

# When Disaster Strikes: Recovery Planning for the Mid-Sized Organization

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**In Brief:** An estimated 40 percent of Fortune 1000 companies are not prepared for a regional disaster; small and medium-sized businesses are even less prepared. Large-scale disasters, including hurricanes Katrina and Rita and terrorist attacks in the U.S. and abroad, have highlighted the need for organizations to protect and be able to quickly restore mission critical data. Many organizations were caught off guard by the scale of the recent events, and are still struggling to resume normal operations months later.

This study examines selected types of disaster recovery data replication technology suitable for a mid-sized organization and utilizing between 5 and twenty Microsoft Windows-based servers in a Wide Area Network (WAN) distributed architecture environment. Technologies reviewed include: continuous data protection, snapshot, and file replication.

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The summary table below provides an abbreviated report of features and attributes of selected types of data replication technologies. The “Pros” section summarizes the advantages over traditional tape backup and the other selected types of replication technologies. The “Cons” row summarizes the drawbacks of the selected

type of replication technology. The “Functionality” row is a summarizes of the accepted use of the technology. The table is designed to help the information systems manager weigh the pros, cons, functionality, and costs to compare different replication technologies in order to choose the one that best meets unique business needs.

*True Continuous Data Protection (CDP)* provides almost immediate restore to any version of a file. CDP offers good options for organizations that cannot afford losing even a small amount of work. This type of data protection comes at a very high cost and, depending on the configuration, restores often cannot be undone. Additionally, the time to restore may be slower than expected if the file is modified frequently. CDP appears to be better suited for local area network (LAN) replication and targeted to companies that cannot afford to lose small changes to mission critical data.



Data Replication Technology	Pros	Cons	Functionality
<b>CDP</b>	<ul style="list-style-type: none"> <li>- The data gap associated with restores from tape is virtually eliminated</li> <li>- Can provide almost immediate restore to any version of a file</li> <li>- Good option for enterprises that can not afford losing even a small amount of work and are not budget constrained</li> <li>- Provides data-level restoration capabilities that tape, file replication and snapshot technologies lack</li> </ul>	<ul style="list-style-type: none"> <li>- True CDP comes at a very high cost</li> <li>- Many less expensive CDP products do not provide true continuous data protection</li> <li>- Least suited for WAN replication</li> <li>- Generally, restores can not be undone</li> <li>- Often appliance based</li> <li>- Time to restore is based on the number of modifications</li> </ul>	<ul style="list-style-type: none"> <li>- Designed for retrieving a single file or piece of data</li> </ul>
<b>Snapshot replication</b>	<ul style="list-style-type: none"> <li>- Creates a second copy of data up to every 15 minutes</li> <li>- Able to roll back data to a specific point in time before the disaster event</li> <li>- Changes to any files are automatically captured and applied</li> <li>- A single disk can hold many snapshots</li> </ul>	<ul style="list-style-type: none"> <li>- Restoration is generally an all or nothing event</li> <li>- Designed to remediate mainly for major disasters</li> <li>- After a restore one loses the changes made since the last snapshot</li> <li>- Must be enough storage space available to accommodate the snapshot</li> </ul>	<ul style="list-style-type: none"> <li>- Designed to remediate for major disasters</li> </ul>
<b>File replication</b>	<ul style="list-style-type: none"> <li>- Data is easily restored</li> <li>- Generally not tied to the storage hardware</li> <li>- Restores at the file or volume level</li> <li>- Relatively inexpensive and easy to implement</li> <li>- Wide variety of vendor offerings and price points</li> </ul>	<ul style="list-style-type: none"> <li>- Performance hit on servers</li> <li>- Potential bandwidth issues</li> <li>- Wide variety of vendor offerings and price points</li> <li>- Require extra upfront planning</li> </ul>	<ul style="list-style-type: none"> <li>- Designed to create a readily accessible second copy of data at a remote location</li> </ul>

**Figure 1:** Features and attributes of selected types of data replication technologies

*Snapshot replication* creates a complete second copy, up to every 15 minutes, of data on a server, and can roll back data to a specific point in time before the disaster event. This may shorten the time to recovery and helps to meet all but the most stringent recovery point objectives. The main limitation is that a restoration is an all-or-nothing event. This technology is designed to remediate for major disasters.

*File replication*, if properly implemented, provides a readily accessible second copy of data at a remote location. Some vendor solutions allow for close synchronization, meeting the most stringent recovery point objectives, given available bandwidth. The wide variety of vendor offerings and price points requires extra time for review by IS managers, and extra upfront planning. The byte and block coding is problematic.

The replication technologies reviewed do not take the place of traditional tape backup, but rather use different strategies to limit exposure from the restore gap associated with tape backup. Although each type of tech-

nology reviewed has inherent limitations, all will meet the recovery point objectives, ranging from continuous to scheduled delay.

**Abstract:** Large-scale disasters highlight the need to protect and quickly restore mission critical data. A conceptual analysis of articles published from 1999 to 2006 forms the basis for a decision support tool designed for IS Managers of medium-sized organizations who need to understand asynchronous WAN replication options. The tool, to be used during business continuity planning, explores the pros, cons, functionality and cost of replication technologies including: file, snapshot, CDP, Block and Byte replication.



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