MicroStrategy OLAP Services brings In-memory Business Intelligence to the MicroStrategy BI platform to significantly improve performance and analysis. MicroStrategy OLAP Services delivers the flexibility, speed, and analytical power of traditional, multidimensional cube analysis while preserving all the strengths of the unified MicroStrategy BI architecture for enterprise business intelligence. Additional analytical insight drives better business decisions, while seamless integration with an industrial-strength BI platform delivers considerable hardware, database, and administration savings.

High Performance
Successful businesses depend on swift analysis for optimal business decisions. Maintaining fast query performance and analytical interactivity is a dominant challenge for BI applications, especially those serving thousands of users. MicroStrategy OLAP Services delivers speed-of-thought analysis and lightning performance through an adaptive caching technology called In-memory ROLAP. MicroStrategy In-memory ROLAP has demonstrated query performance improvements up to 50x faster – giving businesses information as quickly as they need it.

Analytical Insight
Reports are sometimes a starting point to begin answering business questions. Having a comprehensive set of data for analysis should equate to better decision making. Unfortunately, business users often feel bombarded with incomprehensible data. MicroStrategy OLAP Services provides the analytical tools necessary to sift through data to understand the drivers of business performance. MicroStrategy OLAP Services helps business users focus their analysis by applying business conditions to filter the data to return only the information required.

MicroStrategy OLAP Services also lets business users create new business calculations. Many frequently used calculations such as variances, ranks, and time comparisons are only one click away. MicroStrategy OLAP Services offers a complete range of more than 200 arithmetical, statistical, and financial functions for use in new metrics and analysis. Furthermore, business users can create new analytical groups that consolidate similar business attributes together to identify important business characteristics not considered by the original report designer. In short, MicroStrategy OLAP Services empowers a new level of analytical insight and self-service for the business person.

Economic Savings
MicroStrategy OLAP Services provides economic savings in two ways. First, increasing self-service for business users means IT can create and maintain fewer reports. Second, MicroStrategy OLAP Services does not incur the immense IT burden of cube farms found in traditional multidimensional OLAP (MOLAP) products. In contrast, MicroStrategy OLAP Services implements its multidimensional functionality as a virtual ROLAP cube, called an Intelligent Cube, that does not suffer from the problems of traditional cubes. Intelligent Cubes require little to no maintenance, and are a seamless in-memory extension of the MicroStrategy ROLAP architecture.
In-memory ROLAP

In-memory ROLAP works as a seamless architectural extension of MicroStrategy. Physical Intelligent Cubes reside in memory while their definitions reside in the global virtual cube of MicroStrategy metadata, delivering the best of both architectures. In-memory ROLAP creates mid-tier cube databases called Intelligent Cubes that contain selected portions of the data warehouse. These Intelligent Cubes are seamlessly interwoven in the ROLAP architecture as they populate portions of the global multi-dimensional metadata model with actual data.

In-memory ROLAP Delivers Faster Report Performance

Typical ROLAP systems exhibit a wide range of performance profiles. MicroStrategy ROLAP is supplemented with dynamic caching technology that saves report instances in memory so that the next user of the same report can be served the result directly from memory, avoiding database delays. This creates a performance profile with two response-time distributions: one for the database queries and one for the cache-based responses.

In-memory ROLAP changes the performance profile dramatically. It acquires another, or third, response-time distribution for in-memory queries that reside between the very fast caching distribution and the slower database distribution. In fact, the addition of In-memory ROLAP technology redirects many database queries to be served directly from In-memory ROLAP.

In-memory ROLAP takes advantage of the huge addressable memory space on 64-bit systems to provide high performance middle-tier databases that respond directly to data requests from reports, dashboards, and OLAP analyses from all users. Since the new middle-tier databases are stored in memory, they avoid disk access delays of traditional databases.

In-memory ROLAP combines the data scale of ROLAP with the performance of multidimensional cubes. In-memory ROLAP reduces the overall query response time profile resulting in significant performance improvements.
**Faster Queries, Smooth Database Usage**

In-memory ROLAP offloads the highest value queries from the database and serves them to the users quickly and directly from memory. These reports are typically those with the highest level of use, interactivity, and those identified as having the highest business value. MicroStrategy’s Cube Advisor tool and Enterprise Manager can analyze the query workload over time and determine which reports consume the most database processing time. Cube Advisor can then recommend combinations of attributes, metrics, and filters that should be consolidated into Intelligent Cubes and placed into memory. With the addition of the MicroStrategy MultiSource Option, Intelligent Cubes can be built on data from multiple data sources.

In-memory ROLAP offloads the most time-consuming and processor intensive queries from the databases and serves them directly from memory. The result is faster query time and a much more evenly utilized database system.

**Free Up Database Capacity and Reduce User Wait Time**

In-memory ROLAP can shift database processing from high-demand interactive daylight business hours to the batch processing window overnight. This time-shifting improves user response time since the most time-consuming queries are immediately served from In-memory Intelligent Cubes.

Because In-memory ROLAP also frees up database capacity during interactive hours, better response time for database-directed queries is also provided. This additional database capacity has the added benefit of potentially allowing enterprises to delay purchasing additional database capacity to meet ever-evolving interactive peak demand volumes.
Automatically Route Reports to Intelligent Cubes
When MicroStrategy OLAP Services In-memory ROLAP is added to MicroStrategy Intelligence Server, the entire MicroStrategy system becomes immediately aware of any available Intelligent Cubes. MicroStrategy OLAP Services uses Dynamic Sourcing to examine every report request for compatibility with the index of Intelligent Cubes, and automatically to route those requests to the Intelligent Cubes whenever possible. Additionally, Dynamic Sourcing automatically allows the report to source data from the data source if the data requirements for the report change, or cannot be satisfied by an Intelligent Cube. With MicroStrategy MultiSource Option, Intelligent Cubes can also be defined on data from multiple data sources.

With MicroStrategy OLAP Services’ In-memory ROLAP, there is no administrative cost to directly map or link reports to specific Intelligent Cubes. Dynamic Sourcing will always determine the fastest cube possible to satisfy the report request. Dynamic Sourcing is completely transparent to the business users; they simply experience faster report response times more frequently.

Seamless Drilling In and Out of Intelligent Cubes
Drilling from dashboard key performance indicators (KPIs) to transaction-level details is effortless with MicroStrategy OLAP Services. By combining Intelligent Cube technology with the industry’s only multi-pass SQL generation engine, MicroStrategy lets users freely drill beyond their predefined reports to other Intelligent Cubes’ data, or to the complete data warehouse, and back again. Again, all of this occurs transparently to the business user, and without any additional administrative cost.

MicroStrategy OLAP Services’ In-memory ROLAP uses Dynamic Sourcing to choose the fastest source of data, whether it is from an Intelligent Cube or sourced from a database.
Make New Analytic Groupings

MicroStrategy OLAP Services lets business users spontaneously combine elements of a business attribute to create new analytics: filters, lists, and consolidation calculations. This analytic capability is called Derived Elements since these new analytics are derived from elements of attributes.

Filters

In the example to the right, all the Postal zip codes in the United States are filtered by their first digits to create new Derived Element “Regions.” Filters have a wide range of conditions, so users have great flexibility in choosing how to see the data in different ways.

Lists

Sometimes users want to group and order elements in a new way or a dozen new ways, which are often referred to as custom grouping. Now they can with Derived Element Lists.

Consolidation Calculations

Derived Elements empower users to create new consolidated calculations on attributes or even on other derived element combinations.

Combine, Save, Share, and Reuse as Needed

Derived Elements can even be combined to make additional new groups. All Derived Elements can be saved and shared with other users, and reused wherever the original attribute is used with an Intelligent Cube.

BEFORE: Useful ZIP CODE
All US Zip Codes, but hard to see aggregations

MONTH OF YEAR
Every Month of Every Year
Automatically Aggregated

AFTER: Insightful
All of the Above, Plus:
ZIP CODE Filtered to create spontaneous Regional Custom Groups
MONTH OF YEAR Listed as Seasons, Half Years, Quarters, Start, Middle, and End Months
Calculated as Sum, Difference, and Average
Define Insightful Metrics on Demand

Metrics Deliver In-Depth Analysis
MicroStrategy OLAP Services empowers users to augment or modify a report to support investigative analysis by dragging and dropping metrics from the cube. They can also create new metrics easily by simply using existing metrics in the cube, called Derived Metrics. On a report with revenue and cost metrics, a user can spontaneously create a new profit metric by subtracting the cost metric from the revenue metric. Although the profit metric did not exist in the initial report, the calculation can now be used to strengthen the user’s analysis.

Flexible Metric Creation
MicroStrategy OLAP Services provides flexible metric creation from a simple right mouse-click using shortcut metrics and a floating dialog box. Predefined for rapid analysis, shortcut metrics capture the most requested calculations, including Percent To Total, Transformations (time variance calculations), and Rank. When creating metrics, users are able to intuitively load over 200 analytical functions with the click of a button.

Faster Run Time Calculations
When business users create new run-time calculations from existing metrics in an Intelligent Cube, the new calculation does not access the data warehouse. The Intelligent Cube computes the results directly on the MicroStrategy Intelligence Server. This speed-of-thought analysis delivers near instantaneous response time to the business user while reducing the IT backend. All new calculations are automatically saved in the Intelligent Cube for all users, according to their security profile.

MicroStrategy OLAP Services delivers better insight faster. Derived Metric shortcuts as well as Percent To Total, Transformation, and Rank are within reach via a single right mouse-click.

MicroStrategy OLAP Services delivers analytical power with over 200 advanced mathematical, statistical, and financial functions.
Comprehensive Analytical Filtering with View Filters

MicroStrategy OLAP Services zeros in on any set of report data using run-time filtering for speed-of-thought analysis. This is especially useful when the report data is thousands of rows spanning many pages or screens. MicroStrategy OLAP Services can qualify report data through:

- Specific attribute inclusion or exclusion
- Attribute-to-attribute comparisons
- Attribute-to-value comparisons
- Metric-to-metric comparisons
- Metric-to-value comparisons

For these data qualifications, MicroStrategy OLAP Services uses an extensive set of logical operators for comparing text as well as numeric data values. For example, a user can filter a product profitability report to view only the products that make up the top 10% of profits.

Advanced Filtering Precision

Business users can define multiple nested filtering conditions, creating combinations of filter criteria, using AND, AND NOT, OR, and OR NOT. They can also specify the order in which filters execute to precisely control the analysis. For every new filter, MicroStrategy OLAP Services automatically updates the resulting report data. Any filter can now be set to operate at the grid or Intelligent Cube level.

Improved Productivity and Economic Savings

As with metric creation, MicroStrategy OLAP Services performs this analytical filtering in the Intelligent Cube directly on the Intelligence Server without any database involvement. The business user experiences lightning quick response times resulting in improved productivity, while IT sees a reduced backend load resulting in economic savings.

A View Filter definition panel and flexible criteria make adding and modifying filtering conditions easy with MicroStrategy OLAP Services.
This table lists the speed and ease of analysis with MicroStrategy OLAP Services.

<table>
<thead>
<tr>
<th>Application Requirement</th>
<th>MicroStrategy OLAP Services</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faster Performance</td>
<td>50x faster performance from In-Memory ROLAP</td>
<td>Automatically serve queries from Intelligent Cubes when available with Dynamic Sourcing</td>
</tr>
<tr>
<td>Access to a refined set of data</td>
<td>Intelligent Cubes show a subset of attributes and metrics for easier analysis</td>
<td>Rapid access to intuitive reports with a manageable portion of data that can be arranged and formatted as needed</td>
</tr>
<tr>
<td>Create metrics to enhance analysis</td>
<td>Insert, modify, and rename metrics all through the Web with just a few mouse-clicks</td>
<td>Users have access to hundreds of functions, allowing them to define their own metrics without the help of a developer</td>
</tr>
<tr>
<td>Control the amount of data displayed</td>
<td>Users can create View Filters with multiple conditions and with a wide range of logical operators</td>
<td>Users have complete control over the amount of data with which they want to work</td>
</tr>
<tr>
<td>Combine business attributes for analysis</td>
<td>Derived Elements let users create custom groupings of business elements for lists, filters, or calculations</td>
<td>Users can quickly create new analytic groupings to answer business questions without IT help</td>
</tr>
</tbody>
</table>

“MicroStrategy’s new In-memory ROLAP option is game changing. Unlike other in-memory approaches on the market today, it is fully integrated with an enterprise BI environment and provides high performance transparently to business users. The way in which large amounts of data are stored and accessed in-memory is so seamless that I was skeptical until I saw the actual SQL generated and witnessed the performance.”

– Cindi Howson, Founder, BIScorecard

MicroStrategy 9 is breakthrough technology that supports the full range of business intelligence applications from a single, integrated platform. MicroStrategy 9 extends the performance, scalability, and efficiency of enterprise BI; enables the rapid deployment of departmental BI applications; and provides a seamless consolidation path from departmental BI to enterprise BI.

TRY MICROSTRATEGY OLAP SERVICES

Try the best business intelligence software for yourself. Call 1.888.537.8135 or visit us at www.microstrategy.com.