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Enterprise Database Migration with AWS RDS and Terraform

Migrating Oracle and Microsoft SQL Server to PostgreSQL — 2 Days

FA-0194 · 2 Days

DevOps, Cloud & Infrastructure · Data & Analytics

Introduction

Migrating an established Oracle or Microsoft SQL Server environment to PostgreSQL involves far more than copying tables and rows. Database structures, procedural languages, data types, transaction behaviour, proprietary functions, application dependencies, optimizer characteristics, and operational assumptions can all differ significantly between platforms.

Successful migration therefore begins with assessment and compatibility analysis before moving through schema conversion, code remediation, data transfer, synchronization, validation, performance stabilization, and controlled production cutover. Where AWS is part of the target architecture, these decisions must also account for Amazon RDS for PostgreSQL, Aurora PostgreSQL-Compatible Edition, AWS Database Migration Service, and modern schema-conversion workflows.

This intensive two-day course concentrates on the technical and operational decisions required to move Oracle and Microsoft SQL Server workloads to PostgreSQL while controlling downtime and migration risk. Oracle receives particular attention while SQL Server migration is incorporated where the conversion patterns and technologies differ.

The instructor has over 30 years of industry experience and will deliver real industry-demanded migration content rather than treating database conversion as a purely academic exercise. The emphasis is on techniques, tooling, architecture, and decision-making applicable to actual enterprise migration projects.

Learning outcomes

- Assess Oracle and SQL Server workloads for PostgreSQL migration
- Identify major architectural and compatibility differences
- Map schemas and data types to PostgreSQL equivalents
- Convert proprietary database objects and procedural code
- Use contemporary migration and schema-conversion tooling
- Understand AWS PostgreSQL migration architectures
- Design full-load and Change Data Capture migration strategies
- Validate migrated schemas, data, and application behaviour
- Address common post-migration performance differences
- Plan controlled cutover and rollback procedures

Prerequisites

- Experience with Oracle, SQL Server, or PostgreSQL
- Good understanding of SQL and relational database concepts
- Familiarity with stored procedures, indexes, constraints, and transactions
- Basic knowledge of PostgreSQL administration
- Basic AWS knowledge is beneficial for cloud migration topics

Target Audience

- Oracle and SQL Server Database Administrators
- PostgreSQL Database Administrators
- Database and Migration Engineers
- Solutions and Enterprise Architects
- Platform and Cloud Engineers
- Application Engineers involved in database modernization

Training outline

1. Migration Assessment and Planning

1. Source database discovery

2. Schema and dependency inventory
3. Workload and data-volume assessment
4. Compatibility analysis
5. Migration complexity and risk
6. Downtime and cutover requirements

2. Oracle and SQL Server to PostgreSQL Mapping

1. Database and schema architecture differences
2. Users, schemas, and ownership
3. Tablespaces and storage concepts
4. Sequences and identity columns
5. Synonyms and linked objects
6. Transaction and concurrency differences

3. Schema and Data Type Conversion

1. Tables and views
2. Primary and foreign keys
3. Indexes and constraints
4. Oracle data type mapping
5. SQL Server data type mapping
6. LOB and binary data
7. Date, timestamp, and timezone handling

4. Procedural Code and SQL Conversion

1. PL/SQL to PL/pgSQL
2. T-SQL to PostgreSQL
3. Procedures and functions
4. Oracle packages
5. Triggers
6. Exception and error handling
7. Built-in function conversion
8. Proprietary SQL syntax remediation

5. Migration Tools and AWS PostgreSQL

1. AWS DMS Schema Conversion
2. AWS Database Migration Service
3. Conversion assessment and action items
4. Ora2Pg
5. Native PostgreSQL migration utilities
6. Amazon RDS for PostgreSQL
7. Amazon Aurora PostgreSQL-Compatible Edition
8. AWS migration connectivity and security

6. Data Migration and Synchronization

1. Offline versus online migration
2. Full-load migration
3. Parallel data loading
4. Change Data Capture
5. Oracle CDC considerations
6. SQL Server CDC considerations
7. Replication latency and synchronization
8. Low-downtime migration strategy

7. Validation and Post-Migration Stabilization

1. Schema validation
2. Row-count and data reconciliation
3. Constraint verification
4. Business logic validation
5. Application compatibility
6. Execution plan differences
7. Statistics and indexing
8. Initial performance stabilization

8. Amazon RDS for PostgreSQL Deployment with Terraform

1. Terraform AWS provider configuration
2. RDS PostgreSQL deployment architecture

3. VPC, subnet groups, and security groups
4. RDS PostgreSQL instance configuration
5. Parameter and option configuration
6. Storage, backups, and Multi-AZ settings
7. Terraform plan, apply, and deployment validation
8. Terraform state and RDS lifecycle considerations

Disclaimer

This training outline is provided as an indicative framework for the intended scope and structure of the programme. Actual coverage, sequencing, depth, and emphasis may be adjusted by the trainer at his professional discretion without prior notice to reflect participant experience, organizational priorities, available training time, platform availability, technological developments, security requirements, and other considerations relevant to effective course delivery.

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