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## Highlights

- Fast application performance means immediate access to actionable information
  - Agile system design provides the ability to upgrade processor and memory technology to the next generation,<sup>1</sup> reducing acquisition costs by as much as 28 percent<sup>2</sup>
  - Resilient platforms maximize application uptime and promote easy integration in virtual environments
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# IBM 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 IBM® System x3850 X6 incorporates the sixth generation of IBM enterprise X-Architecture® (EXA) to help deliver better, more efficient business results.

X6 platforms can produce 100 percent faster compute performance than previous-generation systems.<sup>3</sup> 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 IBM 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 IBM 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.<sup>4</sup> As more eXFlash DIMMs are added, IOPS increase, yet latency does not increase.

With IBM 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 IBM Flex System®
- Are interoperable with standard DDR3 RDIMMs



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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.

- Support 200 GB to 12.8 TB of memory-channel storage
- Deliver performance that scales with additional modules while keeping latency consistently low.

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.

IBM FlashCache Storage Accelerator is an advanced intelligent-caching software that enables IBM 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.

**IBM Systems and Technology**  
Data Sheet

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 IBM Fast Setup 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.<sup>1</sup>

**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.

**IBM System x3850 X6 at a glance**

<b>Form factor/height</b>	Rack/4U
<b>Processor</b> (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
<b>Cache</b> (max)	Up to 37.5 MB
<b>Memory</b> (max)	Up to 6 TB, 96 DIMM slots supporting 64 GB LRDIMMs
<b>Ultra-low latency flash storage</b>	Up to 12.8 TB, 32 x 400 GB eXFlash DIMMs
<b>Expansion slots</b>	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
<b>Disk bays</b> (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
<b>Maximum internal storage</b>	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)
<b>Network interface</b>	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
<b>Power supply</b> (std/max)	Up to four common 1400 W or 900 W AC or 4 x 750 W DC
<b>Hot-swap components</b>	Half-length I/O Books, Full-length I/O Books, power supplies, fans, hard disk drives, SSDs
<b>RAID support</b>	RAID-0, -1, optional RAID-5, -6
<b>Systems management</b>	Alert on LAN 2, automatic server restart, IBM Systems Director, IBM 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
<b>Operating systems supported</b>	Microsoft Windows Server, Red Hat Enterprise Linux Server, SUSE Linux Enterprise Server, VMware vSphere Hypervisor
<b>Limited warranty</b>	3-year customer replaceable unit and onsite service, next business day 9x5, service upgrades available

Through differentiated X6 self-healing technology, the x3850 X6 maximizes uptime by proactively identifying potential failures and transparently taking necessary corrective actions. These unique IBM 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 EXA investment and innovation in industry-standard servers. X6 platforms are backed by a 100-year history of market-leading IBM technology designed to solve customers' most pressing business problems.

### For more information

To learn more about IBM System x3850 X6, visit: [ibm.com/systems/x/hardware/enterprise/x3850x6/index.html](http://ibm.com/systems/x/hardware/enterprise/x3850x6/index.html) or contact your IBM representative or IBM Business Partner.



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<sup>1</sup> 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.)

<sup>2</sup> Up to 28 percent savings in acquisition cost is based on a comparison of an x3850 X6 (using the modular design) vs. a traditional rack design with no modularity. Based on projected Q1 2014 pricing of x3850 X6 configuration with 2 Compute Books, Storage Book with 1.2TB SAS, dual 1400W power supplies, 10GbE SFP+ networking, and no optional I/O Books.

<sup>3</sup> 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](http://www.spec.org) and [www.tpc.org](http://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).

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



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