

## **RADIOLOGY LTD. IMPROVES PATIENT CARE THROUGH FASTER, REDUNDANT PICTURE ARCHIVING COMMUNICATIONS SOLUTION PERFORMANCE**

**THE COMPANY:**  
Radiology Ltd.

**INDUSTRY:**  
Health care

**EMPLOYEES:**  
425

### **COMMUNICATIONS APPLICATIONS:**

- Patient and enterprise data transport
- Patient and referring physician Internet application support
- Enterprise local and long distance phone services
- Redundant, backup pathways to ensure uninterrupted application and data access

### **BUSINESS RESULTS:**

- Cut patient results turnaround by 85 percent
- Improved network availability from 85 to 99.5 percent
- Provided data transport infrastructure needed to migrate to paperless environment
- Turned PACS/data imaging solution into a revenue center

### **TIME WARNER TELECOM SOLUTIONS:**

Metro Ethernet-based Native LAN service – 2 Gbps

Ethernet Internet service DS-1 Digital trunks

## **THE CHALLENGE**

Radiology Ltd. is Tucson, Arizona's leading health care imaging services company. Each year, the firm processes more than 600,000 patient exams. These cover the entire spectrum of exams from CAT scans to mammograms to MRIs. The growth of patient data is brisk, with the company's enterprise disk arrays managing 30 terabytes of patient data while taking on an additional six terabytes annually.

At the heart of Radiology Ltd.'s applications is a picture archiving communications system (PACS). The legacy solution before used film to capture images, then couriers to transport them from the imaging equipment to select radiologists to read them, then transport them on to physicians who would use them to diagnosis and treat their patients.



“In order to reduce operational expenses and significantly speed up the delivery of services to doctors and patients, we knew that we had to go filmless and paperless,” said Eric Nied, director of information technologies at Radiology Ltd. “Still, by going digital that raises a number of security concerns. We had to do it in a way that was compliant with federal HIPAA requirements.”

Those requirements included the security of patient data, both at rest and in transport, and the protection of data through viable backup systems and technologies. Once implemented, a filmless and paperless solution would need large data transport pathways to transmit patient exams and enterprise data. Additionally, the company would replicate data across those same pathways to meet corporate and regulatory BC/DR requirements.

“In order to get from where we were, to where we wanted to be, we had to have a reliable, high-bandwidth communications infrastructure,” explained Nied. “We looked at the capabilities of providers in the Tucson area and selected Time Warner Telecom as the best solution to meet our requirements.”

## THE SOLUTION

### INTER-OFFICE CONNECTIVITY

Radiology Ltd. re-engineered its entire data communications infrastructure based on Time Warner Telecom’s metro Ethernet-based Native LAN service. Technicians installed a redundant, reliable dual-entry 100 Mbps connection to the company’s headquarters facility. Radiology Ltd.’s other 11 area imaging facilities are linked to the headquarters location in a hub and spoke topology via Native LAN 100 Mbps connections.

### A DATA REPLICATION ENVIRONMENT

Nied’s team placed tier one and tier two disk arrays at two data center locations. These are cross-connected using Time Warner Telecom 1 Gbps Native LAN connections. Data is replicated from tier one arrays to their counterpart tier one array at the DR site then replicated to tier two disk arrays.

"The Time Warner Telecom solutions deliver the reliability, bandwidth and performance that we need to support a paperless environment dedicated to patient health and employee productivity."

Eric Nied, Director of Information Technologies, Radiology, Ltd..

Radiology Ltd.



## ETHERNET INTERNET SERVICE

Radiology Ltd. uses a 30 Mbps Internet service to support patient and referring-physician's access to its website applications. While over 2,000 referring physicians are Radiology Ltd. customers, an average of 250 physicians are connected to Radiology Ltd.'s site at any given time. Employees also access the service for day-to-day Internet usage.

## THE VALUE TO THE BUSINESS

### FINANCIAL BENEFITS

According to Jim Palmer, chief operations officer for Radiology Ltd., "The Time Warner Telecom data communications infrastructure made it possible for us to migrate to a filmless and paperless exam and patient records environment by allowing us to transport high-volume data files. We were also able to consolidate patient records from multiple locations to a single data repository, which delivered significant cost savings for us."

Going to such an environment delivered other cost-savings advantages as well. For example, the company no longer spends money on film or patient files nor on the administrative time formerly dedicated to filing and pulling records. Moreover, the company was able to eliminate several patient record film storage facilities.

Nied credits the Time Warner Telecom Native LAN links for improving radiologist performance as well. "The high-bandwidth connections increased the productivity of our radiologists by 35 percent. They can pull up exams faster, read more of them and do it from any workstation in our network. We can also funnel exams to specialists according to their area of expertise to ensure patients receive the best care." Additionally, we are able to diagnose more studies than before and we can also handle more types of procedures with the same number of doctors.

### BUSINESS BENEFITS

"We couldn't have implemented filmless and paperless patient applications without the Time Warner Telecom Native LAN infrastructure," explained Nied. "A single chest x-ray image, for example, can average 40 megabytes. With 600,000 annual patient exams that adds up to a tremendous amount of data we have to move. And the 100 Mbps Native LAN links have flawlessly met that challenge."



With a reputation to uphold, and HIPAA regulations to meet, the company implemented a business continuity / disaster recovery (BCDR) solution. The company uses Time Warner Telecom 1 Gbps Native LAN circuits to replicate and backup data between its production and disaster recovery data centers. "Not only are we replicating our PACS image files on our backup disk arrays, we are also bringing mission-critical systems on line as well," said Nied. "The high-bandwidth Time Warner Telecom connectivity is a crucial component to help us protect the terabytes of patient data we generate annually."

#### TECHNOLOGY BENEFITS

Because the company supports area emergency rooms and outpatient clinics, executives place availability of patient data high atop their requirements list. "The reliability of the Time Warner Telecom solutions has been stellar," states Nied. "We went from about 85 percent network availability with our legacy solution to 99.5 percent availability with the new services. That has a direct and positive impact on our ability to deliver excellent patient care and generate revenues."

The Time Warner Telecom service markedly improved the performance of the company's PACS application. "The 100 Mbps Native LAN circuits cut turnaround time for results on patient image exams by 85 percent, from 1.5 hours to between five and eight minutes," said Nied. "We can push exam images to radiologists and physicians within minutes after the exam is completed now. The new solution replaced a teleradiology application based on image capture and resend over ISDN."

#### THE TIME WARNER TELECOM EXPERIENCE

Nied credits the Time Warner Telecom team with going the extra mile to increase the company's uptime statistics. "Every time they have done a network upgrade, they've done it without any significant downtime to our business."

As to the technical competency of the specialists he's worked with, "They've done an excellent job of helping us think through our communications solutions and set up a network that is reliable and optimizes the performance of our core applications."



TIME WARNER TELECOM PERFORMANCE METRICS SUMMARY

GOAL	BEFORE TIME WARNER TELECOM SOLUTION	AFTER TIME WARNER TELECOM SOLUTION	RESULT
Increase network availability	85 percent	99.5 percent	Upgraded to ultra-high availability to protect reputation in the community and deliver optimal service to area emergency rooms
Cut exam results turnaround time	90 minutes	5 – 8 minutes	Cut processing time by 94 percent
Implement robust BC/DR solution	Basic, costly solution	Replicate data between production & DR sites	Implemented robust BC/DR solution capable of replicating large data sets using economical infrastructure