

Washington Hospital Center to Quadruple Its RFID Expansion

Today, the MedStar hospital is using 700 active RFID tags; by spring, it will have more than 2,500 in operation across its entire campus.

By Beth Bacheldor

Jan. 30, 2007—By this spring, [Washington Hospital Center](#) will have one of the largest RFID systems in a hospital, covering 2.5 million square feet with more than 2,500 tags.

Working with [Parco Wireless](#), a provider of ultra-wideband (UWB) RFID systems, the Washington, D.C., hospital first started its RFID project in 2004 in its emergency department, with only about 100 active tags and 20 interrogators (see [Hospital Gets Ultra-Wideband RFID](#)).

Currently, the hospital has deployed more than 700 tags and connected about 475 RFID readers to a newly installed local area network spanning its entire campus, which includes several buildings standing eight stories in height, 18 square acres per level. The project also covers an outdoor staging area the hospital maintains in the event it ever needs to treat mass casualties.

The UWB RFID system is used to track and locate medical assets—mostly items for moving patients such as stretchers and wheelchairs, but also some beds and expensive items such as special radiology scopes—as well as personnel. Eventually, the system will be utilized to track patients as well.

"We're using RFID for all the known benefits from asset, personnel and patient tracking—including better inventory control and learning how frequently certain assets are utilized so we can better predict their lifecycles and better plan for future capital asset purchases, as well as the ability to evaluate patient care," says Ella Dade, director of special projects at Washington Hospital Center, a member of [MedStar Health](#). "But we also see huge opportunity for research. When we begin to see patterns between data from, for example, a patient and a caregiver, we can start to answer questions about the doctor-and-patient relationship. Or, when we trend how long staff spends cleaning rooms, we can compare that with infection rates."

One of the 25 largest hospitals in the country, Washington Medical Center has a number of specialized capabilities—including the nation's largest trauma center, a regional burn center and a five-helicopter medevac program. The hospital also has a special responsibility as a core medical care resource for a terrorist attack or other mass-casualty incident. The real-time locating features of the RFID system will help the hospital more effectively respond to a mass incident, Dade says, as well as collect and monitor the large volume of information needed to deal with mass casualties.

Parco's tags operate at the 6.5 GHz band and utilize UWB technology, whereby devices emit a series of extremely short pulses (billionths of a second or shorter) across a frequency segment wider than that used by conventional RFID tags. Because Parco tags use multiple frequencies simultaneously to transmit their signals, the company claims, they can transmit a greater volume of data more quickly.

Washington Hospital Center is using two types of UWB RFID active tags. The asset tags are 1-inch cubes screwed or glued to equipment; the medical staff wear tags the size of credit cards, either clipped onto clothing or attached to a cord worn around the neck. The hospital is considering several options for patients, including embedding the tags into wristbands or attaching them to medical records that remain with the patients—an option that, according to Dade, makes more sense for those undergoing surgical procedures. The interrogators can detect tags at a range of 600 feet, and the tag's battery can last from one to five years, depending on how frequently reads are taken.

Each tag has 32 bytes of data and transmits a unique ID number, as well as information on battery status, whether the tag has been tampered with and the location of the medical device to which the tag is attached. The hospital is developing software that will enable it to build relationships between two tags—one affixed to a bed, for example, and another affixed to an IV pump—to make determinations about the items. "If an IV pump is within 2 feet of the bed, it's likely being used, so we will know to look elsewhere for an available pump," Dade says.

The data generated by the Parco location-tracking system will populate the hospital's clinical information system (CIS), called Azyxxi (which rhymes with "Trixie"). In addition to serving as a repository for a patient's clinical information, Azyxxi provides caregivers access to comprehensive patient information, including EKGs, scanned documents, X-rays, CT scans, MRI scans and ultrasound images. Doctors at Washington Hospital Center designed the system using Microsoft software-development tools; in July 2006, Microsoft acquired Azyxxi and partnered with the hospital to continue developing and enhancing it. By logging into the CIS, nurses, doctors and support staff at the hospital will be able to locate any medical equipment or staff they're looking for within 2 feet.

RELATED_ARTICLES After its initial installation of Parco's UWB RFID system in late 2004, Washington Hospital installed another three readers and 40 tags in an office area. In the past year, the hospital has added Ethernet cables throughout the entire facility to accommodate all the readers needed to track the tags. Dade says installing the cable was time-consuming, in part because of the age of the hospital buildings, which date back to the 1930s.

"The walls are thick, and in some cases, there is lead shielding," Dade says. "In areas where we thought we could get 4- to 5-foot coverage off of one [reader], we were, in fact, only getting about 3 feet off of one, because of a lead wall. So in some cases, we had to add more receivers."

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