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ADVERTISING ON THE INTERNET

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SECOND EDITION

ADVERTISING on the internet

ROBBIN ZEFF

BRAD ARONSON

Featuring a special section on "How to Advertise for Free or Almost Free," by Web promotion expert Eric Ward of NetPOST™

Advertising on the Internet

Second Edition

Robbin Zeff
Brad Aronson

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CHAPTER 4

The Art and Science of Web Measurement

The growth of the Web advertising industry is closely tied to the development of tools for measuring audience size, behavior, and demographics. In traditional advertising, the measurement unit used to determine the cost of reaching an audience is CPM (cost per thousand), based on circulation for print media and projected viewing audience for television. With the Web, the number of times an ad is delivered and clicked is not projected—it is fairly accurately measured. The Web can measure audience behavior by counting the number of times an advertisement is seen, as well as the number of times an ad is clicked.

This chapter will cover the cornerstone of Web advertising, its measurability: what can be measured, how this measurement is conducted, and the products and services available for measurement, as well as the obstacles to effective measurement.

A common myth about the Web is that everything is measurable. As you'll learn in this chapter, the Web is far from the perfectly measurable medium people claim, but it is certainly more accurate than all other media.

Building Blocks

The foundation of Web measurement comes from the information captured by the computer housing a Web site—the server. When you visit a Web site, your browser has a "conversation" with the site's server, and much of that conversation is recorded by the server in a log file. Your browser first requests the HTML page from the server. The code in the HTML page directs the browser as to which graphics it should also request, and from where those graphics should be received. The server records the following user information from each request:

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- Date and time of the request.
- What was requested: a specific GIF, HTML page, etc.
- IP number of the computer making the request.
- Browser used by the surfer: Netscape 4, Internet Explorer 3.0, etc.
- Computer platform used by the surfer: Macintosh, PC, etc.
- Referring URL: If you clicked on a hyperlink to get to the Web site, the site from which you came will be recorded in the log files.

A log file records one line for every request. So, if you visit a home page with five graphics, there will be six requests recorded in the log file—one request for the HTML page and one for each of the graphics. For each request the log file records the IP number, specific item requested, browser used, time and date of request, and so on. As you can imagine, since all of this information is recorded for every request, log files become quite large. A busy Web site can generate many megabytes of data in the daily log file alone.

A lot of very useful information is housed within Web site log files. Figure 4.1 shows a raw log file, which should give you an idea of the difficulty of gleaning useful infor-

What Is an IP Number?

An IP (Internet Protocol) address is a numeric code that uniquely identifies a particular computer on the Internet. An IP address is static. An IP number, on the other hand, can be dynamically generated for an Internet user by an ISP (Internet service provider). Every surfer on the Internet has an IP number that is recorded in the log files of the sites that surfer visits. Here's how a surfer's IP number is determined:

- **Surfers using an ISP have IP numbers dynamically assigned to them by the ISP each time they dial in. Suppose your ISP is AOL. You dial into AOL to access the Internet. AOL has a batch of IP numbers that are assigned to customers as they dial into AOL. Now when you surf the Web, you are identified in log files by the IP number you were just assigned. Every time you dial into AOL, you can be assigned a different IP number from AOL's batch of numbers.**
- **If the surfer is accessing the Internet through a direct connection, the surfer's computer will have an IP address. The IP address is static; every time that computer is used to access the Internet, the same IP address is recorded in log files.**
- **If the surfer is accessing the Internet through a server at the office (which is how most business users access the Internet), the office server (like AOL) will dynamically assign an IP number to the office worker. It is important to note that folks accessing the Net through a company connection or an ISP may be going through a proxy server. Depending on how the proxy server is set up, it can assign each user an IP number, and/or all users can be given the same IP.**

```
marco2.riccione.net - - [01/Feb/1999:04:54:51 -0500] "GET /advertising/nevadbook.jpg HTTP/1.0" 200
marco2.riccione.net - - [01/Feb/1999:04:54:49 -0500] "GET /advertising/resources.html HTTP/1.0" 20
sdn-ar-002varestP286.dialsprint.net - - [01/Feb/1999:05:03:41 -0500] "GET / HTTP/1.1" 200 - "-" "M
sdn-ar-002varestP286.dialsprint.net - - [01/Feb/1999:05:03:44 -0500] "GET /finally.gif HTTP/1.1" 3
sdn-ar-002varestP286.dialsprint.net - - [01/Feb/1999:05:03:45 -0500] "GET /clearpixel.gif HTTP/1.1
sdn-ar-002varestP286.dialsprint.net - - [01/Feb/1999:05:03:45 -0500] "GET /Home_GreenButtonOn.gif
sdn-ar-002varestP286.dialsprint.net - - [01/Feb/1999:05:03:45 -0500] "GET /services_greenbutton.gi
sdn-ar-002varestP286.dialsprint.net - - [01/Feb/1999:05:03:45 -0500] "GET /events_greenbutton.gif
sdn-ar-002varestP286.dialsprint.net - - [01/Feb/1999:05:03:45 -0500] "GET /Publications_GreenButto
sdn-ar-002varestP286.dialsprint.net - - [01/Feb/1999:05:03:45 -0500] "GET /Classes_GreenButton.gif
sdn-ar-002varestP286.dialsprint.net - - [01/Feb/1999:05:03:46 -0500] "GET /About_us_greenbutton.gi
sdn-ar-002varestP286.dialsprint.net - - [01/Feb/1999:05:03:46 -0500] "GET /Contact_GreenButton.gif
sdn-ar-002varestP286.dialsprint.net - - [01/Feb/1999:05:03:46 -0500] "GET /zdbbu.gif HTTP/1.1" 304
sdn-ar-002varestP286.dialsprint.net - - [01/Feb/1999:05:03:46 -0500] "GET /button.gif HTTP/1.1" 30
sdn-ar-002varestP286.dialsprint.net - - [01/Feb/1999:05:03:46 -0500] "GET /a_bottomGreenLine.gif H
sdn-ar-002varestP286.dialsprint.net - - [01/Feb/1999:05:04:12 -0500] "GET /wiley HTTP/1.1" 301 242
sdn-ar-002varestP286.dialsprint.net - - [01/Feb/1999:05:04:13 -0500] "GET /wiley/ HTTP/1.1" 200 59
sdn-ar-002varestP286.dialsprint.net - - [01/Feb/1999:05:04:14 -0500] "GET /icons/blank.gif HTTP/1.
sdn-ar-002varestP286.dialsprint.net - - [01/Feb/1999:05:04:14 -0500] "GET /icons/back.gif HTTP/1.1
sdn-ar-002varestP286.dialsprint.net - - [01/Feb/1999:05:04:14 -0500] "GET /icons/dir.gif HTTP/1.1
sdn-ar-002varestP286.dialsprint.net - - [01/Feb/1999:05:04:24 -0500] "GET /wiley/chap_2_graphics/
sdn-ar-002varestP286.dialsprint.net - - [01/Feb/1999:05:04:25 -0500] "GET /icons/blank.gif HTTP/1.
sdn-ar-002varestP286.dialsprint.net - - [01/Feb/1999:05:04:25 -0500] "GET /icons/back.gif HTTP/1.1
sdn-ar-002varestP286.dialsprint.net - - [01/Feb/1999:05:04:25 -0500] "GET /icons/image2.gif HTTP/1
```

Figure 4.1 The contents of a log file.

mation by just looking through the unformatted text. Fortunately, special analysis tools will crunch all of this data to produce Web site activity reports.

Key Terminology in Web Measurement

Before we dive into the different types of log analysis reports and how they can help you, we will review some of the common terms that you'll see in Web site analysis reports. This new vocabulary blends technology and traditional advertising terms. The following are some of the key terms that will serve as the foundation for understanding the language of Web measurement. For a comprehensive assessment of the concepts and metrics in Web ad measurement, see this book's companion Web site, which includes a reprinting of the Internet Advertising Bureau's "Metrics and Measurement" white paper compiled by the Media Measurement Task Force. This white paper is a fantastic resource when it comes to explaining the intricacies and problems of Internet advertising measurement and reporting.

Ad request. The request of an ad from the server. This happens when someone visits a Web page that has an advertisement and the surfer's browser asks the server to deliver the ad. For a variety of reasons, the ad may not always be successfully served.

Ad view. Technically, the delivery of an ad by the server.

Cache (pronounced *cash*). The temporary storing of a Web page on a user's computer following the page downloading. This speeds up downloading on repeated use, so that the next time you request that page, it is accessed from the cache on your computer instead of from the Web server. Proxy servers and ISPs also cache pages to make access easier for their customers, and to reduce their bandwidth expenses (they don't have to use extra bandwidth every time a page is requested if they have cached that page).

Click rate. Clicks divided by ad requests.

Click-throughs. The number of times an ad is clicked.

Domain name. A naming system that translates the IP number given to computers on the Internet into user-friendly addresses. Domain names are read from left to right, going from specific to general. For example, the domain name for Yahoo! is www.yahoo.com, of which *www* indicates the type of server (World Wide Web), *yahoo* is the general domain name for Yahoo!, and *com* is the top-level domain (commercial). There are two types of top-level domains: categories (com, edu, org, etc.) and countries (uk-United Kingdom, au-Australia, etc.).

Exposures. The number of times that an advertisement is viewed. "Exposure" is commonly used interchangeably with "impression."

Gross exposures, ad views. These are advertising terms that denote the total number of times an ad is seen.

Hit. A hit is a record of each time a file is requested from a server. If a home page consists of eight graphics, nine hits would be recorded each time the home page is requested (one hit for the HTML text and eight for the graphics). Ten people going to that home page would result in 90 hits. Obviously, hits do not reflect the number of people viewing the site, just the number of files requested. Moreover, an increase in hits may be the result of more material on a site (let's say, a redesign of the home page added three new graphic elements) rather than an increase in users visiting the site. Sites still boast about their number of hits, but this basic unit of measurement isn't something that advertisers regard seriously.

Impressions. The number of times an ad is delivered. When an advertiser buys advertising on a CPM basis, the advertiser is paying for every 1,000 impressions that the site can deliver. Different sites measure an impression differently. Some sites count an impression when an ad is requested; others count an impression only when an ad is fully downloaded; and there are other definitions that are used as well. Savvy advertisers will ask the publishers how they define impressions.

Log file. This records all activity on a server. It records the items that are requested (Web pages, graphics, etc.), at what times they are requested, the browser used by the surfer, and other information. Traffic analysis software crunches log files to produce reports that are easy to understand and use as a basis for measuring Web site success.

Page view. This is commonly referred to as viewing all of the elements that comprise a Web page (graphics, text, etc.). It is generally agreed that if someone looks at a Web page that has frames, a page view will be looking at all of the elements of the page. However, some advertisers will count each frame as a separate page view to boost their level of traffic. Number of page views is a common metric for measuring traffic.

Response rate. The number of times an ad is clicked divided by the number of impressions that ad received.

Visitor. A person who goes to a specific Web site. Sites often define their traffic levels in terms of the number of visitors they've had in a given time period.

Visits. This is another term for comparing and measuring Web site traffic. A visit is activity on a Web site from a specific individual. That activity usually counts as a

new visit if the individual has been away from the Web site for a period of thirty minutes or longer.

What Can Be Learned from Log Analysis

Marketers can use Web site analysis software that they either purchase or custom build, or they can use a third-party service to take all of the data in their log files and produce analysis reports. The reports can be used to understand how customers are using the Web site and to help determine action items for improving the effectiveness of the Web site. Successful Web advertising goes hand in hand with an effective Web site. Below are some of the reports that can come from Web site analysis and how we suggest using those reports to improve your Web site.

Most Frequently Requested Pages

This can indicate a few things. First, you may discover that there are certain placements of navigational links that increase traffic to specific sections of your Web site. For example, we have seen that the highest traffic pages are often the ones that are the first navigational options listed on the home page, or those with buttons that are above the fourteen-inch point on the screen. The fourteen-inch point is the place where even material on the screen is visible even on a fourteen-inch monitor (one of the smaller desk top size monitors in use). Buttons above the 14-inch point have worked better than lower placements on the page, because they are seen by the greatest number of people. As we've seen time and time again in focus groups, Web surfers rarely scroll. Almost all Web users (even those with small monitors) can see everything within the first 14 vertical inches of the screen. This can be likened to putting the most important news above the fold on a newspaper

Assuming that the different sections of your site have equally prominent navigational options, you can use this statistic to learn what is most interesting to your audience. It's probably a good bet that your hot content could generate great ideas for advertisements to which your target audience would respond well. You'll also know what content is worth adding to and where you shouldn't be allocating your resources.

If some pages deep within your site have unusually high traffic, you should consider pushing these pages more towards the front of the site. If they have significant traffic when they're buried, imagine what would happen if they were easier to access.

Number of Visits

This gives you a general idea of your traffic levels; it's a good benchmark of your site's popularity. A visit is most often defined as activity on your Web site from one IP address. If the IP address is not active on your Web site for a period of thirty minutes, then any new activity from that IP address will be counted as a separate visit. Since IP addresses are dynamically assigned by ISPs and proxy servers, and more than one person can have an IP at the same time, activity from one IP can actually be from a variety of folks.

Pages Viewed Per Visit and Length of Visit

This gives you an idea of how interested users are in your content. The number of visitors in a given time period is a good benchmark of overall traffic, but you need to know if you're actually getting good traffic—people who are interested in the content. For example, if 50 percent of your visitors look at one page of your site and then leave, you're in trouble. Watching these numbers will also be a good measure of the effect of new content and redesigns. If redesigns and new content increase the number of pages viewed, then you're succeeding at interesting people in what you're offering.

It's important to note that the length of visit can be deceiving. If your server is slow, visit length may go up because surfers have to wait longer for your content to download. Also, an increased visit length can sometimes be the result of a poor redesign that makes it harder for users to find the content that interests them. Of course, these increases in visit length would be far from an indication that the quality of your site is improving, so it's important to carefully determine why changes in the visit length occur.

Distinction Between First-Time and Repeat Visitors

This measurement is not going to be accurate unless folks have to register at the site or the site employs cookies (both cookies and registration will be discussed later in this chapter).

Most Popular Usage Times

This lets you know at what time a daily update is early enough to reach the most users. It also tells you the best times to perform server maintenance (when you have the least traffic). You can also learn about your consumers. Is your site receiving its heaviest traffic during business hours or on weekends and evenings?

Popular Paths Followed through the Site

This gives you a framework for testing navigational changes that influence how a surfer uses your site. You can answer questions like, "if I move the 'current news' button to the top of the page, will there be a greater number of people clicking that option?" This is great for determining what navigational options and copy will influence the path users take through the site.

Click-through Rate

This provides you with data to give to advertisers. Although the click-through rate isn't as important as actually reaching the right audience, a majority of advertisers use click-through rate to measure success, so this is an important measurement. You'll be able to see how different placements and navigational changes affect your click-through rate. You'll also notice what types of ads work best for your audience.

Browser Used

This will help you to determine what design elements are appropriate. If you want to use Java, you want to make sure that a majority of your Web users are using browsers that work well with Java. You should test-view your Web site with the various browsers that your consumers are using.

Referring URL

This tells you where your users are coming from, which is a good way to track the effectiveness of link trades and advertising. High referrers that are not from advertising are usually sites worth investigating for advertising opportunities. Many marketers think it isn't worthwhile to advertise on sites that deliver them a lot of traffic, because they're already getting that traffic for free. But we've seen that the increase in response from actual advertising usually makes the ad buy well worth the investment.

Domain and Host of the User

Log analysis software can use the IP address that is recorded in your log files to figure out the actual domain and host name. In the case of AOL, the name is www.aol.com. An IP address coming from a direct connection at IBM would be www.ibm.com.

Marketers can obtain good information from this data. For example, for one of our U.S.-based clients we found high amounts of traffic from countries outside the United States. In particular we noticed a lot of traffic from Brazil (.br). To accommodate the Brazilian customers, we recommended modifying the order page to make it easier for taking Brazilian orders. The orders from Brazil rolled in, and the client was glad we had uncovered this traffic pattern from their log files.

User Computer Platform

This provides valuable information for computer or software vendors and manufacturers.

User Entrance Page

This lets you know which pages need to serve a home page function and offer the look and feel of a "welcome." Users will not always enter through your home page, and knowing where they do enter will alert you to design those pages in a manner that draws users deeper into the site.

User Exit Page

It's important to know the last page your users view before leaving. These are pages that you want to redesign to keep users from leaving.

Web Measurement Tools

As we've mentioned, the information contained in log files is presented in a raw format. The ability to organize this information into actionable reports is a function of a variety of software solutions. There are three options available. The first is to build the measurement software yourself. This is what many of the early sites had to do before there were commercial products available. Today, the products are so good that this is relatively uncommon. The second option is to purchase the software and manage the process in-house. And the third option is to outsource the entire process. We will discuss the in-house management and outsourcing options below.

Third-Party Outsourcing

Web publishers with a bank of servers or with servers in different geographic locations can save considerable time and effort by hiring a firm to analyze all of their Web site usage data. Such vendors collect and process the data from a company's server logs to generate analysis reports off-site. The leading company for outsourcing Web measurement is I/PRO (www.ipro.com, see Figure 4.2). Using a third party for the time-consuming usage analysis leaves your company more time to focus on other aspects of the business. And, in addition to traffic reports for your own site, I/PRO provides reports on how your traffic growth and patterns compare to the Internet at large. This is useful for determining if your site's growth is faster or slower than the growth of the Internet as a whole. Moreover, many advertisers like the appearance of objectivity that comes from outsourcing to a third party. Since log files are just text file, one could easily tamper with the file. Having a third party handle the analysis places an extra layer between the publisher and the report.

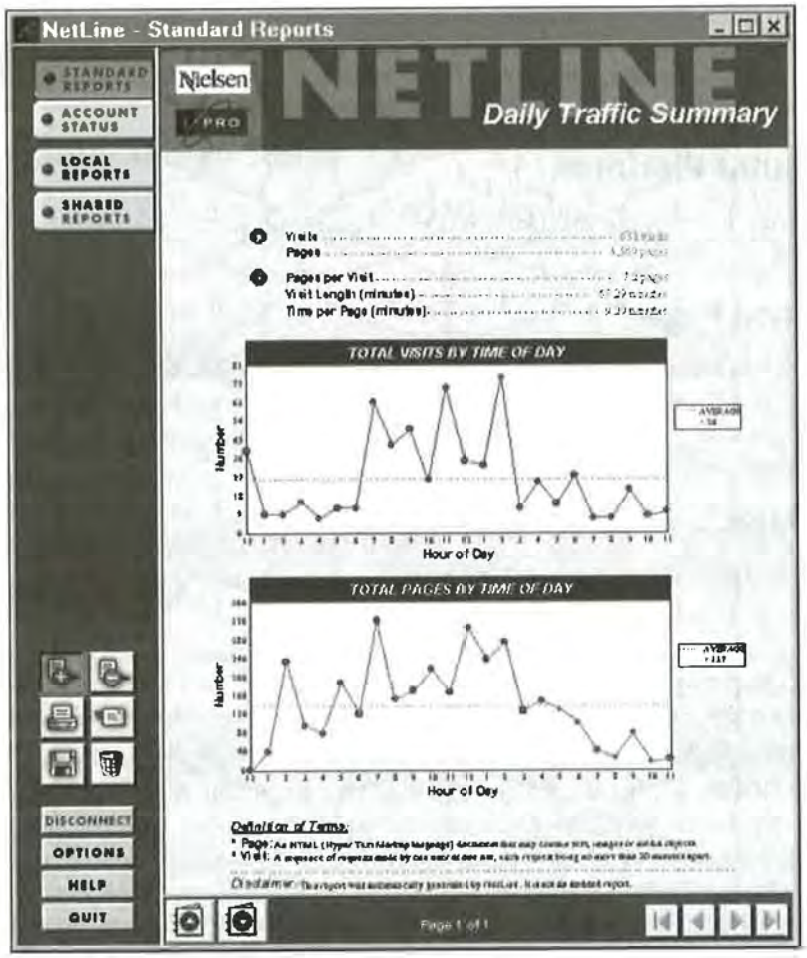

Figure 4.2 I/PRO NetLine Daily Traffic Report.

The disadvantages of using such a service are that Web publishers lose control of their usage information. When using a vendor for measurement, a publisher contracts for services on a monthly basis. Payment models vary based on size and frequency of reporting requirements.

In-House Management of Software

Publishers can also purchase their own tracking software. Table 4.1 provides a list of leading Web measurement software solutions. Almost all of these companies will let you download a free trial version of the software from their Web sites, which is a great way to figure out which software will work best for you. Some of these products can service the smallest sites, and others can provide the horsepower to measure traffic on large commercial ventures. Off-the-shelf versions of the software can cost as little as $300. For example, WebTrends Log Analyzer is a popular choice for small businesses on a limited budget (see Figure 4.3). WebTrends Log Analyzer is easy to operate and does not require that the software reside on the server. Instead, the log file is downloaded to the user's computer and the reports are generated there.

Table 4.1 Web Measurement Software

COMPANY	PRODUCT LINE	SAMPLE CLIENTS
Marketwave (www.marketwave.com)	Hit List Pro Hit List Commerce Hit List Enterprise Hit List Live	Microsoft, Intel, IBM, Apple, Disney, AT&T
I/PRO (www.ipro.com)	NetLine	Dell, InfoSeek, NBC, USA Today, Excite, Netscape, Geocities, Kraft
net.Genesis (www.netgenesis.com)	net.Analysis	Lucent, Sun, 3Com, Xerox, Astra
WebTrends (www.webtrends.com)	WebTrends Log Analyzer (popular inexpensive product) WebTrends Enterprise Suite WebTrends Professional Suite WebTrends for Firewalls and VPNs	IBM, Netscape, Microsoft, Compaq, Novell
Andromedia (www.andromedia.com)	Aria 2.5	U.S. Postal Service, 3Com, Sony Online, Earthlink
Accrue Software Inc. (www.accrue.com)	Accrue Insight 2.5	Warner Bros., Hearst New Media, FedEx, Sun, Qualcomm, Motorola

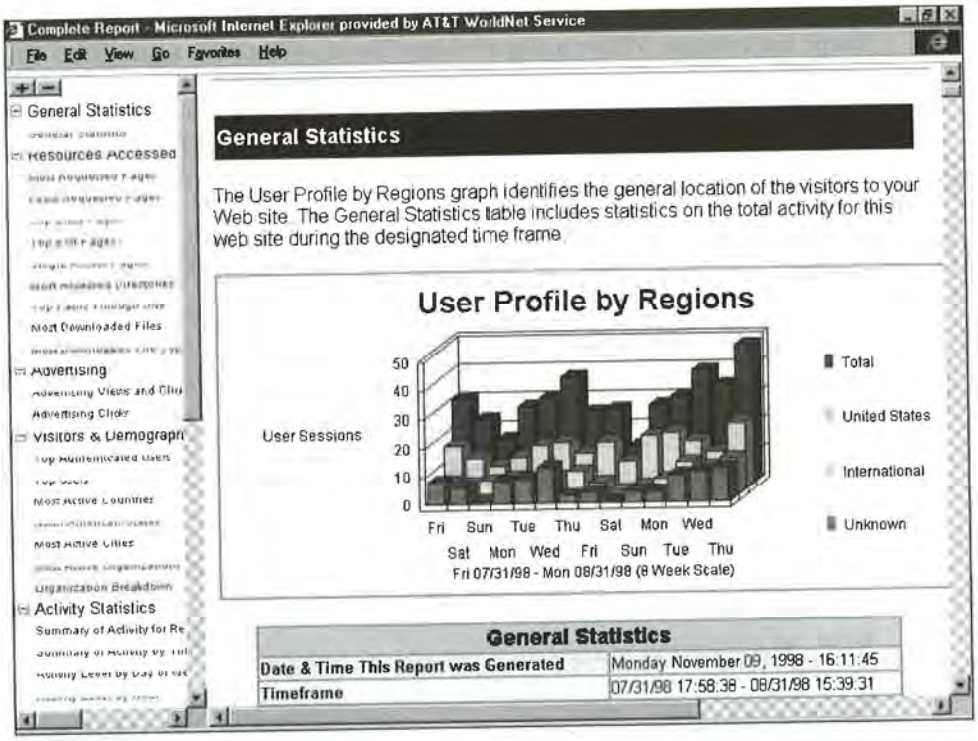

Figure 4.3 WebTrend's report of User Profile by Geographic Location.

For higher traffic sites, the cost can be thousands of dollars. Leaders in this industry include software from Accrue, Andromedia, Marketwave (see Figure 4.4), net.Genesis (see Figure 4.5), and WebTrends.

Significant resources are needed for in-house reporting for Web sites that generate a high volume of traffic, including enough disk space to maintain log files, the computer to run the analysis, and someone to manage the software and the process. The process becomes even more complicated when a Web site is spread over several servers across the country.

The Problems with Web Measurement

As a new and rapidly growing industry, it is only natural that there are some problems with Web measurement. One challenge is a technological hurdle—certain developments in this area can skew the accuracy of numbers. Problems also arise as a result of the lack of standardization in the industry, which can cause measurement numbers to be misunderstood and difficult to compare.

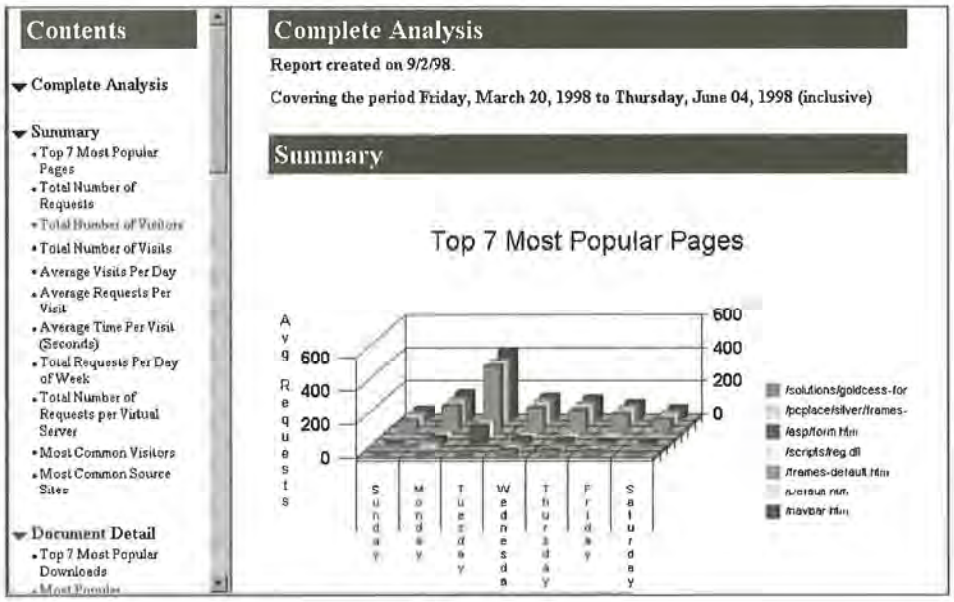

Figure 4.4 Marketwave's Hit List Pro report of most popular pages on a site.

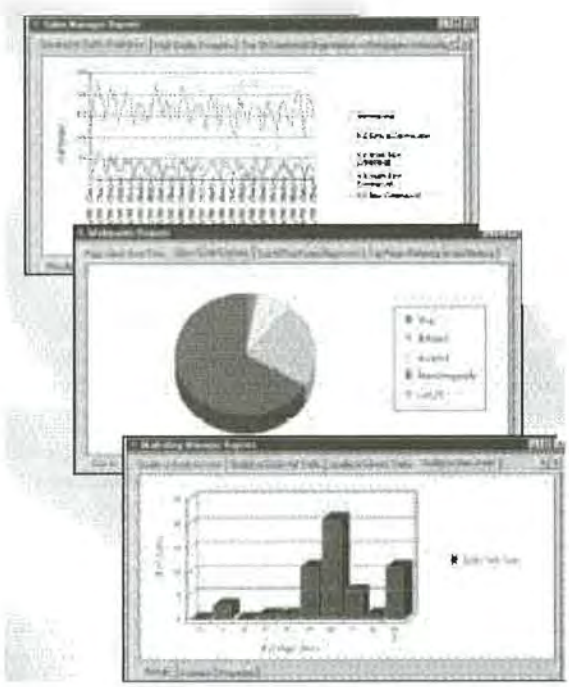

Figure 4.5 net.Genesis's net.Analysis series of Web site usage reports.

Technological Hurdles

Some of the very same technological developments that assist in speeding up Web delivery and facilitating corporate security can skew measurement numbers.

Caching

Caching describes the process of storing Web pages on a hard disk or server to decrease the download time; it eliminates the need to download the same pages each time they are requested. Most browsing software caches recently viewed pages on a user's hard disk, and the larger commercial online services and ISPs, such as AOL, store particularly popular Web pages on their server to expedite the loading of those sites for its members. This also occurs at many large corporations.

Although this process allows users to access information more quickly, publishers cannot track the usage of their Web sites when that usage occurs on someone else's server. For example, thousands of AOL users can surf a Web site, but if it is cached on AOL's servers, the publisher would not know about this activity. This is a problem for two reasons. First, the publisher does not have the correct usage data of the Web site. Second, if the publisher is selling advertising based on impressions, he or she is unable to charge for impressions delivered through cached pages, because no record exists of the impressions in the log files. Note that although impressions aren't recorded, clicks are—when someone clicks a banner it triggers a script that runs through the publisher's server, so sites that are cached will report inflated click-through rates.

The caching server does keep usage records of sites it has cached; this information is recorded in the caching server's log file. Publishers are not against caching, but they would like to have access to the log files of cached sites so they can accurately measure the activity on their Web sites. Help is on the way. There are now software products, such as MatchLogic's TrueCount (www.matchlogic.com), that can measure impressions even when caching occurs.

Proxy Servers and Multiple Users of One Machine

In an effort to maintain security on corporate computer systems, proxy servers act as the gateway from inside a company's firewall to the outside world. Requests for information from the Internet generated inside the firewall must first go to the proxy server, which then gathers the material from the Internet. Proxy servers usually use only one IP address, though larger systems may use several. The result is that a publisher's log file may have identified only one user (the proxy server) when in fact hundreds of computers at a company requested information from the site. This obstacle will be hard to overcome for obvious security reasons.

Another similar situation occurs when several people share a machine. This happens at businesses, academic institutions, and in home environments. For example, at a small company, only one computer may be connected to the Internet, and all employees wishing to surf the Web have to use that machine. This also occurs in an academic

setting where many students may use the same computers in the school's computer lab. And, in the home, every member of a family might use the same PC. The result is that the same IP address will appear several times, giving the impression that one person was returning to the site (or visiting a lot of pages) when in fact it was several. This demonstrates the shortcoming of defining a user by unique IP; the IP identifies the computer, not the user. Also, as we mentioned earlier, proxy servers cache publishers' pages.

Robots

Whereas caching and proxy servers can deflate the true number of requests, robots can inflate the traffic numbers. A robot can be programmed to request a site hundreds or thousands of times a day. A robot may also be a search engine that requests every page of a Web site in order to add those pages to its database. Fortunately, most measurement analysis software is sophisticated enough to identify this measurement aberration for known spiders (the ones used by the major search engines). However, if someone is tracking your site through a spider or an unknown search engine is spidering your site, it can be difficult to detect.

Industry Standards

Without a doubt, one of the growing pains of any industry is that standardization comes on the heels of invention. And in many respects, Web measurement—from terminology to technology—is still developing. With new measurement software coming on the market virtually every month, the lack of industry-wide standards accentuates the confusion. And this confusion extends from terminology to design to pricing structures.

In terms of reporting, standards are needed so advertisers can compare ad performance reports from different publishers. As Richy Glassberg, VP/general manager of Turner Interactive Marketing & Sales and founding member of IAB, puts it, "Standardizing Web measurement in general will make it easier for agencies and clients to buy so that everyone does well."

Any growth industry generates its own terminology, and the Internet is no exception. The Internet has a vocabulary for applications, procedures, and products. Though terms exist to describe the processes and procedures in Web advertising, what is lacking is industry-wide acceptance of the meanings of those terms. Fortunately, organizations like the Internet Advertising Bureau (IAB) (ww.iab.net) have developed standards for Web terminology. Unfortunately, not everyone uses their metrics yet.

One example of a term with different meanings is "impression," which is the basis of a majority of ad buys. The methodology for measuring impressions actually differs from site to site. Some sites count an impression as every time a request is made of the server for an advertisement, whereas others count impressions only if the ad is actually delivered. Also, some sites might have ads rotate while the consumer is on the page. In that case, an impression on one site may be a presence on the page for 10 seconds, whereas on other sites an impression is the ad's presence on the page for the user's entire time spent on that page.

Cookies

A discussion about Web measurement isn't complete without a discussion about cookies. This is a topic about which many people fuss, but with which few are actually familiar.

A cookie is text that can be written to a text file on the user's hard drive when visiting a Web site. In most cases, that text will be a unique string, allowing the person to be identified.

Earlier in this chapter we talked about the discussion that a browser has with the server when someone visits a Web site. That discussion can entail the server asking the browser if the user has a cookie from the Web site. If the user has a cookie, the browser will present that information to the server. (Please note that the server can only access cookies that it has placed; it cannot access cookies from other servers.) If the user doesn't have a cookie, the server will try to place one in the user's cookie file (see Figure 4.6 for a look at an actual cookie file).

For example, a site may assign you a cookie with the text string "123." Every time you access a page on the site, the server can request the cookie it placed and recognize that "123" is back again and track where "123" goes on the site. Maximum information can be gained by using cookies in conjunction with a database. For example, the site that

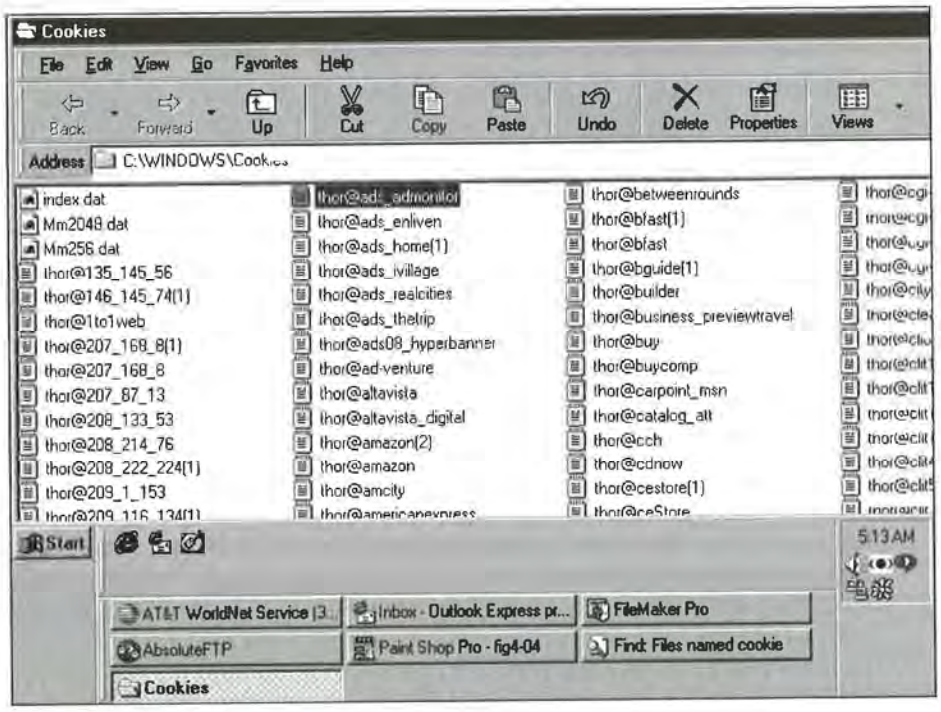

Figure 4.6 A Windows folder of cookie files.

gave you the "123" cookie may have a corresponding "123" record in a database. Every time you do something on the site, your actions can be recorded in the database.

People are often against cookies, because they believe that cookies are an invasion of privacy. In reality, a cookie can't find out anything about you unless you give that information to the Web site. The site knows that "123" is visiting, but not who "123" is or your address unless you provide that information. As we mentioned earlier, there can be a back-end database that is tied to your cookie ID. Then, each time you click on an advertisement or fill out a survey, enter a contest, or otherwise interact with a site, the actions can be recorded in a database as those performed by "123." But unless you fill out a form with your address, the site can't use a cookie to figure out who you are. And, if you fill out a form, the site will know who you are even if it isn't using cookies. The cookie ID tag resides on your hard drive, so the next time you visit the site, that information can be used again.

There are clear benefits for advertisers and publishers to using cookies. For example, if a publisher checks an ID tag, and discovers that according to its database the user visited the auto section of its Web site three times, the publisher can deliver an advertisement to the user for a car manufacturer. To take that scenario a step further, if the user then clicks on the ad and goes to Ford's Web site, Ford can place its own cookie (containing a unique ID) on the user's drive. If Ford enables users to design their dream car on its Web site, and a user chooses to do so, Ford can record that user's

What Determines If a Cookie Is Placed?

Cookies are supported by most browsers, from Netscape 1.1 to more current software. The full specifications on using cookies are provided in a document from Netscape titled "Persistent Client State HTTM Cookies": it is available at www.netscape.com/newsref/std/cookie_spec.html. Although the server can try to set a cookie, there are situations in which the cookie cannot be placed on the user's hard drive.

The latest browsing software can block cookies. The press has been reporting that cookies invade a user's privacy by clandestinely placing a file on the user's hard drive (we disagree, as we discuss in the text). To address the concerns of users in this regard, both Netscape 3.0 and Internet Explorer 3.0 offer users the option to block cookie files. These browsers also have a feature that alerts users when a cookie is being attached.

Users can manually delete cookie files. As noted, cookies are text files that usually reside on the hard drive in the same directory as the Internet software. All you have to do is delete the text within the file, or delete the entire file, and you remove the cookie.

Proxy servers may preclude cookie use. These computers, which serve as gateways between the company's internal network and the Internet, do not always allow cookies to be placed on individual computers.

dream car in a database record that corresponds to the user's cookie. Then, the next time the user visits, the server can recognize the user based on the ID tag in his or her cookie and deliver an advertisement with the user's dream car. The possibilities for such targeting are obvious.

A publisher using cookies can record when a specific unique ID number saw an advertisement, and use that information to ensure that the same ad is not delivered multiple times to the same browser. This also gives advertisers an opportunity to deliver a series of advertisements to a particular user. After a user sees the first ad in a series, it is recorded in a database. The next time the server recognizes that user, it delivers ad number 2, and so on.

And finally, cookies can also retain other information about users that might be useful. For example, when a user registers at a Web site, the cookie can retain the user name and password so that registration is required only once. When the user returns to that site, the server will automatically check the cookie it gave to that user to determine his or her name and password. A cookie can also remember the items a user placed in a shopping cart. In this way, cookies help create a relationship between the content, the advertiser, and the visitor, without forcing the visitor to repeatedly fill out forms. However, cookies are far from perfect.

When the Cookie Crumbles

Unfortunately, the cookie picture is not all rosy. There are a number of reasons why a server cannot place cookies on a user's hard drive. In fact, only about eight out of ten Internet users can be cookied.

Moreover, cookies are mapped to the browser, not to the individual. The hard drive on which cookies are placed may be used by several people, thus opening the door for profile distortions. For example, at a college computer center where many students may be accessing a particular Web site through the same computer, the first time a student accesses the site from that computer, the computer will receive a cookie file. (In this case we'll assume that the publisher placed a unique ID in the cookie file, to learn more about the user.) Unfortunately, what the publisher thinks is one user is actually 100 different students using the same machine. The same problems (although to a lesser extent) are also caused by family computers that are used by more than one person.

Auditing of Web Site Traffic

Like any other advertising medium, Web advertising needs impartial third-party verification of numbers. Independent third-party audits will provide the foundation for confidence in the Web as a legitimate advertising medium. Web measurement is the timely tracking of all activity on a particular site. At this stage of the Web's evolution, there are a multitude of Web measurement solutions available, and most folks are using them. However, auditing Web measurement reports is mostly being done only by the large commercial sites with blue chip advertisers.

When advertisers are considering a site for ad placements, the advertisers want to know about the site's traffic. As an example, a site might say that it has 30 million page

views each week. How does the advertiser know that this is a true number? How does the advertiser know that the site is actually counting page views correctly? We have seen that sites both purposely and accidentally miscount traffic numbers, which is why audits are important. Audits are also important simply because advertisers are accustomed to receiving them from other advertising vehicles. Currently, most advertisers and their agencies aren't demanding audits, but we think that audits will be expected as the Internet advertising industry matures.

An audit usually tells an advertiser the total traffic of the site as well as the traffic the advertiser's ads receives (see Figure 4.7). An audit will also define the terms as the publisher's site uses them so that an advertiser can be certain what an impression really is. If an advertiser uses third-party ad serving, which we mentioned earlier in this chapter, the advertiser will have a third-party measurement of impressions and clicks, but will not have an audit of total site traffic. Just because something is done by a third-party does not mean it was audited. Also, auditors look for foul play, such as programs that will click on all advertisements to increase click-through rates.

The following are the main audit services currently available for Web sites:

Audit Bureau of Verification Services, Inc. (ABVS) (www.abcinteractiveaudits.com) was established on January 1, 1996. It is a wholly owned subsidiary of the Audit

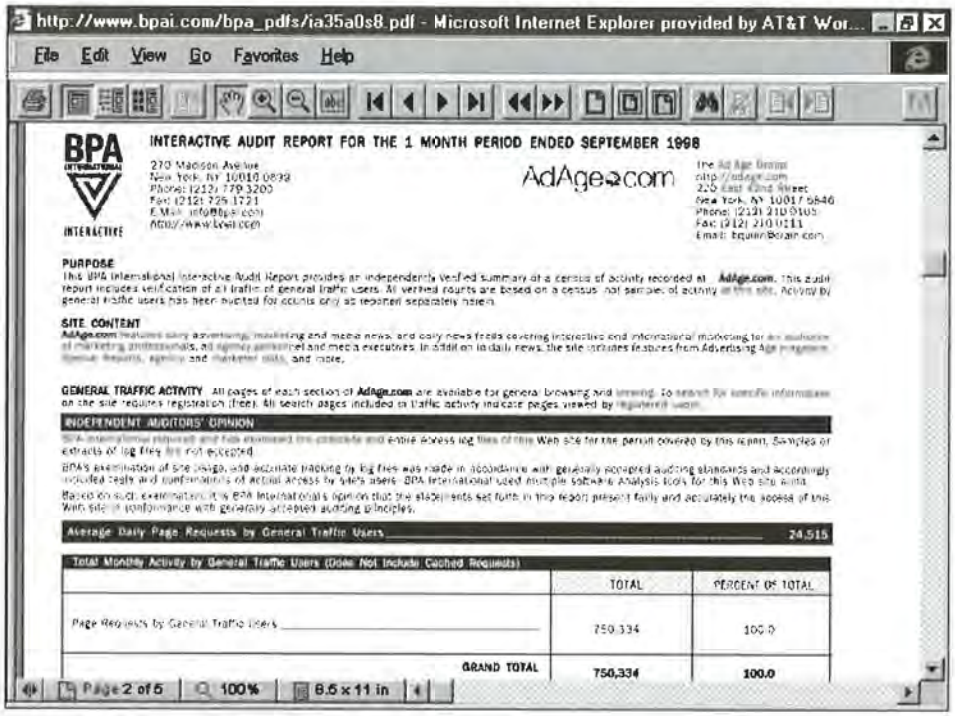

Figure 4.7 An Interactive Audit report by BPA for the AdAge.com Web site.

Bureau of Circulation (ABC). ABC—with over 82 years of circulation auditing experience—formed ABVS "to provide verification requirements of new and nontraditional advertiser-supported media."

BPA International (www.bpai.com), a global leader in magazine auditing since 1931, established an interactive auditing division because "as advertising on the Web grows into a commercially viable medium, advertisers need to know they are buying 'cyberspace' on the basis of accurate numbers that have been verified by an independent third party."

Nielsen, the television rating firm, has teamed with I/PRO (www.ipro.com) to offer a Web site analysis service for auditing and reporting Internet activity.

Rating the Web One Click at a Time

In advertising, broadcasters sell time or space to advertisers to disseminate their message to a particular medium's viewership. And, every medium—print, TV, radio, and so on—has a means to judge this viewership. Viewership is determined through ratings; that is, the number of people exposed to the message. Ratings equal the percentage of a given population group (for example, U.S. households for television) engaged with a medium at an identifiable moment in time.

There is nothing dull about rating Web sites. Whether you are referring to the act of profiling site audiences or to the firms that rate the sites, this is a field full of surprises. In 1998, the rating field shrank from four players to only two teams as the result of mergers. The two biggest players in the field, Media Metrix and RelevantKnowledge, merged into a new bionic Media Metrix ("The Power of Relevant Knowledge") (www.mediametrix.com). The other team consists of the strategic alliance between Nielsen Media Research (www.nielsen.com), the company that owns TV ratings, and NetRatings (www.netratings.com).

How are sites rated? Media Metrix offers coverage of over 15,000 Web sites and online properties, with monthly, weekly, and real-time data reporting, from a representative sample of over 40,000 people measured at home, work, and school. Media Metrix uses a suite of patented software "meters" placed on participants' computers to measure actual Internet and digital media audience usage behavior. The meters capture real-time, actual behavior of Internet users at the time it occurs—minute-by-minute, page-by-page, click-by-click. Tables 4.2–4.6 present the top 25 Web sites in a variety of categories, from Media Metrix. These ratings reflect the integration of the Media Metrix and RelevantKnowledge samples following the merger.

Table 4.2 Top 25 Web Properties
Media Metrix, Inc.
November 1998 Measurement Period
(11/1/98 through 11/30/98)

COMBINED AT HOME AND AT WORK			
RANK	WEB PROPERTY	% REACH	UNIQUE VISITORS (000)
Total Web Universe		100.0	56,781
1	AOL Websites	53.5	30,350
2	Microsoft Sites	48.9	27,751
3	Yahoo Sites	48.0	27,283
4	Lycos	45.2	25,656
5	GeoCities	32.0	18,158
6	The Excite Network	30.0	17,015
7	Netscape	29.9	16,987
8	Disney Online	25.6	14,510
9	Infoseek	20.2	11,488
10	Altavista Search Services	19.2	10,907
11	Time Warner Online	18.6	10,580
12	Bluemountainarts.com	16.0	9,087
13	Xoom Sites	15.4	8,759
14	Amazon	13.8	7,812
15	RealSite Portfolio	12.9	7,326
16	ZDNet Sites	12.6	7,170
17	BroadCast.com Consolidation	11.8	6,691
18	CNET	11.7	6,670
19	LookSmart	10.5	5,982
20	Snap.com Search Services	9.5	5,377
21	Switchboard Network	9.2	5,218
22	Infospace Impressions	8.0	4,554
23	eBay	7.7	4,382
24	Viacom Online	7.7	4,374
25	Go2Net Network	7.5	4,263

Table 4.3 Top 25 Web Sites
Media Metrix, Inc.
November 1998 Measurement Period
(11/1/98 through 11/30/98)

COMBINED AT HOME AND AT WORK			
RANK	WEB SITE	% REACH	UNIQUE VISITORS (000)
Total Web Universe		100.0	56,781
1	aol.com	48.7	27,630
2	yahoo.com	47.0	26,690
3	msn.com	32.7	18,544
4	geocities.com	32.0	18,158
5	netscape.com	29.9	16,987
6	excite.com	25.1	14,237
7	lycos.com	23.2	13,192
8	microsoft.com	22.9	12,991
9	infoseek.com	19.3	10,963
10	Altavista Search Services	19.2	10,907
11	tripod.com	18.5	10,488
12	angelfire.com	16.8	9,533
13	hotmail.com	16.7	9,509
14	bluemountainarts.com	16.0	9,087
15	xoom.com	14.6	8,280
16	amazon.com	13.8	7,812
17	real.com	11.7	6,647
18	zdnet.com	10.8	6,112
19	hotbot.com	10.4	5,898
20	Snap.com Search Services	9.5	5,377
21	switchboard.com	9.1	5,156
22	Disney Online	8.6	4,875
23	icq.com	8.5	4,850
24	simplenet.com	8.5	4,846
25	msnbc.com	8.3	4,693

Table 4.4 Top 25 Web Properties
Media Metrix, Inc.
November 1998 Measurement Period
(11/1/98 through 11/30/98)

TOP 25 WEB PROPERTIES–AT HOME			TOP 25 WEB PROPERTIES–AT WORK		
RANK	WEB PROPERTY	% REACH	RANK	WEB PROPERTY	% REACH
1	AOL Websites	49.2	1	Yahoo Sites	49.6
2	Yahoo Sites	43.7	2	Microsoft Sites	48.7
3	Microsoft Sites	43.1	3	Lycos	39.3
4	Lycos	39.1	4	AOL Websites	36.3
5	GeoCities	27.9	5	Netscape	36.0
6	The Excite Network	25.0	6	The Excite Network	27.5
7	Netscape	24.8	7	GeoCities	24.2
8	The Walt Disney Company Online	21.0	8	The Walt Disney Company Online	23.8
9	Infoseek	15.8	9	Altavista Search Services	21.8
10	Altavista Search Services	15.3	10	Infoseek	20.4
11	Time Warner Online	14.5	11	Time Warner Online	19.5
12	Bluemountainarts.com	14.1	12	Amazon	14.4
13	Xoom Sites	13.3	13	ZDNet Sites	14.0
14	Amazon	10.8	14	RealSite Portfolio	12.4
15	RealSite Portfolio	10.3	15	Bluemountainarts.com	11.5
16	ZDNet Sites	10.1	16	CNET	11.4
17	BroadCast.Com Consolidation	10.1	17	Xoom Sites	10.1
18	CNET	9.7	18	BroadCast.com Consolidation	9.7
19	Snap.com Search Services	8.6	19	Weather Channel	9.3
20	LookSmart	8.5	20	LookSmart	9.3
21	Switchboard Network	7.2	21	Switchboard Network	8.3
22	Viacom Online	7.1	22	Infospace Impressions	7.6
23	eBay	6.7	23	Snap.com Search Services	7.4
24	Go2Net Network	6.3	24	Miningco.com	7.1
25	Infospace Impressions	6.2	25	eBay	7.0

Table 4.5 Top 25 Web Properties
Media Metrix, Inc.
November 1998 Measurement Period
(11/1/98 through 11/30/98)

TOP 25 WEB SITES–AT HOME			TOP 25 WEB SITES–AT WORK		
RANK	WEB SITE	% REACH	RANK	WEB SITE	% REACH
1	aol.com	44.5	1	yahoo.com	48.9
2	yahoo.com	42.8	2	netscape.com	36.0
3	geocities.com	27.9	3	aol.com	34.0
4	msn.com	27.7	4	msn.com	32.0
5	netscape.com	24.8	5	microsoft.com	24.6
6	excite.com	20.8	6	geocities.com	24.2
7	microsoft.com	19.4	7	excite.com	22.8
8	lycos.com	18.6	8	Altavista Search Services	21.8
9	tripod.com	16.3	9	lycos.com	20.9
10	hotmail.com	15.7	10	infoseek.com	19.7
11	Altavista Search Services	15.3	11	amazon.com	14.4
12	angelfire.com	15.0	12	zdnet.com	13.2
13	infoseek.com	15.0	13	tripod.com	12.5
14	bluemountainarts.com	14.1	14	hotmail.com	12.2
15	xoom.com	12.7	15	real.com	11.6
16	amazon.com	10.8	16	bluemountainarts.com	11.5
17	real.com	9.3	17	cnn.com	10.8
18	Snap.com Search & Services	8.6	18	angelfire.com	10.1
19	hotbot.com	8.3	19	msnbc.com	9.5
20	zdnet.com	8.3	20	weather.com	9.3
21	icq.com	8.2	21	hotbot.com	9.3
22	simplenet.com	7.2	22	xoom.com	9.2
23	Disney online	7.2	23	switchboard.com	8.3
24	switchboard.com	7.0	24	infospace.com	7.6
25	ebay.com	6.6	25	espn.com	7.4

Table 4.6 Top Shopping Web Sites
Media Metrix, Inc.
WWW Audience Ratings
November 1998

RANK	DOMAIN NAMES	% REACH	UNIQUE VISITORS (000)
total Web users		100.0	56,781
Shopping		62.7	35,583
1	bluemountainarts.com	16.0	9,087
2	amazon.com	13.8	7,812
3	ebay.com	7.6	4,327
4	Barnes & Noble	6.6	3,769
5	CNET Software Download Services	5.9	3,327
6	etoys.com	5.2	2,957
7	cdnow.com	4.5	2,539
8	columbiahouse.com	4.5	2,536
9	musicblvd.com	4.0	2,262
10	valupage.com	3.7	2,109
11	classifieds2000.com	3.6	2,018
12	coolsavings.com	3.3	1,851
13	spree.com	3.0	1,718
14	bmgmusicservice.com	2.5	1,445
15	onsale.com	2.4	1,359
16	123greetings.com	2.3	1,296
17	beyond.com	2.2	1,277
18	CNET Commerce Services	2.2	1,251
19	netmarket.com	2.1	1,202
20	surplusaction.com	2.1	1,180
21	qvc.com	2.0	1,148
22	wal-mart.com	2.0	1,131
23	carpoint.com	1.9	1,076
24	freeshop.com	1.9	1,075
25	ezspree.com	1.9	1,067
26	egghead.com	1.8	1,003
27	reel.com	1.8	995
28	outpost.com	1.7	939

Table 4.6 *Continued*

RANK	DOMAIN NAMES	% REACH	UNIQUE VISITORS (000)
29	messagemates.com	1.6	913
30	cdw.com	1.6	910
31	priceline.com	1.5	880
32	tucows.com	1.5	851
33	bestbuy.com	1.4	809
34	landsend.com	1.4	809
35	autoweb.com	1.3	763
36	mypoints.com	1.3	758
37	firstauction.com	1.3	747
38	egreetings.com	1.3	739
39	supermarkets.com	1.3	712
40	ubid.com	1.2	691
41	winfiles.com	1.2	660
42	warehouse.com	1.1	628
43	autobytel.com	1.1	625
44	surplusdirect.com	1.0	595
45	netgrocer.com	1.0	575
46	jcrew.com	1.0	554
47	netcart.com	1.0	545
48	ezbid.com	0.9	520
49	worldremote.net	0.9	520
50	filez.com	0.9	516

Chart definitions:

Top 25 Web Properties: The top 25 World Wide Web properties are based on unduplicated audience reach. "Web Properties" include the largest single Web site brands as well as consolidations of multiple Web domains that fall under one brand or common ownership.

Example of "Web Properties": An example of a "Web Property" (i.e., one that offers more than one site) is the Excite Network, which encompasses city.net, excite.com, mckinley.com, and webcrawler.com.

Top 25 Web Sites: The top 25 Web sites are based on unduplicated audience reach. Top sites are from Media Metrix's At Home and At Work samples.

Reach definition and example: The percentage of Web-active individuals (i.e., individuals in the Media Metrix sample) that visited a site once in the given month. Individual visits are unduplicated (not counted twice). For example, if a site has a 2% reach, that means that 2% of Web-active individuals visited that site within the given month.

Unique visitors: The actual number of total users who visited the Web site once in the given month. All Unique Visitors are unduplicated (only counted once) and are in thousands.

Questions to Consider before Choosing a Web Measurement Solution for Your Company

What information do you want to track? Factor in the goals you have set for your Web site, the needs of your advertisers, and the reporting needs of upper management, to determine what information a measurement solution must provide.

Is it more efficient to perform the analysis in-house or should you outsource the process? In-house analysis is less expensive if you have a low to medium traffic site. If, on the other hand, your Web site generates high volume traffic, you need appropriate resources: disk space, adequate computer capabilities, and staff to generate reports. Moreover, the solution must be scalable for continued growth. Note that you need not only enough disk space for your current log file, but enough to archive log files so you can generate long-term trending reports.

What is the volume of traffic at your site? Can the products or service bureau handle it? Specifically, ask software vendors how much disk space and what type of a process you need to generate reports from log files to accommodate the traffic level (usually you will be asked to provide your log file size in megabytes).

How sophisticated does your traffic analysis need to be? Consider your current and future needs in your decision-making process.

How frequently do you need reports? Every day, every week, every month? Daily reports can be expensive when provided by a third-party provider. Also, if you do reports in-house, do you have the staff to put the reports together?

How many different departments need to use the data (marketing, IT, financial, etc.)? Does each department need different report configurations? It is a mistake not to check with all of the departments that will need reports before choosing a solution provider. If they all have different needs, and you

learn what they are, you have a better chance of finding a product that meets all or most of them.

What reports will your advertisers need? If you're a publisher, before you invest in a measurement solution, make sure it meets the needs of the companies footing the bill—your advertisers. Advertisers usually want to know how many times each creative is seen and how many times each is clicked. Advertisers prefer to get these statistics daily so they can tweak their campaigns to get maximum response rates (for example, daily reports will allow an advertiser to drop a poorly performing creative at the beginning of the campaign). Advertisers also want to compare how their ads perform on different pages of your Web site. Please note that unless your site is fairly low in traffic, you will benefit significantly from using adserving software rather than log analysis software to track advertising.

How private do you want to keep your tracking information? Will you allow your traffic statistics to be used in aggregate for industry-wide analysis by the tracking company? If you use a third party to generate traffic usage reports, your data is often used in aggregate for industry-wide analysis, such as I/PRO's analysis of click-through rates.

Will you need to have your reports audited? If so, check with the company that you want to perform the audits. They may recommend a measurement solution that makes the auditing process easier.

After you've considered these questions, you can conduct further research to ensure that you're making a smart purchasing decision. Find out whether any of the measurement solutions you're considering are already serving members of your industry. Ask how the solutions are working. Another alternative is to download a demo or trial version of the software. This gives you a chance to see how products work and how easy it really is to generate the reports you need.

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