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“It was a nice surprise to discover that all these features were included in the original base price of UPSTREAM Reservoir…”
Before looking at UPSTREAM Reservoir, Drenthe College was using numerous backup solutions to secure approximately 20 separate servers, some running Novell NetWare, others running application or database servers under Microsoft Windows 2000/2003. There was no real control over the backup processes and this was leading to a duplication of effort and skills.

“We decided to implement a single backup solution,” explains Geert Zwiers, Drenthe College’s I.T. Manager. “We were looking for something that would be easy to install and set up, and which also had a proven record of backing up Novell NetWare…”

Drenthe College was initially informed about UPSTREAM Reservoir by OVEC, an I.T. Consultancy company, which had already tested the product at its own data centre. This testing included a special focus on Novell Cluster support. Drenthe College took advantage of Innovation’s free no-obligation trial policy and installed UPSTREAM Reservoir to take a closer look at it.

“The trial went really well,” recalls Patrick Lubbers, a Systems Engineer at Drenthe College. “We didn’t have any problems getting it installed and running. The technical support provided by Innovation was first class. Due to other ongoing projects, we weren’t always able to dedicate all our time to the trial, but the tech guys at Innovation were always there and available whenever we needed them.”

“We didn’t have any problems getting it installed and running. The technical support provided by Innovation was first class…”

Almost two months on from that original trial, Drenthe College is now backing up its entire “Admin” LAN with UPSTREAM Reservoir, which holds approx. 1.5TB of data storage, spread across 25 servers. It’s predominantly a NetWare environment, but there are also some Windows and Linux systems in there too.

“We’re running daily incremental backups to disk,” Patrick explains. “Then, at the weekends, we use the full merge process to combine the incrementals with the previous week’s full backup to create a new full backup. This new backup is initially created on disk (there are no operators available at the weekend to handle tapes), but the backup is later moved off to tape. The full merge process takes only marginally longer than the daily incrementals, so we can easily get all of our backups completed within the window available to us.”

Geert is very happy with the progress of the UPSTREAM Reservoir implementation and he is keen to take it to the next stage. “Our next priority is to implement the GroupWise plug-in to allow us to do hot backups via the GroupWise Target Service Agent. We’ve also got some servers running Oracle/SQL and we’ll be looking to use the appropriate UPSTREAM Reservoir database agents to take hot backups of that data too.”

“Our next priority is to implement the GroupWise plug-in to allow us to do hot backups via the GroupWise Target Service Agent…”

The next phase of implementation will also see UPSTREAM Reservoir being used to secure Drenthe College’s “Educational” LAN, which has less servers than the “Admin” LAN, but a lot more storage.

“The implementation of UPSTREAM Reservoir has been a real success,” concludes Patrick.
Het Stedelijk Lyceum was in a very similar position to Drenthe College (see other case study). It too had a decentralised backup strategy and it also utilised a range of backup solutions to secure approximately 10 separate servers.

“We realised that we needed a single backup solution,” admits Din Zwan, Manager of the ICT Department. “As well as supporting Novell NetWare, that solution would also need to cater for other platforms such as Windows and Linux. We are also heavy users of SQL here, so we needed something that would provide support for that as well.”

Din was impressed when he discovered that this “shopping list” of requirements was not only satisfied by UPSTREAM Reservoir, but that all of the required features, including the SQL agent, were included in the base price of the product.

“From our experiences with other products and other vendors,” Din explains, “we had assumed that the multi-platform support and the various backup agents would come at an additional cost. It was a nice surprise to learn that all these features were included in the original base price,” he admits.

“It was a nice surprise to learn that all these features were included in the original base price...”

Tjeerd Kootstra and Alex Reiber are two of the team responsible for backup strategy. “We’re currently using UPSTREAM Reservoir to back up approximately 10 Novell NetWare servers,” Tjeerd explains.

Since the initial implementation two additional servers have been added and Tjeerd was impressed by how easy it was to include those servers into the existing backup processes.

“Something else we discovered at that time,” he adds, “was the way in which Innovation operates as a vendor.” UPSTREAM Reservoir pricing is TB-based and Het Stedelijk Lyceum hit the limit of what it had originally been licensed for.

“In that situation, a lot of software vendors might have asked us for the additional money first and then supplied us with the authorisation code.”

“In that situation, a lot of software vendors might have asked us for the additional money first and then supplied us with the authorisation code to accommodate the extra storage. Innovation immediately gave us the code and then sorted out the licensing issue afterwards...”

That episode also demonstrated to Din just how easy it was going to be to scale-up the use of UPSTREAM Reservoir. “That’s important to us,” he explains.

The business activities of Het Stedelijk Lyceum over the next year or so could lead to an increase in the amount of data that it has to backup. It might also involve the inclusion of more non-NetWare servers, such as Windows and Linux.

“With UPSTREAM Reservoir implemented,” concludes Din, “we know that we’ve already got a solution in place that can cope with the increased data, as well as the diverse server platforms that we may have to look after in the future...”
UPSTREAM Reservoir

UPSTREAM Reservoir is a powerful, reliable and high-performance backup and recovery tool for Open Systems data. It can be hosted on a choice of server platforms, including Windows, AIX, Sun Solaris or Linux (or a z/OS Mainframe as FDR/UPSTREAM).

Client systems that can be backed up by UPSTREAM Reservoir include:

- Novell NetWare
- x86, pSeries and zSeries Linux
- Microsoft Windows
- IBM AIX RS/6000
- HP-UX, Compaq Tru64 UNIX
- Sun Solaris, Sun x86
- VMware

Novell NetWare

UPSTREAM Reservoir fully supports backup and recovery of servers running NetWare versions 3.x, 4.x, 5.x, and 6.x. This support includes:

- Incremental and Full-Merge backup
- NetWare file and directory characteristics
- NetWare Directory Services
- Trustee rights
- Directory restrictions
- Clusters
- Unattended login
- SMS and GroupWise
- OES Linux Support

NetWare Case Studies

Novell NetWare is particularly popular within educational establishments. Here are two case studies from separate colleges in the Netherlands, both of which are using UPSTREAM Reservoir to secure the data on their Novell NetWare servers.
UPSTREAM Reservoir’s support for the Novell NetWare environment is extensive and includes the following:

**Novell SMS**
UPSTREAM Reservoir is Novell SMS capable and carries the NetWare certified label.

**NDS**
UPSTREAM Reservoir includes comprehensive support for the backup and restore of NetWare Directory Services, using Novell SMS.

**GroupWise**
UPSTREAM Reservoir includes an agent for performing non-disruptive database backups of Novell GroupWise 6 and above. The agent provides a reliable backup of an active GroupWise system by successfully backing up open and locked files. The easy-to-use agent backs up standard GroupWise directories and files. This support allows restores of the entire GroupWise system, or any component down to just a single user mailbox!

**Novell Cluster support**
UPSTREAM Reservoir is “cluster aware” supporting Novell Cluster Services automatic failover for the multi-node cluster environment and provides restart ability for failed backups/restore. Support for NSS volumes and open files guarantees that open files are backed up even if in use.

**Salvage**
Many Novell NetWare users use the “Salvage” feature as a basic means of restoring deleted files. UPSTREAM Reservoir, on the other hand, can protect all of your Novell NetWare data against accidental erasure or corruption. It is also an ideal tool to help meet the legal requirement for taking long-term backups and protecting against disasters.
UPSTREAM and Linux

Some Novell users are now opting to install SUSE Linux, either as a replacement for their NetWare servers, or as a complement to them.

UPSTREAM Reservoir supports SUSE Linux, and most of the other implementations of Linux currently available.

UPSTREAM Reservoir provides extensive support for Linux, including:
- Hard links
- Symbolic links
- Owners
- ACL’s
- Incremental Backup
- Extensive File System Support

And There’s More…

This document has focused on UPSTREAM Reservoir’s support for Novell NetWare, but here is a full list of the supported client operating systems:
- Novell NetWare
- Linux for pSeries and zSeries
- Microsoft Windows
- IBM AIX RS/6000
- HP-UX, Compaq Tru64 UNIX
- Sun Solaris, Sun x86
- VMware
- x86 Linux

Call us now to request your free copy of the Concepts & Facilities Guide.