For many organizations, virtualization provides a means to enhance IT flexibility and manageability, boost efficiency, and cut costs. Virtualization helps eliminate wasteful spending by allowing IT organizations to consolidate resources, which helps reduce fixed operational costs for administration, maintenance, power, and cooling.

As the distinction between business and IT strategy vanishes, executives have begun to view virtualization as a baseline technology to catalyze innovation, agility, and growth through cloud computing. But no matter where an organization is on the path from virtualization to cloud computing, it needs effective tools to streamline the management of heterogeneous hardware and software assets and to realize the benefits of virtualization.

Understanding the challenges of virtualization

While the imperative to increase flexibility and align IT initiatives with fast-changing business requirements is clear, many organizations have virtualized a relatively small fraction of their infrastructures. As they begin to map out a comprehensive IT strategy, they may be faced with the challenges of installing and configuring virtual environments or become sidetracked by complex licensing and support terms for virtualized applications. For example, realizing that licensing policies that applied to physical systems are not compatible with virtual machines, some vendors stipulate that support is contingent on returning applications to physical

Pooling resources

In two minutes, learn how Dell Advanced Infrastructure Manager (AIM) helps increase IT agility by combining servers, storage, networking, and hypervisors into a flexible, scalable, automated pool of resources.

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environments. And then they dictate high licensing fees for virtualized servers running their applications. Moreover, virtualization may require deploying hypervisors from multiple vendors, which can add to management complexities. To ease the adoption of virtualization, organizations should avoid vendor lock-in, find tools that manage a mixed-vendor physical and virtual environment, and consolidate resource management.

Resource consolidation means a reduced number of physical servers, which implies that server utilization is optimized to support multiple applications; organizations can be exposed to serious disruptions if a server becomes unavailable. As a result, basic provisions for high availability and disaster recovery need to be well supported before organizations can confidently proceed with widespread adoption of virtualization and next-generation cloud-based IT.

Deploying private cloud-based services is a first step toward cloud computing. Many organizations may start with a hybrid approach and keep their critical data on-site. Tools that enable flexible IT capabilities, aggregate IT resources into a single pool, and provide capacity scalability to support cloud services can help organizations smooth the way to the cloud, whether private, public, or hybrid.

**Streamlining the management of virtualized environments**

The Dell Virtual Integrated System (VIS) portfolio is designed to help organizations improve business agility, reduce operational costs, and optimize data center utilization across heterogeneous computing environments. Dell VIS provides key capabilities that enable organizations to transform IT operations and service delivery with great choice and flexibility:

- Self-service, policy-based delivery of IT and business services
- Centralized control and intelligent workload deployment while maintaining business continuity
- Ability to create and manage pooled infrastructure resources, providing excellent flexibility to accommodate business needs and adaptability to evolving infrastructures

VIS products are designed to deliver workload management across a multivendor and mixed-hypervisor infrastructure for efficient IT service delivery. The portfolio includes Dell Advanced Infrastructure Manager (AIM) and VIS Creator. Dell AIM abstracts workloads from the hardware they run on and provides a single point for managing workloads across a heterogeneous physical and virtual environment (see Figure 1).

Creating a dynamic infrastructure requires rapid server repurposing and configuration management across servers, network, and storage. Dell AIM drives efficiencies by managing physical and virtual resources centrally, as a single pool of assets. It allows administrators to rapidly provision servers and connect them to networks and storage without making physical server, cable, or network changes.

The dynamic resource allocation and workload relocation capabilities of AIM enable high availability and simplified disaster recovery for physical and virtual infrastructures. AIM monitors the environment and when a server fails, it automatically retargets the failed server’s image to an available spare—physical or virtual. Paired with storage replication, AIM can be used to restart workloads at another site in the event of a site outage, essentially providing a cost-effective alternative.

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**Figure 1.** Dell Advanced Infrastructure Manager (AIM) helps IT organizations simplify virtualization and prepare for the cloud
disaster recovery solution. Using automatic virtual provisioning to protect applications against hardware failures, AIM delivers an alternative to complex and expensive clustering approaches.

When downtime is not an option and availability must be as continuous as possible, data centers can further automate their environments with monitoring tools that complement Dell AIM. Automation frees administrators from routine tasks and allows them to allocate time to pressing data center initiatives that advance the strategic agenda.

Managing virtual workloads and switches
AIM is tightly integrated with VMware® ESX servers and the VMware vCenter™ management platform. For example, using the Dell AIM Resource Manager plug-in for vCenter, administrators can monitor and manage an AIM environment from the vCenter console. The plug-in enables administrators to see an inventory of VMware ESX hosts in the AIM environment, virtual machines configured on each host, and workloads running in the virtual machines. Administrators can start workloads, stop workloads, and manage their network connectivity.

AIM is also designed to manage VMware standard switches in the same way that it manages physical network switches. Administrators can establish virtual LAN (VLAN) connectivity to VMware switches on a port-by-port basis. When AIM retargets workloads from physical servers to virtual machines, it automatically configures the networking in the hypervisor host and the virtual machine to match the workload's networking requirements.

Extending mixed-hypervisor environments
The integration of Dell AIM and Microsoft® System Center management products brings together best-of-breed Dell management software, servers, networking, and storage with Microsoft virtualization and management technologies to aid organizations in expanding their virtual infrastructures or building private clouds. Leveraging the integration efforts of the two companies, the combination of Dell AIM workload mobility and recovery management and Microsoft System Center software distribution, patch management, and system- and service-level monitoring leads to an elastic and dynamic IT infrastructure. It supports multiple hypervisors and includes end-to-end management of the multivendor hypervisor environment. Because the Microsoft Hyper-V™ hypervisor is included with the Microsoft Windows Server® 2008 R2 OS at no additional cost, organizations can save money on licensing fees while easily extending virtualization to existing Microsoft platforms. Hyper-V is designed to work seamlessly with widely used Microsoft applications such as Microsoft SharePoint®, Exchange messaging software, and Microsoft SQL Server® database software.

Automating processes in a dynamic cloud environment
Large enterprises with complex deployment requirements can use the BMC Atrium® Orchestrator adapter, which works with Dell AIM to automate complex tasks. Atrium Orchestrator enables a dynamic cloud environment with consistent, repeatable workflows, helping administrators translate business requests into changes that can be easily implemented. Instead of obtaining data from one tool and passing it to another tool, administrators can use Atrium Orchestrator to create deterministic workflows that link different tools into a single process.

Building a strong foundation for cloud computing
Dell AIM, VIS Creator, and products from Dell partners work together to enable the use of multiple hypervisors, create a flexible infrastructure, and manage heterogeneous physical and virtual environments—all of which are essential for establishing an efficient virtualized infrastructure. This infrastructure provides a foundation from which cloud-based services can be deployed as a step toward cloud computing. In particular, cloud-based services offer a big payoff to organizations with limited IT staff by offloading routine management and maintenance so that IT staff can focus on projects that advance the strategic needs of the organization.

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Learn more
Dell Advanced Infrastructure Manager (AIM): dell.com/aim

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