

## KILLERAPP

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INDIANA DIGITAL GATEWAY:  
JUST WHAT THE DOCTOR  
ORDERED *by Masha Zager*

If you drew a diagonal line across Indiana, you would divide the state neatly into two very different regions: the industrial northeast and the largely rural southwest. The southwest, with its low population density, is still struggling to improve its broadband access, health care facilities, and opportunities for economic development. But now a local telecom provider, Smithville Digital – a subsidiary of Smithville Telephone, Indiana's largest privately owned telecommunications company – has made a commitment to using fiber optics to boost the region's development.

The company began building its fiber optic network in 2000 for transport, in order to be less dependent on connections with other carriers. And because the investment coincided with the beginning of the tech bust, transport was the network's only use for several years. But in 2003, as soon as interest in high-speed networking began picking up, Smithville saw an opportunity for selling Metro Ethernet services over its fiber infrastructure. It renamed its network the Indiana Digital Gateway, drew up a business plan and signed its first clients early in 2004.

Today, the Gateway provides high-speed access to health care facilities, schools, city and county offices, an apartment complex and an industrial park. Smithville Digital hopes to add more customers to the network soon.

Jailhouse  
Telepsychiatry

The Center for Behavioral Health (CBH), a psychiatric clinic whose main office is in Bloomington, Indiana, has a contract with the Monroe County Sheriff's Office to evaluate

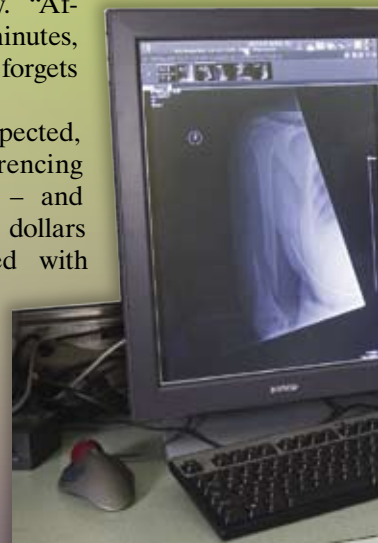
and treat prisoners who need mental-health services, mainly for addiction-related problems.

Until last year, deputy sheriffs would bring prisoners to the clinic, then sit and wait for them outside the door of the treatment room. This arrangement kept deputies idle for long periods, created stress for prisoner patients, and alarmed other patients who found themselves sharing waiting rooms with prisoners and armed guards.

After the Indiana Digital Gateway became available, CBH conferred with the sheriff's office about how to take advantage of it. The clinic's psychiatrists felt that while in-person meetings were needed for initial evaluations, followup treatments could be done via videoconference, allowing prisoners to stay at the jail. Using the Gateway and a Polycom videoconferencing solution, they set up soundproof rooms at the clinic and the jail and equipped them with cameras, televisions and microphones. In the summer of 2006, they began seeing clients remotely.

Getting the ergonomics right took some work, says CBH IT director Chuck Stringer, but the work paid off. "We haven't had a single complaint," he says wonderingly. "After a few minutes, everyone forgets it's video."

As expected, videoconferencing saves time – and taxpayer dollars – associated with transporting prisoners to the clinic. It has other



benefits as well. Psychiatrists are happier not to be conducting therapy sessions with armed guards at the door. Most important, prisoners receive treatment on a more regular schedule. In the past, treatment schedules depended on the availability of sheriffs to transport patients; when sheriffs were called away on emergencies, patients didn't get to see their doctors. Today, this happens much less often.

CBH is now considering setting up cameras in all five of its locations. Videoconferencing between locations will help doctors see patients sooner without having to drive several hours round-trip to distant clinics. It will also let doctors supervise nurses and paraprofessionals in remote offices without having to drive there as often.

### Long-Distance Radiology

Bloomington Hospital is a regional health care provider with two hospital locations and a network of five family practice offices; its main facility is across the street from CBH in Bloomington. The hospital had previously leased T1 lines from Smithville but by 2003 it was ready to install higher-bandwidth applications than the T1 lines would allow. "We thought it was a good time to talk to Bloomington about investing in fiber as a substitute," says Cullen McCarty, president of Smithville Digital. "They could do with one strand of fiber what they couldn't do with a thousand T1's."

In 2004, Bloomington Hospital became the first client on the Indiana Digital Gateway.



Working with its imaging vendor, McKesson, and with Smithville Digital, the hospital installed a system for sharing medical images between the main hospital in Bloomington, the critical-access hospital 45 miles away, and an affiliated outpatient imaging center. With the centralized imaging system, images can now be acquired at any site and read at any site. Highly paid radiologists no longer spend hours on the road, and the worst-case turnaround time for readings has been reduced from several days to several hours. "If you're a patient waiting for an answer, that's really important," says Bloomington CIO Mark McMath.

The system also automatically retrieves the patient's prior images so the radiologist can compare them with the current image. Before the central image archive existed, there wasn't always a way to get prior images in time for them to be diagnostically useful, McMath says. With so much more information accessible today, fewer repeat tests are necessary, which saves time, money and anxiety for patients.

### Hosted Services

Bloomington Hospital is also using its fiber infrastructure for applications beyond medical imaging. For example, it is hosting electronic medical records for the emergency room in the rural hospital as well as for the main hospital. "If your case is too complicated for our Orange County hospital and you get sent to the main hospital, your record goes with you," McMath explains.

The two hospi-


tal locations now also share a pharmacy system. This means that the rural hospital doesn't need to maintain a nighttime pharmacy staff, but doctors there can still write prescriptions at night and have them filled.

At the main hospital, the fiber infrastructure also supports wireless Internet access, which physicians use for remote access to their own systems. While ideally it might be best for all local hospitals and physicians to share a medical-records system, this degree of cooperation has so far proved elusive. Helping doctors access their own medical records systems from the hospital is the next best alternative. "It gives you continuity of care," McMath says. "It simulates having a combined medical record; there's better information at the point of care."

### Platform for Innovation

McMath looks forward to even more integration in the future. He hopes to extend the metro fiber network throughout Bloomington to all doctors' offices, and maybe even to their homes. Then specialists will be able to view true diagnostic-quality images away from the hospital (they can already see lower-resolution images if they have broadband access), and will be able to exchange clinical information securely and automatically.

Other new systems are in the works, too. Cardiology imaging is being implemented now, to be followed by a lab system and a clinical decision support system. The decision-support system, which will present physicians with relevant medical literature and guidelines, drug-interaction information, and patient lab results, is expected to result in faster and more accurate treatments for patients.

In fact, there seems to be no end to the ideas that McMath and his medical informatics director, Todd Rowland, M.D., have in mind. The fiber optic network has inspired their creativity. McMath says, "What I like is that, as you get higher bandwidth, there are unanticipated things you can do. It's a platform for innovation." 



Images courtesy of Bloomington Hospital.