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Internet Connections

By Tom Yager

In the Dallas-Fort Worth metroplex where I live and work, there are so many Internet service providers that even an educated consumer has trouble choosing from among them. And even when you find a provider you trust, what class of service should you get?

Many writers on the subject of Unix make an invalid assumption: that all Unix users know how the Internet works. Fact is, most Unix users' systems aren't connected to the Internet at all, and the systems that are connected were usually hooked up by someone else. So don't feel in an underclass if you know Unix but the Internet is something of a mystery.

If you open yourself to all the choices, there are tons of ways to get a single PC hooked up to the Internet. I'll probably get hate mail from the Unix faithful, but it's true: Windows, equipped with a passable commercial set of TCP/IP tools (like Netmanage's Chameleon) is *far* easier to connect than Unix. Most service providers have technical staffers (avoid the ones who don't) that have specific experience with this class of client. There are mysterious mazes of SLIP and PPP, subnets, address classes and so on that I plan to cover, but not here. If you're completely green to having your own Internet link, you might consider starting simply; you needn't tell others you're running Windows. Windows 95 also has good built-in support for dial-up Internet, but Chameleon's got far better tools.

The Color of the Hose

The least expensive connection is a non-dedicated, dynamically addressed link. This is a connection you fire up only when you plan to use it. When you're finished, either you hang up or the host modem dumps the connection after a few minutes of inactivity.

Dynamic addressing makes it easier for an Internet provider to maintain a shared bank of modems and it also saves rapidly dwindling IP address resources. Dynamic addressing complicates dial-up Internet because there isn't a clear and universally- implemented scheme for the assignment of your system's address. You see, when you connect to a provider that uses dynamic addressing, your system has no clue what its IP address is. You usually have to write an ugly recognition script that reads the address data from the text the remote host spits out after your login.

Dynamic addressing is cheap, but it's generally considered a useless option for Unix systems. Most, UnixWare included, don't support dynamic addressing at all. Only by chance can you get the same IP address in two consecutive sessions, so no one from the outside world knows where to reach you. I've seen Usenet postings advertising FTP servers at dynamically- assigned addresses, their posters not realizing, or not caring, that the address is gone (and then belongs to someone else) after their connection dies. You cannot directly receive Internet e-mail via SMTP, you cannot host your own web server, in short, all you can be on a dynamically-addressed link is a client.

The next service class is dial-up with a static IP address. This is easier to set up because no matter what type of operating system you use, the set-up utility asks you for a specfic IP address. With static IP assignment, your provider will supply you with such an address.

Static IP eases setup, and the address you're given is your own to keep, but it's still not a suitable class of connection if you plan to offer any services. If you have clients who occasionally need FTP access to files on your system you can give them the address. But providers usually get fussed with users who try to push their dial-up account into a dedicated one. Just having someone reach into your machine from the outside is enough to violate some service agreements. And if it's not written, you are likely to run afoul of some of the unwritten rules of conduct. Make no mistake: your provider has the right to drop your service. If you're tying up a shared modem for hours just parked on-line waiting for someone to connect from the outside, you're unfairly exploiting your provider and it won't last. The top class of dial-up connection is the dedicated link. This link involves two modems and two phone lines *you* pay for: one set at your end and one at your provider's end. This is expensive because the resources you use can't be shared by anyone else. So you're at the mercy of your provider's profit margin.

A dedicated link always has a static IP address. It's up 24 hours a day unless one of you (your system or the host) breaks the connection. Most dial-up networking hardware used by providers drops idle connections even on dedicated links. I use a `cron`-table entry that simply `ping`s one of the servers on the host's side every 10 minutes. Don't do this with any but a dedicated link.

Most providers deliver all of their service classes with a default of a single IP address on the client end. That means even though you set up your server with an Internet link, you can't connect other machines to your server and have it transfer packets bound for the Internet. You need to negotiate with your provider to give you a block of IP addresses, one for every simultaneous host you plan to connect. Your provider can, for a fee, send an application to the Network Information Center (NIC) that registers your system and grants you a uniquely-named domain. Do that if you plan to offer any services.

It's simpler if your provider sets up a name server for you. It has the disadvantage that you must get them to make changes to the database for you. If you want to change the name of one of your systems or add a new machine, your provider has to do it.

The Diameter of the Hose

As with most things, most Internet consumers often purchase too little or too much service. I read ads in local tech rags every day from supposed Internet providers who are trying to resell time on their 28.8K dedicated link. How much service you need should be based on the combined bandwidth expectations of you and your users, divided by the number of people you expect to share the link at any one time.

The wanna-be provider with the 28.8K link gets a quick and rude awakening. By any reasonable calculation, his link will support, at most, three simultaneous interactive users. If any one of those users fires up a web browser or uses `ftp` to download a huge file, all the other users sharing that link will feel it. That's simply too little service.

The people who buy too much service sometimes get lured by the power, like Tim Allen's references to eight-cylinder lawn mowers. Bandwidth just to impress yourself or your geek friends is a waste of money. If you run a BBS and want a link for news and to pass mail in and out, dedicated 28.8K is perfect. At that speed, most providers don't want you to ''sublet'' your link anyway. Each user you allow access through your site is one prospective user taken away from your provider. Don't expect them to be thrilled.

If you really do want to resell service, or if you're putting up a web site that's likely to attract lots of traffic, it's time to look into faster links. ISDN is becoming a popular choice because the cost of the phone line is tiny for the amount of bandwidth it can carry.

Here [Fort Worth, Texas], an ISDN line runs $50-$70 per month, and that line can carry 128K-bits per second of traffic, more with compression. In contrast, a 56K data line runs over $300 per month. I'm just climbing into the ISDN camp myself, an experience I'll document when I get there.

Faster lines like T1 and such are beyond my expertise and outside the scope of this column. If you're in that league and unfamiliar, grab yourself a telecommunications consultant.

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