

SAP Business Suite on System x and BladeCenter

Leading performance and extreme scalability for SAP applications

Businesses running SAP Business Suite—or considering upgrading to it—are looking for an optimal IT infrastructure that can help them efficiently manage their enterprise, reduce IT operational costs and handle increasing workloads. System x® servers and BladeCenter® servers with Intel Xeon processors and System Storage® can provide a comprehensive foundation for your SAP environment and help deliver a superior return on investment (ROI). They enable you to easily virtualize your SAP implementation so you can consolidate servers and storage, scale efficiently and reduce costs while continuing to benefit from high levels of performance, security and reliability.

SAP Business Suite helps manage critical business processes

SAP Business Suite is the one of the most comprehensive families of adaptive business applications, providing industry-specific functionality for enterprises. Helping you manage your most critical business processes, SAP Business Suite applications form a tightly integrated set of business applications that adds value across your organization and external value chain. SAP Business Suite applications increase visibility across departments and business silos—improving your ability to make clear business decisions and eliminating bottlenecks.

System x helps companies get more out of SAP systems

The latest System x servers provide a strong foundation for creating a virtualized environment for SAP applications. Organizations can adopt VMware, Microsoft, Xen or KVM virtualization solutions to consolidate their Microsoft Windows

or Linux workloads on fewer physical servers, enhance business flexibility and facilitate rapid growth without having to add hardware. Pretested virtualization configurations help simplify virtual server deployments.

System x servers based on the Intel Xeon processor E7 family offer 20x more performance than single-core servers,¹ enabling greater responsiveness and reliability from SAP applications. These servers also offer extraordinary reliability with Intel Advanced Reliability Technology to keep servers running strong. The Intel Xeon Processor E7 Family supports up to ten cores per each processor and can be scaled to 40 cores and 80 threads with the use of Intel Hyper-Threading Technology. In addition, the Intel Xeon processor E7 family has over 20 new RAS features embedded within the product including new energy efficiency technology (Intel Intelligent Power Technology (IPT)) leveraged from Intel's Efficient Performance product line. IPT automatically shifts the CPU and memory into the lowest available power state, while delivering the performance you need.

In addition, the large memory capacity of eX5™ technology-based System x servers enables them to host significantly more VMs than competing servers. Virtualization software often calculates licensing costs based on processor counts, so the result can be dramatic cost savings. For example, the two-socket x3690 X5 can accommodate 32 memory modules in its base configuration—nearly twice as many as a competing two-socket server. As a result, this server can host 60 percent more virtual machines (VMs) than the competing server at the same licensing cost.² And with Intel Xeon processor E7 family, businesses can see up to 275 percent better virtual machine performance than previous generation processors.³



Adding MAX5 memory expansion to these System x servers significantly increases the system's memory capacity by supporting 32 additional memory modules per system. MAX5 can help cut costs dramatically in virtualized environments. By using the two-socket x3690 X5 server, for example, instead of the competing four-socket system needed to reach the same memory capacity, organizations can save 50 percent of the virtualization licensing costs.

eXFlash™ storage is based on solid-state drives (SSDs) and can maximize storage performance, reliability and rack space while minimizing power consumption. Compared with traditional hard disk drive (HDD) storage solutions, eXFlash storage delivers 99 percent greater performance per watt for database-type workloads running on local disks while maximizing uptime with 64x better reliability.⁴

System x solutions are available in several configurations to support your SAP Business Suite implementation.



System x3650 M4

The System x3650 M4 provides outstanding performance for your mission-critical applications. Its energy-efficient design supports more cores, memory and data capacity in a scalable 2U package that's easy to service and manage. With more computing power per watt and the latest Intel Xeon processors E5 family, you can reduce costs while maintaining speed and availability. The x3650 M3 produces SAP on Windows two-socket performance of 42,880 SAPS.⁵

System x3690 X5

Designed for density and ease of implementation, the System x3690 X5, based on the Intel Xeon E7 processor family, provides performance, memory capacity and virtualization capabilities ideal for consolidating numerous older servers in an all-new dual-socket rack-mount server design that provides density for virtualization. MAX5 support allows you to significantly scale up the number and size of virtual machines that can be run simultaneously. The large memory capacity also makes the x3690 X5 well-suited for running smaller-sized databases. Preconfigured x3690 X5 servers are available for customers planning to run SAP HANA™, virtualization, and database workloads. The x3690 X5 produces leading SAP on Windows two-socket performance with 6,846 SAP SD 2-tier benchmark users and 37,370 SAPS.⁵ Principled Technologies demonstrated that the x3690 X5 with MAX5 successfully supports high density virtualization supporting 320 VMs with vSphere 4.0.¹⁰



System x3850 X5 and x3950 X5

System x3850 X5 servers, based on the Intel Xeon E7 processor family, can help your company make the most out of SAP Business Suite applications by delivering outstanding performance. Scalable from four sockets and 64 DIMMs (2 TB)⁹ to eight sockets and a leading 192 DIMMs (6 TB),⁹ these System x servers are equipped with processors from the Intel Xeon processor E7 family, which combine exceptional raw compute power with increased memory bandwidth and support for significantly greater memory capacity to deliver performance superior to previous-generation processors. The x3850 X5 system with MAX5 memory expansion and eXFlash integrated solid state disk makes the x3850 X5 well-suited for running enterprise scale-up databases in your SAP Business Suite environment and can virtualize and consolidate more SAP applications. Preconfigured x3950 X5 servers are available for customers planning to run SAP HANA, virtualization and database workloads. In benchmark testing, these servers deliver over three times better SAP performance than previous-generation systems, enabling organizations to support up to three times the SAP users per server. The x3850 X5 produces leading SAP on Windows four-socket and eight-socket performance with 14,000 SAP SD 2-tier benchmark users and 76,900 SAPS in a four-socket

configuration and 25,500 SD 2-tier benchmark users and 140,720 SAPS in a eight-socket configuration.⁶ A study by Solitaire Interglobal shows that eX5 systems eX5 virtualization capabilities yield improved agility when compared to unvirtualized environments and that agility advantage increases as the size of the project increases yielding faster time to market for SAP initiatives. In addition, eX5 Systems were shown to lower overall expense based on lower costs for efficient deployment, lower overall acquisition costs, including licensing, capital expenses and staffing.¹¹

BladeCenter uses less energy, offers more choices and control

BladeCenter servers are helping companies running SAP applications sweep complexity aside with an innovative, open design that offers an alternative to sprawling racks and overheated server rooms. BladeCenter integrates SAP application and database servers, storage and networking to help you reduce complexity, simplify IT management and reduce power and cooling costs. BladeCenter systems help improve energy efficiency to reduce costs and decrease the environmental impact of IT. advanced cooling technology optimizes the airflow through the chassis, directing cool air to the areas that need it and blocking hot air from entering critical areas. Active Energy Manager™ delivers advanced control to monitor and even cap power consumption and helps to decrease cooling costs.

With BladeCenter, enterprises can consolidate SAP Business Suite instances into far fewer chassis. Less hardware means less to manage, so enterprises can more easily control and configure SAP instances as a result. The power and flexibility of BladeCenter can be harnessed to consolidate multiple business-critical applications, including SAP, to a single chassis, thereby reducing hardware costs and maintenance time. BladeCenter Open Fabric Manager simplifies the management of blade server infrastructures. It works with chassis to preassign network and storage addresses in the chassis before installation and automatically moves network addresses from failed blades to those with available capacity.

BladeCenter server product lines include:

BladeCenter HS23

Do more in the data center you own with BladeCenter HS23. This efficient server helps you manage big data and is ideal for a wide variety of workloads including virtualization and SAP cloud infrastructure solutions. The BladeCenter HS23 provides outstanding performance with the latest Intel Xeon processor E5-2600 product family and 1600 MHz memory. Integrated Virtual Fabric 10 Gigabit Ethernet (GbE) gains flexibility and easy scalability for SAP application workloads. The HS23 offers sixteen DIMM slots, supporting up to 256 GB of DDR3 memory providing the capability to support more and larger virtual machines per blade compared to previous generations.

BladeCenter HS23e

The BladeCenter HS23E offers you flexible configuration options and provides you the energy efficiency and density you need. Combine the twelve DIMM slots supporting up to 192 GB of DDR3 memory at 1600 MHz, with the integrated 1 Gigabit Ethernet (GbE) onboard for flexibility with value for your SAP application workloads. The HS23E offers value for performance, with support for the new 8-core Intel Xeon processor E5-2400 product family that processes up to 16 simultaneous threads and 1600 MHz memory. It is ideal for SAP application workloads.

BladeCenter HS22

The BladeCenter HS22 offers flexible options to support a broad range of SAP workloads, including virtualized environments. Along with intuitive UEFI-based tools, the HS22 can be customized and deployed quickly while best-in-class reliability features help keep you up and running.

The HS22 provides outstanding performance with processors from the Intel Xeon processor 5600 series. These processors feature intelligent performance that dynamically adjusts processing and energy use for each workload. By delivering high memory bandwidth and support for large memory capacity, these processors enable the HS22 to run applications up to twice as fast as previous-generation blades.

BladeCenter HS22V

The BladeCenter HS22V with the Intel Xeon processor 5600 series has been designed specifically for use in virtualized environments. With 18 DIMM slots, supporting up to 288 GB of DDR3 memory, the HS22V allows you to fit more and larger virtual machines on each blade. Durable solid-state drives and hardware RAID-0 and RAID-1 provide outstanding reliability when virtualizing multiple SAP workloads on a single blade. An embedded hypervisor enables easy deployment of industry-leading third-party virtualization solutions. Combine the HS22V with Virtual Fabric for BladeCenter for a flexible, easy, fast and reliable I/O solution that helps reduce cost and complexity.

The HS22V provides outstanding SAP performance with support for the latest Intel Xeon processors, support for maximum memory capacity, fast memory throughput and high-speed I/O. A flexible, energy-smart design supports up to two 1.8 in. solid-state drives that consume significantly less power than traditional spinning hard-disk drives. New enhanced power management capabilities assist in power planning for the data center while Active Energy Manager provides tracking, monitoring and measuring of energy usage.

BladeCenter HX5

Built on the Intel Xeon processor E7 family, BladeCenter HX5 combines exceptional raw compute power with increased memory bandwidth and support for significantly greater memory capacity to deliver better performance and scalability than previous-generation processors. The capability to support SMP configurations of up to four processors enables organizations to support more SAP users, larger database workloads and further consolidation of SAP environments.

With support for more memory modules than previous blades, BladeCenter HX5 servers enable IT administrators to deploy large-scale memory capacity to enhance application performance or host more VMs and SAP instances than before. Together, the compute performance and support for large-scale memory capacity offered by the Intel Xeon processor E7 family produce tangible results. The BladeCenter HX5 can deliver 20 times the performance of previous-generation four-socket single-core servers.⁷ In benchmark testing, the BladeCenter HX5 servers deliver up to three times better SAP performance than previous-generation blades, enabling organizations to support over three times the SAP users per server when compared to previous-generation blade servers.⁸

BladeCenter HX5 servers also provide an excellent foundation for highly consolidated virtual environments running SAP software. Because virtualization software solutions often calculate licensing costs based on processor counts, the result can be dramatic cost savings. SAP workloads can be easily virtualized through VMware, KVM, Xen or Microsoft Hyper-V to support increased hardware density and reduced hardware costs. Plus, MAX5 memory expansion further extends the memory scalability of the HX5 and enables support for 24 additional memory DIMMs in a two-socket configuration. Adding MAX5 memory expansion to the HX5 server more than doubles the system's memory capacity to 40 DIMMs, helping organizations save 50 percent of the virtualization licensing costs over competing blades. The additional memory and processor scalability enables the HX5 to support more virtual machines and SAP application instances.

FlexNode partitioning offers great flexibility for customers running SAP applications. These servers can help organizations get up and running up to two times faster than with previous systems. Administrators can qualify a single platform for two- and four-socket server needs. In addition, they can later address peak SAP application workload demands and repurpose systems using remote partitioning capabilities and increase processing capabilities of production SAP systems.

IBM System Storage enables data sharing and enterprise-wide collaboration

IBM System Storage solutions help you create a resilient, cost-effective and flexible infrastructure for securely storing information and mitigating business risks for SAP Business Suite environments. The robust IBM System Storage DS8000 subsystem supports continuous operations for large-enterprise and mission-critical workloads. Lenovo has combined best-of-breed development with leading 6 Gbps host interface and drive technology in the IBM System Storage DS3500 Express. With its simple, efficient and flexible approach to storage, the DS3500 delivers superior price-to-performance ratios, functionality, scalability and ease of use for the entry-level storage user. Storwize® V7000 is an integrated, compact, modular design that's offered at a competitive, midrange price. It also allows you to virtualize and reuse existing disk systems, supporting a greater potential return on investment (ROI). The IBM XIV® Storage System gives enterprises a fully virtualized

grid architecture designed to deliver breakthrough ease of management and dramatic efficiencies in capacity, power and space. IBM System Storage XIV is designed to be scalable in all key aspects, including capacity, interfaces, cache, CPU power and internal bandwidth. IBM Tivoli® Storage Manager software provides high-capacity storage backup with secure encryption technologies. SAN Volume Controller virtualization solutions help boost productivity by creating a single point of control, administration and security for consolidating diverse storage resources into a single reservoir of capacity. IBM System Storage network-attached storage (NAS) N series products—including N5000, N6000 and N7000 series NAS systems—are designed to deliver high-end enterprise storage and data management value with mid-range affordability.

Integrated support for leading databases in SAP Business Suite environments

Today's knowledge workers require continuous and immediate access to information. Lenovo works closely with leading database vendors to optimize System x, BladeCenter and System Storage offerings for the reliable and economical hosting of data from the smallest department-level databases to massive enterprise data warehouses—helping to create a dynamic, scalable infrastructure that enables you to respond quickly to changing business demands. System x and BladeCenter servers support databases from IBM, Microsoft, Oracle and SAP, including the SAP MaxDB database.

SAP HANA, delivered on eX5 enterprise servers helps transform the enterprise by addressing current needs while delivering the robust scalability and performance needed to accommodate growth. SAP HANA running on powerful eX5 enterprise servers combines the speed and efficiency of in-memory processing with the ability to analyze massive amounts of business data—enabling companies to eliminate barriers between real-time events and real-time business decisions. SAP HANA leverages multiple years of co-innovation between Intel and SAP to optimize HANA to run exclusively on the Intel Xeon E7 processor family. IBM DB2 is SAP HANA-ready and can efficiently replicate data into SAP HANA in near-real time using Sybase Replication Server. SAP ERP systems based on IBM DB2 can seamlessly support demanding business needs for real-time reporting based on the latest available data with unmatched administrative effort.

Servers—the right platform for SAP Business Suite

SAP Business Suite, when combined with System x and BladeCenter servers running Intel Xeon processors, provides a comprehensive technology foundation that can help your enterprise innovate, adapt and compete. System x and BladeCenter servers deliver the power, availability and scalability you need to make the most of your SAP infrastructure and enhance your company's speed and flexibility—and, ultimately, its competitive edge.

Why System x

System x is the leading provider of x86 systems for the data center. The portfolio includes rack, tower, blade, dense and converged systems, and supports enterprise class performance, reliability and security. System x also offers a full range of networking, storage, software and solutions, and comprehensive services supporting business needs throughout the IT lifecycle.

For more information

To learn more about the iFlow Director, contact your Business Partner or visit lenovo.com/thinkserver

¹ Claim: Intel Xeon processor 7500 series offers up to 20x greater performance than single core servers. See: www.intel.com/Assets/pt_BR/PDF/prodbrief/323499.pdf

² VMware Enterprise Plus cost estimated at US\$3,500/socket—Memory constrained before processors are fully utilized. 2S VMware Enterprise Plus w/ 18 DIMMs: 175 virtual machines vs. x3690 w/ 32 DIMMs: 281 virtual machines.

³ Based on published VMware VMmark results. For more information, visit vmware.com/products/vmmark/results.html

⁴ To operate a 240,000 IOPs database, a client would need 960 spinning disks (300 IOPs/disk). These would be deployed in 80 JBODs (12 disks each). These would require two entry servers (40 JBODs per server using a ServeRAID adapter with cascading feature).

⁵ Results referenced are current as of September 2011. For full system configuration information and the latest SAP benchmark results, visit sap.com/benchmark

⁶ Results referenced are current as of September 2011. For full system configuration information and the latest SAP benchmark results, visit www.sap.com/benchmark

⁷ Intel performance comparison using SPECjbb2005* business operations per second between five-year-old single-core Intel Xeon processor 3.33 GHz-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

⁸ Performance estimates based on System x3850 X5 benchmark results. BladeCenter HX5 uses the same processor and chipset technology as System x3850 X5.

⁹ When using the system configured with MAX5 and 32GB memory DIMMs

¹⁰ System x Server with MAX5: High Virtualization Density with Confidence, July 2011 Principled Technologies <http://www.public.dhe.ibm.com/common/ssi/ecm/en/xsw03112usen/XSW03112USEN.PDF>

¹¹ Solitaire Interglobal Ltd, 2010, SAP Performance on IBM eX5® Systems <http://www.public.dhe.ibm.com/common/ssi/ecm/en/xsw03090usen/XSW03090USEN.PDF>

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