

READY NET GO ... NEWS

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<http://www.readynetgo.net>

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Tip of the Month

Last Fall, Microsoft released a **new version of Internet Explorer – 7.0**. You may have already downloaded it if you are set to receive Automatic Updates from Microsoft. IE 7.0 is more secure (although still not foolproof) and has some interesting features, like tabs, which may make your browsing experience easier.

Once you download the update and open IE, you may be confused as the design of IE 7.0 is different from IE 6.0. The main menu (File, Edit, View, ...) has been changed to icons and drop down menus. This may throw you but give it a chance and you'll re-learn where to click.

You're not mandated to only search the web with Internet Explorer though; there are other options in browsers. **Mozilla's Firefox** is very popular and although it has some security issues, this alternative browser doesn't suffer from the plethora of security issues as does IE. **Opera** is another good alternative. And let's not forget the original competitor, **Netscape**.

Although IE 7.0 is very stable, it's a good idea to **have more than one browser** available on your computer in case of problems. If IE becomes corrupted, you still have an option for browsing the web.

You also may find that if a webpage doesn't look right or you're not able to print properly, trying the page in another browser fixes the issue. It's always a **good idea to have a backup plan**, even if you don't use it very often.

Firefox – www.mozilla.com

Opera – www.opera.com

Netscape – browser.netscape.com

Resolving Problems with Internet Connections

One of our most frequently asked questions is: "I can't get on the Internet. Why can't I connect?"

Every computer that is configured to browse the Internet loses its connection from time to time. Fortunately, there are **steps you can take** to figure out 1) where the problem lies and 2) how you can get back online quickly (if the problem is on your end).

If you lose your Internet Connection, **check these four things first:**

- 1) Is the modem and/or router plugged in, i.e. **power light on?** Is the modem switch turned on?
- 2) Are **all of the lights illuminated** on the devices such as the network port of the computer as well as the ports of the modem and router?
- 3) Are the **cables plugged into the correct ports** of the modem or router?
- 4) Is **anyone else** experiencing a lost connection or is your machine the only one in the office/home that can't connect?

If you don't see lights on the modem and/or router, turn the device off, wait a few seconds and turn it back on. You may want to try restarting your computer as well.

If that doesn't work, try unplugging the cables and plugging them back in – **make sure you hear a click** (the plug may appear to be in all the way but unless all of the pins are connecting, you won't get a true signal).

If all of the lights are illuminated, you'll have to dig deeper to find out where the connection is being blocked.

WWW (Websites Worth Watching)

1. www.rideforclimate.com/usa/ - Ever thought about riding your bicycle for a cause? Here are two guys who are doing just that - they're coming to Philadelphia in May ...
2. www.energystar.gov/ - Bought any new appliances in 2006? Check to see if you can get a tax credit.

If you still can't connect after checking the above, there are two possible reasons:

- 1) Your computer isn't communicating with your modem or router. – **OR** –
- 2) Your ISP service is down (which means you'll have to wait until they resolve the problem on their end).

Figuring out where the problem resides helps to alleviate the frustration that everyone feels when they can't get their email or access a webpage they really need. So roll up your sleeves and get empowered – everyone on a PC running a Microsoft Windows OS can do the troubleshooting steps in this newsletter. Jump to page 4 for troubleshooting or keep reading for some necessary background information.

How Surfing the Internet Works

You turn on your computer and click the Internet Explorer icon and a website appears usually in one second or less. This is the ideal – let's break down the steps.

When you click the browser icon, your computer instantly sends a message to the router with your request ("I want to browse the Internet – show me 'this' page"). The router then sends a message to the modem with that request. The modem (still in your office) contacts your ISP's router with the request. The request is then forwarded to router after router until it reaches the correct destination. When the server that houses the website you want is reached, the process is continued in reverse until the website appears on your monitor. This all happens in less than a few seconds (pretty amazing when you really think about it!).

You can see why some websites may take longer given the distance and number of routers and servers that must handle your request. If a transmission glitch occurs, the process is stopped and an error screen will appear: "The Page Cannot Be Displayed". Many times, if you hit the **Refresh** button, you will initiate the process again and if everything is configured properly, you should connect.

What happens if you hit Refresh and you still get that error message?

Try another website – the website you're trying to access may be down for repairs or they may be receiving an overload of requests. If you can access other websites, try accessing the site you want later in the day.

What devices do I need to get online?

If you have either DSL or cable modem service for your high speed (broadband) connection, you need three things for the connection to work properly:

- 1) **Cable or DSL modem** – The modem allows your computer to transmit and receive a high speed connection from your **Internet Service Provider (ISP)**. If the service is active and the DSL or cable modem is plugged in and turned on, the DSL or cable light will be illuminated even if your computer is off.
- 2) **Router** – The router has multiple network ports. It enables you to share the Internet connection with multiple computers and also provides security for your "always on" connection. (Note: if you have one computer, a router is necessary for security; it is not required to establish a connection with the modem.)

A router has two IP addresses: one that communicates with your computer (private) and one that communicates with your ISP (public). The function of the router is to:

- a) connect two different networks (your private LAN and your ISP's public network); and
- b) translate requests between your private IP and the public IP.

- 3) **Network card** – The network card, either in your computer or laptop, enables your computer to receive and transfer data through the router and modem. If you have a wireless network card, you can do this without plugging a physical cable into your machine.

Background Terminology

TCP/IP – *Transmission Control Protocol / Internet Protocol* – this is the language of the Internet. If you want to browse websites, you have to have this protocol installed on your computer.

IP address – A series of numbers assigned to a device that connects to a network or to the Internet. [Ex: 10.0.10.1 or 65.213.20.2] Since a computer understands data as numbers, IP addressing was devised so that computers can communicate with one another easily. Every computer, router, and server connected to the Internet must have a **distinguishing number** so that information can be sent directly to that device. There are two types of IP addresses and two ways of assigning IP addresses:

A) Private IP addresses – are assigned in the following ranges under IPv4:

Class A: 10.0.0.0 thru 10.255.255.255

Class B: 172.16.0.0 thru 172.31.255.255

Class C: 192.168.0.0 thru 192.168.255.255

Private IP addresses cannot communicate with the Internet. Thousands of computers can have the same private IP address but there can only be one public address assigned to each device directly accessing the internet. (*Note: there is a new protocol called IPv6 which does not use class descriptions.*)

B) Public IP addresses – range from 001.001.001.001 to 255.255.255.255 (exceptions include the values listed above, as well as a few other ranges designated for the localhost and specific organizations like the IANA – Internet Assigned Numbers Authority). Public IP addresses are assigned by your Internet provider and given out in blocks to organizations.

IMPORTANT: A **public IP** address is necessary to access the Internet and external networks.

Two ways of assigning IP addresses:

Dynamic: Most network users will connect with DHCP (Dynamic Host Configuration Protocol) if they surf the web, download/upload files and send/receive email. Two things occur: your router obtains a public IP address from your ISP which can change from time to time and your computer will obtain a private IP address from your router which can change as well.

Static: If you have more advanced needs, your ISP may provide you with a static IP address. In this case, you will **always use the same IP address** every time you connect. Common uses for static IPs are: mail servers, web servers, and FTP servers. These servers all need to be accessible 24/7 at the same address. Some financial, video conferencing and remote access applications may require static IPs as well.

Default Gateway – An IP address that serves as an access point to another network. In our network example, the **default gateway is your router** because it serves as a link between your computer (private IP address) and your modem (public IP address).

DNS (Domain Name System) – This service converts a name that is easily remembered to a series of numbers (IP address) so computers, servers, and routers can communicate with each other.

Troubleshooting

Let's figure out if the problem is with your local network or if it's outside your network.

- 1) Click **Start** – **Run** – then type **cmd** in the Open: box (this opens a command prompt)
- 2) Next to the drive letter that appears type in the following: **ipconfig /all** then **Enter** {see **Figure 1**}

Typing ipconfig /all displays the IP settings of your computer necessary to be on a network. An IP address is similar to a phone number or street address. It lets other computers and devices locate and transfer information to and from your computer.

Figure 1. Click **Start**, scroll up to **Run** and type **cmd** in the open box (Win XP and 2000 computers) to see the following **example** of an IP configuration screen and ping statistics

```
C:\WINDOWS\system32\cmd.exe      __ □ X
P:\>ipconfig /all                (NOTE: your screen will have different values)

Windows IP Configuration
    Host Name ...                  : PC
    Primary DNS Suffix ...         : company.local
    Node Type ...                  : Hybrid
    IP Routing Enabled ...         : No
    WINS Proxy Enabled ...         : No
    DNS Suffix Search List ....    : company.local

Ethernet Adapter Local Area Connection
    Connection-specific DNS suffix ... : company.local
    Description ...                 : Intel Pro 100+ management adapter
    Physical Address .....         : 00-90-27- BO-AE-ED
    Dhcp enabled .....             : Yes
    Auto Configuration Enabled ..... : Yes
    IP address .....               : 10.0.10.100
    Subnet Mask .....              : 255.255.255.0
    Default Gateway .....          : 10.0.10.1
    DHCP Server .....              : 10.0.10.31
    DNS Servers .....              : 198.6.1.122
    Primary WINS server .....      : 10.0.10.31
    Lease Obtained .....           : {Today's date and time}
    Lease Expires .....            : {Future Date – usually same day or in one week}

P:\>ping 10.0.10.100

Pinging 10.0.10.100 with 32 bytes of data:
Reply from 10.0.10.100: bytes=32 time<1ms TTL=128      {x4 lines}

Ping statistics for 10.0.10.100:
    Packets: Sent = 4, Received = 4, Lost = 0 <0% loss>

P:\>
```

NOTE: To close the session of the Command box, type **Exit** at the prompt or just click the **X** in the upper right corner. You can close the session at any time without causing problems or errors.

- 3) At the prompt (whichever drive letter appears, P:\> G:\> T:\> etc.), ping the IP address. For the example on page 4, I entered: P:\>ping 10.0.10.100

Pinging the computer's IP address makes sure that the network card in the machine is functioning properly and the network protocol (TCP/IP) is configured correctly. If the results show — Packets: Sent = 4, Received = 4, Lost = 0, continue with step 4.

If the results show — Packets: **Lost = 4** then your **network card IS NOT functioning** properly. Find out if anyone else on the network is having a problem and restart your machine. Call us if the problem doesn't resolve upon restarting.

- 4) If you get a response, **Lost = 0 from pinging your IP address**, ping the Gateway (which is the IP address of your router or firewall). If you can ping your Gateway, you can communicate with your internal LAN (local area network) / router / firewall. Example: P:\>ping 10.0.10.1
- 5) If you get a response, **Lost = 0 from pinging the Gateway**, go to step 6. If you get a message that shows Lost = 4, then there is a problem with your internal LAN (e.g., cable unplugged, router turned off, router improperly configured). Give us a call if you get a response that shows Lost packets.
- 6) Next step is to **ping the DNS server – Every website** on the Internet has both an **IP address** and a corresponding **Domain Name**. Instead of typing in a series of numbers to browse the web, this server enables us to search with words which are much more memorable. For instance, open a browser and type: <http://207.11.7.60> — Home Depot's website appears. Not many people would remember this series of numbers which makes **DNS an essential part of staying connected**.

So now you're going to ping your DNS server. If it is a series of numbers such as 198.6.x.x or 145.x.x.x, ping that value (these are public DNS servers). If your public DNS server comes back unreachable or if your DNS server starts with 10.x.x.x or 192.168.x.x (these are private DNS IPs), then ping a public IP such as our router. At the prompt, type: ping 65.213.20.2

What do the ping results mean?

- If you can **reach the Gateway** (your router – Step 5 above) but you **can't reach any other IP** address, you'll need to contact your provider. Your router isn't communicating with your ISP's network.
- If you **ping our router** (65.213.20.2) and get a positive response (**Lost=0**) but you don't get a positive reply from your public DNS, then you need to call your provider. Something is wrong on your ISP's end.
- If you can ping the Gateway, the DNS server and/or our router's IP address, there could be a **problem with the website you're trying to access** or the **browser on your PC**. Try accessing the Internet from another computer and/or try using another browser to see if the problem still occurs.
- You can also try pinging an actual domain name. Example: P:\>ping readynetgo.net

If this ping comes back unreachable, then it is definitely an issue with the DNS servers. If you have a Windows server, restart the DNS service or the server. If websites are still unreachable, give us a call and we'll check out your server configuration. If your ISP handles the DNS (most SOHO users), call your provider and let them know your requests from pinging domains are timing out. There is something wrong with the DNS servers on their end.

Summary

In troubleshooting Network Connections, there could be a problem with loose or faulty cables, a faulty device (damaged modem or network card), improperly configured IP addresses on your internal network, problems with your ISPs network, or simply a website that is temporarily offline. Following the steps in this newsletter (i.e., checking physical connections, trying other websites, troubleshooting through ping tests) will help to resolve your lost Internet connection. Call us if you need assistance.

Diagram of a Network with DSL or Cable Modem

Here's an example of a typical wired network with a broadband connection. Make sure your devices are configured similarly if you are having trouble connecting. You'd be surprised how many times the fix is as easy as rechecking and modifying the cable connections.

