VeriTest®

MICROSOFT® CERTIFIED FOR WINDOWS CERTIFICATION RESULTS

Product Overview

Company: VERITAS Software Corporation
Product: Storage Foundation 4.2 for Windows
Version: 4.2
Description: VERITAS Storage Foundation for Windows provides easy-to-use on-line storage management for heterogeneous enterprise environments. Storage Foundation for Windows ensures high availability of data, optimized I/O performance, and allows freedom of choice in storage hardware investments.
Language Category: Unicode
Language(s) Tested: English
Report Date: 11/3/2004
Certified for: Windows 2003 Standard Edition
Windows 2003 Enterprise Edition
Windows 2003 Datacenter Edition

Summary of Key Features

Core Capabilities

Windows Fundamentals	Yes	*Required:* A compliant product will execute on Windows and will not adversely affect the reliability of the operating system.
Installation Requirements	Yes	*Required:* The product will install and uninstall in accord with Windows requirements. This provides a predictable installation experience for users.
Security Services	Yes	*Required:* The product tested complies with the security requirements in the Application Specification.
Reliability and High Availability	Yes	*Required for Enterprise Edition and Datacenter Edition:* Under situations of high load, high stress or limited resources, the application must remain stable and highly available.
24x7 Support	Yes	*Required only for Datacenter Edition:* The application vendor supports this product 24 hours a day, 7 days a week.

Optimized Capabilities

Active Directory	N/A	*Recommended*: Various components of the application should be made available by storing information in Active Directory.
Terminal Server	N/A	*Recommended*: These additional requirements describe how to take advantage of Windows Terminal Services technologies.
Manageability	N/A	*Recommended*: Manageable solutions are easier for systems and network administrators to deploy, operate, and upgrade/decommission.

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intel®	Intel® Xeon™ processor, Intel® Xeon™ processor MP and Intel® Itanium® 2 processors combined with Microsoft Windows Server 2003 enable the industry to deliver complete top to bottom enterprise platforms. (www.intel.com/go/xeon_mp and www.intel.com/go/itanium2)
UNISYS	The Unisys ES7000 offers mainframe-class characteristics on an open server platform. Built on Intel processor technologies, the ES7000 features the Cellular Multiprocessing (CMP) architecture. (www.unisys.com – "Hardware")

Summary of Test Results

VeriTest has confirmed that this application supports the requirements of the "Microsoft Certified for Windows Server 2003 Application Specification" or has obtained specific exemptions (detailed in Appendix A where applicable) from the Certified for Windows Team at Microsoft, and is qualified to use the "Certified for Microsoft Windows" logo stated on page one of this report. VeriTest followed test procedures established by Microsoft Corporation, and used the "Microsoft Certified for Windows Server 2003 Application Test Framework."

The VERITAS Storage Solutions 4.2 for Windows CD contains two base products, plus options and agents. This certification test was for Storage Foundation for Windows base product only.

Storage Foundation HA for Windows (SFW plus VERITAS Cluster Server) and the following options were not tested.

- Dynamic Multi-Pathing Option
- FlashSnap Option
- Volume Replicator Option
- Global Cluster Option
- Cluster Agent for Microsoft Exchange
- Cluster Agent for Microsoft SQL
- Cluster Agent for EMC SRDF

Note: The 'Cluster Option for Microsoft Cluster Service' was tested as this option is required to create Cluster Disk Groups and work with MSCS. While the Global Cluster Option, Cluster Agent for Microsoft Exchange, Cluster Option for Microsoft SQL and Cluster Agent for EMC SRDF are on the same CD, they are options agents for the Storage Foundation HA 4.2 for Windows product only. They are not selectable on a VSFW42 installation.

A. Test Configuration *(Which Components Were Tested on Which Machines)*

Clustering test (IBM eServer xSeries)

1) Domain Controller	Component(s) installed on this machine: No components were installed.
2) Node 1	Component(s) installed on this machine: Veritas Storage Foundation 4.2
3) Node 2	Component(s) installed on this machine: Veritas Storage Foundation 4.2
4) Node 3	Component(s) installed on this machine: Veritas Storage Foundation 4.2
5) Node 4	Component(s) installed on this machine: Veritas Storage Foundation 4.2
6) Member Server 1	Component(s) installed on this machine: Test Harness from ISV (batch file)

32 Processor, PAE and 3GB test (Unisys ES-7000)

1) Domain Controller	Component(s) installed on this machine: No components were installed.
2) Node 1	Component(s) installed on this machine: Veritas Storage Foundation 4.2
3) Member Server 1	Component(s) installed on this machine: No components were installed.
4) Clients (1-8 as needed)	Component(s) installed on these machines: HCT 11.2

Server test (Dell PowerEdge)

1) Domain Controller	Component(s) installed on this machine: Windows 2003 Server, Standard Ed., DNS
2) Member Server 1	Component(s) installed on this machine: Windows 2003 Standard Ed., Veritas Storage Foundation 4.2

B. Kernel Mode *(Components and How They Were Qualified)*

vxboot.sys and vxio.sys were tested and passed the verification test. Microsoft WHQL issues a 'No-Logo Contingency' for these drivers, as there are no test programs available for these drivers.

C. The High-Availability Solution *(For Enterprise and Datacenter Editions)*

Microsoft Cluster Service was used for the High Availability Solution. The application was installed on each node from a single point (first node), and a cluster resource was created manually. This resource was used to make a group of disk volumes available to users.

D. Test Harness *(Only for Datacenter Edition)*

The test harness stresses the application by performing I/O (read, write) operations on a volume belonging to a Volume Group created by Storage Foundation. Command return codes and errors are logged in a trace file.

About VeriTest

VeriTest is the leading provider of comprehensive product testing, product certification, and strategic QA consulting services to the IT developer community. Since 1987, VeriTest clients have leveraged our experience, partnerships, and scalable resources to take the uncertainty out of product quality. We help our clients reduce the cost of testing, while speeding time to market and ensuring the integrity of global brands.

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VeriTest conducts testing for this program using methods provided by Microsoft Corporation and reports the results of that testing.

VeriTest offers no warranties, representations or certifications concerning the products it tests.

All software includes defects: nothing in this document is intended to represent or warrant that testing was complete and without error, nor does this document represent or warrant that the Product tested is suitable to task, free of other defects than reported, fully compliant with any industry standards, Year 2000 compliant nor fully compatible with any operating system, any hardware or other product.

Please refer to the VeriTest Master Testing Agreement for Microsoft Logos for further conditions to this report.

Appendix A: Detailed Test Results

Core Capabilities

Chapter 1 - Windows Fundamentals	Result	Notes
1.1 Perform primary functionality and maintain stability	Yes	
1.2 Any kernel-mode drivers that the application installs must pass verification testing on Windows .NET	Yes	
1.3 Any device or filter drivers included with the application must pass Windows HCT testing	N/A	
1.4 Perform Windows version checking correctly	Yes	
1.5 Support Long Path Names	Yes	
1.6 Execute appropriately in a multi-lingual environment	Yes	
1.7 Ensure non-hidden files outside of your application directory have associated file-types, and all file-types have associated icons, descriptions, and actions	Yes	
1.8 Degrade gracefully when services are unavailable.	Yes	
1.9 Client components and administrative tools.	Yes	
1.10 32-bit application must be able to run with PAE memory enable.	Yes	
1.11 Applications must be able to install and run on 8 and 32 processor systems.	Yes	
Chapter 2 - Installation Requirements		
2.1 Do not attempt to replace files that are protected by Windows File Protection	Yes	
2.2 Do not overwrite non-proprietary files with older versions	Yes	
2.3 Do not require the computer to restart	Yes	
2.4 User control of install locations	Yes	
2.5 Install any shared files to the correct locations	Yes	
2.6 Support Add or Remove Programs properly	Yes	
2.8 Ensure the application uninstalls correctly	Yes	
2.9 Installing kernel mode components	Yes	
Chapter 3 - Security Services		
3.1 Support Smart Card login	Yes	
3.2 Support Secure Credential Management	Yes	
3.3 Run in a highly secure configuration	Yes	
3.4 Do not make insecure additions to the secure desktop	N/A	
3.5 Use of network connections must be secure	Yes	
3.6 Appropriate Clustering	Yes	
3.7 Compatibility with Virus scanning of I/O write to files	Yes	
3.8 Services running as LocalSystem must not present a UI.	Yes	
Chapter 4 - Reliability and High Availability		
4.1 Applications must demonstrate stability under stress	Yes	
4.2 Crash Recovery and Downtime Avoidance	Yes	
4.3 Appropriate Resource Use	Yes	
4.4 Debug symbols or tools must be available	Yes	
4.5 Do not cause services to become unavailable	Yes	
Chapter 5 - 24x7 support		
5.1 24x7 Availability	Yes	**1**
5.2 Personnel qualifications	Yes	
5.3 Access to 24x7 support, Severity levels and response commitments	Yes	
5.4 ISV obsolescence policy	Yes	
5.5 On-site capabilities	Yes	
5.6 QFE and Service Pack Guidelines	Yes	

Appendix B: Special Notes to Test Results

Note 1: Do not require the computer to restart

Expected Behavior
Application Specification 2.3: In Windows Server 2003, few situations that occur during installation truly require the computer to restart or "reboot". Restarting the computer is unwelcome by customers and can hinder deploying applications. Except in the rare specific cases that do require restarting the computer, the application must not require or suggest restarting during or after an installation or after an application uninstalls. Using a deployment package based on Windows Installer makes meeting this requirement much easier.

Storage Foundation 4.2 for Windows: Observed Behavior
Certified for Windows Server 2003, Standard Edition Result: Pass *

Installing Storage Foundation 4.2 for Windows requires a system restart. This restart has been examined by VeriTest and members of the Microsoft Windows team who have determined that appropriate and necessary changes to the Windows system are being made to enable the application's primary functionality, and that completing these changes is only possible with a system restart. Further, this restart is correctly documented and prompted by the application, and the timing of the restart is under full user control. Therefore, Storage Foundation 4.2 for Windows complies with the contingencies for requirement 2.3.

Vendor Comment: None

Note 2: 24x7 Availability

Expected Behavior
Application Specification 5.1: The vendor of certified Datacenter applications must have a 24 x 7 support center that the customer or third party support professionals such as from an OEM can contact as they work to resolve customer issues.

More specifically, from the supplemental Datacenter Application Certification Support Specification 3.2: For a mission-critical (severity 1) issue, a subject-matter expert or developer must be able to respond within a reasonable period after notification from front line support. This person may be on-call but must be able to respond to the customer and also be able to access the support infrastructure as defined in section 2.1 of this document.

Storage Foundation 4.2 for Windows: Observed Behavior
Certified for Windows Server 2003, Standard Edition Result: Pass *

Based on evidence and documentation supplied by VERITAS Software Corporation, we have determined that the required level of support is provided. In addition, the following links lead customers to 24 x 7 support:

Support telephone number in the United States: +1 800 342 0652
Support website: http://support.veritas.com/

Vendor Comment: None

Appendix C: Additional Resources

This software vendor recommends the following valuable resource(s) for additional product information:

Additional technical information regarding VERITAS Storage Foundation 4.1 for Windows can be found at the VERITAS Technical Support website or the VERITAS Architect Network website.

- http://support.veritas.com
- http://www.veritas.com/van

Appendix D: Testing Configuration

STANDARD EDITION TEST RIG

- 2 Servers – one configured as member server and one configured as domain controller
- Base 2xP3-600MHz/512K Cache
- 512MB ECC RAM, 4 DIMMs
- Terminator Card, 100MHz
- 3C980 10/100 PCI Network Card
- 3.5”, 1.44MB Floppy Drive
- 17/40x IDE, CD-ROM Drive
- DNES-309170 9.1GB LVD Hard Drive x 3
- Maxtor Diamond Max
- 10GB IDE Hard Disk
- System Mouse
- Keyboard - 104 Key 6 Pin

XP WORKSTATION

- Intel® Pentium® III processor 450 Mhz.
- 128 MB PC100 SDIMM RAM
- 3.5” Floppy Disk Drive
- 10.1 GB IDE Hard Disk Drive
- 18.2 GB SCSI Hard Disk Drive
- 40x IDE CD-ROM Drive
- 40x SCSI CD-ROM Drive
- 2Gb External Jazz Drive
- G200 AGP 2x Display Adapter
- V550 PCI Display Adapter
- Two 3C905B-TX Network Interface Cards
- AWE64 Sound Card
- PS-2 104-key Windows95 Keyboard
- USB 104-key Windows95 Keyboard
- PS-2 Microsoft Intellimouse
- USB Wheel Mouse

ENTERPRISE AND DATACENTER EDITIONS TEST RIG

IBM - eServer xSeries

4 - eServer xSeries 440 (Datacenter cluster)
- 2IBM Total Storage FAStT FC-2 Host Bus Adapter
- 12 1GB PC133 ECC SDRAM RDIMM
- 1IBM 10/100 Ethernet Server Adapter
- 1IBM ServeRAID-4Mx Ultra160 SCSI Controller
- 8Intel® Pentium® III Xeon processor 1.5GHz/400MHz, 512KB, 2GB
- 4512MB PC133 ECC SDRAM RDIMM
- 2IBM 36.4GB 10K Ultra160 SCSI Hot-Swap SL HDD
- 1xSeries SMP Expansion Module

IBM Storage and Other Components
- 1IBM Total Storage FAStT700 Storage Server
- 1 IBM FAStT EXP500 Storage Expansion Unit
- 10 IBM 36.4 GB 10K-4 FC Hot-Swap HDD
- 2IBM FAStT700 Mini Hub
- 4Netfinity Fibre Channel Short-Wave GBIC
- 10 IBM Short Wave SFP Module
- 1Black TrackPoint Spacesaver Keyboard
- 1T540 15" Flat Panel Colour Monitor
- 1NetBAY 2x8 Console Switch

HP
- One DL380 server for use as a domain controller
- Two DL380 servers for use as member servers

DATACENTER EDITION TEST RIG

Unisys – ES7000

- 1ES732251-ZDU SVR:32X DUAL DOMAIN
- 4PCI3-MOD I/F:PCI MODULE 3.3
- 4PCI502-P64 CTRL:64BIT 2CHAN,LVD/SCS
- 4ETH1010094-P64 CTRL:QUAD ETHERNET, 64-B
- 8FCH20111-P64 CTRL:FIBRE CPR SWT CAPAB
- 32 ES74550-512 PROC:4X PIII XEON 512 L2 PTN550-512 PROC:550MZ,512K L2 CACHE
- 2RAM512-8G MEM:8 GB Memory
- 1ES70001-HAP ACC:HIGH AVAILABILITY PK
- 8HDL18110-CX1 DISK:18GB 10K LVD SCA
- 2APA1000-AC2 POWER:AC ENTRY MOD 3 PH
- 2CDR1740-SI CDR:17-40X SCSI CD-ROM
- 4PCI10001-CXG COMM HW:GIGANET CLUSTER
- 1Sub-Configuration Disk and Tape Subsystems
- 2ESM7700-A10 DISK:FC RAID 512MB 648 GB
- 4OSM1000-HUB DISK:OSM 10 PORT HUB

Appendix E: Test Procedure

The following is a high-level overview of the procedure VeriTest used to execute the primary functionality of the application. Most of the details to achieve full coverage of all primary functionality are not shown:

Creating Dynamic Disk Group, Creating and Deleting a Dynamic Volume, Deporting / Importing groups, and removing a disk from Dynamic Disk Group exercised the primary functionality of this application.

Appendix F: Installation and Prerequisites

The following actions must be performed before primary functionality tests can be executed:

Windows component “WMI Windows Installer Provider” needs to be installed.