQL database server to Azure

**SUMMARY** 

### CHAPTER 5 IMPLEMENT SECURE DATA PLATFORM ENVIRONMENT IN AZURE.

SQL Server Authentication Methods

CONFIGURE AZURE AD AUTHENTICATION

CONFIGURE SECURITY PRINCIPALS

CONFIGURE DATABASE AUTHORIZATION

CONFIGURE DATABASE AND OBJECT-LEVEL PERMISSIONS

**OWNERSHIP CHAINING** 

SWITCH THE EXECUTION CONTEXT

Apply the principle of least privilege for all securable

IMPLEMENT SECURITY FOR DATA AT REST

IMPLEMENT OBJECT-LEVEL ENCRYPTION

IMPLEMENT DYNAMIC DATA MASKING

Configure server and database-level firewall rules

**Row-Level Security** 

APPLY A DATA CLASSIFICATION STRATEGY

**ADVANCED THREAT PROTECTION** 

**CONFIGURE SERVER AND DATABASE AUDITS** 

IMPLEMENT DATA CHANGE TRACKING

PERFORM A VULNERABILITY ASSESSMENT

SUMMARY

## CHAPTER 6 MONITOR AND OPTIMIZE AZURE DATA PLATFORM RESOURCES

MONITORING AZURE SQL DATABASE AND AZURE SQL MANAGED INSTANCES



VIEW DATABASE DATA STORAGE FOR AZURE SQL DATABASE

ALERT RULES

**DIAGNOSTIC SETTINGS** 

QUERY PERFORMANCE INSIGHT

## CHAPTER 7 MONITORING AZURE RESOURCES USING THE AZURE MONITOR

MONITOR AZURE SQL DATABASE USING AZURE MONITOR

Azure SQL Analytics

**SQL** DATABASE VIEW

**SQL Managed Instance view** 

**INTELLIGENT INSIGHTS REPORT** 

**ELASTIC POOLS AND DATABASE REPORTS** 

**QUERY REPORTS** 

VIEW AZURE SQL DATABASE LOG ANALYTICS DATA USING POWER BI

EXTENDED EVENTS IN AZURE SQL DATABASE

SYSTEM HEALTH EXTENDED EVENT SESSION IN AZURE SQL DATABASE

Create an extended event to capture update statement

CAPTURE DEADLOCK INFORMATION USING THE EXTENDED EVENT

DESCRIBE AUTOMATIC TUNING

OPTIMIZE AZURE SQL SERVER ON VM

SUMMARY

#### **CHAPTER 8 OPTIMIZE QUERY PERFORMANCE IN SQL SERVER**

**EXECUTION PLANS** 

**Q**UERY LIFECYCLE

DIFFERENT FORMAT AND TYPES OF THE QUERY EXECUTION PLAN

<u>IDENTIFY PROBLEM AREAS IN EXECUTION PLANS</u>

PARAMETER SNIFFING

COLUMNSTORE INDEX

TABLE PARTITIONING

In-Memory OLTP in Azure SQL Database and Managed instances

Lab 9: Identify issues with a database design

DYNAMIC MANAGEMENT VIEWS AND FUNCTIONS FOR PERFORMANCE MONITORING

WAIT STATISTICS

AZURE SQL INDEXES AND STATISTICS MAINTENANCE

Monitoring performance by using the Query Store

Lab 10: Use covering index for improving query execution plan

MAX DEGREE OF PARALLELISM

Lab 11: Use Query Store feature to resolve the Performance issue

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#### **CHAPTER 9 PERFORM AUTOMATION OF TASKS**

AZURE CLOUD SHELL

Azure CLI overview

Azure PowerShell

Why does PowerShell cmdlets so easy to use?

THE HISTORY OF POWERSHELL

Az and Az CLI commands

SUPPORTED PLATFORMS

DIFFERENCES BETWEEN AZURE POWERSHELL AND AZURE CLI

AZURE AUTOMATION ACCOUNT

LINKED SERVER TO RUN T-SOL ON AZURE SOL DATABASE

Azure Elastic Jobs

CREATE SCHEDULED JOBS USING LOGIC APP

USE-CASE: CREATE A WORKFLOW TO LOAD THE DATA BY EXECUTING SP USING

LOGIC APPS.

Provisioning an Azure SQL Server and SQL Database Using Azure

**POWER SHELL** 

Prepare the deployment code

Azure Resource Manager Templates

SCHEDULE JOBS WITH SQL SERVER AGENT

Multi-Server Automation

CONFIGURE NOTIFICATIONS FOR TASK SUCCESS/FAILURE/NON-COMPLETION

USE-CASE: HOW TO SET UP AN ALERT IN SQL SERVER AGENT JOBS

RUN POWERSHELL SCRIPT STEPS IN SQL SERVER AGENT

Prerequisite:

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## CHAPTER 10 PLAN AND IMPLEMENT HIGH AVAILABILITY AND DISASTER RECOVERY ENVIRONMENTS IN AZURE

RECOVERY TIME OBJECTIVE (RTO) AND RECOVERY POINT OBJECTIVE (RPO)

EXPLORE HIGH AVAILABILITY AND DISASTER RECOVERY OPTIONS

SQL Server HADR Features for Azure Virtual Machine

WINDOWS FAILOVER CLUSTERING

SQL Server Always On Availability Groups

EXPLORE THE HIGH AVAILABILITY AND DISASTER RECOVERY SOLUTION FOR IAAS

SINGLE REGION SQL SERVER ALWAYS ON AVAILABILITY GROUP

Hybrid SQL Server Always On availability group

DISTRIBUTED AVAILABILITY GROUP

DISASTER RECOVERY USING LOG SHIPPING

Azure Site Recovery

PAAS DEPLOYMENTS HIGH AVAILABILITY AND DISASTER RECOVERY OPTIONS

DIFFERENCE BETWEEN ACTIVE-GEO REPLICATION AND AUTO-FAILOVER GROUPS

BACKUP AND RESTORE DATABASES

Lab 12: Configure an Azure SQL Database Geo-Replication using Azure Portal

Lab 13: Configure an Azure SQL Database auto-failover groups using Azure Portal

Lab 14: Configure an Azure SQL Database geo-replication using Azure CLI

Lab 15: Configure auto-failover group using Azure CLI

Lab 15: Backup database to URL

Lab 16: Configure automatic backup V2 for existing VM

LAB 17: CONFIGURE SQL SERVER BACKUP IN AZURE VMS

LAB 18: CONFIGURE LTR POLICY FOR AZURE SQL DATABASE USING AZURE CLI SUMMARY

## CHAPTER 11 PERFORM ADMINISTRATION USING T-SQL AND POWERSHELL.

OVERVIEW OF AZURE SQL DATABASE

CREATE A DATABASE IN AZURE SQL USING T-SQL

CREATE A DATABASE WITH THE OPTIONS

CREATE AN ELASTIC POOL DATABASE

COPY AZURE SQL DATABASE

CHANGE THE SERVICE TIER USING T-SQL

PERFORMANCE MONITORING USING EXTENDED EVENTS T-SOL

DYNAMIC MANAGED VIEWS IN AZURE SQL

How to determine the databases with compute utilization over 75% last days

How to measure resource consumption of a database using

SYS.DM DB RESOURCE STATS

How to configure automatic tuning using T-SQL

How to Enable, Modify and Disable change tracking

How to recover the deleted Azure SOL Databases

Lab 19: How to protect the accidental deletes of logical Azure SQL

SERVER?

LAB 20: CONFIGURE LTR (LONG TERM RETENTION) FOR AZURE SQL SERVER

How to view backups using Azure PowerShell

Manage Security using T-SQL

ACCELERATED DATABASE RECOVERY (ADR

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#### **CHAPTER 12 UNIFIED AZURE SQL MANAGEMENT**

AUTOMATIC SQL VM RESOURCE PROVIDER REGISTRATION

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# CHAPTER 13 SQL WORKLOAD MIGRATION TO MICROSOFT AZURE

**PLANNING** 

MIGRATION TOOLS

MICROSOFT ASSESSMENT AND PLANNING TOOLKIT

Data Migration Assistant (DMA)

Azure Migrate Service

MIGRATE TO A SQL SERVER INSTANCE ON AN AZURE VM

MIGRATE TO AN AZURE SQL DATABASE

MIGRATE TO AN AZURE SQL DATABASE MANAGED INSTANCE

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# CHAPTER 14 PRACTICE TESTS WITH DIRECT AND SCENARIO RELATED QUESTIONS

CERTIFICATE CANDIDATE

STUDY GUIDELINES

#### CHAPTER 15 Q&A

WHAT IS THE NEXT STEP