VMware and Cisco Virtualization Solution: Accelerate Your Server Consolidation Strategy

What You Will Learn

The joint partnership between Cisco[®] and VMware has delivered a solution that addresses the main inhibitors to broader adoption of server virtualization.

Introduction

Server virtualization and consolidation have proven to be an effective strategy for balancing a company's need to deploy new systems and applications with the equally pressing needs to reduce total cost of ownership (TCO) and combat infrastructure sprawl.

However, several factors inhibit customers from taking broader advantage of the benefits of server virtualization. A successful and scalable server virtualization strategy must address these challenges.

Lack of Virtual Machine—Level Granularity

Because a single physical server can now host multiple applications, often with different security, compliance policy, and service-level requirements, policy now needs to be applied at the virtual machine level. If a single server cannot properly host applications with different policy requirements, the degree of server consolidation possible is limited. For example, if applications from the sales, finance, and human resources departments cannot be consolidated onto a single server because of an inability to maintain policy compliance, then separate physical servers must be maintained for each organization, which may not be an optimal use of server infrastructure.

A related need, unique to virtualized environments, is that this virtual machine–level policy must follow virtual machines as they move between physical servers. Ideally, this process should be automated; otherwise, it becomes an impediment to taking advantage of some of the more sophisticated aspects of server virtualization for solutions such as resource management or improved availability. Either the network and storage services must be manually reconfigured before a virtual machine can be moved, which is less than ideal, or the data and storage networks must be configured in a way that may compromise their stability and security.

Need for a Nondisruptive Operational Model

A scalable solution needs to integrate transparently into existing operational models and use existing operations and management tools. A successful solution will allow the server and network teams to use their existing tools and follow their existing operational best practices. Otherwise, adoption of server virtualization is delayed as the operations staff learns new tools and processes. Similarly, if the virtual environment cannot be managed in the same way as the physical environment, overall support costs will increase.

Blurred Organizational Roles

Experience shows that server virtualization can lead to a blurring of organization roles: for example, server administrators may find themselves managing network resources or trying to interpret and implement security policy. At the very least, this approach to roles leads to an inefficient use of time and is not likely to be scalable as virtual machines become the predominant application platform. A larger concern is that this approach will result in implementations that depart from best practices or are not complaint with policy requirements.

Solution Benefits

The joint Cisco and VMware solution combines Cisco Nexus™ 1000V Series Switches and VMware vSphere to specifically address these inhibitors and support the faster adoption of server virtualization across a broad range of applications. A Cisco Nexus 1000V Series Switch is a pure software switch that integrates directly into the VMware vSphere hypervisor as a direct replacement for the VMware vSwitch. It represents a blend of Cisco's networking expertise with VMware's server virtualization expertise, and it was designed specifically to help customers scale their virtualization strategies.

Virtual Machine—Level Granularity

The Cisco Nexus 1000V Series allows policy to be mapped down to the virtual machine level. This mapping helps ensure that workloads with different policy (security, regulatory, and service level) requirements can coexist on a single physical server and still be treated appropriately. The direct benefit of this approach is a higher server consolidation ratio, since servers can be consolidated based on workload and resource requirements instead of policy compliance requirements.

The virtual machine–level policy enforced by the Cisco Nexus 1000V Series also automatically follows the virtual machine as it moves across physical servers in a VMware vSphere cluster without any manual intervention. This behavior means that the server team can make better use of advanced features such as VMware Distributed Resource Scheduling (DRS) and Fault Tolerance (FT).

Nondisruptive Operational Model

One of the main benefits of the Cisco Nexus 1000V Series is that it cleanly integrates with the existing management and operations tools so that no retraining or redrafting of operational procedures is necessary. From the server team's perspective, the whole process is managed from VMware vCenter. When a new virtual machine is created, the various available policies can be selected from the port groups menu, and after the virtual machine is powered on, the policy is applied automatically. Similarly, as VMware VMotion is initiated, the Cisco Nexus 1000V Series Switch concurrently and statefully reconfigures the network services so there is no service disruption. This configuration is also automatic, so no manual intervention is required from the network operations team.

Distinct Organizational Roles

The joint Cisco and VMware solution allows the server and network teams both to focus on their areas of expertise and responsibility. After the server and network teams define the available policies, the server team is free to create, move, and destroy virtual machines without the need to either manage network resources or depend on the network team to complete network reconfiguration in a timely manner. Similarly, the network team is no longer drawn into day-to-day server operations while still maintaining assurance that the server team is adhering to both operational best practices and security and compliance policies.

Why Cisco?

Cisco and VMware have forged a unique partnership designed to deliver the types of solutions customers will need as they virtualize their data centers. The Cisco Nexus 1000V Series is the first result of the companies' shared vision and joint research and development efforts. Customers benefit from the collaboration of two industry leaders with a solution that offers outstanding value, features, and level of integration.

For More Information

More information can be found at the following locations:

- http://www.cisco.com/go/1000V

- http://www.cisco.com/go/vnlink

- http://www.cisco.com/go/datacenter

- http://www.vmware.com/products/cisco-nexus-1000V/index.html

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