

# IBM Systems

M A G A Z I N E



**Sigma-Aldrich Wins Big With Backup and Restore Solution**

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**Sigma-Aldrich Says Backup & Restore is Running Smoothly After Migrating to UPSTREAM RESERVOIR... Like Magic**

## Power Couple

System i and System p tie the knot to become Power Systems

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# MAGIC

## After migrating to a Power Systems environment, Sigma-Aldrich finds a good backup and restore solution with UPSTREAM RESERVOIR

BY JIM UTSLER

Being my own IT specialist—a necessity, given that I work from home—one of my greatest worries is a hard drive failure. If it goes, so goes my years of data—poof, gone, like magic. Bad magic.

As a result, I've experimented with a number of different backup solutions, going back to dragging and dropping mission-critical data on—remember these?—floppy disks. Most recently, I had been using a shareware backup software to clone my internal disk to an external drive. Unfortunately, that software didn't have a scheduling option, so I was at the mercy of my own memory to do it.

Well, all of that changed when I upgraded to the latest version of my OS. Not only does this upgrade run faster than the previous one, but it also includes a built-in backup utility that, on first run, clones my hard drive and then incrementally—and transparently—backs everything up to my external drive periodically throughout the day. Now, if my primary drive fails, I can simply hit a restore button and—voilà!—I'm up and running again on a new drive—like magic. Good magic.

Of course, this technology isn't really new (except maybe on desktop machines), but some of the available tools on, say, AIX\* OS-based machines can be limited in function and difficult to

use. As a result, some organizations may have to hire a dedicated backup specialist to ensure that their data is safeguarded against any type of catastrophic failure. Additionally, if there's a failure, recovering from it may not be as easy as hitting a restore button.

But as Sigma-Aldrich recently discovered, backup and disaster-recovery tools are available that are easy to use and make restoring from failures a simple task. In the case of Sigma-Aldrich, that solution came from INNOVATION Data Processing and its selection of backup and recovery tools, including the company's UPSTREAM RESERVOIR product. Since deploying the INNOVATION tools, Sigma-Aldrich is now confident that it can be up and running again in the event of a failure in very little time—like magic (the good kind).

### Poor Substitutes

Based in St. Louis, Sigma-Aldrich is a leader in the life-sciences business, supplying biochemical and organic chemical products to researchers in genomic, biotechnology and pharmaceutical disciplines, as well as high-technology manufacturing. Its customers include universities, government institutions, hospitals and science-related industries. With 6,800 employees, it has a presence in 35 countries and manufactures its products both in the United States and in Europe.

Supporting its U.S. infrastructure are some 50 IBM\* System p\* servers, ranging from p5 505s to the latest and greatest high-end Power\* 570s, and more than 300 Intel technology-based servers. Its primary mission-critical ERP application is from SAP, and it also runs Lotus\* Domino\* and WebSphere\*. The System p servers are used primarily to host the company's large SAP installation. The company has an EMC Clarion CX700 ATA RAID 3 disk system with 40 TB of storage, an IBM System Storage\* 3584-L52 UltraScalable Tape Library and four IBM System Storage Ultrium\* LTO\*-3 tape drives with 200 slots for backup purposes.

# UP CLOSE

The company is currently in the process of consolidating some of those System p machines to the newer IBM Power System servers, which, according to John Hunter, senior systems programmer with Sigma-Aldrich, will allow “us to move 20 or so System p servers that have leases that are going to expire soon to maybe five of the new Power Systems.”

Given this high reliance on AIX OS-based machines, one might think the company had always operated in this environment. That isn't the case, however. In fact, Sigma-Aldrich's U.S. operation had once been an IBM mainframe shop, using System z\* servers as its primary computing platform. But when it began a transition to SAP some 10 years ago, it decided to move to AIX as its preferred OS platform.

Eventually, the only applications still running on the mainframe were for enterprise printing and enterprise-wide backups. The mainframe ran INNOVATION's FDR/UPSTREAM and FDRSOS products to backup distributed data to the mainframe. The distributed environment includes AIX and Windows\* servers as well as the company's DB2\* and Oracle databases. “As a rule, we do full monthly backups on a rotating basis and daily incrementals,” Hunter says. Of course, this sparse use of the mainframe hardly justified its continued use and maintenance.

The printing could easily be deployed to another server base, but the backup solutions from INNOVATION, with which the company had become very familiar, were another story. In fact, the company began looking for an alternative to UPSTREAM to run on AIX. After looking at some possible options, including a Windows technology-based version of the UPSTREAM product, it found most of them lacking in some ways mainly because Sigma-Aldrich didn't want to run mission-critical applications on Windows—and they were poor substitutes for the mainframe-based INNOVATION solutions it had used for so many years.



**CUSTOMER:** Sigma-Aldrich

**HEADQUARTERS:** St. Louis

**BUSINESS:** Life-sciences and high-technology company

**HARDWARE:** 50 IBM System p servers, an IBM System Storage 3584-L52 UltraScalable Tape Library and four IBM System Storage Ultrium LTO-3 tape drives

**SOFTWARE:** SAP, Lotus Domino, WebSphere and INNOVATION Data Processing's UPSTREAM RESERVOIR

**CHALLENGE:** Finding a replacement backup and restore software solution after migrating from a mainframe environment to an AIX OS-based environment

**SOLUTION:** Moving to INNOVATION's AIX backup and restore software

## Not a Big Deal

As Sigma-Aldrich continued its migration to the System p platform, INNOVATION was fortuitously in the process of porting its UPSTREAM products to the AIX OS. For Sigma-Aldrich, this was a blessing—and a no-brainer. Because the ported UPSTREAM backup software was so similar to the mainframe version, the company decided to become a beta site—and in fact, the first beta site—for the AIX version of UPSTREAM.

Thankfully, the platform switch was relatively painless, with INNOVATION's mainframe-based solutions becoming UPSTREAM RESERVOIR on the System p platform. Despite this name change, the products work similarly. As with INNOVATION's FDR/UPSTREAM mainframe products, UPSTREAM RESERVOIR acts as a central backup-and-restore solution for distributed-computing environments.

In the case of Sigma-Aldrich's U.S. operations (the company isn't using UPSTREAM RESERVOIR in Europe), this means the company can back up all of its servers, including, according to Hunter, “approximately 200 Windows servers, our AIX servers, and our DB2 and Oracle databases,” from a central location, with the data being backed up using UPSTREAM RESERVOIR, which runs on a dedicated System p platform, to disk and, again using utilities included in UPSTREAM RESERVOIR, then offloaded to tape. (The company also follows this regimen in some of its offsite locations, using, in some cases, single tape drives and small tape libraries, “depending,” Hunter says, “on the size of the site and how many servers they have.”)

Significantly, the INNOVATION's FDR/UPSTREAM mainframe-based backup and disaster-recovery solutions and UPSTREAM RESERVOIR, which Sigma-Aldrich began using as beta software in August 2005, share a very common user interface called the Director. For Sigma-Aldrich, this meant a very small learning curve when it began using the AIX OS-based

UPSTREAM RESERVOIR. Two things Hunter had to relearn were scheduling and tape management, which were third-party add-ons on the mainframe but come included with UPSTREAM RESERVOIR. "Once I got those down, though, it wasn't a big deal," Hunter says.

On the software side, the only component that needed to be changed was the backup-server portion of the client/server-based UPSTREAM RESERVOIR. The client-side components on the many servers in the Sigma-Aldrich IT environment remained as they were when the company was using the INNOVATION products on the mainframe. "During the transition, all I had to do was change the client to point to RESERVOIR instead of UPSTREAM," Hunter recalls.

Using the Dispatcher scheduling component that is integrated into the Director interface, Hunter, who schedules, maintains and monitors the system on a part-time basis, can manage the types of backups and backup schedules remotely. In addition, he can conduct restores remotely from St. Louis, even though many of his remote sites have at least one technical person on site who is taught how to conduct restores if needed. Typically, however, those people simply have to swap tapes out. "And at one site," Hunter adds, "I have a guard who does it."

If a file does have to be restored ("which happens every day," according to Hunter), the company's PC managers can do it themselves, without the intervention of Hunter, who manages company-wide backups and large restores. Similarly, the company's database administrators can use the management tools built into their databases, including DB2 and Oracle, for restores, with those front-end tools handing the request off to the UPSTREAM RESERVOIR back end to complete the task. "They like that, because they can use the tools they're familiar with to control their databases," Hunter notes. "They could care less what's happening behind the scenes on the back end."

### An Uncommon Occurrence

One of the most important aspects of UPSTREAM RESERVOIR in the case of Sigma-Aldrich is that the solution can read even FDR/UPSTREAM mainframe-based backup tapes. Although the company infrequently has use for these older data sets, it can bring them up if necessary.

This—along with a common interface and generous licensing—was an additional tipping point for Sigma-Aldrich when it was looking for an AIX OS-based backup and restore solution. "That was huge for us," Hunter remarks. "We didn't want to have to somehow re-create that data if we needed it and we didn't want to keep a mainframe around just to read those old backup tapes."

UPSTREAM RESERVOIR also uses online hot database agents for DB2, Oracle and Lotus Notes\* that allow Hunter to keep the company's databases up and running while they're being backed up. (The Lotus Notes agent provides backup of mailboxes, but

like most backup-and-recovery solutions, it doesn't provide e-mail archiving.) The solution also includes a de-duplication utility that allows users to back up only files that have changed instead of entire file sets on a file server. This helps companies such as Sigma-Aldrich reduce backup times. Hunter also uses UPSTREAM RESERVOIR's SAN EXPRESS feature, which enables him to send backup data across a storage-area network (SAN) so he's not impacting the performance of his production network and can begin backups earlier in the day than he would have been otherwise.

If a system needs to be restored, it can be done in several different ways, depending on the OS. In the case of a Linux\* server, for example, the server administrator would boot up from the Linux installation media CD and then run and use UPSTREAM RESCUER. For Windows, UPSTREAM supports Windows Automated System Recovery or an administrator can reinstall the OS and restore the server's system state. In the case of AIX, according to Hunter, "We would rebuild the server from a mksysb and then lay down all of the data."

### Small and Large

As with the built-in backup system in my OS, UPSTREAM RESERVOIR makes it easy for AIX users to manage and monitor backups and restores. And it does so in ways that make it nearly impossible for a company to lose its data, from the scheduling, tape-management, incremental-backup and restore tools that are built into the software—like a beefed-up version of the software I use.

Of course, I'm just a small guy with a small operation (a few computers and few external hard drives), but the larger lesson is there for any size organization: back up and back up often. Fortunately, UPSTREAM RESERVOIR has quickly become a streamlined alternative for AIX users who would like to follow that dictum. As Hunter puts it, "The INNOVATION product is flexible, does its own tape management and it's good for small locations and scales up very well for larger locations." 



**Jim Utsler**, IBM Systems Magazine senior writer, has been covering technology for more than a decade. Jim can be reached at [jutsler@msptechmedia.com](mailto:jutsler@msptechmedia.com).

