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Virtualization: A Guide to Success for CIOs

As virtualization has become a number one initiative for many organizations, questions arise for CIOs during the implementation process. CIOs need to know how and where to implement in the most cost effective way by factoring in a sufficient return on investment.

This e-guide evaluates the several different stages of virtualization, from servers to desktops and provides feedback from CIOs exploring the process. Learn how staying focused on ROI is the key to success for all virtualization projects and how to identify your companies needs when developing a virtualization strategy.

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Virtualization project success factors from CIOs

Niel Nickolaisen, Contributor

When I ask my fellow CIOs to describe their most interesting and important initiatives, one topic consistently heads the list: Virtualization. It seems nearly all of us have implemented, are implementing, or are exploring virtualization. Our company is about 18 months into our virtualization project. We have virtualized servers, storage and are now toying with desktops. In the interest of finding out what others have learned from their virtualization projects and research, I sent a virtualization poll out to my "network of nerds." Based on their responses, I have learned the following:

What to virtualize. There seems to be a general sense that we should start by virtualizing our older, less transaction-intensive applications and associated servers. Some of us have reduced our physical server counts by 50% to 60%. But many of us have not yet taken the plunge of virtualizing our heavy-duty applications like ERP and Exchange. Nor have we felt comfortable virtualizing our production database servers.

This reluctance to put our IT bread and butter in a virtual environment is not just our being gutless. Rather, we are concerned about creating the potential for a single point of failure for our most critical applications.

Of course, some decisions are easy, like virtualizing development and test environments. What used to take us days to build can now be done nearly immediately. Also, virtualization can simplify our disaster recovery and business continuity designs.

Things to consider. One attractive feature of a virtualization project is the potential costs savings. But to get the espoused savings, we have to make sure we do not replace physical server sprawl with virtual server sprawl. We need to manage our virtual assets just like we did our physical assets. Otherwise, we might not ever get to the operating system license savings we hoped to achieve. So, we need a process for adding a new virtual server. Just because adding a server is now easy does not mean we should do it.

The projected energy savings can be quite nebulous. For many of us, our utility costs are included in the lease for our buildings. In order to turn virtualization into real cost savings, we need to meter our power usage and then have a way to recalculate the power portion of our lease agreements.

Some caveats. Plan your virtualization project. You will likely need large physical servers to host your virtual, consolidated server farm. Make sure both your servers and storage have the capacity to achieve your consolidation goals. It is common for storage needs to increase when virtualizing the application and data stacks.

Make sure your network team is involved in the planning and testing of your virtual environments, as the virtualization software also creates some virtual networking functionality.

Have a regular process for reviewing your virtual server farm. With physical servers, it was easy to locate a server and ask what it was doing. Virtual servers are not nearly as obvious. We sometimes create a virtual server for a

specific, time-limited activity but then forget that it is still in the virtual farm, cluttering up our virtual environments.

Desktop virtualization. After virtualizing servers and storage, some of us are implementing virtual desktops. This allows us to extend the life of our older PC and laptop equipment. One CIO has virtualized more than 100 desktops and been able to slow the replacement of older end-user equipment. She also reports that now all "problem" users are on virtual desktops so IT can proactively manage what is and is not happening on the problem users' desktops.

> **We need to manage our virtual assets just like we did our physical assets.**

That all being said, I have yet to talk with a single CIO who has started but then stopped his general trend towards virtualization. Until the next great idea comes along, I am happy to say that I am on the IT forefront and generating the benefits of virtualization.

Calculating ROI for server, desktop and application virtualization

Danielle and Nelson Ruest, Contributors

Virtualization has been touted as IT's lifesaver for the past few years. This is true, in many ways. There are so many layers of virtualization that organizations can implement—including server, storage, desktop, application, presentation and user state virtualization—all of which change the metrics for IT departments.

But organizations should not implement virtualization for the sake of virtualization. Like all projects in IT, staying focused on obtaining a sufficient return on investment (ROI) is a key element in virtualization projects. Calculating ROI for virtualization, both the hard and soft cost savings, can help you successfully execute your strategy.

First, focus on short-term needs when planning your virtualization strategy. If your server room is crammed full of physical machines and you're thinking of moving or expanding your data center, then server virtualization is the first place to start. If you have problematic applications in your desktop network, then perhaps you should start with application virtualization and resolve these problems once and for all.

Start with a simple and structured approach—build on your successes and virtualize one step at a time.

Begin with server virtualization. Most organizations have problems with their data centers and physical server utilization ratios, so it often makes sense to start here. Server virtualization will resolve many data center issues and increase server utilization to 60% or 70%. It will also help you plan out the foundation required to implement virtualization in other layers, such as virtual desktop infrastructure (VDI) or storage virtualization, since both have a tendency to grow out of the infrastructure necessary for server virtualization.

Lay out a foundation for application virtualization. The advantage of using application virtualization is that you don't have to deploy it for every application in your network at once. You can focus on the most difficult applications first, and then slowly work to encompass all applications.

Address other layers of virtualization as needed. For example, user state virtualization is nothing more than a matter of applying technologies you already have in your network. If you're using Microsoft Active Directory Domain Services, it relies on Group Policy to implement Folder Redirection and user account management to deploy roaming profiles. Implementing these technologies will both protect user information by storing it in centralized repositories, and lay the groundwork for the implementation of VDI.

How to calculate ROI

As a rule, you'll want to perform a project postmortem, calculating ROI after implementing each layer of virtualization. Server virtualization can bring you some considerable hard-dollar savings from the start, especially if you can obtain some rebates from your utility provider or local government.

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Potential and real cost savings from server virtualization

Power savings	$300 to $600 per virtualized server.
Cooling savings	Up to $400 per virtualized server.
Hardware savings	From $2,500 or more per virtualized server, depending on physical server type.
License savings (Microsoft Windows Server)	75% of Enterprise license per virtualized server.
License savings (open source)	Nothing, except for support costs.
Power rebates (selected utility organizations)	Up to 50% of the total cost of the project .
Government rebates (federal, provincial and state)	Variable reduction rates (income tax reductions, sales tax rebates and more).
Space savings	More than 90% space reduction (based on an average of 10 virtual machines per physical host).

For some of the virtualization technologies, it can be difficult to quantify some of the soft-dollar savings. Keep the following questions in mind when calculating ROI:

• How much do you value the time you save in preparing a virtual vs. a physical server? A virtual server can be prepared in minutes once the infrastructure and process are in place, compared with weeks for a physical server.

• How much do you value the automation of standard testing and development environment preparation? With virtualization, you can implement technologies that allow your testers and developers to both deploy and manage their own test environments.

• How much do you value the flexibility a virtual infrastructure can provide for changing business needs? With the ability to deploy new applications -- both server and desktop -- in days rather than weeks, you'll be able to respond quickly and effectively to changing business needs.

• How much do you value the reduced time to deploy new operating systems such as Windows 7? With application virtualization, you may never have to repackage an existing application again. This is especially true when you change operating systems, because the application virtualization engine allows the application to work on almost any version of Windows. This is one of the most significant savings you'll see when implementing virtualization.

As a rule, you'll want to perform a project postmortem, calculating ROI after implementing each layer of virtualization.

There is no doubt: Virtualization provides solid ROI. But properly calculating ROI can prove you are getting the most out of it.