THE MINDCENTER
COMPUTER EDUCATION PROFESSIONALS

Designing an Analysis Solution Architecture Using Microsoft SQL Server 2005 Analysis Services

Course 2796 — Instructor-led

Course Length: 3 days

At the end of this course, students will be able to:

- Capture the business and technical requirements for an analysis solution.
- Design and implement a logical Online Analytical Processing (OLAP) solution architecture.
- Design physical storage for a multidimensional solution.
- Create calculated members and named sets.
- Implement Key Performance Indicators (KPIs), actions, and stored procedures.
- Design the infrastructure for an OLAP solution.
- Deploy and secure an Analysis Services solution in a production environment.
- Monitor and optimize an Analysis Services solution.
- Implement a data mining solution.

Prerequisites:

Before attending this class, students must have:

- Have hands-on experience with database development tasks. For example:
- Creating Transact-SQL queries
- Writing and optimizing advanced queries (for example, queries that contain complex joins or subqueries)
- Creating database objects such as tables, views, and indexes
- Have foundational conceptual understanding of data warehousing, data marts, and business intelligence. Students must be well versed on the subjects of data warehousing, data marts, and BI, and preferably have read at least one book by Ralph Kimball or Bill Inmon.
- Have a conceptual understanding of OLAP technologies, multidimensional data, MDX, and relational database modeling. For example, know what facts, dimensions, measures, calculated measures, and foreign keys are.
- Be familiar with SQL Server 2005 features, tools, and technologies. In particular, they must have built and queried an Analysis Services cube.
- Have foundational understanding of Microsoft Windows security. For example, how groups, delegation of credentials, and impersonation function in a security context.
- Have foundational understanding of Web-based architecture. For example, SSL, SOAP, and IIS-what they are and what their role is.
- Must understand the difference between replication and ETL.

Already know how to use:

- Microsoft Office Visio
- Microsoft SQL Server Business Intelligence Development Studio
- Microsoft SQL Server Management Studio
- Performance Monitor
- Microsoft SQL Server Profiler

Course Outline

Module 1: Capturing Business and Technical Requirements
In this module, students will first learn about key design principles that they should consider when defining the scope of a BI project. They will then learn how to identify the business and technical requirements to ensure that their solution meets the needs of its users.

Lessons

- Planning an Analysis Solution
- Identifying Requirements and Constraints

Lab 1: Capturing Business and Technical Requirements

- Reviewing Solution Requirements
- Identifying Further Information Requirements

Module 2: Designing and Implementing a Logical OLAP Solution Architecture
This module describes considerations and guidelines for designing an OLAP solution, including a relational data warehouse and an Analysis Services cube.

Lessons

- Planning an OLAP Solution
- Designing and Implementing Fact and Dimension Tables
- Designing and Implementing Cubes

Lab 2: Designing and Implementing an OLAP Solution

- Designing and Implementing a Relational Database Schema
- Designing and Implementing a Cube
- Designing and Implementing Perspectives

Module 3: Designing Physical Storage for a Multidimensional Solution
In this module, students will learn how to design an effective physical storage solution for a multidimensional application.

Lessons
- Designing Physical Storage
- Partitioning Relational Data
- Partitioning Multidimensional Data

Lab 3: Designing and Implementing Physical Storage
- Designing and Implementing a Storage Solution
- Designing and Implementing Relational Partitioning
- Designing and Implementing Multidimensional Partitioning
- Testing the Solution

Module 4: Creating Calculations
In this module, students will learn how to create Multidimensional Expression (MDX) calculations. The module describes how to create calculated members, named sets, and scoped assignments.

Lessons
- Implementing Calculated Members
- Implementing Named Sets
- Implementing Scoped MDX Scripts

Lab 4: Implementing Calculations
- Creating Calculated Members
- Creating Named Sets
- Creating a Scoped MDX Script

Module 5: Extending Cube Functionality
In this module, students will learn about the benefits of KPIs, actions, and stored procedures. They will also learn how to implement KPIs, actions, and stored procedures in an Analysis Services cube.

Lessons
- Key Performance Indicators
- Actions
- Stored Procedures

Lab 5: Implementing Advanced Functionality
- Creating KPIs
- Creating Actions
- Creating Stored Procedures

Module 6: Designing an Analysis Services Infrastructure
In this module, students will learn how to design an appropriate infrastructure for an OLAP application.

Lessons
- Considerations for Analysis Services Resource Requirements
- Considerations for Analysis Services Scalability
- Considerations for Analysis Services Availability

Lab 6: Designing and Implementing Analysis Services Infrastructure
- Planning Production System Infrastructure
- Installing Analysis Services in a Cluster

Module 7: Deploying a Multidimensional Solution into Production
In this module, students will learn about and compare the different deployment methods available in SQL Server 2005 Analysis Services. They will also learn about how security in Analysis Services functions and how to protect their company's critical business information.

Lessons
- Deploying an Analysis Services Database
- Managing Analysis Services Security

Lab 7: Deploying Analysis Services into Production
- Deploying an Analysis Services Database
- Enabling User Access

Module 8: Optimizing an OLAP Solution
In this module, students will learn how to monitor Analysis Services and how to optimize performance of their Analysis Services solutions.

Lessons
- Monitoring Analysis Services
- Optimizing Performance

Lab 8: Optimizing Analysis Services
- Monitoring Analysis Services
- Optimizing Queries

Module 9: Implementing Data Mining
In this module, students will learn what a data mining solution is and how to design and implement data mining functionality with SQL Server Analysis Services.

Lessons
- Introduction to Data Mining
- Implementing a Data Mining Solution
- Using Data Mining in a BI Solution

Lab 9: Implementing Data Mining
- Creating a Data Mining Structure
- Validating a Data Mining Structure