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Securing a Linksys router

In this passage we will explain how to secure your wireless network from intruders as well as keeping your wireless signal private. Before we get started, these instructions are common for most linksys products; however, the explicit instructions provided are coming from a wrt54g router with the most current firmware (v3.03.6).

Notice:

Anytime that one makes changes to their router setup it is highly recommended that you do this from a hardwired system. If you are using a laptop or other wireless device, plug it into the router before proceeding as certain options done without a direct connection will actually render the router useless; in a sense it will damage the router and cause it to not work.

1) Let's get started. Wireless security comes from many levels. The first line of defense comes from your routers firmware. Firmware is something that tells the router what to do. Improvements are constantly made and holes being patched so keeping the firmware up to date will block holes within other layers of defense. If you are unsure of the version of firmware that is on your router, check it out. Open your favorite browser i.e. internet explorer, Netscape, Mozilla, opera or any other browser you use to surf the net. Once open, in the address blank type in `http://192.168.1.1` after going to this address a login box should appear. In here type in your password if you have created one, if not use 'admin' as your password, as that is the default. If your password is admin, we will



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discuss how to change this later and why it is important to do so. Once you are looking at your router setup page look at the top right of the window, you should see the line 'Firmware Version: v*.*.*' where * is a number. Now, open a new browser window (ctrl+N) and proceed to www.linksys.com from here click on the products tab at the top of the page. Click on the picture under the wireless category that has a picture of a router and says 'Access Points, Routers & Gateways.' Now select the model of your router. If you are unsure, look at the bottom of your router as it should say. Once you have selected your router look on the left side of the window and you should see a section title 'More Information' and underneath you should see Firmware. If you click on Firmware it will show you the most current version. If yours is up to date, proceed to step two. If yours is not up to date then download the firmware upgrade files and save them to your desktop. Once the .zip file has downloaded, go back to your desktop. Open the file that was just downloaded. In it should be three files, two text files and .bin file. Click on the .bin file and copy it to your desktop. Now go back to the first browser window we had opened, the router setup screen. Click on the tab that says Administration and then underneath that you should see another tab for Firmware Upgrade. Next click on the browse button, navigate to your desktop and select the .bin file that we used in the previous step. Select the file and click open. Next click on the Upgrade button at the bottom of the setup screen. Wait for this to finish and once the completion screen flashes you will have taken the first step to securing your access point.

2) The next step is for a user who has not changed the default password, if you have, proceed to step 3. In the same administration tab as before we want to click tab titled management. Now, type in a password for your router to use instead of admin. Use



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something easy to remember but something unique also. Try and use upper and lower case letters as well as numbers and symbols. For example if you want the password to be 'password' it is advised that you use 'Pa\$w0rD.' Notice the upper and lower case, the zero and the dollar sign. These simple alterations to the word will make cracking it extremely difficult. Click on the "Save Settings" button at the bottom and proceed to step 3.

3) Next we want to change our wireless network name and prevent it from being broadcast. Why? By default the signal will be named linksys and this signals many users that this network may not be secure because it still has the default name. The reason we prevent the SSID (Service Set Identifier) or name from being broadcast is that if people can not see your network right away, it will make it more difficult for them to access it. Click on the wireless tab again and then click on the Basic Wireless Settings tab underneath. In the field 'Wireless Network Name (SSID):' type whatever you want the name to be. Try and avoid personal information use broad information or random words, for example 'network' or 'my wifi.' Once you have selected a name, look underneath that option and you should see 'Wireless SSID Broadcast:' and disable this feature. Make sure the dot is beside disable and then save your settings.

4) Now we are going to enable wireless encryption. Basically what this does is ask a computer for a specific key before it will allow the computer internet access. This is done simply by clicking on the wireless tab and then clicking on the wireless security tab underneath. Several options are listed in this tab. First we want to pick a security mode. WEP is the Wireless Equivalence Protection, WPA-Radius is Wi-Fi Protected Access, RADIUS is Remote Access Dial in User Service, and WPA-Pre-Shared Key. Select any



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one of the options; the most common are WEP and WPA-Pre-Shared Key. For quick and easy demonstration, we are going to use WEP. Select your 'WEP Encryption:' 64bit or 128bit. Note that the higher of the two is more secure. Next type in your 'Passphrase.' Do as it says, type in a phrase using the same characteristics as your password earlier. This time however you can make a phrase, i.e. 'One scoop or 2?' It is a short phrase but uses different characters. Put whatever you desire and then hit generate. Do not be alarmed by the keys that come up, you do not have to remember this. Select a key and write it down. After you write one down look at the key number, is it 1, 2, 3, or 4? In the option 'Default Transmit Key:' located between WEP and your WEP encryption type and select the number of the key you chose. Once you have completed doing these steps save your settings and proceed to step 5.

5) On your laptop or computer using a wireless network connection you will need to insert your WEP key. To do this click on the 'Start' button in windows. Click on 'Control Panel' and once that opens click on 'Network Connections.' Select your wireless connection, right click on it and select properties. A small window will appear, we want to click on the 'Wireless Networks' tab at the top. Next click on the 'add' button at the bottom of that window on the left hand side. Type in your new network name in the blank. Now in the 'Network Key' blank type out your WEP key that you wrote down. Also type it in the 'Confirm Network Key' blank and make sure the box that says 'the key is provided for me' is unselected. Next click on the 'Connection' tab and make sure the box is checked beside 'Connect when this network is in range.' Now click on ok to save your settings as you have just put WEP encryption on your Network.



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6) Finally we are going to filter who has access to your network. This is done by filtering by MAC (Media Access Control) address. Basically every computer or wireless card has a unique MAC address. We are going to tell the router to only accept connections from your computers. The address will only need to be added if it will access the network wirelessly. To obtain the MAC address click on the Start button in Windows. Next click on run and type in **cmd** and hit enter. This will open the command prompt where we want to type in **ipconfig /all** and hit enter. Look at the output and find 'Physical Address.' The digits listed beside this make up your MAC address. Write down the number as you see it and proceed to step 7.

7) In the router setup click on the tab wireless and then the tab underneath 'wireless MAC filter.' Click on 'Enable' beside the MAC filter option. Next click on 'Permit only PCs listed to access the wireless network.' Click on the edit MAC filter list button. A window should pop up that has numerous blank spaces. Under MAC 01: type in your wireless card/computers MAC address. Do the same for any additional computer you may have, for example if you have 3 laptops you want to give network access to then you should have MAC 01-03 filled. Finally click on save settings in that window. Save your settings in the router setup window as well.

8) So far we have updated firmware, changed the password, changed the SSID, enabled encryption, and Filtered by MAC. There is only one thing left to do and that is enabling the firewall on the router. This will act as a shield to the computers inside your network. We want to click on the Security Tab in the router setup window. Simply select 'enable' beside 'Firewall Protection.' Save your changes, close the window and surf with the piece of mind that your information is safe from hackers.