Fiber-Connected Data Centers Drive Economic Development

A data center can boost tax revenues, help justify infrastructure investment and sometimes create jobs. But data centers have unique requirements for power and networking – and operators also may look for certain incentives. Here are some lessons from the field.

By Joan Engebretson

With cloud services gaining momentum, the data center business is booming – and more and more communities are beginning to view data centers as a potential engine of economic development. Although data centers typically don't create many jobs, the organizations that operate them may decide to locate other facilities, such as call centers or fulfillment centers, on the same sites – and those facilities may have significant workforce requirements.

In addition, data centers can generate substantial tax revenues and may help justify investment in enhanced power and communications network infrastructure, which in turn can benefit other interests in the community.

An accidental data center operator in Indiana has attracted new residents and triggered the creation of a new business that is expected to create several hundred jobs.

SUPER SUCCESS IN SOUTH BEND

When Kevin Smith bought an abandoned but ornate and historic train station in South Bend, Ind., in 1979, his goal was to use the building for his sheet metal business. However, the building's location next to railroad rights of way made it attractive to communications network operators that first installed microwave equipment and later laid fiber along the rights of way.

Before long, Smith found himself in the data center business. At first, his Union Station data center mainly allowed network operators to interconnect. Since then, it has expanded to support equipment hosting. Along the way, the data center has helped attract new residents to the community, fuel communications network and power upgrades, and trigger the creation of a new business that is expected to create several hundred new jobs.

A turning point for Smith's company, Global Access Point, occurred when Notre Dame University moved its supercomputing operations into the data center and asked Smith about securing a high-speed connection to Chicago, 100 miles away. After getting sky-high quotes from the incumbent local carrier, Smith got in touch with a nonprofit group called Project Future that ultimately built a 50-mile, regional open-access fiber ring throughout northern Indiana. The network, St. Joe Valley Metronet, aimed to offer high-speed connections at low prices to enhance business opportunities in the area.

Smith was able to use the Metronet to connect Global Access Point to the Notre Dame campus. In addition, he bought a dark fiber connection to a popular Chicago carrier hotel and lit it – a move that enabled any company that had colocated equipment in the data center to reach hundreds of network operators that had a presence in the carrier hotel. Eventually Smith also bought and lit dark fiber to Indianapolis, creating the option to connect with still more carriers and offering redundant routes to the Internet and the rest of the country.

As demand for connectivity grew, Global Access Point faced a new challenge: Clients needed more power than the data center could supply. To address the problem, Global Access Point was able to repurpose another piece of legacy infrastructure: The company connected to an abandoned South Bend Studebaker manufacturing facility that had an excellent power feed. Since then it has

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made additional power upgrades. "I can go up to 600 watts a foot now for high-density computing," observes Smith.

One key Global Access Point win was a large manufacturer in rural Indiana that had an international client base. "They were trying to run an international company on T1s," recalls Smith. By purchasing dark fiber connectivity to Global Access Point, the company gained high-speed connectivity to the rest of the world, allowing it to continue operating in rural Indiana.

Initially, the manufacturer moved only its disaster recovery operations to Global Access Point, but over time the manufacturer has tripled the amount of space it buys from Global Access Point and moved all its computing operations into the data center.

Global Access Point's work with Notre Dame also yielded unexpected benefits. When Smith learned the university's high-speed supercomputers were throwing off excessive heat, he applied his sheet metal expertise to the problem and came up with a solution that helped solve Notre Dame's problem while also addressing another problem.

"We designed a system to capture heat and utilize it for other functions," says Smith. The excess heat is now used to heat a South Bend municipal building – and Smith has patented the solution, which he expects to export internationally. His latest design is based on data center pods designed to be embedded in diverse environments. "The IT guy sees it as a computer, and the facilities guy sees it as a computer/furnace that he heats his water with," explains Smith.

Smith expects to manufacture the pods in South Bend and to hire between 200 and 300 people to support those operations.

Another recent Global Access Point initiative is what Smith calls a "digital mall" – office facilities in the data center building that enable tenants to use a single location for computer equipment and offices. This year, Global Access Point sold 18,000 square feet of technical office space that companies use for back-office operations, engineering, call centers and other operations. "Some are from South Bend," notes Smith. "Others move from somewhere else. We've seen people come from Chicago."

Global Access Point also helps support a colocation program for nonprofit organizations in the community, which are charged only for power, not for space. A local retiree donates his time to head up the operation, negotiating discounts on equipment and services on behalf of the nonprofits. The nonprofits are able to reduce their IT costs by 60 percent and now have more time to focus on their core missions, Smith explains.

LURING DATA CENTER OPERATORS

Perhaps not surprisingly, Global Access Point soon will have a new competitor. Data Realty, a new entrant in the data center business, plans to open a 50,000-square-foot facility in South Bend at the former Studebaker site in the third quarter of 2012.

The company, whose management has prior data center experience, set out to build a high-quality facility in a low-cost location, says Richard Carlton, president and CEO of Data Realty. South Bend offered low costs for the two most critical operational factors – power and connectivity.

"Their power infrastructure is better than in major metros," comments Carlton. Thanks to St. Joe Valley Metronet, Data Realty also was able to get excellent connectivity at a low cost. Carlton likened the community fiber network to a 12-lane exit ramp. "The last mile usually adds so much to the cost," Carlton says. "But that cost is significantly decreased here."

Despite these recent successes, Project Future and St. Joe Valley Metronet initially had difficulty attracting new data centers to the area. As Patrick McMahon, executive director of Project Future, recalls, "We got real close on a number of data centers, but taxes knocked us out of the box."

Project Future then petitioned the Indiana state legislature to exempt data center equipment from the personal property tax – a critical concern for data

center operators because equipment is so expensive and is replaced so frequently. The legislature complied, and McMahon believes northern Indiana now will be well positioned to attract new data centers.

The new tax exemption already has helped attract another data center operator to Indiana and to St. Joe Valley Metronet. Pod Global, a company focused on a modular data center approach, chose a site in Indiana largely because of the combination of low-cost and ample power and excellent network connectivity. St. Joe Valley Metronet has agreed to bring fiber to the Pod Global site. In addition, Pod Global plans to connect to a new nationwide fiber network under construction by Allied Fiber.

In addition, notes Pod Global CEO Lee Hansen, "The tax benefits in Indiana are significant – they don't charge property tax on data center infrastructure."

Although some communities view a well-educated workforce as a key draw, Hansen says that wasn't a consideration in his site choice. "The talent pool is not important," comments Hansen. "Ultimately there are tons of people looking for work, this kind of work specifically. We can hire people all over, and we have another 10 that can fly in at a moment's notice."

Indiana's location in the Midwest was a consideration, however. "You're outside the blast zones," comments Hansen.

BOOSTING THE TAX BASE

Even when they don't bring in many new jobs for local residents, data centers can help boost the tax base. Different types of data centers have different impacts on local revenues, notes Steve Klein. As director of marketing for network equipment manufacturer Allied Telesis, Klein works closely with customers involved in building fiber networks in rural markets for economic development.

Companies such as Global Access Point that operate open data centers may generate profits that can be taxed by states and localities. However, companies that simply locate their internal data centers in an area primarily contribute real property taxes and utility fees to the local economy – their profits are likely to be taxed elsewhere.

"The region or area needs to have first and foremost an economic development plan that defines what its goals are," observes Klein. If those goals include attracting a data center, Klein advises planners to determine what they hope to achieve through the data center. "Data centers have specific requirements that other businesses may not have," comments Klein.

However, even data centers that mainly contribute property taxes are likely to be welcomed by economic development officials. The reason is that they generate a *lot* of property taxes. For example, the city of New Albany, just outside Columbus, Ohio, developed a fiber-connected business park that attracted regional headquarters sites for several large corporations, some of which include corporate data centers. Jennifer Chrysler, community development director for New Albany, notes of the data centers, "Their valuation is usually three to four times higher than a typical Class A office building."

COMMUNITIES SWEETEN THE DEAL

One community that has a clear vision of and plan for attracting a data center is Buffalo County, Neb. Economic development planners there are trying to attract a data center specifically because that type of facility is not likely to need many employees.

"We're sitting in an area with 2.8 percent unemployment, and data centers are perfect for low-unemployment areas," notes Darren Robinson, president of the Economic Development Council of Buffalo County.

The local school district would particularly benefit from the arrival of a data center. That event might bring

A NEW TWIST: BRINGING THE DATA TO THE POWER SOURCE

Bringing power to a data center is normally a key concern in the data center business. In the not-too-distant future, however, bringing the data to the power may also be an option. When that happens, new thinking about the role of the data center in economic development will be required.

Several tests involving multiple computing pods or computing nodes powered by renewable energy and interconnected with fiber optics are under way. "We're replacing electrical transmission with optical fiber," explains Bill St. Arnaud, a consultant who specializes in green data centers.

FOLLOW THE SUN, FOLLOW THE WIND

Potential renewable energy sources include solar and wind power. When the sun sets or the wind dies in one location, data would simply be moved over the fiber connection to another node that has available power and computing capacity, explains St. Arnaud.

The concept has the potential to help justify the deployment of broadband in areas where it might not previously have been feasible – "and hopefully it doesn't need government support," St. Arnaud says.

Another potential energy source is methane, fueled by agricultural waste on or near the farm that generated the waste. Some states offer farmers incentives for minimizing the methane they release into the atmosphere – and using a methane reactor as a power source for a distributed data center could be a way of helping farmers qualify for those incentives.

Some large computer component manufacturers are keen on the idea of distributed data centers because they see a way to help replace lost revenues in the server market, which is declining because of the movement to the cloud. Accordingly, progress on the distributed data center concept is being made quickly, St. Arnaud says.

only a few new families but would be a boon to property taxes, the lion's share of which would go toward education, Robinson says.

Kearney, the county seat of Buffalo County, is so serious about pursuing the data center opportunity that it traded some of its land for 116 acres it believed would make a great data center site because it contained an aquifer well. Water often is another critical infrastructure element for data center operators, who use it for temperature control and rank it only slightly below power and network connectivity in importance.

Buffalo County has fiber network connectivity, and because all power companies in Nebraska are publicly held, pricing tends to be highly competitive and local power companies often are willing to go the extra mile to accommodate new businesses. On the Kearney site, the city built a high-megawatt power substation and is in the process of building a carrier hotel, which will connect to a regional fiber optic network.

"For the right company, we would give them the entire 116 acres," comments Robertson.

Construction of the new facilities on the site was funded through a variety of means, including local lottery revenues and a local sales tax. The community also set aside $100,000 for a finder's fee that could go to any broker responsible for a winning data center deal. In addition, Buffalo County has the support of the state of Nebraska, which put together a package of incentives for data center operators locating in the state, including a personal property tax exemption on data center equipment for data centers above a certain size.

Robertson believes the community will have a competitive edge because, unlike communities that might promise to make infrastructure enhancements, in Buffalo County, "It's all about what's done, not what we will do."

The Tennessee Valley Authority is also serious about attracting data center business. The organization enlisted Deloitte Consulting to identify more than a dozen potential data center locations in five states within its service area, looking at available acreage as well as network access and power. The TVA is offering its most competitive electric rates to data centers with power demand exceeding 5,000 kilowatts and an average load factor of 80 percent or higher.

The city of Westerville, Ohio, is constructing what may be the first community-owned, fiber-connected data center as an engine for economic development.

A DATA CENTER FOR THE COMMUNITY

The city of Gahanna, Ohio, hopes to retain existing businesses by leveraging data center assets in a neighboring community. Gahanna is connected to Columbus FiberNet, a regional open-access fiber network. In the past, that network helped attract business to Gahanna, but today little vacant land is left in the city. The emphasis now is on retaining existing businesses, explains Anthony Jones, director of planning and development for Gahanna.

Complicating that task is the fact that some businesses that received tax abatements for locating in Gahanna are due to see those abatements expire. To help minimize the impact, Gahanna hopes to assist businesses in making greater use of cloud services. Bluemile, a Columbus-based data center, is connected to Gahanna via Columbus FiberNet, which means Gahanna businesses can easily connect to cloud service providers based in the Bluemile center. As an on-ramp to the Columbus FiberNet, businesses can use Gahanna's I-net, whose excess bandwidth is being marketed through a public-private partnership. By using cloud services such as data recovery and offsite data storage, businesses can minimize the equipment they have to own and maintain at their own sites. "It saves money and space," notes Jones.

Westerville, another central Ohio town, also hopes to help local businesses through the use of cloud services, but it has gone a step further than Gahanna by building its own data center, which will be managed by an outside organization that specializes in that business.

The idea for the data center came about when the city realized it would soon have to replace a large amount of its computing equipment. Because Westerville is also connected to Columbus FiberNet, it can move data inexpensively from multiple city locations to a centralized data repository.

Todd Jackson, chief information officer for the city of Westerville, championed the community data center project, dubbed WeConnect, after finding substantial interest in the concept from local businesses. Construction of the building, which will house an 8,000-square foot data center and an additional 8,000 square feet of office space, began in the summer of 2011. The project was funded through a bond offering and also received seed money from the general fund, which Jackson expects to be paid back as the data center gets into full swing.

To support the project, the city also lit fiber with the goal of making high-speed connectivity to the data center a feasible option for smaller businesses that would not be able to afford their own dark fiber. Already, one local business that was involved in an acquisition has opted to consolidate operations in Westerville, in part because of the availability of the community data center.

"People like the idea that the city owns the infrastructure and the private sector provides services," notes Jackson.

Jackson makes an excellent evangelist for the idea of the data center as economic development engine.

"People are drawn to initiatives that are unique, remarkable and human," he says. "The community data center and fiber optic network constitute an infrastructure or ecosystem that can draw businesses into the area and strengthen the social fabric of the community." ❖