



SSAS Maestro Course

The SQL Server Analysis Services (SSAS) Maestro program is a five-day deep dive course on SQL Server Analysis Services 2012 Multidimensional. It is aimed at architects and consultants with several years of Analysis Services experience who want to learn how to design highly-scalable BI solutions.

Benefits

Upon successful completion of this course, attendees will:

- **Become part of the elite group of SSAS Maestros**
- Be included on the SSAS Maestro list, published on the following Microsoft site for your customers to reference: www.microsoft.com/learning/en/us/certification/ssas-maestros.aspx
- Be referred as an SSAS Maestro to individuals needing help with complex SSAS engagements
- Have access to the private SSAS Maestros email discussion list

Requirements

Because of the complexity of the subject matter and the depth of the lessons, the course has strict requirements, including the following:

- Applicants will be accepted based on their depth of technical experience with Analysis Services.
- The five-day course will include several labs that intentionally provide very little guidance. The results of these labs will need to be submitted for marking afterwards.
- Upon completion of the course, attendees will be given a take-home exam that they will need to complete within thirty (30) days.
- Attendees will also need to write a case study detailing their experiences working on an enterprise-scale Analysis Services implementation.

Following the technical conference conventions defining 400-level sessions, this is a 500-level course. It is modeled after the MCM SQL certification program. As a result applicants should be aware that the pass mark is set very high and that only a small number of attendees will be awarded the Maestros certification.

Trainers



Marco Russo
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Chris Webb
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Thomas Kejser
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This course will be taught by **Marco Russo** and **Chris Webb**, who were among the first set of people awarded the SSAS Maestro certification. Both Marco and Chris are well-known experts on Analysis Services, have co-written several books on the subject (including “*MDX Solutions*” and “*Expert Cube Development with SQL Server Analysis Services 2008*”) and are experienced trainers.

For some of the course Marco and Chris will be joined by **Thomas Kejser**, a member of Microsoft’s SQLCAT team (www.sqlcat.com). Thomas has worked on some of the largest SSAS implementations in the world and has presented sessions at numerous conferences on SQL Server scalability.

Course Outline

Module 1: Analysis Services 2008 R2 and Large Cubes

- Overview and Purpose of Course
- Summary of Modules
- Description of How Course Participation Is Evaluated

Module 2: Tools for Monitoring and Optimizing Analysis Services

- Introducing Analysis Services Monitoring
- Executing Queries and Operations with Ascmd
- Monitoring Queries with SQL Server Profiler
- Monitoring the Server with Performance Monitor
- Using the Resource Monitor Project
- Using BIDS Helper
- Using Other Monitoring Tools

Module 3: Internal Data Storage Structures

- Understanding Internal Data Storage Components
- Examining Data Structures for Attributes
- Examining Data Structures for Hierarchies
- Examining Data Structures for Partitions
- Optimizing Hardware for Random I/O

Module 4: Memory Management

- Switching from the Analysis Server Heap to the Windows Heap
- Tuning the Economical Model of Memory Management
- Running Analysis Services with Other Software
- Tuning Memory Options for Processing
- Preallocating Memory to the Analysis Server

Module 5: Thread Management

- Understanding the Trade-Offs in Thread Management
- Examining the Thread Pools
- Configuring the Number of Available Threads
- Handling Long-Running Queries
- Monitoring Thread Usage

Module 6: Designing Partitions

- Understanding Partitions
- Sizing Partitions
- Defining the Partition Slice
- Partitioning for Query Performance
- Partitioning for Processing Performance
- Partitioning for Distinct Count Measures
- Using Solid State Drives for Distinct Count Partitions

Module 7: Designing Aggregations

- Understanding Aggregations
- Considering Aggregations in Large Cubes
- Designing Aggregations
- Deciding for Each Attribute
- Tools and Tips

Module 8: High Performance ROLAP Partitions for Large Cubes

- Choosing ROLAP Instead of MOLAP
- Simplifying the Cube Structure
- Working with Aggregations
- Developing a Partitioning Strategy
- Developing a Partitioning Strategy
- Developing a Partitioning Strategy
- Handling Skewed Data Distributions
- Reviewing Lessons Learned and Best Practices

Module 9: Large Cube Processing Strategies

- Understanding the Steps of Dimension Processing
- Choosing a Dimension Processing Option

- Examining Processing of Special Dimension Types
- Examining Processing and Storage Modes
- Understanding the Steps of Cube Processing
- Choosing a Cube Processing Option
- Optimizing Processing

Module 10: Advanced Dimension Design Best Practices

- Parent-Child Hierarchies
- Unary Operators
- Many-to-Many Dimensions
- Referenced Dimensions
- Diamond Shaped Hierarchies
- Natural Hierarchies
- Junk Dimensions
- Degenerate Dimensions
- Reviewing Design Best Practices for the Source Dimension Table
- Handling Slowly Changing Dimensions

Module 11: Query Performance Monitoring and Tuning

- Identifying Query Problems
- Checking on Partitions and Aggregations
- Implementing a Cache Warming Strategy
- Switching to Subspace Computation
- Optimizing the IIF Function
- Removing Empty Tuples
- Examining Other MDX Optimization Strategies
- Using Analysis Services Features Instead of MDX
- Finding Alternatives to Session Cubes
- Moving Calculations to the Relational Engine

Module 12: Scale-Out Querying with Read-Only Databases

- Considering Reasons for Scale-Out Querying
- Examining the Options for Scaling Out
- Configuring the Architecture
- Balancing the Load Across Multiple Query Servers
- Updating the Analysis Services Database
- Copying the Database Files
- Optimizing the Storage System and I/O

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www.sqlbi.com/training/ssas-maestro