

# Broadband and Economic Development in Brief

Fiber connectivity is a must for data center sites – developing countries use broadband to leapfrog into the innovation economy – rural Oregon businesses welcome fiber – U.K. businesses see broadband barriers to success.

## Fiber Networks Qualify Cities for Data Centers

At least three of the 13 locations identified by a recent Deloitte Consulting study as prequalified for data center sites are in cities with municipal FTTH networks – Bristol, Jackson and Tullahoma, all in Tennessee. Other locations, such as Athens, Ga., have fiber optic rings constructed by municipal utilities. According to the Deloitte study sponsored by the Tennessee Valley Authority (TVA), the criteria needed for a data center environment include electric service, fiber service, site considerations, labor accessibility and low risk for natural disasters.

TVA is working with economic development leaders and local power distributors to begin marketing these sites as part of its economic development region's data center project recruitment initiative.

The presence of a state-of-the-art fiber optic network was a major factor in Bristol's selection, according to Mike Browder, CEO of Bristol Tennessee Essential Services (BTES), a municipally owned power and telecom utility. Browder says, "This designation confirms the vision that BTES had when we developed a state-of-the-art fiber-to-the-



**BROADBAND SUMMIT 2011 PROPERTIES**  
REBOUND . RECOVERY . GROWTH

*What do site selection committees really look for?  
Find out at the Broadband Properties Summit, April 26–28.*

user system via an all-fiber network to serve all of our 33,000 electric customers. Our system is powered by Alcatel-Lucent's GPON technology. Our vision of adding fiber optic services to our highly reliable electric system continues to enhance our ability to attract technology companies and promote economic growth in our area."

John Bradley, senior vice president for TVA economic development, confirms that the demand for data centers is growing as increased use of electronic commerce and information technologies requires more data storage space. He says, "There are exceptional opportunities for regional growth potential in this industry. ... Data centers provide highly skilled, good-paying job opportunities. TVA's goal is to help make the

region more competitive in attracting and retaining these types of industries and the economic benefits associated with them."

TVA and Deloitte Consulting's search for data center-friendly environments included evaluation of ready-for-development primary sites. Deloitte assessed more than 50 sites across TVA's seven-state service area, considering factors such as robust telecommunications connectivity with long-haul fiber optics from multiple carriers, abundant water resources, low business and personal taxation rates, ample supply of well-educated workers, location within 500 miles of 75 percent of the U.S. population, convenient access to commercial airports and interstate highways and low risk of natural disasters.

## Developing Countries Leapfrog With Broadband

More countries are now prepared for the applications of tomorrow, according to Cisco's third global broadband quality study. The 2010 study showed that,

thanks to investment in infrastructure, global broadband quality has improved by 50 percent since 2008. Forty-nine percent of the households in the coun-

tries studied now have access to broadband, up from 40 percent in 2008.

Using the data from 40 million real-life tests conducted in May and June

# ECONOMIC DEVELOPMENT

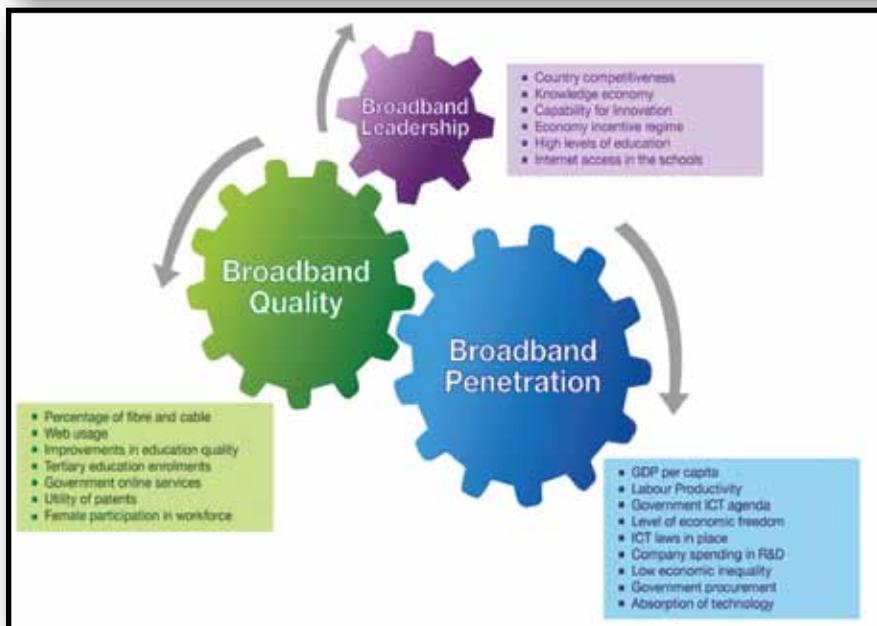


Figure 1: Relationships between broadband leadership and the knowledge economy. (Source: Cisco)

2010 on the Internet speed-testing site speedtest.net, the researchers evaluated broadband quality in 72 countries, combining download speeds, upload speeds and latency into a single quality score. The study, sponsored by Cisco, was conducted by a team of MBA students from the Saïd Business School at the University of Oxford and the University of Oviedo's Department of Applied Economics.

## LINK TO SOCIOECONOMIC DEVELOPMENT

Broadband quality is directly linked to a nation's advancement as a knowledge economy. To reflect this in the results, and to see which countries outperformed their economic groups and were therefore prepared to make economic leaps, the researchers compared the results according to the countries' stages of economic development as defined by the World Economic Forum.

Bulgaria, Qatar and Bahrain were found to lead their economic groups in broadband quality by considerable margins, competing comfortably with, and often outranking, many of those in more advanced stages of economic development.

The research confirmed early findings on the positive associations between broadband and the economy. Significantly, broadband leadership is strongly

associated with competitiveness, knowledge economy and innovation. The main correlations are shown in Figure 1.

## OPPORTUNITIES FOR LEAPFROGGING

Although some countries have been able to deliver high-quality Internet access to the majority of the population, the less-developed economies have tended to deliver high-quality broadband to cities first, as key hubs of economic development, via new investment in fiber or cable

services. This contrasts with the typical approach in more-developed economies, where old copper-based broadband has been upgraded to bring broadband to as much of the population as possible.

Countries using this hub approach, including many from Eastern Europe, have been able to leapfrog the more-advanced economies in broadband quality. However, although their broadband quality scores are high, broadband penetration is lower, affecting their overall ranking as broadband leaders.

Tony Hart, associate fellow at the Saïd Business School, comments: "If I had to pick one key aspect of this year's study, it would be the unprecedented speed at which a country can become a broadband leader. While average broadband quality has improved by 20 percent in three years and penetration by 22 percent, some countries have seen improvements of over 50 percent in this time.

"Some emerging economies, such as Latvia and Bulgaria, have been able to show improvements in broadband leadership of around 60 percent in just one year. Kenya has the record with a 174 percent improvement over three years – albeit from a very small starting point. Compared to the many growth-enabling infrastructures of the past – the telephone, electricity, railways,

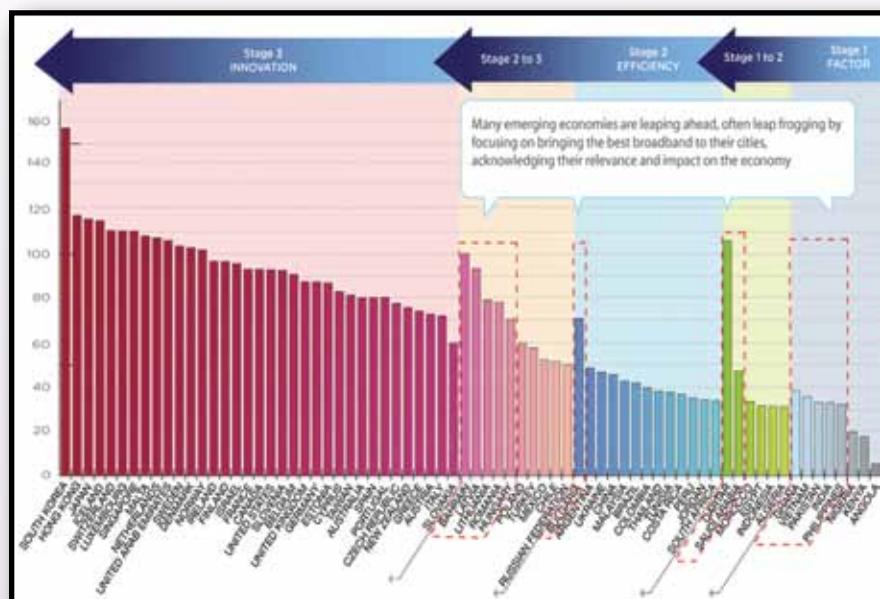


Figure 2: Several countries are ahead of the broadband pack. (Source: Cisco)

etc. – which took many decades or even centuries to impact the wider population, we can see that high-quality Internet access can have an impact on the bulk of the population within just a few years, and its impact will reach the developing world much faster than any other technology of the past.”

Adds Chris Dedicat, Cisco’s president for European markets, “By delivering better access to education, health care and in-home services through high-quality broadband, Europe is fast becoming a leader in connected communities, using the network as the platform to provide a better quality of life for citizens and economic development.”

## SERVICE PROVIDER OPPORTUNITIES

Researchers looked at the impact of higher broadband quality on service provider competitiveness. Assessing the top 25 countries in broadband quality, the team confirmed that service providers that offered significant higher quality of broadband increased their market shares. Specifically,

- Incumbents that provided fiber connections and were unchallenged increased their market share up to 13 percent in just two years.
- Cable operators with superior quality increased their market share between 10 percent (for incumbents) and 60 percent (for new players).
- Alternative service providers that provided higher broadband quality have shown the highest market share gains – up to 96 percent – although they started from smaller customer bases.

Other key findings:

- Average download speed in the 72 countries increased to 5.8 Mbps in 2010 from 3.2 Mbps in 2008. Upload speed increased even faster, to 1.7 Mbps in 2010 from 794 Kbps in 2008, and average latency fell to 142ms in 2010 from 189ms in 2008.
- Broadband quality in 48 countries, or 66 percent of those studied, meets the requirements for today’s advanced Internet services – social

networking, low-definition video streaming, basic videoconferencing and small file sharing – compared with only 30 countries in 2008, despite the fact that Internet traffic volumes rose by 166 percent from 2008 to 2010.

- Fourteen countries are prepared for the Internet applications of tomorrow, such as high-definition Internet TV and high-quality consumer telepresence, which are expected to become mainstream in a few years. These countries are South Korea, Japan, Latvia, Sweden, Bulgaria, Finland, Romania, Lithuania, Netherlands, Hong Kong, Germany, Portugal, Denmark and Iceland. (However, penetration rates are still quite limited in Latvia, Bulgaria, Romania and Lithuania.)
- Broadband quality in South Korea is ranked the highest and set a new benchmark for the world with average download throughput of 33.5 Mbps, average upload throughput of 17 Mbps and average latency of 47ms.

## Rural Businesses in Oregon Eagerly Await Fiber

Public officials and soon-to-be customers met in October at the Broadacres Fire Station in Woodburn, Ore., to celebrate the fiber optic network under construction by Gervais Telephone Company, a 95-year-old communications cooperative. Twenty-seven miles of high-speed

fiber optic cable have now been installed in the rural areas surrounding Gervais and Woodburn, a project made possible with the help of a broadband stimulus grant and loan.

U.S. Rep. Kurt Schrader told the gathering, “The continued deployment

and adoption of high-speed broadband is becoming more and more critical to the community’s ability to compete economically. This is particularly crucial in our rural communities. Expanding rural access to high-speed Internet in homes and businesses will provide them with the tools they need to attract business and grow education and economic opportunities. This is an important step in creating jobs at a time when we need [them] most.”

Local businesses echoed Schrader’s statement about the need for broadband. For example, Don Top, owner and operator of Grower’s Nursery Supply, said he has struggled to secure reliable broadband for his business in the rural area of Marion County. “This is going to be a huge help,” Top said. “I expect to pay less and to have the reliability and high speed I must have to compete.” Along the proposed fiber route, many farms, nurseries, other small businesses and



Gervais Telephone’s new FTTH network will be completed in 2011.

## *What happens to student test scores if the broadband connection fails? Eldriedge School doesn't take chances – it sends students to another school, miles away, for testing.*

residences will also benefit.

Although Gervais Telephone has built broadband networks, including fiber to the home, in the more densely populated parts of its service area, rural areas are more difficult to serve economically. John Hoffmann, the company's president and CEO, tried for years to find an affordable way to provide broadband service in the West Woodburn area and succeeded only when the broadband stimulus program recognized the importance of extending broadband to underserved areas.

### **"THE TESTING TAIL WAGS THE EDUCATION DOG"**

In addition to economic development, the fiber network will also support critical public services, including education. School superintendent Rick Hensel commented, "Regardless of our opinion of 'high-stakes testing,' it is part of the educational fabric. The tests require on-line access. Because of the number of tests that are required and the number of students required to take the tests, the intraschool network is limited by

bandwidth [availability]. If one of these blackouts were to occur during a testing window, the impact on students' scores would – not could – be catastrophic.

"Eldriedge School does not have a fiber optic connection, and we have to bus the English language learning students 4 miles to Brooks for them to take their tests. It seems strange to say, but the testing tail wags the education dog. We need adequate network capacity to provide even the basic instructional services to all students. With Gervais Telephone's fiber optic operation, this school district will have all it needs to go forward."

Communications in emergency services and public safety also stand to improve. "We will have connectivity with all our stations," said Woodburn Fire District Chief Paul Iverson. "All our stations will finally be connected and able to access incident reporting software."

## **Inadequate Broadband Stymies Growth in UK**

Two-thirds of businesses in the United Kingdom believe that poor Internet connectivity is stifling new working practices and that current broadband speeds impede economic growth, according to a new survey by BE Wholesale, the U.K.'s newest wholesale broadband provider.

More than one in three businesses said their current Internet connections would not support new collaborative applications such as videoconferencing, VoIP or, more worryingly, the cloud-based services businesses are quickly adopting. As a result, 72 percent said faster, more reliable broadband would make their businesses more competitive, and 60 percent said unified communications would reduce their costs and increase productivity.

### **"BROADBAND NETWORKS ARE FAILING BRITISH BUSINESSES"**

Other key findings of the survey, which was commissioned by BE Wholesale and carried out by the independent research firm Dynamic Markets, include the following:

- Fifty-seven percent of enterprises said employee remote access through VPN is now a key business tool.

- Thirty-four percent of enterprises considered cloud-hosted applications to be essential business applications.
- Sixty percent of respondents did not think they were receiving the broadband speeds they were paying for.
- Thirty-eight percent of businesses said their Internet connections could not support applications such as high-definition videoconferencing and VoIP.
- Six of ten businesses would adopt new collaborative applications, but only if they were sure these wouldn't impact e-mail and Web search-based activities.

According to Dan Cunliffe, head of BE Wholesale, service providers need to change their thinking: "If businesses want to save thousands of pounds a year on travel by investing in unified communications, videoconferencing or remote access, then service providers need

to deliver. Similarly, if they want to eliminate call costs between multiple offices using VoIP, their broadband needs to be able to support this.

"All too often, providers concentrate on the pipe, rather than what it's there to do – which is help businesses adopt and use tools that allow them to be more productive, more efficient and more competitive. The research brings this into stark contrast and highlights the need for a mindset change right across the broadband and ISP market."

Cherry Taylor, managing director of Dynamic Markets, adds, "Today's results suggest that many broadband networks are failing British businesses, with worrying ramifications for the U.K. economy as a whole. While there is clear enthusiasm for new Internet-based collaboration and productivity tools, there's little confidence that current networks can deliver." **BBP**

*Businesses want new applications but doubt they have the bandwidth to use them.*