Virtualizing Business Applications on SAP

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Enterprise Workloads

Run the SAP resource intensive enterprise infrastructure including databases and NetWeaver etc. in virtual machines

- 64GB RAM
- Up to 4 virtual CPUs
- Support for powerful physical servers with up to 32 logical CPU and 256GB RAM
Typical Medium Enterprise SAP Implementation
The New Datacenter

Virtual Infrastructure

CPU Pool
Memory Pool
Storage Pool
Interconnect Pool

Solution Mgr
Portal
BI
CRM

Operating System
Operating System
Operating System
Operating System
The Dynamic SAP Data Center
Live Migration of Virtual Machines with VMotion …

No stop and restart of SAP applications!

What is it?
- Live migration of virtual machines with VMware VMotion

Customer Impact
- Zero downtime maintenance
- Continuous service availability
- Complete transaction integrity
- Supported on Fibre Channel and iSCSI SAN and NAS
Dynamic and intelligent allocation of hardware resources to ensure optimal alignment between business and IT

What is it?

> Dynamic balancing of computing resources across resource pools
> Intelligent resource allocation based on pre-defined rules

Customer Impact

> Align IT resources with business priorities
> Operational simplicity; dramatically increase system administrator productivity
> Add hardware dynamically to avoid over-provisioning to peak load
Capacity on Demand with VMware DRS

Add hardware dynamically

- Provisioning is “fire and forget”
- Easily add more capacity
- Avoid over-provisioning to peak load

Resource Pool
CPU 50GHz, Mem 70GB
Priority HIGH
VMware HA enables cost-effective high availability for all applications

What is it?
> Automatic restart of virtual machines in case of server failure

Customer Impact
> Cost effective high availability for all applications
> No need for dedicated stand-by hardware
> None of the cost and complexity of clustering
Hardware Lifecycle Management & Hardware *on-demand*

“Each new major SAP version requires 20-25% more resources.”

- Move old systems to new hardware easily
- Free-up space from old hardware
- Planned and reduced downtime
- Lower migration risk
- Reduce overall costs
- Benefit from compute power immediately
Huge Benefits

With VMware software added into your SAP environment you:

- Realize immediate ROI
- Mitigate risk - sizing, disaster, manageability, serviceability
- Increase SAP data center utilization, flexibility, availability and agility
- Decrease SAP data center costs: hardware, third party software, labor, floor space, energy, cooling
- Freedom of choice and Dynamic Resource Allocation
- Increase Software quality at lower cost for your own SAP development
- Increase availability of all environments (not just production) at lower cost
- Increase uptime (especially during planned maintenance)

The result is an easier to manage, cost effective, safer entry point into the SAP ESOA world
Act Now

- With new technologies like SAP NetWeaver, ESOA and xApps the SAP infrastructure landscape is growing significantly and getting more complex.
- 32 to 64-bit transition (Installed base of 32 bit servers will be fully deprecated by mid of 2008).
- From 2007 on, new releases of SAP NetWeaver and SAP applications based on SAP NetWeaver will no longer be supported on Windows 32 bit and Linux 32 bit.
- Full upgrade project can take between 6-18 months.
- Evaluation, Assessment, TCO-study, Porting, Migration Plan, Testing, etc. can be started right away.
- VMware has the full support for test, development, Q&A and Production systems.
SAP on VMware Deployment Technical Details
Agenda

- Deploying SAP using VMware Templates
- SAP & VMotion Example
- General Tips / Guidelines
Create Template of SAP + Deploy New SAP System

Install SAP in VM

Create VM -> Install Guest OS (Windows Srvr 2003 SP1) -> Patch guest OS -> Install Oracle s/w SID = TEM -> Install SAP ECC 6.0 ("sapinst") SID = TEM

Create Template

ECC 5.0 in VM (SID = TEM) -> Run orabrcopy (create Oracle control, init.ora files) -> Uninstall CI ("sapinst") -> Uninstall Oracle s/w. DB files still exist -> Create template (golden image)

Deploy new SAP System from Template

Deploy VM from template (new hostname) -> Install Oracle s/w (new SID = DEV) -> Run "sapinst" System Copy Option

6-9 hours

3-4 hours
SAP System Copy Guide

- SAP Note 11692 ("Renaming the system ID")
- Use SAP System Copy Guide for SID rename
- Advantages
  - Supported + documented by SAP
  - Covers multiple databases
  - Covers ABAP, JAVA and ABAP+JAVA app servers
- Disadvantages
  - Manual steps still required
Agenda

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- General Tips / Guidelines
VMotion Test

“saplicense –get” returns SAME hardware key!
License specific to the VM NOT ESX server
SAPGUI – SGEN Workload SM50 Screenshot

hostname of Guest OS (logical)
VI Client – Performance Chart vega7063 Screenshot

VM moved to vega7062

CPU spike

CPU load on vega7063 (SGEN)
VI Client – Performance Chart vega7062 Screenshot

VM on vega7062

CPU load on vega7062 (SGEN)
VM Client – Performance Chart inside VM Screenshot

VM migrated back to vega7063

CPU load in VM drops to zero during migration
Agenda

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- General Tips / Guidelines
SAP on VMware Guidelines

- SAP Note 674851 - Virtualization on Windows
- SAP on VMware on Windows deployment tips: see SAP Note 1056052 “VMware ESX Server 3.0 configuration guide”
  - Use the latest processor generations (e.g. Core2duo from Intel - Xeon 51xx, 53xx; Rev. E/F AMD)
  - Use VM's with one or two virtual CPU's, start small
  - Use a physical Host for the DB if VM resources are not sufficient
  - Distribute database files over different disks (as per SAP’s normal recommendations)
  - Don’t over commit memory to the point where VM paging starts
  - Use the SAP flat memory model with memory protection switched off (SAP Note 1002587) for test and dev systems
SAP on VMware Guidelines (contd)

▸ Windows View vs Flat memory model: SAP Note 1002587 “Flat Memory Model on Windows”

▸ es/implementation = flat (less system call overhead, more memory)

▸ es/use_mprotect
  - false => no memory protection, less overhead, not recommended for productive Systems by SAP
  - true => memory protected, severe overhead due to Windows issue

▸ For productive systems the view model is recommended by SAP
SAP on VMware Guidelines (contd)

- SAP Note 895807 - Virtualization on Linux
- SAP on VMware on Linux deployment tips: see SAP Note 1122388 “VMware ESX Server 3.0 configuration guide”

- Use the latest processor generations (e.g. Core2duo from Intel - XEON 51xx,53xx; Rev. E/F AMD)
- Use VM's with one or two virtual CPU's, start small
- Use a physical Host for the DB if VM resources are not sufficient
- Distribute database files over different disks (as per SAP’s normal recommendations)
- Don’t over commit memory to the point where VM paging starts
- Use the “map” memory model in your Instance Profile (es/implementation = map) for best memory throughput.
- We HIGHLY recommend to use Novell SLES 9 and REDHAT RHEL 5.1 or higher to avoid time conflicts.
- With RHEL 5.1 we recommend to use the new Boot parameter “divider = 10” to reduce the amount of timer interrupts to 100 Hz.
Sizing

Start with small units. Smaller units are better manageable and load balancing is easier.

Use the scaling features of SAP. e.g. deploy additional Application Servers if necessary

Virtualization may not fit every customer, but often leaving a highly utilized Database on a „native“ host and virtualising the remaining components is a viable option.

SD Benchmark results are around 500 SD users for 2 vCPU with 8GB and around 800 SD users for 4 vCPU with 16GB. When using the latest Processors.

We are working with the Hardware Vendors to determine sizing numbers.
Support

VMware ESX 3.x is supported for Productive Systems under Linux if the Hardware is certified. Refer to Note 895807. The Hardware needs to be certified specifically for ESX, in addition to the „normal“ Hardware cert.

VMware ESX 3.x is supported for Productive Systems under Windows on all Servers that are certified on SAP and Windows. Refer to Note 674851.

No „hosted“ VMware Product is supported to use with SAP Productive Systems. (e.g. WS,Player,Server)

Productive support is for all „Netweaver 6.40 and higher“ based SAP components. All other components are technically feasible and SAP support will do their „Best effort“ but no „official“ support statement.
Special Promotions – valid till 15 Dec 2008

Midsize Acceleration Kit
- VI-Ent for 6 processors + VC Foundation + 30 PSO Credits with 1-year Platinum Support & Subscription
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- VI-Ent for 8 processors + VCMS with 1-year Platinum SNS
- USD29,044

SRM Acceleration Kit
- VI-Ent and SRM for 6 processors + VCMS with 1-year Platinum SNS
- USD34,792

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