



BUG-BYTES

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**MAKE YOUR WIRELESS
NETWORK REALLY SECURE**
KEEP OUT HACKERS AND FREE LOADERS



Are you new to networking? If so, please read the March 2008 issue of Bug-Bytes. In that issue I covered how to setup your network to get it up and running. I also covered the basics of making your network secure. See this link.

<http://www.computerbugs.cc/newsletter/bugbytes0308.pdf>

However, this article explores in much greater detail how to tighten up your security to exclude free loaders and hackers. Think of this article as a network review, and tips on how to make your network even more secure than it is currently.

STEPS YOU NEED TO TAKE TO TIGHTEN NETWORK SECURITY

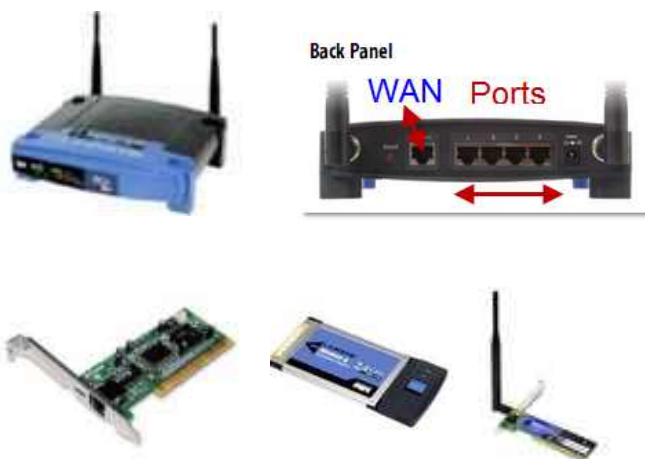
Think of setting up a layered network security strategy. Strong network security does not just happen. **Strong security involves a series of positive steps, by you, to make that level of security happen.** It involves your hardware and software choices, your making good setup decisions, your setting a strong pass phrase for your wireless network, and your creating a password for your router to protect your network. I'll cover the following choices.

- Router and Network Adapters
- Firewall (software)
- Network adapters
- Windows Network Settings
- Password and passphrase

ROUTER

If you have a broadband connection (cable internet or DSL), you will benefit from having a router. The router can be a wired-only router, or a wireless access router. In the first instance, many routers come with ethernet four ports. That is, you can hookup as many of four computers through the router using ethernet cable. If your com-

puter's are positioned close together, then a wired setup may be your best bet. Wired connections are normally faster than wireless connections. See the screen shot below. The front router view is on the top left, the back view on the top right.



Above, on the bottom left is a picture of a network interface card (NIC) made to plug into an empty PCI slot on your motherboard. The center picture is of a Wireless notebook wireless card. On the bottom right is a wireless PCI card that can be used in a desktop computer.

Wireless Routers (called an access point) and network adapters conform to one of three standards. That is, vendors make them to work primarily with wireless-B, wireless-G, or the new Wireless-N standard. Think of them as slow (B), moderately fast (G), and very fast (N). Wireless-B equipment is the least expensive, and wireless-N is the most expensive.

Vendors make Wireless-B to transmit data at up to 12 megabits per second, wireless-G at up to 54Mbps, and wireless-N at up to 108 Mbps. There are 8 bits in a byte. Thus 12 Mbps (megabits per second) is the same as 1.5MBps (Megabytes) [12 megabits per second divided by eight bits per byte]. The capital **B** indicates Bytes versus the lowercase **b** for bits.

Ideally, you want all of your network to conform to the same standard. If you mix peripherals with different standards then your network will work to the lowest standard that your network supports.

Similarly, your network will only work with the highest security standard that your least capable network adapter supports. [See the last paragraph on this page.](#)

FIREWALL (HARDWARE)

You may wonder. Why do you need a hardware firewall ([it is included in a router](#)) if you already have a software firewall? The answer is because it provides even better security against hackers. Think of it as an extra layer of very strong protection. Routers come with NAT (Network Address Translation). NAT enhances security by keeping internal addresses hidden from the outside world.

NETWORK ADAPTER

You need a network adapter for each computer that you will connect to your network. If you are already hooked up to an internet cable, then you already have a network adapter in your desktop computer, the one hooked up directly to the broadband modem provided by your broadband provider. Alternatively, you may connect via a USB connection or a USB wireless network adapter.

If you have internet cable, you probably already have a router that acts as a switch to add additional computers to your network. The router may be a simple four-port model, such as a Linksys WAP-11. However, if you plan to connect one or more computers wirelessly to your network, you either have to buy a wireless access point, or better yet, replace your wired-only router with a wireless router/access point that combines the functions of a four-point switch and wireless access point all in one slim box. That takes up less desktop space, and you don't stare at so many blinking lights.

I personally use a Linksys WRT54GS to network two laptop computers and two desktop computers to my network. At some point in the future, I'll convert the entire network to the new Wireless-N standard.

In shopping for a router, and for network adapters, try to stick with the same brand for all of the network components. For instance, some brands offer a one-touch mode that does most of the network configuring for you. However, that capability only works when you are using the same brand for all of the components. Similarly, purchase network adapters that will provide the same level

of security as offered by your router. [If you purchase network adapters limited to the lowest security level \(WEP\) and your router offers WPA2 the highest level, then your network will operate at the lowest level of security.](#)

Signal strength. No matter what wireless standard you use, your actual signal strength depends on the distance from the router/access point to your networked computers. Signal strength falls off dramatically after about 20 feet.

WINDOWS NETWORK SETTINGS

Use the exact same workgroup name for all computers hooked up to your network. For instance, Windows XP uses MSHOME as the default workgroup name and Vista uses WORKGROUP as the default name. You can call the workgroup whatever you like. Just be sure you use the same name as your setup each computer to work with your network.

Yes, you can and need to use the same workgroup name for all the XP and Vista computers that you want to access your network. In addition, use the same network ID name when setting up access from each of your computers. Otherwise, you cannot connect to your network. You can use a different description for each of your computers. When you click on Network from the Start menu, the network dialog will list the names you have given your computers, if you setup your network correctly.

PASSWORD AND PASSPHRASE

A password is a made-up-name consisting of letters and numbers with from six to ten characters. Whereas, you make up a passphrase of a series of words and characters and it is much more secure than a single password. In other words, a passphrase is much harder to crack.

Go to <http://world.std.com/~reinhold/diceware.html> to create your own hard-to-crack password phrase.

SELECT THE HIGHEST SECURITY LEVEL YOUR NETWORK WILL SUPPORT

Early networks used a low-level security standard called WEP, Wired Equivalent Privacy. WEP was introduced in 1997 and involved an easy to crack encryption key. WPA replaced that standard first, then later by WPA2. WPA stands for Wi-Fi Protected Access. A passphrase is required for WPA and WPA2 and later standards using the "personal" mode. A passphrase must be longer than the six to eight characters WEP users often employ. Personal keys for home users typically involve from 8 to 63 ASCII characters.

USERS BEWARE!**WHAT YOU DON'T KNOW CAN BITE YOU**

I write Bug-Bytes to provide useful information for both new users and for more advanced and experienced users. However, I deliberately hesitate to write about some subjects because I know that they are probably too advanced or too confusing for most of

our club members, or because they can potentially cause serious problems for unwary and inexperienced users.

For instance, I have not written an article about how to edit the registry. I only advise editing the Windows registry for very advanced users, or for users who are following the step-by-step instructions of a qualified vendor support technician. Even then, users who edit the registry, or those who opt to use a commercial registry cleaner, do so at their own peril.

For instance, you should only edit the registry, if at all, after you back up the registry. That way, if something goes wrong, you can restore the registry to its former state before the edits. Similarly, a registry cleaner should never be used unless the product backs up the registry before making changes, and then only when “safe” changes recommended by the vendor are made.

I can't overemphasize the important of being able to undo changes. Even then, the user needs to review the proposed changes and to uncheck proposed changes that they can clearly see are wrong. For instance, the registry cleaner may recommend changing the address of a file to a directory path that you know is not correct.

I personally use Rose City Software's *Registry First Aid Platinum*. I find that I can trust it. Nevertheless, I only make the changes shown as “safe” and even then I carefully review the recommended changes. *Registry First Aid* backs up the registry before it makes any changes. It is not unusual for the program to recommend more than 1000 changes at a time, but they list only a small fraction of those proposed changes as “safe.” In fact, the program recommends against making more than 1000 changes at a time.

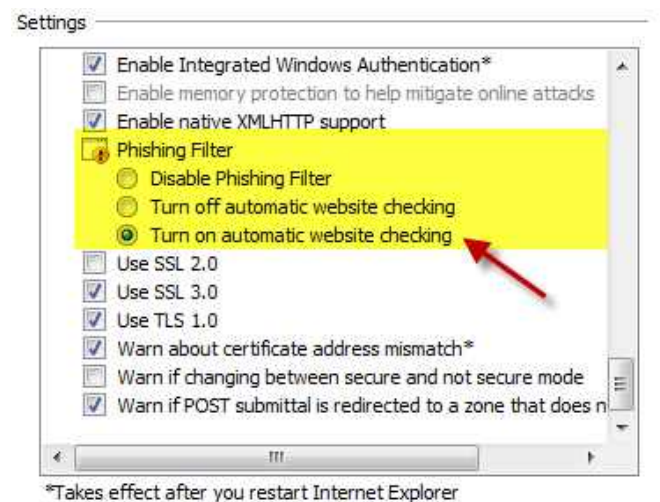
You might ask, why are there so many recommended changes? In my case, as your advocate and resident guinea pig, I download and try a wide range of products to see

which of them may be of interest to you Computerbugs users. Thus, I install many programs and try them on my computer. Some may remain on my computer, but I remove most of them after their trial is over. Many programs leave file remnants behind along with broken links. That is because not all software vendors do a good job of completely removing the footprints of their software when you uninstall their software from your computer.

WARNING ABOUT DOWNLOADING FREE OR ANY SOFTWARE

If you are interested in trying software on your computer, first, do some research about the proposed software. Use your search engine to search for reviews about the proposed download. Look for the good and the bad information written about the product. Look for reputable sources, sources that you know you trust for their reviews.

Even before you start, be sure that you turn on your browser's phishing filter (or that your internet security suite already provides that service.) For instance, the phishing filter in Internet Explorer (if it is turned on) will identify dangerous web sites. Open IE, click on Tools, Internet Options, Advanced, Phishing Filter. See the following screen shots. The settings screen shot at the right shows what you will see to change your IE Internet Options. Only activate this option if your Internet security software does not already offer the same option. The second screen shot shows what you see if the phishing software finds something “fishy.”

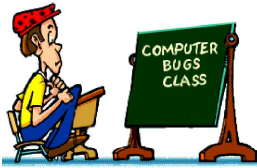


1 potentially harmful website is marked on this page.

Sample phishing filter warning

MISSING SOMETHING GOOD?

TAKE A NEW LOOK AT SHORTCUTS



Are you primarily a point-and-click user? If so, and you do not use a few shortcuts, you are probably short changing yourself. Keyboard shortcuts, and icon shortcuts, will make operating your computer much easier and faster.

KEYBOARD SHORTCUTS

While there is a long list of available keyboard shortcuts, learn just the ones that you will use regularly and which will make computing easier for you. You will find a complete list of different keyboard shortcuts from Start, Help in Windows. However, a few of the following list may be all that you need or will ever use. Try them in your word processor, and in your e-mail program.

F1	Help key
F2	Find and replace
F3	Search for a file or folder
Also Ctrl-S	Save
F4	Open File/Display the address bar in Explorer
Ctrl-F4	Close the active document
F5	Refresh the active window
F11	Maximize/minimize Internet Explorer Window
Ctrl-P	Print
Alt-Tab	Switch between last two open programs
Ctrl-X	Cut out blocked text from a document
Ctrl-C	Copy blocked text
Ctrl-V	Paste cut or copied text into a document
Esc	Undo last command or step
Home	Go to the beginning of the current line
End	Go to the end of the current line
Page up	Go to start of page
Page down	Go to bottom of the page

Click on Help in your word processor and search for "Keyboard shortcuts." Also, see customized keyboard shortcuts. It is well worth your time. Word processors may use function keys in new and interesting ways. For example, in WordPerfect function key F9 brings up the font menu with more options than are shown in the menu above your document. F8 selects the beginning position where you clicked with your cursor. Then, using the arrow keys, you can precisely control how you block text. See what wonderful things your word processor can do with shortcut keys.

Use your word processor's customize features to create your own shortcuts for the repetitive things you do. For example, in WordPerfect I created keyboard shortcuts to go to the top of the current page, to the bottom, to the very beginning and end of a line, and to delete a line from the cursor position to the end of line. These shortcuts save me loads of time.

What is it that you do regularly that keyboard shortcuts can help you do faster and easier than using your mouse? A few minutes spent exploring this subject may return much satisfaction, and may teach you some new skills.

ICON SHORTCUTS

Create icon shortcuts to give you instant access to programs, to a URL, to specific documents, or to favorite files or folders.

Creating such shortcuts is easy. Right-click on an empty spot on your computer's desktop and select New. Then click on folder or shortcut. If you click on "Shortcut" the dialog asks you for the path to a folder, a file, or gives you the option to cut and paste in a favorite URL. Let's say you want to create a shortcut that takes you right to your pictures folder. Click on the browse button and navigate to the folder that holds your pictures. Click OK. The dialog will now give you a change to name the shortcut. Give the folder a short name.



Alternatively, say you want to create a shortcut to immediately take you to our Computerbugs web site. What a capital idea! In the shortcut dialog, type www.computerbugs.cc and click on OK. Give the shortcut a name like "C-bugs" for short. Try it. I think you will like it.

Drag the shortcut to where you want to see it on your desktop. You did it!

PC MAGAZINE GOES PAPERLESS

IS THIS THE FUTURE OF COMPUTER MAGAZINES?

Stop the presses! With the January issue of PC Magazine PC the publisher stopped producing a paper magazine. Subscribers were given the option of getting a refund of their unexpired subscription or to continue with a clever online version of the magazine.



As the February editorial page explained this move was made necessary by escalating print and postage costs, and because it made business sense to change over to the 100 percent digital format. Beside convenience, this change saves millions of trees a year, untold amounts of ink, and the gasoline it took to deliver the magazine to subscribers and magazine outlets.

The digital version arrives automatically in your e-mail inbox. It looks like the PC Magazine that you are familiar with and includes a versatile reader that turns the pages when you are ready to move to the next page. The digital version is interactive so that you can click on links to see additional information, and even slide shows.

Yes, as they say, you can even print the pages that you want, and each issue is stored in a library so that you have an archive of your digital back issues.

Your digital issues are searchable. Enter a search term and PC Magazine Digital will find the pages that relate to your search terms.

A new feature is the searchable Table Of Contents. You can jump right to the article of your choice from the TOC.

A digital version of PC Magazine has been around since 2002, but only as an option to the print version. PC Magazine has been in existence for 27 years. Hopefully, it will be around for many more years, and users will much prefer the new format.

If you are a current subscriber and the magazine already has your e-mail address, you don't have to do a thing. Your digital version of the magazine will pop into your e-mail inbox each month. If you have not provided

an e-mail address to the magazine then visit the following url and follow the simple instructions.

Go.pcmag.com/subscriber_services


If you are not a subscriber and you want to see what the new digital magazine looks like, get a free trial at this link:

www.zinio.com/pcmagtrial

Download the Zinio viewer and give the digital version of PC Magazine a try. I think you will like it.

Below is a sample of some of the articles in the February issue of PC Magazine. This is only a small part of the table of contents.

FIRST LOOKS HARDWARE




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in the score a new hoto- rrent Micro rmed (787), 85), t, but g-for- but if

you're willing to spend a lit a justifiable purchase. It has technology and will propel world of 64-bit computing.

Specs: 3.2-GHz Intel Core 7 9d (overclocked to 3.99 GHz); 12G SDRAM; 80GB SSD; TB, 7,20d two ATI Radeon HD 4870 32 g DVD-RW d-ive; HD DVD-R-RD USB 2.0 ports, 1 FireWire port, (64-bit version).



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-inch lling, exer. eces- e for with : The ar for raph- were phics

were good enough for any ir all photo prints easily qualif (better than you would exp store, but not as good as a p even did a reasonable job o which are a problem for mar

Although the step dow disappointment, the IP4600 offers a more-than- adequate balance of output quality, paper handling, and price.—M. David Stone

FIRST LOOKS

9 Hardware

- HP TouchSmart IQ816
- Falcon Northwest Mach V Core 17
- Canon Pixma iP4600
- Hannsperre Hanns Soccer
- HP Mini1000
- Plus QuickLooks at the ZT Affinity 7225Xi, the Fujitsu LifeBook U820, and more

13 Business

- Sony VAIO VGN-Z590
- Business accounting software
- Omega eGo Desktop Hard Drive (1TB)
- Mitsubishi XD500U-ST

17 Consumer Electronics

- RIM BlackBerry Storm 9530
- Motorola MotoZINE ZN5
- Sony Cyber-shot DSC-T77
- Nikon D90
- Sharp LC-52SB55U
- Plus QuickLooks at the HTC Fuze, the Samsung Epix, and more

21 Software

- Adobe Photoshop CS4
- Skype 4.0 Beta 2
- Picasa 3 (beta)
- Plus QuickLooks at Air Sharing (for iPhone), iGoogle, and more