



# Transitioning from SQL to Azure Data Certification





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# Javier Villegas

IT Director – Data and BI at Mediterranean Shipping Company

Involved with the SQL Server since early versions. Azure SQL

Specialization in SQL Server Administration, Performance Tuning and High Availability

Microsoft MVP Data Platform

Microsoft Certified Trainer (MCT)

Technical Speaker

SQL PASS, 24 HOP, SQL Saturdays , PASS Marathon and PASS Virtual Groups,

vOpen, Microsoft AI+ Tour, GroupBy and DataPlatformGeeks



PASS  
**SQL ARGENTINA**



Azure SQL

# History

- Microsoft Certified Professional - 2003
- Microsoft Certified Professional - 2012
- Microsoft Certified Technology Specialist: SQL Server 2005 - 2007
- Microsoft Certified Technology Specialist: SQL Server 2008, Implementation & Maintenance - 2009
- Microsoft Certified: Azure Data Fundamentals (DP-900) – 2020
- Microsoft Certified: Administering Relational Databases on Microsoft Azure (DP-300) - 2020
- Microsoft Certified Trainer – 2020

# Microsoft Certifications

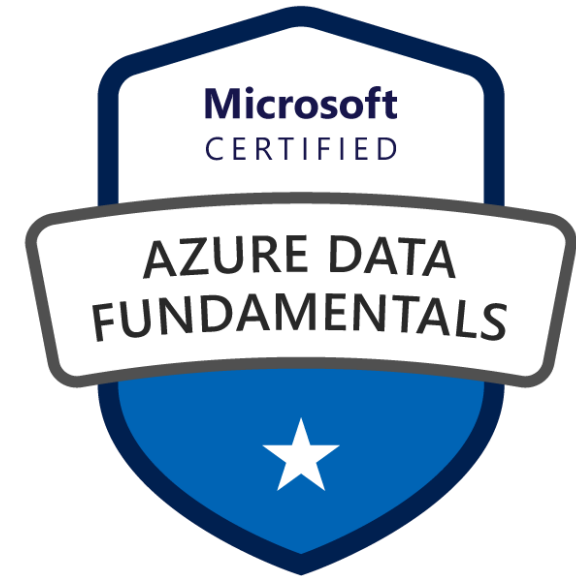
Certification History	Achievement Date
Microsoft® Certified Technology Specialist: SQL Server 2005 Certification Number: B876-1094	February 17, 2007
Microsoft Certified Professional: Microsoft Certified Professional Certification Number: B876-1087	May 14, 2003

# Microsoft Certifications

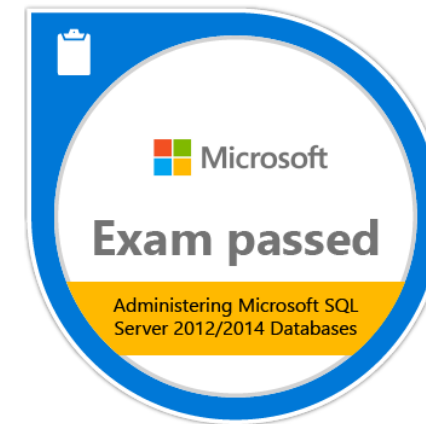
Exams		Date Completed
DP-300	Administering Relational Databases on Microsoft Azure	August 13, 2020
DP-900	Microsoft Azure Data Fundamentals	July 10, 2020
764	Administering a SQL Database Infrastructure	November 10, 2016
462	Administering Microsoft SQL Server 2012/2014 Databases	April 10, 2012
432	Microsoft SQL Server 2008, Implementation and Maintenance	March 30, 2009
431	TS: Microsoft SQL Server™ 2005 - Implementation and Maintenance	February 17, 2007
228	Installing, Configuring, and Administering Microsoft SQL Server™ 2000 Enterprise Edition	May 14, 2003

# Microsoft Certifications

Active Certifications		Achievement Date	
Trainer: MCT Enrollment Certification Number: H506-7383		September 3, 2020	
Microsoft Certified: Azure Database Administrator Associate Certification Number: H490-8290		<div>Valid until August 13, 2022</div> August 13, 2020	
Microsoft Certified: Azure Data Fundamentals Certification Number: H485-8776		July 10, 2020	
Microsoft Certified Professional: Microsoft Certified Professional Certification Number: E071-9518		April 16, 2012	
Microsoft® Certified Technology Specialist: SQL Server 2008, Implementation and Maintenance Certification Number: B876-1105		March 30, 2009	
Microsoft Certified Trainer History		Active From	To
MCT History		September 03, 2020	September 3, 2021



Exam 764: Administering a Microsoft SQL Database Infrastructure



Exam 462: Administering Microsoft SQL Server 2012/2014 Databases



# Exam 70-764: Administering a SQL Database Infrastructure



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

This exam retired on January 31, 2021. For currently available options, please refer to the [Browse Certifications and Exams page](#).

This exam is intended for database professionals who perform installation, maintenance, and configuration tasks. Other responsibilities include setting up database systems, making sure those systems operate efficiently, and regularly storing, backing up, and securing data from unauthorized access.

Part of the requirements for: [MCSA: Microsoft Dynamics 365 for Operations](#), [MCSA: SQL 2016 Database Administration](#)

Related exams: none

Important: [See details](#)

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# Exam 70-764: Administering a SQL Database Infrastructure

## **Audience Profile**

This exam is intended for database professionals who perform installation, maintenance, and configuration tasks. Other responsibilities include setting up database systems, making sure those systems operate efficiently, and regularly storing, backing up, and securing data from unauthorized access.

## **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

# Exam 70-764: Administering a SQL Database Infrastructure

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# Exam 70-764: Administering a SQL Database Infrastructure

## **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

# Exam 70-764: Administering a SQL Database Infrastructure

## **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

# Exam 70-764: Administering a SQL Database Infrastructure

(CONT)

## **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



# Exam 70-764: Administering a SQL Database Infrastructure

## **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

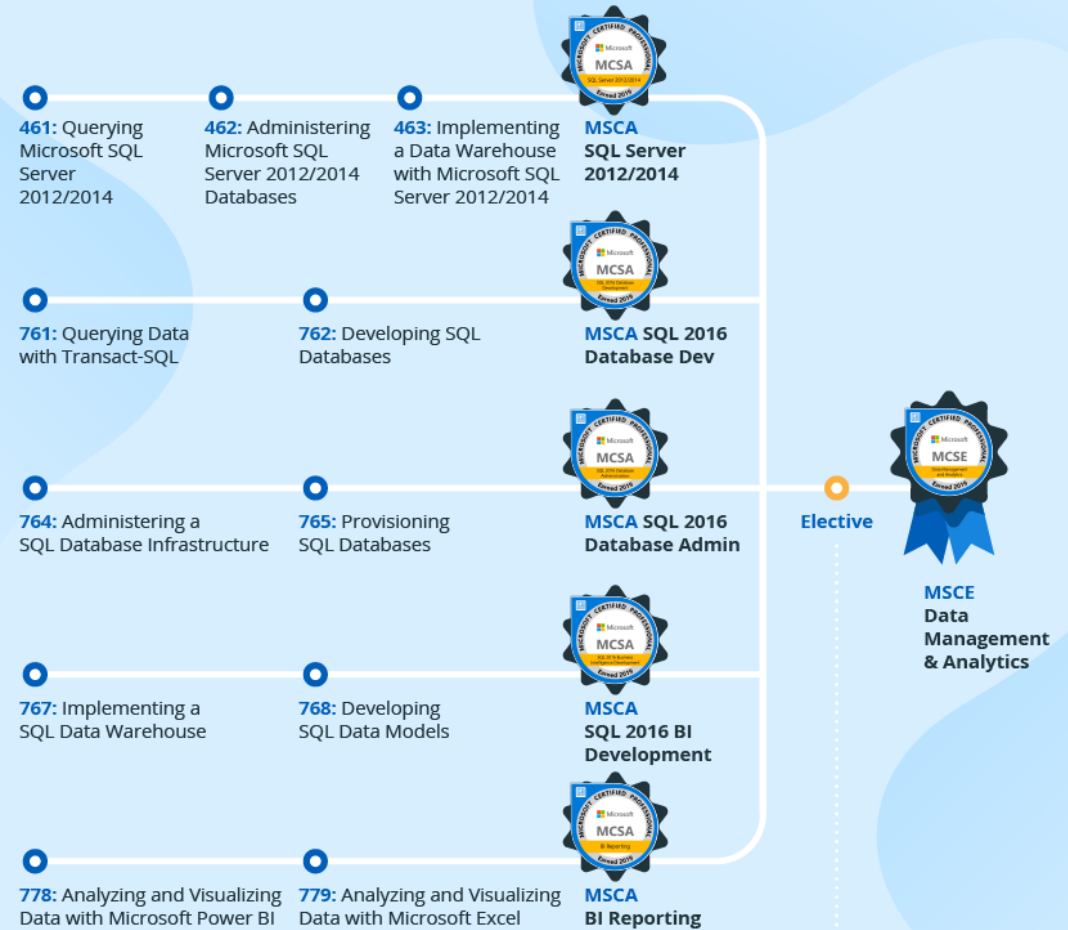
### **Implement failover cluster instances**

- manage shared disks, configure cluster shared volumes



# SQL Certification Path

## Microsoft Business Intelligence Certification Paths



# Azure Data Certification Path



# Azure Data Certification Path



# Exam DP-300: Administering Relational Databases on Microsoft Azure



## Exam DP-300: Administering Relational Databases on Microsoft Azure

The content of this exam was updated on January 27, 2021. Please download the skills measured document below to see what changed.

Candidates for this exam are database administrators and data management specialists that manage on-premises and cloud relational databases built with Microsoft SQL Server and Microsoft Azure Data Services.

The Azure Database Administrator implements and manages the operational aspects of cloud-native and hybrid data platform solutions built on Azure Data Services and SQL Server. The Azure Database Administrator uses a variety of methods and tools to perform day-to-day operations, including applying knowledge of using T-SQL for administrative management purposes.

This role is responsible for management, availability, security and performance monitoring and optimization of modern relational database solutions. This role works with the Azure Data Engineer role to manage operational aspects of data platform solutions.

Candidates for this role should understand all concepts covered in [Exam DP-900: Microsoft Azure Data Fundamentals](#).

Part of the requirements for: [Microsoft Certified: Azure Database Administrator Associate](#)

Related exams: none

Important: [See details](#)

[Go to Certification Dashboard](#)

# Exam DP-900: Microsoft Azure Data Fundamentals



## Exam DP-900: Microsoft Azure Data Fundamentals

The content of this exam **will be updated on April 23, 2021**. Please download the skills measured document below to see what will be changing.

Candidates for this exam should have foundational knowledge of core data concepts and how they are implemented using Microsoft Azure data services.

This exam is intended for candidates beginning to work with data in the cloud.

Candidates should be familiar with the concepts of relational and non-relational data, and different types of data workloads such as transactional or analytical.

Azure Data Fundamentals can be used to prepare for other Azure role-based certifications like Azure Database Administrator Associate or Azure Data Engineer Associate, but it's not a prerequisite for any of them.

Part of the requirements for: [Microsoft Certified: Azure Data Fundamentals](#)

Related exams: none

Important: [See details](#)

[Go to Certification Dashboard](#) ↗

# Microsoft Certified: Azure Data Engineer Associate



## Microsoft Certified: Azure Data Engineer Associate

**EXAM DP-203 IS REPLACING EXAMS DP-200 AND DP-201. DP-200 and DP-201 will retire on June 30, 2021.**

A candidate for the Azure Data Engineer Associate certification should have subject matter expertise integrating, transforming, and consolidating data from various structured and unstructured data systems into structures that are suitable for building analytics solutions.

Responsibilities for this role include helping stakeholders understand the data through exploration, building and maintaining secure and compliant data processing pipelines by using different tools and techniques. This professional uses various Azure data services and languages to store and produce cleansed and enhanced datasets for analysis.

An Azure Data Engineer also helps ensure that data pipelines and data stores are high-performing, efficient, organized, and reliable, given a specific set of business requirements and constraints. This professional deals with unanticipated issues swiftly and minimizes data loss. An Azure Data Engineer also designs, implements, monitors, and optimizes data platforms to meet the data pipeline needs.

A candidate for this certification must have solid knowledge of data processing languages, such as SQL, Python, or Scala, and they need to understand parallel processing and data architecture patterns.

**You will earn this certification if you complete one of the following options:**

- Pass [DP-200](#) and [DP-201](#) (retiring on June 30, 2021) or
- Pass [DP-203](#) (beta released February 23, 2021)

**Job role:** Data Engineer

**Required exams:** [DP-203](#)

**Important:** [See details](#)

[Go to Certification Dashboard](#) ↗

# Exam DP-300: Administering Relational Databases on Microsoft Azure

## Plan and Implement Data Platform Resources (15-20%)

### 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

<https://cutt.ly/lc1LxJF>





# Exam DP-300: Administering Relational Databases on Microsoft Azure

## Plan and Implement Data Platform Resources (15-20%)

### 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





# Exam DP-300: Administering Relational Databases on Microsoft Azure

## Implement a Secure Environment (15-20%)

### 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

<https://cutt.ly/lc1LxJF>



# Exam DP-300: Administering Relational Databases on Microsoft Azure

## Implement a Secure Environment (15-20%)

### 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



# Exam DP-300: Administering Relational Databases on Microsoft Azure

## Monitor and Optimize Operational Resources (15-20%)

### 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

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# Exam DP-300: Administering Relational Databases on Microsoft Azure

## Monitor and Optimize Operational Resources (15-20%)

### 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)

<https://cutt.ly/lc1LxJF>



# Exam DP-300: Administering Relational Databases on Microsoft Azure

## Optimize Query Performance (5-10%)

### 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

<https://cutt.ly/lc1LxJF>



# Exam DP-300: Administering Relational Databases on Microsoft Azure

## Perform Automation of Tasks (10-15%)

### 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

<https://cutt.ly/lc1LxJF>



# Exam DP-300: Administering Relational Databases on Microsoft Azure

## Plan and Implement a High Availability and Disaster Recovery (HADR) Environment (15-20%)

### **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

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# Exam DP-300: Administering Relational Databases on Microsoft Azure

## Plan and Implement a High Availability and Disaster Recovery (HADR) Environment (15-20%)

### 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





# Exam DP-300: Administering Relational Databases on Microsoft Azure

## Perform Administration by Using T-SQL (10-15%)

### 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



# Exam DP-300: Administering Relational Databases on Microsoft Azure

## Perform Administration by Using T-SQL (10-15%)

### 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



# Exam DP-300: Administering Relational Databases on Microsoft Azure

## Summary

Plan and Implement Data Platform Resources (15-20%)

Implement a Secure Environment (15-20%)

Monitor and Optimize Operational Resources (15-20%)

Optimize Query Performance (5-10%)

Perform Automation of Tasks (10-15%)

Plan and Implement a High Availability and Disaster Recovery (HADR) Environment (15-20%)

Perform Administration by Using T-SQL (10-15%)

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Summary

**Working Experience**

**Training**

**Learning materials**

**Practice**

**Test**

# How to Learn



<https://docs.microsoft.com/en-us/learn/>

<https://docs.microsoft.com/en-us/welcome-to-docs>

<https://docs.microsoft.com/en-us/learn/tv/>

# How to Learn



<https://developer.microsoft.com/en-us/offers/30-days-to-learn-it>

# How to Learn

## Azure SQL

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[https://www.youtube.com/channel/UCNsev6sULZ\\_Zp06VL7uktuA](https://www.youtube.com/channel/UCNsev6sULZ_Zp06VL7uktuA)

# How to Learn

```
DATA() {  
EXPOSED;  
}
```



# Learn more

## What's new in SQL Server 2019

QR: <https://cutt.ly/khnFloC>



# Training

## Azure SQL Fundamentals

QR: <https://cutt.ly/ngnX9ob>



# Study Guide

DP-300

<https://cutt.ly/lc1LxJF>



# Transitioning from SQL to Azure Data Certification



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