Computing Challenges Today

Organizations rely on their computing infrastructure to provide a broad array of services. To meet the demand to deploy, maintain, and grow these services, IT organizations must continually add new servers to increase computing capacity. However, as a consequence of purchasing more and more servers, organizations face a growing server sprawl presenting challenges that include:

- **Rising costs.** In addition to the cost of adding servers, organizations face rising costs for power, cooling, network infrastructure, storage infrastructure, server administration, data center upgrades and new data centers.

- **Poor return on investment.** The common practice of dedicating a single server to each x86 application and sizing it for peak loads has led to severe underutilization of server assets in most data centers. Servers typically run at 5-15% CPU utilization, but business process and technology limitations make it difficult to improve on those figures.

- **Decreasing manageability.** Managing servers becomes increasingly difficult as the number of servers grows. Adding to that challenge is the heterogeneous mix of hardware vendors, server models, operating systems and configurations that IT departments need to support.

- **Reduced efficiency.** As server sprawl increases, IT organizations are forced to spend an increasing amount of time on reactive tasks such as server provisioning, configuration, monitoring and maintenance. This leaves them less time for proactive, strategic projects to improve infrastructure and service levels.

In short, the need to provide new and upgraded services has brought organizations face-to-face with the limitations of their current data center infrastructure. As a result, organizations are looking for solutions that provide them a more cost-effective, manageable and efficient infrastructure.

Consolidating and Containing Servers with VMware Virtual Infrastructure

Server consolidation and containment solutions implemented with VMware virtual infrastructure software meet the challenges of server sprawl and underutilization while building a better computing infrastructure that is ready to meet future computing needs.

VMware virtualization technology makes it possible to package a complete x86 server—hardware, operating system, applications, and configurations—into a portable virtual machine package. Multiple virtual machines can then run simultaneously and independently on a single x86 server with consolidation ratios often exceeding 10 virtual machines per host processor. Virtual machines and their data are encapsulated in easily managed virtual disk files and hardware independence is ensured by the uniform x86 virtual platform provided to each virtual machine by the VMware virtualization layer.

"VMware software probably saved us several hundred thousand dollars within a year on hardware purchases alone. As QUALCOMM grows, we anticipate even greater savings."

Paul Poppleton, IT Manager, QUALCOMM
VMware software uses this technology to provide a simple, proven solution for consolidating servers. Each workload that previously required a dedicated physical server can be placed in a virtual machine, making it simple to consolidate multiple workloads onto each physical server. Unlike many consolidation solutions, a VMware solution provides the benefits of consolidation without requiring significant changes to existing applications and configurations. The VMware® P2V Assistant tool accelerates the completion of server consolidation projects by automating the conversion of Windows servers into virtual machines. In addition to consolidating servers today, implementing VMware virtual infrastructure provides a solution to contain future server growth. Over 25% of VMware’s large enterprise customers have made virtual machines the default platform for all newly provisioned servers. Fulfilling requests for new servers with virtual machines defers the need to purchase new physical servers and improves utilization. This ability makes it possible to accurately forecast and strategically manage future growth in computing capacity.

**Drive Utilization Higher with VMware Resource Pools and DRS**

The VMware Infrastructure product suite allows many varied x86 physical servers to be combined into a single resource pool that aggregates processor, memory, disk and networking capacity. Virtual machines are deployed to the resource pool rather than to particular machines. VMware Distributed Resource Scheduler (DRS) continuously balances virtual machine workloads across resource pools based on rules that can be adjusted as conditions change. When load increases, VMware DRS automatically allocates additional resources and uses VMware VMotion to transparently migrate virtual machines between hosts in the resource pool to ensure that service level agreements are met.

VMware Infrastructure resource pools and VMware DRS, removes the dependencies between applications and x86 hardware, allowing companies to focus on strategically managing services rather than servers. With many virtual machines consolidated on a pool of servers, VMware DRS continuously monitors resource usage and balances loads, delivering more than 80% CPU utilization and dramatically improving the return on data center investments.
Key Components Available for Building a VMware Server Consolidation and Containment Solution

- VMware Infrastructure is the most widely deployed software suite for optimizing and managing IT environments through x86 server virtualization. VMware Infrastructure includes the proven ESX Server virtualization layer, VMotion for live virtual machine migrations and VMware DRS for continuous load balancing.
- VMware VirtualCenter delivers centralized management, operational automation, resource optimization and high availability to IT environments based on VMware infrastructure.
- Tools including VMware P2V Assistant automate conversion of existing Windows servers into virtual machines.
- Professional services from VMware and our partners will accelerate implementation of consolidation and containment projects with VMware Infrastructure. Our Virtualization Assessment services will inventory existing data center systems and resource usage to assess where and how to implement consolidation.

Benefits of Server Consolidation and Containment with VMware Virtual Infrastructure

Over 20,000 VMware corporate customers have benefited from implementing a server consolidation and containment solution using VMware virtual infrastructure software. Among the benefits that they have realized are the following:

- **Dramatically lower costs.** VMware customers report cost savings of 30-70% from implementing a VMware server consolidation solution. In addition to the significant reductions in server hardware expenses made possible by improving server utilization, they have realized savings in costs for administration, power, cooling and data center infrastructure. These savings have provided customers a rapid return on their VMware software investment.
- **Significantly improved manageability.** Server consolidation and containment with VMware software reduces data center complexity by reducing the number of servers that IT organizations need to manage. With VMware management tools, organizations can also simplify and centralize the monitoring and management of large virtual infrastructure environments.

- **Boost utilization.** VMware Infrastructure aggregates x86 server resources into pools that can reliably support CPU utilization exceeding 80% with the continuous virtual machine load balancing provided by VMware DRS.
- **Increased IT efficiency.** A VMware solution streamlines and eliminates common administrative tasks such as server provisioning and configuration, enabling IT to manage a growing server environment with existing resources.
- **Greater responsiveness.** By streamlining common tasks and continuously balancing workloads, VMware software makes it possible for IT to respond more rapidly to requests for new servers and maintain service levels as resource demands fluctuate.
- **Improved ability to handle future growth.** Because a VMware solution eliminates the need to dedicate a physical server to each workload and makes it possible to fully utilize existing server resources, organizations can more effectively monitor growth in utilized capacity and strategically plan for additional growth to meet future business needs.

Summary

VMware Infrastructure provides a proven server consolidation and containment solution used by organizations of all types and sizes worldwide, including over 99 of the Fortune 100 companies. These customers have realized significant and rapid returns on their investment in server consolidation and containment with VMware virtual infrastructure.

To learn more about how your organization can benefit from a VMware server consolidation and containment solution, visit the VMware Web site at http://www.vmware.com or contact VMware at 1-877-4VMWARE.