

System x Solution for Microsoft Hyper-V on X6

Innovative virtualized performance and reliability

The valuable data your business owns can give you a competitive advantage. But you will only realize that data's full power if your users can analyze and access that information where, when and how they need it. This available-anywhere access to competitive knowledge is one reason why a 2013 global CIO survey identified virtualized business intelligence as a top priority.

Providing your users with virtualized access to business intelligence can help your business realize the power within its data. But that virtualization can increase demands on your IT systems, infrastructure planning and IT staff. Since your performance is defined by how well you master technical priorities to deliver tangible business benefits, you must find ways to simultaneously reduce this pressure while capitalizing on the insights hidden in your business data.

Breakthrough technology from System x can provide that virtualized power—even with capital and operational resource constraints. Powered by X6 technology, the System x® Solution for Microsoft Hyper-V on X6 provides outstanding server virtualization performance for secure, anywhere and anytime access to each user's individualized desktop.

Combining standardized hardware, software and memory advancements on the server, and tested to work with the built-in capabilities of Microsoft Hyper-V, this virtualization solution is housed on the latest generation of Enterprise X-Architecture™, and is built to be fast, agile and resilient. The result is an ability to meet your users' data access needs without negatively impacting your IT organization.

Fast server virtualization

Successfully competing in today's market requires anywhere, anytime access to business intelligence. To derive insight from large data volumes, you need a powerful system capable of providing robust virtualized capabilities to desktops, laptops, smartphones, tablets and thin clients.

The System x Solution for Microsoft Hyper-V on X6 provides virtualized power for all these devices. Built on Intel Xeon E7-4800/8800 v2 processors, System x enterprise servers with X6 technology provide faster virtualized performance through better bandwidth and lower latencies. Integrating an innovative design that locates up to 12 TB of ultra-low latency eXFlash

memory-channel storage close to the processor, with I/O operations that have been relocated for increased performance, System x X6 enterprise servers provide up to:

- 100 percent faster performance than previous-generation systems.¹
- Three times the memory capacity of previous-generation systems.²
- One-third the write latency of PCIe-based flash.³

Of course, high performance hardware is only part of the equation. Running Microsoft Hyper-V on the System x X6 enterprise servers gives you greatly expanded support for host processors and memory—which results in support for up to 8,000 virtual machines (VMs). Microsoft Hyper-V quality of service (QoS) provides you the ability to specify the minimum bandwidth available to a VM or port. Finally, because of integration with Windows Server, users experience a rich, “local-like” experience that speeds their ability to log on and begin productively using their virtual desktop.

Hardware built for performance

100% faster

X6 servers can produce
TWICE the performance of
previous-generation systems.¹

Agile system design

Faster virtualized performance is certainly crucial to maintaining your competitive edge. But it is a business reality that you will undoubtedly require more performance capabilities next year than you do now. The System x Solution for Microsoft Hyper-V on X6 meets your current and your future demands.

Both pieces of the solution—System x X6 enterprise servers and Microsoft Hyper-V—provide the performance you need now along with built-in scalability to handle your future needs. For example, the System x X6 enterprise server couples a unique rack design that incorporates modular component books along with FastSetup™. This approach allows you to:

- Reduce acquisition costs without compromising capacity or performance.
- Speed server deployment from days to minutes.
- Support three generations of processor technology within the same chassis.
- Scale from 2 sockets and 48 DIMMs up to 8 sockets and 192 DIMMs.
- Swap components quickly, including compute, storage and full-length and half-length I/O books as well as fans and power supplies.

Along with the server's ability to scale up to 240 processor threads and 12 TB of RAM, Microsoft Hyper-V includes support for simultaneous live migrations with the ability to move multiple VMs at the same time. This enables a more agile, responsive infrastructure and a more optimal use of network bandwidth during migration.

In addition, Microsoft Hyper-V also comes with live storage migration. This allows a system administrator to move virtual disk drives that are attached to a running VM. The result is no-downtime virtual disk drive transfer for system maintenance, storage upgrading or load redistribution.

Resilient enterprise platform

Virtualized speed and scalability are vital to maintaining a market edge. But because unanticipated or excessive system downtime can neutralize those performance and agility advantages, system dependability is equally important.

The System x Solution for Microsoft Hyper-V on X6 is built on the proven reliability of the System x platform. As an example, advanced memory recovery capabilities monitor and identify fail-prone memory pages and quarantine them to avoid outages.

Also, advanced core recovery capabilities protect the system against consumed errors that could reach critical applications. Modules for the X6 platform integrate predictive failure analysis (PFA) and microcode management, as well as diagnostics, into standard hypervisors.

When coupled with Hyper-V Replica, Microsoft Hyper-V's built-in asynchronous, application-consistent VM replication and VM failover prioritization, the result is superior system availability and

dependability. By integrating these RAS technologies into a comprehensive solution, the System x Solution for Microsoft Hyper-V on X6 helps you:

- Perform maintenance and serviceability faster due to the modular design.
- Eliminate restarts and ease serviceability by minimizing the number of system “touches.”
- Reduce downtime due to self healing architectures for CPU failures.

Fast. Agile. Resilient.

It is no secret your success depends on reliable, available anywhere access to business intelligence. You must provide those capabilities without detrimentally impacting your system administrators or your bottom line. That makes your virtualization decision crucial.

The System x Solution for Microsoft Hyper-V on X6 provides the speed, scalability and reliability you need. Featuring System x X6 enterprise servers powered by Intel Xeon processors, and incorporating next-generation X6 technology, the solution's hardware has the performance to meet your needs and the dependability you can count on. Microsoft Hyper-V takes advantage of that hardware to provide built-in, easy-to-administer virtualized performance that helps users increase productivity right from login.

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 System x Solution for Microsoft Hyper-V on X6, contact your Business Partner or visit lenovo.com/thinkserver

- ¹ 100 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).
- ² 6TB maximum memory vs. 2TB or less for previous-generation competitive 4-socket servers.
- ³ Laboratory testing shows eXFlash DIMMs can deliver 3 times lower latency (<5 μ s) than PCIe based flash (15-19 μ s).

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