

Insights from
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Seeing the bigger wireless picture

Cook Children's vision of a more comprehensive wireless solution addresses both present and future needs.

? **You had multiple legacy networks in place for your various wireless applications. What led you to seek out a different solution?**

Mobile clinical technologies, such as Computerized Physician Order Entry, Radiology PACS, Ambulatory and Inpatient EMR, and Vital Sign Integration have become a necessity for physicians, nurses and staff.

Additionally, smartphone communications and entertainment for patients, families and visitors have increased.

Wireless services have moved from a "nice to have" to mission critical. But early attempts to establish mobile solutions and workflow were intermittent due to spotty Wi-Fi coverage and a very limited deployment of single-carrier cellular support.

? **What is your vision of comprehensive wireless and how is it pivotal to delivering exceptional care?**

Comprehensive wireless is now center stage at Cook Children's and led us to build a business case for the Medical Grade Wireless Utility (MGWU). We had substantial goals. The MGWU would provide a hospital-owned infrastructure to transport any wireless signal across more than 1 M sq. ft. of the Medical Center. It would offer multi-carrier smartphone support for everyone. It would enable mobile workflow by improving Wi-Fi reliability for enterprise and clinical users. And it

A single, comprehensive wireless network is significant for today's quality of care and the future of the enterprise.

When you consider that we had inadequate VoIP phone and cellular communications, Wi-Fi interference issues, and mediocre Computer on Wheels (COW) communications with our mostly proprietary and costly to maintain legacy wireless networks, you begin to appreciate the significance of our new, comprehensive wireless infrastructure.

Physicians can use their smartphones from any location within the hospital. Staff can utilize the latest biomedical devices. Patients can watch movies on their mobile devices. And, all of this can be done without interruption.

would ease the hospital stay for patients, families, and visitors.

The MGWU would make financial sense. The highly engineered wireless solution would lessen reliance on vendors and enable IT to roll out new applications and devices without worrying about underlying infrastructure or costly infection control issues.

? **How did your vision of a more comprehensive wireless solution lead you to engage Black Box?**

We selected Black Box because of their expertise and experience with in-building wireless infrastructures in complex hospital environments.

To address both present and future wireless needs, Cook's Children and Black Box converted disparate legacy wireless networks into a comprehensive wireless solution capable of supporting 4G cellular, Wi-Fi, medical telemetry, pagers, 2-way radio, and public safety.

? **How did Black Box's experience facilitate your implementation?**

Black Box surveyed the entire Cook Children's campus and optimized each and every wireless frequency to ensure consistent reliability everywhere in the medical center, including elevators, restrooms, and stairways.

Black Box focused on coverage, capacity, and criticality. For cellular, this included meeting the carrier requirements to isolate the hospital from the external cellular network. For Wi-Fi, it included segmenting traffic across multiple WLANS so that guest, enterprise, and medical usage could be managed independently, without affecting each other.

Only after this attention to detail and the associated rigorous engineering was the solution deployed.

Reliable and silent communications that allow nurses to be both mobile and in contact with patients has enabled Cook Children's to create a calming private room setting that vastly improves the patient/family experience.

? *VoIP was an area where you needed to make substantial gains in terms of coverage and reliability. Has the MGWU delivered as you had hoped?*

Now that Cook Children's has a wireless infrastructure that we can trust, our focus has moved from the infrastructure to new end-user applications and devices.

The first was a Vocera VoIP solution that integrated nurse call and bedside physiological monitoring alarms in the neonatal intensive care unit where Cook Children's most fragile patients receive highly specialized and monitored care.

Reliable and silent communications that allow nurses to be both mobile and in contact with patients has enabled Cook Children's to create a calming private room setting that vastly improves the patient/family experience. Parents can stay in the room 24x7 and the two-way communications for both assistance calls and medical alarms enable nursing to be efficient while providing critical emergency response across an expansive set of private rooms.

? *You also had aggressive goals for a Bedside Medication Verification (BMV) initiative. How is that working out with the MGWU?*

A clinician-driven initiative, Cook Children's wanted to achieve an average hospital scan rate much higher than the industry average of 70 percent.

Again, we did not have to worry about the wireless environment, so IT was able to focus on usability of the barcode scanners, printers, and even the barcode band that would be placed

on patient wrists. When it came to rollout, the system integrity and continuity allowed IT to concentrate on training and support of the new application to maximize nursing adoption. The results have been astounding with more than 97 percent of patients and their medications being scanned on a daily basis.

The Black Box Medical Grade Wireless Utility project has exceeded Cook Children's expectations.

The comprehensive wireless infrastructure that started in the 400,000 sq. ft. North Tower has expanded into other hospital and medical office buildings, which presently represent more than 600,000 sq. ft. of additional wireless coverage.

The MGWU is now included in all new construction projects and will be deployed in the brand new South Tower of the Medical Center next.

The partnership between Cook Children's and Black Box has allowed the hospital to control and support all wireless needs across all parts of the campus with room to grow. This comprehensive and scalable solution meets the needs of doctors, nurses, and staff. As a patient-centric care facility, it is equally vital that this solution meets the needs of the patients we care for, along with their families, and their visitors.

? *With the proliferation of wireless devices and applications, you were concerned with device density and any system's ability to keep pace over time. How has the MGWU fared?*

With the general growth of wireless, the number of devices in a single room can challenge most wireless infrastructures. It is not uncommon now to have 4-to-6 wireless medical devices in a room and 4-to-6 wireless devices used by family, visitors, and patients for a total of a dozen wireless devices in a room.

At Cook Children's, the number of wireless devices has increased by more than 1,000 percent over the last 5 years with most of this growth on the GuestNet.

But with the ability to offer different types of wireless connections and the ability to segregate Wi-Fi traffic between guest-critical, enterprise-critical, and life-critical, Cook Children's has been able to manage this growth, keeping the GuestNet in check without impacting the throughput or reliability of the enterprise and medical applications.

Based in Fort Worth, Texas, Cook Children's Healthcare System is a pediatric, integrated delivery network that includes a 428-bed medical center, an extensive physician's network, a pediatric surgery center, home health services, a health plan, and more than 35 pediatric offices and specialty clinics throughout the state. Cook Children's has developed a strong reputation for providing superior patient care and outcomes.

Black Box (NASDAQ: BBOX) a leading communications systems integrator dedicated to designing, sourcing, implementing and maintaining today's complex communications solutions. Black Box services more than 175,000 clients in approximately 150 countries with approximately 200 offices throughout the world.