

## SQL Server Analysis Services Multidimensional Deep Dive

This 4-day Deep Dive workshop is designed for experienced SQL Server professionals who need to get more out of SQL Server Analysis Services for Data Warehousing.

Concentrating on a framework of best practices, participants will gain a deep understanding of Analysis Services Cube Design and MDX and will be introduced to advanced real world scenarios by Chris's "from the trenches" experience. Drilling down into the MDX language, participants will learn how to write queries with common calculations, then move on to more complex topics such as subselects and scoped assignments.

The workshop takes participants to the next level where they will discover how to performance tune SQL Server Analysis Services, how to diagnose performance problems with Profiler and then how to design, implement, tune and monitor the solution for maximum performance.

### Workshop Prerequisites

Before attending this workshop, participants should have:

- at least three months experience of building cubes in SQL Server Analysis Services from Analysis Services 2005 onwards
- Working knowledge of writing MDX calculations and queries

### Workshop Objectives

- Be confident they are following best practices for building SSAS cubes
- Handle more complex cube-design scenarios such as slowly-changing dimensions, many-to-many relationships and parent-child hierarchies
- Write MDX calculated members for time-series calculations and other common business requirements
- Write MDX queries for tools such as Reporting Services
- Understand how to diagnose SSAS performance concerns and resolve issues by changing the design and implementing, monitoring and tuning the cubes

### About the Presenter

Chris Webb is a UK-based independent consultant specialising in Analysis Services, MDX, DAX and PowerPivot, along with Data Explorer, the new self-service ETL tool for the Excel power user.



Chris is a co-author of "SQL Server Analysis Services 2012: The BISM Tabular Model", "Expert Cube Development with SQL Server 2008 Analysis Services" and "MDX Solutions with Microsoft SQL Server Analysis Services 2005 and Hyperion Essbase" and is a SQL Server BI MVP.

He blogs about Microsoft BI topics at <http://cwebbbi.wordpress.com/>

**Course Code:** SPCW13  
**Course Duration:** 4 Days

### Course Summary

**Day 1:** SSAS Cube Design Tips & Tricks

**Day 2:** MDX: Beyond the Basics (1)

**Day 3:** MDX: Beyond the Basics (2)

**Day 4:** Performance Tuning SSAS Multidimensional Solutions



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## Workshop Outline

### Day 1: SSAS Cube Design Tips & Tricks

This day will cover the process of designing SSAS cubes. Assuming you've done it many times before, it will build on those skills and concentrate on best practices while introducing some of the more advanced techniques and scenarios that you may not have encountered before. Topics covered will include:

- Data source and DSV do's and don'ts
- Dimension design best practices:
  - Dimension, attribute and hierarchy properties
  - Attribute relationships in detail – optimising relationships for query and processing performance; handling slowly-changing dimensions
  - Parent-child dimensions and ragged hierarchies
- Cube design best practices:
  - Cube, measure group and partition properties
  - Measure aggregation
  - Dimension-measure group relationships: handling different granularities; understanding many-to-many relationships and different scenarios where they can be used
- Dimension and cell security
- Putting your cube into production:
  - Understanding the different processing options
  - Automating processing and partition creation using SSIS

### Day 2 – MDX: Beyond the Basics (1)

Days 2 and 3 of the workshop will cover MDX. While many people write basic MDX queries and calculations, they often feel uncomfortable with the language. To begin with we will very briefly review the basic concepts of MDX, writing MDX queries and some common calculations, then move on to the more complex topics such as subselects and scoped assignments.

- MDX basic theory: members, sets and tuples
- Writing MDX queries
- Simple MDX calculated members
- MDX functions that return sets and members, and hierarchy navigation functions
- Implementing common MDX time series calculations

### Day 3 – MDX: Beyond the Basics (2)

Day 3 continues on with MDX from where day 2 left off.

- Implementing calculations on Time Utility Dimensions
- Advanced concepts: Exists, Subselects and Solve Order
- MDX for dynamic security
- Writing scoped assignments with the SCOPE statement, and using scoped assignments to solve MDX calculation problems

### Day 4 – Performance Tuning SSAS Multidimensional Solutions

The final day of the workshop will drill down into performance-tuning SSAS: how to diagnose performance problems with Profiler and how to resolve these problems

- Understanding SSAS query processing and what Profiler can tell you about it
- Partitioning for query performance, and fixing partition elimination problems
- Designing aggregations both manually and using the wizards
- SSAS caching: when it works and when it doesn't, and how to warm the cache
- Writing efficient MDX for calculations