SAGE SALESLOGIX

Benefits of Sage SalesLogix Visual Analyzer In-Memory Analysis over OLAP and Static Reporting Solutions

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The Emergence of a New Business Intelligence Space

Increasingly, the Business Intelligence (BI) market is moving from OLAP solutions to adopt In-Memory business intelligence solutions. To understand In-Memory analysis it is useful to characterize the technology it replaces: MOLAP and ROLAP.

MOLAP is "multidimensional" OLAP. The distinctive feature of MOLAP is that it stores the results of a cube in a multidimensional store. The form and exact nature of this multidimensional store is proprietary and specific to the particular vendor whose tool is being used.

In-Memory Analysis (IMOLAP) differs from ROLAP and MOLAP in that the primary storage mechanism for data to be analyzed is memory. Typically, vendors in this arena do not pre-calculate measures, but rather rely on the speed of memory to allow values to be calculated as they are needed. There is significantly less uniformity of approach by these vendors– some offer only fast queries and no calculation or User Interface (UI), others are simply implementations of cubes which are held in memory.

Sage SalesLogix Visual Analyzer

Sage SalesLogix Visual Analyzer is built on a simple architectural premise – all data should be held in memory, and all calculations should be performed when requested and not prior. The SalesLogix Visual Analyzer solution offers some unique advantages over traditional OLAP because of its unique integrated components and because it operates entirely in memory.

SalesLogix Visual Analyzer Core Components

As a solution, SalesLogix Visual Analyzer offers three components in an integrated solution:

- Fast Query Engine: Loading the data into memory allows SalesLogix Visual Analyzer to query the data instantly to only reveal the data which is relevant to a given user. In addition, SalesLogix Visual Analyzer shows users the data which is excluded by a selection.
- On Demand Calculation Engine: Charts, graphs, and tables of all types in SalesLogix Visual Analyzer are multidimensional analysis. That is, they show one or more measures (metrics, Key Performance Indicators, expressions, etc.) across one or more dimensions (example: total sales by region). The major difference is that these calculations are performed as the user clicks and never prior.
- Visually Interactive UI: SalesLogix Visual Analyzer provides 10 pre-built dashboards covering key CRM measurements such as forecast, pipeline, win/loss, marketing, and customer service. SalesLogix Visual Analyzer includes list boxes for navigating dimensions, statistic boxes, and many other UI elements. Every UI element can be clicked on to query. In addition, hundreds of possible chart, table types, and varieties are available for customizing SalesLogix Visual Analyzer. The SalesLogix Visual Analyzer UI is the representation of an associative model for data interaction. The model defines that all the data included in a query should be shown, as well as data that was excluded from the query.

SalesLogix Visual Analyzer is built on the industry-leading BI solution QlikView, by QlikTech. QlikView's underlying technology foundation is called In-Memory Association Technology. It is referred to as "In-Memory" for the simple reason that it holds all data in memory, and operates (queries and aggregates) that data in memory. QlikTech is recognized as the fastest growing BI software company by IDC, and in press reports as the leader in In-Memory Analysis.

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The concept of Association refers to the associative mapping between data elements that SalesLogix Visual Analyzer performs. This associative model allows users to navigate and use SalesLogix Visual Analyzer in the same way their brain thinks about a problem. Humans think about challenges nonlinearly, and they think about possibilities included and excluded at the same time. Much in the same way SalesLogix Visual Analyzer's association technology shows information that is included and excluded at the same time, and allows the user a unique path through the data. QlikTech has patents on this technology foundation.

SalesLogix Visual Analyzer holds all data in memory and queries that memory store, resulting in very fast query times. All aggregation is done directly in memory and aggregates are never stored to disk. SalesLogix Visual Analyzer's user interface is visually interactive, and uses a simple but powerful green-white-grey metaphor that anyone can understand.

Benefits of SalesLogix Visual Analyzer In-Memory Analysis

The Benefits of SalesLogix Visual Analyzer In-Memory Analysis include:

- Memory is significantly faster than disk, which results in fast queries and calculations.
- Eliminating the building of cubes speeds deployment and allows revision to analysis more quickly.
- Fast access to queries and aggregates allows new ways to visualize and manipulate data.
- Faster Time-to-Value: With traditional OLAP, constructing cubes is time-consuming and requires expert skills. This process can take months, and sometimes more than a year. In addition, the cube must be constructed before it can be calculated, a process which itself can take hours. And, all of this must occur before analysis or reporting can be performed – before the user even sees answers to his questions.
- Easy to Use: The entire end-user experience in SalesLogix Visual Analyzer is driven by the "click." End users enjoy using SalesLogix Visual Analyzer because it works the way their mind does. Each time they want to review the data sliced a new way, they simply click on the data they want to evaluate. Because SalesLogix Visual Analyzer operates in memory, with each click all data and measures are recalculated to reflect the selection.
- Flexible: One of the major issues with traditional OLAP is that modifying an analysis requires changing the cube, a process which can take a very long time and may be costly.

The OLAP Tradition

Twenty years ago memory was expensive and processors were slow. (The difference in price/performance today is astounding; memory is much cheaper and processors are much faster.) Faced with these constraints two decades ago, developers devised an architectural approach for delivering results of multidimensional analysis which relied on pre-calculating fixed analyses. Simply put, they pre-calculated all measures across every possible combination of dimensions. For example, for total sales by sales person and region, the system would calculate total sales for each sales person for each region, and for every union of sales person and region. The results of these calculations were stored and retrieved when an end user requested a particular "analysis." This is what is traditionally referred to as "calculating the cube" and the "cube" is the mechanism which organizes and stores the results. Because the results were pre-calculated, regardless of how long it took to calculate the results, the response time from the perspective of the end user was instantaneous.

ROLAP vendors include Cognos, MicroStrategy, and Business Objects. The main vendors in the ROLAP space have not made any investments in In-Memory technology. They are strongly committed to their path of traditional OLAP.

Gartner predicts a shift in ROLAP/OLAP technologies such that:

> "By 2012, 70% of Global 1000 organizations will load detailed data into memory as the primary method to optimize BI application performance (0.7 probability)."
> — Gartner, Oct 2, 2006

Advantages of ROLAP

- ROLAP is considered to be more scalable than MOLAP in handling large data volumes.
- Load times are generally much shorter than with the automated MOLAP loads.

Disadvantages of ROLAP

- The process of loading data into star/snowflake schemas is difficult and involves management of complex ETL code.
- Management and change of these schemas requires time and resources typically not addressed during initial phases.
- ROLAP data stores tend to "explode" in size as many dimensions are added.

Static Reporting vs. Sage SalesLogix Visual Analyzer

Static reporting solutions produce nice-looking reports and graphs, but are still static reports and do not change without the help of IT resources. There is limited drill down, just basic graphs, no list boxes, no pivot tables, and much less flexibility. Performance issues are a major consideration. Each time a report is created, a query is made to the database which dramatically reduces the usability of the application. Slow report turnaround leads to lack of use. SalesLogix Visual Analyzer uses the power and speed of memory to eliminate this performance hit.

Summary

Sage SalesLogix Visual Analyzer is built on a simple architectural premise – all data should be held in memory, and all calculations should be performed when requested and not prior. The SalesLogix Visual Analyzer solution offers some unique advantages over traditional OLAP and static reporting solutions because of its unique integrated components and because it operates entirely in memory.

SalesLogix Visual Analyzer holds all data in memory and queries that memory store, resulting in very fast query and calculation times. All aggregation is done directly in memory and aggregates are never stored to disk. SalesLogix Visual Analyzer's user interface is visually interactive and easy to use, providing an analysis solution that everyone in an organization – not just the chosen few – can use.

The following page provides a comparison of SalesLogix Visual Analyzer with OLAP, ROLAP, and Reporting Technologies.

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Business Intelligence Technologies Overview and Comparison

	Sage SalesLogix Visual Analyzer	ROLAP	OLAP	Reporting
Examples	Sage SalesLogix Visual Analyzer	MicroStrategy, Oracle Discoverer	Cognos, Hyperion, Panorama, Microsoft Analytical	Business Objects, Crystal Reports, Oracle Reports
Technology	Associative Database Layer: Data stored in Associative database in memory (RAM) and all aggregations/calculations created dynamically as needed	On Demand Queries: Complex queries broken into simpler SQL queries and pushed down to source database in real time	OLAP Cubes: Static cubes built to store pre-aggregated data on hard discs	Static Database Queries: Predefined queries run against source database
Impact on Source DB	BEST: Records pulled straight across with minimal processing; data stored in a snapshot until refreshed	WORST: Every new view of the data creates a separate and involved query that runs against the source database; data not stored and must be re-queried every time it is accessed	AVERAGE: Cubes must be refreshed but data is processed (aggregated) on the server which impacts DB server; data stored in a snapshot until refreshed	POOR: Each report contains one or more queries that must be executed against the source database every time an instance of a report is refreshed; data is stored in each individual report file until refreshed
Performance – Refreshing the Snapshot	BEST: Data is pulled from the ODBC or OLE DB connection with minimal processing; the limiting factor is typically the speed at which records can be pulled out of the ODBC or OLE DB connection	N/A: Data not stored in a snapshot; every new request directly hits the source database servers	WORST: Very complex, demanding queries must be run against the source database in order to pre-aggregate the data; this data must then be written out to a huge multi-dimensional cube stored on a hard disk	POOR: Each report must be refreshed individually, one after the other; Calculations are performed at the time the reports are refreshed
Performance – Analyzing Data	BEST: Data is stored in memory (RAM) and calculated as needed without any disc-reads or network traffic	WORST: Each change to a view of the data results in a query that will have to be executed on the database server and the results transferred back across the network to the analysis tool; queries are complicated and can take a long time	BEST: Data is stored in a cube in a pre-aggregated format and displayed as needed	WORST: Data is static and cannot be analyzed interactively; each report must be rerun against the source database servers to be updated
Flexibility – Adding Dimensions & Measures	BEST: Any field in the source data can be added as a dimension instantly; likewise new measures can be added on the fly	BEST: Any field in the source data can be added as a dimension instantly; likewise new measures can be added on the fly	WORST: New dimensions and measures must be hard-coded into the cube definitions (an IT task) and then the cubes must be refreshed	WORST: New aggregations must be hard-coded into reports (an IT task) and reports must be refreshed

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