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Oracle Essbase多维数据库与金融分析

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Objectives

After completing this lesson, you should be able to:

- Describe multidimensional analysis
- Describe Oracle Enterprise Performance Management system
- Describe Oracle Business Intelligence Suite Enterprise Edition Plus
- Describe Essbase
- Identify components of the block storage production environment

Multidimensional Analysis

Analysis of data from multiple perspectives:

January Gross Sales for
All Products and All
Customers in the
Current Year

Sales Report by Month

All Products		Customer	Current Year
	Jan	Feb	Mar
Gross Sales	2,358,810	2,427,770	(68,960)
Discounts	118,618	138,856	(20,238)
Net Sales	2,477,428	2,566,626	(89,198)

Product Report by Month

Gross Sales		Customer	Current Year
	Jan	Feb	Mar
PERFORMANCE	1,697,560	1,619,970	77,590
VALUE	661,250	807,800	(146,550)
All Products	2,358,810	2,427,770	(68,960)

Variance Report by Channel

All Products		Gross Sales	Jan
	Current Year	Budget	Act Vs Bud
OEM	749,700	525,540	224,160
Distributor	1,609,110	1,651,005	(41,895)
Customer	2,358,810	2,176,545	182,265

Spreadsheet-Based Analysis

- Data integrity suffers because of user errors or stale data.
- Validating spreadsheet reports wastes time and resources.

Two reports prepared by two users show two different totals. Which one is correct?

OEM Customer Q1 Variance Report			
LIGHTBOLT 365 A		Gross Sales	Quarter 1
	Current Year	Budget	Act Vs Bud
Gateway	35,204	29,226	5,978
IBM	104,800	100,776	4,024
Acer	21,600	20,520	1,080
Apple	89,200	87,096	2,104
AST	66,400	64,258	2,142
Dell	68,600	66,358	2,243
HP	100,600	96,777	3,824
OEM	451,200	435,784	15,416

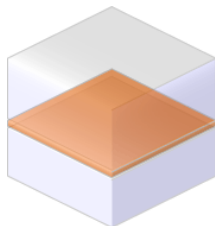
Q1 Variance Report by Channel			
LIGHTBOLT 365 A		Gross Sales	Quarter 1
	Current Year	Budget	Act Vs Bud
OEM	486,404	465,010	21,394
Distributor	919,600	1,063,438	(143,838)
Retail	535,987	521,672	14,315
Customer	1,941,991	2,050,120	(108,129)

Multidimensional View of Information

- Structures data around natural business concepts
- Provides foundation for efficient, sophisticated business analysis



Accountant

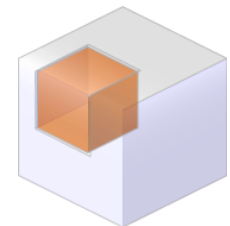


Product Manager

		LIGHT		THUND	
		January		February	
		Actual	Budget	Actual	Budget
Sales	OEM				
	Retail				
Margin	OEM				
	Retail				



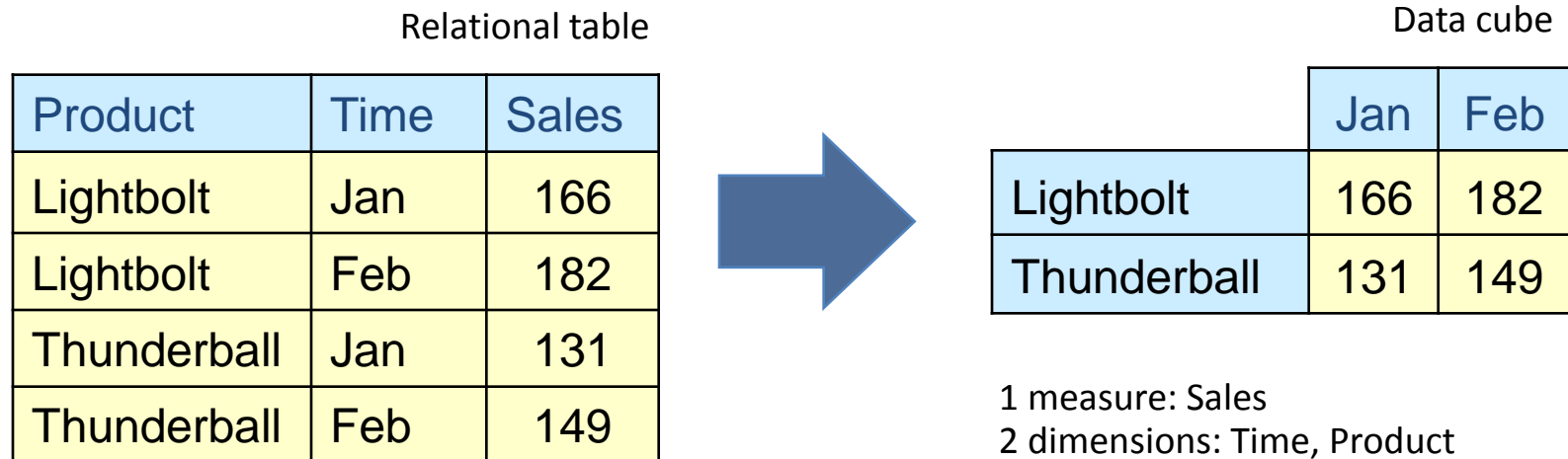
Region Manager



Financial Analyst

Data Cubes

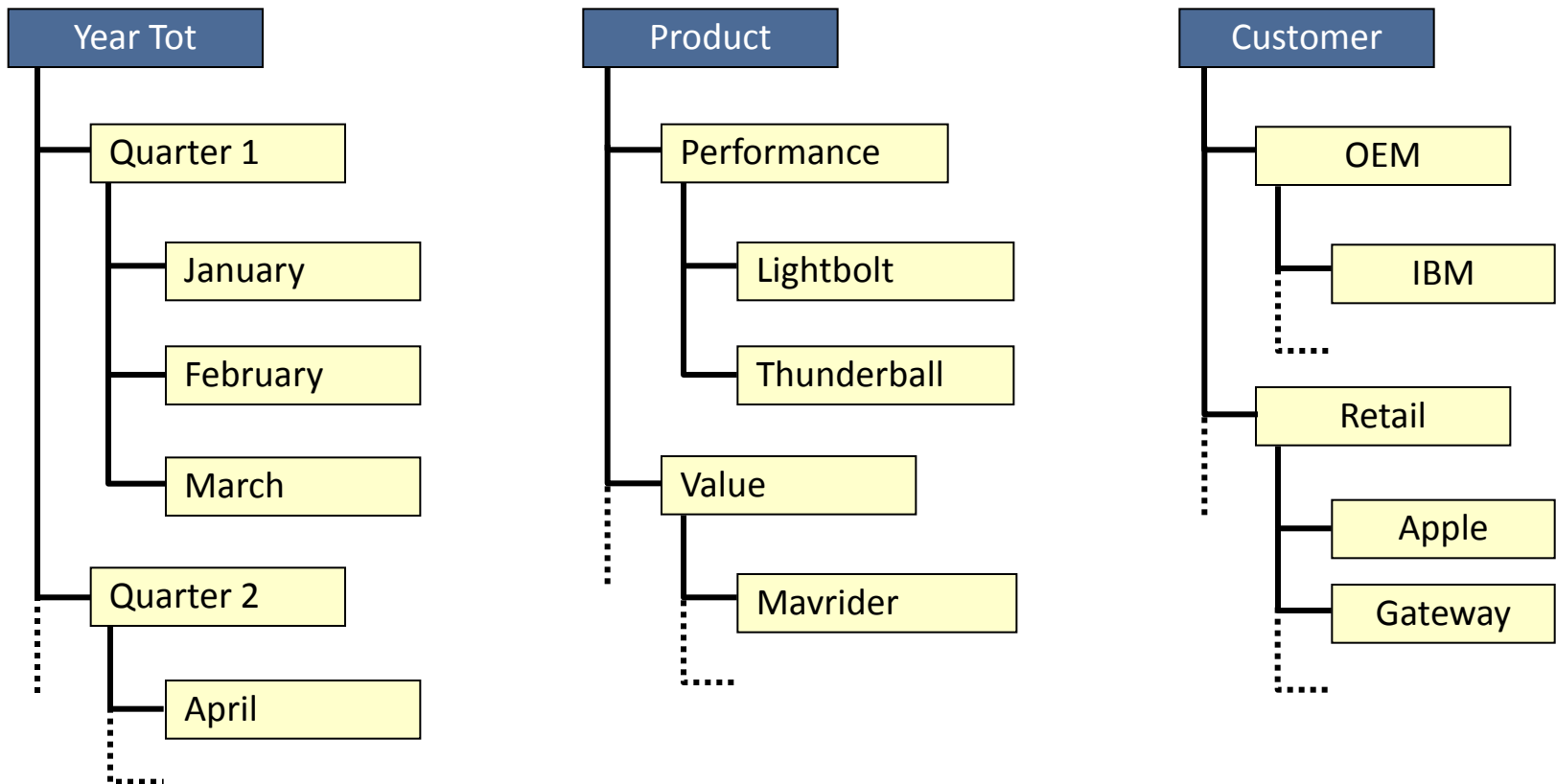
- Analysts prefer to view multidimensional data in cubes, rather than in relational tables.



- *Cube* is a metaphor for multidimensional data storage.
- Data is analyzed along only two to three dimensions at a time.

Dimension Hierarchies

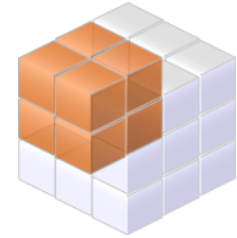
You can organize a dimension's members in a hierarchy.



Operations in Multidimensional Data Models

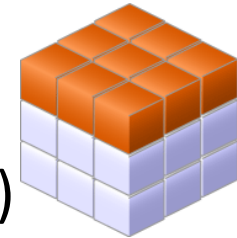
- Selection (**slice** and **dice**)

Sales to retail customers during January and February by product



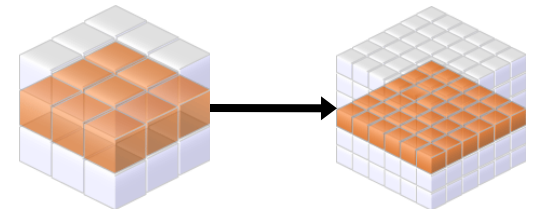
- Aggregation (**roll up**)

Total sales by product



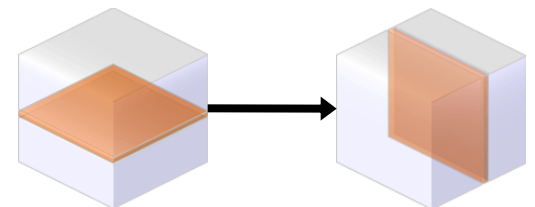
- Navigation to more detailed data (**drill down**)

Supporting data for sales for retail customers during Qtr 1



- Visualization operations (**pivot**)

Reorientation of the data cube
Display of a three-dimensional data cube in a series of two-dimensional planes



Oracle's Enterprise Performance Management System

EPM Workspace

Performance Management Applications

BI Applications

Business Intelligence Foundation

Fusion Middleware



OLTP & ODS Systems



Data Warehouse Data Mart



OLAP, Essbase



SAP, Oracle, Siebel, PeopleSoft, Custom



Excel XML



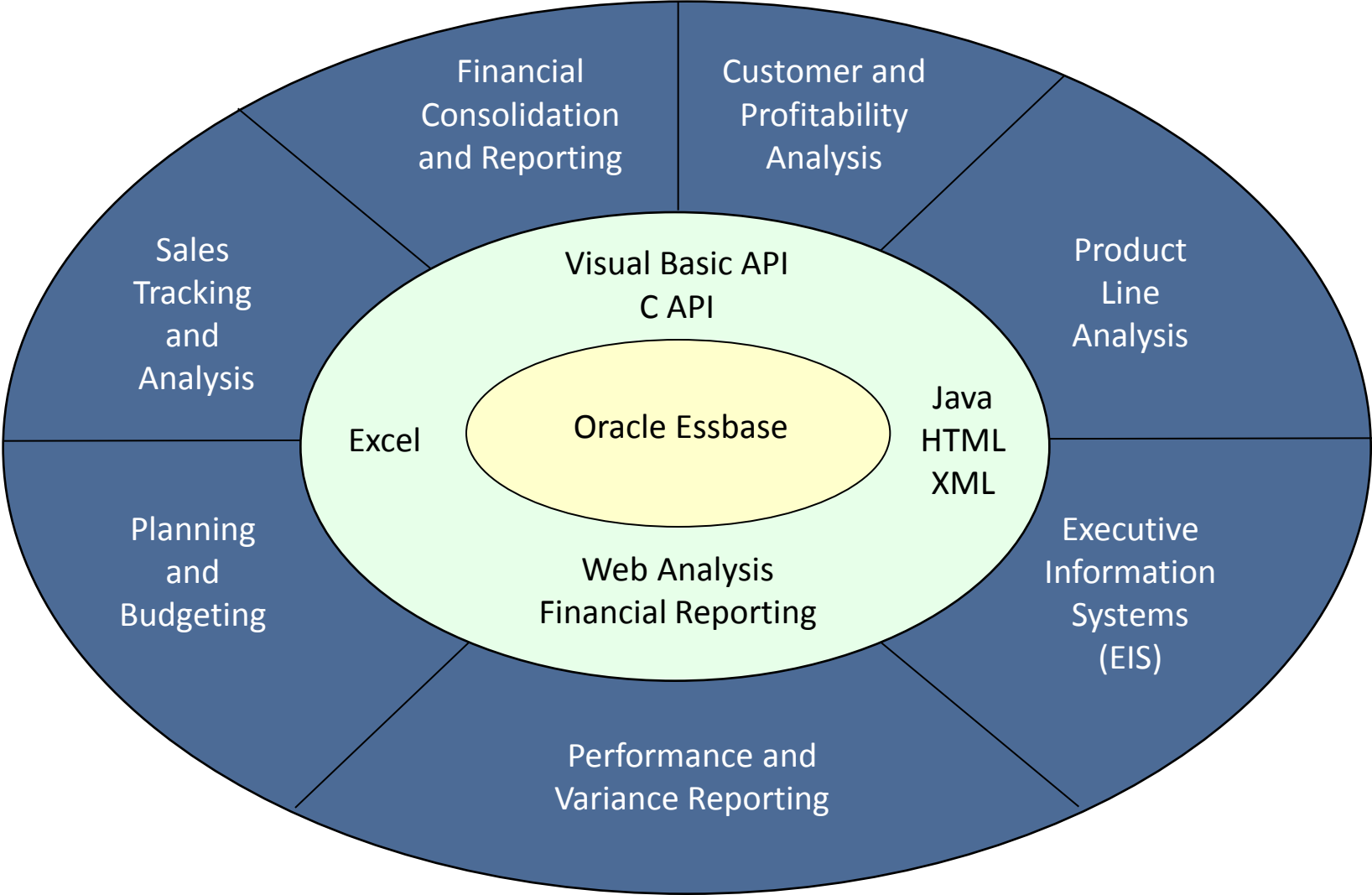
Business Process

Oracle BI Suite Enterprise Edition Plus

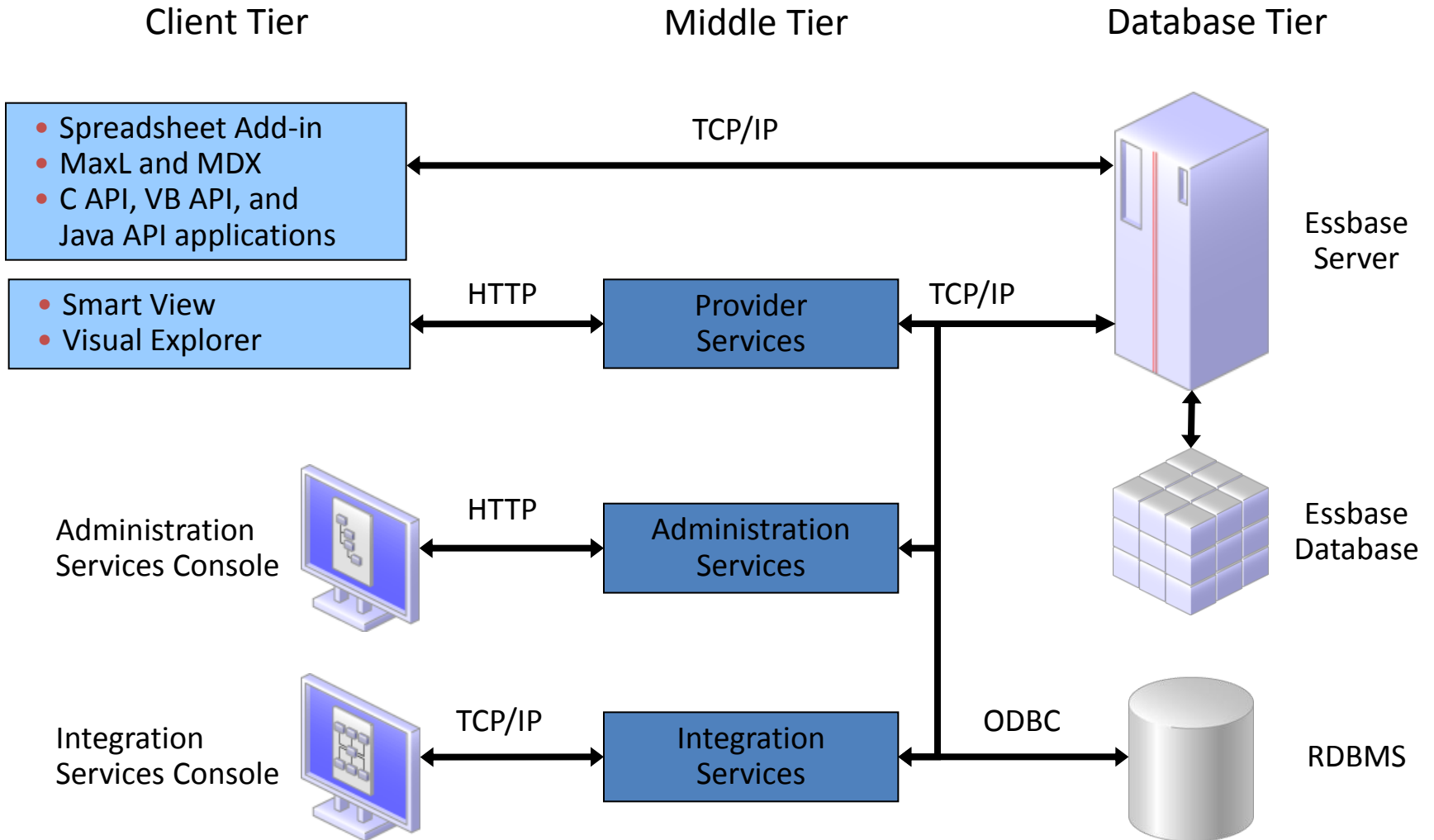
- Is part of Business Intelligence Foundation
- Delivers a full range of analysis and reporting capabilities



Essbase



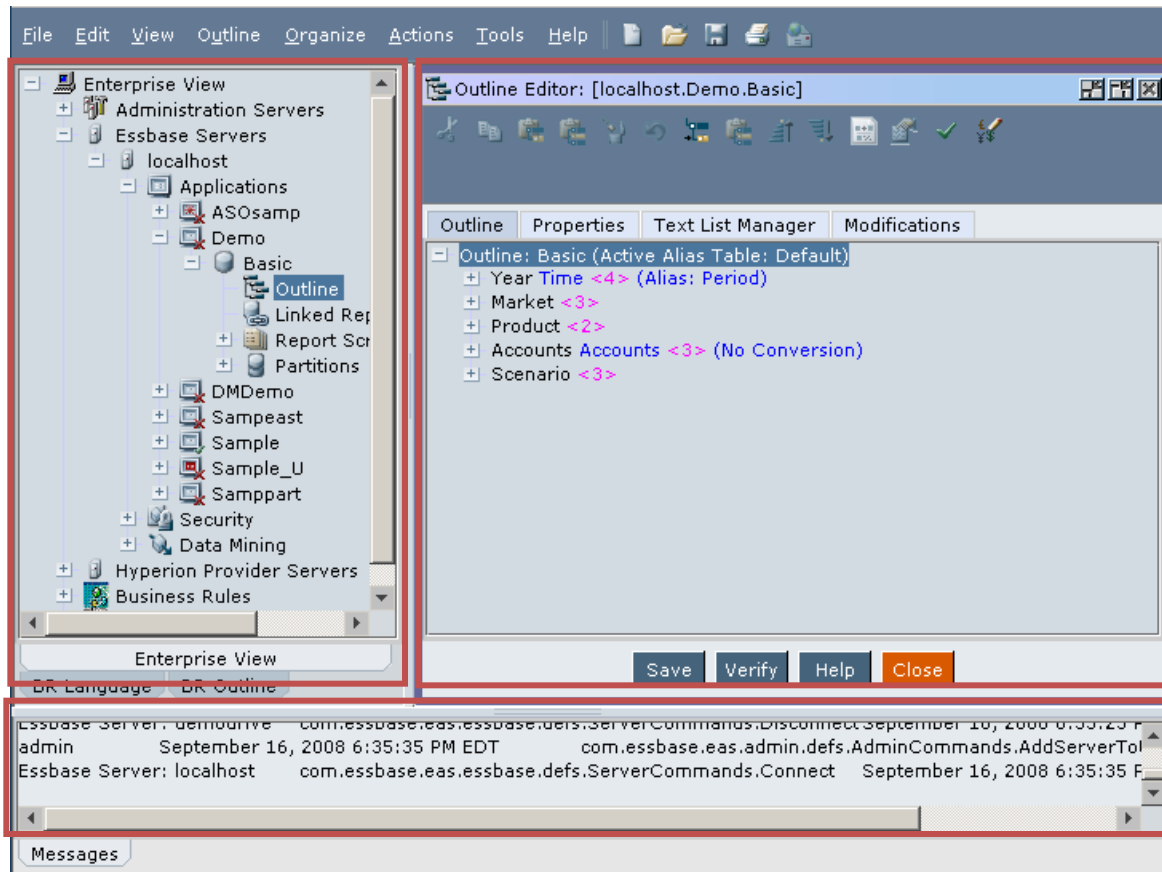
Essbase Architecture



Administration Services Console

Database and system administrators' interface

Navigation panel →

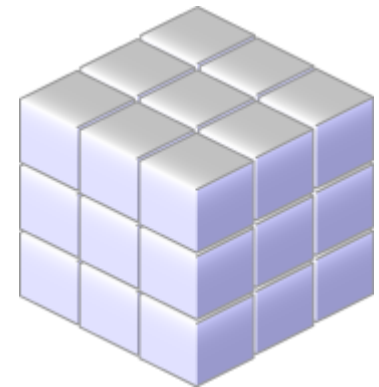
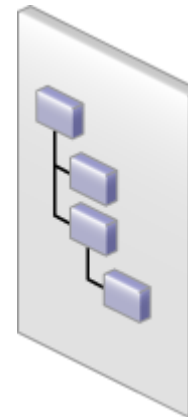
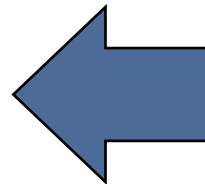
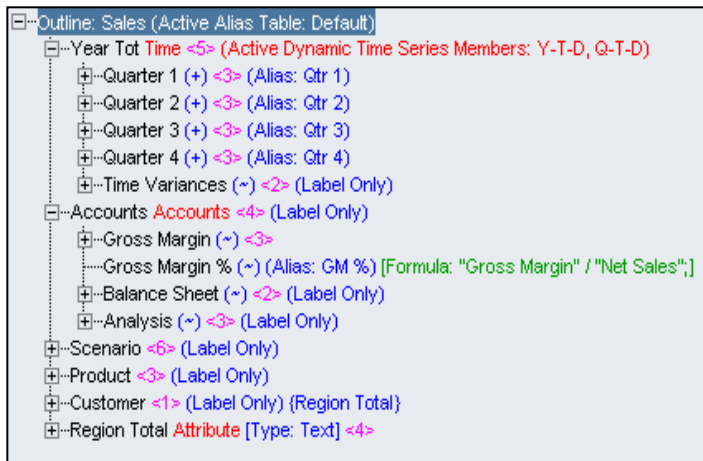


← Object window

← Message panel

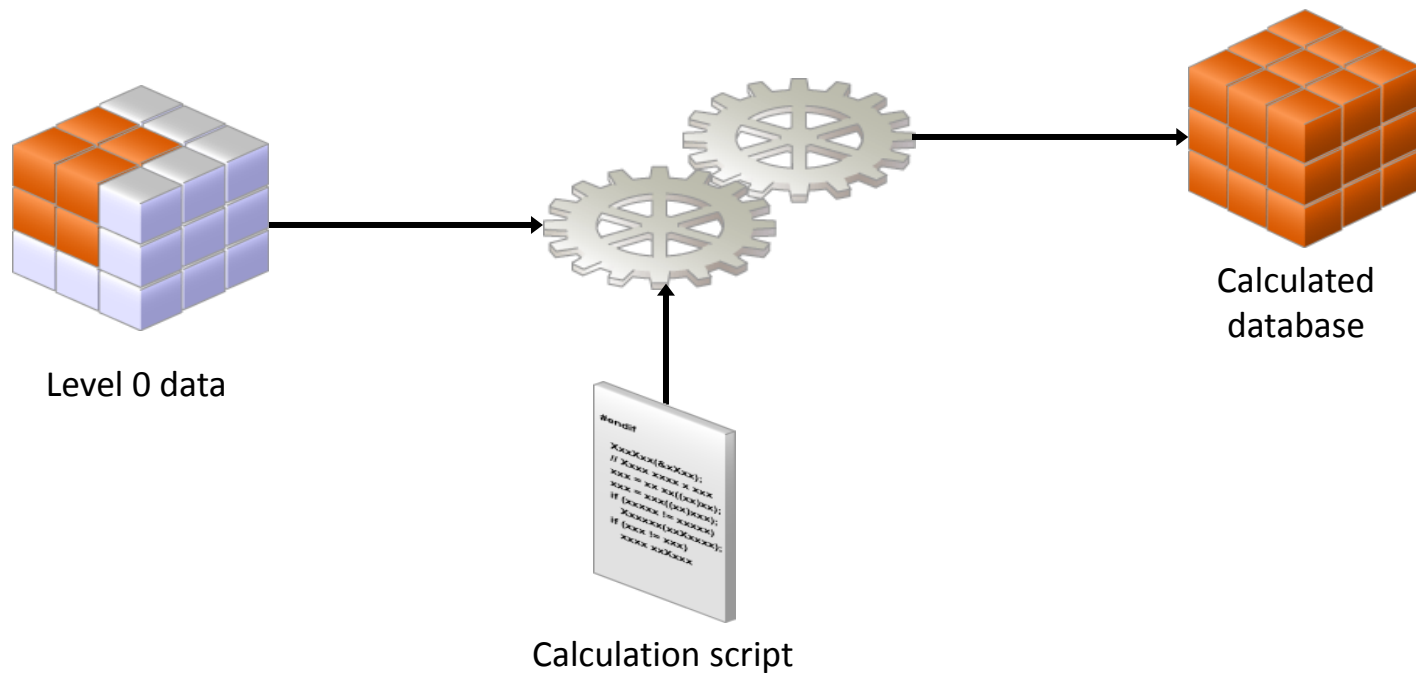
Outlines

- Tree structure for dimension hierarchies
- Consolidations and mathematical relationships between members
- Outline Editor



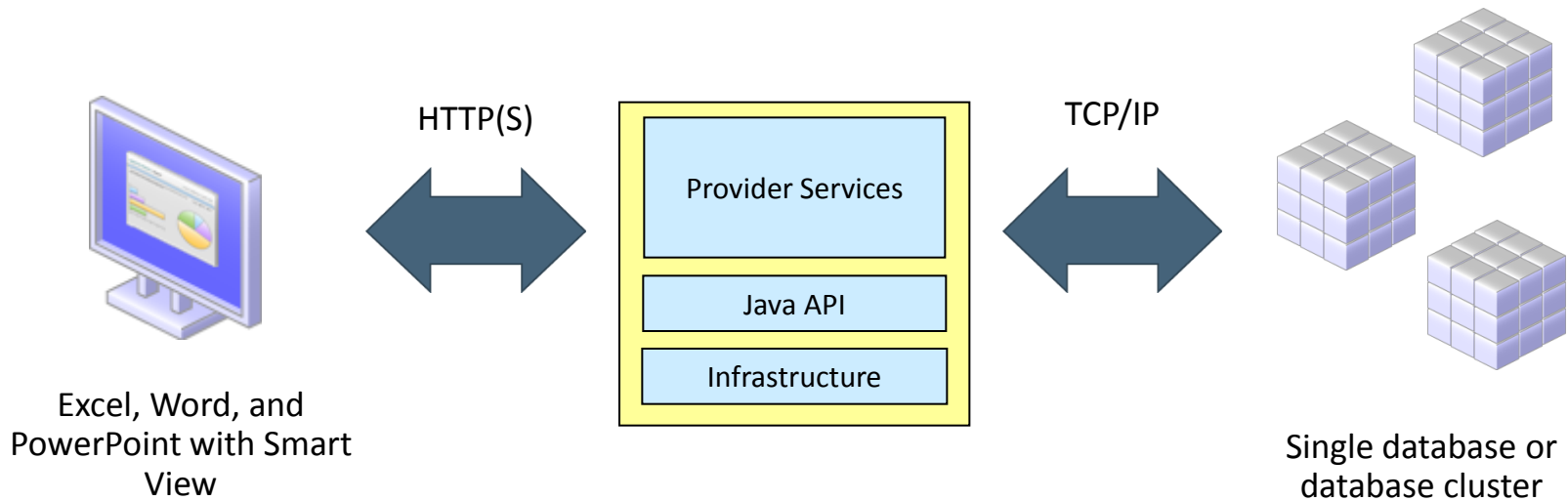
Calculation Scripts

- Calculate all or a portion of the database
- Control the order in which dimensions are calculated
- Perform complex calculations



Smart View

- Is a Web-deployed thin client that is embedded in a client spreadsheet application
- Enables you to retrieve data and create ad hoc reports
- Provides integration with Microsoft Office products
- Provides a single Excel interface to analyze data



Block Storage Implementation Process

Analysis and Planning

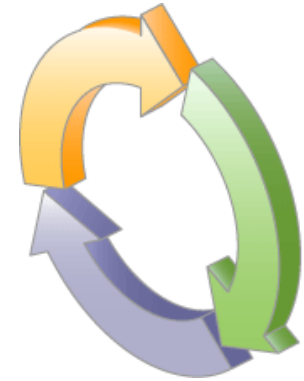
1. Identify business results
2. Examine data sources
3. Analyze sample reports
4. Design block storage outlines

Database Creation

5. Create block storage outlines
6. Create load rules
7. Create calculation scripts

Deployment and Support

8. Maintain block storage outlines
9. Manage data flow
10. Analyze data
11. Provide management and user support

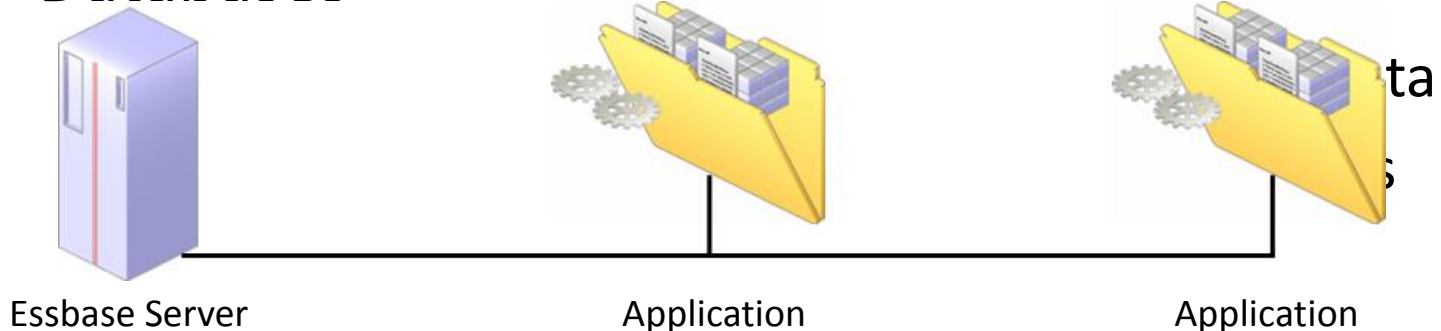


Creating Applications and Databases

– Applications

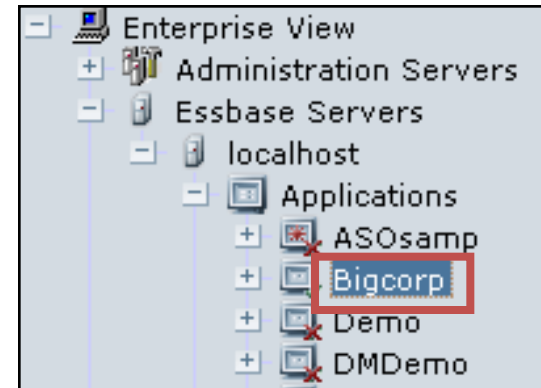
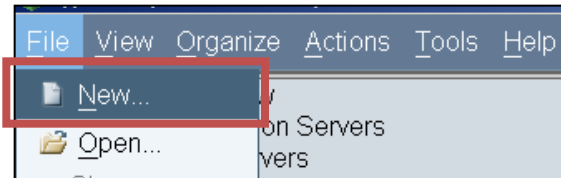
- Contain block storage databases and shared scripts
- Reside on the server where Essbase Server is installed
- Run application server processes

– Databases

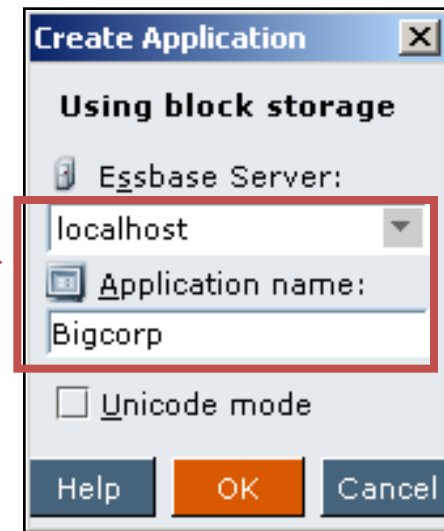
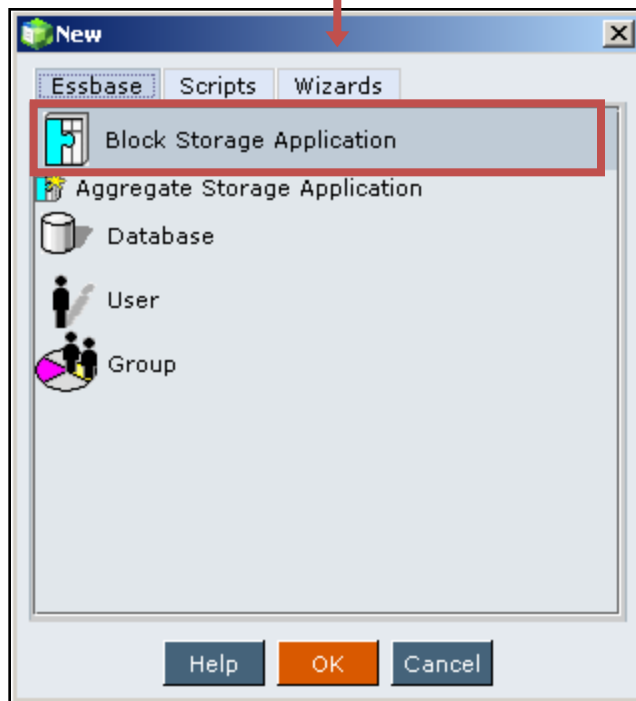


Creating Block Storage Applications

1



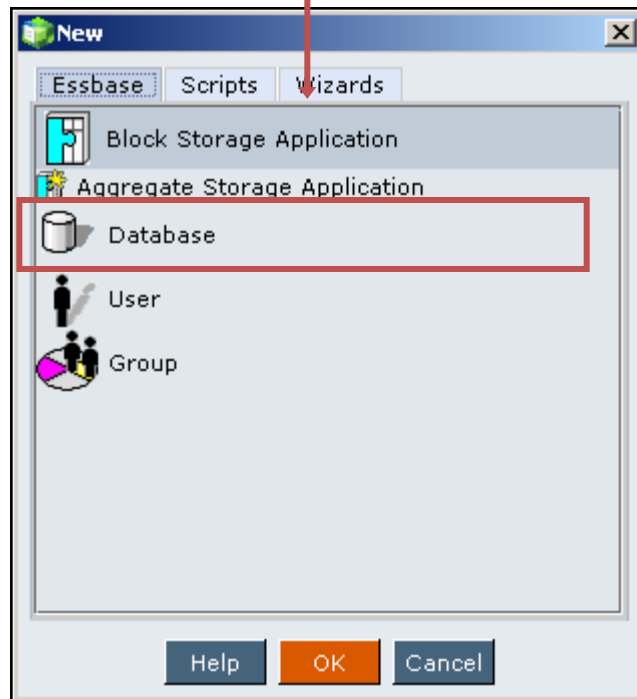
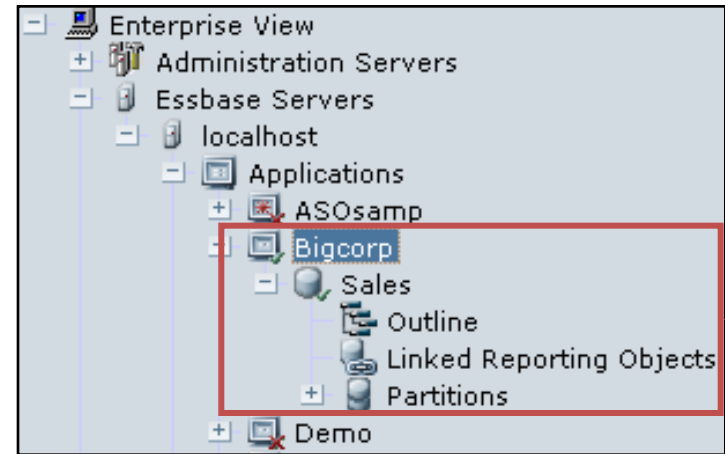
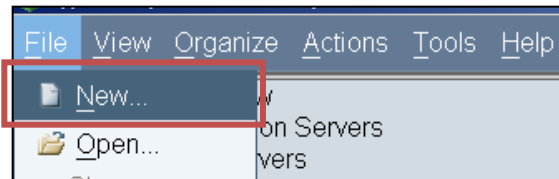
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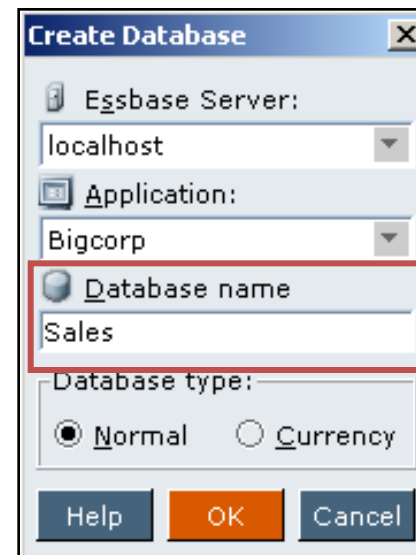
3

Creating Block Storage Databases

1



2



3

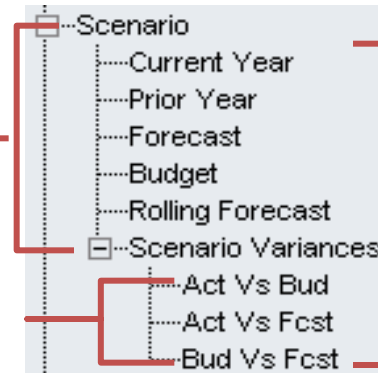
Creating Outline Structures

Hierarchy terminology:

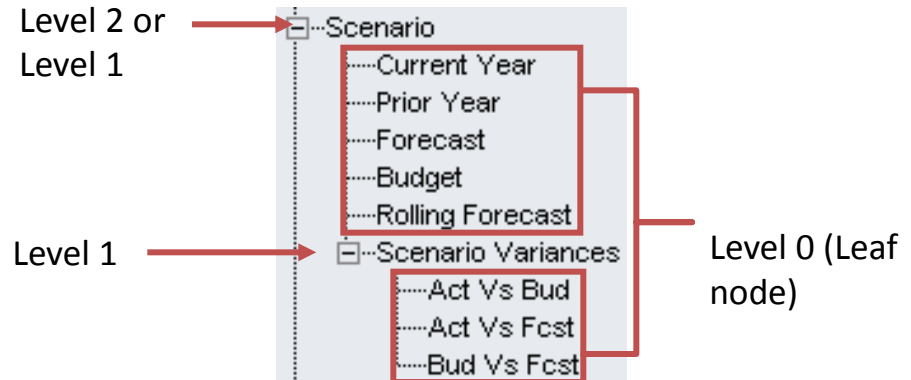
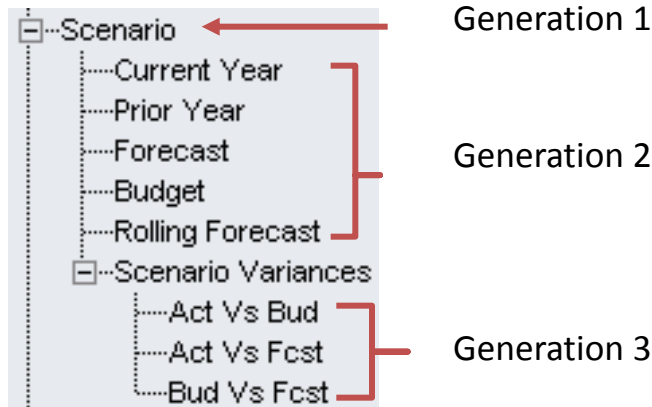
- Genealogy
- Generations
- Levels

- Ancestors of
- Act vs Bud
 - Act vs Fcst
 - Bud vs Fcst

Children of Scenario
Variances



Descendants
of Scenario



金融预算分析案例

统计历史

- 历史上类似的股票最大跌幅

设置预算

- 假设现在的股票未来会跌倒历史的最大值

决策分析

- 如果按照6笔资金投入，最多亏损40%，该如何投入资金比例？

金融数据挖掘案例

统计历史
样本

- 历史股票价格（历史样本）

设置影响
因素

- 假设M2，CPI，大数据采集的舆情，等对股价有比较大的影响，那么他们是影响因子

数据挖掘

- 下周估计是多少？（预测）
- 对应Hyperion 可利用@TREND函数，应用回归算法

@TREND

- Calculates future values, basing the calculation on curve-fitting to historical values

@TREND

Syntax

@TREND (Ylist, [Xlist], [weightList], [errorList], [XforecastList], YforecastList, method[, method parameters] [, Xfilter1 [, parameters]] [, XfilterN [, parameters]] [, Yfilter1 [, parameters]] [, YfilterN [, parameters]])

Algorithm for Linear Regression

Ylist y_1, y_2, \dots, y_k

Xlist x_1, x_2, \dots, x_k

weightList w_1, w_2, \dots, w_k

Linear Regression (LR)

(if w_i is #MISSING or the whole *weightList* is missing as an argument, $w_i = 1$)

$$S = \sum_{i=1}^k (w_i)^2 \qquad S_x = \sum_{i=1}^k x_i (w_i)^2 \qquad S_y = \sum_{i=1}^k y_i (w_i)^2$$

$$S_{xx} = \sum_{i=1}^k (x_i)^2 (w_i)^2 \qquad S_{xy} = \sum_{i=1}^k (x_i y_i) (w_i)^2$$

$$\Delta = SS_{xx} - (S_x)^2$$

预算分析演示 数据挖掘演示

DEMO

Thanks !

Q and A

Using, Learning & Sharing

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Let's Leverage Oracle Together

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