Start Faster, Reach Further

IBM Smart Analytics System and Powerful Intel Xeon Processor–Based IBM System x Servers Deliver Business Insights

There are some things that you don't mind waiting for, like a perfect cup of coffee. Business intelligence (BI) is not one of those things. Every day, your organization collects more data about its customers, partners, and markets. BI and analytics give you the ability to make sense of that ocean of data, crystallizing the patterns, trends, and knowledge that help top executives and front-line employees make smart, fast decisions; find opportunities; and keep your business ahead of the pack.

But if organizations cannot afford to wait for BI, neither can they afford to write a blank check to create it. IT budgets are already stretched to the breaking point. If you listen carefully, you can almost hear a giant sucking sound as racks of data center servers absorb scarce floor space, power, and cooling capacity. Meanwhile, IT organizations are under tremendous pressure to extract maximum value out of every dollar spent. But with IT data volumes expected to grow by leaps and bounds over the next five years, senior staffers are watching maintenance and troubleshooting tasks crowd strategic projects off their calendars.

IBM and Intel have been working for years to deliver optimized computing solutions and to bring enterprise-class technologies into industry-standard systems.

The IBM® Smart Analytics System family combines hardware, software, and services into systems that are integrated and optimized, can be installed in days instead of months, and can be quickly scaled out to support changing business needs. Available in a range of configurations and capabilities, including several models powered by the latest, most powerful Intel® Xeon® processor–based servers, the IBM Smart Analytics System family is designed to deliver cost-effective, enterprise-class analytics—without the wait.

Smarter Systems Support Smart Decision Making

IBM Smart Analytics System integrates leading data warehouse, business reporting, and analytics capabilities, enabling you to rapidly deploy comprehensive business analytics. It is built on a powerful IBM server, storage, and data management platform that is optimized for analytic workloads.

The Smart Analytics System is designed to deliver insights for capturing new opportunities and gaining competitive advantage. As a preconfigured solution, it facilitates rapid deployment, enabling organizations to get to work in days, not months. It can help cut costs by reducing the need for extra staff and in-depth expertise for implementation, tuning, and maintenance. Working with a single vendor also helps simplify acquisition, implementation, and support processes.

The Smart Analytics System provides a comprehensive, fully integrated BI solution, with a scalable warehouse foundation and broad analytic capabilities from the industry-leading IBM analytics and BI software portfolio, including multidimensional Cubing Services, data mining and text analytics, dashboards, and reporting (see Figure 1). Part of the IBM smarter systems for a smarter planet approach to optimizing hardware, software, and services, the Smart Analytics System is based on IBM InfoSphere™ Warehouse and is powered by IBM DB2® database software. It takes advantage of DB2's advanced performance features, such as:

- Deep data compression, which helps reduce the cost and footprint of the data warehouse
- Workload management, which enables you to manage, enforce, and monitor workloads and their service levels for users across your warehouse

The Smart Analytics System also integrates easily with existing data sources to provide a single version of the truth and to deliver powerful insights across your business.

The Power of Intel Xeon Processors

Today's markets may shift on a moment's notice, so your business must be agile enough to respond quickly—and accurately—if an opportunity presents itself. That means you need systems that respond fast and deliver insight and analysis on demand.

IBM Smart Analytics Systems draw on the power of the latest Intel Xeon processors to deliver high levels of enterprise computing capability (see sidebar, "Intel Xeon Processors").

IBM Smart Analytics System Integrated Stack

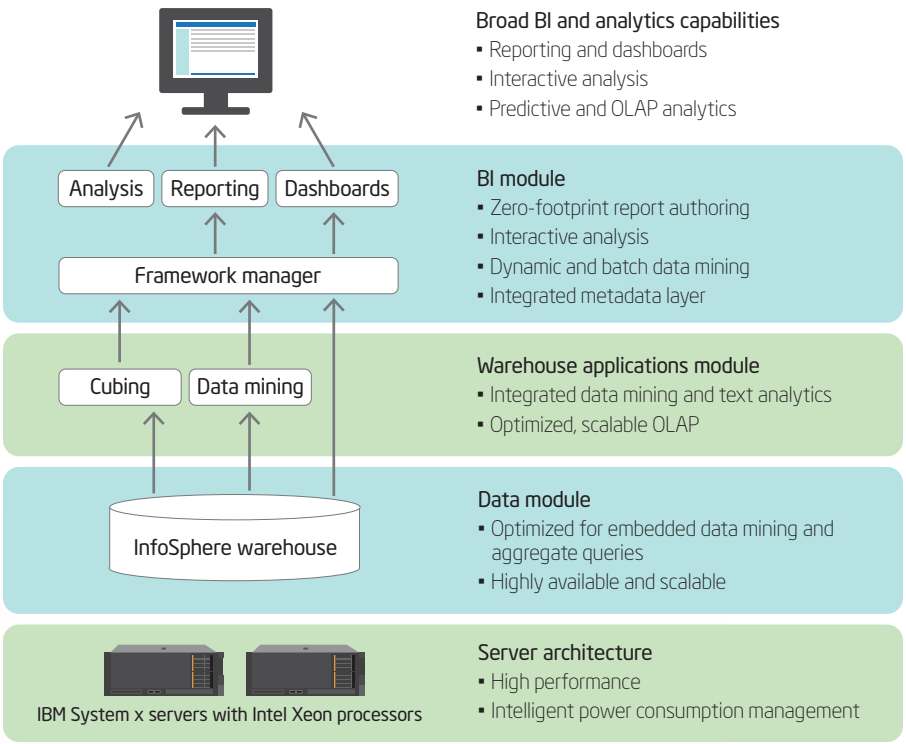


Figure 1: The IBM Smart Analytics System includes BI and warehousing capabilities, built on a high-performance server architecture.

Intel Xeon Processor 7500 Series

The Intel Xeon processor 7500 series delivers the largest performance leap ever for an Intel processor generation (see Figure 2), with an average of 3x higher performance across a wide range of industry benchmarks[1] compared with its predecessor. It provides up to 20x better performance per server versus single-core servers,[2] plus massive increases in scalability and more than 20 new, mainframe-inspired reliability, availability, and serviceability (RAS) features to help protect data and improve system resilience.

Large on-die cache (up to 24 MB per socket), Intel® Hyper-Threading Technology, and Intel® Turbo Boost Technology[3] deliver exceptional performance for complex BI workloads. Further, Intel® Advanced Reliability technology helps ensure data integrity and high availability to keep critical BI systems up and running. Intel and IBM have demonstrated scalable performance and consistent query response times for data sets as large as 10 TB on Intel Xeon processor 7500 series-based servers.[4]

Intel Xeon Processor 5600 Series

The Intel Xeon processor 5600 series for two-socket servers automatically regulates power consumption and intelligently adjusts server performance according to application needs. It delivers up to 15x performance per server over single-core servers,[5] enabling up to 95 percent lower energy costs[6] and helping you maximize performance while making the most of limited data center space, power, and cooling resources.

IBM Server Family Architectures: A Solid Foundation

IBM Smart Analytics Systems harness the power of the Intel Xeon processors through

IBM Smart Analytics System Family

IBM Smart Analytics System 1050

Cost-effective support for smaller deployments

- IBM System x®3500 M3
- Intel Xeon Processor 5600 series
- Novell* SUSE Linux* Enterprise 11 and Microsoft* Windows Server* 2008
- IBM System Storage® DS3500
- IBM InfoSphere Warehouse Departmental Edition or InfoSphere Warehouse Departmental Base Edition
- IBM Cognos® Reporting and Query

IBM Smart Analytics System 2050

Scalability for departmental enterprise deployments and midsize businesses

- IBM System x3850 X5
- Intel Xeon processor 7500 series
- Novell SUSE Linux Enterprise 11 and Microsoft Windows Server 2008
- IBM System Storage DS3500
- IBM InfoSphere Warehouse Departmental Edition or InfoSphere Warehouse Departmental Base Edition
- IBM Cognos Reporting and Query

IBM Smart Analytics System 5600

Modular system for companies that need powerful analytics capabilities and growth flexibility

- IBM System x3650 M3
- Intel Xeon processor 5600 series
- Linux
- IBM System Storage DS3400; Fusion-io solid-state drive (optional)
- IBM InfoSphere Warehouse Enterprise Edition
- IBM Cognos 8 BI

Intel Xeon Processors

Intel Xeon Processor 7500 Series

Exceptional scalable performance with advanced reliability

- Up to eight cores, 16 threads, 24 MB of on-die cache
- Intel Advanced Reliability technology

Intel Xeon Processor 5600 Series

The next generation of intelligent server processors

- Automatically regulates power consumption
- Adjusts server performance according to application needs

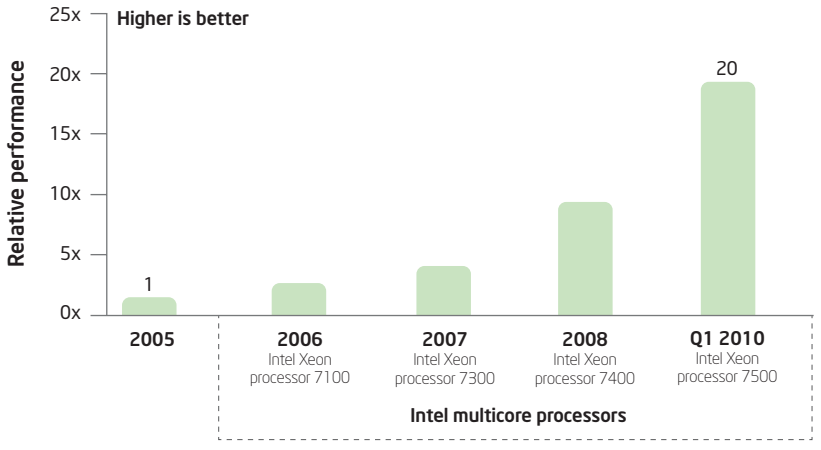
two IBM server architectures, the M3 and eX5 servers (see sidebar, "IBM Smart Analytics System Family"). The IBM M3 server architecture is ideal for small- and medium-sized workloads, delivering performance and per-core energy efficiency for smaller deployments, while the IBM eX5 server architecture delivers value and investment protection for enterprise-class environments.

IBM Smart Analytics Systems based on the eX5 architecture offer flexible configurations and a modular design for pay-as-you-grow scalability, with affordable starting points and easy expansion to handle the most demanding analytics and BI initiatives. You can start with a two-socket or four-socket server with just a single processor, and then scale that system as needed. As workloads grow, you can connect two systems with a high-performance link to create a single server with up to eight sockets (64 cores, 128 threads), and 3 TB of memory. This can dramatically accelerate analytic processing by making it possible to hold large data sets in main memory and therefore substantially reduce the frequency of disk access.

For even more complex workloads, you can add optional modules with Fusion-io* solid-state drive (SSD) technology to help improve response time and boost efficiency. The advanced design of the Smart Analytics System puts this high-performance technology to work where it is the most cost-effective and will have the greatest positive impact on system performance.

In an analytics system, for example, writing data to spinning disks can cause big performance bottlenecks. When equipped with solid-state storage, the Smart Analytics System captures highly disruptive temporary write I/Os—which are common in analytic workloads—to the solid-state storage first. Moving even a small percentage of data writes from spinning disks to solid-state storage can significantly increase I/O and cut query response, giving you the capability to expand hardware capacity on existing systems as your BI needs grow.

The Biggest Performance Leap Ever for an Intel Processor Generation



(Source: Intel Internal Measurements, January 15, 2010. Results calculated based on geometric mean of five enterprise benchmark scores, including server-side Java*, integer throughput, floating-point throughput, ERP, and OLTP.)

Figure 2: The Intel Xeon processor 7500 series delivers the biggest leap ever in generation-to-generation performance for an Intel processor.

Reduce Time to Value through Integration

The modular, easily expandable nature of the Smart Analytics System family showcases the extensive integration work done by IBM and Intel. Every Smart Analytics System is a turnkey analytics solution that combines hardware, software, and services. All of the components have been configured and optimized to work smoothly together as a seamless unit, and the entire system has been tuned to maximize performance for analytic workloads. .

As integrated solutions, Smart Analytics Systems are application-ready and data-ready almost from the moment they arrive. Organizations typically have Smart Analytics Systems up, running, and delivering analysis in a few days, compared to the weeks or months necessary for solutions built from scratch.

That simplicity helps reduce the staff time and expertise that you need to reserve for implementation, which means that your senior IT staff can focus on delivering analytics to every level of your organization instead of wading through time-consuming setup and configuration.

Once the systems are in place, the extensive integration helps minimize conflicts and confusion. You can rely on a unified, certified solution stack and enjoy the benefits of a single point of service and support—no more chasing problems through multiple vendors.

Get Results Now

The Smart Analytics System combines the high performance of the latest Intel Xeon processors with industry-leading IBM software and system architectures to form a single system that's preconfigured, tuned, and tested to deliver remarkable analytics and BI performance and time-to-value straight out of the box. With workload-optimized systems, you can cut through the complexity of BI and implement an integrated, ready-to-use analytics solution designed to accelerate your business today and grow with you tomorrow. It's the balance of performance and power you've been waiting for.

Learn More

More about smarter systems from IBM: www.ibm.com/systems/smarter

More about IBM Smart Analytics System: www.ibm.com/smart-analytics-system

More about the Intel Xeon processor 7500 series: www.intel.com/itcenter/products/xeon/7500/index.htm

More about the Intel Xeon processor 5600 series: www.intel.com/itcenter/products/xeon/5600/index.htm

---

[1] Average of 3x performance claim based on geometric mean of four industry-standard, common enterprise benchmarks (SPECjbb*2005, SPECint*_rate_base2006, SPECfp*_rate_base2006, and TPC Benchmark* E) comparing best published/submitted results on four-socket (4S) Intel® Xeon® processor X7560–based server platform to best published 4S Intel Xeon processor X7460–based server platform as of March 26, 2010.

[2] Claim: "Up to 20x performance per server" Disclaimer: Intel performance comparison using SPECjbb2005* business operations per second between five-year-old single-core Intel® Xeon® processor 3.33GHz–based servers and one new Intel Xeon processor X7560–based server. Performance tests and ratings are measured using specific computer systems and/or components and reflect the approximate performance of Intel products as measured by those tests. Any difference in system hardware or software design or configuration may affect actual performance. Buyers should consult other sources of information to evaluate the performance of systems or components they are considering purchasing. For more information, visit www.intel.com/performance/server.

[3] Intel® Hyper-Threading Technology requires a computer system with a processor supporting HT Technology and an HT Technology–enabled chipset, BIOS, and operating system. Performance will vary depending on the specific hardware and software you use. For more information, including details on which processors support HT Technology, see www.intel.com/technology/platform-technology/hyper-threading.

Intel® Turbo Boost Technology requires a platform with a processor with Intel Turbo Boost Technology capability. Intel Turbo Boost Technology performance varies depending on hardware, software, and overall system configuration. Check with your platform manufacturer on whether your system delivers Intel Turbo Boost Technology. For more information, see www.intel.com/technology/turboboost.

[4] Source: IBM internal measurements as of March 2010. All of the benchmark results presented are from a database with schema extended from the TPoX 2.0 schema. The benchmark was run with a series of 16 complex analytical SQL/XML queries. The resulting database size was built from approximately 10 TB data. Platform: three servers each with four Intel® Xeon® processor X7500, 2.27 GHz; 128 GB, running DB2 9.7 on Linux RHEL 5.4 64-bit with DB2 Compression and STMM. DS8700 configured with 384 300 GB 15K RPM Fibre Channel drives.

[5] Claim: "Up to 15x performance per server" Disclaimer: Intel performance comparison using SPECjbb2005* business operations per second between four-year-old single-core Intel® Xeon® processor 3.8 GHz with 2M cache–based servers and one new Intel Xeon processor X5670–based server. Performance tests and ratings are measured using specific computer systems and/or components and reflect the approximate performance of Intel products as measured by those tests. Any difference in system hardware or software design or configuration may affect actual performance. Buyers should consult other sources of information to evaluate the performance of systems or components they are considering purchasing. For more information, visit www.intel.com/performance/server.

- Baseline platform: Intel server platform with two 64-bit Intel Xeon processor 3.80 GHz with 2M L2 Cache, 800 FSB, 8x1 GB DDR2-400 memory, 1 hard drive, 1 power supply, Microsoft* Windows Server* 2003 Ent. SP1, Oracle* JRockit* build P27.4.0-windows-x86_64 run with 2 JVM instances.
- New platform: Intel server platform with two six-core Intel® Xeon® processor X5670, 2.93 GHz, 12 MB L3 cache, 6.4QPI, 12 GB memory (6x2 GB DDR3-1333), 1 hard drive, 1 power supply, Microsoft Windows Server 2008 64 bit SP2, Oracle JRockit build P28.0.0-29 run with 2 JVM instances.

[6] Claim: "Up to 95 percent lower energy costs" Disclaimer: Intel comparison replacing 15 four-year-old single-core Intel® Xeon® processor 3.8 GHz with 2M cache–based servers with one new Intel Xeon processor X5670–based server. ROI claims and costs have been estimated based on internal Intel analysis and are provided for informational purposes only. Performance tests and ratings are measured using specific computer systems and/or components and reflect the approximate performance of Intel products as measured by those tests. Any difference in system hardware or software design or configuration may affect actual performance. Buyers should consult other sources of information to evaluate the performance of systems or components they are considering purchasing. For more information on performance tests and on the performance of Intel products, visit Intel Performance Benchmark Limitations.

- Baseline platform: Intel server platform with two 64-bit Intel Xeon processor 3.80 GHz with 2M L2 Cache, 800 FSB, 8x1 GB DDR2-400 memory, 1 hard drive, 1 power supply, Microsoft Windows Server 2003 Ent. SP1, Oracle JRockit build P27.4.0-windows-x86_64 run with 2 JVM instances.
- New platform: Intel server platform with two six-core Intel Xeon processor X5670, 2.93 GHz, 12 MB L3 cache, 6.4QPI, 12 GB memory (6x2 GB DDR3-1333), 1 hard drive, 1 power supply, Microsoft Windows Server 2008 64 bit SP2, Oracle JRockit build P28.0.0-29 run with 2 JVM instances.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments might vary significantly. Users of this document should verify the applicable data for their specific environment.