



Pushing the Boundaries of WLAN at Versailles Hospital System

Leaders in healthcare constantly challenge themselves to improve the quality of patient care, even as they strive to lower operational costs. Mignot Hospital, an 800-bed facility and member of the Versailles Hospital System in Versailles, France, is a perfect example. They set a bold goal: mobilize all patient data to the bedside, enabling doctors and nurses to achieve a new level of care, responsiveness, and productivity.



At the heart of this initiative was the hospital's Picture Archiving and Communications System (PACS), a tool for caregivers to securely access digital images such as x-rays, in real-time, anywhere in the facility. It immediately became apparent, however, that Versailles' expectations for high bandwidth, mobile Wi-Fi connectivity pushed far beyond the limits of traditional wireless LAN (WLAN). Their goals could only be met using the Extricom Interference-Free™ Wireless LAN System.

A Fast-Moving Environment

Hospitals are all about mobility: a bustling, round-the-clock environment where doctors, nurses, and other healthcare practitioners constantly move from room to room, examining patients and interacting with colleagues. Timeliness and accuracy of diagnosis are critical factors in successful treatment. In this setting, easy and rapid access to information is vital.

WLAN is therefore an essential tool in to the delivery of patient care. Mobile applications supported by Wi-Fi provide patient information directly to the physician at the point of care, enabling quicker, better informed decisions. Among the many scenarios made possible by Wi-Fi are real-time access to electronic medical records, voice badge communications that make critical personnel accessible at all times, asset tracking through RFID, and use of barcodes and scanners to reduce medical errors.

Performance Comes First

But how much can patient care depend on WLAN? Dropped or slow connections, unpredictable mobility, and inconsistent performance are all unacceptable, especially in life-or-death circumstances. Traditional WLAN architectures are simply not flexible enough to meet the performance demands of a multi-application, real-time wireless operation.

A striking example of this is the PACS application, which requires files up to 90MByte in size to be transmitted directly to a doctor's portable device. Not only is the file transfer in itself difficult for traditional WLAN systems to support, but it also severely affects the performance of other application types, such as voice over Wi-Fi, that may be using the same system. The end-result is dropped calls or sessions, poor access to backend data systems, and an inevitable negative impact on patient care.

Mobility with Throughput

Achieving mobility, high bandwidth, and multi-application flexibility without compromises was uppermost in mind as the IT team at Versailles Hospital System looked into their options for deploying WLAN. Mobilizing PACS would enable doctors to access x-rays while examining patients, both accelerating diagnosis and replacing very expensive film development. But the WLAN had to meet stringent data transfer requirements, allowing physicians to download large files quickly while walking from room to room in patient treatment areas.

"Simply put, we needed mobility with throughput. We couldn't install a lot of cables, but physicians needed to be able to access medical information everywhere, so wireless was the obvious choice," stated Hervé Paris, Versailles Hospital System's

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Hervé Paris
Director of Information Technology
Versailles Hospital System



Project Scope

Provide comprehensive Wi-Fi infrastructure to ensure high data-rate, mobile connectivity everywhere in patient treatment areas of 800-bed hospital. The WLAN needed to support PACS application for mobile upload/download of digital images of up to 90 Mbytes.

Solution

- Deployment of EXSW-1200/2400 switches, and multiple EXRP-20 Dual-Radio UltraThin™ APs.
- Channel blanket topology guarantees coverage for mobile medical personnel.
- Deployment flexibility allows implementation team to ensure strict sterility standards are met.

Results

- PACS eliminates need for costly development of x-ray images, essentially paying for WLAN.
- Enormous productivity gains for medical staff: digital image access times reduced from 30+ minutes to less than two minutes.
- WLAN provides application-agnostic infrastructure platform to deploy multiple future applications.

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Director of IT. “But dependability had to be absolute; downtime is not permissible when you’re treating someone who is critically ill. And the same infrastructure had to be able to support any other applications we might choose to deploy.”

The Only Option

Paris researched the available solutions and consulted with other IT Directors in the area. Airmedis, a well-respected healthcare wireless IT integrator, proposed the Extricom WLAN, a system they had already successfully deployed in other challenging healthcare scenarios.

What makes Extricom WLAN ideal for hospital environments is its unique Channel Blanket™ architecture, which provides a degree of operational flexibility and performance that no other WLAN can achieve. The Channel Blanket technology uses one set of APs to establish up to four overlapping wireless networks, which can independently provide different services for diverse applications and clients throughout a facility.

The separation of traffic and devices on separate wireless blankets eliminates the contention and bandwidth compromises that are found in all other solutions. Add to this rock-steady connectivity and complete mobility, and the result is a system that can deliver significantly more throughput than comparable WLANs; typically four to six times greater, and even more than that depending on system configuration.

The IT team at Versailles Hospital System immediately saw that Channel Blanket architecture would fully support the PACS application, without the bandwidth and mobility degradation from AP-to-AP handoffs that could bring the system to a grinding halt. “We needed real mobility without dropped connections while downloading large, highly time-sensitive files... and Extricom was the only product that offered us that,” stated Paris.

Meeting the Production Challenge

Versailles Hospital System gave the project the green light and proceeded to deploy across all 10 floors of Mignot Hospital, providing coverage to all patient treatment areas.

Deployments in hospitals must consider strict sterility requirements which can restrict

project timeframes or even the ability to run cables and place APs in specific areas. Once again, the flexibility of the Extricom WLAN proved invaluable, since its minimal site survey requirement, AP-anywhere placement, and largely “plug-and-play” configuration greatly reduced the complexity of implementation.

Shaving Off the Minutes

The Extricom WLAN deployment for Versailles Hospital has been a complete success. Financially speaking, the hard cost and productivity gains just from mobilizing PACS will pay for the system. Costly conventional x-ray development is eliminated, and the efficiency gains are enormous: accessing the medical records used to take up to 30 minutes, and this is now accomplished wirelessly in under two minutes, a dramatic acceleration of physician response times.

According to Paris, the system has been a revelation to the over 200 PACS users. “The reaction has been very favorable. The Extricom system has improved productivity noticeably, and extended to caregivers a level of information access, as well as ease of access, that’s vastly better than what they had before.”

The ROI of Quality

Looking ahead, the value of the Extricom WLAN will continue to increase, since it can support any additional applications from the same base infrastructure. Versailles plans to supplement the x-ray function currently fulfilled by the PACS with a comprehensive medical recordkeeping application that will allow nurses to quickly check and update a patient’s complete medical dossier in real-time. This will help minimize the potential for administrative errors, such as over-prescription of drugs.

In the end, however, the most important beneficiaries of the system will be the patients themselves. “Patient care has definitely been upgraded and will continue to improve, thanks to the application mobility which Extricom makes possible,” says Paris. “That’s the real ROI of the system: quality of care.”