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**WORKSTATIONS AND LAN BACKUPS MADE EASY WITH  
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# Farmland Industries Recovers Distributed Data

By Philip E. Courtney

enterprise has served to dramatically complicate the recovery process. In many companies, the number of procedures employed for backup and recovery are equal to the number of LANs and LAN administrators. Yet, despite the multitude of procedures, few companies can safely admit to employing comprehensive recovery capabilities.

Possessing an extensive network of mainframe-connected PCs and LANs using a combination of IBM's OS/2 LAN servers and Novell Netware, Farmland Industries maintains the comprehensive capability to recover application and corporate data stored on any PC and LAN server. Employing FDR/UPSTREAM (Innovation Data Processing, Little Falls, NJ), Farmland has dramatically simplified the backup process for distributed data by implementing automated, unattended and centralized recovery management. "FDR/UPSTREAM facilitates the backup and recovery of data stored on the LAN servers," says Dan Neisen, communications analyst programmer

**R**ecovery of distributed data is one of the most pressing concerns for contingency planners. While the stand-alone mainframe environment has long possessed mature tools designed to centralize backup and recovery of application data, the distribution of data on PCs and LANs scattered throughout the corporate computing

for the Kansas City, MO-based agricultural company. "The product tracks data set name, file and data block count as well as storage means. It also provides a secure method for managing the recovery of distributed data."

### Storage, Time Constraints Require New Solution

Prior to implementing centralized recovery management, Farmland was faced with the problem of increased data and limited storage capabilities for recovery. According to Neisen, the tape backup process formerly employed for capturing PC and LAN server data was cumbersome, ineffective and often unreliable. "Our previous tape backup method was unable to process in a timely fashion the large volume of data stored on our LANs," he explains. "In many cases, we were uncertain if the backup had occurred properly. It was a guessing game as to whether we could get files back."

During the past several years, many companies have taken advantage of declining PC hardware costs by installing machines with greater processing power and dramatically increased storage capacities. Compounding the data integrity challenge for recovery analysts was the expanding number of networks scattered throughout every corporate division, each containing many thousands of megabytes of data. Combined with improved communications and connectivity technology, an ever-increasing amount of vital corporate data was stored in a distributed environment sometimes rivaling - and often exceeding - the amount of data stored on the centralized mainframe.

While tape backup systems exist for individual PCs or LAN servers, these systems are often unable to appropriately syn-

chronize backups and recoveries across multiple PCs or LANs - an especially critical function when analysts strive to achieve a time-based recovery. Synchronized backups are equally critical in environments performing PC-based development for mainframe applications to ensure an accurate recovery. Furthermore, diskette backups of individual PC data are unreliable and manual, consistently requiring the user to insert new diskettes while also possessing an inherent security risk.

"The multitude of backup procedures presented a tremendous exposure risk," says Neisen. "We required a method to ensure the proper recovery of all data on PCs and LANs and combine those recovery steps with our existing mainframe recovery procedures. Centralizing management was a service we could provide to our corporate personnel."

### **Centralized Management**

The implementation of FDR/UPSTREAM helped Farmland centralize recovery management for PC- and LAN-based data. Farmland has implemented both MVS and distributed components linked via Advanced Program-to-Program Communications (APPC) LU6.2 to capture the data distributed

enable Farmland to adjust storage mechanisms based on application requirements. For example, while some distributed data can be placed into a dynamically allocated mainframe sequential file, other forms of on-line DASD storage include a single repository managed by FDR/UPSTREAM or multiple systems-managed storage-controlled files. At the discretion of each application or site, data in these files can be automatically "batched" and transferred to tape at a later date to either free DASD space or send information to an off-site storage location. Application-critical data can also be written directly to a dynamically allocated mainframe tape, which can be under the control of an existing mainframe tape management system. "Our tape management system controls the tapes once the data is transferred to the mainframe," says Neisen. Expiration dates for tapes are established via GDG cycles and are scratched by CA-TLMS (Computer Associates International, Islandia, NY) when cycling is complete.

Communication between the PC and mainframe components ensures that only the appropriate files are transmitted to the MVS component. The product also contains version control logic that maintains information regarding the status and location of all data. This logic pro-

The Farmland distributed recovery procedures include daily incremental backups and semiweekly merge backups. For the incremental backups, the data is stored for a single generation on DASD while older versions are copied to tape by CA-TLMS. "Sufficient overlap exists so we can rapidly recover and rebuild our files in the event of a disaster," says Neisen. This overlap also ensures corporate personnel can immediately retrieve and recover different versions of data from the preceding several days as input to other applications. Equally important is the ability to further mirror mainframe archiving capabilities where data remaining unused for a specified time period can be automatically copied to mainframe storage and removed from the PC or LAN.

### **Seamless Integration With Existing Environment**

According to Neisen, FDR/UPSTREAM has integrated with the company's existing environment, providing the ability for completely unattended and automated distributed data backups. Working in conjunction with existing tools, Farmland's backup procedures are initiated from the mainframe by the Job Trac (Legent Corp., Herndon, VA) job scheduling system. "All backups are host-initiated," explains Neisen. "Job Trac submits the appropriate jobs for FDR/UPSTREAM to process. We also have the capability to submit jobs from the server and operate in either attended or unattended mode."

By employing both the mainframe and server components of the product, Farmland has improved recovery capabilities by customizing the backup parameters to meet the needs of each individual application. While the mainframe component contains the control parameters indicating the Logical Unit (LU) names of the PCs to be processed, the server component contains the actual backup parameters — incremental, archive, merge, full volume — for individual and groups of files. "FDR/UPSTREAM from the PC determines what should be backed-up while the component on the mainframe determines how that information should be handled," says Neisen.

Employing an LU6.2 conversation, the jobs submitted by Job Trac communicate with the mainframe FDR/UPSTREAM started task. The started task, which

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across the entire corporate computing enterprise for storage on the mainframe. According to Neisen, data copied to the mainframe is compressed by the product for rapid transfer and simply incorporated into existing disaster recovery procedures. "The files are placed on either DASD or tape and managed just like a mainframe file," he explains. "The product supports a multitude of storage options."

These options, Neisen contends,

vides all corporate personnel with the ability to perform an authorized on-line inquiry of individual backup parameters and file-set specifications to retrieve such information as archive status, backup completion, Novell (Provo, UT) and BANYAN (Banyan Corp., Westborough, MA) data on any individual file or group of files. Additionally, file inquiries enable the display of all directory files including file name, size, backup date and so on.

communicates via APPC to the LAN components, operates as an "on-line initiator" and causes the actual backup process to begin at the server or workstation level. "The process is automated and unattended," says Neisen. "Accurate and secure backups can occur at any time of the day without requiring the presence of any personnel."

The files processed by the Farmland procedures represent a cross section of the files present in virtually every organization. From application development and end-user decision support databases to files created from a variety of application using IBM's OS/2, Microsoft Windows, WordPerfect and DrawPerfect (WordPerfect Corp., Orem UT),

Farmland has ensured the successful recovery of all corporate data. "It doesn't matter much what files the corporation employs in the distributed environment," says Neisen. "We can get them all."

### Recovering And Sharing Data

The procedures implemented by Farmland have simplified the recovery of distributed data. Using the inquiry capabilities contained within the product, corporate personnel can merely select the individual file or groups of files necessary for a restore. Furthermore, complete server restores are possible in the event of a major catastrophe. "The restores performed at our host site are typically

for lost or corrupted files," Neisen explains. The company also performs full volume restores for locally attached servers in the event of disk crashes. "We have also successfully performed full server restores while testing at our disaster recovery hot site," he says.

Neisen notes that another advantage of the restore capabilities contained within the product is that corporate business units possess the ability to share data even on independent LANs. With the restore function, corporate personnel now possess the ability to retrieve necessary information from the mainframe or server "warehouse." "The data is also much more secure," Neisen says. "Our mainframe security controls access to the files stored on tape or DASD, while LAN security provides the necessary mechanisms to manage access in the distributed environment."

Centralizing the management of distributed data recovery has eliminated many of the redundant tasks performed by Farmland LAN administrators. According to Neisen, FDR/UPSTREAM has simplified administrative tasks, enabling technical analysts to specify the necessary LU names and necessary backup criteria during product implementation. "Centralized administration assures us the backups are always performed," he says.

Most important, he says, is that Farmland now maintains the comprehensive capability of recovering all of the vital corporate data distributed throughout the entire enterprise. "With all PCs connected to the mainframe," says Neisen, "not a single machine can elude the backup process." ●



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