

Designing Data Protection Strategies for Lotus® Domino™

VERITAS Backup Exec™ 10 for Windows Servers
Agent for Lotus® Domino™

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EXECUTIVE SUMMARY

The VERITAS Backup Exec™ *for Windows Servers Agent* for Lotus® Domino™ integrates comprehensive data protection of vital Lotus Domino messaging, application, and collaboration databases with standard daily network backup routines. This provides complete online, non-disruptive protection of Lotus Domino R5 and R6 databases.

The Backup Exec Agent for Lotus Domino (which includes a Client Access License, or CAL) is a separately licensed and priced agent extending the power of VERITAS Backup Exec *for Windows Servers*. Together with Backup Exec core software, the optimized Lotus Domino agent performs the required data protection functions vital to the protection of Lotus Domino server data and eliminates the need for separate administration and dedicated backup hardware.

INTRODUCTION TO LOTUS DOMINO R5, R6

The Lotus Domino family of server applications is designed to provide fast and reliable messaging, applications, and online collaboration for organizations ranging from small businesses to large enterprises. Domino Mail Server provides e-mail functions, Web access, online calendar support, and more. Domino Application Server provides collaborative Web applications that integrate company processes with enterprise systems. Domino Enterprise Server takes all of this functionality and reinforces it through clustering, providing the high availability and reliability required by mission-critical applications. As a whole, Domino helps organizations reduce costs by offering robust messaging and collaboration applications for the server and desktop that are easy to administer and manage. Domino also provides businesses with the flexibility and openness they need to harness the power of the Web, along with the security they need to keep systems running smoothly and securely.

Additional features, deployment information and evaluation software for Lotus Domino can be obtained from the Lotus Web site: <http://www.lotus.com/domino>.

Key Benefits

- Helps reduce total cost of ownership by providing single solution for Windows and Lotus Servers
- Optimizes backups with automatically locating and selecting Lotus databases
- Improves data protection by supporting both logged and unlogged Lotus databases

DATA PROTECTION CONSIDERATIONS

A company may have already standardized and deployed dozens of dedicated Domino R5 and R6 servers throughout its organization, or may still be in the initial stages of evaluation and testing with a single Domino R5 or R6 server. Whether managing a new installation, a competitive migration from another messaging product, or simply an upgrade from a prior Domino release, Domino administrators must understand the need for a reliable, well-designed backup solution capable of fully protecting Lotus Domino R5 or R6. This backup solution is what will protect company data from possible catastrophic loss by enabling the recovery of individual databases or entire servers that are lost as a result of corruption, user error, viruses, hardware failure, or natural disaster.

This white paper has two main goals. The first is to familiarize Domino administrators with common Domino data protection challenges, and the second is to introduce the Backup Exec Agent for Lotus Domino. VERITAS Backup Exec software is the market-leading Windows data protection solution that fully protects your company's valuable information and investment in Lotus Domino. This paper will identify the files, components, and requirements necessary for protecting Domino R5 and R6 environments, as well as present best practices, innovative features, and recommended strategies to automate and simplify these processes.

BUILDING THE RIGHT DATA PROTECTION STRATEGY

In order for Domino administrators to successfully design and implement data protection strategies tailored to specific Lotus Domino environments, they must first consider the answers to many of the following questions:

- How many Domino R5 and R6 servers will be protected?
- How much Domino data will be protected?
- How frequently will Domino backups be performed?
- In case of Disaster, how long can the company live without access to critical Domino data?
- Should all the Domino databases (e-mail, other databases) be treated equally, or are some more critical than others?
- Will transaction logging be enabled for Domino databases?
- Will Domino servers be partitioned, clustered, or used for database replication?
- Will Domino backups be stored on tape media or disk volumes?
- Will Domino backup processes be performed separately or combined with file system and other protected resources?

UNDERSTANDING LOTUS DOMINO R5 AND R6

The unique architecture and file structure of Domino servers, which more closely resemble a file server than a traditional database structure, present a number of unique data protection challenges. Unlike many database products that typically have a small number of large centralized database files, Domino servers may host hundreds or even thousands of small individual database files that, while typically located in a default data directory, may be distributed across multiple local volumes or remote servers. Protecting this unique environment is further complicated by Domino's ability to support linked databases, cross-server database replication, and multiple server clustering.

Prior to the release of Lotus Domino R5, administrators had limited options when it came to protecting Domino databases, and were typically required to perform daily full backups to ensure proper protection. These full backups were generally time- and resource- intensive. The backup process often required a manual shutdown of the Domino server, and third-party open file management software or backup software with sophisticated "file locking" capabilities. Yet, something as simple as an unexpected server shutdown could cause unrecoverable data loss with the only option being a restore from the previous day.

New features introduced in the Lotus Domino R5 release resolved many of these data protection issues. For example, transaction logging can significantly improve server performance, while simplifying server and database

recovery by recording all database transactions to a common log file instead of volatile system memory. Enabling this new feature can provide enhanced reliability and higher availability, while decreasing recovery time through automated processes that eliminate many of the lengthy maintenance tasks used previously. Transaction logging, depending on the implementation, can offer flexible backup and recovery options; however, this introduces a completely new set of data protection challenges. To address these new challenges, Lotus designed a backup and recovery application program interface (API) that allows third-party software vendors to design software capable of providing reliable online backup and point-in-time restore capabilities for Domino R5 and R6 databases and transaction logs. VERITAS Backup Exec software utilizes these APIs to deliver simple, fast, and robust data protection for Lotus Domino R5 and R6 databases.

INDUSTRY LEADING DATA PROTECTION FOR LOTUS DOMINO

VERITAS Backup Exec *for Windows Servers* is the industry standard for data protection, providing certified compatibility for Microsoft Windows server environments. It offers reliable backup and recovery of Windows Active Directory, Distributed File System, and System State components. Built-in wizards, agent accelerator technology, and advanced device and media management offer ease of use, high performance, and flexibility to manage data quickly and reliably. Leveraging the Lotus Domino R5 and R6 Backup API, Backup Exec software provides complete, online Lotus Domino protection. Combined with the many available agents and options, the Backup Exec Agent for Lotus Domino ensures that Backup Exec provides a scalable solution for any Microsoft network or Lotus Domino environment.

Please note that while Lotus Domino is designed to support multiple platforms and operating systems, the Backup Exec Agent for Lotus Domino is specifically designed to protect Lotus Domino R5 and R6 servers with logged and unlogged databases running on Intel-compatible Windows Server platforms.

Customers interested in obtaining online protection of Lotus Domino databases hosted on enterprise UNIX platforms should consider VERITAS NetBackup™ *for Lotus Notes*. Additional information on this solution is available from the VERITAS Web site: <http://www.veritas.com>.

Making the decision to deploy Backup Exec 10 software and the appropriate agents and options to protect your company's Windows Servers environment is an excellent choice and provides a variety of approaches when deciding what, when, where and how data resources will be protected. Many of the key features and functions supported by the Backup Exec Agent for Lotus Domino are included in following chart and will be discussed in greater length.

VERITAS Backup Exec Data Protection for Lotus Domino	
Supported Versions	Lotus Domino R5* and R6 server family
Operating Systems Support	Microsoft Windows Servers
Full Online Backup Support	Yes, logged and unlogged databases
File System and System State Backup Support	Yes, local or remote (via integrated Backup Exec Remote Agent)
Remote Network Backup Support	Yes, via the integrated Backup Exec Remote Agent
Dedicated Backup Network Support	Yes
LAN-Free Backup Support	Yes, via the SAN Shared Storage Option
Centralized Management	Yes, multiple backup server centralized management through the Options Central Admin Server Option
Transaction Logging Support	Yes, Archive and Circular Logging
Differential Backup Support	Yes, via Archive Transaction Logs
Incremental Backup Support	Yes, via Archive Transaction Logs
Transaction Log Recycling Support	Yes, Archive Logging Only
Server Partitioning Support	Yes
Database Replication Support	Yes
Domino Clustering Support	Yes, additional Domino Agent required for each node
Backup to Disk Support	Yes, with software compression
Encrypted Database Support	Yes
Point-in-Time Restore Support	Yes, via playback of archive transaction logs
Redirected Restore Support	Yes
Database Backup and Restore Granularity	Yes
Operating System Disaster Recovery	Yes, via the Intelligent Disaster Recovery Option

* Complete online backup operations of active transaction logs are not supported by Lotus Domino R5.03 or earlier and could result in possible data loss during restore. It is recommended that the latest Lotus Domino R5.x, or R6.x release be used.

A Remote Agent Client Access License (CAL) for Windows Servers is bundled with every Backup Exec Agent for Lotus Notes, protecting either local or remote servers. The Backup Exec *for Windows Server* core software is required with the Backup Exec Agent for Lotus Domino software.

LOTUS DOMINO R5 AND R6 DATABASE PROTECTION

Since Domino database files are not restricted to a specific volume or path, the task of locating and selecting the appropriate files could easily prove cumbersome and time-consuming to Domino administrators. Backup Exec software solves this problem by automating the task of locating and selecting Domino databases for inclusion in backup processes. The Agent for Lotus Domino does this by searching local volumes or the remote file system and enumerating Domino databases, which are then displayed — separately from the file system — in an “Explorer Style” tree view within the Backup Exec Selections List.

The Agent for Lotus Domino automatically locates and includes the following file types in the Lotus Domino Databases selection list:

<filename> .**ntf** – Lotus Notes Template Files
 <filename> .**nsf** – Lotus Notes Database Files
 <filename> .**box** – Lotus Mailbox Files
 <filename> .**dsk** – Cache Files

The Backup Exec Agent for Lotus Domino delivers powerful data protection that is capable of protecting Lotus Domino servers with both logged *and* unlogged databases. These databases are typically located in the **Lotus\Domino\Data** directory, but could reside in different volumes or directories, and be linked to the Domino data directory. The following Domino database configurations are supported:

- **Logged Databases** – Logged Domino R5 and R6 databases must reside under the Domino data directory. Transaction logging must be enabled for one or more Lotus databases on the server. All database transactions are recorded into a single transaction log.
- **Unlogged Databases** – Unlogged Domino R5 and R6 databases either do not reside on a server that has transaction logging enabled, or transaction logging has been disabled for specific databases. Unlogged Domino databases are protected when a full, differential, or incremental backup is performed, but can be restored only to the point of the latest database backup.
- **Linked Databases** – Linked Domino R5 and R6 databases residing on remote servers are not displayed in the Lotus Domino Databases Selection List, and the link is not followed by Backup Exec Agent for Lotus Domino to those remote servers. Databases linked in this manner must be selected for backup on the server where they are located. Additional licenses for the Agent for Lotus Domino and Remote Agent for Windows Servers are required to protect remote databases on each remote server.
- **Local Databases** – Linked Domino R5 and R6 databases are considered local when they reside on the Domino server, but are not located under the Domino data directory. Local linked Domino databases require a full backup when using any of the Lotus Domino backup methods. All databases on the local Domino server appear in the Lotus Domino Databases Selection List.
- **Remote Databases** – Linked Domino R5 and R6 databases residing on remote servers are not displayed in the Lotus Domino Databases Selection List or followed by the Backup Exec Agent for Lotus Domino. Databases redirected in this manner must be selected for backup on the server where they are located. Additional licenses for the Agent for Lotus Domino are required to protect remote databases on each remote server.

The Agent for Lotus Domino provides complete database backup capabilities, but database protection alone is not sufficient to provide complete disaster recovery protection. The Agent for Lotus Domino does not include any Lotus Domino application files in the Domino R5 and R6 database backup. Files or file types, such as: <filename>.njf, <filename>.ncf, <filename>.id, <filename>.dic or the **notes.ini** are not automatically protected. To include the Lotus Domino application and additional Domino files with the backup, they must be separately marked for inclusion in the Backup Exec Selections List from the volume where the Lotus Domino program directory is located. For disaster recovery purposes, it is a good idea for administrators to include occasional file system backups with scheduled Domino database backups.

REMOTE LOTUS DOMINO SERVER PROTECTION

The Backup Exec software with the Agent for Lotus Domino provides a full-featured data protection solution that delivers the needed scalability to centrally protect environments that may be running multiple remote Lotus Domino R5 and R6 servers or a mix of other applications. Through a combination of the Lotus Domino Agents, including the Backup Exec Remote Agent *for Windows Servers* with its embedded, patented Agent Accelerator technology, a single Backup Exec server is able to centrally protect multiple remote Lotus Domino servers, file servers, or other protected resources such as SQL, SAP or Oracle. Through the use of data compression and distributed processing, the Remote Agent *for Windows Servers* is able to offload data compression tasks from the backup server to the remote server, reducing the amount of data traffic sent across the network. This performs backup routines quicker than traditional technologies requiring multiple requests and acknowledgments between the backup server and remote server.

DEDICATED BACKUP NETWORK

The Specified Backup Network feature offers the ability to define a dedicated backup network for any number of servers. This Specified Backup Network provides many of the benefits often associated with a more costly Storage Area Network (SAN) environment. While this does not provide a fibre channel backup environment or allow the sharing of tape devices among multiple Backup Exec servers (please see the VERITAS Backup Exec SAN Shared Storage Option™ for this functionality), it does offload backup traffic from the production network. By implementing this feature to perform an online backup of Lotus Domino servers on your network, backup jobs are no longer limited by a traditional backup window. Backup operations can now be performed 24 hours a day, seven days a week without creating additional network traffic on the production LAN. This added flexibility gives an administrator the ability to let backup operations continue until completed or to perform an on-the-fly backup as needed, instead of waiting for scheduled backup windows. As an added fail-safe measure, Backup Exec software can be configured to ensure that Lotus Domino data is protected, even if data becomes inaccessible via the backup network and is available only over the production network, thereby extending the data protection offered to business critical information.

LAN-FREE BACKUP

By implementing a fibre channel SAN, administrators can create an infrastructure that isolates both backup and restore traffic from the Ethernet network and allows multiple servers shared access to SAN-attached tape devices. Large Lotus Domino deployments that already take advantage of SAN-based disk arrays can benefit from adding Backup Exec, its SAN Shared Storage Option and Agent for Lotus Domino, to each Lotus Domino server that requires protection. Here, each Lotus Domino server on the SAN becomes its own backup server. In addition, high-performance, multidrive, multislot SAN-based libraries can process backup and restore jobs more efficiently. Comparatively, this offers vast improvements over the performance bottleneck typically seen in centralized backup environments, where a single Backup Exec server protects multiple machines. Additionally, this offers more centralized control in a typical distributed backup environment.

VERITAS tests and certifies complete Backup Exec fibre channel SAN solutions. For a current list of these supported solutions, please visit the VERITAS support Web site: <http://support.veritas.com/rd/bews-compatibility.htm>.

CENTRALIZED MANAGEMENT

When developing data protection solutions for large distributed Lotus Domino environments, administrators often have a need for centralized management and scalability above what is provided by the Backup Exec Remote Agent. VERITAS answers this need with the new Backup Exec Central Admin Server Option, a powerful and easily implemented enhancement that can measurably reduce management costs and increase operational efficiency. VERITAS Backup Exec™ 10 *for Windows Servers* introduces the Central Admin Server Option (CASO), providing a number of advanced centralized management features offering a robust and scalable

solution for managing multiple Backup Exec media servers. The functionality enables today's storage administrator the ability to maximize a Backup Exec for Windows Servers investment by providing centrally managed operations, load balancing, fault tolerance, monitoring, and reporting for many Backup Exec media servers in a Windows data center or distributed throughout the network. Furthermore, by combining the Central Admin Server Option with the SAN Shared Storage Option, you can create a complete, centrally managed LAN-free backup solution for Lotus Domino Servers on a fibre channel SAN. Backup Exec Central Admin Server Option is also a perfect fit for companies with a distributed organization with a number of remote sites, where it can become difficult for an IT administrator to manage the backup of the environment. If Lotus Domino servers are scattered throughout the organization, both locally as well as on remote sites, combining the Backup Exec Agent for Lotus Domino and the Backup Exec Central Admin Server Option will provide the IT administrator with a complete protection of valuable data. This data protection will be centrally managed, eliminating the need to travel around the organization.

Additional information, white papers and evaluation software for VERITAS Backup Exec Central Admin Server Option can be obtained from the VERITAS Web site: <http://www.veritas.com/backupexec>.

TRANSACTION LOGGING

When enabled, the transaction logging feature of Lotus Domino intercepts all database changes and writes them to a common transaction log instead of directly to the various database files. This process defers database write operations during high server activity and commits the data in batches when server resources are available. When transaction logging is first enabled, each database is assigned a unique Database Instance ID (DBIID). Each logged transaction includes this DBIID, which is used to match transactions to databases during a restore. Transaction logging benefits include simplified backup and recovery procedures, improved data integrity, and faster server restart times. Additionally, dependencies on maintenance tasks and repair tools are almost eliminated through the ability to replay transaction logs to recover from system faults.

The transaction logging feature of Lotus Domino significantly improves server availability and reliability, while increasing backup and restore efficiency. The ability for Lotus Domino to log database transactions is disabled by default, but can easily be configured to support either circular or archive logging. Backup Exec software and the Agent for Lotus Domino support both of these methods, enabling administrators to deploy fully recoverable, higher-performing servers at a lower cost and to restore to a specific point-in-time.

CIRCULAR LOGGING

Circular logging is the default when transaction logging is enabled in Lotus Domino. Circular logging supports a maximum user-definable log file size of up to 4 GB. Transaction logs in this configuration are automatically reused once the log file reaches the defined size.

When using the circular logging method, which constantly overwrites itself, Backup Exec software is not required to back up the transaction log file, but is limited to performing full backups. Incremental or differential backup methods are not supported when using circular logging, limiting database recovery options to the point of the last full backup.

ARCHIVE LOGGING

Lotus recommends archive logging as the preferred method of transaction logging. The maximum log file size is limited only by volume capacity, but is not automatically reused as with circular logging. In order for administrators to properly implement this method of transaction logging, Lotus requires the use of a supported third-party backup product to manage the transaction logs. Without proper management, the transaction logs could fill to capacity and cause the Domino server to crash. The Backup Exec Agent for Lotus Domino protects the Domino server and avoids crashes by marking transaction logs for recycling after a successful backup completes. Once these transaction logs are marked, the Lotus Domino server can delete them to create space for new transactions. Archive transaction logs are not selectable or visible from the "Explorer Style" selection list in the Backup Exec GUI, but are automatically selected and included with database backups and stored in separate backup sets. Administrators also have the option to perform incremental and differential backups through the Backup Exec

Agent for Lotus Domino. These flexible methods of protecting new or changed databases and transaction logs can significantly reduce the size of weekly backup volume, making backups more efficient and reducing the backup window.

SUPPORTED BACKUP SCHEMES

VERITAS Backup Exec software and the Agent for Lotus Domino support various backup methods, depending on how Lotus Domino servers are configured. Lotus Domino administrators will have the most control over how Lotus Domino databases are protected when archive transaction logging is enabled. This allows Backup Exec software and the Agent for Lotus Domino to use transaction logs to provide the following backup schemes:

Full Backup Schemes – These methods perform a complete backup of all selected logged or unlogged Domino databases and transaction logs. Archive Transaction Logs are automatically included as part of the backup process and are then marked to be recycled. Transaction logs do not exist for unlogged databases and circular transaction logs do not support or require backup operations. The Full Backup Schemes require the longest backup window and consume the most media of any supported backup scheme, however, they provide the quickest and easiest way to perform database recovery. Full backups function as the foundation required for all other backup schemes and should be performed immediately after transaction logging is enabled, or to fully protect databases whose DBIID has changed.

Differential Backup Scheme – This method is available only if archive transaction logging is enabled. It performs a full backup of any selected unlogged databases, logged databases with new or changed DBIIDs, and complete transaction logs, but does not mark the logs to be recycled. The transaction logs continue to grow larger until they are optionally marked for recycling or until a scheduled full backup is performed. Used following a full backup, this backup scheme is smaller and faster than performing daily full backups. Database recovery could require more interaction than with a full backup, but less than with an incremental backup.

Incremental Backup Scheme – This method is available only if archive transaction logging is enabled. It performs a full backup of any selected unlogged databases, or logged databases with new or changed DBIIDs and complete transaction logs, and it then marks the logs to be recycled. Used following a full backup, this is the smallest and fastest backup scheme, although database recovery may require data from each daily incremental backup.

DATABASE REPLICATION AND DOMINO CLUSTERING

Lotus Domino provides highly scalable access to information through its ability to replicate databases between multiple Domino servers, ensuring that live database copies are always available. Similarly, Domino clustering, which is effectively real time replication of Domino databases, provides high availability and scalability for Lotus Domino environments. Domino clustering supports a maximum of six servers that work together as a unit to meet capacity and availability goals beyond the capacity of a single machine.

Database replication and Domino clustering are controlled by replication IDs that link databases on one server to replica partners on another. Done incorrectly, restoring outdated database replicas could cause a “replication storm” and possible data loss if databases are accidentally overwritten. Administrators need to implement a backup and recovery solution – like Backup Exec and the Agent for Lotus Domino – that addresses and manages the restoration of Domino databases and their associated replication IDs. With Domino clustering, each Domino server independently maintains its own databases and requires a Backup Exec Agent for Lotus Domino license. Backup jobs should be performed for each server participating in the Domino cluster or performing database replication. Lotus Domino databases that are replicated in this manner appear no different than any other Domino database to Backup Exec software, making backup operations simple. To avoid outdated database replicas that are restored from replicating across the network and creating a replication storm, Backup Exec can optionally assign new replication IDs. The new database ID will appear to be a different database, and therefore no replication storm will occur, reducing excess network traffic and possible data loss.

BACKUP TO DISK

Implementing Domino clustering and database replication across multiple Domino servers for increased data availability and fault-tolerance can substantially increase the number of Lotus Domino databases needing protection. These configurations can create a requirement for high-speed, high-capacity tape drives or robotic libraries capable of protecting large volumes of data within a fixed backup window.

LAN, SAN, and direct-attached disk arrays are capable of yielding better performance than most tape drives. This fact, combined with the ever-dropping cost per megabyte of hard disk drives, is quickly making the backup to disk feature of Backup Exec attractive to many companies. Backup to disk uses software data compression to reduce the amount of disk resources used by the backup and can be an effective alternative when Lotus Domino backup jobs are performed on holidays and weekends, or any time a backup job is expected to exceed the capacity of a single tape and would require manual intervention to swap media. Backup to disk and data compression offers improved performance over tape devices. This makes backup to disk an excellent choice for environments where large amounts of data are required to be backed up during a short backup window, or when high-performance restores are required for high availability and disaster recovery.

Backup to disk is best used to complement existing tape backup processes and is an ideal solution for companies on a rotation scheme with access to a limited number of tapes per day, or for those organizations with a large amount of unused disk space. In these situations, companies can back up to disk, but archive to tape for true disaster recovery. For disaster recovery purposes, it is often a good practice to perform a temporary backup to disk before making major configuration changes.

LOTUS DOMINO DATABASE RECOVERY

Restoring a Lotus Domino database is a two-part process. The first part involves copying database files from the media to the server. During this process, existing databases are taken offline and deleted, and then the databases are restored. Unlogged databases are brought back online, but if the database is logged and multiple databases are being restored, the database name is added to a list for recovery. The second part of the restore is a recovery process that applies data from the transaction logs to the database to bring it up to date. This process begins automatically after the database is copied to the server. Logged databases are restored to a point in time using the required transaction logs. Once the recovery process is complete, the Lotus Domino database is brought online.

If archive transaction logging is enabled, two backup sets appear for each Lotus Domino R5 and R6 backup job when locating Lotus Domino databases from the Backup Exec Restore Selections tab. The first backup set contains the actual Lotus Domino databases and the second backup set contains the associated transaction logs. When restoring Domino databases, the individual databases should be selected from the first backup set. Transactions, from the appropriate transaction logs, are automatically selected by Backup Exec and applied to the restored databases.

During a restore, the desired Lotus Domino database is usually contained in the most recent backup set. However, subsequent differential or incremental backup jobs performed after a full backup job may not contain data, because only the transaction log was backed up. If the required data is not located in the most recent backup set, check the previous backup sets until the appropriate Domino database is located.

Advanced features and flexible restore options within Backup Exec and the Agent for Lotus Domino w/CAL simplify database recovery by allowing Domino administrators to take full advantage of their Lotus Domino environment. Administrators are presented with the following features and options:

Set Wait Period – Existing Lotus Domino databases must be taken offline before they can be restored. This ensures that the database will not be accessed, closed, or deleted while the restore operation is being processed. This feature of Backup Exec allows an administrator to specify a time for the restore process to wait for databases

that are in use. If a database remains in use and cannot be taken offline after the specified wait time, that database will not be restored.

Database Identification – New DBIIDs are assigned to databases when certain operations are performed within Lotus Domino. This includes when:

- The **Compact Server** Command is used
- The **Fixup** Command is used to repair corrupt databases
- The log file location or size is changed
- Domino databases are moved from one logged server to another

Once a new DBIID is assigned, it is used for all new transactions recorded in the transaction log. Previous transactions no longer match the DBIID for the database and cause DBIID mismatches when restored. Backup Exec offers the flexibility for Domino administrators to decide if restored databases retain their existing DBIIDs and replication IDs, or are assigned new IDs. This further ensures that databases are restored correctly and properly linked to the transaction logs and replica partner. Since previous transaction logs cannot be applied to databases after receiving new DBIIDs, it is recommended that administrators perform a full backup to prevent potential data loss. A full backup would include all current transactions on the database and would ensure that only the transactions with the new DBIID are needed to restore the database.

Point-in-Time Restore – One of the most important features gained through archive transaction logging is the ability to perform a point-in-time restore of a Domino database. Backup Exec software automates the restore process by first retrieving the database and then applying transactions stored on either disk or tape to bring the databases to the specified point in time.

Redirected Restores – By default, Backup Exec restores files or databases to their original location, simplifying the process of restoring an entire server or directory. However, a Domino administrator may need to restore a database without overwriting the original file. Flexible redirection and restore options, offered for practically all protected Backup Exec resources, allow an administrator to restore Lotus Domino databases to alternate directories within the Lotus Domino data directory on the original server. This allows a Domino administrator to redirect the restore of a database that can then be brought online for document recovery or comparison with later versions.

DISASTER RECOVERY PREPARATION

Database replication and Domino clustering are two successful methods for achieving and maintaining high availability in Lotus Domino environments. While these methods provide users with efficient access to Domino information, they do not offer a complete disaster recovery process that provides automated server operating system recovery in the event of a hardware failure. Using the Backup Exec Intelligent Disaster Recovery Option ensures that local and remote Lotus Domino servers can quickly be restored in the event of hardware failure.

Recovering Lotus Domino servers requires the destination server to have a functioning operating system and installation of Lotus Domino. If this is not the case, the operating system and Lotus Domino must first be reinstalled. While this can be done through a manual disaster recovery process, the Backup Exec Intelligent Disaster Recovery Option provides faster recovery with an automated server restore. After recovery of the Windows server and Lotus Domino application is complete, Lotus Domino system configuration data, databases, and transaction logs will be restored via different methods depending on the version, configuration, and data protection scheme used in your Lotus Domino environment. Documenting all of the possible disaster recovery scenarios is beyond the scope of this document. However, the VERITAS Backup Exec 10.0 *for Windows Servers Administrators Guide* includes documented step-by-step recovery processes for the following scenarios:

- Disaster recovery of a Lotus Domino R5 and R6 Server
- Disaster recovery of a Lotus Domino R5 and R6 Server using Archive Logging
- Disaster recovery of a Lotus Domino R5 and R6 Server using Circular Logging

This document is located on the Backup Exec CD, in the Backup Exec Help or available for download from the VERITAS Web site: <http://support.veritas.com>.

SUMMARY

With Domino R5 and R6, Lotus provides a wide range of scalable messaging and collaboration services for diverse environments. The VERITAS Backup Exec 10 *for Windows Servers* Agent for Lotus Domino provides market-leading backup and restore functionality vital to the protection of Lotus Domino server data, and eliminates the need for separate administration and dedicated backup hardware. The Backup Exec Agent for Lotus Domino support for transaction logging has significantly improved reliability and availability for Lotus Domino servers. Backup Exec software's additional functionality, such as Dedicated Backup Network and Backup To Disk functionality or even the Intelligent Disaster Recovery Option, means that VERITAS Backup Exec 10 *for Windows Servers* and its Agent for Lotus Domino provide an easy-to-use, efficient, highly scalable solution capable of protecting all aspects of Lotus Domino servers.

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