

[www.futurebrief.com](http://www.futurebrief.com)

## Why Fiber is "Moving to the Curb"

**Jeffrey R. Harrow**  
Principal Technologist, The Harrow Group

It's about speed of course. And much more...

If you have cable modem service that works well, you already have download speeds of two to three megabits/second which is nothing to sneeze at; most operations, including reasonably sized file downloads such as demo programs, complete quickly enough that you rarely find yourself in the tedious 'wait mode' of dial-up modem days. (We won't explore here the issue of cables' relatively paltry upload speeds, often between 128 to 256 kilobits/second, but even that is often fast enough for typical users).

So why would we want more bandwidth? The answer is because history continuously demonstrates that we're NEVER satisfied with any such bottleneck -- we WILL develop applications that will make current DSL or cable modem service seem as slow as a dial-up modem feels today.

One obvious application for higher-speed connections is video-on-demand, which could send the "video rental" industry following the road of buggy whips. I can well imagine a time not too many years away when kids can't imagine having to get someone to drive them down to the "tape store" to get a movie for the evening's party -- they'll just download the movie (hopefully from legitimate sources that charge less per "rental" and make up for it in volume).

Think that's improbable? When was the last time your kid harassed you to take her to the mall to listen to the latest music? THAT sea change owed its start to Napster, but legitimate, affordable online sales have been very slow in coming as the music industry thought they could re-close Pandora's Box. Of course, as always happens when a new technology changes the rules, they were wrong.

(The success of iTunes and other new commercial online music services now demonstrate that many people are indeed quite willing to pay a reasonable fee to legally download music; I'll bet the music industry wished they'd been proactive in online sales, rather than letting free file-sharing networks put them at the bottom of a hill they now have to re-climb).

### **It's Not Just Music Anymore!**

This sort of change dramatically altered the music industry, and new technologies are now beginning to affect the movie/video industry as well. New compression technologies such as MPEG 4, DivX, and more now make it viable (if slow) to download entire movies at reasonable quality.

Which is why I think (hope) that the movie industry, learning from the music industry before it, will be more aggressive in offering what their customers want, in the way they want it, and at a price they're willing to pay. The movie industry's incentive is that this sure beats the Napsterization of yet another industry.

Today's saving grace is that -- you guessed it -- while cable and DSL connections *can* download movies, the compressed movies' file sizes are still large enough, compared to today's bandwidth, that downloading a movie is a non-trivial effort. For this application, users are "behind the bandwidth hump" -- again.

[www.futurebrief.com](http://www.futurebrief.com)

### **Bandwidth Won't Stop Here.**

My cable system recently finished a major upgrade, switching from an old and noisy and troublesome coaxial cable backbone to "fiber to the neighborhood." Now, a fiber run terminates within a few hundred feet of most homes, where its signals are converted to coaxial cable for that last "tenth-mile." It works great, by comparison with the old days; instead of a constant 20% or greater packet loss and generally ridiculous latency times from the old cable modem service, packet loss or high latency of ANY amount is now an occasional oddity. YES!

But even though the cable company spent millions of dollars to upgrade the system, this is NOT (yet) "fiber to the curb," which could have delivered perhaps 100 megabits/second (12.5 megabytes /second) to me instead of the current 3 megabits/second (375 kilobytes /second). That 33-times enhanced speed would have made movies-on-demand practical, if still somewhat slow over today's infrastructure.

The cable company may, though, have been smart in delaying, because unsurprisingly, "fiber to the curb" technology is certainly getting "riper." As early as 1998, the Silicon Valley neighborhood Community Center has made fiber-to-the-curb service of up to 100 megabytes/second available to both homes and businesses ([http://www.paloaltoonline.com/weekly/morgue/news/1998\\_Aug\\_19.FIBERNET.html](http://www.paloaltoonline.com/weekly/morgue/news/1998_Aug_19.FIBERNET.html)).

Impressive. Yet if 100 megabytes/second "fiber to the curb" service isn't fast enough for you, NTT has just announced a "new technology [that] will increase communication speeds tenfold, to one gigabyte/second... for fiber optic services..." (<http://www.gridtoday.com/03/0616/101564.html>) They anticipate that this service will be ready to hit the road (so to speak) within two years.

(Note that we have to watch how the various companies and articles specify the speed of their connections -- some stating speeds in megaBYTES/second, while others specify in megaBITS/second, where one BYTE contains 8 BITS. For comparison, 1 giga byte /second = 1,000 megabytes /second = 8,000 mega bits /second -- or a 2,667-times increase in speed compared to today's 3 mega bits /second typical cable speed!)

That's potentially 30 seconds to download a movie. That's "video on demand." That's a potential fundamental change to yet another industry -- if it doesn't adapt to its customers' expectations before less legitimate services steal their customers' hearts, minds, and dollars.

100 megabytes/second is fast enough. For now...

Yet, we'll always need even more bandwidth. For example, just wait until you want to download your first HDTV movie; you'll find out that even 100 megabytes/second 'fiber-to-the-curb' technology is slow. Again!

Happily, advances in fiber technologies, and others, will assure that this beat goes on.

*This essay is original and was specifically prepared for publication at [Future Brief](#). A biography of Jeff Harrow can be found at our [Commentary](#) page. E-mail Jeff at [jeff@theharrowgroup.com](mailto:jeff@theharrowgroup.com) and visit his [web site](#). To hear about future **Commentary** essays visit [Daily Brief](#).*