



## Overview

**Country or Region:** United States

**Industry:** Power generation

### Customer Profile

Southern Company, based in Atlanta, Georgia, is one of the largest electrical utilities in the United States. It has about 26,000 employees and had earnings in 2003 of U.S.\$1.47 billion.

### Business Situation

The power company wanted to replace hard-to-manage scripts, clumsy tape devices, and costly, specialized backup software for replicating data from branch offices to central data servers.

### Solution

The company plans to install Microsoft® Windows Server™ 2003 R2 on 170 servers across the company to take advantage of the operating system's state-of-the-art data-replication technology.

### Benefits

- No need for backup software or devices
- Easily managed central replication
- Easier-to-manage printers
- Automatic failover/failback

## Replication Technology Enables Smooth, Reliable Data Backup at Power Company

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Mark Canup, Systems Engineer, Southern Company

Southern Company, one of the largest producers of electricity in the United States, relies on tape-drive devices, batch-file backup scripts, and specialized software to back up vital data from its branch offices to central data servers. Each method has its limitations and added costs. Southern Company’s IT team discovered that Microsoft® Windows Server™ 2003 R2 could do everything their older replication technologies could do and more—at no additional cost. By replacing aging replication technologies with the advanced replication features and technologies built into Windows Server 2003 R2, the company can create a robust replication infrastructure that is simpler, more scalable, and better centrally managed. Using Windows Server 2003 R2, the company can reduce costs and administrative overhead while maintaining its level of service to branch office clients.

## Situation

Southern Company, a power company based in Atlanta, Georgia, supplies energy to a 120,000-square-mile service territory that spans most of Georgia and Alabama, southeastern Mississippi, and the Panhandle region of Florida. Like most power companies, Southern Company maintains a highly distributed IT infrastructure with more than 1,200 branch offices including retail storefronts, training facilities, equipment warehouses, and regional headquarters.

Employees at these locations create and store a variety of electronic files: e-mail messages, Microsoft® Office documents, computer-aided design (CAD) drawings, and more. However, safeguarding and backing up those files to centralized data centers is difficult. Because bandwidth between the branch and central offices is limited and Southern Company's wide area network (WAN) carries both data and voice communications, bandwidth management is a priority.

Until recently, Southern Company's branch offices used a number of unwieldy tools to replicate data. Many branch offices use tape devices to back up their file servers, but tape devices are expensive and unreliable. And because most of the branch offices do not have on-site IT administrators, the devices are also inconvenient for the non-IT personnel who must use and maintain them. Southern Company has also used about 150 batch-file backup processes based on Robocopy, a command-line software tool found in the Resource Kits of the Microsoft Windows Server™ 2003, Windows® 2000, and Windows NT® version 4.0 operating systems. Unfortunately, using Robocopy requires knowledge of sophisticated scripting techniques that are beyond the capabilities of non-IT personnel and cannot be centrally managed.

Because tape devices and Robocopy presented unsatisfactory replication solutions, Southern Company implemented two specialized software products to replicate data from 90 of their branch offices to central data servers. These specialized replication products saved Southern Company money and reduced complexity by enabling the company to eliminate tape devices at those 90 branch offices.

One limitation of the replication software was its reliance on machine names. Replacing server hardware caused name resolution problems. "If you switch out machines and don't remove the replication software first, it's a nightmare to fix," says Mark Canup, a Systems Engineer at Southern Company. Southern Company's IT team was also concerned about the growing cost of licensing the replication software. This cost was significant, considering the number of servers involved and the annual maintenance fees required for each. Southern Company also wanted to find a data replication tool that would be easier to manage from a central location.

## Solution

Late in 2003, the Southern Company IT team began upgrading many of its servers to Windows Server 2003, the operating system foundation of Microsoft Windows Server System™ integrated server software. In 2004, the company's IT team became aware of an upcoming release of Windows Server that would include a completely rewritten replication engine for the operating system's Distributed File System (DFS). The new DFS Replication engine is more scalable and efficient at file synchronization than its predecessor, the File Replication Services (FRS) found in Windows 2000 Server.

DFS Replication uses Remote Differential Compression (RDC), an advanced compression technology that optimizes data

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Julie Bishop, Print-Production Analyst,  
Southern Company

transfers over limited-bandwidth networks, such as most WANs. Instead of repeatedly transferring similar or redundant data, RDC accurately identifies just the “deltas” or changes—the insertions, removals, and rearrangements of data—within and across files and transmits only the deltas to save bandwidth while replicating the data. Using RDC, a title change in a 3-megabyte Microsoft Office PowerPoint® presentation, for example, takes less than a second to replicate over a WAN instead of one minute for the entire file—a bandwidth savings of more than 98 percent.

In December 2004, the company’s IT team installed a beta release of Windows Server 2003 R2—an updated release of Windows Server 2003—on test servers in Atlanta, Georgia, and Birmingham, Alabama. By April 2005, test servers in Savannah, Georgia; Pensacola, Florida; and Gulfport, Mississippi, had been added to the test environment. The team was still testing Windows Server 2003 R2 when a disaster reminded them of the importance of unassailable replication in their line of business: Hurricane Katrina struck the Mississippi Gulf Coast on the last Monday in August 2005, wiping out several of Southern Company’s remote offices. The team completed testing of Windows Server 2003 R2 with renewed zeal in late 2005. A rollout of Windows Server 2003 R2 to more than 170 servers companywide is planned for 2006.

### Benefits

Southern Company’s IT team is impressed with how efficiently and cost-effectively the replication technology in Windows Server 2003 R2 works. “We have requests for replication from all over the company,” Canup says. “We’d prefer to use features in the operating system at no incremental cost instead of buying other software or relying on our homegrown batch files.” Canup expects to save money by not having to acquire additional per-server licenses for specialized replication software. Using the Windows

Server 2003 R2 replication technology will enable Southern Company to better use its WAN infrastructure as well, thereby avoiding the expense of many of its planned WAN upgrades.

### Central Management

Windows Server 2003 R2 will help the IT team manage replication across the company. “DFS Replication will give us a much better handle on all the replication that goes on in the company,” Canup says. “Our developers and end users will benefit because we can set up replication jobs for them more quickly and troubleshoot them more easily than before. Compared to replication jobs using Robocopy alone, Windows Server 2003 R2 will also reduce WAN traffic, thanks to RDC.” In rare cases, such as where data must be replicated between different forests in the Active Directory® service (part of the Windows Server 2003 operating system), the company can’t use DFS Replication. Even in those cases, the Remote Differential Compression feature helps streamline the process. “We can’t use DFS Replication between our internal network and our main data center, which are in different forests,” he says. “But we should be able to use a new version of Robocopy with RDC, so we’ll get much faster backups even without DFS Replication.”

### The Big Picture in Printers

Julie Bishop, a Southern Company Print-Production Analyst, appreciates the new Print Management Console in Windows Server 2003 R2. The unified interface enables administrators to monitor many printers and print servers simultaneously and to perform detailed printer and print server tasks. For example, administrators can view the status of all printers in a network and set up filters to view only printers that meet certain conditions. If a printer or print server malfunctions, the Print Management Console can automatically notify administrators by e-mail. Bishop says, “The Print Management Console

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Mark Canup, Systems Engineer, Southern Company

lets us sort print jobs by status or number of jobs in a queue so we can see the big picture and identify printer issues before they become obstacles.”

#### **Failsafe Failover and Failback**

Southern Company’s IT team also appreciates the automatic failover/failback features in Windows Server 2003 R2. If a server in a branch office fails, Windows Server 2003 R2 can automatically point users upstream to another server in a data center. Then, when the branch office server is back online, the operating system will automatically point users back to it. “DFS Replication in Windows Server 2003 R2 is far superior to FRS,” Canup says. “Before, failover and failback were manual processes. We had to go through DFS and enumerate all the different DFS pointers to the old server and change them to the new server, and at the same time, we had to tell users to stop pointing to the old server. In some cases, it got too complicated, and we’d have to tell users to map a drive to another server. But with Windows Server 2003 R2, failover and failback are integrated in the operating system, and you can set them up to work automatically. That saves us time and energy, making for happier users.”

Southern Company is still rolling out Windows Server 2003 R2 but is very excited about its features for branch offices. “Windows Server 2003 R2 is a significant improvement in design,” Canup says. “Microsoft has done a great job in replication technologies. There’s a world of difference between FRS and the new DFS Replication. If you’re not doing replication today or you’re using Robocopy or some other mechanism, Windows Server 2003 R2 is an excellent approach to doing replication. It’s all built into the operating system and works wonderfully.”

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### Software and Services

- Microsoft Windows Server System
  - Microsoft Windows Server 2003 R2

### Hardware

- Dell servers and workstations

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