Solution Brief

SAP HANA with VMware vSphere on System x for Production Environments

Deliver fast, agile, and resilient performance for virtualized SAP HANA production environments

Today, IT is called upon to do more than ever. No longer just responsible for running an efficient and reliable IT department, CIOs are increasingly responsible for enabling the new products, services and business processes that will drive future competitive advantage for the entire business. In fact, a global survey of CIOs confirmed that business intelligence/ analytics, cloud and enterprise resource planning (ERP) were three of the top five CIO technology investment priorities— with business intelligence/analytics leading the way.[1]

To succeed in this demanding environment, you must have ready access to actionable information. And as data continues to grow exponentially, your environment must be able to scale performance, manage big data efficiently and operate reliably without adversely impacting virtualized loads. This requires more than just servers, storage, hardware and software tools—it calls for an all-encompassing solution that meets these increased demands in a holistic, solution-based manner.

Together, VMware®, SAP® and Lenovo® have developed a comprehensive solution that delivers on the promise of IT as a strategic business resource, and will help you compete more effectively in today's business environment.

The four-socket System x3850 X6 Enterprise Server: Workload-optimized for SAP HANA and VMware vSphere

A Complete, Integrated Solution for Real-Time Data Insights

The SAP HANA® platform is an innovative alternative to traditional data warehouse and business intelligence (BI) solutions. SAP HANA converges data processing with real-time application services so businesses can gain significant benefits by combining online transaction processing (OLTP) and online analytical processing (OLAP) processes. This revolutionary technology offers the opportunity to obtain value from exploding data volumes, even with limited capital and operational resources. In addition, SAP HANA supports powerful complementary features, including business process and application libraries, and predictive, geo-spatial and text analytics.

VMware vSphere®, a foundational component of VMware vCloud Suite®, on System x® enterprise servers gives you the agility, efficiency and control you are looking for as you take the next steps toward a software-defined enterprise architecture. You can transform and virtualize your entire mission-critical SAP landscape—including SAP HANA production environments—using VMware vSphere on System x servers, with support from SAP and VMware.

Virtualizing SAP HANA on System x X6 enterprise servers, built on the newest generation of enterprise X ARCHITECTURE, improves both your business intelligence and your bottom line. These servers integrate hardware, software and memory advancements, making them faster, more agile, and more resilient to support your virtualized SAP HANA environment.

By combining the power of SAP HANA with vSphere on X6 servers, you can achieve lower total cost of ownership (TCO), faster time-to-value and better service levels for SAP HANA production environments with full support.[2] This allows you to leverage SAP HANA quickly, in the most flexible, cost-effective way, as well as leverage advanced features like VMware vSphere® vMotion®, VMware vSphere® Distributed Resource Scheduler™ (DRS), VMware vSphere® High Availability (HA) and Disaster Recovery (DR) using Site Recovery Manager, required for virtualizing mission-critical applications.

Lower Total Cost of Ownership

Trimming unnecessary IT costs helps you stay within budget and apply more resources to the initiatives that really move the needle. The SAP HANA with vSphere on System x solution delivers hardware and workflow efficiencies that reduce your TCO for long-term budget advantages.

VMware vSphere helps you simplify and streamline administration to reduce costs. The integration of virtualized IT services with analytics-based, highly automated operations management, along with the ability to unify and manage SAP HANA applications with the rest of the virtualized data center allows you to reduce the need for specialized IT staff. This increase in efficiency can lower operating expenses (OpEx) by 56 percent.[3] At the same time, improved utilization of existing infrastructure, along with simplified operations management, drive capital expenditure (CapEx) reduction of up to 49 percent.[4] Enabling scenario-based data center capacity planning allows you to grow your environment in a sustainable fashion, keeping long-term costs down.

Adding to the savings, X6 servers incorporate simplified scalability that provides the performance you need now, in a pay-as-you-grow design. The System x X6 enterprise server with next-generation technology also has a unique rack design that incorporates modular component books. This allows you to further reduce your TCO by:

- Achieving higher utilization and lower acquisition costs through improved capacity, enterprise-class reliability and performance
- Scaling from two sockets and 48 DIMMs up to eight sockets and 192 DIMMs[5]
- Swapping components quickly, including compute, storage, and full-length and half-length I/O books, as well as fans and power supplies

In addition, System x X6 enterprise servers include Intel® Xeon® E7 processors. With up to 15 cores in each processor, the X6 servers can provide up to 120 cores and 240 threads using Intel® Hyper-Threading Technology. This means you can achieve extreme scaling to run multiple SAP HANA workloads, enabling you to reach the server utilization and flexibility you need for memory-intensive and CPU-intensive SAP HANA production workloads—without the need to buy an additional server. In addition, X6 FlexNode technology allows you to use an eight-socket system and flexibly configure it as two, four-socket systems in the same chassis, enabling you to maximize server utilization to meet workload demands and minimize management of systems.[6]

System x enterprise servers and VMware vSphere provide a strong foundation for virtualizing SAP HANA production environments. This combination can enhance business agility and facilitate growth without necessitating additional hardware, while pretested virtualization configurations simplify virtual server deployments.

Faster Time-to-Value

The SAP HANA with vSphere on X6 solution helps you realize value more quickly, with innovations that allow you to streamline common tasks and manage your SAP HANA environment more effectively so you can make faster, more informed decisions with growing data volumes. It achieves this by accelerating and automating provisioning, reducing overall deployment time to hours versus days.[7] This results in more efficient utilization of your SAP HANA server investments and faster response times due to increased flexibility and agility.

Unified VMware vSphere and SAP HANA management tools shorten the learning curve by allowing you to manage your SAP HANA environment with the same tools as your virtualized data center. A unified management portal enables rapid application provisioning on any hardware stack and on vSphere private or public clouds, by giving you access to vSphere abstraction, pooling and automation of the entire compute layer.

Designated users can easily self-provision infrastructure, platform and desktop services in minutes from the on-demand self-service portal and catalog. At the same time, best-practice application architectures allow you to build reusable templates that can be shared across teams, organizations and clouds, to ensure consistency and scalability across environments. Both of these features greatly reduce time-to-market for business initiatives and new products.

In fact, VMware innovations like these have allowed customers to increase IT productivity by 67 percent[8] and reduce deployment time for instances and hosts from days to just hours.[9]

Better Service Levels

Running on the fast and powerful X6 enterprise server, SAP HANA can play a critical role in providing the insights you need from large enterprise data. But rapidly changing workload demands from mission-critical applications can make it challenging to meet service-level agreements and user expectations alike. Virtualizing SAP HANA helps to speed deployment of new SAP HANA applications, and gives you the flexibility to make SAP application changes and updates with ease. And DRS allows you to automatically manage peak analytic workloads easily, by adjusting resource allocation levels to meet fluctuating demands.

While speed and scalability are vital to your system's success, unplanned or excessive system downtime can neutralize performance and agility advantages. That's why you need a highly resilient solution designed to keep your system up and running and your business thriving. The SAP HANA with vSphere on X6 solution offers superior reliability, availability and serviceability (RAS) features.

For example, X6 technology integrates advanced core recovery capabilities to protect the system against consumed errors that could reach critical applications, as well as predictive failure analysis (PFA), which helps decrease system downtime. The result of X6 built-in system protection is outstanding system resilience. By integrating these technologies into the system platform, the X6 enterprise server helps you:

• Perform maintenance and service faster than competitive offerings
• Reduce unscheduled events due to self-healing
• Eliminate restarts and ease serviceability by minimizing the number of system "touches"

VMware vSphere also includes features that help maintain uptime.

When used in SAP HANA Tailored Datacenter Integration (TDI) implementations, VMware vSphere vMotion allows you to live-migrate SAP HANA databases across vSphere hosts in just minutes, with zero downtime and zero data loss. VMware vSphere HA preserves 99.9 percent uptime[10] by automatically restarting virtual machines on other hosts in the cluster, without manual intervention in the case of a server outage.

In addition, System x Enterprise Solution Services, formerly IBM Systems Lab Services, offers comprehensive installation and management services for your SAP HANA solution, including SAP HANA 24x7 Managed Services. System x Enterprise Solution Services are based on leading industry practices to deliver consistent implementation and management of your SAP HANA solution for optimal performance and system reliability.

SAP HANA on VMware Using GPFS
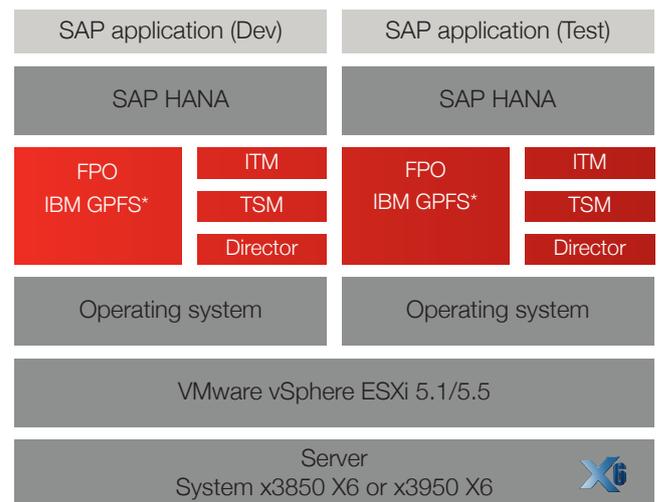
*GPFS is used in the appliance implementation and optional in the TDI implementation.

Your Technology Decisions Are Essential to Your Bottom Line

It's no secret your business success relies on your mission-critical SAP application deployments. So your success depends on how well your mission-critical systems perform. The SAP HANA with vSphere on System x solution offers key advantages over other solutions, including superior TCO, time-to-value and service delivery. This solution includes an integrated, pretested, workload-optimized platform, which is unique in its ability to lower costs and risks for virtualizing SAP HANA production environments.

Capitalize on the outstanding computing power and modularity of X6 enterprise servers and vSphere to attain leading SAP HANA results—and gain the competitive edge you need now and over the life of the system.

For More Information

To learn more about the SAP HANA and VMware vSphere on System x solution, go to:

- www.vmware.com/partners/global-alliances/lenovo/lenovo.html
- www.vmware.com/go/sap-hana
- www.ibm.com/systems/x/
- www-03.ibm.com/systems/x/solutions/sap/

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[1] Gartner Executive Programs, Flipping to Digital Leadership: Insights from the 2015 Gartner CIO Agenda Report, October 2014. http://www.gartner.com/imagesrv/cio/pdf/cio_agenda_insights2015.pdf

[2] Please refer to SAP Notes HANA virtualization in general SAP notes 1788665, 1995460, and 2024433. IBM GPFS software is optional in HANA Tailored Datacenter Integration (TDI) scenarios

[3, 4, 7, 8] (June, 2014). *Transforming the Datacenter with VMware's Software-defined Data Center vCloud Suite. Hopkinton, MA*

[5, 6] Please refer to SAP Notes HANA virtualization in general SAP notes 1788665, 1995460, and 2024433. IBM GPFS software is optional in HANA Tailored Datacenter Integration (TDI) scenarios

[9] EMC IT internal analysis

[10] EMC IT, EMC Perspectives, 2/2014, H12853

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