



# Cashing In On A Virtual-Ready Infrastructure

*The next generation of infrastructure management reduces costs and improves efficiencies. Stand still and you will be left behind.*

**I**T professionals are under constant pressure to upgrade their organization's infrastructure. They are managing more devices, more data, more services and more applications, with no end in sight. This has put a tremendous strain on data centers—not to mention added considerable costs. And all of this is taking place during a time of tighter IT budgets and smaller staffs.

Fortunately, necessity has been the mother of invention: Innovations in information technology have enabled organizations to manage their IT resources more effectively and efficiently. Technology advances from blade servers to virtualization and now cloud computing are creating opportunities for businesses to accomplish more utilizing fewer resources.

And now one of the next great IT breakthroughs is taking place in the data center itself: The move to a new type of architecture that is all about being faster to deploy, easier to adapt and far more capable of enabling predictive outcomes. In short, a new type of

infrastructure that is all about being more responsive to the needs of the business.

This next generation of data center is known as a virtual-ready infrastructure. It is characterized as “virtual-ready” because it enables IT to break down the silos that have been built between computing, networking and storage and enables the entire IT infrastructure to be virtualized.

The result is an infrastructure that delivers significant cost savings while driving maximum flexibility and efficiencies. In addition, this next-generation data center holds the promise of dramatically reducing lifecycle costs by creating a strategic, simple path to upgrading an organization's IT infrastructure for now and the future.

This next-generation virtual-ready infrastructure is being achieved through the implementation of innovative solutions such as the Dell Advanced Infrastructure Manager (AIM). A virtual-ready infrastructure enabled by AIM delivers significant improvements in ROI by reducing the number of

servers, cutting energy consumption, simplifying provisioning, reducing complexity and making the entire infrastructure more efficient and cost-effective.

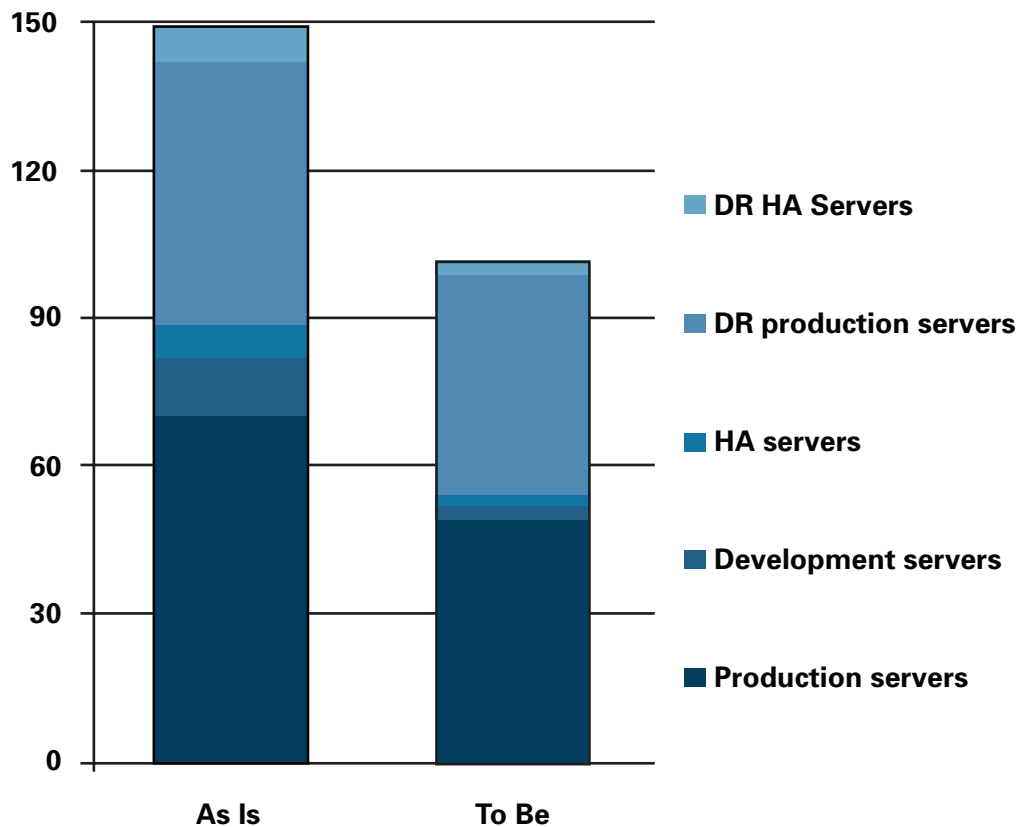
Most importantly, a virtual-ready infrastructure enables IT departments to align the data center with the needs of the business and provides organizations with unprecedented flexibility, versatility and efficiency. In doing so, it enables requests from business to IT to be handled much more quickly and also lowers the overall risk for IT outages. And it is

available now.

## A New Approach to Building the Data Center

Dell AIM reflects Dell's vision of the next generation of data centers that are open, dynamic, simple to install, easy to manage and truly virtual-

# CAPEX Savings Potential from Dell AIM





ready. The ability to dynamically change and manage the infrastructure—which enables instant provisioning and automatic rapid recovery from server failures – is based on a new approach to building the data center infrastructure built on two core principles:

1. Operations are executed using logical definitions of data center resources that exist independently of the physical infrastructure.
2. The logical definitions are mapped to physical resources dynamically by a resource manager, which is aware of the state and composition of the physical infrastructure.

This means that the server image is disassociated from the physical hardware, stored on centralized storage and booted on a server that is dynamically selected either automatically or by an operator. The consequent changes to the network and storage access are automated as well. The result is a data center that streamlines and automates resource management and allows data center operations to be run independently of the state and composition of the underlying physical infrastructure.

Under this vision, the infrastructure is not only virtual-ready but is also flexible, scalable, less complex to manage and much more ready to adapt to the changing needs of the business. Adding new servers, for example, is just plug-and-play: As they come on to the network, they are discovered automatically and added to the available resource pool. Change management is also easily facilitated: As capacity demands fluctuate, Dell AIM enables IT personnel to assign resources where they are needed without requiring physical changes to the infrastructure.

## Delivering Maximum ROI

There are myriad reasons for building a virtual-ready infrastructure using Dell AIM: It is simple to install, it can be rolled out gradually across the organization, it supports open standards, it supports the existing infrastructure, it reduces energy consumption and it “future-proofs” the data center.

Ultimately it bolsters the bottom line by reducing costs and delivering maximum return on investment. This maximum ROI is achieved by reducing capital expenditures, saving money on energy consumption, reducing software licensing fees, enhancing business continuity and creating significant operational efficiencies. Here are just some of the innovative ways in which a virtual-ready infrastructure enhances ROI:

**Reduced Capital Expenditures:** The organization will be able to optimize and maximize its use of servers, storage and networks and will be able to save money by deploying less hardware. For example, with a virtual-ready infrastructure it is possible to dynamically repurpose the hardware to serve different needs in different time zones across the world. It enables the enterprise to figuratively follow the sun: As the workload is ramping down in one part of the world, the computing resources can be shifted dynamically to another. The capital savings here could be significant. Once an organization spends less on servers, it saves on power consumption, on software licensing fees and on IT support.

CAPEX savings can also be achieved because a virtual-ready infrastructure will allow the organization to deploy fewer servers for backup and disaster recovery. Dell AIM, for example, offers automatic



server failover, which eliminates downtime and also reduces the number of spare servers required. AIM uses a common pool of spares to service the failover needs of multiple servers. This means fewer spare servers are required in the data center and for disaster recovery. Again, fewer servers mean incremental CAPEX savings – long- and short- term—in reduced energy consumption and reduced software licensing fees.

In addition to these savings, Dell AIM supports open standards and existing infrastructure. This means organizations don't have to get rid of any equipment in their infrastructure and can, in fact, revitalize their current investment. By deploying a virtual-ready infrastructure that supports open standards, IT can buy best-of-breed products now and in the future; and can also create longer life spans for existing equipment by repurposing it, as newer equipment is provisioned.

There are opportunities for additional CAPEX savings: For example, with a virtual-ready infrastructure an organization could remove local hard disks from each server and run everything remotely on a storage area network. This provides savings in power consumption and hardware costs while delivering better recovery and backup: Simply by eliminating local disks in servers and transitioning to boot from central storage, organizations can reduce server power use by up to 25%. Additional savings in power can be achieved by automatically powering off unused servers. Another area of savings could be in applications development: Developers may no longer require separate servers to write an application. Every little bit helps.

Operational Efficiency Improvements: Cost savings and ROI can be achieved in a number of other ways through the deployment Dell AIM as the foundation

for a virtual-ready infrastructure. One of the more interesting ways to look at the value of this new type of infrastructure is the impact it has on the refresh cycle. Often IT will keep an application running on a server until the server is fully depreciated. This can make for a lot of older, inefficient equipment. In a virtual-ready infrastructure the applications are not sitting on any particular server, which means you can refresh the data center as often as you want with confidence. This means the data center is never static, but it's also never in a state of flux. The refresh is simple, quick and transparent to the users.

In fact, it is the rapid provisioning of hardware and applications that provides some of the most significant efficiency improvements to IT. With the Dell AIM approach to a virtual-ready infrastructure new servers are discovered automatically and added to the resource pool. This saves the IT department considerable time and expense in deploying new devices and in rolling out new applications. It also means ongoing maintenance costs will be reduced, with fewer servers and automatic recovery from failures.

In addition, the complexity involved in certain IT tasks, such as provisioning, will be reduced so the IT department can deploy its most skilled workers on its most strategic initiatives. Reducing complexity also reduces risk: When you follow a manual process, you have the possibility of introducing inconsistencies into the process. When the process is automated, risk is reduced and consistency is maintained.

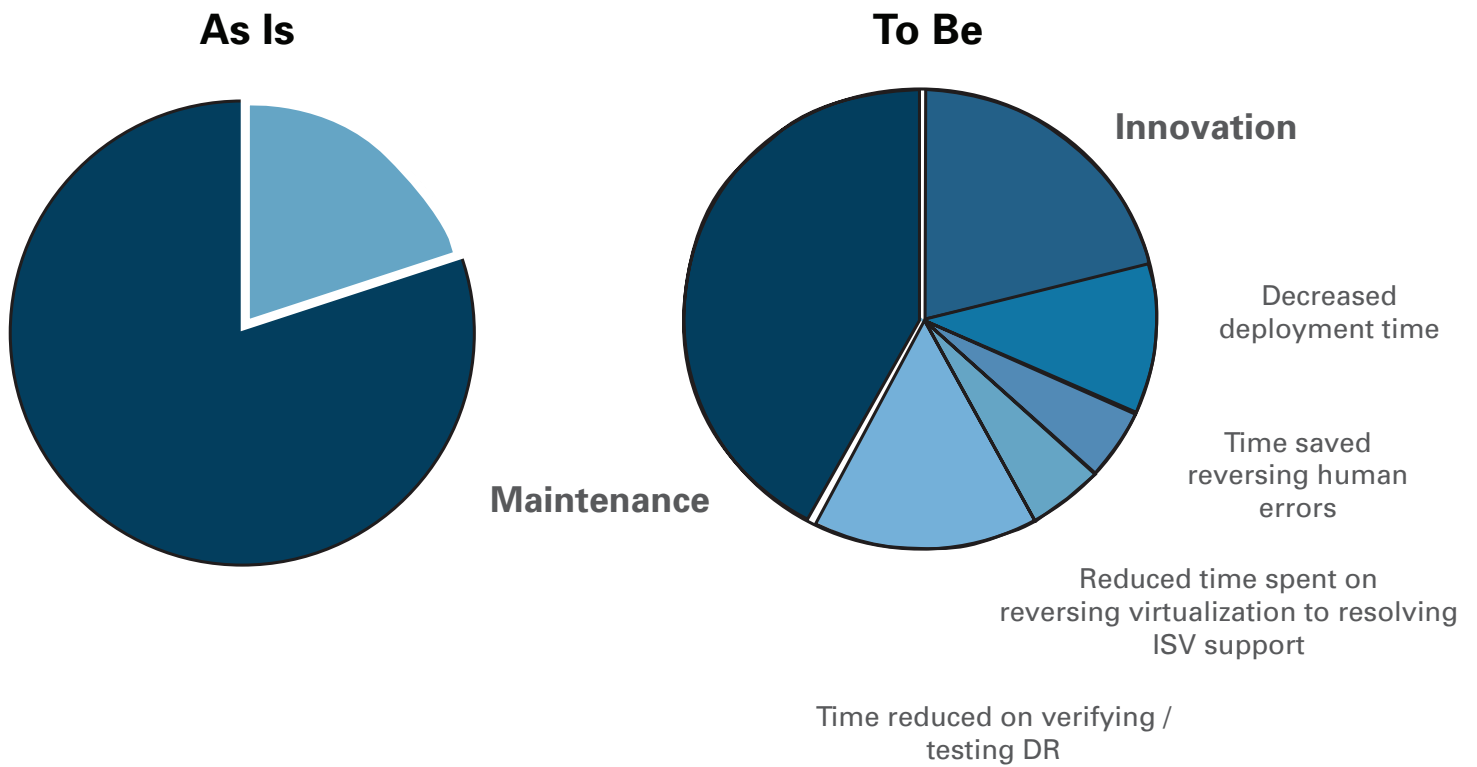
## Reducing Risk, Boosting Flexibility



Not every benefit can be measured strictly in terms of ROI. In fact, certain benefits may fall into the “priceless” category. For example, a virtual-ready data center can respond quickly to the changing needs of the business. This enables a more rapid rollout of new applications and it significantly reduces the elapsed time for the IT department to respond to service requests from the business units. At the end of the day, IT is all about focusing on the needs of the business. Making the business more competitive, responsive to customer needs and responsive to employees? Priceless.

Another benefit is business continuity. Downtime can impact sales, reputation, morale and confidence in a brand. The Dell AIM provides an N+1 availability solution in which a spare server anywhere in the infrastructure can replace any failed server. Server failures are detected automatically and the failed server’s image is immediately targeted to an available spare server. At the same time, network and storage connectivity are established on the new server as well. This feature also improves an organization’s ability to plan for and respond to disasters, so IT can spend less time and money in implementing disaster recovery plans.

## OpEx Savings Potential (IT Admin) from AIM



Flexibility is another important characteristic to look for in this next-generation data center. While there is no doubt that organizations will be increasing their use of virtualization, there will still be pockets of resistance and fear. Financial departments, for example, may want their own physical servers. A product like Dell AIM enables IT to manage both virtual and physical machines from the same management platform, so if a particular application needs to be switched back from a virtual environment to a physical machine, the process can be handled quickly, efficiently and easily. Organizations also do not have to go through a time-consuming conversion process for migrating workloads between physical servers and virtual machines.

## Why Wait?

This is one of those transitional times in IT where it will actually cost your organization more by staying with the status quo rather than moving ahead to the next-generation. The amount of savings that can be achieved by moving to a virtual-ready infrastructure — as well as the potential ROI — is too compelling to ignore, particularly at a time when IT is moving forward and investing in the data center. In a recent survey by InformationWeek, data center software infrastructure — virtualization, management software, SOA, Web services or other infrastructure upgrades — was cited as the number one investment target for 2010. If you're going to be investing in data center infrastructure, ROI should be a critical determining factor.

But the benefits of moving to a virtual-ready infrastructure go beyond ROI and cost savings: Now is the opportunity to put in place an architecture that can serve a business' infrastructure needs for

many years to come. The reality is that virtualization is becoming more and more ingrained in the data center, and moving to a virtual-ready infrastructure gives organizations tremendous flexibility and efficiency in adapting the infrastructure to serve the needs of the business.

The need for this next-generation infrastructure is certainly there: No matter what happens, IT will continue to be asked to deliver more and will be asked to stretch resources as far as possible. The technology is also there, particularly as embodied in innovative solutions such as Dell AIM. And, even if your organization does not have incremental money to spend on improving the data center, the ROI involved in making this kind of move means that the financial considerations are such that the transition will pay for itself soon enough.

Why wait? The answer is simple: You shouldn't.



# Taking AIM At Reducing TCO

*How you can save 20% over five years by upgrading your data center*

If you're thinking about upgrading your data center with a virtual-ready infrastructure, you know there is one key question you are going to have to answer: What will be the impact on total cost of ownership?

Using conservative methodology, Dell estimates that an upgrade to Advanced Infrastructure Manager (AIM) can deliver a reduction of at least 20% in total cost of ownership over a three-year period in a "typical" data center that currently has 149 servers. This reduction would come from a combination of reduced servers, lower administrative costs, reduced operating expenses and significantly reduced maintenance expenses.

The methodology is conservative because it doesn't account for any increase in virtualization: It basically focuses on the improved efficiencies

inherent in upgrading to this next-generation infrastructure. For example, the number of total servers could be cut by about 18% because AIM would enable the organization to reduce the number high-availability servers, disaster recovery servers, spare servers and development servers while also improving performance and availability. With fewer servers there are corresponding savings in power consumption, space, software licensing fees and ongoing administration and maintenance.

AIM also enables IT administrators to improve efficiencies and spend less time on maintenance and more time on functions that are deemed more strategic. Using conservative estimates, AIM can reduce the amount of time administrators spend on maintenance and deployment from about 80% of their time per server to about 35%.