

HP BladeSystem tested configuration for Quantum StorNext 3.1



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Executive summary

This document describes the tested configuration used to verify that Quantum's StorNext File System 3.1 installed and executed successfully on HP ProLiant BL460c and BL465c servers, with an HP StorageWorks 4000 Enterprise Virtual Array (EVA4000) and is expected to work as well on other EVAs.

HP ProLiant BL460c and BL465c server capabilities may be enhanced by the use of recommended HP services – from planning and readiness assessment to solution implementation and lifecycle support. HP Services contact information is provided in the *Conclusion* section of this document.

This white paper describes testing performed in February 2008.

Quantum StorNext 3.1 overview

StorNext data management software streamlines digital workflow and reduces data retention costs by creating a consolidated storage pool where multiple systems can access SAN storage in parallel. This enables greater throughput and faster data sharing than is possible with standard network attached storage architectures. StorNext includes an integrated data movement engine that transparently moves files between different tiers of storage to reduce data retention costs and provide additional data protection. The StorNext suite is composed of two discrete components:

- StorNext File System – provides data sharing functionality
- StorNext Storage Manager – provides automated data movement

StorNext creates shared pools of images, media content, analytical data, and other key digital assets, which are made accessible across multiple operating systems. As a result, StorNext reduces storage costs and the expenses normally associated with digital asset retention. Particularly in server blade architectures, StorNext provides fast, effective data sharing of this consolidated storage pool for any servers mounting the file system. Even if they are running different operating systems, these server blades have access to the shared data pool and eliminate any performance bottlenecks normally associated with traditional, serialized, workflow processes.

Conceptually, the server blade environment appears to StorNext as a high-speed, networked, server architecture. As such, the software takes full advantage of the high-speed data throughput, reliability, and cost benefits of this architecture. Each server blade can be configured as a client on the file system, and using the StorNext Distributed LAN Client (DLC), servers in remote locations can access the file system using a LAN connection.

An option for StorNext is the High-Availability (HA) feature. Utilizing two separate servers as MetaData Controllers (MDCs) in an active/standby mode, StorNext offers the inherent redundancy of such a configuration. In the event of a power loss on the primary MDC the software would utilize the HP Integrated Lights-Out (iLO) feature to power off the faulty MDC and turn over control to the standby unit; all without a loss of data.

Under continuous improvement since its inception, StorNext brings a rich feature set, data security, integrity, scalability, and reliability to the enterprise data architecture. When combined with the features of the HP BladeSystem, the combination is a compelling architecture that will more than meet the customer's requirements. The list of successful customer installations entrusting their critical data to a StorNext based architecture reads like a who's who of the rich media, petrochemical, and Federal marketplace.

HP BladeSystem and management software solutions overview

HP BladeSystem c-Class delivers excellent IT infrastructure out of the box – unifying server, storage, networking, and power and management capabilities in a time-smart, change-ready, energy-thrifty and cost-savvy system that brings a wide range of possibilities to businesses of any size. It will help IT administrators by enabling tighter, dynamic connections between IT and the business process. When combined with HP StorageWorks products, it further benefits IT administrators by reducing costs and increasing productivity through:

- Unified Infrastructure
- Operational efficiency by simplifying routine tasks, automating administration through tools like HP Systems Insight Manager and HP Storage Essentials
- Flexibility to accommodate future growth and needs by providing a variety of connections and options

Further, the extensive selection of HP BladeSystem management tools, storage and networking products, services and support delivers a robust portfolio that enables you to build solutions to meet your unique and changing infrastructure requirements. Tools such as HP Integrated Lights-Out (iLO) management, HP Systems Insight Manager and HP ProLiant Essentials Rapid Deployment Pack can help optimize data center efficiency and lower Total Cost of Ownership.

HP Integrated Lights-Out 2 (iLO 2)

With iLO 2, you can perform basic system administration tasks remotely; as if you were at the server using its KVM (keyboard, video, and mouse) switch and power button regardless of the server's operating condition. It also enables anytime access to system management information. These remote control capabilities dramatically reduce the need of onsite assistance to support ProLiant servers.

HP Systems Insight Manager (HP SIM)

HP Systems Insight Manager, the HP unified server-storage management tool, helps maximize IT staff efficiency and hardware platform availability for small and large server deployments alike. From a single management console, administrators can manage their complete HP server and storage environment with a feature rich, extensible and secure management tool set.

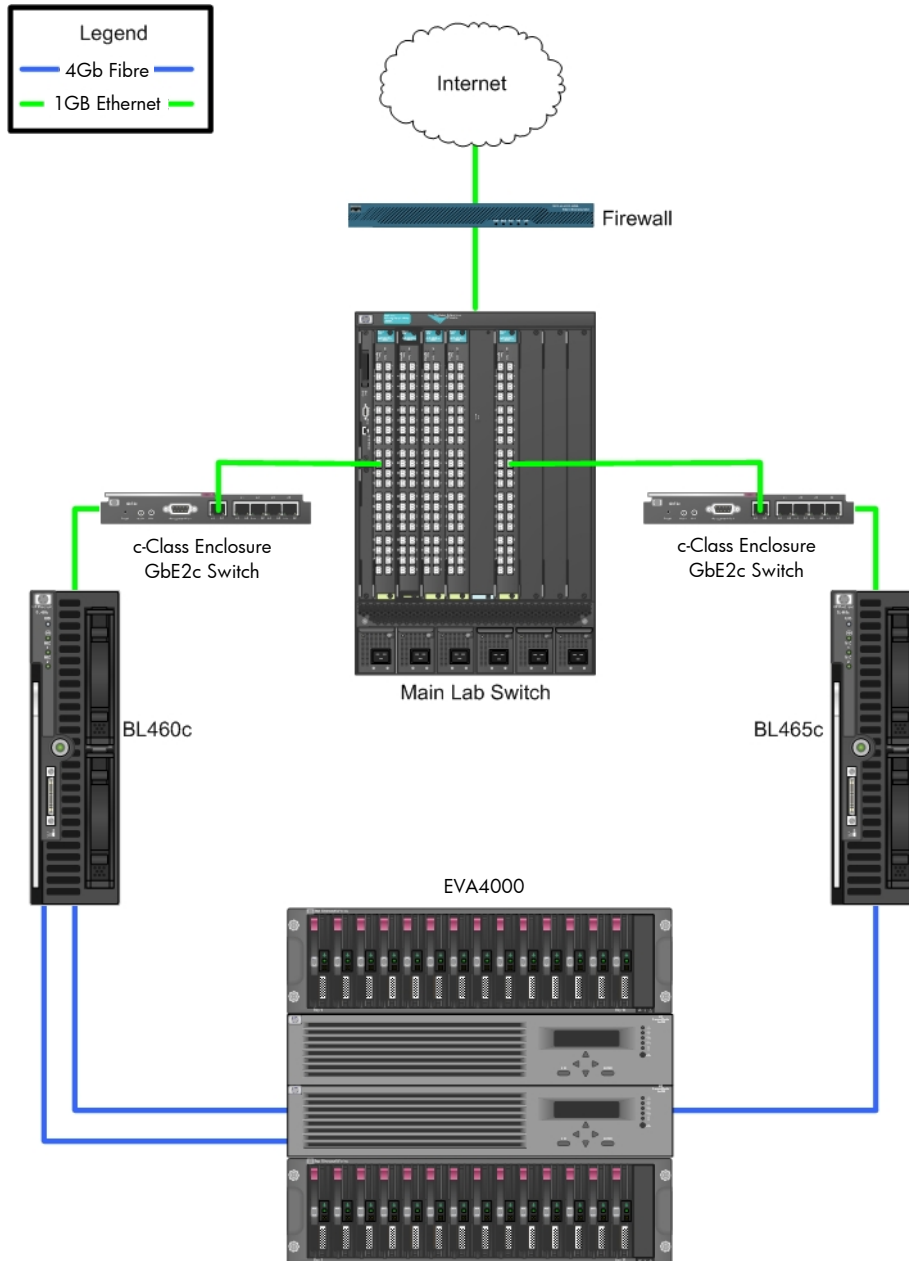
HP Rapid Deployment Pack (RDP)

Rapid Deployment Pack (RDP) is a server deployment solution that facilitates the installation, configuration, and deployment of high-volumes of servers through either a GUI-based or a web-based console, using either scripting or imaging technology. Server configuration time is reduced, making it possible to scale server deployments to high volumes in rapid fashion.

Tightly integrated with HP Systems Insight Manager, RDP is a fast, easy solution for deploying servers using imaging or scripting. Deploying a server is as easy as selecting one, a few or hundreds of target servers, then selecting predefined images or scripts and clicking **Run**.

Tested configuration based on the HP BladeSystem c-Class

Figure 1. Sample configuration



Software used in this verification

The tested configuration was purposefully chosen to test two common server blade platforms (Intel® and AMD™) as well as the two major Linux variants. The configuration was based on HP ProLiant BL460c and BL465c servers. The following software was installed:

- Red Hat Enterprise Linux Server 5.1 x86_64 running on the BL460c
 - HP ProLiant Support Pack for Red Hat Enterprise Linux Server 5 version 7.92
- Novell SUSE Linux Enterprise Server 10 SP1 x86_64 running on the BL465c
 - HP ProLiant Support Pack for SUSE Linux Enterprise Server 10 version 7.91
- Quantum StorNext File System Software v3.1
 - StorNext Client for SUSE Linux Enterprise Server 10
 - StorNext Client for Red Hat Enterprise Linux Server 5
- I/O Speed Measurement Software
 - Imdd utility

Hardware verification environment

The tested configuration was based on the HP ProLiant BL460c and BL465c server platforms with Dual-Core Intel Xeon® (BL460c) and Dual-Core AMD Opteron™ (BL465c) processors.

Table 1. Hardware verification environment

| Qty | Description | Configuration |
|----------------|-----------------|---|
| Servers | | |
| 1 | ProLiant BL460c | 2 processor/4 cores @ 3.2 GHz 8 GB memory 2 x 72 GB SAS hard drives |
| 1 | ProLiant BL465c | 2 processor/4 cores @ 2.6 GHz 16 GB memory 2 x 146 GB SAS hard drives |
| Storage | | |
| 1 | EVA4000 | 4 Gigabit Fibre Channel Dual Controller 28 x 146 GB hard drives 4 TB total raw storage |

Test description

Tests conducted evaluated a seven-point checklist and basic functional testing. The seven-point checklist verified in the specified environment that the application:

- Installed without incurring any resource limitations
- Installed without generating any critical error messages
- Installed without requiring additional driver or software upgrades
- Exhibited normal expected functionality after installation
- Passed specific tests for iLO management functionality
- Passed specific tests for HP SIM and server communication
- Passed specific tests for RDP and server communication

Test results

- Date tested: February 8, 2008
- Hardware verification: PASSED
- Software verification: PASSED

Performance

While the purpose of the testing was to validate the functionality of StorNext on an HP BladeSystem infrastructure and verify that StorNext did not break HP management software related to the basic blade operations (for example, iLO, SIM, RDP), Quantum also took the opportunity to validate that performance is consistent with expectations. A separate, more exhaustive performance test would be needed to identify more detailed performance measurements.

A UNIX® utility, Imdd, was used to measure I/O times during data transfers. Random files were used and transfers were done using blocks of data of 1000, 10,000, and 100,000 bytes. Tests were done to both a single output file and multiple output files to mitigate the effects of caching.

The resulting throughput for a single BL465c server blade was between 250-300 MB/s for a single output file and 180-220 MB/s for multiple output files, which is consistent with performance seen with standalone ProLiant servers in a SAN environment.

Conclusion

HP and Quantum have verified that StorNext v3.1 installs and runs on the HP BladeSystem c-Class infrastructure and servers as outlined above.

HP recommends a proof-of-concept implementation using this tested configuration as a matter of best practice for all deployments. HP recommends that this configuration be tested and analyzed as similar to the production environments as possible to determine the performance and scalability characteristics of the defined configuration. For help with the proof-of-concept, contact an HP Services representative at <http://www.hp.com/hps/contacts/index.html>.

For more information

HP ProLiant servers home
<http://www.hp.com/go/proliant>

HP BladeSystem home
<http://www.hp.com/go/blades>

HP Insight Control Management Software portfolio
<http://www.hp.com/go/insightcontrol>

HP Systems Insight Manager
<http://www.hp.com/go/hpsim>

HP Storage
<http://www.hp.com/go/storage>

Remote management
<http://www.hp.com/go/ilo>

HP ActiveAnswers home
<http://www.hp.com/solutions/activeanswers>

Quantum StorNext website and evaluation downloads
<http://www.quantum.com/StorNext>

StorNext product documentation and data sheets
<http://www.quantum.com/ServiceandSupport/SoftwareandDocumentationDownloads/Index.aspx>

Additional StorNext Information and Integration options
softwareinfo@quantum.com

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