

IBM TotalStorage Proven™ program

QLogic Corporation QLogic SMB SAN with DS4000 Storage



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”):

Architecture Description

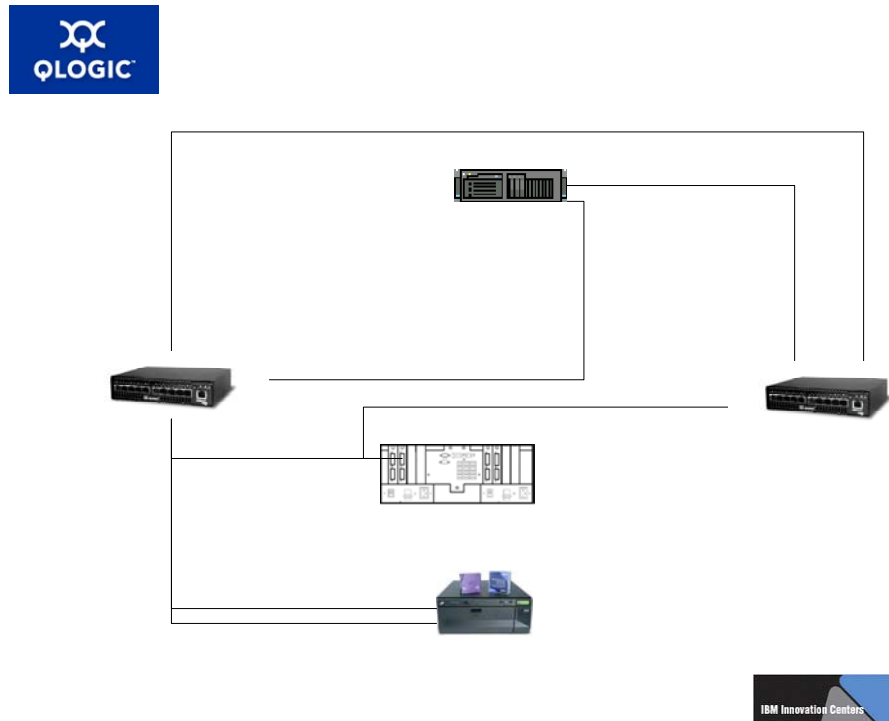
The IBM TotalStorage Proven testing of the QLogic SMB SAN consisted of the following equipment:

- One IBM x345 server
- Two QLogic QLA200 Host Bus Adapters (HBA)
- Two SANbox Express 1400 Fibre Channel Switches
- One IBM TotalStorage DS4300 RAID array
- One IBM TotalStorage 3582 Tape Library

The QLogic SMB SAN was tested at the IBM San Mateo labs via remote access from Eden Prairie, MN with the IBM storage products listed above, and successfully met the requirements for IBM TSP Comprehensive status.

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Test Environment. The following diagram depicts the test environment:



Testing level achieved: Comprehensive, as described below.

- Standard: The standard test consists of elements like install, configuration, load, exercise I/O, and backup/restore testing.
- Comprehensive: Comprehensive testing would include the standard testing in addition to a much higher level of integration and failure testing. In either case, these tests are customized for the specific product(s) being tested, and in consultation with the participant.
- The level is determined by IBM based on the test plan and results.

Test Objectives. The following features were tested as specified in the IBM TotalStorage Proven Test Plan, and verified successfully:

- Verify interoperability between the server, QLA200 HBA, SANbox Express 1400 FC switch, TotalStorage 4300 RAID, and TotalStorage 3582 Tape Library using log files, GUIs, etc.
- Installation and configuration of all products, including:

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- Standard and non-standard installation
 - Software upgrade
- Basic functionality tests, including:
 - Power up
 - Authentication and security
- Stress Tests
 - IOMeter traffic testing with incrementally increasing data block size from 512B to 32KB
 - High volume traffic generation
 - Disk I/O stress
 - HBA failover with traffic using IBM RDAC failover software
 - 72-hour high volume test without error
- Data Integrity & Protection
 - WinMTA traffic generator used to demonstrate data integrity
 - Demonstrate disaster recovery via successful tape backup and restore
 - Demonstrate ability to backup and restore FC switch configuration and zoning
- Exception Handling
 - Demonstrate successful device recognition of failed FC disk drive
- Reliability, Availability, Serviceability
 - Verify sufficient diagnostics capability to recognize device failure and recovery
 - Observe and report any memory leak issues with applications
 - Demonstrate successful switch failover via power cycle, switch port failure
- Documentation
 - Documentation of any known limitations and/or workarounds
- Performance
 - Record throughput during 72 hr. high volume traffic using SANsurfer, other tools.

Product Specifications

Hardware

Device	Manufacturer	Model	Version(s)	Notes
Server	IBM	X345		
HBA	QLogic	QLA200	Firmware: 3.03.12 Driver: STOR 9.0.2.16 BIOS: 1.07	
FC Switch	QLogic	SANbox Express 1400	4.2.0.20	10 port
RAID	IBM	DS4300	1722-600 Microcode: 6.10.06	14 drive, 68 GB
Tape Library	IBM	3582		2 LTO2 drives

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Software

Application	Manufacturer	Product	Version(s)
Operating System	Microsoft	Windows 2003	SP1
Fail Over Software	IBM	RDAC	9.1.35.11
Backup Software	Veritas	Backup Exec	10.0.5484
Traffic Generator	Intel	IOMeter	2004.07.30
Data Integrity	Intel	WinMTA	3.00
Driver Installation	QLogic	SANsurfer Express	1.0.0
Storage Management	QLogic	SANsurfer	2.0.30

Test Results

Test Dates: 10/04/05 – 10/11/05

Test Location(s): IBM Innovation Center for Business Partners, San Mateo, CA; remotely from QLogic Switch Products Group, Eden Prairie, MN.

Summary

Larry Garibay performed the installation of the HBA, server, switches, and storage at San Mateo, CA with help from Nasir Moinuddin. Testing was performed jointly by Larry Garibay at San Mateo and Terry Garrity remotely from Eden Prairie, MN via a VPN connection utilizing Windows Remote Desktop Connection.

All testing performed and concluded successfully with no errors, as described in Section 4. All devices were installed with factory defaults, with no special configuration required. Where applicable, default values were changed only to demonstrate that customizable options were accessible, and were subsequently re-defaulted.

The QLA200 STOR miniport driver was installed using the QLogic SANsurfer Express installation tool for ease of use. The non-standard installation requirement utilized the SCSI miniport driver and the included README.TXT file was used for installation instructions.

Intel IOMeter and WinMTA were used to meet the test requirements for traffic generation and data integrity test tools, respectively. All equipment and software was demonstrated successfully, with no errors. IBM RDAC failover software was used to demonstrate path failover from one HBA to another. Two QLogic FC switches were used to demonstrate the HBA path failover, as well as switch failure failover. Both of these features were demonstrated successfully with no errors.

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