Designing Cubes, Dimensions, and Facts Using Microsoft SQL Server 2

Course Summary

Description

This course provides students with the beginning and advanced skills necessary to design, deploy, tune and use data warehouses containing both star schemas and OLAP cubes using Microsoft SQL Server 2008 Analysis Services. In order to do this, the student will learn how to create dimension and fact tables for their star schemas using the SQL Server Management Studio. They will learn how to load their dimension and fact tables using SQL Server Integration Services. They will learn how to build an Analysis Services database for their OLAP cubes using the Microsoft Business Intelligence Development Studio. The student will learn how to use Multidimensional Expressions (MDX) to browse and update OLAP cubes. The student will learn how to speed up query response times using aggregates, make cubes interactive with URL and drill-through actions, enable financial analysis and globalization using cubes, retrieve data and create BI reports, implement role-based security for the cubes and manage and monitor Analysis Services databases.

Topics

- Business Intelligence: A Data Analysis Foundation
- Understanding OLAP and Analysis Services
- Accessing Source Data
- Creating Dimensions
- Creating a Cube
- Creating Advanced Measures and Calculations
- Advanced Dimension Design
- Working with Account Intelligence
- Currency Conversion and Multiple Languages

- Interacting with a Cube
- Retrieving Data from Analysis Services
- Implementing Security
- Designing Aggregations
- Managing Partitions and Database Processing
- Managing Deployment
- Advanced Monitoring and Management Tools

Audience

This course is targeted at database, data warehouse, and business intelligence designers and users, who need to understand how to design, deploy, tune and use both star schemas containing dimension and fact tables as well as how to design, deploy, tune and use cubes to deliver usable and timely business intelligence.

Prerequisites

Students should have experience designing or using databases. Knowledge of SQL is helpful.

Duration

Five days

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Course Outline

I. Business Intelligence: A Data Analysis Foundation
  A. Introducing Business Intelligence
  B. Multidimensional Data Analysis
  C. Attributes in Data Analysis
  D. Hierarchies in Data Analysis
  E. Dimensions in Data Analysis
  F. Understanding a Dimensional Data Warehouse
  G. A Fact Table
  H. Dimension Tables
  I. Surrogate Keys and Slowly Changing Dimensions
  J. Alternative Table Structures
  K. Multidimensional OLAP

II. Understanding OLAP and Analysis Services
  A. Understanding OLAP
  B. Consistently Fast Response
  C. Metadata-Based Queries
  D. Spreadsheet-Style Formulas
  E. Understanding Analysis Services
  F. Analysis Services and Speed
  G. Analysis Services and Metadata
  H. Analysis Services and the Microsoft Business Intelligence Platform
  I. Analysis Services Tools

III. Accessing Source Data
  A. Creating a Business Intelligence Solution
  B. Creating a Data Source
  C. Creating a Data Source View
  D. Modifying a Data Source View

IV. Creating Dimensions
  A. Previewing Dimension Data
  B. Creating a Standard Dimension
  C. Deploying an Analysis Services Database
  D. Modifying a Dimension
  E. Creating a Time Dimension
  F. Creating a Parent-Child Dimension

V. Creating a Cube
  A. Previewing Cube Data
  B. Using the Wizard to Create a Cube
  C. Role-Playing Dimensions

  D. Deploying and Browsing a Cube
  E. Using the Cube Designer to Modify a Cube
  F. Adding User-Friendly Names to a Cube
  G. Formatting Measures
  H. Modifying the Interaction of Dimensions and Measure Groups
  I. Adding Measures and Measure Groups to a Cube
  J. Creating a Calculated Member
  K. Redeploying and Browsing a Cube

VI. Creating Advanced Measures and Calculations
  A. Using Aggregate Functions
  B. Using MDX to Retrieve Values from a Cube
  C. Creating Calculated Members
  D. Applying Conditional Formatting
  E. Calculating Contribution
  F. Creating Calculated Members Outside of the Measures Dimension
  G. Calculation Scripting
  H. Creating KPIs

VII. Advanced Dimension Design
  A. Dimension Usage
  B. Creating Reference Dimensions
  C. Creating a Fact Dimension
  D. Creating a Many-to-Many Dimension

VIII. Working with Account Intelligence
  A. Designing a Financial Analysis Cube
  B. Working with Account Intelligence
  C. Creating an Account Dimension
  D. Working with Non-Additive Financial Measures
  E. Creating a Non-Additive Calculated Member
  F. Working with a Scenario Dimension

IX. Currency Conversion and Multiple Languages
  A. Supporting Foreign Currency Conversion
  B. Supporting Foreign Language Translation

X. Interacting with a Cube
  A. Implementing Actions
  B. Creating Standard Actions

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Course Outline (cont'd)

C. Creating Drillthrough Actions
D. Linking to Reporting Services Reports
E. Using Writeback to Modify Analysis Services Data
F. Enabling Dimension Writeback
G. Enabling Cube Writeback

XI. Retrieving Data from Analysis Services
A. Creating Perspectives
B. Creating MDX Queries
C. Accessing Analysis Services Using Excel 2007
D. Creating Reporting Services Reports

XII. Implementing Security
A. Understanding Roles
B. Securing Administrative Access
C. Assigning Server-Level Administrative Access
D. Assigning Database-Level Administrative Access
E. Securing Data Access
F. Granting Access to Cubes
G. Restricting Access to Dimension Members
H. Restricting Access to Cells

XIII. Designing Aggregations
A. Understanding Aggregation Design
B. Using the Aggregation Design Wizard
C. Attribute Relationships, User-Defined Hierarchies, and Aggregation Design
D. Designing an Aggregation
E. Changing Partition Counts
F. Using the Usage-Based Optimization Wizard

XIV. Managing Partitions and Database Processing
A. Working with Storage
B. Understanding Dimension Storage Modes
C. Understanding Partition Storage Modes
D. Changing Data in a Warehouse
E. Managing Analysis Services Processing
F. Processing a Dimension
G. Processing a Cube
H. Proactive Caching
I. Working with Partitions

J. Understanding Partition Strategies
K. Creating Partitions

XV. Managing Deployment
A. Deployment Overview
B. Deployment Mechanics
C. Deployment Using Business Intelligence Development Studio
D. Deployment Using the Deployment Wizard
E. Deployment Wizard UI
F. Understanding Deployment Scripts
G. Migrating Databases and Disaster Recovery
H. Detaching and Attaching an Analysis Services Database
I. Synchronizing Databases
J. Backing Up and Restoring a Database

XVI. Advanced Monitoring and Management Tools
A. Monitoring Analysis Services Using Windows Reliability and Performance Monitor
B. Monitoring Analysis Services Using SQL Server Profiler
C. Analysis Services Dynamic Management Views