AVC-Group Jumps on the PungaNet
New Zealand Broadcaster Replaces Outdated System Using Telos iPort

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AUCKLAND, NEW ZEALAND — AVC-Group operates a large, national, audio contribution/distribution network for 23 radio stations in New Zealand, called “PungaNet.” This service allows the 23 indigenous Maori radio stations to share and distribute content in real time. It’s very different from your standard one-way distribution network.

Four years ago each station used an ISDN codec connecting over 128 kbps, x.25 synchronous circuits to a native MPEG router of our own design. Then Telecom NZ announced the end of x.25 circuits, and a fortuitous chat with Steve Church of Telos Systems saw the genesis of the Telos Zephyr iPort MPEG Gateway.

GENESIS

The Zephyr iPort is a 2RU box with eight IP codecs inside. Studio-side audio I/O is via Axia’s Livewire IP audio. For convenience, there are two RJ-45 Ethernet connections on the rear, one for Livewire and the other for the Wide-Area Network (WAN) connection for the encoded audio streams. Each internal IP codec can be configured separately at different bitrates, sample rates, even different algorithms including AAC, HE-AAC, AAC-LD, MP3, apt-X, MPEG Layer II and uncompressed PCM. Each can provide point-to-point or point-to-multipoint (using multicast) studio connections, act as an STL link or provide an encoder for in-house audio distribution and Internet streaming.

In New Zealand’s PungaNet, iPort codecs have replaced the old, single-channel ISDN codecs. WAN IP circuits of 2 Mbps have replaced the 128 kbps x.25 links. And where before there was one feed per station, now there are eight bidirectional stereo codecs that can operate simultaneously. PungaNet’s 23 iPorts have been operating continuously for just over two years and haven’t missed a beat.

Conveniently, all stations had previously upgraded to Axia studio systems, so adding an iPort to each station’s Axia network was simple. We plugged each iPort to the Axia Livewire network using a Cat-5e Ethernet cable, then plugged each iPort’s WAN connection into a Cisco router.

The iPort also offers mixing capabilities through the built-in V-mixer and V-mode functions. Familiar to Axia Livewire users, these are virtual mixing and audio mode configuration tools. Eight of each are inside the iPort with each V-mixer capable of controlling levels and mixing five inputs to a single stereo output, or provide five independent gain controls.

For Axia users, control of levels and channel on/off is provided remotely following an Element mixing control surface. This allows talent in a booth miles from the studio to bear a clean feed in their headphones, as if they were connected directly to the console.

V-mode provides manipulation of audio channels including down-mix, up-mix left to right, right-left to left, surround to left and right, and other combinations. If you want to create a talkback source that would go only to the left channel of the host’s headphones, V-mode will do it.

Any of the sources in an Axia studio, or the iPort’s own sources such as the decoder outputs, V-mix and V-mode outputs, can be routed to any encoder input or any V-mixer input. This creates a fully controllable and functional audio router.

The Zephyr iPort is straightforward (continued on page 21)
that we establish an IP address and answer a few questions about the con-
nexion requirements. Of course it was a big help that we had plenty of Cisco
experience, as setting up a router can be
trying if you haven’t done it before.

RELIABLE
We tested the entire arrangement on
the workbench thoroughly, sending
audio out one channel and looping it
back through the other channel with
no issues. After a few days of trouble-
free operation, and given that our other
choices were less desirable, we issued a
PO to purchase the demo units Tieline
had sent us.

We have now been using the Bridge-
IT on our T1 STL line for about half
a year with no significant issues. They
simply work all the time.

When our T1 line goes down we are
able to log in to either of the Bridge-
IT units as well as our routers and see
what is happening. We have our own
error statistics, and we are no longer at
the mercy of Verizon. We can tell them
what kind of error we are experiencing
and what end of the line it is on; we can
tell when it has been fixed.

This is radio in the computer age,
using readily available computer hard-
ware and techniques to achieve the same
goal, and doing so easier and better.

A word of caution about quality of
service: If you are also using your T1
line for data, you will need to handle
QoS priorities in the router configura-
tion. This means being sure that the
Bridge-IT always has priority and that
the UDP packets are never delayed.

We found this out the hard way when
we went to transfer a few big files
through the line and it really garbled our
audio. We were aware of this ahead of
time but never got around to doing what
was required to assure that the Bridge-IT
always got what it needed for our uncom-
pressed stream. Our older legacy system
handled this in the hardware, so you
could be assured your audio was unin-
interrupted, and data transfers were only
accomplished with the little bit of extra
bandwidth. Using standard routers and
any type of audio to network converter
box is going to require you to consider
QoS when you set up your system.

In conclusion, we couldn’t be hap-
pier. We have the real-time statistics and
access that we need in a reliable device
that gets the job done. Did I mention the
price is real reasonable?

For information, contact Mary Ann
Seidler at Tieline in Indiana at (317)
845-8000 or visit www.tieline.com.

PUNGANET
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to install. It’s configured primarily
by its Web interface. Set an IP
address on the front panel, then
connect with your browser from
anywhere on your LAN. Once set
up, you can remotely back up and
restore configurations via the Web
interface. The iPort will write its
entire setup into one file; restoring an
iPort from a backup to a config-
ured and working state takes less
than a minute, including reboot time.

The iPort is designed to be con-
ected over a managed IP network
that provides Quality of Service
(QoS) protocol. It’s not intended
for use over the public Internet;
the Telos Z/IP codec is the tool for
that job.

Multicast protocol can provide
distribution of a single audio source
to multiple receiving codecs. Be

careful here because MPLS (a QoS
implementation) does not support
dynamic multicast routing using
IGMP (Internet Group Management
Protocol). It is technically possible
but expensive for the telco, so usual-
ly only static multicast is supported.

At a cost of around $650 per
codec I believe the Telos iPort is an
amazingly good buy. If you already
have Axia studios, choosing the
iPort is obvious. If you don’t there is
still a good option: a single Axia
node (analog or AES/EBU) con-
nected directly to the Livewire port
will provide an interface for typical
broadcast I/O.

For information, contact Telos
in Ohio at (216) 241-7225 or visit

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