



One nation under Internet Protocol

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*"Gonna keep on tryin'
Till I reach the highest ground."*
--Stevie Wonder, Higher Ground

Take a trip to Korea or Japan, and you will immediately have a new appreciation for the definition of broadband.

There, it is not uncommon for a consumer's Internet connection to breathe a blazingly fast 10-plus megabits per second. In Japan, Yahoo BB goes a step further, trumpeting a full 45-megabits-per-second offering for a cool \$37 per month (about 3,892 yen). Still not amazed? Korea boasts a mind-boggling 80 percent broadband penetration rate, while the United States still ambles around half that. That said, even the states' 42 percent penetration rate is deceptive, as the U.S. version of broadband is a far cry from these Asian fire hoses.

What is most striking about the notion of a 45-megabit Internet Protocol connection is the overwhelming universality of such an incredibly high-speed packet-based conduit. Into it melt all forms of media and communications: voice, data, video and any other application or service you might imagine. There is no need to consider bringing multiple connections or service providers into your home, for this network can do everything you need and more. Early signs in Japan are consistent with this notion. Yahoo BB announced a stunning 80 percent attachment rate on its IP-based phone service. It is now promoting an IP-based set-top box for the ultimate in personalized television.

One cannot help but wonder if we are headed for a similar fate in the United States--a single super high-speed pipe into the home that carries all media forms over a simple, standard IP connection.

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It certainly seems probable, although the path to such a reality is by no means a straight line. The key constituents--the cable companies and the regional Bell operating companies (RBOCs)--each will make key business decisions over the next five to 10 years that will dictate the likeliness of such an outcome and in doing so could simultaneously ensure their own leadership or obsolescence.

Here are seven key questions that will shape the future of communications in the United States:

Who is the leader today?

Make no mistake about it: The cable companies rule the broadband world in the United States. While their networks are not currently "all IP," their coax cables are the only communications transport capable of carrying voice, data and video simultaneously. The satellite broadcasters are indeed gaining steam on the video side, and they have improved their data offerings, but voice is a real stretch, due to latency. The RBOCs unfortunately sit in the worst position.

Not only are the current copper wires quite feeble when compared to a coax cable, but the RBOCs are simultaneously hamstrung by excessive regulations, including the requirement that they share their networks.

RBOC executives have claimed that these rules are a disincentive to investment; however, as we will discuss later, it's the RBOCs that have everything to lose in terms of investment.

Will there be a long-term, stand-alone business for voice services?

It is a common macroeconomic understanding that marginal pricing will eventually approach marginal cost, assuming a competitive environment. As long as there are "enough" providers of high-speed IP connections for each home, and assuming that the government does not impose regulations that hamper market forces, voice should one day be absolutely free. Already, any two broadband users anywhere in the world can make wonderfully free voice calls via [Skype's peer-to-peer client](#). Those that question the quality of these calls have obviously not used the product.

While voice should be free, that doesn't mean that it will be free. The two conditions outlined above are nontrivial. It is not at all clear that we have enough competition in the U.S. broadband market. Innovations in the wireless market, particularly recent innovations around mesh architectures, have the opportunity to change this. But at the moment, many users simply lack choice.

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Additionally, the many state municipalities around the country are eager to place their hands on voice over Internet Protocol (VoIP) technology. A poorly executed policy could in fact "increase" the long-term pricing on voice services for all users. For example, would you really tax a free service? The regulators are supposedly looking after the best interest of consumers, but it is hard for them not to look after their own longevity as well.

One huge irony in the marketplace is that the cable companies may actually control the near-term fate of the RBOCs. It would be quite easy for the cable companies to decide to make voice a free service over broadband. The marginal costs are simply not that high, especially if you assume an IP-based phone solution such as [Vonage](#) or Skype. This type of offering would likely lead to an attachment rate similar to that of Japan's Yahoo BB, which would in turn be devastating for the RBOCs.

Yet, there are two reasons why the cable companies may choose not to do this. First, they may have already fallen in love with the notion of charging for voice. They may view it tactically rather than strategically. Alternatively, they may view it as a strategic move to prolong frightening the RBOCs into fiber deployment. The longer the RBOCs continue to believe that there is a long-term future in voice services, the better off the cable providers may be.

Was the offer for Disney driven by a vision of an all-IP network?

It would be easy to dismiss the [Comcast offer for Disney](#) as just another example of the standard media strategy of [bridging content and distribution](#). One could also point to the recent price hikes of cable must-haves ESPN and MTV to see why Comcast might want a few aces in the hole next time it has to barter.

However, there may be one other reason for such a move: a keen awareness that in an all-IP world, the power of distribution falls, as all content providers can establish a direct relationship with their customers. A similar move played out in the travel industry last week, when Hilton and many other hotels declared that in the future, the best rates would be found on their own Web sites, not on [Expedia](#) or [Travelocity](#).

Think about this. If you assume that Brian Roberts and the team at Comcast are rational, then they would only consider such an offer if they believed that the market were overvaluing distribution relative to content. If they felt that the power of distribution would rise in the future relative to content, it would be strategically inept to make such a move.

The only reasonable assumption is that based on current information and valuations, the company would love to trade distribution dollars for content dollars. In an all-IP world, Disney would certainly have more choices and alternatives than it does in a cable environment, where its only negotiation options are for channel placement and bundling inclusion--factors that are both controlled by the cable company.

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Will the cable providers "break" the IP network?

One of the most strategically interesting issues of the next 10 years will be the cable companies' desire to "break" the IP network in an effort to protect their video (and potentially voice) revenue streams.

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No cable company relishes a vision of the future, whereby it sells X megabits of IP connectivity and nothing more, rendering itself a pure commodity access provider. Cable companies are much too accustomed to packaging, bundling and upselling an array of offerings and choices. Additionally, they are seeing early success with video on demand and believe that it is their destiny to provide these services. A pure, traditional IP network threatens these core business assumptions.

So what's a cable company to do? It is quite easy for a cable company to insert a half-second delay in its IP network. This delay will go unnoticed by standard Web users but would quite negatively impact the quality of after-market VoIP clients like Skype and Vonage. This would allow the cable company to "charge" for its own voice services. In other words, customers would pay extra to have their IP network back. On the video front, the cable companies have similar opportunities to offer priorities to "sanctioned" IP video streams and intentionally reduce the quality of streams to which the cable provider has no financial interest.

History would suggest that these types of initiatives are continually being considered. Cable broadband providers once charged for virtual private network services, a similar "breaking" of the IP network to extract financial gain. What's more, over the past 12 months, Comcast has terminated the accounts of users who use more bandwidth than the company prefers. Lackluster support of the "open cable" initiative over the years offers further proof that cable companies want as much control over the user experience as possible. Again, it seems too improbable to assume that the cable companies will quietly move toward a future as a commodity Internet service provider.

The reality is that breaking the IP networks will elicit enormous waves of negative feedback from core Internet users. Early actions like those mentioned above have already been met with tremendous negative feedback across the Web. That said, if there are no reasonable consumer alternatives for unaltered IP services, the cable companies may very well get away with such action.

How will the RBOCs respond?

The RBOCs are unfortunately in a difficult position. Their current IP networks are simply too thin to provide the type of IP connection that can realistically carry video. Additionally, they are burdened with excess regulation, including one critical piece of regulation that requires that they allow competitors access to their physical assets.

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Lastly, cellular phones and VoIP aggressively threaten their core revenue streams. While they could theoretically make an offer for a satellite video company such as EchoStar Satellite's Dish Network, this would require them to piece together an awkward multidevice consumer experience.

The only real alternative is to immediately begin investing in a separate high-speed, all-IP network, either like those that have been built in Korea and Japan or one that leverages recent innovation in wireless. It turns out that the RBOCs negotiated a regulatory carve-out, whereby they are not required to share new assets that are not part of the current plant. More importantly, only by building a very fast IP network do the RBOCs have any chance of slowing the onslaught of cable vis-a-vis voice. While cable is busy puncturing the voice market, the RBOCs can make an end run and puncture the traditional video market.

This will not be cheap, but waiting could be futile. While Standard & Poor's has put several RBOCs' credit on a ratings watch, Wall Street has not fully embraced the notion that wireline voice is under significant threat. As such, the RBOCs' market capitalizations are large enough that they might be able to raise the capital necessary to upgrade their infrastructure. If they wait until the cable voice attachment rate approaches that of Yahoo BB in Japan--which really depends on the aggressiveness of cable VoIP pricing--a pessimistic Wall Street may not be willing to provide the capital needed to secure their future. Once more, that may be the scenario cable executives favor.

Who is underestimated in this market evolution?

Believe it or not, Microsoft is the company that may be most underestimated in the all-IP network future. The company has done a magnificent job developing its Windows Media 9 [codec](#) and its corresponding digital rights management (DRM) features, and it now appears to be the technology of choice for distributing video over IP. WM9 has a strong presence in both Korea and Japan.

Hollywood appears to be satisfied with the DRM features and has released many popular movie titles over Internet sites such as [Movielink](#) and [CinemaNow](#). Microsoft has also won a huge victory recently with respect to the next-generation DVD format, which will also include support for WM9.

Why does the codec matter? With strong execution, Microsoft can use its position as a leader in codecs as a back door into the operating system and potentially into a position to control the user interface (UI) for most consumer-electronics products.

Until last summer, Microsoft only supported WM9 codecs on top of Windows operating systems. It has recently agreed to let others build WM9 codecs for Linux, but rest assured that it will focus its support over time on Windows and Windows CE. Controlling the UI (as it will unquestionably do in PCs) is a very strong position, from which it would be able to aggregate, bundle and extract rent from video over IP services.

Will there be a video over IP portal?

Who will make money from video over IP aggregation or distribution? As just mentioned, Microsoft is in a very compelling position from which to extract rent. You can already see a menu hierarchy within the media guide on Windows Media Player. Just last month, Microsoft [agreed to pay \\$40 million](#) to roll access to Major League Baseball video underneath its premium MSN services. That is direct proof that Microsoft sees itself as a key player in video over IP aggregation.

The cable companies also warrant consideration, especially if they are successful in altering the IP network to their benefit. Another key advantage they bring to the table is a preexisting billing relationship with the customer. Any vendor that can authorize one-click ordering of video content will have a huge advantage over one that requires full registration.

There are many others that will fight this battle over the next 10 years. Companies like [Netflix](#) and [Movielink](#) have strong early-leadership positions and have aggregated key content. The networks and the movie studios likely fancy a vision, whereby users will visit their sites directly to purchase digital content. Based on Yahoo's original vision, [upon purchasing Broadcast.com](#), they might have an interest in this world, and Amazon.com must certainly be thinking about the implications of fatter and fatter IP pipes.

Let's also not forget RealNetworks. If it is successful in its [litigation against Microsoft](#), RealNetworks will likely have a very strong position in the market. Currently, it has major video distribution deals with NASCAR, the National Basketball Association and the Cable News Network.

While an all-IP world may not happen immediately, over the next 10 years, our communications networks will very likely follow the lead of the aggressive rollouts in Korea and Japan. As IP engulfs everything else, many traditional industries and paradigms will be challenged. For the companies involved, the time to prepare for these challenges is today. Postponement will only increase the likelihood of failure.

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