PART I

Starting a Web Hosting Business

CHAPTER 1

The Changing World of Web Hosting

If we did all the things we are capable of doing, we would literally astound ourselves.

—Thomas Edison

In the expanding web hosting market, the information technology industry has come far from the early days of simply providing server spacing for customers to view static HTML pages and to access files online. The Internet, now an integral part of conducting business, provides many areas in which web hosts can specialize such as shared hosting, co-location hosting, managed 24/7 enterprise services, e-commerce, or application hosting for businesses.

TRENDS IN WEB HOSTING AND THE INTERNET

Innovative technology continues to be introduced at a record pace as hardware, software, and infrastructure advancements increasingly make the Internet available on portable devices. These include wireless devices such as PDAs and cellular phones, streaming media, e-commerce, Java, and XML applications. Other devices such as web phones, Internet-only terminals, and television-based web appliances are becoming more popular, with web phones leading the way. Custom content delivery through niche portals holds promise, and will continue to drive the wireless market.

For web hosts, a key factor in gaining an early market presence will be harnessing wireless application protocol (WAP) technologies by partnering with key market players and content providers. web hosts are exploring ways to provide value-added service plans to assist businesses with modifying site content to reach the wireless market. By 2003 wireless networks will be greatly enhanced worldwide, which will make web browsing a standard feature on most wireless devices. According to Cahners In-Stat Group (www.instat.com), by 2004 these wireless devices will account for more than 37 million units sold, compared to 2 million in 1999. This technology will be discussed later in this book, beginning in Chapter 4.

As the surge of innovation continues and brick-and-mortar businesses venture onto the Web for the first time, opportunities to capture new markets arise. Existing sites with basic brochure-type

content are seeking to add e-commerce capabilities. According to Forrester Research (www.forrester.com), in a 2000 study of 2,500 global users with web sites, 62 percent chose to outsource their web sites, compared to 44 percent in 1998. Those responding cited key factors such as adding e-commerce capabilities, lack of internal expertise, cost savings, and reliability of host, as shown in Figure 1-1. It is interesting to note, given the breaches of security that have occurred at leading web sites, that security did not appear as a consideration in the 2000 results. In a similar survey completed in 1998, security was cited as a concern by 14 percent of the 22 companies that responded.

Several companies with high-visibility sites were concerned that their hosts would not have the capabilities required to fully support their needs. This presents excellent opportunities for hosts that specialize in applications hosting, managed hosting, and enterprise hosting to pursue market opportunities. In addition to offering IT expertise, consultants, web designers, and IT professionals can partner with web hosts to resell hosting services as a value-added solution for their clients.

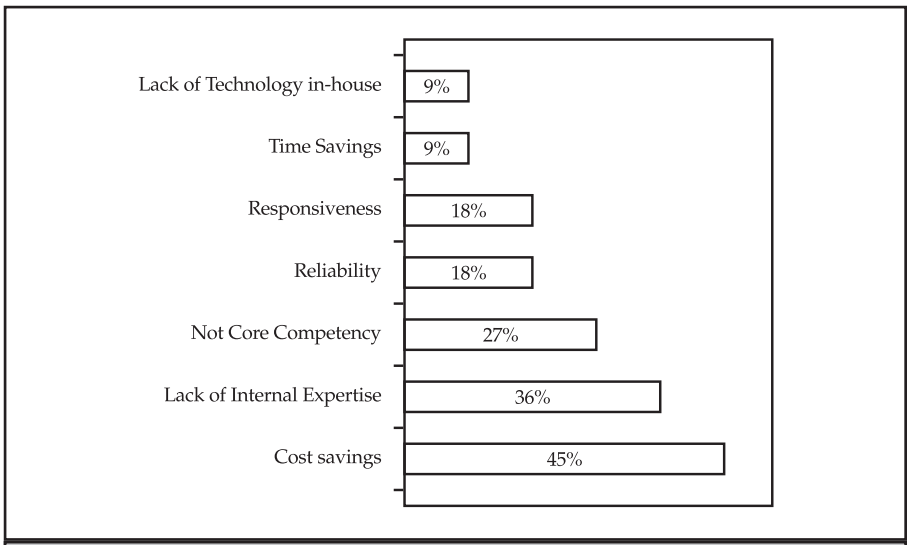

Figure 1-1. Forrester Research, May 2000, based on responses of 11 companies surveyed)

Businesses have revamped their marketing strategies and core business models to be centrally focused on the Web. Business fortunes are being won and lost on the Internet as investors demand that even startup companies show immediate and profitable results. The challenges for businesses will be to base offerings around core business principles, and to outsource functions that are not central to the business (such as web hosting). Within the web hosting industry, firms that continue to base their hosting services on price alone will not survive, as the trend leads toward a commodity market; especially for low-end shared hosting. Instant access to information has accelerated the rate of change, touching all facets of daily life and resulting in increased demand for IT professionals with a wide range of technical skill levels. According to most industry analysts, within the next four years, web hosts will find it more difficult, as they compete to fill network administrator, systems administrator, and application development programmer positions. Web hosts that have the vision to focus on core specialties, partnering where needed, and to be true value-added business consultants instead of order takers will profit immensely in the next phase of the Internet's growth. Some of the value-added web services in hot demand include the following:

- **Performance monitoring** The web hosting service gauges the level of activity on servers, optimizing where needed.
- **Distributed content** Through capacity upon demand, web sites can plan for special one-time events and variable traffic needs. Special online events often require immediate availability of additional bandwidth to accommodate increased visitors . Capacity on demand enables a web host to rev up additional bandwidth as it is needed so the web site is always available as it receives extra traffic.
- **Streaming media services** These services support audio and video, which requires a high level of bandwidth to display properly.
- **Managed hosting of applications and servers** Features include customized server management, monitoring of applications, and network integration.

- **Security** Web hosts can better protect customer data through a combination of hardware and software technology, ongoing monitoring, and security policies.
- **Load balancing** Load balancing distributes processing or applications among multiple computers within a network, which prevents some servers from operating at capacity whereas others are barely used. This is shown in Figure 1-2.

Throughout this book we will be exploring ways that web hosts can provide these and other web services as they move to become business and integration partners with their customers. Within this chapter, we will first take a brief look at how the Internet began, the markets for web hosts and related markets, and how some companies are meeting the needs of clients today.

PIONEERING A MARKET

The first traces of what is now the Internet began with ARPA (Advanced Research Projects Agency), which was part of the U.S. Department of Defense (DoD) in 1969. Early research into network computing, funded through the DoD, led to the creation of many new technologies, including telephone lines used for network connectivity. The chief contractor for ARPANET was BBN (Bolt Beranek and Newman, Inc.). BBN was the creator of many innovative Internet technologies that exist today, including the router, the modem, the @ sign in e-mail, and distributed packet switching. BBN also was instrumental in the creation of other networks including BBN Planet, the first Internet Service Provider. BBN was sold to GTE, and now is Genuity.

During the high point of ARPANET's popularity, the NSF (National Science Foundation) developed the NSFNET, which linked four supercomputers at different locations. NSFNET provided regional backbone connectivity both for the public sector and research facilities through these multiple supercomputer centers. This network led to other trial networks, and eventually to ARPANET, which was a compilation of interconnected computer networks. The four original nodes of ARPANET included the University of California Santa Barbara,

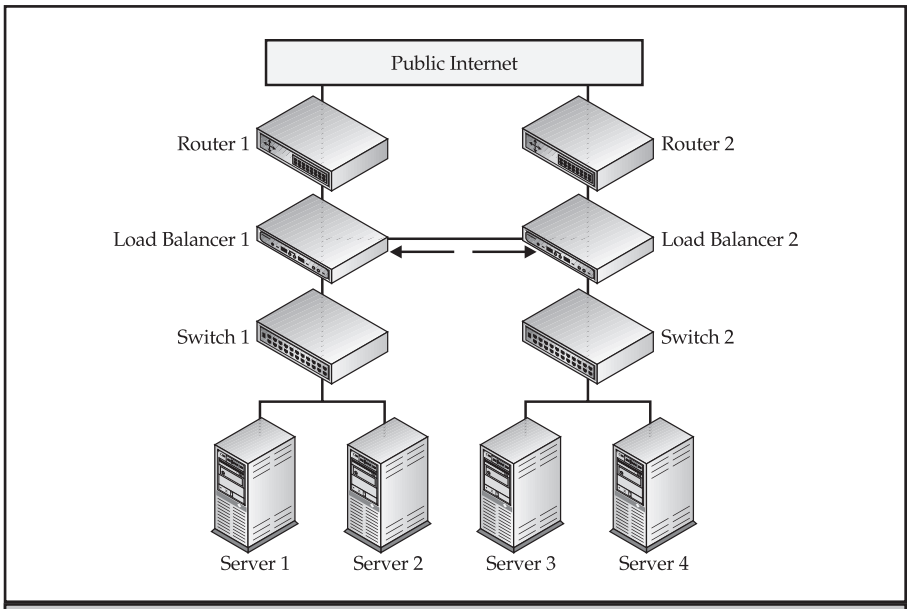

Figure 1-2. Load balancing example (courtesy of Rackspace.com)

UCLA, the University of Utah, and SRI International. ARPANET proved successful in the public sector and was used until 1989.

Issued around 1969, RFCs (Requests for Comments) detailed networking protocols and communications notes that later emerged into Internet standards. In 1988 T1 links (at 1.544 Mbps) were introduced, greatly enhancing speed over previous 56Kbps linkages. By 1991 the NSFNET become available to the private sector and was enhanced to T3 links (at 45Mbps). During this time other networks were forming and needed to mutually connect with each other; ISPs (Internet Service Providers) emerged to provide this connectivity. The very first web browser, shown in Figure 1-3, was designed by Tim Berners-Lee, a CERN scientist, in 1989. The browser would be called *World Wide Web,* which soon would mean so much more.

By 1993 personal web sites appeared with some semblance of graphical content, which look like the Stone Age compared to today. During the same year search engines such as Altavista, Inktomi, Yahoo!, WebCrawler, and Excite emerged; these still are the predominate

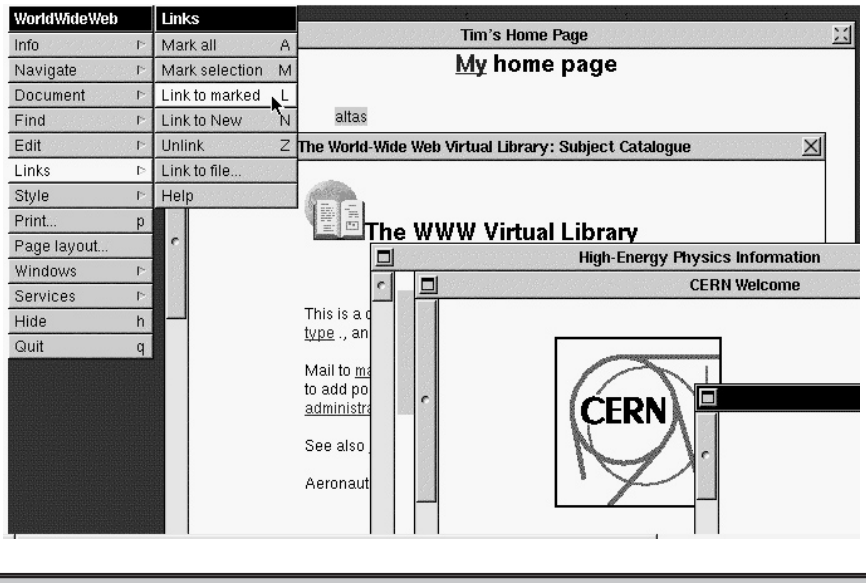

Figure 1-3. Example of the first World Wide Web browser

vehicles for Internet research today. This made it necessary for web sites to have different types of content to generate the most hits by the search engines. Bulletin board services such as those offered by Prodigy and America Online were introduced, followed by the offering of public Internet access beginning in 1995 with the introduction of the web browser. Once it introduced Internet Explorer Microsoft took the lead in the browser market.

The National Science Foundation Network (NSFNET) commissioned Sprint to provide a connectivity framework for the public and private sectors throughout the world. Before NSFNET's discontinuation in 1995, several commercial Internet carriers, along with Sprint, were awarded status as NAPs (Network Access Points) to provide Internet connectivity through regional exchange backbone locations. The NAPs were Ameritech (Chicago, Illinois), PacBell (San Francisco, California), MFS Datanet (Washington, D.C.), and Sprint (Pennsauken, New Jersey). MFS Datanet, now commonly referred to as MAE-East, is located in Tyson's Corner, Virginia. MAE-EAST

makes use of a gigaswitch and has more than 33 connections, with funding provided by U.S. federal agencies. MAE-WEST also is operated by MFS and by NASA Ames.

The standard method for connectivity that emerged was for customers to gain access through small Internet service provider POPs (point of presence), which are dial-up connections to the high-speed carrier backbones, with storage made available for static pages to display information. These early efforts were mostly text based and primitive in appearance when compared with today's web sites. There now are several major carriers throughout the world that have the bandwidth and infrastructure to provide backbone connectivity points for ISPs. Some of these carriers include Sprint, Qwest, UUNET, AT&T, GTE, WorldCom, and Cable & Wireless. Many NAPs utilize sophisticated peering methods that enhance speeds of interconnectivity through shared routing tables. Many smaller web hosting firms are using partner arrangements with ISPs for peering without using a major carrier.

The National Science Foundation also awarded projects that led to broad infrastructure developments. One such project, the InterNIC (Internet Network Information Center), was entrusted with domain name registration services and assigning domains (using .com, .net, .edu, .org, .mil, and .gov) with a corresponding Internet Protocol numerical address. The InterNIC project originally was overseen by Network Solutions, AT&T, and General Atomics. Through the InterNIC domain registration process, applicants completed templates for each domain, which had to include at least two active, independent DNS (Domain Name System servers) as part of the submittal process.

In June 1999 the U.S. government split up the InterNIC and allowed other entities to handle domain name registrations, although the InterNIC (now referred to as Network Solutions) remains a leading domain registration service. Other online registration services now compete in this market, including Register.com and OpenSRS.org. Domain registration services are covered in greater detail in Chapter 8. Nonprofit corporation ICANN (Internet Corporation for Assigned Names and Numbers) has been designated by the U.S. government to maintain the Internet's domain name system. ICANN (http://www.icann.org) also accredits domain registrars, which can register top-level domain names either directly or by reseller arrangements.

The heightened traffic demands for more bandwidth continue to escalate infrastructure costs for main carriers and providers of Internet access as more cross-connects, SONET multiplexers, and other equipment are purchased. New optical switching technology, now being fully utilized by carriers, promises to substantially reduce new equipment outlays, and greatly reduce personnel and operating costs for carriers. This will provide higher bandwidth services for web hosts and rapid bandwidth on demand will be available, providing opportunities for mutual partnerships. This new technology is discussed further in Chapter 16.

THE GROWING WEB HOSTING MARKET

The overall number of ISPs increased to 7,785 in 2000 from 5,775 in 1999, according to Cahners In-Stat Group—a 35 percent increase within one year. Revenues are anticipated to be $32.5 billion in 2000 compared to $23.7 billion in 1999, a 37 percent increase. Projected out to the year 2004, the market research firm anticipates that the combined annual growth rate for ISP revenues will be 25.7 percent. Within the broadband market, which primarily includes cable and DSL modem access, revenue is anticipated to grow 77 percent by 2004. By 2004 the revenues from broadband access are expected to increase to $13.3 billion from the current level of $1 billion.

There are an estimated 10,000 companies providing a wide range of web hosting services. The types of web hosting services continue to expand to meet the needs of business and consumer markets. In Chapter 2, we will explore the main categories of web hosts in detail. As shown in Figure 1-4, the U.S. market is expected to grow from $1.4 billion in 1999 to $10.6 billion by 2002. Analysts estimate that by 2004 it will reach $19.8 billion.

ISPs are defined as either owners and maintainers of their own networks or as resellers and consultants that resell ISP services. ISPs primarily provide a range of Internet connectivity services. As with web hosting, the market for ISPs continues to gravitate toward the business market. For the year 2001 only an 8 percent annual growth rate is anticipated within the consumer market for ISPs, a 50 percent reduction from previous years. Because ISPs are focused on providing

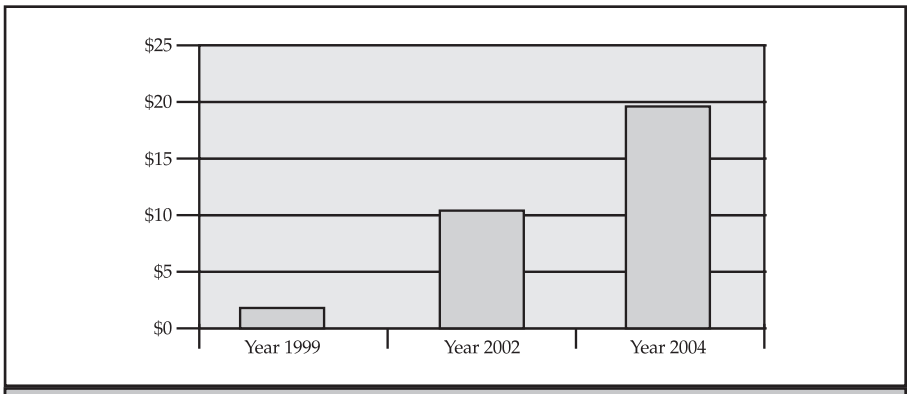

Figure 1-4. Estimated growth of U.S. web hosting market in billions of dollars

Internet connectivity services, they are increasingly looking for ways to provide value-added web hosting services that go beyond entry-level shared hosting plans. Some are gaining access to more advanced hosting specialties, such as managed services and application hosting, through partnerships with web hosts. The most common method for larger ISPs has been acquisitions and mergers with web hosting companies that already have the technical expertise in house.

NOTE: Nearly 30 percent of revenues generated by ISPs in the business market are from web hosting.

Internet usage worldwide continues to grow as it expands into new markets. As shown in Figure 1-5, it is estimated to reach 377 million users by 2003, from 250 million in 2000. The biggest percentage increase (in 1999) was in South America, with a 165 percent increase. By 2005 it is estimated that 68 percent of all Internet users will be logging on from outside the U.S. and Canada (this was already almost 50 percent in 1999) and 75 percent of the U.S. population will be online, as shown in Figure 1-6. With the increase of online users, web hosts seeking to attract global markets must consider including multiple language translation in their web sites and services.

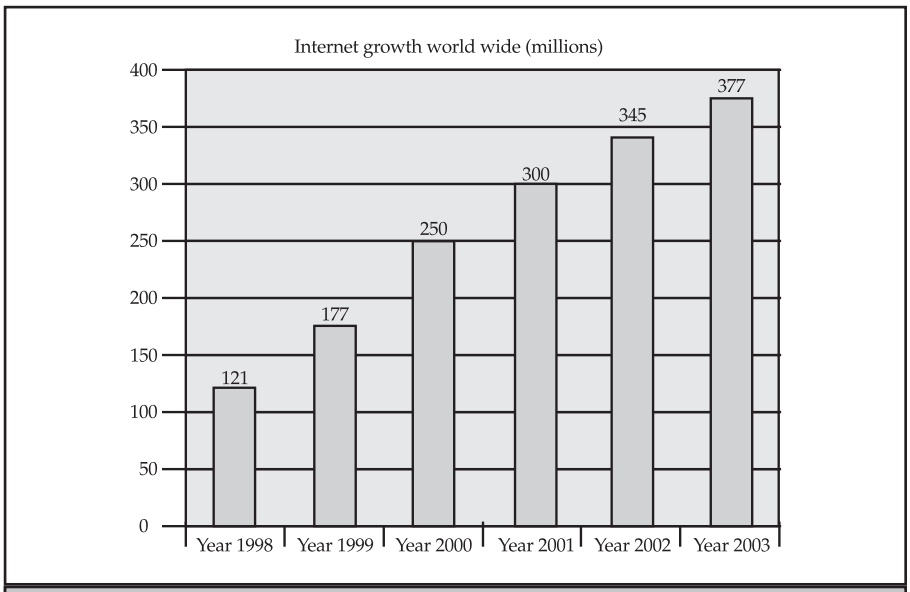

Figure 1-5. Internet growth worldwide in millions of users

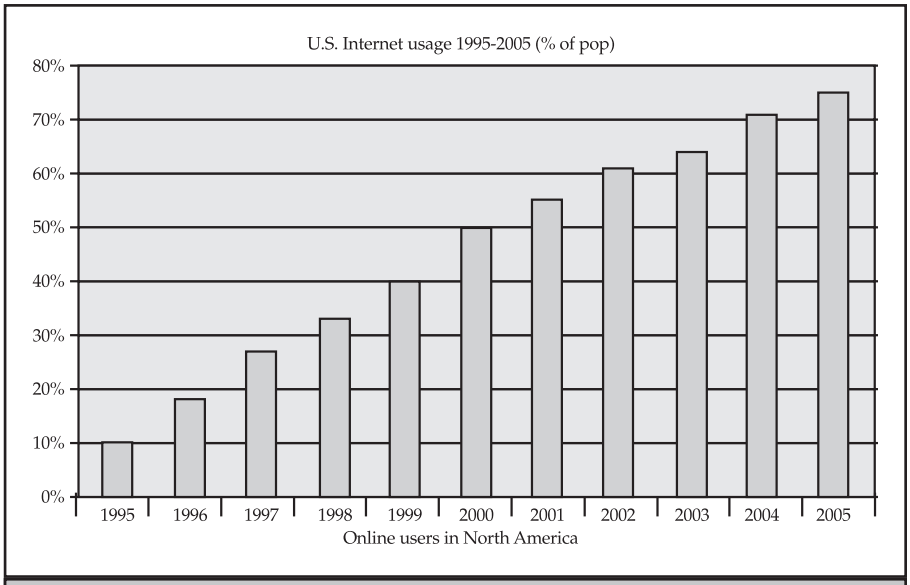

Figure 1-6. U.S. Internet usage 1995–2005 by percentage of population

Source for Figures 1-6 is CommerceNet (**http://www.commerce.net**)

Mergers abound throughout the Internet industry as companies seek to grab market share and combine services under one name. As one example, EarthLink merged with Mindspring to form one of the largest ISPs after America Online, with annual revenues of $914 million (during 1999) and 4.3 million subscribers. America Online remains by far the leading ISP, with annual revenues of $6.9 billion (during 1999), more than 25 million subscribers, and a 14.5 percent share of the ISP market. AOL recently merged with Time Warner in a $30 billion all-stock arrangement to take advantage of each company's many market properties, and online and offline resources. This trend will continue; especially for web hosts as they attempt to increase the range of web services they offer.

APPLICATION SERVICE PROVIDERS

ASPs (application service providers), provide managed hosting of specific application services, which enables businesses to use enterprise software securely through the Internet on an agreed-upon monthly pricing plan. The software that is hosted by the ASP can be a word processing, groupware, productivity, accounting, or other business application, the same as a business would normally use, except that it is online through a web browser. A business receives several benefits from ASPs, including access to the latest software, without the obligation of recurring licensing, upgrade, or IT support and management costs for in-house handling. The ASP is responsible for all of the functions related to the application. This type of web hosting niche has not been clearly understood by the business market, even though substantial cost benefits can be realized. Some of the questions that companies or existing web hosts will want to consider before pursuing this market include the following:

- What range of applications will be offered?
- What level of customization will be provided?
- What will be the setup and monthly service fees charged?
- What will be the network infrastructure or data center facilities?

- What will be the customer support and security policies?
- How will security be implemented?

The majority of ASPs do not have their own data center facilities to securely house web servers. ASPs must develop close partnerships with ISPs and carriers that have data centers, or build their own (an expensive proposition) to provide a guarantee of service, which is built into most ASP agreements and defined as a service level agreement. Additionally, ISPs have a large customer base where co-marketing campaigns could focus on specific application needs that partner ASPs fulfill. ISPs typically lack the high-end application specialties that ASPs have. These types of partnering opportunities are discussed in further detail in Chapter 14. To capture a share of the ASP market ISPs must ramp up their data centers to handle the dynamic traffic demands of businesses in a physically secure 24/7 environment. Internal applications expertise also will be a requisite as businesses look to realize the substantial savings from outsourcing their in-house applications to ASPs.

According to Cahners In-Stat Group, by 2004 more than 3 million small companies will be using ASPs, likely subscribing to them through an Internet carrier or broadband connectivity provider. Internet carriers and providers will benefit by having a specialized range of services to offer. Depending on the agreements, a possible advantage for ASPs could be in having ready access to an Internet carrier or provider's database to conduct coordinated sales campaigns. Many companies that decide to pursue the ASP market select applications that the company is already experienced in, such as e-mail, groupware, or office applications, instead of supporting intensive applications that require a high level of specialized IT personnel involvement. ASPs also are evolving toward providing a multitude of services through the wireless market, such as with Qwest Cyber.Solutions.

As with the overall market, ASP expertise is increasingly acquired through mergers. During 2000 the telecommunications giant WorldCom purchased Internet service provider Intermedia Communications to gain access to Digex Inc. (which is a subsidiary). Digex specializes in ASP and managed web hosting services. Digex will benefit from the merger by having access to a major Internet backbone provider.

Other major backbone carriers that have entered the ASP market include Qwest, which has data centers and provides a range of ASP services through its subsidiary Qwest Cyber.Solutions.

Within the ASP market, the applications being hosted are being led by e-mail services, messaging, and groupware (60 percent), as shown in Figure 1-7. These applications are obvious, given the widespread usage of e-mail as a standard medium for communications. Many ASPs get started by providing services within these areas. Other applications noted here include e-commerce (37 percent), accounting (37 percent), training (36 percent), and customer service (30 percent) according to Zona Research.

For many businesses e-commerce is a critical path toward realizing the potential profitability of the Internet. Online business accounts for 30 percent of all business revenues. By 2003 more than 49 percent of small businesses are predicted to have e-commerce capability. As businesses apply the Internet to handle more of their internal and external operations, the shift to ASPs will escalate (see Figure 1-8).

As web hosts are required to ramp up sites quickly and provide more sophisticated products, many are partnering with managed-

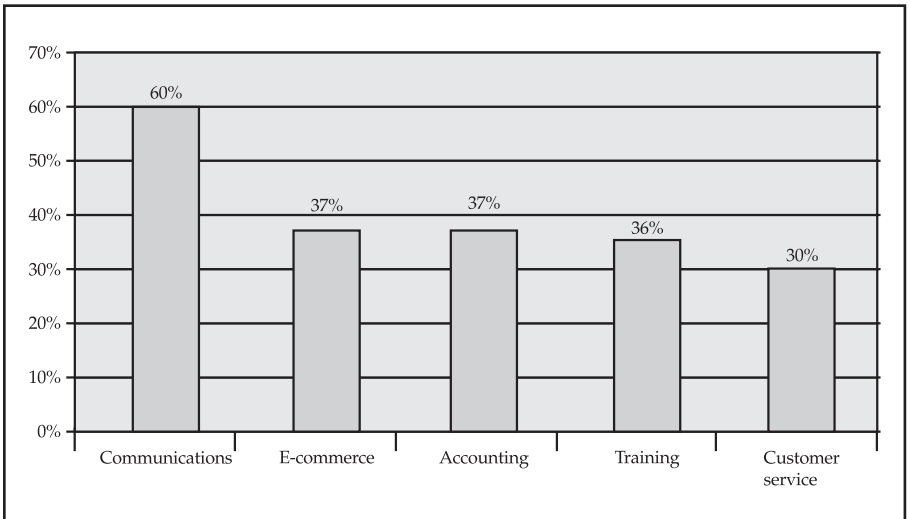

Figure 1-7. Leading applications in the ASP market

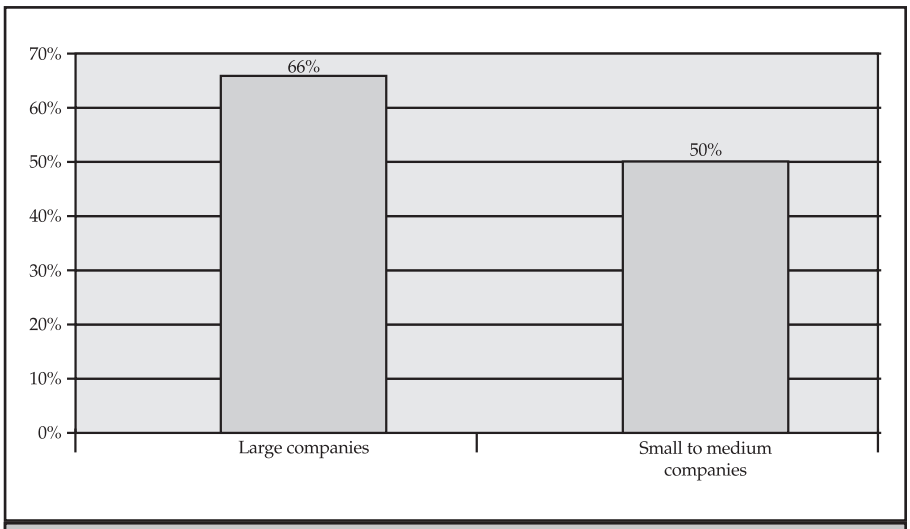

Figure 1-8. Anticipated use of ASPs by 2004

service hosts (such as SiteRock, Loudcloud, and Luminate), which enable services such as comprehensive 24/7 real-time monitoring, site security, and redundancy. According to the Intermedia Group (www.imgevents.com), Loudcloud customers save an average 87.3 percent by outsourcing IT services. The In-Stat Group anticipates that Internet providers will focus on becoming "business service providers." This is the natural progression of a provider offering enhanced services beyond simple connectivity, through partnerships with specialized application and managed hosting firms.

As spending for web-related services surpasses hardware purchases, traditional computer manufacturers, including Dell, Micron, Compaq, and IBM also are entering the web hosting market. Dell has partnered with Interliant to provide web hosting services. In 2000 IBM leased co-location space from AT&T and Equinix data centers to provide web services. IBM also is building centers in partnership with Internet backbone provider Qwest, in return for 25 percent usage of spacing in each facility. In meeting the high-end needs for fully scalable and redundant hosting, companies such as Exodus, Genuity, and Verio are providing managed hosting services to ASPs and corporations within highly secure data centers throughout the world. Services

include 24/7 technical support, extensive network monitoring, and hardware scalability. These types of hosting services will be discussed in further detail in Chapter 15.

For the web host, the key to profitability will be how well they can consult with businesses to help them to reach their business goals—especially small businesses. According to Director of Markets & Computing for Cahners In-Stat Group Kneko Burney, "These small companies are looking for a virtual partner that can not only give them the tools they need to expand online, but more importantly give them the guidance to do it successfully. This means it's not just about eBusiness services; it's about building relationships with your small business customers and offering services flexible enough to accommodate their diverse needs."

SUMMARY

As has been discussed, there are many factors that contribute to a high demand for web hosting. The Internet is providing sweeping changes to businesses and consumers, providing refreshing opportunities, innovations, and challenges to IT professionals. As the Internet continues to expand, new opportunities emerge for Internet businesses. As you will see in the next chapter, there are many categories of hosting plans that are providing added value and filling business niches through specialization or strategic partnering outside the organization to gain market advantages. In many cases a web host will provide a combination of these services, either in-house or through partnerships. The plans discussed in the next chapter include shared, dedicated, co-location, reseller, template, specialized platform, application, and high scalability hosting.