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Practical Advice on Data/Voice/Video from Telecommunications Management Consultants Inc.

Winter Olympics—Torch Relay Telecommunications

By Peter Aggus

This is so groundbreaking that it just couldn't be done in 2009! The torch relay telecommunications is leading edge stuff—the technology is so seamless that it's invisible to most people. Let's remove the invisibility cloak and look at the technology elements that could have a profound effect on broadband mobile communications in the future.

The Challenge

The torch relay is a complex enough logistical exercise without adding live TV coverage—yet that is exactly what the Olympic Broadcaster CTV decided to do. Of course we have had TV coverage of the torch at earlier Olympics but it was always focused on an event—not the entire route. CTV`s problem was telecommunications—specifically the need to get a signal from a mobile camera back to the TV production studio for broadcast.

How It Used To Be Done

We've seen clever mobile cameras mounted on Formula One race cars that put you right in the driver's seat. However that technology required at least one, sometimes two aerial relay platforms with line-of-sight microwave links. Most often helicopters are used, though occasionally lighter-than-air airships (like the well known Goodyear blimp) do the job. The cost of this every day throughout the Torch Relay was out of the question. We've also seen satellite relay trucks for TV Outside Broadcast Units—but the dishes used are too large for use on the move.

New Ways to Deliver Live Feeds

Over the last few decades, we've seen on-the-spot news switch from film to video and with it bring an increase in live inserts of news material. These inserts sometimes use satellite but the cost makes such use infrequent.

One of the CTV affiliate stations, CP24 in Toronto, started to experiment last year with digital compression and low cost links like cellular or public Wi-Fi. Initially, the news video segment was sent offline as a file over a public data network, then broadcast from the studio.

Last year the CP24 system reached the point where it could often grab enough bandwidth from the new high-speed cellular networks to go live in real-time.

The new system even allowed the news crew to shoot and transmit real-time while on the move.

This was exactly what CTV needed for their Torch Relay project.

Torch Relay Web Cam

The heart of the system is little more than a basic web camera, though the system can connect with full broadcast quality cameras.

The camera faces backwards towards the runner when the torch is being paraded and forwards, as in the shot on this page, when the flame is being driven. This shot shows that the system is well able to handle video while moving at speed.

It also sends GPS data, which the receiving end uses to provide positional data on Google Maps.

Radio Link

The innovative radio link system for the Torch Relay project is provided by a company called Dejero Labs of Waterloo, Ontario. It uses multiple back-haul links over cellular or Wi-Fi networks as available and splits up the data to be sent in a way that allows the original data stream to be sent over multiple links to get higher bandwidth. The original data packets are reconstituted at the receiving terminal in the order they were given to the sending terminal even if they take different routes.

What's particularly interesting about this concept is the way that the link system automatically uses whatever capacity it can find and the application is unaware of how it does that.

Other Applications

As CTV note in the sidebar comment below, this will impact news gathering in the future. However we see many uses beyond this field. The Dejero Labs system used in the Torch Relay project is designed for video collection. The principle used is much more general.

The first key point to notice is that the data link side of the project is unconnected with the application side. That is like taking the phone and the phone line as two separate components (which you can do with Voice Over IP technology as we see in our MPLS article elsewhere in this issue). However think outside the box a bit and consider having a Local Area Network in your mobile office. To that LAN you can connect anything that you would normally hook up to the LAN—computer, VoIP phone, GPS unit etc. Then connect the LAN back to base via the magic box. How? Who cares how it works as long as it does work—and that is really the point.

IT folk can set up VLAN partitions for separate applications but one physical LAN bridge is all that you need—and there is no need to buy the links part from the same vendor as the application (think about that—you like a PDA that Rogers sells but you prefer the network that Bell provide...)

The Power of Diversity

The second key point about this radio system is that it uses links from multiple sources to provide aggregated bandwidth. The trick also provides some degree of diversity because the loss of one carrier link will not isolate the application.

The Future

We like this project not only for what it is but for what it shows can now be done. There are many applications, particularly in small and medium sized businesses and for small branch offices, that cannot afford high-end link technology. This is particularly true when one link is required for phones and another for data—and so on.

Now we can see that radio links are rapidly following in the footsteps of landline MPLS systems and are being separated from the application layer. This means that many applications that could not justify radio links on their own can now share the technology.

The door is also open to field links for low budget projects that cannot afford satellite systems.

The implications of all this are staggering. We'll definitely return to the topic in a future issue.

CTV.ca Executive Producer Mark Sikstrom, who helped get the project off the ground, says, "There is something compelling about the Torch Cam video. It's a vicarious way to experience the relay and you can't help but get caught up in the enthusiasm that the Torch inspires along the route."

But the technology also has implications for news gathering beyond the Olympics.

"It has opened a world of new possibilities. I can see this technology being used on election tour buses, on helicopters, on the scene of major breaking news from almost anywhere in the country. It's a breakthrough," says Sikstrom.

Quotation from CTV web site

http://www.ctvolympics.ca/torch/news/newsid=20008.html

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