COVINGTON & BURLING

1201 PENNSYLVANIA AVENUE NW
WASHINGTON, DC 20004-2401
TEL 202.662.6000
FAX 202.662.6291
WWW.COV.COM

WASHINGTON
NEW YORK
SAN FRANCISCO
LONDON
BRUSSELS

GERARD J. WALDRON
TEL 202.662.5360
FAX 202.778.5360
GWALDRON@COV.COM

December 13, 2002

FILED ELECTRONICALLY

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities, GN Docket No. 00-185; Appropriate Regulatory Treatment for Broadband Access to the Internet Over Cable Facilities, CS Docket No. 02-52; Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, CC Docket No. 02-33; Computer III Further Remand Proceedings, CC Docket Nos. 95-20 & 98-10
Notice of *Ex Parte* Presentation

Dear Ms. Salas:

Submitted herewith pursuant to Section 1.1206(b)(2) of the Commission's rules is a notice regarding permitted oral *ex parte* presentations in the above-captioned proceedings. On December 12, 2002, members of the Coalition of Broadband Users and Innovators, including John Scheibel of Yahoo!, Dan Horowitz of the Digital Media Association, Andrew Jay Schwartzman of Media Access Project, Veronica O'Connell of the Consumer Electronics Association, Marc Berejka of Microsoft Corp., Mark Uncapher of the Information Technology Association of America, and the undersigned on behalf of the Coalition met with Jon Cody, Special Policy Advisor to Chairman Powell, and Alexis Johns, Legal Advisor to Commissioner Copps; Ms. O'Connell and Messrs. Scheibel, Horowitz, Berejka, Uncapher, and Waldron met with William Maher, Brent Olson, and Scott Bergmann of the Wireline Competition Bureau; and Ms. O'Connell and Messrs. Scheibel, Schwartzman, Uncapher, and Waldron met with Robert Pepper and Simon Wilkie of the Office of Plans and Policy and Kenneth Ferree, Marjorie Greene, Mary Beth Murphy, Barbara Esbin, Kyle Dixon, Eric Bash, and Peter Corea of the Media Bureau concerning the need for consumers to be able to connect to and use the Internet without interference from network operators.

The parties discussed the letter filed by the Coalition on November 18, 2002, which emphasized that the Commission should assure in its broadband policy that consumers continue to have the ability they now enjoy lawfully to roam over the Internet; to run the applications they want using the equipment they choose; to gather, create, and share information; and to connect to websites absent interference by network operators. The history of the Internet has been characterized by consumer ability to use an unprecedented array of content, services, and applications via an ever-increasing repertoire of products, and the Commission should take steps to ensure that this legacy, which has made the Internet the powerful communications and technology tool that it is today and contributed significantly to economic growth, continues. Moreover, the parties explained that a network operator's failing to provide consumers with access to the entire Internet is inconsistent with the Commission's understanding of cable modem service as reflected in the *Declaratory Ruling*.

As the Commission moves forward in the above-captioned proceedings to write a policy for the future of the broadband era, it must focus on the incentives that content and equipment providers at the edge of the network have to develop the content and devices that motivate consumers actually to use broadband. The explosion of investment and innovation in the consumer electronics and equipment sector and in the availability of a wide variety of consumer electronics devices over the past twenty years is a direct result of the fact that companies have confidence that users can attach any device to the network. But manufacturers' investment and willingness to innovate in this area will evaporate if their customers are denied the right by network operators to attach such devices. Similarly, many have bemoaned the lack of compelling broadband content and cite this as a significant factor impeding broadband deployment. Companies that develop and provide this content would like to continue to develop and provide this content, but they, too, will have difficulty justifying substantial new investments if they cannot be assured that consumers will have the freedom to reach their offerings without interference from network providers.

The parties explained that there is an increasing consensus among large numbers of companies in the e-commerce, software, hardware, and telecommunications industries, as well as groups representing citizens who use the Internet for interactive communications, as to the importance of these problems and the need for preserving well-accepted consumer connectivity principles in the above-captioned proceedings. This principle has, for example, been endorsed by NARUC, which last month adopted the attached resolution endorsing "a right of access to the Internet that is unrestricted as to viewpoint and that is provided without unreasonable discrimination as to lawful choice of content."

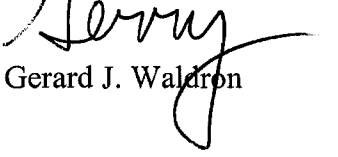
We also explained that the Commission needs to secure the right of consumers to go anywhere on the Internet without operator interference because of the prospect of a broadband duopoly. Today, cable modem and DSL service dominate broadband access in this country, with more than 80 percent of households facing a broadband monopoly or duopoly and almost 20 percent without access to either service. The Commission consistently has not embraced a duopoly without adopting substantial safeguards, and the parties explained that though

alternative broadband sources are on the horizon, in realistic terms the broadband duopoly will define the Internet for some time.

Finally, the Coalition raised the Commission's jurisdiction to adopt consumer connectivity safeguards for broadband. In particular, we discussed a memorandum of law submitted by Amazon.com in an *ex parte* filing of December 2, 2002, analyzing the FCC's ancillary authority and concluding that it has ample jurisdiction to adopt a non-impairment principle in the broadband context.

In the course of our discussions, we distributed the attached copies of the connectivity principles promulgated by the High Tech Broadband Coalition and a report prepared by Legg Mason discussing discrimination in the broadband context. Kindly address any questions to the undersigned.

Sincerely,



Gerard J. Waldron

Attachments

cc: Eric Bash
Scott Bergmann
Jon Cody
Peter Corea
Kyle Dixon
Barbara Esbin
Kenneth Ferree
Marjorie Greene
Alexis Johns
William Maher
Mary Beth Murphy
Brent Olson
Robert Pepper
Simon Wilkie

ATTACHMENT I

NARUC Broadband Resolution

Resolution Regarding Citizen Access to Internet Content

WHEREAS, In a "cable modem" Declaratory Ruling and Notice of Proposed Rulemaking released on March 15, 2002, the FCC declared that cable modem service is an information service, and it sought comment on whether the threat of blocking subscriber access to Internet content or services is sufficient to justify regulatory intervention; and

WHEREAS, The Commission proposes to regulate broadband access to the Internet using its Title I "ancillary jurisdiction" authority; and

WHEREAS, Customers using a telecommunications common carrier today have the ability to send and receive lawful information of their own design and choosing; and

WHEREAS, Title II of the Communications Act's prohibition against unreasonable discrimination has historically protected the rights of American citizens to transmit and receive information without change in its form or content; and

WHEREAS, Some citizens today use broadband services and facilities as their chief source of information and news, even to the point of replacing newspapers, and more may do so in the future; and

WHEREAS, Some citizens can get broadband service only through wireline telephone facilities, and others can get broadband service only through cable modems; and

WHEREAS, Providers of broadband services or facilities have the technical capability to create a "walled garden" or "fenced prairie," that is designed to attract customers to preferred content but that also could keep consumers from reaching content other than those of the providers' choosing; and

WHEREAS, It is conceivable that some providers of broadband services or facilities may have an incentive to restrict Internet access to favored news sources, and if they chose to do so, it could significantly harm free and open information exchange in the marketplace of ideas; and

in Chicago, Illinois, that all Internet users, including broadband wireline and cable modem users should:

1. Have a right to access to the Internet that is unrestricted as to viewpoint and that is provided without unreasonable discrimination as to lawful choice of content (including software applications); and
2. Receive meaningful information regarding the technical limitations of their broadband service; and be it further

RESOLVED, Where a broadband facilities provider furnishes facilities on a nondiscriminatory basis to ISPs, including an affiliated ISP, nothing here prohibits the affiliated ISP from promoting or preferring particular content; and be it further

RESOLVED, That the NARUC General Counsel should include these guiding principles in NARUC comments filed in all relevant FCC broadband proceedings.

Sponsored by the Committee on Telecommunications
Recommended by the NARUC Board of Directors November 12, 2002
Adopted NARUC Convention November 12, 2002

ATTACHMENT II

HTBC's Connectivity Principles

HTBC'S CONNECTIVITY PRINCIPLES[1]

The Commission should protect important "connectivity principles" that have made the Internet what it is today:

- Consumers have a right to meaningful information regarding technical limitations of their service.

- Consumers should have unrestricted access to their choice of Internet content using the bandwidth capacity of their service plan.

- Cable modem customers should be allowed to run applications of their choice, as long as they do not harm the provider's network and are within the bandwidth limits of their service plans.

- Consumers should be permitted to attach any devices they choose, without prior permission, to their ISP connection, so long as they operate within the agreed bandwidth, do not harm the provider's network, or enable theft of services.

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[1] Excerpted from Comments of the High Tech Broadband Coalition (Business Software Alliance, Consumer Electronics Association, Information Technology Industry Council, National Association of Manufacturers, Semiconductor Industry Association, and Telecommunications Industry Association), in CS Docket No. 02-52, at 7-9 (June 17, 2002).

ATTACHMENT III

Legg Mason Report on Broadband Discrimination

Beyond UNE-P: The Edge vs. the Network - a/k/a "Open Access II"

December 5, 2002

Blair Levin	blevin@leggmason.com	(202)778-4341
Daniel Zito	dezito@leggmason.com	(410) 454-4333
Rebecca Arbogast	rarbogast@leggmason.com	(202) 778-1978
David Kaut	dpkaut@leggmason.com	(202) 778-4341

- **Despite the current furor over UNE-P, we believe investors should not lose sight of the ongoing broadband migration that increasingly will empower a new generation of voice and, eventually, video services offered from the edge of the network, opening up new business opportunities and public policy questions.**
- **In our view, the most important government policies for determining who captures most of the value created by broadband growth will be those affecting the relative power of the network owners (Bells, cable) versus the content and application providers (broadcasters, MSFT, others). The key question will be the extent to which network operators may discriminate against IP-based voice and video services offered by these edge competitors.**
- **The issue ("Open Access II") will play out over time, with gaming and Wi-Fi being early flash points. An initial indication of how the FCC views this issue should be seen in its cable and wireline broadband decisions, likely to be released in 1Q03, though we don't anticipate definitive rulings on the discrimination issue at that time.**
- **Despite deregulatory trends, we believe non-discriminatory requirements are likely to be imposed eventually, whether implicitly or explicitly. We believe that such obligations over time would shift more of the aggregate broadband opportunity from the network providers to content and applications companies.**
- **We believe that the Bell and cable companies still will have opportunities to tap new broadband revenue streams, but anti-discrimination mandates could limit their upside, and increase the importance of service bundling, particularly with wireless.**
- **When Voice over Internet Protocol becomes widely used, telecom policies, including those on unbundling and universal service, will have to undergo a complete re-examination.**

THE KEY PUBLIC POLICY DEBATE FOR THE NEXT INFLECTION POINT

I. Introduction.

A. The big issues now.

The Federal Communications Commission is currently reviewing a number of issues that could materially affect existing revenues, and therefore market valuations, of all telecom companies. These include the rules governing the unbundled network element platform, or UNE-P (the Bells vs. AT&T, WorldCom, and other IXCs/CLECs), broadband service definitions (Bells vs. CLECs and ISPs), broadband parity (Bells vs. cable), and universal service (IXCs vs. Bells vs. cable vs. wireless). To a significant extent, these battles involve new entrants using a variety of entry strategies to capture revenues, particularly voice revenues, from the incumbent networks. These companies generally integrate the services they provide with the transmission capability of the networks.

B. The key change: Delinking content and transmission.

In today's world, those seeking to offer a voice or video service generally have to strike a commercial deal, or have government-mandated access, to offer that service over the cable or Bell/ILEC (incumbent local exchange carrier) network. For example, HBO strikes deals with cable systems to share revenues for the video service; and CLECs offer voice services over a combination of their own and ILEC networks. But those who sell goods or services from the edge of the network, such as Amazon.com (AMZN) or eBay (EBAY), do not have to strike a deal with the network provider.

Broadband bit speeds, in combination with improved data compression, will make it increasingly viable in coming years to sell voice and video services from the edge of the network, thus weakening the link between the service and the network. We believe this change will have a profound impact on market structure and

policy.

C. The next inflection point: When voice becomes a data application.
We believe the significance of this change will become more apparent in the market when voice services can be offered commercially as an Internet Protocol (IP) data application. Though this shift in the mass market has been anticipated for some time and its precise timing remains debatable, some such services are already available to large, enterprise customers. When telephony becomes integrated with data and other services, it is likely to have a profound impact, as packet-switched IP operating economics, once it scales, is likely to be superior to the current Bell/ILEC circuit-switched voice service. For example, while Microsoft (MSFT) already has some IP telephony features in the current version of Windows XP, the company is planning on putting in much more in its next version, codenamed Longhorn, tentatively set for release in 2005. An early version of this phenomenon can be seen with MSFT's rollout of its Xbox live online gaming service, which allows gamers to talk to each other using Voice over Internet Protocol (VoIP). Others on the edge of the network are also trying to use the "always-on" and high-speed attributes of the network to drive new applications and revenue sources in ways that compete with and add to traditional voice, and eventually video, offerings. SBC's (SBC) unsuccessful bid to have a court impose tougher antitrust remedies on Microsoft was not an idle, philosophical effort: it was an attempt to limit Microsoft's ability to leverage its Windows platform to take away voice and other revenues from SBC in coming years.

D. The big issue in the future: Can network owners discriminate against some network use?
IP telephony raises a number of policy issues that have been gestating for some time at the FCC, including regulatory parity, universal-service subsidy contributions, and federal/state/local jurisdiction over the Internet. But we think that the key policy issue is likely to involve the extent to which the network provider can restrict the customers' use of the network. Some have raised the fear that the Bell and cable companies could use their network control to undermine competitive offerings. In responding to such concerns, the government may have to address whether network providers can (1) restrict access to any Internet content, (2) restrict the user from running an application even if it does not harm the network and stays within bandwidth limits, (3) use routers to improve the performance of affiliated services (or undermine the performance of unaffiliated services), or (4) prohibit the attachment of devices to their Internet connection for reasons other than harm to the network or theft of service.

This currently obscure debate is just starting. Over time, we believe the extent to which network operators can favor certain kinds of content and services will become the key issue for the broadband market, particularly once voice and video over broadband become more commercially viable. A non-discriminatory requirement could limit the broadband upside for cable and the Bells while creating new opportunities for content and services firms at the edge of the network. This note provides an overview of the issue and how we believe it is likely to play out over time.

II. The broadband non-discrimination debate.

A. Quiet now but with broad implications.
We believe this network access question may be the most important and overlooked issue potentially on the FCC agenda. Its implications for the broadband world are dramatic, as the outcome will likely affect the leverage between the network operators and the content/applications providers.

B. Issue embedded in several proceedings.
The FCC itself has not formally raised this issue. But several months ago, a coalition of high-tech companies, in a filing in the current cable modem proceeding, advocated that the FCC establish the principle that the network operator cannot discriminate against certain kinds of network use. (Amazon.com has gone further and filed in favor of broader open-access requirements on cable modem service, but other major high-tech firms declined to do so.) The National Association of Regulatory Utility Commissioners in November passed a resolution opposing restrictions by broadband network providers on users' access to lawful content or services. More recently, the effort was joined by the newly formed Coalition of Broadband Users and Innovators - a group that includes Amazon.com , Yahoo! (YHOO), eBay, Apple Computer (AAPL), Microsoft, RadioShack (RSH), Disney (DIS), and a number of trade associations and consumer advocacy organizations - which filed for non-discriminatory principles to be adopted in the wireline broadband proceeding. While Commission officials initially indicated they hope to complete these proceedings as early as this month, we now expect the cable and wireline broadband items to slip to early next year, given the weight of other ongoing matters.

C. Open Access II: The rhetorical sequel, but a different policy.
The issue might sound familiar to those who remember AOL's (AOL) efforts, prior to its merger with Time Warner, to convince the government to force cable operators to offer "open access" to ISPs ("Open Access I"), though cable called it "forced access." While the rhetoric will be similar, the practical and political reality of the two issues will be very different, in our opinion. The key difference is in the nature of the government intervention. Open Access I advocated government intervention in the market to tell cable how to reconfigure its network to enable ISP access and to set the terms and conditions by which businesses, largely ISPs, would resell the cable data network. The new policy thrust ("Open Access II") would limit government intervention to preventing network operators from interfering with customer use of the network. This difference, we believe, makes it more likely Open Access II will become a general government policy where Open Access I did not. (The latter only became a policy applied to AOL Time Warner as a merger condition, owing to the particular market power of AOL in the online service providers market.)

D. Clear resolution unlikely to be quick.
The Commission does not have to resolve these issues at this time. As the harms cited by high-tech and consumer coalitions are mostly theoretical problems for the future, the Commission could decide that it does not need to act now but will continue to monitor the issue to see how the market develops.

No matter what the initial outcomes in these proceedings, however, the issue is likely to keep being raised. If the Commission does not act to establish some sort of non-discriminatory broadband principles, we think the issue will arise in subsequent proceedings, just as Open Access I arose in a number of different policy and merger proceedings.

E. Early flashpoints: Gaming and Wi-Fi.
While the battle ultimately will be over voice service, as it generates the largest share of the revenue, early flashpoints will be seen in gaming services and with Wi-Fi unlicensed wireless uses. Gaming represents a fast growing revenue stream and the network owners will not want the service companies, such as Microsoft and Sony (SNE), to capture all the incremental revenues. Wi-Fi represents a way for homes to network numerous computers to a single broadband connection, which is prohibited by standard cable agreements, and an alternative to paying network providers a monthly networking fee (see our July 2002 report, "Wi-Fi: Hype and Hope"). Cable has threatened to crack down on what it regards as abuse of its network by Wi-Fi attachments, but to date cable has not cut off service broadly and the issue has not reached the media or public policy front burner. If the network providers undercut gaming or Wi-Fi, however, it could serve as an early indicator of how the issue will play, both with the public and with policymakers.

F. Odd Bedfellows: High-tech and Hollywood vs. Cable and the Bells?
The issue could create some interesting political realignments. In numerous past communications policy battles, the high-tech community, including MSFT and Intel (INTC), has joined cable in pushing for a deregulatory, facilities-oriented policy. Open Access II represents a situation in which high-tech companies might find themselves lined up against cable. The opposition is not complete; high-tech parties would, we believe, oppose any effort to price regulate broadband data transmission. They would also probably argue that the network owners could capture most of the upside for deploying higher bandwidth to more users. Nonetheless, the issue would represent the first time a significant part of the high-tech community has sought new regulations over phone and cable networks (though it would argue that it merely seeks the application of existing voice network non-discriminatory principles to the broadband networks). We also think high-tech interests will be joined by the broadcast and content communities, which will want to shift leverage towards the edge of the broadband network. They have already been joined by Disney, which they have been at odds with over copyright issues.

What do the Bells do? A critical question is how the Bells will respond. The Bells may decide that they want cable to face such regulation, based on the short-term advantage of hurting cable's access to capital. The Bells may believe that they will inevitably be subject to non-discrimination requirements and that, therefore, having such requirements placed on cable creates a more benign playing field. The Bells may also believe that such a regime will help accelerate applications growth, thereby stimulating demand for Bell network services.

In the long term, however, the Bells face two downsides if cable is subject to new non-discrimination requirements. First, the requirements would accelerate entry by software providers into the Bells' core telephony business through the cable platform. The ultimate impact on the Bells would likely be greater than on cable, as voice applications undercut the pricing of the ILECs' core offering. Further, given cable's lead in residential broadband, a loss of a voice customer could sever the most critical tie that the ILEC has to the

customer. Second, if cable loses its ability to discriminate in favor of its own content and service bundles, the Bells' long-term potential upside in bundling content with distribution will likely become more limited as well.

G. But network owners will have arguments, particularly with incentives for facilities-based competition.

Those opposed to placing new rules on all broadband networks will have some powerful ammunition. We believe they will trumpet the arguments of FCC Chairman Michael Powell in favor of "facilities-based competition," which put the highest priority on providing incentives for network investment. Any regulation of network use has some negative impact on the ability of companies to raise capital to maintain and upgrade networks.

In addition, the network owners can point to the need to discriminate against some kinds of Internet uses, in order to protect public safety and copyright owners. As those issues are currently high on the public policy agenda, and as we believe they will be resolved in a way that allows some interference by the network owners with the behavior of network users, the network owners will have political support for the idea that there are some legitimate areas of interference.

Further, in our view, network owners will likely note how high-tech is pushing for more unlicensed spectrum, with the argument that stimulating the demand for, and build-out of, such wireless networks will lead to more facilities-based competition, and therefore less need for regulation. Cable can suggest that providing more spectrum for Wi-Fi makes adding new regulations unnecessary and that doing both will effectively diminish the incentives to invest in new and upgraded networks. While we think the government ultimately will adopt a non-discriminatory position, we think these arguments are strong enough to cause policymakers to move cautiously in establishing new rules.

III. Likely Outcomes.

A. Policy bottom line: Despite the deregulatory climate, non-discriminatory requirements are likely to be imposed, implicitly or explicitly, over time.

High-tech's political weight has diminished and the general direction of most policy issues is deregulatory. Nonetheless, we believe the high-tech argument will prevail over time. We believe high-tech parties will have the rhetorical high ground about openness and, in addition, will benefit from the fact that the nature of government intrusion in the market is far different than advocated in Open Access I. We also believe that by the time the issue becomes ripe, the dual dominance of the cable and Bell networks in delivering Internet access will be clearer, making political forces more comfortable with regulation. Further, if cable or the Bells actually limits access, we believe it could be the kind of event (like the collapse of Enron leading to passage of campaign finance reform or of WorldCom leading to passage of Sarbanes-Oxley) that catalyzes public sentiment for regulation. Indeed, the fear of explicit regulation could force cable to operate under an implicit rule similar to what high-tech has proposed. We also note that because the coalitions raised the issue, cable interests have been forced to publicly say they don't discriminate, making it harder to do so in the future, and making it easier politically to impose such anti-discrimination requirements if cable does in fact discriminate.

Regardless of the government decision, the business model of one network, may force other networks to the same model. The first reaction of companies is generally to try and keep their customer's environment closed. For example AOL originally offered a closed, proprietary network in which members could only talk to members. But with the emergence of the wide-open Web, and other entities offering services on an open platform, AOL's original business model proved counter-productive.

In the same way here, if the government chooses not to regulate but one network offers an open platform, it may well force the other to do the same. While the Bells and cable are currently regulated differently, the open requirements on the Bells may ultimately force cable operators to be just as open, or force them to offer a closed value proposition that is so compelling (either due to much lower prices or superior service) that they can attract customers despite the restrictions on use.

B. The economic bottom line: Cable and the Bells still can prosper but upside is more limited.

If edge providers can ride over the broadband pipes to offer voice and eventually video services, it will undercut the upside potential of cable moving into telephony (and undercuts any Bell move into video over their own networks, though we view that possibility as much more remote). Competition from the edge puts downward pressure on how cable and telephony can price in their core markets.

The network owners will still benefit from a growing, and non-price regulated transmission market. The

emergence of edge applications as a competitive threat does not mean the network owners can't make money. First, the government is unlikely to regulate the price of any pure broadband data delivery offering. Most policymakers want to provide incentives to build bigger last-mile pipes and regard broadband price regulation as counter-productive. Given the telecom collapse in the capital markets, we believe it unlikely that significant new competition is going to emerge in the foreseeable future for the last-mile broadband data delivery service. We note, however, that if a third broadband path to the home does emerge, governmental pressure for a non-discriminatory regime likely will ease considerably, as policymakers look to market forces to ensure non-discriminatory access.

Second, high-tech would argue that if the network providers focus on improving last-mile bandwidth, it would cause hundreds of companies on the edge of the network to develop applications, which in turn will drive up demand for bandwidth. If this dynamic works, the economy could enjoy a virtuous circle, similar to what happened between Microsoft and Intel in the early 1990's in which increasingly functional software drove demand for increases in computing power, driving the opportunity for increasingly functional software, and on and on. So here, more applications could increase greater demand for bandwidth, increasing the ability to create more bandwidth-intensive applications.

Third, there is some advantage to the cable industry of consumers buying their own equipment to attach to the network. Some in the cable industry believe that the need to provide customer-premises equipment has consistently created accounting and marketing problems that would be happily resolved if consumers bought their own equipment.

Further, if one ignores sunk costs, the Bells and cable are in the pole position to benefit from broadband use, due to customer relationships and the customer knowledge curve, to sell applications. As the Bells and cable are increasingly able to bundle better packages of voice, video and data services, they will have significant advantages over those selling single services (see our June 2002 report, "The Battle of the Bundles"). The potential competition from the edge makes the Bell ownership of wireless assets even more important to keeping the customer relationship, as the edge providers won't be able to offer the same mobility benefits.

Of course, Wall Street wants cable and the Bells not to ignore sunk costs and to return a profit on those investments, and companies are generally unwilling to cannibalize their existing businesses. But this could be a case where, as wireless did once there was sufficient competition (i.e., in 1997 but not in 1987), the market reality gives the incumbents no choice but to cannibalize their own businesses

Other companies in the sector will also have to adjust their strategies as competition moves to the edge. For interexchange carriers (IXCs) and competitive local exchange carriers (CLECs) in the residential market, and in parts of the business market, such competition could make their own network investments obsolete but could create new opportunities to build off of existing brands for offering low-cost alternatives to the incumbents. For example, if VoIP becomes commercially viable before UNE-P is phased out, VoIP could offer an opportunity for CLECs to migrate their customers to a more economically viable platform. Over time, however, we think increased bandwidth and edge services will force non-cable and non-ILEC players to choose between focusing on transmission and focusing on services.

C. The strategic bottom line: Aggregate broader value creation opportunities could move to the edge of the network.

The edge companies face many obstacles in driving revenue from their applications. They will be at a disadvantage relative to the network providers in facing a number of operating expenses not reduced by Moore's law of expanding microprocessor power, such as billing and customer care. Over time, however, technology trends suggest that the long-term value creation will accrue more to the providers on the edge. Because of the declining costs at the edge of the network (dictated by Moore's law) the content and applications players may be able to drive the costs of services down more rapidly than those who have to do both data delivery and services. Moreover, those on the edge of the network could be more nimble in creating applications and services that respond to consumer needs. Thus, on an aggregate basis, we think that in a broadband world in which networks cannot discriminate, more value is likely to be created on the edge than on the networks.

Companies on the edge, however, could face significant competition from each other due to low barriers to entry. While more value may be created on the edge, the reduced barriers to entry mean that the content and applications market could be very competitive. Those who merely offer a single good software product may find themselves, like the dot.com players in the late 1990s, facing too much undifferentiated competition. We think that to survive, the long-term players will likely bundle their service with products where they have a

well-established advantage. For example, MSFT would be able to use its embedded base in the operating system market to sell value-added voice and video services far more easily than a start-up offering a single service. IBM (IBM) is another example of a company likely to benefit from greater opportunities to sell services from the edge to its existing customer base.

D. Rip-tide effect on current public policy issues: The upcoming UNE and other policy decisions will set the stage for the broadband market, but will have to be reexamined once broadband commercially delivers voice and video services.

If companies are able to offer voice and video services as data applications, it will radically alter the issues that currently dominate the communications policy agenda. While it will not happen in the near term, and while there are numerous issues to be resolved (such as VoIP obligations for emergency 911 services or under "CALEA" wiretapping provisions, powering obligations for VoIP, and the treatment of VoIP for universal-service purposes), UNEs will likely have less relevance if numerous providers are offering functionally equivalent services from the edge of the network. It is also hard to see how the current universal-service mechanisms would accomplish their goals of universal connectivity with the current rate base significantly diminished. The resolution of a series of issues in the upcoming UNE Triennial Review and broadband proceedings, represent, in our view, a critically important but nonetheless, short-term resolution of the issues that will have to be addressed again once the voice-as-data inflection point is reached. We don't think this will happen immediately, but it limits the long-term economic impact of the current proceedings.

Additional Informaton Available Upon Request

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