



Split Remote -
heralding dramatic
cost savings in
event coverage

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Introduction

As downward pressure on budgets continues, one of the quandaries faced by many broadcasters is how to effectively cover large events to the high standards that have come to be expected by viewers. Competition has continually raised the bar - soccer matches, for instance, routinely deploy 20+ cameras compared with the handful of just over a decade ago - and for broadcasters that means shipping increasing numbers of equipment and people round the world to generate an increasing amount of in-depth coverage at ever-increasing cost.

This is where Split Remote comes in. The concept of Split Remote was inspired by the highly creative engineers at CBC/Radio Canada, who were looking for a cost-effective solution for their coverage of the 2004 Olympic Games in Athens. Even rudimentary calculations suggest that if a company can avoid sending a mere twenty staff to a two-week long event, the savings can easily run into the hundreds of thousands of euros.

Concept

Split Remote is made possible by the unique combination of features offered by Quantel's generationQ product range, and in particular the sQServer. Alongside its scalable architecture and support for all common compression and file exchange formats, it has four essential qualities that place it apart from any of its peers in the market today:

- Combined broadcast-quality and browse encoding

- Simultaneous video and file-based connectivity

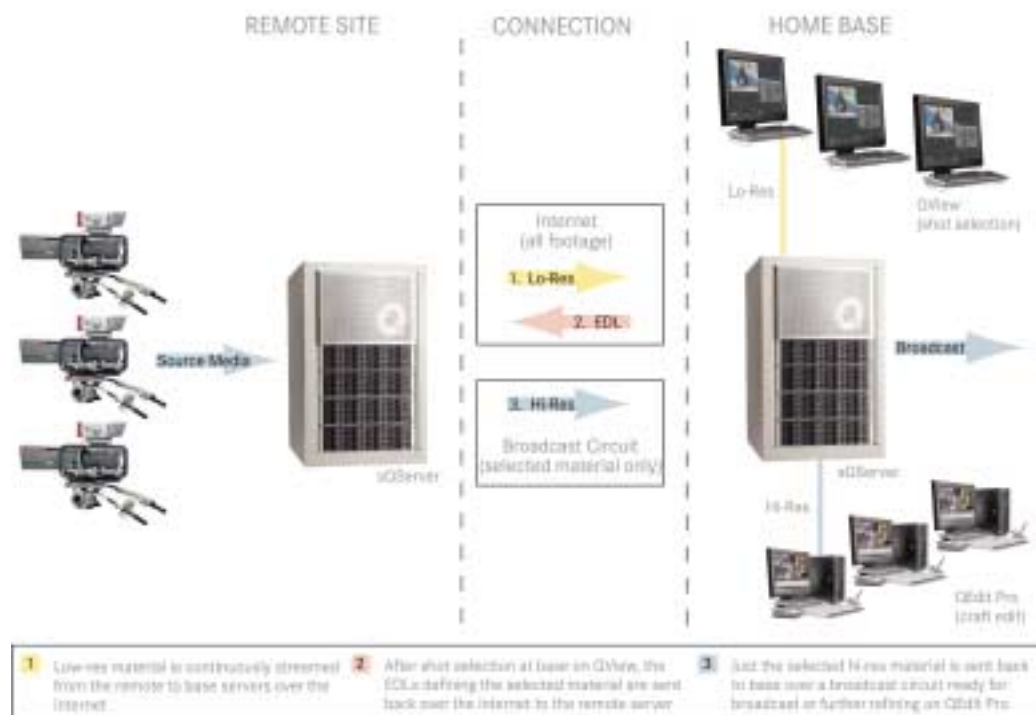
- 'Frame Magic'

- Single system-wide database

Following on from these attributes, the actual idea of Split Remote is simple. Take two sQServers and place them in different buildings. The first is your main production centre, the second is a remote location where a major event is to take place. This can be in another part of the same city or on the other side of the world; the distance is irrelevant. The two servers are joined by a high-speed data connection, provided by a telecoms operator. sQServer's single, system-wide database, called ISA (Integrated Server Architecture), means that these two servers then behave as if they were one.

With a single, 'virtual' server split across two locations it's possible for people to work on media recorded at a remote event as if they were there. The sQServer enables this to happen using only modest data bandwidth between the two sites.

The diagram and accompanying bullet points explain the Split Remote workflow. The diagram in particular shows how the elements fit together and hints at the potential for cost savings. The production workstations are in the home base - so those people don't need to travel. The equipment deployed at the event needs to be little more than the server itself, some basic media management tools and the network connections (not counting all the cameras of course).



Split Remote: Functional configuration

Split Remote workflow

Cameras and VTRs are routed via connections into the remote sQServer

These feeds are simultaneously encoded as broadcast-quality (hi-res) and browse (lo-res) clips

The browse copies are streamed across the data connection to the home server

Producers, journalists and editors, using QView, can watch all the feeds just a few seconds after the action has happened. Selected shots from these feeds are saved as subclips.

Information about these subclips is immediately published back to the remote server as an EDL.

The remote server then conforms a broadcast copy from the EDL and sends the hi-res, broadcast quality shots back to the home server

The broadcast-quality clips are then ready for immediate playout or for building into edits, using QCut or QEdit Pro workstations.

Proof of concept

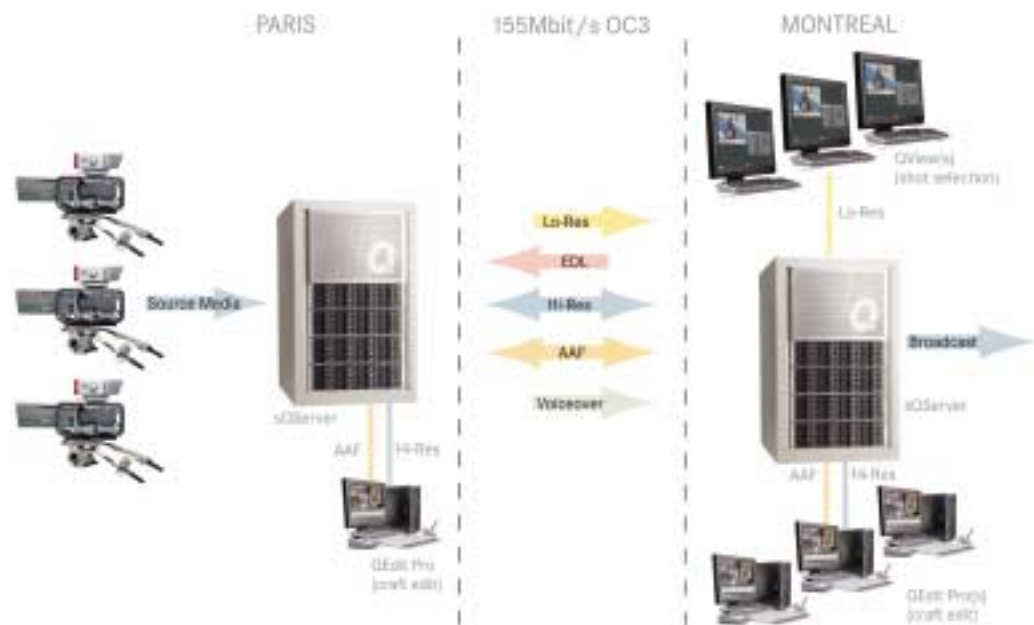
After the engineers at CBC contacted Quantel to discuss the viability of their idea, early calculations showed that the theory was sound and suggested that a fairly modest 155 Mbit/sec OC3 connection could provide the backbone for a moderately complex remote event. In late 2002, CBC and Quantel agreed on the World Athletics championships, to be held in Paris in August 2003, as a suitable event for testing the technology.

In the intervening months many laboratory trials were conducted using simulated long-distance fibre-optic cables - to prove that the theory would stand up to the real-life problems of long propagation delays, interference and occasional disruptions to the circuit.

CBC's operational team also began real-life evaluation of Quantel's QEdit Pro craft workstation. It was deployed at the IAAF World Indoor Athletics Championships in Birmingham in March 2003. Editors, producers and presenters were delighted with the interface and, inspired by the tests and the Birmingham evaluation, CBC decided to proceed with a full trial at the Paris games. The Split Remote system would form the principal production platform for coverage of this significant sporting event.

The basic configuration was enhanced with some editing capability at the Paris site. This was to provide some security against total loss of the transatlantic data connection and also to allow the on-screen presenters to add voice-overs to the edited reports. This production finesse was itself made possible by some sQServer features: AAF support and Frame Magic.

The final Paris configuration was as shown below.



Split Remote: World Athletics Championships

This workflow builds on the basic scheme as follows:

An AAF file representing the full, edited report is published from Montreal back to Paris

The Paris QEdit Pro is able to conform the AAF file very quickly because all the media forming the edit already exists on the local server. The only exception is any new frames rendered in Montreal - like dissolves, wipes or video effects. Just these frames are drawn back to Paris.

The local presenter is able to record a voiceover against the timeline

A new AAF file, including the voiceover itself, is published back to Montreal

This complete, finished story can be conformed, drawing only the voiceover- as a .wav file across the link

The story is ready for broadcast or further reworking if required

The business case

Split Remote enables large numbers of personnel to remain at their home base. This is the primary source of savings. Figures vary from country to country and even from season to season, but just by way of an illustration, let us assume that using the technology a broadcaster can refrain from sending twenty people to a two-week long remote event on another continent.

These figures are per person and, to be frank, are probably an underestimate

Travel expenses (airfares, taxis etc)		\$1000
Hotel accommodation	\$150 per night	\$2100
Expenses and incidentals	\$100 per day	\$1400
Employee replacement costs at base	\$250 per day	\$3500
Total		\$8000
Total for 20 employees:		\$160,000

There are other savings that need to be added in too, notably shipping and kit costs. Even that though isn't the end of the story as smaller teams mean less on-site production space is required and thus lower rental costs are incurred which, at venues like the Olympics, can be significant sums of money.

All of which means that Split Remote has the potential to amortise its capital costs extremely quickly indeed.

It's also worth pointing out here that by no means is the technology's application limited to sports events. Any large events that would necessitate a considerable OB presence can potentially save money using Split Remote, be they elections, concerts and festivals, extended news events or otherwise. Equally, it's not just temporary set-ups that need to be considered, as the system is perfect for city-to-city links and almost tailor-made for disaster recovery.

Unique Quantel technology

One thing that ought to be emphasised at this stage: you can't put this system together using any old server technology. It really is the combined effect of the sQServer's many and unique features that makes Split Remote work. Take any one of them away and the benefits are lost. A brief overview:

The sQServer combines both broadcast and browse encoders inside the same server, and managing these with the single ISA database eliminates any possibility for errors. Shot selections made on low-resolution QView are guaranteed to be frame-accurately replicated in broadcast media.

sQServer can ingest media over video connections and simultaneously transfer the stored frames over standard IT topologies. Equally, it can receive media via IT connections and make frames of video available to production workstations as soon as they have landed on the storage disks.

The ISA database is based on the standard MySQL application and can be distributed across any number of server mainframes and across wide area networks. In the Split Remote example, local copies of the database can be maintained at each end. In the event of loss of transmission between the sites, both halves can operate independently and will re-synchronise when the connection is restored.

Frame Magic™ - Quantel's unique frame-based internal media management strategy means that master recordings can be deleted, to create recording space, without any risk to edited clips.

Frame Magic, and its derivative technology, Delta Editing™, mean that Quantel edits are only ever pointers to original recorded frames plus any new frames created in the workstation - for example, transitions, colour corrections, composites etc. This maximises the use of storage for original recordings and eliminates the need for copying and consolidation of media.

Quantel's support of AAF, coupled with Frame Magic and Delta Editing, allows complete timelines and complex processing history to pass through the data connection with minimal use of bandwidth. A cuts-only edit sent from Montreal to Paris could be conformed instantly, with no media passing across the link. The ISA database recognises the existence of the same frames at each end.

This is a future-proof technology with Split Remote High Definition a very real possibility if the market demands it.

Lastly QView, QCut and QEdit Pro share a common user interface. Journalists, producers, editors and managers can be trained together, can work together and support each other.

Conclusion

The reaction to Split Remote when it was announced at IBC in Amsterdam was extremely enthusiastic. This, many have recognised, is a technology that appeals to both the engineering side of a broadcast organisation and - not uniquely but rarely enough to be noteworthy - to the accounting side of it too. It is a powerful way of saving money whilst giving viewers the breadth and depth of coverage they've come to expect at the quality they demand.