CASE STUDY

THE WI-FI PERFORMANCE COMPANY

Beaumont Health System

Improves patient care and responsiveness with peak performing Wi-Fi

Beaumont®

Beaumont Health System is a regional health care system in Metro Detroit. It currently operates 1,728 beds at three locations. The Royal Oak campus with 1,070 beds is the 20th largest US hospital and is ranked 1st in Michigan by U.S. News and World Report.

Challenge

Hospital buildings are hostile to wireless connectivity, with concrete walls, wire mesh and other RF-blocking materials. Yet Wi-Fi has become mission-critical in hospitals as more mobile devices and wireless-enabled equipment and medical device are brought into the environment.

Despite being one of the leading hospitals in the country, even Beaumont had its fair share of Wi-Fi issues according to Steve Gammon, Lead Network Engineer for Beaumont Health System. “Like many organizations we had intermittent Wi-Fi issues and depended on what users told us, to track them down. There was no system in place for verifying or validating issues.” In addition, Gammon indicated that peak performing Wi-Fi was becoming increasingly critical for doctors and nurses to perform their duties. Nurses relied heavily on the WLAN in order to be effective and responsive by visiting patients from room to room, utilizing mobile EMR charting and Wi-Fi based patient ID technology.

Solution

Beaumont Hospital selected the 7SIGNAL Wireless Network Monitoring platform to obtain the real-time performance data needed to isolate and correct Wi-Fi connectivity and performance issues. Sapphire Eye sensors were installed at the Grosse Pointe, Royal Oak and Troy locations as well as the PNC office building location. The 7SIGNAL platform performed active and passive measurements around the clock, testing a variety of SSIDs on both the 2.4 and 5GHz bands. Beaumont also enlisted the help of 7signal’s WLAN experts to assist in identifying trouble areas and developing a systematic plan for improvement.

Beaumont Health System

Location: Metro Detroit, Michigan, USA

Hospital Beds: 1,728

Critical Apps: EMR, Nurse call

Benefits Realized from the Sapphire Wi-Fi Performance Management System

- Over 60% downlink throughput improvements at all locations
- Significant improvements in voice quality for the nurse call badge system
- Fewer complaints about intermittent or slow Wi-Fi connections

Results

7SIGNAL and Beaumont teamed up for the analysis phase to review the baseline performance data gathered by the Sapphire system. As a result of monitoring, measuring and analyzing the wireless LANs at different locations, Beaumont Hospital performed a series of changes to improve WLAN performance, including the following:

- Optimized use of 802.11 protocols
- Proper application of 5GHz HT (High Throughput) channels
- Access point transmit power adjustment
- Validation of wide area network access speeds
- Before / after checks of wireless controller software upgrades

These optimization steps yielded significant improvements in voice quality for the nurse call badge system – one of their most mission critical mobile applications, and they saw a 60-75% increase in downlink throughput across all locations, without any investment in additional access points.

Given the dynamic nature of the Wi-Fi environment, Beaumont Hospital continues to rely upon the 7SIGNAL platform to ensure performance and quality of service. After performing remediation and getting the overall network performing above baseline targets, the hospital then established service level thresholds within the 7SIGNAL platform.

When the service level targets for user experience metrics such as throughput, latency and jitter begin to slip out of compliance, proactive notifications alert Beaumont IT staff, enabling them to address the issue before care-giver productivity is impacted.

The system also stores historical data and presents graphs that show performance trends over time. Whenever changes are implemented to the wireless network, they are noted on the graphs so IT staff can easily verify whether the performance impact of the change was positive or negative.

Proactive Approach

Beaumont considers its Wi-Fi network to be mission-critical and the hospital lacked the systems and tools to adequately troubleshoot WLAN performance bottlenecks. Sapphire solved this problem, giving them the means to proactively monitor the user experience 24/7.

Each Sapphire Eye acts as a client on the WLAN, connecting to the various wireless access points in its vicinity. The sensor simulates various types of traffic from the client device perspective, and provides data on, throughput, attach rate, retransmissions, voice quality and other key performance metrics.

> ***"Without a system in place, you can't put your finger on the issues. So, it is hard to correct what's wrong or verify what's right."***
>
> Steve Gammon,
> Lead Network Engineer