

SQL Server 2014 Business Intelligence: Integration Services and Analysis Services

Duration: *(Face-to-Face & Remote-Live)*, or 35 Hours *(On-Demand)*

Price: £1,945 *(Face-to-Face & Remote-Live)*, or £1,145 *(On-Demand)*

Discounts: For multiple course purchases, please [contact us](#) for applicable discounts.

Delivery Options: Perform training at your own pace via our [on-demand training](#) option or attend regularly scheduled live courses via [remote-live attendance](#).

Students Will Learn

- Understanding the architecture of SSIS and how to use it as an ETL utility
- Using SSIS to create import/export routines between SQL Servers and many other data sources
- Moving data between databases, XML, Excel, .NET, and flat file formats
- Deploying and scheduling SSIS routines
- Implementing error handling in SSIS
- Understanding the fact-dimension table structure used by data warehouses
- Designing and building data warehouses
- Using SSIS to populate data warehouses with data from relational databases
- Creating cubes using SSAS
- Implementing data mining algorithms against cubes to support predictive and trending analysis
- Automating cube processing
- Deploying, managing and securing cubes
- Defining attribute relationships to optimize cube performance
- Applying custom formatting to cube data
- Connecting to data cubes from Excel and other clients

Course Description

This hands-on course focuses on the Integration Services (SSIS) and Analysis Services (SSAS) business intelligence tools that are bundled with SQL Server 2014. Students will install and configure SQL Server 2014 servers that are enabled for SSIS and SSAS, which are then used for comprehensive hands on exercises demonstrating key features of SSIS/SSAS.

Students work with complex SSIS data migration projects that import/export data between multiple formats including: Access, SQL Server, Oracle and other databases, XML files,

Excel spreadsheets and flat files. Also demonstrated are SSIS tasks that can download from FTP Servers, copy/move files and folders, execute Win32 processes and .NET scripts, perform bulk imports, perform database maintenance, contact (via text or e-mail) administrators, and transfer database components between SQL Servers. Error handling options are also demonstrated with hands-on exercises, as well as how to use variables and input parameters in SSIS routines. The course provides thorough coverage of how to deploy, automate, secure and troubleshoot SSIS routines.

Students will learn how to use SSAS to design, build and populate data warehouses to stage data for use by data cubes, and will perform hands-on exercises to design and build a data warehouse. Advanced data warehouse concepts, such as surrogate keys and rapidly changing dimensions are also reviewed. Subsequent exercises use SSAS to create data cubes and analyze them. Cube customization options are demonstrated, including how to add Key Performance Indicators (KPIs), custom calculations, and actions that link to SSRS reports. Attendees also learn how to optimize cube performance by defining attribute relationships and custom aggregation levels.

The course also includes an overview of data mining and the tools available to do this in SSAS, supported by a hands-on exercise that walks through the process of defining a data mining structure to predict future sales. Administration topics related to data cubes are covered, including exercises that deploy and secure cubes, process and manage cubes.

Course Prerequisites

Familiarity with database concepts, Windows desktop navigation and software installation techniques. Attendance at HOTT's [SQL Programming](#) course or [Microsoft Transact-SQL Programming](#) course is highly recommended although not required.

Course Overview

Installing SQL Server Business Intelligence Tools

- Installation Requirements
- Steps to Install SSRS, SSIS and SSAS
- Navigating the SQL Server Data Tools Development Environment
- New Features to SQL Server 2014 Business Intelligence

Common SSIS Tasks

- Executing SQL Statements
- Connecting to FTP Servers
- Sending E-mail
- Notifying Administrators of Errors
- Completing Bulk Inserts
- Copying, Moving and Deleting Files and Folders

Advanced SSIS Tasks

- Executing .NET Scripts and Win32 Processes

Integration Services Architecture

- Architecture of the SSIS Data Engine
- Using Data Transformation Tasks
- Managing Connections to Sources and Destinations
- ADO.NET Data Source and Destination
- Understanding Data Buffers
- Control Flow Tasks and Containers

Data Transformations

- Converting Data Types
- Merging Data from Multiple Sources
- Splitting Data to Multiple Destinations
- Counting Rows
- Sampling and Sorting Records
- Copying Columns

Advanced Data Transformations

- Filling in Missing Data with Lookups
- Locating Near Duplicate Rows with

Using the Windows Management Instrumentation (WMI) Tasks

- Performing Database Maintenance and Backups During SSIS Routines
- Using Variables and Input Parameters
- Profiling Database Tables
- Comparing XML Files Against Schemas

Migrating SQL Server 2000 DTS Packages

- Using the Upgrade Advisor
- Running Legacy DTS Packages on SQL Server 2005
- Migration DTS Packages to SSIS
- Customizing Upgraded DTS Packages

OLAP Design

- Understanding Fact and Dimension Tables
- Modeling Slowly Changing and Rapidly Changing Dimensions
- Modeling Fact Tables
- Using Star and Snowflake Schemas for Dimension Tables
- Implementing Surrogate Keys
- Defining Business Keys

Creating and Managing Cubes

- Creating Data Sources to Connect to Data Warehouses
- Using SSAS to Create Cubes
- Applying Friendly Names to Measures and Attributes
- Customizing Dimensions and Measures
- Setting up Navigational Hierarchies
- Optimizing Cubes with Attribute Relationships

Cube Deployment and Administration

- Cube Storage Calculations
- Configuring Desired Aggregation
- Configuring Caching
- Deploying and Processing Cubes
- Connecting to Cubes from Excel and Other Clients
- Partitioning and Processing Cubes
- Backup and Restore Options
- Securing Cubes

MDX Functions

Fuzzy Grouping

- Adding Audit Information to Results
- Counting the Occurrence of Keywords
- Sending Rows That Process Correctly and Incorrectly to Different Destinations
- Respond to Truncation Errors

SSIS Administration and Automation

- Deploying SSIS Routines
- Manually Running SSIS Routines
- Automating SSIS Execution
- Configuring Notifications for Execution Success, Failure or Both
- SSIS Security
- Troubleshooting Techniques

Creating and Populating Data Warehouses

- Creating Data Warehouses (OLAP Databases)
- Adding Fact Tables
- Adding Dimension Tables and Joining Them to Fact Tables
- Loading Data into Fact and Dimension Tables
- Validation Techniques for Data Loads

Customizing Cubes

- Adding Key Performance Indicators (KPIs)
- Customizing Dimensions and Attributes
- Adding Translations to Support Multiple Languages
- Adding Custom Calculations
- Subdividing Cubes Using Perspectives

Multidimensional (MDX) Essentials

- Using MDX Queries to Pull Data from Cubes
- Understanding Tuples and Sets
- MDX Expressions vs. Queries
- Grouping Attribute Values into Named Sets
- Adding Custom Calculations for Cubes Using MDX

Understanding the Data Mining Process

- Using MDX Aggregate Functions
- Using Navigations Functions to Move Though Hierarchies
- Grouping, Filtering and Sorting Functions
- Time-Based MDX Functions
- Types of Business Analysis Supported by Data Mining
- Data Mining Process Explained
- Understanding the Key Components of Data Mining
- Built-In Data Mining Algorithms
- Matching Mining Algorithms to Business Needs

Working with Data Mining Structures

- Adding Data Mining Structures
- Mining for Hidden Information
- Discovering Patterns in Data
- Creating Predictive Models
- Using the Data Mining Wizard
- Modifying Mining Structures with the Data Mining Designer

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