Signs of the times

Wow-Vision steps through the wireless presentation gateway with an audiovisual system that uses A/V-over-IP technology to offer a unique feature set

Dinesh Tripathi, founder of Wow-Vision

IT WAS THREE YEARS AGO when Singapore-based Wow-Vision was approached by the Republic Polytechnic of Singapore to design a next-generation wireless presentation solution. A new university that was exploring a problem-based learning style of teaching, the polytechnic had visions of its own regarding the possibilities offered by advanced display technologies in a learning environment.

The invitation did not come without reason, and referred directly to the work that Wow-Vision had been established to develop in 2001. With a directive to take a leading role in the design and development of A/V-over-IP hardware and software system solutions, the company had already devised a wirelessly delivered, digital signage solution called wowVista. This was the work of Wow-Vision CEO, Dr Dinesh Tripathi, and uses 68-point patented core technology that encompasses a unique communication protocol, compression technology, encryption algorithm, wireless broadband linkage, and an auto error detection and correction function. By applying a process called frequency hopping – also known as spread spectrum – to the IP environment, Wow-Vision's engineers were able to achieve an efficient means of transmitting computer screen and A/V data over an IP network with 1,024-bit encryption. The result is high-quality transmission with only a nominal data transmission load on the network.

The wowVista system facilitated the remote management, deployment and monitoring of content for digital signage displays – and has been installed in a number of companies in Singapore and across the surrounding region, including Subaru, McDonalds, Panasonic, Daimler AG, KIA Motors and the FairPrice chain of supermarkets. It was with this profile, that Wow-Vision was approached by the Republic Polytechnic (RP) in its search for a presentation solution for a 'wireless campus'.

Students at work, using the Wow-Vision infrastructure

Singapore's Ministry of Education has established the nation's polytechnics with a specific mission – to train mid-level professionals to support the technological and economic development of Singapore. This requires students to be trained in relevant and specific skills for the Singapore workplace, and uses the central tenet of problem-based learning is knowledge integration – essentially students learn to integrate knowledge through struggling with problems. To achieve this, they work in small teams and develop both problem solving process skills and teamwork. In this integrated and collaborative learning environment, RP needed a wireless and paperless campus as the first step in creating a high-tech interactive learning environment for its students.

In order for its students to solve problems, seek information, submit assignments and carry out all necessary transactions electronically through the wireless IT infrastructure of the campus, the RP identified a series of key objectives. These included the provision of wireless, multi-client or 'shared' access to video projectors that would eliminate the need for cabling and subsequent equipment costs. The system should also be a scalable, future-proof solution with additional functionality in the form of electronic whiteboard, Q&A, polling and attendance registration, as well as offering central management and software upgrades.

This solution had to cover more than 725 classrooms, and be capable of handling access from 10,000 students and close to 1,000 teachers and staff. The RP had received proposals from major A/V and IT system consultants and contractors, but none of them precisely met the stringent requirements of the newly established university. When Wow-Vision was invited to suggest a solution, the design team found it could adapt the existing wowVista digital signage technology and, by incorporating some classroom management functionality, meet all of the polytechnic's criteria. The solution was a wireless projector gateway, initially called Genesis. Subsequently renamed Veos, this added an asset management function so that projectors and ancillary equipment could be centrally managed. Wow-Vision's system cost 90 per cent less than a comparable conventional solution and maximised in-class interaction between tutors and students. Additionally, it reduced waiting time when switching presentations by 90 per cent.

Wow-Vision is a divison of Summit Holding, a $280M, multinational company that trades on the Singapore stock exchange.

At its most fundamental level, Veos is simply a gateway between a wired or wireless computer network and a video projector or large display. It works with any local network (WAN/LAN/Internet/Intranet) and any Windows or Mac computers connected to the network. Veos automatically handles functions, such as switching users, scaling video resolution and even controlling a projector via RS232 without any additional hardware. It replaces multiple VGA cables, matrix switchers, video scalers, and even the need for a control panel or remote for the projector. Enabling shared access to a projector or display is the primary function of Veos, the additional features and more advanced classroom management functionality have been added since the first installation in RP.

The solution can be classified as a 'disruptive innovation' as it changes the way in which multiple users connect to a projector. Essentially, it changes the limitations of what can be done in an interactive learning and presentation environment.

The system takes two forms – wowVeos and proVeos. Where wowVeos requires a dedicated server and is intended for large, multi-room installations, such as schools requiring central management, proVeos is designed as a stand-alone unit with the server component built-in. proVeos can also function as a wowVeos unit in a multi-gateway environment. For example, a school could have several classrooms with wowVeos units permanently installed, and one proVeos system functioning as a 'floating' unit that can be used in a classroom or at an off-campus event. Both wowVeos and proVeos gateway units have identical housing, and both units use hardware that has similarities to

standard PC components. However, proVeos uses a higher speed processor and a motherboard with more robust I/O capabilities. Both systems run on the Linux open-source operating system.

With either wowVeos or proVeos installed and configured on a network, users have a Veos client application on a laptop or desktop computer to access the gateways. There are clients for both Mac- and Windows-based computers. The wowVeos server and proVeos gateways have a management console that can be accessed via web browser, much like accessing the configuration home page of a network router. Entering the IP address of the Veos gateway in an Internet browser opens the gateway home page. User profiles can be setup on the wowVeos server and proVeos gateway's administration page to specify access rights and participation roles – for teaching staff, students and visitors. In the case of wowVeos, desktop client installers can be pre-configured and 'pushed down' to users on a domain using Active Directory and SMS Server.

Once a computer is logged on to the Veos gateway, relaying the screen to the projector is as simple as clicking on a 'display me' button. Accessing other functions, such as whiteboard and chat, are equally easy, and presentation sessions can also be recorded.

The Republic Polytechnic lecture theatre

The Veos system is designed to display – actually stream – a typical desktop with average movements and even graphics as elaborate as PowerPoint presentations with animation. However, when it comes to full-motion video and audio, Veos needs to use a more robust method of streaming. There is a dedicated media player in the Veos client for playing A/V media. When presentations are played using the media player on the local computer, a portion of it has to be pre-loaded, in the same way as clicking a link to watch a video on the internet. The Veos client media player can stream in high definition 1080p video and up to 7.1-channel audio in real time. The Veos client also allows users to upload media to the Veos gateway. Media content that has been uploaded to a Veos device can be played and even downloaded by any user logged onto the gateway.

Security is an important consideration in the Veos system. IT network managers can be assured that data transmissions handled by the system use the same 1024-bit encryption Wow-Vision developed for its earlier system. The content of presentations in a financial institution, for example, are completely secure.

In addition to the projector gateway and collaborative presentation features, the digital signage functionality has been preserved and has proved to be a valuable tool for some organisations. Messages can be programmed for activation at a scheduled time, – such as a monthly security or fire drill – via flashing a message on all display units. Equally, a message can be sent out immediately to all or select Veos gateways. The system is even intelligent enough to turn on the projector systems, should they be off, which is an essential function in the event of an emergency. Veos units can also stream live TV or advertisements to the display, which, for example, are welcome features for hotel or airport environments.

'When you look at our product, there is no one thing that by itself is all that extraordinary,' Dr Tripathi observes. 'Video streaming has been around a long time. Virtual interactive whiteboards and WebEx-type capabilities are fairly abundant, as are wireless projectors and digital signage. What is remarkable is that all these capabilities are now together in one box and it's designed to be easy to use. In that sense, Veos is a unique solution and a revolutionary way for users to interact with each other in an interactive learning or collaborative presentation environment.'

WOW | vision
Innovating Simplicity

VEOS