

South West Alliance of Rural Hospitals reduces communications costs and improves patient care with IP Telephony



Background

The South Western Alliance of Rural Hospitals (SWARH) was established in September 1997. It is comprised of 11 Public Hospitals in rural and regional Victoria, Australia and was formed as a result of the Victorian State Government's I2T2 cost-saving strategy. Under this initiative, the Department of Human Services grouped hospitals into health regions in order to realise greater economies of scale in their IT infrastructure deployment and maintenance costs.

Garry Druitt, Chief Information Officer (CIO) at SWARH was appointed in 1998 to lead and coordinate the development and implementation of the I2T2 Strategy by SWARH and to provide a single point of accountability for strategy implementation and a focus for skills development and change management.

Challenge

The most pressing challenge facing Druitt was to review each hospital's network and determine how best to link the hospitals together in one integrated network that would offer the best Return On Investment (ROI). He was looking for both economies of scale and the potential for leveraging future services that might benefit patients and staff.

Druitt worked with a hierarchical structure of committees and subcommittees to formulate a strategic plan, starting with the Wide Area Network (WAN) that would link all of the hospitals. At that time AAPT had a contract with the Victorian Government to deliver ISDN-based data WANs, but Druitt and his colleagues were attracted by the greater long-term potential of a broadband converged voice, video and data network, so they asked a number of organisations to submit bids.

"The microwave based broadband WAN and Cisco Systems converged voice, video and data network solution came in at 50% the price of the nearest competitor, which actually caused a bit of a price shakedown in the industry," comments Druitt. Although it was a departure from the government policy of the day, Druitt was able to convince authorities that a converged network was a smarter long-term investment for the hospital and he was given the go ahead for AAPT to install the proposed network.

Solution

By June 2000 the 4 Megabit microwave network was rolled out in a star configuration between 33 sites and the main Warrnambool and District Base Hospital, which had a 4 Megabit link to the metropolitan city of Melbourne. In addition to this, each hospital's infrastructure was upgraded using Cisco's Architecture for Voice, Video and Integrated Data (AVVID).

During the rollout period in 1999, Druitt also carried out a pilot test using Cisco IP Telephony handsets.

"We were one of the first hospitals in the world to do so," he comments, "and so John Chambers, the CEO of Cisco Systems worldwide, took a close interest in us as a test site. In fact, when we did encounter a hiccup, he personally e-mailed me to say that the challenge would be overcome in 24 hours. And it was!"

"It was important for us to pilot the technology first because nine of the sites in SWARH are small acute hospitals with from 10 - 40 beds and they are totally dependent on telecommunications."

The pilot was deemed a success; in fact the CEO of the pilot hospital signed off with 'more than 95% confidence in the system', at which point Druitt proceeded to replace traditional phones with 500 more IP Telephony handsets in a further 8 hospitals.

He comments: "Staff adapted instantly to the IP Telephony handsets. We notified them in advance and then replaced the old phones overnight. There were no complaints at all; they all thought the new system was wonderful. They didn't need more than some basic training in how to transfer and distribute calls. They also find the Cisco Unity Voicemail easy to use.

"We are still continuing the process with a further 1500 IP Telephony handsets scheduled for installation as the larger hospitals come on board."

SWARH is also using Cisco Aironet for wireless connectivity at Ethernet speeds across the converged network. This means that nurses can easily use cordless IP Telephones or Personal Digital Assistants. This has enabled Druitt to run a pilot to test the efficiency of issuing PDAs to their triage nurses who work in Casualty at Warrnambool. Instead of writing patient details on a clipboard and entering them into the computer – a lengthy process that took them away from the patient – they can now enter the data directly into the hospital system via the wireless PDA. This process not only saves 10 - 20 minutes per case and duplication of effort, it also classifies the patient faster enabling the hospital to quickly determine the appropriate level of care and administer it.

Although the interface for the wireless PDA solution is still in development, Druitt predicts that ultimately all clinicians will use handheld devices both inside hospital using wireless Ethernet and outside using standard mobile telephone networks, including the emerging third generation mobile technologies being deployed by the carriers.

Druitt is also looking at how he can use the wireless network to carry out barcode reading of patients' wristbands as nurses are dispensing drugs.

"This could minimise adverse effects and wrong medications," he says, "and as Electronic Health Records (EHR) come on board, staff can have real-time updates to patient record to check medication, allergies, etc."

As a large region, videoconferencing was already part of the SWARH healthcare culture, and particularly popular with psychiatrists using it for remote review, assessment and training. But it was expensive to use and other staff hesitated to use it. The original ISDN-based units cost around \$60,000 per annum to run. In order to further leverage the converged IP network, Druitt invested in six room-based and two desktop IP videoconferencing systems.

"Just by switching to IP based video conferencing technology, we reduced costs for video conferencing by 90%," he said. "It's now free across the network compared to the \$200 - \$300 per hour we paid previously. Not only does this give us a significant cost

benefit, it also encourages staff to collaborate and communicate with each other more freely, which saves on travel costs.

"Using Cisco's IP/VC – the video part of Cisco's AVVID infrastructure - staff can plug a low cost Polycom IP based video conferencing camera into their PC and receive full-frame, full motion video on the desktop. Or they can use one of our multipoint conference units to which enable up to four people to appear on screen in a multi-party videoconference.

"If staff wish to videoconference with Royal Melbourne Hospital or St Vincent's Hospital in metropolitan Melbourne, which are not part of the SWARH system, the IP/VC gateway enables them to communicate over IP all the way to the gateway (which is free), and only pay for the link from gateway – located in Melbourne – to the respective hospital – also located in Melbourne."

Druitt believes that there are endless possibilities for leveraging the converged network in order to improve patient care and streamline hospital administration.

One example is the pilot underway in the maternity ward of Warrnambool Base Hospital where several beds have been set up with flat touch screen computers connected to the IP network, in place of standard televisions.

Cisco's Content Engines are used to stream all kinds of services to these screens on demand. As a result, patients can select videos, view pay and free to air television, or access healthcare information on topics such as breastfeeding, bathing babies, government assistance etc. They also have access to e-mail and the Internet.

"There is no reason why these options should not be self-funding, given that patients already pay for television use on a daily basis. Or, if we attract sponsored material from pharmaceutical companies and other providers, some services could be free" comments Druitt.

"The benefit to the hospital is that we can easily disseminate healthcare information to patients and provide remote consultation from specialists via video conferencing."

In another test case, Druitt has been providing videoconferencing to institutional aged care patients, for whom many close relatives are often too frail to visit in person or themselves are institutionalised.

"As an example, we have a 93-year-old patient who videoconferences with her aged sister who is in another care facility 200 kms away. This interaction has vastly improved their quality of life," he comments, "and proved to us that age is no barrier to this kind of technology."

Results

The major benefit from the converged IP Telephony network has been the cost-savings.

Druitt explains: "The ROI was based on a straightforward calculation built around a \$1million expenditure. Had we cabled using traditional ISDN links, we were looking at costs of approximately \$200,000 per annum. With a WAN capable of supporting a Cisco AVVID converged network, we were looking at \$600,000 pa. By saving 40% on the cost of calls using IP Telephony, we ended up with a neutral outcome. That in itself was sufficient justification for the investment in a converged network. But the ROI is in fact far greater than that. We have been able to make a 90% saving on videoconferencing, leading to a 30% saving on travel without taking into account productivity gains through business reengineering.

"Our ongoing costs are all significantly lower. All calls within the system are free, meaning that staff and specialists can stay in contact without any concerns about the phone bill.

"By having a converged network, we will reduce the number of PABX systems in place from 16 down to two, with substantial associated savings."

Even the hospitals which are yet to be connected to the converged network, have been able to reap cost-savings as SWARH has connected the remaining PABXs at the larger hospitals to the network, enabling them to leverage Least Cost Routing (LCR) which directs their calls across the IP network to the Melbourne Point of Presence (PoP) where it enters the public telephone network, enabling them to pay only local rates for the call.

There have also been significant savings in management costs. As an example, Timboon Hospital initially had a Cisco CallManager on site. Now the CallManagers only exist at the central Warrnambool data centre from whence a new phone can be deployed anywhere in the region in a matter of minutes. Even a new site can be set up very quickly from Warrnambool, with the only local requirements being to add the IP Telephony handsets and a local gateway router.

Partnerships

Strong, reliable partnerships are central to the success of any converged network rollout. When he implemented his converged network, Druitt was confident in the quality of his team.

"While some people might view piloting IP Telephony at a hospital as early as 1999 as risky, I was confident in the partners that we had picked. I knew Cisco had significant investment in this technology and the track record of making things work. The contact offered to me and the personal interest in our solution at the highest level was very satisfactory."

Sam Gerner, Cisco Account Manager is equally impressed by the energy and innovation of the IT team at SWARH. "Their IT solution provides a benchmark against which others inevitably compare themselves," he said. "Not content with the substantial cost-savings he has already effected, Garry Druitt continues to find practical, innovate ways of leveraging the converged network to improve healthcare and further reduce costs for SWARH."



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