

Lakeview Technology
EchoStream™ FS



Testing Template:

This document will be used to describe, from a technical perspective, the elements that were included as part of the IBM TotalStorage Proven testing. It is intended to give an overall picture of the technical elements of the configuration, with a brief description of the results of the testing including any specific highlights of the interoperability results.

High-level architecture/description, include a list of products that meet the compatibility requirements (“Approved Product(s)”) as well as a list of the IBM storage products with which the Approved Products meet the compatibility requirements (“Qualified IBM Storage Products”):

EchoStream™ FS is the replication solution used to move data from a “source” Linux server to a second, “target”, Linux servers. Servers included four Dell PowerEdge2650s and two IBM HS20 blade servers. Servers were attached to a NAS 200, an Enterprise Storage Server (ESS) 800 storage device, and an IBM 3583 tape Library via two McData ED-5000 switches.

Changes in source server files are detected and replicated to the source systems.

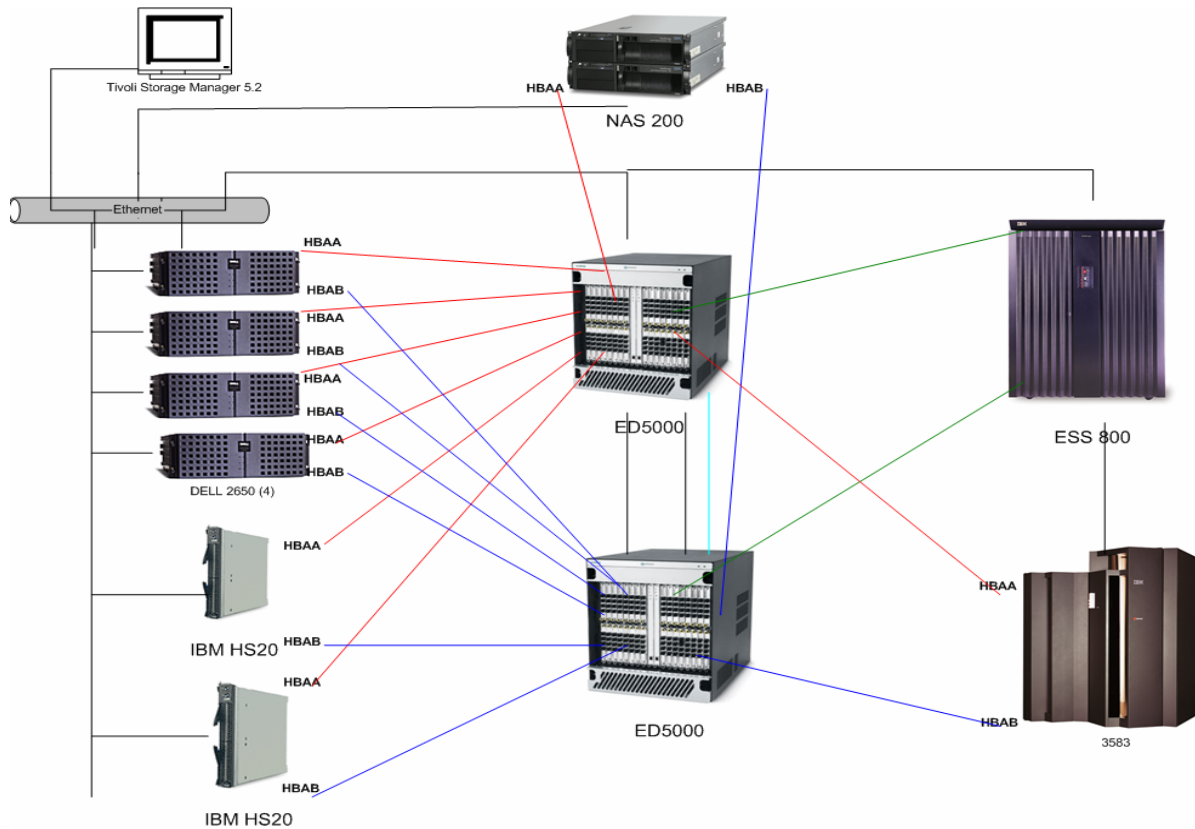
Replicated data is available on a “target” server in the case of a source system or communications failure and to a tape library (an IBM 3583) for backup.

Replicated data is stored to tape using Tivoli Storage Manager version 3.1.2 from the target system.

Loss of the communications or storage devices is detected by EchoStream™ FS. EchoStream™ FS successfully detected the failures and resumed operations with the active equipment.

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The actual testing scenario:



Testing level achieved: **Standard**

The standard test consists of install, configuration, load, exercise I/O, and backup/restore testing.

Testing:

Two separate copies of EchoStream™ FS was installed on NAS 200 in separate libraries. One library supported the four Dell PowerEdge 2560 server set and the other library supported the two IBM HS20 blade servers.

The Dell servers were set up in a daisy chain cluster. Failure of the production server resulted in failover to the next server in the chain. The two IBM servers were configured in a two-node cluster.

Failover within the Dell and IBM clusters was tested by simulating power outages for the servers and NAS200. EchoStream™ FS successfully detected the failures. Active servers in the cluster were able to successfully access replicated data.

IBM TotalStorage Proven™ program

Tivoli Storage Manger was used to successfully backup and restore data from/to each of the servers, NAS and ESS devices and the IBM 3583 tape library.

Testing included the replication of data from source-to-target and target-to-source. Detection of server and communication failures was validated. The ability to switch to the active server and storage upon failure detection was verified.

Backups were performed under the above scenarios using Tivoli Storage Manager and IBM 3583 Tape Library.

Storage related benefits of this EchoStream™ FS solution include:

- Provides active, efficient replication for Linux files to minimize the risks from planned or unplanned downtime.
- Maintains Integrity of Files and Servers even during communication failures. It monitors and caches any changes on the production server until communications are restored then replicates queued changes to the target server in sequence, without intervention.
- Supports multiple replication topologies—1-to-1, 1-to-many, many-to-1 and bi-directional.
- Uses active replication techniques to continuously cycles through Linux files and replicates only changed files to a backup server.
- Makes the recovery process faster and more secure than tape, ensuring that files are up-to-date and immediately usable.
- Creates a full, fresh copy of all files and authentications from the primary server to the backup server on demand.
- Performs a compare and repair between primary and backup, making sure every file on one exists on the other.
- Eliminates downtime windows for hardware, software and storage upgrades. Only a brief interruption is required to switch between the source and target servers.

Test configuration:

Hardware Details:

Server type(s) and quantity: (2) IBM Blade Server HS20

Host Bus Adapter (HBA) vendor model(s): 48P7062

Firmware level: 1.35

Driver level: v6.05.0

Network Interface Card (NIC) vendor: IBM

Model(s) 48P7054

Firmware levels: v7.0.00 Bios: V1.35

Server type(s) and quantity: (4) Dell PowerEdge 2650

Host Bus Adapter (HBA) vendor model(s): Qlogic: QLA2342/L

Firmware level: 1.35

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Driver level: V6.05beta9

Network Interface Card (NIC) vendor: Broadcom
Model(s) NetXtreme A01
Firmware levels: v.7.0.0 Bios: 1.35

Storage Product(s) Used:

Vendor: IBM
Model Name and Number: (2) 3583 Tape Library
Version: L36-36
Number of Drives: 6
Drive Type: Ultrium 2 08L9870 LTO
Capacity: 200/400GB
Microcode Level: v5.14_01
Comments: Tape drive will be connected via fibre channel

Vendor: IBM
Model Name and Number: ESS 800
Version: 2105
Number of Drives: 16
Drive Type: 36.4 GB
Capacity: Raid Group 1: 245 GB (7+P) RAID 5; Raid Group 2: 245 GB (7+P) RAID 5
Microcode Level:
Comments: ESS 800 will be connected to fabric with dual connections for redundant zoning from fibre channel fabric. Need license 2.1.0 for Linux level support

Vendor: IBM
Model Name and Number: NAS 200
Version: M226
Number of Drives: 3
Drive Type: 72.8 GB
Capacity:
Microcode Level:
Comments: NAS 200 will have connectivity via LAN and dual connectivity via fibre channel to fibre channel fabric

Switches:

Vendor: McData
Model Name and Number: ED-5000 (2)
Version: V.3.2

Software Details:

Software Vendor: IBM
Software Name: Tivoli Storage Manager

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Release level(s): 5.2

Description: Tivoli Storage Manager for backup and archive.

OS Version: Linux

Middleware Used:

Vendor Name: Lakeview Technology

Middleware Name: EchoStream™ FS

Release level(s): V6.7.9

Test Results:

Standard EchoStream™ FS installation procedures were used. Two installations of EchoStream™ FS were installed on the NAS using unique libraries – one installation supporting the four Dell 2560s and one supporting the IBM HS20 blade servers. Data replication was initiated from the source to target servers, storing replicated data on the attached ESS 800. Backups of original and replicated data were made using Tivoli Storage Manager and IBM 3583 Tape Library.

Various hardware components were disabled by simulating power failures. EchoStream™ FS properly detected the failures. User access was verified and backups were performed from the target system with no exceptions. The disabled equipment was reactivated and the process repeated in the reverse direction to simulate a return to the original operating configuration. All data replicated with out exception.

EchoStream™ FS status screens correctly documented the various status conditions in the testing scenarios.

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