



A Workload Optimized Approach to a Dynamic Infrastructure

Aligning technology to business requirements

As the world becomes exponentially more instrumented, interconnected and intelligent, the sheer volume of data that will be available to people via smart devices and the maturation of advanced analytical applications will allow for better business decisions. This is assuming that the information can be available when it is needed and that it can be processed in a timely manner.

Follow that assumption for a moment and think about what's possible when this data is put to work. What would it mean to communication service providers if they could have a view into how their customers are experiencing their service in real time? How would healthcare change if integrated patient information were available to physicians consulting on a diagnosis, independent of time or location? And what would it mean to green IT initiatives – and the environment as a whole – if a single dashboard could provide visibility into everything that generates energy in an organization's facility?

For businesses going forward, these questions will be moot unless they have the IT-enabled services to respond quickly and efficiently to the daily demands of the business. For the IT department or provider, it means continuously integrating disparate workloads, such as transaction processing, real-time analytics and web services. In order to do this, they'll need to match the workloads that make up the services they provide with the right technology systems so they can get the

best performance out of each application – and the underlying technology that supports it. In a dynamic, ever-evolving business landscape, this approach can be the difference between winning and losing, profit and loss.

Optimizing the environment for specific business needs

What is it that defines a workload? All IT services provided to the business are made up of some combination of workloads, such as billing and database queries. In the future, workloads like these will become increasingly complex and, in many cases, demand real-time capabilities. Different types of workloads have unique characteristics and run more purposefully when matched with the right computing resources.

“In a dynamic, ever-evolving business landscape, a workload optimized approach can be the difference between winning and losing, profit and loss.”

When it comes to the infrastructure of tomorrow, IBM recommends a workload optimized approach with organizations aligning technology to business requirements in order to enable the effective processing of data and information for improved performance, scale and efficiency. These efficiencies are becoming critical for businesses hoping to achieve the service quality and business outcomes they – and their customers – desire. With technology better aligned to support the business, clients will be able to better manage business processes, not just IT resources. For example:

- Transaction processing and database workloads demand systems that can scale to handle high transaction numbers and provide resiliency, security and high-quality service. For instance, ATMs in banking require speedy and secure transactions of countless volumes of basic data.
- Analytics and high-performance computing workloads are more compute intensive, necessitating high I/O bandwidth and increased memory. For example, predictive analysis workloads call for high-performance systems that can handle mathematically intense calculations.
- Such business applications as ERP, CRM and SCM solutions require highly responsive systems, a large memory footprint and a high level of service.
- Still other workloads, such as Web 2.0 tools, collaboration and infrastructure workloads, are highly multithreaded and through-put oriented. In addition, they typically require rapid scaling and demand that systems can quickly process and distribute data across vast IT networks.

A choice of systems to support a multitude of workloads

IBM provides a range of systems that are engineered to address the requirements of different types of workloads, allowing clients to take a workload optimized approach in how they meet the needs of the business. Our hardware platforms leverage advanced technologies – like high-speed fabrics, accelerators and systems software, as well as system enhancements and tighter integration of heterogeneous architectures – to best address the unique requirements of the different workloads they support.

By leveraging our deep technology know-how and expertise of business and IT workloads by industry, IBM provides customers with a spectrum of value:

- **Systems choice:** IBM provides a choice of architectures to address the need for general purpose systems, for both servers and storage, each fit for a particular job. What's more, IBM can help clients make the right choice, selecting the ideal platform for their unique needs.
- **Pre-integrated solutions:** IBM solutions utilize system technology enhancements, such as System Optimizers, that hone the platform's capabilities for specific workload usage. In addition, IBM provides pre-integrated solutions that package hardware and software capabilities to support a specific workload or class of workloads. In other words, IBM deeply tunes the stack for better performance, efficiency and scale as compared to a conventional piece-part approach.

Workloads Key to Addressing Client Needs: Not all workloads are the same. They influence platform choices.

<p>Transaction Processing & Database</p> <ul style="list-style-type: none"> • Application Database • Data Warehousing • Online Transaction Processing • Batch 	<p>Analytics & High Performance Computing</p> <ul style="list-style-type: none"> • Data Mining Applications • Numerical • Enterprise Search
<p>Business Applications</p> <ul style="list-style-type: none"> • Enterprise Resource Planning • Customer Relationship Management • Application Development 	<p>Web, Collaboration & Infrastructure</p> <ul style="list-style-type: none"> • Systems Management • Web Serving/Hosting • Networking • File & Print

- **Integrated workloads:** IBM integrates heterogeneous systems to optimize multiple workloads and provide enhanced ease of management.

The secret to a workload optimized approach is a purposeful design, which itself is driven by the unique systems requirements of various workloads. Going forward, a “one size fits all” approach will not meet the evolving needs of these workloads.

For example, when the Singapore Land Transit Authority wanted to create a transit payment system, it worked with IBM to optimize the right mix of platforms for the job. Today, one system is used for transaction processing and database, real-time calculations and passenger demand prediction; while another is utilized for web and retail channel infrastructure. As a result, the Singapore Land Transit Authority has been able to accommodate multiple fare card issuers, increasing convenience for commuters while simultaneously lowering costs.

Another example is Chicago-based Blue Cross and Blue Shield Association (BCBSA), which IBM is working with to build a data warehouse using hardware and software components of IBM's Smart Analytics System that have been configured to work together for maximum scalability, balanced performance, security and high availability. With this optimized approach, BCBSA is now better able to understand and detect demographic trends, helping it improve workforce health and cost management for employees.

Taiwan Semiconductor Company came to IBM asking for help with a critical workload that would support end-user computing management and collaboration. They leveraged a new delivery model for their environment by selecting a private virtual desktop cloud and a public collaboration cloud. They were able to dramatically improve the overall productivity of their researchers and simultaneously reduce their costs, while also improving the service levels of the desktop environment.

These are just a few examples of how IBM is aligning technology to business requirements in order to provide clients with an optimized approach to today's workloads. Such an approach helps organizations address the increasing costs and complexity of their datacenters; integrate and more effectively manage their IT assets; and make their IT environment as dynamic as the changing business landscape demands.

The right approach for a smarter planet

IBM has been providing a choice of systems to meet unique business requirements for years, and we continue to evolve both our systems and delivery options with the technology innovation that you have come to trust from IBM. This includes advancements in system design, system software and integrated service management, as well as leveraging new delivery options for workload optimized solutions like cloud computing for collaboration, business analytics, development and test and storage – helping clients achieve the desired scale, performance, service quality and user experience needed on a smarter planet.

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IBM's workload optimized approach can provide:

- ***Faster time to value:*** Workload optimized hardware, software and services pre-tuned and highly scalable to help clients keep up with changing needs.
- ***Deliver improved performance:*** Integrated accelerators, systems software and service management – pre-tuned by a team of experts for deeper levels of workload optimization – deliver top performance and enable the most efficient use of resources.
- ***Improve productivity of IT staff:*** Simplified and integrated systems management means less staff time is needed for routine operational tasks and more time can be spent driving greater levels of innovation.

The end result is a smarter approach to business and IT service delivery that helps improve service, reduce cost and manage risk while accelerating business growth.

For more information, contact your IBM representative or visit: ibm.com/dynamicinfrastructure/optimizedworkloads

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