



IBM Infrastructure for SAP Adaptive Computing

Highlights

- *Helps to reduce TCO significantly through IBM server and storage virtualization*
- *IBM hardware and software support all SAP R3 or NetWeaver releases*
- *IBM is the SAP partner on all four SAP partner categories: Technology, Software, Service, and Hosting*

SAP applications have become an integral part of all industries, driving critical business needs for company IT infrastructures. SAP applications require platforms to manage a demanding workload. CIOs need an affordable platform that maintains the highest levels of reliability, dynamically provides real-time workload flexibility, and effectively mitigates downtime.

To accommodate these requirements, SAP developed a concept with the central objective to “start any service on any server at any time,” called *SAP Adaptive Computing (AC)*. A service in this respect is a SAP product component, e.g. a central system of R/3 Enterprise, an application server in a Business Intelligence (BI) landscape, or a database server.

SAP Adaptive Computing offers an approach to dynamically assign hardware resources. Within an Adaptive Computing infrastructure, for example, a SAP application can be moved very quickly from a server which is no longer providing the required performance to a more powerful server. Dialog instances can be flexibly started on free servers to absorb peaks in workload. Taking advantage of excess server capacity in development and training systems areas that are idle at night is another example of adaptive computing. These servers can be enabled to support the

background operation of production systems using their available server capacity. These processes are automatically performed without needing to make any configuration changes.

SAP Adaptive Computing works best with UNIX® environments, as UNIX does not require local SAP instances for AC operations. As SAP AC requires a shared or clustered file system, a SAP instance can be installed on the shared file system, and any host attached to this file system can execute the SAP instance. For these reasons, IBM offers AC solutions that focus on AIX® and LINUX® operating systems.

IBM offers complete and comprehensive infrastructure solutions to run any SAP landscape, including SAP AC. IBM infrastructure solutions encompass servers, storage, databases (DB2®) and infrastructure management software like Tivoli®, WebSphere®, Lotus®, and Rational®.

IBM POWER Systems with AIX (System p®)

Virtualization technologies divide computing resources efficiently between workloads. IBM Power Systems™ offer comprehensive virtualization technologies that deliver reliability, availability, and serviceability (RAS), which enhance the capability to deploy, manage, and

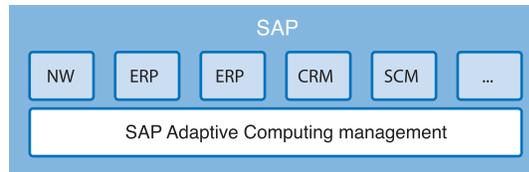
optimize SAP IT infrastructure environments. The POWER Hypervisor™ provides the foundation for virtualization by enabling partitioning of the CPU and helping to ensure system security with robust isolation between partitions. The Virtual I/O server provides virtual LAN (Ethernet) and virtual SCSI devices (SAN) throughout all logical partitions defined on the system, saving significant costs associated with infrastructure components such as physical adapters, switches and cabling.

The logical partition (LPAR: Logical PARTition) is key to virtualization technologies. LPAR technology allows a single hardware platform to serve as multiple servers, capable of running multiple operating system instances and applications in isolation on shared hardware resources. An LPAR is not constrained to physical processor boundaries and automatically allocates resources from a shared processor pool when needed.

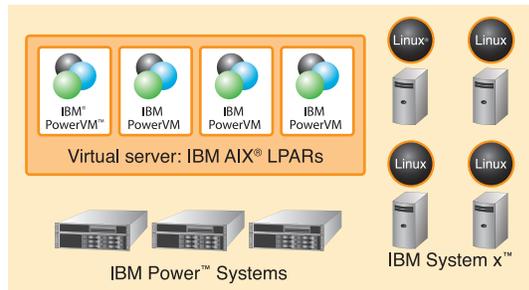
IBM System x running LINUX

The IBM System x™ family of products with X-Architecture® is specifically designed to meet the growing computing demands of SAP AC landscapes with unequalled 64-bit price/performance. System x servers with X-Architecture are powerful, easy-to-use, cost-effective, and provide an effective industry standard IT system for SAP solutions. IBM enterprise class servers with X-Architecture integrate industry-leading systems manageability with true hardware-based monitoring and security helping to ensure increased reliability and faster, simplified deployment. These servers are well-suited for SAP customers that are looking for reliability, manageability and scalability with the flexibility to run LINUX, VMware, or Microsoft®

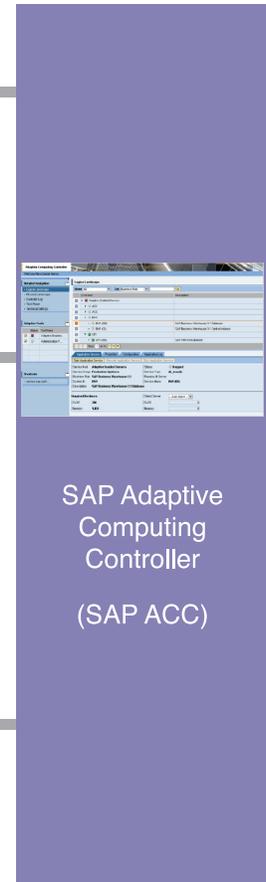
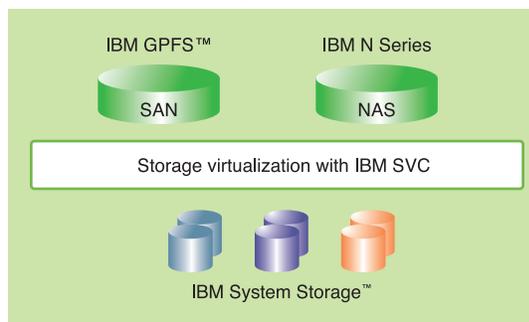
Virtualized SAP® landscape



Physical server landscape



Centralized/shared storage



Virtualized SAP Landscape

Windows®. System x servers with X-Architecture provide the foundation for a cost-effective SAP solution landscape.

The IBM System x family of x86 servers offers both scale-up and scale-out implementations for SAP AC environments.

Scale-up represents an architecture which can increase the processor compute capability by adding processors in a multi-processor (MP) architecture. IBM System x servers with eX4 technology, such as the System x3950M2, can modularly scale up by adding nodes. Each node supports up to 4 processors and can scale up to 4 nodes providing a MP system supporting up to 16 processors and 64 processor cores. IBM System x enterprise servers with

eX4 technology provide an excellent platform for virtualization, including a unique chipset and other advanced capabilities that provide higher throughput and exceptional reliability.

Scale-out implementations are based on a distributed concept of using many smaller individual x86 server systems and adding to your “server farm” as you add applications or workloads. Scale-out implementations are built using 2 processor or 4 processor System x servers or with scalable blade technology such as IBM BladeCenter®. IBM BladeCenter scales your application server environment when you add server blades as your application workload grows. By integrating servers, storage and networking, IBM BladeCenter helps reduce complexity and improves manageability of your scale-out server environment.

IBM System Storage

SAP AC requires a centralized storage concept based on NAS or SAN, with a shared, clustered file system.

IBM System Storage DS™ series or SAN Volume Controller, both in combination with the IBM clustered file system GPFS™, provide SAN-based storage to complete your end-to-end SAP AC IT environment.

IBM DS series provides a wide range of storage systems from entry level **DS3000** systems with up to 48 SAS or SATA drives, through the price-performance leader **DS4000™** and **DS5000 systems**, to the enterprise series **DS8000™** with up to 1024 FC or SATA drives, [benchmark leading performance](#), and world class reliability.

IBM SAN Volume Controller is a recognized market leader for storage virtualization and well-suited for SAP AC environments. More than 13000 SVC engines have been installed in more than 4000 SVC systems (clusters). SVC is optimized for use with the other System Storage™ offerings, and can virtualize a wide variety of vendor storage systems and software that comply with Storage Networking Industry Association (SNIA) standards. With SVC, storage workloads can be re-provisioned online, with no need to shut down any applications; also storage hardware can be exchanged without interruption while applications and SAP keeps working.

Additionally, IBM System Storage N series storage systems provide NAS-based storage to complete your SAP AC environments.

IBM N series delivers a unified and integrated hardware and software solution which simplifies storage deployment and management on all models, including **N3000, N5000, N6000** and **N7000** series, with a capacity up to 1024 drives. All N series models deliver best-of-breed data management solutions, thin- and over-provisioning of storage, snap-shot, cloning, mirroring, and backup. N series also uses space efficient technology, where only additional or changed data blocks require additional storage space.

IBM IT server and storage solutions support SAP's Adaptive Computing IT landscapes and help you provide a dynamic, available, secure, and reliable information infrastructure for your SAP operations.

Supported server and storage infrastructure for SAP Adaptive Computing:

SAP ACC based on NetWeaver 7.0 or NetWeaver 7.1	SAN	NAS
POWER Systems (POWER5™ or POWER6™) AIX V5 or V6	GPFS with SVC and/or any DS series	any N series
System x server 64 Bit LINUX SLES or RedHat		

Table 1

Feature	Benefits
Supported platforms	<ul style="list-style-type: none"> IBM supports AIX V5 and AIX V6, as well as x86 based LINUX systems SLES 10 and RedHat Enterprise Server 5.
Supported storage environment	<ul style="list-style-type: none"> IBM is the only solution provider delivering a SAP certified infrastructure for Adaptive Computing based on SAN shared file system: GPFS IBM also supports NAS based infrastructure with IBM System Storage N series.
System Management	<ul style="list-style-type: none"> IBM delivers solution for user account management, like user identity and access management (Tivoli Identity Manager, Tivoli Access Manager), as well as system monitoring and provisioning (IBM Tivoli Monitoring and System Management, and Tivoli Provisioning Manager).



For more information

For more information about IBM Infrastructure support for SAP Adaptive Computing, contact your IBM representative or visit the following Web sites:

IBM

ibm.com

IBM and SAP website

<http://www-03.ibm.com/solutions/sap/index.jsp>

Colgate drives innovation through strategic focus on IT optimization

<http://www-01.ibm.com/software/success/cssdb.nsf/cs/CSTE-6PUJ9U?OpenDocument&Site=gcjss67cons>

Infrastructure Simplification solutions for SAP

<http://www-03.ibm.com/systems/storage/solutions/sap/infrastructure/solutions.html>

IBM Dynamic Infrastructure for SAP Business Suite

<http://www-03.ibm.com/solutions/sap/doc/content/resource/business/1400155130.html>

SAP's Adaptive Computing On IBM pSeries Implementation Guide

<http://www-03.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/WP100914>

IBM Redbook: IBM System Storage N series for SAP

<http://www.redbooks.ibm.com/abstracts/SG247336.html?Open>

IBM Redbook: AIX 5L and POWER5 Virtualization in a SAP Landscape

<http://www-03.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/WP100717>

IBM Readpaper: The Benefits of Running SAP Solutions on IBM System x and BladeCenter

<http://www.redbooks.ibm.com/abstracts/REDP4234.html?Open>

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All performance information was determined in a controlled environment. Actual results may vary. Performance information is provided "AS IS" and no warranties or guarantees are expressed or implied by IBM. Buyers should consult other sources of information, including system benchmarks, to evaluate the performance of a system they are considering buying.

When referring to storage capacity, 1 TB equals total GB divided by 1000; accessible capacity may be less.

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