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Web-Page Distribution System Could Unclog Internet Traffic Jams

By ANDREW POLLACK

LOS ANGELES -- Tax time was crunch time for the World Wide Web site of Intuit Inc., the supplier of personal finance software. Traffic shot up to as much as 20 times its levels the rest of year, as customers downloaded the latest revisions to Intuit's Turbotax tax preparation program.

But unlike tax seasons past, this time Intuit had the help of Sandpiper Networks Inc., a start-up company that has developed a way to speed the delivery of information on the Web. "Customers got it faster than they would have with us," said Rick Parkinson, director of the planning and delivery group at Intuit.

Sandpiper and a rival start-up company, Akamai Technologies Inc., are pioneering a way to distribute material over the Internet that avoids much of the congestion that can turn the World Wide Web into the World Wide Wait. And the companies are starting to be noticed.

Ed Carreon for The New York Times

Leo S. Spiegel was recruited to head Sandpiper Networks.

This week, Sandpiper is expected to announce that America Online, the largest provider of Internet access, has made a small investment in the company and will incorporate Sandpiper's technology into its network.

Inktomi Corp., a supplier of Internet software is expected to invest in the start-up company along with two Sandpiper customers -- the Times Mirror Corporation and NBC.

Sandpiper is raising a total of $21.5 million in this, its second round of raising venture capital, with each of the corporate partners believed to be putting in $2 million to $3 million and the rest coming from venture capitalists.

Akamai, meanwhile, recently scored a coup of its own, hiring as its president and chief executive George H. Conrades, formerly

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president of the GTE Corporation's BBN unit and before that a top executive at I.B.M.

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As more corporations turn to the Web for marketing and sales, long waits on the Internet are becoming bad for business. And while the companies can improve service somewhat by buying more powerful computers for their Web sites, they have less control over the network traffic jams that can develop between their sites and the users.

"Since nobody controls the Internet, how do you insure quality of service?" said Scott Yara, vice president for marketing at Sandpiper, which is based in Westlake Village, Calif., outside of Los Angeles.

The answer proposed by both Sandpiper and Akamai is to distribute the contents of a Web site to server computers dispersed throughout the Internet, so that information does not always have to wend its way through the network from a single site.

"The whole name of the game here is to push content to the edge of the Internet, very, very close to the end user," said David Goodtree, vice president for marketing at Akamai, which is based in Cambridge, Mass.

One use of such a service would be to help with big Web events that could bring the Internet to its knees. The Los Angeles Times, owned by Times Mirror, used Sandpiper to help cope with the on-line demand for the Starr Report last year and for the newspaper's coverage of the Academy Awards in March.

But Sandpiper and Akamai contend, and some analysts agree, that distribution of Web content will eventually be a full-time necessity, as Internet traffic continues to grow.

"The demand is so high and straightforward," said Ted Julian, an analyst with Forrester Research, a market research firm in Cambridge.

A somewhat similar technique, known as caching, is already in use. If, for example, an Internet service provider in Los Angeles finds heavy demand among its customers for a Web page based in New York, it will create a local copy of the page in Los Angeles.

But the actual producer of the Web page in New York has no control over this cache, and thus no way of preventing the information on it from becoming outdated. Moreover, the producer of the Web page usually does not know how many visits or "hits" the copy on the cache receives.

Both Sandpiper and Akamai sell their service directly to the Web content providers, automatically distributing the content to servers, updating the material as necessary and keeping track of the number of visitors.

Sandpiper was founded three years ago by David Farber and Andrew D. Swart, software experts who had worked for Interactive Systems, a Unix company. Leo S. Spiegel, whom they recruited to

be president, started a computer company while still in college. That company, LAN Systems, was sold to the Intel Corporation and R. I Donnelly & Sons.

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Akamai, which says its name means "intelligent, clever and cool" i Hawaiian, grew out of a math class at the Massachusetts Institute of Technology.

Tim Berners-Lee, the M.I.T. researcher known as the father of the Web, suggested to Tom Leighton, a professor of applied mathematics, that "load balancing" on the Internet would be a good problem for his class to tackle. The classwork led to algorithms that are used by Akamai, which was founded by Professor Leighton and a graduate student, Danny Lewin.

Akamai, which is only now beginning commercial service, says that customers for its trial service included 5 of the 10 most popular Web sites. But Goodtree would not identify any of them.

Akamai seems to have a more sophisticated approach, but Sandpiper has the advantage of being first, said Peter Christy, principal at Collaborative Research, a market research firm in Los Altos, Calif. Akamai also has deployed 400 servers, compared with only 32 for Sandpiper. "We could handle the load today of 15 Yahoos and the top 20 Web sites combined," Goodtree said.

But the deal with America Online and Inktomi could help change that. Inktomi already provides more than 300 cache servers to America Online, and Sandpiper will now be able to use those, as well as Inktomi servers in other networks. "It really expands our footprint," Spiegel said of Sandpiper (which calls its service Footprint).

The biggest challenge for the companies, though, might not be each other but new entrants expected in the market.

Julian of Forrester said these could include big computer service providers like I.B.M. and Electronic Data Systems as well as companies like Exodus Communications that provide computer sites used to host Web pages. Even Intel announced last week that it would enter the business of providing servers to host Web pages. But some of these companies might decide to ally themselves with Sandpiper or Akamai rather than compete with them.

Another challenge could be persuading companies to entrust distribution of Web pages to outsiders.

Parkinson of Intuit, for instance, said it made sense to use Sandpiper to save Intuit from having to invest in enough capacity to handle the rare peak demand. But at times of normal demand, Intuit prefers to run its Web site by itself, to guard its competitive information. "You give up a little bit of control every time you give something to someone else," he said.

Lemont Southworth, technology manager for latimes.com, said another problem was that Sandpiper's system cannot handle the individually customized advertisements that many Web sites offer.

Another possible threat is that if technologies like high-speed cable modems and optical fiber can sufficiently reduce congestion, there would be less need to store Web pages close to users.

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But both companies insist that cable modems, by increasing the flow of information between users' computers and Internet sites, will only increase the strain on Web site providers, much as widening freeway on-ramps can worsen congestion on the freeway itself.

So content will still need to be dispersed.

"I really believe it's the next evolution of the Internet," Spiegel said.

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