This is the reality: If you are an IT manager at a medium or large-size enterprise your infrastructure is going to get more virtual—and quickly—over the next few years.

Why? Because the benefits created by virtualization—consolidation, reduced power consumption, scalability, flexibility and an improved ROI—are simply too compelling to ignore.

The pressure on IT to deliver more using fewer resources is not going away no matter what happens with the economy. The analyst firm Gartner expects more than 50 percent of server workloads to be virtualized within the next two years, up from today’s 16-to-20-percent, according to a report issued at last year’s Gartner Symposium/ITxpo.

What’s more, virtualization is going to spread rapidly to a broader cross section of mission-critical functions—think virtualized corporate databases, corporate finance and all of your company’s various homegrown applications. In a recent Outlook 2010 survey by InformationWeek, 73 percent of IT professionals said they will either continue to do server virtualization in 2010 or they are more likely to do it to improve overall IT efficiency.

So what should IT do to prepare for this inevitable invasion of server virtualization? How are you going to get from 20 percent virtualization to 50 percent virtualization in two years or less?

The first and by far most critical step is to make sure that you have in place an infrastructure that is optimized for virtualization. A virtual-ready infrastructure should enable you to add and allocate resources dynamically as needed and should also provide virtualization capabilities across the entire infrastructure: Servers, storage and networks. It should support the rapid rollout of servers and services and provide all of the benefits of virtualization, such as reduced costs, lower energy consumption and improved operational efficiencies. It should also “future-proof” your infrastructure with an architecture that will last by supporting a variety of standards as well as all
types of devices. Finally, it should be simple to install and easy to manage.

What You Should Look For In A Solution

Since a virtual-ready infrastructure will define the data center of the future, the obvious next question is: When is the right time to make the move? The answer, quite simply, is this: If you choose the right technology solution, there is no better time to make the move than now.

Why? Because you will be able to achieve immediate cost benefits and consolidate space in your data center. You will also be able to create an architecture where it will be much simpler and cost efficient when the inevitable time comes to add IT resources to support the changing demands of the business.

If the goal is to get beyond 20 percent virtualization—and it should be—there are several important features that you will require from your virtual-ready infrastructure platform, including:

How A Next-Generation Infrastructure Can Facilitate The Use of Virtualization

Dell’s AIM enables a virtual-ready data center that helps organizations address operational, procedural and cultural challenges.

In addition to the technical challenges in moving beyond 20 percent virtualization, many businesses must also overcome organizational, procedural and cultural obstacles that can hamper virtualization usage. The Dell Advanced Infrastructure Management architecture for a virtual-ready infrastructure has been designed from the ground up to help IT come up with innovative and elegant solutions to address some of these organizational challenges.

For example, one of the key issues in many organizations is whether IT has the authority to take business applications into a virtual environment. One key concern is performance: Will running a hypervisor slow down the responsiveness of the application? Another is control: Some business managers, in finance or HR for example, may want to be on a dedicated physical server. With AIM, IT can easily revert a workload back to a bare-metal server in the time it takes to reboot the server.

Another organizational and cultural issue has to do with the way in which the data center operates. Many mid-sized and large enterprises have different silos for servers, storage and networking. Moving to a next-generation virtual-ready data center will require some changes in procedures, but using Dell AIM as the foundation makes the transition much easier compared with solutions from other vendors.

AIM still allows servers, storage and networks to be administrated separately, but it helps to fill in the gaps between these functions, automating many of the tasks involved in provisioning new servers as well as new storage and networking devices. In this way, the various administrators remain in charge of their own domains. In contrast, other solutions forces separate tools for network and server administrators, often putting them in conflict.

While choosing the right technology can be critical in helping companies overcome the obstacles preventing them from moving beyond 20 percent virtualization, it also sometimes helps to have a valued, experienced partner. Understanding some of the challenges faced by others can help you plan and adapt your own processes. Dell offers a ProConsult practice in this area, called Virtualization Operations Readiness Assessment, which focuses on helping organizations assess, plan, design and implement virtualization projects.
Support for heterogeneous hypervisors. While VMware has been the dominant platform to date, there are now other options—notably Microsoft’s Hyper-V—and it will be important to have flexibility for multiple solutions within the IT infrastructure. By not being tied in to one hypervisor, organizations can seamlessly re-target their workloads between physical servers and virtual servers without having to go through a time-consuming conversion process. Basically, you never know which hypervisor is going to provide the best performance or features in the future, so why lock yourself into one solution?

The ability to manage both virtual and physical servers. Many individuals and organizations are still not fully comfortable with virtualization. With the right virtual-ready infrastructure, the organization should be able to seamlessly migrate between virtual machines and physical machines. So, while the infrastructure can be in place for virtualization, it doesn’t have to be an all-or-nothing proposition. This way, the organization can still have the architecture for a virtual-ready infrastructure, but if it isn’t ready to virtualize the Oracle database or Microsoft Exchange, for example, it doesn’t have to do so.

Rapid provisioning of servers, storage and network devices. With a virtual-ready infrastructure you should be able to instantly provision servers, storage and network connectivity without having to make physical changes to the servers, cables or storage area networks (SANs). The infrastructure should also be based on industry standards so IT can take advantage of all existing assets. This can help to save money and also ensure that as you refresh your technology base—servers, SANs, switches and other networking devices—all of your technology investment is “future-proofed” and will be supported no matter what happens in the data center.

The other important feature to look for in a virtual-ready infrastructure is a management platform that is software-based and resides on a separate physical server or virtual machine. This way the management of the infrastructure is separated from the infrastructure itself, which means the management platform does not impact performance and also enables the infrastructure and applications to continue to operate unaffected by anything taking place at the management layer.

Taking AIM at Virtualization

There are many management solutions that aspire to be virtual-ready. However, when you focus on the features that will be truly important to the infrastructure as it becomes more virtual—features such as one management platform for physical and virtual machines and support for multiple hypervisors—the one solution that really “gets it” is the Dell Advanced Infrastructure Manager (AIM).

AIM provides integrated virtualization management across the infrastructure so, in addition to supporting centralizing booting of physical servers, AIM boots hypervisor stacks or virtualization host operating systems – such as VMware ESX, Microsoft Hyper-V or Red Hat Xen – from central storage. This enables IT to dynamically manage the number of servers that are part of virtualized environments. In addition to the hypervisors noted above, Dell AIM will also support SUSE XEN and Citrix XenServer in the future.

As the data center moves forward from 20 percent virtualization, it will be important to extend the same management paradigm for bare metal services to
include virtual resources as well. If you look at current data centers, there are generally two different groups handling physical servers and virtual servers because the management philosophies are different.

However, by offering one simple solution for managing both environments, AIM makes it easier for IT to manage resources and to prepare IT departments for the inevitable influx of virtualization. It also helps to blur the line between virtual and physical environments, enabling flexible resource sharing and workload mobility. By enabling the same server image to move between physical and virtual resources AIM eases the path toward a more virtual environment.

AIM automatically discovers a virtualization host and all virtual machines configured on that host. The process of discovering this host is the same as the one used for physical servers. AIM also enables the repurposing of virtual machines and either boots them directly using images stored on standard storage devices or by using images stored in proprietary formats such as VMware VMDK and Microsoft Hyper-V VHDs.

AIM also provides specific advantages in managing VMware environments. AIM enables rapid and dynamic provisioning of physical resources required to estimate, expand and shrink VMware ESX clusters. A common, shared pool of bare-metal servers can be used to service the needs of any cluster.

The Path to 50 Percent Virtualization

The shift to a virtual-ready infrastructure is inevitable. The benefits are too compelling and the opportunities too great to ignore. In a recent survey by Symantec on the 2010 State of the Data Center, more than 70 percent of IT professionals rated virtualization as either somewhat or absolutely important as a data center initiative for 2010. What's more, virtualization is expanding from servers into networks and storage. IT departments realize they must remove the boundaries between the separate silos that have been artificially erected within their IT organizations. The path to 50 percent or greater virtualization is clear and it starts with a virtual-ready infrastructure.

A Guide To Rolling out a Virtual-Ready Infrastructure

Dell offers a four-step methodology for moving to a virtual-ready infrastructure. The goal is to make the transformation more manageable, particularly in environments where existing operational policies must be respected, such as IP address administration, network access restrictions, storage security and service-level requirements.

Step 1: This begins in the server department. It involves a simple and non-intrusive mechanism for deploying a Dell AIM environment and building an inventory of servers. Processes include automatic server discovery and remote power control.

Step 2: This incorporates tools and methodologies for migrating existing workloads to central storage and gradually transitioning from local booting to booting from central storage. Functions include centralized booting and the creation of personas, which are software constructs that combine the server’s operating and installed applications with metadata that describes its unique properties and configuration.

Step 3: This requires cooperation across departments, particularly between the server and network departments. It incorporates automated network topology management.

Step 4: The transformation is completed by automating server image configuration and integration with other management software in the ecosystem through Dell AIM abstraction and APIs.