

Spanish Hospitals Improve Patient Service with WLAN

Unified Wireless offers SESCAM a feature-rich replacement for traditional healthcare communications systems

EXECUTIVE SUMMARY

SERVICIO DE SALUD DE CASTILLA-LA MANCHA (SESCAM)

- Healthcare
- Castile-La Mancha, Spain
- 20,000 employees

BUSINESS CHALLENGE

- Need to find a reliable, flexible replacement for traditional forms of communication such as pagers
- Desire to improve location of vital hospital equipment and personnel
- Requirement to improve patient services

NETWORK SOLUTION

- Introduced wireless network to deliver communication and location-based services

BUSINESS RESULTS

- Replacement of the pager technology across four hospitals, location-based services delivered in three (Almansa Hospital, Villarrobledo Hospital and Tomelloso Hospital)

Business Challenge

The Servicio de Salud de Castilla-La Mancha (SESCAM); literally, Health Service of Castile-La Mancha serves what is perhaps the most emblematic autonomous community of Spain: the windswept La Mancha region which was the backdrop to Cervantes's famous novel, *Don Quixote*. Delivering healthcare to a population of more than 1.8 million people (according to figures from 2005, making Castile-La Mancha the ninth-largest community in Spain by population and third-largest by area), SESCAM is not, however, 'tilting at windmills'.

In recent years, SESCAM has opted to include market-leading technology in the specification for its new hospitals, and in the last four cases the Cisco® Unified Wireless Network has played an important part in the delivery of service to patients and, in

general, to all healthcare users and professionals.

SESCAM first became interested in wireless LAN as a way of replacing pagers, a time-honoured communications system in the medical profession that was coming to the end of its commercial life, with something that would offer additional functions such as message reception, access to corporate applications and voice.

In addition, SESCAM was aware of the benefits of localization systems and was trying to implement new methods for tracking medical equipment and even personnel, including patients who for medical reasons might need to be located if they wandered away from their wards, all without having to install and run a separate network for this purpose.

SESCAM first introduced a Cisco Unified Wireless Network at the Hospital General de Ciudad Real (Ciudad Real General Hospital), a 540-bed new-build facility serving the capital of the province of Ciudad Real, with a population of more than 69,000.

The Ciudad Real deployment has subsequently been used as an example in terms of network design, with improvements in newer hospitals to include, for example, location-based services.

Throughout these deployments, SESCAM wanted not only to make the most of wireless technology to deliver improved, more responsive services to patients, but at the same time help ensure that security and reliability would not be compromised.

Network Solution

Anticipating the demise of the pager as a communications technology, when SESCAM started designing the communications infrastructure for the Hospital General de Ciudad Real in 2005 it sought to find a replacement that would offer at least that same standard of service.

Indra Redes, the systems integrator tasked with creating the IT infrastructure for the hospital, wanted to use the latest available technology in building what SESCAM hoped would be a national and international reference point for new services in healthcare. As a result, Indra Redes proposed a Wi-Fi network that would support high-bandwidth and delay-sensitive applications such as voice over IP (VoIP) and video transport.

As a Cisco Gold Certified Partner and former Gold Partner of the Year award winner, with a strong working relationship with Cisco and specialist experience in assembling easily-deployed systems, Indra Redes had no hesitation in recommending Cisco technology for the project.

“Our main concern was availability of the network since communications are critical in our centers and we could not afford to have the network out of service,” says Rafael Nuñez, head of communications for SESCAM.

A total of 256 Cisco Aironet® 1131 and 1232 Series wireless access points were distributed across the hospital's six floors, supporting 140 Wireless IP Phones within the Cisco unified solution. In addition, 450 desktop Cisco IP Phones provide service over the same infrastructure.

The wireless infrastructure implemented in the hospital complements a 720 Mbps, 3840-port network featuring a range of Cisco technologies, including Cisco Supervisor Engines, Catalyst® Series Switches and Cisco routers, distributed across 44 cabling cabinets.

The Cisco Unified Wireless Network also allows SESCAM to configure its Nokia E61 and E65 series mobile handsets for dual-mode use. Dual-mode phones are terminals that can connect to the WLAN when on campus for collaboration and business applications but switch to the Global System for Mobile Communications (GSM) cellular network while on the road or, if needed, as a backup.

“Wi-Fi has allowed us to integrate a whole range of functions into a single handheld device, making it far more effective than the simple functionality offered by pagers.”

—Rafael Nuñez, Head of communications, SESCAM

SESCAM is currently piloting this mode of communication, using the functionality available on the Cisco technology to assign a single telephone number to each healthcare professional (and thus eliminating separate numbers for mobile, wireless or desktop communications), supported by a cluster of Cisco Unified Communications Managers.

Although the main purpose of the Wi-Fi infrastructure at Ciudad Real is to replace pagers before they become obsolete and suffer from lack of vendor support, the network overall supports a wide range of medical applications for citizens, including, for example, the transfer of X-ray and other patient files in digital format to cut down on paperwork.

Here, says Rafael Peñalver, physician and General Secretary of SESCAM, “We have reduced the use of X-ray material by 90 per cent and the introduction of an electronic patient record system has reduced the overall amount of information by 15 percent, thanks to the removal of duplicate records.”

The Wi-Fi capability of the network also enables medical staff to retrieve, update, and file patient records while carrying out visits, using a personal digital assistant or tablet PC.

This service improves accuracy and responsiveness, both important factors in improving care, by cutting out errors caused by handwritten notes and helping ensure updates to patient records are recorded at the same time that they are made.

Ciudad Real's IT infrastructure, completed in 2006, has been so successful that it has served as a model for all of SESCAM's other hospital projects to date—in Almansa, Villarrobledo and Tomelloso. With these newer centers, however, SESCAM has updated and improved on the original Ciudad Real IT design, for example by using more powerful switches from the Cisco Catalyst range.

On the Wi-Fi side, the most important addition at Almansa, Villarrobledo, and Tomelloso has been to introduce location-based services, where the wireless network is used to locate people and objects using Radio Frequency identification (RFID) tags. “Medical equipment can now be found in the event of any medical emergency,” says Ambrosio Rodríguez, head of Information Technologies. “Previously, precious minutes might be wasted looking for life-saving equipment. Now we know straight away whether the unit or device we need is available, and where to find it.”

Business Results

SESCAM has no doubt that the Wi-Fi networks across the Ciudad Real, Almansa, Villarrobledo, and Tomelloso hospitals have added value.

PRODUCT LIST

Cisco Unified Communications

- Cisco IP Contact Center Express
- Cisco Unified Communications Manager
- Cisco Unified IP Phone 7912
- Cisco Unified IP Phone 7940
- Cisco Unified IP Phone 7960
- Cisco Unified IP Phone 7971

Routing and Switching

- Cisco Catalyst 6500 Series Supervisor Engine 720
- Catalyst 3750 Series switch
- Catalyst 4500 Series switch
- Cisco 2509 Series router

Cisco Unified Wireless Network

- Cisco 2100 Series Wireless LAN Controllers
- Cisco 1131 Access Points
- Cisco 1232 Access Points
- Cisco 7920 Unified Wireless IP Phone
- Cisco 2700 Series Wireless Location Appliance

Technology Partners

- Nokia E61 dual-mode handsets
- Nokia E65 dual-mode handsets

“Even though our hospital personnel were used to using the pager as their main means of communication, we have had a 100 percent success in replacing these terminals with IP phones for our medical staff in Ciudad Real,” says Rodríguez.

“It was vital for us to find an alternative because pager companies are disappearing, and with dual-mode phones, covering Wi-Fi and GSM, we have been able to completely substitute this outmoded technology. We still have all the functionality of before, plus we voice and data capabilities in the same device.”

Not only have pager messages been completely superseded by short message service texts, but the handsets can also deliver an alarm in the event of a patient requiring assistance, making it easier to provide a better service to patients.

The Location Solution has also enabled SESCAM to introduce applications such as Guide-Me, which tells

patients with disabilities which routes they have to take to find their way around the hospital, for example for medical examinations or for consultations with specialists in different locations.

Running VoIP over the Wi-Fi network has helped SESCAM reduce its call costs but, says Nuñez, it was also crucial to have reliability and security.

And its security extends to access to data, which is an important consideration given the need for patient confidentiality and the fact that one of the hospitals is next door to a university, from where it would potentially be easier to launch hacker attacks.

“Right now, wireless is one of the most popular technologies for our hospitals because of the range of new services and applications it allows us to offer,” says Ambrosio Rodríguez.

Next Steps

Besides the planned extension of the location solution to include the Hospital General de Ciudad Real, SESCAM is continuing to look into new location-based applications, using feedback from medical staff and patients.

In addition, the healthcare provider is committed to including wireless in its future hospital development plans. “Wi-Fi changes the concept of the facility, allowing us to integrate a whole range of functions into a single handheld device, making it far more effective than the simple functionality offered by pagers,” says Nuñez.

For More Information

To find out more about Cisco Unified Wireless Networks, go to: <http://www.cisco.com/go/wireless>.

To find out more about Cisco healthcare solutions, go to: <http://www.cisco.com/go/healthcare>.

To find out more about SESCAM, go to: <http://sescam.iccm.es/web1/home.do>.

To view the SESCAM video case study, go to: <http://tools.cisco.com/cmn/jsp/index.jsp?id=70986>



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