CUSTOMER SUCCESS STORY

RADIOLOGY LTD. RELIES ON AN END-TO-END CISCO NETWORK TO SEE IMAGES DIFFERENTLY. FASTER.

EXECUTIVE SUMMARY

RADIOLOGY LTD.

- Radiology Ltd. is a physician-owned group practice that has provided imaging services in Tucson for more than 50 years. More than 48 board-certified radiologists provide high-quality, all-digital imaging services to the Tucson community, including x-ray, CT, MRI, ultrasound, DEXA, fluoroscopy, mammography, and PET scans.

INDUSTRY

- Healthcare Imaging

BUSINESS CHALLENGE

- Increase network availability for transporting huge diagnostic image files
- Improve radiologist productivity and, therefore, physician satisfaction
- Build a foundation for adding future capabilities, such as wireless and IP telephony

NETWORK SOLUTION

- Cisco Systems® routing and switching solutions
- Cisco® healthcare solutions
- Cisco optical solutions
- Cisco security solutions
- Cisco SMARTnet® services

Time Warner Telecom provides managed services to Radiology Ltd., including Ethernet Internet Service (EIS) and Native LAN (NLAN) Service. Time Warner Telecom is also a Cisco Powered Network member, achieving this designation by maintaining high levels of network quality and by basing its service end to end on Cisco equipment, using proven platforms such as the Cisco ONS 15454 Multiservice Provisioning Platform (MSPP), Cisco 7600 Series routers, and Cisco Catalyst® 3550 Series switches. Cisco Powered Network member providers help enable customers to reduce training costs, activate advanced Cisco IOS® Software features, improve application performance, and benefit from Cisco standards for support.

BUSINESS VALUE

- Improved network responsiveness by 45 percent
- Significantly improved network availability
- Reduced reading time for emergency cases by approximately 45 minutes per case

Radiology Ltd. rebuilt its network to improve diagnostic image delivery for physicians and their patients. Based on an end-to-end Cisco Systems® network, scans are now available almost immediately for reading—accelerating diagnosis and treatment.

BUSINESS CHALLENGE

For Tucson-based Radiology Ltd., a growing population means an expanding business. Business growth required the private, physician-owned company to upgrade its network to meet several important goals—continue moving toward a completely "filmless" environment, improve radiologists' productivity, and lay the groundwork for new technologies that booming growth will soon demand.

Radiology's primary customers are referring physicians, who refer patients to one of the company's eight sites for conventional imaging procedures such as x-rays, ultrasounds, mammography, and Computerized Tomography (CT) and Magnetic Resonance Imaging (MRI) scans, as well as for specialized needs such as nuclear medicine-based Positron Emission Tomography (PET) scans. Radiology Ltd. is completely digital, providing scans at three sites integrated within Tucson's largest hospitals, and another five facilities.

"We have always had the best imaging equipment," explains Eric Nied, director of IT for Radiology Ltd., "and our focus is service—accelerating our processes and improving productivity to return results to the referring physicians quickly, so that they can appropriately diagnose and treat patients. We are part of the support team for the community's physicians." The company performs more than 600,000 procedures a year—totaling a million images every five weeks—and expects to grow at 15 percent annually.

The amount of data that must be transmitted over the company's network is huge. For example, the average digital mammogram is approximately 120 megabytes, and an MRI can often exceed 700 megabytes. In addition, as imaging technology continues to evolve, providing thinner "slices" and more rows of scanning, network traffic grows exponentially.

Radiology's original network linked eight sites with a microwave network, which transported data between headquarters and the satellite sites. Carrier-supplied T1 links carried voice. High volume had surpassed the capacity of the company's access layer switches, many of which were operating at 70- to 90-percent CPU usage. Poor reliability between imaging sites made it difficult to send data consistently over the

network. With forecasted high growth and plans for a new headquarters, limited capacity was holding the company back. Nied and his team decided to redesign the network.

NETWORK SOLUTION

Radiology Ltd. chose Calence, a Cisco® Gold Certified Partner, to help it design and implement the new network. Calence is a leader in building and managing networks and focuses on enabling businesses to accelerate their performance by aligning network technology, organization and capabilities with enterprise strategies. The Calence methodology involves initially assessing the network, gathering requirements, and recommending best practices and solutions for the specific network implementation.

"We provide a solid plan, along with design, implementation, and build, as well as transition support," says Mike Baumann, business development director for Calence. The Radiology network would require all those services. As part of the network redesign, Calence worked with Time Warner Telecom, a Cisco Powered Network member, to implement the network using fiber and T1 lines and deliver managed Internet and native LAN services. By choosing Time Warner Telecom managed services, Radiology Ltd. gains increased network performance for rapid delivery of digital images and high reliability.

"We were able to build fiber to the Radiology sites and provide Ethernet-based services at 100-megabit speeds for prices comparable to the price they were paying for DS-3 connections (45 Mbps)," explains Corey Heard, account executive for Time Warner Telecom Enterprise Accounts. "We delivered redundant SONET-protected fiber rings with Cisco ONS 15454 multiservice provisioning platforms (MSPP) and Ethernet technology, giving them the high availability they needed and the ability to keep using the technology they are familiar with." Time Warner Telecom installed fiber to the Radiology Ltd. headquarters and remote sites, enabling the firm to connect all its locations over a high-bandwidth, resilient optical transport.

The Radiology network core is based on redundant Cisco Catalyst® 6509 switches with switch fabric modules that can deliver throughput of up to 256 gigabits per second. The Cisco Catalyst 6509 switches connect to Cisco Catalyst 3550 Series switches, which support the company's desktop and laptop computer platforms. The Cisco Catalyst 6509 switches also connect to the Cisco ONS 15454 MSPP. Owned by Time Warner Telecom, the Cisco ONS 15454 MSPP provides the connection to its 100-megabit fiber links.

At the company's hub location, one Cisco 7200 Series router provides interfaces to the Ethernet network—through the Cisco Catalyst 6509—and to the Internet over the Time Warner Telecom network. A second Cisco 7200 Series router is used to connect a Radiology location in Oro Valley, beyond the city limits. It connects to the Time Warner Telecom fiber network using a DS-3 connection and a Type 2 circuit, so traffic is routed over the Time Warner Telecom network to Qwest for final delivery. The Cisco 7200 Series router also provides a range of features, such as access control lists (ACLs), which complement overall routing security and connectivity for a range of applications that physicians use. NetFlow data collection on the Cisco 7200 Series router monitors and gathers statistical data flows, allowing Radiology Ltd. to understand traffic patterns and behaviors for easier management and improved network bandwidth use.

Radiology Ltd.'s remote sites are connected using Time Warner Telecom's Ethernet Internet Service (EIS) and Time Warner Telecom metro Ethernet NLAN service running over 100-Mbps point-to-point fiber links. Each site also hosts a Cisco ONS 15454 MSPP, which terminates traffic and delivers it to Cisco Catalyst 4003 switches or Cisco 3600 Series multiservice access platforms. The Cisco 3600 Series routers run Hot Standby Router Protocol (HSRP) and provide WAN routing capabilities; they also connect diagnostic imaging systems, such as CT and MRI scanners, to the network. Patient scans are sent directly into the Radiology- Ltd. Picture Archiving and Communication Systems (PACS) over the network, where they become available for reading. Time Warner Telecom's managed NLAN service carries the Cisco Powered Network designation, meaning the service is delivered over a network built end to end with Cisco products and technologies. It works transparently with Radiology's own Cisco network.

“In the past, it might require a day and a half to deliver films to the referring physician,” says Ben Armstrong, assistant director of IT. “Now images can be available within five minutes of the examination. The kind of network throughput we have now is just awesome, and it enables us to scale and add many functions quickly.”

BUSINESS VALUE

The difference in performance is noticeable to the network users. Today, Radiology is experiencing a 27-percent increase in network throughput and a 45-percent increase in network responsiveness—with virtually no complaints to the IT group.

“We struggle like every business to improve performance and efficiency,” says Armstrong. “Greatly improved uptime is critical to revenue and to patient confidence. When something is not working, or is slow, it directly and dramatically impacts patient care. Delivering patient care is our business, and the new network significantly improved our ability to deliver.”

Radiologist productivity has increased dramatically as well—up to a 30-percent increase, estimates Nied. In the past, physicians would have to wait for films to be developed or delivered, gather prior images for comparison from other locations, and sit in front of a light box with a stack of films and reading while they dictate. Now through the Radiology Ltd. Website, referring physicians can securely retrieve and view their patients’ images even five minutes after the procedure is performed and view them on their own desktop systems. Not only does this save time, it also enables physicians to use a range of comprehensive three-dimensional modeling and viewing tools, giving them even better insight into what the images reveal.

“And radiologists do not exactly come cheap,” laughs Nied. “The network allows us to use them more effectively and provide better coverage for our hospital-based sites. We have radiologists on call from 11 p.m. to 7 a.m. to provide reading expertise for emergency care. We can send them images over those fast point-to-point links, and they can read the image and report back, saving approximately 45 minutes for each case.”

The network also allows Radiology Ltd. to continuously upgrade capabilities and add modalities. The company has been able to scale its Amicas teleradiology application and PACS to meet growing demand and deliver highly data-intensive images over the network. Radiology has added CT and MRI scanners directly to its network, as well as powerful three-dimensional modeling tools that provide additional insight into images.

“We now have in place the capability to implement whatever we need. We can easily go to the next generation of capabilities, and that is critical to the return on our investment.”
—Eric Nied, director of IT

“Having that scalability is valuable,” says Armstrong, “because you can upgrade Cisco IOS® Software on existing hardware and you do not have to do a complete system change. We have added a significant number of new medical procedures and new medical imaging equipment to our network without having to do anything to it. We can implement changes as needed and bring new features online very quickly.”

“Radiology Ltd. has expressed to us many times its satisfaction with the network, and our performance,” says Heard. “The company is extremely pleased—from service delivery to the technical simplicity of plugging its Cisco equipment directly into our Ethernet. It has been easy for Radiology to implement, and it has been extremely reliable.”

NEXT STEPS

Two new sites are being added to the network as Radiology Ltd. continues to grow. Future plans call for exploring options such as IP telephony and wireless access solutions. Nied sees opportunities for further enhancing the patient experience at the company’s sites by streamlining the check-in and patient registration processes using a touch-pad wireless solution that could deliver patient registration data directly into patients’ electronic records, along with the images from their procedures. The goal is to become totally paperless and filmless.

“We now have in place the capability to implement whatever we need,” says Nied. “We designed the network so that we can easily go to the next generation of capabilities without having a major upgrade, and that is really important when you consider the return on our investment.”

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To find out more about the Cisco Powered Network program and to find a service provider recommended by Cisco, go to: www.cisco.com/cpn

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To find out more about Time Warner Telecom, Inc., go to: www.twtelecom.com

To find out more about Calence, go to: www.calence.com

To find out more about Radiology Ltd., go to: www.radltd.com

This customer story is based on information provided by Radiology, Ltd. and describes how that particular organization benefits from the deployment of Cisco products. Many factors may have contributed to the results and benefits described; Cisco does not guarantee comparable results elsewhere.

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