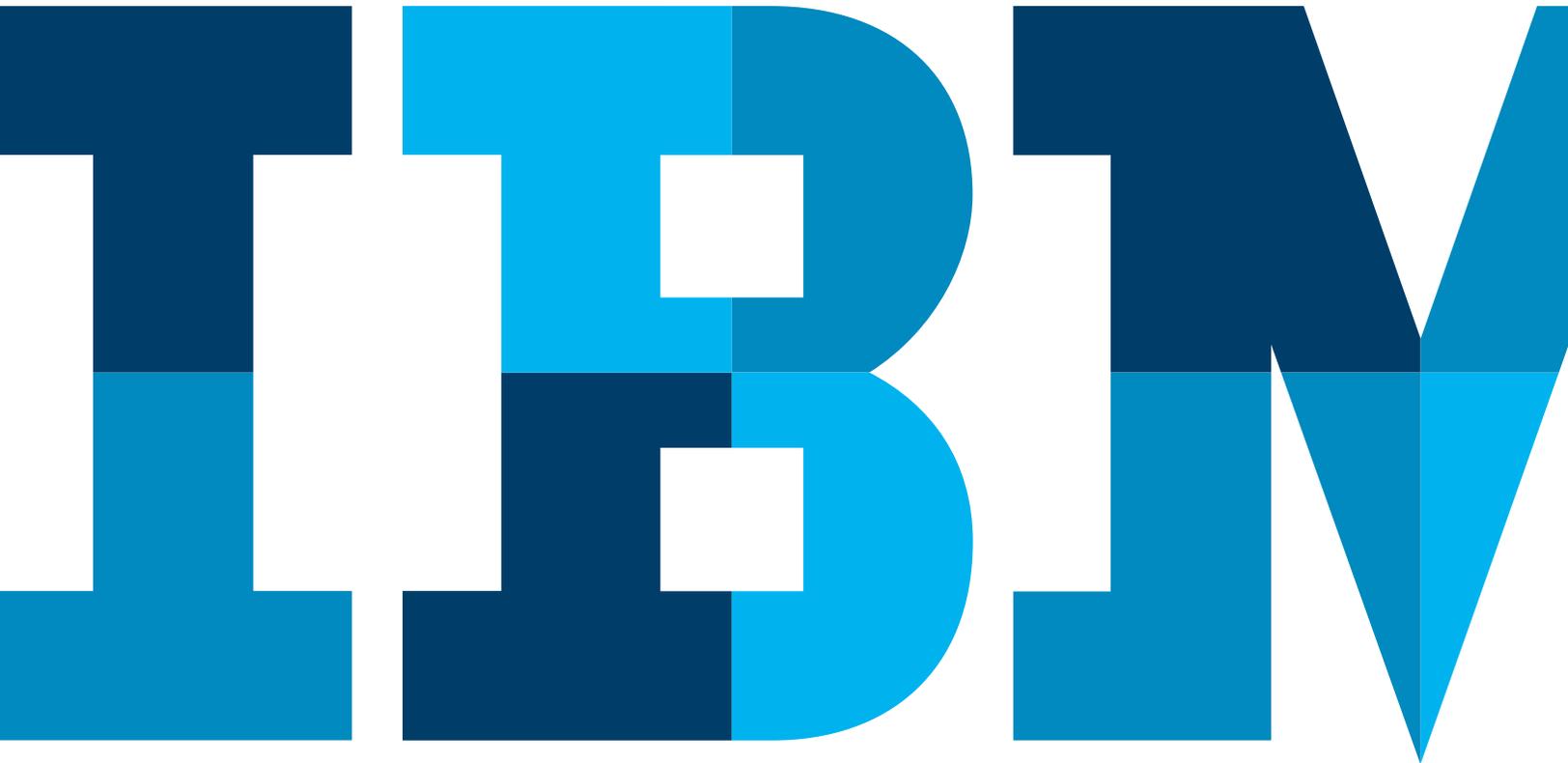


Analytics at the speed of thought

*IBM Cognos Business Intelligence and DB2 on
Power Systems optimized to deliver insights 82X faster*



Data is the new natural resource, and 80 percent of CEOs believe that they can transform their business by drawing insights from the plethora of data that they have and create daily.¹ If C-Suite executives capitalize on the currency of data by finding business insights faster and more efficiently, and gain the elasticity they need to handle the varying analytics initiatives their business requires, they can address a wide array of strategic and operational goals—from increasing customer loyalty and creating targeted marketing offers to enhancing operational efficiency and reducing risk.

Maximizing the power of analytics requires infrastructure, databases, data warehouses, and business intelligence (BI) solutions that are integrated with and optimized for each other. Combining these capabilities enables leaders to glean insights from big data in real time with analyses that present previously unavailable insights quickly and in ways that can be easily visualized and consumed.

To deliver timely insights, IT groups need to ensure that these integrated applications deliver outstanding performance, reliability and security while providing users with ready access to easy-to-use BI tools so a full range of workers can access and use analytics without IT support.

Accelerating analytics

IBM® DB2®, IBM Cognos® Business Intelligence and IBM Power Systems™ with the POWER8™ design and processor are designed to overcome these challenges. Optimized to work together seamlessly, DB2, Cognos BI and Power Systems offer capabilities designed to accelerate analytics 82X faster² and strengthen the integration of database, data warehousing, BI tools and hardware processing—without compromising reliability and security.

DB2 with BLU Acceleration

DB2 with BLU Acceleration is a combination of innovations from IBM Research and Development Labs that can dramatically simplify and speed the delivery of business insight from data.

Next generation in-memory columnar processing holds frequently used data in memory while maintaining access to less-frequently used data. Keeping “warm” data in memory helps accelerate queries that must scan through large data sets. In-memory columnar technologies provide an efficient way to scan and find relevant data—ideal for analytic workloads. Unlike other solutions, the IBM next generation in-memory capability works even when data size exceeds available memory.

Advanced compression capabilities enable the system to process data in a compressed format. The compressed data takes up less space and more data can be stored in memory. When combined with the other capabilities of BLU acceleration, clients have reported compression rates of 10 times in DB2 with BLU Acceleration versus uncompressed tables.³ Also, processing data in a compressed format saves processor cycles that would be used for decompression.

New hardware instructions enable BLU Acceleration to apply a single instruction to process multiple data elements simultaneously.

Data skipping capabilities enable BLU Acceleration to automatically detect and skip over large blocks of data not relevant to the specific query, greatly accelerating performance.

Enhanced ease-of-use features simplify the process of extracting value from data while minimizing demands on IT staff. For example, when using columnar tables, BLU Acceleration requires no indexes or other structures to improve performance. As a result, DB2 with BLU Acceleration is easy to set up and maintain, and its efficiency helps businesses reduce storage and management costs.

Cognos Business Intelligence

Cognos Business Intelligence delivers a broad set of self-service capabilities including reports, dashboards and interactive visualization helping users to quickly pinpoint trends in data — getting them the answers they need faster than previously possible.

Faster queries are made possible by more efficient use of memory in Cognos Dynamic Cubes. Cognos Dynamic Cubes facilitate fast analytics across terabytes of data, due to the ability to store aggregated information in memory and instantly return updated results when users run new queries. Dynamic Cubes are accessible from all Cognos BI interfaces, making it simple for any user to capitalize on this capability.

Extensible visualization enhances the user experience by enabling users to identify trends faster through interactive, customizable visualizations. Extensibility enables users to access more visualizations faster without requiring IT assistance. As a result, organizations benefit from rapid decision making.

IBM Power Systems

Built with innovation to put data to work, the latest IBM Power Systems servers built with IBM POWER8 processor-based architecture are designed to bring insight to the point of impact faster and offer economic advantages that scale out intelligently with less hardware, energy and cooling requirements to meet business needs.

Computing power is 82X⁺ faster than commodity systems, with 50 percent more cores and twice the number of simultaneous threads per core, leveraging the POWER8 processor and smart acceleration enabled by CAPI (Coherent Accelerator Processor Interface).

Massive memory to process data faster with lower latency and smaller footprint with CAPI Flash and achieve greater speed and efficiency for database, transactional and other highly multi-threaded applications.

Broad pathways to easily move data in and out of systems with twice the memory and world-leading I/O.

Easy to consume and manage with open-source technologies like OpenStack, KVM, simplified virtualization management and flexible capabilities to drive rapid adoption and dramatically simplify IT consumption.

Better price performance for analytics and reporting

Cognos Business Intelligence and DB2 with BLU Acceleration are optimized for the latest Power Systems servers built with POWER8, the first processor generation optimized for big data and analytics. The teamwork of these integrated, workload optimized solutions and innovative technologies deliver better price performance for analytics and reporting .

“I was asked to help one of our analysts who gave up on something he was executing across a billion records, because after 3 hours, the answer didn’t come back. We took that query (which involved a big join) & ran it on DB2 with BLU Acceleration and it finished in 10 seconds — 1080x faster.”

— Randy Wilson, Lead DB2 for LUW Database Administrator,
BlueCross BlueShield of Tennessee

Faster processing through smart acceleration

Cognos BI and DB2 with BLU Acceleration on Power Systems leverage POWER8, the first processor designed for big data. Power Systems can run more concurrent queries in parallel faster, across multiple cores with more threads per core technology. Power Systems provide increased memory bandwidth to access up to 1 TB of memory for data operations and enlarged cache in every processor with faster IO to ingest, move and access data. These capabilities are enhanced further through smart acceleration enabled by Coherent Accelerator Processor Interface (CAPI) technology.

The performance gains from Power Systems versus commodity systems increase with the concurrency and complexity of the analytics workload. Running Cognos BI reports on Power Systems and DB2 with BLU Acceleration provides:⁵

- 18X-40X more throughput for simple and intermediate reports
- 747X better throughput for complex reports

These improvements have many implications for both business and IT. For instance, organizations can use BLU Acceleration to offload data from poorly performing data warehouses to analytic data marts for better performance. At the same time, line-of-business users can leverage existing online analytical processing (OLAP) application tools and generate reports using Cognos BI in real time from the in-memory, column-organized data mart stores of DB2 with BLU Acceleration (see Figure 1). The result: organizations can speed up analytics and reporting while delivering consistently high performance on large data volumes, which can drive better-informed, timelier business decisions.

Cognos BI with BLU Acceleration on POWER8

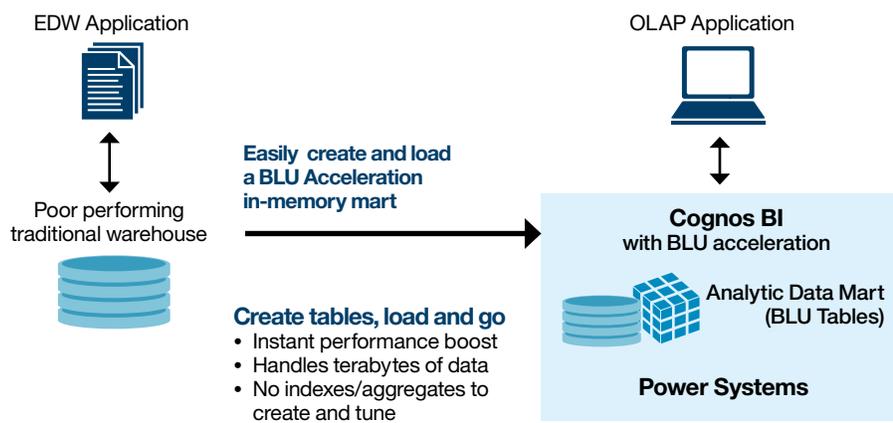


Figure 1: Organizations can use BLU Acceleration to offload analytic data marts from poorly performing data warehouses, allowing line-of-business users to get faster reports in real time from the in-memory column.

Simplicity

The combined capabilities of Cognos BI and DB2 with BLU Acceleration on Power Systems can help dramatically reduce time to business value. Organizations can leverage existing IT skill sets with DB2, even if they are moving from a competing database. Applications built to run on Oracle Database require few or no code changes to run on DB2, which means IT staff generally spend less time tuning and adjusting the database after it is moved to DB2.

Cognos BI and DB2 with BLU Acceleration on Power Systems also eliminate the need for managing indexes, aggregates, tuning, SQL changes and schema changes when using columnar tables. With the self-service capabilities of Cognos BI, business users gain easy access to the insight they need to handle the fast-changing trends shaping today's markets.

“The BLU Acceleration technology has some obvious benefits: it makes our analytical queries run 4 to 15 times faster and decreases the size of our tables by a factor of 10. But it’s when I think about all the things I don’t have to do with BLU, it made me appreciate the technology even more: no tuning, no partitioning, no indexes, no aggregates.”

— Andrew Juarez, Lead SAP Basis and DBA, Coca-Cola Bottling Company Consolidated

Affordability

Adopting Cognos BI and DB2 with BLU Acceleration on Power Systems can reduce costs in several ways. For example, organizations can simply combine the integrated functionality with their existing infrastructure—avoiding the potentially high costs of deploying other in-memory, appliance-based solutions that might require additional training, licensing and management fees.

In addition, data compression capabilities in both solutions can reduce storage costs. Without the need to create or tune indexes or materialized query tables (MQTs), the applications use less capacity.

After purchase, DB2 self-configuration, self-tuning, self-healing and automatic maintenance features take care of many routine, basic management tasks, saving administrators hours (and sometimes days) of work; freeing them to work on higher-value, higher-skill projects. DB2 can also take advantage of the IBM PowerVM® virtualization technology available with Power Systems. By virtualizing processor, memory and I/O resources and enabling partitioning of each processing core, PowerVM enables consolidation of workloads onto fewer physical hosts. This helps reduce infrastructure and energy costs while creating a more flexible IT infrastructure.

Cognos BI also helps ease the maintenance burden and associated costs. Because Cognos BI offers familiar BI interfaces, organizations can capitalize on the upgrade while controlling the cost of training. Support for big data tools such as Big SQL, Apache Hive, ODBC and JDBC, plus interoperability with big data solutions including IBM InfoSphere® BigInsights™ and other commercial Apache Hadoop offerings, enable organizations to capitalize on big data analytics cost-effectively.

The open and extensible nature of the Cognos BI platform adds another layer of cost savings for today's complex IT infrastructures. By providing a foundation for interactive analysis, Cognos BI helps lessen the need for IT to build reports to answer each business question.

Achieving faster, better decision making

The combined capabilities of Cognos BI, DB2 with BLU Acceleration and Power Systems offer organizations several advantages over competing solutions. Because the applications are easy and simple to use, users can easily deploy advanced analytics capabilities, including “what-if” analysis. There is no need to limit their queries due to time or performance constraints.

Users can also leverage information across all time horizons—that is, they can view historical information next to real-time updates, plans and predictive results—in one unified workspace. This capability means clients get faster insights from more data for ultimate business agility to better serve their customers, enter new markets, reduce risk, and improve efficiency of operations.

The added simplicity of the integrated applications also gives users clear paths to incremental analysis and dynamic interaction without worrying about performance. They have the ability to move from viewing to exploration to extensive analysis in the same single unified workspace with one click.

With the offerings working together, organizations can reap the benefits of a purpose-built, enterprise-class platform that supports global deployments for all BI and performance management needs, while still delivering scalability and cost-effectiveness. Cognos BI and DB2 with BLU Acceleration on Power Systems is the right combination to help simplify deployment, improve performance and rapidly generate the insights organizations need for better, more timely decision making.

For more information

To learn more about the combined power of Cognos BI and DB2 with BLU Acceleration on Power Systems, please contact your IBM representative or IBM Business Partner, or visit:

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1 IBM. "The Essential CIO: Insights from the Global Chief Information Officer Study." 2011. ibm.com/services/c-suite/series-download.html

2 82X is based on IBM internal testing of sample analytic workloads of varying complexity; current as of March 28, 2014. Performance improvement figures are cumulative of all queries in the workload. Individual results will vary depending on individual workloads, configurations and conditions. IBM Analytics Stack: IBM Power System S824; 24 cores / 192 threads, POWER8; 3.5GHz, 384 GB memory, DB2 with BLU Acceleration v10.5 and Cognos v10.2. Competitive stack: HP DL380p; 24 cores / 48 threads; Intel E5-2697 v2; 2.7 GHz; 384 GB; Traditional database and Cognos v 10.2.

3 Client reported testing results in DB2 10.5 early release program. Individual results will vary depending on individual workloads, configurations and conditions, including table size and content.

4 82X is based on IBM internal testing of sample analytic workloads of varying complexity; current as of March 28, 2014. Performance improvement figures are cumulative of all queries in the workload. Individual results will vary depending on individual workloads, configurations and conditions. IBM Analytics Stack: IBM Power System S824; 24 cores / 192 threads, POWER8; 3.5GHz, 384 GB memory, DB2 with BLU Acceleration v10.5 and Cognos v10.2. Competitive stack: HP DL380p; 24 cores / 48 threads; Intel E5-2697 v2; 2.7 GHz; 384 GB; Traditional database and Cognos v 10.2.

5 Based on IBM internal tests as of April 17, 2014 comparing IBM DB2 with BLU Acceleration on Power with a comparably tuned competitor row store database server on x86 executing a materially identical 2.6TB BI workload in a controlled laboratory environment. Test measured 60 concurrent user report throughput executing identical Cognos report workloads. Report per hour (RPH) metric calculated for each category of reports as total completed reports/hours to complete all reports in the category. Competitor configuration: HP DL380p, 24 cores, 256GB RAM, Competitor row-store database, SuSE Linux 11SP3 (Database) and HP DL380p, 16 cores, 384GB RAM, Cognos 10.2.1.1, SuSE Linux 11SP3 (Cognos). IBM configuration: IBM S824, 24 cores, 256GB RAM, DB2 10.5, AIX 7.1 TL2 (Database) and IBM S822L, 16 of 20 cores activated, 384GB RAM, Cognos 10.2.1.1, SuSE Linux 11SP3 (Cognos). Results may not be typical and will vary based on actual workload, configuration, applications, queries and other variables in a production environment.



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