

**Net Neutrality — Beware the Law of Unintended Consequences**

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### Overview

In the wake of our two recent reports "The Dumb Pipe Paradox Parts I and II," we recently testified before the Senate Commerce Committee on issues related to pending telecommunications reform. The focus of our remarks was the emerging debate over "Net Neutrality." In its purest form, the notion of Net Neutrality refers to mandated equal treatment of all data traffic by network operators. Mandated "Neutrality" stands in contrast to the idea — recently espoused in public comments by the telcos — that network management, and potentially prioritizing certain traffic streams, should be left to market forces. Excerpts of our remarks follow.

### Senate Commerce Committee, Tuesday, March 14, 2006

Chairman Stevens and distinguished Members of the Committee, I want to express my thanks for the opportunity to participate in today's hearings.

I'll confine my prepared comments today to issues related to physical networks, and the constellation of issues that have been given the name "Net Neutrality." I believe there is a risk that we are embarking on a course that will discourage network investment.

The "Net Neutrality" debate has become a catch-all for a number of competing public policy needs. We want to ensure the availability of ubiquitous and reliable high-speed Internet access, and we want to do it while minimizing consumer prices and maximizing consumer choice.

That means we need to foster investment in the networks themselves. And we need to do that while at the same time protecting inalienable First Amendment principles, and creating a vibrant climate for innovation in network-reliant businesses.

With respect to the first part of that balancing act, i.e., "fostering investment in the networks themselves," Wall Street has, by and large, already cast its vote. The capital markets see a bleak future for network operators.

Cable stocks have suffered five years of valuation declines relative to the broader market. Telecommunications firms like Verizon and AT&T have been given similar treatment. Comcast's stock is punished every time the company's management even mentions the words "capital investment." Verizon's stock was likewise punished throughout 2005 due to the capital markets' distaste for the expansive capital investments in its FiOS fiber optic deployment.

Ironically, this comes at a time when consumer broadband demand is exploding. Sony's *PlayStation* and tech companies like Microsoft talk about "owning the living room," and AOL and Yahoo! and Google are all planning video-rich strategies. New applications like video telephony and video surveillance over the Web have barely started yet.

Despite this strong demand for networks, however, Wall Street harbors grave doubts about the ability to earn a return on network investments. Excessive competition and an uncertain, and at times hostile, regulatory environment are dampening capital formation and slowing the pace of investment.

And that investment is critical, because despite a great deal of arm waving from "visionaries," our telecommunications infrastructure is woefully unprepared for widespread delivery of advanced services — especially video — over the Internet. Downloading a single half hour TV show on the Web consumes more bandwidth than does receiving 200 e-mails a day for a full year. Downloading a single high-definition movie consumes more bandwidth than does the downloading of 35,000 Web pages; it's the equivalent of downloading 2,300 songs over Apple's iTunes Web site. Today's networks simply aren't scaled for that.

In a series of recent research reports that I entitled "The Dumb Pipe Paradox" — which I believe provided the original impetus for the Committee's invitation to testify today — I tried to address the expectation that the telcos are rapidly rushing in to meet this need and to provide competition for cable incumbents. In fact, by their own best

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estimates, they'll be able to reach no more than 40% or so of American households with fiber over the next seven years.

And most of that will be in the form of hybrid fiber/legacy copper networks, such as that being constructed by AT&T under the banner of "Project Lightspeed." These hybrid networks are expected to deliver 20Mbps average downstream bandwidth. After accounting for significant standard deviation around that average, that will mean many "enabled" subscribers will actually receive far less. I and many others on Wall Street harbor real doubts as to whether these hybrid networks will prove technologically sufficient to meet future demands.

More importantly, in 60% of the country, there are simply no new networks on the horizon, and the existing infrastructure from the telcos — DSL running at speeds of just 1.5Mbps or so — simply won't be adequate to be considered "broadband" in five years or so. That includes wireless networks, by the way. Current and planned wireless networks — including the over-hyped Wi-Max technology — offer the promise of satisfying today's definition of broadband, but simply can't feasibly support the kind of bandwidth required for the kind of dedicated point-to-point video connections that will be required to be considered broadband tomorrow. Those demands will continue to fall to terrestrial wired networks.

Again, the Wall Street view is that even this amount of investment is unwarranted. Verizon's network-investment strategy is predicated largely on cost savings, not on the potential returns from delivering new services. We expect Verizon's return on investment to be marginally positive. AT&T's is less costly, but generates fewer cost savings, and so is likely significantly worse. Without cost savings, you simply can't make a case for major new investments on the basis of voice, video and data as currently conceived.

In Part I of the "Dumb Pipe Paradox," I noted that if a telco was in the business of providing broadband connections only — that is, if phone service becomes, as many predict, simply another bit stream on top of a data connection — then the cost to provide service would be as much as \$80 per month. And from a consumer's perspective, that would be the pipe only, before paying for any content over the Web.

And the cost, and therefore the price, would likely be much, much more. Some recent comments from BellSouth's chief architect, Henry Kafka, at the Optical Fiber Communication/National Fiber Optics Engineers Conference last week put this in perspective. He estimated that the average residential broadband user today consumes about two gigabytes of data per month. Heavy users who regularly download movies consume an average of nine gigabytes of data per month. In the future, watching IPTV would consume 224 gigabytes, and would cost carriers \$112 per month to deliver. And if IPTV is going to deliver high definition, then the average user would be consuming more than one terabyte per month, at a cost to carriers of \$560 per month.

That, I believe, puts the "Net Neutrality" debate in context. The very valence of the phrase suggests that the First Amendment is about to be trampled lest it be legislatively protected. And the very idea that third parties who benefit from Internet infrastructure investments — say, Google and Yahoo! — might economically contribute in some way to these costs has been roundly greeted as if it is a threat to basic liberties.

But the notion of "Net Neutrality" as it is currently construed would, I believe, likely trigger a host of unintended consequences. Mandated "Net Neutrality" would further sour Wall Street's taste for broadband infrastructure investments, making it increasingly difficult to sustain the necessary capital investments.

It would also likely mean that consumers alone would be required to foot the bill for whatever future network investments that do get made. That would result in much higher end-user prices, much steeper subsidies of heavy users by occasional ones, and, in all likelihood, a much sharper "digital divide." By discouraging the deployment of new networks, it would also likely freeze in place the status quo cable/telco duopoly (or worse in much of the country, where we are, as previously described, on a trajectory to a near cable monopoly for genuine broadband). The United States as a whole would, in all likelihood, fall further behind other countries in broadband availability and reliability.

Conversely, from a Wall Street perspective, allowing a "multiplicity of payers" (say, advertisers, or Web services providers) to support network investments would greatly bolster the business case for deploying new infrastructure, as it would offer the prospect of more attractive returns. And while current network operators would undeniably benefit in such a regime, so too would consumers, who would likely see both greater choice and lower prices.

And despite their current howls at the idea of paying for such services as packet prioritization (what some have referred to as a "fast lane" for data), it is likely that the Internet services community would be the biggest beneficiaries of all, inasmuch as they would be assured of an infrastructure capable of supporting innovation in new high-bandwidth Internet-based services.

The First Amendment concerns surrounding “Net Neutrality” are very real. But surely these concerns can be dealt with — say, through anti-blocking provisions, or through the carve-out of a neutral “basic tier” — without triggering this laundry list of unintended consequences. Indeed, it is my belief that that network operators can feasibly meet the needs of unfettered access to any and all Web-based content by providing a “basic access tier” that provides for a fixed minimum amount of bandwidth (or, alternatively, a fixed percentage of total bandwidth) in which pure neutrality would be maintained, and that the provision of resources over and above that minimum can then be left entirely to market forces.

Once again, I thank you for your kind attention.

**Risks**

Our investment thesis for the cable and satellite group continues to be underpinned by our view that the competitive-pricing environment will be less aggressive than consensus expectations. Irrational pricing behavior, or mere *expectations* of a more challenging pricing environment, may continue to weigh on the stocks for some time. New technologies may pressure broadband margins or reduce the value of cable’s video distribution bottleneck. RBOC fiber deployments may impact cable and satellite subscriber and revenue growth rates or pricing more than we have forecast.

**Investment Conclusion**

We rate Comcast (price target \$27) outperform (\$37), Cablevision (\$27) market-perform (price target \$29), DirecTV (\$16) market-perform (price target \$16) and EchoStar (\$30) market-perform (price target \$31).

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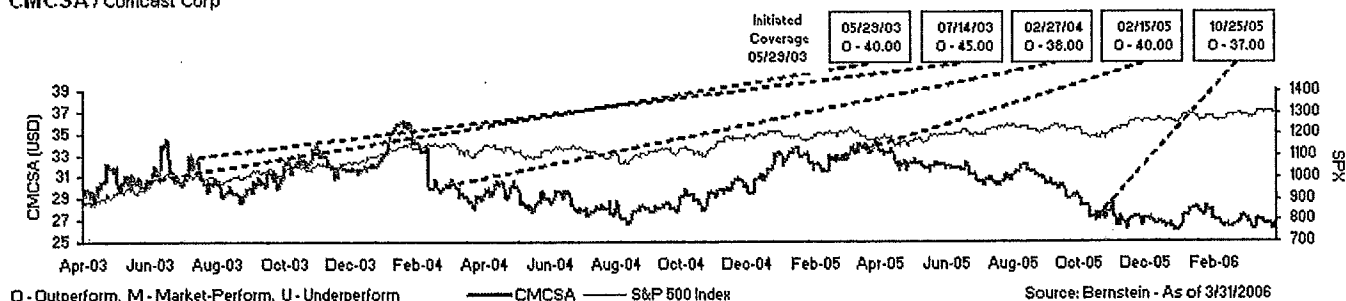
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