Tapping the Web, 22,000 Miles Up

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Satellite companies have been the also-rans of Internet providers.

Enlarge This Image

Peter DaSilva for The New York Times

At Space Systems/Loral the ViaSat-1 satellite is lifted ahead of being tested for performance at extreme temperatures.

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Peter DaSilva for The New York Times

The ViaSat-1 satellite is lifted by an overhead crane into a thermal vacuum chamber at a manufacturing and test facility in Palo Alto, Calif.

They serve a little more than one million customers, most in rural areas that have no other options. Their services can be painfully slow and cost twice as much as high-speed broadband.

But two companies, WildBlue and HughesNet, are now in a race to change all that. Both plan to launch satellites in the next couple of years that will dwarf their predecessors in space.

WildBlue's alone will have 10 times the capacity of its three current satellites combined. Such behemoths, the companies say, will enable them, at prices similar to what they now charge, to provide Internet service at speeds many times faster than they now offer — as fast, in some cases, as fiber connections. Further, the companies argue, satellites can provide service more easily and cheaply per subscriber than their earthbound cable and phone company competitors, particularly to the 14 million to 24 million Americans who live in areas without broadband service.

“One advantage satellite has is ubiquity,” Arunas G. Slekys, vice president for Hughes Network Systems, said. “The cost of reaching you with a satellite dish is independent of where you are. Fiber or cable is labor-intensive and dependent on distance.”

As to satellite’s potential in rural regions, “clearly, there’s an unserved market,” Mr. Slekys said. “And it’s not as though they have terrestrial or satellite. They only have satellite as a choice.”

But even with their big, shiny new satellites, the companies will still have to overcome earthly concerns. While the new satellites will transmit signals more quickly, there will continue to be slight delays — a half a second or so — on users’ computers because the signals have to travel 22,000 miles up into space and back down again.

There’s also the problem of serving residents who are not able to point a satellite dish toward the satellites’ location in the southern skies. And then there’s the question of making sure satellite modem dishes are clear of snow in winter.

Even so, the satellite companies contend that they should have received a bigger piece of the $7.2 billion in federal stimulus money for extending broadband service to underserved areas in the United States. Of its $2.5 billion share of the stimulus funds, the Agriculture Department is allocating just $100 million in grants to satellite companies.

Thomas E. Moore, chief of WildBlue, said satellite technology would be able to serve thousands more rural residents than terrestrial services at a fraction of the cost. He cited a $28 million grant to a nonprofit group in North Carolina to extend fiber to 420 schools and libraries. That same grant could have instead directly served 70,000 residents in North Carolina through satellite service, Mr. Moore said.

“For every one of those people, there are literally hundreds more who won’t have access to stimulus funds,” he said.

But Joseph Freddoso, president of MCNC, the nonprofit group that manages North Carolina’s public education technology network, said satellites were not an ideal primary service for his users, who require a more reliable network for their research and data-heavy applications.

“To compare what we do with what satellite does as a service is an apples-to-oranges comparison,” Mr. Freddoso said, adding that the grant will serve one million students in 37 counties.

For all the strides that satellite companies are taking, other Internet service providers are trying to accelerate their services as well. The life span of a satellite is around 15 years, and the complexity of a broadband satellite, which has three times as many components as TV broadcast satellites, has led the industry to evolve at glacial speeds. And satellites, too, are dependent on complicated rocket launches.

Kevin R. Laverty, a spokesman for Verizon, agreed that laying down fiber optic cable is expensive initially. But once in place, fiber optic networks can be upgraded much more easily.

“Fiber optic is virtually an unlimited technology,” he said. “All you have to do is change the electronics on either end.”

Justin Venech, a spokesman for Time Warner Cable, says that the speeds his company provides easily surpass even the new offerings from the satellite companies: “We feel we are strongly positioned to compete against all competitors.”

The satellite industry has boasted of its capabilities before. In the late 1990s, before the Internet bubble burst, there was a space bubble, said Christopher D. Quilty, a senior vice president in Florida for the investment firm Raymond James & Associates. “In the late ’90s, there was an overcapacity and overinvestment in everything space.” He estimated that half a dozen to a dozen satellite broadband initiatives were started globally. “There were only two surviving projects from that era.”

One of the two, WildBlue, was acquired last December by ViaSat Inc., which previously had operations in military, government and commercial satellite communications. The other, HughesNet, is currently operated by Hughes Communications. Both are using Space Systems/Loral in Palo Alto, Calif., to manufacture their new satellites.

Those satellites have more efficient antennas and 100 times the bandwidth of the first-generation broadband satellites 10 years ago, said Christopher F. Hoeber, a senior vice president at Space Systems/Loral. He said residents will have smaller dishes because the new satellites’ smaller beams concentrate energy for a stronger connection, less affected by weather.

More beams also mean satellite frequencies can be reused more often, allowing for greater capacity. WildBlue’s satellite, ViaSat-1, is scheduled to be the first to go into orbit, sometime early next year. HughesNet’s satellite, Jupiter, will follow in 2012.

Mr. Hoeber said first-generation broadband satellites did have problems with weather and delayed transmissions. But he said the new generation, the third, had made notable improvements, as would future versions.

“I think there’s a misperception that the broadband service isn’t as good as cable or DSL,” Mr. Hoeber said. “And it’s not true anymore.”

Still, while the two new satellites represent a big step forward, they have little ability, once in space, to adapt to changing technology on the ground. In the future, satellites are likely to have more flexibility.

In one of the first steps in that process, the networking company Cisco said it had developed the first router for a commercial satellite. The satellite was launched last November, and Cisco announced last month that the router successfully supported communications for its first tester, the Defense Department.

Gregory Pelton, general manager of Cisco’s Internet Routing in Space program, said the router would make satellite communications smoother, allowing a satellite call to be made directly without routing on the ground. “We’re making satellite a full member of the Internet,” he said.

Another manufacturer, Boeing, is building two satellites, to be launched within the next year, that will combine terrestrial and satellite networks in the United States for 4G wireless services.

In the meantime, WildBlue’s satellite, ViaSat-1, has started a monthlong test in a thermal vacuum meant to simulate space conditions. HughesNet’s Jupiter satellite is still being built.

“Satellite has to evolve at the same rate as terrestrial technologies to be relevant to the market,” Mr. Moore said.

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