

SQL Server Admin: Always On, Replication & Log Shipping

Learn to configure and manage SQL Server high availability, replication, log shipping, and performance monitoring.

6 Days

48 HOURS

22

MODULES

119

TOPICS

COURSE OVERVIEW

This training program is designed to provide participants with a comprehensive understanding of advanced features and best practices in Microsoft SQL Server 2019. The course will cover high availability, disaster recovery, security, performance tuning, and monitoring strategies, equipping participants with the skills necessary to effectively manage and optimize SQL Server environments.

WHO THIS COURSE IS FOR

Database Administrators (DBAs)**SQL Server Developers****IT Professionals involved in SQL Server management****System Architects interested in high availability and disaster recovery**

PREREQUISITES

- Participants should have a basic understanding of SQL Server, including familiarity with SQL queries, database concepts, and fundamental administrative tasks.

LEARNING OBJECTIVES

- Configure Windows and SQL Server authentication modes
- Manage SQL Server roles and permissions using T-SQL
- Configure and monitor log shipping between servers
- Set up and troubleshoot database mirroring sessions
- Configure transactional and peer to peer replication
- Build Always On availability groups and failover clustering
- Perform manual and automatic failover across topologies
- Analyse query performance using SQL Profiler and DTA

22 Modules, 119 Topics

01

Selecting Authentication or Mixed-Mode Security

TOPICS

- Overview of SQL Server Authentication Modes
- Configuring Windows and SQL Server Authentication
- Mixed-Mode Security Considerations
- Best Practices for Securing SQL Server
- Auditing and Monitoring Authentication Methods

02

Managing SQL Server Roles via T-SQL

TOPICS

- Introduction to SQL Server Roles and Permissions
- Creating and Assigning Roles Using T-SQL
- Managing Role Memberships via T-SQL
- Auditing and Reviewing Role Permissions
- Best Practices for Role Management in SQL Server

03

Log Shipping Architecture

TOPICS

Introduction to Log Shipping · Components of Log Shipping · Configuring Log Shipping · Log Shipping Operational Process · Advantages and Limitations of Log Shipping · Security Considerations in Log Shipping

04

Monitoring Log Shipping

TOPICS

Log Shipping Monitoring Overview · Configuring Alerts for Log Shipping Failures · Viewing Log Shipping Reports · Troubleshooting Common Log Shipping Issues

05

Database Mirroring

TOPICS

- Introduction to Database Mirroring
- **Mirroring Modes:** High Safety, High Performance
- Configuring Database Mirroring
- Monitoring Database Mirroring
- Automatic Failover in Database Mirroring
- Managing and Troubleshooting Mirroring Sessions

06

Transactional Replication

TOPICS

- Overview of Transactional Replication
- Configuring Publishers, Distributors, and Subscribers
- Managing Transactional Replication
- Monitoring and Tuning Replication Performance
- Conflict Resolution in Transactional Replication
- Troubleshooting Common Replication Issues

07

Peer to Peer Replication

TOPICS

- Introduction to Peer to Peer Replication
- Peer to Peer Topology and Architecture
- Setting Up Peer to Peer Replication
- Managing Data Consistency Across Peers
- Conflict Detection and Resolution
- Scaling Peer to Peer Replication
- Best Practices for Peer to Peer Replication

08

Always On Availability Group Architecture Setups

TOPICS

- Introduction to Always On Availability Groups
- Availability Group Architecture
- Prerequisites and Considerations
- Configuring Always On Availability Groups
- Monitoring Availability Groups
- Failover Strategies in Always On Availability Groups
- Handling Availability Group Failures and Errors

09

Clustering Architecture

TOPICS

- Introduction to SQL Server Clustering
- Types of Clustering in SQL Server
- Configuring Failover Clustering
- Managing Clustered SQL Server Instances
- Troubleshooting Cluster Failovers
- High Availability Solutions with Clustering

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How to Failover

TOPICS

- Introduction to SQL Server Failover
- Manual vs. Automatic Failover
- Failover Process in Log Shipping, Mirroring, and Always On
- Performing a Manual Failover
- Post-Failover Checklist and Validation
- Troubleshooting Failover Issues

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Patching and Upgrading MS SQL Server

TOPICS

- Understanding SQL Server Patch Types
- Pre-Patching Considerations and Best Practices
- Applying Patches and Cumulative Updates
- Upgrading SQL Server Versions
- Rolling Back Failed Patches and Upgrades
- Post-Upgrade Testing and Validation

12

Managing Blockings and Deadlocks

TOPICS

- Understanding Blocking in SQL Server
- Identifying and Resolving Blocked Processes
- Deadlock Detection and Resolution
- Configuring Deadlock Priority and Handling
- Monitoring and Preventing Deadlocks
- Best Practices for Minimizing Blockings and Deadlocks

13

Reorganize and Rebuild Indexes

TOPICS

Understanding Index Fragmentation · Choosing Between Reorganize and Rebuild · Automated Index Maintenance Strategies · Monitoring and Analyzing Index Performance · Best Practices for Index Maintenance

14

Partitioning

TOPICS

- Understanding Table Partitioning in SQL Server
- Benefits and Considerations of Partitioning
- Configuring Partition Schemes and Functions
- Managing and Maintaining Partitions
- Monitoring and Optimizing Partition Performance
- Handling Partition Switching and Merging

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SQL Profiler

TOPICS

- Introduction to SQL Profiler
- Configuring and Running SQL Profiler Traces
- Analyzing SQL Profiler Results
- Capturing Long-Running Queries with SQL Profiler
- Storing and Replaying SQL Profiler Traces

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SQL Profiler: Longest Running Query

TOPICS

- Identifying Long-Running Queries Using SQL Profiler
- Analyzing Query Performance
- Optimizing Long-Running Queries
- Best Practices for Monitoring Query Performance

17

Audit Logins

TOPICS

Introduction to SQL Server Auditing · Configuring Audit Specifications for Logins · Monitoring and Reviewing Audit Logs · Securing and Archiving Audit Data · Compliance and Regulatory Considerations

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SQL Profiler with Index Tuning

TOPICS

- Using SQL Profiler for Index Analysis
- Integrating SQL Profiler with Database Engine Tuning Advisor
- Analyzing and Applying Index Recommendations
- Continuous Index Tuning Strategies

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SQL Profiler Best Practices

TOPICS

- Optimizing SQL Profiler for Performance
- Minimizing Profiler Impact on Production Systems
- Configuring Effective Trace Filters
- Storing and Managing Profiler Data
- Security Considerations When Using SQL Profiler

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SQL Server Side Trace

TOPICS

Introduction to Server Side Tracing · Configuring Server Side Traces · Storing and Analyzing Trace Data · Comparing Server Side Trace with SQL Profiler · Automating Server Side Trace Processes

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Database Engine Tuning Advisor

TOPICS

- Introduction to Database Engine Tuning Advisor (DTA)
- Preparing Workloads for Analysis
- Running Tuning Sessions with DTA
- Interpreting Tuning Recommendations
- Applying and Validating Index and Partition Recommendations
- Best Practices for Using DTA

Setting Up Alerts for Severity Errors

TOPICS

Introduction to SQL Server Alerts · Configuring Alerts for Severity Levels · Automating Responses to Alerts · Monitoring Alert History and Performance

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Delivery by certified instructors and subject matter experts
- Hands-on exercises throughout the course
- Course completion certificate from Koenig

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Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

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