Smarter Systems for a Smarter Planet

A new way of thinking about systems

Success in today's demanding times requires smarter systems—that are optimized for the workloads and realities of a smarter planet
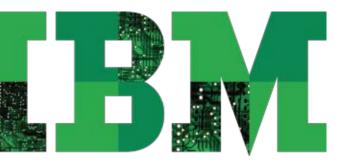
Optimized for the needs of a smarter planet

Actions. Interactions. Transactions. People-to-people, people-to-device, computer-to-computer. In person and around the world. We're dependent on transactions and the systems that support them.

These systems matter to you and to the world. The advancements are astounding, and still the systems can be improved, reworked to a higher level of efficiency. For example, reducing gridlock by reworking traffic systems. Reducing energy footprints by advancing power meters. Establishing collaboration systems that can help us manage our business responsibilities and clear space for our personal lives.

When we add the opportunities for improvement to the inherent complexity of these systems, significant challenges arise. Systems must become smarter. They need to:

- Enable massive scale yet consume less energy, floor space and manpower.
- Store, manage and retrieve vast amounts of data without adding more cost and complexity.
- Turn information into insights fast enough to keep up with a business changing in real time.
- Increase business agility to improve service delivery.

Clearly, this will require new thinking. New designs. We must redefine performance. We can no longer measure success by the speed of the computing system, but by the speed of the answer it delivers. And getting there requires that we look deeper—at the workloads that run our world.

Optimized for the workloads and needs of a smarter planet

So what is a workload? In a nutshell, a workload is a body of computations that has certain characteristics. For example, data and transaction processing workloads have different characteristics than an analytics workload, which is different from Web applications.

Much of our continued investment in systems is to ensure that we offer the range of choices necessary to help our clients optimize all of their workloads. We recognize that the "right system" will be different for different clients and for different applications.

That's why we've already invested US$4.2 billion in fundamental research and development—and we'll invest US$6 billion more in the next 24 months to deliver the breadth of technology, software and services necessary to optimize the performance of today's key workloads and ensure product and service leadership in each class of technology.

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Reduce the cost and complexity of data storage

The vast amounts of data we produce and process every day have to go somewhere. Healthcare, cities, retailers, not to mention the throughput of smarter grids and financial systems, all add constantly to the data load.

To manage this data moving forward, smarter systems will help you store massive—and growing—amounts of data without adding complexity to your systems.

This means that you can scale vast amounts of storage, and do so economically. So your storage systems can grow exponentially, but conserve energy, floor space and management costs.

Analyze and unlock the insights in that data

Data does no good if you can't use it, extract value from it, act on it. It used to be enough to be able to "pull reports" on data to understand what happened. But now, you want to understand what's happening today and be able to predict what might happen tomorrow. You want to use your data to change what's happening—in real time. Retailers can manage pricing based on real-time availability and demand. Banks can prevent fraud based on current transaction activity.

To unlock these insights, you need systems that offer the real performance to analyze massive amounts of data in a timeframe that matters. IBM is there, with new kinds of processors that will continue the stream of performance that took the industry from megahertz to gigahertz to multi-core. The firmware and the systems software, where capabilities like security and virtualization must be tightly integrated into the core of the system.

Achieve the business performance and scale required

The cost of designing and building chips continues to go down while the speed continues to go up. But what impact does that have on performance? Processors can handle massive numbers of transactions—but scaling to meet today's business, storage and analytic demands is about more than just transistors.

It's time to move beyond simple speeds and feeds to defining performance by a set of attributes critical to both technology and business clients. This "business" performance means balanced systems built to scale flexibly and efficiently, coupled more closely than ever with highly tuned middleware and applications.

IBM is already delivering systems like these and helping business and technology leaders reframe their conversations about technology and the role it will play in their organizations moving forward. Systems such as the new POWER7™ systems with native virtualization that enable you to run at 90% utilization. Or the new eX5 systems that have decoupled I/O, memory and processor so you can scale appropriately for the application you need. IBM has systems that scale—economically—to meet today's demands. And tomorrow's.

For decades, the systems IBM made were designed for the back office. Today, we take pride in the fact that our systems are front and center, making a noticeable difference in people's lives. From System z® and System x® to Power® systems and storage, IBM is delivering computing capabilities that can help reinvent your existing IT infrastructure, making it leaner, flexible, resilient—and smarter.

Increase business agility to improve service delivery
At the heart of efficient systems scalability is virtualization. You need to be able to use the systems you have efficiently and flexibly—not only to run applications but to run your business and make it more agile.

Virtualization with integrated service management helps you use your resources effectively, manage your infrastructure efficiently, and gain the flexibility to meet ever-changing business demands. To achieve the best outcome, organizations are virtualizing at all layers of the architecture, from servers to desktops, storage, networks, and applications to help reduce cost, improve service and manage risk.

IBM has decades of virtualization experience. We offer the industry's broadest set of virtualization capabilities—from specific infrastructure and management offerings to complete virtualization solutions for single servers and multi-system environments. IBM has design and implementation networking solutions to support a highly available and virtualized environment and the ability to manage both physical and virtual server and storage environments in single- and multi-vendor environments.

Fueled by expertise
IBM systems and software are robust. Industrial strength. Proven. Whether it's for a fifty-person start up or for the world's monetary system, our products and services work.

But it's not just the code or the boxes. It's also about the ongoing service we provide. We've always been dedicated to our clients' every success. Our teams work tirelessly in partnership with each other, and our clients, to apply technology to solve their greatest challenges and create new value.

We know how to help clients apply technology to deliver results. We know industries, the world of business, and how work gets done. We know systems, both natural and man-made. And we're committed to applying this expertise to help our clients reinvent themselves and their industries—one client at a time.

On a smarter planet, opportunities are unlimited but resources are not. Success in business demands smarter systems that are intentionally designed for particular business workloads. By offering flexibility, choice, innovation, and integration, smarter systems redefine performance to deliver the highest possible value with the fewest resources. Explore what other successful companies are doing at **ibm.com**/systems/smarter

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