

How to Get the Best ROI from your Virtualization Efforts

Private cloud automation improves service delivery while lowering operational costs

Dell

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Overview

Calculating the return on investment (ROI) for virtualization is easy: If you consolidate 10 physical machines onto 10 virtual machines running on a single physical server, the capital savings can be quite substantial.

However, achieving these savings is not as easy as the simple math might suggest. Many companies adopt virtualization as a cost-cutting mechanism in order to maintain services with flat or shrinking budgets. Most companies that have deployed virtualization to any extent quickly realize that they will not be able to attain the savings they originally envisioned without the efficient and effective management of the virtual infrastructure. In many cases, inefficient management reduces the anticipated savings and can slow the deployment of virtualization solutions.

This white paper looks at the savings that can be achieved by deploying a policy-driven private cloud automation platform. This type of solution helps improve service delivery while lowering the operational costs of managing a virtual infrastructure. In addition, private cloud automation helps companies ensure that they are more effectively using their shared physical infrastructure. This combination of an increase in operational efficiency and an improvement in resource utilization helps accelerate the virtualization deployment, thereby generating even more cost savings.

Challenges

All hypervisors come with management software; so why should companies invest additional money for software to help them better manage their virtual infrastructures? Because as a virtual infrastructure grows from proof-of-concept pilot to full production use, the complexities of managing, tracking, and controlling it very often exceed the capabilities of these management tools. Some of the challenges that companies face as they try to scale their production virtual infrastructures include:

Enforcing governance and compliance

Virtualization hypervisor managers have the capability to manage every unique hypervisor feature, but they do little to enforce which resources a user is allowed to consume or how a machine will be built and managed throughout its life. In addition, these tools require new administrative skill sets.

Managing a virtual infrastructure involves more than just configuring a virtual machine

Delivering a virtual compute resource to its consumer involves more than just configuring the virtual machine. In most cases, requisitioning, planning, pre-configuration, and post-configuration processing must occur. For most companies, these additional tasks are manual processes that lead to inefficiencies and errors. The problem is only compounded when companies try to integrate their virtual environment with their existing management ecosystem.

Delivering a virtual machine frequently involves using multiple management tools

In most cases, tools beyond a hypervisor element manager are required to bring a machine online. An example is the deployment of a virtual desktop. In order to accomplish this task, a system administrator likely has to use three separate management tools: the hypervisor management software; the image deployment device manager for software, such as Altiris®, Tivoli, or Citrix® Provisioning Server; and the connection broker's device manager to configure the user's access rights.

Additional management tools can be required, such as patch-management applications or CMDBs, to integrate the virtual infrastructure into the existing management ecosystem.

Multi-vendor environments add management complexities

Today, most companies only have one hypervisor; however, if operating systems is an indication, that status will likely change. Even with a single hypervisor today, the management tools required for administration of a single vendor's virtual servers and virtual desktops are often not integrated and are frequently incompatible.

What is Automated Workload Provisioning?

A private cloud automation platform orchestrates the end-to-end service delivery and ongoing management of a virtual machine. Throughout the machine's life, it monitors, tracks, and enforces policies that control resource consumption as well as compliance with internal standards regarding how machines should be built and managed.

This software manages the hypervisor's functional capabilities and helps orchestrate the interactions with complementary virtualization technologies, including integration with a company's existing management infrastructure. In terms of capacity planning and management, the platform goes well beyond capacity and chargeback reporting. It identifies stranded, inactive, and abandoned resources and helps automate their reclamation and recycling in order to optimize utilization and further lower operational and capital costs.

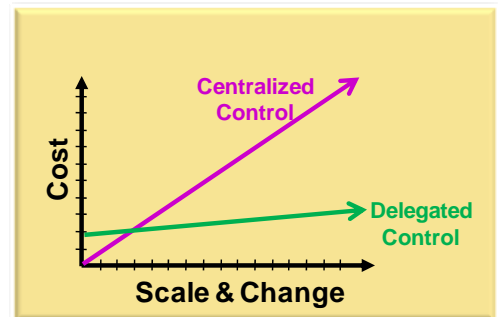
The ROI behind Private Cloud Automation

A private cloud automation platform is easily cost justified based on its ROI. By enhancing the hypervisor's native management capabilities with policy-enabled governance and process automation, this software helps companies increase operational efficiency, optimize resource utilization, and accelerate virtualization deployment.

Increase Operational Efficiency

The provisioning time for virtual machines has been reduced from months and weeks to days and hours. However, most companies still spend four to six person hours, spread out over a few days of elapsed time, to provision a new machine because manual processing must still take place. The same is true for other management operations like re-provisioning, snapshot, decommissioning, and archiving. Errors introduced using these manual processes, and the rework associated with those errors, further contribute to management inefficiencies.

The lack of governance within the hypervisor's management software also contributes to operational inefficiencies. Many companies start with a single administrator as the policy enforcer; while this works short term, in order to scale the environment more people are required. Additional administrators lead to additional operational costs. Also, it is much harder to standardize manual processes across multiple administrators,



which typically leads to the breakdown of governance and compliance controls.

An automated workload provisioning platform helps companies accelerate the delivery of IT services by automating the end-to-end processes associated with virtual infrastructure management. By removing manual processes, it eliminates the work necessary to perform these tasks and also eliminates the rework associated with errors. Policy and access controls enforce governance, which limits user access to pre-allocated compute resources and enforces compliance with how machines are built, managed, and eventually decommissioned.

Private cloud automation allows companies to delegate operational control further downstream because the software abstracts management complexities and its predefined policies ensure that IT administrators remain in control. Neil Smith, a virtualization engineer at Man Group, said that private cloud automation "... has reduced the provisioning cycle from days to minutes. As we expand to thousands of VMs, this reduction will greatly improve initial service delivery and ongoing management, while lowering operational costs."

It is not uncommon for companies to save four to eight person hours in the manual effort required to provision or update just one virtual machine. A typical company managing 1,000 virtual machines can achieve annual OPEX savings of \$200,000 by deploying a private cloud automation platform.

Optimize Resource Utilization

Virtual machine sprawl is one of the biggest concerns facing companies that have deployed virtualization. The ability to quickly create virtual machines without the disciplines and controls in place in the physical world results in machines being provisioned unnecessarily without proper justifications and approvals, machines being over-provisioned (too much CPU, memory, or disk), and machines consuming resources when they are no longer required.

Reduce, reuse, and recycle are the three basic rules that drive the overall environmental movement. These same rules directly apply to the efficient management of a virtual compute infrastructure. An automated workload provisioning platform provides policy-enabled governance and compliance enforcement, which optimize resource utilization in the following ways:

REDUCE - With the appropriate policies in place, administrators control not only how a machine will be built but what resources will be used and how much of those resources will be consumed by each VM. For additional control, policies can be established that automate the approval workflow, further assuring that machines are not over-provisioned or provisioned unnecessarily.

A typical company with 1,000 VMs that has five percent of its machines created without proper business justification and another five percent over-provisioned could easily save over \$100,000 - \$150,000 in capital expenditures through better control of the front-end provisioning process. By delivering the "right sized" machine at the "right service level," companies can eliminate waste, improve resource utilization, and lower costs.

REUSE - The degree to which resources can be reused has a high impact on the overall efficiency of a virtual infrastructure. There are a number of use cases where machines are only needed for short periods of time, yet they continue to exist well beyond when they are required. An automated workload provisioning platform that automatically reclaims and reuses resources is key to enabling more efficient resource reuse.

How to Get the Best ROI from your Virtualization Efforts

A typical company with 1,000 virtual machines that has five percent of its machines used for temporary applications can expect to save about \$60,000 - \$70,000 by automating the reuse of these machines. Environments like development and testing, which have a need for more temporary machines, can expect even greater savings. The same sized company that archives 10 percent of its machines on a yearly basis can expect to save \$30,000 - \$50,000 annually by reclaiming and reusing storage resources after the archive period has ended.

RECYCLE - The first problem with reclaiming inactive resources is the identification of inactive machines. For most companies, this is a manual process consisting of data collection scripts and spreadsheets. The second problem is filtering out the truly inactive machines from those that just appear to be inactive. An automated workload provisioning platform not only provides exception reports that help identify stranded, inactive, and abandoned machines, but also automates the workflow associated with reclaiming and recycling those resources. Anthony Cole, Head of IT at The University of Buckingham said, "Our central IT Services department is no longer needed to re-provision workstations, giving us more time to focus on other IT projects."

A typical company with 1,000 virtual machines and 10 percent of its resources being consumed by inactive and abandoned VMs can expect to save \$80,000 - \$100,000 on capital expenditures annually. Even if the automated process is run more frequently than the current manual process (e.g. quarterly versus annually), companies can expect to save another \$20,000 in operational expenses associated with identification and reclamation of inactive resources.

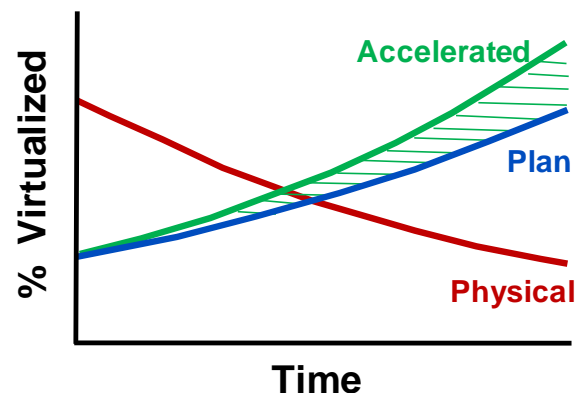
Accelerate Virtualization Deployment

There is very little argument that virtualization can improve overall business agility while reducing costs. If this is the case, why have companies not virtualized a larger percentage of their IT infrastructures? While there are some valid concerns and limitations around the core virtualization technologies, one of the biggest barriers to expanded virtualization deployment is the efficient management of the virtual infrastructure.

Virtualization is a big paradigm shift compared to the physical IT world. Many of the system-management tools and processes that worked fine in the physical world cannot adequately address the new challenges of the virtual world. Without the appropriate policies and controls in place, most companies have slowed the deployment of virtualization in order to avoid losing control of the virtual infrastructure.

Proper governance and compliance enforcement available from an automated workload provisioning platform enable the efficient management of a virtual infrastructure, allowing additional portions of a company's infrastructure to be virtualized. The productivity and capital savings related to more efficient management can be used to fund the hardware required to grow the physical infrastructure in order to support the virtualization expansion.

A typical company with approximately 2,000 physical servers and 1,000 VMs could save \$400,000 - \$500,000 annually by accelerating its virtualization plans just five percent.



Proven Customer Savings

An automated workload provisioning platform that automates workflow and enforces policies related to the provisioning and ongoing management of a virtual infrastructure can typically justify its additional cost through improved operational efficiency alone. In addition, it provides other savings by optimizing resource utilization and helping accelerate virtualization deployments by providing the tools needed to manage a growing virtual infrastructure more efficiently.

The table below highlights the potential savings that can be achieved by deploying an automated workload provisioning platform.

Customer Config	Physical Servers	Virtual Machines	OpEx Savings	CapEx Savings	Total Savings
Small	800	300	\$60K	\$480K	\$0.54M
Medium	2,000	1,000	\$196K	\$975K	\$1.2M
Large	10,000	4,000	\$750K	\$3,768K	\$4.6M

As with any tool that estimates potential cost savings, the results are somewhat dependent on the specific environment. However, most customers we have worked with intuitively realize the inefficiencies in both their operational management overhead and resource utilization. The ROI model used to calculate the savings for variously sized configurations helps companies quantify their actual savings.

Brad Novak, managing director of End-User Platforms at Credit Suisse, indicated that, "We are able to improve the user experience through rapid service delivery, while maximizing the operational ROI through automation and standardization."