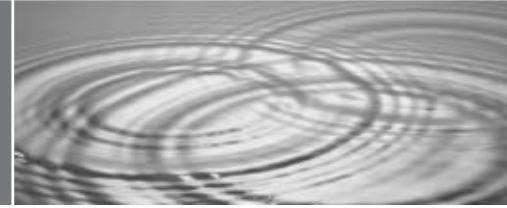


# Server Consolidation and Containment with VMware Virtual Infrastructure and LeftHand Networks



## 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.

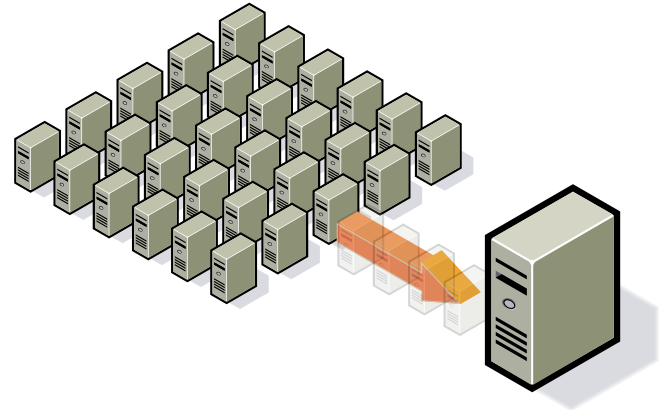
In short, the need to provide new and upgraded services has brought organizations face-to-face with the limitations of their current data center infrastructure.

## 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.



## 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.



## Key Highlights

LeftHand Networks, Inc.  
www.lefthandnetworks.com  
VMware Technology Alliance Partner

## Partner Overview

LeftHand Networks is the leader in Clustered Open iSCSI SANs. LeftHand's SAN/iQ® software turns industry-standard servers into scalable and highly available iSCSI SANs.

## Key Business Needs

IT departments face rapid and unpredictable explosion of business information. In addition they face:

- High availability requirements from applications, regulatory requirements, and business realities
- Demand to scale storage and server infrastructure quickly and easily
- Increasing management costs and complexity
- Server and storage sprawl
- Various forms of device, room, network, site disasters that impact data availability and business continuity

## Key Business Benefits

iSCSI SANs built using LeftHand's SAN/iQ software are uniquely able to distribute and protect data across a cluster of industry-standard storage servers. The company's patented architecture increases data availability, simplifies management and allows users to start small and grow the SAN seamlessly. iSCSI SANs powered by SAN/iQ are ideal for primary storage and server consolidation, campus SANs, and disaster recovery.

## Business Results

Combining VMware software with virtualized storage on a LeftHand iSCSI SAN simplifies growth, improves utilization rates, and provides greater data protection and business continuity.

## Products

iSCSI SANs Powered by LeftHand SAN/iQ

## Partner Products

SAN/iQ® Storage Clustering Software  
Industry-standard servers powered by SAN/iQ include:

- LeftHand NSM160
- LeftHand NSM260
- HP ProLiant DL380
- MPC DataFRAME Series
- Intel SAN Systems

## Clustered Open iSCSI SANs from LeftHand Networks

Fully virtualized data centers from LeftHand and VMware enable unprecedented administrative control

### Industry Overview

IT directors and administrators are faced with meeting their organizations rapidly changing and growing storage needs. These needs include reducing storage management costs, reducing backup/restore times, meeting the 24x7x365 data availability needs of today's business environment. IT organizations are also faced with implementing affordable off-site disaster recovery solutions, creating easily scaling storage for new projects, providing a diverse range of users and applications access to their information, and reallocating or provisioning storage quickly with no downtime. Addressing these needs also comes in the face of IT organizations trying to control costs.

### Solution Overview

LeftHand Networks is the only storage vendor to build enterprise-class SANs on industry-standard platforms. Our patented SAN/iQ® storage clustering software turns standard servers like the HP ProLiant DL380 into scalable network storage ideal for primary storage, disaster recovery and campus SANs. LeftHand's patented SAN/iQ software provides grid-like storage clustering capabilities, combining the storage modules together to form one pool of storage. SAN/iQ provides simple scalability, both within a volume and across the storage pool. All available physical capacity is aggregated and available for volume creation. Both volume expansion and the addition of a storage module are done on the fly, with no downtime. The system scales by adding storage modules – thereby adding capacity, processing power, and bandwidth simultaneously.

SAN/iQ offers a number of sophisticated features that greatly simplify the day-to-day management of data, including:

- Snapshot
- Thin provisioning/auto grow
- Automated load balancing
- Remote copy capabilities between remote sites
- Synchronous replication between locations (Campus SANs)

### Solution Benefits

LeftHand's unique ability to leverage industry-standard servers lowers storage costs and improves efficiency by allowing customers to avoid being locked into one "proprietary" box or a single vendor. SAN/iQ Server Repurposing for the HP ProLiant DL380 G4 Server series is a unique customer benefit that results from LeftHand's ability to support industry-standard servers. Servers that the company already owns can be repurposed into an enterprise-class iSCSI SAN running SAN/iQ. Companies can avoid the hardware costs associated with a SAN purchase, allowing them to reallocate tight IT budget dollars and invest in new, cost-efficient products and technology – such as blade servers and virtualization.

### LeftHand Networks and VMware

SAN/iQ is the ideal storage solution for virtualized environments because of its own rich storage virtualization layer. Both your compute infrastructure and your SAN/iQ storage infrastructure are fully abstracted from the physical hardware.

Combine virtualized storage on a LeftHand iSCSI SAN with VMware virtualized servers to:

- Make capacity planning easier and less time consuming
- Provide multiple ways to avoid planned and unplanned downtime
- Improve storage and server utilization rates
- Implement VMotion™ and ESX Server clusters across sites for enhanced disaster recovery
- Streamline both storage and server infrastructure management

SAN/iQ also supports advanced VMware product features such as VMotion, Clustering, Consolidated Backup, VMware High Availability and RAS.

*"With 31 VMware virtual servers connected to an 8 TB LeftHand iSCSI SAN, we have successfully reduced our servers by 36% and maintained exceptionally high performance within the SAN from day one. Since our goals were to lower the temperature in the server room, increase the battery backup time on the UPS and increase system wide reliability, it made sense to virtualize both our storage and servers on LeftHand's highly redundant iSCSI SAN platform. The implementation of the solution was painless, and we received seamless support from VMware and LeftHand Networks."*

— Dave Brown, Manager of Network & Telecommunications Systems at NewEnergy Associates, A Siemens Company.