How Healthy Is Your Hospital's Wi-Fi? **WHITEPAPER**

## Maximizing Tech ROI Starts with Diagnosing the Health of Your Wi-Fi

A 2016 survey revealed that 70 percent of C-suite healthcare executives expect technology to have the biggest "game-changing" impact on the healthcare industry.

Emerging wireless technologies, such as mobile solutions and the Internet of Things (IoT), will affect major shifts in hospital best practices and patient care.

Healthcare technology benefits are immense. However, maximum ROI often depends on the hospital's ability to proactively pinpoint and remedy Wi-Fi problem areas.

Let's take a deeper look…
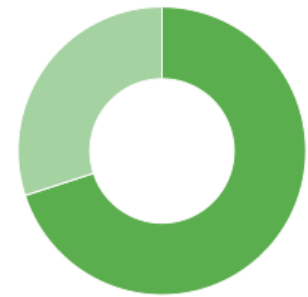
Technology is the Heart of the Hospital

Electronic Health Records (EHR)

Technology is having a profound impact on hospital settings. Most significantly, EHR providers, such as Epic, McKesson, and Cerner, are depended upon by 96 percent of non-federal acute care hospitals in the United States:

- An estimated 190 million patients have a current electronic record with **Epic**.

- **McKesson**, thanks in part to its flagship EHR system, Paragon, has out-earned most other health IT companies with a recorded $3.1 billion in 2016 revenue.

- **Cerner,** also a top earner at $4.43 billion in 2016 revenue, has been implemented in more than 24,000 facilities worldwide.

The breadth of an EHR system's capabilities essentially runs the hospital, from second-by-second patient updates to billing data. As such, hospitals that integrate an EHR system expect a significant return on investment, and many get it: respondents to a 2016 HIMSS survey indicated that 81 percent of hospitals with an EHR system saw valuable overall savings thanks to EHR implementation.

Read More:
Quality Wi-Fi Reaching "Epic" Proportions in Hospitals

Wireless Biomedical Devices

Say goodbye to the sea of wires connecting a patient to machines and monitors. Wi-Fi enabled medical devices allow greater patient mobility. Sixty-four percent of hospitals use Wi-Fi to connect medical devices like motion sensors and medical tricorders. The futuristic dream of a wireless hospital bed is probably closer to reality than previously thought, thanks to increased availability of wireless biomedical devices.

Wearable Devices

Wearable devices are one of the quickest growing trends in healthcare. Twenty-one percent of consumers use a healthcare wearable, and healthcare providers advocate for the devices' ability to track overall health—especially after a hospital stay. Hospitals are regularly integrating new wearable technology. A few examples:

- The Leaf Patient Sensor monitors patient health and prevents complications by wirelessly tracking patient movements.

- Philips' medical-grade biosensor tracks vital signs and transmits them to physicians through software.

- The Aparito wristband collects data, such as heart rate and ambient temperature, and sends it to an app and a physician-facing dashboard.

Such devices save medical costs by alerting physicians to potential problems before they occur. Furthermore, more smartphone and tablet applications are now being developed with HIPAA compliance in mind, increasing app use throughout healthcare systems.

Read More:
Wi-Fi Wearables are the Lifeblood of Next-Gen Hospital Care

Guest Wi-Fi Networks

For patients and their visitors, guest Wi-Fi networks aren't just a luxury anymore—they're an expectation. A 2016 survey of hospital IT professionals indicated that 85 percent of hospitals provide free guest Wi-Fi access to patients and visitors.

Most importantly, guest networks separate unsecured devices from the hospital's internal network, which is used to transmit sensitive personal data about patients.

It is crucial to maintaining a patient's connection to the world outside the hospital.

A hospital's quality-of-service declines without the ability for guests to stream content and experience a good Wi-Fi connection.

Wi-Fi is Mission Critical

Due to the increased dependence of hospitals on wireless technology, the drawbacks of poor Wi-Fi connectivity can be crippling. Without fast, strong Wi-Fi, patient files can't be accessed, physicians won't receive time-sensitive communications, and critical wireless biomedical devices can fail. Lives would be at risk.

Additionally, hospital employee efficiency and productivity is diminished significantly without a strong Wi-Fi signal to accomplish basic job functions. More than 90 percent of IT professionals agree that the biggest benefits of hospital employees using mobile devices on Wi-Fi are improved access to information and enhanced communication, collaboration, and care coordination. Without the monitored Wi-Fi needed to access these systems, the overall quality of patient care is affected.

However, hospitals face unique connectivity challenges: they generally have thousands of access points; thick cinder block walls and moving metal objects can block radio frequency

signals; and the sheer volume of devices moving in and out of the network can be overwhelming to monitor.

As such, it's incredibly difficult to track Wi-Fi performance in a traditional hospital setting. The most effective way to determine Wi-Fi trouble spots is to observe the individual devices experiencing connectivity issues.

Read More:

[Is Wi-Fi Coming to the HCAHPS Survey Soon?](#)

Yet, most hospital IT professionals waste time fielding complaints about "bad Wi-Fi" without crucial information on when the poor connectivity occurred, the device in use at the time, end user location, and duration of the issues experienced. This approach is extremely reactive and doesn't determine the root cause of the problem, resulting in frustration and wasted time.

Better Wi-Fi Means Better Working Technology

Proactive Wi-Fi monitoring is key to enhancing the use of hospital software and wireless technologies.

A major investment in hospital technology is a sunk cost without the capability to consistently support its connectivity needs. Without a strong Wi-Fi signal, the hospital is unable to realize the gains of the robust new tools available.

<u>Uncover the Root Cause of Issues</u>

To see exactly where problems exist, IT specialists need to continually analyze and measure the network's performance by collecting data from access points, applications, *and* individual devices.

Traditional data, such as traffic monitoring by access points, has many drawbacks. For starters, it only measures the traffic on the channel on which it's operating, which renders it useless for gathering analytics over multiple channels during peak traffic times. Additionally, traditional Wi-Fi monitoring doesn't have the capability to track trends in data over time. Most importantly, there is no capability to pinpoint exactly which devices are having connectivity issues.

In some cases, the frustration a physician might be experiencing with the healthcare software may actually exist only on his or her device. IT specialists need the tools to drill down into individual devices on the network to uncover the root cause. For example, that it's a faulty iPad running healthcare software, not the software itself.

This efficient problem solving not only enables better use of software and technology, it builds confidence in the hospital's Wi-Fi system.

If issues do arise with specific technologies, hospital CIOs are equipped with data to address the vendor about the problems. The result of having this detailed data is faster, more accurate resolutions and better-working technology.

Stop Problems Before They Start

Wi-Fi monitoring gives IT professionals the ability to set alerts when Wi-Fi performance drops below a certain threshold. This lets them proactively assess problems before they become a threat to the mission-critical devices used throughout the hospital.

As a result, IT departments are incredibly efficient, and better able to pinpoint potential problem spots and simplify planning when implementing new technologies.

Realize Greater Investment Returns

Technology that works hard results in a hospital that can work hard. Physicians and nurses experience greater efficiency when the wireless technology they rely on works quickly and without breaking down. Advanced Wi-Fi monitoring, with its ability to predict potential issues before they happen, can keep problems from slowing down the key employees that impact hospital functions.

The hospital as a whole relies on strong Wi-Fi, which means that Wi-Fi is essential to keeping the hospital moving. Time savings for physicians and nurses means money savings for the hospital. Additionally, less problematic Wi-Fi means fewer Wi-Fi support requests, saving the IT department time and money.

Wi-Fi Monitoring in Action

In one instance, a Midwest hospital utilized 7Signal's Sapphire Eye Wi-Fi monitoring before implementing Epic. A key pain point was the lack of visibility into the end-user's Wi-Fi experience, leaving IT professionals with a major knowledge gap in their Wi-Fi performance monitoring. Upon implementing Wi-Fi monitoring devices with the capability to report on end-user experience on individual devices, adjustments were made that resulted in:

- A throughput increase of up to 110 percent
- End-to-end network delay reduction of 35 percent
- Packet loss reduction of 80 percent
- The determination that Epic implementation was possible with adjustments to the current WLAN setup

To make the EHR system work better, the hospital successfully used Wi-Fi monitoring for fact-based decision-making regarding Wi-Fi capability, a critical component of Epic's performance. This type of risk management is essential to making healthcare technology work better for the thousands of users who depend on it.

Wi-Fi Monitoring Creates a Positive Impact

To make wireless healthcare technology work better, the software's infrastructure must work better. Strong Wi-Fi means increased efficiency for physicians, IT professionals, and hospital technology. By monitoring hospital Wi-Fi, the landscape of a wireless hospital is dramatically improved.

About 7SIGNAL

7SIGNAL is a U.S.-based network technology company with a mission to make wireless LAN networks work—reliably. The company's groundbreaking platforms crowdsource the Wi-Fi experience from every corner of your global network to provide valuable insights and analytics that offer proactive actionable intelligence for finding and fixing Wi-Fi performance issues before productivity is lost. 7signal's solutions help ensure that all end-users in hospitals, institutions of higher education and enterprises can connect and stay connected to their critical applications at all times.

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