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Upgrading Your Internet Connection

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Table of Contents

Upgrading Your Internet Connection

You can never be too thin, too rich or have too much Internet access speed!

To connect to the Internet, you need a computer, modem, perhaps a phone line or cable connection, communication software and an Internet Service Provider. Any one of these components might slow down your Internet activities, including the age and speed of your PC, your Internet Service Provider's equipment, your software settings, and the quality of your telephone line.

I. Switch from traditional telephone modem access to newer broadband technologies

The most significant way to change your Internet access speed is to subscribe to one of the newer broadband technologies such as cable modem or digital subscriber line.   Aside from being incredibly fast, these options offer the advantage of not tying up your telephone line.   In fact, you're always connected to the Internet. No more screeching modem connections. Just boot up your PC and you're connected to the Internet.

A. What are the new broadband technologies?

Currently, the two primary leaders in fast web access technology are cable modems and digital subscriber lines.   Both the cable companies and telecommunications utilities figured out that they could enhance their existing wiring schemes to transmit data via the Internet at increased speeds. Cable modems use cable connections and wiring to provide Internet access while digital subscriber lines use telecommunication lines to provide fast Internet access.

Although both of these technologies are much faster than traditional telephone modem Internet access, each of these technologies has different data capacity and speed limitations. For more information, see the section below on obtaining further information for references to helpful web sites with detailed explanations in the differences between the two technologies.

B. Choosing between the technologies

Usually, you will not have a choice. Generally only one or the other will be offered in your area. If possible, avoid long term commitments since the technology is still rapidly developing.

C. What is the expected cost?

1. Monthly Costs - Monthly costs average approximately $50.00.

2. Installation Costs - Installation costs can range from $75 to $150. Installation is still not a simple process. The average consumer will be unable to set up their broadband subscription services. A technician will need to visit your house to help set up your personal computer for network access as well as to install the necessary cable or telecommunications wiring.

3. Leasing or Purchasing a Modem - Many companies will give you the option of either leasing or purchasing a modem for accessing their services. While the cost of purchasing the modem coupled with the installation fee may seem steep, remember that leasing over the long run will be generally less cost effective. Depending upon the cost of modem rental, you may actually end up paying several times the actual purchase price of a modem.

On the other hand, most modems provide limited usability among vendors.   Many cable

companies use proprietary modems.   In other words, a modem that works for one cable provider

may not work well with the system of another cable provider. This will be an important factor if

you anticipate changing service providers or moving to another geographic region.

D. How to locate a vendor in your area

To find out if high speed Internet access is available in your location, contact your local

cable companies or telecommunications providers. Many companies have interactive web sites

that will tell you if they provide service in your area. At most web sites you can enter your zip

code to determine what type of service is available in your area. Below is a partial listing of

cable modem and digital subscribe line services that might be available within your area:

@home - http://www.home.com/

BellSouth - http://bellsouth.myway.com/

Comcast - http://www.comcast.com

Cox Communications - http://www.cox.com/CoxatHome

Media-One - http://www.mediaone.com

Road Runner - http://www.rr.com/rdrun/

E. Obtaining More Information

For more information on cable modems and digital subscriber lines, visit the following

web sites:

1. Cable Modem Help

http://www.cablemodemhelp.com
A helpful page with frequently asked questions such as: What's the difference between cable modems and DSL? Buy or rent a cable modem? How do I connect more than one PC to a cable modem?

2. Cable Modem Trials
http://www.teleport.com/~samc/cable5.html
A consumer web site which offers cable modem and digital subscriber line news industry news. In particular, this site contains a chart listing cable modem and digital subscriber line companies, modem speeds, description of services and subscription pricing.

3. DSL Reports
http://www.dslreports.com
An excellent site that includes 12 steps to home DSL, reviews, and a DSL locator by zip code. If you enter your zip code and address, you can find out if DSL is located in your neighborhood including the distance from your address to the telephone company's central office. (DSL works best if you are closer to the telephone company's central office).

3. *Broadband or Bust*
Complete Guide to Fast Web Access: New Tests of Cable and DSL
Cover Story - PC World, May 2000
http://www.pcworld.com/current_issue/article/0,1212,15821+1+0,00.html
Last month's cover story in PC World discusses cost, installation, security, speed and availability of faster web access.

II. What If Newer Broadband Technologies Are Unavailable in Your Area?

A. Purchase a New Computer

A slow processor, small hard drive and too little RAM are often major setbacks to a speedy Internet connection.

If you have a computer that's more than two to three years old and you have not upgraded any of its components, your computer might be slowing down your Internet access.   In addition to slow Internet access, have you noticed any of these other symptoms:

- As you try to complete normal tasks such as opening programs or executing commands, can you hear your hard disk "grinding"?

- When you shop for software at the computer store, do you often have to forego purchasing many programs because you don't meet the minimum system requirements?

- Do you feel the urge to get a cup of coffee while your computer is performing anything slightly beyond ordinary computer tasks?

If you answered yes to any of these questions, you should seriously consider purchasing a new computer. With the rock bottom prices of personal computers on the market currently, the only upgrade for your old computer that I could possibly recommend would be RAM. Many people don't buy enough RAM when purchasing a computer and don't realize how this decision can affect computing speed. For optimal speed, you should have at least 64 MB RAM in your computer to run most of today's software applications and to cruise the Internet effectively.

Once you reach a decision to purchase a new personal computer, I recommend that you visit the following web sites:

1. PC World
 http://www.pcworld.com
Each month *PC World* magazine publishes a comparative review list of the top 10 home PCs, top 20 power PCs, top 10 notebook PCs and top 20 budget PCs. The web site list is updated more frequently than the magazine and is an excellent guide for comparison shopping.

2.ZDNet
http://www.zdnet.com
Visit ZDNet for a smart shopper buying guide to purchasing computer hardware and software. Includes such tips as desktop buyers' checklist, desktop or notebook?, ten tips for buying success, choosing the right processor.

B. Troubleshoot Your Modem and Telephone Line

In the past, it was easy to categorically state that anyone who wanted improved Internet access should purchase a faster modem - the fastest that you can afford. That is no longer a blanket recommendation. With the advent of cable modems and the confusion over modem standards, you might wish to reconsider that decision. A modem can be very expensive. You can save yourself considerable frustration and expense by investigating your options before purchasing a modem. Before you purchase a new modem, you should consult with your Internet Service Provider and find out what type of modems they support. You might even consider buying the same modem as your Internet Service Provider. A modem works best when communicating with another modem of the same brand, so in theory if you use the same model modem as your Internet Service Provider does, then you are set for optimum modem performance.

Your telephone line may also cause problems. Some suburban and rural telephone lines can have excessive line noise (audible 'crackling' on the line) which will interfere with modem data transfers. If you plug a phone into the same line your modem is in and you can hear a lot of static, this is probably slowing you down. You can call the phone company and ask them to take a look at the line, but if the cause is bad wiring in your home or office, they may want you to pay for any repairs.

Finally, some phone lines simply cannot support high speed modem connections. There is very little you can do about slow connections. You can either ask your phone company about plans for upgrading its telephone lines or you can try to locate an alternative to the phone company such as the cable company. See the section D below for information on alternatives to

traditional telephone Internet access.

C. Evaluate Your Internet Service Providers

1. Work With Your Current Internet Service Provider

If you have eliminated your PC, modem or phone line as causes of your Internet slowness, your Internet Service Provider might be the culprit. Most Internet Service Providers have a Frequently Asked Questions (FAQ) section on their web page which includes tips on increasing your Internet speed. Read the FAQ section carefully to be certain your equipment is optimized for the best possible Internet connection that your Internet Service Provider can provide.

If you suspect your Internet Service Provider's performance is hindering your speed, gather some evidence and contact their technical support. You should be able to provide times, dates, and details about the problems you've had. Be specific. You will need to mention any failed calls, busy signals, DNS server failures, or slow connect times (that is, anything consistently longer than 25 seconds). You will also want to ask your Internet Service Provider about the speed of their connection to the main Internet backbone. Most Internet Service Providers are happy to report the speed of their main Internet connection.

After all this, if you're still not satisfied, look for another provider.

2. Change to a New Internet Service Provider

You must first decide whether to choose an Internet Service Provider that is national or global versus a regional or local Internet Service Provider. You've probably heard of many of

the large Internet Service Providers such as America Online, Microsoft Network, or CompuServe.   Generally the advantage of a large Internet Service Provider is ease of use. For example, the America Online software interface is very user-friendly. Another advantage is that often you can access them without accruing long distance telephone charges regardless of your physical location. If you anticipate needing an Internet connection during frequent traveling with a laptop, then you might want to consider an Internet Service Provider with a national presence.

You might also consider a regional or local provider within your community. To find a local provider, check your telephone yellow pages.   Or, you can consult The List at the following web address:

http://www.thelist.com

The List proclaims to be a definitive guide to over 6,900 Internet Service Providers by state and area code. I found The List to be almost too comprehensive. The number of Internet Service Providers for my area code (706) was overwhelming.

Perhaps the best advice is to survey your friends, neighbors or other members of the legal community. Find out what Internet Service Providers have proven track records in your community.

When selecting an Internet Service Provider, ask the following questions:

1.   What is the quality of the customer service?

2.   How often do you get a busy signal?

3.   Is there a limit to the amount of Internet access per month? If so, what is the per hour charge when you exceed the limit?

4.	How long has the Internet Service Provider been in business?

5.	Does the Internet Service Provider provide space for you to create your own web page? If so, how much?

6.	Does the Internet Service Provider provide an 800 number for access while you are traveling? If so, is there an extra charge for using the 800 number?

7.	What modem speeds does the Internet Service Provider support?

D. Reconfigure Your Web Browser

1. Check the Help File of Your Web Browser

Both Netscape and Internet Explorer have tips for improving your Internet access speed in their Help files. For example, the Netscape Help file provides instructions for optimizing the speed of your Internet access by changing various system preferences such as enabling java, changing your cache settings, and automatically downloading images.   The Internet Explorer Help file provides Tips and Tricks section which includes instructions for displaying web pages faster.   Review the help files for your browser and be certain your browser is properly configured.

2. Change Your Cache Settings

To speed up your Internet access, your web browser maintains a cache of
 information and graphics from recently visited web sites. If you go to a web site you have previously visited, your browser will check to see if it has been modified since the last visit and, if not, load the information from your hard disk rather than download it again from the Internet.

Fortunately, you can specify how much disk space you want set aside by your web browser for its cache. You may have to experiment with your settings to figure out exactly how much disk space to specify. In trying to determine the proper size, consider how you use the web. If you tend to jump around to different sites a lot, you should try using a small cache. If you visit new sites pretty often, it would be senseless to have a big cache to store pages you may never visit again. If you consistently visit the same sites, you may want to increase your cache. Be aware, however, that excessively large disk caches waste disk space and waste time because Netscape has to compare cached pages to ones currently being viewed. Also, if you do not have a lot of space on your hard drive, you may not want to increase your cache.   Check the help file of your browser to find out how to change your cache settings.

3. Stop Automatically Loading Graphics

Normally your web browser automatically loads graphics or images on web pages.   This is an option you can turn off and see some dramatic speed increases. If most of your web browsing consists of needing graphics or pictures then do not change this option.   If, however, most of your browsing consists of needing text and occasional graphics then turn the feature off for increased speed. Even with this feature turned off, if you visit a web site and suddenly realize that you do need to see the graphics, you can simply click your browser button marked `images' on the toolbar to load images on a web site. Also note, many web pages provide alt text as part of their html code, which shows up to describe the graphics your browser doesn't display. Alt text's primary function is to describe graphics images for web browsers without graphics capability.   So, even with graphics not loading automatically in your browser, you will see a

description of the graphics on most web pages.

A final suggestion regarding graphics is to choose the text only version of web pages if you have a choice. Many web pages provide a link to a text only version of their site. Unless you need the graphics for a particular reason, choose the text only version and navigate much quicker.
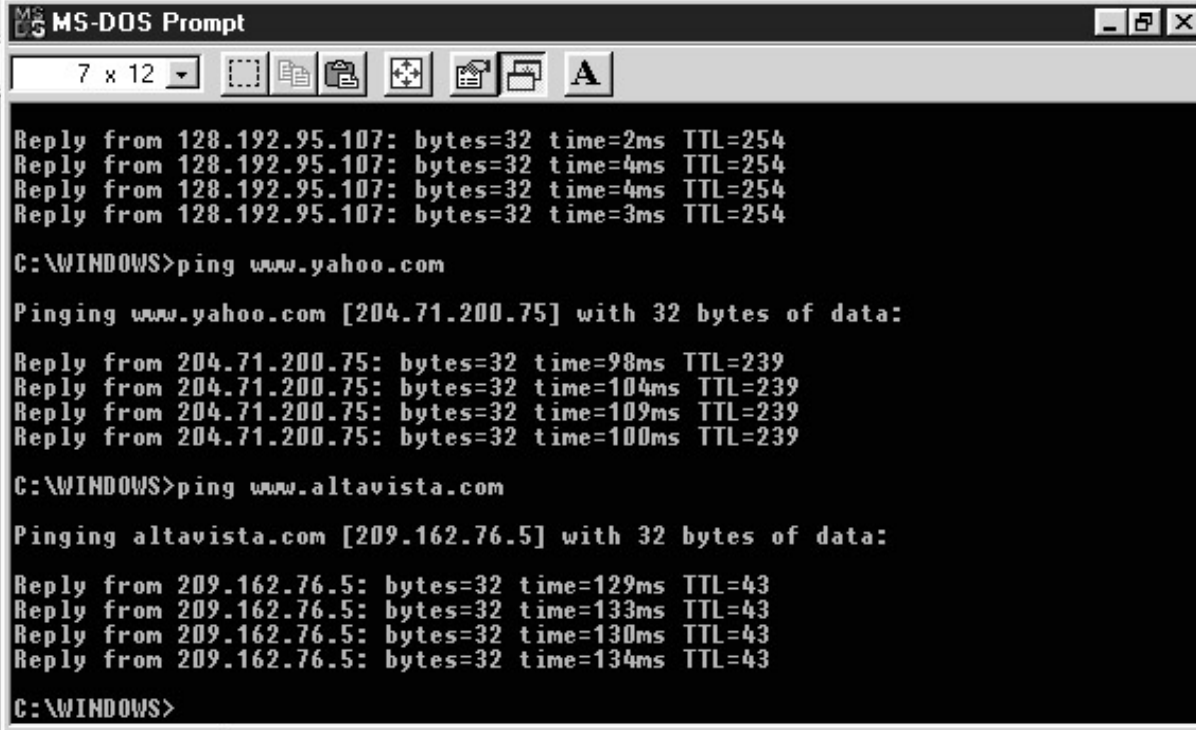
E. Internet Traffic Problems

1. Avoid Popular Web Sites at Busy Times

The Internet has some known slow spots that even the fastest computers can't navigate quickly. For example, the IRS web site is impossibly busy during the tax season. This is because at any one time, thousands of individuals could be connected to their site downloading large files. If you desperately need access to a site that is hopelessly clogged, try to find a location where the popular site has been mirrored. Many popular sites are replicated or mirrored at other geographic locations. Use one of the popular search engines or meta-indexes to find a mirrored site. Another option is to access a crowded web site at non-peak hours. Non-peak hours are generally at night or early morning.

2. Use the Ping and Tracert Commands

If you are not sure whether your Internet slowness is due to the sluggishness of the web site you are trying to access, there are a couple of tricks you can use to diagnose the problem. You could purchase software to monitor your Internet connection such as Starfish or NetMedic, but for free, you can use the *ping* and *tracert* commands. You can use the *ping* command to check a site's response rate. You can use the *Tracert* command to check the path your data is

taking through various Internet networks. Tracert will show you which router is slacking off

along the way.

```
MS-DOS Prompt                                                    _ 8 X

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Reply from 128.192.95.107: bytes=32 time=2ms TTL=254
Reply from 128.192.95.107: bytes=32 time=4ms TTL=254
Reply from 128.192.95.107: bytes=32 time=4ms TTL=254
Reply from 128.192.95.107: bytes=32 time=3ms TTL=254

C:\WINDOWS>ping www.yahoo.com

Pinging www.yahoo.com [204.71.200.75] with 32 bytes of data:

Reply from 204.71.200.75: bytes=32 time=98ms TTL=239
Reply from 204.71.200.75: bytes=32 time=104ms TTL=239
Reply from 204.71.200.75: bytes=32 time=109ms TTL=239
Reply from 204.71.200.75: bytes=32 time=100ms TTL=239

C:\WINDOWS>ping www.altavista.com

Pinging altavista.com [209.162.76.5] with 32 bytes of data:

Reply from 209.162.76.5: bytes=32 time=129ms TTL=43
Reply from 209.162.76.5: bytes=32 time=133ms TTL=43
Reply from 209.162.76.5: bytes=32 time=130ms TTL=43
Reply from 209.162.76.5: bytes=32 time=134ms TTL=43

C:\WINDOWS>
```

Windows users can run Ping from a DOS command line. To do this, from the START

menu, choose RUN. Type command. This should give you an MS DOS prompt. At the prompt

type ping followed by the site's name (for example, ping www.toyota.com).

Ping will show you the results of four tests. Any time less than 300ms (milliseconds) is normal.

More than 400ms is slow. If you get a "Request Timed Out" message, this means that the server

is either down, not configured to respond to ping, or extremely slow. If the site is busy or slow,

you should try again later to see if it is an ongoing problem. If your favorite web site is really

slow, you may want to use a search engine to locate a mirror site you can visit.

```
MS-DOS Prompt                                                   _ 🗗

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C:\WINDOWS>tracert www.mit.edu

Tracing route to DANDELION-PATCH.MIT.EDU [18.181.0.31]
over a maximum of 30 hops:

  1     4 ms     4 ms     3 ms  128.192.239.250
  2     4 ms     3 ms     3 ms  128.192.233.1
  3    12 ms     7 ms     7 ms  128.192.166.1
  4     7 ms     7 ms     *     131.144.136.5
  5    25 ms    21 ms    18 ms  131.144.130.5
  6     9 ms     9 ms     9 ms  atla.abilene.sox.net [199.77.193.2]
  7    23 ms    23 ms    24 ms  nycm-atla.abilene.ucaid.edu [198.32.8.46]
  8     *       31 ms    31 ms  vbns-abilene.abilene.ucaid.edu [198.32.11.10]
  9    40 ms    43 ms    39 ms  cs-atm0-0-20.cht.vbns.net [204.147.132.189]
 10    44 ms    45 ms    53 ms  VBNS-RTR-OC3.MIT.EDU [18.3.0.1]
 11    44 ms    46 ms    49 ms  MW12-RTR-FDDI.MIT.EDU [18.168.0.16]
 12    46 ms    47 ms     *     DANDELION-PATCH.MIT.EDU [18.181.0.31]
 13    72 ms    71 ms    83 ms  DANDELION-PATCH.MIT.EDU [18.181.0.31]

Trace complete.
```

Windows users can also run Tracert from a DOS command line. To do this, from the

START menu, choose RUN. Type command. This should give you an MS DOS prompt. At the

C: prompt, type tracert, followed by your site's name(for example, tracert www.cnn.com).

Tracert will show you up to 30 "hops," indicating both the response time and the site name

and/or IP(numerical) address of each stop along the route. If you get repeated "Request timed

out" messages, press Ctrl-C to quit. If you get four "Request timed out" responses, most likely

you have found a router that refuses Tracert requests.

The speed of your connection is determined by the total response time of everything

along the path. Five hops with each router taking1 second to respond is worse than nine hops

13

with each router taking 200 milliseconds to respond. With Tracert's information, you can exactly which router is wasting your time. It's quite satisfying to be able to direct blame at a specific culprit. Unfortunately, that's all tracert lets you do. If your Internet Service Provider is speedy but one of the routers in the chain is slow, you're stuck with the situation.

As a final solution, you might look at Internet traffic patterns as a whole and reassure yourself about the Internet traffic flow. Occasionally main Internet connections have problems and wreak major havoc with Internet traffic. To graphically view the Internet and its traffic patterns, visit the Internet Weather Report at http://www.mids.org/weather.

G. Stalled Web Pages

Occasionally you are trying to view a web page and it just seems to stall cold. You can sometimes get a faster load by pressing the STOP button on your browser and then pressing RELOAD (on Netscape) or REFRESH (on Internet Explorer). If you're really lucky, you don't even have to press RELOAD or REFRESH because enough of the page is visible for your needs.

If you only need a picture or two loaded and you can see the box where it's supposed to be (usually after clicking the STOP button), you can right-click on the box and tell Netscape to ``view image''.   This will sometimes load the needed graphic very quickly and you're on your way.