

## SQL Server® Analysis Services: Hands-On - 4 Days

### Analyzing Data for Business Intelligence

#### *Course 139 Overview*

- You Will Learn How To**
- Leverage SQL Server Analysis Services to produce Business Intelligence solutions
  - Create and deploy multidimensional data cubes
  - Extend hierarchies and exploit advanced dimension relationships
  - Build custom solutions with MDX
  - Implement Key Performance Indicators (KPIs) to monitor business objectives
  - Make smarter business decisions with data mining techniques

**Course Benefits** With the current explosion of data in today's enterprise environment, traditional methods of querying and reporting on information are no longer sufficient. This course provides the knowledge and skills to analyze and discover trends in your data warehouse. You learn to create On-Line Analytical Processing (OLAP) cubes using business intelligence tools and to automate their maintenance using XMLA scripts and SQL Server Integration Services (SSIS) packages.

**Who Should Attend** Those designing, creating or developing analysis cubes from a database. A working knowledge of relational databases is assumed.

**Hands-On Training** Throughout this course, you gain extensive experience with SQL Server Analysis Services. Practical exercises include:

- Creating and deploying a cube
- Building aggregations with the Aggregation Design Wizard
- Automating cube processing with an XMLA script
- Configuring many-to-many dimension relationships
- Implementing an action to open a Reporting Services report
- Retrieving data using MDX
- Discovering key influencers with Data Mining

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### Analyzing Data for Business Intelligence

Course 139 Outline

#### Building and Modifying an OLAP Cube Designing a Unified Dimension Model (UDM)

- Identifying measures and their suitable granularities
- Adding new measure groups and creating custom measures

#### Creating dimensions

- Implementing a Star and Snowflake Schema
- Identifying role-play dimensions
- Adding dimension attributes and properties
- Configuring multilanguage support

#### Extending the Cube with Hierarchies

##### Creating hierarchies

- Building natural hierarchies and creating attribute relationships
- Distinguishing between ragged, balanced and unbalanced hierarchies
- Discretizing attribute values with the Clusters and Equal Areas algorithms

##### Parent-child relationships

- Defining parent and key attributes
- Generating level captions with the Naming Template feature
- Removing repeated entries with the MembersWithData property

#### Exploiting Advanced Dimension Relationships

##### Storing dimension data in fact tables

- Building a degenerate dimension
- Configuring fact relationships

##### Saving space with referenced dimension relationships

- Identifying candidates for referenced relationships
- Utilizing the Dimension Usage tab to configure referenced relationships

##### Including dimensions with many-to-many relationships

- Implementing intermediate measure groups and dimensions
- Reporting on many-to-many dimensions without double counting

#### Designing Optimal Cubes

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#### Assembling cube components

- Selecting the appropriate fact tables
- Adding cube dimensions
- Distinguishing between additive, semiadditive and nonadditive measures
- Simplifying cubes with perspectives

#### Managing Cubes

##### Designing storage and aggregations

- Choosing between ROLAP, MOLAP and HOLAP
- Partitioning cubes for improved performance
- Designing aggregations with the Aggregation Design Wizard
- Leveraging the Usage-Based Optimization Wizard

#### Automating processing and deployment

- Exploiting XMLA scripts and SSIS
- Refreshing cubes with Proactive Caching
- Deploying cubes easily through the enterprise

#### Performing Advanced Analysis with MDX

##### Retrieving data with MDX

- Defining tuples, sets and calculated members
- Querying cubes with MDX
- Utilizing set functions

##### Monitoring business performance with KPIs

- Building goal, status and trend expressions
- Using PARALLELPERIOD to compare with past time periods
- Simplifying KPI definitions using the KPIValue and KPIGoal functions

##### Enhancing cubes with MDX

- Adding runtime calculations to the cube
- Comparing MDX calculations with DSV calculated columns
- Adding drill-through and URL actions

#### Gaining Business Advantage with Data Mining

##### Determining the correct model

- Identifying business tasks for data mining
- Training and testing data mining algorithms
- Comparing algorithms with the accuracy chart and classification matrix

- Optimizing returns with the Profit Chart

##### Performing real-world predictions

- Classifying with the Decision Trees, Neural Network and Naive Bayes algorithms
- Predicting with the Time Series algorithm

##### Deploying models

- Predicting new cases with algorithms
- Utilizing DMX to perform batch and singleton predictions
- Exploring results with data mining viewers