

Internet Basics for the Ohio Attorney

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I. INTRODUCTION TO INTERNET TERMINOLOGY

A. What It Means To “Go Online”

“Going online” is no longer the mystical phrase that it was once. Indeed, the phrase has become part and parcel of our daily vernacular. Stripped of its mysterious connotations, however, “going online” means nothing more than having the ability to access the Internet.

Of course, as is true with a good cross-examination, that answer sparks some logical follow-up questions, like what is the Internet and how do I access it? Let’s explore those questions in turn.

1. What Is the Internet and Who Developed It?

At an elementary level, the Internet is a loose association of thousands of computer networks composed of millions of interconnected computers spanning the globe that have the ability to work together by sharing information.

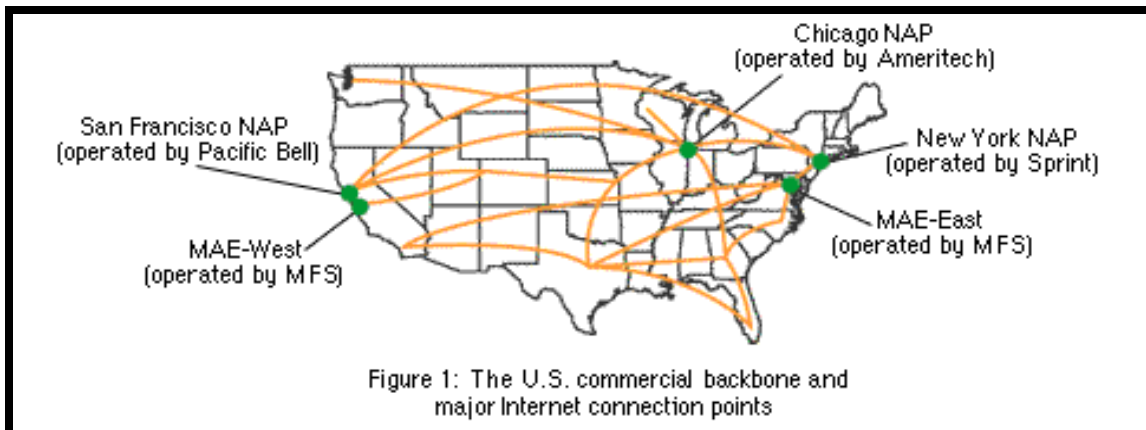
You may have heard the Internet referred to as the “information superhighway.” That’s a helpful metaphor. In the United States, we have an Interstate Highway System,

composed of a number of very wide, very fast highways. Then there are state highways, state roads, county roads, and local streets and avenues. All of these roads intersect, and cars are free to move from one system to another at any intersection. Although there's only one straight line between a given starting point and a destination, there may be lots of routes that you can follow to get there in your car.

The same is true on the Internet, where the interstate highways that carry the bulk of data are known as the "backbone." The backbone is composed of the biggest networks in the system, and are owned by major Internet Service Providers (ISPs) such as GTE, MCI, Sprint, UUNet, and America Online's ANS.

These various backbone networks are all connected to one another, creating a very fast pipeline for transmitting data across the United States and into Europe, Japan, mainland Asia, and the rest of the world. Of course, like any interstate, the backbone isn't as wide or well developed at every point. For instance, in the U.S., the backbone is so well interconnected that with a failure of one portion, data can easily and rather quickly be routed a different way. To you, that means relatively uninterrupted service. Alas, the same is not true in other parts of the world, so a system failure may have dire consequences.

The U.S. backbone consists of five major hubs, located in San Francisco, San Jose (California), Chicago, New York, and Washington, D.C. (see Figure 1). In addition, these networks are connected to thousands of smaller networks through the high-speed transmission equipment. These smaller networks are owned by regional and local ISPs, which in turn sell access to companies and individuals in the areas they serve.



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This infrastructure, however, is not entirely commercially-owned. Government agencies and universities are actively involved in running various parts of the Internet. For example, many Listservers (which we'll talk about later) are serviced by university computing centers. It wasn't all that long ago when the Internet was almost exclusively the province of the military and academics.

No one person or organization — not even Vice-President Al Gore — can rightly claim sole credit for creating the Internet. The first conception of what we now know as the Internet appeared in about 1962 in a series of memos written J.C.R. Licklider of M.I.T. In those papers, he expounded on a “Galactic Network” through which everyone could share and access data and programs. Fortuitously, a couple months later, he was appointed to run the Defense Department’s Advanced Research Projects Agency (ARPA). ARPA was the progenitor of today’s Internet.

ARPANet, as the network was then known, was designed primarily to ensure that nuclear weapons facilities could continue to transmit and receive data in the event of a major

nuclear attack. The idea was to develop a communications protocol that split data into individual packets which could follow any available route to their destination, where they could be reassembled into their original form. Critically, however, all packets would not need to follow the same path. Eventually, this idea became known as “packet switching,” and it is still in use today.

By the end of 1968, the company that would eventually become BBN Planet (a major backbone ISP now owned by GTE) was well into the development of the first hardware that could route data over the ARPANet. The first tests of this equipment were made in 1969 at UCLA and then at Stanford.

Subsequently, the nascent Internet grew steadily but unremarkably as government agencies, universities, and corporations continued to develop and refine protocols and architectures. E-mail and the Internet made their first public appearances in 1972 at the Internet Computer Communication Conference. In 1973 and 1974, the protocol known as Transmission Control Protocol/Internet Protocol (TCP/IP) emerged in essentially its current form, although the same group of collaborators would continue to refine it through the early 1980s.

Once the communications protocols were in place, the various developers formulated much of the software and services that make the Internet useable. The basic services for connecting to files remotely (via Telnet), transferring files over the Internet (via FTP), and sending and receiving e-mail appeared in the mid- and late 1970s. The Usenet news system first appeared in 1979 as an offshoot of the rise of Unix. The World Wide Web, which many

“newbies” (a term for those new to the Internet) think *is* the Internet, began in 1989 after being developed in the Swiss laboratories of CERN.

In 1990, the federal government officially decommissioned ARPANet, and tasked the National Science Foundation (NSF) with managing the Internet backbone, then known as NSFNet. In 1995, the NSF in turn withdrew, turning the backbone over to a consortium of commercial providers.

2. Accessing The Internet

To access the Internet, you need three things: a computer, connectivity (access to the Internet through some type of communications facility), and software specifically designed to navigate and transmit data through one or more of several services of the Internet. The software that we will discuss later serves the three most popular services of the Internet: the World Wide Web, e-mail, and Usenet.

a. Computer

Theoretically, any computer with a modem can access the Internet. In reality, however, you’d be best served to have a computer with the following minimum requirements:

- ✓ IBM-compatible computers should have at least a 486 processor and 16 megabytes of memory and running some version of the Windows operating system (3.1, 3.11, 95, 98, or NT).

- ✓ Apple Macintosh computers should be running Mac O.S. 7.0 or later and have at least 8 megabytes of memory.

It is important to note that while Internet use is not very taxing on a computer's resources, the more important factor is whether the computer is able to run more recent operating systems (such as Windows 95/98) for which more recent Internet software has been written and optimized. Current Internet-related software allows the utilization of the latest technology standards used on the Internet. If you are not sure whether your computer meets the minimum hardware requirements for running the software your service/access provider recommends you run, check with the manufacturer of the computer.

b. Access (Connectivity)

There are several ways your computer can connect to the Internet, ranging from dial-up connections over telephone lines, to local area networks (LANs), cable TV wires, and satellite links. If your computer is connected to a network at the office, you may already be connected to the Internet. If not, there are a variety of options available.

i. Dial-up Access

The most popular method of accessing the Internet is by finding an ISP that lets your computer connect to their "network" using a modem over a regular phone line for a low monthly fee.

A modem — short for "modulator/demodulator" — is a device that connects to your computer and converts digital signals to analog signals that can be transmitted over the

public telephone network. Modem speed is measured in baud rate, more commonly referred to as “bps,” or bits per second (with a bit being the smallest amount of data, equal to the numeric value of a 1 or 0). You may hear of a particular modem referred to as a 28.8 (pronounced “twenty-eight eight”). This means that the modem is capable of sending or receiving up to 28,000 bits of data per second. Currently, most Internet users have at least a 28.8 Kbps modem, although more and more are using newer 33.6 Kbps and 56 Kbps modems for faster performance.

There are several factors to take into consideration when selecting both a modem and an ISP, which we will discuss in a later section. As mentioned earlier, the dial-up method of Internet access is by far the most popular and affordable method of access, although there are other methods discussed below have the distinct advantage of offering faster transmission speeds (but at a higher cost).

ii. Dedicated Access

Some small to medium firms may reach levels of Internet use sufficient to justify faster or more permanent connections than those provided by regular modem dial-up connections. In such cases, the firm may consider utilizing a dedicated connection or leased line, such as Integrated Services Digital Network (ISDN), which will connect the firm directly to the ISP without the need for a modem.

With ISDN access, you must also have a dedicated Internet gateway server to route the Internet traffic on your network or to a stand-alone PC. Although these gateways are

relatively inexpensive, using a leased line and an Internet server still involves larger connection fees than dial-up access, as well as ongoing annual leasing charges for the line and Internet access costs with an ISP.

Many larger firms are opting for dedicated connectivity in order to capitalize on its several advantages over dial-up access. Dedicated lines allow faster communications, even allowing several users at a time to access the Internet over one line. Also, as the name indicates, dedicated lines are dedicated to full-time Internet connectivity. Users do not have to wait for someone to get off of the phone or worry about someone trying to call in while the phone line is being used for Internet access. Dedicated connectivity also offers maximum flexibility for publishing material directly onto the Internet and managing electronic mail facilities.

ISDN is considered “entry level dedicated service.” The slowest ISDN line available provides 64 Kbps connectivity, which is more than twice the speed of a 28.8 Kbps modem. Although the prices have been dropping, the installation and monthly fees associated with ISDN service, as well as other forms of dedicated service, generally is cost prohibitive for the average home user. These fees, however, are well within the budget of small to mid-size firms, if you consider the time saved waiting for connections and transmissions as well as opportunities for future growth.

Dedicated lines are an option that allow small firms to consider expanding Internet connection capabilities to enable multiple users to access the Internet simultaneously. ISDN speeds range from 64 Kbps to 128 Kbps, making it much more attractive for firms that are

able to share an ISDN line among several users. Sharing can be accomplished over a network using a special hardware configuration usually managed by a network administrator or representative of the ISP or phone company providing the dedicated service.

The next level of dedicated service is the T-1 line, which can handle transmission speeds of up to 1.544 Megabits per second (Mbps; a megabit is equal to 1 million bits). In addition to this exceptionally-fast speed, T-1 lines are capable of consolidating data and voice systems, so they have been in demand recently as we have begun to see the convergence of these two technologies. If your firm has a need to connect over thirty users to the Internet or have a dedicated Web server in-house, it may want to consider installing a T-1 line. If you do, speak to your ISP about the possibility of utilizing the line for both voice and data, which can add up to substantial savings over time.

iii. Emerging Access Technologies

Several other technologies are emerging that promise to increase the speed of home connections: digital subscriber lines (DSL), asymmetrical digital subscriber lines (ADSL), cable access, and satellite access.

DSL technologies allow data to be transmitted over standard telephone wires at extremely high speeds, often approaching 1.5 Mbps (approximately 30 times faster than a 56-kbps modem). In addition, as is true with a T-1 connection, DSL users can use the same line to receive voice and data simultaneously, allowing smaller offices to leave their computers connected to the Internet without interrupting phone connections. Currently, DSL

is expensive because specialized equipment known as a splitter must be installed at the subscriber's location.

ADSL, like its cousin DSL, uses standard phone lines to deliver high-speed data communications. ADSL differs from true DSL in that data speeds differ depending on whether it is being transmitted or received (hence the "asynchronous" moniker). In general, ADSL technology can transmit data at 640 Kbps, but can receive it as high as 6 Mbps. ADSL can also use the portion of a phone line's bandwidth not utilized by voice, allowing for simultaneous voice and data transmission. Ameritech currently provides ADSL access only in selected portions of Detroit and Chicago.

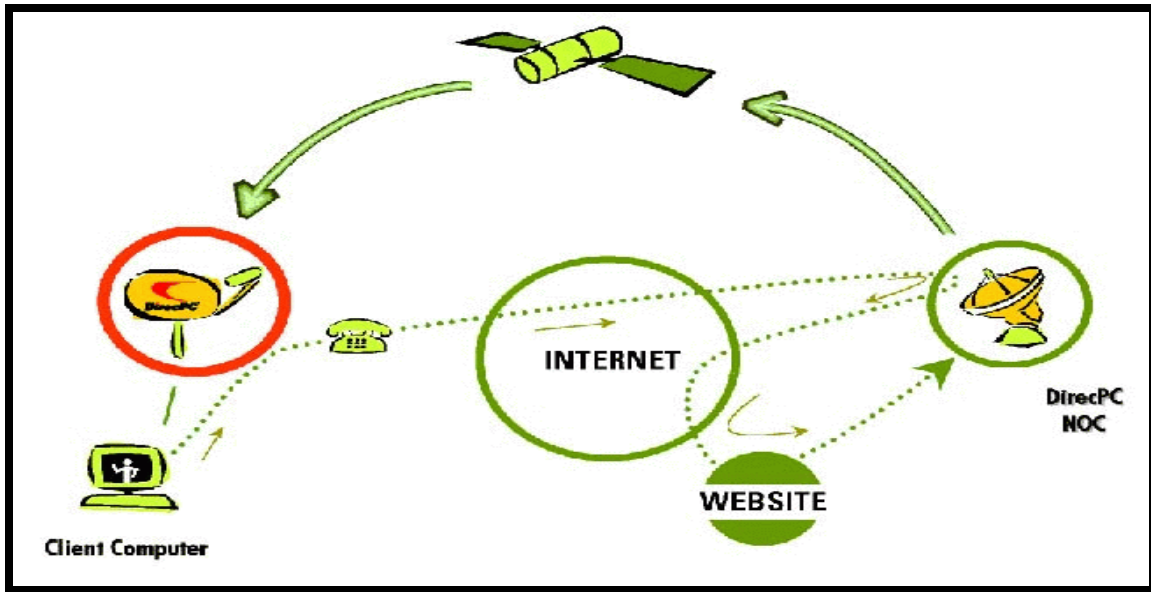
Cable access is just as its name implies: using the coaxial cable connection of your cable television company to transmit and receive Internet data. Cable modems can achieve rates of as high as 10-20 Mbps on downloads. Several factors limit the speed of cable modems. First, the numbers of users on the system at a given time can affect speed, since cable modems used "shared" technology. This "shared" bandwidth can be drained by too many users using too much throughput. Second, the cable modem itself can have a direct effect on transmission speed. Third, some cable providers actually artificially limit speed on the cable modem.

As its name suggests, satellite access uses satellite technology to download data at speeds of up to 400 Kbps. But note well: this is for *downloads only*. Satellite access still relies on some sort of dial-up account to transmit data.

Currently, the only provider of this technology is DirecPC, which is actually owned by the DirecTV a satellite television service. Rumor has it that installation is relatively straight-forward, if you are not afraid to climb on your roof or run cable through the house.

Once DirecPC is installed, your upstream link to the Internet is unchanged. All of your data requests are fed to a central connection point (the “network operating center” or “NOC”) that has a very high-speed connection to the Internet. The data you requested is then downloaded from its source to the connection point. As the data is received at the connection point, it is bounced off the satellite and is received by your dish. The following diagram from www.direcpc.com¹ illustrates the path data follows:

¹ For the sake of convenience, I have deleted the prefix “http://” that normally precedes a Web site address. Unless otherwise specified, all Web sites listed in this section conform to the HTTP protocol. Most of the more recent browsers are aware of this and, if you omit the prefix, will default to this protocol.



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3. Selecting an Internet Service Provider (ISP)

Selecting an ISP is perhaps the most important aspect of the connection process. Because the ISP provides the link between your computer and the Internet, its services can mean the difference between your experience with the Internet being a joy or a hassle.

One important distinction to note at this point is that online services such as America Online, CompuServe, MSN (Microsoft Network), and others are not “the Internet.” You may be a member of these services (sometimes called Internet Content Providers), but that does not mean you are on the Internet. Online services are like communities with a “back door” that allows you to access the Internet. You have access to the services’ neatly

organized groups, conferences, directories, news and more, but Internet access is only one part of the service. With an ISP, *all* you get is access to the Internet. (This explains the distinction between Internet *content* providers and Internet *service* providers.)

When selecting an ISP, keep in mind that the industry is very competitive— an ISP should charge approximately \$19.95- \$25.00 a month for unlimited access to the Internet over a standard telephone line. Rates vary for dedicated connectivity depending on the speed line you require. All of these services offer free trial periods for you to use the service in order to decide if it meets your needs. It's a good idea to “try before you buy” and make sure that the access speeds are sufficient and that you are able to connect, even during the evening hours when Internet traffic is at its peak.

Here is a checklist for selecting an ISP that will both accommodate and grow with your needs:

- ✓ ***What is the ISP's user to modem ratio?*** Nothing's more frustrating than being under a deadline and telephoning your ISP, only to find the telephone line remains continuously busy. If you are going to be using a dial-up connection, look for a ratio no greater than one-modem-to-twelve-users.
- ✓ ***What's the ISP's time without a keystroke before shutting you off?*** All ISPs set their machines to disconnect you if you don't touch the mouse or keyboard for a certain length of

time. If you get up to get a cup of coffee are you going to be disconnected?

✓ ***Is there an initial setup charge?*** Some ISPs try to charge a one-time fee for “configuring” your account. Fortunately, this has become less common as more ISPs have taken to the market and competition for users has risen. Don’t be afraid to ask if the ISP will waive the charge. If not, think about choosing a different ISP.

✓ ***Do you have to pay more for a space on their Web server in case you want to set up a Web page for yourself for the firm?***

Most ISPs will offer you anywhere from three to five megabytes of storage space on their server for you to use for a noncommercial Web page. As a general rule, you should get at least five megabytes of space. Make sure to ask how much space you get and if there are additional charges for using the space for commercial interests.

✓ ***Is the account billed at an hourly rate or for unlimited access?*** You don’t want a subconscious clock ticking away when you have work to do (and time tends to fly online).

✓ ***Do you get freeware or shareware software?*** To get started on the Internet, you don’t need to pay for software. There are

many varieties available, and your provider should be able to make it all accessible to you.

- ✓ ***What is the ISP's support policy and hours?*** When things go wrong, as they are wont to do, you want someone to answer your questions and get you up and running no matter what time of day or night. Don't wait until you are working late on a project and can't connect to the Internet to find out that your ISP's technical staff takes off at five o'clock. It is not rare to find an ISP that offers 24/7 support for those times when you need a little hand holding.
- ✓ ***Is support free?*** The market is too competitive to have an ISP that charges to help you use their service. As a matter of fact, it is so competitive that most not only offer free support, they offer free classes to get you acclimated with the Web.
- ✓ ***Is it a local company?*** Personalized service from a neighbor goes a long way.

A final note: There are both national and local Internet service providers. While the access they offer is relatively fungible, keep in mind that local ISPs are more likely to have local service technicians that can help when problems arise that necessitate a service call.

B. Search Engines

Search engines are one of the technologies that have made the Internet accessible to even computer novices. While there are different types, in general a search engine can best be understood as a program that is used to find information. Because of the vastness of the Internet, without search engines it would be incredibly difficult for a user to find a Web site that contains interesting or relevant information.

1. How Search Engines Work

There are two types of tools for searching: search engines and directories. Search engines utilize “spiders” or “robots” that constantly search the Web for content and index that information in a database. Directories are databases made by humans who either look at Web sites and categorize them accordingly or allow you to index the site yourself. Every engine and directory has a link on the home page that says something like “Add a Site,” “Add a URL,” or “Get Listed.” All you have to do is click on the link and follow the directions. It usually takes a week or so before you see your site indexed in their database.

One of the more important aspects of using search tools is learning each site’s method for narrowing search results. For example, if you search AltaVista (www.altavista.com) for the term “immigration law,” you get 9,633,548 matches. In other words, AltaVista found over nine million documents containing either the word “immigration” or the word “law” in it. AltaVista allows you to search for exact terms by placing quotes around the word(s) like

this “immigration law,” returning only 32,662 matches. That simple technique allowed the engine to cut out 9 million irrelevant matches.

AltaVista allows other narrowing methods such as using the + and - signs to add or subtract matches from a search. For example, if you want to find a firm that practices immigration law in the State of Ohio, you might search for “immigration law” +Ohio. This would return documents that contain the exact phrase “immigration law” and the word “Ohio” anywhere in the document. (A total of 4,437.) By the same token, if your search returns matches for firms that practice immigration law and have attorneys that graduated from “Ohio” State University, you can exclude them by changing the search to “immigration law” +Ohio -university and increase the chances that you will find those documents you really want. (Now down to 2,040.) Also note that search engines and most directories are case sensitive, meaning that searching for “Bill” will bring back different results than “bill.”

Each search engine and directory has instructions regarding its narrowing techniques online. Usually the link to the instructions is called something like “Refine” or “Advanced Search.” Some engines have text instructions, while others allow you to narrow your search by using menus and dialogs. One menu-driven search engine, HotBot (www.hotbot.com), has a very useful feature that allows you to type in a date range before you search. Because the Web is constantly changing (domain names change, people move files and sites), you will find that search tools often return links that point to files that no longer exist. Limiting your search to documents posted on the Web by date increases your chances of finding data that is current and well maintained by the author.

2. Recommended Search Engines

a. True Search Engines

- ✓ AltaVista — www.altavista.com *
- ✓ Excite — www.excite.com *
- ✓ GoTo — www.goto.com
- ✓ HotBot — www.hotbot.com *
- ✓ Infoseek — www.infoseek.com *
- ✓ Lycos — www.lycos.com *
- ✓ WebCrawler — www.Webcrawler.com

b. Directories

- ✓ Bell Atlantic Yellow Pages — www.bigyellow.com
- ✓ Clearinghouse — www.clearinghouse.net
- ✓ LookSmart — www.looksmart.com
- ✓ Magellan — magellan.mckinley.com
- ✓ Mining Company — www.miningco.com
- ✓ Netscape — www.netscape.com
- ✓ Starting Point — www.stpt.com or www.starting-point.com
- ✓ Yahoo! — www.yahoo.com *

* Most Frequented

Note: Yahoo! is the most popular Web site in the world. Not only does Yahoo! search its directory, but using searching software by Inktomi, Yahoo! searches the entire Web as well. (Normally, if Yahoo! finds a hit in its directory, it returns that with an option to search Web pages as well. If there's no hit in the directory, it immediately passes you off to the Web pages search.) Basically, with Yahoo!, you kill two birds with one stone. The downside is that the Web page search function is not as customizable as those of true search engines.

There are several resources on the Web that list various directories and search engines. Some of the more popular compilations are Beaucoup! (www.beaucoup.com) and the Yahoo directory (go to www.yahoo.com, select Computers and the Internet | World Wide Web | Searching the Web, then choose either Search Engines or Directories).

It is also possible to use a "spider" or "robot" on your computer. One program that accomplishes this for even the novice Internet user is WebFerret. This program, available free of charge from www.ferretsoft.com, allows the user to enter the desired search (helpful so that you only have to learn the syntax of a single program, not multiple engines), and then it goes out and queries all the search engines specified.

There are some Web sites that can automate this process for you, such as Search.com (www.search.com) and PowerSearch (www.powersearch.com.) Check out the Yahoo! listing of these as well (go to www.yahoo.com, select Computers and the Internet | World Wide Web | Searching the Web | All In One Search Pages).

C. Browsers

A “browser” is a software application that interprets Hypertext Markup Language (HTML) and displays it in the proper format for a user. Browsers are what enable people to view Web pages.

1. Browsers and Browser Maintenance

Netscape’s Navigator was one of the first browsers developed and is in use by more Internet users than any other browser, though that margin is quickly dwindling. The latest version of the browser can be downloaded free of charge from Netscape’s Web site at www.netscape.com/computing/download/index.html. Consider downloading the integrated suite, Netscape Communicator, which includes not only the Navigator browser, but also e-mail, news, and groupware applications as well.

Although Microsoft’s Internet Explorer was a late entrant in the browser market, it has quickly gained market share and is currently the second most popular browser in the world. Not only does the latest version of Internet Explorer integrate with the Windows 95/98 operating system, but it supports far more of the newer technology standards than Netscape Navigator (DHTML, ActiveX, Java, J++, Active Server Pages, etc.) The latest version of Internet Explorer can be downloaded at www.microsoft.com/windows/ie/download/.

Although Navigator and Internet Explorer are the two most widely-used Web browsers, there are a few others worth considering. Mosaic was actually the precursor of

Navigator. Developed at the University of Illinois at Urbana-Champaign's National Center for Supercomputing Applications (NCSA), Mosaic has been one of the longest-running Web browsers. NCSA has discontinued updating Mosaic, so its ability to handle emerging Web technologies has begun to weaken. That trend can only be expected to continue. The Mosaic user interface has a look-and-feel like that Internet Explorer 4.0. If you want to try Mosaic, you can download it from www.ncsa.uiuc.edu/SDG/Software/Mosaic/.

Lynx is a text-based browser with a similarly-long pedigree behind it. Though not in widespread use today because of the pervasiveness of graphics on the Internet, it is still a useful program for DOS- and UNIX-based computers. Lynx's principal advantage is raw speed. Consequently, it does not support Java, JavaScript, ActiveX, or frames, all of which are in widespread use on today's more popular Web sites. While it is available from numerous sites, you can download it from download.cnet.com/downloads/0-10058-108-31558.html.

One final browser worth considering is called Opera. Developed in Norway, one of Opera's primary advantages is its small size. Whereas downloads of Navigator and Internet Explorer can be tens of megabytes, Opera's download is about 1.4 megabytes. Translation: it takes only a couple of minutes even on a 28.8 Kbps modem; other downloads can take an hour or more.

One interesting feature of Opera is the ability to open several windows within the same windows and display them in a cascaded or tiled fashion. (Although you can open new windows with both Navigator and Internet Explorer, they actually open additional copies of

the program. Opera keeps all of the windows within the same program shell.) In addition, each window can have its own distinct settings, and you can specify distinct settings for each. With these capabilities, you could, for example, open your firm's graphics-based Intranet (we'll talk more about those later) in one window and your customized text-based news page in another, and then easily switch between the two throughout the day.

As with any application downloaded over the Web, be sure to revisit the vendor's site often checking for updates and new versions that add functionality.

2. Browser "Plug-Ins"

Plug-ins are mini-software programs that extend the capabilities of your Web browser in a specific way — giving you, for example, the ability to play audio samples or view video movies. Software companies develop new versions of their plug-ins at a phenomenal rate, so check the vendor's Web site frequently for updated versions. In addition, many vendors will offer free versions on either a trial basis or with fewer features than the retail version. Here are a few of the more important plug-ins that you may need.

a. Adobe Acrobat Reader [\(www.adobe.com/products/acrobat/\)](http://www.adobe.com/products/acrobat/)

The Acrobat Reader, made by Adobe Systems, is one of the most popular browser plug-ins. Acrobat Reader allows Web browsers to view documents in portable document format (.pdf). Pdf documents are essentially optimized documents that have been published using Adobe Acrobat software. The documents are compressed, small in byte size, and appear like scanned images maintaining their structural integrity regardless of variables such

as fonts and software installed on the reader's computer. Once the document is downloaded to your screen, it can be printed as it was originally published. You will find many lengthy documents and manuals published in this format on the Internet.

In addition, some courts offer .pdf versions of oft-used documents. One example is the Web site for the Clerk's Office of the Southern District of New York Federal Court (www.nysd.uscourts.gov/forms.htm), on which you can find .pdf versions of a civil action summons, as well as civil and criminal witness subpoenas, all with a "fill-in-the-blank" capability. These can be helpful where you need to issue multiple subpoenas in a case and don't want to have your secretary type the case caption and hearing information multiple times.

If your firm has a need to publish its own .pdf files for the Web (or for electronic filing with the Northern District of Ohio federal court), you can purchase the full Adobe Acrobat suite, which includes applications for publishing and reading .pdf files (both on and off the Internet) and a myriad of other helpful multimedia publishing applications. Additional information about Adobe Acrobat and the free Adobe Acrobat Reader can be found at Adobe's Web site listed above.

b. Envoy Viewer
(www.tumbleweed.com)

The Envoy Viewer is another .pdf document viewer that some sites require for viewing their online documents. While it is not very common, many software vendors distribute updated manuals and addendums in this format. Its publisher, Tumbleweed,

appears to be moving away from this product, so it's hard to find any information about Envoy on Tumbleweed's site. If you really need to download it, try accessing the third-party site at www.akleinpr.com/newsletter/envoy.htm. It has a list of links to the actual download pages for different versions of Envoy.

c. i-Chat
(www.ichat.com)

The i-Chat plug-in lets users access the full suite of functionality supported by i-Chat Room Servers, which are installed on more than a thousand of the most highly trafficked sites on the Web. Downloadable in just a few minutes, the i-Chat client opens up a whole new world of interactive experiences on the Web. With the i-Chat software added to your browser, you can join more than eight million i-Chat users who enjoy affiliation with people of similar interests on the Internet.

d. Real Player
(www.real.com)

Many sites allow you to download audio and video files of speeches, music, and more in a relatively high quality format called RealVideo/RealAudio. Most radio stations that have taken to the Web use RealAudio to "broadcast" around the world.

e. FlashPlayer/Shockwave
(www.macromedia.com)

Experience animation and entertainment on the Web with Flash, the Web standard for vector graphics and animation. Many of the fancier sites on the Web include content created with Macromedia Flash. Shockwave is a similar program that is used by many Web sites to add interactive games and presentations. Both can be downloaded free from www.macromedia.com.

f. IntelliTrip
(www.thetrip.com)

The IntelliTrip plug-in is like an electronic travel agent that resides on your computer. It queries the best travel sites on the Web for the lowest fares currently available for a given itinerary and enables the user to quickly and conveniently book a desired itinerary on the site with which the user chooses to do business. The plug-in manages the user's accounts on those sites, obviating the need for the user to remember multiple logins for different travel sites. Next time you fly someone in for a deposition, make sure your client knows you found the unbelievable rate on the Internet — just don't tell them how easy it was!

g. NetZip
(www.netzip.com/plugin.html)

Automate the process of downloading, unzipping, and installing compressed software and Internet files. NetZip allows you to download, unzip, and install with one click from your browser. You can even create .zip files for uploading or sending as a mail attachment,

all inside your browser. NetZip is also integrated with the desktop so you can use it even when you are not online.

h. WebTurbo (www.Webturbo.com)

WebTurbo works within your browser to make finding, reviewing, and organizing Web information faster and easier. Query the six most popular search engines, and WebTurbo delivers summaries of Web pages in an outline format. With WebTurbo, you can actually surf site previews to find what you want, without loading whole pages. You can also edit and save your search results for future reference.

i. Mail and News Clients

Not only do you want to have the best Web browser possible, but a good e-mail and news application as well. If you are using Netscape Navigator, you can download Netscape Communicator, free of charge, which includes a news reader and e-mail program. If you are using Internet Explorer, you can download Microsoft Outlook Express, free of charge, for e-mail and news capabilities. The latest version of Internet Explorer (IE 5.0) comes with Outlook Express “bundled” with the browser. Another popular mail program, also free, is Eudora Light which can be downloaded from www.eudora.com.

NetMeeting, available at www.microsoft.com/netmeeting/, allows you to use your PC and the Internet to hold face-to-face conversations with friends and family around the world, without costing a fortune to do so. NetMeeting works with any video capture card or camera that supports Video for Windows, so you can choose from a wide range of video

equipment. If you don't have a camera, you can chat with one or more in a text-based chat environment.

Video is just one of the powerful features of NetMeeting. Its data conferencing features allow you collaborate with a group of people from within any 32-bit Windows application -- drawing on a shared whiteboard, sending text messages, and transferring files. NetMeeting's real-time audio lets you talk to other people over the Internet, even if you use a 14.4 Kbps modem. NetMeeting's video, audio, and data conferencing are all based on industry standards, so you can communicate with people using compatible products.

D. URLs

“URL” is an acronym for uniform resource locator, sometimes known by its alias “address.” URLs are incredibly important, because a real Internet address consists of four sets of numbers, such as 38.21.35.75. It's much easier to remember www.yahoo.com. Computers known as Domain Name Servers (also known by their acronym DNS) convert the word addresses into the numeric addresses.

URLs actually have two components. The first part specifies the communications protocol that the browser should use to access the file (see footnote 1, *supra*); the second part specifies the IP address/domain name where the particular resource can be located. Consider two fiction examples:

<http://www.website.com/index.html>

<ftp://www.website.com/file.exe>

The first, which should look somewhat familiar, specifies a Web page that should be accessed using the Hypertext Transport Protocol (HTTP). The second, which may look a little less familiar but follows the same general syntax, specifies an executable file (*i.e.*, a program) that should be retrieved using File Transport Protocol (FTP).

1. URLs of Top Web Sites No Attorney Should Be Without

In no particular order, the selections for the most important Web sites for substantive legal research and/or legal work would have to include the following:

- ✓ FindLaw, www.findlaw.com

FindLaw is one of the best-known collection sites and is often featured as a search box link on other legal pages. It uses a Yahoo like interface with topics and subtopics shown on the front page. The topics range from the usual down to such specifics as *Microsoft v. DOJ*. A search box is included with a pull down menu for several sites. There is also a link for legal news which contains pertinent headlines from Reuters, and you will find LawCrawler, the Internet search tool for legal information. A very easy to use, comprehensive site. It contains some advertisements but is not graphic intensive.

- ✓ Legal Information Institute at Cornell Law School — www.law.cornell.edu

Law schools have long set the pace for placement of legal materials on the Web; Cornell is the premier law school site.

- ✓ Hieros Gamos — www.hg.org

Hieros Gamos has so much information that it has a very cluttered appearance. Though this is difficult to get used to, the wealth of information here makes it worth the time. From its framed home page, you can (1) use a search box to search the site's pages and direct links to what Hieros Gamos claims is a database of 50,000+ law and government sites, (2) browse by an index of organizations, practice areas, discussion groups or other resources, (3) select databases to browse for information on organizations (experts, mediators, etc.), (4) read news from over 5,000 sources, or (5) use a search page with a collection of legal search tools. The site uses frames and contains unobtrusive advertising. You can also view the site in several different languages.

- ✓ Law Library Resource Exchange — www.llrx.com
- ✓ WashLaw (Washburn Law School) — www.washlaw.edu

Links to law related resources on the Internet. In addition to specialized subject areas, you may access information about Law Schools and Law Libraries. You can search “full text” for the law and law journals, as well as browse law library catalogs. The Law Library hosts many law related Web servers and listserv discussion groups.

- ✓ Electronic Reference Desk (Emory Law School) — www.law.emory.edu/LAW/refdesk/toc.html

The Electronic Reference Desk contains links to legal resources sorted by Law by Country, Law by Subject, Journals & Periodicals, Reference Materials, Career Information, and Law Firms & Lawyers.

- ✓ Office of Law Revision Counsel, U.S. House of Representatives — uscode.house.gov

Provided by the U.S. House of Representatives as part of the Counsel's mission to make the law available to the public. The Internet Law Library has two goals. The first is to provide free public access to the basic documents of U.S. Law. The second goal is to provide access to the other law resources of the Internet.

- ✓ Virtual Medical Law Center — www-sci.lib.uci.edu/HSG/Legal.html

A plethora of worldwide law and health science resources.

- ✓ World Wide Web Virtual Library — www.law.indiana.edu/law/v-lib/lawindex.html

The Virtual Library is a collection of subject-related Web sites maintained by institutions throughout the world, each administering a different subject. Material within the Virtual Law Library is organized by organization type (i.e., U.S. Government Servers) and by legal topic (i.e., Contracts). The site is also searchable by key word.

- ✓ Center for Information Law and Policy (CLIP) — www.law.vill.edu

A joint effort between the Villanova University School of Law and the Chicago-Kent College of Law. CLIP, a National Center for Automated Information Research sponsored project, began as a research institute which developed wide-area-networking needs for legal information from governmental sources, such as courts and federal agencies. CLIP's current

emphasis is on technology development, and on articulating a vision of the role of the Internet in the National Information Infrastructure (a/k/a NII). Most recently, CLIP is an active participant in the development of a global Domain Name policy.

2. Finding Legal Collections

A number of Web sites provide useful collections of legal resources. Typically these include links to bar associations, courts, firm sites, forms, government resources, law schools, legal periodicals, and practice areas. These sites range from small resource pages maintained by individuals with no advertising to large corporate sites with advertising that require membership to access certain resources. Each has its own merits. Which one you use may be a matter of personal preference and budget.

This section highlights some of the more useful collections. It is by no means comprehensive. If you want to locate other collections, try Yahoo!'s list of legal indices at www.yahoo.com/Government/Law/Indices. Also, this section is limited to collections of general interest, but there are a number of sites that collect resources by particular areas of the law. You may want to check those if you are looking for something specific to those areas.

- ✓ American Bar Association -- www.abanet.org

The ABA's site has a page listing collected legal resources that is a good starting point and easy to use. It also includes a page called Site-tation that highlights a different site or mailing list each week. This is also a useful jumping off point for additional information

because the ABA's 70+ entities are comprehensive sources for information in a particular field. Many of the entities' publications are not actually on the Web, since the ABA is trying to sell them, but the site can lead you to additional information.

✓ Counsel Connect — www.counsel.com

Counsel Connect is a subscription service. Before the explosion of Internet access, Counsel Connect was a particularly useful dial up service. With widespread Internet access, it is not as useful and works best as a site for exchanging information through forums and other networking opportunities.

✓ Counsel Quest — www.counselquest.com

Counsel Quest includes the usual links plus others that are less typical, e.g., archaic laws, humor, a reference desk, and Usenet newsgroups and listservs. In addition to a search box, there is an interesting interface at the bottom of the home page using a hierarchical folder system that looks like Windows Explorer. Counsel Quest also touts a feature called the Remote Briefcase, which is a small separate window containing the same folders. This feature only works with JavaScript enhanced Web browsers. This site contains a lot of information without looking too busy. It does contain some advertisements.

✓ Internet Legal Resource Guide — www.ilrg.com

Another of the most popular compilations of legal resources, The Internet Legal Resource Guide contains a categorized index of 3100 select Web sites, as well as more than 850 locally stored Web pages and other files. This site was established to serve as a comprehensive resource for information available on the Internet concerning law and the

legal profession, with an emphasis on the legal system of the United States. The site also contains information of significance to law students, including law school rankings and course outlines. Students at the University of Texas Law School established and maintain this site.

✓ Law Guru — www.lawguru.com

Law Guru is a useful site for legal research and subscribing to mailing lists. The legal research page uses a pull down menu that allows you to choose from over 400 search tools organized by state, federal and general resources. With a free registration that takes about thirty seconds, you can also use the Multi Resource Legal Research tool to search multiple opinion and code sites at the same time. LawGuru's "listTool - Mailing and Discussion List Manager" also allows you to subscribe and unsubscribe to over 600 mailing lists without having to remember those pesky commands and instructions. The site does include some advertising and uses frames as well as JavaScript for certain features.

✓ LawInfo — www.lawinfo.com

LawInfo includes a legal research page with links to search Supreme Court decisions, international resources, and on-line libraries, as well as the typical links. It is very commercialized, heavy in advertising and relatively graphics intensive but you may find it useful for additional features such as a chat center, news, career center, online CLE, and seminars.

✓ Law News Network — www.lawnewsnetwork.com

This is an omnibus listing of links to *American Lawyer* publications. It is heavy in advertising and graphic, but is also heavy in content and quite current.

- ✓ The Legal Pad — www.legal-pad.com

The Legal Pad is a free private site that includes the typical links plus links for general resources, law student resources, legal clip-art, legal corporations, legal publishers, and the Department of Justice. You can search its index from the front page or go to another search page, which is particularly useful because it also allows a search of databases by topic, using a pull-down menu. Plus, you can light a virtual candle for its law student creator. The site includes no advertisements and is not graphic intensive but may be somewhat out of date.

3. Where to Look for Legal Authority on the Internet

- ✓ The United States Code — uscode.house.gov/usc.htm

This U.S. Code site is searchable by terms, titles or section. Cornell University also offers another way to access information on the U.S.C. Try www4.law.cornell.edu/uscode/.

- ✓ Congressional & Legislative (THOMAS) — thomas.loc.gov

Produced by the Library of Commerce, Thomas includes the full text and digests of bills and congressional records, as well as status reports and information on bills expected to receive action. Committee information includes the text of reports and connections to committee home pages, which typically include committee membership, schedules

and hearing transcripts. The site may be searched by topic, bill number or popular name.

✓ Bankruptcy — www4.law.cornell.edu/uscode/11

The Bankruptcy Code is available here. Other bankruptcy law sources are available from Cornell University, www.law.comell.edu/topics/debtor_creditor.html, the Law Library Resource Exchange, www.llrx.com/columns/litigat.htm (contains all Federal Rules, Federal Local Rules, Appellate Rules, Bankruptcy, State, and State Local Rules). LegalResource.com also provides a wealth of bankruptcy related material for both laymen and legal professionals. See www.legalresource.com/bankruptcy3.htm.

✓ Federal Register — www.nara.gov/fedreg/

This site, hosted by the federal agency responsible for publishing the Federal Register, provides a link to another government site that allows you to search the complete text of the Register back to 1995.

✓ Code of Federal Regulations —
www.access.gpo.gov/nara/cfr/cfr-table-search.html

Similar to the above, this provides direct access to the site that enables you to search the C.F.R.

✓ Federal Agencies

A good source for searching Federal information is the FedWorld Information Network at www.fedworld.gov. This site allows you to search for a single topic among several agencies at a time. Other interesting federal sites include the FBI home page at www.fbi.gov, and the Department of Justice Home Page at www.usdoj.gov.

✓ United States Supreme Court Decisions

The most comprehensive collection of United States Supreme Court opinions available on the Internet at no cost appears at FindLaw (www.findlaw.com/casecode/supreme.html). Cases here date back to 1893, or volume 150 of the United States Reports. The database is up-to-date with the most recent cases. Cases can be browsed by volume or year. They can also be searched by citation, party name, or full text.

✓ Other Federal Courts

A cooperative effort by the Legal Information Institute, Villanova Law School, Georgetown University Law Center, Emory Law School, Touro Law School, Pace Law School, the University of Texas and the Administrative Office of the U.S. Courts has provided a search engine that permits a simultaneous search of the caselaw of all the federal circuit courts. The search engine is found at the Legal Information Institute (supct.law.cornell.edu/Harvest/brokers/circuit-x/fancy.query.html). Cases can be searched by party name, keyword or phrase. Texts of opinions of all Circuits can also be accessed directly from the FindLaw page at www.findlaw.com/casecode/courts/index.html.

Ohio authority includes the Ohio Supreme Court (www.sconet.ohio.gov), the Ohio State Bar Association (www.ohiobar.org) with its Casemaker Library, and the Ohio Legislature (see the listings at www.state.oh.us/ohio/legislat.htm). An interesting listing of Ohio laws, rules, and Constitutions can be found at www.state.oh.us/ohio/legislat.htm.

For an index of what state judicial and legislative information is available for other states, visit www.lawsource.com, FindLaw, www.findlaw.com/11stategov, and The Internet Legal Resource Guide, www.ilrg.com. Other state law resource links can be found at American Law Sources On-Line (www.lawsource.com/also/usa.html).

E. Electronic Mail, List Servers, and Chat Groups

Electronic Mail, List Servers, and Chat Groups are examples of basic communication services available for use on the Internet. As is true for all Internet services, the use of these services should be in accordance with standard policies for your firm, and it should be born in mind that, if and when you contribute to one of these services, you may be reflecting upon the organization from which you transmit your messages. In other words, keep in mind that good manners and professional decorum are always in order. Each of these services are described in more detail below.

1. Electronic Mail

This feature is central to any legal professional who cares to become Internet-capable. Made available on the Internet through various mailing protocols and software that resides on your computer, and typically also available on other closed local- and wide-area computer networks, electronic mail (or “e-mail”) enables the users of such networks to communicate with one another through the transmission of electronic messages addressed to an intended recipient. However, a very important additional feature of electronic mail is the ability to

transmit electronic files that may be converted to reproduce documents, audio, photographs, and/or video. In this way, documents in electronic form may be transmitted to anyone on the globe for printing at their local printer in a matter of seconds or minutes. E-mail can be sent using e-mail programs such as Eudora, or by using e-mail components of common Internet browsers like Netscape and Internet Explorer.

E-mail may be sent over dedicated data lines, as is the case for local- and wide-area networks, or over the Internet. Especially when sending e-mail over the Internet, the users must be aware of the risks associated with the use of such e-mail vis-a-vis waiver of attorney-client privilege and possible breach of confidentiality in the event the e-mail is intercepted or opened by someone other than the intended recipient. Because of this concern, legal professionals must be particularly vigilant in guarding against such risks when considering transmission of an electronic mail message and/or electronic documents to another person.

The ABA has concluded that the mere transmission of privileged information by e-mail is not, in and of itself, a waiver. Formal Opinion 99-413 of the ABA's Standing Committee on Ethics and Professional Responsibility, issued on March 10, 1999, adopts the position that "[l]awyers have a reasonable expectation of privacy in communications made by all forms of e-mail, including unencrypted e-mail sent on the Internet, despite some risk of interception and disclosure." As such, the Committee concluded that use of e-mail was consistent with Model Rule 1.6. In April of 1999, Ohio reached a similar conclusion in Opinion 99-2.

To guard against an inadvertent waiver of privilege, at a minimum, an attorney confirm a client's consent to the use of e-mail prior to transmission of attorney-client privileged information by e-mail. Additional steps, such as the use of registered digital signatures, the use of separate encryption programs like PGP (Pretty Good Privacy) that are commercially available, and the use of proxy servers or e-mail aliases (*see, e.g., www.abanet.org/initial.html*) to mask the identity of the sender of e-mail messages may be considered if a client wishes to use e-mail but desires one or more additional levels of protection against waiver of the attorney-client privilege or disclosure of confidential information.

Documenting e-mail sent for business purposes is also important. Because it is electronic, e-mail can be deleted easily and inadvertently from a computer or floppy disk, at times leaving behind no record of having been created or sent. Steps, therefore, should be taken by users of e-mail to insure that electronic and/or hard copy forms of e-mail messages which are sent to others will be archived, either in a central location, or in the file pertinent to the matter or client addressed in the e-mail message. Policies which set forth specific guidelines in this respect when multiple persons have e-mail access within a single organization should be established and followed.

2. List Servers

Another service available over the Internet, listservers provide a professional networking opportunity, an opportunity to share information and obtain answers to questions

from persons having similar interests, and an opportunity to stay in touch with late-breaking news pertinent to a specific topic. This service is really only an evolutionary step away from e-mail, in that the service is used through and depends upon e-mail messages which are sent to a central location, from which the same message is then transmitted to all subscribers to the list. Messages and responses thereto are thus transmitted to the list of subscribers for all to read. It is a good idea to be somewhat selective in the listservers to which you subscribe, given the fact that your e-mail inbox can sometimes become flooded with messages you may not care to read. Subscribing to the listservers requires that you following a certain fairly standardized protocol involving the sending of a particular message to the listserver host computer connected to the Web. Instructions for the following of this protocol is usually found at the Web site for that host computer.

A comprehensive list of legal-related listservers can be found at www.lib.uchicago.edu/~llou/lawlists/info.html. This list is alphabetical, so it can be difficult to find a list of interest to you. Try a keyword search of the same list at www.lib.uchicago.edu/cgi-bin/law-lists. You can also go to www.lawguru.com or www.findlaw.com/lists/ and use their form-based pages to subscribe to any number of legal-related lists.

3. Chat Groups

Chat groups are another service available, often for free, on the Internet. These services are provided through software programs residing on computers connected to the

Internet which enable an Internet user to post messages to an electronic bulletin board and to read other messages posted to that bulletin board, all in real time. The chat groups are typically established around a central theme or topic. A good example of legal-related chat groups may be found by clicking on Legal Chat at the Web site found at www.legal.net. Chat groups have the advantage of not presenting e-mail messages to a list of people who do not necessarily want to receive the e-mail, but they generally also have the disadvantage of being “open” or uncontrolled so that virtually anyone may post a message to the electronic bulletin board.

F. Intranet

Intranets are nothing more than corporate offshoots of the Internet. They work and act just like the Internet, but access is limited to employees of the organization.

Many companies use them to allow employees to share data, with the added advantage that they’re cheaper and easier to manage than most private networks. For example, with an Intranet, the need for proprietary or special software is limited. With any Web browser (and the necessary user i.d. and password), employees can be granted access to the Intranet.

The most important part of the Intranet is the *firewall*, which is used to fence off the Intranet from unauthorized access. A firewall may be either hardware- or software-based, or some combination of both. Essentially what a firewall does is examine each incoming

request and block those that do not meet access criteria.