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Hitachi High-performance NAS Provides a Powerful Platform for Massive-scale Storage Consolidation

@Hitachi Data Systems

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The nature of highly distributed computing systems continues to segment and isolate information resources across the enterprise. Consolidation of these resources into a single centralized resource enables simplified management along with significant cost savings. The powerful high-performance capabilities and industry-leading scalability of the Hitachi High-performance NAS Platform, powered by BlueArc®, allows for the sustainable scalability and performance required for today's consolidation of application servers, file servers, and NAS appliances.

The Problem

It's a story everyone in IT knows: Storage sprawls and data crawls. Servers and NAS filers continue to proliferate. Isolated storage islands create hot spots that slow performance. And when you add storage, it drives down capacity utilization rates. An IDC survey reveals that 80 percent of IT organizations in the United States are actively consolidating and predicts the storage consolidation market to grow to US$4.5 billion by 2009.

The Solution

Fortunately, there is a solution that vaults ahead of the competition and breaks the cycle of sprawl and crawl: Hitachi High-performance NAS Platform, a powerful solution that Hitachi Data Systems co-brands with BlueArc. It is built on an advanced hardware-accelerated architecture and a rich set of storage software. It has leading performance, massive scalability, and built-in intelligence to handle the most demanding application environments. Therefore, whether you want to consolidate your infrastructure by reducing the number of server and storage devices or by streamlining provisioning, the High-performance NAS Platform is the answer.

"The Hitachi High-performance NAS Platform, powered by BlueArc, resets the NAS gateway capability bar in much the same way as the HDS Universal Storage Platform, Adaptable Modular Storage and Network Storage Controller solutions reset SAN-based scalability, performance and virtualization. As HDS evolves, the integration of its file- and block-based solutions, including common and comprehensive management with the HiCommand® Suite, the convergence of SAN and NAS will become a reality for the most demanding and diverse storage environments."

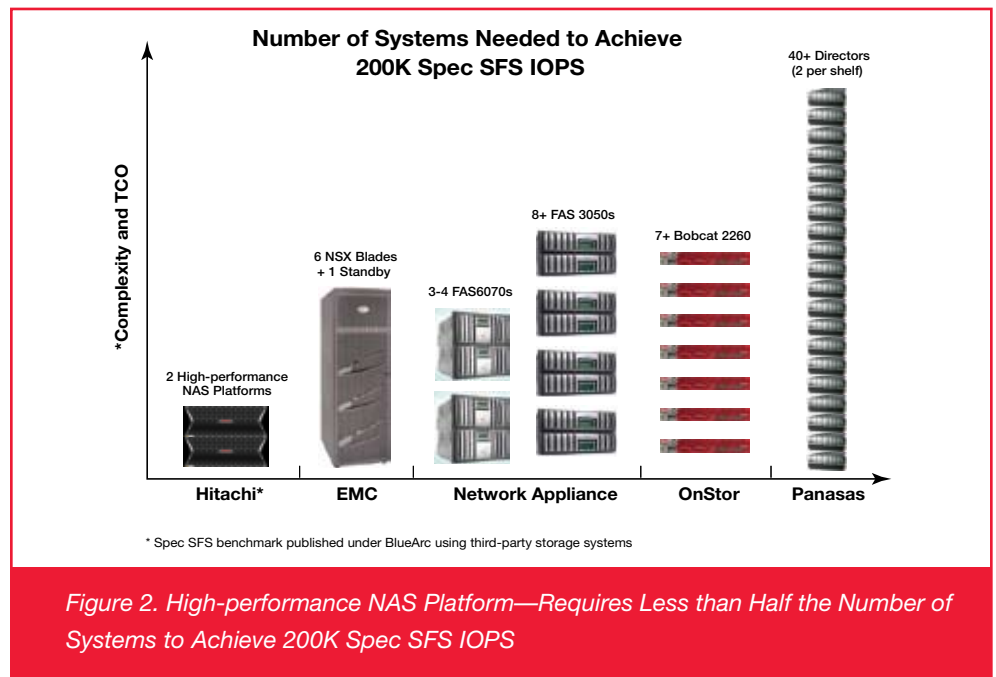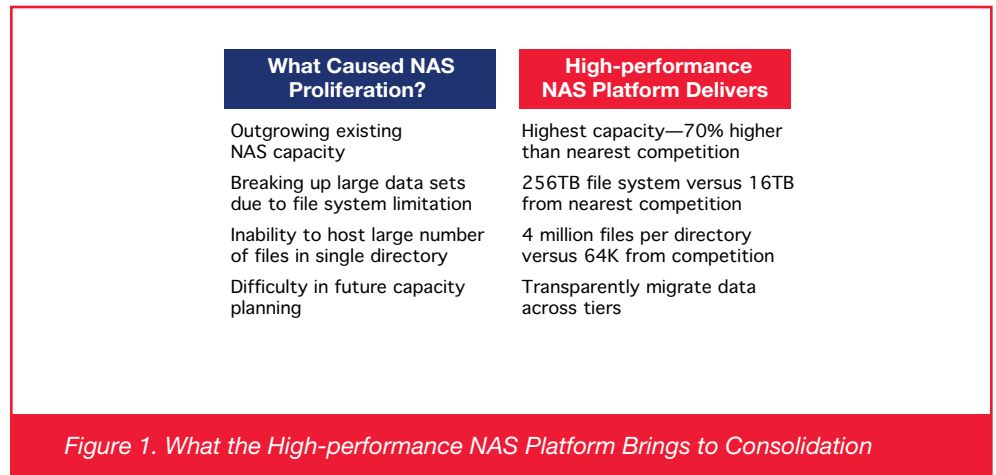— **Carl Greiner, OVUM, OVUM report: "Hitachi enters the high-performance NAS market"**

Why High-performance NAS Platform for Consolidation?

The High-performance NAS Platform is the most compelling solution for enterprise-class consolidation because it offers:

- The highest scalability in the NAS market today, allowing organizations to consolidate file servers and other NAS devices into fewer nodes

- An option to reach critical performance levels with less than half the nodes required by competitive solutions

- The most advanced virtualization framework to simplify data management

- Lowest total cost of ownership for enterprise consolidation

Industry-leading Scalability for Massive Scale Storage Consolidation

In the past, IT organizations found that NAS proliferation was the inevitable result of the lack of scalability of their NAS devices. With industry-leading scalability, the High-performance NAS Platform consolidates and manages up to 512 terabytes (TB) of Fibre Channel and SATA storage in a single shared storage pool. Users working on even the largest data sets see dramatic improvements in information storage, sharing, and retrieval. They no longer need to break up large data sets due to file system limitation because the High-performance NAS Platform offers a file system up to 256TB while supporting up to 4 million files per directory.

What Caused NAS Proliferation?	High-performance NAS Platform Delivers
Outgrowing existing NAS capacity	Highest capacity—70% higher than nearest competition
Breaking up large data sets due to file system limitation	256TB file system versus 16TB from nearest competition
Inability to host large number of files in single directory	4 million files per directory versus 64K from competition
Difficulty in future capacity planning	Transparently migrate data across tiers

Figure 1. What the High-performance NAS Platform Brings to Consolidation

Number of Systems Needed to Achieve 200K Spec SFS IOPS

*Complexity and TCO

- 2 High-performance NAS Platforms — Hitachi*
- 6 NSX Blades + 1 Standby — EMC
- 3-4 FAS6070s / 8+ FAS 3050s — Network Appliance
- 7+ Bobcat 2260 — OnStor
- 40+ Directors (2 per shelf) — Panasas

* Spec SFS benchmark published under BlueArc using third-party storage systems

Figure 2. High-performance NAS Platform—Requires Less than Half the Number of Systems to Achieve 200K Spec SFS IOPS

Industry-leading Performance for High-performance Applications

The High-performance NAS Platform delivers the highest performance in the NAS market today, allowing organizations to meet critical performance requirements with less than half of the number of the nodes required by competitive offerings. That translates into less hardware to buy, less software license, less management complexity, and less power and cooling cost.
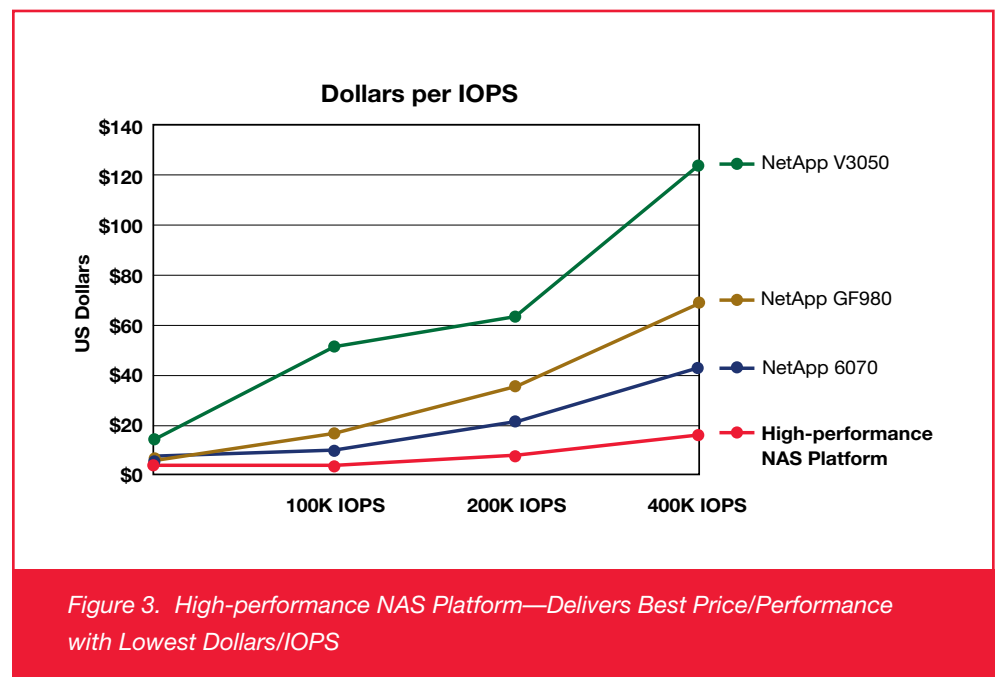
Advanced Virtualization Framework

The High-performance NAS Platform provides an advanced virtualization framework that enables enterprise consolidation. One key element is Cluster Name Space (CNS), which creates a unified directory structure up to 512TB and allows global access to all the data. In addition, virtual servers can be created for different user groups or applications. Each virtual server can have different

IP addresses and data management policies. The High-performance NAS Platform also includes virtual volumes and storage pools, which enable storage administrators to over-subscribe the physical storage and apply quota policies that can dynamically expand or contract as needed.

Achieve Unparalleled Levels of Performance, Scalability, and Availability for NAS Applications

You can expect dramatically better storage utilization with exactly the capacity you need, when you need it; the flexibility to optimize the storage capabilities; and the power to rapidly

Dollars per IOPS

- NetApp V3050
- NetApp GF980
- NetApp 6070
- **High-performance NAS Platform**

Figure 3. High-performance NAS Platform—Delivers Best Price/Performance with Lowest Dollars/IOPS

Electricity Cost per Year for 200K IOPS

British Thermal Units (BTUs) per Year for 200K IOPS

Legend:
- High-performance NAS Platform
- NetApp GF980
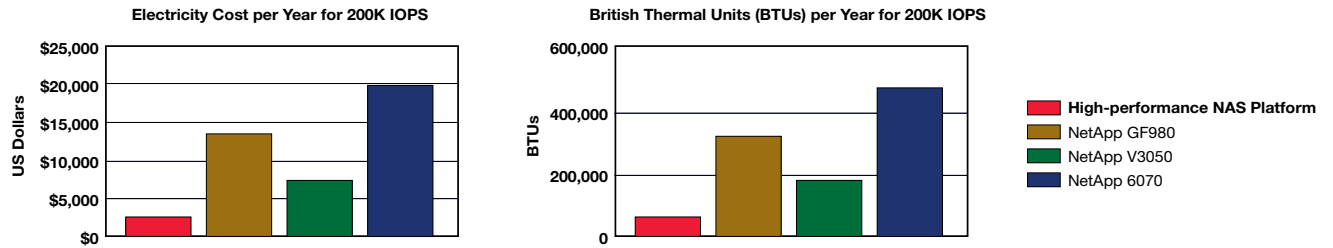- NetApp V3050
- NetApp 6070

Figure 4. Energy and Cost Savings with High-performance NAS Platform

provision more capacity as business requirements change. As data moves through its lifecycle, it can be transparently migrated from one tier of storage to another to provide the most appropriate storage media for the task.

Benefits of Consolidation with High-performance NAS Platform

- Lower total cost of ownership
  - Lower hardware and software costs
  - Lower labor and service costs
  - Greater scalability, reducing growth costs
- Less management complexity
  - Fewer devices
  - Centralized administration and policies
  - Enhanced security and control
- Faster data replication and backup, improving productivity
  - Streamlined provisioning
  - Improved application performance
  - Integrated analytics and reporting

Hitachi High-performance NAS Highlights

- Hardware-accelerated CIFS, NFS, iSCSI, and NDMP
- Cluster Name Space
- Virtual volumes and servers
- Block- and file-level replication
- High-speed snapshots
- Hard and soft storage quotas with oversubscription
- Policy-based management and data migration
- Role-based security and virus scanning

Complementary Solutions

The Hitachi Data Systems Global Solution Services (GSS) team delivers a full range of storage design, rapid product deployment, and ongoing management services to create Application Optimized Storage™ solutions that map to your critical business application requirements and truly deliver the value to your organization. Choose from GSS design, implementation, and data migration services that support the High-performance NAS Platform and the entire suite of Hitachi storage products.

"Ideally, for a storage environment to support real- or near-real-time OLTP, messaging, and data warehousing applications, it must offer:

- *Significant performance and scalability characteristics*
- *High bandwidth connectivity across multiple I/O protocols on the front-end*
- *Heterogeneous support for different classes of storage on the back-end*
- *The ability to create virtual, private storage pools*
- *Data movement and replication capabilities across disparate storage systems*

Hitachi's High-performance NAS Platform delivers these, making it a primary candidate for large commercial NAS consolidation projects."

—John Webster, Illuminata, Illuminata report: "HDS to the Power of Blue"

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