

Clearing the Web's pipelines

BY STEPHEN NELLIS
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To show what the looming Internet bandwidth crisis means in action, Andrew Seybold, a consultant to the wireless phone industry, tried a simple experiment. He gathered six friends with laptops and went to a coffee shop with WiFi in Santa Barbara.

One friend started watching a streaming video online. Then another friend did. Then another. By the time the third person was watching, no one else in the coffee shop could use the Internet — the pipe was clogged.

"They politely asked us to leave," Seybold said during a Feb. 16 discussion hosted by the MIT Central Coast Enterprise Forum in Santa Barbara.

That coffee shop scenario can play out anywhere bandwidth is shared: an apartment building, a city block, or, in the end, over the entire Internet. Demand for bandwidth is far outstripping supply, and there's no reason to think demand will cool. Half of all U.S. Internet traffic is now streaming video from sites like YouTube and Netflix. And that's with Netflix only streaming

see **BANDWIDTH** on page 21A

FEB. 25-MARCH 3, 2011

BANDWIDTH

Continued from page 1A

its B-list titles.

Think of bandwidth as the diameter of the Internet pipe; the larger it is, the more data it can deliver. Fiber optic cable is the best pipe you can get at the moment, but most of the Tri-Counties won't be getting it from big carriers any time soon.

Verizon ran fiber to homes in some parts of Ventura County, but Seybold and other industry observers agree the company has met its goal, which was to show the technology is viable, and won't be laying much more fiber.

"They said they're going to do 18 million homes, and they did," Lorenz Cartellieri, whose firm, Expor Labs in Oxnard, tested much of Verizon's equipment, told the Business Times in a recent interview. "The homes in Ventura County that don't have fiber probably won't in the foreseeable future."

Santa Barbara has remained an oddity because it has some of the most advanced computer scientists in the world but no high-bandwidth fiber lines available to consumers or most businesses. According to Dan Blumenthal, a UC Santa Barbara professor who spoke at the MIT event, it may be because "Santa Barbarans are unique creatures in that they don't like their environment messed with" and wouldn't tolerate torn up streets and sidewalks.

But in San Luis Obispo, Digital West is providing businesses with unprecedented bandwidth by laying its own fiber lines, out-

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stripping speeds in Santa Barbara and much of Ventura County. The company accomplished that with grants and working with power companies and the city to reduce the cost of laying cable.

"I get a notification from the city of San Luis Obispo every time there's a sewer project so that I can throw my fiber in," said Bob Fasulkey, vice president of engineering with the firm.

Santa Barbara Mayor Helene Schneider attended the discussion and said she would be open to working with business in a manner similar to San Luis Obispo to make it easier to install fiber lines.

"Why not? It can't hurt to have the conversation," she said.

While the wired Internet faces bandwidth challenges, it's even worse when you go wireless. Cell sites are costly and ugly, and Seybold said it takes an average of two years to get one permitted and built in Santa Barbara.

PACIFIC COAST BUSINESS TIMES

"Without more cell sites closer together, there's no more bandwidth," Seybold said. "Nobody wants a cell site in their backyard. ... If you have a dead spot, it's not going to be fixed overnight."

Not everyone at the event agreed that there's a looming wireless bandwidth crisis. Henry Baker, an investor with a \$1.5 billion private equity fund who was in the audience, said bandwidth is only running out because large carriers haven't invested in better technology. Using lasers, smarter routing of signals through space and other techniques could create enough bandwidth to go around.

"It's a dinosaur that needs to be replaced," Baker said of the current system of networks. "What's missing here is a failure of innovation, a failure of imagination. It's not a failure of technology."

Seybold responded that while better technologies are being investigated, demand is surging right now. Futuristic techniques "aren't ready for prime time," he said.

Better traffic direction and network management could also help alleviate the bandwidth problem without a big change in technology, some of the panel members said. To illustrate that, Blumenthal, the UCSB professor, asked everyone in the audience to talk to someone else three people away. There was enough bandwidth in the room to carry all the speech, but no one could understand what was said.

"Bandwidth is not the issue," Blumenthal said.

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