

## How cable got its X-ray vision

*Dedicated high-performance bandwidth is sparking a rapid rise in networked digital imaging*  
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By Stewart Schley



Healthcare’s new era of networked digital imaging – the practice of moving radiology images to and from locations – hinges on an immutable mathematic truth: The bigger the data set, the more bandwidth power it takes to get it where it’s going.

That’s the essential reason cable telecommunications companies are rapidly accelerating onto the networked imaging scene. As healthcare organizations transition to a world where images travel to caretakers – rather than the other way around – many are discovering their legacy data networks don’t have the muscle to manage the task. And they’re increasingly turning to cable for a solution.

In central Ohio, for example, OhioHealth has enlisted Time Warner Cable Business Class to provide Ethernet connectivity that includes 100 Mbps point-to-point Ethernet Private Line circuits connecting 50 care sites, plus 100 Mbps high-speed Internet access for smaller offices. Among the applications: extending the reach of the OhioHealth Stroke Network by making imaging files accessible across the organization. “Having a high speed, high performance, highly reliable, low latency network is absolutely critical to our operations,” said Jim Lowder, OhioHealth’s System Vice President, Technology.

It’s easy to see why cable Ethernet makes sense for imaging distribution purposes. A single computed tomography (CT) scan with hundreds of image slices can yield a digital file weighing in at 3 gigabytes or more. A cellular pathology study might engulf 25 gigabytes. Those are two of the more extreme examples, but it’s not uncommon for picture archiving and communications systems (PACS) image for a patient to add up to 500 megabytes or more.

Transmitting these data files at the speed of modern medicine requires the kind of network throughput aging T1 networks can’t muster. For example, moving a 500 MB imaging file through a 1.544 megabit-per-second (Mbps) T1 circuit would take roughly 45 minutes.

Even with advanced compression schemes, transferring dense imaging files across the network can test the patience of caretakers. An analysis published in the U.S. National Broadband Plan dramatizes the distinctions. A 3 GB CT scan would skip across a 5 gigabit-per-second network in just seconds, the document points out, but would take several minutes over a network that pumps data at 80 Mbps. A single T1 line? Forget it: You could drive across town well before the file would arrive more than four hours later.

For many healthcare organizations, and especially those with multiple facilities in metropolitan areas, the ideal solution comes from the cable industry, where dedicated, private Ethernet networks deliver consistent, high-speed file transmission over secure paths – and usually at lower costs than legacy networks.

These cable-deployed networks are having a dramatic impact on the teleradiology category. In the northwestern U.S., for example, Spectrum Business, a division of Charter Communications, Inc., recently worked with Oregon Health Network to complete an 87-mile fiber network running from Grants Pass, Oregon to Crescent City, California. This broadband pipeline allows technicians to send a magnetic resonance imaging (MRI) X-ray from Oregon to Sutter Coast hospital in Crescent City in less than a second, or a pathological study in about eight seconds.





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Creative applications of cable Ethernet connectivity also are redefining the “when” and “where” of radiology. Comcast’s new Ethernet @Home service provides bi-directional bandwidth of 10 Mbps, enabling radiologists to connect to healthcare networks securely from home. Jayashree Raman, Vice President and Chief Information Officer for Cooper University Health Care in New Jersey, said the managed data network “gives our radiologists the ability to quickly and securely review images and patient files from their homes over Cooper’s private network, letting them provide the best care for their patients in a timely manner.” Now that’s the ultimate value of cable’s X-ray vision.

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