KIMBALL UNIVERSITY

Microsoft Data Warehouse / Business Intelligence in Depth

Why Attend

This class teaches you how to design and build a successful data warehouse / business intelligence system on the Microsoft SQL Server platform. Using the *Microsoft Data Warehouse Toolkit, Second Edition* with SQL Server 2008 R2 as its foundation, it translates proven Kimball Lifecycle methods and patterns to the Microsoft SQL Server 2005, 2008 R2, and SQL Server 2012 platforms.

Through a combination of lectures and demonstrations, this course delivers a detailed technical introduction to designing and building a Microsoft-based DW/BI system that meets the needs of your business users. It provides an understanding of what you need to do to succeed, plus specific tools and techniques.
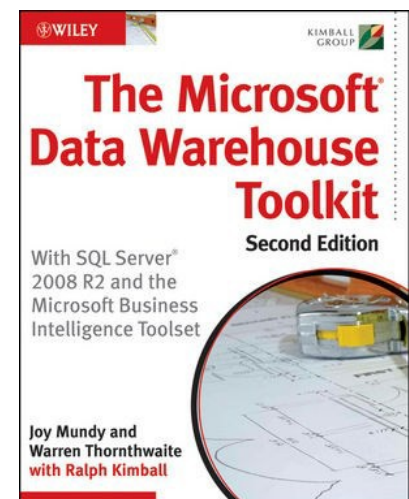
Who Should Attend

This course is designed for all major roles on a Microsoft-centric DW/BI project team, including data warehouse team managers, system architects, ETL system architects and developers, data warehouse operational staff, and BI application designers and developers.

Instructors

Warren Thornthwaite and Joy Mundy, co-authors of the best-selling *Microsoft Data Warehouse Toolkit*, *Second Edition*

Course Overview

Day 1
- Introduction to the Kimball Lifecycle
- Project Planning and Management
- Defining Business Requirements
- Designing the Business Process Dimensional Model
- Microsoft DW/ BI System Architecture
- System Setup

Day 2
- SQL Server Relational DW Physical Design
- Business Intelligence Applications
- Delivering BI Applications with Reporting Services, Office and SharePoint
- Adding Business Value with Data Mining and Predictive Analytics
- Metadata
- ETL System Design
- Data Quality Services and Master Data Management

Day 3
- Introduction to Integration Services
- Developing the ETL System
- Introduction to Analysis Services
- Developing the Analysis Services Multidimensional Database

Day 4
- Developing the Analysis Services Tabular Database
- Real Time Business Intelligence
- Securing the Microsoft DW/BI System
- Deployment
- Operations, Maintenance, and Growth

The Microsoft Data Warehouse Toolkit

Second Edition

With SQL Server 2008 R2 and the Microsoft Business Intelligence Toolset

Joy Mundy and Warren Thornthwaite with Ralph Kimball

Microsoft DW/BI in Depth: Course Details

DAY 1

Introduction to the Kimball Lifecycle
• Roadmap for creating the DW/BI system

Project Planning and Management
• Assess readiness
• Define, plan, and manage the project

Defining Business Requirements
• Gathering business requirements
• Requirements prioritization session
• Exercise: Translating requirements into the DW Bus Matrix

Designing the Business Process Dimensional Model
• Basic dimensional modeling concepts
• Conformed dimensions
• Slowly changing dimensions
• Additional concepts in dimensional modeling
   -Hierarchies and snowflaking
   -Degenerate and junk dimensions
   -Many to many dimensions
• The dimensional modeling process and design spreadsheet

MS Data Warehouse/Business Intelligence System Architecture
• Common components of DW/BI system architecture
• Mapping MS components to the general DW/BI architecture
• Process: How to create an architecture plan
• Exercise/discussion: Develop & present summary architecture
  for attendees' systems

System Setup
• System configuration: location of components, memory and
  storage
• System sizing factors
• Installing SQL Server and issues to consider during installation
  and configuration

DAY 2

SQL Server Relational Data Warehouse, Physical Design
• Column names, data types, keys and compression
• Initial index plan, including columnstore indexes
• Setting up the Resource Governor
• Fact table partitioning

Business Intelligence Applications
• Basic BI application concepts
• The reporting system design process
   -Standard report template
   -Report specifications
   -Reporting system navigation design--the BI Portal
• The BI application development process

Delivering BI Applications with Reporting Services
• Reporting Services overview
• Extended demo: Designing and deploying a report
• Reporting Services metadata
• Other BI options: PowerPivot, Power View, PerformancePoint

Adding Business Value with Data Mining & Predictive Analytics
• Data Mining overview
• The SQL Server data mining architecture
• The data mining process
• Extended demo: Creating a data mining model
   -Developing the input data set
   -Selecting algorithms
   -The data mining designer
   -Using the data mining add-ins for Microsoft Office
• Validating the model and moving to production
• Data mining metadata and maintenance

The Metadata Morass
• Defining and managing metadata
• Metadata in SQL Server
• A simple business metadata data model

ETL System Design
• Develop a high-level map
• Exercise: High-level map for Customer dimension
• Develop standard design patterns for common tasks
• The ETL system specification

Data Quality Services and Master Data Services
• Defining master data management (MDM)
• Introducing Microsoft Data Quality Services (DQS)
• Introducing Microsoft Master Data Services (MDS)
• Getting started with DQS and MDS

DAY 3

Introduction to Integration Services
• Intro to Integration Services and development environment
   -Control Flow tasks and Data Flow components
   -Variables and Expressions
   -Managing Connections
   -Demo: creating a new package introduction to variables
• Extracting data
   -Extract design tips; extended demo
• Capturing changed data
   -Alternative approaches
   -Changed Data Capture features
   -Identifying changed data by brute force
• Loading Data
   -Extended demo: Data load best practices

Developing the ETL System
• Transformation for dimension tables
   -Cleaning and conforming; extended demo
   -Populating multi-valued or many-to-many dimensions
   -Demo: incremental updates and managing slowly changing
    dimensions
• Transformation for fact tables
   -Surrogate key pipeline; extended demos
   -Early arriving facts, late arriving facts; demos
   -Periodic and accumulating snapshot facts; demos
• Audit system overview
• Configurations and Parameters

Introduction to Analysis Services
• What is Analysis Services
   -Overview
   -Multidimensional versus Tabular modes
• Why use Analysis Services?
• Extended demo: Designing dimensions
   -The vocabulary of dimensions
   -The Dimension Wizard
   -The Dimension Editor

Developing the Analysis Services Multidimensional Database
• Getting started
• Extended demo: creating a new dimension
   -Key properties to edit
    (and which properties most of us can ignore)
   -Hierarchies and attribute relationships
   -Processing and fine tuning
• Designing multidimensional cubes; extended demo
   -Terminology
   -Cube structure and physical facts
   -Dimension usage
   -Calculations, KPIs and Actions
• Physical design considerations
• Cube processing

DAY 4

Developing the Analysis Services Tabular Database
• Extended demo: Designing tabular models
   -Design a dimension
   -Create facts and calculations
   -Relationships
   -Direct query versus in memory

Real Time Business Intelligence
• Defining real-time BI
• Making the case for (and against) real-time
• Alternative approaches to providing real-time data
   -Executing reports in real-time
   -Loading the DW/BI system in real-time
   -Using Analysis Services with real-time data

Securing Microsoft DW/BI System
• Developing a security plan
• Securing the core SQL Server components

Deployment: The Great Unveiling
• Setting up the environments
• Testing
• Deploying to production
• User readiness

Operations, Maintenance and Growth
• Providing ongoing user support
• Monitoring the DW/BI system
• Killing queries
• Backup and recovery