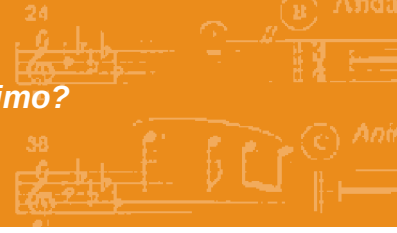




Make more music with your SAP systems

IBM Dynamic Infrastructure *for mySAP Business Suite*
on IBM @server xSeries and IBM @server BladeCenter



In the past it was relatively easy to foresee how a company would develop. You knew when to expect peak demand and when you could relax a little. Today it's almost impossible to estimate what highs and lows the market will bring. A company must be able to cover a wide dynamic range, from 'pianissimo' to 'fortissimo.' This can be made possible if the company creates on demand business structures, which allow it to become more responsive, flexible, focused, and resilient.

SAP applications and their platforms – functionality is required.

In many enterprises, SAP® applications play a central role for business-critical processes. SAP components are designed to make a company faster and more flexible. Today, business processes increasingly require new functionality. Whether or not new solutions can be used sensibly depends on how easily the systems can be operated. To reap the benefits, applications and their hardware and software platforms are thus subjected to constant scrutiny: what creates costs, and what reduces costs? Sometimes, the answers are easier than you think.

SAP solutions are like an orchestra – in the end, it's the ensemble performance that counts.

If SAP landscapes grow, the costs generally also increase, often because of the traditional implementation of the infrastructure. Usually SAP applications run isolated, each on its own server, split up into various systems such as production, test, development and training systems. This affects the entire operation:

- *Flexibility decreases: highly complex, non-integrated systems can only be adjusted to a limited extent and in certain circumstances are not available 24 x 7. If the requirements of the company change, IT often cannot react quickly enough.*
- *Resources are only utilized to a limited extent: system capacities are normally designed so that they can manage peak loads. In normal operation, however, these excess capacities simply go to waste. In contrast, other applications might need more resources, which they do not have readily available.*
- *Transparency is lost: it is often difficult to measure capacity and performance. Thus costs cannot be assigned precisely.*



A heavier load can mean worse performance



Now you can play the complete score.

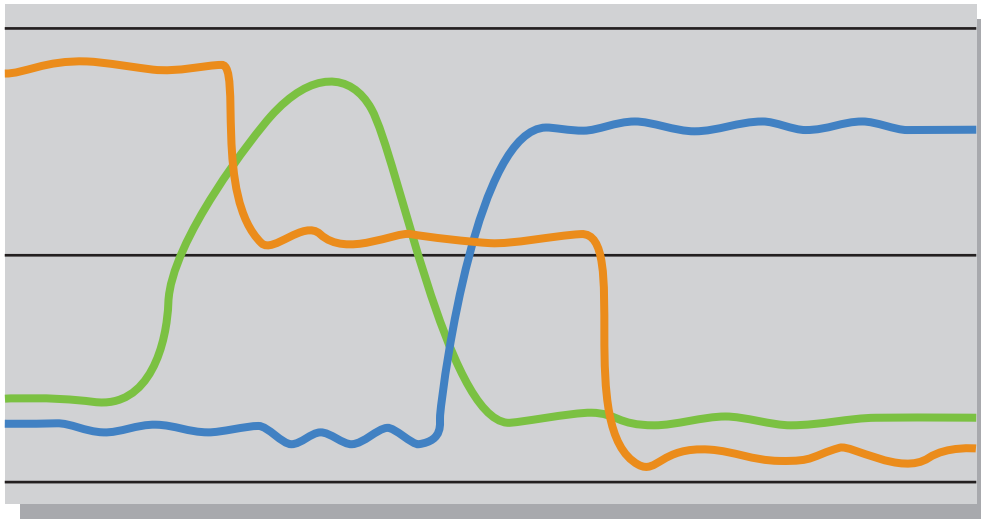
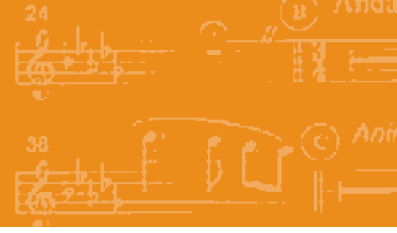
Traditional infrastructure concepts have their limits when it comes to increased capacity and performance and optimized use of resources, and all this without appreciably higher administrative costs. With IBM Dynamic Infrastructure for mySAP™ Business Suite, IBM offers you a solution based on IBM @server®, IBM TotalStorage® products, and IBM software. Through this solution you have the potential to reduce your costs and make your SAP landscape more flexible and easier to manage.

IBM Dynamic Infrastructure for mySAP Business Suite is based on the IBM Virtualization Engine™ and is available on various IBM @server platforms. You can choose the platform depending on your operational requirements. A compact, powerful choice is IBM Dynamic Infrastructure for mySAP Business Suite on IBM @server xSeries® and IBM @server BladeCenter™. The most important elements of this offering, besides xSeries and BladeCenter, are a Linux® operating system, IBM DS4000 (previously FASTT) storage technology, and Tivoli® software for the dynamic allocation of resources, automated management and high availability of your SAP systems.

Sounds good, doesn't it?

- Proactive resource provisioning
- Dynamic adaptation to changing demands
- Easy administration
- Open infrastructure
- Lower operating costs

Read more on	
What provisioning and automation can bring to a dynamic company	p. 4
How new servers are mobilized within minutes and reach top speed	p. 6
How IBM supports SAP's Adaptive Computing and the IBM SAP alliance	p. 8
What your future infrastructure for SAP applications could look like	p. 10
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Heavy loads occur at staggered intervals – potential savings lie here

IBM Dynamic Infrastructure *for mySAP Business Suite* is a component of the IBM Virtualization Engine and is based on virtualization of resources and automation. The infrastructure management of complex SAP landscapes can thus be simplified considerably. Virtualized resources can be retrieved on demand from a shared pool and assigned to different applications. This dynamic allocation is called 'provisioning'. It occurs automatically, as does 'deprovisioning', the relinquishing of resources. Functionalities for high application availability are already integrated or can be implemented easily. That's the simple, clear concept of IBM Dynamic Infrastructure *for mySAP Business Suite* – helping to equip you for the vibrant dynamics required for modern SAP applications.

Less is often more – how to save on hardware capacity and nevertheless manage 'fortissimo.'

In the past, hardware capacities were matched to maximum load. But, in practice, to what extent of total capacity are servers actually used? Often only in a range of between 10 and 30 percent! If you analyze the load curves of individual SAP applications in a company, it becomes clear that heavy loads often occur at staggered intervals. Previously, however, resources could not be deployed flexibly when and where they were needed. Herein lies the potential to reduce costs: servers from a shared resource pool can be dynamically added for heavy loads. In 'normal' phases, resources can be returned to the pool. Dedicated hardware resources need only be designed for the requirements of normal operation, and, overall, less hardware capacity may be required. This may reduce costs significantly.



You only determine the direction – the tuning and use of your instruments are automatic.

With IBM Dynamic Infrastructure *for mySAP Business Suite*, you can make far better use of your hardware resources. Each application receives only as many resources as it needs for normal operation. If the load becomes critical, servers from the application-spanning resource pool can be added automatically. The entire resource management runs precisely and reliably in the background: allocating, configuring, starting, stopping, and reallocating again. An important advantage is that these procedures are automated and controlled by an administrator who decides where manual intervention is necessary and what should run automatically. Administration of the infrastructure becomes easier and more efficient.

IBM Dynamic Infrastructure *for mySAP Business Suite* thus facilitates IT consolidation and IT optimization. This means that total cost of ownership (TCO) may be reduced drastically compared with traditional IT solutions. An open architecture permits continued flexible expansion, according to your requirements.

Decide for yourself whether it's time for a change.

If...

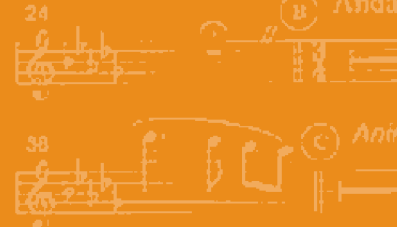
- *you want to help reduce your TCO and protect your investments*
- *you want to adjust your infrastructure more quickly and flexibly to changes in your business processes*
- *you operate your SAP applications in system environments that are independent of one another*
- *the capacity of your infrastructure is oriented towards heavy loads and therefore is only used to a small extent in normal operation*
- *you want an open, integrated infrastructure*
- *your employees spend too much time managing resources*
- *a static IT infrastructure no longer fits the dynamic requirements of your business environment*

...then IBM Dynamic Infrastructure *for mySAP Business Suite* is the right solution for you!



*Precise deployment –
and everything is
splendidly harmonized*

To be competitive, you have to be ready.



Get your SAP applications into shape: IBM Dynamic Infrastructure *for mySAP Business Suite* satisfies three elementary requirements of a modern IT infrastructure:

- *Lower costs*
- *High flexibility*
- *Simple operation*

Ready for use!

With IBM Dynamic Infrastructure *for mySAP Business Suite*, the entire system can become easier to administer, and resources can be used more efficiently. This helps reduce total operating costs. But costs can also be reduced in another way: IBM Dynamic Infrastructure *for mySAP Business Suite* allows you to make servers available within minutes instead of within days. Wait times for users and project teams get shorter. Valuable resources can be deployed more quickly. Resource allocation occurs automatically. The system can record how resources are used so that costs can be allocated, controlled, and accounted for – precisely.

Peak performance even with peak loads.

With IBM Dynamic Infrastructure *for mySAP Business Suite*, complete SAP systems can be configured, started, or stopped. Your SAP landscape may become more robust and flexible. And it can be adjusted to on demand business processes. Companies can react better to changing market conditions, and unexpected system loads can be more easily handled.

IBM Dynamic Infrastructure *for mySAP Business Suite* supports the availability of applications as well as the consistency of response times, even during peak load periods.

A slim infrastructure for a better grip on your business.

With IBM Dynamic Infrastructure *for mySAP Business Suite*, you can take advantage of high-performance and innovative applications when compared to traditional infrastructure of varied complexity. The infrastructure builds on a pool of resources. This makes it 'slimmer'. Overall, fewer resources are required to achieve an equivalent or even higher performance. The IT infrastructure is significantly easier to maintain and develop further. Where dozens of SAP systems run on different software and hardware platforms, the high degree of automation eases administration efforts enormously.



Everything's in play!



SAP system operation in practice – does your computer center actually have more servers than are really available?

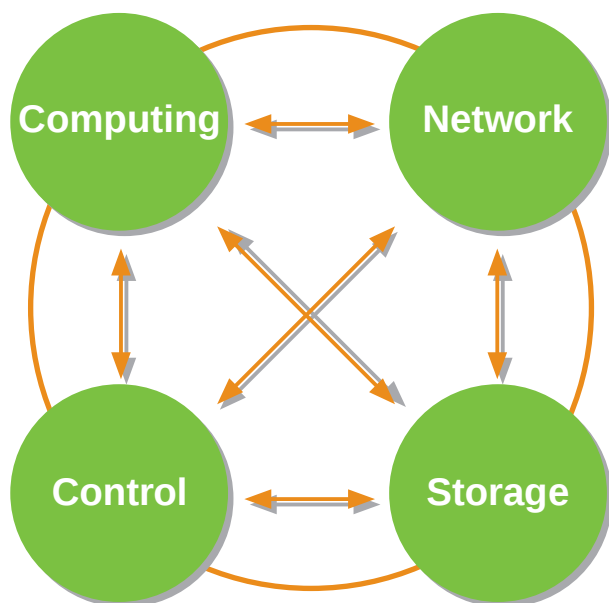
This is often the reality: a project team orders a new SAP system in the computer center to test an SAP application. The administrator looks for unused servers, installs the SAP system on these, and configures it. This can take a few days. Then the system is handed over for test, which usually takes only a short time. After that, the project team no longer needs the SAP system. Now the dedicated servers could be returned to the pool of available servers. However, the project team often retains the SAP system even though it might not use it for weeks, since ordering a new system again for additional tests would cost valuable time. So, the servers of this unused SAP system are blocked. They are not available to other project teams and for other applications. The larger the IT landscape, the more numerous such idle hardware resources can be.

IBM Dynamic Infrastructure *for mySAP Business Suite* helps put an end to unnecessarily blocked resources. Temporary capacities for a project, a department, or an application can be provided automatically and therefore much faster. After use, they are returned to the shared resource pool – automatically, without the intervention of an administrator.

Resources no longer have to be blocked permanently for individual project phases such as training or testing. With this new solution, it's much faster to provide and to recover servers automatically.



**Harmonious interplay of all components:
How IBM supports SAP's Adaptive Computing.**



(Source: SAP Adaptive Computing Concept, 2003)

IBM Dynamic Infrastructure is based on standard technologies for an on demand operating environment, and integrates these technologies into your SAP landscape. IBM Dynamic Infrastructure solutions support SAP's Adaptive Computing, with additional functions for dynamic resource provisioning for SAP applications.

New possibilities through virtualization.

At the center of SAP's Adaptive Computing is the implementation of a virtualization layer between the IT infrastructure and the application level. Virtualization frees SAP applications from being tied to fixed resources such as servers, networks, and storage systems, allowing flexible reaction to changing capacity requirements. With the help of a control instance, resources can be flexibly allocated to various applications and services as required. To achieve this, the SAP Adaptive Computing Controller allows the management and operation of an SAP system landscape. The increased flexibility and optimized server deployment can facilitate the harmonization of your SAP system landscape.

Automation makes it possible: faster, easier, more reliable.

IBM Dynamic Infrastructure *for mySAP Business Suite* is based on future-oriented technologies from IBM @server, IBM TotalStorage products and IBM software. These building blocks enable the virtualization of servers, networks, and storage systems, and their dynamic allocation to SAP applications. In addition to infrastructure management of SAP landscapes, IBM Dynamic Infrastructure also permits the incorporation of other system environments.



A particular strength of IBM Dynamic Infrastructure is that with this solution, highly developed automation technologies are used. Infrastructure management tasks such as the provisioning or withdrawal of resources can run rule-based and automatically, which decreases reaction time and improves quality. Tasks that usually are handled manually often become unnecessary. Operation can become easier and more cost-efficient.

An additional advantage is that with IBM Dynamic Infrastructure, it's possible to create a high availability solution for your SAP environment. This is especially important for your business-critical applications.

IBM and SAP are well-established partners – and you can benefit.

SAP, as the world's largest inter-enterprise software company and independent software supplier, delivers application-specific expertise. And as the world's largest information technology company, IBM delivers expertise in IT infrastructure. IBM Dynamic Infrastructure *for mySAP Business Suite* supports SAP's Adaptive Computing on IBM **@server** platforms and IBM storage systems. Successful 'compliance tests' with different IBM **@server** platforms emphasize the good cooperation between SAP's Adaptive Computing and the IBM solution.

*A well-established ensemble masters
difficult scores*



IBM Dynamic Infrastructure *for mySAP Business Suite* on xSeries is a compact, high-performance solution based on IBM @server xSeries and BladeCenter. Depending on your needs, it can also be combined with the larger IBM Dynamic Infrastructure solutions on IBM @server pSeries® and zSeries®. In addition to automated management (configuration, start, stop), moving complete SAP systems to other servers is also supported. Functionality for high availability is the foundation of this solution. Maybe you already have some of the hardware and software components required for IBM Dynamic Infrastructure *for mySAP Business Suite* on xSeries in your IT landscape. If so, you can then profit from the enormous advantages at even less expense.

Components of the offering:

Servers

The following servers can be used as an IBM Dynamic Infrastructure environment on IBM @server xSeries:

- IBM @server xSeries
- IBM @server BladeCenter, equipped with blade servers HS20 or HS40 (2 or 4-way servers based on Intel® processors)



Network

- Storage systems are connected via Fibre Channel; networks via Fast Ethernet or Gigabit Ethernet.

Storage system

Storage systems in the form of a SAN solution based on IBM storage technology, for example:

- IBM TotalStorage DS4000 Series (previously FAStT Family) – depending on memory information volume, frequency of access, and availability demands

Network-attached storage is also possible for simple storage solutions.

Basic software building blocks for your SAP landscape

- Operating system: SUSE LINUX Enterprise Server 8
- SAP applications: SAP Kernel, Version 4.6D and 6.20

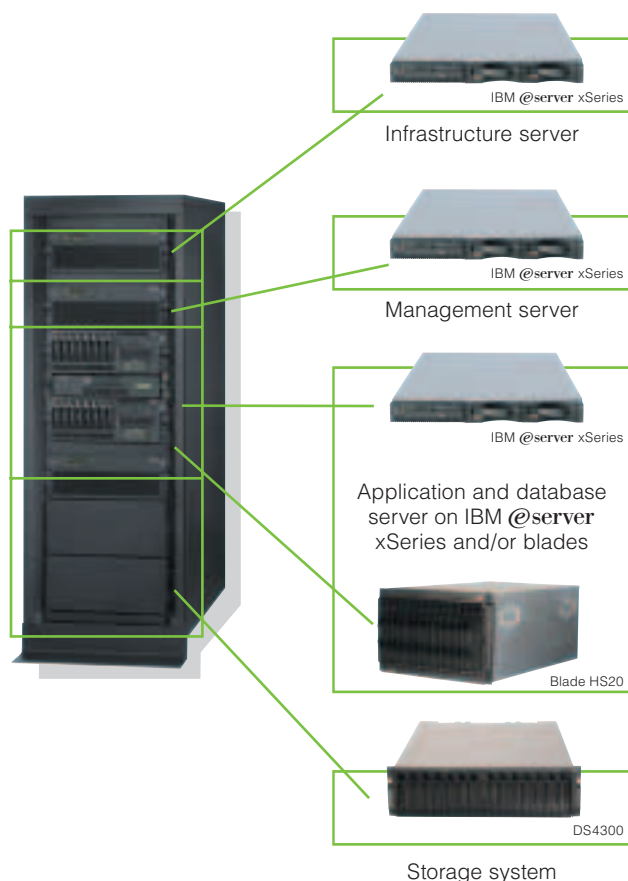
Software for resource distribution and automation

- IBM Tivoli Provisioning Manager, which allocates resources automatically and dynamically
- IBM Tivoli System Automation for Multiplatforms for automated management of the SAP systems (for example, moving to other resources) and for high availability

IBM Dynamic Infrastructure has a graphical user interface that the administrator can use to control the solution.



And this is what your IBM Dynamic Infrastructure environment might look like:



IBM @server xSeries or blade server based solution:

- **Infrastructure server:** Contains Linux components that allow the operating system to be provided to the servers over the network. Especially practical: maintenance work for the operating system, database software, and the SAP systems is only carried out on this central server.
- **Management server:** The Tivoli Provisioning Manager is installed here.
- **Application and database server:** SAP applications and databases run on IBM @server xSeries or a homogeneous set of blade servers.
- **Storage system:** a TotalStorage SAN solution.

IBM Dynamic Infrastructure for mySAP Business Suite

High degree of flexibility

- Fast, dynamic allocation of additional resources
- New system landscapes can be made ready for operation within minutes – not within hours or days!
- SAN or NAS infrastructure
- High availability thanks to automatic failsafe processes

Efficient operation

- Easier operation to provide resources for SAP applications and databases
- Efficient capacity management across system limits
- Considerable increase of utilization and average load of SAP servers

Lower total cost of ownership (TCO)

- High investment protection since existing hardware can be integrated into the solution
- Is based on open standards and standard components for reduced administrative effort
- Has interfaces that enable precise allocation and accounting of used resources. Costs can become transparent: Which profit center used the system when, for how long, and how intensively?
- High degree of utilization of resources

Make more music with IBM

Summary

IBM Dynamic Infrastructure for mySAP Business Suite offers what you need for your SAP landscape in an on demand business environment:

- **Efficient use of your resources**
- **Easy administration**
- **High flexibility for fluctuations in demand**
- **Lower operating costs**



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Photographs may show design models.

For additional information and consultation regarding this offering, you have the following options:

At IBM Global Services, you can

- *participate in a one-day introductory workshop*
- *with an IT architect, determine how you can optimize your SAP infrastructure.*

At the IBM SAP International Competence Center (ISICC) in Walldorf or at the Technical Marketing Competence Center (TMCC) in the IBM Development Center in Boeblingen, you can

- *receive a briefing about IBM Dynamic Infrastructure solutions*
- *see a live demo of a solution*

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