Meru Wireless Networks In Healthcare

Mobile Healthcare Solutions Require Reliable WLAN

Healthcare Market Dynamics

Healthcare market dynamics strongly influence the way healthcare organizations pursue their missions. Today's healthcare industry is being influenced by a number of related trends:

:: Growing demand for care

:: Caregiver shortages

:: Rising costs

:: Downward pressure on revenues

:: Threat of litigation

Healthcare Business Drivers

These marketplace dynamics shape the critical business drivers that affect healthcare organizations such as hospitals, reaching/teaching hospitals, and long-term care facilities. Healthcare organizations need to:

:: Empower staff for increased productivity

:: Reduce errors to increase patient safety

:: Improve diagnoses to achieve better patient outcomes

:: Reduce costs while improving care

:: Share information across providers to achieve clinical integration

:: Demonstrate "meaningful use" of EHRs and compliance with regulations such as HIPAA

Mobility Is Critical to Quality Care

Traditionally, the productivity of physicians and caregivers has been hampered by processes that have failed to keep up with the demands of the industry. For example, healthcare workers have had to visit the nurse's station to view patient information. Today, healthcare organizations have embraced mobile applications to streamline operations, reduce costs, and improve the quality of care. These applications fall into several main categories:
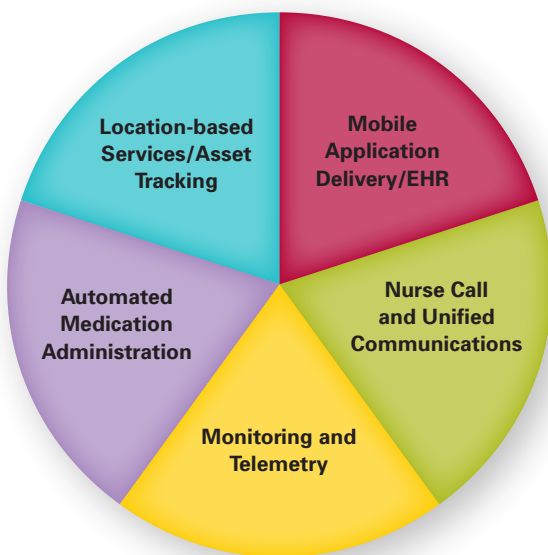
These mobile applications, along with the advent of "bring your own device" (BYOD), have resulted in a massive increase in the density of devices and the volume of wireless traffic. From personal mobile phones and smartphones to notebook computers, tablet PCs, workstations on wheels (WOWs), bar code scanners, telemetry

systems, communication badges, and VoIP handsets, the wireless LAN must be able to simultaneously deliver applications, data, and voice to everyone who needs them, when and where they need them, on any device.

Conventional Wireless Technology Fails to Meet Healthcare Requirements

The sheer numbers of mobile devices demanding wireless network resources in healthcare environments has hit a ceiling in terms of the ability of conventional wireless networks to keep up. That's because of a fundamental flaw in traditional wireless: putting client devices in control of network access. This limit on the traditional implementation of 802.11 manifests itself in a wide variety of network problems:

End User/Clinician Issues

:: Dropped voice calls and poor voice quality

:: Inability to reliably connect to applications or information

:: Lack of ability to multitask across applications

:: Wireless assets, such as WOW s and EHRs, not being used at the point of care

:: Wireless signal not available in some areas

:: Poor application performance

IT Issues

:: High volume of complaints

:: Continuous need for coverage and channel planning

:: Tuning and re-tuning the wireless network

:: Significant cost and engineering effort required to scale network for new applications

:: Need for multiple staff members and specialized expertise to keep wireless network operating

:: High staff, management, and support costs

These network issues have created the popular misconception that clinical technologists have no real choice—that because all wireless solutions are based upon the same standards, they come with the same limitations. Fortunately, healthcare organizations do have an alternative: Meru Networks® uniquely unlocks the potential of 802.11 to help restore control to IT.

Meru Networks: Powering Mobile Healthcare Solutions

With Meru, healthcare organizations get the freedom of choice and the power of control over their wireless networks. Meru easily accommodates high-density, distributed environments so that physicians and caregivers stay continuously connected throughout the hospital and beyond—they get toll-quality voice, with seamless roaming and no dropped calls. Meru supports critical mobile applications at the point of care, enabling hospitals to confidently deploy innovative solutions for mobile access to patient records, patient monitoring, dosage verification, asset tracking, and voice. Meru helps you regain control over your organization's productivity and budget. You're able to lower costs for your wireless deployment—as well as for your business as a whole—by realizing the full potential of mobile.

Meru's single-channel architecture frees your healthcare organization from the limitations imposed by client control. By taking network control away from client devices and restoring it to your IT managers, we give you the freedom to take full advantage of wireless technology. The single-channel approach eliminates co-

channel interference and the need for costly and arduous channel planning. Additional channels can be layered to increase capacity within the same physical space, offering you superior flexibility in planning your deployment strategy.
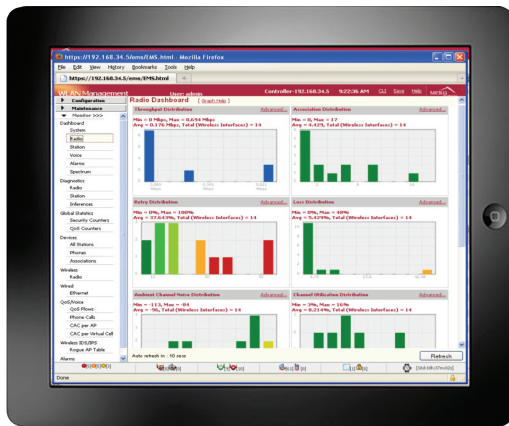
Running on Meru controllers, System Director OS is the intelligence that puts the network in control to deliver superior reliability, scalability, and predictability in your wireless LAN deployment.

Meru's Air Traffic Control® ensures that all devices operate at their highest speeds to deliver wired-like performance with the mobility of cellular for your entire hospital staff. Meru enables healthcare organizations to use a single wireless network for all voice, data, video, and telemetry applications, with deep visibility into network health. Using network telemetry from each access point, Meru infrastructure delivers proactive and predictive diagnostics and measures the health of your wireless transmissions. Meru provides real-time and six-month historical visibility into client station diagnostics (such as laptops, tablets, and smartphones) for fast troubleshooting down to the Wi-Fi event level for each client.

Meru Enables Meaningful Use of Electronic Health Records

Healthcare organizations are currently able to take advantage of financial incentives for demonstrating meaningful use of EHRs. It is a competitive imperative that you get a head start on this, because these incentives will transition into disincentives for non-adoption in a few years. Meru is uniquely positioned to help your organization meet a variety of criteria for meaningful use, including:

:: Use CPOE (computerized physician order entry)

:: Generate and transmit permissible prescriptions electronically

:: Record and chart changes in vital signs

:: Implement one clinical decision support rule

:: Exchange key clinical information electronically

:: Protect electronic health information through the implementation of appropriate technical capabilities

Robust WLAN Security Enforces Policies, Protects Sensitive Data, and Aids in Compliance

Meru offers advanced security measures to help maintain HIPAA compliance. Meru provides WPA2/802.1x authentication and encryption for all wireless transmissions to protect data. A per-user, per-application firewall enables you to centrally enforce security policies and secure access within physical perimeters. Meru also supports network vendors' Network Admission Control (NAC) solutions.

IDC reports on BYOD indicate that clinicians increasingly want to use their own mobile devices to connect them to the healthcare organization's network, yet 56 percent of survey respondents cited encryption of data transmissions as a top security concern (*Source: IDC Health Insights Predictions 2012: Health, The IDC Health Insights Research Team Web Conference, December 5, 2011*). Consistent with HIPAA and best practices for security in healthcare, Meru Identity Manager provides for both managed guest access and automated secure device provisioning with 802.1x authentication and encrypted data transmissions.

| Meru WLAN Security |
| --- |
| **Secure Connectivity** |
| :: WPA2, WPA |
| :: 802.1x, PEAP, LEAP |
| :: VPN from remote offices |
| **Authorization** |
| :: Radius |
| :: MAC-based |
| :: Captive portal |
| **Intrusion Prevention** |
| :: Rogue AP detection and mitigation |
| :: Wireless IPS/IDS |
| **User, Device, Application Security** |
| :: Per-user and application-aware security policies |
| :: Guest lifecycle management |
| :: 802.1x provisioning for client devices |
| :: PCI compliance |

Simple to Deploy and Manage

Meru wireless networks deliver low total cost of ownership because they are so easy to deploy and manage. The Meru Service Assurance Application Suite, featuring E(z)RF™ Network Manager, Service Assurance Manager, and Spectrum Manager, delivers superior ease of management for dramatically greater operational efficiency. These powerful management tools ensure constant connectivity for reliable telemetry, speed your mobile EHR deployment, and help you achieve "meaningful use" faster.
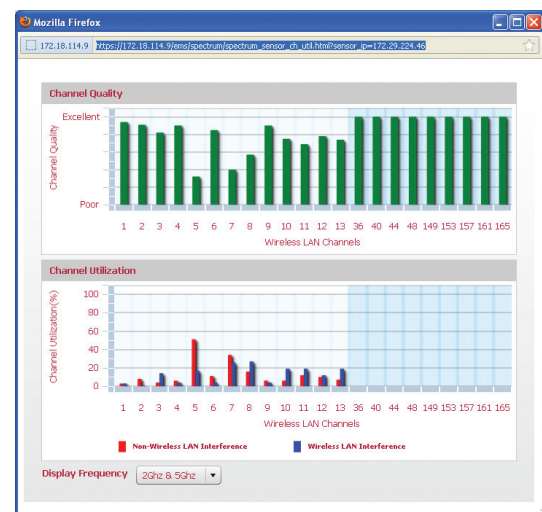
Spectrum Manager helps you to identify, remediate, and prevent sources of RF radiation.

Customer Success Enabled Through Solutions

Our customers deploy, operate, and manage a diversity of devices and applications on their Meru WLAN, including those from the companies listed below. Many of these vendors are members of the Meru WINS™ (Wireless Interoperability and Network Solutions) program.

Location-based Services/Asset Tracking

AeroScout
Ekahau

Mobile Application Delivery/EHR

Cerner	McKesson
Eclipsys	Siemens
Epic	

Nurse Call and Unified Communications

AAstra	Microsoft
Ascom	Polycom
Avaya	T-Mobile
Cisco	ShoreTel
Fujitsu	Voalte
Healthsense	Vocera
Hitachi	

Monitoring and Telemetry

Cardinal Health	Hospira
Draeger Medical	Welch Allyn
GE Healthcare	

Automated Medication Administration

Intermec	Psion/Teklogix
Motorola/Symbol	

Mobile Computing/Smart Devices

Apple	Motion Computing
Dell	Motorola/Symbol
Hewlett-Packard	Psion/Teklogix
Intermec	Socket Mobile

Security and Network Admission Control

Bradford Networks	Juniper
Impulse Point	

Distributed Antenna

Inner Wireless	TerraWave Solutions
Corning/MobileAccess	

"The Meru network is ideal for us. The maintenance cost is much lower. And with limited staff, I need a network that I can put in, forget about, and manage from my office."

Brian Boxell | Network Manager
Parkview Health System
Fort Wayne | Indiana | U.S.A.

"We gained the coverage we needed with 20 percent fewer units than we expected. The final cost of the Meru wireless LAN came in at approximately 50 percent of what other vendors had proposed."

Michael Verna | Technical Support Manager
LibertyHealth System
Jersey City | New Jersey | U.S.A.

"Our medical network needs to be isolated from other Wi-Fi services because the data is time sensitive and should not compete with other services for air time. We need this isolation because the requirements are vastly different between medical and standard enterprise Wi-Fi devices. With our solution, we are able to keep medical devices on separate channels, assuring the level of uninterrupted communication that is necessary."

Don Huff | Corporate Director of Clinical Technology Services
Methodist Le Bonheur Germantown Hospital
Memphis | Tennessee | U.S.A.

"The Meru virtualized wireless network simply runs. Now we can stay focused on enriching our healthcare operations and decreasing our overall costs."

Don Parlagreco | Team Lead/Network Analyst for Network Data Systems
Faxton St. Luke's Healthcare | Utica | New York | U.S.A.