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## Headed to the Cloud?

### Road-Tested Tips to Manage the Transition Successfully

Transitioning to a cloud computing infrastructure is a multi-faceted endeavor, bearing significant impact across your company's data center and SAP applications. The journey represents a foundational change in how IT organizations structure, operate, and deliver services to their internal customers.

The last thing CIOs want to do is introduce risks into their SAP landscape – especially since SAP applications are so mission-critical to the business. That's why developing a strategy for building your virtual infrastructure is important. To successfully achieve enterprise-scale virtualization of SAP applications, your primary objectives should be to subtract risk from the equation, achieve predictable results, and deliver faster ROI.

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#### 6 Key Considerations for Moving to the Cloud

To realize these goals with minimal disruption to your business, take a disciplined approach to cloud computing that includes the following considerations:

##### 1. Understand the Business and IT Drivers for the Change

From an application perspective, drivers for cloud computing may include mergers and acquisitions, new offerings, or plans for SAP upgrades or heterogeneous migrations. For IT, drivers may include performance or service-level issues, rising energy costs, growing server and storage footprints, or space limitations due to the expanding IT footprint.

Moving your business-critical IT environment to the cloud can be daunting. Get started in a practical way: Focus on prioritizing and building use cases for each business requirement, and assemble a virtualization team to build around pools of technology for all of the use cases. With these preparations, you'll end up with an infrastructure that is much easier to use.

##### 2. Have a Current, Documented IT Blueprint

Before moving to the cloud, ensure that you have an automated IT management framework that accurately maps

SAP solutions to their IT dependencies. Not only will this framework help in planning and implementing new projects, but its documented configuration information will support ongoing IT operations.

##### 3. Seek Consolidation Opportunities

Look for areas to consolidate SAP landscapes, including application consolidation influenced by planned mergers, acquisitions, retiring legacy applications, or SAP upgrades. Also consider opportunities to consolidate infrastructure, including desktops, servers, networks, and storage.

##### 4. Embrace Virtualization

Consider virtualizing components of your SAP landscape, including the desktop, applications, and database instances. For mission-critical SAP applications, start with the non-production environment. Understanding your company's current use of existing IT assets is important for assessing plans for change.

##### 5. Establish the Right IT Support Services

With the adoption of virtualization for SAP landscapes, a unified IT framework and tools for providing support services need to be in place to protect and ensure landscape availability for SAP users. The services include backup and recovery, data replications for SAP system refresh, business continuity, and automated IT resource management.

##### 6. Implement Policy-Based Automation for Provisioning IT

To realize the full value of cloud computing for your SAP landscape, your data center management team needs to be able to provision IT as a service. Key elements for policy-based service automation include service catalogs for SAP solutions; business workflow for reviewing, ordering, and chargeback of services; and automated IT best practices (such as the Information Technology Infrastructure Library, or ITIL) for compliant service management.

### Take a Holistic Approach: Innovate in 5 Areas

When deploying a cloud or private cloud strategy for your SAP applications, you should consider adopting relevant alternatives in each of the five IT domains – desktop, applications, operating system (OS), network, and storage.

#### Desktop

Managing traditional desktops has become increasingly complex. The number of users with local, remote, and mobile access is increasing, and thus there's a greater demand for high-quality service and performance levels across multiple applications. Costs associated with IT administrative activities, including PC maintenance, repairs, and upgrades, are also rising.

Centralized desktop management reduces capital and operating costs for applications by:

- Migrating users and intelligence from standalone machines to centralized data centers
- Unifying geographic data centers to serve SAP business users' requirements worldwide

As a result, organizations are streamlining desktop management and control, while providing SAP users with a virtual desktop that behaves like a normal PC.

#### Applications

When virtualizing SAP applications, it is important to distinguish between application virtualization and hypervisor virtualization (see **Figure 1**). In the case of application virtualization, the SAP NetWeaver Adaptive Computing Controller tool provides the ability to virtualize the SAP landscape on top of the OS by separating the application layer from OS dependencies. By contrast, hypervisor virtualization takes place at the hardware level of the server by separating the OS and its dependent services from the server platform. Deciding which environment is best for you depends on your management criteria.

#### Operating System

While the first phase of virtualization has focused on application server consolidation for SAP environments, the next phase focuses on transforming the data center into an OS cloud environment. For example, with the announcement of VMware vSphere, the OS cloud will comprise the following two service groups:

- **Application services** providing built-in service level controls for all running applications, regardless of type or OS

- **Infrastructure services** integrating server, storage, and network resources and allocating them on demand to applications based on business priority

These service groups are critical for supporting the cloud computing infrastructure for SAP landscapes.

#### Network

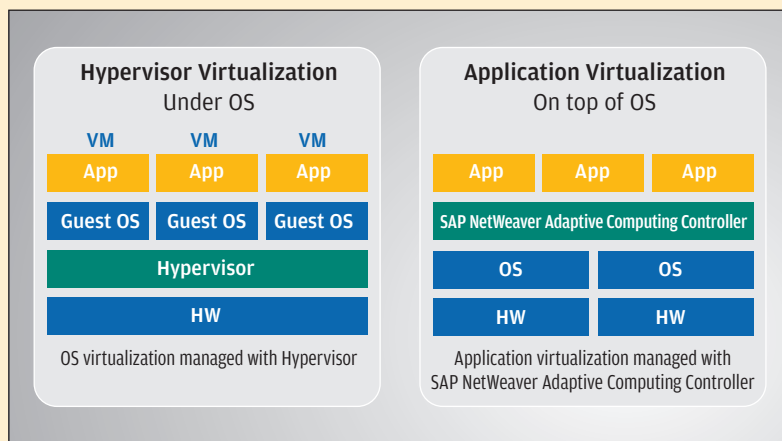
Networks affect the cost and operations of the internal cloud. Typically, SAP system performance and availability requires the data center to have two separate but interdependent physical networks – an Ethernet local area network (LAN) and a Fibre Channel storage area network (SAN). Each network has its own terminology, protocols, management tools, and physical components, requiring unique equipment and creating a tremendous amount of redundancy.

A unified network strategy, such as leveraging Fibre Channel over Ethernet (FCoE), enables consolidation of server cables and adapters by allowing LAN and SAN traffic to travel on a single 10-gigabit Ethernet link. It also seamlessly integrates with existing Fibre Channel networks, management processes, and workflows, offering a smooth migration path for existing Fibre Channel customers.

The OS cloud also affects the network for SAP landscapes. Until recently, data center networks were designed under the safe assumption that each end node was connected to a single instance of an OS and a single instance of a given application. Another safe assumption was that the application and its associated OS would be persistently bound to that specific physical server and would rarely, if ever, move onto another physical server.

Today, network vendors, such as Cisco, are providing “virtual” switches, which enable port and configuration

**FIGURE 1** ▼  
Comparing hypervisor virtualization and application virtualization



information to follow virtual machines as they move from one physical host to another.

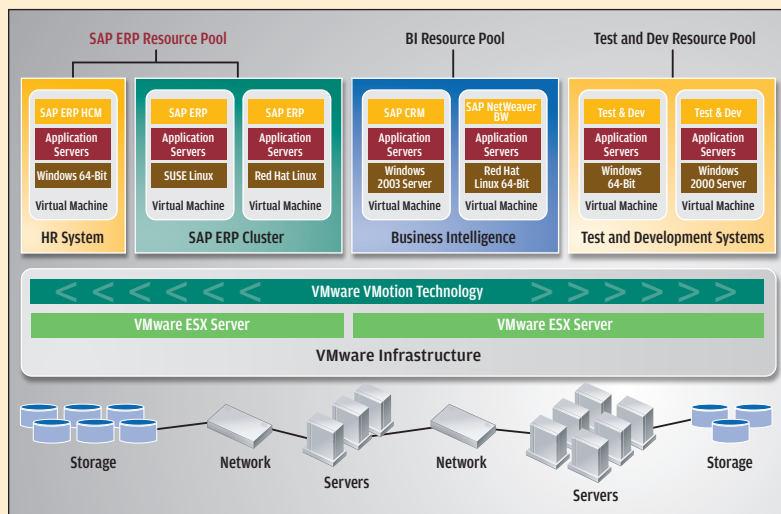
### Storage

SAP landscapes typically handle significant amounts of data, driven by the size of production instances and the number of copies maintained for non-production and backup. Consequently, organizations are looking for a storage platform that delivers the same savings and operating principles that server virtualization is delivering. EMC Corporation fulfills this requirement with:

- A unified storage platform architecture with “scale-out” and tiering capabilities within a single frame, providing a reduced footprint and decreased cooling and energy requirements
- “Just-in-time” capacity allocation with virtual provisioning, which presents a large amount of capacity to an SAP host and then consumes space from a shared pool only as needed
- Fully automated storage tiering (FAST), providing SAP data mobility between drives or RAID types without disrupting the availability of SAP applications

EMC is committed to integrating with the OS cloud to help IT simplify the management of virtual environments, lower costs, and enable higher levels of service. Integration with vendors like VMware provides management abstraction for ease, speed, and automation in provisioning resources, ensuring performance, and minimizing the disruption of mission-critical SAP solutions.

FIGURE 2 ▼ VMware's virtualization infrastructure



### EMC Helps Bring It All Together: 3 Tips

It cannot be stressed enough – a holistic approach is critical for reducing risk to your SAP landscape during migration to an internal cloud and subsequent operations. To ensure a successful move, consider these three tips:

1. **Focus on collaboration**, since commitment to change requires investment by both the business and IT. For many businesses, their SAP application landscape is mission-critical and is their largest single consumer of IT services. Working with EMC can help bring the IT and business components together to assess business impact for IT projects leading to the private cloud deployment for SAP solutions.
2. **Reduce risk and save time with EMC Proven Solutions for VMware** for building, integrating, and managing your cloud strategy for SAP applications. EMC Proven Solutions are designed to minimize risk by providing reference architectures and documented best practices for deploying technology to virtualize the SAP infrastructure (see Figure 2).
3. **Stay up to date on the work that evolves from the Virtual Computing Environment (VCE) coalition**, which was formed after EMC, Cisco, and VMware worked closely over the past year on a shared vision for the future of enterprise IT infrastructure – private cloud computing. The VCE's introductory initiative was Acadia, a joint venture focused on accelerating customer build-outs of private cloud infrastructures through the end-to-end enablement of service providers and large enterprise customers.

### The Secret to Efficient, Effective Data Center Virtualization

By focusing on business-ready IT infrastructure packages and a single point of contact for design, service, and support, organizations of all sizes can develop an accelerated approach to data center virtualization. As a result, you'll no longer have to choose between best-of-breed technologies and end-to-end vendor accountability. Keep in mind the key considerations, holistic strategy, and tips presented in this article, and your migration to a cloud computing environment will promise efficiency and significant reductions in both capital and operating expenses.

For more information on EMC's Cloud Computing Strategy Service and other offerings, visit [www.emc.com/leadership/index.htm](http://www.emc.com/leadership/index.htm). ■