



Vertica Architecture Class Outline

What is Columnar?

What is Parallel Processing?

Nothing Happens on Disk

Data in Memory is Fast as Lightning

Parallel Processing Of Data

The Problem With Row-Based Data

Columnar Data Can Store Each Column in Their Own Block

Why Columnar?

Row Based Blocks vs. Columnar Based Blocks

Visualize the Data – Rows vs. Columns

The Architecture of Vertica

Vertica Architecture Terms

Vertica has Linear Scalability

Vertica Data Distribution

Distribution Strategy 1 - Segmented By Hash

Distribution Strategy 2 - Unsegmented

Sorting the Data in a Table CREATE Statement

Even Distribution

Uneven Distribution Where the Data is Non-Unique

Matching Distribution Keys for Co-Location of Joins

Big Table / Small Table Joins

Fact and Dimension Table Distribution Key Designs

Why a Sort Key Improves Performance

Sort Keys Help Group By, Order By and Window Functions

Clever Features of Vertica

Super Projections

Vertica Projections

The Five Advantages of Projections

Creating a Projection

Read-Optimized Store (ROS)/Write-Optimized Store (WOS)

Write-Optimized Store (WOS) is Memory Resident

Updates are Collected in Time-Based Buckets called Epochs

Vertica Does Not Support In-Place Updates

K-Safety

K-Safety of 2

The Five Data Isolation Modes

Import/Export Between Multiple Vertica Systems

Roles

Compression

Runlength encoding

LZO Encoding

Delta Encoding

Block Based Dictionary Encoding for Character Data

Nexus on Vertica

Nexus is Available on the Cloud

Nexus Queries Every Major System

Setup of Nexus is as Easy as Pie

Setup of Nexus is a Easy as 1, 2, 3

Nexus Data Visualization

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Nexus Data Visualization Shows What Tables Can Be Joined

Nexus is Doing a Five-Table Join

Nexus Generates the SQL Automatically

Nexus Delivers the Report

Cross-System Joins From Teradata, Oracle and SQL Server

The Tabs of the Super Join Builder

The 9 Tabs of the Super Join Builder – Objects Tab 1

Selecting Columns in the Objects Tab

The 9 Tabs of the Super Join Builder – Columns Tab 2

Removing Columns From the Report in the Columns Tab

The 9 Tabs of the Super Join Builder – Sorting Tab 3

The 9 Tabs of the Super Join Builder – Joins Tab 4

The 9 Tabs of the Super Join Builder – Where Tab 5

Using the WHERE Tab For Additional WHERE or AND

The 9 Tabs of the Super Join Builder – SQL Tab 6 – check paragraph below

The 9 Tabs of the Super Join Builder – Answer Set Tab 7

The 9 Tabs of the Super Join Builder – Analytics Tab 9

Analytics Tab

Analytics Tab – OLAP Example

Analytics Tab – OLAP Example of SQL Generated

Analytics Tab – Grouping Sets Example

Analytics Tab – Grouping Sets Answer Set

Nexus Data Movement

Moving a Single Table To a Different System

The Single Table Data Movement Screen

Moving an Entire Database To a Different System

The Database Mover Screen

The Database Mover Options Tab

Converting DDL Table Structures

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Compare and Synchronize

Compare Two Different Databases From Different Systems

Comparisons Down to the Column Level

The Results Tab

View Differences

Synchronizing Differences In the Results Tab

Synchronizing Differences In the Results Tab

Hound Dog Compression

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