

DP-3021: Configure and migrate to Azure Database for PostgreSQL

Course Code: DP-3021

Duration: 1 day

Instructor-led Training (ILT) | Virtual Instructor-led Training (VILT)

OVERVIEW

Azure Database for PostgreSQL is a Platform as a Service database service in the Microsoft cloud. It bases itself on the PostgreSQL open-source relational database and includes built-in high availability, automatic backup and restore, as well as comprehensive security features. The pay-as-you-go pricing model provides predictable performance and near-instant scaling. In this learning path, you learn the main features of PostgreSQL and how they work in Azure Database for PostgreSQL. You learn about the different Azure Database for PostgreSQL implementation options, and how to configure a server for your needs.

SKILLS COVERED

- Explore PostgreSQL architecture
- Understand client-server communication in PostgreSQL
- Understand PostgreSQL query processing
- Secure Azure Database for PostgreSQL
- Procedures and functions in PostgreSQL
- Understand write-ahead logging
- Configure and manage Azure Database for PostgreSQL
- Understand concurrency in PostgreSQL
- Tune queries in Azure Database for PostgreSQL
- Migrate to Azure Database for PostgreSQL flexible server

WHO SHOULD ATTEND?

- Database Administrator

PREREQUISITES

- Demonstrate an understanding of relational databases.
- Demonstrate an understanding of basic SQL.

MODULES

Module 1: Explore PostgreSQL architecture

PostgreSQL is an open-source relational database system that is available as an Azure service. In this module, you learn about the PostgreSQL architecture, and how to manage different aspects of Azure Database for PostgreSQL.

Learning objectives

After completing this module, you'll be able to:

- Describe the architecture of PostgreSQL.
- Describe the options for creating an Azure Database for PostgreSQL server.
- Understand PostgreSQL shared memory.

Prerequisites

- Demonstrate an understanding of relational databases.
- Demonstrate an understanding of basic SQL.

Module 2: Understand client-server communication in PostgreSQL

PostgreSQL is a client-server system, which allows many clients to connect to a central

server. In this module, you learn how PostgreSQL manages connections from clients, and look at some common PostgreSQL client tools.

Learning objectives

After completing this module, you'll be able to:

- Understand connection handling.
- Understand the PostgreSQL client tools.

Prerequisites

- Demonstrate an understanding of relational databases.
- Demonstrate an understanding of basic SQL.

Module 3: Understand PostgreSQL query processing

The Azure Database for PostgreSQL server receives SQL queries and returns the relevant results. Each SQL query goes through several stages in order to return the correct results as quickly as possible.

Learning objectives

After completing this module, you'll be able to:

- Identify the query processing components.
- Understand EXPLAIN.

Prerequisites

- Demonstrate an understanding of relational databases.
- Demonstrate an understanding of basic SQL.

Module 4: Secure Azure Database for PostgreSQL

Azure Database for PostgreSQL includes comprehensive security features including encryption, authentication, and granting permissions to database users. In this module, you learn about the security features of Azure Database for PostgreSQL.

Learning objectives

After completing this module, you'll be able to:

- Describe the security features of Azure Database for PostgreSQL.
- Create database users and grant permissions.
- Understand encryption in Azure Database for PostgreSQL.

Prerequisites

- Demonstrate an understanding of relational databases.
- Demonstrate an understanding of basic SQL.

Module 5: Procedures and functions in PostgreSQL

PostgreSQL supports stored procedures and functions to make SQL queries reusable. In this module, you learn how to create and run stored procedures and functions.

Learning objectives

After completing this module, you'll be able to:

- Create a stored procedure in Azure Database for PostgreSQL.
- Call a stored procedure in Azure Database for PostgreSQL.
- Create and use a function in Azure Database for PostgreSQL.

Prerequisites

- Demonstrate an understanding of relational databases.
- Demonstrate an understanding of basic SQL.

Module 6: Understand write-ahead logging

Azure Database for PostgreSQL is an ACID compliant database service. Write-ahead logging ensures changes are both atomic and durable. In this module, you learn how Azure Database for PostgreSQL implements write-ahead logging.

Learning objectives

After completing this module, you'll be able to:

- Describe write-ahead logging.
- Describe replication and logical decoding.

Prerequisites

- Demonstrate an understanding of relational databases.
- Demonstrate an understanding of basic SQL.

Module 7: Configure and manage Azure Database for PostgreSQL

Azure Database for PostgreSQL employs system catalogs and views to manage metadata efficiently. Understanding these can significantly enhance database performance and streamline the administration of PostgreSQL systems.

Learning objectives

After completing this module, you'll be able to:

- Describe system catalogs and system views in Azure Database for PostgreSQL.
- Investigate metadata in Azure Database for PostgreSQL.
- Explain the purpose of the vacuum process.
- Configure vacuum server parameters.

Prerequisites

- Demonstrate an understanding of relational databases.
- Demonstrate an understanding of basic SQL

Module 8: Understand concurrency in PostgreSQL

Azure Database for PostgreSQL is a multi-user relational database solution. The increase in users brings a risk of conflicts and so it is important to understand the concurrency systems that are in place.

Learning objectives

After completing this module, you'll be able to:

- Describe Multi-Version Content Control and snapshots in Azure Database for PostgreSQL.
- Describe isolation levels in Azure Database for PostgreSQL.
- Describe locking in Azure Database for PostgreSQL.

Prerequisites

- Demonstrate an understanding of relational databases.
- Demonstrate an understanding of basic SQL.

Module 9: Tune queries in Azure Database for PostgreSQL

Database management systems (DBMSs) need systems to understand the data and the queries that are running against this data. It's important to understand how performance tuning works and how you can assess performance metrics.

Learning objectives

After completing this module, you'll be able to:

- Describe statistics in Azure Database for PostgreSQL.
- Assess query performance with the Query Store.

Prerequisites

- Demonstrate an understanding of relational databases.
- Demonstrate an understanding of basic SQL.

Module 10: Migrate to Azure Database for PostgreSQL flexible server

Azure Database for PostgreSQL Flexible Server supports data migration from PostgreSQL servers. This module covers online and offline migration tools and methods, helping you choose the right approach for your scenario.

Learning objectives

After completing this module, you'll be able to:

- Understand the different online and offline migration options.
- Identify the different migration tools available.
- Select the appropriate migration tool for your specific scenario.

Prerequisites

- Demonstrate an understanding of relational databases.
- Demonstrate an understanding of basic SQL.

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