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Spartanburg Medical Center Deploys Wi-Fi RFID System

Topics/Verticals: Operations, Asset Tracking, Health Care

The hospital, now using its Wi-Fi network to track infusion pumps, plans to expand the technology so it can also track other assets, along with surgical patients and staff.

By Beth Bacheldor

Jan. 5, 2007—To help serve its patients better, Spartanburg Regional Medical Center, located in Spartanburg, S.C., is using a Wi-Fi network and a new active RFID-based real-time location system (RTLS) from McKesson. Currently, Spartanburg is utilizing the system to track the whereabouts of more than 550 intravenous (IV) infusion pumps throughout its 1.2 million-square-foot facility so they can be properly maintained and accounted for.

The initiative has been up and running since September and is bolstering an initiative to improve patient safety by providing the hospital with the whereabouts of computer-based infusion pumps, which periodically require software upgrades. "We have a very strong patient-safety initiative going on here, and one of the technologies we implemented several years ago were these smart pumps for infusions," says Ray Shingler, Spartanburg's CIO. "These all require software upgrades, but when it came time to do an upgrade, we weren't able to find them."

McKesson's Ben Sperling

To that end, the hospital worked with McKesson, a pharmaceutical distributor and information technology provider to the health-care industry, to implement the company's new Horizon real-time location system. The RTLS leverages Spartanburg's 802.11 Wi-Fi network, which the hospital installed in 1997, as well as active 2.4 GHz RFID tags from Ekahau that comply with the 802.11g protocol.

Once every hour, as well as six seconds after the tagged pump comes to rest following movement, the tags emit their unique ID numbers to 340 Wi-Fi access points situated throughout the hospital. "How often tags emit a signal is customizable, but we decided, instead of trying to track the pumps in real-time, we [would] just track them periodically and after they've been moved," says Jesse White, the hospital's senior network engineer. In so doing, the hospital can preserve the battery life of each tag, which White says is supposed to last for two years.

About 80 percent of the access points used by the RTLS were already installed as part of the existing Wi-Fi network, White says, but Spartanburg added an additional group of access points to provide complete coverage across the hospital.

McKesson and Spartanburg employees affixed the active tags to the IV pumps. Using a standard Web-based browser, nurses, doctors, biomedical staff and administrative personnel can access a map of the facility to pinpoint the location of all the tagged pumps. Additionally, Spartanburg configured the Horizon software to send automated text and e-mail alerts whenever an IV pump enters an off-limits

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area, such as a stairwell or a building exterior.

The system alerts the hospital department that sterilizes and maintains the IV pumps when the pumps are brought to the holding area before being cleaned. "An e-mail is sent to the materials-management group, so that they know an IV pump has come in and that a replenishment needs to be put out on the floor," says Ben Sperling, McKesson's RFID director.

Spartanburg now wants to extend the RTLS to help track patients undergoing surgery. The hospital is completely renovating its operating rooms, and by next October will use RFID to track patients as they are prepped and taken into surgery, and when the surgery is completed. In the operating room, staff will wear badges with embedded active 2.4 GHz RFID tags. Tagged assets will also be tracked, Shingler says, and patients will be given the same tags as the assets. Later this spring, Ekahau plans to release a version of the active RFID Wi-Fi tag that resembles a regular staff badge but also has a small LCD screen and can be used for paging and text messaging.

The Horizon RTLS used in the operating room will be linked with Spartanburg's implementation of McKesson's Horizon Surgical Manager, an application designed to help hospitals manage OR capacity and throughput, clinical documentation, equipment utilization and performance. The RFID data collected via the RTLS will be fed into the Horizon Surgical Manager, and will help document how well surgical patients are served.

The hospital already uses numerous automated processes to enhance the patient experience, but without an RTLS in place, it did not have complete, up-to-the-minute data that could be collected during surgery and other procedures. Therefore, Shingler says, Spartanburg has found it difficult to identify more places for improvement. "RFID will help," he says. "The nurses, the doctors, even our board of trustees are excited about the opportunities the technology will bring to us."

A growing number of other health-care facilities around the world are using Wi-Fi RFID systems to track and manage medical equipment as well, including the Dwight David Eisenhower Army Medical Center at Fort Gordon, Ga.; Tuusula Hospital in Finland; France's Arras Central Hospital; and Mayores Hospital, in Calhorra, Spain (see RFID Sees Gains in Health Care).