

Developing SQL 2016 Data Models (SSAS)

Course Duration: 24 Hours

Course code: M20768

1. Course Overview

This course provides participants with the knowledge and skills to develop multidimensional and tabular data models using SQL Server Analysis Services (SSAS) 2016. The course covers data modeling concepts, cube design, DAX and MDX queries, security implementation, performance optimization, and deployment. Participants will gain practical experience in building analytical solutions that enable better business intelligence and reporting.

2. What you'll learn?

- Understand SSAS architecture and components in SQL Server 2016.
- Design and implement multidimensional cubes and tabular models.
- Work with measures, KPIs, hierarchies, and calculations.
- Write queries using MDX (Multidimensional Expressions) and DAX (Data Analysis Expressions).
- Implement row-level and role-based security in SSAS.
- Optimize, deploy, and maintain SSAS solutions for performance and scalability.

3. Target Audience

- Business Intelligence (BI) Developers
- Database Developers and Data Analysts
- Data Engineers working with SQL Server BI stack
- Professionals preparing for Microsoft SQL Server BI certification

4. Pre-Requisites

- Basic knowledge of SQL Server and relational databases

- Familiarity with SQL Server Management Studio (SSMS)
- Understanding of data warehousing and BI concepts (star schema, ETL, reporting)

5. Course content

Module 1: Introduction to SSAS and Data Modeling

- Overview of SSAS in SQL Server 2016
- Multidimensional vs. Tabular models
- Role of SSAS in the Microsoft BI ecosystem
- Key concepts: measures, dimensions, hierarchies

Module 2: Designing Multidimensional Cubes

- Creating data sources and data source views
- Defining dimensions and hierarchies
- Creating and managing cubes
- Implementing measures and calculated members

Module 3: Developing Tabular Models

- Introduction to tabular modeling in SSAS 2016
- Importing data from multiple sources
- Creating relationships and hierarchies
- Using KPIs and calculated columns

Module 4: Working with MDX and DAX

- Introduction to MDX for querying cubes
- Writing MDX queries for measures and dimensions
- Introduction to DAX for tabular models
- Building advanced calculations with DAX

Module 5: Implementing Security in SSAS

- Role-based security in SSAS
- Implementing row-level security (RLS)
- Dynamic security in tabular models
- Best practices for securing SSAS models

Module 6: Performance Tuning and Optimization

- Storage modes: MOLAP, ROLAP, HOLAP, and In-memory tabular
- Partitioning strategies for large datasets
- Aggregations and caching for performance
- Monitoring SSAS performance

Module 7: Deployment and Maintenance

- Deploying SSAS solutions from development to production
- Managing and processing cubes and tabular models
- Automating deployment with scripts
- Troubleshooting common SSAS issues

Module 8: Best Practices and Case Studies

- Designing scalable and maintainable data models
- Case studies of real-world SSAS implementations
- Integrating SSAS models with Power BI and Excel
- Hands-on labs and practice scenarios