System x3850 X6

Innovation for business advantage

Today, mission-critical applications are being called upon to do more as businesses expand access through new mobile and cloud deployments. Delivering the right answer at the right time means having ready access to actionable information. IT solutions must be able to easily scale performance, manage large masses of data and reliably make information available in real-time.

While the volume of data and transactions continues to grow exponentially, businesses remain constrained by a finite set of capital and operational resources. The new System x3850 X6 incorporates the sixth generation of enterprise x Architecture™ to help deliver better, more efficient business results.

X6 platforms can produce 100 percent faster compute performance than previous-generation systems.[3] The X6 portfolio increases virtualization density and decreases infrastructure costs and complexity. This enables you to design faster analytics engines, rein in IT sprawl and deliver information with high reliability. X6 servers are fast, agile and resilient.

Fast application performance

The x3850 X6 delivers fast application performance thanks to an innovative scalable design and new storage technology that is designed to optimize overall solution performance. The x3850 X6 is the first server designed and optimized for new eXFlash™ memory-channel storage. With eXFlash DIMM storage, it can deliver up to 12.8 TB of ultra-low latency flash storage—unmatched storage performance in an x86 server. With the new Intel Xeon E7-8800 v2 and E7-4800 v2 processors, the x3850 X6 can deliver up to 6.0 TB of memory and 60 cores of processing power. Armed with these capabilities,

you can host essential business-critical applications, implement large virtual machines or run sizeable in-memory databases without compromises in performance, capacity or scalability.

This business-critical, enterprise-class server leverages unique eXFlash memory-channel storage to deliver an exceptional level of performance and value to clients. eXFlash memory-channel storage offers significantly lower write latency than any other flash offering on the market—less than 5 microseconds write latency.[4] As more eXFlash DIMMs are added, IOPS increase, yet latency does not increase.

With eXFlash memory-channel storage, you gain consistent performance even if you are running mixed workloads:

• The on-memory-bus design alleviates potential I/O contention
• Databases from 200 GB to 12.8 TB have deterministic response times and consistent performance

eXFlash memory-channel storage gives you the confidence to support several times more virtual machines per server without degradation of service, and they are ideal for large databases and highly virtualized systems.

eXFlash memory channel storage represents a highly scalable form factor that provides greater performance and granular capacity growth. eXFlash DIMMs:

• Leverage universal DIMM slots, making them ideal for all server types including Flex System™
• Are interoperable with standard DDR3 RDIMMs
• Support 200 GB to 12.8 TB of memory-channel storage
• Deliver performance that scales with additional modules while keeping latency consistently low.

The x3850 X6 is the first server designed and optimized for eXFlash memory-channel storage, and it can deliver unmatched storage performance and capacity in an x86 server.

eXFlash memory-channel storage contributes to lower licensing costs and also helps reduce storage costs. Using internal eXFlash storage reduces or eliminates the need for SAN/NAS storage, and less SAN/NAS hardware means fewer software licenses.

FlashCache Storage Accelerator™ is an advanced intelligent-caching software that enables eXFlash memory-channel storage and hard disk drive storage to transparently work together to maximize performance and minimize cost.

Agile design characteristics

Change is inevitable and managing it is a must in order to achieve or maintain market leadership. Changes in IT infrastructure typically drive complexity and cost. Managing evolving technology, divergent customer needs and fluctuating costs requires an agile approach to platform design. Having flexible systems to create fit-for-purpose solutions is essential.

The unique, adaptive modular rack design of the new x3850 X6 delivers agility, enabling you to design a solution that meets your needs. At the same time, you can realize infrastructure

cost savings by hosting multiple generations of technology in a single platform—without compromising performance or capacity. With X6 platforms:

- You can configure the server to fit the unique requirements of your applications and workloads; you can add, modify or upgrade X6 platforms easily with selectable modular book components. There are three types of X6 books, one for each of the major subsystems—storage, compute and I/O.
- You can scale capacity and performance from 4-socket to 8-socket, to deliver twice the performance for growing applications without creating IT sprawl.
- You can use FastSetUp™ software for automated provisioning of a cluster of servers; realize time-to-value in minutes rather than days.
- You get agile system design that provides the ability to host multiple generations of technology in a single server.[1]

Resilient enterprise platforms

The growth of new applications has ratcheted database processing and business analytics to the top of the list of crucial x86 workloads for enterprise businesses. These environments demand continuous uptime in order to rapidly achieve the most valuable result—massive amounts of business-critical data. The enterprise platforms that host these workloads must deliver data at a high velocity—with continuous availability.

Through differentiated X6 self-healing technology, the x3850 X6 maximizes uptime by proactively identifying potential failures and transparently taking necessary corrective actions. These unique System x® features include:

- Advanced Page Retire—proactively protects applications from corrupt pages in memory, crucial for scaling memory to terabytes.
- Processor High Availability—allows the platform to maintain access to networking and storage and server management during a processor failure

- Rolling Firmware Update Upward Integration Module—enables concurrent updating of the system firmware with no impact on application performance or availability
- RAS Upward Integration Module—enables the creation and management of policies to maintain high availability of virtual machines
- x3850 X6 modular design—reduces service time by enabling quick easy replacement of failed components.

These built-in technologies drive the outstanding system availability and uninterrupted application performance needed to host business-critical applications.

Fast. Agile. Resilient.

A fast, agile and resilient technology infrastructure makes meeting the needs of your enterprise easier. X6 platforms help you reduce costs and complexity and deliver the breakthrough performance and capacity your applications demand. X6 servers are the result of more than 15 years of x Architecture investment and innovation in industry-standard servers. X6 platforms are based on a 100-year history of market-leading technology designed to solve customers' most pressing business problems.

Specifications

Form factor/height	Rack/4U
Processor (max)	Up to four Intel Xeon E7-4800/8800 v2 processor families up to 3.2 GHz, up to 1800 MHz memory access, 15 cores per processor
Cache (max)	Up to 37.5 MB
Memory (max)	Up to 6 TB, 96 DIMM slots supporting 64 GB LRDIMMs
Ultra-low latency flash storage	Up to 12.8 TB, 32 x 400 GB eXFlash DIMMs
Expansion slots	Up to 11 PCIe; Gen3 (up to 11), Gen 2 (up to 2), up to five x16 slots; up to six full-length, full-height
Disk bays (total/hot-swap)	Up to eight 2.5-inch Serial Attached SCSI (SAS) hard disk drives (HDDs) or SAS solid state drives (SSDs); or up to sixteen 1.8-inch eXFlash SSDs
Maximum internal storage	Up to 9.6 TB (8 x 2.5-inch SAS/SATA HDDs) or up to 12.8 TB (8 x 2.5-inch SSDs) or 6.4 TB (16 x 1.8-inch eXFlash SSDs)
Network interface	One ML2 socket; ML2 card choices include: 4 x 1 GbE copper or 2 x 10 GbE SFP+ or 2 x 10 GbE 10BaseT; Dedicated 1 GbE on-board management port
Power supply (std/max)	Up to four common 1400 W or 900 W AC or 4 x 750 W DC
Hot-swap components	Half-length I/O Books, Full-length I/O Books, power supplies, fans, hard disk drives, SSDs
RAID support	RAID-0, -1, optional RAID-5, -6
Systems management	Alert on LAN 2, automatic server restart, IBM Systems Director, ServerGuide®, IMM2, light path diagnostics (independently powered), Wake on LAN, Dynamic System Analysis, Predictive Failure Analysis on storage, processors, adapter slots, VRMs, fans, power supplies and memory
Operating systems supported	Microsoft Windows Server, Red Hat Enterprise Linux Server, SUSE Linux Enterprise Server, VMware vSphere Hypervisor
Limited warranty	3-year customer replaceable unit and onsite service, next business day 9×5, service upgrades available

Options

32GB (1x32GB, 4Rx4, 1.35V)PC3L-12800 CL11 ECC DDR3 1600MHz LP LRDIMM	IBM 1.6TB SAS 2.5" MLC G3HS Enterprise SSD	IBM eXFlash 400GB DDR3 Storage DIMM
46W0676	00AJ222	00FE005
Add more memory to help improve the performance of all your workloads	High-performance, dense flash to accelerate applications	Provides the lowest write latency while maintaining consistent high IOPS

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 System x3850 X6, contact your Lenovo representative or Business Partner.

[1] When a newer generation of processor and memory technology becomes available, Compute Books can be replaced with newer ones. (All Compute Books must use matching technology.)

[3] 100 percent performance improvement is based on preliminary results of SPECint*_rate_base2006, SPECfp*_rate_base2006, and TPC-E benchmarks, plus performance gains from eXFlash DIMM storage. SPEC and TPC benchmark results will be available at www.spec.org and www.tpc.org, respectively, after 2/18/14. Configurations: 4-socket x3850 X6 server using Intel Xeon processor E7-4890 v2 vs. 4-socket server using the previous top-of-the-line E7-4870 (v1).

[4] Laboratory testing shows eXFlash DIMMs can deliver 3 times lower latency (<5 microsecond) than PCIe based flash (15-19us).