



VirtuousIT Ltd

Online Disaster Recovery, Backup & Archive Solutions



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1 Introduction

No matter how up-to-date your desktops and servers are, data loss and system crashes are inevitable. And no matter what the cause, when vital business information isn't available, every minute down costs you money. That's why you need to have a data protection and system recovery strategy that gets you back up and running within minutes, not hours or days.

The Data Explosion

Every business has unique information protection and disaster recovery challenges. But organisations of all sizes face the same issues when it comes to keeping their data protected and available. For one thing, consider the growth of corporate data. By numerous accounts, the amount of data that needs to be protected is growing at a rate of 50% per year. For small and midsize businesses, the challenge of backing up this data and recovering it quickly is proving more onerous than ever.

At the same time, Microsoft Exchange has become a mission-critical application for many companies. Today, various reports estimate that the majority of a typical company's intellectual property is contained in email. It's not surprising, then, that keeping this application highly available and protecting the associated data is not an option, but a critical necessity.

The objective of traditional backups is to minimize the downtime of the messaging environment while providing the fastest possible data recovery in the event of a system crash, database corruption, loss of a mailbox, or other data loss. This is primarily accomplished through full or incremental online backups of the Exchange databases. But as data volumes grow, so does the backup window, which leaves a company at risk of data loss. Also, if organizations need to restore individual email messages or mailboxes, a separate Exchange mailbox backup is required to restore an individual item without recovering the entire Exchange database, which is twice the backup time and twice the storage space.

The Importance of Rapid System Recovery

When organisations think of backup and recovery, it's usually about protecting information residing on a server. It's important to remember, however, that both data and system information are at stake. Too often, so much importance is put on protecting the data that the system is overlooked. But if the system isn't operable, the chances of accessing the data are slim. When a server operating system fails, it can take days to rebuild and restore the server.

There's also the matter of having to replace the server hardware. Most small and midsize organizations can't afford the luxury of maintaining extra server hardware in case they need to replace an existing system. This introduces the issue of restoring a system to different hardware, while trying to preserve the integrity of the system state and the availability of the data.

Today, all systems - from servers to desktops to laptops - must be quickly recoverable, whether it's to the exact same hardware or to completely dissimilar hardware.

All businesses need their critical data and systems to be protected and available. But given the exponential growth of corporate data, as well as the rapidly escalating cost of system downtime, the challenges facing small and midsize businesses are more acute than ever. Today's solutions must offer best-of-breed data protection and system recovery. Businesses can't afford to waste valuable time and resources restoring a complete data volume or database when all a user needs is a single file or email message. Likewise, they need assurance that expensive system downtime is kept to an absolute minimum.

3 RecoveryShield™ - Solutions

RecoveryShield™ is a complete software solution allowing both enterprise users and service providers to implement distributed backup to disk, replication, archive and disaster recovery solutions with de-duplication, compression and block-level backup technologies minimising bandwidth and storage utilisation.

Our solutions are designed for the stringent needs of businesses where guaranteed disaster recovery is paramount. This means having protection policies enforced, protected data replicated for resilience, and administrators advised when intervention is necessary.

At the core of the RecoveryShield™ solution is disk-to-disk backup with replication, where backup data is stored in secure datacentre environments - generally regarded as the best approach to data protection issues - based on performance, resilience and reliability. But this is just part of the complete solution. Also required are technologies such as automatic forward recovery to standby systems, rapid recovery to either virtual or physical systems and easy disaster recovery testing. This is where RecoveryShield™ establishes its advantage over its rivals.

Larger enterprises normally have the in-house resource and expertise, plus the desire, to manage their data and recovery processes. VirtuousIT fully endorse and support this approach with our tailored solutions.

Smaller and medium sized businesses can access the benefits of RecoveryShield™ by purchasing or via our fully managed service.

Large Business

RecoveryShield™ automatically captures data from any location and any system and secures it to disk-based storage. Sufficiently flexible and powerful to operate VirtuousIT's own online backup service, protecting our clients' data, it is also available to purchase by those preferring to run backup operations in-house.

Data is backed up to a central storage server which continually replicates to a remote site; which may be another client site, co-location facility or VirtuousIT's datacentre facility and may be replicated to data stores at multiple locations for extra resilience. It is compressed, de-duplicated and encrypted for secure transmission and storage. Only new files are backed up, plus any changes to previously backed-up files, at block level.

It can maintain failover-over systems using real or virtual servers in multiple locations, so businesses can recover from almost any disaster in minutes.

Business needs:

- Recovery Time and Recovery Point reduced to just minutes.
- All data secured with a single software platform.
- Backup and recovery policies across heterogeneous, multi-site environments.
- Easy management of backup, recovery and archive processes via central console.
- Automatic archive policies.
- Data secured with PKI and AES 256 bit encryption.
- Backup and recovery data replicated to multiple sites for increased resilience.
- Backup data de-duplicated at source, with advanced single instancing technology.
- All mobile and remote data secured.
- Lower total cost of ownership than tape-based systems.

Small Medium Business

Small and medium businesses increasingly require a similar level of data recovery assurance as their larger counterparts. VirtuousIT addresses these needs with the choice of a fully managed service, or purchase of a solution for in-house operation and management.

Whether it is a single site, or a network of remote offices, VirtuousIT carefully considers requirements and come up with cost effective options, taking into account such issues as recovery time and recovery point objectives, availability of in-house IT skills and bandwidth limitations. Where IT resource is limited, many clients prefer our fully managed service, incorporating helpdesk support, daily monitoring, hosted storage and disaster recovery services. Where IT resources are plentiful, clients can purchase our complete hardware and software solution to manage in-house.

RecoveryShield™ can:

- Automate backup and recovery policies across all company systems.
- Secure all data with a single software platform.
- Easily manage backup, recovery and archive processes via central console.
- Reduce Recovery Time and Recovery Point to just minutes.
- Secure data with PKI and AES 256 bit encryption.
- Replicate backup and recovery data to multiple sites for increased resilience.
- De-duplicate backup data at source, with advanced single instancing technology.
- Secure all mobile and remote data.
- Provide lower total cost of ownership than tape-based systems.

4 RecoveryShield™ - Software

RecoveryShield™ is an Enterprise Backup, Archive and Disaster Recovery application, designed to simplify the processes involved in protecting, archiving and restoring data, both for end user businesses and for service providers wishing to offer data backup and disaster recovery services. Integrating these functions within a unified application reduces administration and simplifies recovery, leading to a robust, reliable and cost effective solution. Automation minimises administration: protection policies are enforced, backup data is replicated to alternative locations, regular reports are generated and emailed. Even operational errors can often be fixed without intervention, with administrators only alerted if their input is required.

In today's businesses, downtime or data loss is less and less acceptable, so secure backup and fast recovery, - with minimal, if any, data loss - are essential. With its capability of protecting data every hour throughout the day, RecoveryShield™ combines the benefits of disk-to-disk backup with replication far more cost effectively than having two separate solutions for backup and for replication. It incorporates advanced de-duplication and compression technologies, minimising use of bandwidth and thus impact on other network users; and reducing storage utilisation and costs.

When it comes to disaster recovery, RecoveryShield™ leverages virtualisation technology so that entire servers can be rapidly recovered as a virtual image with immediate access to data which is less than one hour old.

- de-duplication and compression hugely reduce transmitted and stored data volumes
- recovery times are reduced to a matter of minutes with forward recovery
- greatly reduced disaster recovery infrastructure costs
- disaster recovery testing becomes fast and simple

Central Management

RecoveryShield™ works equally well whether protecting single or multiple sites. Data from smaller sites can be backed up directly to HQ, with or without a local appliance, depending upon data volume and client preference. Backup data can be consolidated at a main location, (eg. HQ or datacentre) and / or distributed to satisfy disaster recovery plans.

- Central management console gives an organisation-wide view of all business data
- Simple deployment across the organisation from the RecoveryShield™ console
- Removes reliance on non-IT staff having to perform backup at remote locations
- Centrally set policies simplify data management and save time
- Data automatically secured to remote site(s)

RecoveryShield™ allows every aspect of data protection to be centrally managed, even when your environment is distributed across multiple sites and different physical networks. For many organisations the RecoveryShield™ console is the only place where they view all data regardless of location, and is almost certainly the only place where they can view all the changes to their data environment.

Backup

A flexible policy configuration tool allows appropriate backup schedules to be set according to data criticality. Target data, backup frequency, retention time and storage location are set for each data type. Specific folders can be included or excluded from the backups; and specific file types can be excluded to reduce storage requirements.

RecoveryShield™ is able to protect all of the operating system, applications and data. Policies can also specify advanced features such as archiving, forward recovery which maintains a standby server for DR, and the retention period for which historic snapshots will be available for recovery.

RecoveryShield™ automation features significantly reduce management time:

- Backups happen exactly as scheduled
- Backup storage availability is managed, ensuring that specified retention is correctly executed and space automatically reclaimed when it is no longer needed.
- Data is replicated across multiple storage servers, using available bandwidth on existing connections, timed to have no significant impact on other network users.
- Scheduled operations are retried automatically until they succeed.
- Administrators are notified by email if any policy cannot be fully executed

Once correctly implemented, RecoveryShield™ runs continuously and reliably with minimal routine maintenance

Archive

Stale data can be automatically archived to secondary storage and deleted from primary data storage, freeing up valuable storage space, yet remaining available for online browse and restore whenever required.

RecoveryShield™ maintains the archived data in de-duplicated, compressed and encrypted secondary storage, which dramatically reduces the storage space required for long-term archive. This means that period-end records, closed projects, and snapshots of active projects can be archived cost effectively for long term retention.

The other benefits of using the same system to provide long-term archive are convenience, ease of use and reliability. Costs can even be further reduced by using NAS storage devices, or migrating de-duplicated data to tape for off-line storage.

- Older inactive data can be archived onto less expensive storage
- Frees up space on production systems
- Reduces overall infrastructure costs

Compliance

The core requirements for compliance are preventing unauthorised deletion or modification of the protected data, and ensuring adequate audit records are maintained.

RecoveryShield™ addresses these requirements with a combination of techniques, including automatic storage distribution and auditing, strong cryptography and secure key management, and synchronisation with the atomic clock. Every item protected is time-stamped using a signal from the atomic clock and cryptographically signed at source, providing authentication. These cryptographic signatures are verified repeatedly throughout the storage process, particularly whenever the item is transmitted, stored or retrieved. This means that it can be proven beyond reasonable doubt that the item restored is identical to the item originally protected.

Additional security measures, relating to timestamps and digital certificates, allow proof of when and where the item was originally protected. Multi-site storage capability is used to ensure that items cannot be deleted or corrupted by any single-site attack. The central principle is that each site retains an independent copy of data, with retention defined by policy, and with all communication between sites secured by certificates and restrictive protocols. This multi-site protection can be further enhanced by using multiple service providers to store copies of the data or just the cryptographic signatures used to verify the data, providing security against internal attacks or collusion.

This level of protection was traditionally restricted to military applications, but wider availability and reduced costs have made this an effective solution for medical, banking, insurance and other compliance-critical applications. Archiving data to physical media such as WORM disc or tape can also be considered to improve security, but is not sufficient on its own, so should only be used in addition to physically distributed storage and cryptographic security.

Modern compliance solutions typically require multiple layers of physical security to prevent unauthorised destruction of protected data and ensure authenticity. Without such measures, it is very difficult to protect against an internal attack, even with appropriate physical access controls in place. Hence, electronic transport of the data to multiple physical locations, combined with off-line data silos should be considered essential to achieving long-term compliance.

Disaster Recovery

RecoveryShield™ is the basis for a robust and reliable disaster recovery solution. Our physical to virtual, virtual to physical, virtual to virtual, and physical to physical restore capability makes server recovery faster and more reliable. It also has a powerful automatic forward-recovery feature, enabling continuous recovery of operating systems, applications and data onto standby servers for rapid recovery and business continuity.

RecoveryShield™ enables standby servers to be maintained automatically for each application server, as a physical or virtual server. Virtualisation of the disaster recovery environment brings clear benefits in enabling a single physical server to act as a standby for multiple application servers, any of which may be activated as required, subject to performance of the physical hardware.

There are no additional costs for using RecoveryShield™ to implement a complete business continuity solution. Specification of the hardware depends on the required performance levels, and the number of standby servers that to be made active at any one time.

- Hourly protection ensures all configuration changes are automatically captured
- The recovery process is simple and straightforward
- Each recovery point can be selected from the management console, as a self-contained snapshot
- Recovery of every application server is available from the management console
- Every application can be selected from the management console
- Every policy can be selected from the management console
- Any storage server can be selected from the management console
- Any recovery destination can be selected from the management console

A disaster recovery plan is only as good as the last disaster recovery test, which is why many of customers use RecoveryShield™ to support weekly or even daily testing.

5 Symantec Backup Exec System Recovery

Symantec Backup Exec System Recovery allows for the restoration of complete Windows systems in minutes, even to dissimilar hardware or virtual environments, with new functionality to automate physical to virtual conversions for immediate system recovery.

Windows system recovery has never been easy. Traditionally, it has been a very manual, intensive, and lengthy process. It can involve repairing the hardware and then reinstalling the operating system, applications, patches, and system updates – with several reboots along the way. Administrators then need to reconfigure the system back to its pre-failure state. All told, the process can take days or even weeks.

That sort of timetable is untenable in today's mission-critical environments. Today, all systems – from servers to desktops to laptops – must be quickly recoverable, whether to similar or dissimilar hardware. Failure to return promptly to a productive state could result in significant lost revenue, loss of employee productivity, not to mention a damaged reputation.

Nevertheless, system recovery is too often overlooked by today's businesses. One survey estimates that 85% of corporate systems are not backed up. According to a recent study of U.S. companies, nearly half had experienced a recovery failure in the past year. And when the recovery did work, it took more than six hours and required an IT person on site.

Symantec Backup Exec System Recovery is a disk-based system recovery solution designed to capture a recovery point of the entire live Windows system (including operating system, applications, system settings, configurations, and files) and restore it quickly without a lengthy, manual process. It will also quickly restore individual Microsoft Exchange email messages, folders, and mailboxes.

Today's Server Environments

A typical server environment consists of the main servers, drive arrays (which may or may not be directly attached to their respective servers), and disk- and tape-based backup servers. Server storage devices hold organizational applications (and operating systems) in some partitions and documents in others. The entire environment is subject to the following threats:

- End users can easily overwrite or delete important documents.
- Applications need updating.
- Operating systems need to be patched.
- Malicious code can penetrate defences and attack data, applications, and operating systems and can even get backed up if not found before the next backup cycle.
- Storage systems wear out and must be replaced.
- A hard drive fails, or hardware needs upgrading, and there is no matching hardware to which it can be restored.
- The entire facility can be shut down due to a natural disaster.
- An important user (whose work must be backed up frequently) is added to the network without proper notification.

In addition, organisations often worry about maintaining duplicate hardware environments for recovery purposes since many solutions don't support restoring to dissimilar hardware environments. That can be extremely costly. Finally, what if the system that goes down is in a remote location? In many instances, organizations don't have IT support at all of their remote locations, necessitating the need to send someone to that site, which takes time and money.

Rapid recovery

Symantec Backup Exec System Recovery overcomes manual system recovery processes by capturing an exact copy of a system—including operating system, applications, system settings, configurations, and data—in a single recovery point. When a system fails it is possible to select a recovery point to restore

from and the software restores the complete system in minutes, rather than hours or days, even to dissimilar hardware or in remote, unattended locations. Additional benefits include:

- Support for virtual environments; this includes the conversion of physical recovery points to virtual formats (P2V) through a wizard-driven process as well as conversion of virtual systems back to physical environments (V2P) for VMware ESX Server, VMware Server, VMware Workstation, and Microsoft Virtual Server. Administrators can choose to convert entire systems at once or selective volumes at a time.
- Enhanced data recovery capabilities; integration with Google Desktop as well as Backup Exec Retrieve allows end users to recover their own files without IT intervention. Each provides a simple, web-based user interface that is so simple, no training or special software is needed.
- Centralized management; simplifying backup and recovery tasks for organizations with more than a single system, the software enables administrators to centrally create backup jobs, view real-time status, run reports, quickly resolve any problems identified, and add new systems as required.

Microsoft Exchange Recovery

Increasingly, IT administrators are demanding greater flexibility in managing Microsoft Exchange. Backup Exec System Recovery can simplify Exchange recovery, providing recovery not only of the entire Exchange server, but also of individual email messages, attachments, folders, and mailboxes in seconds. Granular and full system recoveries are possible without the need for multiple backups.

Conclusion

A complete disk-based system recovery solution for Microsoft Windows-based servers, desktops, and laptops allows businesses to recover from system loss or disasters in minutes rather than in hours or days—even to dissimilar hardware platforms, virtual environments, or remote, unattended locations. Such a solution significantly strengthens an administrator's ability to meet ambitious recovery time objectives and service-level agreements. Ultimately, a disk-based system recovery solution enables an administrator to keep a system state completely up-to-date so it can be recovered from bare metal, if necessary, in a very rapid timeframe.

6 The VirtuousIT Managed Service

The standard managed service is based upon a charge per GB stored per month. Final price will depend on how many servers and the volume of data protected.

The VirtuousIT DRBC Managed Service includes:

- Off-site backup
- Initial imaging of server
- In the event of a DR event:
 - Free server loan
 - Free restore and build
- Optional office space/hot desks

All situations are different and so we offer a fully bespoke service which can either be a fully purchased solution, a fully managed service or a combination of both.

