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Converging System and Data Protection for Complete Disaster Recovery

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Introduction

Information drives a business. Everything about a company—product development, sales, relationship management, marketing, competitive analysis, investor relations, finance, human resources, and so on—is managed through the information unique to that business. The success and viability of that information hinge on an administrator's ability to protect its integrity while keeping it available throughout the enterprise at all times. Disaster recovery plays a vital role in keeping information safe and available. However, the exponential growth rate of data volumes; shrinking backup windows; the demand for more effective change management; and the need for fast, reliable recovery create stiff challenges for disaster recovery efforts. Today's solutions must offer best-of-breed data protection and system recovery. An essential part of such a solution is granular data protection. Businesses cannot 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, with system downtime costing anywhere from US\$14,000 to US\$6,450,000 per hour (according to Contingency Planning Research), extended downtime can mean the end of a business.

To calculate the annual loss expectancy (ALE) of an asset, you use the quantitative risk analysis method. This calculation is determined by first figuring the annual rate of occurrence (ARO) and the single loss expectancy (SLE). Once those values are known, $ARO \times SLE = ALE$. Suppose the SLE is US\$35,000, and the ARO is 12 (i.e., the cost of the server being down for a day is US\$35,000, and this attack happens once every month). In this example, $US\$35,000 \times 12 = US\$420,000$ per machine. To protect your financial viability, you need to be able to perform data restoration and bare metal system recoveries more efficiently and faster than ever.

Symantec provides a balanced approach to information availability and security in which data and systems are protected, yet remain accessible wherever, whenever, and to whomever your business needs dictate. From resilience against threats to efficient restoration of normal operations, Symantec can help keep your business up, running, and growing—no matter what happens.

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Two products, one solution

Together, Symantec Backup Exec™ and Symantec Backup Exec™ System Recovery offer complete data and system recovery for Microsoft® Windows® based organizations of all sizes. These leading data and Windows system recovery solutions combine the benefits of disk-to-disk-to-tape protection with those of rapid, reliable system and data recovery.

Symantec Backup Exec: comprehensive data protection

Symantec Backup Exec 12 for Windows Servers is the gold standard in Windows data protection, providing continuous, comprehensive, cost-effective, and certified disk-to-disk-to-tape backup and recovery—and delivering continuous data protection for Microsoft® Exchange, SQL, and file servers and for desktop and laptop workstations.

Symantec Backup Exec 12 revolutionizes data protection by eliminating backup windows and recovering data in seconds. Enhancing data security with encryption and protecting both 32-bit and 64-bit systems, Symantec Backup Exec is the perfect fit for today's Windows centric businesses.

Centralized administration provides scalable management of distributed backup and remote servers. An intuitive interface and wizards simplify data protection and recovery procedures for any level user and any size network. With a complete family of high-performance agents and options to protect Windows, Linux®, UNIX, Mac®, and NetWare® server data, as well as desktops and laptops, Symantec Backup Exec is the gold standard in Windows data protection.

Symantec Backup Exec System Recovery: complete system recovery

As important as data recovery is, it is not sufficient to help a business resume operations if there has been physical corruption of a system or application, whether it be a simple hardware failure or a disaster such as a fire or flood. A manual system rebuild from bare metal can take hours, even days.

Symantec Backup Exec System Recovery 8 is the gold standard in complete Windows system recovery, allowing businesses and IT to recover from system loss or disasters in minutes, not hours or days. Helping IT administrators meet recovery time objectives, Symantec Backup Exec System Recovery provides fast, easy-to-use system restoration or full bare metal recovery, even to dissimilar hardware and virtual environments, for servers, desktops, or laptops. It also enables you to recover systems in remote, unattended locations.

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Symantec Backup Exec System Recovery captures a recovery point of the entire live Windows system—including the operating system, applications, system settings, configurations, and files—without impacting productivity. This recovery point can be conveniently saved to various media or disk storage devices including SAN, NAS, Direct Attached Storage, RAID, and CD/DVD. Recovery points can also be copied to up to two off-site destinations, including FTP servers, as part of the same backup job. When systems fail, you can quickly restore them without the need for manual, lengthy, and error-prone processes.

Extending your recovery capabilities even further, Symantec Backup Exec System Recovery quickly restores individual Microsoft Exchange email, folders, and mailboxes. In version 8, granular recovery of SharePoint data is also supported. It also integrates with Google Desktop as well as Symantec Backup Exec Retrieve for simple, end-user file recovery that does not require IT intervention.

Centralized management capabilities in Symantec Backup Exec System Recovery Manager simplify administration by providing IT administrators with an at-a-glance view of system recovery jobs across your entire organization. You can centrally deploy, modify, and maintain recovery activities, jobs, and policies for local and remote systems; monitor real-time status; and quickly resolve any problems identified. You can also create reports to analyze trends over time. For customers using Altiris Notification Server, a free connector is available for download allowing your servers protected by Symantec Backup Exec System Recovery to be managed right from the Notification Server console.

The Symantec Backup Exec for Windows Servers System Recovery Option, a streamlined, lower-priced version designed specifically for Symantec Backup Exec for Windows Servers customers, continues to be available with version 8. For organizations ranging from small businesses to larger Windows environments, Symantec Backup Exec System Recovery is the gold standard in complete Windows system recovery.

Combining Symantec Backup Exec and Backup Exec System Recovery

Every business has unique information protection and disaster recovery challenges; however, organizations of all sizes face similar issues when it comes to keeping data and systems protected and available. Regardless of the number of servers used, businesses rely on them to keep their employees connected to the applications, printers, and data they share. If a server goes down, access to those resources is lost until the server can be brought back online.

The combination of Symantec Backup Exec and Backup Exec System Recovery delivers leading Windows data protection and system recovery. By deploying both products, departments or organizations of any size can realize the immediate benefits of shorter backup times, faster system recoveries, and reduced data loss. As a business grows and its requirements change, the user can cost-effectively upgrade and add options to these versatile products.

Simplified management

Symantec Backup Exec and Backup Exec System Recovery provide intuitive, feature-rich management interfaces that allow the capture of Windows system recovery points to be automated and user and application data to be backed up on a single server. With Symantec Backup Exec Continuous Protection Server, administrators can schedule how often data recovery points are created and can retain specific recovery points for different time periods. For example, an administrator may want to retain hourly recovery points for a one-week period, daily recovery points for prior weeks, and weekly or monthly recovery points for even older data. The disk-to-tape staging process can even be automated, scheduling the movement of disk-based backups to tape for long-term retention and disaster recovery.

Unlike most other disaster recovery solutions, Symantec Backup Exec and Backup Exec System Recovery do not disrupt data access or application usage; therefore, backups and recovery points can be scheduled periodically throughout the day, helping to ensure that a recent snapshot of the system and open file data is always available.

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Symantec Backup Exec and Backup Exec System Recovery can be fully automated and, for integration between the two solutions, each product can use scripting interfaces to call functions of the other. For example, using Symantec Backup Exec System Recovery, system recovery points can be scheduled for a Windows server and direction given that upon completion, Symantec Backup Exec will capture user and application data from that server. Alternately, Symantec Backup Exec can be used to schedule data backups, and Symantec Backup Exec System Recovery can be used to issue a request to Backup Exec to capture system recovery points on tape. Regardless of which method is chosen, Symantec products eliminate the need to manage Windows server and user and application data protection separately.

Flexible protection options

Not only do Symantec Backup Exec and Backup Exec System Recovery provide best-in-class, disk-based backup and recovery, but they also let you take advantage of the long-term archival and offsite storage benefits offered by tape backup. That gives you the flexibility to choose a protection scheme that best fits your needs and requirements, including:

- Disk to tape
- Disk to disk
- Disk to disk to tape

Disk-to-tape backup

Many servers are configured with a two-volume structure. Thus, in a small server environment, Windows system files are typically stored on the server's "C" drive—and user shares and data on its "D" drive.

According to the schedule set by the user, Symantec Backup Exec System Recovery will use its hot snapshot technology to capture all server system files and configurations on the "C" drive in one easy-to-manage recovery point file, which it will store directly on the backup server. The recovery point preserves the entire operating state of the system, including open, hidden, and encrypted files; the operating system; service packs; system settings; registry information; and any other data it finds on the system volume. As the server's system files change throughout the day, Symantec Backup Exec System Recovery can automatically track and protect those changes by creating full or incremental point-in-time recovery points of the system volume without interrupting user productivity.

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Upon completion of a recovery point capture, Symantec Backup Exec can initiate a backup of all the user data residing on the data volume and store it to tape. It can also back up the system recovery points created by Symantec Backup Exec System Recovery and store those to tape as well.

Symantec Backup Exec includes proactive management tools that help ensure the reliability of tape backup. For example, the Job Test Run tool checks available tape capacity, credentials for the systems being backed up, and other criteria to identify potential problems that can cause job failures. Also included are reliability features that help maintain data integrity with high-speed verification, such as Cyclical Redundancy Check (CRC), Data Verify, and Database Consistency Checking. Through its self-healing capabilities, Symantec Backup Exec allows thresholds to be set that will fail stalled jobs and then recover those jobs using customizable error-handling rules, which allow the user to specify the number of times that stalled, failed, or recovered jobs are retried, as well as the intervals between retries. Symantec Backup Exec also maintains an easy-to-navigate catalog of everything that has been written to tape, so data losses can be recovered easily. If you encounter operating system problems such as file corruption or system conflicts, the system can easily be restored from the recovery points stored on the backup server, bringing the failed server to the last known stable operating system state in a matter of minutes. User data and system recovery points can easily be restored from tape as well.

Disk-to-disk backup

Like disk-to-tape recovery, disk-to-disk backup and recovery typically require a backup server; however, by combining Symantec products, not only can a server's system recovery points—captured from Symantec Backup Exec System Recovery—be stored directly on a backup server's disk storage, but so can the data backed up by Symantec Backup Exec. By taking advantage of the disk-to-disk backup capabilities in Symantec Backup Exec and Backup Exec System Recovery, the speed of disk-to-disk technology can be leveraged for fast backups and restores of user data and systems. Disk-to-disk backup allows multiple backup jobs to be run concurrently to disk-based targets, further enhancing backup throughput.

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With Continuous Protection Server and Continuous Protection Agent for file servers available with Symantec Backup Exec, only one initial full backup need be performed. From then on, Symantec Backup Exec automatically backs up only incremental changes to user data as it is modified. Backups are created on a schedule of the user's choice, whether hourly, daily, or weekly. Continuous Data Protection greatly simplifies the management of user data backup schedules while helping to ensure that vital files are protected.

Disk-to-disk-to-tape backup

In addition to the previous disk-to-disk scenario, Symantec Backup Exec and Backup Exec System Recovery offer another level of redundancy and reliability by combining the fast backup and recovery benefits of disk-to-disk technology with the long-term archival and offsite storage benefits of tape. Whether your business has a few servers or dozens, a Symantec disk-to-disk-to-tape backup and restore strategy will enable you to take advantage of the following multistage backup benefits:

- Fast disk backup of data and systems to combat shrinking backup windows
- Full and incremental hot backups to disk of system information, applications, and user data
- Long-term tape archival
- Offsite storage
- Ability to stream to tape without image multiplexing
- Faster restores of data and systems from disk-based images
- No tape device latency and non-multiplexed images
- Ability to stage backups on disk for a defined period of time before moving them to tape
- Higher-reliability backup and recovery

Scaling to meet business growth

An increase in business size usually results in more data, network user shares, and shared applications—all of which generally require an increase in the number of servers. The features and capabilities of Symantec Backup Exec and Backup Exec System Recovery can scale to meet an organization's growing disaster recovery needs. For example, an organization might have one server dedicated to hosting a Microsoft Exchange server, another to hosting an Oracle® database, a third to run a custom application for managing customers and to serve as a shared data repository, a fourth to act as the domain controller, and a fifth dedicated to storing data

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backups and system recovery points. In such a complex server environment, Symantec Backup Exec and Backup Exec System Recovery provide the quick, simple, and reliable backup and restore functionality that might be thought possible only in smaller environments.

With a larger IT landscape, protecting the integrity and availability of data and systems is an even greater challenge. Symantec Backup Exec and Backup Exec System Recovery combine to answer these questions: How are critical business applications backed up if the business cannot afford to take them offline? What can be done if the domain controller hardware fails and no one can authenticate to the network? How can multiple servers be leveraged to achieve higher levels of reliability and redundancy and to enhance the user's ability to restore systems and data fast?

Additional layers of protection

With multiple servers in an environment, greater levels of redundancy can be created to protect system information and data. One server's recovery points and data backups can be stored on different servers, and a media server can even be set up as a dedicated repository for all data backups and system recovery points.

A dedicated Symantec Backup Exec media server simplifies the implementation of a disk-to-disk-to-tape scenario where, for short-term archival, data backups and system recovery points are stored on the media server's disk storage system (SAN, NAS, or RAID devices). Then, Symantec Backup Exec can be scheduled to move those data backups and system recovery points to tape for long-term archival.

Symantec Backup Exec System Recovery can be used to capture recovery points for the entire server, thereby protecting media server operations, and an extra layer of redundancy can be added by storing the recovery points for the media server on a separate server. Thus, any user data or system information can be quickly restored from disk or tape.

Protecting business-critical applications

The process of protecting a server's critical applications comprises two main elements: protecting the applications' system information, and protecting the ever-changing user data in those applications' data stores.

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When Symantec Backup Exec System Recovery captures recovery points for a server's system volume, it preserves a precise image of that volume—an image that can include the applications' in-use executables, hidden files, encrypted files, configuration information, registry entries, and any other application-related information stored on the system volume. The recovery points for an application's system information can be captured as often as every 15 minutes. If the system should fail, Symantec Backup Exec System Recovery facilitates the return of application system files to their exact working state in minutes.

Symantec Backup Exec can protect the information in application data stores, enabling backup of that data without adversely affecting application performance or user productivity. If a problem occurs, Symantec Backup Exec can quickly restore the data to its last known good state—and it also allows the user to perform granular recovery of application data, which can dramatically reduce recovery time when only a subset of the full data store is needed.

Backing up the database of an application whose users are constantly updating or adding data is an enormous challenge for IT personnel. If the application is taken offline for backup during business hours, productivity halts because users cannot access the services and information they need to do their jobs. Backups may be done after business hours—though for nonstop global businesses, there is really no such thing as “after hours”—but the tremendous size of most application databases often causes the backup to extend into the next business day. Moreover, after-hours backups lack the frequency to reflect the most recent database changes should a restoration be required during the workday.

Online or “hot” backups of an application database can be performed to keep backups current during the day, but many such solutions adversely affect application performance, and their complex restoration processes impede the timely return of a failed application to a good working state. With appropriate options installed, however, Symantec Backup Exec performs incremental backups on application data the instant a change is made; thus, if data ever needs to be restored, the most recent changes will always be protected and ready to use.

Symantec offers a complete family of optional Symantec Backup Exec application agents, which allow application data stores to be restored quickly and easily:

- **Agent for Microsoft Exchange Server** protects vital Exchange Server 2000, 2003, and 2007 data while the application is online. The new version supports continuous data protection for Exchange Server and revolutionizes data protection and recovery by eliminating the daily backup window for Exchange backup jobs while still allowing recovery of individual mailboxes,

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messages, and folders—in seconds. Additionally, administrators do not need to run a mailbox (or MAPI) backup, which significantly reduces the number of backups and time required to protect Exchange. The enhanced Agent for Exchange can recover granularly from a single full backup, eliminating the need for redundant Exchange backups.

- **Agent for Microsoft SharePoint Server** recovers critical data in seconds—and the latest version allows individual documents to be restored from Microsoft SharePoint Portal Server 2003, SharePoint Server 2007, and SharePoint Services 3.0 as well, offering quick, granular recovery of only the specific file or version of a file that has been deleted or corrupted.
- **Agent for Lotus Domino®** integrates comprehensive data protection of vital Lotus Domino 6.x, 7.x, and 8.0 messaging and collaboration databases with daily backup activities.
- **Agent for Microsoft SQL Server** includes continuous protection of SQL databases, flexible recovery of SQL databases to destinations other than where they originated, and direction of a copy of the actual data streams being sent to media by a SQL database to a local directory for later use as its latest features.
- **Agent for Oracle on Windows or Linux Servers** integrates non-disruptive data protection for business-critical Oracle10g, 9i, and 8.x databases. It provides granular protection for individual table spaces or a complete application/database backup and protects archived redo logs and control files—without ever taking them offline. The new version delivers full support for Oracle Recovery Manager (RMAN).
- **Agent for SAP** provides SAP certified data protection for business-critical SAP applications while the application is still online and in use—supporting both Oracle and MaxDB databases.
- **Agent for Remote Macintosh Servers** provides support for online non-disruptive backup of Mac OS® X 10.3, 10.4 and 10.5 operating systems.
- **Agent for Active Directory** allows you to restore Active Directory or Active Directory Application Mode (ADAM) objects, including deleted user accounts, and individual attributes online without having to perform an offline authoritative or non-authoritative full Active Directory restore.
- **Agent for Oracle RAC on Windows or Linux Servers** protects an Oracle application server or business-critical applications requiring high availability that are running within Oracle Real Application Clusters on Windows and Linux servers.

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- **Agent for DB2® on Windows Servers** supports the backup and restore of IBM® DB2 on Windows servers, allowing administrators to view logical objects (databases and table spaces) and select these entities to be recovered to a specified point in time.
- **NEW Agent for Symantec Enterprise Vault™** supports the backup of critical Symantec Enterprise Vault archives. Symantec Backup Exec delivers full application protection and granular recovery of Symantec Enterprise Vault, including directory database, partitions or Vault Stores, and indexes.
- **NDMP Option** supports the backup and restore of NDMP NetApp® (Data ONTAP 7.0 or later), EMC Celerra (with DART 5.5 or later), and IBM N-Series filers with tape devices attached. Support for NDMP devices greatly expands the number of disk targets that can be selected for disk-based data protection.

The list of applications that Symantec Backup Exec supports for online backup continues to grow. The database configurations of any familiar applications that are not on the list (in-house or custom-developed applications) can be protected by using Backup Exec System Recovery to momentarily freeze the database and take a snapshot of it. The database is taken offline briefly and is then quickly brought back online, at which time Backup Exec System Recovery writes the recovery points from the snapshot to disk without affecting application performance.

Restoring critical servers quickly

A failed critical server must be brought back online immediately—even if a hard drive or the entire server has to be replaced. Symantec Backup Exec System Recovery performs bare-metal recoveries in a matter of minutes. Simply insert the Symantec Backup Exec System Recovery CD in the server's drive, connect to the media server, and restore from the latest recovery point.

Symantec Backup Exec System Recovery even restores system recovery points to dissimilar hardware, which means that the hardware on a new server does not have to match the hardware of the old device. Once the recovery process is initiated, the Symantec Recovery Disk that comes with a purchase of Symantec Backup Exec System Recovery automatically detects and installs the appropriate hardware drivers needed for that system.

Simplifying complex disaster recovery

To further simplify disaster recovery efforts in larger, more complex environments, Symantec offers a complete solution with Symantec Backup Exec and Backup Exec System Recovery.

A larger business with 20 or more servers needs even more layers of redundancy and more management tools to simplify setup and configuration and improve the availability of network resources. For instance, instead of a single domain controller, Exchange server, or Oracle server, a larger company may have several of each. This approach ensures that if one of these critical servers goes down, users will still have access to the applications and resources they need. Failure of one server may hinder performance, but probably will not halt productivity; nonetheless, the effective protection and rapid restore capabilities that Symantec Backup Exec and Backup Exec System Recovery grant to user data, application data, and system information are still needed.

Along with redundant domain controllers and application servers, you must have redundant media servers for storing data backups and system recovery points to achieve the highest levels of data and system protection. The Central Admin Server Option in Symantec Backup Exec facilitates synchronization and management of data backups on Symantec Backup Exec media servers, and it provides a central point of administration and control for job processing and load balancing, enabling:

- Management of data protection operations across multiple Symantec Backup Exec media servers
- Storage of catalogs, device and media information, policies, jobs, and selection lists for the entire Symantec Backup Exec environment

With Continuous Data Protection added to your data protection efforts, you can take advantage of application data protection in remote offices while reducing costs and minimizing the IT workload. Continuous Data Protection helps eliminate the hassle and expense of tape-based backups at remote sites by replicating data from remote office servers to a central location at the corporate office, where data can be reliably backed up and stored. Centralizing backups minimizes the costs associated with hardware, media, and administration investments at remote offices—and tight integration of Continuous Data Protection with Symantec Backup Exec allows monitoring of companywide data protection from a single console.

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Plus, to further enhance the protection of servers' operating systems, centralized management capabilities in Symantec Backup Exec System Recovery Manager simplify administration by providing your organization's IT administrators with an at-a-glance view of system recovery jobs across the entire organization. You can centrally deploy, modify, and maintain recovery activities, jobs, and policies for local and remote systems; monitor real-time status; and quickly resolve any problems identified. You can also create reports to analyze trends over time. Backup Exec System Recovery Manager scales from small businesses to large Windows environments.

Conclusion

As the world leader in providing solutions to help individuals and organizations ensure the security, availability, and integrity of their information, Symantec offers industry-leading protection and recovery solutions for critical business systems and data. Symantec Backup Exec 12 for Windows Servers and Symantec Backup Exec System Recovery 8 are complementary solutions that deliver complete Windows based data and system protection and recovery. By combining these products, companies benefit from:

- Rapid disk-to-disk backup and recovery for critical systems, applications, and user data
- Continuous data, systems, and application protection and availability from a single vendor
- Exceptional reliability levels for protecting and recovering systems and data
- The ability to recover quickly, enabling compliance
- Simplified protection and recovery of complex systems and data environments
- Multi-stage backups (disk-to-disk-to-tape)

Symantec Backup Exec and Backup Exec System Recovery are the gold standard in Windows data protection and complete system recovery. By working together, they help keep your business up, running, and growing—no matter what happens.

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.

For specific country offices and contact numbers, please visit our Web site. For product information in the U.S., call toll-free 1 (800) 745 6054.

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