

Business Accelerator: Key Features and Capability – Analytical Engine BIA

Applies to:

SAP NetWeaver 2004s Business Intelligence

Summary

BI Accelerator's transparent approach helps in enhancing the reading ability of Query from the Infocube and has the functions necessary for enhancing the performance of the analytic processing. It has a bit different from traditional approaches that BI follows. In this article we will see how it differs from existing BI approaches and key understanding on the working, processing, Cost variance with implementation strategies and technical approach it facilitates.

Author: Rahul Dwivedi

Company: HCL Technologies LTD.

Created on: 29 June 2007

Author Bio

Rahul Dwivedi is a SAP BI Consultant working in HCL Technologies. He also has basic domain knowledge on CRM and ABAP/4 programming.

Table of Contents

Introduction - Business Accelerator	3
Options available with BI	4
SAP NetWeaver Business Accelerator Architecture	5
How BI Accelerator and SAP BI communicate?	6
Strategies for implementing BI Accelerator	7
Benefits of using BI Accelerator	8
Shortcomings of using BI Accelerator	8
Related Content	9
Disclaimer and Liability Notice	10

Introduction - Business Accelerator

The relational OLAP model in SAP BI works well for small and mid-level business intelligence operations but this sophisticated model has some data access performance issues.

Now with the BI Accelerator, there will be high speed data access which helps to implement analytics for the intelligent business solutions. One of the reasons that it(accelerator) is useful is the time constraints are not bounded and the need to rebuild the instances(structures, cubes etc.) is eliminated, the BIA stores the existing cubes in a different way, it stores it ON-LINE(immediately accessible).

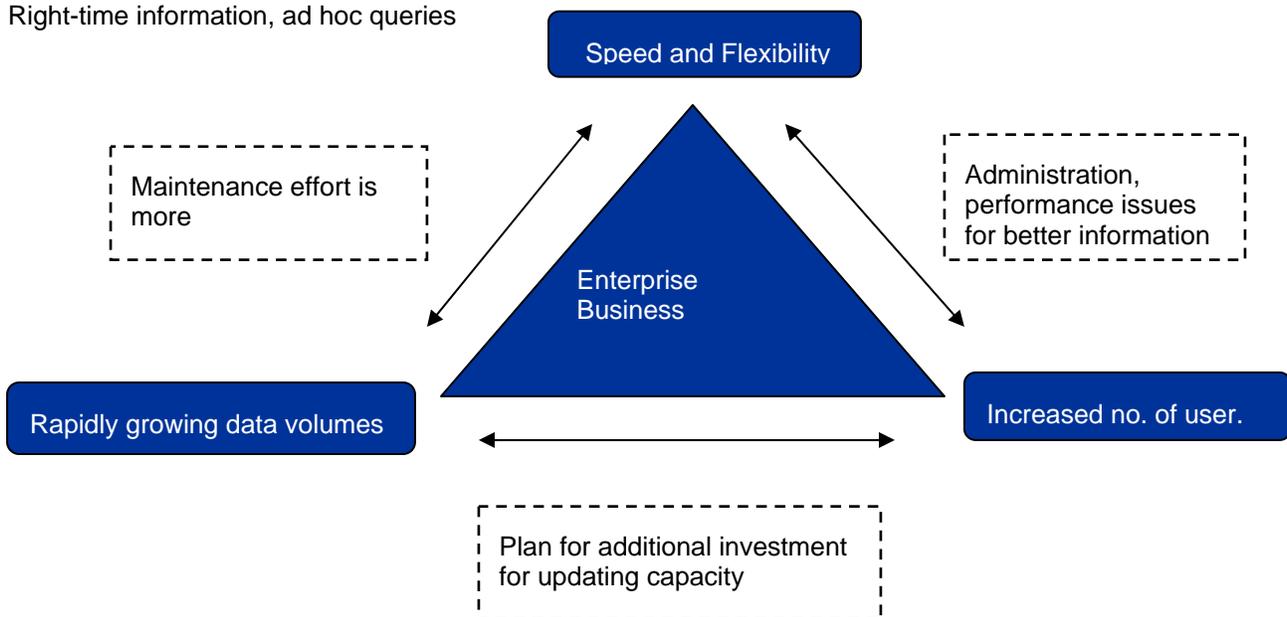
Basically we can say that BIA is an appliance combining software (TREX) and hardware (Blade servers with 64-bit Intel Xeon CPUs) to speeds up the data accessing ability without changing the BI user experience interfacing.

As we might experience that daily growth of the BI users and relatively high volume of data leads to a sophisticated data accessing problem, so we can see that need of BIA with large scale implementation scenario leads us to one proper solution - Business Accelerator.

Some of the factors contributing to the growth of data:

- Enterprise Data Warehousing, when historical data is stored on long-term basis.
- Daily retail data flowing in the SAP systems.
- RFID (Radio Frequency Technologies) referring to All (Auto-ID Infrastructure) processing, through which large volumes are generated.
- SAP BI web applications also lead to growth of data by deploying in the portals information.

Right-time information, ad hoc queries



Options available with BI

The currently recognized BI options to improve query performance may not be able to meet the demands of these new challenges.

Current business scenario requires processing large amounts of data to generate relevant analytical reports from the existing Analytical Engine. The query response time is often critical to maintain application and customer expectations. Sometimes it takes weeks for the user to retrieve reports on the right time from the IT department.

Some of the established methods used to improve BI query performance are mentioned below:

- **OLAP Cache** – improves performance by caching results and reading from cache instead of reading from the database (this is somehow adapted by BIA as well).
- Use of **Relational DBMS Aggregates** - They are redundant data stores in a BI InfoCube: In relational **aggregates**, data is stored in an aggregated form; BIA is particularly useful in cases where relational aggregates are not sufficient, are too complex, or have other disadvantages.
- **Reporting Agent or Information Broadcasting** – with this you can pre-calculate queries, alerts, reports and broadcast these reports to portals or send these reports via e-mails.

BI Accelerator can benefit businesses that have high volume of data. The read performance of BI queries is greatly improved using BI Accelerator. This new tool enables quick access to any data with a low amount of administrative effort and is especially useful for sophisticated scenarios with unpredictable query types, high data volume and high frequency of queries.

BI Accelerator is highly useful when aggregates or database indexes are not sufficient, or when these methods become too costly to maintain. This new appliance helps reduction of the most management worried word TCO.

SAP NetWeaver Business Accelerator Architecture

What are the points that makes BI Accelerator so fast (by factor of 10-100) compared to other methods?

The BI Accelerator comprises of two main components that collectively improves the working ability or let us say data processing ability,

- **BI Accelerator Engine** – the response to queries is done at run time.
- **BI Accelerator Indexes** – data when copied into RAM enables fast processing.

And with TREX, administration is done in detailed level of Information regarding system (RFC, Queue) monitoring, troubleshooting etc.

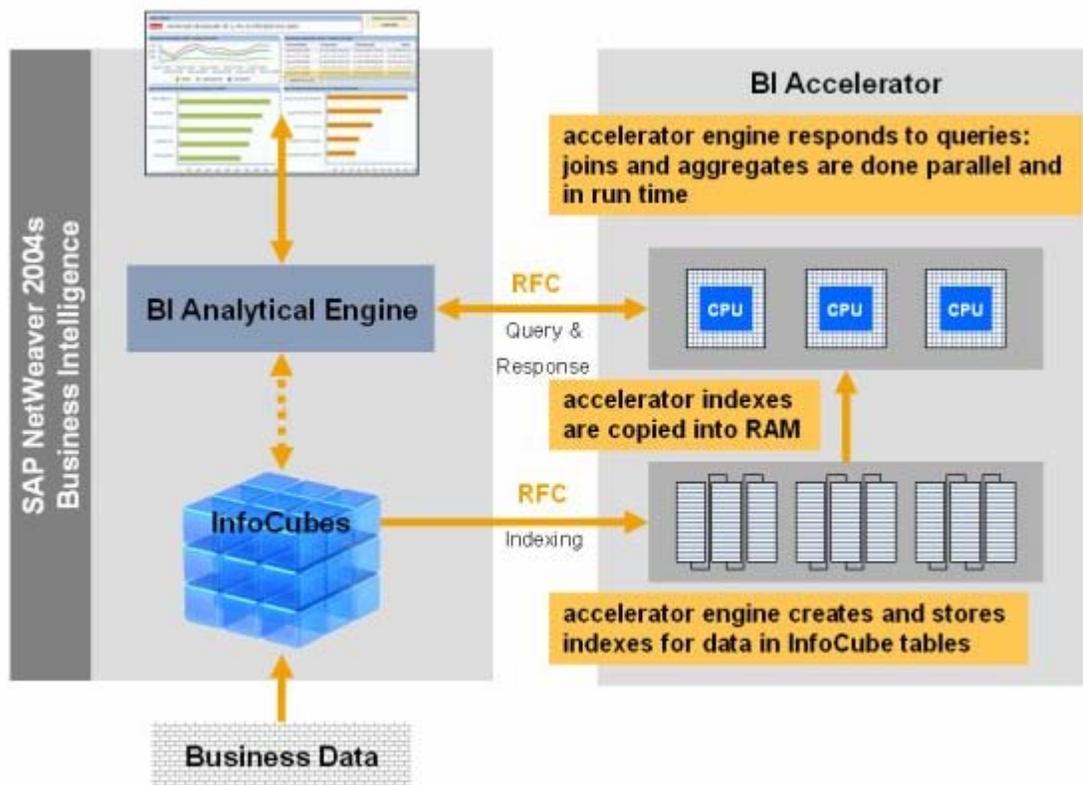
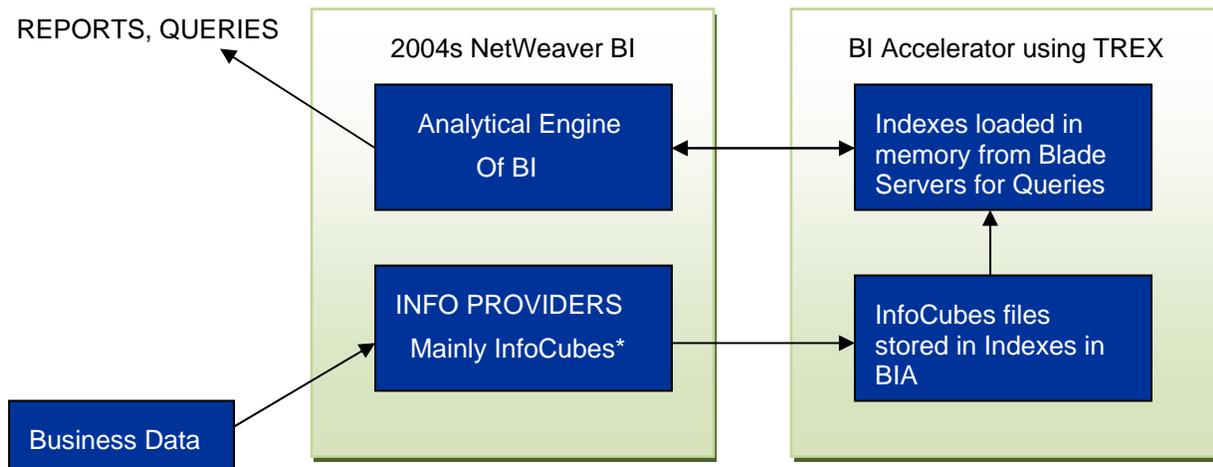


Figure: BI Accelerator architecture (source google.com)

The data flow with introduction to TREX can also be shown with a simple effort



How BI Accelerator and SAP BI communicate?

About BI Accelerator, an appliance – pre-installed 64-bit Intel Xeon processor- based blade servers from HP and IBM, running Linux Operating system having TREX (text retrieval and classification) technology based search engine for the structured data installed (1 TREX instance for each blade) for enhancing search capability.

To enable the appliance to work in synchronization with SAP BI, an RFC connection is established for each instance. Both, indexes and data are moved to the file system, as BI Accelerator has no database engine but has a file system for storage. When a query is analyzed or being analyzed the OLAP processor directs the access through it bypassing the aggregates and tables in SAP BI to the end-user application. Then the BI Accelerator Engine acts at run-time (joins and aggregates are made at run time) thus using its in-memory attribute search capability for performance that increases its factor from 10 to 100.

Hope this explanation had let you understand this increase in performance factor. Well, before having hands on BI Accelerator we have to define the complete Data Warehouse Architecture strategy to design everything as per user requirement and for performance optimization.

Strategies for implementing BI Accelerator

Before starting with implementation strategies we should consider some facts:

- A SAP NetWeaver BI 2004s system
- BI Accelerator cannot run with systems below SAP NetWeaver BI 2004s
- It can be leveraged by any SAP NetWeaver 2004s Installation

There are scenarios available with BI Accelerator that is shown below:

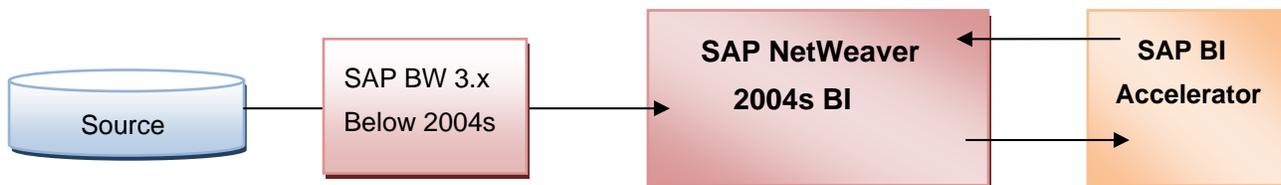
Scenario 1

UPGRADE/NEW



Scenario 2

DATA MART



Scenario 3

REMOTE ENABLED



These strategies are the means to adapt to BI Accelerator. The above scenarios will be explained with customer's adaptability, TCO, time and reduced maintenance effort etc.

In **Scenario 1**, the client can upgrade the existing SAP Netweaver 2004 and below (SAP BW 3.x) or setup a new SAP Netweaver 2004s. Now having said TCO and maintenance cost, there is no additional maintenance for additional systems and data replication.

In **Scenario 2**, we "split" (copy and upgrade) the SAP NetWeaver 2004 and below (SAP BW 3.x) to NetWeaver 2004s (step by step upgrade), a possible raise in TCO for additional maintenance which becomes a bit time consuming job for maintaining the sync between master data and transaction data.

And at last **Scenario 3**, this uses the concept of Remote Cubes where the InfoCubes are replicated with data to be used in BI Accelerator to a separate BI 2004s system and the data is accessed remotely from the system below (SAP BW 3.x) or SAP NetWeaver 2004s and the additional effort to replicate data remains for increase in maintenance cost compared to first scenario. This scenario is not a step by step upgrade process (create virtual providers in original system and adjust MultiProviders or Queries).

Benefits of using BI Accelerator

- Fast Query processing and response time, faster load times.
- Techniques used by BI Accelerator help to optimize use of scalable hardware i.e. as demand grows system scales up by adding new blades.
- Lower maintenance cost benefits:
 - ✓ No need to create relational aggregates.
 - ✓ Less need of logical partitioning of data
 - ✓ Less performance tuning to Databases
 - ✓ Yields maximum return on investment with productive gains

Shortcomings of using BI Accelerator

- InfoCube is the only data source, it does not work with ODS and other source systems.
- Sharing of multiple SAP NetWeaver BI instances with single BI Accelerator is not possible.
- Small sized operations cannot benefit by using BI Accelerator with all its costs parameters i.e. for companies dealing with huge amount of data to process at faster rate BI Accelerators are recommended.
- No back up rather than to build the indexes again if the system goes down.

Related Content

- <https://www.sdn.sap.com/irj/sdn/go/portal/prtroot/docs/library/uuid/3604c604-0901-0010-f0aa-b37378495537>
- <https://www.sdn.sap.com/irj/sdn/go/portal/prtroot/docs/library/uuid/11c4b71d-0a01-0010-5ca0-aadc2415b137>
- <https://www.sdn.sap.com/irj/sdn/go/portal/prtroot/docs/library/uuid/e1f6cc7d-0c01-0010-5a93-8def1fad5ea3>

Disclaimer and Liability Notice

This document may discuss sample coding or other information that does not include SAP official interfaces and therefore is not supported by SAP. Changes made based on this information are not supported and can be overwritten during an upgrade.

SAP will not be held liable for any damages caused by using or misusing the information, code or methods suggested in this document, and anyone using these methods does so at his/her own risk.

SAP offers no guarantees and assumes no responsibility or liability of any type with respect to the content of this technical article or code sample, including any liability resulting from incompatibility between the content within this document and the materials and services offered by SAP. You agree that you will not hold, or seek to hold, SAP responsible or liable with respect to the content of this document.