BridgeWave

Case Study

Medical X-Ray Center

Medical X-Ray Center Ensures High-Quality Patient Care by Delivering Bandwidth-Intensive Digital Images Using BridgeWave's Secure, Reliable Gigabit Wireless Links

Medical X-Ray Center P.C.

Medical X-Ray Center is a private practice radiology center that serves hospitals and clinics throughout South Dakota, Minnesota and Iowa. Founded in 1961, the Sioux Falls, S.D.-based organization provides specialized diagnostic and therapeutic radiology services using the latest medical procedures and technologies.

One of only three accredited radiation oncology facilities in a five-state region, Medical X-Ray Center's 31 physicians along with therapists, nurses, radiologic technologists and office staff are dedicated to providing the highest levels of patient care. To that end, the center transitioned from traditional film-based technology to an all-digital Picture Archiving Communications System (PACS) for capturing, storing and distributing all medical images.

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- Rod Sevening,
IS Manager, Medical X-Ray Center

According to Rod Sevening, IS manager for Medical X-Ray Center, the migration to film-less technology required a complete network infrastructure upgrade to ensure fast and reliable transmission of bandwidth-intensive X-ray, CT, MRI and ultrasound images as well as customized patient treatment plans. "Time is always of the essence, so sending large files, which on average are several hundred megabytes but can surge to nearly 500 megabytes, is a top priority," he explains. Equally important to the three-person IT team was connecting Medical X-Ray Center's four treatment centers with a secure, HIPAA-compliant metropolitan area network.

CHALLENGE

With file sizes growing along with Medical X-Ray Center's number of patients and expanding services, the existing 100Mbps wireless links that connected the facilities became completely overburdened. Capacity problems resulted in poor performance and unreliable image transmissions, which impacted overall productivity and the efficiency of crucial patient procedures. "Troubleshooting the wireless links was tough because we had so many points of failure," recalls Sevening. "We spent more than two hours a week just trying to isolate and fix problems, since the radios only worked half the time."

Reliability problems, mostly caused by interference, prompted the team to install a T1 (1.5Mbps) leased line for redundancy. Unfortunately, the lower-speed backup link was needed too often, resulting in network traffic moving at a crawl, further impacting the center's ability to serve patients. "Latency was huge with the T1 line and it took far too long to deliver images over the network," says Sevening. "We couldn't risk relying on an unreliable solution or having insufficient bandwidth any longer."

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An essential wireless link between Medical X-Ray Center and nearby Avera McKennan Hospital also was used for hosting the center's website, as well as providing remote staffers access to vital patient files, treatment plans, email and other important data via Citrix application servers. "Without the radio link, we couldn't do procedures," Sevening adds. "Having a reliable, high-bandwidth connectivity solution was critical to daily patient care as well as the continuing success of our business."

SOLUTION

In seeking replacements for its aging, inadequate wireless bridges, Medical X-Ray Center determined that at least 700Mbps of bandwidth were needed to accommodate its requirements while maximizing the capacity of its upgraded network infrastructure. Compliance with federal HIPAA regulations demanded a connectivity link with the highest levels of security. While evaluating alternatives, the center's IT team briefly considered high-speed, fiber-optic based services but rejected the idea after learning that Gigabit Ethernet leased lines would cost approximately $10,000 a month in fees.

A thorough review of high-speed wireless products led Medical X-Ray Center to BridgeWave Communications, a pioneer in Gigabit Ethernet wireless networking and the leading supplier of GigE outdoor wireless products. BridgeWave's 60GHz and 80GHz E-Band links offer 10 times the bandwidth of comparably priced 100Mbps Ethernet wireless links. In addition, the BridgeWave products provide superior interference immunity and enhanced data security with extremely narrow antenna beam widths. BridgeWave's links also utilize an exclusive AdaptRate™ capability, which momentarily switches from GigE to 100Mbps data rates to penetrate intense cloudbursts, providing continuous operation even under adverse conditions.

With more than 1,000 gigabit radios deployed worldwide, BridgeWave's product maturity and strong customer track record prompted a closer look. Medical X-Ray Center was planning to place its radios atop a 150-foot city water tower to connect its headquarters to its treatment centers and nearby McKennan hospital, requiring a wide range of link distances. BridgeWave engineers reviewed the path lengths of the proposed links and recommended a combination of license-free 60GHz and licensed-band 80GHz radios. "Since the crucial hospital link was about 1.2 miles away, BridgeWave proposed the 80GHz product since it has a connectivity range of up to five miles," says Sevening. "The extra measure of physical security with the licensed link was an additional selling point. We also chose BridgeWave's AdaptRate models to achieve highly available link operation, even during periods of the most intense rainfall. BridgeWave was the only vendor offering this capability."

In deploying its BridgeWave AR60 and AR80 RF products, Medical X-Ray Center sought the assistance of Sioux Falls Two Way Radio, a wireless solution provider that installed and aligned the links within a single day. "The compact form factor, quality design and minimal indoor equipment requirements of BridgeWave's point-to-point wireless products enabled us to quickly and easily deploy the high-speed links for Medical X-Ray Center," says Kevin Schmidt, field tech manager for Sioux Falls Two Way Radio.

THE BENEFITS

Medical X-Ray Center's BridgeWave links have performed flawlessly since installation while providing ample bandwidth to meet Medical X-Ray Center's current and emerging networking needs. "BridgeWave's products have exceeded our expectations in terms of capacity, security and reliability," notes Sevening. "We now have room to grow without any concern about bandwidth limitations or any lingering performance or interference problems. What's more, these high-capacity links have boosted overall staff productivity while yielding a seven-month ROI."

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Instead of laboring for hours each week to keep its faltering 5.8GHz radio up and running, Medical X-Ray Center's IT team now spends less than 30 minutes a week monitoring network operations. "We no longer get any calls about incomplete image transmissions, files locking up or lack of server access," Sevening notes. "Everyone has much more confidence in network stability and reliability." As a result, Sevening projects that overall productivity has increased by approximately 30 percent.

For Medical X-Ray Center, the bottom line benefit of its newly revamped network is ensuring the highest levels of quality patient care. "By increasing network capacity, we've been able to improve patient care," concludes Sevening. "The day will come when each imaging file will exceed one gigabyte and when they do, we'll just add more BridgeWave links to carry the additional load. The amount of bandwidth they provide for the price just can't be beat."

CUSTOMER QUOTE:

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CUSTOMER:

Medical X-Ray Center, a private practice radiology center based in Sioux Falls, S.D.
www.medx-ray.com

INDUSTRY:

Healthcare

CHALLENGES:

- A growing number of patients and increased imaging file sizes overburdened existing 100Mbps wireless link, resulting in poor and unreliable performance.
- Troubleshooting outages took an inordinate amount of time due to the continually changing RF interference environment.
- T1 backup suffered from inadequate bandwidth and latency problems, impacting staff productivity and patient care.
- Need for high-bandwidth, highly reliable LAN extensions between multiple medical buildings and nearby hospital.

SOLUTION:

- BridgeWave AR60 60GHz and AR80 80GHz E-Band AdaptRate wireless links.

CHANNEL PARTNERS

- Sioux Falls Two Way Radio
- TESSCO Technologies

BENEFITS:

- Ample bandwidth to meet current and future networking needs while ensuring highest levels of quality patient care.
- Weekly administrative support has been reduced from two hours to 30 minutes.
- Confidence in the new network has resulted in an overall staff productivity increase of 30 percent.
- Seven-month ROI with flawless operation.

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