



Pursuing Wireless Excellence at Cedars-Sinai Medical Center

CASE STUDY

CHALLENGE

Founded in 1902, Cedars-Sinai Medical Center is consistently ranked as one of the top hospitals in the United States. Housed in seven buildings in west Los Angeles, including three, 16-story towers, Cedars-Sinai has more than 2,000 attending physicians and more than 8000 staff members from all walks of life (including research, teaching and community service), all involved in the care of patients. Featuring a Level I Trauma Center, several critical care facilities, operating rooms, laboratories, a pharmacy, 950 patient rooms, and a cafeteria, Cedars-Sinai is a premier medical education center, with some 60 graduate medical education programs underway.

Throughout its million square-foot campus, Cedars-Sinai relies heavily on fast and reliable communications. From the maintenance and housekeeping staff to doctors and nurses in patient care units, everyone employed in the campus must be constantly available. Prior to the year 2000, Cedars-Sinai relied on a combination of overhead paging, beepers and two-way radios to connect with its physicians and staff, as was the case with most hospitals at the time. But in its continuing effort to provide the best care, Cedars-Sinai was an early adopter of wireless infrastructure as a means of speeding communications.

In 2000, Cedars-Sinai's IT department deployed the Ericsson Digital Wireless Office Service (DWOS) service offered by AT&T wireless. DWOS offered a vision of immediate connectivity for all Cedars-Sinai personnel. "Our staff did a study in 2003 to see how cellular phones could improve our response time, and we found that having cellular communications saved about 30 minutes," says David Dean, telecommunications system



engineer at Cedars-Sinai. "With the pagers, sometimes you had to leave a message and wait for a call-back just to have a 30-second conversation. The DWOS system gave us instant communications and greatly increased peoples' efficiency."

Based on pico cells (individual, ceiling-mounted cellular radios), the DWOS system improved cellular coverage in some areas of the building and offered call mobility, so that a person's desk and cell phones rang simultaneously whenever he or she got a call. On the other hand, the DWOS system was limited in some ways. First, it operated on a proprietary, internal network, so each cellular phone user had to be individually authorized for use. In addition, the original system had a capacity of only 600 users, and adding more users would have required a complete redesign. Finally, the network used older TDMA technology, which was rapidly being supplanted by other wireless technologies such as GSM, CDMA, and iDEN.

As a result, Cedars-Sinai only offered AT&T cellular phones to employees, nurses, and doctors in the emergency, pathology, facilities, and some intensive care groups because their relatively mobile work styles made wireless availability most critical.

SOMETHING OLD, SOMETHING NEW

In 2004, the Cedars-Sinai IT staff found out that the DWOS product would be discontinued. As a result, the IT staff immediately began looking for a replacement system. This time, the medical center's early experience led to an expanded set of requirements.

"We wanted to have complete cellular coverage for anyone throughout the facility, not just in certain areas, and we didn't want to have to worry about cellular traffic interfering with medical telemetry equipment," says Dean. "We also wanted modern technology that gave our users a wide choice of phones and service plans."

After soliciting bids from all cellular carriers in the Los Angeles area, Cedars-Sinai's IT staff settled on proposals from Cingular and Sprint Nextel. Both solutions specified InterReach® Unison in-building wireless systems.

"It was an in-building system with distributed antennas that reminded us of the DWOS system, so its functionality was easily explained," says Milo Chavez, senior project engineer. Other carriers had proposed building macro base stations near the campus and beaming them at the hospital facility, but that approach raised interference and coverage concerns. The Unison system also distributed the same high signal strength at each antenna, so phones could operate on lower power because they always get a good signal. "Those two things did a lot to eliminate our concerns," says Chavez.

Ultimately, the IT staff selected the offers from both Cingular and Sprint Nextel to give it the widest possible selection of phones and services. With their push-to-talk feature and rugged cases, the Sprint Nextel phones were the best solution for the emergency and nursing personnel, while Cingular's broader range of handsets (including PDAs and smart phones) were better suited for physicians and others who wanted voice calling as well as synchronized e-mail, calendaring, and other EDGE-based data services.

In addition, the Unison system offered far more coverage and scalability to meet the facility's needs: expanding the system to support more users and coverage is a simple matter of adding new hubs and antennas. And rather than forcing IT staff to give users permission to be on the network, the system was caller-agnostic, providing immediate service to anyone with a Cingular or Sprint Nextel phone.

Finally, the new Unison system preserved the call mobility feature thanks to deployment of an Ascendant Mobility Server that fully integrates with the medical center's PBX.

Deployment took four months, beginning in November 2005: the Cingular system was up and running by December 31, 2005, and the Sprint Nextel system went on-line in February 2006. The cellular service signals are provided by on-site base stations installed by Cingular and Sprint Nextel in the medical center's telephone room. From there, Unison Main Hubs distribute the signal via fiber to Expansion Hubs located in various buildings or on specific floors of the high-rise buildings. The Expansion Hubs connect via Cat-5 cable to Remote Access Units (RAUs) and antennas. Thanks to this "active" electronic

design, the system offers end-to-end configuration, monitoring, and management for rapid responses to any component failure.

In all, the Unison system at Cedars-Sinai includes 9 Main Hubs, 32 Expansion Hubs, and 206 antennas covering all areas of the facility. The flush-mount antennas blend in with the ceilings, and the rest of the equipment is completely hidden from view. Installers saved money and time by using existing cable risers and raceways, and by linking buildings with existing fiber.

New Services, New Users

Since the system has been deployed, Cedars-Sinai has begun a campus-wide initiative to use cell phone communications for as many users as possible. Soon after the system went live, there were 800 users. There are 1300 users as of this writing (March, 2006), and new requests come in every week.

"Because it's a more modern system with better phones and services, there are more groups within the campus jumping on the bandwagon," says JoAnne White, telecommunications health system manager.

Another benefit is that Cedars-Sinai visitors who are subscribers on Cingular or Sprint Nextel networks can also get better coverage via the system. Since the Unison system is user-agnostic, visitors to the campus now have great cellular coverage as well, although the hospital still restricts public cell phone use to the lobby, cafeteria, waiting rooms, and some other areas.

Finally, Unison's complete call monitoring ensures that Cingular or Sprint Nextel knows immediately if an antenna is down. In that event, the carrier or the deployment staff can quickly make a replacement. "We had an antenna down once got it fixed right away," says Chavez.

Seeing the Future

Dean sees the new Unison system as eventually supporting most of the employees and staff at Cedars-Sinai, and he's also excited about the new data capabilities that have become available. He has begun reading up on mobile applications, and plans to look at some ideas that may further improve hospital operations in the future. "With TDMA, text messaging was a big deal," he says, "so it will be interesting to see what we can do now." Eventually, Cingular will upgrade its data service to HSDPA, which delivers over 1 megabit per second.

But the most important thing for this highly-regarded medical center is that it now has a comprehensive, reliable, and high-performance wireless voice and data communications system through which to continue its pursuit of health care excellence. And as future cellular services and higher data throughput become available, they can be delivered on the Unison system without requiring any system upgrade. For Cedars-Sinai, improvements in communications and medical care will now go hand in hand.



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