

IBM Software for Power Systems



A planet—or our business—is only as smart as its systems and the software that runs on those systems. And the IT infrastructure has to be the smartest of all.

Working smarter is about redefining how your hardware and software enable the flexibility required to quickly meet your business needs. That's why IBM® is helping forward-thinking leaders around the world to capture the potential of smarter systems and smarter software to achieve economic growth, near-term efficiency, sustainable development and societal progress. A smarter planet requires a profound shift in management and governance toward far more collaborative approaches.

The need for smarter systems and smarter software

Many of today's infrastructures are not equipped to handle the demands of a smarter planet; as a result, organizations are incurring higher costs and risk, while missing opportunities to provide higher levels of service to consumers. For example:

- In the utility industry, it is estimated that as much as 170 kilowatt hours (kWh) are wasted each year by consumers due to insufficient power usage information.¹
- In the retail sector, companies lose US\$93 billion a year in sales due to not having the right products in stock to meet consumer demand.²
- In financial markets, the consequences can be catastrophic when infrastructures fail to keep up with growth in volumes and market data, such as the day when a major European trading system collapsed and trading was completely shut down.³



The proliferation of technology and intelligence in an increasingly interconnected world can make it challenging to fully utilize and effectively manage IT assets and non-IT assets as well. For example:

- According to some reports, 85 percent of computing capacity in distributed environments today sits idle.⁴
- Digital data is being generated in unprecedented volumes—more than 15 petabytes daily.⁵ As a result, it is often difficult to quickly and easily find needed information. In fact, 42 percent of people report they are forced to make decisions with the wrong information at least once a week.⁶
- The business models of the past can no longer support effective collaboration and communication between businesses and with customers. Ninety-one percent of CEOs say they need to restructure the way their organizations work.⁷
- Organizations are under increasing pressure from stakeholders, customers and regulators today to pursue environmental sustainability. CEO concern about environmental issues has doubled over the past four years globally.⁸

IBM is focused on bringing a new level of intelligence to how the world works. The following examples make clear how IBM software on IBM POWER7® Systems is helping private enterprises and governments worldwide to seize opportunities and succeed in reorienting their structures, information technology and policies around the citizens they serve.

Singapore Land Transport Authority: New insight and integration make public transport more efficient and sustainable

Singapore's Land Transport Authority (LTA) has developed a fare processing system that integrates all modes of their public transport. LTA worked with IBM to create a seamless national transport fare system that enables riders to use a single card of their choice to pay for all modes of travel—bus, rail and taxis—as well as improve vehicle congestion charging and car parking. Now card readers capture rider information at all points in the transportation network and this information goes into a single national fare processing clearinghouse. New insight into rider travel patterns enables the LTA to optimize fares and schedules to promote maximum utilization of public transport. The new system enabled the LTA to achieve an 80 percent reduction in revenue leakage from “lost” transactions, and a two percent reduction in the overall cost of operating the fare processing system, while tripling its performance capacity to 20 million fare transactions per day.

Queensland Motorways: Intelligent toll system creates smarter traffic management

Commuters in Brisbane—Australia's third-largest city—now enjoy reduced congestion during peak traffic hours and improved travel experiences, thanks to IBM's solution for Queensland Motorways. The intelligent central system for tolling captures vehicle data and provides the foundation for targeted and flexible traffic-shaping capability while embedded business intelligence enables the creation of travel profiles for each customer. The identification, rating and interoperability

services (IRIS) subsystem uses business logic to execute toll-related transactions, including calculating and sending the bill to the customer. In addition, the new system provides increased revenue opportunities for Queensland by providing a strong basis for funding future road infrastructure initiatives.

IBM software for Power Systems: Optimizing workloads for the way business works today

IBM POWER7™ processor based systems represent a true leap forward to more intelligent systems that minimize complexity, automate processes, and reduce energy consumption downtime and other operational costs. POWER7 Systems deliver:

- **Virtualization without limits:** Built-in virtualization with more flexibility, no limits to virtual machine size and no virtualization performance penalty.
- **Workload optimization:** Balanced system designs with intelligence that automatically optimizes workload performance and capacity at either a system or individual virtual machine level.
- **Dynamic energy optimization:** Triple the performance using 20 percent less energy. Increased consolidation drives higher utilization and more energy savings.
- **Resiliency without downtime:** Delivering a strategy for continuous availability with PowerVM™ Live Partition Mobility for planned system downtime without application downtime.
- **Management with automation:** Server and virtualization management is integrated with network and storage management for complete resource control.

IBM software is optimized to run on POWER7 Systems, exploiting multi-core, 45 nanometer design and running speeds of over 4.1 GHz, up to eight cores per socket and four threads per core. Applications that run on POWER7 Systems combined with IBM software are designed to deliver optimized system innovations. For example: No application redesign is required; business queries don't require rewriting; calculation speeds are faster (and more precise); and near-linear scalability is achieved with IBM DB2® and IBM WebSphere® Application Server software.

Together, IBM software and IBM Power Systems™ can help you consolidate workloads into fewer instances to seamlessly and significantly reduce energy consumption for computing. Virtualization and consolidation benefits include:

- Automatic and optimized workload management
- Reduction of memory footprint
- Exploitation of active memory sharing
- End-to-end application and resource management
- Enablement of cloud-ready software

In addition to optimizing IBM software for POWER7 Systems, IBM also delivers *workload optimized systems*—turnkey solutions designed for specific business problems. The IBM Smart Analytics System, for example, is a fully integrated turnkey offering combining powerful business intelligence capabilities and IBM hardware. The system provides all the key capabilities of reporting, analysis and dashboards to enable fast answers to key business questions. This cost effective, modular solution offers rapid deployment and can easily grow with your business.

Software that infuses intelligence into business operations

The world's increasing complexity brings new challenges, increasing the pressure on businesses to optimize consumption and operations, get work done in the best and smartest way, and to recognize problems in advance so that they may be addressed proactively. IBM software for Power Systems can help integrate value into core business processes by infusing intelligence into your business operations. Power Systems software addresses the full spectrum of business IT needs, including:

- Data management
- Business analytics
- Application infrastructure and connectivity
- Collaboration and messaging
- Enterprise content management
- Design and development
- Integrated service management
- Cloud computing



Data management: Optimizing business transactional workloads

IBM DB2 pureScale™ software is a scalable, high-performance database solution that provides unlimited capacity, continuous availability, and application transparency. It is designed for OLTP environments such as SAP ERP or e-commerce. With DB2 pureScale software, you don't need to change your application code to efficiently run on multiple nodes. Thanks to a proven, scalable, architecture you can grow your application to meet the most demanding business requirements.

You can also run applications written for other database software with little or no changes; DB2 software offers native support for commonly used syntax and PL/SQL procedure language, making it easier than ever to move from Oracle and Sybase databases to the DB2 platform. DB2 pureScale technology provides continuous availability through the use of highly reliable IBM PowerHA™ pureScale technology on IBM Power Systems and a redundant architecture. The system recovers nearly instantaneously from node failures, immediately redistributing the workload to surviving nodes.

The IBM pureScale Application System provides an optimized system for business transactional workloads. It extends the reliability and speed of IBM DB2 software, WebSphere Application Server and POWER7 servers with DB2 pureScale clustering technology. The system offers virtually unlimited capacity. Scaling your system is simply a matter of connecting a new node and issuing two simple commands. DB2 pureScale's cluster-based, shared-disk architecture reduces costs through the efficient use of system resources.

Smarter healthcare: University of North Carolina speeds development of disease treatments

Researchers and physicians at this major research and teaching institution have clearer insight now into a larger cross section of medical data, contributing to faster diagnoses and treatment decisions. Evidence-based treatment plans are improving the quality of patient care and the likelihood of treatment success. The Carolina Data Warehouse for Health solution is built on the IBM Health Integration Framework and takes advantage of IBM DB2, IBM InfoSphere® and IBM WebSphere software. The solution includes pay-for-performance reporting within clinical care, provides real-time access to vast amounts of patient data and uncovers trends in a matter of seconds.



Business analytics: Delivering new intelligence in a box

Built on a foundation of IBM data warehouse management software powered by DB2, storage, and the Power Systems platform, the IBM Smart Analytics System 7700 delivers a workload optimized system and the industry's most complete integrated business-ready analytics solution. This technology can help you discover insights, predict outcomes and act faster to improve business results. Pre-integrated hardware and software modules can be added any time to existing installations, resulting in unmatched performance, scalability and flexibility. The pre-optimized business intelligence software reduces floor space by 50%.⁹

Smarter retail: Elie Tahari drives greater visibility on inventory levels, customer orders, shopping patterns and market trends

The IBM retail integration framework data warehouse solution provides fashion retailer Elie Tahari complete visibility into all of its data, from sales to production. Now, all systems and departments can better connect with one another in near real time. With new business intelligence and greater efficiencies, Elie Tahari can provide retail managers, designers and merchandisers detailed information about buying patterns as well as market trends; anticipate inventory problems and plan accordingly; and they are able to deliver an optimal assortment of merchandise to customers while minimizing production and distribution costs.

Application infrastructure and connectivity: Increasing agility

Data and transaction growth increases the need for transaction integrity, meaning confidence that every business transaction completes successfully and that data is protected. Increased workloads demand increased performance, including top speeds and availability to serve a global marketplace. And today's workloads require flexibility and cost efficiency through system configurations that provide for rapid and easy growth to keep pace with business.

IBM software for Power Systems can help simplify web-application deployment. IBM WebSphere Application Server (WAS) provides the cornerstone for a SMART SOA™ environment. Software for service-oriented architecture (SOA) helps enable dynamic, interconnected business processes, and delivers highly effective application infrastructures. IBM



WebSphere Application Server on POWER7 Systems is helping many organizations build, deploy and manage SOA business applications and services while reducing application infrastructure costs. WebSphere is able to exploit all 32 threads available in a single 8-core POWER7 microprocessor, resulting in performance gains of nearly 73 percent¹⁰ over competitive application servers on Nehalem.

The WebSphere connectivity solution set includes messaging backbones. WebSphere Message Broker V7.0 is an enterprise service bus (ESB) for universal connectivity and transformation in heterogeneous IT environments. WebSphere Message Broker distributes information and data generated by business events in real time to people, applications, and devices throughout your extended enterprise and beyond. Using WebSphere Message Broker V7 with a Power750 system in a competitive project office internal study, the messaging backbone was 53 times faster than Microsoft® Biztalk; the workload was a mix of in/out, routing, transformation and routing messages.

Today's market champions are transitioning their focus from cost reduction to new growth-driving initiatives, while others focus on stabilization. Leading organizations are transforming their people, processes, and information to increase agility and quickly capitalize on new market opportunities. Tools such as the always available and scalable IBM pureScale Application System deliver unmatched transaction integrity for capturing business transactions, superior price and performance for controlling IT costs, and ultimate flexibility for responding to changing business needs.

Smarter banking: SBI Sumishin Net Bank accelerates business growth with a new path to Internet banking

This "pure-play" Internet bank is able to quickly create customized products, cross-sell and up-sell in real time for its Japanese market. SOA integration provides a single view of the client, including information from many lines of business at the bank. In the first 18 months of operation, bank deposits totaled 600 billion yen, 400,000 new accounts were opened, and dynamic flexibility was achieved when adding new services.



Collaboration and messaging: Enhancing efficiencies within and throughout the organization

Collaboration and messaging are key components in an organization's ability to accomplish more with less. Without collaboration and messaging assets, organizations cannot harness the potential that exists within the organization and with critical partners and customers.

IBM WebSphere Portal delivers an exceptional web experience tailored to user needs, enabling you to improve relationships with customers, partners, and employees with online self-service. It provides a single access point to web content and applications, personalized for each user's needs. IBM WebSphere Portal software provides a composite application or business mashup framework and the advanced tooling needed to build flexible, SOA-based solutions, as well as the unmatched scalability required by any size organization.

Enterprise collaboration software helps people effectively create, discover, and share information, make business decisions quickly, and streamline the way they work. Some of the rich IBM Lotus® collaboration offerings available on POWER Systems include:

- IBM Lotus Connections software that can enable you to connect to expertise and resources within and beyond your organization through growing social networks
- IBM Lotus Quickr™ software that can enable you to share content, collaborate and work faster with teams online
- IBM Lotus Sametime® instant messaging software that can help you to reduce costs for travel, telephone and audio- and web-conferencing services through unified communications

Flexibility and choice are key to determining the right advanced messaging solution to meet your company's unique business needs. IBM provides a variety of security-rich, multi-platform messaging products with IBM Lotus Domino® and IBM Lotus Notes® software on POWER7 Systems that can work together to build cost-effective solutions to meet your varying requirements.

Lotus Domino software is helping enterprises to lower costs for resources such as power consumption, memory, and data storage; and it is helping them to minimize administration staffing requirements through simplified and automated management tools. Lotus Domino software running on POWER7 Systems supports 40,000 users at 40 percent the cost of Microsoft Exchange on Nehalem.¹¹ Lotus Notes software offers a business email solution providing a single point of access to people, business applications and resources throughout the enterprise and the Internet.

Smarter education: Fashion Institute of Design & Merchandising opens doors to student success with IBM Lotus solutions

Students, staff and alumni at the Fashion Institute of Design & Merchandising (FIDM) in California connect to administrative and learning tools quickly and easily now, thanks to a unified messaging and IT Telephony solution. The WebSphere Portal platform can scale quickly to handle spikes in traffic and it is easier to rapidly communicate important information while reducing voice costs. Now that application deployment is as much as 50 percent faster, the school can quickly deliver new features.

Enterprise content management: Maximizing the value from your data

Collectively, unstructured information (or content) represents 80 percent of what you store today. The need for business and IT agility makes it imperative for businesses to change their traditional approaches to dealing with unstructured information. Enterprise content management (ECM) solutions help deliver competitive advantage with faster decisions, lower costs, optimal customer interactions and new insights.

ECM capabilities from IBM include IBM FileNet® software and IBM Content Manager. With FileNet software, users can lower costs by up to 60 percent for document ingestion and retrieval on POWER7 versus POWER5™ platforms.¹²

An IBM ECM solution can help your organization to:

- *Know* your content—Dynamic assessment and analysis enable you to preserve the content that matters and decommission what's unnecessary.
- *Trust* your content—Trusted repositories provide confidence as you manage and govern your content.
- *Leverage and exploit* your content—Interactive searching enables you to derive unexpected business insights and take action.

Smarter operations: DOF Management helps users find the right documents in seconds

DOF Management AS, a vessel and crew management company, is saving 630,000 euros per year in operational costs, with the help of powerful information search capabilities. All project-related documents, calls and emails are captured by the central repository, providing full traceability and facilitating compliance. Highly reliable IBM AIX® and Power Systems infrastructure delivers 24x7 availability for global operations.



Design and development: Infrastructure that powers innovation

To be successful today, businesses need a more flexible and affordable infrastructure for design and development in order to optimize software development and delivery.

IBM Rational® solutions for Power Systems can help you optimize your software assets, development skills and infrastructure investments by delivering unrivaled performance gains through world class compilers. Additionally, these solutions can help manage and lower total cost of ownership with individual development environments that dramatically improve collaborative software development and delivery.

- Rational compilers for AIX and Linux® exploit the latest POWER7 architecture and multi-core technology and can deliver up to 40 percent better system utilization.¹³
- Rational Developer for Power Systems delivers integrated tools for Power operating systems and programming languages.
- Rational Team Concert™ for Power Systems provides an integrated agile collaborative development environment and enables real-time, in-context collaboration for distributed project teams.
- The new IBM Rational Power Appliance is designed to deliver everything you need for faster application development—POWER7 hardware and Rational software in three simple configurations.

Customers cited in the IBM study, “[Making a Business Case for IBM Rational Developer for i](#)”¹⁴ achieved a 20 percent or more improvement in developer productivity with the Rational tool set.

Smarter financial services: FIS software improves developer productivity

Thanks to IBM Rational Developer for Power Systems software, development and testing productivity at FIS Software, Ltd. is up an estimated 20-30 percent. The company develops and delivers packaged-based global insurance solutions that enable life insurance, pensions and investment companies to run their businesses efficiently and respond to territorial legislation and regulations. The new productivity enhancing tools provide a GUI-based development environment for the Power platform. FIS developers say that now debugging IBM AIX code is “a pleasure.”

Integrated Service Management with POWER7 platform: Sustaining an optimized and virtualized IT environment

IBM Tivoli® solutions on Power Systems can enable you to deploy integrated visibility, control and automation capabilities for higher quality services at a lower cost.

IBM service management solutions provide the context necessary to effectively manage the dynamic nature of POWER7 environments. These solutions exploit the dynamic POWER7 infrastructure, and can help enable you to:

- Use and integrate IT management and POWER7 Systems business assets to deliver next generation services—to deploy and manage; automate and optimize; and secure and track resources.
- Respond rapidly to change, mitigate risk and support new business opportunities through greater agility.
- Deliver higher quality service to customers and business partners at a lower cost.



Managing POWER7 Systems with Tivoli can help provide:

- *Virtualization* with integrated service—up to 90 percent¹⁵ utilization through server partitioning to support consolidation of resources
- *Complete monitoring* coverage for virtual infrastructures—POWER7 server utilization, availability and energy usage
- *Consolidated workloads*—integrated POWER7 resource management from one suite of products
- *Optimized energy efficiency*—performance visualization and management of the entire POWER7 environment
- *Simplified cost accounting*—measurements, analysis, reports and bill utilization of IT costs down to the aggregated LPAR level

Smarter transportation: Japan Airlines reduces the potential for costly IT system outages

Working with IBM, Japan Airlines (JAL) implemented an enterprise-wide IT issue tracking, change and configuration management solution. In the first year, the system reduced system failures by 58 percent, IT interruptions by 39 percent, and downtime by 80 percent. The airline's overall quality of service improved as outage-related operational delays were

reduced. The system provided JAL management with a greater understanding of how IT affects its business by providing unprecedented visibility into the current state of its IT systems.

Cloud Computing on POWER7 platform: Rapidly deploy a private cloud on Power Systems

In response to the increasing need for businesses to do more with less, reduce risks, deliver higher quality service and deliver breakthrough agility, cloud computing is an exciting option.

IBM intends to offer two new flexible delivery models to deliver cloud computing capability on Power Systems. First, IBM CloudBurst™ 2.1 will offer an integrated service management platform to rapidly deploy a private cloud on POWER7 technology. Second, IBM Service Delivery Manager will provide a self-contained, software-based service delivery platform for a private cloud that can be deployed on POWER6® or POWER7 technology.

The power of smarter systems

Smarter systems and smarter software are redefining and expanding opportunities for businesses and governments worldwide. They are setting new benchmarks in data management, business analytics, transaction processing, collaboration and messaging, enterprise content management, design and development and integrated service management. Together, IBM hardware, software and services are helping to create unprecedented business value by delivering systems optimized for specific workloads. IBM software optimized for IBM Power Systems offers you unprecedented potential to drive significant innovation.

For more information

Visit [IBM Software for POWER7 Systems](#), or contact your IBM representative.

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- 9 Based on IBM laboratory tests versus non-optimized systems. Actual results may vary depending on specific environment and configuration.
- 10 Based on IBM internal studies. Results for a single JVM.
- 11 Based on sizing from <http://h20338.www2.hp.com/ActiveAnswers/us/en/sizers/microsoft-exchange-server-2010.html>
- 12 The performance results reported represent test data models and workloads run in an isolated laboratory on specific operating environments and system configurations. Actual performance in real customer environments with production workloads may vary significantly, and will depend on the unique circumstances of each customer’s configuration and workload.
- 13 System utilization improvement depends on the application and result may vary.
- 14 “Making a Business Case for IBM Rational Developer for i,” February, 2010.
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