DP-900 Study Guide

Microsoft Azure Data Fundamentals

PURPOSE

The following resources have been assembled to help you prepare for the DP-900 Microsoft Azure Data Fundamentals learning track during Microsoft Certification Week.

Use this guide to understand what knowledge is needed to complete the exam and as a learning tool to help you understand areas where you feel you need additional training. It is not required that you leverage all the resources in this guide to participate in Microsoft Certification Week.

AUDIENCE

All Pax8 Partners

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DP-900: Exam Resources

Audience Profile for the Exam
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.

Preparing with an Azure Subscription
It is highly recommended when preparing for a Microsoft exam, that you have had some level of hands- on experience with the services within the objectives. Microsoft courses have a GitHub repository for labs that are recommended and available to the public.
- Azure Free Trial: [Create your Azure free account today | Microsoft Azure](#).
- Suggested Lab Guides: [GitHub - MicrosoftLearning/DP-900T00A-Azure-Data-Fundamentals: DP-](#) [900 ILT lab instructions](#)

All lab guides can be found at this link: https://github.com/MicrosoftLearning

Creating an Azure free subscription
[Create your Azure free account today | Microsoft Azure](#)

Exam Objectives
The following are the learning objectives for the exam. In line with each objective are links to Microsoft documentation around the specific concept or service. In addition to the documentation, there are also online courses from Microsoft Learn and the Microsoft Partner virtual training series available for additional learning resources.

Objective: Describe Core Data Concepts (15-20%)

Describe Types of Core Data Workloads
- Describe batch data
  https://docs.microsoft.com/en-us/azure/architecture/data-guide/technology- [choices/batch-processing](#)
- Describe streaming data
  https://docs.microsoft.com/en-us/learn/paths/implement-data-streaming-with-asa/
- Describe the difference between batch and streaming data
  https://thenewstack.io/the-big-data-debate-batch-processing-vs-streaming-processing/
- Describe the characteristics of relational data
  https://binaryterms.com/relational-data-model.html

Describe Data Analytics Core Concepts
- Describe data visualization (e.g., visualization, reporting, business intelligence
  https://www.tableau.com/learn/articles/data-visualization
- Describe basic chart types such as bar charts and pie charts
  https://chartio.com/learn/charts/how-to-choose-pie-chart-vs-bar-chart/

- Describe analytics techniques (e.g., descriptive, diagnostic, predictive, prescriptive, cognitive)
  https://www.investopedia.com/terms/d/data-analytics.asp#:~:text=Data%20analytics%20is%20the%20science,raw%20data%20for%20human%20consumption.
- Describe ELT and ETL processing
  https://www.xplenty.com/blog/etl-vs-elt/#:~:text=ETL%20is%20Extract%2C%20Transform%20and,No%20data%20staging%20is%20needed.
- Describe the concepts of data processing
  https://www.mbaknol.com/management-information-systems/concept-of-data-processing/

Objective: Describe How to Work with Relational Data on Azure (25-30%)

Describe Relational Data Workloads
- Identify the right data offering for a relational workload
  https://docs.microsoft.com/en-us/azure/architecture/guide/technology-choices/data-store-overview
- Describe relational data structures (e.g., tables, index, views)
  https://docs.microsoft.com/en-us/azure/architecture/guide/technology-choices/data-store-overview

Describe Relational Azure Data Services
- Describe and compare PaaS, IaaS, and SaaS delivery models
  https://www.nigelfrank.com/blog/iaas-vs-saas-vs-paas-a-guide-to-azure-cloud-service-types/
- Describe Azure SQL Database
  https://azure.microsoft.com/en-gb/services/sql-database/#product-overview
- Describe Azure Synapse Analytics
  https://azure.microsoft.com/en-gb/services/synapse-analytics/
- Describe SQL Server on Azure Virtual Machine
  https://azure.microsoft.com/en-gb/services/virtual-machines/sql-server/#overview
- Describe Azure Database for PostgreSQL, Azure Database for MariaDB, and Azure Database for MySQL
  https://azure.microsoft.com/en-us/services/postgresql/ https://azure.microsoft.com/en-us/services/mariadb/ https://azure.microsoft.com/en-gb/services/mysql/#product-overview
- Describe Azure SQL Managed Instance
  https://docs.microsoft.com/en-us/azure/azure-sql/managed-instance/sql-managed-instance-paas-overview

Identify Basic Management Tasks for Relational Data
- Describe provisioning and deployment of relational data services
  https://docs.microsoft.com/en-gb/azure/azure-sql/database/sql-database-paas-overview
- Describe method for deployment including ARM templates and Azure Portal
  https://docs.microsoft.com/en-us/azure/azure-sql/database/arm-templates-content-guide?tabs=single-database
- Identify data security components (e.g., firewall, authentication)
  https://docs.microsoft.com/en-us/azure/azure-sql/database/secure-database-tutorial
- Identify basic connectivity issues (e.g., accessing from on-premises, access with Azure VNets, access from Internet, authentication, firewalls)
  https://docs.microsoft.com/en-us/azure/azure-sql/database/troubleshoot-common-errors-issues
- Identify query tools (e.g., Azure Data Studio, SQL Server Management Studio, sqlcmd utility, etc.)
  https://docs.microsoft.com/en-us/azure/azure-sql/database/connect-query-ssms

Describe Query Techniques for Data Using SQL Language
- Compare DDL versus DML
  https://www.geeksforgeeks.org/difference-between-ddl-and-dml-in-dbms/
- Query relational data in PostgreSQL, MySQL, and Azure SQL Database
  https://azure.microsoft.com/en-gb/blog/fast-and-easy-dev-with-azure-db-for-mysql-and-azuredb-for-postgresql/

Objective: Describe How to Work with Non-Relational Data on Azure (25-30%)

Describe Non-Relational Data Workloads
- Describe the characteristics of non-relational data
  https://docs.microsoft.com/en-us/azure/architecture/data-guide/big-data/non- relational-data
- Describe the types of non-relational and NoSQL data
  https://docs.microsoft.com/en-us/azure/architecture/data-guide/big-data/non- relational-data
- Recommend the correct data store
- Determine when to use non-relational data
  https://www.pluralsight.com/blog/software-development/relational-non-relational- databases

Describe Non-Relational Data Offerings on Azure
- Identify Azure data services for non-relational workloads
  https://docs.microsoft.com/en-us/azure/architecture/guide/technology-choices/data- store-overview
- Describe Azure Cosmos DB APIs
  https://docs.microsoft.com/en-us/learn/modules/choose-api-for-cosmos-db/
- Describe Azure Table storage
  https://azure.microsoft.com/en-gb/services/storage/tables/
- Describe Azure Blob storage
  https://azure.microsoft.com/en-gb/services/storage/blobs/
- Describe Azure File storage
- https://azure.microsoft.com/en-gb/services/storage/files/

Identify Basic Management Tasks for Non-Relational Data
- Describe provisioning and deployment of non-relational data services
  https://www.edx.org/course/databases-in-azure
- Describe method for deployment including ARM templates and Azure Portal
  https://docs.microsoft.com/en-us/azure/cosmos-db/manage-table-with-resource- manager
- Identify data security components (e.g., firewall, authentication)
  https://docs.microsoft.com/en-us/azure/cosmos-db/database-security
- Identify basic connectivity issues (e.g., accessing from on-premises, access with Azure VNets, access from Internet, authentication, firewalls)
  https://docs.microsoft.com/en-us/azure/cosmos-db/troubleshoot-dot-net-sdk
- Identify management tools for non-relational data
  https://azure.microsoft.com/en-gb/overview/nosql-database/

Objective: Describe and Analytics Workload on Azure (25-30%)

Describe Analytics Workloads
- Describe transactional workloads
  https://docs.microsoft.com/en-us/azure/cosmos-db/analytical-store-introduction
- Describe the difference between a transactional and an analytics workload
- Describe the difference between batch and real time
- Describe data warehousing workloads
  https://azure.microsoft.com/en-gb/updates/workload-importance-for-azure-sql-data- warehouse-is-now-generally-available/
- Determine when a data warehouse solution is needed

Describe the Components of a Modern Data Warehouse
- Describe Azure data services for modern data warehousing such as Azure Data Lake, Azure Synapse Analytics, Azure Databricks, and Azure HDInsight
  https://azure.microsoft.com/en-gb/solutions/data-lake/
  https://azure.microsoft.com/en-gb/services/synapse-analytics/
  https://azure.microsoft.com/en-gb/services/databricks/ https://docs.microsoft.com/en- us/azure/hdinsight/

- Describe modern data warehousing architecture and workload

Describe Data Ingestion and Processing on Azure
- Describe common practices for data loading
https://techcommunity.microsoft.com/t5/datacat/azure-sql-data-warehouse-loading- patterns-and-strategies/ba-p/305456
- Describe the components of Azure Data Factory (e.g., pipeline, activities, etc.)
https://www.youtube.com/watch?v=UQpAZVrRrzs#:~:text=some%20of%20the%20high%2Dlevel,ultimate%20end%20product%20for%20consumption.
- Describe data processing options (e.g., HDI, Azure Databricks, Azure Synapse Analytics, Azure Data Factory)
https://docs.microsoft.com/en-us/azure/architecture/data-guide/technology- choices/data-storage

Describe Data Visualization in Microsoft PowerBI
- Describe the role of paginated reporting
https://docs.microsoft.com/en-us/power-bi/paginated-reports/paginated-reports- report-builder-power-bi
- Describe the role of interactive reports
- Describe the role of dashboards
https://docs.microsoft.com/en-us/power-bi/create-reports/service-dashboards
- Describe the workflow in Power BI
https://curbal.com/blog/lesson/power-bi-workflow

On-Demand Training from Microsoft Learn

New to the cloud? Azure fundamentals is a six-part series that teaches you basic cloud concepts, provides a streamlined overview of many Azure services, and guides you with hands-on exercises to deploy your very first services for free.

- Azure Fundamentals part 1: Describe core Azure Concepts
- Azure Fundamentals part 2: Describe core Azure Services
- Azure Fundamentals part 3: Describe core solutions and management tools on Azure
- Azure Fundamentals part 4: Describe general security and network security features
- Azure Fundamentals part 5: Describe identity, governance, privacy, and compliance features
- Azure Fundamentals part 6: Describe Azure cost management and service level agreements

Virtual Training Series

This online course will provide foundational level knowledge of cloud services and how those services are provided with Microsoft Azure. The course can be taken as an optional first step in learning about cloud services and Microsoft Azure, before taking further Microsoft Azure or Microsoft cloud services courses.

All Virtual Training Series: http://aka.ms/vts