

A brief overview of the Internet

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Why should I care about the Internet?

We hear a lot about the Internet in the news these days--some of it positive, some negative. Terms like "net-surfing," and the "Information Highway" have become common vocabulary even for non-computer nerd types. But what exactly *is* the Internet?

On the positive side, the Internet is a world-wide means of information exchange, available to individuals as well as governments and corporations. Some uses of the Internet have international ramifications. During the collapse of the Soviet Union, some of the most reliable reports available in the United States were private email messages sent through the Internet, which was never successfully controlled. We also were able to get eyewitness reports from both Kuwait and Iraq during the Gulf War. Some uses of the Internet are more personal. Accounts of people meeting potential long-term friends -- or even spouses -- are common. Internet access has traditionally be very unrestricted, and very difficult to restrict. The "Information Highway" may be just a buzzword to the politicians, but to those of us on the Net, it's already here in a very real sense. The Internet is a post-office, bulletin board, reference library, software clearing-house, general-purpose tech support provider, dating service, and the ultimate free press.

On the flip side, the news is also full of accounts of people sending viruses through the Internet to crash corporate or government systems, or engaging in illegal activities such as fraud or child pornography. Information espionage is a widespread problem. There are even Internet-specific crimes, or at least violations of custom, as in several recent mass-emailings which attracted the ire of the Internet community at large. The disadvantage of the degree of freedom allowed in the Internet is that there is very little ability to force users to behave.

What is the Internet?

First, the Internet is a *networking standard*. By this I mean that there is no "Internet Company." The Internet doesn't belong to any one group, be they corporate, government, or academic. There is no single computer that is the Internet. The hardware that makes up the Internet is a group of computers, owned by many different interests, used together cooperatively. No single group controls the Internet, either. To connect to the Internet, a computer owner simply must connect to another machine already on the Internet, usually via a dedicated phone line. Internet access is not free in that the leased line costs a company money. But it is relatively unrestricted. Each member is solely responsible for screening who they allow to access the Internet through their connection. In a sense, the Internet is the world's largest functional anarchy.

When was the Internet created?

The Internet was initially formed in the mid eighties by joining a number of (relatively) smaller networks, many of which were owned and operated by the government (including the military). Some of the early subnetworks, which are still part of the Internet today, were: DDN (Defense Data Network), ESNET (Energy Sciences Network), and NFSNET (National Science Foundation Network). Most of the machines outside of the government were owned by academic institutions, such as the University of Minnesota, and these probably account for the bulk of the machines and traffic, even today. Recently (within the past few years) the Internet

has been opened up to private commercial interests as well. Many corporations who had had internal networks, especially computer companies such as DEC or Sun, now have gateways to the Internet at large, allowing their users to communicate with their peers anywhere on the Net. This article, for example, was submitted through the Internet.

Who is on the Internet?

The Internet represents a worldwide community, and has its famous individuals as well as its ordinary citizens. Many government officials have internet addresses, including `president@whitehouse.gov` and `vp@whitehouse.gov` (yes, the Big Guys have been online since June 1993). Scott Adams, author of the popular "Dilbert" cartoon, publishes his Internet address in each strip: `scottadams@aol.com`. You can even write to `santa@north.pole.org`. On the less famous side, my address is `elizabeth.dalton@east.sun.com`. You can write me directly with comments about this article. I can't promise to write back, but I do read everything that comes into my inbox.

How can I get Internet Access?

You probably won't want to pay for a dedicated phone line connecting you to another Internet machine. So how can you, as a normal citizen, get access to the Internet? There are a number of routes. If you work for an Internet-savvy company, as I do, you may already have an internal electronic mail system with connections to the Internet at large. Or, if you are a student at a college or university, you may be able to get an account on a machine (a "host," in UNIX-speak) that is connected to the Internet.

Or you may access the Internet through a commercial service. America Online, Compuserve, Delphi and Prodigy (listed in alphabetical order) are all services that charge a fee, and allow some access to the Internet, usually via email, at least. Note that none of these services directly connect you to the Internet. They all offer access to their own internal network, with restricted access to the Internet at large. Most will charge you for how much you use that access. (They will also charge you for all the time you spend on-line.) On the other hand, they usually provide the user with software to help them navigate the Net, and they offer gradual access so you don't get overwhelmed instantly. There are also independent companies offering direct access to the Internet for a fee. These are generally small start-ups with the necessary equipment to access another Internet machine, and a bunch of modems for users to dial up from their own machines. They may or may not offer much by way of navigational software or customer support; check before you sign up.

Either way, with a commercial service you'll need some means of accessing that service. Although an old teletype terminal and a 300 baud modem will do the job, you'll get more out of the experience if you use some kind of computer, preferably with a hard drive to store all the cool stuff you'll find, a reasonably fast modem (I use a 2400 baud, and it seems to suit my needs), and a communications package.

OK, I've got access. Now what?

What your access allows you to do varies with what kind of connection you have. The simplest service provided is email: using the Internet, you can send electronic mail messages practically anywhere on the planet. It's fast, it's easy, it's practically free (depending on how you connect--see above). If you're willing to sift through the amount of mail you'll receive, you can subscribe to electronic mailing lists that will rapidly fill your in-box with letters relating to topics from Ada

Programming to Zen Gardening.

If you prefer a slightly more manageable means of access to information, there are also newsgroups. Usenet is an Internet facility that allows you to subscribe to newsgroups you are interested in. Topics vary widely, new ones being created on a daily basis. One can subscribe to alt.activism, or alt.dear.whitehouse. Or alt.tv.northern-exp. Looking for a job in a biological field? Try bionet.jobs. Find out about technology's impact on society in comp.society. Swap reviews with the other readers on rec.music.celtic. To access newsgroups, you'll need a news reader. Generally, news reader software is provided by the host computer you're logged into, although versions which run on your own computer are also available. For example, a common UNIX news reader is rn. The news reader keeps track of which newsgroups you are subscribed to, and which messages from each newsgroup you've already read. The advantage of newsgroups is that they keep articles from the different topics sorted out, so that you can peruse one topic at a time. They also don't swamp your mailbox. If you use email for anything other than personal correspondence, subscribing to mailing lists can rapidly whack your productivity.

Using either email or newsgroups, you can connect with people all over the world who share your interests. You can look for a job, exchange philosophies, swap recipes. But the Internet is more than just email and newsgroups. With full Internet access, you can also use a utility like 'ftp' (File Transfer Protocol) to obtain all kinds of information and software: peruse the National Archives at ra.msstate.edu, for example. Or download free, "Public Domain" programs, "shareware" (which you pay for after you've tried it and decided you like it), and demo versions companies post to the Net to get you hooked on their latest product. Not all commercial services allow you to access the net in this way, so again, check before you sign up.

Surfing the Net, Part I: How to read an Internet Address

Once you're on, whether you're telnetting, ftping, or just sending mail, you'll need to understand how to read an Internet address. The system is actually quite simple. Consider a real-world address: name first, street, city, and zip, optionally followed by country. Internet addresses are similar. Email addresses start with the name: e.g., elizabeth.dalton. (Case is unimportant to the Internet mail protocol, although some local mail sorting mechanisms may require you to type certain parts of the address in upper or lower case.) Then comes the at sign (@). Then the address of the host that user's account is on, from smallest subgroup to largest, separated by a "dot" (.). So, continuing to use my own address as an example, I'm in a corporate network, so my address ends with .com, and the company I work for uses "Sun" as their network name: .Sun.com. I work on the east coast, and Sun's internal network divides into subnetworks by region: East.Sun.com. So my full address is elizabeth.dalton@east.sun.com.

Other major parts of the Net are the educational groups, which end with .edu, the military net, which ends with .mil, and the government network, which is symbolized .gov. How many subnets you need to specify to get to your recipient depends on who you're mailing to. Just as you don't always have to specify a floor or apartment number to mail a letter through snail-mail, you don't always need as many subnets to get through to one person as you might need to get through to another. An example of this is Al Gore's address: vp@whitehouse.gov. Our Vice-President works for the government, so he's on gov. The name of the host on the government network is whitehouse. Al's "alias" is "vp". That's all you need.

To connect via telnet or ftp, you won't need a user name. I'll be talking more about how to use ftp and telnet next time.

Controversies: Commercialization, regulation of commercial access services, privacy.

As an anarchy, the Internet is remarkably stable. But there are still controversies that pop up from time to time. One of the biggest concerns commercialization. Although corporate networks are now part of the Internet, it wasn't always that way. Allowing major commercial networks to become part of the Internet is still one of the hottest topics in the Net. The purists out there feel, rightly or wrongly, that somehow the net has been sullied and compromised by these additions. And if you want to fill your inbox with hate-mail, try advertising *anything* in a public newsgroup or on a widespread email alias. Recent examples of a breach of this netiquet included what seems to have been a bogus ad for a weight reduction method, and a junk email blitz from a law office looking for new clients. Both events spawned "flame wars" of rather colorfully worded email messages, the equivalent of a Net riot.

Another hot topic has been how the commercial access providers manage their accounts. A few years ago one of the larger commercial services started placing a maximum on the number of email messages each user could send or receive a month. Groups of users who had come to rely on that service (which had formerly been unlimited) protested. In the scuffle that followed, the provider tried to ban the user groups from sending email concerning the situation to all users on the service, calling into question how much censorship a private service provider should be able to exercise.

Issues of rights of access have also been prominent recently. In the above-mentioned weight-loss advertising scheme, the message originator seems to have used a rented terminal in a public access provider to blitz the entire Internet community. Until recently, the only way to access the Internet has been through accounts that were ultimately traceable, and under the control of some governing body, so such "info-terrorist" acts could be retaliated against by asking the administrator of the user's host to terminate the account, or at least disable the user's access to internet and newsgroups. Today, not only are there a number of commercial providers who don't screen their clientele, but there are "anonymous" servers which allow a user to send email or post to a newsgroup without revealing their identity. Although anonymous posting has advantages as a means to allow free access to the Net to voice controversial ideas without fear of retribution, issues of accountability and privacy with respect to these services are still unresolved. Some users seem to find that anonymity a temptation to harass others. Again, the Internet has always been an anarchy in essence, governed only by custom. Other than ignoring the messages, there is little a target of such harassment can do.

There are also issues of privacy, especially privacy in the workplace. Recent court cases on the issues of email monitoring have established a few basic standards: an employer has a right to restrict email to work-related uses only, and has a right to monitor an employee's email only if the employee has been warned in advance. There are a lot of unresolved issues here, too. The technology is new, and although there are customs on the Net itself, the rest of the world has yet to decide how to react to the Internet.

More to come

Obviously, this article has only provided the most shallow overview to the Internet. Next time, I'll talk in more detail about how to use basic UNIX utilities like telnet and ftp, common email and newsgroup conventions, and fancy ways to search for information using Mosaic, Gopher, Fetch, and Archie. In the meantime, happy net-surfing!