

**The 370-bed hospital says the deployment of Wi-Fi-based asset and temperature tags from Ekahau has made the facility more efficient.**

By Claire Swedberg

Oct. 20, 2009—After carrying out a pilot deployment of an RFID real-time location system (RTLS) consisting of 1,000 tags attached to assets, as well as five tags with sensor probes installed within refrigerators and freezers, the [Southeast Alabama Medical Center](#) (SAMC) has found that the system reduces labor hours spent by staff members trying to locate equipment and monitor storage conditions of temperature-sensitive materials. As a result, the 370-bed facility, located in Dothan, Ala., has ordered 75 additional temperature tags, and plans to at least double its asset-tag deployment. The system was provided by Finnish RTLS company [Ekahau](#).

Approximately six years ago, recalls Scott Lapham, the medical center's senior network engineer, the nursing department first went to the hospital's management and requested an automated tracking system that might help the staff reduce the time spent searching for mobile devices. Lapham says he was interested in how RFID could be employed with the facility's existing [Cisco](#) Wi-Fi network—used for staff telephones and other devices, including laptop computers—but felt RFID technology was not yet fully developed. He asked for more time to watch the technology mature through additional installations and development of the hardware and software. In the meantime, the hospital focused on its Wi-Fi network, installing 500 access points in the million-square-foot building, to ensure it would be able to support an RFID system.



SAMC's Scott Lapham

Several years ago, Lapham determined that the time had come to reevaluate RFID solutions for the tracking of assets. To that end, he reviewed several vendors before choosing Ekahau's system, which supports hybrid Wi-Fi infrared (IR) tags. Ekahau's T301B and T301BD tags, as well as the T301W (its new RFID-enabled wristband) all transmit 2.45 GHz signals that comply with the IEEE 802.11 (Wi-Fi) standard, but the tags can also receive IR signals from location beacons, for greater locating accuracy in cases in which RFID transmissions might leak from one room to the next, or in which an asset's location needs to be pinpointed within a room containing many tags.

SAMC launched the deployment in 2008, by having Ekahau install its software solution and provide its T301A RFID tags for the hospital's most critical assets. The hospital wanted to start with items that were moved often and either were of high value or frequently took valuable time away from employees who searched the facility for them. "We wanted to start by validating the system," Lapham explains. Each asset was fitted with a tag, which then transmits a signal encoded with a unique ID number. Ekahau's software system provides a map indicating a specific item's location, says Tuomo Rutanen, the firm's senior VP of marketing and business development, based on its tag's unique ID number, or its description. The tags transmit

directly to SAMC's Cisco wireless access points, without requiring any changes to the hospital's existing Wi-Fi system.

In the second quarter of 2009, the hospital's management also began considering options for monitoring temperatures within its refrigerators and freezers, in order to ensure that proper conditions are maintained for the storage of its medicines, organs, and blood and tissue samples, as well as food. Like all hospitals, Southeast Medical must comply with the [Joint Commission's](#) requirements to track the temperatures of any implantable tissues, in addition to certain medications. The hospital had already been tracking its refrigerator and freezer temperatures at least once daily, using a manual system consisting of having a worker check a thermometer and write the results on a piece of paper. This process, however, was time-consuming. Lapham suggested using Ekahau's Wireless Temperature Monitoring and Management system for the solution, and as a result, Ekahau provided its T301T tags, which are wired to external probes that measure the temperature.

The T301T tags send that temperature data every 15 minutes to the server, where Ekahau software determines whether the temperature is within an acceptable threshold. After the tag transmits a signal, Rutanen says, it receives a response from the server alerting it that its message was received. If the tag does not receive that confirmation, it continues beaconing until a response comes from the server, at which time it goes dormant for another 15 minutes.

In instances whereby a temperature threshold is breached, the Ekahau software sends an alert to the necessary parties via e-mail or pager. The tag itself has an LED and an audible buzzer, and can sound that alarm, as well as lighting the LED, if the temperature becomes too warm or too cold. In that way, a staff member near the refrigerator can be alerted to the problem without being near a computer. In addition, an employee can don an Ekahau T301BD badge tag that acts as a pager, lighting up in the event of a temperature breach.

Since the system was installed, Lapham says, he has received numerous e-mails regarding refrigerator and freezer temperatures. Some were triggered when a door was not closed properly, he explains, or when a staff member left a door open for an excessive length of time, according to follow-up investigations into the alerts. The system gives him more data than daily manual checks ever could, he indicates.

According to Lapham, the hospital is considering installing Ekahau's battery-operated location beacons, which transmit an infrared signal encoded with a unique ID number, and attaching Ekahau T301B tags to certain assets. The tag's built-in IR sensor would capture that IR transmission, then transmit the unique ID number of that location beacon, along with its own unique ID number, to the back-end system. The system could then determine the tag's whereabouts, based on the location beacon's ID number. This function enables the system to better pinpoint a tag's location in areas where RFID transmissions might leak from one room to another, or where even greater location granularity is required, such as items that might be difficult to locate without knowing exactly where in a room they are.

## Southeast Alabama Medical Center Expands RFID Deployment

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Lapham believes the deployment of asset and temperature tags has made the hospital more efficient. "We are still working on the actual quantifiable measurements when it comes to the efficiencies gained," he notes. The system, he says, has reduced the amount of time workers spent manually monitoring temperatures. For asset tracking, Lapham says, the biomedical and equipment supply departments are noticing a reduction in the hours spent by employees searching for items, as well as faster turnaround times for equipment as it is used, cleaned and reused.