

# Disaster Recovery Solution

## A Case Study

(A design using VMware/Netapp/Doubletake/esxpress)

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## Case Study (Our design using Netapp/Doubletake/esxpress)

A hosting firm with leased datacenter space wanted to offer one of its hosting clients ABC, a disaster recovery solution.

Hosting Firm had created a basic design for ABC with their in-house engineers, but the design had some obvious glitches.

The firm approached EIL Global for help on the design and implementation of the DR solution.

Consultants from EIL Global were accurately able to find out the design issues and rectify the problem areas, leading to project success.

### Scenario

ABC operated an environment of both physical and virtual servers (VMware based) in their production environment.

The DR solution designed in-house provided a DR solution with 2 NetApp, one FAS2040 at the ABC production site and the second (FAS 2050) at the DR site (Hosting Firm's datacenter)

The idea was to use Netapp snapmirror to transfer data from production to DR.

A 15 Mbps MPLS dedicated site to site link connected had been obtained from AT&T for replication traffic.

For the physical servers at the production, double-take software was being used to dump data to volumes on the FAS2040.

The virtual servers (VMware VI3) at production site were backed up by esxpress and backups targeted to volumes on the FAS2040.

The FAS2040 replicated these volumes to FAS2050 at the DR site via snapmirror.

The DR would involve restoring the esxpress and Doubletake backups (from FAS2050) to a VI3 environment in the DR data center.

### Issues and solutions

These are just a few of the many issues that were rectified.

1. The replication needed more than the estimated maximum bandwidth on the link, this led to snapmirror lagging back by a few days for each volume. This means the data on the DR site was older than production site by a few days (high RPO)

### Solution:

We enabled dedupe on all source volumes and changed the original NetApp snapmirror replication design to use Volume snapmirror (VSM) instead of Qtree snapmirror (QSM). This led to dedupe savings being passed to replication traffic savings. Replication traffic came down by 30%.

We also changed esxpress settings to daily DELTA backups and to take FULL backups only when DELTA backup differs by 60% or every 2 months. This reduced the load of monthly FULL backups of virtual machines clogging the link around the same dates.

2. In an event of an actual disaster, restoration of backups had to been done manually. This increased the RTO of the DR solution.

**Solution:**

We used a feature of esxpress called auto-restore, which automatically restores backups from a target when newer backups are placed. We configured the cron jobs needed to achieve this and were able to successfully demonstrate this by performing a DR test. The cron job ran every hour to check if new backups had arrived to the FAS2050 volume, and restore these backups to the DR V13 environment.

During the DR test, instead of manually restoring backups on the DR side, Firm's engineers simply needed to power on the DR VMs.

3. Exchange and SQL databases came up "dirty" during DR testing. Database repairs had to be performed to get the databases to mount successfully.

**Solution:**

The root cause of the problem was Netapp snapmirror usage with Doubletake. Doubletake backs up data continuously to the FAS2040 volumes.

Snapmirror snapshots this volume and sends it over to the NetApp FAS2050 on the DR site. Although the backups taken by Doubletake are "quiesced" backups, the snapmirror snapshots can happen at anytime rendering the backups "unquiesced". This problem does not affect regular files too much, it considerable affects databases. We found that 20% of all databases came up corrupt on the DR site.

To have a proper working solution, we implemented Exchange SCR (standby continuous replication) instead of using NetApp snapmirror. SCR is a well tested and documented solution recommended by Microsoft, and can be used over WAN links.

For SQL, we found an easier solution by redirecting regular daily backups of SQL databases to a NetApp 2040 volume. This NetApp 2040 volume was configured to be replicated over to the DR site by using Netapp VSM.



