



BY STEPHEN H. WILDSTROM

Buying the Right HDTV (Part One)

If you're like a lot of folks, you didn't buy a high-definition television for Christmas, but you're thinking hard about getting one this year. The good news is that prices are likely to continue their sharp decline in coming months. The bad news is that the consumer-electronics industry is making TV shopping unnecessarily difficult.

The biggest problem is a profusion of standards, along with the occasional made-up terms that make it hard to compare products. In this column, I'll try to guide you through the thicket of terminology, and next week I'll help you choose among the myriad display technologies.

The first point of confusion is digital television vs. HDTV. While the terms are often used interchangeably, they shouldn't be. All HDTV in North America is digital, but not all digital TV is HD, and it's the high-definition part that gives you the big improvement in image quality, especially on large screens. A second issue is that manufacturers bill some displays as "HDTV-ready." This means they're capable of showing an HD picture—but not without a \$400 or so digital TV receiver. Although this is a bit deceptive, the separation may not be a bad thing. A stand-alone receiver offers more flexibility, for example, to deal with the copy-protection schemes that will be used with some broadcast and cable HDTV content starting next year. My personal choice would be to go with a pure monitor and a separate tuner/receiver, but a lot of people prefer integrated solutions because they don't want the hassle of setup.

UNDERSTANDING DISPLAY CHOICES requires delving into the mind-bending world of TV standards and formats. A TV display consists of hundreds of so-called scan lines—the more lines, the better the picture. Standard U.S. analog TV uses 480 lines, but these are handled in a peculiar way. Every 60th of a second, all the odd-numbered lines are drawn; then in the next 60th of a second, the even lines. This process, called interlacing, produces 30 frames per second, but the resulting image is generally less sharp than if the lines had been displayed sequentially in what is called progressive scan. In describing these two approaches, a letter "i" follows a number indicating interlacing and "p" for progressive scan.

As defined by the Arlington (Va.)-based Consumer Electronics Assn., true HDTV requires at least 720p. Many broadcast stations, however, offer only the 480i format on



their digital channels—which is little or no quality improvement over standard TV. You can do a bit better with a DVD player that offers progressive scan. Its output is 480p, which the CEA calls Enhanced Definition TV. When used with a wide-screen display, it provides improved quality. But it's not HD.

To qualify as true HDTV, a display must also have a 16:9 screen, about 1¼ times as wide as it is high—similar to the format of movies than television. Regular old TVs have screens 1½ times as wide as high. HD broadcasts offer either 720p or 1080i. HD displays automatically convert the signal to the best quality they can handle. On screens up to around 40 inches, more than 720p offers little or no quality improvement. On bigger displays, a maximum resolution of 1080 lines is highly desirable. But any HD format offers a dramatic quality improvement over standard TV.

One thing to beware of: displays that boast they can

Caveat emptor: All high-definition TVs are not created equal

handle 720p or 1080i inputs while mumbling about their actual display resolution. Some less expensive models, sometimes called "HDTV-compatible," convert the HD input to display at 480p. Since it's the output resolution that determines what you see, you'd be getting a wide-screen TV at standard resolution.

Now that you understand the mysteries of digital formats, you're ready to choose among plasma, LCD, projection, and CRT displays. But that has to wait until next week. ■

E-mail: techandyou@businessweek.com

BusinessWeek online For a collection of past columns and online-only reviews of technology products, go to Technology & You at www.businessweek.com/technology/



BY STEPHEN H. WILDSTROM

How to Stymie The Snoop in Your PC

By now, anyone who uses a PC knows about viruses and the need to defend against them. But they are not the only threat. Spyware, programs that snoop on your online activities and send the info to third parties without your knowledge, is another class of software that requires your attention. As usual, the cure requires buying and running still more software.

Spyware comes in several varieties of varying nastiness. Adware tracks your Web surfing activities and reports back to agencies, which use the data to send you ads supposedly tailored to your interests. Worse are key loggers, which can record everything you type and report personal data, including user names and passwords, to identity thieves.

Some programs have a legitimate reason to report information, but any program that is going to send data to a third party should get your explicit, informed permission. Google offers a model of the right way to do it. When you download the Google Toolbar, it asks if you want to install a feature that reports information to Google that is used to improve searches. If you say no, you still get the toolbar, but it cannot personalize search results as precisely.

OTHER PROGRAMS ARE LESS UP FRONT. RealNetworks' RealPlayer will include reporting software unless you uncheck a box during setup. With the Kazaa music download service, you have to drill down through five pages to learn that you are installing adware from Claria. Some programs slip a line granting permission to send data into the license agreement that few read. And the most unscrupulous ones don't bother asking for permission.

Your first line of defense against spyware is to be careful about what software you install and to pay close attention to the options offered during setup. For example, I let the Google Toolbar send data because I find it invaluable and I trust Google. But I say no to most everything else.

How do you protect yourself against sneaky spyware? A firewall program, such as Symantec's Norton Personal Firewall (\$49.95) or Zone Labs' ZoneAlarm (\$39.95 for Plus version; basic version is free), is of some help because it will object when a program unknown to it tries to send data to the Web. Running a firewall is always a good idea, though the approach fails when spyware succeeds in hiding itself inside a



**It's legal to
install
spyware
without
consent**

program, such as Internet Explorer, that is authorized to send data. The best solution is to get additional protection by adding a program that is specifically designed to detect and block spyware. Many are available, but be careful of free products because there are reports that some actually contain spyware. I recommend three programs: Spy Sweeper from Webroot Software, the established leader; the new McAfee AntiSpyware; and Ad-aware from Lavasoft. Both Spy Sweeper (\$29.95 with a free trial) and AntiSpyware (\$39.95 with a \$10 rebate) are sold like antivirus software, with annual subscriptions. Ad-aware, which has an automatic update service, costs \$26.95 for the Plus edition; a basic version is free. The paid versions of these products give you much more control over what you want to allow and what you want to block.

These do a good job, but it's annoying to have to buy and run software to deal with a problem that lawmakers could do something about. Surprisingly, it is perfectly legal for companies to install most spyware without a user's informed consent. (The legality of key loggers has yet to be tested.) Several bills have been introduced in Congress to restrict the practice, but action is unlikely this year. (Utah recently became the first state to restrict spyware.) So I am left offering the familiar, but critical, advice: Be careful about what you download and install, and consider adding an anti-spyware program to your computer's armor. ■

E-mail: techandyou@businessweek.com

BusinessWeek online For a collection of past columns and online-only reviews of technology products, go to Technology & You at www.businessweek.com/technology/



BY STEPHEN H. WILDSTROM

At Last, You Can Ditch The Phone Company

We are going through a telecommunications revolution. Yet the way that the most basic communications technology—known as “plain old telephone service”—is delivered to most households and many offices has stayed largely the same for a century. That, however, is about to change dramatically, and the benefit could be better service at lower cost.

The disruptive technology—voice over Internet protocol (VOIP)—simply uses data networks to deliver voice conversations. It has been around for about a decade, but until the big recent improvements in voice quality and ease of use, VOIP was attractive mostly to folks looking to reduce the often-exorbitant cost of international calls, especially to Asia.

Early systems required you to make “calls” over your PC through a microphone or headset, and you could call only another similarly equipped computer running the same software. Services such as Net2Phone emerged that let you make a call from a computer to a phone number, but while the price was low, so were the quality and reliability.

A free service called Skype provides an updated version of this computer-to-computer calling. Voice quality is vastly better than it used to be, and you can run Skype on Pocket PCs equipped with Wi-Fi wireless as well as on desktops and laptops. But you can call only a fellow Skype user, making this a solution for people who want to talk cheap to a fixed group of chatters, not as a substitute for a real phone.

MOST PEOPLE WILL WANT SOMETHING that resembles standard phone service as closely as possible. This can be accomplished with a box that plugs into your broadband connection or home network and converts the voice signal for Internet transmission. You plug one or more phones into the converter box, and when you pick up the handset, you hear a dial tone and make a call. (The call travels over the Internet until the service provider eventually connects it to the wired telephone network.) Incoming calls ring, and voice quality is generally indistinguishable from regular phone service.

Cable and long-distance companies are scrambling to get into the residential VOIP market, but for now, the leader is an Edison (N.J.)-based startup called Vonage, whose service I'll describe in more detail in my next column. An account with unlimited local and domestic long-distance calling, voice mail, and other features costs \$35 a month—\$15 less



VOIP lets you make clear, fast calls over the Net, using a plain phone

they may also use the technology to link branch offices over the Internet or private networks.

There are some drawbacks to VOIP. If either your power or your Internet connection goes down, you lose your phone service. (A cell phone is an adequate backup for most purposes.) And installation of residential VOIP is still a do-it-yourself project. But this is a technology with vast potential. After more than 100 years, the days of plain old telephone service may be numbered.

E-mail: techandyou@businessweek.com

BusinessWeek online For a collection of past columns and online-only reviews of technology products, go to Technology & You at www.businessweek.com/technology/



BY STEPHEN H. WILDSTROM

Why I'm Staying Away From Internet Explorer

In late June network security experts saw one of their worst fears realized. Attackers exploited a pair of known but unpatched flaws in Microsoft's Web server and Internet Explorer browser to compromise seemingly safe Web sites. People who browsed the sites using Windows computers—without downloading anything—were infected with malicious code. I've

been increasingly concerned about IE's endless security problems, and this episode has convinced me that the program is simply too dangerous for routine use.

Fortunately, you are not stuck with IE as your default browser. For several weeks I have been testing three alternatives: Mozilla 1.7 and Firefox, both free from Mozilla.org, and Opera 7.5 from Norway's Opera Software, which costs \$39 if you want an ad-free version. All include useful features, such as pop-up blockers, that are lacking in the current version of IE. Mozilla is based on code written by Netscape Communications, but I would avoid its poorly maintained cousin, Netscape 7.1. Firefox, officially still a test version, is a clean design and fast, while Opera offers tons of features. But the chief virtue of these browsers is that they don't share IE's vulnerabilities.

Changing your default browser is simple. Most browsers will ask, when you open them the first time, if you want them to be the default. And if you're running the latest version of Windows XP, Service Pack 1, there's an application on the Start menu called Set Program Access and Defaults that makes switching painless.

FOR ALL OF ITS PROBLEMS, Internet Explorer isn't easy to give up. Some handy add-ons, such as the Google Toolbar, work only with IE. The Windows Update service requires it, and many corporations have developed custom IE-based applications. The travel-and-entertainment reporting system used by *BusinessWeek*, for example, works only with the Microsoft browser. So even if you default to another browser, you may still need IE from time to time.

Because IE will remain an inescapable fact of life, I hope Microsoft succeeds in its current effort to come up with a secure version. Later this summer the company will release Windows XP Service Pack 2, a major overhaul of Windows that focuses almost entirely on improving security. One component of SP2, as it is known, is a reworked browser that may make a big difference—but it will be many months before we know for sure.



The biggest security problem in IE—one that has plagued Microsoft and its customers for at least four years and is at the heart of the recent exploit—is a flaw that lets a Web site trick the browser into running an alien program in violation of its own security settings. In effect, an unknown program on a Web site is treated as though it were a trusted program on your computer. Compromised Web sites can covertly install programs ranging from nuisances that cause ad pop-ups to real threats that record your keystrokes to steal passwords and account information.

Instead of making one more attempt to plug the hole, SP2 drastically restricts IE's ability to run any program without the explicit permission of the user. So even if the hole is still

The browser's endless security woes make it dangerous to use

there, says Windows product manager Greg Sullivan, taking advantage of it “will be like breaking into jail.” The hostile application would be blocked from doing any harm. This shouldn't cause problems during most browser use, but some custom corporate applications may fail. Other features of the new IE include changes that make it tougher for scammers to make phony bank Web sites look authentic.

There will also a long-overdue pop-up blocker.

In theory, the approach Microsoft is taking should solve the security problem. But we won't really know until the bad guys have a chance to bang on SP2 for a while. For the time being, wherever possible, I'm staying away from IE. ■

E-mail: techandyou@businessweek.com

BusinessWeek online For a collection of past columns and online-only reviews of technology products, go to Technology & You at www.businessweek.com/technology/



BY STEPHEN H. WILDSTROM

The iMac G5: Elegant— But a Lost Opportunity

No question about it, Apple Computer's new iMac G5 is beautiful. The minimalist design, whose echoes of the iPod are entirely intentional, would grace any desk. Although I have some quibbles with the details, the iMac offers outstanding performance at a fair price. Still, lovely as the iMac is, I think Apple may be blowing an opportunity to expand its market.

This is the third generation of iMacs, and the only family resemblance is an all-in-one design radically different from anything else on the market. The previous iMacs put their guts in a hemispherical base and used a clever arm that let you position the 15- or 17-inch displays just about anywhere you wanted. The new versions mount all the electronics behind the wide-screen 17- or 20-in. display that is only about two inches thick, and the entire unit stands on a curved aluminum foot.

Apple cools the system with large, slow-turning fans, so it's whisper-quiet. If you add the optional wireless networking card (\$79) and Bluetooth module and wireless mouse and keyboard package (\$99), the only wire running into your iMac will be the power cord. Mac OS X is the best personal-computer operating system today by a fair margin, and the iMac comes preloaded with Apple's very good suite of iLife programs, including iPhoto and iTunes for picture and music management, respectively, and the Garage Band music composition and recording system.

THE HARDWARE IS BEAUTIFUL, the software is beautiful—so what's wrong with this picture? For one thing, some functionality seems to have been lost in the interest of aesthetics. The previous generation of iMacs allowed almost unlimited adjustment of both horizontal and vertical screen angle and a considerable range of height. The new models offer effortless vertical tilt, but only up to 30 degrees. Horizontal movement is accomplished by swiveling the entire unit, which has a slippery plastic pad on the bottom of the aluminum foot. There is no height adjustment at all, a serious blow to good ergonomics. The iMac has a full complement of ports, including three USB and two FireWire sockets and even a digital audio link, but all the connectors, as well as the power button, are in the back. This keeps the front and sides perfectly clean, but it means you have to turn the unit to plug anything in.

Price is another concern. The cheapest iMac, the 17-in. with a 1.6 gigahertz G5 processor, doesn't sound too bad at \$1,299.



But Apple prices all of the iMacs with a bare minimum of 256 megabytes of memory, which will hobble performance. Bringing that to 512 MB adds \$75; moving to a gigabyte, which you'll want for Garage Band or any serious photo or video editing, adds \$225. Throw in the wireless options, and the base iMac is up to a hefty \$1,702, while the 20-in. version goes well over \$2,000. By contrast, you can get a Dell Dimension 4600 with a 3.2 GHz Pentium 4, a gigabyte of memory, and a 17-in. flat panel display for \$1,164. Elegance is expensive.

Considering the excellence of the software, Apple deserves a larger share of the market than the low single digits it has been able to garner, and consumers deserve more access to Apple products. The average selling price of a desktop PC is below \$750, and few go for more than \$1,000. But Apple's only sub-\$1,000 computers are two dated eMacs, bulbous all-in-ones with 17-in. CRT displays.

Apple could shake things up by rolling out a \$700 Mac

With any real improvement in Windows at least two years away, I think Apple could shake the industry by offering, for \$700 or less, a PC-like Mac box for which consumers would provide their own displays. The company wouldn't have to scrimp on features or quality; the unit would lack the elegant design of the iMac G5, but it would still be a Mac. Given Apple's obsession with beautiful but expensive industrial design, there is almost no chance we'll ever see such a product. And that's a shame, both for Apple and for its prospective customers. ■

E-mail: techandyou@businessweek.com

BusinessWeek online For a collection of past columns and online-only reviews of technology products, go to Technology & You at www.businessweek.com/technology/



BY STEPHEN H. WILDSTROM

The Music Mess: Advantage, Microsoft

Imagine buying a CD at Best Buy only to discover that it won't work on the CD player you bought at Circuit City. Absurd as it sounds, this sort of situation is the rule rather than the exception in the world of legally downloaded music. This maze of incompatible standards is a threat to online services such as Apple Computer's iTunes Music Store.

The situation is both baffling and infuriating. My iPod can play all the MP3s I rip from CDs or pull from KaZaA (if I used it), but when it comes to legal downloads, it works only with the iTunes store. The Roku SoundBridge that connects my stereo to my computer's stash of digital music can play everything in my iTunes library that I digitized myself—MP3s and the like—but not iTunes Music Store purchases. Similarly, other players handle only music bought from a specific service.

No wonder the market share of legal music downloads remains tiny compared with sales of CDs and the traffic on music-swapping services such as KaZaA. Both let you play your music wherever you want. Record companies insist on using technology to limit the number and types of copies buyers can make of downloaded songs. But the problem isn't the restrictions—it's the incompatibilities. Apple uses a digital-rights management (DRM) system called FairPlay, RealNetworks uses one called Helix, and Microsoft has just introduced a DRM known as Janus.

IT'S PUZZLING THAT THE INDUSTRY doesn't see how hard this is on consumers. Apple has chosen an isolationist course. It supports only FairPlay in its products, and it has been unwilling to license other companies either to build FairPlay-enabled players or to sell FairPlay-protected songs. Hewlett-Packard sells iPods co-branded with Apple, but it's not clear whether Apple will enter broader licensing deals.

RealNetworks, as befits the smallest competitor, is eclectic, promoting a system called Harmony that supports players using its own Helix as well as Microsoft's Janus. It also sells songs for the iPod using its own, unlicensed version of FairPlay.

Microsoft holds the high cards in this game. Much as I hate to see the colossus of Redmond end up dominating yet another market, I believe that is going to happen, and given the current state of affairs, it may be the best outcome for consumers. Microsoft doesn't make player hardware, and



MSN Music is a tiny part of its business. The company makes money selling the Windows Server 2003 software required to distribute music or video in Windows Media content, so it profits by having the technology as widely embraced as possible. To promote that, it offers favorable, often royalty-free, licensing of Windows Media technology to music and movie studios and device makers.

When Windows Media 10 and Janus were released in early October, Microsoft took a self-serving step that simplifies things for consumers. It created a "PlaysForSure" logo for sites that sell Windows Media music and devices that play it. In theory, PlaysForSure music you buy from sources that include Napster, Musicmatch, and Wal-Mart Stores will work on any PlaysForSure player, including products from Dell, Creative, iRiver, Gateway, and newcomer Virgin Electronics.

None of these players is as easy to use as an iPod, these

**Gates & Co.
focus on
compatibility,
which is what
music lovers
want**

Web sites aren't as easy to use as the iTunes online store, and no rival can match Apple's brilliant marketing. But the gap is narrowing. Virgin Electronics, for one, is part of an empire with proven marketing ability, especially in selling music.

In the end, what consumers care about is getting the music—and in the not-too-distant future, the movies and video—they want and having it play without hassles on the device of their choice. Microsoft's big-tent approach offers a way out of this morass for everyone, except perhaps Apple. ■

E-mail: techandyou@businessweek.com

BusinessWeek online For a collection of past columns and online-only reviews of technology products, go to Technology & You at www.businessweek.com/technology/



BY STEPHEN H. WILDSTROM

There's Google. Then There's Google Desktop

The logic behind Google Desktop Search is simple enough: Why shouldn't the best tool for finding things on the Web do equally well at helping people search their own computers? The product demonstrates that, as computer scientists have long known, a local search is a world apart from a Web search. It requires different tools and approaches.

Like just about everything Google has done lately, Desktop Search is controversial, with some privacy advocates and competitors warning that the software poses a grave threat. Charges that the new Google product exposes your private searches to the world are grossly exaggerated. The truth is that, while Google does a reasonably good job of finding things on your computer, it presents the results in a way that is not terribly useful.

Bear in mind that Google Desktop Search, available for free download from desktop.google.com, is a "beta," or test, program and will probably remain so for many months. Some of its shortcomings, such as the inability to search the contents of Adobe Acrobat files, will be fixed. But there are fundamental problems in using Google's Web query and results formats for local searches.

GOOGLE'S GREAT STRENGTH IN SEARCHING your PC is the same as in Web searching: It's terrific at finding the copies of Web pages you have visited that Internet Explorer stashes away on your hard drive, including Web-based e-mail such as Hotmail. Enter a search term, and you get back listings that look exactly like Web search results—10 or so items consisting of a title and a couple of lines of extracted text that includes the search term. This is fine for locating the Web page of that hotel in Antigua you looked at six weeks ago, but it's a terrible way to locate the e-mail Aunt Millie sent you last month.

In a local search, you generally know what sort of file you are looking for. So it ought to be easy to restrict the search to e-mail messages, Word files, and the like—but it's not. Most desktop search programs, such as X1, Copernic, or Enfish—as well as the test version of MSN desktop search due from Microsoft by yearend—let you limit the search with a mouse click or two. With Google, you must use geeky filtering commands, such as `filetype: e-mail`, as part of each search. What's more, the competing tools typically present results in a window with multiple panes—one giving file names, or in



The local search tool is no privacy threat, but it falls short in several ways

the case of e-mail, the subject and the sender, and another giving at least a partial view of the contents. Google gives you a thumbnail image of some Web pages, but it is too small to be of much use.

Google Desktop Search is bound to improve before it is officially released. For example, the list of searchable file types will be expanded. And the restriction that keeps more than one person from running searches—on a Windows XP or 2000 computer—will go away.

Despite critics' warnings, Google users need not worry that their desktop queries will be shared with the world, saved in a giant Google database, or used to unleash a flood of ads on their PCs. When you use the Desktop Search form, no keywords leave your computer. If you use the regular Google Web search form,

you'll get results from both the Web and your PC, and your search terms will obviously be sent to Google. The company insists that the information is not saved and the only ads sent are the sort that accompany every Google search.

Your decision to use Google Desktop Search should be based on whether it meets your needs, not scare talk. If you mostly search for Web pages and use a Web e-mail program, it might be just the ticket. But if, like many business users, you need to search a variety of document types and use a mail program such as Microsoft Outlook, you'll probably be happier with a different search tool.

E-mail: techandyou@businessweek.com

BusinessWeek online For a discussion of the privacy implications of desktop search, go to www.businessweek.com/magazine/extra.htm

(TOP) PHOTOGRAPH BY ETHAN HILL; ILLUSTRATION BY MICHAEL WITTE