



The Gigaphone

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The Shouting Ground Newsletter

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From the cubicle of the president...

An ISP and His Dog

Welcome to 1900! Like most of the rest of the world, we did not run into any problems. Our only verifiable Y2K incident consisted of an old version of the Elm mail client. Outbound messages were dated January 1st, 100. Go figure. Having been inundated with Y2K hype for the last few years, I'll just end it right there.

Chicago Here We Come!

Except for a few delays, the building of our Chicago POP is progressing quickly. Any day now we will be making our first attempt to turn up our 56k and ISDN dialups that cover the 312, 708, 630, 815, 847, and 773 area-codes. If everything goes well, higher bandwidth services including T-1 access should follow in February or March. Those of you who enjoy dealing with phone companies can appreciate some of the obstacles we've run into. At one point we had to convince Ameritech that, "yes, you DO have a fiber ring in that building. Really. I've seen it, and it's got your name on it. Work with me here." Fortunately, they came to their senses.

Personnel Changes

Lastly, some of you may have noticed that we have made some personnel changes. Brent has returned to a position at the University of Illinois. We will miss him, and we wish him the best in his new digs. Joining our staff is Jim Creason. Jim comes to us with strong PC and Macintosh skills. He has already picked up on a lot of the quirks of our operation, and he is proving to be an invaluable employee. Welcome aboard, Jim!

In closing, we are very excited about the New Year. With the year-end rollover behind us (and no evidence of smoldering craters), we are looking forward to redirecting our energies towards growth and improving our existing services. We hope you'll join us!



High-Speed Internet Access in Champaign-Urbana

Mike Berger

The C-U Cable Commission held a forum in December on local options for high-speed Internet access. The alternatives were presented by AT&T Cable Services, McLeod USA, and Ameritech/SBC. Cable modems and DSL services were compared.

George Badger, in his talk about the past, present, and future of the Internet, noted that people are willing to pay the higher costs associated with high-speed access because the value of the Internet is increasing. As people use e-commerce, download music and video, and e-mail instead of more traditional communications, they need more bandwidth and are willing to pay for it. Meanwhile, to keep costs competitive, the service providers need to sell as many services over their pipe (whether it's copper or fiber) as possible. So we

should see offers of telephone and cable television services bundled with Internet access.

Not all alternatives will be available at all locations. Before deciding on a service, consider the following questions:

- What service is available (and reliable) where I live?
- What's the connection speed? How many people is it shared with? Is it secure or can they eavesdrop on my traffic?
- Are there upgrade plans in place to maintain the level of service as more people subscribe?

Read the fine print. While advertisements might talk about 10 MB/s network speeds, in reality your traffic will be much slower by the time it gets to the head end and out to the Internet. Most of the high-speed services have bandwidth limitations.

AT&T Cable Services plans to launch their "@Home" service in February. They have emphasized that it is a "residential entertainment product" and are not marketing it as general high-speed Internet access. While AT&T refused to give actual bandwidth figures, they guarantee that it's "real fast". To further the illusion of speed, AT&T is using their "water tower approach", which is really just web caching. The caching machine stores the contents of popular web pages so they can be viewed by @Home customers without leaving the AT&T network. The drawback is that pages stored in a cache may not be the latest version, especially if the page is updated frequently or self-updating. They are constructing regional data centers for caching, and expect to serve a lot of their traffic from their own caching servers. One dynamic address is provided, and two static addresses may be purchased for \$ 4.95 each per month. There are bandwidth limits on both uploads and downloads, though AT&T was not willing to specify what they are. Servers are not permitted. AT&T eventually plans to announce other services oriented toward businesses.

McLeod Communications has spent the past year building a fiber ring around town, and eventually plans to roll out DSL and fiber connectivity for the same connection cost. At the present time, their copper and fiber are concentrated in the campus area and they are focusing on UI campus area housing. Eventually they will be offering service in other parts of the community. Technical limitations of DSL constrain the service to approximately a two mile radius from the 4th Street and Clark Street Ameritech switches, so the service will not be available everywhere.

McLeod plans to offer both voice and data service over the same circuit. Their DSL offering includes 6 addresses, and eventually you should be able to choose your Internet Service Provider. Unlike cable modems, a DSL circuit is dedicated to the user and is not shared. Presently McLeod is offering ADSL, which means that the reverse channel (to the Internet) is slower than the forward channel.

Ameritech, which recently merged with SBC, plans to offer DSL service as well. They announced "Project Pronto" in October, with

their plans to become a leader in broadband services. Their scheme is similar to what McLeod is implementing, in that they plan to run fiber to the neighborhoods, and then deploy DSL services from neighborhood gateways. They expect to offer service later this year, and plan to have enhanced service for businesses as well.

Despite the optimistic claims for alternative high-speed services, there are still many problems and unanswered questions. Road Runner, a competitor of the @Home service, has placed unannounced bandwidth constraints on the service and prohibited streaming video. Furthermore, shared services like cable access slow down as they're used by more people. DSL speed varies by line conditions and distance, and may be affected when other phone services are run in nearby wires. Most of these services are intended for web browsing. If you need to upload files frequently, need a fixed IP address, or have other special applications, you should consider more conventional high-speed services. ISDN is inexpensive and reliable for bandwidth requirements up to 256K or so. The cost of T1 service is not substantially higher than DSL if you frequently need higher speeds. Typically the cost of the Internet bandwidth is significantly higher than the cost of the transport (wires to get it to you).

We're fortunate to have so many choices for connectivity in this community, but except for casual Internet users and web browsers, the new high-speed offerings have serious limitations.



Basic Linux Security

by Lucas Peet

In my last article, I wrote about getting your Linux box connected to the world of the Internet. Now that you're online, there is a big issue that needs to be discussed: Security. You wouldn't want some malicious cracker breaking into your system, and stealing your files, now would you? Since Linux security is such a monstrous subject, I'll be touching on the basics here, and in upcoming articles.

Passwords

Passwords, obviously, play an important role in security. In the online world, if someone knows your password, *they can be you*. They can access your files, read your e-mail, anything you can do, they can do. For this reason, you want to make sure your passwords are 1.) Hard to guess, and 2.) Easy to remember. Try to make them at least 6 characters long. Don't use the name of your pet, favorite animal, color, or food. Passwords that are all numbers, such as birthdates, anniversaries, or your Social Security number are also guessable by others. Mix upper case and lower case letters along with some punctuation. A good example is to pick your favorite movie, use the first letter of each word in the title and the main actor's name, stick in some punctuation, and tack on the year it was made. In the end, you'll get something like this: tMKr\$99. (The Matrix: Keanu Reeves, 1999) That's a fairly difficult password to guess, but it's easy to remember.

On your Linux system, usernames and passwords are stored in the file `/etc/passwd`. Although Linux stores the passwords encrypted, the usernames are still plain text, and there are programs on the Internet that can be fed a password file in order to crack all the passwords in it. The password file must be readable by everyone, so anyone has access to that file. A way to get around someone copying your password file and cracking the passwords in it is to use *shadow passwords*. *Shadow passwords* is a software package for UNIX systems that replaces all the passwords in the password file with an 'x'. It then makes a second file that stores the passwords, and only the root user has access to it. In most modern Linux distributions, *shadow passwords* comes installed by default. If you don't have it installed, or you want more information on it, look here:

Shadow Passwords How-To:
<http://www.linuxdoc.org/HOWTO/Shadow-Password-HOWTO.html>

inetd and TCP Wrappers

inetd is the Unix daemon used to launch network services. It does this by looking in a configuration file - `/etc/inetd.conf`. The format of this file looks like this. (Note that lines beginning with a '#' are comments:)

```
#service socket protocol wait? user program arguments
telnet stream tcp nowait root /usr/sbin/in.telnetd /usr/sbin/in.telnetd
```

First, look through this file, and comment out (put a # in front the line) each service you don't need to offer to the general public. Are you going to be running an FTP or telnet server? What about finger? Unless you know you want some of these, it's safe to comment those out.

TCP Wrappers is a useful software package used in conjunction with *inetd* to grant (or deny) access to specific services on your machine based on hostnames or IP addresses. Most modern Linux distributions come with *TCP Wrappers* installed, so you won't have to worry about setting it up in `/etc/inetd.conf`. If you do, modify the above `/etc/inetd.conf` to look like this:

```
/etc/inetd.conf
#service socket protocol wait? user program arguments
telnet stream tcp nowait root /usr/sbin/tcpd /usr/sbin/in.telnetd
```

Note the bold text - this is all you want to change. Change this for every service you want to protect with *TCP Wrappers*. Note that *TCP Wrappers* doesn't work for UDP services.

The files `/etc/hosts.allow`, and `/etc/hosts.deny` are the two files you'll be editing. Basically, `/etc/hosts.allow` and `/etc/hosts.deny` control who is able to access your machine by defining hosts and services. The file `/etc/hosts.allow` contains the IP addresses for systems you want to allow access to your machine, and `/etc/hosts.deny` contains the IP addresses for the systems you want to deny access to your machine. The format for these files is `SERVICE:HOST`. For example, if you don't want anyone to access any services on your machine, put 'ALL:LOCAL' in `/etc/hosts.allow` (which would give local users, i.e. you, access to all the services), and put 'ALL:ALL' in `/etc/hosts.deny`. If you are running an FTP server that you want only U of I students to access, your configuration might look like this:

```
/etc/hosts.allow /etc/hosts.deny
ALL:LOCAL ALL:ALL
in.ftpd:128.174.5.
```

Keep in mind that *TCP Wrappers* only protects services executed from *inetd*, so there could very well be other services (such as the Apache Web Server or sendmail, which happen to have their own configuration files) that *TCP Wrappers* will not protect.

Other Information

Some other things to do to keep security risks down to a minimum are to keep your software up to date. Security related bugs are found almost daily. If you use RedHat, they post errata on their homepage constantly, as do other distributions, so keep those packages updated! Also, if you want to read or get e-mail about security-related issues, some good sites are Bugtraq (<http://www.securityfocus.com> - Go to 'Forums -> Bugtraq') or CERT (<http://www.cert.org>). These sites regularly post security-related advisories, and fixes for them if they're available. Look for the next edition of The Gigaphone where, I'll be writing about Anonymous FTP, relaying e-mail, and file permissions.

