

IBM TotalStorage Proven™ program

IBM Linux-HA on DS4000 (formerly FASTT) with SLES 9 (2.6 Kernel)



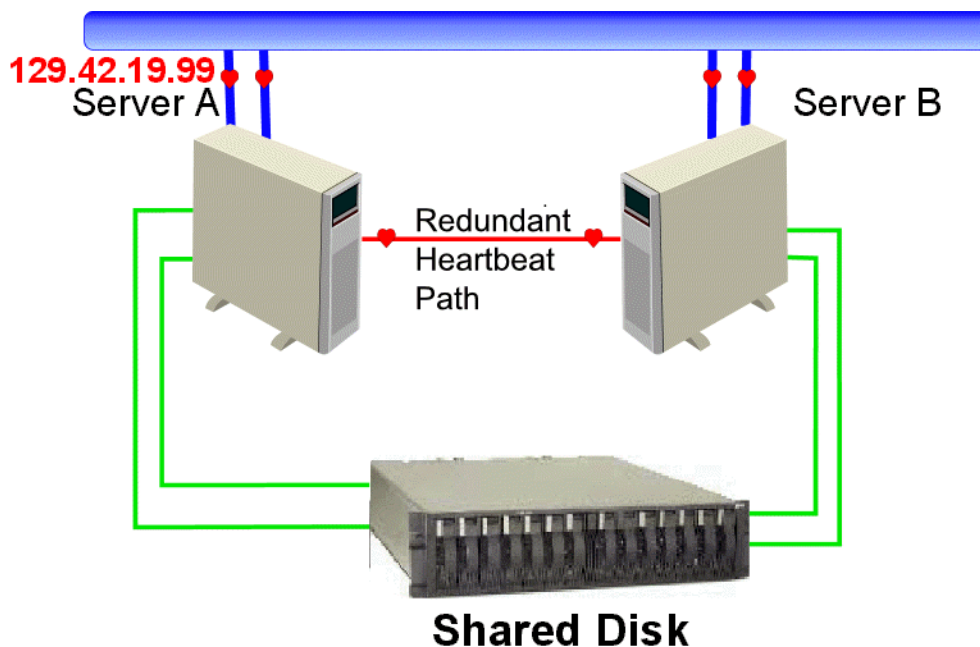
Testing Template:

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”):

This solution includes 2 xSeries servers (IBM), equipped with QLOGIC cards and dual Ethernet cards each, DS4300 storage and an 8 port FC Switch. In the specific configuration tested, a DS4300 was used, QLOGIC 2312 cards and an IBM 3534-F08 switch. OS tested was SLES 9 (kernel 2.6.5)

The testing scenario:



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Testing level achieved: Standard

Testing Overview:

The following items (from the TotalStorage Proven Test Plan matrix) were tested:

- Power on all devices
- Switch Failure/Exception Tests
- Initial standard installation
- Regression test of existing on-the-box software
- Multiple installation scenarios
- Device Driver installs/validation
- IBM Storage Product.
- Storage product features as applicable
- Validate Data Integrity
- Backup/Restore features of IBM Storage Product
- Failures of Storage product
- Failover testing of Clustered product
- validate that redundant IP paths functions properly by disabling primary path
- Diagnostics
- Document any known limitations/workarounds. Document supported versions of products
- Baseline Test to ensure adequate performance

Test configuration:

- 1) Linux OS: SuSE Linux Enterprise Server 9 (SLES 9) – 2.6.5 kernel
- 2) Linux-HA Version 1.2.x (Open Source) – included in distribution
- 3) QLOGIC 2312, firmware 1.25
- 4) FC Switch: IBM 3534-F08, kernel 5.4, Fabric v3.1.1b

Testing Dates: March 14, 2005 – March 24, 2005

Installation and setup on both xSeries servers:

- 1) Install Linux OS – SLES 9 , including QLOGIC drivers
- 2) Install and Configure Linux-HA (open source package), included with SLES 9 distribution
- 3) Include serial connection and Ethernet connection between two servers for heartbeat
- 4) Configure Apache (httpd) to use as high availability test service
- 5) Create mount pts on each server to DS4300 storage and create web pages on DS4300 to be accessed via httpd service

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Testing Results:

- 1) Start Linux-HA (heartbeat) on both servers (active and standby)
- 2) Tested failover from primary to secondary using various methods to take down primary service. (stop service cmd, power off, pull cables)
- 3) Tested auto failback – bringing primary server back on line.
- 4) Data Integrity – Writes to files on FAStT storage from each server are preserved during failover and failback.
- 5) Performance: <10 sec failover and failback observed in all test scenarios.
* Additional details provided in Test results document provided to TotalStorage Proven program

Support Contacts: This product is internal to IBM. Normal IBM support applies.