

Sustaining Virtualization's ROI

How a disciplined process and complementary technologies can make it happen

by Bill Tohtz

On August 13, 2007, the highly anticipated VMware public offering stunned the Wall Street investment community. The virtualization software company—whose IPO price was set at \$29—zoomed to \$56 by day's end and has continued to climb. It is hard to remember a situation where the Wall Street gurus missed the mark that badly. But that's not the big news. The big news is that this story has provided a compelling proof point on the power and potential of virtualization technology.

Virtualization, at its core, is about optimizing IT assets. It is a leveraging technique. It is a contemporary and effective response to two of the most common IT challenges organizations have created over the past decade—server proliferation and insufficient planning. Virtualization helps organizations to begin correcting those mistakes and get out from under the burdening weight of mounting IT investments. It goes beyond data center and server consolidation; it transforms hardware into software.

For IT professionals, the most critical question is not *whether* to virtualize (a no-brainer)? It is not even *what* to virtualize (although very important)? The critical question is *how* to virtualize?

This article presents the “how to”—the process to follow, rather than the product to buy. I will outline a

6 Step Virtualization Process that will enable an organization to maximize ROI for an extended period of time (Figure 1). Further, given its strategic value and economic impact, I will suggest that virtualization has now become a critical IT process and, as such, it must be owned by the CIO.

FIGURE 1: THE VIRTUALIZATION PROCESS

Design Phase	Execution Phase
Step 1: Establish clear, measurable and attainable goals	Step 4: Pilot the full solution in a limited environment
Step 2: Design the roadmap with the end in mind	Step 5: Expand the implementation to the entire environment
Step 3: Find the blind spots; then address them with complementary technologies	Step 6: Sharpen the saw

Step 1: Establish Clear, Measurable, and Attainable Goals

What do you want to accomplish? A major electronics company wants to reduce its annual IT costs by a whopping \$100 million through virtualization. A major health insurer—whose server count almost quadrupled over a 2-year period—wants to reduce that number by 80 percent within the next two years. Moreover, the opportunity is not just for the big companies. In my own company, a mid-size IT services firm, we have virtualized 40 servers into two HP blades, achieving a 20:1 consolidation ratio in less than 30 days. Further, we have reduced our floor space footprint by 70 percent.

Not only are these goals significant and meaningful, they are specific. To determine whether the goals are appropriate and attainable requires communication and consensus among the key participants—senior management, IT management, vendors and consultants. It also requires energy, enthusiasm and commitment.

The goals go beyond the quantitative—like server reduction or expense savings. Qualitative goals are equally significant—goals such as application availability, operational responsiveness and desktop manageability.

The organizational approach to virtualization ought to be strategic. The buzz surrounding VMware will cause companies to jump on the virtualization bandwagon as documented cost savings and success stories from a variety of organizations fill the internet. Historically, many technology decisions have tended to be opportunistic—seizing an immediate opportunity without reference to a greater plan. It is an approach that usually works for a while but the inherent flaws are exposed when markets change or economies weaken. A strategic plan begins with a clearly defined destination—a clear articulation of what success will look like.

The first step is to understand *why* an organization has decided to virtualize. It could be financially driven. It may be strategic—pursued to take advantage of high availability (HA) features, rapid provisioning, server containment, or to advance disaster recovery (DR). Ideally, it is a dual motivation—economic impact and strategic fit. But regardless of what moves an organization toward virtualization, it is imperative that there is clear consensus prior to embarking on the virtualization trail.

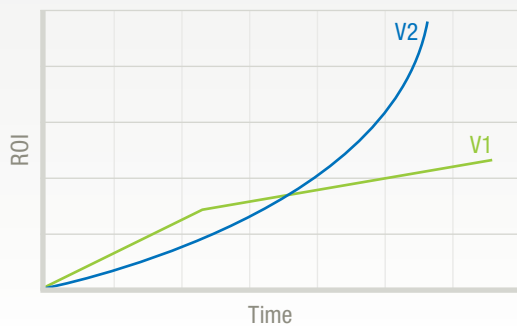
If the goal is purely financial, the ROI calculation is straightforward and is typically achievable in 12 months. Simply take into account the current cost structure— including all hardware, software, and power and cooling expenses— then compare the current costs versus the costs of implementing a virtual infrastructure. Virtual infrastructure costs include: more powerful hardware, the virtualization software and the implementation costs, less the savings achieved from lower power and cooling expenses. If there is no ROI (pretty unlikely), the business should not virtualize. If it is a strategic move, a value must be placed on leveraging the benefits of high availability, rapid provisioning, server containment and disaster recovery. These strategic advantages need to be factored into the ROI calculation.

Part of the recommended process in setting virtualization goals is to complete a partial assessment on a representative subset of the environment for statistical analysis, using an assessment toolset. There are valid toolsets in the market

that can be used to achieve the desired result; the choice depends on the size of the assessment and the resources available to complete the assessment. The partial assessment results will determine whether the organization should consider moving forward with a complete assessment: Does it make financial sense? Does it advance our strategic objectives? Are the resources required available and ready to be engaged? A complete assessment entails a full analysis of the entire environment, the results of which lead to the initial implementation roadmap.

During the assessment phase, the education of the technologists must begin. How will the solution work? What are the advantages? Why is the organization taking this path? It is also critical to educate the Business Units because virtualization represents a cultural shift. This shift can become a significant challenge if there is insufficient education on the strategic benefits and business impact of virtualization—faster provisioning, financial control, accelerated application development, more efficient testing processes and better availability. Familiarity will disarm opposition, uncertainty, fear and doubt.

FIGURE 2: THE VIRTUALIZATION CURVE



V1 represents the ROI associated with an out-of-the box virtualization solution. V2 represents the ROI associated with the 6 Step Virtualization Process. V1 ROI is higher in the beginning because it does not require investing in complementary technologies (Step 3). However, the V1 ROI plateaus over time in the absence of a process while the V2 ROI continues to increase.

Step 2: Design the Roadmap with the End in Mind

After compiling the assessment data, the organization can begin an initial ROI analysis. These initial ROI findings will be based upon consolidation ratios⁽¹⁾ using actual organizational data gathered from the consolidation toolset. If the ROI findings—whether financial or strategic or both—justify moving forward, then the organization can begin to design a practical, customized virtualization roadmap.

When designing the roadmap, the organization must begin with the end in mind. Not build a plan for what the business looks like today, but rather what it will look like 6 months from now and with a view several years down the road. Factors such as business growth, acquisitions or divestitures, backup and recovery, and disaster recovery will all be affected by a virtual infrastructure. It is much less costly and will cause far less chaos to plan ahead rather than to scramble to catch up by adding more and more infrastructure (essentially re-creating the problem the organization

(1) Our clients' consolidation ratios have ranged from 6:1 to 20:1.

was originally trying to solve.) Think of Wayne Gretzky. When asked how—without having the hardest shot, being the fastest skater or being the strongest player—he had become the best player in the game, Gretzky responded, “Most players skate to where the puck is. I skate to where the puck is going to be.” Organizations will need to adopt Gretzky’s philosophy early in the virtualization process.

When identifying virtualization candidates, the organization needs to plan beyond mere consolidation availability. Some candidates, while capable of virtualization, may or may not be the most appropriate to consolidate. Take SQL servers or backup infrastructure servers as an example. These types of systems typically drive high I/O and memory utilization and are not considered good candidates for virtualization, if consolidation is the primary goal.

The architectural recommendation must be based on the technology the organization has chosen to implement, taking into account the established best practices from each of the hardware vendor specific design requirements. Whether new equipment or repurposing existing hardware, the professional team must make sure to not exceed the acceptable thresholds of the equipment. Once the architecture has been implemented, the team must be prepared to validate the baseline assumptions established during the design phase for each of the primary technology areas.

When designing the solution, the team must consider Business Unit input and processes. Will you architect the virtual infrastructure with a physical or logical separation? A Physical separation develops a virtual infrastructure based on business unit or business requirements. A Logical separation leverages a larger pool of resources while allocating constraints around resource usage. At this point, the organization must also take into account any security or compliance issues, including policies or requirements that mandate the physical separation of management and/or resources.

Step 3: Find the Blind Spots; then Address with Complementary Technologies

Adding complementary technologies to the core virtualization infrastructure can avoid common blind spots and provide effective responses to efficiency objectives such as:

- › Easing migration to a virtual infrastructure;
- › Improving management of uptime requirements at beginning of migration from physical to virtual;
- › Enabling more efficient provisioning of new systems;
- › Increasing speed and efficiency of Back-up & Recovery;
- › Reducing Monitoring, Reporting, and Chargeback inefficiencies

Take reporting, monitoring and chargeback. Standard monitoring and reporting tools that were sufficient in a physical environment tend to fall short in a virtual one. Complementary technologies can respond to these objectives. A complementary technology, such as Vizioncore’s vCharter product, enables an organization to look “under the hood” and provide a real-time and historical monitoring and performance control solution for a virtual environment. Business unit chargeback is important as well. Every organization—regardless of whether there is a formal system in place—needs

to allocate costs based on actual resource pool utilization rates. Virtual machines are not free! If an organization behaves as if they were, they will soon be dealing with a “Virtual Sprawl” and end up with an even bigger problem on their hands.

FIGURE 3: COMMON VIRTUALIZATION BLIND SPOTS	
Potential Blind Spot	Recommended Corrective Action
User Education	Certification Training
Virtual Machine Sprawl	Standardized processes and policies
Migration Challenges	Leverage complementary technologies
Monitoring & Performance Pitfalls	Analyze existing tools and remediate accordingly
Chargeback Accounting	Leverage complementary technologies

Step 4: Pilot the Full Solution in a Limited Environment

The pilot implementation should be a full solution rollout in a limited environment. The selected technologies are combined to create a base architecture to begin deployment. The architectural concepts must be continuously monitored and validated throughout the deployment to ensure that all technologies are functioning as expected and the core support staff is comfortable with the process and concept. Actual results must be measured and compared to projected results. Existing IT processes must be tested in the virtual world and technologists need formal training on all the tools that have been selected. Regular meetings with key business representatives should be held to make sure expectations are being met. The IT team needs to seek their support for proliferation of the new infrastructure into other areas. A success in one area of the company is easy to replicate when business peers share their perspectives with each other, which leads us to the next step in the process.

Step 5: Expand the Virtual infrastructure

The full solution rollout into the production environment seems imposing. However, if Steps 1-4 are closely followed, it need not be. The team takes what has been learned from the pilot implementation and expands it out to production.

Once the organization embraces the virtual environment and realizes its benefits, a determination will be made on which areas to virtualize. Are there critical applications that need to be prioritized for virtualization? Will all or part of the production environment be virtualized? Should test and development be virtualized? These are the critical questions that need to be answered before next steps can be determined.

Step 6: Sharpen the Saw

As with any implementation, assumptions and processes must be continuously tested, reviewed and evaluated to maximize ROI.

Once virtualization is a proven winner and has gained organizational acceptance, it can be extended into two other logical areas of IT—application development and desktop management. Application development can be accelerated

by decreasing provisioning time in the lab and debugging new applications faster and more efficiently. A virtual environment used for disaster recovery can reduce recovery time by enabling a quicker start up of a replicated environment. Organizations can expand control of the desktop by using virtual desktop. This would allow an organization to manage desktops from a central location, keeping sensitive data in the data center and under control.

Final Thoughts

The VMware stock performance speaks loudly about the business impact of virtualization technology. Nevertheless, virtualization technology is not a silver bullet; it is merely a great enabler. A disciplined approach to an aligned process must accompany the technology. If virtualization is the optimizer, a customized virtualization process will, in essence, optimize the optimizer. Done right, it will sustain and compound ROI and become a powerful advantage for any company.

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