When It Comes To Broadband, U.S. Plays Follow The Leader

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The United States often views itself as a paragon of technology innovation and deployment. In some cases, that view is correct, but not when it comes to broadband deployment, where the country lags considerably behind other major nations. Here's why.

By Richard Hoffman, InformationWeek

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Broadband access in the United States continues to grow at an impressive rate, from 60 million users in March 2005 to 84 million in March 2006, according to the Pew Internet & American Life Project. As-yet unpublished survey data gathered by Pew in December 2006 shows that 45% of respondents now report broadband access at home.

Despite these compelling growth statistics, the reality isn't quite so rosy, especially when comparing broadband progress in the United States with other industrialized countries.

According to a study by U.K.-based Point Topic, as of the third quarter in 2006, the United States led the world in total number of broadband lines installed with 54.5 million lines, followed by China with 48.6 million. The same Point Topic report, however, indicates that broadband growth rates are much higher in other countries -- for example, China is now projected to surpass the U.S. in total broadband lines within 2007, given current trends. And the total number of broadband lines, while a useful figure for some purposes, isn't the most meaningful statistic for measuring how common and widespread access really is, or to compare broadband progress relative to other nations.

For these judgments, metrics based on per-capita household penetration provide a clearer picture. For instance, it's inevitable that, due to its vastly higher population, China will surpass the U.S. in total number of broadband lines, even if the percentage of people in China with broadband lines stays quite small and access is restricted largely to affluent urban areas.

Looking at the more representative measurement of the percentage of those who have access to broadband connectivity, the United States isn't even in the top 10 countries, various studies indicate. President George W. Bush admitted back in 2004 that while broadband use had tripled over the previous four years, the U.S. then ranked 10th

among industrialized nations for broadband availability, and he added, "Tenth is 10 spots too low, as far as I'm concerned." Now almost three years later, how much progress have we made, and where do we stand?

Playing The Numbers Game

There are a variety of data points related to broadband penetration in the United States. One thing on which they all agree: the U.S. is far from being in the lead.

The United States currently ranks 12th in broadband adoption rates, significantly down from its ranking of fourth in 2001, according to the Organisation for Economic Co-operation and Development, a 30 member-nation group committed to the development of democratic governments and market economies.

The International Telecommunications Union lists the U.S. as 21st worldwide for broadband penetration rate in 2005. Point Topic shows the United States is in 20th place by number of households with broadband access and in 19th by individual broadband access. Those ranks have been falling, not rising, in recent quarters.

And even the good news isn't that good. Some of the more positive data that has been reported is questionable, such as figures presented in a letter written by FCC Chairman Kevin Martin in 2005 and published in The Wall Street Journal, showing what seems to be tremendous growth in U.S. broadband access.

The July, 2005, FCC report that he was citing, which promoted and defended the state of broadband access in the U.S., has received pointed criticism for defining a "high-speed" line as one delivering service of at least 200 Kbps in at least one direction, and for defining a ZIP code as "covered" by broadband access even if just a single broadband line is active in that region. It is true that 200 Kbps was, even in 2005, a minimal definition of "broadband," but it's a level that's largely inadequate for delivering much of what is commonly accepted as "broadband-level service," such as streaming video and swift downloads of large files. It seems clear that measuring "broadband access" by even the relatively modest speeds of 1Mbps or higher would drastically cut the estimate of U.S. broadband penetration. No Solid Data From The Feds Associate Director John Horrigan at Pew Internet noted there are indications that our broadband access tends to be slower and less capable than that of a number of other nations, but the lack of solid data from the federal government makes this hard to quantify. "Another element that we don't have data on," said Horrigan, "is the fact that there's not good data in the U.S. on connection speed. Yes, people are adopting broadband at a good clip in the U.S., but we don't know how fast their connections are. The FCC has no good data on network speed, and that's not a question that you can reliably get by doing a telephone survey."

Increasingly, noted Horrigan, the international debate is not only about rates of broadband adoption but also about speed and quality of the broadband networks. On that metric, the U.S. isn't faring well.

Japan's fastest-growing broadband service offers speeds in excess of 100 Mbps, and Korea offers 100 Mbps uploads and downloads. Most current U.S. customers are lucky to get one-tenth or even one one-hundredth of that speed, particularly for uploads -- and they pay more for the lower speed.

By OECD estimates, the U.S. price-per-megabit of connection speed is more than 10 times as high in the U.S. as in Japan. And for sheer speed, overseas offerings blow the U.S. away. While major U.S. carriers, such as Verizon, report initiatives to bring high-speed fiber to the home, and a Verizon spokesperson reported current plans to reach 3 million homes per year with high-speed fiber, that's roughly 1% of the U.S. population, even if that target is met. Only 1% to 2% of U.S. broadband users in Pew's latest study report having fiber or T1-speed access, while some other nations are more aggressively pursuing deployment of fiber to the home and other forms of very high-speed connectivity.

A Rural Explanation? Hardly

One of the rationales often given for lower broadband penetration in the U.S. is that low population density makes broadband deployment, especially in rural areas, considerably more expensive in the U.S. than among more dense populations in countries such as Korea, Japan, the Netherlands, and the United Kingdom. That argument falters, however, when one considers that five of the 11 nations that lead the U.S. in per capita broadband penetration, including Iceland, Finland, Norway, Sweden, and Canada, have significantly lower population densities than the U.S.

Another argument commonly invoked for lower-than-expected U.S broadband penetration rates notes that higher income tends to be associated with increased adoption of any new technology, and most of the countries with the highest rates of broadband use tend to be highly affluent. Despite its comparatively high poverty rate, the United States is ranked second overall for gross domestic product among OECD nations, ahead of every nation except Luxembourg, and the World Bank's latest numbers for 2005 estimate the U.S. is seventh in worldwide gross national income per capita, and third in per-capita purchasing power. As a rule, prosperity clearly correlates with broadband access, but the United States is comparatively more affluent than most of the nations it trails in the broadband arena.

A third demographic possibility which could affect the analysis of broadband adoption rates is median age of the population. There are indications that lower age tends to correlate with heavier Internet use in general, and broadband use specifically, as younger users tend to be more likely to be early adopters of new products and technologies. Yet the latest data from the U.S. Census Bureau indicates that the U.S. has a statistically younger population based on median age than all the countries -- except Iceland and Korea -- that are ranked higher for broadband adoption.

The bottom line is that the United States currently has a strong and growing broadband infrastructure and is still a powerful innovator and test bed for advanced research and

development in this area. But the U.S. isn't even close to being the leader in widespread broadband availability and usage and, in fact, may be dropping further behind the "first tier" of broadband-rich countries in Northern Europe and Asia.

Eating Korea's Dust

Korea is perhaps the best example of a country's rapid rise to widespread broadband availability. By almost all measures, Korea far surpasses all other nations in terms of broadband access, while Japan is the leader for price and highest typical connection speed. Over the 10 years between 1997 and 2007, Korea went from no broadband access to approximately 70% of households wired for broadband. Korea has a tradition of constructive and proactive government policy and involvement in building industry and technological capability to be competitive in the international market.

The United States has tended to swing between over-regulation and a hands-off, purely market-driven approach, neither of which, it could be argued, has served it well over the long term. Government is playing a key role in broadband development in the U.S., but proactive government initiatives have tended in recent years to occur on the state and local level more than through federal policies.

State and local governments across the country are stepping in with increasing urgency in an attempt to improve both wired and wireless broadband access. Jim Douglas, the second-term Republican governor of Vermont, in his January 2007 inaugural address, gave special attention to development of a broadband infrastructure, and promised to make Vermont the first "e-state," a proposition that involves near-ubiquitous wireless voice and data coverage throughout the state.

"While we take incremental steps to build a hard-wired network, the wireless world moves ahead. Homes that do not have broadband available are becoming increasingly difficult to sell," Douglas said at the time. "Entrepreneurs looking to start a new business will barely consider breaking ground in a community without good cellular coverage. Broadband Internet and wireless cellular are no longer mere conveniences afforded to urbanites or the well-heeled; they are a fundamental part of modern life for all Vermonters, as essential as electricity and good roads."

Douglas' proposal to create a Vermont Telecommunications Authority, to partner with private firms to improve cellular coverage and offer universal broadband access, is innovative and forward-looking. And coming from the highest state-level government official in Vermont, it also is a tacit recognition that the federal government isn't doing all it could to encourage broadband adoption throughout the United States, and that broadband coverage isn't currently adequate in many areas.

Doing It Locally

The ConnectKentucky program, an alliance of public agencies, private companies, and nongovernmental organizations, and a winner of the U.S. Economic Development

Administration's Excellence in Innovation Award, is, through a variety of programs and initiatives, attempting to push for full broadband deployment statewide by the end of 2007.

One of the key tasks ConnectKentucky has pursued is a thorough set of surveys to determine broadband connectivity in its state. Among the central findings of those surveys has been that for those who don't have broadband connectivity, access and cost are the two main impediments. That critical result echoes other studies in the U.S.: the primary reasons homes in the U.S. don't use broadband tend to be lack of availability and high cost.

The city of Philippi in Barbour County, W.Va., whose economy has historically been based on mining, wood products, and agriculture, has put itself on the broadband map by pursuing the creation of a fiber to the home network, creating high-speed access in an area that has previously been underserved. A recipient of one of the largest USDA Rural Broadband grants available -- $2.3 million -- Philippi is bringing the kind of bandwidth to its citizens that most rural residents can only dream of, proof of the positive effect even limited public money can have when used to support broadband initiatives.

But even where local and regional governments have attempted to take matters into their own hands, success hasn't been guaranteed. SB740, introduced in the West Virginia Senate in 2005, was intended to increase broadband availability in the state by allowing local government bodies to act as Internet service providers in those communities where service wasn't already available. After intense lobbying by major telecommunications firms, the bill was weakened, and eventually dropped. This matches a pattern seen repeatedly across the country -- where a number of local municipalities and groups across the U.S. have created local broadband access opportunities where none previously existed, powerful lobbying efforts by telecommunications firms have smothered many of these initiatives.

The history of the telecommunications industry and government policy in the United States has been one of periods of government-enhanced monopoly and heavy regulation followed by a vigorous swing toward deregulation and pure market-force approaches. Overly intrusive governmental control or regulation of technology and telecommunications infrastructure has shown itself to have numerous pitfalls.

Yet the intensely "hands-off" market-driven system in recent years seems to have resulted in a chaotic and inefficient marketplace, and one that doesn't represent the true state of the United States as a technology leader. Laissez-faire isn't a viable stance if the goal is to compete most effectively against other industrialized nations. Carriers Focused On ROI
The existing large telecommunications providers invest their money where there is maximum return on investment, which results in a patchwork of coverage throughout the U.S. Telecom providers maximize profits and spend millions of dollars lobbying to create laws that decrease competitive challenges, while having little incentive to provide

new services to less population-dense areas of the country, or to increase speed and lower costs for those who already do have service. This state of affairs stands in marked contrast to the situation in those nations that are truly broadband leaders.

In the absence of widespread government initiatives and incentives to roll out broadband services in rural areas, telecom providers have made the decision to maximize profits by rolling out service in those areas that have the highest population density and lowest cost of build-out per customer. The free market wins in the short term, quarterly profits are maximized, but the customers in less-profitable geographic areas lose, and the nation as a whole loses out over the long term, falling behind other nations with more farsighted policies.

While there's certainly a degree of competition in the country's broadband market, and broadband access prices are trending slowly downward, prices are still much higher in the U.S. than in many of the countries that lead the world in broadband use. Part of the cause for this pricing disparity can be attributed to the fact that competition brings lower prices and greater innovation, and the U.S. broadband market is, in many ways, not highly competitive.

In many areas of the United States, the choice largely comes down to a dominant DSL carrier and a dominant cable carrier, both protected by historical and regulatory environments that allow cable and telecommunications companies to control the "last mile" to the home. The top four cable and DSL companies (Comcast, AT&T, Verizon, and Time-Warner) provide more than 55% of the U.S. broadband market. If, as the government policy seems to be stating, the goal is robust competition, the policy is failing. The availability of wireless broadband changes the environment somewhat, but wired speeds and bandwidth will almost always be higher than that available via wireless, so exclusive control of that "last mile" of wire to the home still means that competition for the highest-speed telecommunications services will continue to be limited.

Losing The Lead

The United States may be a technology leader, but it isn't a broadband leader, in relative coverage and use of broadband, in speed and capability of the services that are widely available, or in price. Broadband infrastructure in the United States, while healthy by some measures, is marked with surprisingly little competition in some key critical areas, and in others, such as wireless communication and data services, a patchwork of incompatible technologies has led to inconsistent and often substandard regional service, duplication of effort, and waste of resources -- exactly the problems that telephone regulation in the 20th century was designed to address.

It's clear that broadband access isn't just a faster and more convenient way to view Web pages and download songs or e-mail. Many applications in use now, such as videoconferencing, IP telephony, and video-on-demand, and many more which are still over the horizon, are dependent on broadband access.

Broadband is a leveler. It opens markets and possibilities to people who may be geographically distant from traditional centers of commerce -- people who could be doing valuable, productive, high-skilled work, or bringing new products to a global market -- if they had the capacity to do so. Many nations have recognized that widespread broadband access is a critical strategic asset, pumping billions of dollars into their economies and enabling entirely new kinds of business models and economic opportunities.

Developing nations see broadband as an invaluable tool for their economic growth -- India's government, for example, has finalized a policy to accelerate the growth of broadband services, noting the services' potential to improve GDP as well as quality of life.

Those nations able to craft genuinely forward-looking telecommunications policies that promote universal access as well as enhancing competition, and which can balance short-term market forces against long-term national priorities, will reap the current and future benefits of increased economic productivity. They will be the true trailblazers, and the first to see and make use of the rich possibilities which lie ahead. It remains to be seen whether the United States will regain the initiative, and be among those leaders.

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