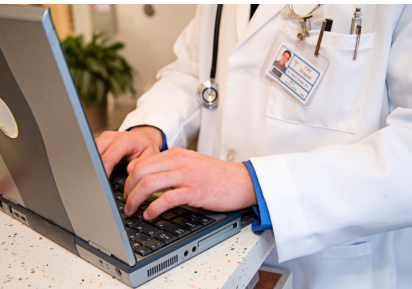




## Record Progress: Extricom WLAN at Palo Pinto General Hospital

Accurate information and fast access to it are critical in a healthcare environment, where patients' lives sometimes can literally depend on how quickly a caregiver can check their records. This need for speed has been one of the driving forces behind the adoption of electronic medical records or EMR, which aims to make hospitals and doctor's offices paperless in the coming decade.

Wireless technology gives EMR a significant boost by untethering caregivers from fixed terminals and allowing patient data to be accessed anywhere in a hospital. But not every wireless network can handle all the challenges a hospital environment throws at it. When Palo Pinto General Hospital decided to implement a wireless LAN, they found that the only solution that fit all their criteria was Extricom.



### Moving to the Information Environment

Hospitals are information-centric environments. When a patient is admitted, doctors and nurses begin compiling a mass of data that will help ensure a safe and successful outcome to his or her case. The objective of EMR is to standardize how this data is recorded and make it much more quickly accessible. This will also allow hospitals to streamline procedures, enhance productivity, and cut costs.

The transition to EMR is being driven by healthcare applications in several key categories. Computerized Physician Order Entry (CPOE) and Bedside Medication Verification (BMV) reduce medical errors and improve health care quality and efficiency. Picture Archiving and Communication Systems (PACS) allow doctors to see patient x-rays and scans within minutes, improving the diagnosis process. And telemetry monitoring enables continuous observation of patients by specialists from elsewhere in the hospital.

### EMR and Wireless Infrastructure

Implementing EMR in an institution as large as a hospital, though, is a complex and expensive proposition, and IT managers look to cut costs wherever they can. One way is to use wireless LAN as the base network infrastructure. This saves money both in terms of the upfront implementation from minimized cable runs, and in the long-term in staff productivity gains from the additional flexibility wireless conveys.

The Wi-Fi environment in a hospital can be challenging, however, and signal propagation is not a given. The applications running over the wireless network are usually mission-critical, and a dropped connection could lead to a patient safety issue, so robust connectivity and pervasive coverage are absolute requirements for any implemented system.

### Avoiding Coverage Holes

For Darrell Polston, Network Administrator at Palo Pinto General Hospital in Mineral Wells, TX, the ability of a wireless system to ensure seamless mobility without dropped connections was the primary driver behind his choice of system, "We specifically needed to support MEDITECH's CPOE module for our physicians and bedside documentation for nursing and other clinical staff. The nature of MEDITECH's applications is such that a hole in wireless coverage causes a dropped telnet and server session. We just couldn't afford that."

Polston wanted a wireless system that, in addition to supporting CPOE and other EMR applications, could handle capacity issues from a highly mobile workforce densely clustered around workstations. He researched a range of major wireless vendors, Aruba Networks, Cisco, 3Com, and Trapeze, and even went so far as to have an RF site survey performed. But the solution that was the best fit was an Extricom WLAN.

“We're confident that having the Extricom wireless in place is going to lead to better productivity overall, especially nurse and doctor communication and workflow. And that translates into better patient care and better patient safety, which is ultimately what we're here for.”

Darrell Polston  
Network Administrator  
Palo Pinto General Hospital

## Project Scope

Implement comprehensive wireless LAN at a 99-bed County Hospital District healthcare facility in Mineral Wells, TX. Solution would support hospital's move towards full EMR environment, specifically mobile users leveraging CPOE, BMV, PACS, and telemetry monitoring applications.

## Solution

Extricom EXRP-1200/2400 switches and EXRP-20 access points.

System deployed to ensure no coverage holes anywhere in the facility.

## Results

System configured over two days and put into production immediately.

All applications fully supported at full performance.

Hospital prepared to move to Stage 6 of EMR adoption.

## The Elevator Challenge

Palo Pinto's IS Director, Chasity Wilcox, had also given Polston a very specific challenge: find a WLAN that would work in the elevator, "In the past, the clinical staff had experienced dropped connections, resulting in lost data and staff frustration," recalled Wilcox. "It was essential to have a solution we could be confident would sustain connectivity when the elevator was in motion between floors, so we could promote its use with no reservations."

Polston made the "Elevator Challenge" a key focus in assessing Wi-Fi. "Elevators are highly problematic for most WLANs, and almost invariably trigger AP to AP handoff," he stated, "When that happens, boom, you drop your network connection. That's where Extricom was different"

Extricom's Channel Blanket™ architecture, in which individual APs are little more than radios, and wireless clients associate directly with the switch, makes it highly resilient in difficult RF environments. Every AP broadcasts on the same 802.11a/b/g/n radio channel, creating overlapping zones of coverage with no AP-to-AP handoff. For doctors and nurses, this translates to seamless mobility and no dropped sessions.

## Multiple Uses, Same Infrastructure

Another strength of the Channel Blanket is the ability to support multiple layers of coverage from the same infrastructure. Applications with conflicting network requirements, such as data and voice can be segregated onto separate Channel Blankets for QoS, an important advantage for Palo Pinto when using the system to support diverse applications such as MEDITECH, internet access, PACS, and Nihon-Koden Telemetry.

The same blanket architecture is optimal for supporting redundant networks without co-channel interference, an absolute requirement in an environment where a network outage could potentially impact patient treatment. Polson states, "Because of the way the Extricom system works, if we lose the switch on one floor, users can easily switch over to a Blanket on the floors above or below and still continue to do 90-95% of what they've got to do. It would be one handoff and done, until the out-of-service switch comes back."

## Up, Running, and Covered

The Extricom WLAN was deployed without problems, unlike other vendor solutions according to Polston, "They all have the same pitfall, you've got three channels, APs can't overlap, so in the planning and design stages, you've got to look at frequencies, placement, antenna maps, coverage zones... With Extricom that doesn't happen." Switch configuration, including customization of Extricom's standard access gateway, took less than two days, and the system was up and running.

To ensure coverage in difficult areas such as their Radiology lab, Palo Pinto leveraged the Extricom system's ability to mount access points in close proximity to each other without co-channel interference. Polston stated, "That's the beauty of the Extricom solution, I don't have to worry whether this AP is going to override into that zone over there, and have to mess with the power levels. The Radiology department was included entirely within a Channel Blanket, and the zones surrounding it on the same, so if signal leaked through the wall it didn't matter."

## The Fast Track to Stage 6

With the Extricom WLAN in place to support CPOE, BMV and other critical applications, Palo Pinto is on the fast track to achieve Stage 6 on the HIMSS Analytics' EMR adoption scale. Few other community hospitals have achieved this status, which could help Palo Pinto qualify for additional stimulus funds and position them ahead of the curve in achieving Stage 2 of the DHSS's "meaningful use" criteria.

More importantly, having a reliable wireless environment is a building block for continuous improvement in the patient experience. As Polston summarizes, "We're confident that having Extricom wireless in place is going to lead to better productivity overall, especially nurse and doctor communication and workflow. And that translates into better patient care and better patient safety, which is ultimately what we're here for."