

UBS Investment Research

Q-Series™: Sayonara to Voice?

VOIP in Japan and the U.S.**■ Threat from VOIP is Increasing in the U.S.**

We believe VOIP technology has the potential to do to wireline carriers what file sharing is doing to the recording industry. Despite the fact that the United States is in the opening stages of VOIP deployment, it is clear that the technology could dramatically alter the economics and competitive dynamics of telephony over the next decade.

■ Lessons Learned from the Experience in Japan

We fast-forward 2-3 years into the future by examining the current situation in Japan where the adoption of VOIP is dramatically exceeding expectations and threatens to uproot traditional models. We superimpose the Japanese experience on the Bells, to get a better understanding of what the implications may be.

■ Taking the Initial Analysis a Step Further

This report is a follow up to our initial analysis of the cable telephony threat "Cable Telephony: Who Gets It?", which framed the addressable market. In this report, we take the analysis to the level of potential access line losses for the Bells.

■ Recommendation

We continue to believe that cable telephony is the largest risk to Bell fundamentals over the next 5 years and expect to see retail line losses begin to reaccelerate in 18-24 months. We maintain our Neutral 1 ratings on Verizon, SBC and BellSouth and Neutral 2 rating on Qwest.

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Summary

We believe Voice over Internet Protocol (VOIP) technology has the potential to do to wireline carriers what file sharing is doing to the recording industry. The popularity of file swapping may well be the main driver for the recent declining sales in the recording industry. The basic problem for the recording industry is that consumers are now getting the product that generates their core earnings for free. In Japan, VOIP-based competition has emerged, allowing consumers to save as much as 90% off of usage. Calls to other VOIP customers are indeed free. As a result, VOIP-based telephony competitors now provide service to more than 10% of households and 45% of high-end, broadband households after less than 2 years of service while incumbent NTT is feeling the pressure.

We believe incumbent carriers around the world could have a similar effect in store for them due to the introduction and rapid growth of VOIP. These carriers' ownership of the last mile has made them comfortable in their competitive position. Ironically, competition from UNE-P appears to have been just what the incumbents in the U.S. needed – a wake-up call to prevent them from falling into the same trap as the major record labels. In our Q-Series report “VOIP in the U.S.: Sayonara to Voice?”, we provide an overview of the competitive landscape for VOIP-based telephony service in the U.S. and examine NTT's experience in Japan to gain a better understanding of how the situation may evolve. We also build on our recent report “Cable Telephony Competition: Who Gets It?” 8/7/03, which estimated cable modem penetration of Bell lines, to estimate the number of lines the Bells can expect to lose to VOIP-based competition over the next 5 years.

Broadband Telephony - Two Fronts are Forming in the U.S.

We believe the Bells are enjoying a period of improving fundamentals. With the economy slowly improving and their bundled efforts starting to click, retail line losses should begin to slow down in 2H03. However, we expect this improvement to be short lived and broadband telephony to be the next major threat to fundamentals. The attack from VOIP in the U.S. will come on two fronts: Small edge-based carriers and cable MSOs. Vonage appears to be leading the edge-based providers with over 50K subs. What these companies lack is brand recognition and the financial resources to build it. The emergence of a well-financed telephony provider such as one with a recognizable consumer brand name could become a major risk to the Bells' residential franchises virtually overnight (Is anyone at AT&T or Microsoft listening?). The cable MSOs are readying plans to dramatically expand telephony offerings in 2004 using VOIP in combination with cable-based broadband connections. UBS Cable Analyst Aryeh Bourkoff believes these efforts have been accelerated by increased competition from the Bells in broadband access. As the Bells lower prices for DSL, the cable MSOs will likely see high-speed data growth decelerate faster than previously expected, encouraging them to move ahead sooner with telephony.

Broadband telephony affects today. The success of UNE-P based providers was an eye opener for the Bells as they lost 10M lines, or 10% of their retail base over 2 ½ years. As a result, the Bells are already taking a number of defensive measures that have significant impact on profitability. The addressable market for the cable MSOs' VOIP-based telephony service will initially be limited to homes with cable modems. The Bells, therefore, have a major incentive to keep cable modem penetration from rising. The Bells are doing this through aggressive price-cutting in DSL and by bundling the service with all-distance voice and wireless services. SBC appears to be the most aggressive in attacking the problem at a higher level as well with its soon-to-be-launched SBC-DISH Network video service. These initiatives are accelerating a shift in the Bells' revenue mix from high margin to low margin services that should continue to impact profitability before the direct effects of broadband telephony are evident.

VOIP in Japan – Not Just a Storm in a Teacup

We believe the economics of consumer telephony could look very different in the US just five years down the road due to increased competition from both cable-based and access-agnostic providers. In Japan, the new technology-based competition with incumbent NTT is not coming from entrenched cable competitors but from alternative carriers and broadband service providers taking advantage of regulation in Japan that make the cost of unbundling the local loop attractive. VOIP use started picking up with the rapid growth of DSL services, encouraged by low monthly unbundling rates for last mile copper connections - only Y173 (US\$1.44). Over 5M subscribers have signed up for VOIP services with providers Yahoo!BB and Fusion leading the field, equating to over 10% of Japanese households. Yahoo!BB, one of the more aggressive players on pricing, has signed up about 3M DSL subs, and 90% of its new subscribers sign up for VOIP, equating to 5.4% of Japanese households in just 1 ½ years of service. The company is targeting 4M DSL subs by March 2004, suggesting 3.6M Yahoo!BB Phone customers, or 7.3% of Japanese households. The response from the telecom operators has been to promote VOIP services themselves. The question is how aggressively they will allow themselves to cannibalize their traditional business and how does this effect pricing for traditional voice services.

NTT still gets the basic line rental revenue. VOIP lines represent roughly 8% of NTT's access lines. In almost all cases even after signing up for DSL services from another operator, customers still need to pay a monthly subscription fee to NTT. This last mile connection is unbundled to a broadband provider for Y173 (US\$1.44) a month, but with monthly charges ranging on average from Y1,700-2,400 (US\$14.17-20.00) it still provides NTT with income that currently makes up one-third of fixed line revenues and represent a stable and safe revenue stream. On an annualized basis Yahoo!BB's traffic represents over 15% of KDDI's or about 5% of NTT's analog and ISDN fixed line traffic. In FY2002, NTT East and West saw minutes decline 29% for total analog and ISDN traffic, up from the already significant 21% decline experienced in FY2001. The total number of lines at NTT East and West has also been slowly falling by 1.6% in

FY2001 and 1.7% in FY2002. We estimate that losing fixed-line long-distance and international calls to VOIP, could hurt 7% of NTT's consolidated revenues, or about 13% of fixed line revenues.

East Meets West: Implications for the US

While there are a number of differences between the two markets (competitive, regulatory, pricing), the overarching fact remains that almost 10% of households in Japan now employ VOIP-based telephony service after just 2 years of service availability despite the fact that users are unable to receive inbound calls. This fact has not been lost on the management of the large U.S. incumbents, which are hard at work to counter the likely effects of VOIP even before they become evident. In our opinion, differences between the two markets will likely slow the adoption of VOIP in the United States versus the Japanese experience but make the economics substantially worse for the incumbent carriers.

Slower adoption of VOIP expected in the US. The differences in adoption rates of VOIP-based telephony will derive from size and reach of competitors and the relative pricing between traditional and VOIP-based service in each country.

1) Competition from VOIP in Japan is coming largely from edge-based providers whose addressable market is any household with a broadband connection (22% of Japanese households today). Cable players and alternative telecom operators have far less traction than in the US. The immediate threat for the Bells, however, is from the cable modems in markets where the large MSOs has deployed VOIP technology. While we estimate that roughly 11-14% of Bell households have cable modems today, cable-based VOIP telephony service is commercially available only in a few markets. We expect deployment of VOIP to be largely completed by the large MSOs by YE2005, when cable modems will have penetrated an estimated 20-25% of Bells households.

2) Another reason for a slower uptake of VOIP in the US is the relative pricing for traditional versus VOIP-based telephony service. Long distance rates in Japan average ¥80/ 3 min. (roughly \$0.20-0.25/min), significantly higher than rates in the US, which we estimate it to be \$0.06-0.07/min on average today. We estimate Japanese consumers could save up to 90% on usage by switching to VOIP services, considerable higher than roughly 50% savings in the U.S.

3) VOIP-based telephony service will also be considerably cheaper in Japan versus the US at the outset due to the economics of the competitive providers. Yahoo!BB sells telephony at extremely low rates largely in an effort to drive growth of its broadband service. The telephony service is not expected to be the main contributor of the underlying profitability of the company. While the US cable MSOs are in a similar position, they need to maintain revenue and cash flow growth and would be unlikely to price the service as aggressively as Yahoo!BB in Japan. The real danger to the Bells comes from potential competitors that sell another product or service into the consumer market and could use inexpensive telephony solely to increase its sales. This makes a company such as Microsoft a more dangerous edge-based provider than AT&T, which needs to replace consumer revenues being lost to falling market share.

The Bells should see a larger financial impact than the Japanese incumbents. NTT benefits from the fact that there is no competition for underlying connectivity in Japan. Subscribers to Yahoo!BB's voice service continue to have to pay a monthly line fee to NTT. Including the unbundling fee, NTT retains close to 80% of the average analog bill, largely protecting the company from the full effects of retail line loss. This is similar to UNE-P in the US in that it allows the incumbent to recover the majority of its costs, however, the economics are much better for NTT.

The economics of cable-based VOIP are much worse for the Bells than that of UNE-P. In fact, we believe the financial impact of the loss of one line to cable telephony is double that of a line lost to UNE-P based competitors. The cable MSOs offer consumers an alternative provider of basic connectivity, making cable based VOIP a line replacement strategy. As a result, the Bells stand to lose all revenues generated from an access line when a household selects a cable provider for primary line service. This puts roughly 40-50% of the Bell wireline revenues at risk, making their exposure to VOIP more similar to that of KDDI and Japan Telecom. There is no cost recovery in a facilities-based VOIP model, suggesting a more dramatic impact on margins versus UNE-P. In cases where cable telephony is purchased as a second line, the Bells will suffer from lower minutes of use and, most likely, lower revenues from basic service and high margin vertical services as customers dial down existing service.

We believe VOIP will also have an impact on retail pricing in the U.S. Broadband pricing in Japan collapsed following the entry of many players taking advantage of cheap unbundling and we believe we are in the midst of a similar slide in prices in the US. Next up is a possible price war breaking out in Japanese voice markets, exacerbated by the Japanese incumbents' development of their own VOIP-based services to address a growing segment of the market that purchases consumer HSD service to secure inexpensive telephony. We expect these trends to play out in the US as well, with reductions in bundled prices for all-distance service and Bell offerings of inexpensive VOIP-based second line service bundled with their DSL product.

We do not believe the Bells can avoid significant costs when it loses a line to UNE-P or VOIP substitution. Plant specific operating costs that are primarily fixed in nature accounted for roughly 65% of cost of goods sold in 2002. The remainder, which includes network operations and access costs, would only be impacted to the extent that VOIP reduces variable transport costs. While the Bells have more flexibility in SG&A, we would not expect them to cut spending dramatically when pressure from VOIP emerges, but likely be more aggressive in advertising and pricing.

Under an edge provider model, such as Yahoo!BB in Japan and Vonage in the US, the Bell has the opportunity to at least retain the monthly access line rental and DSL revenue if a customer uses DSL as the underlying connectivity. However, what edge-based competitors offer the Bells in potentially better

economics, they take back in increased reach. As we have stated previously, DSL service “inoculates” a carrier from cable-based VOIP telephony competition due to the need to have a cable modem to purchase the service. There is no inoculation from edge-based VOIP telephony providers, which can use underlying connectivity of both cable and DSL providers, essentially using their own defenses against them.

Overall, wireline profitability of the Bells will also be negatively affected by profit stratification within the consumer market. Not all consumer customers are equally profitable. The top quartile of customers generates a disproportionate amount of the profits due to the large number of minutes they generate and their high penetration of vertical services. These customers are also likely to be attracted to high-speed access and thus are eligible for broadband telephony service. In this respect, the fact that 45% of broadband homes in Japan have VOIP-based telephony service and that 90% of Yahoo!BB’s new customers also sign up for voice must be unsettling for the Bells.

How much line loss can we expect in the U.S.?

Based on a study by Aryeh Bourkoff, we found that the top 7 cable MSOs provide video service to roughly 57% of Bell primary lines. Based on cable modem penetration of basic cable subscribers, we estimate that 11-14% of Bell households currently have cable modem. We call this addressable market the “at risk access lines. We estimate that by YE03, cable modems will penetrate roughly 15% of the Bells’ 73 million primary residential access lines and this penetration will grow to over 35% of Bell homes by YE08. To quantify the potential impact, we have assumed aggressive VOIP market build-out plans by the cable operators from 2003-2005. We assume that 10% of Bells’ “at risk lines” will be built out with VOIP at YE03, equating to roughly 1.1M access lines and consistent with Cablevision’s plans to build out VOIP to 100% of its footprint by year-end. We assume the built out increases to 50% in 2004 and 85% by year-end 2005, representing roughly 16M Bell lines. In our base case, we assume 30% market share loss of the VOIP “at-risk” lines in a 5-year period. Under these assumptions, the Bells could lose roughly 16% of their primary access lines or roughly 40% of their “at-risk” lines over the next five years. That said, this analysis only accounts for potential competition from cable operators. We continue to believe strong edge-based carriers could still emerge while small providers are still recording rapid growth despite their capital constraints. While this analysis isolates only the effects of line losses, the effect on Bell economics is more complex. Price reductions, lower usage and fewer vertical services on existing lines and the Bells’ response to these factors should further impact Bell fundamentals.

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Reduce 1	Excess return potential < -15%, smaller range around price target	Reduce 2	Excess return potential < -15%, larger range around price target	Sell	9%	38%

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2: Percentage of companies under coverage globally within this rating category.

3: Percentage of companies within this rating category for which investment banking (IB) services were provided within the past 12 months.

Source: UBS; as of 30 June 2003.

Companies mentioned

Company Name	Reuters	Rating	Price*
AT&T Corp. ^{3a,10b}	T.N	Reduce 2	US\$22.00
BellSouth Corp. ^{3c,10a}	BLS.N	Neutral 1	US\$25.36
Cablevision Systems	CVC.N	Not rated	US\$21.03
Comcast Corporation ^{1,3b,6,10a,13b}	CMCSA.O	Buy 2	US\$30.94
Cox Communications ¹²	COX.N	Buy 1	US\$33.00
Japan Telecom HD ^{9,10a,12}	9434.T	Buy 2	¥343,000
KDDI Corp.	9433.T	Neutral 2	¥613,000
NTT ^{3b,8,10a}	9432.T	Neutral 2	¥503,000
Qwest Communications ^{10a,13a}	Q.N	Neutral 2	US\$4.12
SBC Communications ^{3a,10a,12}	SBC.N	Neutral 1	US\$22.92
Verizon ^{3a,3b,10a,12}	VZ.N	Neutral 1	US\$35.15

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