



Pricing Comparisons between Windows-Based and Non- Windows-Based NAS Solutions

*A Supplement to Windows-Based NAS
Enables Customers to "Do More with Less"*

September 2004

A D.H. Brown Associates, Inc.

White Paper Prepared for

Microsoft

An  *ideas*
International Company

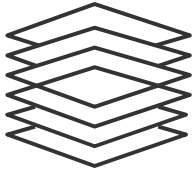
This document is copyrighted © by D.H. Brown Associates, Inc. (DHBA) and is protected by U.S. and international copyright laws and conventions. This document may not be copied, reproduced, stored in a retrieval system, transmitted in any form, posted on a public or private website or bulletin board, or sublicensed to a third party without the written consent of DHBA. No copyright may be obscured or removed from the paper. D.H. Brown Associates, Inc. and DHBA are trademarks of D.H. Brown Associates, Inc. All trademarks and registered marks of products and companies referred to in this paper are protected.

This document was developed on the basis of information and sources believed to be reliable. This document is to be used "as is." DHBA makes no guarantees or representations regarding, and shall have no liability for the accuracy of, data, subject matter, quality, or timeliness of the content. The data contained in this document are subject to change. DHBA accepts no responsibility to inform the reader of changes in the data. In addition, DHBA may change its view of the products, services, and companies described in this document.

DHBA accepts no responsibility for decisions made on the basis of information contained herein, nor from the reader's attempts to duplicate performance results or other outcomes. Nor can the paper be used to predict future values or performance levels. This document may not be used to create an endorsement for products and services discussed in the paper or for other products and services offered by the vendors discussed.

TABLE OF CONTENTS

METHODOLOGY.....	1
OVERALL FINDINGS.....	1
THE AVERAGE PRICING ADVANTAGE OF WINDOWS-BASED NAS	3
THE ABSOLUTE PRICING ADVANTAGE OF WINDOWS-BASED NAS	3
FINAL THOUGHTS	5
APPENDIX 1: WINDOWS-BASED VERSUS NON-WINDOWS-BASED NAS SOLUTIONS – COMPARISON DETAILS.....	6



Pricing Comparisons between Windows-Based and Non-Windows-Based NAS Solutions

A Supplement to *Windows-Based NAS Enables Customers to “Do More with Less”*

The previously released white paper, *Windows-Based NAS Enables Customers to “Do More with Less,”* discussed how cost represents a key driver for customers to deploy Windows-based Network-Attached Storage (NAS). The following competitive pricing analysis serves as a supplement to this white paper. This analysis further illustrates the magnitude of savings customers can realize from choosing Windows-based over non-Windows-based NAS solutions.

METHODOLOGY

In this supplement, Windows-based and non-Windows-based NAS solutions were compared across several categories of typical configurations.

For both Dedicated NAS (a NAS device with its own storage resources) and NAS Gateway (a NAS device utilizing the storage resources of a Storage Area Network [SAN]) solutions, systems from various vendors were categorized into Entry, Workgroup, and Enterprise offerings, according to their product positioning and system specifications. The vendors featured in this study include Dell, EMC, Hewlett-Packard, IBM, Iomega, Network Appliance, Snap Appliance, and Sun Microsystems. NAS Systems in each category were configured with identical hardware features, such as number of processors, memory, and storage capacity. Note that due to the lack of performance measurements across NAS vendor product lines, this is the only objective set of criteria feasible for identifying comparable offerings, even though vendors may have different competitive positioning for certain products. See Appendix 1 for system and configuration details.

System prices were calculated at three levels – base prices with management software included, prices with point-in-time copy/restore capability enabled, and prices that include support for heterogeneous (CIFS and NFS) client access. The comparisons were made between the average prices of Windows-based and non-Windows-based NAS systems in the same category. Pricing was based on D.H. Brown Associates, Inc. (DHBA) estimated list prices as of August 2004.

OVERALL FINDINGS

Windows-based NAS solutions generally cost less than non-Windows-based NAS solutions. The base prices of Windows-based NAS products generally start lower than the base prices of similarly positioned non-Windows-based NAS products. The OEM vendors of Windows-based NAS include major system vendors. Taking advantage of their economies of scale, Windows-based NAS solutions are equipped with up-to-date hardware at attractive price points.

For dedicated NAS solutions, Windows-based NAS vendors today are commonly offering cost-effective Serial-ATA (SATA) based storage, which is not available on mainstream NAS products from several non-Windows-based NAS vendors. The pricing advantage of the Windows-based NAS vendors grows as the storage capacity increases.

For NAS Gateway solutions, Windows-based NAS vendors are offering industry-standard server hardware, while several non-Windows-based NAS solutions are based on proprietary configurations. The pricing advantages of the Windows-based NAS Gateway products are most significant in low-end (single- or dual-CPU) configurations.

Windows-based NAS pricing advantages are further augmented by the software license pricing of Windows Storage Server 2003. While the base prices of non-Windows-based NAS products commonly cover only basic features and charge extra software license fees for additional features, Windows-based NAS solutions typically come with all the integrated features of Windows Storage Server 2003. The pricing comparison shows that to enable point-in-time copy/restore capability and heterogeneous client access – two popular features demanded by most customers – customers need to pay anywhere from 9% to 81% more than the base prices with non-Windows-based products. As a result, the Windows-based NAS solutions generally cost less than NAS solutions based on other operating systems and microcodes, even when both solutions are provided by the same vendor.

Figure 1 below depicts the average prices of Windows-based and non-Windows-based NAS products in each category, for both dedicated NAS and NAS Gateway solutions.

FIGURE 1
 Windows-Based NAS Solutions Generally Cost Less than Non-Windows-Based NAS Solutions

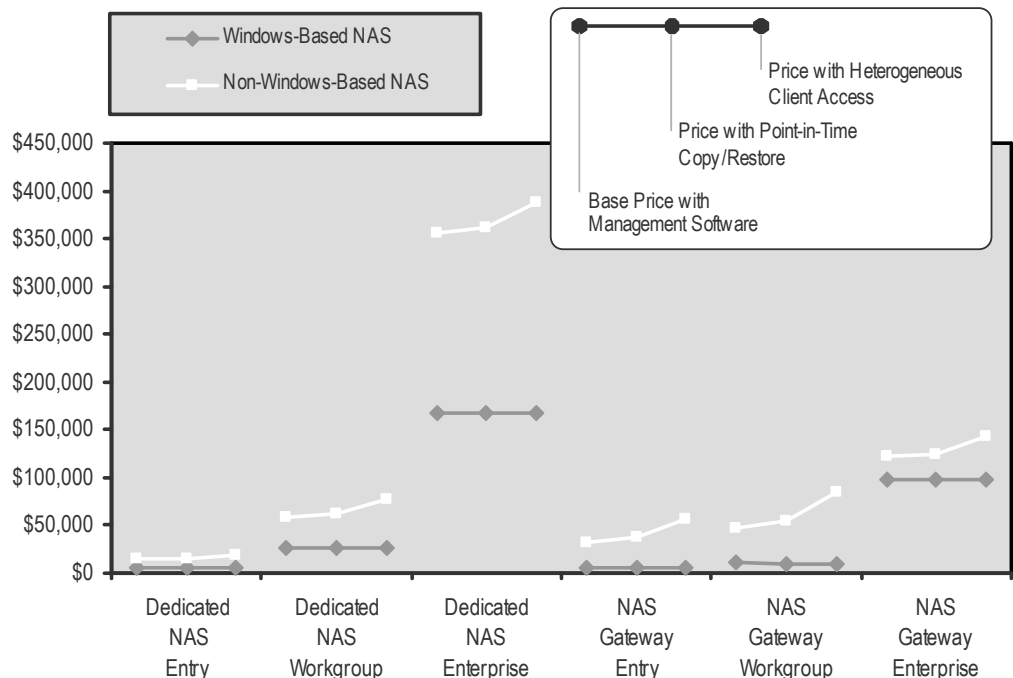
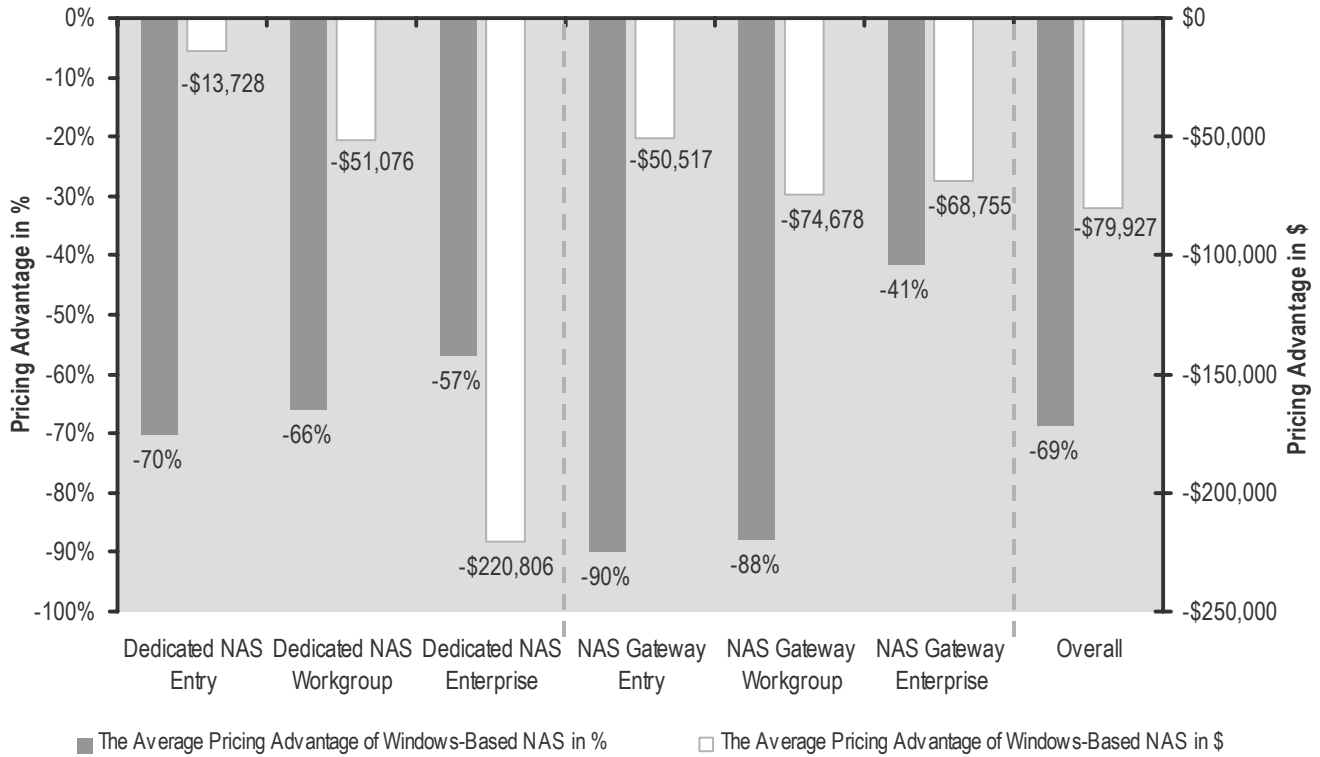


FIGURE 2: Windows-Based NAS Offers A Lower Average Price than Non-Windows-Based NAS in Each Category



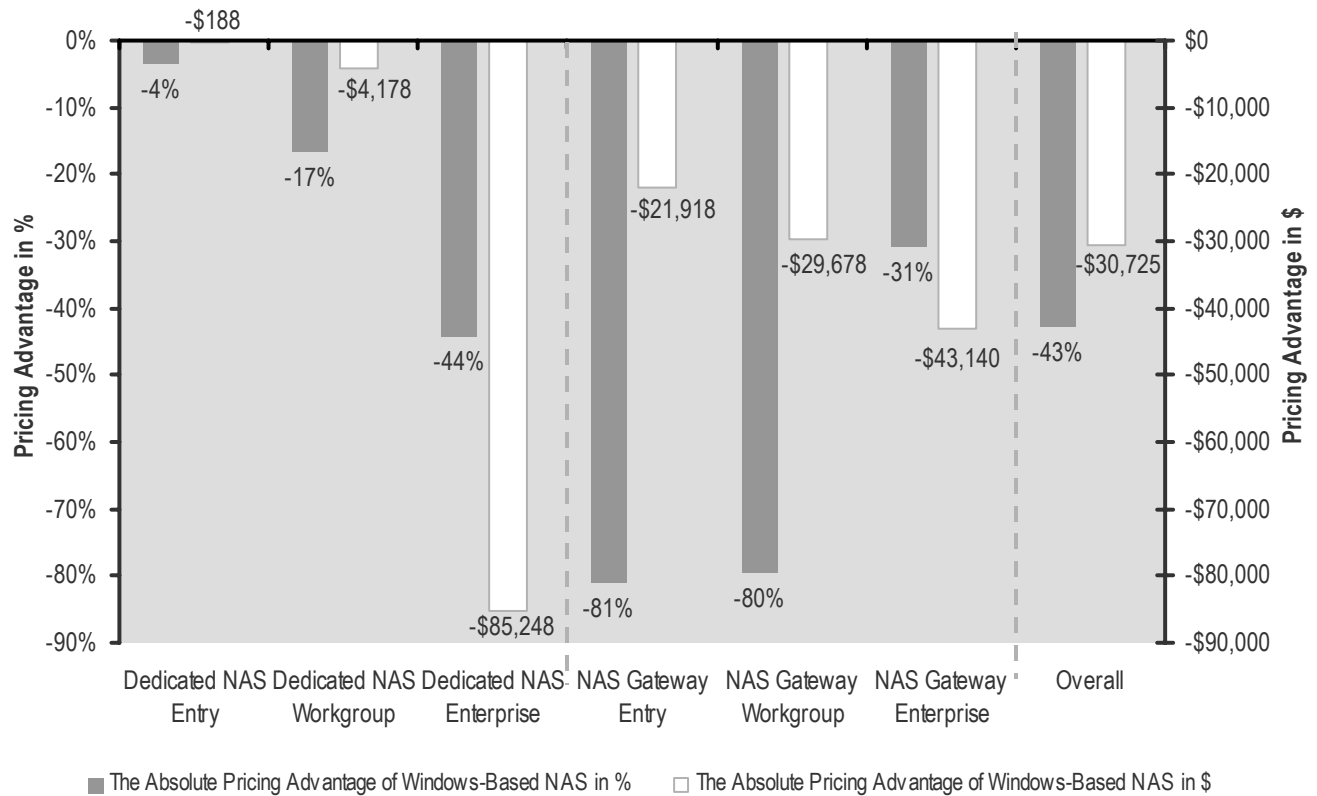
THE AVERAGE PRICING ADVANTAGE OF WINDOWS-BASED NAS

Windows-based NAS exhibits a lower average price than non-Windows-based NAS in each category. For dedicated NAS solutions, the average Windows-based NAS prices are 57% to 70% lower than the average non-Windows-based NAS prices. The average prices of Windows-based NAS solutions are over \$13,000 lower for entry solutions and over \$220,000 lower for enterprise solutions. For NAS Gateway solutions, the average Windows-based NAS prices are 41% to 90% lower than the average non-Windows-based NAS prices. The average prices of Windows-based NAS solutions are over \$50,000 lower for entry solutions and over \$68,000 lower for enterprise solutions. Figure 2 illustrates the *average pricing advantage* of Windows-based NAS, comparing the average prices of Windows-based and non-Windows-based NAS solutions in each category.

THE ABSOLUTE PRICING ADVANTAGE OF WINDOWS-BASED NAS

Naturally, some products are priced considerably higher than competing products in the market, especially with the popular high-list-price/high-discount pricing strategy among storage vendors. The average price comparisons are significantly impacted by these extraordinarily high-priced solutions. A comparison between the lowest-priced Windows-based and non-Windows-based NAS solutions in each category further demonstrates the “absolute” strength of the Windows-NAS architecture.

FIGURE 3: Windows-Based NAS Offers the Lowest Price among Competing Solutions in Each Category



Despite lower average prices, Windows-based NAS also offers the lowest price among competing solutions in each category. For dedicated NAS solutions, the lowest-priced Windows-based NAS systems are 4% to 44% less expensive than the lowest-priced non-Windows-based NAS systems. The lowest prices of Windows-based NAS solutions are about \$200 lower for entry solutions and over \$85,000 lower for enterprise solutions than the lowest-priced non-Windows-based systems. For NAS Gateway solutions, the lowest-priced Windows-based NAS solutions are 31% to 81% less expensive than the lowest-priced non-Windows-based NAS solutions. The lowest prices of Windows-based NAS are over \$20,000 lower for entry solutions and over \$43,000 lower for enterprise solutions than the lowest-priced non-Windows-based NAS solutions. Figure 3 illustrates the *absolute pricing advantage* of Windows-based NAS, comparing the lowest prices of Windows-based and non-Windows-based NAS solutions in each category.

FINAL THOUGHTS

The results of this competitive pricing analysis further substantiate the cost advantage of Windows-based NAS and illustrate the magnitude of savings customers can realize from choosing a Windows-based NAS solution over a non-Windows-based NAS solution. A 50% pricing advantage means the competitor's price is double that of the equivalent Windows-based NAS solution. The pricing differences between Windows-based and non-Windows-based solutions for many categories are over 50%, and as much as 90%. A 90% pricing advantage – which is the *average pricing advantage* of Windows-based NAS in the Entry NAS Gateway category – means that the non-Windows-based NAS systems can be nine times more expensive! In addition, scalable NAS deployments in the Enterprise Dedicated NAS category can result in customer savings of up to hundreds of thousands of dollars when Windows-based NAS solutions are deployed over non-Windows-based NAS solutions. The bottom line – Windows-based NAS solutions are based on industry-standard technologies and backed by several Tier-One vendors. Proprietary solutions based on technology from a single vendor cannot compete with industry-standard solutions when cost, integration, and completeness of offering are major concerns.

APPENDIX 1: WINDOWS-BASED VERSUS NON-WINDOWS-BASED NAS SOLUTIONS – COMPARISON DETAILS

DEDICATED NAS (NAS DEVICE WITH ITS OWN STORAGE RESOURCES)						
ENTRY CONFIGURATION						
Single Device with Internal Storage, 1 TB Raw Storage Capacity						
	Windows-Based NAS			Non-Windows-Based NAS		
System and Configuration	Dell PV 745N	HP NAS 1500s	lomega NAS 400m	NetApp FAS250	Snap Server 4500	Sun 5210 NAS
	2.8 GHz/1 MB L2 Intel Pentium 4 Processor, 1 GB Memory, 1 TB SATA Storage	3.2 GHz/512 KB L2 Intel Pentium 4 Processor, 1 GB Memory, 1 TB SATA Storage	2.6 GHz Intel Pentium 4 Processor, 1 GB Memory, 1 TB SATA Storage	650 MHz Broadcom SB1250 MIPS Processor, 512 MB Memory, 1 TB FC Storage	2.4 GHz/512 KB L2 Intel Pentium 4 Processor, 512 Memory, 1 TB PATA Storage	3.06 GHz/512 KB L2 Intel Xeon Processor, 4 GB Memory, 876 GB Ultra320 SCSI Storage
Average Price	Base Price with Management Software: \$5,835 Price with Point-in-Time Copy/Restore: \$5,835 Price with CIFS and NFS Support: \$5,835			Base Price with Management Software: \$14,293 Price with Point-in-Time Copy/Restore: \$15,627 Price with CIFS and NFS Support: \$19,563		
Lowest Price	Base Price with Management Software: \$5,007 Price with Point-in-Time Copy/Restore: \$5,007 Price with CIFS and NFS Support: \$5,007			Base Price with Management Software: \$5,195 Price with Point-in-Time Copy/Restore: \$5,195 Price with CIFS and NFS Support: \$5,195		
WORKGROUP CONFIGURATION						
Single Device with External Storage Subsystems, 5 TB of Raw Storage Capacity						
	Windows-Based NAS			Non-Windows-Based NAS		
System and Configuration	Dell PV775N	HP NAS 2000s	EMC NetWin 110	EMC Celerra NS500	NetApp FAS270	Snap Server 15000
	3.06 GHz/1 MB L3 Intel Xeon Processor, 1 GB Memory, 2 x AX100 (3 TB + 2 TB SATA) Storage	3.06 GHz/1 MB L3 Intel Xeon Processor, 1 GB Memory, 2 x MSA20 (3 TB + 2 TB SATA) Storage	2.4 GHz Intel Pentium 4 Processor, 1 GB Memory, 2 x AX100 (3 TB + 2 TB SATA) Storage	2 x 1.6 GHz Pentium 4 Processor, 1 GB Memory, 1 x CX300 (180 GB FC + 4.8 TB PATA) Storage	650 MHz Broadcom SB1250 MIPS Processor, 1 GB Memory, 3 x DS14 (2 TB + 2 TB + 1 TB FC) Storage	3.06 GHz/512 KB L2 Intel Pentium 4 Processor, 2 GB Memory, 5 TB SATA Storage
Average Price	Base Price with Management Software: \$26,215 Price with Point-in-Time Copy/Restore: \$26,215 Price with CIFS and NFS Support: \$26,215			Base Price with Management Software: \$58,652 Price with Point-in-Time Copy/Restore: \$62,002 Price with CIFS and NFS Support: \$77,291		
Lowest Price	Base Price with Management Software: \$20,817 Price with Point-in-Time Copy/Restore: \$20,817 Price with CIFS and NFS Support: \$20,817			Base Price with Management Software: \$24,995 Price with Point-in-Time Copy/Restore: \$24,995 Price with CIFS and NFS Support: \$24,995		
ENTERPRISE CONFIGURATION						
Dual-Node HA Cluster, Each Node with 15 TB of Raw Storage Capacity						
	Windows-Based NAS			Non-Windows-Based NAS		
System and Configuration	Dell PV770N	HP NAS 2000s	EMC NetWin 200	EMC Celerra NS700	NetApp FAS960c	Snap Server 18000
	Each Node: 2 x 3.06 GHz/1 MB L3 Intel Xeon Processor, 2 GB Memory, 5 x AX100 (5 x 3 TB SATA) Storage	Each Node: 2 x 3.06 GHz/1 MB L3 Intel Xeon Processor, 2 GB Memory, 5 x MSA20 (5 x 3 TB SATA) Storage	Each Node: 2 x 3.06 GHz Intel Xeon Processor, 2 GB Memory, CX300 (730 GB FC + 14.4 TB PATA) Storage	Each Node: 2 x 3.06 GHz Intel Pentium 4 Processor, 2 GB Memory; Both Nodes Attached to a Dual-Controller CX500 with 2 x (584 GB FC + 14.4 TB PATA) Storage	Each Node: 2 x 2.4 GHz/512 KB L2 Intel Xeon Processor, 6 GB Memory, 8 x DS14 (7 x 2TB + 1 TB FC) Storage	Each Node: 2 x 3.06 GHz Intel Xeon Processor, 2 GB Memory, Internal and 4 x SD30SA (2 TB SATA) Storage
Average Price	Base Price with Management Software: \$167,580 Price with Point-in-Time Copy/Restore: \$167,580 Price with CIFS and NFS Support: \$167,580			Base Price with Management Software: \$356,686 Price with Point-in-Time Copy/Restore: \$362,153 Price with CIFS and NFS Support: \$388,386		
Lowest Price	Base Price with Management Software: \$107,812 Price with Point-in-Time Copy/Restore: \$107,812 Price with CIFS and NFS Support: \$107,812			Base Price with Management Software: \$193,060 Price with Point-in-Time Copy/Restore: \$193,060 Price with CIFS and NFS Support: \$193,060		

NAS GATEWAY (NAS DEVICE UTILIZING STORAGE RESOURCES OF A SAN)						
ENTRY CONFIGURATION						
Uni-CPU Single Device						
Windows-Based NAS			Non-Windows-Based NAS			
System and Configuration	Dell PV775N	EMC NetWin 110	EMC Celerra NS500GS *	NetApp gFiler G825	IBM NAS Gateway 500	
	3.06 GHz/1 MB L3 Intel Xeon Processor, 1 GB Memory	2.4 GHz Intel Pentium 4 Processor, 1 GB Memory	2 x 1.6 GHz Pentium 4 Processor, 1 GB Memory	733 MHz Intel Pentium III Processor, 1 GB Memory	1.45 GHz Power 4+ Processor, 2 GB Memory	
Average Price	Base Price with Management Software: \$5,629		Base Price with Management Software: \$31,777			
	Price with Point-in-Time Copy/Restore: \$5,629		Price with Point-in-Time Copy/Restore: \$37,677			
	Price with CIFS & NFS Support: \$5,629		Price with CIFS & NFS Support: \$56,145			
Lowest Price	Base Price with Management Software: \$5,157		Base Price with Management Software: \$13,280			
	Price with Point-in-Time Copy/Restore: \$5,157		Price with Point-in-Time Copy/Restore: \$16,580			
	Price with CIFS & NFS Support: \$5,157		Price with CIFS & NFS Support: \$27,075			
WORKGROUP CONFIGURATION						
Dual-CPU Single Device						
Windows-Based NAS			Non-Windows-Based NAS			
System and Configuration	Dell PV770N	HP NAS 4000s	EMC NetWin 200	EMC Celerra NS700GS	NetApp gFiler G960c	IBM NAS Gateway 500
	2 x 3.2 GHz/2 MB L3 Intel Xeon Processor, 2 GB Memory	2 x 3.2 GHz/1 MB L3 Intel Xeon Processor, 2 GB Memory	2 x 3.06 GHz Intel Xeon Processor, 2 GB Memory	2 x 3.06 GHz Intel Pentium 4 Processor, 2 GB Memory	2 x 2.4 GHz/512 KB L2 Intel Xeon Processor, 6 GB Memory	2 x 1.45 GHz Power 4+ Processor, 2 GB Memory
Average Price	Base Price with Management Software: \$10,361		Base Price with Management Software: \$47,030			
	Price with Point-in-Time Copy/Restore: \$10,361		Price with Point-in-Time Copy/Restore: \$54,330			
	Price with CIFS & NFS Support: \$10,361		Price with CIFS & NFS Support: \$85,038			
Lowest Price	Base Price with Management Software: \$7,637		Base Price with Management Software: \$26,200			
	Price with Point-in-Time Copy/Restore: \$7,637		Price with Point-in-Time Copy/Restore: \$30,100			
	Price with CIFS & NFS Support: \$7,637		Price with CIFS & NFS Support: \$37,315			
ENTERPRISE CONFIGURATION						
HA-Cluster, Eight CPUs Total						
Windows-Based NAS			Non-Windows-Based NAS			
System and Configuration	HP NAS 9000s		EMC Celerra NS704G	IBM NAS Gateway 500		
	Two Nodes; Each Node: 4 x 2.8 GHz Intel Xeon Processor, 4 GB memory		Four Nodes; Each Node: 2 x 3 GHz Intel Pentium 4 Processor, 2 GB Memory	Two Nodes; Each Node: 4 x 1.45 GHz Power 4+ Processor, 4 GB memory		
Average Price	Base Price with Management Software: \$97,030		Base Price with Management Software: \$151,660			
	Price with Point-in-Time Copy/Restore: \$97,030		Price with Point-in-Time Copy/Restore: \$151,660			
	Price with CIFS & NFS Support: \$97,030		Price with CIFS & NFS Support: \$165,785			
Lowest Price	Base Price with Management Software: \$97,030		Base Price with Management Software: \$138,320			
	Price with Point-in-Time Copy/Restore: \$97,030		Price with Point-in-Time Copy/Restore: \$138,320			
	Price with CIFS & NFS Support: \$97,030		Price with CIFS & NFS Support: \$140,170			

* Although the EMC Celerra is equipped with dual processors, it represents the current entry price point of non-Windows-based NAS gateway solutions, therefore is included in the entry category.