

## **MICROSTRATEGY 9: DESIGNED TO SUPPORT THE FULL RANGE OF BI APPLICATIONS FROM WORKGROUP BI TO DEPARTMENTAL BI TO ENTERPRISE BI**

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Most organizations require a business intelligence (BI) strategy that can support enterprise, departmental, and workgroup BI initiatives to balance the need for enterprise-wide consistency with nimble responsiveness to local business needs. When the sponsors of departmental BI and workgroup BI applications choose disparate BI technologies for each of their initiatives, it results in islands of BI and multiple versions of the truth, which inevitably subverts the value of all of the BI applications. This strategy also results in the highly inefficient use of corporate resources, including databases, training time, budgets, and IT personnel. The biggest challenge in BI is to gradually coalesce departmental and workgroup BI into a cohesive enterprise framework.

MicroStrategy 9 allows companies to support all three levels of BI well and, just as importantly, provides a smooth migration path for workgroup and departmental BI applications to merge into an overall enterprise-wide framework. With MicroStrategy, workgroups and departments can retain the autonomy and self-service that they enjoy as an island of BI, and yet the enterprise obtains highly efficient, enterprise-wide, consistency of business information. MicroStrategy 9 is a breakthrough technology that allows companies to support all three levels of BI and gradually merge disparate BI applications into a cohesive and consistent enterprise asset.

### **THE IDEAL BI VISION IS AN ENTERPRISE BI VISION**

#### **Enterprise BI Provides a Single Version of the Truth**

The ideal vision for business intelligence is an enterprise BI vision with a single, cohesive model of the business represented by the “BI metadata.” The BI metadata provides a business-oriented view of all of the data available to the enterprise, and allows any business user or department to assemble reports and dashboards, or to conduct investigative analyses using a business viewpoint. Because the BI metadata presents a single cohesive model of the business, the enterprise can be assured that a single version of the truth will exist throughout all of the reports, dashboards, and analyses, regardless of who creates them. A universally-applied BI security system can uniformly protect the privacy of the data, automatically filtering out data from any report based on the security profile of each business user.

#### **Enterprise BI is the Most Efficient Mode of Operation**

The other primary benefit of an enterprise BI vision is that it is highly efficient in the use of corporate resources and administrative effort. Compared to models of many disparate islands of BI, the enterprise BI model minimizes the number of IT personnel needed to manage and maintain the technology, and it minimizes the number of computer servers needed to run the system. Having a single enterprise BI system minimizes the training needed for business users and IT personnel.

#### **Enterprise BI is Technically Possible Today...**

This vision of enterprise BI is technically possible today and many organizations are pursuing this model. Enterprise BI is based on well-understood engineering concepts of data warehousing with vibrant database technology that can support faster query performance and greater capacity every year. Enterprise BI is also based on enterprise-caliber BI technology, like MicroStrategy, that has been refined over many years to support the most demanding requirements of BI, including very high user scalability, high performance at scale, and high IT efficiency requiring the fewest possible IT personnel and fewest servers.

## ...but Enterprise BI can Only be Achieved Gradually

The hard reality is that enterprise BI takes a long time to achieve because it requires extensive consensus among business managers on business models and business definitions, and because it requires hard work on data standardization and cleansing. Practice has shown that it is virtually impossible to engineer, from the top down, a universal model of a business and a data warehouse to feed it. Individual business people do not think about their businesses in these terms, let alone achieve consensus on it with other people from other departments. What does work, however, is an incremental application by application evolution towards a goal of enterprise BI. In this scenario, individual large-scale BI applications are proposed periodically that offer distinct value to the enterprise (e.g., financial reporting, store performance reporting, and supplier scorecards). The ROI for each of these new applications justifies the political effort to establish common business definitions and provides a focal point for the various parties to achieve consensus on the subject area at hand. The application also justifies the technical effort of finding the data, cleansing it, and storing it in a database suitable for BI. Over time, each new BI application adds another piece of valuable business intelligence to the enterprise. If correctly engineered to fit together as part of an overall framework, these pieces can add to an ever larger and cohesive enterprise-wide BI asset where the whole is greater than the sum of the parts.

## **DEPARTMENTAL BI AND WORKGROUP BI ARE NECESSARY TOO**

As each new enterprise-wide BI application project is undertaken, it consumes inter-departmental political capital and IT attention. Organizations can accommodate only a limited number of these types of projects at one time. Meanwhile, there are BI needs at the departmental level and workgroup level that need to be addressed. For every large-scale, enterprise-significant BI application, there are likely to be 10 departmentally-significant BI applications and 100 workgroup BI applications that the business needs.

## Departmental and Workgroup BI Applications can be More Responsive to Local Business Needs

Because of the limited organizational scope of departmental and workgroup BI applications, they can be implemented much more quickly than enterprise-wide BI initiatives. What is even more important is that departmental and workgroup BI applications can be modified and adapted much more rapidly than enterprise BI applications because of their smaller size and their limited need for inter-organizational coordination. This adaptability is vitally important for two reasons. The first is that most business people do not know what business intelligence reports, dashboards, or analyses they need until after they use their initial BI applications for a while. It is quite common for the first set of reports and dashboards designed for a BI application to be obsolete after a year or two. These initial reports are replaced by subsequent refined designs. In fact, a truism of BI is that every report that a business user sees, usually spurs the desire for two more reports to provide more detail or a different perspective on the data. After a year or two, the original report is no longer used. The second reason that adaptability is vitally important is that business conditions change, and they change most rapidly at the workgroup and departmental levels. Over time, companies face changes in business priorities, organizational structures, customer care approaches, market segmentations, budget priorities, supplier strategies, and personnel. The BI applications that help managers understand and manage this environment need to change at the same pace to remain relevant.

### **Workgroups Have Limited Technical Resources, but Significant BI Needs**

Workgroup BI is the smallest unit of BI application, typically serving groups of business people ranging from a few people to several dozen people. Workgroups are usually tightly managed groups of people in the same department or function, all of whom work on a highly-interrelated task (e.g., recruiting, direct marketing, advertising, supplier management, logistics, and warehouse operations) and who all share a similar view of the business, similar priorities, and similar business performance goals. What characterizes workgroup BI, however, is not so much their size or similarity of work, but rather the lack of IT resources that are available to a workgroup. Typical workgroups store the “decision support” data they need using Microsoft Excel worksheets or perhaps an Access database on someone’s computer. In some cases, they have small operational applications that contain operational data (e.g., inventory management system or shipping system). Workgroups rarely have any IT people within their group, nor do they typically even have access to IT people to help them. Yet, they still need to produce and share reports and analyses with each other on this data.

### **BI Technology for Workgroups Must Deliver Speed and Simplicity to Succeed**

The BI technology needed to serve workgroups needs to be very simple to implement, containing all of the necessary components for BI “in-the-box.” Specifically, the BI technology should contain a well-integrated set of functionality, including a database to store the data, an ETL technology (extract, transform, and load) to move the data into the database, and a BI platform to create reports, dashboards, and analyses that people can share. The critical characteristics of the technology for workgroup success are speed and simplicity and it must be fast and easy to install on common office-caliber computers by a (technically-literate) business person. Workgroup BI must be easy to use for collecting data from Excel or databases, easy to store and manage the data that will be used for reports and analyses, and easy to design reports for other business users to run at will.

### **MicroStrategy 9 Provides the Speed and Simplicity Needed by Workgroup BI**

Speed and simplicity are characteristics of the new MicroStrategy 9 BI software platform, which can be installed in a single morning on standard Windows computers. MicroStrategy 9 contains an internal “in-memory” database as well as simple ETL functionality that can access relational databases or Excel spreadsheets. By lunchtime, the in-memory database can be populated with data and by early afternoon the power user can produce the first few reports using drag-n-drop functionality. By the end of the day, other members of the workgroup can run those reports by simply pointing their Web browsers to the MicroStrategy 9 server and can even begin slicing and dicing the data or building their own reports using just a Web browser.

### **Departmental BI Implementations are Similar to Enterprise BI Implementations, but Smaller**

Departmental BI applications typically support 50-200 business users within a single business function like Finance, Marketing, Sales, or Operations. Because of the substantial user population and because departmental BI applications are sponsored by executives or senior business managers, they typically have more IT support than workgroups in terms of both IT personnel and technology. Departmental BI implementations can be thought of as scaled-down versions of enterprise BI implementations. Departmental BI applications are typically supported by dedicated decision support databases (data marts) which are populated by some form of formal ETL technology (often freeware) and are supported by a few dedicated technically-trained personnel. Users of departmental BI applications need all 5 Styles of BI, ranging from dashboards and reports to investigative analysis and predictions to proactive alerting and report distribution.

## BI Technology for Departments Should Excel at Self-service to Succeed

The dominant operational characteristic of departmental BI that distinguishes it from enterprise BI is the need for maximum self-service. Departments have access to only a few IT personnel, usually just enough to manage and maintain the technology, but not enough to create the reports, dashboards, and analyses that provide business value. With limited IT personnel, business users need to fill the gap through two modes: (1) with power users acting on behalf of IT personnel and who create reports and dashboards for others to use, and (2) with average business users serving themselves dynamically with new views of data.

MicroStrategy 9 supports both of these self-service modes through a powerful, yet simple Web interface, which lets power users create any report or dashboard using drag-n-drop functionality. Even more powerful is MicroStrategy's ability to allow average business people to "drill anywhere" throughout the database freely using point-and-click OLAP commands. As average business people drill throughout the database, they can also add subtotals, add calculations, add filters, and rotate the data to see exactly the perspective they want to see. After performing these many self-service manipulations, business users can then save the resulting report designs for later use themselves or share those new report designs with other users in their department.

## Departmental BI Technology Needs Access to Many Databases

Another dominant requirement for successful departmental BI is the ability to flexibly access many databases at once. It is rare that a single department has the technical resources to aggregate all the data it might need from a myriad of operational databases into its decision support data mart. Moreover, departmental BI requirements change rapidly, evolving as quickly as business priorities change and as rapidly as managers conceive of new reports they need for greater business insight. If each new informational need required the laborious task of moving the data from a source operational system into a carefully-engineered departmental data mart, many business users would be too frustrated with the delay to find value in the BI system.

MicroStrategy 9 addresses this problem directly with a new multi-source capability that allows departments to quickly incorporate new databases into the BI model without going through the effort of moving the data into the data mart or data warehouse. Once the new databases are identified in the BI metadata model, their physical storage location becomes completely transparent to both BI users and report developers.

## **THE ABILITY TO MIGRATE WORKGROUP AND DEPARTMENTAL ISLANDS INTO ENTERPRISE BI IS CRITICALLY IMPORTANT FOR THE LONG TERM**

### Islands of BI Lead to Multiple Versions of the Truth

Every organization has a mix of BI installations ranging from workgroup BI, departmental BI, and enterprise BI. Most of these installations and the applications within them were developed completely independently of one another over an extended period of time. Initially, these islands of BI served their user communities and the enterprise well because they each supported a unique user community with unique reporting or analyses. Inevitably, however, BI applications expand in both business scope and user consumption to the point where they begin to overlap. Two or more BI applications cover the same business areas in their reports, but do not agree with each other. As a result, the problem of multiple versions of the truth begins to propagate throughout an enterprise, and the problem only gets worse with time. Ultimately, the credibility of all of the BI applications is undermined as business users argue over whose numbers are correct.

### MicroStrategy 9 Makes it Easy to Merge Islands of BI into a Cohesive Enterprise-wide Model

MicroStrategy 9 is designed to help organizations to gracefully merge disparate islands of BI into a cohesive enterprise-wide BI model. When all of the BI islands are comprised of MicroStrategy 9 technology, the new MicroStrategy 9 multi-source capability provides a first easy step in merging the island by allowing the enterprise BI installation to quickly incorporate the island's database. All of the reports and metadata originally created in the workgroup or departmental island can be migrated to the larger enterprise model. Over time, the IT organization will want to move selected data items incrementally from their existing multiple database sources into the more cohesive and high-performing data warehouse. MicroStrategy 9 supports this evolution in an elegant way by simply "re-pointing" the metadata from the former data source (island database) to the new data source (data warehouse), thereby preserving all of the business definitions and reports that had been built using the former database.

### MSTR 9 Allows Departments and Workgroups to Continue to Enjoy Autonomous Operation, Even Within an Enterprise-wide Framework

Merging islands of BI into a cohesive enterprise model would be of little value if it also meant that departments and workgroups would lose the nimble responsiveness that drove them to implement a workgroup or departmental BI application in the first place. MicroStrategy 9 has a sophisticated metadata architecture and security architecture that allows departments and workgroups to continue to have independent control over their piece of the enterprise BI environment. With MicroStrategy 9, departments and workgroups can create reports and metadata that only affect their group and thus avoid or postpone inter-departmental coordination typically required in an enterprise-wide BI utility. Departments and workgroups can incorporate new data sources solely for their own use, without affecting any other group using the enterprise BI resource. Over time, as the departments and workgroups create new business definitions, calculations, or reports that would be useful to the entire enterprise, these items can be moved from the departmental-only area into an enterprise-wide accessible area. Once combined for enterprise use, MicroStrategy's universal data privacy system continues to enforce workgroup and departmental security configurations.

### **MICROSTRATEGY 9 FEATURES SIGNIFICANT NEW PRODUCTS AND MAJOR ARCHITECTURAL EXTENSIONS TO HELP COMPANIES START SMALL AND FAST WITH THEIR BI INITIATIVES, AND THEN SEAMLESSLY EXTEND THOSE INTO A COHESIVE ENTERPRISE BI OPERATION**

The goal of the MicroStrategy 9 release is to help companies achieve enterprise BI standardization by providing them with a roadmap that lets them incrementally move from small-scale workgroup BI to mid-sized departmental BI to full-scale enterprise BI seamlessly.

With this major release, MicroStrategy delivers new technology and features designed to:

- Support workgroup BI with technology that increases the speed and simplicity of deploying new BI applications at the workgroup level
- Support departmental BI by empowering business users and departments with dramatic self-service capabilities
- Support enterprise BI by extending the scale, performance, and efficiency of BI at the high-end
- Support the seamless evolution from workgroup BI and departmental BI to enterprise BI

Already a leader in the business intelligence industry, MicroStrategy will extend its BI platform with technical advances, including Multi-source capability, In-memory capability, new personalized report distribution services, new reporting capabilities, new dashboard capabilities, a dramatically streamlined user interface, and new technical features that extend the performance and scalability of the platform even beyond its already high levels.

## **MULTI-SOURCE ROLAP**

As part of the MicroStrategy 9 release, MicroStrategy has added a new “multi-source engine” to its ROLAP architecture that extends MicroStrategy’s unified multi-dimensional model to be able to span multiple database sources, including data warehouses, data marts, operational databases, and departmental databases. Previously, MicroStrategy’s ROLAP engine provided a unified multi-dimensional model for just a single relational database. Each instance of data is modeled within the MicroStrategy metadata model only once, regardless of whether it exists in one or many separate databases. When that data item is required for a report, MicroStrategy’s new Multi-source ROLAP engine automatically chooses which data source can best deliver the data for each and every pass of SQL.

### ***Engineered to be Seamless and Simple***

The new multi-source capability is a seamless extension to MicroStrategy’s ROLAP architecture and its use is completely transparent to both end users and to report designers. Multi-source ROLAP can support all user interaction with reports, dashboards, and OLAP grids that single-source ROLAP provides, and it does so without a user being aware that data is coming from multiple sources. Moreover, designers can create reports and dashboards without any knowledge of where the data might come from. In fact, one query might create individual passes of SQL that source data from multiple different database technologies.

### ***Supporting Departmental BI by Giving Departments Access to a Much Greater Range of Data***

MicroStrategy’s new Multi-source ROLAP will help departments connect their BI software to many more databases, without incurring the cost and coordination effort of physically moving the data into a data warehouse. Without Multi-source ROLAP, departments would need to obtain ETL technology to move the data into a warehouse or a data mart. With Multi-source ROLAP, departments can reduce that time by weeks or months and all of the technical work can be accomplished by the BI architects, rather than needing extra technical assistance from DBAs or ETL engineers.

### ***Supporting Departmental BI by Giving Users Greater Ability to Investigate Data***

Multi-source ROLAP allows companies to easily incorporate data from multiple databases into a single report, increasing the richness and relevance of any report or dashboard. Even more striking is the fact that the multi-dimensional nature of Multi-source ROLAP allows users to seamlessly drill across and throughout multiple databases, allowing them to easily investigate any information they need, regardless of where it is housed. Unlike other BI technologies, MicroStrategy’s architecture uses a single, unified metadata model for all styles of BI, which ensures that all reports, dashboards, and OLAP sessions are entirely consistent with one another, promoting a single version of the truth across the enterprise.

### ***Supporting Enterprise BI with High Performance at Scale***

MicroStrategy's new multi-source capability exhibits several powerful engineering characteristics that set it apart from other technologies and are designed to deliver maximum performance at high scale. MicroStrategy's Multi-source ROLAP engine automatically creates SQL that is customized for each specific database technology it accesses, producing different SQL syntax for IBM DB2 databases, Oracle databases, Teradata, Netezza, or Microsoft SQL Server.

Even more important is the fact that MicroStrategy 9 employs a "push-down architecture" for joining data across multiple database servers. Unlike other BI technologies, which join data from multiple databases by first moving large datasets into a middle tier BI server and conducting the join there, MicroStrategy 9 uses the database engines themselves to execute joins. MicroStrategy's SQL engine performs the maximum amount of processing in each participating database engine, and then it moves only the result sets from one database to another database and instructs the target database to execute the join. The target database is automatically chosen by the Multi-source ROLAP engine based on which location will deliver the best performance. This push-down architecture is much more efficient than mid-tier architectures because push-down architectures move much less data across the network, require much less mid-tier server capacity, and use the database engines that are far more optimized for high-volume join tasks.

### ***Supporting High-efficiency Enterprise BI by Requiring Less Expensive Database Capacity***

Companies can use Multi-source ROLAP to get more capacity from their expensive database engines by offloading simple queries like look-ups from high-end, high-cost database servers and moving those queries to much lower cost database engines. This is particularly useful for companies with multi-million dollar investments in high-end database appliances from companies such as Teradata, Netezza, and HP. With MicroStrategy Multi-source ROLAP, companies can offload routine, simple queries onto less-expensive, general-purpose databases from vendors like Microsoft, Sybase, Oracle, and Sun; and the MicroStrategy engine will automatically use the inexpensive database whenever it can, reserving the expensive, high-end database capacity for the high-volume queries.

### ***Supporting the Incremental and Gradual Evolution from Departmental BI to Enterprise BI***

MicroStrategy's Multi-source ROLAP engine offers a two-stage evolutionary path that allows companies to migrate departmental BI installations gradually and gracefully from disparate departmental islands of BI into a fully integrated and unified enterprise BI architecture. In the first stage, companies with disparate islands of BI based on MicroStrategy technology can be gradually integrated into a multi-source environment, leaving data in its disparate departmental databases, but merging metadata and reports into a single unified BI layer. In the second stage, the departmental data can be gradually moved from the departmental databases into the more unified data warehouse. As the departmental data is gradually moved into the data warehouse, the MicroStrategy multi-dimensional model can simply be "re-pointed" to the data's new database source, and all reports and dashboards will continue to run without change.

## **IN-MEMORY ROLAP**

MicroStrategy's new In-memory ROLAP is an extension to its existing ROLAP architecture and is designed specifically to take advantage of the immense amount of addressable memory now available with the newest 64-bit operating systems including: Microsoft Windows 64, IBM AIX, HP-UX, Sun Solaris, Red Hat Linux, and SUSE Linux. In-memory ROLAP technology uses the multi-gigabytes of memory space available in 64-bit servers as "multi-dimensional memory" in which both data and calculations can reside as multi-dimensional datasets called ROLAP cubes. MicroStrategy reports and dashboards automatically direct their queries to In-memory ROLAP cubes whenever possible to take advantage of the much faster query performance available with in-memory data as compared to database-resident storage. In-memory ROLAP is designed to improve the overall performance of a BI system as perceived by users, especially affecting complex queries that take a long time to process in the database or when accessing a very large database where all queries are burdened by the database size.

### ***Engineered to be Simple and Transparent***

In-memory ROLAP operates seamlessly within the MicroStrategy ROLAP architecture and its usage is completely transparent to users and report developers. Report developers create reports using MicroStrategy metadata objects irrespective of whether the data underlying the metadata might, at some time, reside within a ROLAP cube as well as in the databases. When each report is run, the MicroStrategy engine dynamically determines whether the report's data can be obtained from a ROLAP cube first. If not, the MicroStrategy engine will source the data from the optimum database.

ROLAP cubes are equally transparent to BI users except that users see much faster performance for many of their reports, dashboards, and OLAP analyses. Users can perform all of the same ROLAP functionality they are already accustomed to regardless of whether the data is being sourced from ROLAP cubes or from databases or from both.

### ***Supporting Workgroup BI by Allowing Very Fast and Simple BI Set-up***

MicroStrategy's new In-memory ROLAP technology is ideal for setting up small workgroup BI applications with minimal up-front effort, no need for ETL technology, and even no need for a decision support database. In-memory ROLAP cubes can be populated quickly and easily from any database source or even a spreadsheet. Once the data resides inside an In-memory ROLAP cube, it can act as a source of reusable definitions for many reports, dashboards, and even OLAP investigations by workgroup users. As workgroup-level BI applications mature and grow beyond the size of an In-memory cube, companies can put the data into a proper relational database and use MicroStrategy's relational OLAP capability to model and access the data. MicroStrategy's datamart-creation capability can be used to populate the relational database without having to rely on complicated ETL technology.

### ***Engineered for High Efficiency and Low Administration Effort***

MicroStrategy's In-memory ROLAP technology has been designed to avoid the excessive administrative burdens imposed by older MOLAP cube architectures. Specifically, MicroStrategy's In-memory ROLAP cubes automatically load into memory from disk when they are used, and selectively purge themselves from memory if memory space begins to get tight. Furthermore, ROLAP cubes can be scheduled to automatically refresh when the underlying data in the databases change, which eliminates the need for administrators to detect database changes, to identify which ROLAP cubes are affected, and to initiate a manual refresh.



### *Supporting Enterprise BI by Delivering More BI with Fewer Servers*

In-memory ROLAP offers the extraordinary benefit of eliminating a large amount of repetitive and expensive processing that would normally burden the database servers. By creating In-memory ROLAP cubes for the most expensive and time-consuming queries, the database engine processes these queries only once to form the various ROLAP cubes instead of each time a report or dashboard is run. The ROLAP cubes can be formed overnight during off-peak hours, thus freeing up database capacity during the peak interactive hours of the day, allowing the databases to be sized just enough to service ad hoc analyses and less frequent reports. By offloading the database server with In-memory ROLAP cubes, companies can deliver faster performance, deliver more reports per hour, and free up capacity on the database servers for additional users and additional BI applications.

### *Supporting Departmental BI by Enabling Business Users to Serve Themselves*

Finally, In-memory ROLAP gives companies a very easy mechanism to carve out subsets of the enterprise BI environment for convenient departmental or workgroup usage. Analytic “sandboxes” for different subject areas can be created for different workgroups by a centralized IT group, and those workgroups can operate autonomously using those ROLAP cubes, without impacting the data warehouse workload.

## **NEW WEB INTERFACE**

### *Faster, Friendlier, More Self-sufficient*

MicroStrategy 9 includes a newly re-engineered Web user interface that is designed to be faster, more powerful, and more personal than ever before. The new MicroStrategy 9 Web architecture boasts a wide range of performance-enhancing engineering changes that make the user interface more interactive and more instantly responsive to user requests. The MicroStrategy 9 interface includes a wide range of self-service features that allow the user to have more control over the reports, formats, and data they see, without requiring an IT person to make any changes.

### *Supporting High Scale Enterprise BI by Delivering More BI with Fewer Servers*

**64-bit Java Virtual Machines:** MicroStrategy 9 now fully supports 64-bit Java Virtual Machines (JVMs) for both Unix-based Web servers as well as ASP-based Microsoft Windows servers. The 64-bit JVMs offer much greater memory space than 32-bit JVMs and allow the MicroStrategy Web software to support more users with larger reports, without requiring additional Web servers.

**Extreme AJAX:** MicroStrategy has rewritten its Web interface to take full advantage of the extraordinary processing power now available in workstation computers and modern browsers. The new MicroStrategy Web architecture is designed to perform the maximum amount of processing on the client as possible, including HTML screen generation, user click interpretation, user input validation, and analytic processing. MicroStrategy accomplishes this within a zero-footprint framework using extensive Javascript coding coupled with support files and persistent browser-level caching. Client-centric processing has two primary benefits. The first benefit is that all user interactions are much more interactive, intuitive, and responsive to user actions. The second benefit is that client-centric processing offloads large amount of processing from the Web Servers to the workstation, thus freeing up processing capacity on the MicroStrategy Web servers, allowing each Web server to support even more interactive users without having to get a bigger server.

## *Supporting Departmental BI by Enabling Even Greater User Self-service*

**Minimizing the Need for Report Design:** MicroStrategy 9 contains a broad range of new features that make it easier for users to get more data and more information, without having to become a report designer. MicroStrategy gives its Web-based business users the ability to reformat reports using autostyles, graph control, font control, title control; change the arrangement of data on reports by pivot, page-by, and sorting; change the analytics on reports using subtotals, time transformations, row calculations, and column calculations; and even change the data on a report by applying filters, prompting, and drilling anywhere throughout the databases. All of these features minimize the need for new report designs and minimize the amount of support needed by IT personnel to serve the changing needs of business users.

**Making End User Report Design More Powerful and Simple for Web Users:** When new reports need to be designed, MicroStrategy's new Web user interface provides an extensive set of features that allow business users to create reports and graphical output as well as create reusable reporting components like prompts and filters directly from the Web interface. The new tools are designed to be simple for non-technical people to use, yet powerful to give users full control over the design aspects of a report.

## **MICROSTRATEGY DISTRIBUTION SERVICES**

MicroStrategy Distribution Services is a major new component of the MicroStrategy 9 platform architecture designed for high-volume and high-efficiency distribution of reports and dashboards with the lowest administrative overhead. Distribution Services is fully integrated within the MicroStrategy Intelligence Server, thereby inheriting all of its administrative and operational efficiencies, as well as inheriting the Intelligence Server's ability to run in true 64-bit mode on a range of operating systems including: Microsoft Windows 64, IBM AIX, HP-UX, Sun Solaris, and Linux from Red Hat and SUSE.

## *Supporting Departmental BI by Enabling Even Greater User Self-service*

MicroStrategy Distribution Services is a high-volume, high-efficiency, personalized distribution engine for reports and dashboards. With MicroStrategy 9, business users can personalize their distributions by freely selecting:

- Distribution Format: HTML, Flash, PDF, or Excel
- Distribution End-point: E-mail, Networked Printers, File Server (including Portals and PCs), or their MicroStrategy report archive

Distribution Services is intended to allow business users to set up high-efficiency information flows for themselves and their co-workers. Business users can control all of their distribution subscriptions and set up distributions for other business users without having to go through a centralized IT administrator. This latter capability puts the control of information flow directly in the hands of business users.

Business users can set a variety of report distribution triggers, including Send Now, Time-based Schedules (e.g., every Monday morning), Event-based Triggers (e.g., when the books are closed), or Alert-based Triggers (e.g., if inventory levels drop 10% below normal). While schedule-based distributions are common in the BI industry, event-based triggers and alert-based triggers are far less common and empower the users to see reports only when they need to look at the data, thereby giving time back to the information user.

With MicroStrategy 9, business users can further personalize and automate their BI environment by setting up their own personal alert conditions for their alert triggers. Business users can have their own personal information radar that automatically scans the databases for their exception conditions.

#### ***Supporting High-efficiency Enterprise BI by Delivering More BI with Fewer Servers***

For the business users, MicroStrategy 9 Distribution Services offers a system that will make them more efficient in their day-to-day work, allowing them to spend less time looking for data and running reports in an ad hoc fashion. With Distribution Services, information finds the user, rather than the user having to find the information.

For the IT/BI professional, Distribution Services offers a new mode of achieving high-efficiency operations. Reports and dashboards can be scheduled to run overnight, during off-peak hours, thereby freeing up expensive database resources and BI server resources for interactive activity during the peak hours of the day.

### **NEW ENTERPRISE REPORTING FEATURES**

MicroStrategy 9 offers a series of new features for its Report Services module that allow Report Services to be used for complex enterprise reporting and customer statements. Report Services already contains a host of features for enterprise reporting, including automatic hierarchical report organization, comprehensive conditional formatting, and Pixel Perfect™ layout that is equally precise on screen as it is in print. With MicroStrategy 9, Report Services has been extended to include features for the most demanding applications for enterprise reporting and customer statements. These new features include additional automatic formatting features: horizontal repeating sections, dynamically-selected images, vertical text layout, multi-layout reports, automatic table of contents generation, automatic pagination, and watermarks.

#### ***Supporting High-efficiency Enterprise BI by Enabling Very Complex Report Designs Without Programming***

What is notable about MicroStrategy 9 and its ability to support the most demanding enterprise reporting and customer statement applications is that it is entirely metadata driven and does not require programming as is typical of other BI technologies that address these same requirements. As a result, MicroStrategy enterprise reports and customer statement applications are fast to develop and easy to change and maintain over time.

### **NEW DASHBOARD FEATURES AND DESIGN CAPABILITIES**

With MicroStrategy 9, MicroStrategy's dynamic dashboards have been significantly enhanced to contain even more information, and are more interactive and analytically-rich. With this release, MicroStrategy has expanded its library of advanced visualizations based on Flash technology and enhanced its existing visualizations to be more interactive for the user. The combination of advanced visualizations and dynamic "selector controls" allows MicroStrategy's dynamic dashboards to encapsulate the data contained in a dozen or more grid or graph reports.

#### ***Supporting Departmental BI by Allowing Business Users to Investigate Data Directly on Dashboards***

MicroStrategy 9 dynamic dashboards now have full OLAP drilling capability automatically enabled directly on the dashboards themselves. This breakthrough in engineering allows users to perform OLAP investigations directly on the grids and graphs that are displayed on the dashboards, which further minimizes the need for IT to develop and maintain additional reports for investigation.

Another major enhancement in MicroStrategy 9 is the ability for MicroStrategy dashboards to include any HTML-accessible content directly in the dashboard, which means that dashboard designers can include external information feeds, like real-time stock tickers, directly on MicroStrategy dashboards.

#### ***Supporting High-efficiency Enterprise BI by Delivering More BI with Fewer Servers***

Another major enhancement is a new feature called “multi-layout documents” that allow users to easily combine several independent dashboards into a single convenient “dashboard book.” This capability allows users to put all of their frequently-used dashboards into a single, interconnected dashboard document that can be run once and then viewed by the user throughout the day. Because these large dashboard books can be run overnight, they can offload processing from the database server and the BI server during the day, thus freeing up capacity for interactive and ad hoc BI that cannot be predicted and scheduled.

#### ***Supporting Departmental BI by Enabling Users to Serve Themselves***

MicroStrategy 9 Report Services also offers many new features to make dashboard design simpler and more automatic so business users can easily create their own great-looking and information-rich dashboards. These new features include new “smart placement” assistants that automatically size and position items on a dashboard, visual design cues placed directly on the dashboard template that avoid the need for many pull-down menus, and out-of-the-box dashboard templates that provide structured starting points for novice dashboard designers.

### **HIGH PERFORMANCE SQL ENGINE**

#### ***Supporting High-efficiency Enterprise BI by Delivering More BI with Fewer Servers***

MicroStrategy 9 introduces some new and powerful features to deliver even faster performance at higher levels of scalability. MicroStrategy is already a leader in SQL generation with its patented ROLAP-based SQL generation engine. This engine employs the most sophisticated features of dynamic SQL generation including: Customized SQL for each major DBMS technology, Collaborative analytics, Very Large Data Base (VLDB) settings, Aggregate Awareness, and Multi-pass SQL capability.

With MicroStrategy 9, MicroStrategy is introducing a new level of SQL Optimization designed to optimize multi-pass SQL generation even further. Tests with real data warehouses and reports have shown dramatic improvement with the new SQL optimization, with as much as a 55% query time reduction for complex queries.

**For more information on MicroStrategy 9, visit <http://www.microstrategy.com/9> or call 1-888-537-8135.**