Veritas Storage Foundation™ *for Windows*® by Symantec

Advanced online storage management

Veritas Storage Foundation 5.0 *for Windows* brings advanced online storage management to Microsoft® Windows Server® environments. The solution creates virtual storage devices from physical disks and arrays, so storage can be optimally configured, shared, and managed without interruption to servers and mission-critical applications such as Microsoft Exchange, SQL, and SharePoint® Server. Storage Foundation *for Windows* provides easy online storage management for enterprise applications and Fibre Channel– or iSCSI/IP-based storage area network (SAN) environments.

Unlike point solutions, Storage Foundation *for Windows* enables IT organizations to manage their storage infrastructure with one tool. With advanced features such as centralized storage management, online configuration and administration, Dynamic Multi-pathing, and local and remote replication, Storage Foundation *for Windows* enables organizations to reduce operational costs and capital expenditures across the data center.

Highlights

- **Online configuration with dynamic disks**—Optimizes storage performance and availability without bringing operating systems or applications offline

- **Centralized management and reporting**—Improves operational efficiencies and visibility with centralized management and reporting across thousands of hosts and enables nondisruptive storage operations through GUI-based management

- **I/O path availability and performance**—Efficiently spreads I/O across multiple paths for maximum performance, path failure protection, and fast failover

- **Local and remote data protection**—Protects data across any environment with point-in-time copies and data replication

- **Multivendor hardware infrastructure**—Reduces capital expenditures with broad support for heterogeneous operating systems and storage hardware

- **High availability for mission-critical Windows applications**—Delivers a single clustering solution for both local and wide area high-availability and disaster recovery solutions.

Online configuration with dynamic disks

Dynamic disks are unique to Veritas Storage Foundation *for Windows* and can hold simple volumes, spanned volumes, mirrored and striped volumes, and RAID 5 volumes. With this dynamic disk storage capability, it is possible to perform disk and volume management tasks without restarting the operating system, thereby significantly improving online application performance. Additionally, dynamic disks dramatically simplify server migrations and disaster recovery by enabling another Windows host to "see" and access the storage. By not having to keep storage configuration information in the Windows registry, as Microsoft Logical Disk Manager does, dynamic disks enable unparalleled business and management flexibility.

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Centralized management and reporting

With Storage Foundation Management Server (SFMS), organizations can choose industry-leading functionality across Windows platforms and centrally monitor and report on the application, server, and storage environments through a secure Web-based console. This approach leads to higher service levels, reduces the risk of human error, and provides comprehensive visibility throughout the environment. SFMS enables administrators to identify and visualize potential problems with applications and storage resources by correlating health and status information across multiple applications, servers, storage, and replication resources. The increased visibility enables rapid problem resolution that typically spans multiple organizational structures. Storage Foundation *for Windows* also provides a Microsoft MOM Pack to allow storage management integration into Microsoft Operations Manager (MOM 2000 and 2005).

The Storage Foundation GUI enables centralized, online automation of routine administration tasks, such as adding or moving storage resources or data across different disk devices and subsystems. In addition to online storage con-figuration, online logical volume management, and flexible I/O performance monitoring, new dynamic volume "shrink" and "shred" capabilities ensure that information is securely deleted before a volume is erased. Online storage bottle-necks and I/O hot spots can be proactively detected and data can be nondisruptively migrated using the drag-and-drop interface. And with the new advanced track-aligned volume awareness, simple online configuration changes (that can be automated) can deliver performance improve-ment of up to 40 percent. For read oriented applications, such as Exchange, the VxCache functionality allocates

dedicated cache to volumes, further improving Exchange performance by up to 40 percent.
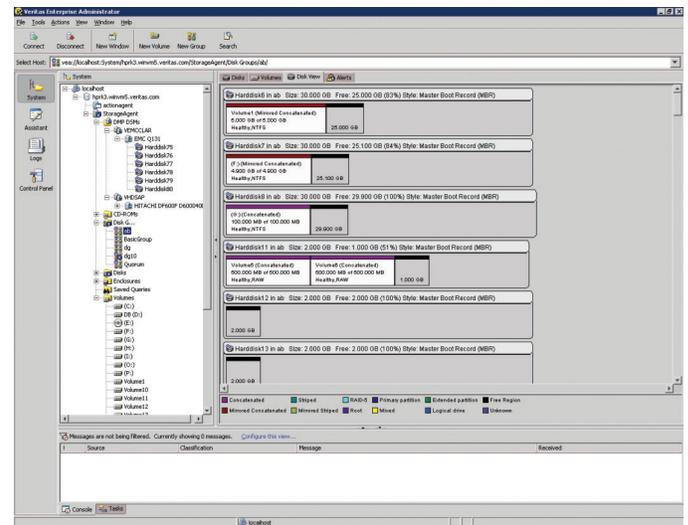
Figure 1. Storage Foundation for Windows provides simple, graphical, and non-disruptive, storage management capabilities.

Storage Foundation *for Windows* configures and monitors leading hardware RAID arrays. It supports clustering configurations with both Veritas™ Cluster Server and Microsoft Cluster Server (MSCS). Fully integrated with Microsoft Virtual Disk Services (VDS), Storage Foundation *for Windows* provides detailed task views including Veritas Cluster Server and Storage Foundation replication topology and Dynamic Multi-pathing performance statistics and trends. Storage Foundation *for Windows* integrates with Microsoft iSNS (Internet Storage Name Service) for automated discovery, management, and configuration of IP SANs, providing enterprise-class management for iSCSI initiators and targets.

I/O path availability and performance

With the Dynamic Multi-pathing option, storage I/O performance and availability are enhanced across

heterogeneous server and storage infrastructures. Dynamic Multi-pathing has seven intelligent algorithms to load-balance storage I/O across multiple host bus adapters (HBAs) for faster throughput, and increases the application's availability by rerouting I/O traffic to an available data path in the event of a path failure. Advanced multipathing management enables GUI visualization of array resources (by array, controller, or path), command-line interfaces for custom scripts, path performance statistics, proactive path checking, and SNMP alerts for path failure notification and recovery. Dynamic Multi-pathing fully supports the Microsoft Windows MPIO Framework and offers MPIO Device Specific Modules (DSM's) for most leading arrays from EMC, HP, HDS, IBM, and Network Appliance. It is fully compliant with the Microsoft Multipath I/O (MPIO) frame-work for both Fibre Channel HBA Storport and Microsoft iSCSI software compatibility, ensuring the required robust interoperability in a Windows environment.
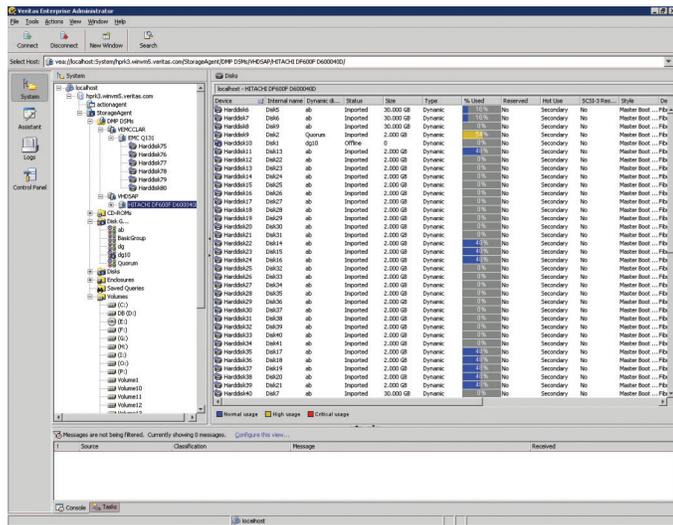

Figure 2. Storage Foundation for Windows provides easy to use storage, device, and I/O path management.

Local and remote data protection

Veritas Storage Foundation *for Windows* provides data protection solutions that address both local and remote replication needs. With the Veritas FlashSnap™ option, administrators can use the intuitive GUI-based scheduler to create point-in-time copies with minimal impact to applications and users. Point-in-time copies can be accessed from the same server or be easily imported to another host, enabling users to leverage tiered storage. FlashSnap is fully integrated with the Windows Server 2003 Volume Shadowcopy Service (VSS) and supports VSS-based snapshots using the integrated VSS Snapshot Scheduler and VSS Software Snapshot Provider. These snapshots can be used for quick recovery or off-host backup of Microsoft Exchange Server 2003 and Microsoft SQL Server 2005 servers. The Exchange VSS snapshot quick recovery process makes it possible to fully restore Exchange to a point in time or to "roll forward" to the point immediately before a failure.

New VSS-based snapshot configuration wizards walk users through the entire snapshot configuration for the entire instance: select components, define snapshot set, select disks for snapshot volumes, schedule start and stop time for snapshots. Moreover, new wizards for high availability, disaster recovery, fire drill, and quick recovery improve ease of use and convenience.

For mission-critical applications that require remote recovery sites, the Veritas™ Volume Replicator Option enables efficient replication of data over IP networks and is an extremely flexible, high-performance solution. Organizations can combine virtually any storage devices on any major operating system, providing a consistent, easy-to-manage high-availability/disaster recovery solution

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throughout the data center. The Veritas Volume Replicator Option also integrates with the Veritas FlashSnap Option to allow VSS-based snapshots to be taken at both a primary and a secondary DR site simultaneously. Additionally, with the new bunker replication feature of Veritas Volume Replicator, organizations can select the ultimate data replication strategy by replicating data over any distance without loosing a single transaction—a recovery-point objective of zero over any distance.

Figure 3. Establishing snapshots and using rollbacks or roll-forward to recover from data corruption or logical failures.

Multivendor hardware infrastructure

Veritas Storage Foundation *for Windows* provides comprehensive platform support for a heterogeneous server and storage infrastructure with no hardware, database, or application agenda. This provides enterprises with the flexibility to choose industry-leading functionality across Linux, UNIX®, or Windows platforms, without getting locked into proprietary solutions.

High availability for mission-critical Windows applications

Veritas Storage Foundation HA *for Windows* combines Veritas Storage Foundation *for Windows* and Veritas Cluster Server to monitor the status of applications— and automatically move them to another server (over any distance) in the event of a planned or unplanned outage. It can detect faults in an application and all its dependent components, including the associated database, operating system, network, and storage resources. Veritas Cluster Server supports a wide range of applications, including Exchange, SQL Server, SharePoint Portal Server, SAP, and many more, including custom-built applications. In a single, scalable solution, Storage Foundation HA *for Windows* achieves local, metropolitan, and wide area high availability and disaster recovery and is the same solution used to pro-tect Linux, UNIX, and Windows applications. This delivers operational efficiencies as active management is done through a single console—Cluster Management Console.

The comprehensive Storage Foundation HA *for Windows* solution manages and protects not only physical servers but also virtual servers (e.g., VMware ESX). By providing unparalleled support for physical-virtual (P2V) and virtual-virtual (V2V) configurations, organizations can protect any application or database over local or wide area distances.

A Microsoft Cluster Server option to Storage Foundation *for Windows* adds dynamic disk capability to MSCS and eliminates significant availability vulnerabilities such as quorum disk failure within MSCS. It does not impose any majority node set requirements and associated additional hardware to keep services running.
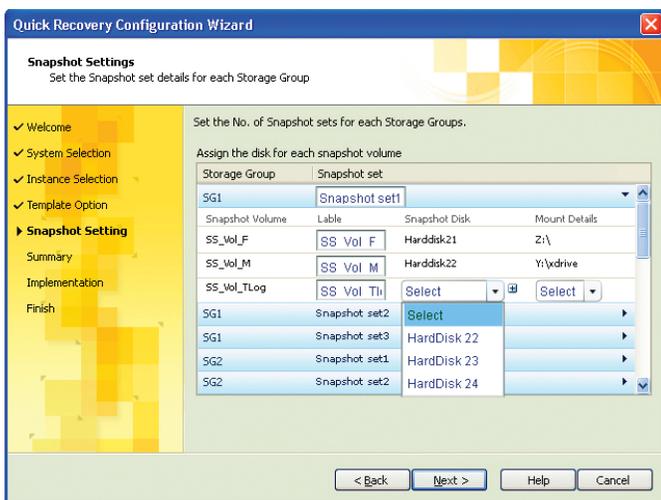
For additional information, refer to the Veritas Volume Replicator Option and Veritas Storage Foundation HA *for Windows* data sheets.

Supported OS platforms, applications, and storage devices

- Microsoft Windows Server 2000 and 2003 (x86, x64, IA64)
- Microsoft Exchange Server 2000, 2003, and 2007
- Microsoft SQL Server
- Microsoft SharePoint
- Microsoft Operations Manager
- Oracle®

In addition, any device in the Microsoft Windows Server Catalog is supported. If using multipathing or clustering functionality, please consult the latest hardware and software compatibility list at http://entsupport.symantec.com/carveout_PID_15227_view_CL.htm.

Related products

- Veritas Storage Foundation HA *for Windows*
- Veritas Volume Replicator
- Veritas Storage Foundation Management Server

Packaging

- **Veritas Storage Foundation Basic *for Windows*—**
  A free version of the industry-leading Storage Foundation *for Windows* made available for management of edge-tier and departmental workloads, with up to four volumes, and two sockets per system. Storage Foundation Basic is available for free download at www.symantec.com/sfbasic.

- **Veritas Storage Foundation *for Windows* options—** FlashSnap, DMP, Cluster Option for MSCS, and Volume Replicator

- **Veritas Storage Foundation Enterprise *for Windows*—** Includes Veritas Storage Foundation *for Windows*, plus FlashSnap, DMP, and MSCS options

- **Veritas Storage Foundation HA *for Windows*—**Includes Veritas Storage Foundation *for Windows*, Veritas Cluster Server *for Windows*, application agents, and database agents

- **Veritas Storage Foundation Enterprise HA *for Windows*—**Includes Veritas Storage Foundation HA *for Windows*, plus FlashSnap and DMP options

- **Veritas Storage Foundation HA/DR *for Windows*—** Includes Veritas Storage Foundation HA *for Windows*, Hardware Replication agents, GCO option

- **Veritas Storage Foundation Enterprise HA/DR *for Windows*—**Includes Veritas Storage Foundation HA *for Windows*, Hardware Replication agents, plus FlashSnap, DMP, and GCO options

- **Veritas Volume Replicator Option**

- **Veritas Cluster Server for NetApp**—Unique integration for clustering support in Network Appliance storage environments

- **Veritas Cluster Server for NetApp HA/DR**—Includes Veritas Cluster Server for NetApp plus GCO option

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Feature	Benefit
Management Server	Centralizes monitoring and reporting across thousands of server platforms to provide complete visibility to application, server, and storage resources.
Dynamic Multi-pathing (DMP)	Balances I/O across all available paths between the server and the storage array to improve performance and availability. Common failures from I/O path, HBA, or switch failures can be avoided because administrators can spread I/O across all available paths.
Online administration	Limits the amount of time that disks need to be offline for maintenance by performing volume resizing (including shrinking), domain reconfiguration, backup, and off-host processing while the data remains online and available.
FlashSnap	Takes instant full-volume snapshots of data for off-host processing, disk-based recovery, and backup. Only resynchronizes changed blocks for fast resynchronization.
Automated performance tuning	Automatically tunes each write for optimal performance. Administrators no longer need to manually tune writes for performance.
Hot relocation	Automatically migrates data from failing disks to healthy disks.
VxCache	The VxCache functionality allocates dedicated cache to volumes and improves Exchange performance by up to 40 percent.
RAID support	Supports all levels of RAID for maximum availability and performance.
Volume Replicator Option	Provides continuous data replication, enabling rapid and reliable recovery of critical applications at remote recovery sites.
Veritas Cluster Server	The HA (High Availability) version of Storage Foundation *for Windows* includes Veritas Cluster Server. Monitors the status of applications and all its dependent components for both physical and virtual server environments, automatically moving them to another server in the event of planned or unplanned outages over any distance.
Support for all major storage arrays	Lets organizations choose the storage hardware that best fits their needs.

Please consult http://entsupport.symantec.com/carveout_PID_15227_view_CL.htm for the most current and detailed operating system and storage array support information.

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More information

Visit our Web site

http://enterprise.symantec.com

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For specific country offices and contact numbers, please visit our Web site.

About Symantec

Symantec is a global leader in infrastructure software, enabling businesses and consumers to have confidence in a connected world. The company helps customers protect their infrastructure, information, and interactions by delivering software and services that address risks to security, availability, compliance, and performance. Headquartered in Cupertino, Calif., Symantec has operations in 40 countries. More information is available at www.symantec.com.

Symantec World Headquarters

20330 Stevens Creek Boulevard

Cupertino, CA 95014 USA

+1 (408) 517 8000

1 (800) 721 3934

www.symantec.com

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