XactCopy

Back up your OS and data for fast, easy disaster recovery

As companies increasingly rely on e-commerce, they become decreasingly tolerant of system downtime for disaster recovery. Business managers and systems administrators sometimes can't wait an hour or two for a tape restore to complete; for many transaction and database servers, acceptable disaster-recovery downtime has dwindled to minutes. DuoCor's XactCopy can speed up the recovery process.

XactCopy is a hard disk data-backup tool for Windows NT servers and workstations. The product might be appropriate as a complete backup solution on some smaller systems, but DuoCor intends customers to use XactCopy for OS disaster recovery and instantaneous file restoration. XactCopy uses a secondary hard disk, which is hidden from the OS, to back up a selected hard disk or partitions. The product performs a sector-level backup of your specified hard disk or partitions at regular intervals.

You can command XactCopy to exclude from backups certain directories or files, a characteristic that distinguishes the product's backup process from mirroring. When you use mirroring (RAID 1) and other forms of RAID, your main goal is to protect your system from disk hardware failures. Mirroring backs up everything, including corrupted OS or data files; if your OS becomes corrupted, the mirror drive contains an identically corrupted OS. Using XactCopy, you can back up the OS once, then exclude it from incremental backups. Thus, you can instantly restore a file or, in the case of a blue screen, remove the corrupted drive and boot up to the secondary hard disk, which has an intact OS copy. XactCopy works with either IDE or SCSI hard disks in non-RAID and RAID environments. I tested both environments.

XactCopy in a Non-RAID Environment

I tested XactCopy first on a small server with two hard disks: a 9.1GB SCSI hard disk for the system disk and an unformatted 18.2GB SCSI hard disk for the backup disk. (Usually you wouldn't use a larger-than-necessary backup disk, but the larger disk was the only spare I had on hand for this server.) XactCopy calls the secondary hard disk the *Data Protection/System Recovery* (DPSR) disk. XactCopy installed easily and required a reboot.

After you install the software, you need to configure the blank, unformatted secondary hard disk as the DPSR disk. Following the instructions in XactCopy's 24-page manual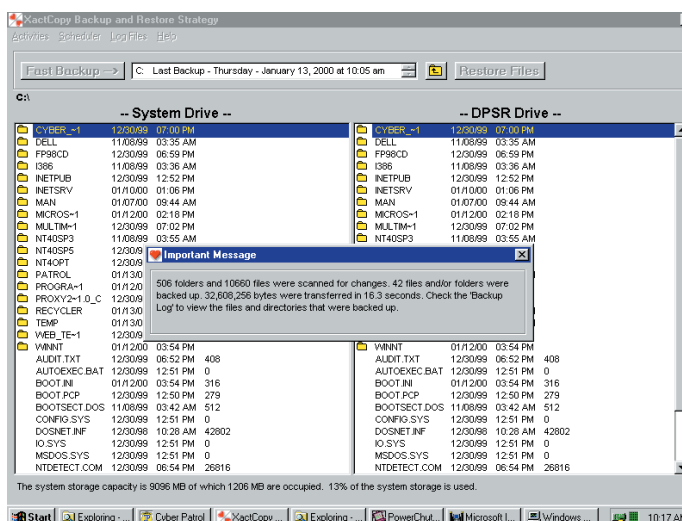, I ran the software's Disk Configurer, which detects your system disk and matches it with a DPSR disk. When the DPSR disk is smaller than the system disk you're protecting, you need to specify which system-disk partitions you want XactCopy to back up based on partition content and the DPSR disk's size. My DPSR disk was larger than my system disk, so I protected the entire system disk.

After specifying the DPSR disk, I ran a full partition backup of my 9.1GB disk. The backup took more than an hour to run. After the initial backup completes, you can schedule regular automatic differential backups that record only the changes in your system or data files. XactCopy lets

▶ **SCREEN 1:**

Backing up a system disk

you select backup intervals ranging from 5 minutes to monthly. In my tests, a typical differential backup, which Screen 1, page 151, shows, lasted less than 2 minutes and used little CPU memory. To exclude files from your backups, click those files in the system-disk view and type Ctrl+E. XactCopy copies at the sector level, so you don't have to worry about archive bit changes.

XactCopy's log-file generator, which records the names of files that XactCopy backs up and the times those backups happened, is useful but flawed. The interface displays filenames and backup times, but in my test, some of the log-file entries were garbled. XactCopy either truncated longer directory names and filenames or extended the names into the neighboring date field, resulting in information that I couldn't read. The product also provides no way for the user to export logs to a record-keeping database.

Saving Data During a Backup

XactCopy includes Columbia Data Products' Open Transaction Manager (OTM). If users write to the system disk while XactCopy is backing it up, OTM uses a caching mechanism to store those user changes and ensure that the system disk reflects the changes after the backup completes. I tested this functionality by accessing a file on the system disk from a remote workstation. While XactCopy was backing up the disk, I modified and saved the file back to the system disk. After the backup finished, I opened the file and verified that the system had written my changes even though I saved them during a backup.

Recognizing that your backup is only as reliable as your media, XactCopy includes the Data Integrity Checker to scan for bad sectors on your DPSR disk's surface. If the integrity checker finds a bad sector, you need to run XactCopy's Verify utility, which marks the bad block. Then, you need to rerun the full partition backup to ensure the DPSR disk's reliability. You can set the Data Integrity Checker to run after every backup or at specified intervals. Unless you use older hard disks for your DPSR

duties, a weekly or monthly check is probably adequate.

To test XactCopy's OS recovery capabilities, I shut down my server and removed the SCSI connection from my system disk. I rebooted, and the following message appeared: *Backup drive restored—restart your system*. I rebooted again, and the DPSR disk came up as the system disk. The server booted up correctly with no data loss. After you boot to the DPSR disk, you have two options for reconnecting the original system disk: You can run the XactCopy Disk Configurer and specify the previous system disk as the new DPSR disk, or you can remove the original system disk, rebuild it, and reinstall it in the server as the boot disk.

XactCopy in a RAID Environment

Setting up XactCopy in a RAID 5 environment might require some reconfiguration of your RAID array and server. DuoCor recommends that you place the system partition on a separate hard disk and back it up to an identical DPSR disk. This configuration avoids boot-order and drive-letter problems that can arise when the system and data partitions are on the same RAID volume. I set up a Dell PowerEdge 4300 server with a PowerEdge Expandable RAID Controller, Version 2 (PERC2) in the following manner: one 18GB disk (logical volume 0) as the system disk; one blank, unformatted 18GB disk (logical volume 2) as the DPSR disk; and the remaining six disks as a data volume (logical volume 3 configured as RAID 5). I configured XactCopy to back up the system volume to the DPSR disk and ran the full partition backup.

To test recovery, I shut down the server, removed the hot-plug system disk, and restarted the server. The *Backup drive restored—restart your system* message appeared, so I rebooted the system again. The system readily booted up to the DPSR disk.

Most administrators probably consider the system partition protection adequate in RAID 5 environments. In this case, you might want to create two large RAID 5 volumes and use Xact-

Copy to back up crucial areas of your data volume. The first volume can consist of your system and data partitions, and the second volume can be a large DPSR disk. (This functionality depends on your RAID controller. Some RAID controllers let you pick which logical volume your system boots to; others don't offer such a choice.) For example, you might create two logical four-disk RAID 5 volumes on a server that has eight hard disks. You could create the system and data partitions on one volume and use the other volume as your DPSR drive. You would lose more than half your disk capacity, but you would be able to instantly restore the OS and data if necessary. I didn't test this functionality.

A Strong Product

You should consider XactCopy for any crucial NT system in which downtime is unacceptable. DuoCor doesn't intend XactCopy to replace your current data backup solutions but to augment them with nearly instantaneous file and OS recoverability. The program restores files very quickly. As a disaster-recovery product, XactCopy seems to have no direct competitors. Considering the per-minute cost of downtime for most production servers, XactCopy seems to make good fiscal sense for many NT shops. ▲

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