



STORAGECRAFT[™]
Technology Corporation

Leading the Way to Safer Computing

SHADOWPROTECT[™]

PRODUCT WHITEPAPER

StorageCraft Technology Corporation – Leading the Way to Safer Computing

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Introduction

Advancements in technology and price reductions have made it possible to combine disk-based backup technologies together with virtualization and tape backup solutions to improve data backup and disaster recovery. Some of the benefits that this combination of solutions promises are:

- Reduced time for recovery
- Improved backup performance
- Increased success rate of backups and restores
- Use of existing tape infrastructure investment for archival media.

With shrinking backup windows and increasing amounts of data, administrators are faced with many challenges ensuring critical data is protected and, more importantly, the data can be recovered quickly. Back up to disk is essentially the process of backing up data to a disk device rather than to tape. Backups are then copied to tape for long-term storage to meet regulation requirements.

The marriage of disk-based backup and disaster recovery technologies with virtualization solutions provides administrators a very quick and easy way to backup and recover their systems. In the event of a disaster, recovery of the system and data takes minutes rather than hours. Administrators have the benefits of online and near-line disk-based backups combined with the benefits of recovering a back image to the same system, completely different system or to and from a virtual environment. These options are outlined as:

P2P – Recovery from a physical system to the same or another physical system.

P2V – Recovery from a physical system to a virtual environment.

V2P – Recovery of a virtual environment to a physical system.

V2V – Recovery from one virtual environment to another virtual environment.

Reduced recovery time

To recover a file from tape, the tape first has to be mounted and then searched for the needed file. As tape is a sequential media, this can take many minutes, even hours, depending on the technology used. To recover a file from disk is only going to take as long as it takes to copy the data over the network to the destination disk. Recovering the operating system takes minutes. The traditional tape method requires locating the tapes, reading the data from the tape, and copying the data back to the disk once the operating system has been reinstalled.

Improved backup performance

The backup window can be dramatically reduced by backing up to disk first. Once full backups have been taken, administrators can backup only the changed data since the last full or incremental backup. The backups are saved at the speed of disk and there is no need to swap tapes in and out. Administrators can also stage their backups to disk first, and then allow the data to be archived to tape during the day or at any other time.

Increased success rate of backups and restores

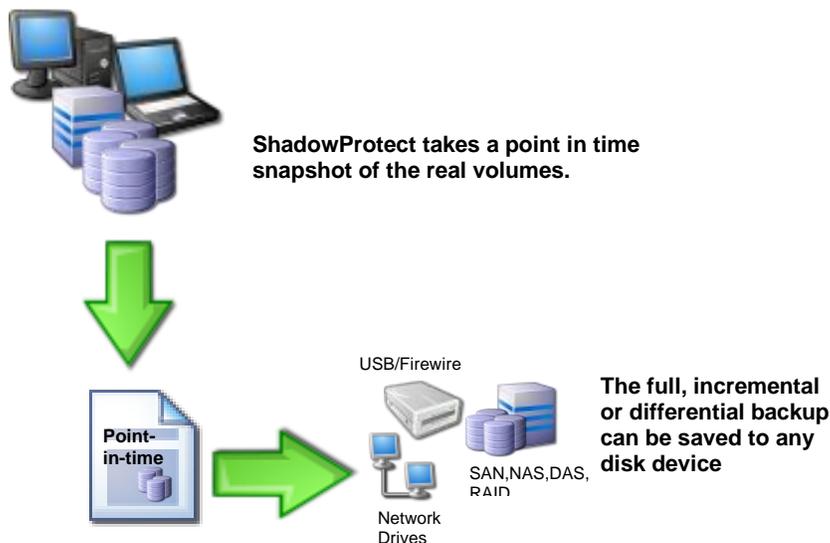
Using disk as the storage destination for your backups can prevent backups and recoveries from failing due to:

- Tape drive failure
- Data not actually being written to the tape drive
- Open files not being backed up causing undesired results when restoring data or the operating system.

As backup to disk is not constrained to a limited set of tape drives, it's easier to accommodate changes in the backup load and the number of parallel jobs running. Administrators can save time and money backing up to disk as a first line of protection leveraging tape as an archival media.

StorageCraft ShadowProtect: Complete system and data protection

StorageCraft ShadowProtect line of products provides disk-based backup and bare metal disaster recovery for enterprise servers, desktops and laptops. ShadowProtect products protect your entire system including the operating system, applications, critical data, configuration settings, security settings and hidden utility volumes. StorageCraft ShadowProtect provides fast, reliable bare-metal recovery of critical systems, whether the problem is operating system corruption, catastrophic failures, viruses, accidental user error or hardware failure. Combining Storagecraft disk-based backup and recovery with virtualization and tape backup solutions provides unparalleled performance and protection.



ShadowProtect creates an exact backup image of the system and data and stores it into a file.

Figure1. ShadowProtect Live Backup

StorageCraft ShadowProtect creates live, point-in-time backups using its reliable snapshot technology. ShadowProtect's unique incremental functionality allows backups to be taken while systems are online.

Volume Snapshot Technology

StorageCraft's core hot volume snapshot technology, which allows administrators to create an image of their system while a server, desktop or laptop is running, is currently used in many industry backup and recovery solutions, including Symantec™ Veritas System Recovery and Norton Ghost™, EMC/Dantz™ and other online backup solutions. ShadowProtect provides the next generation in hot snapshot technology and improves disk-based backup and disaster recovery. Our latest snapshot technology offers unprecedented stability and application compatibility.

Live backup with zero interruption

Create live backups anytime you want while you work in Windows®. You can create full, incremental or differential backups anytime without interrupting the system or applications. Frequent incremental backups can be scheduled for automatic system protection.

Rapid bare-metal recovery

The StorageCraft Recovery Environment allows for quick recovery from system failure. You can simply boot from the StorageCraft Recovery CD and restore entire systems—including the operating system, applications, configuration settings and data—within minutes.

The StorageCraft Recovery Environment provides hardware independent restore for physical to physical system (P2P) recovery. The StorageCraft Recovery Environment also supports conversion from physical systems to virtual environments (P2V), virtual environments to physical systems (V2P) and virtual environments to virtual environments (V2V). ShadowProtect is complimentary to VMWare™ and Microsoft™ Virtual Server and PC for quick and reliable disaster recovery and system migration.

Within the StorageCraft Recovery Environment, you may restore systems and also back them up. This is useful in two cases: 1. If the system is unable to boot, StorageCraft allows you to back that system up before a destructive restore could destroy valuable data; 2. ExactState backups, which are backups of volumes that are offline, can be taken when the best possible backup or cold backup is required.

Through ShadowProtect's remote management and remote control capabilities, the administrator or helpdesk personnel can manage ShadowProtect without sitting in front of the computer he/she is managing. In case of system failure, the StorageCraft Recovery Environment can be controlled remotely for full system recovery.

Traditional Methods		StorageCraft ShadowProtect	
1	Repair hardware if necessary	1	Repair hardware if necessary
2	Collect all necessary OS media	2	Boot from recovery CD
3	Reload OS from CD	3	Restore entire system or selected files
4	Reboot	4	Reboot
5	Apply service packs (multiple)		
6	Reboot (this could take several reboots)		
7	Reload backup software from CD		
8	Patch backup to latest support level		
9	Reboot		
10	Load recovery tapes and restore data		

Figure2. Bare-metal recovery

StorageCraft ShadowProtect can perform bare-metal recovery in minutes. Administrators can simply boot to the StorageCraft Recovery Environment using the recovery CD and restore systems quickly and reliably.

Enhanced system and database backup through Microsoft® VSS

The Windows Volume Shadow Copy Service Framework (VSS) provides an infrastructure that enables third-party storage backup programs, business programs and operating systems to work together to provide better backup and recovery. ShadowProtect is both a Backup Requester and a software Snapshot Provider. This enables ShadowProtect to use the existing snapshot found in Windows XP and 2003 without installing additional drivers. For enhanced backup features such as rapid incremental or differential backups, the VSS framework can use our registered snapshot provider. In both cases, better backups of the operating system and applications such as Exchange and SQL will be created.

Active backup image files

ShadowProtect point-in-time backups can be mounted as drive letters or mount points, both for read-only or read-write access. This flexibility allows scanning, sharing, updating or even working from a backup image file. For example, administrators could update an existing backup or scan a backup for viruses and fix it before restoring a point-in-time. Point-in-time backups can also be shared on the network for end-user self-restores. Mounted backups look just like the original volume, end users can quickly use Windows Explorer to search, find and recover files. File and folder restoration becomes a simple drag and drop operation.

Zero install backups (ShadowProtect IT Edition only)

ShadowProtect IT Edition™ is truly revolutionary. Users can backup systems without any installs, reboots or software compatibility testing. The software is licensed so that it

can be used by a technician on an unlimited number of servers, desktops and laptops. Leveraging Microsoft VSS and VolSnap eliminates the need to install any drivers or certify new drivers to work on your system. Administrators can create point-in-time backups on any machine at any time and without the need to install additional software.

Flexibility in creating backups

StorageCraft ShadowProtect allows administrators to select the best type of backup for their needs. There are three types of backups you can create: 1. Create live backups using Storagecraft volume snapshot technology. 2. Create live backups using Microsoft VolSnap without the need to install software or drivers. 3. Create ExactState backups from the StorageCraft Recovery Environment.

StorageCraft Disk-Based Backup and System Recovery Solutions

The ShadowProtect product family offers an innovative approach to disk-based backup, disaster recovery and system migration for complete systems and data protection.

ShadowProtect IT Edition

Simple and Affordable Disaster Recovery & System Migration - P2P, P2V, V2P and V2V

StorageCraft ShadowProtect IT Edition provides a flexible technician licensing program for unlimited use on servers, desktops and laptops for disk-based backup, disaster recovery, system migration and consolidation.

ShadowProtect IT Edition provides hardware independent restore for physical to physical system (P2P) recovery. ShadowProtect IT Edition also supports conversion from physical systems to virtual environments (P2V), virtual environments to physical systems (V2P) and virtual environments to virtual environments (V2V).

StorageCraft ShadowProtect IT Edition provides complete bare metal recovery in minutes. ShadowProtect IT Edition provides IT Professionals a bootable Windows environment to create and restore compressed and encrypted backup images, no software installation required. ShadowProtect IT Edition includes an easy to use interface for network configuration and a simple view to restore individual files and folders or update your backup images.

ShadowProtect IT Edition provides the following benefits:

- Bare metal recovery of Windows servers, desktops and laptops in minutes.
- Restore or migrate backup images to and from physical systems and virtual environments (P2V, V2P and V2V).
- Hardware independent restore of backup images to different systems (P2P).
- Unlimited use on servers, desktops and laptops.
- No software installation required.
- Bootable recovery CD provides automatic hardware detection and network support.
- Create full online or cold state backup images.
- A simple view to quickly recover files and folders or update backup images.

- Compress and encrypt backup images for efficiency and security.
- Configuration tools to manage domains, mapped drives and network resources.

ShadowProtect Server Edition

Fast and Reliable Server Recovery & System Migration – P2P, P2V, V2P and V2V

StorageCraft ShadowProtect Server Edition provides quick and reliable disaster recovery, system migration and data protection for Windows servers. ShadowProtect Server Edition provides bare metal recovery of the Windows operating system, applications such as Exchange and SQL and your critical data.

ShadowProtect Server Edition provides hardware independent restore for physical to physical system (P2P) recovery. ShadowProtect Server Edition also supports conversion from physical systems to virtual environments (P2V), virtual environments to physical systems (V2P) and virtual environments to virtual environments (V2V). ShadowProtect Server Edition is very complimentary to VMWare™ and Microsoft™ Virtual Server for quick and reliable disaster recovery and system migration.

ShadowProtect Server Edition provides the following benefits:

- Bare metal recovery of Windows servers in minutes.
- Restore or migrate backup images to and from physical systems and virtual environments (P2V, V2P and V2V).
- Hardware independent restore of backup images to different systems (P2P).
- Full support for online backup of applications such as Exchange and SQL.
- Schedule automatic full and incremental backups.
- Image management to minimize storage consumption and simplify archiving.
- Bootable recovery CD provides automatic hardware detection and network support.
- A simple view to quickly recover files and folders or update backup images.
- Compress and encrypt backup images for efficiency and security.
- ShadowProtect console to simplify backup management across your enterprise.
- Recover your servers remotely.
- Save backup images to USB, Firewire, NAS, SAN or any network location.

ShadowProtect Small Business Server Edition

StorageCraft™ ShadowProtect SBS Edition provides fast and reliable disaster recovery, system migration and data protection for Windows SBS servers. ShadowProtect SBS Edition provides bare metal recovery of the Windows operating system, applications such as Exchange and SQL and your critical data.

ShadowProtect SBS Edition provides hardware independent restore for physical to physical system (P2P) recovery. ShadowProtect SBS Edition also supports conversion from physical systems to virtual environments (P2V), virtual environments to physical systems (V2P) and virtual environments to virtual environments (V2V).

ShadowProtect Desktop Edition

Fast and Reliable Desktop Recovery & Migration - P2P, P2V, V2P and V2V

StorageCraft ShadowProtect Desktop Edition provides quick and reliable disaster recovery, system migration and data protection for Windows desktops and laptops. ShadowProtect Desktop Edition provides hardware independent restore for physical to physical system (P2P) recovery. ShadowProtect Desktop also supports conversion from physical systems to virtual environments (P2V), virtual environments to physical systems (V2P) and virtual environments to virtual environments (V2V).

ShadowProtect Desktop Edition is very complimentary to VMWare™ Workstation and Microsoft™ Virtual PC for quick and reliable disaster recovery. VMWare Workstation includes full support for ShadowProtect backup image files for simple conversion from physical systems to virtual environments.

ShadowProtect Desktop Edition provides the following benefits:

- Bare metal recovery of Windows desktops and laptops in minutes.
- Restore or migrate backup images to and from physical systems and virtual environments (P2V, V2P and V2V).
- Hardware independent restore of backup images to different systems (P2P).
- Schedule automatic full and incremental backups.
- Bootable recovery CD provides automatic hardware detection and network support.
- Simple view to quickly recover files and folders or update backup images.
- Compress and encrypt backup images for efficiency and security.
- Save backup images to USB, Firewire, NAS, SAN or any network location.

Conclusion

StorageCraft ShadowProtect backup and recovery solutions combined with existing tape backup technology creates reliable system and data protection for your enterprise. StorageCraft's proven technology is found in many industry leading backup and recovery solutions today and with millions of installations worldwide continues to provide reliable and fast recovery of systems.

Take the Next Step

If you would like to evaluate ShadowProtect, you can download a 30-day full-featured trial version or purchase at www.storagecraft.com. Volume pricing and licensing are available for enterprise, OEM, government, education and non-profit organizations.

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StorageCraft Technology Corporation provides innovative disk-based backup, disaster recovery, system migration, data protection and security solutions for servers, desktop and laptops. StorageCraft delivers software products that reduce downtime, improve security and stability for systems and data and lower the total cost of ownership for servers, desktops and laptops. Please visit us at www.storagecraft.com for more information about our innovative solutions.

Company Address:

StorageCraft Technology Corporation
121 West Election Road, Suite 110
Draper, Utah 84020 U.S.A.

Reseller Address:

Guardian Network Solutions
4524 Boat Club Rd, Suite 174
Fort Worth, Texas 76135 U.S.A.

Phone: +1 855.819.3125

Fax: +1 866.824.4585

Web: www.guardiannetworksolutions.com

Sales: cody@guardiannetworksolutions.com