IBM pureScale Application System

Optimized performance for transactional workloads

Highlights

- Deliver consistently high transaction throughput and 24x7 availability
- Scale applications quickly, incrementally and smoothly—without complex tuning or costly custom development
- Support application growth across multiple nodes without code changes

Organizations in virtually every industry are struggling to keep up with an ever-growing volume of transactions and data. To compound the challenge, much of this data resides in rigid, siloed repositories that are the result of legacy IT environments. These silos can create performance bottlenecks and unacceptable levels of downtime—and they can make scaling costly and complex. The growing cost of space and energy also compounds the expense of maintaining growing databases.

The result of all of those factors is that companies can't scale as their demands evolve, may miss service-level agreements (SLAs) and may incur other penalties for inferior performance, scalability and availability.

To succeed, companies must focus on optimizing the performance of their key systems. Organizations need smarter IT solutions that can efficiently transform increasing volumes of data, streaming in from numerous devices, into actionable insights. A one-size-fits-all approach is not the answer because transactional and analytic workloads have different support and performance requirements.

Online transaction processing (OLTP) workloads require the highest levels of performance and scalability—as well as the flexibility to adjust with changing transaction volumes—to support seamless, real-time service for end users. High amounts of data mean that consistent transaction integrity (confidence that every transaction has completed successfully) is critical for maintaining secure, reliable operational performance.

Smarter systems: Taking a transactional workload optimized approach

Systems that are optimized for specific workloads are at the heart of IBM's vision for helping organizations meet their business needs. IBM has spent years investing in and engineering workload optimized systems built on IBM hardware and software designed to be especially cost effective.

Workload optimized systems must include the right combination of pre-integrated components that have been tested to ensure smooth operation and reliability. They must also provide integrated services from a single vendor, from installation to ongoing support. Smarter systems from IBM are designed to manage multiple virtual workloads seamlessly and efficiently, while effortlessly scaling both up and out. In addition, many IBM software offerings have the ability to self-configure, self-heal, self-optimize and self-secure. And, IBM has the strategy and technology expertise to help organizations optimize transactional workloads through the IBM® pureScale™ Application System.

Built for the way business really works, the pureScale Application System is configured to provide reliable transaction integrity, leading performance and system flexibility. It is designed to help ensure that every business transaction completes successfully and valuable data is protected. In addition, IBM systems can help provide top speed and around-the-clock availability to serve the globally integrated enterprise. With the pureScale Application System, organizations can choose configurations that meet today's needs while maintaining the capacity for rapid and easy growth to keep pace with tomorrow's business.

Maximize value and scalability with pureScale Application System

The pureScale Application System is designed for businesses that rely on OLTP applications on distributed systems. Using systems that are optimized for transactional workloads enables companies to get maximum efficiency and value from their database platforms.

The pureScale Application System is a pre-integrated, pretuned and pre-optimized combination of:

- **IBM Power® 770 servers** that drive up to 90 percent server utilization with industry-leading virtualization and provide resiliency without downtime
- **IBM DB2® pureScale** on IBM AIX®, which offers outstanding performance and scale-out efficiency
- **IBM WebSphere® Application Server 7**, which provides 73 percent better performance than a competing application server on Intel® Microarchitecture[1]

- **QLogic InfiniBand switches** that are high-performance, low-latency interconnects, well-suited to the requirements and network challenges common in today's business IT environments. Tested and optimized for use with IBM Power Systems™ solutions, they provide easy-to-install and easy-to-manage network connectivity.
- **IBM PowerVM™** to dynamically adjust the server to meet changing workload demands

The Power 770 servers are designed to support up to 90 percent processor utilization through industry-leading virtualization features that help increase resiliency and reduce downtime. Those capabilities are built directly into the hardware, which contributes to lower total cost of ownership, improved performance and enhanced scalability. In addition, dynamic energy utilization features enable Power Systems to deliver up to a 70 - 90 percent reduction in energy consumption.[2]

Both DB2 and WebSphere Application Server are designed to exploit the IBM POWER7® processor and systems architectures to deliver faster time to value and exceptional price/performance. POWER7 processors are designed to support massive parallelism, which enables workloads to be processed concurrently instead of sequentially so work can be completed faster. DB2 pureScale allows companies to automatically exploit these multiple threading capabilities without requiring IT staff to rewrite application code. WebSphere Application Server on POWER7 harnesses increased performance to help drive customer satisfaction through more responsive applications.

Support virtually unlimited capacity and near-linear scalability

The pureScale Application System is designed to provide virtually unlimited capacity and near-linear scaling for transactional workloads. By connecting a new node and issuing two simple commands, IT administrators can scale key systems quickly and incrementally, without massive expenditures or complex tuning. The cluster-based, shared-disk DB2 pureScale architecture helps reduce costs through efficient use of system resources, and flexible licensing helps to minimize costs during peak times.

Leverage application transparency to enable smooth growth

Because the pureScale Application System does not require IT administrators to change the application code to run efficiently on multiple nodes, companies can take advantage of extra capacity rapidly. Proven, scalable architecture enables applications to grow smoothly to meet the most demanding business requirements. In addition, applications written for other database software can run on DB2 with few or no changes.

DB2 offers native support for commonly used syntax and PL/SQL procedural language, which helps simplify the process of migrating data from other databases. SQL compatibility features also make the pureScale Application System an outstanding consolidation environment for both existing DB2 systems and data systems from other vendors.

Provide high availability for critical applications without creating complexity

The pureScale Application System supports a consistently high transaction throughput and 24x7 availability through the use of highly reliable IBM PowerHA™ pureScale technology on Power Systems and a redundant architecture. The system can recover nearly instantaneously from node failures, immediately redistributing the workload to surviving nodes.

DB2 pureScale, the clustering technology at the heart of pureScale Application Server, does not require applications to have cluster awareness. By automatically balancing the workload across the cluster, DB2 pureScale allows companies to achieve scalability without the revisions often required by other distributed database cluster technologies. This capability can help reduce complexity, cut costs and speed time to value.

Take a smarter approach to optimizing transactional workloads

The pureScale Application System builds on decades of IBM expertise in tuning IT environments for transactional workloads. By combining the exceptional performance, reliability and flexibility of POWER7 processor-based servers with DB2 software, DB2 pureScale on AIX and WebSphere Application Server, IBM created a solution that can help organizations scale applications incrementally and smoothly, support application growth without code changes and deliver consistently high transaction throughput and 24x7 availability.

For more information

To learn more about the IBM pureScale Application System
and smarter systems from IBM, please contact your
IBM representative or IBM Business Partner, or visit:

- **ibm.com**/systems/smarter
- **ibm.com**/software/data/purescale

[1] HP Sizer for Microsoft Exchange Server 2010.
http://h20338.www2.hp.com/ActiveAnswers/us/en/sizers/
microsoft-exchange-server-2010.html

[2] "IBM EnergyScale for POWER7 Processor-Based Systems." April 2010.

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