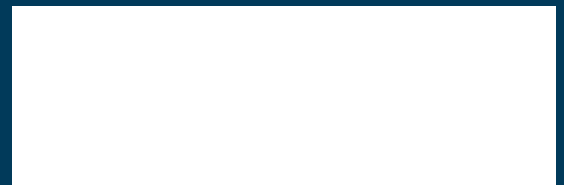


# TAME THE DATA EXPLOSION

OPERATIONAL BI: EXECUTIVE PLAYBOOK

TIPS AND TECHNIQUES ON HOW TO BUILD AND SELL A SOLID BUSINESS  
CASE FOR YOUR ENTERPRISE DATA ANALYTICS SOLUTION

As today's businesses grow in complexity, so too does the data that is the lifeblood of those enterprises. Analyzing that data to help make critical business decisions is what operational business intelligence is all about. This Playbook will guide you through the steps needed for operational BI to work in your enterprise.



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AND SELL A SOLID BUSINESS CASE FOR YOUR  
ENTERPRISE DATA ANALYTICS SOLUTION

**T**his Operational Business Intelligence Playbook outlines the key considerations for enterprises that want to turn the data explosion into business intelligence. Sybase, Intel and HP have teamed to provide this Playbook as a hands-on guide for managing the evolution from traditional data warehouse to a dynamic analytical engine that turns data into valuable business intelligence in operational timeframes.

Why Sybase, Intel and HP? Underlying technologies and platforms must support and optimize the business requirements for operational BI. By combining Sybase® IQ analytics platform with HP Integrity® servers powered by the Intel® Itanium® 2 processor, businesses can choose a solution specifically tailored for operational BI projects. With this Playbook, Sybase, Intel and HP have teamed to guide businesses through not just the technology, but the overall business considerations, from original assessment to measuring ROI. We hope you find it helpful.

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## TAME THE DATA EXPLOSION

### EXECUTIVE PLAYBOOK

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## TURNING THE DATA EXPLOSION

# Into Business Intelligence

**I**n today's world, companies can live and die on their ability to analyze data and make crisp, informed decisions. But as the amount of collected data grows exponentially each year, many are finding that long-sought target difficult to hit.

In fact, the changing business demands that drive today's companies will only fuel data growth. Increased regulatory requirements are forcing businesses to store and maintain burgeoning amounts of data, and companies seek to collect data across the enterprise in an effort to get the most complete analytical picture possible.

As a result, the sheer amount of data exploding onto corporate systems threatens to overwhelm the existing analytical process. Larger amounts of data translate into more complex queries that take longer to process. While this undoubtedly takes a toll in IT staff and system performance, the real loss lies in the hit business operations take, as knowledge workers must wait longer for critical query results.

The inadequacy of traditional analytical tools exacerbates the problem. Built to analyze transactional data stored in a data warehouse, these cumbersome tools cannot handle the current explosion of data. As a result, companies either dumb down their queries—which yields less desirable information—or divide the queries into smaller slices that take longer to process.

But as the decision cycle continues to shrink, many companies cannot afford to wait for analytical results. Financial services firms must do risk analysis on online transactions in minutes, not days. Retail companies need to pull customer data to create cus-

tomized incentives in seconds, not hours. The frustration lies in knowing that time is money, but not having a business intelligence function that can analyze complex data fast and accurately.

## Delivering Real-Time Decisions

For many companies, the answer is to transform business intelligence from a “once-removed” operation to one that is embedded directly into frontline business processes, a strategy known as operational business intelligence (BI).

According to Forrester Research, corporate use of business intelligence has shifted to include BI in the daily decisions made at the operational level of the business.<sup>1</sup> While many existing BI implementations are designed to answer high-level strategic questions that can withstand some time lag, operational BI users want and expect instant response. This shift to the operational layer produces analytical requirements that differ from those of traditional BI. For instance, the manager of a call center might use strategic BI for planning and forecasting, and the call center representatives would use operational BI for real-time responses to complex customer queries.

Operational BI depends on closely targeted real-time queries that provide detailed, granular information. That call center representative might use a dashboard that creates a single view of the customer, assembled on the fly from a variety of unintegrated data sources. In such cases, fast access to data is vital. Operational BI users are on the front lines in many cases, and cannot wait for data to be staged and loaded or long-running query results—they need the information immediately. In fact, a hallmark of operational

<sup>1</sup> Forrester: Process-Centric BI Emerges (December 2004)

BI is that user volume and query complexity will grow rapidly, as more of the workforce turns to operational BI installations as part of everyday business processes. These users will need answers fast, regardless of where the source data is housed. In many cases, they'll need their BI tool to pull data from multiple sources, on the fly.

Those sources will not be confined to traditional data storage devices, particu-



“Operational BI users are on the front lines in many cases, and cannot wait for data to be staged and loaded or long-running query results—they need the information immediately.”

larly as compliance reporting pressures increase. Instead, businesses will need to make sure that valuable unstructured data is included in the source data streams of operational BI. The bottom line: For operational BI to work, users must be able to pull data from multiple sources to get answers in real time, no matter where those users reside in their business's informational flow.

### Solutions and Technologies

The business needs behind the surge of operational BI are pushing a similar change in technology. The underlying technologies and platforms must support and optimize the business requirements for operational BI if this innovative business strategy is to succeed. In recognition of this, Intel, Sybase and HP have come together to present a solution that has

been specifically tailored to create an outstanding technological fit for operational BI projects. Combining the Sybase IQ analytics platform with HP Integrity servers powered by the Intel Itanium 2 processor, these vendors answer operational BI needs on multiple levels:

- **Faster time to decision.** This solution set has been specifically built to handle rapid-fire business queries against large amounts of data and can process and scale efficiently. Users get answers faster and can draw on larger loads of data to do so, resulting in better-informed business decisions.
- **Optimized performance and scalability.** HP Integrity servers based on Intel Itanium 2 processors are proven performers that have been engineered to deliver the performance and scalability requirements of operational BI applications. HP Integrity servers powered by

64-bit Intel platforms accelerate and improve decision making by processing more complex queries and higher data volumes on the fly.

- **Analytics built for operational BI.** Sybase IQ provides a powerful analytics platform expressly designed to analyze and process business queries drawing from heterogeneous sources and demanding a rapid turnaround. It's a perfect choice for operational BI projects, which can stall under the query lag time common in more traditional analytical solutions.
- **Cost efficiency.** Sybase IQ eliminates traditional—and costly—RDBMS bottlenecks and tuning requirements. Its ability to add and change database and server configurations, combined with its storage-saving data compression capability, reduces costs while yielding better business information. ■

## OPERATIONAL BI:

# A Chance to Rethink

**O**perational BI is a different animal—and answers a different need—than the traditional business intelligence systems most organizations have in place, so it’s a mistake to think of this

type of project as a “been there, done that” scenario. Evaluating and implementing operational BI requires CIOs and business leaders to rethink existing notions about business intelligence if they want to make BI work at the operational level. It’s particularly important to take a step back at the outset and conduct some upfront analysis and assessment.

CIOs and business decision makers must assess and review different business processes and implementation scenarios than those commonly associated with traditional data warehousing efforts. For example, in addition to analyzing historical data for risk management, banks might employ analytical tools for processes with extremely short decision cycles, such as fraud detection. The two projects require separate tools and implementation strategies.

## Operational BI Indicators

A number of drivers will help decision makers and CIOs pinpoint those business processes best fitted for operational BI implementations. One thing to look for is a corporate need to build key performance indicators, or KPIs, based on the use of oper-

ational data. The faster and more efficiently workers can access and use that data, the more likely the KPIs will be met, and that’s where operational BI comes in. Likewise, companies that need to use data at a very granular level—for example, to drill down to the individual customer level in customer service—should also assess the value of this technology. The same holds true if a business wants to identify tiers of customers, a task that involves very complex queries that need a fast response. Basically, if there’s a need for data to help decision making at the front lines of a company, operational BI is a good fit.

Another indicator lies in the need to use data to identify problems or opportunities in real time. For example, in order for warehouse operators to access and analyze RFID data to red-flag product delivery gaps, they need instant response times. Often, such processes are subject to rapid fluctuations—think about the heavy workload in a call center at holiday time—another indicator that a highly scalable operational BI solution would be appropriate.

Operational BI opportunities also arise when a company needs to pull data from heterogeneous sources to get an answer. Operational BI needs to fit within existing business processes and infrastructure. It should aim toward helping people get the information they need faster rather than overhauling existing business processes. Operational BI applications must be able to pull data from many different sources rather than force extraction to a single repository.

## Finding the Pain Points

Since business pain points are the driving force behind operational BI, CIOs must

start with a thorough assessment of current business challenges, such as the inability to access certain sources of operational data, or the soft costs that come from a company's inability to make fast decisions. From there, they can identify the gaps that lie between the current state and a successful implementation.

Because operational BI is a fairly new concept, most businesses will gain from working with outside experts to assess their business for areas that are ripe for operational BI. The idea is to identify the functional areas where access to operational data could pay off, measure the prospective ROI of embedding operational BI into those business processes, and prioritize the opportunities. Experts from HP, Sybase or Intel can draw from their expertise in operational BI to help organizations identify a game plan for operational BI improvements and investments.

– **Start with due diligence.** To create a detailed overview of the current situa-



changes that must be made to support operational BI. The business processes to be addressed will generate pertinent technical questions, such as: How fast will the data load and be ready for queries? How configurable is the analytics solution in response to changing data capture and query requirements?

– **Define and map.** Here, the assessment team documents existing and future process flows and objectives, and builds a map of the business processes that will be affected by the application. The team will then determine what data sources feed into them and map how the sources will be extracted, federated and virtualized to present one data source, as well as specify and design operational BI process flows and objectives.

– **Specify cost expectations.** In these days of flat budgets, it goes without saying that business applications must be cost-effective. This vital requirement will drive technical specifications down the road, so in addition to the traditional metrics of performance, scalability and reliability, IT leaders should consider making existing resources work harder through virtualization and partitioning, as well as through promising new technologies such as dual-core processor architectures that can save money through increased performance.

– **Determine ROI metrics.** Here, the assessment team draws from the raw data they've collected to design meaningful ROI metrics based on both technical performance and projected business benefits that are tied directly to the BI application. For example, in an application where users must have instant answers to their queries, response time is a good metric, particularly if the speed of the response can be tied to a pertinent business benefit, such as increased customer satisfaction. ■

“Operational BI needs to fit within existing business processes and infrastructure. It should aim toward helping people get the information they need faster rather than overhauling existing business processes.”

tion, the assessment team must conduct in-depth interviews across business and IT units, including line-of-business sponsors and users, the CIO,

IT managers and technical specialists. The goal is to identify optimal business processes for an operational BI implementation, as well as to pinpoint IT

## BENEFITS PACKAGE:

# Make the BI Case By the Numbers

**A**fter putting together business requirements, CIOs and business leaders must clearly delineate the path that leads from business need to technology implementation to the application's

impact on the company's business. To make this connection, businesses must build a detailed overview of the effects operational BI will have on the organization in terms of claims that can be quantified and reasonably guaranteed. In other words, if there is going to be a cost reduction, how much? What is the ROI and in what time frame will it be achieved? When can the benefits be expected?

CIOs and senior business executives will take the information gathered from the business requirement process to build a detailed overview of how the proposed application will benefit the organization going forward, in terms of both business value and cost-effectiveness. This overview should also include supporting metric and ROI analysis for a complete picture of the impact of the proposed application. Steps to consider when building an impact statement include the following:

- **Build a usage model.** This model should forecast how the application will be used, how it will grow and how it will affect business processes. Usage models analyze the tasks that workers are trying to accomplish and come up with ways to improve how work gets done, as well as tie each task within a business process more closely to the desired end result. While many companies are apt to skip this phase and head straight

to technical analysis, it's vital to conduct a full breakdown of people, processes and technologies. The business requirements interviews should address issues such as whether a company has the right processes in place to work with analytical information, and whether the general corporate culture embraces data analysis.

- **Analyze the technology impact.** Since operational BI differs markedly from more traditional BI applications, it's particularly important not to assume too many similarities between the technical infrastructures. In fact, the choices made with regard to technology will have an enormous influence on the success of operational BI. By taking a close look at the business processes that are most in need of operational BI, CIOs can glean some important insights that will help optimize the impact of the technology.

For example, operational BI applications are intended to be used by a fairly large user population, compared with the smaller "power user" population that generally uses strategic BI applications. Consequently, operational BI applications need to scale over time, using technologies that are designed to handle many users per CPU as well as scale linearly as resources are added. Sybase IQ's ability to handle multiple users per CPU gives the analytic software great scalability without impinging on performance, particularly when running on a 64-bit Intel-based HP platform, which further improves both scalability and performance. Technologies such as dual-core processor architectures can enhance query response and load times still further, giving scalability an additional boost.

This is particularly important because the peak workload on an operational BI application can vary sharply according to demand. BI implementations should incorporate technology such as HP

Integrity servers based on Intel Itanium 2 processors, which can manage unpredictable workloads. Grid architectures and virtual platforms based on these technologies can reallocate resources on the fly, giving CIOs greater flexibility to respond to fluctuating workloads.

One final consideration lies in the fact that operational BI demands real-time response at a granular level, as users seek to pull business answers in real time from multiple data sources. The stasis of traditional data warehousing solutions, which depend on historical data aggregated in one place, would be a death knell in an operational BI scenario. Instead, CIOs should look for an analytical platform such as Sybase IQ, which is built specifically for high-level analytical performance. Such a solution will also have an impact on technical infrastructure components such as storage, as its data compression technology significantly reduces the amount of storage necessary to support the application.

### Measure ROI Correctly

It is not always simple to find directly measurable ROI indicators in operational BI solutions, simply because the payoffs are often to be found several steps down the road. Benefits may include more loyal customers, workers who can make smarter, faster business decisions, or new products or services that are a direct result of BI insights. Many companies find it makes sense to view operational BI investments along the lines of ERP, a valuable business necessity.

Still, it can help to find some metrics to quantify the value of data access in the form of operational BI. For example, companies concerned with application performance might consider limiting the amount of data that is accessible through the application in order to maintain an acceptable level of performance. However,



### Use Technology to Shorten Payback

It is also possible to find hard cost and performance ROI in the technology choices that are made for the operational BI application. Sybase IQ running on HP Integrity servers powered by Intel Itanium 2 processors can save money and build ROI in several areas.

For instance, in the data access example above, the best choice is to provide full access to business data. To do so requires the high performance and scalability offered by this integrated solution. In fact, predictable scalability allows companies to better map spending to business requirements, while the virtualization technology helps save money through more efficient resource allocation.

Sybase IQ's data compression technology helps curtail storage spending. While this solution offers much in the way of scalable, cost-effective, high-performing tech-

“ The stasis of traditional data warehousing solutions, which depend on historical data aggregated in one place, would be a death knell in an operational BI scenario.

er, that choice may well reduce the system's overall ROI, as users would not be able to make full use of the data. Assessing the value of business data is a vital part of building ROI.

nology, the real payback lies in its ability to speed decision making through faster access to data. That business value is less quantifiable, but perhaps the most important of all the ROI metrics out there. ■

## SOUND FOUNDATION:

# Platform Strategies

# A

s the growth of operational BI pushes analytics down to the production level, it triggers important alterations in how data is used, maintained and accessed.

Such a bellwether change will impart

equally important shifts in the underlying technology that serves operational BI, and IT leaders must take that into consideration as they plan platform requirements for this new way of doing business. Decision makers must plan for rapid growth as a vastly expanded user population peppers massive data volumes with queries that demand real-time results.

From server infrastructure to storage systems to network bandwidth, the selection of the appropriate platforms will have business-critical repercussions. Every aspect of the platform design should be optimized for performance, all while maximizing data scalability, user scalability and load balance. At the same time, CIOs must deliver these valuable solutions within tight time frames and limited budgets, as the mantra of “doing more with less” continues its business ascent. Consider these strategies when evaluating BI platform requirements.

## Virtualize and Deploy Service-Oriented Architecture

Building an IT infrastructure that allows flexibility and instant response time is an important factor when implementing operational BI. For many companies, the answer lies in deploying a more flexible, virtualized, open standards-based environment that maximizes business agility and reduces complexity. Many Fortune 1000 companies have turned from the high costs and limited flexibility of proprietary RISC architectures to

HP Integrity servers based on 64-bit Intel Itanium 2 processors for the reliability and scalability demanded by BI and other applications. As companies increasingly demand the expanded data analytic capabilities of operational BI, the limitations of retrofitting proprietary systems to meet the demands of BI have become increasingly clear. As a result, the trend toward this open standards-based platform will continue to grow in popularity.

Moreover, technologies such as virtualization, which simplifies the management and control of hardware and application resources, will help both control costs and hasten ROI. A platform technology such as HP servers based on the Intel Itanium 2 processor or Dual-Core Intel® Xeon® processor offer several features designed to shorten the payback cycle.

Beyond meeting the performance and scalability requirements of operational BI applications, consider the cost savings that come from running multiple applications and operating systems on a single dual-core platform. Add the increased availability and security that come from using fail-over partitions to assure application availability. Then, factor in the simplicity of OS and hardware migrations, which can be moved onto virtual partitions. Virtual platforms can be provisioned or resized in minutes, providing much greater agility to respond dynamically to demanding workloads. Clearly, the right choice of platform technologies can have a significant impact on the overall value, effectiveness and cost-efficiency of not only BI and data analytics, but of the entire IT infrastructure.

## Start with a 64-Bit Foundation

The promise of operational BI lies in its ability to accelerate and improve the quality of decision making by handling more complex queries and higher data volumes quickly and efficiently. HP Integrity servers powered by 64-bit platform technologies from Intel provide a powerful foundation for enterprise-grade analytic

engines, particularly those drawing on heterogeneous data sources.

With dramatically expanded memory addressability, these 64-bit platforms can bring massive volumes of data into memory and avoid time-consuming trips to disk to fetch data. They also offer large caches that accelerate BI throughput by storing more data and instructions in high-speed memory closer to the processor. On top of that, the Sybase IQ processing model melds well with Intel's 64-bit advancements. Because Sybase IQ relies heavily on processors and less on disk I/O, the benefits of faster processors are immediately recognized and provide a predictable path to meet future scalability requirements.

### Plan for the Move to Multi-Core

The industry shift to dual-core, and eventually multi-core, processor architectures offers significant value for operational BI. By increasing the number of cores in the processor—and hence, a server's capabilities and computing resources—multi-core architectures enable enhanced query responses and load times as well as enterprise flexibility. With the relevant software support, businesses can dedicate separate cores to specialized functions. One core might handle data mining while the other tackles online analytical processing, enabling performance gains for both applications.

### Expect Platform Architectures to Do More

The industry has long been accustomed to steady improvements in processor clock speed and performance, but businesses can now look for processor platforms to deliver value in a variety of new ways. For instance, along with introducing dual-core processing across its product lines, Intel is incorporating innovative platform technologies that support virtualization, enhance remote manage-

ment and accelerate I/O.

Those capabilities will in turn boost the performance of operational BI applications. Case in point: Intel® I/O Acceleration Technology (Intel® I/OAT), built into its next-generation platforms, can reduce database load times and speed the work of transforming data from multiple sources. Furthermore, Sybase IQ's patented indexing and storage technology is proven to increase response time significantly faster than a traditional RDBMS.

### Build Scalability

To keep up with the data explosion, CIOs must turn to flexible server architectures that can scale quickly and easily on demand. The supporting architecture must support large-scale growth without forklift upgrades—another plus for HP servers based on the Intel Itanium 2 processor or Dual-Core Intel Xeon processor. The platform should support the seamless addition of nodes, processors, memory, I/O bandwidth and storage capacity to tune for throughput and query performance, as well as accommodate more concurrent users issuing complex queries on larger data sets. Sybase IQ's multiplex cluster capabilities allow for both vertical and horizontal scaling on open standards-based hardware. Sybase IQ supports many of the world's largest and most demanding data warehouse implementations.

### Put It All Together

Sybase IQ, running on HP Integrity servers powered by the Intel Itanium 2 processor, has been built to meet the demands of analytical applications such as operational BI. All aspects of the system have been balanced and optimized to run routines and formulas quickly and efficiently. Running on Itanium 2-based HP Integrity servers, Sybase IQ offers a flexible solution that can help keep costs down by minimizing customization, easing implementations,

and reducing maintenance and hardware requirements.

### Accelerate Time-to-Value

Technical blueprints or reference architectures from vendors such as HP, Intel and Sybase can help IT organizations choose and deploy technologies that work well together from the perspectives of technology and business process efficiencies. Intel, Sybase and HP have developed reference architecture for heavy-duty business intelligence and data analytics featuring HP Integrity servers built on Intel Itanium 2 processors and running Sybase IQ. The reference architecture incorporates insights from each company's deep well of BI expertise.

To further accelerate ROI, consider working with a consulting team to adapt an existing reference architecture to suit your unique requirements and assist with any benchmark analysis needed to confirm cost and performance forecasts. Intel, Sybase and HP can provide such assistance, along with sharing information about performance for different configurations.

### Plan for Solid ROI

Any significant investment should be supported by a solid analysis of how and when the investment will pay off. The investment analysis should include a detailed breakdown of IT costs: hardware, software, consulting and training, including both proposed purchases and the costs of integrating the solution into the existing infrastructure. To accelerate ROI, organizations should deploy platforms that provide robust 64-bit performance, scale cost-effectively as business requirements demand, support virtualization—and will not require a massive ramp up for the IT staff. Then, prepare to enjoy the payoff in improved insights into the business, smarter decision making and a more powerful, agile information environment. ■

## BEYOND THE WAREHOUSE: A New View Toward Data

**B**usinesses have long grappled with how to turn data into a true business asset, and how to do so quickly and efficiently. Because IT is constantly trying to keep up, the ability to plan and move from reactive to strategic

decision making is impaired. By giving frontline knowledge workers access to business data to make faster, smarter, real-time tactical decisions, business leaders finally have a chance to exploit the data explosion for its full worth. For the most part, proprietary, RISC-based solutions haven't offered the necessary speed, scalability and flexibility for the demands of operational BI. The failure rate of data warehouse and traditional reporting tools in operational BI settings has been historically high. Among the challenges:

- \* Relational database management systems (RDBMSs) were never designed to handle the ever-increasing and unpredictable volumes of data, as well as the explosion of users who need to access and analyze that data. As a result, RDBMSs don't efficiently support the real-time reporting and analytics that provide the agility businesses require to provide effective decision making.
- \* The combination of the data explosion and increased user data access demands is severely impeding the performance of operational systems.
- \* The work and time required to manage and access data stored on a mainframe is placing IT departments and budgets under enormous stress. Traditional export-trans-

form-load (ETL) technology requires a staging area, which is not possible under the instant-response requirements of operational BI.

In short, many traditional database methods are structured for strategic, longer-term analysis rather than on-the-fly decision making. But as exploding user populations draw more heavily on operational data, traditional transaction technology, which was originally designed for online transaction processing (OLTP), bogs down. Retrofitting these tools to meet the demands of operational BI is simply a Band-Aid that avoids the reality that businesses are being restrained by the underlying limitations of "old" technology.

In any event, such tools require ever more company resources, including personnel, floor space and budget, in order to operate and keep up with the velocity of demands, without foreseeing future requirements.

The result is that IT staff are overburdened with query requests, and users have to wait for their answers—a wait that can prove costly as well as reduce competitive advantage and operational efficiency.

### New Solutions, New Possibilities

Real-time business analytic solutions offer significant business value, as they allow organizations to download source data not just once a day or in one batch, but multiple times during the day, in an up-to-the-second format. Specifically, the Sybase IQ analytic engine, running on scalable, 64-bit HP servers powered by the Intel Itanium 2 processor, can dramatically accelerate time-to-information while reducing the cost and complexity of data management in a number of important ways. Businesses

can:

- Perform analysis and reporting that was previously too complex, time-consuming or cost-prohibitive.
- Relieve the burden on operational systems.
- Simplify the challenges of integrating many sources of information.
- Reduce risk through safe, effective data offloading and querying.
- Protect legacy systems while dramatically reducing the time it takes to offload mainframe data for analytical use.
- Allow for storage of unstructured data that must be retained for compliance requirements.

Because Sybase, Intel and HP have built their data analytics solution with a standards-based relational design that easily integrates with existing systems, it overcomes the cost and complexity issues that strain many IT departments. Unlike other similar solutions, Sybase IQ allows direct offloading of data from legacy and production databases with no need to reconstitute the data—a time-consuming process that can add months to a BI project. Sybase IQ also accelerates the performance of existing sluggish data warehouse implementations, and accelerates implementation time.

Operational BI often demands that companies pull data from multiple sources—for example, when a call center representative needs to draw from billing, service, dispatch and other sources to create a real-time customer profile. Many companies turn to enterprise information integration (EII), which can extract data from operational sources and provide a single layer. Sybase's Avaki® EII software provides a flexible, scalable, and efficient solution for delivering fresh data from multiple, distributed sources to key enterprise applications. It integrates distributed data while providing standardized



access to integrated data views through a single data layer.

Sybase's EII differs most from conventional ETL-oriented data warehousing in that it accesses information rather than moving it. Instead of moving data to a central repository, EII uses virtualization to present clients with one view of a consolidated information resource. EII hides the federated queries that draw from multiple data sources, "playing the data where it lies," as some put it.

When it comes to raw power, 64-bit Intel Itanium 2 processors address up to 1,024 terabytes of physical memory, allowing analytics applications to accom-

modate today's terabyte-scale databases and data warehouses. Sybase IQ's column-based structure delivers queries up to 100 times faster than an RDBMS, and accepts ad hoc queries more readily than the row-based approach used in traditional databases, while handling complex queries with multiple criteria.<sup>2</sup> In addition, sophisticated compression algorithms reduce storage needs by between 30 and 70 percent.<sup>3</sup>

By providing a platform for more complete analysis and reporting, along with easy access to historical data, Sybase IQ gives businesses the tools to meet the ever-growing host of regulatory requirements that mandate data retention and management across the business landscape. Running on Itanium 2-based HP servers, the solution scales as user loads increase, enabling smarter, faster decisions with a low cost of ownership and attractive payback. In addition, the collaborators in this new business intelligence solution offer—along with reference architectures, hardware and software necessary to complete a timely and robust implementation—consulting services that allow a business to zero in on its pain points and work those into business process changes, choosing the appropriate technology along the way.

Using this solution to implement operational BI will yield payback on many levels:

- **Enhanced manageability.** Based on open industry standards and scalable architectures, the platform requires fewer people to manage and maintain than traditional database systems running on mainframe or RISC architectures. Businesses moving from performing business analytics manually with expensive, proprietary and inflexible systems to operational BI platforms based on HP servers and the Intel Itanium 2 processor can expect to cut their human resource costs by a significant amount.

<sup>2</sup> <http://www.sybase.com/products/informationmanagement/sybaseiq>  
<sup>3</sup> <http://www.sybase.com/products/informationmanagement/sybaseiq>

- **Reduced mainframe dependence.** The solution allows businesses that are dependent on a mainframe or RISC platform to pull data from that source onto more cost-effective HP systems based on Intel technologies, making it possible to perform reporting and analysis on a less expensive platform.
- **Better decision making.** Users can make smarter, faster decisions by using more data in their queries, asking more complex questions, comparing more variables and getting results more quickly.
- **IT efficiencies.** By allowing IT centers to get more out of each server, and by using virtualization to make full use of available resources, Sybase IQ, running on Itanium 2-based HP servers, can help reduce an IT department's power needs. It can also lower data storage costs by using storage compression.
- **User self-service model.** Because users can perform their own analysis rather than submitting requests to the IT department, operational BI and EII dramatically reduce the amount of time users need to wait for a result, while at the same time liberating IT staff to undertake more strategic projects.

These paybacks translate into business value that's couched in tangible benefits. For example, using Sybase IQ, a company that had previously been able to store and analyze only three months' worth of data at a given time can now store two or three years' worth. Instead of performing analyses in segmented chunks, the company performs a full analysis in real time with all the available data. In some cases, businesses have saved millions of dollars because the improved analysis has allowed them to discover accounting inefficiencies or fraud.<sup>4</sup> Other businesses are discovering new sources of revenue by offering analysis services to paying customers. For example, retail enterprises are generating real-time analytics based on customer purchases,

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allowing them to better target those same customers in the future and to see immediately whether a specific promotion had the desired effect on customers' buying habits.

### Real-World Examples

As more companies buy into the premise of real-time, all-inclusive analysis, the business value of such an analytical engine begins to emerge. For example, a large U.S. state government division used Sybase IQ to create a financial management system that delivers information throughout the state government and to citizens. As a result, the state makes more data more widely available to its 1,000 employees, has realized savings of \$100,000 per month in mainframe data storage, and has reduced printed reports by 90 percent, while seeing redundant efforts plummet.<sup>5</sup>

A credit-reporting giant used Sybase

IQ to perform in just seconds queries that used to take minutes; those that took days were done in just hours. Now the company's customers can execute ad hoc queries that weren't possible with the mainframe system.<sup>6</sup>

A large financial services company, faced with compliance regulations that required the rapid analysis of data, used Sybase IQ to produce regulatory reports without straining operational systems, while allowing its operating departments to perform real-time analysis for marketing, CRM and statistics.<sup>7</sup>

Some businesses have grudgingly learned to live with the barriers their current analytics systems present, even if that means they analyze smaller amounts of data than they would like, wait longer for answers or pay more to store and access it. With new data analytics solutions on the horizon, those barriers are crumbling. ■

<sup>4</sup> For example, see [www.sybase.com/products/informationmanagement/sybaseiq/testimonials](http://www.sybase.com/products/informationmanagement/sybaseiq/testimonials).

<sup>5</sup> [www.sybase.com/detail?id=1013806](http://www.sybase.com/detail?id=1013806)

<sup>6</sup> This company is one of many to experience similar results. See [www.sybase.com/products/informationmanagement/sybaseiq/testimonials](http://www.sybase.com/products/informationmanagement/sybaseiq/testimonials)

<sup>7</sup> [www.sybase.com/detail?id=1036825](http://www.sybase.com/detail?id=1036825)

TIME TO DEPLOY:

# Managing Sponsors, Complexities and Expectations

Once CIOs have identified requirements, developed a breakdown of IT costs and picked the right solution for optimum operational BI analysis, the challenge of deployment looms. Operational BI,

with its emphasis on embedding analytical tools into the business processes, is a fairly new concept, and there are a number of issues that CIOs should address to maximize the project's payback. Critical success factors include:

- Collaborating with the business community that will use the application.
- Creating an orderly project management plan that includes a proof of concept and measurable milestones.
- Managing fiscal expectations.
- Leveraging partners.

The following tactics will help CIOs address these challenges.

## Find Key Players and Secure Executive Sponsors

Constructing an operational BI system requires a complex blend of hardware, software

and organizational support. Since operational BI often reaches across many functions, data sources and business processes, it's imperative to do a thorough assessment up front, identifying which staff groups will be involved with the deployment and making sure key players are on board. The right groups in an organization must be identified and involved early on to ensure the successful adoption of the system.

There are usually several contingents vital to operational BI: application sponsors, those who work with the applications accessing the data and those who own the database infrastructure. CIOs should include the following groups in any operational BI implementation.

### – Line-of-business executive sponsors.

One of the most important voices to involve in deploying operational analytics belongs to the executives responsible for the business processes that the technology will affect. These are the people who will both sign off on the implementation and see the benefits accrue to their bottom lines. Therefore, assuming the business executives aren't the project sponsors to begin with, it's vital that these stakeholders strongly support the project. As the business value of an IT project increases, so does the likelihood that line-of-business executives not only will be on board, but also will provide the chief impetus behind the project. In the case of operational analytics, IT and line-of-business executives are often in sync about the need to query and analyze data more effectively.

– **Users.** These are the people who often feel the most pain from the current solution—they're the employees for whom the current system is not fast enough, the people who can't access vital information in real time. For operational BI solutions, which are typically accessed by large user populations in frontline positions, it's

imperative for project leaders to consult users at every step of the process. From gathering information about current business processes to testing and modifying the new solutions, users must have a say in the construction of solutions in order to ensure that their business applications work smoothly with the new analytics solution. This critical constituency may include senior management as well as mainstream knowledge workers.

- **IT executive sponsors.** These executives will be responsible for the oversight of the technical implementation, and will work closely with project team members to ensure that solutions are implemented on time and on budget.
- **IT staff.** Those in charge of maintaining the solution are also key to its deployment. While users will look for business results from enhancing the BI analysis, the IT staff should look for ways to streamline both installation and maintenance.

Together, these groups need to ask, “How can operational BI help us work smarter? What specific steps are needed to get to that point? How can we use this solution to net the maximum value for the enterprise’s business applications?” This is when the hard questions must be asked of the users and the BI system in place. Companies that focus too much on the technical excellence of a system, and not on business problems like customer segmentation, will not get the most from their deployment.

Once those questions are answered, it’s important to identify the sources of data, build a blueprint to direct each data source to the Sybase IQ analytic platform, and make sure the queries are on target for business requirements. A retail company, for instance, might decide to institute a loyalty card and coupons program. The retail managers may want to see what effect the coupons are having on weekly sales results. But the real engine of the program is what is being printed in the coupons. How is the data on buying patterns contributing to the offerings in the

coupons? It’s all in how the data will be sliced and diced to drive future profits.

### Proof of Concept

The next step is a proof-of-concept (POC) pilot program. When scoped properly, the POC lets users gain hands-on knowledge of the new systems through testing in an actual environment.

The POC should include measurable success criteria so project managers have an idea of load times, query times, and application robustness. They should also consider how easy it is to convert the appli-

skills of even the most nimble IT department. The beauty of the innovative operational data analytics solution put together by HP, Intel and Sybase is that because it is built with a standards-based design and easily integrates with existing systems, it reduces the complexity of the installation.

Because Sybase IQ makes it so easy to convert applications to the new system, there is no need for extensive—and expensive—rewriting. This simplifies the development cycle and system administration necessary during the initial deployment.

Recent deployments of comprehensive

“ Companies that focus too much on the technical excellence of a system, and not on the business problems like customer segmentation, will not get the most from their deployment.

cation over to the analytical engine for migration purposes. The POC should be structured to show real-world data volumes, ad hoc queries and concurrent users.

Once the POC is completed and sponsors have seen the results, project managers should be able to plug the results and projected hardware environments into the ROI model. They can then set the full deployment schedule, as well as a road map of benefits, costs and user adoption.

### Deploy Analytical, Not Transactional

Installing traditional data warehouses and RDBMSs can test the project management

BI analytics solutions have shown that DBA and support requirements and training time were reduced. In addition, the reduced time and cost to implement changes to the database, and to modify existing queries, have also led to savings.

### Manage Expectations

Plan to manage cost expectations. While the cost of the deployment of this sort of data analytics system can have an impact on IT resources and budget in the short term, an analysis of past deployments shows that this is quickly offset by future reductions in the hardware, software and personnel resources needed. ■

## COST CONSIDERATIONS:

# Looking for Value in All the Right Places

**O**perational BI's success depends in large part on a tight connection between the business processes it affects and the indirect business value derived therein. Therefore, it's generally more valuable

to calculate the worth of the investment in terms of its business payback rather than a strict ROI equation. One can, however, build a strong cost-benefit case by implementing a solution that's heavy on technology savings while maximizing the types of operational benefits that the solution will generate. While many such benefits are self-evident, it's important to track how the workforce uses the solution, because payback can come in unexpected places.

When it comes to tracking the investment and payback cycle of an operational BI project, CIOs should look for business value and cost returns in a number of areas:

– **Storage savings.** One of the hallmarks of the data explosion is a corresponding explosion in storage needs, causing companies to struggle with an exponential growth in storage purchases. Sybase IQ running on HP Integrity servers powered by

Intel Itanium 2 processors can provide major savings in this area. Sybase IQ compresses stored data by as much as 70 percent. In an audited benchmark test by TPC auditor Francois Raab<sup>8</sup>, Sybase IQ loaded 155 terabytes (1 trillion rows) of input data and compressed it into a 55-terabyte data warehouse. This provided a major reduction in storage costs versus a conventional transactional-based data warehouse. Using a traditional relational database, the same 155 terabytes would explode up to 1,000 terabytes (1 petabyte).

- **Higher performance.** HP Integrity servers based on the Intel Itanium 2 processor can yield a cost-effective solution through increased performance and scalability compared to proprietary RISC solutions. With a 64-bit architecture, multiple CPUs per server and huge memory bandwidth, organizations can analyze large data sets quickly, run multiple jobs and support multiple users.
- **Faster response.** Running on Intel-based HP servers, Sybase IQ delivers answers to user questions far faster than traditional data warehouse technologies, regardless of the number of users or queries. Ad hoc query results are returned in seconds and minutes, instead of hours or days with traditional transactional technologies. And because Sybase IQ can load data in real time with virtually no impact on performance, users can act efficiently, based on current information, to make the best-informed decisions possible. Moreover, the solution's 64-bit hardware platform can also dramatically accelerate time-to-decision-making through its significantly expanded memory addressability. As a result, this solution can bring massive volumes of data into memory, saving time and increasing user productivity.

<sup>8</sup> [www.sybase.com/products/informationmanagement/sybaseiq/unprecedentedroi](http://www.sybase.com/products/informationmanagement/sybaseiq/unprecedentedroi)

Query responses are hastened by the system's ability to cache data in high-speed memory closer to the processor. The result is lightning-fast response times that further accelerate decision making.

– **Soft cost reductions.** This solution can reduce soft costs, such as ongoing IT staff devoted to maintenance. By eliminating the need to tune for every query and devote scarce time and resources to adding new fields and managing everyday data growth, Sybase IQ eliminates data overhead and reduces maintenance and attendant costs. This also holds true with deployment costs;

sions as operational BI is embedded into daily business processes and provides data on a more granular and immediate basis. And since Sybase IQ stores discrete data elements, as opposed to aggregated data, users will be able to change their queries on the fly in reaction to business conditions, rather than having to wait for a database rebuild to revise or modify queries. Database schema can be easily modified, and an almost unlimited number of new columns can be added. The result is a boost in business value down the line, as companies can react quickly to changing needs in their businesses. This flexibility also extends to the ability to

nificantly, potentially resulting in a minimal or negative ROI. It is therefore necessary to quantify all the risks related to cost and benefit estimates.

There are a number of risk factors to consider for operational BI business cases, such as the impact that vendor choice will have on the application during its life cycle. CIOs must factor in the risk of using an unproven vendor with unknown long-term viability, for example, as well as the risks that the products chosen will not deliver the functionality expected. Since operational BI depends heavily on agility and flexibility for success, it's also important to minimize the

“ Business leaders and CIOs must find the balance point at which the risk outweighs the undeniable business value of operational BI, or discover ways to bring the risk level down.

Sybase IQ takes only a fraction of the time to deploy as do traditional databases, significantly reducing costs such as consulting services and project management services. The upshot? Businesses get results faster, paring the payback cycle in the process.

### Increased Business Value

The greater value for operational BI lies in the business benefits it generates. Although not easy to quantify, these operational benefits should represent a significant value to the company, and should be factored into any ROI analysis.

For example, business leaders should count on the ability to make faster deci-

add users quickly in response to business demands, as it is a simple matter to add servers without having to move or modify the existing users' configurations. The result: a system that scales both quickly and cost effectively.

A certain level of risk analysis is also necessary in building an overall cost and payback picture for operational BI. Certainly, increased technical efficiency, lower cycle times and increased performance and reliability can be measured and quantified, although business benefit metrics are a little more difficult to create. Moreover, it is possible that the risk associated with the costs and benefits may lower the original benefits estimate sig-

risk that the products chosen will not allow future infrastructure decisions and changes. A service oriented, standards based solution will increase flexibility and, therefore, reduce risk.

On the business side, it's important to evaluate the corporate culture. Is it data-centric? Can it absorb and adapt to the new technology? This is not a trivial matter, as user acceptance can make or break operational BI. Finally, the risk/reward ratio goes up in direct correlation to the size of the project. Business leaders and CIOs must find the balance point at which the risk outweighs the undeniable business value of operational BI, or discover ways to bring the risk level down. ■

## BOTTOM LINE:

# More Speed, Flexibility, Less Complexity = BI Business Value

**T**he concept is clear: If companies expect to wring full business value from the ever-increasing amounts of data they collect and store, they must find better ways to use it.

For many, the true competitive differentiator lies in operational BI, which enables front-line employees to access and analyze business data on the fly—and use the insights from that information to make faster, smarter business decisions. From improved customer service in call centers to enhanced risk analysis in financial services companies, operational BI is a bellwether strategy for many, spawning great changes in both business and technology. The question is, just what results can CIOs and business executives expect? The following areas are ripe for payback.

## Analytical Results

Operational BI empowers businesses to reduce the lag time between information analysis and market action, letting them respond to market changes or customer demands faster and more effectively. The integrated solution from Sybase, Intel and HP does so in a number of ways:

- **Faster access to operational data.** Sybase IQ, running on HP servers based on the Intel Itanium 2 processor, allows users to get at data faster through a variety of unique capabilities. For example, with the solution's ability to offload data from legacy databases without having to reconstitute it first, users can shave months off a BI project. In a world where time is money, faster analysis can yield key business decisions earlier.
  - **A single analytical source.** IT executives can funnel myriad data sources into Sybase IQ, allowing analysts the opportunity to compare and contrast data that previously was not accessible from one system. The business value of removing artificial limits from data analysis is enormous.
  - **Support for more complex data analysis.** Sybase IQ's powerful analytic platform, running on HP servers based on the Intel Itanium 2 processor, allows business users to perform BI data analysis on larger datasets. Unfettered by constraints around data size, analysts can conduct more complex queries and pluck business answers that much faster.
  - **Improved business flexibility.** Sybase IQ, running on HP servers based on the Intel Itanium 2 processor, improves IT and business flexibility through the ability to add and change database and server configurations. This leads to faster and less expensive changes to business queries and analytics.
- Sybase IQ is easier to maintain and does not require the time- and resource-intensive training of traditional RDBMSs. The solution can scale to meet the growing user population found in operational BI schema, while at the same time handling their real-time query requirements. Moreover, it does so without straining IT budget and staff resources. Its data compression feature greatly reduces the need for IT staff to manage the data, helping compa-

nies battle the staff creep that comes with managing ever-increasing data volumes in a traditional data warehouse.

For instance, a comprehensive securities firm with 70 discrete users and 240GB of data spread across 40 locations—and six different applications—turned to Sybase IQ to better track its sales and to get more visibility into its customers.<sup>9</sup> The high-volume query process capabilities and the reporting processes that enable the tracking of daily customer transactions have increased the frequency with which customers can place orders. It has also become a valuable client communications tool, enabling the company to quickly and accurately locate a client name list and, through a transmission system, immediately notify a client of a transaction decision—rather than the much slower process that involved going through the sales staff.

## Business Benefits

Although Sybase IQ yields significant business value on its own, the performance benefits increase when run in tandem with HP servers based on the Intel Itanium 2 processor. The Winter Corporation, an independent consulting firm, found that HP was the most popular choice for BI servers in a recent survey titled “2005 Winter Top Ten Program.”<sup>10</sup> Business results come in several areas:

- **Faster time-to-decision.** HP servers based on the Intel Itanium 2 processor, coupled with 64-bit applications, can substantially improve analytical performance. With faster query times, users can work more productively and make faster, smarter decisions.
- **Better cost control.** With HP servers based on the Intel Itanium 2 processor, companies can grow their analytic platform as business needs require, rather than being forced into a large upfront investment. This allows CIOs to base future spending on current ROI, yielding faster payback and better budget control. Servers can be configured with

anywhere from two to 100 symmetric multiprocessing central processing units (CPUs), with any number of machines in a cluster, allowing companies to fit their BI investment both to business value and budget requirements.

- **Holistic BI use.** For operational BI to succeed, companies need to be able to draw pertinent data into the analysis, regardless of where it lies in the corporate infrastructure. By creating a solution that uses a service-oriented architecture and virtualization to create a single data layer, Sybase, HP and Intel have created a solution that can truly draw on the breadth of corporate data, instead of being confined to stovepipe analysis. Their open standards-based architecture makes it easier and less expensive for business to implement operational BI.

## Soft Benefits

Operational BI's ROI must also include a look at less quantifiable benefits, such as increased business flexibility. Operational BI should optimally give enterprises the

ability to react quickly to changing business needs. For example, Sybase IQ allows users to easily change their queries, and it is easily modified without having to rebuild databases or their indices. New users can be added quickly, without having to move or modify existing users' configurations. HP hardware platforms, powered by Intel Itanium 2 processors, reinforce the environment's agility with their ready scalability and high performance 64-bit architecture.

Bringing in outside experts to lessen the learning and implementation curve can also yield benefits by shortening the payback cycle. By enlisting experts with a deep background in operational BI, companies can more quickly access the analytical information that will enable better business decisions.

Operational BI, implemented correctly, can have a substantial effect on business revenue. By accessing data when it is needed and acting instantly on that information, companies get not only better technology performance, but better business results.

# THE ROI EQUATION

A strict ROI analysis isn't always part of a decision to implement operational BI. Typically, a pressing business challenge is enough to justify the money for a proof of concept. The consequences of not implementing a data analytics solution can be the most important motivator.

A direct correlation between the installation of an operational BI solution and bottom-line revenue enhancements can be hard to find, as the benefits can be a few steps removed from the original implementation. Still, some fundamental questions can prove helpful. Will the solution help users make better decisions? How will this solution reduce costs or increase efficiency? Will it help the company build better customer relationship—and hence loyalty?

In examining the potential ROI of operational BI, the breakdown of the installment should be done in three areas: hardware, software and services. Of the three, services, the consulting piece of the deployment, can eat up the largest piece of the budget, and choosing service providers wisely can help control that expenditure. For example, Sybase, Intel and HP all have proven track records of excellent services and consulting that extends beyond the roll-out—their institutional knowledge is baked into the solution as well. And the three companies have collaborated extensively to ensure that solution elements integrate well together and meet user needs. The result is faster deployment, fewer deployment headaches and faster ROI.

<sup>9</sup> [www.sybase.com/detail?id=1025522](http://www.sybase.com/detail?id=1025522)

<sup>10</sup> <http://h71028.www7.hp.com/enterprise/downloads/WinterTopTen.pdf>