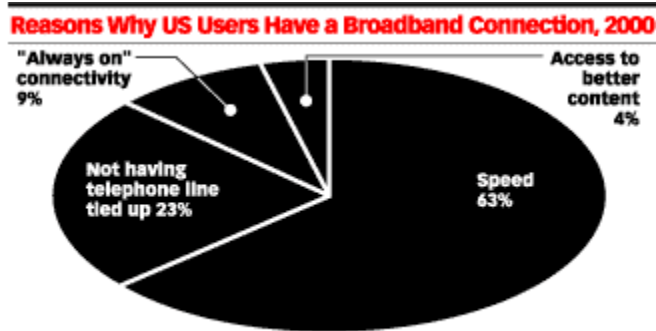


MARKET DATA ANALYSIS

1. WHAT BROADBAND USERS WANT

Studies from a number of research firms, including Arbitron/Coleman, The Strategis Group, McKinsey and Jupiter, indicate that the primary motivation for getting a broadband connection is speed. Broadband users at the moment essentially display the same usage characteristics of narrowband users, except that they surf a lot more and purchase more online. The second motivating factor for getting broadband is that it frees up the telephone line, and the third is that the connection is 'always on.'



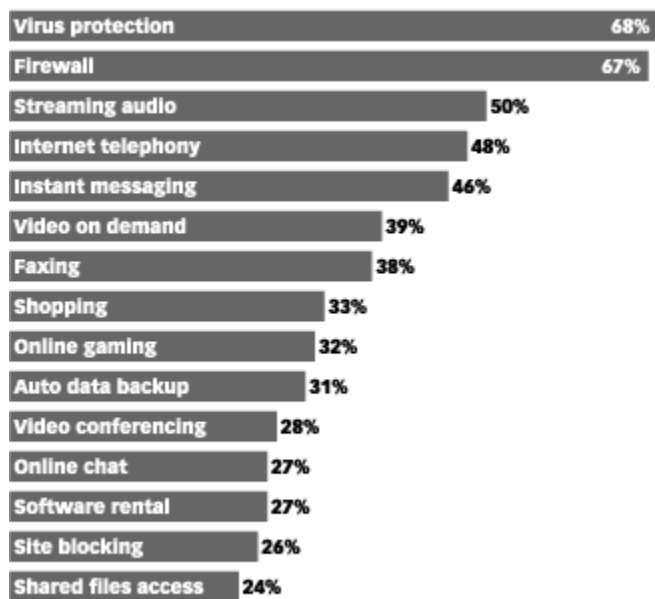
Source: Arbitron/Coleman, 2000

002460 ©2001 eMarketer, Inc.

www.eMarketer.com

A recent study by BroadJump, however, suggests that US broadband users are interested in enhanced and premium services and are prepared to pay extra for them.

US Broadband Users Interested in Enhanced Services, 2001 (as a % of respondents indicating a general interest)



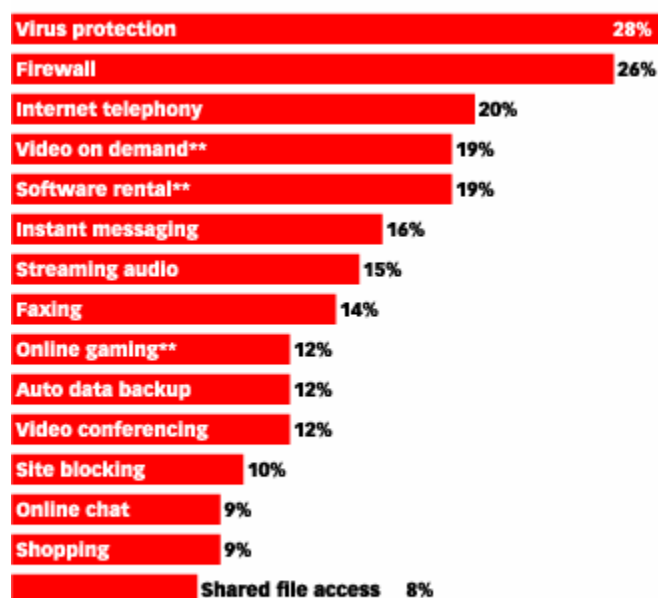
Source: BroadJump, 2001

026546 ©2001 eMarketer, Inc.

www.eMarketer.com

Curiously, perhaps, broadband users are far more interested in virus protection and firewall services than they are in streaming services, video on demand and online gaming, and three premium broadband content services. This clearly indicates that the PC, whether connected to a narrowband or broadband connection, is still not regarded as an entertainment device by most people.

US Broadband Users Willing to Pay* for Enhanced Services, 2001 (as a % of respondents indicating a willingness to pay)



Note: *Subscription pricing at \$10 per service per month (% that would definitely or probably would sign up)**Willingness to pay, per-per-use pricing at \$5 per service (% that would definitely or probably would sign up)

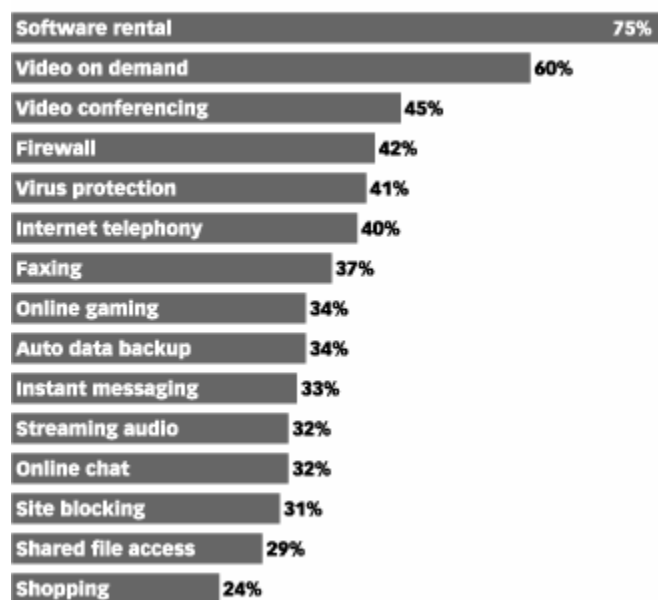
Source: BroadJump, 2001

026547 ©2001 eMarketer, Inc.

www.eMarketer.com

Unsurprisingly, those respondents that expressed the greatest interest in enhanced services also indicated a willingness to pay for those services. Over a quarter of respondents indicated they were willing to pay \$10 per month for virus and/or firewall protection services. Using a different pricing model, 19% of respondents indicated a willingness to pay for video on demand and software rental services on a "per use" basis at \$5. Further analysis by BroadJump indicates that the conversion rate at which "general interest" is converted to "willingness to pay" reveals that software rental and video on demand have the highest conversion rates.

Broadband Users Who Are Interested in Service Options and Willing to Pay for Them, 2001



Source: BroadJump, 2001

026548 ©2001 eMarketer, Inc.

www.eMarketer.com

The study clearly presents opportunities for broadband providers to not only differentiate themselves from their competitors by offering enhanced services, but also to add another valuable revenue stream. Premium entertainment content such as streaming, movies and games are less important for broadband users at this stage than utility services such as firewall and virus protection, software and internet telephony services. By offering a variety of enhanced services, broadband providers can drive both subscriber growth and per-subscriber revenue.

[Source: eMarketer 5 June 2001]

2. Current Market Status: Broadband Still Blooming

With their local competitors going down the tubes, the broadband giants are raising prices as they expand increasingly profitable networks. The regional Bells, which once accused upstart competitors of "cherry picking" the best customers, can now recapture the premium business while dictating prices for DSL service, which delivers high-speed services over traditional copper phone lines. They're not stopping at the boundaries of their regulated service areas. New York-based Verizon Communications is targeting high-density residential buildings in Atlanta, Denver and Phoenix through its Verizon Avenue subsidiary. The new campaign comes as Verizon challenges another regional Bell, SBC Communications, as the leading DSL provider.

As the first quarter ended, Verizon had about 720,000 DSL lines--nearly five times more than it operated in the same period last year. Verizon increased the number of lines that can get the service to 30 million, or 47 percent of its access lines. Officials at SBC, in San Antonio, claimed 954,000 DSL customers, 201,000 more than in the same period last year. SBC also has ambitious plans to increase its DSL revenue with the second phase of Project Pronto, which uses neighborhood gateways to reach more households.

"Broadband is the foundation for a host of new value-added services, and we will continue to pursue it aggressively," said SBC Chairman Ed Whitacre.

The other Bells, BellSouth and Qwest Communications International, are also pushing new DSL initiatives, despite a softening market. Qwest, whose DSL customer base grew 125 percent since the first quarter of last year, to more than 306,000, said it is making money on DSL.

Qwest CEO Joe Nacchio last week said, "Our only product that doesn't make money is local telephone service. We make money on DSL priced at \$39.95 and \$42.95 per month. That's very competitive, maybe too competitive."

BellSouth's DSL customer base grew by 88,000 lines in the past year, to a total of 303,000 by the end of the first quarter of this year.

After watching SBC and Internet service provider (ISP) EarthLink boost their prices to nearly \$50 per month for DSL service, the nation's largest cable company, AT&T, last week followed suit - bumping up prices for high-speed Internet access by 15 percent to \$45.95 per month.

"We think the price better reflects the value of the product," said AT&T Broadband spokesman Steve Lang. "Even with the rate hike, it's still the best value."

With the shakeout among DSL upstarts, competitive pricing will likely diminish, according to Gary Kim, president of NxGen Data Research. The Bells have vanquished their local competition in the residential DSL market, with no opportunity for niche players until prices approach \$70 per month, he said.

The rapid disappearance of competitive carriers such as NorthPoint Communications and the demise of free ISPs led to the first recorded decline in online subscribers in 21 years, according to Telecommunications Reports International. Despite the shakeout, analysts said they expect healthy growth in broadband services. The Broadband Report, compiled by eMarketer, pegs broadband revenue at \$8 billion in 2004.

New Paradigm Resources Group analysts expect residential and business DSL to grow nearly threefold, to \$5 billion, within four years.

"The only question is which business models can overcome technical hurdles, deploy DSL cost-effectively and meet the continued growth in demand for broadband?" said Terry Barnich, president of New Paradigm.

[Source: Interactive Week - May 7, 2001]

2. The Future of Broadband

The Phoenix Will Rise Again. That's the message of a study of chief executive officers, who agreed overwhelmingly that broadband access to the Internet is the most important trend for the technology sector and may provide the spark that revives the downtrodden e-commerce niche.

Nearly two-thirds of 128 CEOs surveyed by researchers at consulting firms Ernst & Young and Cap Gemini Ernst & Young cited broadband connectivity as the "most significant immediate factor influencing the way customers will experience entertainment and communications and utilize technology over the next few years."

Broadband is any means of connecting to the Internet other than traditional "dial-up" access over standard copper telephone lines. Broadband includes access via cable modem, DSL, T1 and T3 lines.

The survey, which promised executives anonymity in exchange for details, highlighted an unwavering optimism despite the stock market slump and threat of global economic recession. Many CEOs emphasized that broadband access would speed up online transactions, improve customer service, entice people to spend more time and money online and generally rejuvenate the e-commerce sector, which has been particularly hammered in the economic slowdown.

"Broadband connectivity will be the tide that lifts all ships," beamed one hopeful CEO, whom researchers said summarized the "prevailing sentiment" of peers.

Skeptics may have a tough time directly connecting the CEOs' breathless enthusiasm for broadband with a renewed flourishing of the e-commerce niche. After all, many investors were duped by surveys touting the emergence of Web browsers and the popularization of dial-up access in the mid- to late 1990s.

But Ernst & Young and Cap Gemini Ernst & Young researchers said that CEOs and the survey, dubbed "Business Redefined," have legitimate claims.

Households connected with broadband access consume more than 20 percent more entertainment time than households without high-speed access, according to Ernst & Young. And nearly 80 percent of large companies will have fiber connections to their buildings by 2004, compared with 65 percent today.

Even midsized businesses with 100 to 499 employees are driving demand: 54 percent are expected to have fiber-optic access by 2004, up 35 percent from current levels, according to Ernst & Young.

"Broadband is snacking technology," said one CEO. "With broadband's convenience you will eat more." Another gushed, "Broadband will be everywhere, and it will be reliable, available, and low cost."

The 128 entertainment, communications and new media CEOs from around the world are even bullish on one of the most bloodied e-commerce segments: online advertising. As dot-coms and traditional companies shrink ad budgets, numerous e-tailers that relied on the spending--including eToys and Pets.com--have died, while larger portals, including Yahoo, have withered. But that didn't dent surveyed CEOs' prospects for the future.

"Advertising in the digital world will be a lot more effective. Consumers will have a choice to either remain anonymous and receive content for a premium, or surrender some personal information and receive the content with some personally targeted ads," predicted one CEO, without detailing how online advertisers will reap these new efficiencies.

But not all the surveyed CEOs were examples of irrepressible optimism and can-do spirit. With the revival will come a dramatic restructuring of the e-commerce segment that will continue to rattle executives, kill off even more young companies and throw business plans into turmoil, they said.

Researchers proclaimed that a "profound blurring and restructuring across communications and entertainment as well as the technologies enabling these industries" will mark the next few years. Globalization, deregulation, technology-compressed product life cycles and lower barriers to online entry for dot-coms and bricks-and-mortar companies, will be boons to the consumer--but nightmares to the CEOs.

"The customer will no longer be held hostage to a single provider," one CEO said. "Competition is finally taking root."

[Source: CNET News.com March 26, 2001]

3. STATISTICS: BANDWIDTH/DEPLOYMENT PROJECTIONS

A. BANDWIDTH

- WASTED TIME: Internet users wasted an estimated 3.5 billion hours in 2000 waiting for web pages to download. (NUA, Oct. 2000)

- **LARGER APPLICATIONS:** The average file transfer from the Web is now 60KB, rendering traditional dial-up service increasingly inadequate. (Cyberatlas/Communications Industry Researchers, 2000)
- **UNMET CONSUMER DOWNLOAD EXPECTATIONS:** On average, consumers expected a site's home page to load within 13.2 seconds. (Boston Consulting Group, Mar. 2000).
- **GROWING TRAFFIC:** Internet traffic will consume 90% of the available bandwidth by 2003. (Nicholas Lippis, 2001).
- **LOST REVENUE:** E-commerce merchants may lose up to \$4.35 billion in sales each year if Web sites do not maintain an average download time of eight seconds, effectively a potential monthly loss in excess of \$362 million. (Zona Research, 2000).
- **LOST E-COMMERCE:** 20.6% of online shoppers gave up when the web page took too long to download. (Boston Consulting Group, Mar. 2000).
- **UNMET BROADBAND DEMAND:** 12 million U.S. net users are ready to purchase high-speed internet access now, with another 11 million showing interest. (Strategis Group, Mar. 2000).
- **INSUFFICIENT FIBER DEPLOYMENT:** World-wide sales of copper wire for telecommunications rose 3.3% last year to \$7.85 billion in 1999, exceeding sales of fiber-optic lines (\$6.15 billion). (Wall Street Journal, Feb. 16, 2000).
- **Deployment into 33% of U.S. households by 2003.** (NUA/IDC Oct. 2000).
- **Deployment into 37% of online U.S. households by 2003.** (NUA/Gartner Group, Oct. 2000)

B. BROADBAND ACCESS, U.S. PROJECTIONS (number of households)

- 1998 -- 1 million Americans had broadband connections as of Oct. 1998. (NUA/Forrester Research, Oct. 1998)
- 1999 -- 1.9 million high-speed households. (eMarketer, Feb. 2000)
- 2000 -- 3.3 million subscribers (Yankee Group, Feb. 2000)
- 2002 -- 16 million Americans will have high-speed access as of 2002. (NUA/Forrester Research, Oct. 2000)
- 2003 -- 31.7 million households will have signed up for Internet access at speeds near or above 1.5 Mbps by 2003, up from its current total of approximately 1.6 million. (Cyberatlas/Communications Industry Researchers, July 2000)
- 2004 -- 16.6 million subscribers (Yankee Group, Feb. 2000)
- 2004 -- over 25 million high-speed households. (eMarketer, Feb. 2000)
- 2005 -- 13.8 million homes (Computer Economics, Mar. 2000)
- 2006 -- 25 million households (NUA/Kagan Associates, Apr. 1998)
- **SMALL / MEDIUM BUSINESS BROADBAND:** At least 30% of all small and medium-sized companies will have broadband access to Internet in 2 years, up from 11% today. (Insight Research, March 2000)
- **BROADBAND CONSUMERS:** Installed base of broadband-enabled consumers will reach 35 million by 2005. (Cyberatlas / Forward Concepts, May 2000)
- **BROADBAND MARKET VALUE 2010:** Global broadband market will be worth \$580 billion by 2010. (Comsys, April 2000)
- **BROADBAND ASIA:** Number of broadband subscribers in the Asia-Pacific region will surge from 452,900 at year-end 1999 to 11.3 million by the end of 2003 (Yankee Group, April 2000)
- **DSL UNITS:** Worldwide shipment of DSL is expected to grow from 350,000 units in 1998 to 9.8 million units by 2003. (Cyberatlas/Gartner Group, Oct. 2000).

4. GLOBAL PROSPECTS FOR BROADBAND INTERNET

eMarketer has determined, from its analysis of the broadband sector across 29 countries, that there are ten fundamentally important factors when analyzing and forecasting the future prospects of broadband internet within a country or region.

They are as follows:

- Current internet use/penetration
- PC penetration
- Availability of two-way cable
- Availability of DSL
- Competition in the local loop
- Competition in the cable and DSL sectors
- Pro active government
- Availability of alternative broadband access technologies
- Economic conditions
- Relevant content and applications

Taking into account these ten factors, eMarketer has ranked 29 countries into five tiers of 'broadband readiness.'

The Broadband Readiness & Potential of 29 Countries, 2001

Tier One	Tier Two	Tier Three	Tier Four	Tier Five
1. United States	7. Netherlands	13. Taiwan	19. France	24. India
2. Canada	8. Finland	14. Austria	20. Spain	25. Poland
3. South Korea	9. Japan	15. Belgium	21. Portugal	26. Brazil
4. Sweden	10. Hong Kong	16. UK	22. Italy	27. Mexico
5. Denmark	11. Singapore	17. Switzerland	23. Argentina	28. China
6. Germany	12. Norway	18. Australia	-	29. Russia

Source: eMarketer, 2001

Tier One countries, lead by the United States, have few barriers to becoming advanced broadband market places. They characteristically have a very high PC and internet penetration, broadband internet is readily available and affordable and the economic and political environment is conducive to broadband growth.

Tier Two countries will all be significant broadband markets but there are one or two factors that currently hold them back. For example, in the Netherlands, Japan and Norway, DSL is currently not widely available but will be soon.

Tier Three countries have one or more significant barrier, which currently prevents them from fully embracing broadband, but future prospects are good. In Australia and the UK for example, the slow rollout of DSL from the dominant incumbent is delaying the take-up of broadband.

Tier Four countries have several significant barriers that will prevent broadband growth for at least 18 months. The most important of which is the lack of access to broadband networks - either cable or DSL.

Tier Five countries currently do not have high PC or internet penetration, there is a significant lack of access to broadband networks and the economic situation is not conducive to broadband growth for at least two or more years.

Broadband Readiness & Potential of 29 Countries by Region, 2001

North America	Europe	Asia/Pacific	Latin America
1. United States	1. Sweden	1. South Korea	1. Argentina
2. Canada	2. Denmark	2. Japan	2. Brazil
	3. Germany	3. Hong Kong	3. Mexico
	4. Netherlands	4. Singapore	
	5. Finland	5. Taiwan	
	6. Norway	6. Australia	
	7. Austria	7. India	
	8. Belgium	8. China	
	9. UK		
	10. Switzerland		
	11. France		
	12. Spain		
	13. Portugal		
	14. Italy		
	15. Poland		
	16. Russia		

Source: eMarketer, 2001

009540 ©2001 eMarketer, Inc.

www.eMarketer.com

North America - The United States and Canada are the two global leaders in 'broadband readiness.' While the sheer size of the US market demands that it will be the global leader in broadband internet, Canada actually has a much higher broadband penetration rate than its larger US neighbor. It is forecast by NFO Interactive Canada that in less than 12 months Canada will have more broadband subscribers than dial-up.

Europe - The European broadband sector will be led by Germany, the UK, the Netherlands and France in sheer numbers of broadband households, but in countries such as Sweden, Denmark, Finland and Norway there will be a significantly higher broadband penetration rate. Countries such as Spain, Portugal, Italy, Poland and Russia will be the European 'back-waters' for broadband internet.

Asia - The Asian region lead by South Korea and Japan will rival both Europe and North America in numbers of broadband households by 2005. Of the eight Asian countries examined six of them have sophisticated telecommunications and cable infrastructures, which will foster rapid broadband internet growth. India and China are rapidly building broadband networks and it is expected that within three to five years they will be significant broadband internet markets in their own right.

Latin America - Prospects for broadband in Latin America are not good. While Argentina has a well-developed cable network the telecommunications infrastructure throughout the region is poor. Broadband will only be available to the very wealthy who live in cities for at least two years.

[Source: eMarketer - March 2001]

5. High-Speed Homes in North America

According to a recent report from Kinetic Strategies, there are 7.6 million broadband subscribers in the US and 1.7 million in Canada. Kinetic says that these numbers represent a North American household penetration rate of 8.2%.

Residential Broadband Subscribers in the US and Canada, June 2001 (in millions)



Source: Kinetic Strategies, June 2001

026564 ©2001 eMarketer, Inc.

www.eMarketer.com

eMarketer's latest **Broadband Report** presents estimates for the number of high-speed households in Canada. eMarketer reports that according to Ovum, there will be 2.14 million households in Canada with broadband internet access by 2002.

Residential Broadband Internet Market in North America*, 2001

	DSL	Cable	Total
Subscribers as of 6/1/2001	2,913,636	6,450,916	9,364,552
Subscribers as of 3/31/2001	2,543,938	5,800,103	8,344,041
Q1-01 subscriber additions	560,148	986,081	1,546,229
Q1-01 Average add/week	43,088	75,852	118,941

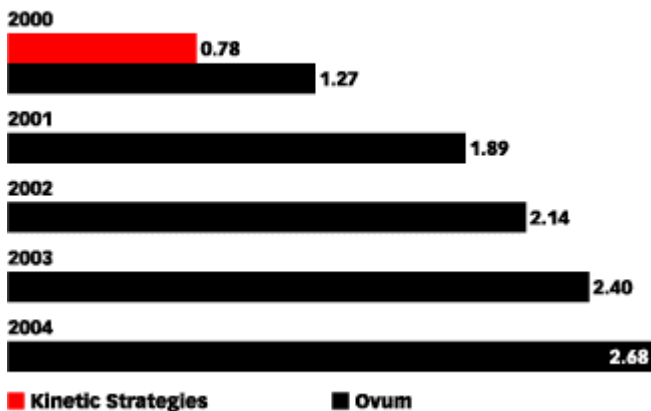
Note: *Includes US and Canada

Source: Kinetic Strategies, June 2001

026565 ©2001 eMarketer, Inc.

www.eMarketer.com

Comparative Estimates: Broadband-Connected Households in Canada, 2000-2004 (in millions)



Source: various, as noted, 2000

[Source: eMarketer and Kinetic Strategies June 2001]

6. HOW MANY WILL CONNECT VIA BROADBAND IN 2005?

More than 28 million US online households, or over one-third of US online households, are expected to use a high-speed Internet connection by 2005, according to a new report from Jupiter Research, the worldwide authority on Internet commerce.

As last-mile technologies continue to evolve, consumers will perceive few differences between leading broadband technologies. Jupiter warns that broadband access providers seeking a share of this audience must focus on service differentiation and customer retention to attract consumers in an increasingly crowded competitive landscape.

Jupiter projects that 36% of US online households will use a broadband connection by 2005. While Jupiter analysts forecast mild growth during the 2000 to 2001 time frame, adoption is expected to grow robustly between 2002 and 2005. Jupiter attributes current growth to pent-up demand from early adopters. Broadband services still fail to resonate with more mainstream households, including online novices; 53% of all respondents to a Jupiter Consumer Survey said they have no interest in any broadband offering, compared with 56% who responded in 1999.

By 2005, broadband access technologies will become stable in terms of capabilities, and competition among broadband providers will drive all entrants to find new ways to differentiate their service from that of their competitors. According to Joe Laszlo, an analyst with Jupiter, broadband service providers must shift from their current technology-centric messaging to more of a service focus to capture a broader base of users.

"Stronger broadband adoption rates will come only as broadband service providers refocus on applications and retention from their first interaction with potential customers," said Laszlo. "Service providers must tailor packages that are similar to the tiered services offered by cable and satellite providers, which appeal to specific audience segments to build future services and customer loyalty. Suppliers of broadband access and content must deliver services for today's broadband early-adopter demographic, while strategically planning for wider adoption over the next several years."

Laszlo explained that while some ISPs will cast a wide net to secure a large number of consumers, Jupiter believes that broadband offerings may fare well if they target their audience more narrowly. Vendors should design packages for specific user groups - such as telecommuters, active stock traders, families, and gamers. For example, active traders could receive a package that includes an increased level of security and bundled-in comprehensive financial tools; families could select a package that includes access to educational software and a Multi-PC home networking solution.

"Broad, untargeted services will appeal to most consumers, including the price-sensitive, not-very-loyal, and broadband-skeptical portions of the online audience," added Laszlo. "Broadband providers must offer high-value, differentiated services to prevent commoditization and price erosion."

[Source: Media Post November 2000]

7. Key Reports

A. DSL Will Surpass Cable in the Broadband Marketplace

New report by RHK predicts 71% CAGR for residential DSL over the next four years. Cable Modems No Longer Dominate the Broadband Market. Residential DSL service in North America will grow from 2.2 million users in 2000 to 18.6 million users by 2004, according to a new report by leading telecom market research firm, RHK, Inc.

According to the report, Access Network Systems Digital Subscriber Line: North American xDSL Market Forecast, ADSL (asymmetrical digital subscriber line) will capture 50 percent of the residential broadband market by 2004, growing at a CAGR of 71 percent. RHK's new report also examines the SDSL (symmetrical digital subscriber line) market and finds that the SDSL market will grow, but at a slower rate than ADSL. ADSL is the main competitor to cable modems for residential users. At the close of 2000, broadband cable modem users numbered 5.1 million, with ADSL users weighing in at 2.2 million. RHK's report attributes the rapid growth of the residential broadband market to telecommuting, growing availability of multimedia content (e.g. Napster and streaming media) and improving subscriber economics.

"Cable has previously dominated broadband because modems were deployed eighteen months earlier than ADSL technology," states Kelly Dougherty, Analyst at RHK, Inc. "However, we believe that ADSL is a worthy opponent and will gain ground over the next few years. Carriers are responding to the strong consumer demand by increasing their DSL footprints. In 2000, only 50 percent of homes were eligible for service. SBC's Project Pronto and other carriers' initiatives to serve customers through remote terminals will allow over 70 percent of homes to receive DSL by 2004."

RHK's new report also examines the role of SDSL in the broadband market. Targeted at the business user, SDSL provides greater bandwidth but has greater distance limitations than ADSL. RHK's report forecasts that the number of SDSL subscribers will increase from 555,000 users in 2000 to 2.6 million users by 2004. SDSL faces competition from established fractional T1 and full-rate T1 services. Incumbent local exchange carriers (ILECs) have significantly lowered the price of T1, thus making them more attractive to business users.

The report also finds that carrier equipment purchases increased markedly in 2000, but RHK does not expect this trend to continue. Dougherty states, "Equipment purchases have outdistanced the number of subscribers. Even with the strong demand for DSL, carriers need to reckon with excess capacity. As a result, the volume of central office based equipment purchases will drop significantly, beginning in 2001."

[Source: RHK Analysts - March 6, 2001]

B. PC Magazine Special Report

The buzz surrounding high-speed Internet services -- primarily DSL, from phone companies and regional start-ups such as Speakeasy, and competing cable-modem service offered by cable TV carriers -- has reached a fever pitch. Everyone wants it. The reasons are obvious. Broadband Internet service in many cases is "always-on," meaning you don't have to dial in to your ISP's server and wait for a connection (and potentially not get one during peak times). Just launch your browser and you're there. But the real allure for many is the speed. Cable and DSL connections generally deliver an average minimum of around 150 Kbps (kilobits per second) and an average max of around 1 Mbps for cable and 2 Mbps for DSL, versus the theoretical maximum of 53.3 Kbps for dial-up Internet service. The extra speed not only makes Web page download seemingly instantly (a huge benefit in itself), but it also enables subscribers to use the Web for things that are impractical over a regular phone connection: streaming audio and video, virtual private networks (VPNs), extranets, and more. Broadband's fat pipe also makes it practical for a small business or home users to share a single connection and ISP account among several PCs -- a prospect that would bring a dial-up connection to its knees.

The number of high-speed lines connecting homes and small businesses in the U.S. to the Net reached 4.3 million in the first half of 2000, according to the Federal Communications Commission. Even so, that accounts for only 3 percent of the nation's total homes and businesses. Although ISDN has been delivering digital data services over POTS lines for years, it is DSL (digital subscriber line) that gives your phone line zing. DSL boasts faster connection times, higher throughput, easier installation, and cheaper subscription costs. GartnerGroup, a market research firm based in Stamford, Connecticut, estimates that there were 1.97 million DSL subscribers -- both businesses and homes -- in the U.S. in 2000. GartnerGroup predicts that this number will swell to 12.2 million by 2004.

[Source: PC Magazine - Special Report January 19, 2001]

C. Broadband's Bright Future - A Special Report from Industry Standard

High-speed net access at home hasn't taken off as expected, but it won't be that way for long. Broadband is already in heavy use at the office: Almost 60 percent of U.S. workers who access the Internet at work do so over a high-speed connection. We also found that plenty of companies successfully deliver broadband multimedia content. The reason they are successful: They focus on delivering business news and other must-have content, not just entertainment.

But the real reason you need to pay attention to broadband is blessedly simple: The projections for both home- and office-based broadband use are pointing straight up. While broadband users today are a small minority of the online community, in 2005 more than one-third of home users and almost half of the at-work audience are expected to have some form of high-speed Internet access. Which means that while your business may not need to be broadband-friendly right now, it's time to start thinking about what the broadband future will mean to you.

Experts speak out: Mark O'Leary (Excite@Home executive VP for broadband services), Andrew Schneider (Sony Pictures senior VP for the broadband content group) and Murray Smith (Qwest Communications VP of DSL):

Will the broadband Web replace the narrowband Web the way color TV supplanted black-and-white TV? Or will the two coexist?

Murray Smith, Qwest: There'll always be a place for narrowband. People are going to use broadband wherever it makes good sense. But you may be at a place where you don't have access to broadband, or you may have a device that you're using to access the Internet that doesn't lend itself to broadband.

Andrew Schneider, Sony: For a period of time they're going to coexist, but I believe in a broadband future. In the long term, ubiquitous broadband access is a great goal to shoot for, and I think that eventually we'll get there.

How can broadband companies persuade consumers to make the switch?

Mark O'Leary, Excite@Home: There will have to be a portfolio of services delivered over broadband before its value is clear. The real distinction will be realized when we see IP-streaming product portfolios that are video-based, audio-based and [application service provider]-based. Once North America sees 8 million to 10 million broadband users, the Disneys and the Time Warners of the world will have enough of an audience to make money on IP-streaming services.

As a consumer, is there a reason I should pay a higher monthly fee, and deal with the infamous installation frustrations, for content that is for the most part identical to what I already get with dialup?

Smith, Qwest: I think the factor that drives broadband versus narrowband today is simply speed - to be able to paint those graphics-rich pages in a much quicker fashion than with dialup.

Schneider, Sony: For the mass consumer, there needs to be a clearer proposition. For the entertainment industry, we need to figure out unique ways to leverage the medium, to program for broadband.

O'Leary, Excite@Home: The reason people have been buying [broadband service] during the past six months is that the [downloading] experience is more time-efficient. Broadband is also a lot more consuming. When you see even this generation of streaming media on a broadband connection versus a dialup connection, it's a hell of a lot more immersive.

To date, most broadband Web sites have been entertainment-oriented and usually focused on offering videoclips. Is this all there is to the broadband Web?

Schneider, Sony: Enhancing current offerings with broadband elements is a good thing, especially for a film company that produces motion pictures and television shows. However, the Internet is essentially a two-way medium. Animation and video on the Web is fine, but it lacks a certain inherent use of the medium. It doesn't push the envelope in terms of what you can do with those unique capabilities.

Smith, Qwest: Gaming is very popular with kids. In order to be competitive in an interactive gaming environment, you need a low "ping" rate. Then there's the videophone application. I don't know if you've ever tried to use a videophone-type application with a low-speed connection. It's not attractive.

If broadband takes off, what new kinds of business models do you envision?

O'Leary, Excite@Home: Subscription video. If I have a 6-year-old and an 8-year-old, I have a video subscription with Disney. I also see audio subscription platforms. And we'll have software-on-demand over broadband. I also see more ad insertion. If I'm watching 20 minutes of highlights from NHL hockey on my PC, it's free - but every five minutes there's a 30-second ad insertion for Miller Lite beer.

Schneider, Sony: The notion that content isn't free is a new business model that is beginning to emerge, and you see companies beginning to adopt that. Some companies that were offering content for free are now charging for it - big and small companies alike.

Do you think one particular type of Internet device has the best chance of attracting a critical mass of consumers to broadband?

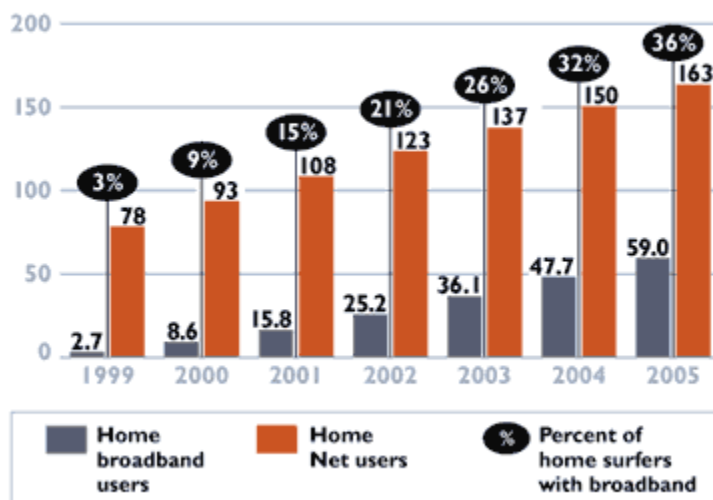
Smith, Qwest: It's definitely the PC today and at least into the near future. PCs already have all the necessary capabilities built in; they've got the right screen size for Web browsing; and they're always connected to the Internet.

O'Leary, Excite@Home: Six months ago the argument was that people would always use PCs for this application and TVs for that application. Well, the introduction of inexpensive, highly featured, IP-based set-top boxes - what are also being called "home gateways" - will make that argument irrelevant. These devices will have a whole different functionality than TiVo or WebTV - those products do only about 5 percent of the functionality of IP set-tops. They will provide the flexibility for a family to set up its devices however it wants. This market is going to explode in the next 12 to 18 months.

Schneider, Sony: Right now the PC is the primary broadband delivery device. When we get networks that can deliver wireless broadband, we'll see handheld devices handling this type of content, too. But it's also a processor issue. These devices need to get faster before they'll support some of the broadband content we're thinking of. We need to figure out the unique capabilities of each platform. Programming that works on a PC may not work on a handheld and may not work on a network set-top box. It's about programming to unleash each device's potential.

Cable and DSL Gaining on Dialup

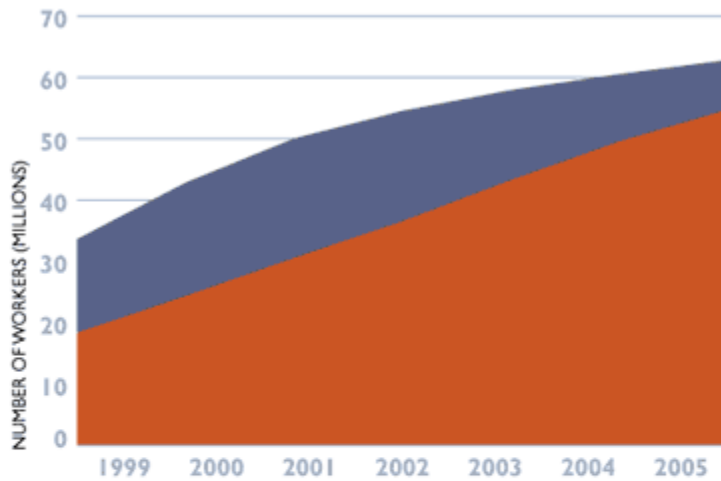
Net Access Forecast for U.S. Home Surfers



IN MILLIONS. SOURCE: JUPITER RESEARCH, DECEMBER 2000

Broadband Outpaces Dialup at Work

Net Access Forecast for Corporate Americans



	1999	2000	2001	2002	2003	2004	2005
Broadband access	18.2	24.2	30.4	36.4	43.1	49.4	54.6
Dialup access	15.3	18.5	19.5	18.0	14.7	11.0	8.1
Total Americans with Net access at work	33.5	42.7	49.9	54.4	57.8	60.4	62.7
Percent of total workforce with broadband	17%	22%	28%	33%	38%	43%	47%

IN MILLIONS. SOURCE: JUPITER RESEARCH, DECEMBER 2000

[Source: THE INDUSTRY STANDARD MAGAZINE May 07 2001]

D. US DSL Users Need Their High-Speed

According to SBC Communications, 96% of internet users in the US with digital subscriber line (DSL) internet connections believe that high-speed internet access is the most important technology in their house. DSL users value their speedy connections more than their remote controls (87%), their VCRs (81%), their cable television (70%), even their garage-door openers (59%). In fact, SBC found that DSL users would rather be without their morning coffee, newspapers, radio and cable television before giving up their DSL connections:

DSL Users in the US Who Would Rather Give Up the Following Than Give Up DSL, January 2001 (as a % of DSL Subscribers)

Newspaper	78%
Radio	74%
Coffee in the morning	63%
Cable TV	59%

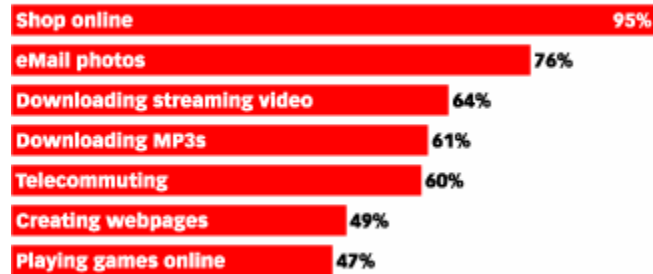
Source: SBC Communications, 2001

024381 ©2001 eMarketer, Inc.

www.eMarketer.com

Like many internet users (dial-up or broadband), a popular online activity for DSL users is e-shopping -- 95% enjoy the activity. SBC found that DSL users also like other online activities that are facilitated by a higher internet connection speed, such as, e-mailing photos and downloading streaming video.

How Broadband Internet Users in the US Use the Internet, January 2001 (as a % of users)



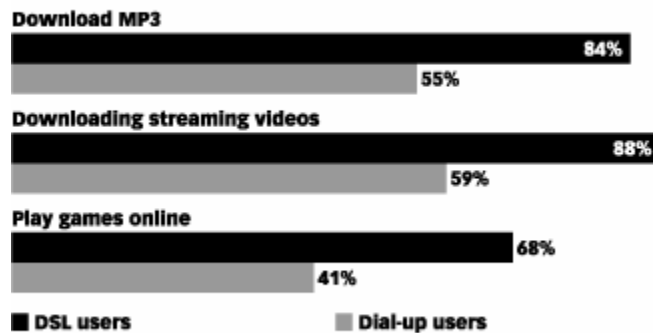
Source: SBC Communications, 2001

024382 ©2001 eMarketer, Inc.

www.eMarketer.com

DSL subscribers engage in some of these online activities even more than their dial-up counterparts:

Likelihood of Online Activities among DSL and Dial-Up Internet Subscribers in the US, January 2001 (as a % of DSL/dial up users)



Source: SBC Communications, 2001

024383 ©2001 eMarketer, Inc.

www.eMarketer.com

[Source: eMarketer 2001]

D. TeleChoice DSL Deployment Summary

Numbers below reflect the status at the end of first quarter 2001.

Although some information was publicly available, other companies are not as yet publicly disclosing deployment details. These deployment figures are based upon the following:

- Individual companies providing information.
- This study does not reflect HDSL or HDSL2 deployment figures.
- The business versus residential percentages calculated for the entire market may be misleading for two primary reasons:
 1. Many home office customers are purchasing the residential products instead of the business class products.
 2. The number itself is skewed because of the disparity between the ILEC and CLEC percentages.

TeleChoice 1Q01 DSL Deployment Summary

Service Provider	1Q01 Lines in Service	% Residential	% Business
ILECs - US	2,419,285	80%	20%
CLECs - US	470,718	43%	57%
IXCs - US	24,000	15%	85%
Total	2,914,003	73%	27%

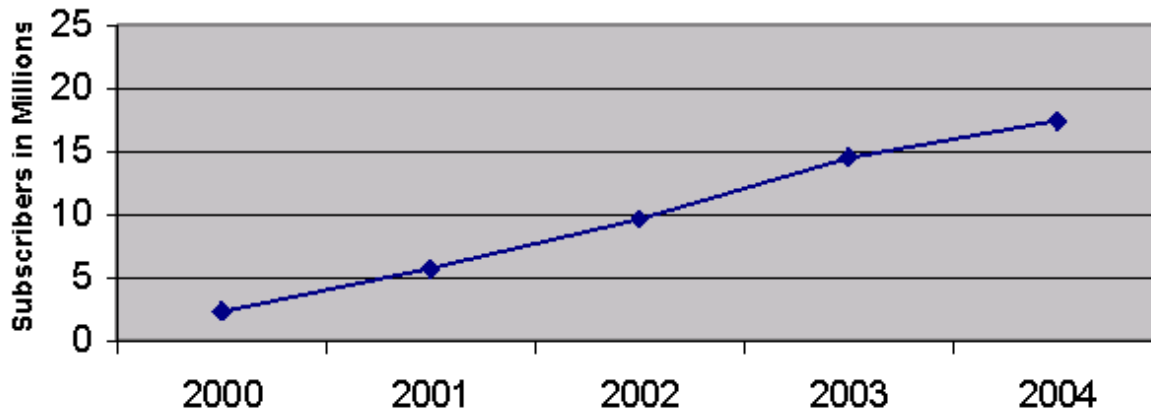
ILEC-Canada	590,351	85%	15%
-------------	---------	-----	-----

In the U.S., 2,914,003 lines were in service at the end of first quarter 2001. This number consists of approximately 16% CLEC, 83% ILEC, and 1% for IXC customers. For the U.S. and Canada, a total of 3,504,354 lines were in service at the end of first quarter 2001.

TeleChoice updated the DSL line projections in January 2001.

- Figures represent U.S. DSL lines in service.
- HDSL is not included.
- TeleChoice surveyed providers based on internal projections and then applied market expertise in making the numbers realistic.

Projected U.S. DSL Line Growth 2000-2004



	2000	2001	2002	2003	2004
Lines	2,349,785	5,686,480	9,667,015	14,500,523	17,400,628
Percent Growth	366%*	142%	70%	50%	20%

Numbers below reflect the status at the end of fourth quarter 2000.

Although some information was publicly available, other companies are not as yet publicly disclosing deployment details. These deployment figures are based upon the following:

- Individual companies providing information.
- This study does not reflect HDSL or HDSL2 deployment figures.
- The business versus residential percentages calculated for the entire market may be misleading for two primary reasons:
 1. Many home office customers are purchasing the residential products instead of the business class products.
 2. The number itself is skewed because of the disparity between the ILEC and CLEC percentages.

TeleChoice 4Q00 DSL Deployment Summary

Service Provider	4Q00 Lines in Service	% Residential	% Business
ILECs - US	1,899,271	80%	20%
CLECs - US	507,918	37%	63%
IXCs - US	22,000	15%	85%
Total	2,429,189	71%	29%

ILEC-Canada	431,856	88%	12%
-------------	---------	-----	-----

There were 2,429,189 lines in service at the end of 4Q 2000 in the U.S. This number consists of approximately 21% CLEC, 88% ILEC, and 1% for IXC customers. For the U.S. and Canada there were a total of 2,861,045 lines in service at the end of 4Q 2000.

For comparison, numbers below reflect the status at the end of third quarter 2000. Although some information was publicly available, other companies are not as yet publicly disclosing deployment details. These deployment figures are based upon the following:

- Individual companies providing information.
- This study does not reflect HDSL or HDSL2 deployment figures.
- The business versus residential percentages calculated for the entire market may be misleading for two primary reasons:
 1. Many home office customers are purchasing the residential products instead of the business class products.
 2. The number itself is skewed because of the disparity between the ILEC and CLEC percentages.

TeleChoice 3Q00 DSL Deployment Summary

Service Provider	3Q00 Lines in Service	% Residential	% Business	DSL- Equipped COs
ILECs - US	1,301,290	80%	20%	4,979
CLECs - US	405,297	29%	71%	8,201
IXCs - US	18,200	15%	85%	2,050
Total	1,724,787	67%	33%	15,230

ILEC-Canada	287,203	88%	12%	595
-------------	---------	-----	-----	-----

There were 1,724,787 lines in service at the end of 3Q 2000 in the U.S. This number consists of approximately 23.5% CLEC, 75.4% ILEC, and 1.1% for IXC customers. For the U.S. and Canada there were a total of 2,011,990 lines in service at the end of 3Q 2000.

[Source – Telechoice Report 2001]