# DSL speed could soon get a boost with new technologies

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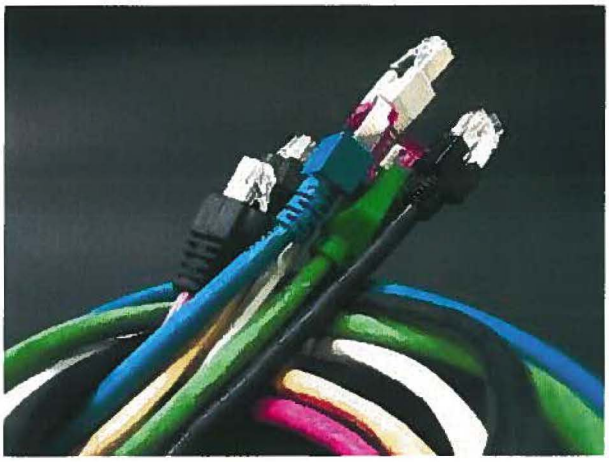
If you're a customer of AT&T's U-verse service or have plain-old DSL Internet access, you may feel like you're stuck in the slow lane, especially compared with your friends and neighbors who have cable Internet access.

But you soon may be getting a speed boost.

Through a combination of existing and emerging technologies, DSL providers starting as soon as this year are expected to increase their Internet speeds up to 100 megabits per second or more, which is comparable to the top rates offered today by Comcast and other cable Internet providers -- and a lot faster than most consumers actually use today.



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The difference in speeds offered by DSL providers and cable operators "is pretty big right now and is getting wider," noted Teresa Mastrangelo, an analyst at Broadbandtrends, an industry analysis and consulting firm. But she added that next-generation DSL technologies will "help close the gap."

DSL's big boost is expected to come from two technologies called bonding and vectoring.

With bonding, a DSL provider sends signals over multiple phone lines rather than using just one. By using two phone lines to deliver DSL, providers can effectively double Internet speeds, industry experts say.



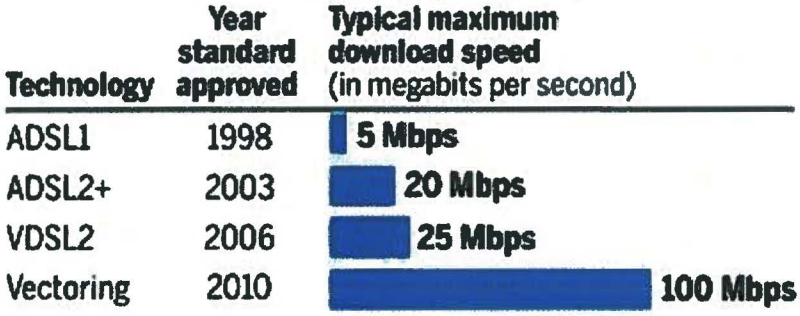
And they can do it fairly easily, without having to upgrade their networks or, in many cases, lay down new wire to homes. Many newer American homes already have multiple lines installed, and many older ones had second lines added in the 1980s and 1990s for things like fax machines and dedicated dial-up Internet access. In many cases, those extra lines aren't being used today and could be used to deliver higher-speed Internet access.

Santa Rosa-based Sonic.net, the largest independent broadband provider in Northern California, already offers a bonded DSL service in the Bay Area. The service offers speeds of up to 40 megabits per second, double that of its regular Fusion broadband offering. But it costs $90 a month, more than twice that of the Fusion service.

Unlike bonding, vectoring is still in development. The technology essentially involves compensating for the noise and interference on or around phone lines. Vectoring, which is being developed by companies including Redwood City-based ASSIA, could help boost DSL speeds to up to 100 megabits per second or more, experts say. It also is expected to greatly increase the speed at which consumers can upload data from their computers to services such as Facebook or YouTube.

## DSL in the fast lane

The maximum Internet download speeds available in DSL have jumped over the past 15 years, thanks to new technologies. The latest of these, vectoring, promises to boost DSL speeds so they are comparable with some of the fastest offered by cable Internet providers.




Source: ASSIA

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Although it's not yet fully baked, vectoring already has some big backers. Deutsche Telekom, the German-based telecommunication giant, announced in December that it would vector its DSL lines as part of a $7.8 billion, three-year upgrade to its wired broadband network. AT&T, which in November announced a $6 billion, three-year upgrade to its wired network, is widely expected to employ vectoring and bonding as part of that investment.

AT&T representatives declined to comment on the technology they will employ to upgrade their network.

It remains unclear whether consumers will notice or care about the upgrades. Jim Turner, a retired Menlo Park resident, said that what encouraged him to switch his telecommunications provider from Comcast to U-Verse about two years ago was AT&T's DVR, not its Internet service. Turner, who said he mainly uses his Internet service for surfing the Web, wasn't aware of how fast his service is, but said it was adequate for what he does.

"I've been satisfied with the rate we get," he said. "I've never paid much attention to it."

DSL boosters and some analysts argue that the speed upgrades should be more than adequate to help DSL compete with cable Internet access. One thing that DSL has in its

favor, they say, is that the bandwidth it promises is "dedicated," which can help DSL providers, unlike their cable rivals, offer consistent speeds.

Cable Internet customers share the bandwidth in their neighborhood with anyone on the Internet at the same time. That can be a problem at night and other peak periods, when multiple families in an area are watching movies from Netflix (NFLX) or doing other things online that require a lot of bandwidth. By contrast, with DSL, consumers have a dedicated line to a network box in their area and don't have to share any of the bandwidth available on that line.

But cable representatives note that DSL customers have to share the bandwidth being delivered to their neighborhood network box, which can also slow speeds. According to recent studies by the Federal Communications Commission, cable Internet providers do a significantly better job than DSL providers of delivering the speeds they promise, even during peak periods.

Cable representatives and some analysts say the DSL providers may have trouble keeping up, even with the new technologies coming on line. Cable engineers are developing ways to deliver speeds of up to 1 gigabit per second to consumer. Comcast says that it plans to offer speeds of up to 200 megabits per second in the near future.

"Cable is still king in North America," said Erik Keith, who covers broadband infrastructure for research company Current Analysis. "There's no way around it."

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