

SQL Server 2005 Analysis Services

Table of Contents

INTRODUCTION	INTRO-1
Prerequisites	INTRO-2
Installing the Practice Files	INTRO-3
Software Requirements	INTRO-3
Sample Database	INTRO-3
Installation	INTRO-4
About the Author	INTRO-5
WHAT IS MICROSOFT BUSINESS INTELLIGENCE?	1-1
Defining Microsoft Business Intelligence	1-2
Why Use OLAP?	1-3
Understanding the UDM	1-5
Dimensions and Measures	1-5
OLAP Schemas	1-6
Building and Viewing a Sample Cube.....	1-7
The AdventureWorksDW Source Database	1-7
Building a Cube with BIDS.....	1-9
Viewing the Results in BIDS	1-11
Viewing a Cube Using Excel.....	1-15
Cubes in Reporting Services	1-17
OLAP MODELING	2-1
Selecting a Modeling Tool	2-2
Understanding OLAP Modeling	2-4
An Example Star Model	2-5
Understanding Dimensional Modeling	2-9
Dimension Types	2-10
Understanding Cube Modeling	2-13
Modeling with BIDS	2-16
Understanding the BIDS Interface	2-16
Two Ways to Build a Model	2-18
A Note about ETL	2-22
LAB 2: OLAP MODELING	2-27
Lab 2 Overview	2-28

Create a Star Schema Using Visio	2-29
Create a Star Schema Using BIDS.....	2-33
USING SSAS IN BIDS.....	3-1
Understanding BIDS	3-2
Offline vs. Online Mode.....	3-2
Creating Data Sources	3-5
Creating Data Source Views.....	3-9
Creating a Cube Using the Wizard	3-13
Refining Dimensions and Measures	3-16
Working with Your Cube	3-19
LAB 3: USING SSAS IN BIDS.....	3-27
Lab 3 Overview.....	3-28
Use the New Cube Wizard	3-29
Refine the Cube.....	3-32
INTERMEDIATE SSAS	4-1
Creating KPIs.....	4-2
How KPIs Are Implemented in SSAS	4-3
Customizing the KPI Templates.....	4-5
Other KPI Considerations	4-6
Creating Perspectives.....	4-7
Creating Translations.....	4-9
Localizing Measure Values	4-11
Currency Localization	4-12
Creating Actions	4-14
LAB 4: INTERMEDIATE SSAS	4-21
Lab 4 Overview.....	4-22
Add an Action	4-23
Add a Perspective.....	4-25
ADVANCED SSAS	5-1
Working with Multiple Fact Tables	5-2
Linked Objects	5-4
Dimension Usage Configurations	5-5
Using Advanced Dimension Types.....	5-8
Snowflake Dimensions.....	5-9
Degenerate Dimensions	5-10

Parent-Child Dimensions	5-11
Many-To-Many Dimensions	5-12
Role Playing Dimensions	5-13
Writeback Dimensions	5-14
Working with Changing Dimensions	5-16
More about Error Handling for Dimension Attribute Loads	5-17
Using the Business Intelligence Wizard.....	5-19
LAB 5: ADVANCED SSAS	5-30
Lab 5 Overview	5-31
Use the Business Intelligence Wizard	5-32
Refine the Cube (Advanced)	5-35
CUBE STORAGE AND AGGREGATION.....	6-1
Basic Storage: MOLAP	6-2
About XMLA	6-2
Three Storage Modes	6-4
About Aggregations	6-5
Customizing Aggregations.....	6-10
Using Profiler	6-12
Advanced Storage: MOLAP, HOLAP, or ROLAP	6-16
Using Partitions with Advanced Storage Options	6-16
ROLAP Dimensions	6-18
Implementing Proactive Caching.....	6-20
Notification Settings for Proactive Caching.....	6-23
Fine Tuning Proactive Caching.....	6-24
Using Partitions: Relational or SSAS.....	6-26
Relational Table Partitioning in SQL Server 2005	6-26
How to Implement OLTP Partitioning.....	6-26
Other Capabilities of OLAP Partitions.....	6-27
Cube and Dimension Processing Options	6-28
LAB 6: CUBE STORAGE AND AGGREGATION.....	6-35
Lab 6 Overview	6-36
Add a Cube Partition.....	6-37
Design Aggregations and Process the Cube.....	6-39
BEGINNING MDX	7-1
Understanding MDX	7-2

MDX Structure Names	7-2
MDX Syntax Rules	7-5
Writing Your First MDX Query	7-8
About Members, Tuples, and Sets	7-12
Common MDX Functions Explained	7-17
New or Updated MDX Functions or Keywords	7-22
LAB 7: BEGINNING MDX	7-29
Lab 7 Overview	7-30
Write and Execute Simple MDX Queries	7-31
Write and Execute Complex MDX Queries	7-35
INTERMEDIATE MDX	8-1
Understanding the Calculations Subtab	8-2
Adding Calculated Members	8-4
Examine a Calculated Measure	8-4
Why Use Calculated Members?	8-6
Adding MDX Scripts	8-9
Adding Named Sets	8-13
Adding .NET Assemblies	8-16
Why Use External Assemblies?	8-18
LAB 8: INTERMEDIATE MDX	8-23
Lab 8 Overview	8-24
Add a Calculated Measure	8-25
Refine the Cube	8-27
SSAS ADMINISTRATION	9-1
Implementing SSAS Security	9-2
Reducing the Attack Surface	9-3
Data Source Connection Methods	9-4
Implementing Cube Roles	9-5
Other Security Considerations	9-8
Implementing XMLA Scripts	9-9
SSAS Database Synchronization	9-12
Understanding SSAS Backup and Restore	9-13
Understanding Clustering	9-16
Improving Scalability	9-16
Understanding Performance Optimization	9-20

LAB 9: SSAS ADMINISTRATION	9-27
Lab 9 Overview	9-28
Create and Test SSAS Security Roles	9-29
Generate and Edit XMLA Scripts	9-32
INTRODUCTION TO DATA MINING	10-1
Understanding Data Mining Concepts	10-2
About Algorithms	10-3
More Data Mining Concepts	10-4
Implementing Algorithms	10-6
Reviewing Data Mining Structures	10-7
Mining Structure Subtab	10-8
Mining Models Subtab	10-9
Advanced Model Properties	10-10
Mining Structure Viewers	10-11
Decision Tree Viewer	10-11
Dependency Network Viewer	10-12
Naïve Bayes Viewer	10-13
Mining Accuracy Charts	10-15
Mining Prediction Viewers	10-16
Understanding Data Mining Algorithms	10-17
Content and Data Types	10-28
Other Model Properties	10-30
Considering Data Mining Clients	10-33
Understanding Mining Structure Processing	10-34
Using SSIS to Process Mining Models	10-34
SSIS and Data Mining	10-35
Working with the DMX (Data Mining Extensions) Language ..	10-36
A Simple DMX Query	10-37
LAB 10: INTRODUCTION TO DATA MINING	10-43
Lab 10 Overview	10-44
Use the New Mining Model Wizard	10-45
Refine the Mining Structure	10-49
INTRODUCTION TO SSAS CLIENTS	11-1
Using Excel 2003 Pivot Tables	11-2
Pivot Charts	11-6
The Limits of Excel 2003 as a BI client	11-10
Using SQL Server Reporting Services	11-12

Build an SSRS Report	11-13
Write an MDX Query	11-14
View the SSRS Report.....	11-17
Design the SSRS Report	11-18
Deploy the SSRS Report	11-20
Report Builder	11-22
Using .NET 2.0 Report Viewer Controls	11-28
Using SharePoint 2003 Web Parts	11-31
Business Scorecard Manager 2005.....	11-33
Data Mining Clients.....	11-34
LAB 11: INTRODUCTION TO SSAS CLIENTS	11-39
Lab 11 Overview	11-40
Use Excel 2003 as an SSAS Client	11-41
Use SSRS as an SSAS Client	11-44
OFFICE 2007 INTEGRATION WITH SSAS	12-1
Implementing SQL Server SP2.....	12-2
SSAS SP2.....	12-2
Implementing Excel 2007 Pivot Tables.....	12-3
Excel 2007 Pivot Charts.....	12-6
Implementing Excel 2007 as a Data Mining Client	12-8
Configuring the Add-in	12-8
Using Excel 2007 as a Data Mining Client.....	12-11
Using the Query Function	12-13
Using the Data Preparation Menu.....	12-16
Using the Data Modeling Menu.....	12-19
Using the Accuracy and Validation Menu	12-21
Implementing MOSS BI Features	12-25
Excel 2007 Web Services	12-25
MOSS Data Connection Libraries.....	12-33
MOSS KPIs.....	12-34
Other MOSS BI Capabilities	12-36
Performance Point Server (PPS)	12-39
LAB 12: OFFICE 2007 INTEGRATION WITH SSAS	12-45
Lab 12 Overview	12-46
Use Excel 2007 Pivot Charts	12-47
Use the Excel Data Mining Add-In.....	12-53