IBM

IBM Cognos 8 Business Intelligence Software for use with SAP NetWeaver® Business Warehouse Accelerator

Cognos®
software

Contents

Preface & Scope

The objective of this white paper is to identify the advantages and performance gains of IBM Cognos Business Intelligence software when deployed in an SAP NetWeaver environment in which the Business Warehouse Accelerator (BWA) has been activated.

Acknowledgements

Edition History
Version 1.1

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Annotation

The implementation of an entire IBM Cognos software and SAP NetWeaver® Business Warehouse Accelerator solution requires extended implementation skills about Cognos Business Intelligence software, IBM hardware, Linux, especially SUSE SLES10, GPFS, Storage- and Network configuration and SAP NetWeaver® skills. Technical documentation should be consulted. This document should be viewed as guidance not be used as a primary source of information.

Executive Summary

As business data volumes expand, the challenge of channeling reams of disparate data accumulated over years of operation, into usable information that supports effective decision making. Leading organizations that invest in the SAP Netweaver® Business Warehouse continuously seek new ways to leverage the power of all corporate data. In short, the ability to explore and analyze salient information has become fundamental to driving effective decision making and corporate strategy.

With the relatively recent introduction by SAP® of the SAP NetWeaver® Business Warehouse Accelerator (BWA), query performance from the Business Warehouse can be enhanced such that the execution time of queries and data retrieval can be expedited through best of breed performance management tools such as IBM Cognos 8. In addition, by working with the SAP NetWeaver® team, IBM has developed a hardware and software solution to run the Business Warehouse Accelerator using a pre-configured highly scalable architecture.

The combination of IBM hardware and IBM Cognos software with your investment in the SAP NetWeaver® Business Warehouse Accelerator provides both proven horsepower to speed access to data within the Business Warehouse, and, the ability to provide enterprise wide performance management and business decision support.

While providing notable gains in performance, the addition of the BWA will not necessitate a change in a customer's approach to creating business intelligence and performance management content within IBM Cognos 8 software. The rationale being the BWA is transparent to the IBM Cognos 8 environment. However, given the benefits encountered, one may decide to indirectly modify the configuration of the IBM Cognos 8 environment to gain the full benefits and potential of the BWA.

The remainder of the paper provides general guidelines on the performance gains observed based on scenarios completed within a lab environment. To develop a detailed understanding of the performance gains within specific environments, specific empirical observations would be required in order to accurately understand the potential gains of the BWA.

Prior to reviewing the test scenarios, as context, the document will provide background on each of the respective solution components, then outline the results of testing between IBM Cognos 8 software and the IBM Systems solution for the SAP NetWeaver® Business Warehouse Accelerator (BWA).

Background on SAP NetWeaver® Business Warehouse Accelerator, and IBM Cognos solutions

SAP NetWeaver® Business Warehouse Accelerator

The Business Warehouse Accelerator is an appliance-like offering that combines hardware and software to deliver improved query performance from the SAP NetWeaver® Business Warehouse. In part, this is facilitated by the SAP Text Retrieval and Information Extraction (TREX) engine which improves the search, classification and indexation of the data within Business Warehouse InfoCubes.

The Business Warehouse Admin workbench is used to flag InfoCubes that will reside within the Accelerator. These structures are indexed within the BWA appliance and loaded into memory within the Business Warehouse Applicance. Thereafter, the solution can be used to respond to any OLAP query request that involves InfoCube data from the Business Warehouse. In effect, the Business Warehouse Accelerator acts as a form of "data proxy" to quickly respond to data queries. This capability is both seamless and transparent to IBM Cognos 8 software.

IBM Systems solution for use with SAP NetWeaver Business Warehouse Accelerator

Timely access to relevant information has always been critical to business success. With new data sources and increased access, managing, processing and making sense of huge data volumes is even more important. SAP NetWeaver Business Warehouse (SAP NetWeaver BW) leads the way in providing a complete picture of your business from diverse data sources.

To address business users demand for a more responsive and reliable BI environment, the IBM Systems solution for use with the SAP NetWeaver® Business Warehouse Accelerator is the best solution for your Business Warehouse environment as it provides outstanding scalability and responsiveness.

Based on IBM BladeCenter® technology with 64-bit Quad-core processors and IBM storage, the IBM Systems solution for SAP NetWeaver® Business Warehouse Accelerator extends the traditional Business Warehouse environment, crunching through terabytes of data in seconds, enabling faster business insight and turbo-charging your business warehouse solution.

IBM Systems Solutions help to ensure the business warehouse accelerator runs with desired speed and stability. This pre-configured "Turn-Key" solution is a robust infrastructure which has proven boosts of business warehouse query performance up to 200 times; in some cases response times for customers has been reduced from 700 to 2.5 seconds.

IBM Cognos 8 BI

The IBM Cognos 8 BI solution aligns tactics with strategy and combines historic, transactional and functional data to enable fact-based decisions throughout organizations. This BI solution embraces and extends the capabilities of the SAP NetWeaver ecosystem.

IBM Cognos 8 BI uses a SAP Certified: Integration with SAP NetWeaver connection with the SAP NetWeaver Business Warehouse, and, has become the chosen performance management solution for many SAP NetWeaver Business Warehouse customers around the globe.
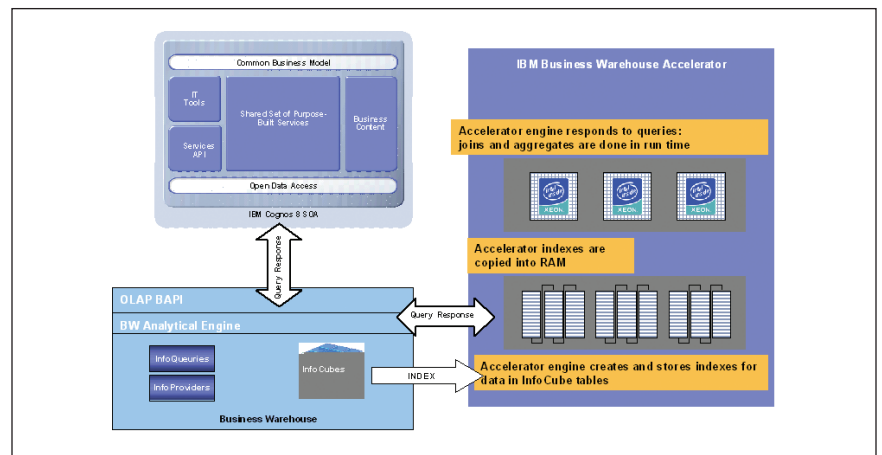
The rationale being, IBM Cognos 8 BI seamlessly leverages investments in SAP software and SAP NetWeaver by providing fast, direct access to data stored within the SAP NetWeaver Business Warehouse, flexibility to broaden access to data structures with the Business Warehouse, and, a simplified yet powerfully intuitive interface for business users to rapidly develop answers to business problems.

**IBM Cognos 8 BI and the
IBM Systems solution for the
Business Warehouse Accelerator**

The decision to implement the Business Warehouse Accelerator is an investment that is enhanced when deployed with IBM Cognos 8 BI.

IBM Cognos software continues a history of strategic commitment to deliver an open, standards-based, service oriented architecture that enables customers to embrace, enhance and extend their investments in SAP NetWeaver, and the SAP NetWeaver Business Warehouse.

Using a certified OLAP-BAPI connection, IBM Cognos 8 BI does not require a customized connection with a Business Warehouse environment with, or without, the presence of the Accelerator. The IBM Cognos 8 platform communicates via the Business Warehouse OLAP processor which in turn seamlessly renders any information indexed within the Accelerator. Hence, the presence of BWA is transparent to the IBM Cognos 8 software and requires no changes to interoperability with the Business Warehouse.

Interoperability Testing

IBM Cognos software and IBM Systems solution hardware labs completed a series of scalability tests of the Business Warehouse Accelerator. Tests performed on an IBM infrastructure demonstrate IBM Cognos 8 BI to not only be seamlessly interoperable with Business Warehouse Accelerator, but also seamlessly delivers tangible performance gains as demanded by large-scale ad-hoc analytic and reporting activities for consumers of data within the SAP Netweaver Business Warehouse.

Testing IBM Cognos 8 with BW Accelerator

IBM Cognos BI General Reporting

The IBM Cognos 8 BI platform communicates with the Business Warehouse using the Business Application Programming Interface (BAPI) function library within the SAP NetWeaver environment. Generally speaking, the methodology utilized by IBM Cognos 8 BI to communicate with the Business Warehouse follows a process of decomposing a request to its basic form. During this process, a combination of BAPI function calls and MDX statements are sent to the Business Warehouse to retrieve requested desired results.

In this context, different types of MDX were recorded during scenario testing:

• Metadata MDX - Utilized to retrieve members from specific dimensions/ characteristics from the Business Warehouse

• Data Requests / Regular MDX – Utilized to retrieve small result sets from the Business Warehouse

• Data Requests / Provider CrossJoins – Utilized to retrieve large result sets from the Business Warehouse

Test Methodology

IBM Cognos and BWA technical experts have conducted a series of tests within a controlled lab environment to identify performance results of reports and ad-hoc capabilities using IBM Cognos software to access Business Warehouse data through the Business Warehouse Accelerator. To illustrate the impact of BWA when using IBM Cognos 8 BI with the Business Warehouse as a data source, testing was divided into two categories:

1) Cognos software data requests from the Business Warehouse with BWA, and

2) Cognos software data requests from the Business Warehouse without BWA. All tests conducted ensured that no the Business Warehouse or IBM Cognos 8 BI caching was used.

The Business Warehouse cubes tested contained over 57M records; which were also read and compressed into BWA indexes. The BWA hardware used was a standard configuration, small blade cluster containing four blades within an IBM Blade Center chassis. Each of the four blades contained 16GB of memory and one Quad Core Xeon processor per blade. More information regarding the lab environment hardware and configuration can be found within the appendix of this document.

Scenario Test Results

For the cubes tested, all three forms of MDX scenarios as outlined above were executed to access data from a Business Warehouse InfoCube; both with, and without, the use of the Business Warehouse Accelerator. This approach was used to provide a comprehensive result set, and, demonstrate the net impact of IBM Cognos 8 software with IBM Systems solutions and the BWA.

The performance gains utilizing BWA were consistently much faster as summarized in figures 1.0 and 1.1 below. IBM Cognos 8 Reports with and without aggregated data are included in results that showed MDX metadata requests were consistently returned in less then 1 second.

This demonstrates a clear enhancement in performance when delivering data to the IBM Cognos 8 environment. The effect being greater use of metadata retrieval using MDX statements in lieu of standard BAPI GetMember() function calls which are sometimes required. The net result being greater improvements in the speed of MDX data retrieval.

For each of the scenarios summarized below, Cognos data requests were performed against a Business Warehouse InfoCube which contained 57 million fact records.

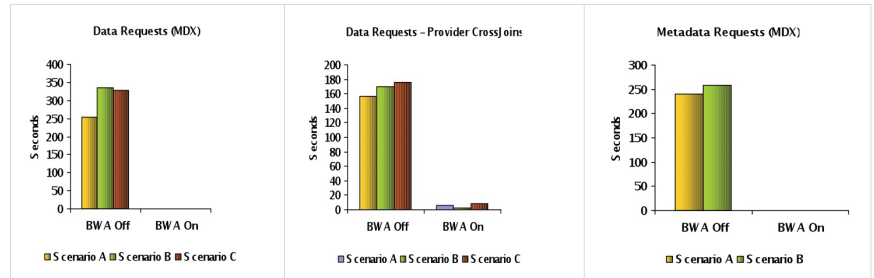| Data Requests (regular MDX)	BWA Off	BWA On	Performance Gains
Scenario A	254	0.422	601x
Scenario B	335	0.766	437x
Scenario C	328	0.75	437x
Data Requests (Provider CrossJoin)	BWA Off	BWA On	
Scenario A	157	5.5	28x
Scenario B	170	2.3	74x
Scenario C	176	8.3	21x
Metadata Requests (MDX)	BWA Off	BWA On	
Scenario A	241	0.313	769x
Scenario B	259	0.766	338x

Figure 1.0

Figure 1.1

The final results, as shown above, show a drastic improvement in the responsiveness between the Business Warehouse & the IBM Cognos environment when using the BWA. These results demonstrate the transparency of the BWA appliance to IBM Cognos software. Hence the addition of the BWA compliments the IBM Cognos 8 BI platform architecture.

This is great news for those who do not yet have IBM Cognos 8 BI but already have BWA in their business warehouse landscape; or for those who do use IBM Cognos 8 BI and are considering adding BWA hardware to their Business Intelligence and Performance Management architecture.

Conclusion

The performance results on the BW in conjunction with proven practices such as filtering and other business rules, the performance results of IBM Cognos on the BWA conclusively demonstrate the following:

a. Seamless interoperability between IBM Cognos 8 and the SAP NetWeaver Business Warehouse and Business Warehouse Accelerator

b. Notable performance gains in data retrievals and execution of BW data requests

c. The opportunity to configure and fine tune the IBM Cognos 8 environment to take advantage of the performance benefits associated with the Business Warehouse Accelerator by leveraging MDX calls.

For additional information on IBM Cognos 8 for use with the SAP NetWeaver Business Warehouse please visit http://www-01.ibm.com/software/data/cognos/solutions/sap/

Appendix: Lab Environment:

Software	Version
IBM Cognos 8	8.4
BWA	Revision 49
SAP NetWeaver Business Warehouse	7.0 patch level 20

IBM Cognos 8.4 BI System:

Machine Model/Type	xSeries, Modell 7979B9G
Processor	Intel Xeon CPU X5450 @ 3.00 GHz 6MB Cache 2 x QuadCore
Memory	20GB
Operating System	Microsoft Windows Server 2003 R2 Enterprise x64 Edition
Database	DB2 9.5
Disk Storage	6 x internal drives 300GB

Business Warehouse System:

Machine Model/Type	xSeries, Modell 7979B9G
Processor	Intel Xeon CPU X5450 @ 3.00 GHz 6MB Cache 2 x QuadCore
Memory	20GB
Operating System	SUSE Enterprise 10 - Linux 2.6 86x64
Database	DB2 9.1
Disk Storage	6 x internal drives 300GB

BW Accelerator Hardware:

Chassis	IBM BladeCenter Chassis
Number of Blades	4 HS21 XM Blades
Memory per Blade	16 GB
Processor per Blade	Dual Intel Quad Core Xeon Processor
Disk Storage	DS4700

About IBM Cognos BI and Performance Management

IBM Cognos business intelligence (BI) and performance management solutions deliver world-leading enterprise planning, consolidation and BI software, support and services to help companies plan, understand and manage financial and operational performance. IBM Cognos solutions bring together technology, analytical applications, best practices, and a broad network of partners to give customers an open, adaptive and complete performance solution. Over 23,000 customers in more than 135 countries around the world choose IBM Cognos solutions.

For additional information on how IBM Cognos 8 can help you embrace, enhance and extend your investment in SAP NetWeaver Business Warehouse please visit www.ibm.com/cognos/sap or contact your IBM Account Executive.

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