



RelationalCube for SAP BW Business White Paper

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Leverage Your Existing IT Infrastructure by Opening SAP BW to SQL Data Access with Simba RelationalCube

Overview

Most large enterprises have decades and millions of dollars of investment in their IT infrastructure. The bulk of this is made up of relational data systems and applications written in SQL, the most popular programming language in the world.

The world's leading vendor of operational software is SAP, claiming over 70% of the Fortune 1000 as customers. Most of these companies are also aggressively investing in Business Intelligence (BI) systems for greater competitive advantage and many have SAP BW as their data warehouse for analytics.

When enterprises install multi-dimensional data stores, like SAP BW, they face a challenge. SAP BW is programmed in MDX, the language for multi-dimensional data structures. On the other hand, most enterprise IT infrastructure is programmed with SQL, resulting in a connectivity gap.

To address this, Simba has developed an innovative solution, aptly named RelationalCube, which enables robust connectivity between your SAP BW data warehouse and familiar SQL applications.

This paper explains the business reasons why enterprises should use Simba's RelationalCube product to connect to SAP BW. It discusses how RelationalCube allows business users to connect to critical analytics data in SAP BW, and it outlines the advantages of leveraging current IT infrastructure when expanding BI capacity.

This paper identifies benefits for both enterprises and Independent Software Vendors (ISVs) in relation to using SAP BW for analytics.

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RelationalCube Opens Access to SAP BW

SAP BW is a leading analytics data warehouse solution. Enterprises commit considerable resources and budget to build a multi-dimensional data warehouse because they want to gain competitive intelligence from their data infrastructure. Advanced products today are written in MDX, the language for multi-dimensional data structures, because MDX provides greater processing potential and complex data models. There are however, very few front-end applications that can access MDX data because it is relatively new. This means that enterprises are limited in their choice of MDX tools.

Before migrating to MDX databases, many enterprises heavily invested in SQL databases, tools and infrastructure. As such, business users are often more familiar with best practices and processes developed with SQL-based tools. The result is a connectivity gap – SAP BW speaks MDX, while most available enterprise tools speak SQL; the two cannot connect directly. This situation poses several challenges.

Challenges Faced by Enterprises Using SAP BW

- SAP BW speaks MDX and requires MDX tools and applications for data access, while the majority of client-based enterprise IT is SQL-based.
- There are a limited number of MDX tools available in the market today, so enterprises do not have a full spectrum of choice for front-end applications capable of connecting to SAP BW.
- Business users, familiar with their traditional SQL tools, resist learning new software and processes when a MDX data store is installed.

RelationalCube: The SQL-based Connectivity Solution for SAP BW

RelationalCube opens access to SAP BW via standards-based SQL/ODBC/JDBC connectivity. With RelationalCube, enterprises can use their familiar SQL-based tools to query and report on SAP BW data. RelationalCube allows business users to continue to utilize their familiar applications and reports, saving thousands of dollars in implementation costs that would otherwise be spent to acquire and train users on new tools.

RelationalCube provides a standards-based ODBC/JDBC driver for SQL-based applications to connect to SAP BW. It takes a standard SQL query in, connects via MDX to the data warehouse and returns back a standard SQL result to the user. The magic of SQL to MDX happens within RelationalCube. Essentially, RelationalCube flattens a multi-dimensional data cube into a star schema that can be accessed by relational queries.

The following sections of the paper will expand on the challenges faced by enterprises when installing new Business Intelligence capacity, like SAP BW, and show how robust connectivity solutions, like RelationalCube, can save enterprises thousands of dollars in implementation costs and lost productivity.



Expanding BI Capacity Is a Top Priority

BI is a top priority today and executives are convinced that installing more BI capacity is essential to gaining and maintaining a competitive advantage in the global economy. This section discusses the growing demand for BI in all areas of the enterprise and how this has led to critical issues with data access and connectivity.

BI, BI Everywhere in the Enterprise

BI systems are tasked with the duty to report, analyze and visualize data for business users. In today's globally competitive world, one of the key success factors for all enterprises is market intelligence at the fingertips of every decision maker in the organization. Managers have had access to BI for over a decade, but enterprises are now providing BI to the desktop, to the mobile device and online to employees, customers and partners. Investments in BI have doubled year over year since 2003, and new products are available in all areas of the enterprise. Today, for example, customers can see and track their orders, sales people on the road can gain access to the sales database to up-sell clients and supply chain partners can see inventory in real time.

BI data systems have become more advanced with multi-dimensional models and the industry is growing fast with thousands of new applications that promise to deliver competitive intelligence. The proof is demonstrated by the strong performance of companies like Wal-Mart that have invested in sophisticated, real time BI performance systems. The base of all BI is the operational data of the enterprise. It is important to look at its evolution to understand the complex enterprise IT landscape.

Islands of Data Need to Be Connected

Historically, IT infrastructure has been built over time with relational databases programmed in SQL. Each new operational system that is installed in the enterprise typically has its own data structure and applications. Over the decades of development, pockets of data have been distributed in different departments creating islands of data. These islands of data are found in ERP (Enterprise Resource Planning) systems in manufacturing, CRM (Customer Relationship Management) in the sales department, HRM (Human Resource Management) at the head office, and other systems within many more departments across the organization.

Gartner Research has shown that a typical Fortune 1000 company may have up to forty-eight different enterprise applications and data systems¹ in house. When enterprises want to look at performance, the BI system needs access to all the data, whether it is legacy data in old systems, or operational data trapped in islands in different departments. To solve the problem, enterprises have employed various strategies: consolidation to put all the data in one data warehouse; integration to enhance connectivity, so that data can be called as needed; and, information portals that try to deliver data on demand. BI systems have to ensure strong data connectivity to get results, but the data layer is just one part of the problem. Above the data layer is the business logic layer.

The Business Is Run Through the Business Logic Layer

The layer above the data systems is made up of many different applications and operating environments, all of which access the data layer. In many organizations, this Business Logic layer has been created over the years to reflect the unique business

¹ Gartner Enterprise Software Report 2001. www.Gartner.com



model and operations of the enterprise. Business logic can be metadata, such as customer account definitions for a bank account, or it can be standard reports like monthly sales reports. It can also be a standard business process like a RMA (Returned Merchandise Authorization) form and its contents. An enterprise in the financial services industry may have applications and reports for account management, monthly statements, credit card processing and hundreds more that are well defined and understood by business users. Most of the business logic in enterprises is written in SQL and difficult to re-write every time a new data standard is implemented by the IT department. Enterprises have to ensure open connectivity to the business logic layer, as well as the data layer, to maintain productivity. Thus, IT solutions must interoperate with other systems in the enterprise.

Interoperability Is Key

As enterprises install more BI capacity and multi-dimensional data stores, they need compatible tools to access and report on data. For analytics, MDX tools and applications are limited in the marketplace. Given the option, most enterprises would elect to use available SQL-based tools to access their MDX data.

Business users within the enterprise already have queries and reports that have been used for many years, based upon finely tuned and tested business logic. Ideally, these queries and reports also have to be able to access new data systems, like those based upon MDX.

RelationalCube allows enterprises to use familiar SQL applications to connect to MDX data sources via ODBC/JDBC. RelationalCube could be implemented within a single enterprise by its IT department, or it could be bundled by savvy BI vendors to open their standards-based, SQL-centric BI products for use with MDX.

RelationalCube – Relational Connectivity for BI and Analytics

In the first section, we identified several challenges faced by enterprises that install SAP BW as their data warehouse. RelationalCube tackles these challenges with its robust technology, opening up SAP BW to virtually all tools that talk SQL.

Addressing the Connectivity Gap

SAP BW speaks MDX, while the majority of existing IT infrastructure within enterprises speaks SQL. RelationalCube bridges this gap seamlessly by translating SQL queries to MDX. RelationalCube provides ODBC/JDBC access to SAP BW data, returning SQL results to users. With RelationalCube, enterprises with SAP BW systems can safely and securely provide needed SQL connectivity to business users. Similarly, ISVs can bundle RelationalCube with their relational BI offerings, expanding their market to include customers with multi-dimensional data systems.

Reducing Implementation Costs of New Tools and Software

Another consideration is related to the tools used to access SAP BW. When a new SAP BW system is implemented, the enterprise has the option of throwing out older SQL-based tools in favor of new MDX tools. However, this option is not always practical because the cost of implementing new tools is very high. Furthermore, replacing tools is not always possible because there are a limited number of MDX-based applications available on the market. Some enterprises may still purchase



select high performance MDX tools to attain the full benefit of advanced analytics from their MDX-based systems, but these tools are often used by experienced IT and technical staff to gain insight into complex intelligence questions. The majority of business users do not want to learn MDX, or new tools. Likewise, for both efficiency and security, IT departments seek to reduce the complexity of systems and tools used by business users, ultimately helping to maximize user productivity and minimize support.

RelationalCube helps reduce implementation costs for new tools and software by providing seamless access from familiar SQL-based tools to SAP BW data. The solution is implemented simply, without introducing the business user to further complexity. A SQL query is sent to RelationalCube, which in turn automatically translates the query into MDX to access data within SAP BW, then back-converting it and returning a SQL result to the user. RelationalCube has the potential to save an enterprise thousands of dollars in implementation costs, training costs and user support costs. Users are able to use familiar SQL-based tools and applications to access SAP BW data.

Enhancing Analytics Capacity

The majority of BI tools in the market are still SQL-based. ISV's can benefit from RelationalCube by bundling it with their BI offerings to tap into a wider market. By bundling RelationalCube with their solutions, ISVs enhance their customers' analytics capacity and increase their market opportunity by being able to sell SQL products into the MDX market. Enterprises can also benefit, as they will enhance their investment in SAP BW by being able to use familiar tools, as well as having access to a wider selection of compatible applications to connect to their SAP BW data.

Leveraging Existing IT Infrastructure with RelationalCube

Overall, RelationalCube allows enterprises and ISVs to leverage existing IT infrastructure and products by:

- Opening SQL access to SAP BW
- Reducing the implementation costs of new multi-dimensional data stores, like SAP BW
- Enhancing analytics capability by allowing enterprises to use a wide spectrum of tools
- Benefiting ISVs that want to help their customers expand analytics capacity
- Supporting ISVs that want to expand their opportunities in the MDX market

How Does RelationalCube Work?

RelationalCube works by providing a standards-based ODBC/JDBC driver for SQL-based applications to SAP BW. It takes a standard SQL query in, connects via MDX to the data warehouse, accesses to the data and returns back a standard SQL result to the user. The magic of SQL to MDX happens within RelationalCube. What the product is able to do is essentially open up, or flatten a multi-dimensional data cube into a star schema that can be accessed by a relational query.

Figure one shows how RelationalCube works.

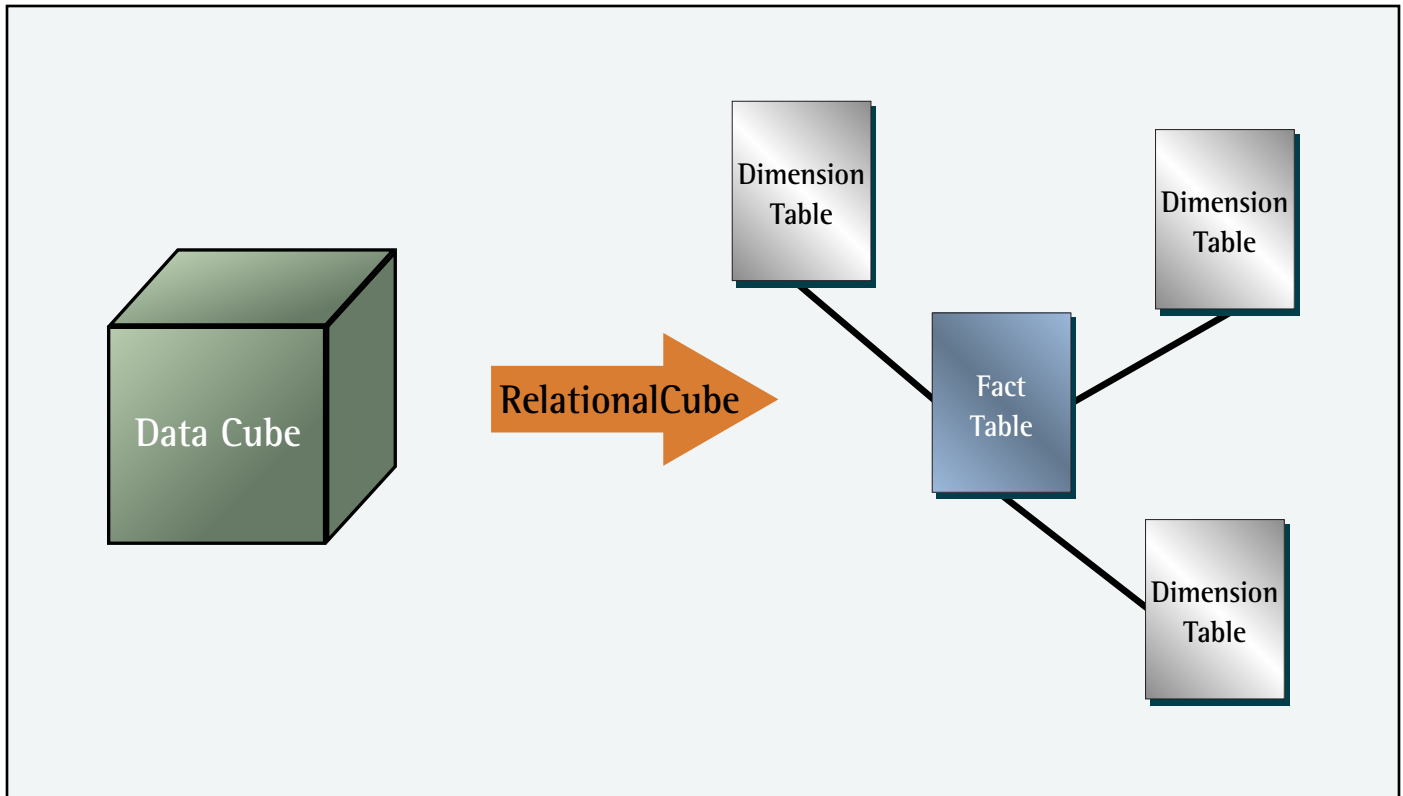


Figure 1: RelationalCube

SAP BW Connectivity Options

SAP BW is a leading multi-dimensional data warehouse marketed by SAP, the largest enterprise software company in the world. SAP BW stores operational data for analytics and provides multi-dimensional access to its customers. SAP BW provides access to its data via an API (Application Programming Interface) centered on MDX, and it provides three interfaces for open analysis of data:

- OLE DB for OLAP (ODBO)
- OLAP BAPI (Business Application Programming Interface)
- XML for Analysis (XMLA)

Before the advent of RelationalCube, business users that wished to query data held within SAP BW needed to use MDX-based analytical tools. Now with RelationalCube for SAP BW, users can access, analyze and report on their SAP BW data using SQL-based applications. RelationalCube provides a standards-based ODBC/JDBC interface that connects to SAP BW via ODBO, OLAP BAPI, or XMLA.



Conclusion

Enterprises have decades of relational IT infrastructure written in SQL. When they install new analytics data systems, like SAP BW, their SQL applications cannot access the newly stored multi-dimensional data. Simba's RelationalCube is the solution that bridges the connectivity gap by allowing SQL access to MDX data. Enterprises are able to leverage their SQL infrastructure with RelationalCube and save considerable money and effort in sourcing and implementing new tools to access their MDX data. Business users can continue to use their familiar applications and IT departments can expand BI capacity with SAP BW without incurring additional implementation, training or support costs. ISV's that bundle RelationalCube with their products can expand in the MDX market and provide a wider spectrum of choice for analytics tools to enterprises. With RelationalCube, enterprises can harness the power of SAP BW, while using available SQL infrastructure for increased savings and productivity gains.

About Simba Technologies

Simba Technologies Inc. is the recognized world leader in standards-based data access products and solutions. Simba works with the world's leading software companies to deliver first class data connectivity solutions.

Simba is a pioneer in ODBC, MDX, ODBO and XMLA. Since 1991, Simba has developed advanced data access solutions for thousands of end users. Today, more than half of all MDX providers have been built with Simba technology, and through a partnership with Microsoft, Simba's SQL technology has been installed on more than 30 million desktops worldwide.

Simba's firm commitment to delivering the highest customer value through innovative solutions and expert support has gained the company a reputation as the industry leader for data connectivity solutions.

For more information, visit www.simba.com, call us at 604.633.0008, or email us at solutions@simba.com.

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