



- Home
- News ▶
- Technology ▶
- Markets ▶
- Personal Journal ▶
- Opinion ▶
- Leisure/Weekend ▶

## The Print Edition

Today's Edition

Past Editions

## Features

Portfolio

Columnists

In-Depth Reports

Discussions

Company Research

Markets Data Center

Video Center

Site Map

Corrections

## My Online Journal

Personalize My News

E-Mail Setup

My Account/Billing

RSS Feeds

## Customer Service

The Online Journal

The Print Edition

Contact Us

Help

BARRON'S Online

## THE JOURNAL REPORT: TECHNOLOGY

*Home & Entertainment*Who's Going to Win  
The Living-Room Wars?

By MICHAEL TOTTY

Staff Reporter of THE WALL STREET JOURNAL

April 25, 2005

Welcome to Ground Zero of the information revolution: the living room.

It's the key battleground in what promises to be one of the most bruising -- and important -- global corporate fights in the next couple of years.

Telephone giants, cable titans, computer companies and consumer-electronics makers are all vying to provide the next generation of high-tech entertainment -- a single network of gadgets that lets you view photos, listen to music, record DVDs and tune into whatever TV programs you want to watch, whenever you feel like watching them.

## THE JOURNAL REPORT



See the complete [Technology report](#).

This convergence of computing, communications and entertainment has been promised before, only to evaporate because of

consumer indifference and technology that wasn't ready for prime time. But now the pieces are finally coming together. And corporations are scrambling to make sure they aren't left behind.

"The open question," says Van Baker, vice president and research director at Gartner Inc.'s GartnerG2 technology research company in San Jose, Calif., "is what's going to be the center of control."

All the major players have their advantages -- and weaknesses. Computer companies, led by [Microsoft Corp.](#) and equipment suppliers [Hewlett-Packard Co.](#) and [Dell Inc.](#), say the processing power and adaptability of the PC gives them an edge in delivering innovative services to the living room. Consumer-electronics giants, like [Sony Corp.](#) and [Matsushita Electric Industrial Co.](#), maker of Panasonic products, tout the reliability of their extensive line of home-entertainment devices. The big Baby Bells, notably [SBC Communications Inc.](#) and [Verizon Communications Inc.](#), are investing billions of dollars to deliver a nearly unlimited supply of broadcast and on-demand programming over their broadband optical-fiber networks.

EMAIL PRINT MOST POPULAR

advertisement

iShares®

HERE'S  
TO THE NEW,  
SMARTER YOU.

DISCOVER  
MORE FINANCIAL  
ADVISORS' STORIES

Call 1-800-iShares for a prospectus; read it carefully before investing. It contains fund investment objectives, risk factors, charges and expenses you should carefully consider to see if this is an appropriate investment.

iShares Funds are distributed by SEI Investments Distribution Co.

Investing involves risk, including possible loss of principal.

iShares®

[iShares.com/newyou](http://iShares.com/newyou)

## Report Rundown

- [Special Report Main Page](#)
- [Winning the Living-Room Wars](#)
- [Not a Kid, Not an Adult](#)
- [A Word From Our Low-Definition Sponsor](#)
- [Better Training Through Gaming](#)
- [Pay First, Call Later](#)
- [Software for Sarbanes](#)

iShares®

HERE'S  
TO THE NEW,  
SMARTER YOU.DISCOVER MORE  
FINANCIAL ADVISORS'  
STORIES

iShares®

iShares.com/newyou

At the moment, though, many experts believe that it's the cable companies, such as [Comcast Corp.](#) and [Time Warner Inc.](#)'s cable unit, that have the edge over rivals. Cable already delivers entertainment to millions of U.S. homes, and companies have spent the past few years upgrading their networks to deliver much more. Though cable operators typically have been slow to roll out more advanced technology, they are beginning to add more features to their set-top boxes that give customers new services without the hassle or cost of buying new equipment.

In some sense, there are really two separate match-ups: cable vs. telephone to deliver traditional and on-demand television programs, and PC vs. consumer electronics to provide the hardware in the home-entertainment system. But to an increasing extent, everybody wants a piece of everything.

Moreover, the battle isn't an all-or-nothing proposition, as many companies hedge their bets by having a hand in several outcomes. For instance, consumer-electronics maker Samsung Electronics Co. recently announced it was building an advanced set-top box for cable companies using technology from Digeo Inc., of Kirkland, Wash. Similarly, Microsoft provides PC makers with its Media Center software for managing all kinds of entertainment content, while its IPTV platform has been adopted by SBC and Verizon for their planned television services.

"We have bets on more than one number," says Joe Belfiore, general manager of Microsoft's eHome Media Center team.

So how do things stand in the early stages of the battle? Here's a look at the current scorecard:

## CABLE COMPANIES

**Where things stand:** Cable-television operators boast about 74 million subscribers in the U.S. and claim about 60% of the subscribers of high-speed Internet service. And they're going after convergence with a vengeance.

Cable operators have spent about \$90 billion since the mid-1990s to replace their formerly one-way analog networks with two-way, digital capabilities. For Philadelphia-based Comcast, moving to digital has meant it can boost the number of available channels to an average of 300 from 72. In the past year, it has begun offering a growing library of on-demand programming -- about 2,000 hours today -- and recently signed a deal with Sony to provide a rotating lineup of about 100 movies a month from the Sony Pictures and MGM libraries.

Cable companies also are beefing up the set-top box. Most operators now offer digital set-top equipment with a built-in digital video recorder that allows viewers to pause live broadcasts and record and store dozens of programs for later viewing. Comcast recently signed a deal with [TiVo Inc.](#) to begin offering the DVR pioneer's more advanced search and personalization options sometime next year.

- [Teens Don't Know Everything](#)
- [What's Woot?](#)
- [Radio Tags Keep Track of Your Kids](#)
- [Technical Advisor: Note-Taking Programs](#)
- [Web Watch: Coffee & Sunglasses](#)
- [Editor's Note](#)
- [Recommended Reading](#)

## COMPANIES

Dow Jones, Reuters

### Microsoft Corp. (MSFT)

PRICE	24.98
CHANGE	-0.30
U.S. dollars	4/22

### Hewlett-Packard Co. (HPQ)

PRICE	20.78
CHANGE	-0.30
U.S. dollars	4/22

### Dell Inc. (DELL)

PRICE	36.31
CHANGE	-0.54
U.S. dollars	4/22

### Sony Corp. ADS (SNE)

PRICE	36.84
CHANGE	-0.77
U.S. dollars	4/22

### Matsushita Electric Industrial Co. ADS (MC)

PRICE	14.31
CHANGE	-0.30
U.S. dollars	4/22

### SBC Communications Inc. (SBC)

PRICE	23.20
CHANGE	0.02
U.S. dollars	4/22

### Verizon Communications Inc. (VZ)

PRICE	34.06
CHANGE	-0.20
U.S. dollars	4/22

\* At Market Close

## RELATED INDUSTRIES

- [Computer Hardware](#)
- [Computer Software](#)
- [Internet & Online](#)

## Advertiser Links

### Featured Archive

CIGNA presents  
**"The Benefits of Caring"**  
An archive of health-care  
articles  
[Click Here ...](#)

[Investor Resource  
Center](#)

[FedEx Presents: "Small  
Business Center"](#)

[Questions for the Future:  
Issues that will Shape  
Our Future](#)

[Get IBM's On Demand  
Business e-newsletter](#)

[30 free trades at](#)

[Ameritrade.](#)[Accenture Presents: "High Performance"](#)[Financial HP Workstations at PC Prices](#)

**Advantages:** The cable industry's biggest strength is a simple one: incumbency. It's already at the center of the entertainment experience in most homes.

Equipment costs are another advantage. Cable eliminates big upfront investments in gear because consumers don't need to shell out additional money when cable companies add new features; it all goes into the same set-top box consumers are already leasing. "Consumers like to get things that are free," says Gartner's Mr. Baker. "They don't see themselves paying for this technology."

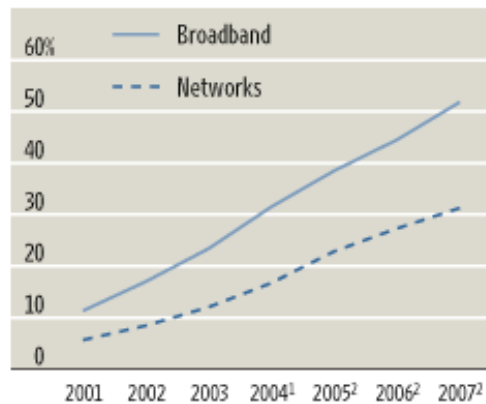
[Personalized Home Page Setup](#)

Put headlines on your homepage about the companies, industries and topics that interest you most.

## The State of Play in the Entertainment Wars

### Stretching the Wires

Penetration of broadband and home networking among U.S. households.

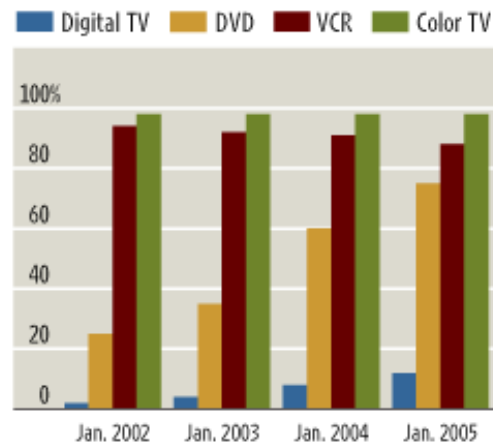


<sup>1</sup> Estimated <sup>2</sup> Projected

Source: Diffusion Group

### Plugged In

Households that have leading consumer-electronics devices



Source: Consumer Electronics Association

Finally, cable's easy to use. When it comes to simplicity vs. features, the cable companies generally opt for simplicity. Comcast, for instance, resists rolling out new features until the technology improves and there's a proven consumer demand. "What

consumers have told us is that you have to make this easy," says Dave Watson, Comcast's executive vice president for operations.

**Disadvantages:** Mr. Watson's ode to ease of use is a double-edge sword, and it points to the industry's main weakness: a slowness to innovate. Competitors come to market with advanced services more quickly. Before cable went digital, for instance, satellite-TV providers were able to steal market share with a larger lineup of channels. Consumers looking for the most advanced features and services, from improved channel guides to the ability to stream Net-based content to the television, could go elsewhere.

Clunky program guides are another problem for cable. Viewers have to click through screen after screen of programs, and at a pace that can be maddening to the instant-on generation.

There are alternatives, but cable companies have been slow to adopt them. Digeo has a set-top box, called the Moxi Media Center, that features a built-in DVR, photo and music software and an ingenious program guide that allows viewers to speed through available channels and options and to instantly change channels, without the bothersome delays on most other cable systems.

Digeo is available only for some customers of [Charter Communications Inc.](#), [Adelphia Communications Corp.](#) and a couple of smaller systems. Comcast is testing the service in two markets, but hasn't detailed its plans for a wider rollout. Digeo says that Comcast will test the new Samsung-made Moxi Media Center in one of the test markets, Huntsville, Ala., beginning this year.

## TELEPHONE COMPANIES

**Where things stand:** It wasn't long ago that the notion of telephone companies offering TV programming

seemed inconceivable -- as inconceivable as the idea that cable companies would offer phone service. Now, cable operators are adding calling options, and the Baby Bells are rushing in with television programs.

In the short term, the Baby Bells are teaming up with satellite-television providers to deliver current TV programming to their customers. Beginning in late summer or early fall, for instance, San Antonio-based SBC plans to offer a broadband-and-broadcast home-entertainment service that combines satellite TV from [EchoStar Communications Corp.](#), a new set-top box from technology company [2Wire Inc.](#) of San Jose, Calif., and a user-friendly interface from [Yahoo Inc.](#)

With the service, SBC says, viewers can watch television, view on-demand programs, download music to personal computers or home stereos, and view digital photos directly from digital cameras, PCs or the Web.

But longer term, the telecoms are placing their bets on their own fiber-optic networks to deliver television programming, perhaps as early as year end.

Companies are taking different paths to the service. SBC is spending \$4 billion over the next three years to string optical-fiber cable to neighborhoods totaling as many as 18 million homes, and plans to deliver television services using Internet technology, called IPTV. Rather than broadcasting a constant stream of all available programs, as cable does today, IPTV stores a potentially unlimited number of programs on a central server, which users then call up on demand.

Meanwhile, Verizon will spend \$6 billion over five years to bring fiber directly to as many as 16 million homes in its service areas, according to a UBS Securities analyst report. (Verizon hasn't provided comparable figures.) Verizon's network will deliver programming more like a cable system, broadcasting all channels simultaneously, with additional on-demand offerings.

The battle "is going to be city by city, neighborhood by neighborhood," says Robert E. Ingalls Jr., president of

Verizon's retail market group. "It's going to be us versus the cable incumbents and the satellite companies."

**Advantages:** The telephone companies' primary strength is that they promise better integration than cable operators because they can combine phone service, Internet and TV programming all in one set-top device. With its home-entertainment service, SBC says customers will be able to send programs to their TV sets, music to the stereo and photos to and from their PCs through a single set-top box. Company officials also say that users will eventually be able to display caller-ID information on their TV sets, though they are vague about when this service might be available.

Telephone companies also boast better technology than the cable companies, at least in the short term. Once it's deployed, IPTV promises a much more powerful platform for advanced services. For instance, viewers could have the option of viewing a sporting event from multiple camera angles or looking up cast information while watching movies.

**Disadvantages:** The Bells tried to offer TV programming in the 1990s and failed. Their inexperience isn't a problem as long as they're partnering with satellite operators, but it becomes a big obstacle as they move to

#### A TASTE FOR GADGETS

Total factory sales of consumer electronics (in billions)

	2001	2002	2003	2004 (1)	2005 (2)
<b>Direct-to-home satellite system</b>	\$1.18	\$1.12	\$1.48	\$1.89	\$1.78
<b>Digital video recorders(3)</b>	0.14	0.57	0.18	0.54	0.68
<b>DVD players(4)</b>	2.10	2.43	2.70	2.46	2.54
<b>Set-top Internet-access devices</b>	0.20	0.12	0.63	0.31	0.14
<b>Personal computers</b>	12.96	12.61	15.58	17.20	18.33

(1) Estimated, (2) Projected, (3) Includes those built into cable or satellite set-top boxes sold directly to consumers, (4) Separate component

Source: Consumer Electronics Association

deliver programming on their own. "The Bells don't know anything about television," says Ted Schadler, a vice president at Forrester Research Inc.

First, they have to cut deals with television studios and other content providers; for instance, the ability to serve up multiple camera angles of sporting events requires cutting special deals with the sports leagues. While analysts expect they will be successful, most predict that they will have to pay a premium for the content, at least at first.

So far, though, it's largely vapor: Although a handful of companies are offering IPTV services overseas and in some rural U.S. areas, to date none of the Baby Bells' offerings have any subscribers, and the telecoms have only just begun to sign content deals to deliver programs. While the technology looks great in controlled demonstrations, it isn't clear how well it will perform when used by millions of customers.

So in the matchup between cable and the telephone companies, "cable probably won't be as rich, but it will be easier," says Rob Enderle, a technology analyst in San Jose, Calif., "while DSL will provide a higher variety of choice, but it will be more difficult and confusing."

## **PC COMPANIES**

**Where things stand:** PC makers are trying to move the PC from the isolation of the home office to center stage in the living room.

Using Microsoft's Media Center operating system, PC makers have been rolling out computers designed to sit at the middle of the home-entertainment center. Media Center lets users conduct all their entertainment-type computing tasks -- watching DVDs, managing photos, listening to music and viewing downloaded video -- with a remote control and a television screen.

Add a tuner, and the PC can also take the place of the TV set-top box, or record DVR-style on the computer's hard drive. What's more, viewers can get their traditional PC information -- such as instant messages -- on their TV screen as well.

Customers know that "the PC has value," says Mr. Belfiore, Microsoft's Media Center general manager. "This lets them get that value on a different screen."

Since Microsoft introduced the software in 2002, PC makers such as Hewlett-Packard, Dell and [Gateway Inc.](#) have built hardware around the system; to date, more than 1.5 million Media Center PCs have been sold world-wide. While most of these PCs look like a typical computer, H-P for one is selling Media Center devices that resemble home-entertainment devices like TiVos or stereo receivers.

Moving into the living room has required some adaptation on the part of the PC companies. When H-P first shipped its digital entertainment center, the device displayed a message reminding users -- in PC-sized text, invisible from across the room -- to renew the antivirus subscription. "We just missed that," says Tom Anderson, vice president of H-P's consumer systems group. "It's an example of the kind of things that H-P and Microsoft should have caught."

**Advantages:** No. 1 is flexibility. The great thing about today's PC is that there's little you can't do with it, whether performing sophisticated photo or video editing, keeping all your music in one place or recording television programs. And when a new application appears -- such as a more advanced program guide -- viewers don't need to wait three years for the cable company to roll it out.

"The PC has the ultimate flexibility and upgradeability," Gartner's Mr. Baker says. "You can make it do anything that you want to."

Another advantage is that with a PC, you have access to all the content on the Internet. By contrast, cable



programming is the classic walled garden: Because of the equipment constraints, the only programs available are the ones the cable operators want to offer. But a PC and a Web browser bring the entire Internet to the home-entertainment center.

**Disadvantages:** The PC's flexibility comes at a price: There also are more things that can go wrong. Though the latest versions of Microsoft's operating system are less prone to crashing than before, users have zero tolerance when it comes to glitches with the TV set; no one wants to have to reboot during the last two minutes of the NCAA championship game. Gartner's Mr. Baker recalls how a Media Center product he was using rebooted when he pressed the remote's mute button.

"Because it's more complex, there are more opportunities for it to break," says Mr. Enderle, the technology analyst.

Price is another negative. Gateway sells a Media Center PC with a built-in television tuner for about \$1,000, although it can also double as a regular office PC. The HP Digital Entertainment Center, which comes without a monitor, sells for about \$1,400.

Cable companies, in contrast, rent out their hardware for a small monthly charge. Most consumer-electronics devices, which admittedly do a lot less than the PC, are much cheaper: A home-theater receiver with a built-in DVD player can be found for a few hundred dollars. The TiVo DVR, which is as much a computer as a consumer-electronics device, sells for as little as \$100 after rebates.

## CONSUMER-ELECTRONICS COMPANIES

**Where things stand:** For most consumers, televisions, stereo receivers, CD and DVD players are the home-entertainment system, and the companies that make that equipment would seem to have the edge in the living-room war.

However, that position is being threatened from all sides. Dell and Gateway are selling display screens that compete directly with TV sets from Sony, Toshiba and others. Media Centers have built-in DVD players and recorders, and their hard drives can be used to store programming, challenging consumer electronics' sales of stand-alone DVD players and digital video recorders. Cable and satellite providers are offering DVRs as standard equipment in most digital set-top boxes.

In response, Sony, Panasonic and consumer-electronics companies are rolling out DVD recorders that can connect to the Internet. More important, they are beefing up the centerpiece of the living room -- the TV set. Panasonic, for instance, includes a high-speed Ethernet connection for hooking up to the Internet on the back of every digital TV set sold in Japan. Though the sets support only a simple browser, viewers can use them to visit special "T Navi" sites, sponsored by Panasonic and others, where they can order a pizza or a movie or view electronic program guides. So far, the company doesn't have any immediate plans to sell such sets in the U.S.

Meanwhile, Sony, which also has bets on the PC-based media center through its Vaio personal-computer line, is adding to the connections available on its digital sets. In addition to Ethernet connections, it offers sets with a connection for its portable flash-memory devices, so customers can plug in a card containing their digital family photos and automatically view them on the TV screen. The company also is including all-digital high-definition multimedia interface, or HDMI, connectors, which can be connected to a PC, DVD player or camcorder allowing high-quality video transfers.

"If you have a TV with no connections, the TV is just a TV," says Greg Gudorf, vice president of television marketing at Sony Electronics. "The ability for the TV to connect to other products is the key to the digital living room."

**Advantages:** The main thing consumer-electronics companies have going for them is brand recognition. In consumer surveys, Sony has shown up as the best brand in the U.S. and Britain, while Panasonic, Philips and

Pioneer are other names consumers associate with home entertainment. "Consumers are going to gravitate toward the brand names that they're familiar with," says Michael Greeson, president of Diffusion Group, a market-research company in Plano, Texas.

In addition, these companies are known for simplicity and reliability: There are no blue screens here, and consumers can reasonably expect that their electronic equipment will work when they're turned on -- without any delays for booting up. Of course, things aren't entirely uncomplicated: Ask anyone who has tried to install a home-theater system.

**Disadvantages:** Gadget creep is No. 1. Count the number of remote controls in your living room, and you can see the appeal of a super-smart cable, telecom or PC set-top box with a built-in DVD player that you can command from one device. Most consumers add to their existing equipment one box at a time, creating a different kind of complexity.

Consumer-electronics companies haven't reacted quickly enough to the networked world. The consumer-electronics giants -- Sony, Panasonic and Samsung -- have been slow to embrace the power of the Internet and of information technology in their home-entertainment gadgets, creating an opening for the PC makers. It shouldn't be surprising that the most innovative consumer device to come along in a while -- TiVo's digital video recorder -- came out of Silicon Valley, and had the guts of a PC.

Consumer-electronics companies "are not as nimble at taking advantage of the Internet," says Paul Liao, chief technology officer for Panasonic Corp. of America. "Can the IT companies get so far ahead that the consumer-electronics companies can't catch up?"

--Mr. Totty is a news editor for The Journal Report in San Francisco.

Write to Michael Totty at [michael.totty@wsj.com](mailto:michael.totty@wsj.com)

 [EMAIL THIS](#)  [FORMAT FOR PRINTING](#)  [MOST POPULAR](#)  [ORDER REPRINTS](#)

Sponsored by

**XEROX.**

[Return To Top](#)

---

[Log Out](#) [Contact Us](#) [Help](#) [E-Mail Setup](#) [My Account/Billing](#) [Customer Service: Online](#) | [Print](#)  
[Privacy Policy](#) [Subscriber Agreement](#) [Mobile Devices](#) [RSS Feeds](#) [News Licensing](#) [About Dow Jones](#)

Copyright © 2005 Dow Jones & Company, Inc. All Rights Reserved

**DOWJONES**