

KOENIG SOLUTIONS · COURSE OUTLINE

Building End-to-End Solution Using Azure Synapse Analytics

Learn to build end-to-end Azure Synapse Analytics solutions, from data integration and pipeline orchestration to security and release management.

40 Hours

DURATION

8

MODULES

61

TOPICS

COURSE OVERVIEW

This course provides an in-depth understanding of developing end-to-end solutions using Azure Synapse Analytics. Participants will learn about data integration, scalability, performance optimization, pipeline orchestration, logging and monitoring, data modeling, and release pipelines. The course combines theoretical knowledge with practical, hands-on exercises to ensure participants can apply what they learn in real-world scenarios.

WHO THIS COURSE IS FOR

Data Engineers

Solution Architects

BI Developers

Data Analysts

DevOps Engineers

PREREQUISITES

- Basic knowledge of SQL and database concepts
- Familiarity with Azure basics
- Understanding of data engineering principles

LEARNING OBJECTIVES

- Explain the lifecycle and key components of solution development
- Configure linked services and secure data connections with Azure Key Vault
- Apply Spark pools and serverless SQL pools to optimise data ingestion
- Design ETL pipelines using notebooks, data flows and dynamic control flows
- Implement logging, alerts and monitoring for pipeline activity
- Implement medallion architecture and optimise the serving layer
- Configure CI/CD pipelines and version control with Synapse Repos
- Apply role-based access control, row-level and column-level security

8 Modules, 61 Topics

01

Introduction to Solution Development

OVERVIEW OF END-TO-END SOLUTION DEVELOPMENT

- Understanding the Lifecycle of Solution Development
- Key Milestones and Deliverables

IMPORTANCE AND BENEFITS OF INTEGRATED SOLUTIONS

- Streamlining Processes
- Enhancing Data Accuracy and Consistency
- Reducing Operational Costs

KEY COMPONENTS OF A COMPREHENSIVE SOLUTION

- Data Integration
- Scalability and Performance
- Pipeline Orchestration
- Data Modelling
- Release Management

02

Data Integration

INTRODUCTION TO DATA INTEGRATION

- Purpose and Objectives
- Common Challenges in Data Integration

CONFIGURING LINKED SERVICES

- **Types of Linked Services:** Blob Storage, SQL Databases, Data Lakes, etc.
- Step-by-Step Configuration Guide

SECURING DATA CONNECTIONS

- Introduction to Azure Key Vault
- Steps to Use Azure Key Vault
- Best Practices for Securing Data Connections

03

Scalability and Performance

INTRODUCTION TO SCALABILITY AND PERFORMANCE

- Definitions and Key Metrics
- Importance in Big Data Solutions

OPTIMIZING DATA INGESTION

- **Using Spark Pools:** Overview and Configuration
- **Serverless SQL Pools:** When and How to Use Them
- Case Studies and Examples Based on Data Volume

04

Pipeline Orchestration and Transformation Techniques

INTRODUCTION TO PIPELINE ORCHESTRATION

- Understanding ETL (Extract, Transform, Load) Processes
- Key Concepts and Terminology

DESIGNING ETL PIPELINES

- Essential Components of ETL Pipelines
- Best Practices for Efficient Pipeline Design

USING NOTEBOOKS/DATA FLOWS FOR TRANSFORMATIONS

- Overview of Notebooks and Data Flows
- Practical Examples and Use Cases

IMPLEMENTING DYNAMIC CONTROL FLOWS

- Introduction to Metadata-Driven Pipelines
- Steps to Create and Implement Dynamic Control Flows

05

Logging and Monitoring

INTRODUCTION TO LOGGING AND MONITORING

- Importance of Logging and Monitoring
- Key Concepts and Tools

ENABLING PIPELINE ACTIVITY LOGS

- Step-by-Step Guide to Enable Logging
- Common Log Patterns and What They Mean

CONFIGURING ALERTS FOR MONITORING

- **Setting Up Alerts:** Tools and Techniques
- **Monitoring Performance:** Key Metrics and Dashboards
- Troubleshooting Common Issues

06

Data Modelling

INTRODUCTION TO DATA MODELLING

- Importance and Objectives of Data Modelling
- Key Concepts and Frameworks

IMPLEMENTING MEDALLION ARCHITECTURE

- Overview of Bronze, Silver, and Gold Layers
- Step-by-Step Guide to Implement Medallion Architecture
- Use Cases and Examples

OPTIMIZING THE SERVING LAYER FOR PERFORMANCE

- Best Practices for Data Modelling with Serverless SQL Pools and Spark Pools
- Examples of Optimized Serving Layers
- **Enabling Access for End Users:** Power BI, Data Scientists, etc.

07

Release Pipeline

INTRODUCTION TO RELEASE PIPELINE

Key Concepts in Release Management · Benefits of Automated Release Pipelines

SETTING UP CI/CD PIPELINES

Introduction to CI/CD Concepts · Step-by-Step Guide Using Azure DevOps · Examples of Successful CI/CD Implementations

MANAGING VERSION CONTROL WITH SYNAPSE REPOS

Overview of Synapse Repos · Best Practices for Version Control · Step-by-Step Guide for Managing Repos

IMPLEMENTING AUTOMATED BRANCHING STRATEGIES

Introduction to Branching Strategies · Steps to Implement Automated Branching

08

Data Security and Access Control

AUTHENTICATION & ACCESS CONTROL

- Overview of Azure Active Directory (Azure AD) and its importance
- Setting up Role-Based Access Control (RBAC) for managing permissions
- Using Managed Identity for secure connections

DATA PROTECTION

- Implementing Row-Level Security (RLS) to control access to specific rows
- Applying Column-Level Security (CLS) to restrict field-level data access
- Configuring Dynamic Data Masking (DDM) to safeguard sensitive information dynamically

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

ABOUT KOENIG

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.

FLEXIBLE DELIVERY

Learn the Way That Suits You

Classroom Training

Live Online Classes (ILO)

Fly-Me-A-Trainer (FMAT)

Flexi (Self-Paced)

1-on-1 Training

Ready to Get Started?

Talk to a learning advisor about schedules, group training and customised delivery.

Visit koenig-solutions.com

✉ info@koenig-solutions.com