

SAN/iQ®

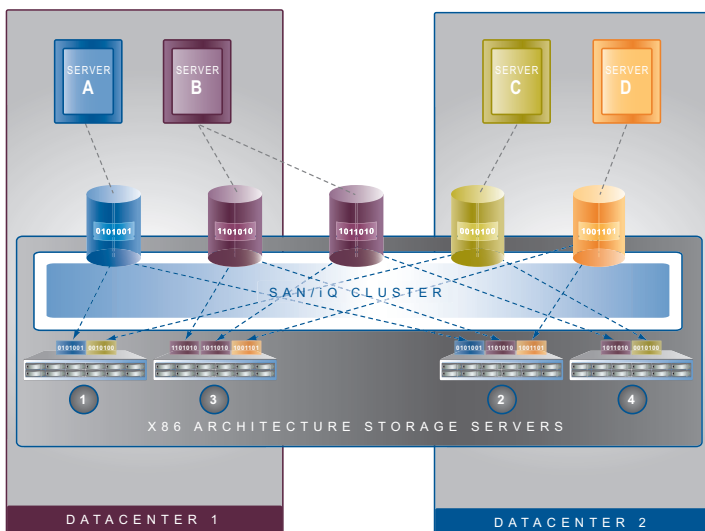
Multi-Site HA/DR Solution Pack

Automated, Unparalleled Availability for Business Continuity

KEY FEATURES AND BENEFITS

SAN/iQ Multi-Site HA/DR Solution Pack software for High Availability and Disaster Recovery

- Easy to Manage Geographic/Site Awareness
- Multi-Subnet Clusters Support
- Highly Available Automatic Data Center Mirroring
- Advanced Data Protection with Network RAID-ADP
- Advanced Intra-Site and Inter-Site High Availability
- Automatic 2-Site Failover and Failback
- High Performance Intelligent I/O Prefencing
- Secure Multi-Domain SAN Partitioning



LeftHand Networks' unique volume mirroring technology presents a single volume to the application server and then the SAN/iQ Multi-Site HA/DR software mirrors the data between sites

AT A GLANCE

For customers with LeftHand SAN/iQ® software, this Solution Pack provides high availability and fault-tolerant capabilities in multi-site environments while automating system tasks and reducing SAN management costs.

EASY TO MANAGE GEOGRAPHIC/SITE AWARENESS

The SAN/iQ Multi-site HA/DR Solution Pack introduces the concept of a site, or data center into the management of the SAN, removing the painstaking manual process that is the norm today. Based on this information, the software intelligently makes the appropriate configuration and operational decisions to always protect data from a complete site failure – automatically.

The SAN administrator, using the SAN/iQ Centralized Management Console (CMC), can map the data center configuration into the SAN to completely automate all site dependant data availability and fault tolerance decisions within the software. The CMC programmatically ensures fault tolerance and will not allow the administrator to create a non-fault tolerant configuration.

Multi-Subnet Clusters Support

The “site” concept is defined through the use of multiple TCP/IP sub-nets. SAN/iQ Multi-Site HA/DR Solution Pack supports iSCSI clusters that span up to three subnets (sites). The following rules apply to the subnet/site relationships:

- A site can only contain a single subnet.
- A subnet can span multiple sites.

Administrators can architect the SAN infrastructure in a way that makes sense for your environment. All other iSCSI SAN implementations require that iSCSI clusters reside in the same subnet (network). Now administrators with multiple data centers or multiple subnets can easily create iSCSI clusters that exist across those subnets.

HIGHLY AVAILABLE AUTOMATIC DATA CENTER MIRRORING

Storage administrators use the CMC to indicate in which sites (data centers) the storage nodes are located, and SAN/iQ Multi-site HA/DR software will handle mirroring those data centers. The software will also enforce data redundancy and availability policies based on the configured site relationships.

You can achieve unparalleled levels of data redundancy without the complexity typically associated with this high-end feature set. The SAN/iQ software automatically replicates (mirrors) the data on a volume-by-volume basis between the data centers.

ADVANCED DATA PROTECTION WITH NETWORK RAID-ADP

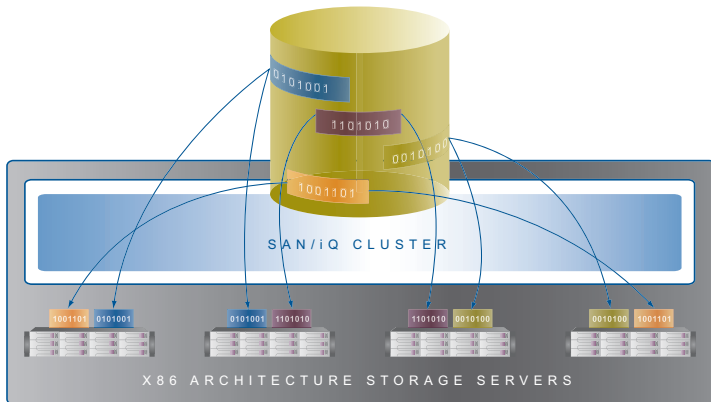
Enterprises can no longer risk allowing mission-critical data sets to reside in a single location. Administrators today routinely maintain two, three and even four separate copies of data to help guarantee constant intra- and inter-site data availability.

Armed with site awareness, Advanced Data Protection (ADP) goes beyond the limits of traditional replication methods. The SAN/iQ volume wizard understands your particular distributed SAN architecture and guides you through system configuration, maximizing storage resource efficiency and availability and ensuring a SAN with the highest available fault tolerance.

Depending on your environment, SAN/iQ offers a variety of synchronous replication levels between sites:

- Network RAID Level 2 (2 copies of data)
- Network RAID Level 3 (3 copies of data)
- Network RAID Level 4 (4 copies of data)

Data is mirrored on a per volume basis, providing you with the flexibility to choose the Network RAID level appropriate for the application server data hosted on that volume.



The unique SAN/iQ volume replication feature ensures continuous access to your data, even if you lose access to one or more nodes

ADVANCED INTRA-SITE AND INTER-SITE HIGH AVAILABILITY

SAN/iQ Multi-Site HA/DR Solution Pack provides unprecedented availability for iSCSI SANs. The Solution Pack ensures high availability not only between two sites (Intra-Site HA), but also within a site (Inter-Site HA). Thus the SAN can withstand three node failures and still provide continuous availability of the storage volume.

As an example, consider a data center with three types of data, temporary files, business critical data and mission critical data. The main data center could be located in New York and the secondary data center in New Jersey. The administrator can configure the volume with temporary files to have no high-availability, the business critical data to have intra-site high availability and the mission critical data to have intra-site and inter-site high availability. If the New York/New Jersey area had a power failure, the New York site could fail, but the New Jersey site (powered by UPS systems) could continue to provide data access to both business and mission-critical applications. In the event that the New Jersey facility sustained a UPS failure, the mission critical data would still be available for mission critical applications.

Automatic 2-Site Failover and Failback

The Multi-Site HA/DR software capabilities include complete automatic failover and failback of the data in the sites. This is done without requiring a complete re-sync of the data between the sites. Only the incremental changed data has to be re-synced once the offline data center is reconnected to the online data center.

LeftHand Networks' unique volume provisioning technology presents a single volume to the application server and then the SAN/iQ Multi-Site HA/DR software mirrors the data between sites. This enables automatic failover and failback of the data in the event of a site failure. Competitive SAN solutions typically require manual failover and failback of the data because they use a multiple-LUN replication scheme.

HIGH PERFORMANCE INTELLIGENT I/O PATH PREFERENCING

Since the iSCSI cluster spans multiple subnets (sites), the I/O path for reads and writes are preferred to the storage nodes that are local to the application server that is submitting the I/O operations. The SAN/iQ Multi-Site HA/DR software handles all of this automatically. No special configuration is required for the application server to enable this I/O pathing functionality. Based on site and subnet configurations, application server I/O is preferred to the local copy for that server. Reads are always done against the copy of the data that is in the same data center as the application server. Writes are always done against the local copy and then forwarded by the SAN to the remote copy based on the Network RAID Level (2, 3 or 4).

Easy to Administer Network Topology Integration

Based on the network configuration and storage node site designation, the software integrates into your network topology to provide a high availability SAN solution.

The administrator can implement the SAN into nearly any network topology configuration to meet business needs. Because SAN/iQ clusters can span multiple networks, you do not have to implement specialized VLANs or subnets as part of your SAN implementation.

SECURE MULTI-DOMAIN SAN PARTITIONING

Utilizing the Multi-Site HA/DR software and Multiple Subnet support, you can partition an iSCSI cluster into multiple virtual SANs within a single data center.

Application server data traffic is securely isolated according to network and business policies. For example, you can setup segmented SANs based on departmental restrictions while still being able to leverage a common storage pool. This is ideal for IT organizations to provide charge-back/budget recommendations on a per-line of business/application request, or for a Managed Service Provider (MSP) to securely support multiple corporations' data on the same shared storage infrastructure.

SYSTEM REQUIREMENTS

SAN/iQ Supported Software

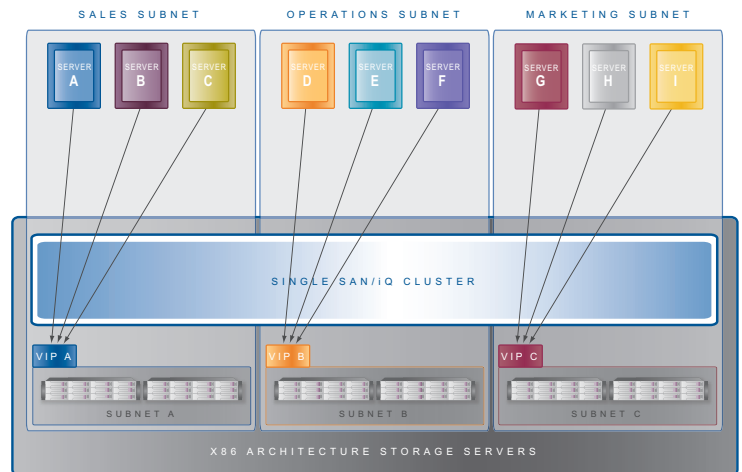
The SAN/iQ Multi-Site HA/DR Solution Pack runs on SAN/iQ 7.0, or higher

Networking Requirements Bandwidth:

- Minimum Bandwidth between data centers: Gigabit Ethernet
- Recommended Bandwidth between data centers: 50MB/sec per storage node

Latency:

- Maximum Round-trip Latency between data centers: 5ms
- Recommended Maximum Round-trip Latency between data centers: 2ms



Multi-Site HA/DR software and Multiple Subnet support allows you to securely partition an iSCSI cluster into multiple virtual SANs within a single data center



ABOUT LEFTHAND NETWORKS

At LeftHand Networks, we deliver physical and virtual SANs that are easy-to-install, easy-to-manage and designed to perform optimally in today's global data centers. LeftHand Networks pioneered IP-based SANs in 2001, and its innovative SAN products are engineered to deliver the highest availability and scalable performance, with integrated enterprise-class features.

Corporate Headquarters
2580 55th Street
Boulder, CO 80301
United States
303.449.4100

European Headquarters
10 Fenchurch Avenue
London, EC3M5BN
United Kingdom
+44 (0) 203.178.3904