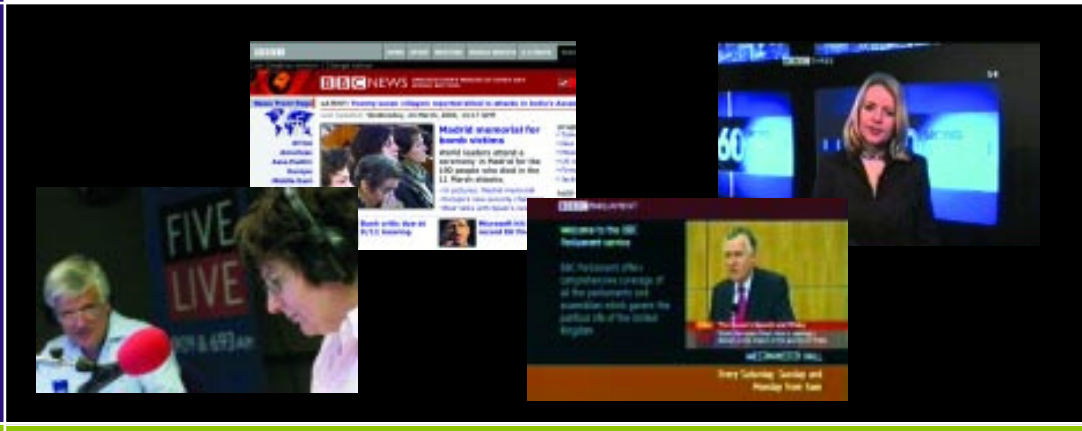
Success Story

BBC Broadcast's Broadcast Centre



SGI® InfiniteStorage NAS 3000 and CXFS™ Helps BBC Broadcast Make Convergence

"We have built the Broadcast Centre to be one of the most technologically advanced in Europe."

– Chris Howe, Chief Technology Officer, BBC Broadcast

"Convergence" is a common buzz-word in the world of electronic media.

Broadcasting, IT, the Internet, and telephony are just four of the areas which are said to be converging, and where core technologies and the ways they are used are merging.

But Chris Howe, Chief Technology Officer at BBC Broadcast's Broadcast Centre, says that "convergence" is not quite the right word to describe the process that the broadcast industry is going through. He prefers "compression", since it more accurately conveys what really happens when technologies merge:

- Pressure is applied from outside sources
- It usually meets resistance
- There is frequently a degree of discomfort or even pain for those involved

And he should know, since he has been a driving force behind one of the biggest and most "convergent" media technology projects in recent times: the building of the Broadcast Centre in West London.

This is a project in which technology from SGI plays a vital role.

The BBC is one of the world's largest broadcasters, and it is also one of the most diverse, with a huge range of output covering television, radio, online and print. BBC Broadcast is a commercial subsidiary of the BBC, offering the complete range of services required to launch, promote, playout and provide access to broadcast content on any media platform.

"We have built the Broadcast Centre to be one of the most technologically advanced in Europe," said Howe.

Located on the Media Village site at White City, the Broadcast Centre is a place for superlatives:

- Its 270,000 square foot building is the biggest facility of its kind in the UK
- It is the largest channel creation and management business in the UK, employing over 1000 people and with an annual turnover of £100 million
- It currently delivers 51 public service and commercial TV channels. It also manages bbc.co.uk, the most-visited website in Europe

Important though it is, playout is only a part of the Broadcast Centre's business. It is also a large-scale production centre, providing a wide range of creative and access services to its customers.

Creative services include everything from branding, to promotions, to commercial production, to broadcast, and interactive design. The creative services team has the BBC as one of its clients, but also other companies: other broadcasters, independent productions such as Endemol, even commercial companies like Ikea and McDonalds.

Access services supplied by BBC Broadcast include subtitling and signing for the deaf and hard of hearing, and audio description for the blind and visually impaired. BBC Broadcast creates subtitles for over 80% of all BBC One and BBC Two output (it will be 100% by 2008), and for tens of thousands of hours of other material broadcast on channels such as News24, BBC Three, BBC Four, CBBC, and CBeebies.

Designing a technology infrastructure to support all of these activities, and to underpin BBC Broadcast's diverse set of business and operations requirements, was a major undertaking in itself.

"By employing the SGI technology infrastructure we are able to use the 'ingest once, use many' principle for all our future production and playout with great savings in physical media handling, ingest, outgest, conversion time and delivery to end user," said Ian Wimsett, Technology Manager, BBC Broadcast.

Chris Howe and his colleagues had a vision: it was of business transformation supported by the right technology. Specifically, they wanted an integrated environment built around open standards, within which data and media components might be created and configured differently, but delivered in a converged way. And the environment had to be flexible enough to continue servicing a diverse set of business requirements, both current and future, whatever they might be.

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One of the most important elements of the vision had as much to do with people as with technology itself. The infrastructure had to empower a new and collaborative way of working, based on the digitization of content at the earliest possible stage in its lifecycle. The need was to allow shared access at all times to anyone who needed it, for whatever purpose: production, editing, compliance, quality control, playout or storage in both short and long term.

So the BBC Broadcast infrastructure had to link together and allow interoperability between systems and processes for scheduling and campaign management, ingest, production, playout, transcoding, quality control, compliance, and, of course, storage and archiving.

SGI's contribution to the Broadcast Centre involves the Central Storage System: the repository which takes in, houses and makes available to all processes the media and data which make up the essential "currency" of the BBC Broadcast environment. It is fair to say that the CSS "touches" the vast majority of media and data handled by BBC Broadcast. It may not be all that visible to the average user, but if the whole operation is a media factory, then the CSS is its power-plant.

The CSS had to meet an exacting set of requirements all of its own. It had to include:

- On-line storage
- Near-line archive
- HSM (hierarchical storage management).
- Integration of these elements with:
- Ingest and playout systems provided by Omnibus and Omneon
- Production systems from Quantel and AMS
- Compatibility with media management Systems

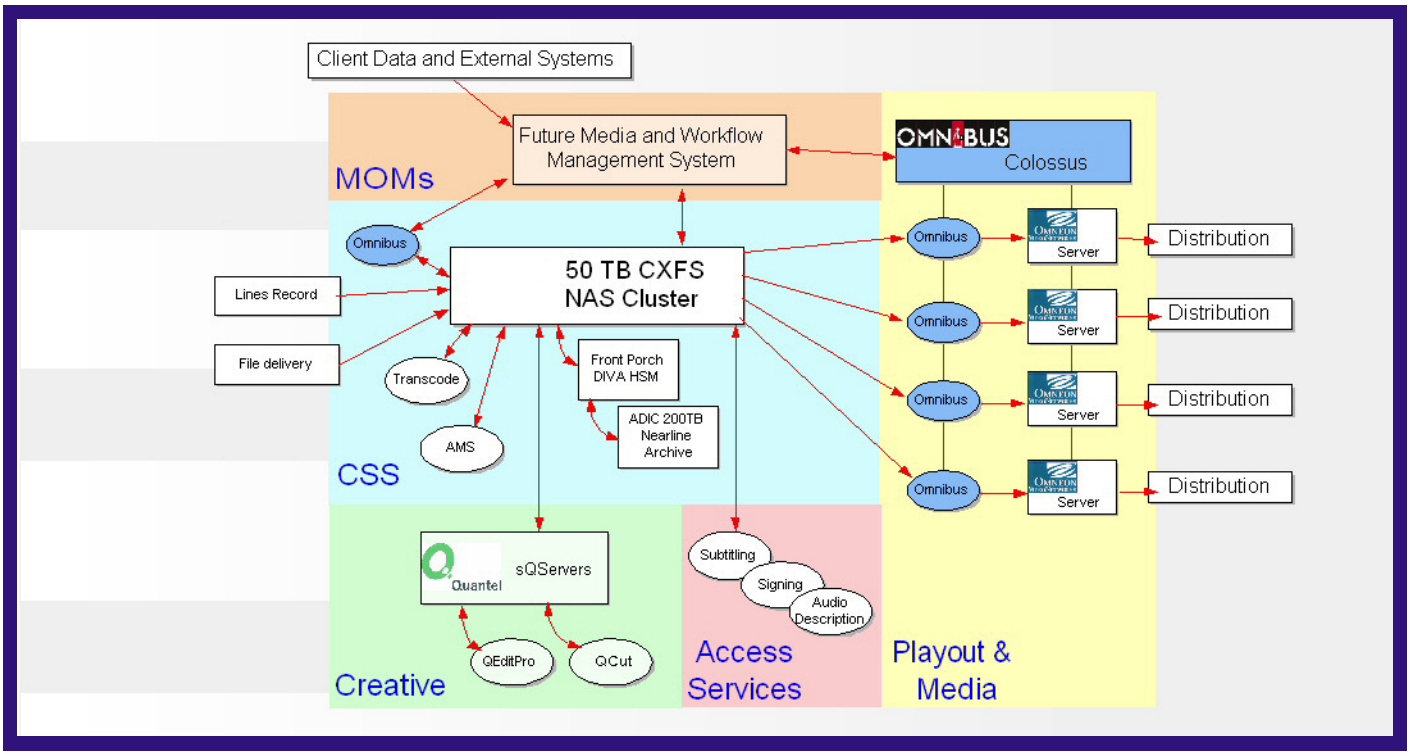
In terms of performance, BBC Broadcast specified that the CSS should be capable of supporting over 250 concurrent read and write streams at a range of bandwidths from 1.5 to 400MBit/s. Initial storage capacity was set at 50TBytes online, and 200TBytes nearline. But upwards scalability is a basic requirement: the system must grow to at least 200TBytes for the online storage and 1PByte for the nearline archive.

Other key requirements for the CSS were:

- Use of generic, non-proprietary, commodity hardware
- A rugged operating system
- Support for a range of network file protocols
- Better than 99.9% availability
- No single points of failure
- Every component hot-swappable

All of these requirements were met by SGI, who built a CSS solution around the SGI InfiniteStorage NAS 3000 architecture and the CXFS™ Shared Filesystem. This modular design had three major components: a fibre channel fabric, a storage subsystem and multiple fileservers. The fibre channel fabric provides multiple paths between the disk subsystems and the fileservers, which are configured in a redundant Failsafe® cluster of 4 NAS heads.

This configuration was exhaustively researched as part of the selection process, and had to meet all of BBC Broadcast's requirements for performance, flexibility and security. It is capable of expansion well beyond even BBC Broadcast's foreseeable needs: the CXFS file system can scale up to hold 18 million terabytes of digital media. That's equivalent to almost two and a half thousand years of broadcast material at 50Mbit/s resolution.



SGI partnered with a number of other manufacturers to deliver the nearline archive part of the CSS, notably Front Porch Digital, who provided their DIVA HSM software to manage a 200TByte robotic tape archive systems from ADIC. SGI also worked extensively with the other manufacturers whose products were part of the integrated environment.

Although selecting SGI for the CSS was a technology-based decision, other criteria were just as important. Chris Howe says that BBC Broadcast had to be satisfied that SGI was the right kind of partner for the project as a whole.

Fundamental IT capabilities were obviously important, since the system is the core of the entire business workflow and simply has to work, come what may. So in addition to purely technical performance, SGI had to satisfy them that their software was mature, robust and open; that it was well supported; and future-proofed to the greatest extent possible. SGI had to show that it could perform as a supplier in a way which would promote a high standard of service and minimize risk for the customer.

A solid track record in broadcasting was also a major factor. In many aspects, SGI straddles two worlds: it offers world-class IT capabilities and services and also has a long-standing reputation in the highly creative areas of broadcast and post-production.

SGI's experiences and achievements with such customers as Swedish Television, Denmark Radio and Georgia Public Broadcasting were crucial. In particular DR where SGI has been working since 1999 on a business transformation project with similar strategic goals to those of BBC Broadcast: a file-based operation with shared production facilities, central media management, and multi-channel playout. DR provided an operational reference site where BBC Broadcast could see ideas being put into practice.

Although larger than most, BBC Broadcast is similar to all media enterprises in that it must implement new ways of working imposed by an entirely new set of demands and challenges: more channels, more formats, new delivery opportunities, all coupled with the need to increase productivity, lower overall technology costs, and monetize assets efficiently.

sgi

Corporate Office
1500 Crittenden Lane
Mountain View, CA 94043
(650) 960-1980
www.sgi.com

North America +1 800.800.7441
Latin America +55 11.5509.1455
Europe +44 118.925.7500
Japan +81 3.5488.1811
Asia Pacific +1 650.933.3000

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