

# Double Negative Case Study

Sun and Ovation help to create some unforgettable movie moments.



*“As far as I’m concerned, Sun’s SAM-FS is the backbone of the company.”*  
– Peter Hanson, Studio Manager, Double Negative

## The Customer

Double Negative is one of the UK’s leading visual effects (VFX) production specialists. Formed in 1998, the company’s numerous film credits include *Bridget Jones’s Diary*, *Captain Corelli’s Mandolin*, the James Bond epic *Die Another Day*, and Anthony Minghella’s forthcoming *Cold Mountain*.

## Let there be snow!

Even the most determined film director can’t control the weather. So if the script calls for a snow storm in London in the middle of Summer, there’s only one solution: visual effects (VFX).

For companies like Double Negative, no visual effect is too difficult to achieve. Given sufficient time, disk space and processing power, the company’s skilled operators can make aircraft appear to disintegrate dramatically in mid-air, stage underwater battles between simulated submarines, or simulate vast flocks of identical three-dimensional animated creatures.

“Sometimes the effects are more subtle,” admitted Double Negative’s Studio Manager Peter Hanson. “Maybe a director wants to make some cosmetic changes to an actor’s appearance, or add graininess to the film to give it an old-fashioned look and feel. Whatever the job, we just take the film negatives, manipulate the images, and return the finished product to the owner.”

## Terabytes of data

The biggest technical problem that Double Negative faces is managing the vast amount of data generated by visual effects. “Movie film is a more complex medium than many people think,” explains Hanson. “An ordinary frame contains about 12 MB of information, and there are 24 frames per second. But for full-scale computerised simulation, we can be talking about many gigabytes per frame. What’s more, this data can’t be compressed, as that would impact the film quality. When you consider that we frequently work on five feature film projects at one time, with tens of operators each working on different pieces of film, you can see that megabytes of storage quickly turn into terabytes.”

## Key highlights

### Company:

Double Negative

### Industry:

Film Industry Special Effects

### Customer Environment:

Sun Server E450 running Solaris 2.6 (to be upgraded shortly)

Disk Cache (500 GB)

Sony B35 Library with 2 x DTF2 drives

Sun Utilisation Suite with SAM-FS

Workstations platforms served:

SGI (Origins), Linux, NT, Macs

### Business Challenges:

- Build a robust storage system to allow production teams to create, share, and update very large files
- Provide ease of use, fast retrieval of files, and scope for rapid growth of archive
- Support heterogeneous workstation environment

### Business Solutions:

- Highly scalable archiving system, based on leading-edge Sun Solaris server technology and Sony high-speed tape library
- Advanced data archival software, offering user-friendly index and search features, high-performance storage and retrieval facilities, and support for rapid file copy
- Flexible, open architecture with support for mixed environments

### Business Benefits:

- Improved productivity for production teams
- Ease of data management, file sharing and back-up
- Low cost of ownership

From day one, Double Negative knew that they needed a sophisticated archival system to help manage their data. "It's not just a case of backing up the files," said Peter Hanson. "Our whole operation depends on simple, fast access to archived film. Despite the sheer amount of film involved, the production teams need to be able to put their hand on the precise item that they need, when they need it. That requires a very disciplined approach to storage administration."

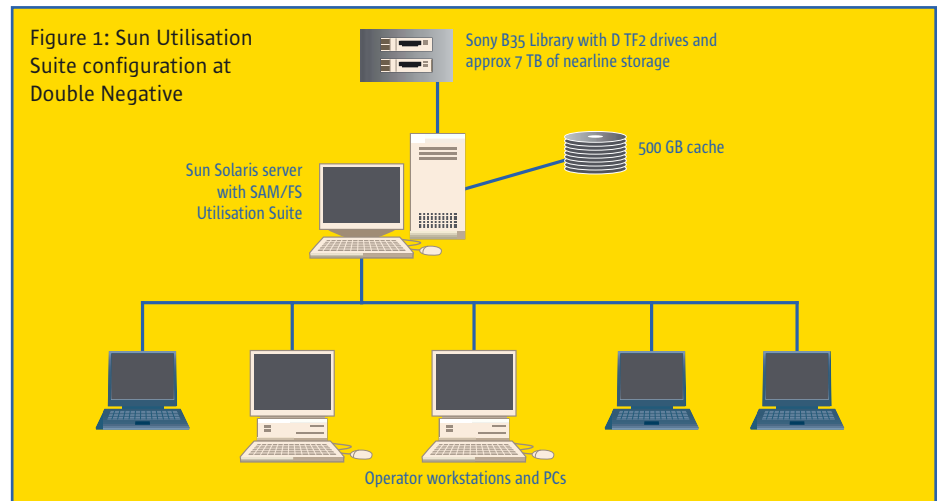
### Calling in the experts

Double Negative called in Ovation Data Services, a leading data management specialist and storage solutions supplier, which recommended the SAM-FS archival system from Sun.

Sun's archiving solution is one of Sun's Data Management infrastructure solutions. These solutions are designed to reduce the cost of IT, simplify its management, and improve service levels.

With Ovation's assistance, Hanson's team used the SAM Metafiling System to archive its data. SAM-FS archives all data in iNode files, each of which contains 512K of metadata. This allowed Double Negative to make sure that each section of film could be identified very precisely, with information included to link it with other files belonging to the same project.

The great thing about SAM-FS is that it gives us the freedom to let operators manage their own disk space," said Hanson. "We just have to teach them to follow a formal naming convention for the files they create, and SAM-FS does the rest."



At the centre of Double Negative's archival system today stands the SAM-FS storage server, based on Sun Solaris, which has SCSI connections to 500GB of online disk cache and to around 7TB of nearline storage in a Sony B35 Tape Library, now equipped with DTF2 drives. When a production team operator needs a film file that is held on-line, he can just mount the cache and pull down the required document immediately. If the file resides in the company's Tape Library, he requests it via e-mail from the storage administrator.

Once a document is ready for returning to the archive, it is marked with the appropriate naming identity information, then moved into a staging area on the workstation desktop, ready to be swept back into cache. When the file moves back, SAM-FS uses customer-set criteria (based on content, creation date, access frequency etc) to decide whether to keep it on-line or transfer it to nearline or off-line storage.

One of the reasons why Double Negative moved to Sony high-speed DTF2 drives for its Tape Library was that they offered dramatic performance improvements, allowing data to be retrieved at 24MB/sec – an essential requirement when operators need to retrieve multiple gigabytes at one time. The tape system also includes special chip technology for accelerating the file search process. Speed is everything for Double Negative, because of the enormous files involved. The company is now considering moving to Sun's Performance Suite with SAM-QFS (Quick File System), which separates the data itself from the metadata identifiers, making searches even faster. Furthermore, one of the great features of the Utilisation Suite is that it can be configured to create up to four copies of data simultaneously when the files hit the cache - and that means that a separate back-up process is unnecessary.

"We have been working with Ovation and Sun Utilisation Suite for six years now," said Hanson, "and we couldn't do without it now. It's one of the company's most important assets."

Sun Microsystems, Inc. 901 San Antonio Road, Palo Alto, CA 94303-4900 USA Phone 800 786-7638 or +1 512 434-1577 Web sun.com



**Sun Worldwide Sales Offices:** Africa (North, West and Central) +33-13-067-4680, Argentina +5411-4317-5600, Australia +61-2-9844-5000, Austria +43-1-60563-0, Belgium +32-2-704-8000, Brazil +55-11-5187-2100, Canada +905-477-6745, Chile +56-2-3724500, Colombia +571-629-2323, Commonwealth of Independent States +7-502-935-8411, Czech Republic +420-2-3300-9311, Denmark +45 4556 5000, Egypt +202-570-9442, Estonia +372-6-308-900, Finland +358-9-525-561, France +33-134-03-00-00, Germany +49-89-46008-0, Greece +30-1-618-8111, Hungary +36-1-489-8900, Iceland +354-563-3010, India-Bangalore +91-80-2298989/2295454; New Delhi +91-11-6106000; Mumbai +91-22-697-8111, Ireland +353-1-8055-666, Israel +972-9-9710500, Italy +39-02-6415111, Japan +81-3-5717-5000, Kazakhstan +7-3272-466774, Korea +82-2193-5114, Latvia +371-750-3700, Lithuania +370-729-8468, Luxembourg +352-49 11 33 1, Malaysia +603-21161888, Mexico +52-5-258-6100, The Netherlands +00-31-33-45-15-000, New Zealand-Auckland +64-9-976-6800, Wellington +64-4-462-0780, Norway +47 23 36 96 00, People's Republic of China-Beijing +86-10-6803-5588; Chengdu +86-28-619-9333; Guangzhou +86-20-8755-5900; Shanghai +86-21-6466-1228; Hong Kong +852-2202-6688, Poland +48-22-8747800, Portugal +351-21-4134000, Russia +7-502-935-8411, Singapore +65-6438-1888, Slovak Republic +421-2-4342-94-85, South Africa +27 11 256-6300, Spain +34-91-596-9900, Sweden +46-8-631-10-00, Switzerland-German 41-1-908-90-00; French 41-22-999-0444, Taiwan +886-2-8732-9933, Thailand +662-344-6888, Turkey +90-212-335-22-00, United Arab Emirates +9714-3366333, United Kingdom +44-1-276-20444, United States +1-800-555-95UN or +1-650-960-1300, Venezuela +58-2-905-3800

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