



To discuss this course and customizations:
Call: 434-509-5680 or Email: sales@cloudcontraptions.com

Learn Azure PostgreSQL Flexible Server: Build Scalable, Secure, and High-Performance Databases

Class Duration

21 hours of live training delivered over 3-5 days to accommodate your scheduling needs

Student Prerequisites

- No prior experience with PostgreSQL is necessary
- Students should have a basic understanding of SQL and relational databases

Target Audience

Software engineers, DBAs, data engineers, SREs, and cloud architects seeking results: deploy Azure PostgreSQL Flexible Server quickly, harden identity and network access, tune queries, automate HA/backup, scale cost-efficiently, meet compliance, and run low-downtime migrations with actionable observability.

Description

This course is designed for software engineers, database professionals, and cloud architects who want to build and operate scalable, secure, and high-performing databases using Azure Database for PostgreSQL Flexible Server. Participants will learn how to provision and manage PostgreSQL Flexible Server through both Azure Portal and CLI, configure high availability, and secure access with authentication, roles, and encryption.

You'll dive into performance tuning, observability with Azure-native tools, and integration with Power BI and Grafana. Real-world backup and restore practices, along with scalable resource management and zero-downtime migration strategies, make this course essential for teams modernizing data infrastructure on Azure.

Learning Outcomes

- Differentiate DBMS, RDBMS, and NoSQL options and map them to workload requirements; explain core SQL and PostgreSQL architecture.



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- Plan Azure foundations for PostgreSQL: subscriptions, regions, availability zones, resource groups, cost controls, and governance.
- Provision Azure Database for PostgreSQL Flexible Server via portal and Azure CLI, selecting version, workload, compute, storage, and performance tiers.
- Secure servers and data using Microsoft Entra ID, PostgreSQL roles, least-privilege grants, encryption in transit/at rest, SSL, firewalls, and Defender for Cloud.
- Administer servers and databases: start/stop, upgrades, networking, parameters (static/dynamic/read-only), tags, locks, and activity logs; connect via VS Code, psql, pgAdmin, and DBeaver.
- Implement backup and restore strategies: automated, manual, vaulted, geo-redundant; use pg_dump and pg_restore to validate recovery workflows.
- Scale with confidence: vertical and horizontal options, compute and storage scaling, read replicas, and near-zero downtime techniques.
- Monitor and optimize: use EXPLAIN and index tuning; instrument metrics, logs, alerts, and dashboards with Azure Monitor, Log Analytics, Grafana, Power BI, and Microsoft Fabric.

Training Materials

All students receive comprehensive courseware covering all topics in the course. Courseware is distributed via GitHub in the form of documentation and extensive code samples. Students practice the topics covered through challenging hands-on lab exercises. Students will need a free, personal GitHub account to access the courseware. Students are provided a cloud-based environment for all demonstrations and lab exercises.

Software Requirements

Students will need a free, personal GitHub account to access the courseware. Students are provided a cloud-based environment for all demonstrations and lab exercises.

Training Topics

Relational Databases

- Database Management Systems (DBMS)
- Relational Database Management Systems (RDBMS)
- Other Database Types (e.g. NoSQL)



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- SQL Language

PostgreSQL

- Overview
- PostgreSQL History
- Azure PostgreSQL History
- Use Cases
- Architecture
- On-Premise Options
- Cloud Options

Azure

- Overview
- Subscriptions
- Managing Costs
- Regions
- Availability Zones
- Resource Groups
- Cloud Shell
- Azure CLI
- Log Analytics Workspace
- Microsoft Fabric
- PostgreSQL Flexible Server

PostgreSQL Flexible Server

- Create PostgreSQL Flexible Server with the Portal
- Create PostgreSQL Flexible Server with the Azure CLI
- Region & Availability Zones
- Server Version
- Workload Type
- Compute Tier + Size
- Storage Type + Size
- Performance Tier
- High Availability
- Authentication
- Firewall Rules
- Explore Portal UI



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- Resource Locks
- Activity Log
- Tags

Manage Database Server

- Delete Database Server
- Stop/Start Database Server
- Reset Password
- Upgrade Server Version
- Network Access
- Server Parameters
- Static Parameters
- Dynamic Parameters
- Read-Only Parameters

Connect

- Connect with VS Code
- PSQL in Cloud Shell
- PSQL Locally
- PgAdmin
- DBeaver

Databases

- Create/Drop Databases using the Portal
- Create/Drop Databases using PSQL
- Create/Drop Databases using PgAdmin
- Create/Drop Databases using DBeaver

Security

- User Authentication Methods
- Microsoft Entra Id
- PostgreSQL Roles
- Manage Roles with SQL
- Granting and Revoking Privileges
- Data Encryption at Rest
- Data Encryption in Transit
- Secure TCP/IP Connections with SSL and SSH
- Microsoft Defender for Cloud



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- Identity

[Backup and Restore](#)

- Backups and Computer Tier
- Backups and Region/Zone
- Geo-redundancy
- Automated Backups
- Manual Backups
- Vaulted Backups
- `pg_dump` & `pg_restore`

[Scaling Resources](#)

- Scaling Options
- Scale Compute
- Scale Storage
- Vertical Scaling
- Horizontal Scaling
- Near-zero Downtime Scaling

[Replication and High Availability](#)

- Explore Replication
- Virtual Endpoints
- Read Replicas
- High Availability
- Same Zone
- Zone Redundant
- Automatic Failover
- Elastic Cluster
- Nodes

[Performance Tuning](#)

- Monitoring and Optimizing Queries with EXPLAIN
- Query Performance Insight
- Index tuning

[Observability & Diagnostics](#)

- Resource Visualizer
- Advisor Recommendations



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- Alerts
- Metrics
- Diagnostic Settings
- Streaming Logs
- Server Logs
- Power BI
- Azure Monitor
- Azure Log Analytics
- Azure Dashboards
- Graphana Integration
- Microsoft Fabric

Migration

- Migration Overview
- From Azure Database for PostgreSQL
- From Azure Virtual Machine
- From Amazon Aurora PostgreSQL
- From Amazon EC2
- From Amazon RDS for PostgreSQL
- From Google Cloud SQL for PostgreSQL
- From Google Compute Engine
- From On-premise Server
- Options: Validate & Migrate
- Mode: Offline & Online
- Runtime Server & Azure Networking