

SAN/iQ® Remote Copy

Time and space-efficient asynchronous replication for disaster recovery and backups

REMOTE COPY AND ASYNCHRONOUS REPLICATION

Remote copy and asynchronous replication are important components of disaster-recovery and backup strategies. Remote copies of business-critical data allow backup sites to take over in the event of a disaster at the primary site. Periodic updates to remote copies — or asynchronous replication — allow business to resume with a short recovery point and minimal disruption. Remote copies are also fundamental components of centralized backup strategies. Consolidate copies of all of your data in a centralized location, and you can back it up at one central location.

SPACE-EFFICIENT, THIN-PROVISIONED COPIES

SAN/iQ® Remote Copy is based on thin-provisioned SAN/iQ snapshots, which allow precise, instant, point-in-time volume copies to be made with minimal use of storage, raising utilization levels and helping to contain costs. The SAN/iQ Remote Copy mechanism creates a remote replica of a snapshot, using minimal space on the local cluster, and, by default, space only for allocated blocks on the remote cluster.

ASYNCHRONOUS REPLICATION

Asynchronous replication is implemented as a series of scheduled remote copies. A SAN/iQ cluster understands the relationship of any given snapshot to the sync point, so all SAN/iQ software has to do to

KEY FEATURES AND BENEFITS

SAN/iQ Remote Copy and Asynchronous Replication are the same built-in mechanism for providing time and space-efficient remote copies of data for disaster recovery and centralized backups:

- Space and bandwidth-efficient remote copies
- Scheduled remote copies for asynchronous replication
- Intelligent bandwidth management to help share resources and maintain network QoS levels
- Failover/failback wizard takes the guesswork out of disaster recovery
- Uses snapshots for exact, point-in-time remote copies

accomplish asynchronous replication is to copy the blocks that have changed since the last copy. Asynchronous replication is integrated with the SAN/iQ Snapshot mechanism, so you don't have to worry about write ordering should a failure occur while a remote copy is in progress. Each remote copy is exactly the same as its source snapshot.

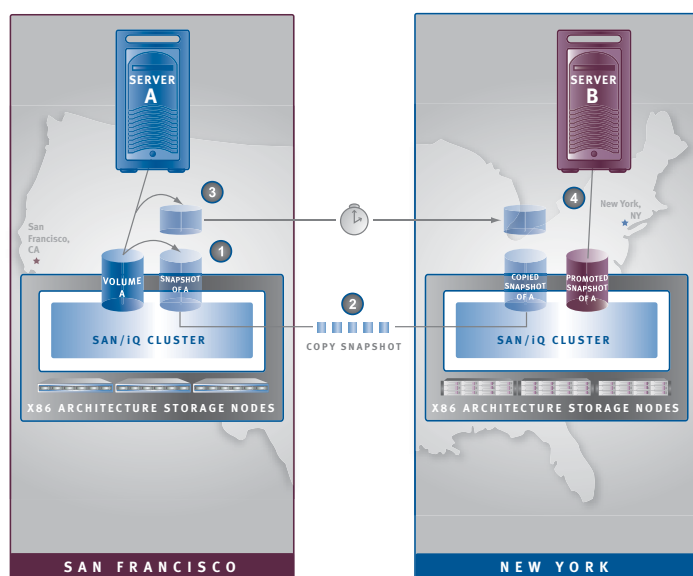
INTELLIGENT BANDWIDTH MANAGEMENT

You probably don't have infinite bandwidth between your sites, and SAN/iQ Remote Copy helps you to intelligently manage and share your network resources so that you can support asynchronous replication while maintaining quality-of-service levels for the rest of your network traffic. The PrimeSync feature lets you physically move your initial volume copy to your remote location, saving transferring potentially terabytes of data over the network. SAN/iQ software also monitors and adapts to changing network conditions for bandwidth and latency, throttling the data transfer accordingly.

REMOTE COPY AT A GLANCE

Remote Copy is a straightforward extension of the space-efficient, thin-provisioned SAN/iQ snapshot mechanism:

1. When you make your first remote copy, SAN/iQ software starts by taking an instant, point-in-time snapshot of your volume.
2. The blocks described by the snapshot are copied to the remote cluster to create the sync point. You can have SAN/iQ Remote Copy transfer the blocks over the network, or you can make a local copy on temporary or transient storage nodes and physically transport the storage to the remote site, saving perhaps days or



SAN/iQ remote copy uses space-efficient snapshots to create consistent, point-in-time remote copies for backup and disaster recovery.

weeks of data transfer time. SAN/iQ Remote Copy watermarks volumes so that there's never confusion over the relationship between local and remote volumes.

3. Asynchronous replication is a scheduled remote copy. On the schedule that you define, SAN/iQ software takes an instant snapshot of the blocks changed since the sync point, then copies them to your remote site. You can set up a retention policy that saves the most recent remote copy and also a history of copies so that you can recover from the point in time of your choosing.
4. If your remote copies are for disaster recovery, you can promote the copy to be the primary copy in the event of a disaster. If your remote copies are for backups, you can mount a point-in-time remote copy as a recovery point.

EFFICIENT USE OF SPACE

SAN/iQ remote copies are thin provisioned and are therefore space efficient on both ends of your network connection. On the source cluster, the initial snapshot is a point-in-time copy of the volume. On the destination cluster, the remote copy is thin provisioned by default, using space only for blocks that were actually allocated on the source cluster. Remote Copy only copies the data necessary to create the first sync point. Each successive remote copy consumes only the number of blocks modified since the last sync point. You can manage how much data you store, and how many recovery points you maintain, by adjusting the frequency of your remote copies and your retention policies.

INTELLIGENT ASYNCHRONOUS REPLICATION

Asynchronous replication is the same as a set of scheduled remote copies. You can set one or more schedules to suit your recovery-time and recovery point objectives, and you can pause and resume them at a later time if needed.

With SAN/iQ Remote Copy, you don't have to worry about write order or inconsistent data. The source volume is captured at an exact point in time, and can be coordinated with applications for consistency. Each periodic remote copy is a batch operation, so there is no issue with block write ordering as with many remote copy mechanisms from other vendors. When all of the blocks have been transferred, you're guaranteed an exact replica of the source volume. If a failure occurs during a remote copy, you recover from the previous remote copy.

If disaster strikes, the last thing you need to worry about is making a mistake during the failover process. If your primary site does go down, The Remote Copy Failover/Failback Wizard takes the guesswork out of transitioning the backup site's status to primary and reversing the relationship when the problem is resolved.

INTELLIGENT BANDWIDTH MANAGEMENT

SAN/iQ Remote Copy manages the bandwidth that it uses for copying so that you can more effectively share your network connections with other network services. SAN/iQ software manages remote copies so that the bandwidth they use doesn't exceed the limits that you set. If network conditions deteriorate, remote copy automatically adapts its packet flow to accommodate — without requiring complex network quality-of-service management.

SAN/iQ Remote Copy further conserves bandwidth by checkpointing remote copies every 10 percent of the way. If a network interruption occurs during a remote copy operation, it can resume without having to restart at the beginning.

REMOTE COPY REPORTING

SAN/iQ Remote Copy keeps you informed with the information you need in order to best manage your data. Parameters that it reports on include the type of remote copy (manual or scheduled), state, start time, elapsed time, estimated time remaining, completion time, amount of data copied, amount of data remaining, current data rate, and average data rate.

The screenshot shows a window titled "Remote Snapshot Details" with a close button in the top right corner. It is divided into four main sections: "Source Info", "Time", "Status", and "Data".

- Source Info:**
 - Primary Mgmt Group: PrimarySite
 - Primary Snapshot: SQL_DB_RS_Sch_1_Pri.1
 - Remote Mgmt Group: RemoteSite
 - Remote Snapshot: SQL_DB_RS_Sch_1_R...
 - Original Mgmt Group: N/A
 - Original Snapshot: N/A
- Time:**
 - Start Time: 10/20/2006 04:51:48 PM MDT
 - Elapsed Time: 4m 4s
 - Est. Time Remaining: 0s
 - Completion Time: N/A
- Status:**
 - Manual | Scheduled: Scheduled
 - State: Copying
 - Snapshot Scanned (%): N/A
- Data:**
 - Data Copied: 2.03 GB
 - Data Remaining: N/A
 - Current Rate: 65,536 Kb/sec
 - Avg Rate: 69,833 Kb/sec

At the bottom right of the window is an "OK" button.

SAN/iQ remote copy presents the data you need in order to best manage your remote volumes.



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.

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