



iSCSI SANs Powered by HP® ProLiant DL380 and SAN/iQ®



The combination of HP's industry-leading ProLiant DL380 and LeftHand Networks' SAN/iQ® software provides a scalable, highly available, full featured SAN that leverages the ease-of-use and cost benefits of the iSCSI network protocol. SAN/iQ runs on the ProLiant DL380 G4 to create "storage modules," which are then aggregated together forming a storage pool managed from a single intuitive GUI. By utilizing DL380 servers as storage modules within a SAN, HP and LeftHand Networks break through the proprietary, special-purpose storage hardware barrier to offer an iSCSI SAN with an enterprise-class feature set including SAN/iQ Snap and SAN/iQ Remote Copy.

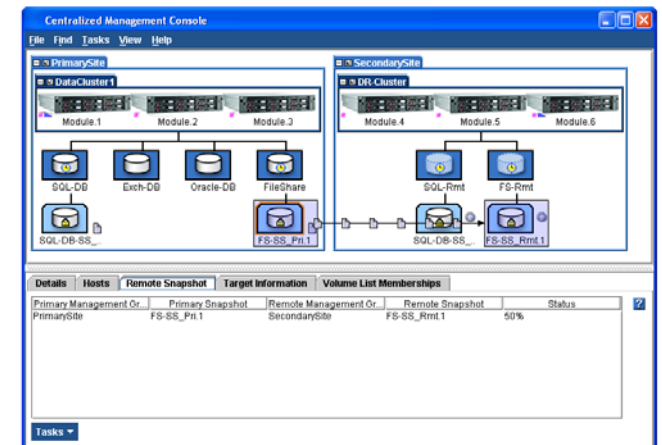
The HP ProLiant DL380 delivers on its history of design excellence with enterprise-class performance, uptime and manageability for a variety of deployments and applications. Built on high-performance 10,000 and 15,000 RPM SCSI disk drives, the DL380 with SAN/iQ is well suited for high I/O and transactional

applications such as Microsoft Exchange, Oracle or Microsoft SQL Server.

SIMPLE, CENTRALIZED PROVISIONING AND MANAGEMENT

While sophisticated in design, SAN/iQ greatly simplifies storage management and provisioning. In addition to HP's hardware-level Insight Manager that users of the HP ProLiant servers are familiar with, the HP ProLiant DL380s can be physically distributed and managed centrally through an intuitive graphical user interface. Configuration Wizards guide the administrator through discovering the HP ProLiant DL380s running SAN/iQ on the network, creating data volumes and connecting volumes to production servers. Adding HP ProLiant

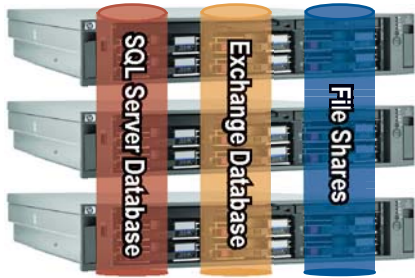
DL380s to an established cluster is as simple as adding any other Ethernet device to the network. Intelligence within SAN/iQ automates the process of striping and mirroring volumes across the new storage module. This same intelligence enables volumes to expand automatically once configured. All management processes can be handled in a matter of minutes during normal business hours, without any system downtime.



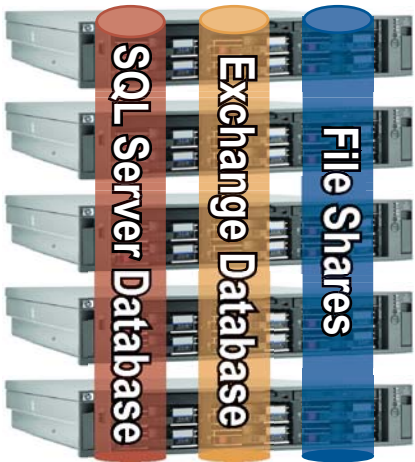
SAN/iQ Centralized Management Console



iSCSI SANs Powered by HP® ProLiant DL380 and SAN/iQ®



As the iSCSI SAN powered by HP DL380 and SAN/iQ scales, application volumes are automatically re-striped without downtime or an impact on performance.



JUST-IN-TIME SCALABILITY

SAN/iQ software running on ProLiant DL380s scales capacity, availability, and performance simultaneously. As modules are added to a SAN/iQ Cluster, storage capacity, processing power, spindle count and additional data paths are added to the SAN and leveraged for increased throughput and performance.

Adding capacity to an established DL380 running SAN/iQ is as simple as adding one or more DL380s to the SAN/iQ Cluster. There's no application or storage downtime, and it's a simple drag-and-drop operation within the management interface.

With the unique architecture of SAN/iQ, the ProLiant DL380 servers become storage modules that can be located anywhere on the IP network. All available storage capacity is aggregated and available for SAN/iQ Volume creation. SAN/iQ Network RAID distributes data to all modules in equal proportions, so that the system is always load balanced and capacity fully utilized. The SAN/iQ Advanced Provisioning feature allows for thin, or over, provisioning of volumes. This functionality

enables an administrator to specify volume sizes that exceed the physical capacity of the SAN. Initially, virtual capacity is provisioned where needed, without permanently tying up available physical capacity. When the physical volume approaches set thresholds, the volume can be scaled automatically or the administrator can be alerted to either expand the volume or add more physical capacity.

DATA AVAILABILITY AND PROTECTION

The quantity and critical nature of data managed in today's IT environments dictates that data be systematically protected, but without impact on users. Because LeftHand SAN/iQ resides on each HP ProLiant DL380 within the cluster, there is no single point of failure – a problem common with other storage technologies. A SAN/iQ Cluster can survive failure of multiple DL380s and retain full data availability. Because each HP ProLiant DL380 includes its own processor, memory, controller and network connections, performance is also not compromised in the loss of a module.

LeftHand SAN/iQ for the DL380 provides a choice of non-disruptive data protection capabilities which can be optimized for availability, capacity utilization, and data protection. For example, the ability to set SAN/iQ Network RAID levels by volume ensures that capacity is used efficiently, and only data that warrants extra levels of protection get extra levels of protection. Network RAID for individual data volumes can be set to stripe and mirror data one, two, or three times, as needed.

SIMPLIFY BACKUP WITH SNAPSHOTS

SAN/iQ Snap provides an additional level of protection. Should the current version of data become corrupted or unreliable for any reason, the system can "roll back" to earlier versions of the data. With SAN/iQ's intuitive user interface, administrators can create snapshots manually or automatically, at regularly scheduled intervals. SAN/iQ minimizes the amount of reserved capacity required for snapshot volumes by enabling system administrators to be conservative in the amount of space set aside for snapshots. Space allocated for



iSCSI SANs Powered by HP® ProLiant DL380 and SAN/iQ®

SAN/iQ Snap Schedule Tab

snapshots can be systematically grown through pre-set or administrator-defined increments. Backing up to tape or other medium from a snapshot volume minimizes the backup window, removes backup traffic from the corporate LAN, and off-loads backup processing from application servers.

SIMPLIFYING DISASTER RECOVERY

LeftHand SAN/iQ Remote Copy provides for the efficient distribution of data across geographies. SAN/iQ Remote Copy is ideal for companies wishing to implement centralized backup, storage disaster recovery, or data distribution. For more information, refer to the SAN/iQ Remote Copy data sheet.

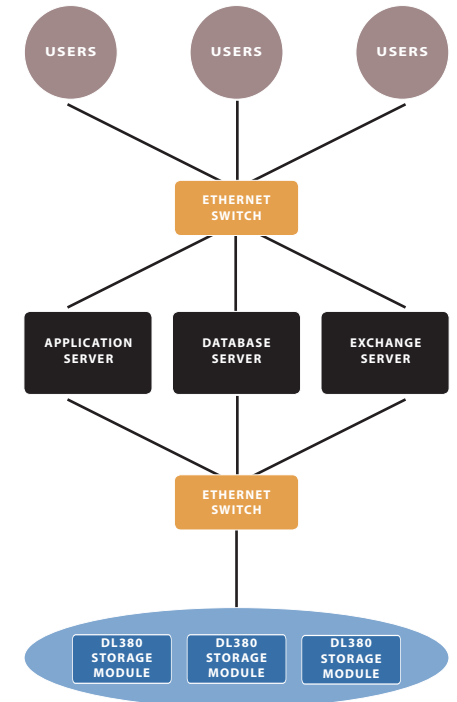
SECURITY

All security mechanisms that can be implemented in an IP network can be implemented with SAN/iQ and the DL380, including traffic segregation, traffic inspection, and data encryption. The LeftHand SAN also offers a variety of security features unique to the SAN environment, including access

control, volume mapping, and volume permissions. Authentication Groups are used to designate which servers and other clients can access which SAN/iQ Volumes. Authentication may be set to all clients on the network, clients with a specific subnet and mask, or no clients. LeftHand SAN/iQ also supports the Challenge-Handshake Authentication Protocol (CHAP) available with iSCSI-compliant initiators and adaptors.

REPORTING

SAN/iQ provides multiple reporting capabilities, including real-time statistical information and active monitoring of selected variables. Active reporting is used to set up notification through emails, alerts in the console, and/or SNMP traps. Configuration is as simple as selecting the variable or variables you want monitored and the action you wish taken. Passive reporting provides point-in-time data about the performance of the iSCSI SAN comprised of DL380s and SAN/iQ. Performance data and log files can be saved for use in trending analysis, troubleshooting, or hardware inventory.



LeftHand's highly available, scalable and easy-to-use clustered architecture combined with the robust HP DL380 solves your data storage challenges.



iSCSI SANs Powered by HP® ProLiant DL380 and SAN/iQ®

Technical Specifications	HP DL380
Capacity	438 GBs, 876 GBs or 1.8 TBs per module
RAID Level	RAID 5
Form Factor	3.38"x17.54"x26.01" (2U) Weight 60 lbs
Network Interface	Dual Gigabit Ethernet
Cooling	Eight hot-plug fans
Power	Dual hot-plug power supply, 575 Watt
Disk Drives	SCSI (73 GB, 15K RPM; 146 GB, 10K and 15K RPM; 300 GB, 10K RPM)
Hardware	3.2 GHz Xeon Processor 438 GB and 876 GB modules: 1 GB RAM (2 x 512 MB modules) 1.8 TB modules: 2 GB RAM (4 x 512 MB modules)

OPERATING SYSTEM SUPPORT

The iSCSI SAN powered by HP ProLiant DL380s and SAN/iQ is fully iSCSI compliant and will interoperate with any fully-compliant iSCSI software or hardware initiator/adaptor in the following Operating System Platforms:

- Microsoft® Windows 2000/2003
- Novell NetWare
- RedHat Linux
- SUSE Linux
- Sun Solaris
- HP-UX
- IBM AIX

HARDWARE SERVICE AND SUPPORT

- Standard - Three years parts exchange, three years labor and three year on-site, next business day response.
- Premium - 24x7 support with a four-hour response for three years as well as installation and startup service.

SOFTWARE SERVICE AND SUPPORT

One year standard software warranty service:

- Standard - Same-day, four-hour, toll-free telephone response, 8AM to 5PM local time, Monday - Friday, excluding national holidays
- Access to knowledge base and troubleshooting information
- Premium support (24x7x365) available

ORDERING INFORMATION

For purchasing information or to contact a regional sales manager:

sales@lefthandnetworks.com

1.866.4.IPSANS

© Copyright 2006 LeftHand Networks Inc. All rights reserved. LeftHand Networks, the LeftHand Networks Logo, and SAN/iQ are registered trademarks of LeftHand Networks, Inc. Distributed Storage Matrix and Remote IP Copy are trademarks of LeftHand Networks, Inc.

