vmware® | technology alliance PROGRAM

SOLUTIONS DATASHEET

Server Consolidation and Containment with VMware Virtual Infrastructure and Emulex

Computing Challenges Today

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

- **Rising costs.** In addition to spending a growing amount of money purchasing a growing number of new and updated servers, organizations face growing costs for power, cooling, network infrastructure, storage infrastructure, server administration, data center upgrades and new data centers.
- **Decreasing manageability.** Managing servers becomes increasingly difficult as the number of servers grows. Adding to that challenge is the heterogeneous mix of hardware models, vendors, operating systems and configurations that IT departments need to support.
- **Decreasing 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.

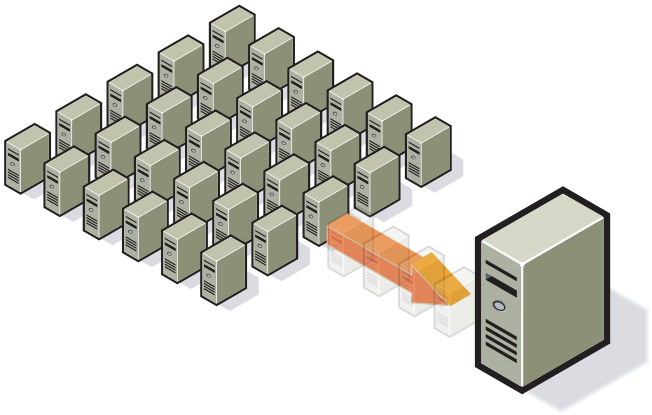
In short, the need to provide new and upgraded services has brought organizations face-to-face with the limitations of their current data center infrastructure.

Consolidating and Containing Servers with VMware Virtual Infrastructure

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.

VMware software uses this technology to provide a simple, proven solution for consolidating existing servers. Each workload that previously required a dedicated physical server can be placed in a virtual machine, and then multiple virtual machines can be consolidated onto each physical server.

Requests for new servers can be fulfilled by provisioning virtual machines to existing physical servers with unutilized capacity rather than by purchasing new servers.



Benefits of Server Consolidation and Containment with VMware Virtual Infrastructure

The benefits of using VMware virtual infrastructure include the following:

- **Dramatically lower costs.** Significantly reduce server hardware expenses and spend significantly less for power, cooling, data center infrastructure and servers. VMware customers report cost savings of 30-70% from implementing a VMware server consolidation solution.
- **Significantly improved manageability.** Simplify and centralize the monitoring and management of large virtual infrastructure environments.
- **Increased IT efficiency.** Streamline and eliminate common administrative tasks such as server provisioning and configuration, enabling IT to manage a growing server environment with existing resources.
- **Greater responsiveness.** Respond more rapidly to requests for new or expanded services, new servers and new configurations.
- **Improved ability to handle future growth.** Pool server resources and dynamically provide workloads, for managing and planning for future capacity growth.

Learn More

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.

EMULEX

Key Highlights

Emulex Corporation
3333 Susan Street
Costa Mesa, CA 92626
+1 714-662-5600
www.emulex.com

ISV Overview

Emulex (NYSE:ELX) provides enterprise-class solutions and technologies that intelligently connect storage, servers and networks, to ensure access to data that's open, secure and adaptable.

Key Business Needs

Emulex understands the enterprise customer and has applied that knowledge to VMware enabled data centers. Why are these IT departments choosing Emulex? Because Emulex offers:

- The Most Advanced VMware Driver Architecture
- Technology Leadership in Virtualization and Storage Networking
- Highly Efficient and Scalable Enterprise Management
- Platform Stability
- High Performance, Broad Product Offering

Key Business Benefits

Companies who have already standardized on Emulex for their Windows, Solaris, HP-UX, Linux or AIX solutions are now achieving the same scalability, performance, manageability and investment protection with an NPIV-enabled VMware Fibre Channel HBA solution from Emulex.

Business Results

More than 95 of the Fortune 100, as well as large corporations worldwide, use Emulex HBAs for their mission critical applications. A recent independent benchmark study conducted by Demartek Labs and approved by VMware found that Emulex HBAs outperform the competition in the predominant usage scenarios (i.e., 2K, 4K, and 8K block sizes). "The Emulex HBA was up to 9% faster in read I/O per second, 31% faster in write I/O per second and 31% faster in total throughput at these block sizes.

Products

- VMware® Infrastructure 3
- ESX Server 3.5
- Brocade switches, including legacy McDATA
- Cisco MDS switches
- Emulex LightPulse 4G b/s Fibre Channel Host Bus Adapters with Virtual HBA technology, including blade and OEM versions

Next Generation Data Centers: Enhanced Connectivity for Virtual Servers

Ensure SAN Best Practices with Enhanced Management and Security Capabilities

Industry Overview

VMware is successfully spearheading the virtualization revolution. Enterprises world-wide are consolidating underutilized servers to enhance CPU utilization, centralize management, and increase operational efficiencies. Users are typically pooling storage resources through Fibre Channel connected storage area networks (SANs). Higher-stage deployments often include High Availability and Disaster Recovery, and extend these services to Tier 1 mission critical applications. Emulex works closely with VMware to enable high performance, high availability, Fibre Channel connectivity using state of the art technologies and simplified management.

Solution Overview

Emulex and VMware are collaborating on support for the N-Port ID Virtualization standard (NPIV). Now an ANSI T11 standard, NPIV was co-developed by Emulex and IBM and provides the capability for a fabric switch to register several Worldwide Port Name (WWPN) on the same physical HBA port. Emulex developed its LightPulse® Virtual HBA technology to deliver the benefits of NPIV into VMware environments.

Emulex's LightPulse Virtual HBA technology, including Emulex LightPulse 4Gb/s Fibre Channel HBAs and NPIV–enable driver technology, allows customers to effectively 'virtualize' SAN connections so that each virtual machine has independent access to its own protected storage. In addition, Emulex LightPulse Virtual HBA technology enables storage and SAN fabric administrators to manage connections from virtualized machines in the same way, and with the same tools, as traditional physical hardware-based servers. The end result is greater storage security, enhanced management and migration of virtual machines and the ability to implement SAN best practices such as LUN-masking and zoning for individual virtual machines.

This solution, now integrated with VMware Infrastructure 3, will give customers higher levels of storage management integration, while improving their overall data center efficiency.

Solution Benefits

Some performance and management benefits enabled by LightPulse Virtual HBA technology with VMware ESX Server 3.5 include:

- **Track I/O throughput, storage traffic and utilization to the VM level, allowing for application or user-level chargeback**
- **Report VM-specific performance and dianostic data using WWPN-based SAN tools**
- **Isolate VMs with fabric zoning for increased security**
- **Trace storage from a VM to a LUN, and vice versa, with bi-directional associations**

VMware and Emulex

VMware Infrastructure 3 provides enterprises with unprecedented capabilities for consolidation and infrastructure management. With the support as a feature of VMware Infrastructure 3, data centers will be able to further leverage the benefits of server virtualization combined with traditional SAN best practices. Emulex LightPulse Virtual HBA technology delivers the benefits of NPIV into VMware Infrastructure 3. The key SAN benefits of increased availability, security and manageability will enable a new level of efficiency in resource management within the virtualized data center.

Emulex has closely partnered with VMware over the past five years, through the Technology Alliance Partner and Community Source Programs.

CONTACT 1-877-4VMWARE World Headquarters VMware, Inc. 3401 Hillview Ave Palo Alto CA 94304
Tel: 1-877-486-9273 (toll-free) or 650-427-5000 Fax: 650-427-5001 www.vmware.com

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