dB Broadcast provides state-of-the-art production and transmission facility for UK based broadcaster

Background

A not-for-profit registered charity - set up to entertain and inform people outside the UK to enjoy multi-channel television - shows selected programmes from UK TV and a network of radio stations. It broadcasts around the clock to its audience, which is spread geographically throughout the world.

The TV channels are available via DTH satellite and local DTT or cable distribution, and online. In addition, content is compiled for offline and file-based delivery including DVDs/VOD used in locations such as submarines.

The relatively small number of viewers, perhaps no more than 25000, belies the importance of this service that broadcasts to 23 countries from The Falklands to Afghanistan. It represents a link with life in the UK. Delivered quality is important, and the audience expects the same level of professional presentation as they are accustomed to. Increasingly, they expect to be able to view programmes on their choice of platform, for example mobile digital devices.

In 2013, a core requirement was the replacement of an existing tape and file-based infrastructure, which was around eight years old and no longer a suitable environment in which the channel offering could evolve in both linear and non-linear domains. After a multi-way invitation to tender, several systems integrators (SIs) made a day-long pitch for this significant project. dB was selected to take responsibility for the fixed price work. Its brief: to completely re-design and upgrade the TV facilities, overhaul the playout operation, including equipment and operational areas.

dB Broadcast approach

dB Broadcast has long experience and ability in broadcast engineering, and more recently has a proven track record in providing IP based systems based on best-of-breed software products from a number of suppliers. For this work, dB was tasked with delivering an economically priced, highly automated TV services platform, including a complete overhaul of the playout operation, equipment and operational areas. Achieving this goal to a high standard required working with best of breed suppliers in each area of the workflow, from ingest to playout. While this co-ordination role is standard practice for system integrators, the project held some unusual challenges, and some of the vendors had not worked together previously.

The scope of the project was particularly complex as far as software was concerned. The client provides a unique service, repackaging and re-purposing existing material. It runs a rich mix of

specially curated and compiled channels, some hybrid channels and prime TV channels rebroadcast from BBC, ITV and Sky, sometimes with delays to match local time-zones and watershed rules. Typically, 24 hours' worth of content is set up in advance. The dB designed system had to incorporate these unusual and complex workflows.

A dB team was assembled, led by dB Engineering Director Graham Pearl and dB Head of Solutions Mike Bryan, who managed client liaison and the major third party vendors. Kevin Scott as Lead Engineer and Dan Brennan were responsible for detailed test scripts and commissioning of the system. The customer personnel all have their own day to day responsibilities, and assigned time to the testing of the system as and when necessary. A very good relationship with the client was necessary to ensure the specification was clear and could be met efficiently.

While hardware and connectivity standards exist and can be specified readily, no such standards yet exist for software. Also, software is much more flexible and the user options more extensive. During this project, dB needed to manage four suppliers to write custom code to meet the customer's unique requirements, and to interface successfully to other vendors for an efficient operational workflow. The scope of software functions is more difficult to document as operators may have their own procedures, and differing expectations of how the system will respond. To overcome this, dB created a series of customised solutions, each of which was tested and client feedback obtained. This attention to detail on software operation extended the timescale of the project somewhat, but resulted in a very high quality final result. dB was keen that only good practice should be built in to the new system operation and so less desirable legacy procedures were removed.

The transition from a manual, paper-based system to a new digital workflow was huge for the operational staff, and dB needed to work closely with them as well as the engineering team. As already noted, the clients requirements are unique and this close relationship meant that dB were able to manage suitable changes to vendor software to meet their needs.

Services completed and products supplied

A controlled build and migration process was deployed from the current on-air facility and production processes to a highly automated, digital workflow operation. A total of fifteen bays of equipment were installed in less than three weeks, but the software installation, configuration and testing took several months before undertaking migration from the old to new system. Three control desks were installed, each capable of carrying out all tasks on the station. The result is a complete turnkey system, spanning both traditional broadcast technologies and network infrastructure.

Key deliverables of the system included:

- Scheduling and traffic
- Ingest (via line sources and off-air satellite DTH) and QC
- Playout
- Global workflow
- Media asset management (MAM)
- Direct to Home (DTH) reception equipment (Sky, Freesat etc.)
- Master Control Room (MCR)
- Post-production
- Multi-platform 'publishing' ready for VOD and DVD processing
- Archiving
- Supervision and monitoring
- Content delivery ready for distribution.

System integration from studio through to transmission

The customer was already using a traffic system from Provys, and continuing with this was preferred as it had evolved over a long period to accommodate the requirements for rights management, scheduling across from around 35 UK TV channels, complex reporting to UK Government and so on. Although this system was already in place, the requirement to provide uninterrupted uptime meant that a second instance of the scheduling system had to be provided on a second server, and the whole project occasionally required dB personnel cover around the clock. This required custom software from the vendor, managed by dB Broadcast.

A mass ingest solution from Arbor Media was selected by dB Broadcast. As a lot of material is archived on tape, this needed to be re-ingested onto the new system. This system was chosen to undertake three main tasks: the capture of transport streams from DVB TV and encoder sources, capture of feeds from multiple IP stream encoders and DVB-IP gateways, and finally the users can playback the buffered transport streams, edit and export the raw content.

S_A_M (Snell) was selected to provide ICE Channel-in-a-box systems with Morpheus automation to handle playout. This comprised four ICE and two ICE LE systems providing redundant playout for all 15 TV channels. Both SD and HD playout are supported for future development. Other features include native graphics including DVE squeezes, subtitles, while an Advanced Graphics option supports both 2D and 3D graphics.

A Media Asset Management Curator system from IPV managed the workflows and media and was fully integrated with the SAM and Provys equipment. Curator is a complete end to end media PAM solution, and enables the efficient production of the media library and metadata.

Control and Monitoring was implemented with a combination of Axon Cerebrum and Nagios XI units, providing a comprehensive supervision operation.

Other hardware supplied included S_A_M Sirius 830 router, CISCO hardware with NetApp storage for LAN, Ericsson Television Integrated Receiver Devices (IRDs) and decoders, Grass Valley Multiviewer, Ideas Unlimited compliance recording and Trilogy intercom.
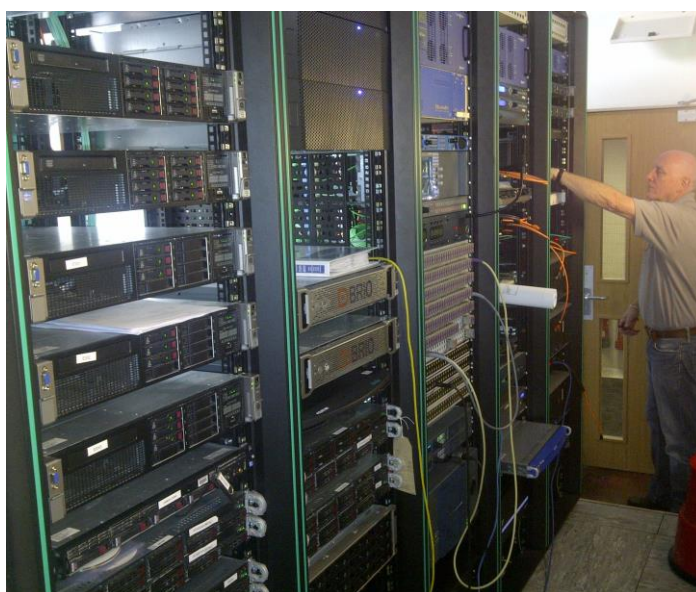
System integration from studio through to transmission

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Outcomes

dB was confident that its planning and systems would result in a successful 'go live'. In fact, it was so confident that the system was set to go live in December 2015, ahead of the Xmas schedule!

The new facility has been equipped with highly flexible and workflow efficient solutions capable of handling current and foreseeable future TV broadcast requirements. While SD is still the standard for import and transmission, a built-in HD core allows for a later move to HD.

"The new automated system provides greater flexibility and efficiency to run the complex broadcasting network and unusual workflows," said Tom Swan Sales and Marketing Director at dB Broadcast. "I am excited by the new possibilities offered by ICE and Morpheus to enhance their channels."

"Completion of the facility represents one of the first significant 'new generation' projects in the broadcast industry", says Graham Pearl, Engineering Director.

dB Broadcast was able to deploy its considerable Project Management and Engineering experience in Workflow, MAM and Scheduling and Traffic systems, and a firm focus on the use of these systems to provide highly automated workflows. This eliminated repetitive tasks, minimised manual processing of media and optimised both equipment deployment and operator duties. Importantly, dB was able to live up to client's expectations of automation and provide a cost effective, space-efficient solution with future proofed features.

April 2016

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