Configuring Routers and Their Settings

When installing a router on your home network the routers settings are usually defaulted to automatically protect your home, and simplify setup.

This is done because the knowledge that is required to successfully setup a network can confuse a trained network technician.

This portion of the troubleshooter is supplied as a courtesy and we are only giving you enough information to get you connected, to your MSS II. If you require more information regarding your router and its configuration please contact your router manufacturer's web site.

Some of the more popular home and small business routers are made by Linksys, Dlink, and Netgear. They typically come with 4 network connections and 1 uplink connection allowing you to connect to your home network to your ISP's router.

Your router should come with a software CD that includes a network configuration wizard. "Use it", it's the easiest way to get connected to the internet allowing you to search for more troubleshooting information if needed.

By default routers are configured as DHCP servers and the hardware firewall is enabled, so it's ok to turn off windows firewall, and your virus software's firewall as long as your PC or laptop is connected to your networks router.

When you take your laptop, turn on the Windows firewall, or your virus software's firewall.

To find your routers web based configuration pages go to Start> Run > and type CMD in the Open: field and press enter.



When the command prompt window opens, type ipconfig /all and press enter.



After the IP information is displayed look for the line **Default Gateway**...... and write down the IP address (routers are typically in the 192.168.1.1 address range.) to the right of the dotted line.

Then go to Start> Run > and enter the default gateways IP address in the open field as an internet address and press OK.

| Run | |
|---------------|--|
| | Type the name of a program, folder, document, or Internet resource, and Windows will open it for you. |
| <u>O</u> pen: | http://192.168.1.1 |
| | OK Cancel Browse |

Your routers main administration page should display after you login with your username and password. For example below we will illustrate using a Linksys WRT54GS router.

| | Wireless-G Broadband Router with SpeedBooster WRT54GS | | | | | | |
|-------------------------|---|---------------------------|------------------------|--------------------------|------------------------------------|--------------------------------|--|
| Setup | Setup Wirele | ss Security | Access Restrictions | Applications & Gaming | Administration | Status | |
| | Basic Setup | DDN | S I M | AC Address Clone | Advanced | l Routing | |
| Internet Setup | | | _ | | | | |
| nternet Connection Type | Automatic Co | nfiguration - DHCP | * | | Automatic Cor DHCP : This set | nfiguration - | |
| Optional Settings | Daudas Nama i | WDTEACE | | | commonly used | | |
| (required by some ISPs) | Router Name . | WR15405 | | | Nost Name - Fr | der the hort | |
| | Domaia Nama : | 1 | | | name provided t | y your ISP. | |
| | MTIL - | Auto | | | Domain Name | | |
| | Size : | 1500 | | | domain name pri ISP. | ovided by you | |
| | | 14000 | | | More | | |
| Network Setup | | | | | | | |
| Router IP | Local IP Address : | 192.168.1 | . 1 | | Local IP Addre | ss: This is th | |
| | Subnet Mask : | 255.255.255. | 0 💌 | | Cubinet Menter | | |
| Network Address | | - | | | subnet mask of | the router. | |
| Server Settings (DHCP) | DHCP Server : | Enable O Disa | ble | | | | |
| | Address : | 192.168.1. 100 | | | DHCP Server : | Allows the | |
| | DHCP Users : | ^{of} 50 | | | router to manage addresses. | | |
| | Client Lease Time | : 0 minutes (0 r | neans one day) | | Starting IP Add | tress . The | |
| | Static DNS 1 : | 0.0.0 | . 0 | | address you wo | uld like to sta | |
| | Static DNS 2 : | 0.0.0 | . 0 | | winit | | |
| | Static DNS 3 : | 0,0,0 | . 0 | | Users : You ma | y limit the | |
| | WINS : | 0.0.0 | . 0 | | number of addre router hands ou | | |
| Time Setting | Time Zone : | | | | More | | |
| Tinto ootanig | (GMT-08:00) F | Pacific Time (USA & | Canada) | ~ | | | |
| | Automatically a | adjust clock for daylight | saving changes | | Time Setting : | Choose the ti The router ci | |
| | | | | | also adjust auto | natically for | |

Your router's main administration page should be set to Automatic Configuration - DHCP.

MTU should be left set to **Auto**, which allows the router to decide the best data transfers speeds.

The Router Name is generally a factory default of the model number.

The Local IP Address and Subnet Mask should display your routers IP information. The DCHP server setting should be enabled.

Your **Starting IP Address** represents the first available address your router will allow devices on your network to connect.

Maximum Number of DHCP Users should be left at the default setting of 50. Allowing more than 50 users to connect to a 4 port home router can cause your network to slow to a crawl if everybody tries accessing the network or internet at the same time.

Client Lease Time is usually defaulted to 0.

The Static DNS 1,2,3 and Wins fields are usually defaulted to 0.

| LINKSYS [®] Division of Cisco Systems, Inc. | | | Wirele | ss-G Broadb | and Router with S | Firmia | re Version : v4.5 WRT54GS |
|---|-----------|--------------|-------------|------------------------|--------------------------|--|--|
| Setup | Setup | Wireless | Security | Access Restrictions | Applications & Gaming | Administration | Status |
| | Basic Set | up 1 | DDNS | - E | MAC Address Clone | Advance | d Routing |
| DDNS | DDNS S | ervice : Dis | able 🔽 | | | DDNS Service you to access y using domain ni P addresses. T manages chang and updates yo information dyn must sign up fo through TZO.cc DynDNS org. More | : DDNS allow your network ames instead he service ging IP addres ur domain amically. You r service im or |
| | | | Save Settin | gs C | ancel Changes | | CISCO SYSTEM |

The next tab over is the **DDNS** page. The **DDNS** Service is disabled by default. Leave this page at its default unless you need the **DDNS** service.

| LINKSYS® A Division of Cisco Systems, Inc. | | | | | | | | Finnes | re Version : v4.50.8 |
|---|-----------------------|---------------------------------|----------------|-------------------------------|--------------------|--------------------------|--|--|--|
| | | | | Wireless-G | Broadb | and Router with S | peedBo | oster | WRT54GS |
| Setup | Setup | Wireless | Secur | ity Res | ccess trictions | Applications & Gaming | Admin | istration | Status |
| | Basic Sett | ip. | 1 | DDNS | I | MAC Address Clone | 1 | Advance | d Routing |
| MAC Clone | C Enable User Defined | Disable Entry: 00:: Your PC's N | 14 : BF IAC | : <u>Ba</u> : [<u>G8</u> :] | R2 | | MA ISP you not MAI rout that Mo | C Address will require r MAC addr wish to re- C address, er clone the is registere re | s Clone : Some you to register ess. If you do register your you can have the b MAC address ad with your ISP. |
| | | | Sav | e Settings |) <u> </u> | ancel Changes | | | CISCO SYSTEMS atlliaantlliaa |

The **Mac Address Clone** page is disabled by default. Leave this page as is unless your Internet Service Provider requests you enable its features.

| LINKSYS [®] A Division of Cisco Systems, Inc. | | | | | | Firmwa | | | |
|---|--|---|--|------------------------|--------------------------|--|--|--|--|
| | | Wireless-G Broadband Router with SpeedBooster WRT54GS | | | | | | | |
| Setup | Setup | Wireless | Security | Access Restrictions | Applications & Gaming | Administration | Status | | |
| | Basic Se | tup | DDNS | 1 | MAC Address Clone | Advance | ed Routing | | |
| Advanced Routing Operating Mode Static Routing | Gate Select Enter F Destind Subnet Default Interfa | way v set number : 1 (toute Name : ation LAN IP : 0 Mask : 0 : Gateway : 0 ce : LA tow Routing Ta | () • 0 0 0 0 0 0 0 N & Wireless ble | Delete T | his Entry | Operating Mi is hosting your connection, se mode. If anothion mode. Select Set Nu the unique rour may set up to 2 Route Name you would like route. Destination L the remote hos would like to a route. Subnet Mask host and the in More | Dete : If the router Internet letc Gateway er router exists rik, select Router umber : This is te number, you 20 routes. Enter the name to assign to this AN IP : This is to which you assign the static :: Determines the etwork portion. | | |
| | | | Save Settin | ngs C | ancel Changes | | ավիստովիստ | | |

If you have one router on your home network it is hosting your internet connection and the **Operating Mode** should be set to **Gateway**.

Static Routing Select set number is defaulted to 1, all other fields Enter Route Name, Destination LAN IP, Subnet Mask, and Default Gateway are either blank or defaulted to 0 and the Interface is set to LAN and Wireless. You shouldn't have to change any of the settings on this page.

The next tab over on your routers administration page is for wireless configuration.



In most cases the only thing you would change on this page is The Wireless Network Name and Enabling or Disabling the Wireless SSID Broadcast. If you plan on using the wireless network option enable the Wireless SSID broadcast. Enabling the broadcast allows you to search available wireless networks and connect your laptop from anywhere within your home, or the signal range.

Clicking on the wireless security tab displays your wireless frequency encryption settings.

| LINKSYS® Division of Cisco Systems, Inc. | | | | | | Firmwar | re Version : v4.50 | |
|---|-------------------------------------|-------------|--------------------|------------------------|---|--|--------------------|--|
| | | | Wire | less-G Broadbar | nd Router with S | peedBooster | WRT54GS | |
| Wireless | Setup | Wireless | Security | Access Restrictions | Applications & Gaming | Administration | Status | |
| | Basic Wirele | ss Settings | Wireless Si | ecurity Wire | eless MAC Filter | Advanced Wireless | Settings | |
| Wireless Security | Security Mode : WPA Algorithms : | | WPA Pre-Sh TKIP | ared Key | Security Mode : You may choose from Disable, WEP, WPA Pre-Shared Key, WPA RADIUS, or RADIUS. All devic on your network must use the | | | |
| | Group Key Re | enewal: | 3600 | seconds | | same security mode communicate, More | | |
| | | | | | | | CISCO SYSTEMS | |
| | | | Save Set | tings Car | icel Changes | | يرز الانتين الله | |

Routers typically support four different types of security for your wireless network. The settings on this page allow different levels of encryption, and you will have to decide what works best for you, we are only going to explain how it works. In the field next to **WPA Shared Key:** set a password for your wireless connection that you can remember, otherwise the default is supplied by the router and it's usually a number that you will never remember.

The Security Mode: on this network is set for WPA Pre-Shared Key (WPA= Wi-Fi Protected Access.) and the WPA Algorithms: is set for TKIP. The easiest way to explain this type of security is "encryption on the fly." These settings encrypt your data while messages are flying through the air between your laptop and router, to keep hackers from looking at your stuff.

The Group Key Renewal: field is defaulted to 3600 seconds, leave it at it's default.

The next form of wireless protection is the MAC Filter. This is the one you want to pay close attention to. The MAC Filter allows only those computers that you specify access to your wireless network, and you get to make the list.

| LINKSYS® A Division of Cisco Systems, Inc. | | | | | Firmwa | re Version : v4.50.6 |
|---|---|--|---|--------------------------------|-------------------|----------------------|
| | | Wire | eless-G Broadbar | nd Router with Sj | peedBooster | WRT54GS |
| Wireless | Setup Wirele | ess Security | Access Restrictions | Applications & Gaming | Administration | Status |
| | Basic Wireless Setting | ps Wireless S | ecurity Wire | eless MAC Filter | Advanced Wireless | Settings |
| Wireless MAC Filter | Wireless MAC Filter : Prevent : Permit only : | Enable Dis Prevent PCs is Permit only PC Edit MAC Fil | able ted from accessing th s listed to access the ter List | e wireless wireless network | More | Cisco Systems |
| | | Save Se | ttings Car | icel Changes | | التسمينالية. |

First you need to enable the **Wireless MAC Filter:** by clicking on the **Enable Wireless Mac** filter button then, select the **Permit Only PC's listed:** setting. Click on the **Edit MAC Filter List** and the exceptions box should appear.

| MAC 01: | 00:14:A5:65:06:39 | MAC 11: |
|----------|-------------------|----------|
| MAC 02 : | 00:0E:58:10:5F:30 | MAC 12: |
| MAC 03 : | 00:16:E3:24:97:DF | MAC 13: |
| MAC 04 : | 00:10:75:04:29:CF | MAC 14: |
| MAC 06: | 00:0D:F0:3C:29:E9 | MAC 15: |
| MAC 06: | | MAC 16: |
| MAC 07: | | MAC 17: |
| MAC 08 : | | MAC 18: |
| MAC 09: | | MAC 19: |
| MAC 10 : | | MAC 20: |
| | | |
| MAC 21 : | | MAC 31 : |
| MAC 22 : | | MAC 32: |
| MAC 23 : | | MAC 33 : |
| MAC 24 : | | MAC 34: |
| MAC 25 : | | MAC 35: |
| MAC 26: | | MAC 36: |
| MAC 27 : | | MAC 37: |
| MAC 28 : | | MAC 38: |
| MAC 29 : | | MAC 39: |
| MAC 30: | | MAC 40 : |

After the box appears you need to add the MAC address of any computers on your home network that are capable of connecting wirelessly.

To display the MAC address of the laptop you want to add open a command prompt window by clicking **Start** and selecting run. Type **cmd** in the open field and click **OK**.

| Run | ? 🛛 |
|-------|--|
| | Type the name of a program, folder, document, or Internet resource, and Windows will open it for you. |
| Open: | and |
| | OK Cancel Browse |

When the command prompt window opens, type the command **ipconfig** /**all** and press enter.

| C:\WINDOWS\system32\cmd.exe | × |
|---|---|
| C:\>ipconfig /all | |
| Windows IP Configuration | |
| Host Name DJLaptop Primary Dns Suffix | |
| Ethernet adapter Local Area Connection: | |
| Media State Media disconnected Description Realtek RTL8139/810x Family Fast Eth ernet NIC Physical Address : 00-0F-B0-C0-3B-AD | |
| C:\> | - |

Look for the line that says **Ethernet adapter Wireless Network Connection** and write down the number after the **Physical Address**. That's the number you add to the MAC Filter List.

You will have to perform the same operation on the rest of the computers on your home network

| MAC 01 : | 00:14:A5:65:06:39 | MAC 11: | |
|----------|-------------------|----------|--|
| MAC 02: | 00:0E:58:10:5F:30 | MAC 12: | |
| MAC 03 : | 00:16:E3:24:97:DF | MAC 13: | |
| MAC 04: | 00:10:75:04:29:CF | MAC 14: | |
| MAC 05 : | 00:0D:F0:3C:29:E9 | MAC 15: | |
| MAC 06: | | MAC 16: | |
| MAC 07: | | MAC 17 : | |
| MAC 08 : | | MAC 18: | |
| MAC 09: | | MAC 19: | |
| MAC 10 : | | MAC 20: | |
| | | | |
| MAC 21 : | | MAC 31: | |
| MAC 22 : | | MAC 32: | |
| MAC 23 : | | MAC 33: | |
| MAC 24 : | | MAC 34: | |
| MAC 25 : | | MAC 35: | |
| MAC 26 : | | MAC 36: | |
| MAC 27 : | | MAC 37 : | |
| MAC 28 : | | MAC 38: | |
| MAC 29 : | | MAC 39: | |
| MAC 30: | | MAC 40: | |

After you have added all the computers on your home network to the list, click on save settings.

When the filter list closes click on the **Save Settings** button of the Wireless Mac Filter page to update your router.



Having your wireless network setup in this configuration denies everybody a connection to your wireless network except those computers on the MAC Filter list. So remember if you get a new computer, or you have a friend that is trying to connect wirelessly you will either have to disable the MAC Filter, or add the new MAC addresses to the MAC Filter List.

Most home networks **Advanced Wireless Settings** should be left at their default values below is an example of the defaults. If you are having problems and you are uncertain of the settings you can always perform a hardware reset on your router to reset it back to its factory defaults.

| | | Wi | eless-G Broadban | d Router with S | peedBooster | WRT54GS |
|----------|---|--|--|---------------------------------------|--|---|
| Wireless | Setup Wirele: | ss Security | Access Restrictions | Applications & Gaming | Administration | Status |
| | Basic Wireless Settings | Wireless | Security Wire | ess MAC Filter 🛛 🛔 | Advanced Wireless | Settings |
| | Authentication Type : Basic Rate : Transmission Rate : CTS Protection Mode : Frame Burst : Beacon Interval : Pragmentation Threshold : RTS Threshold : AP Isolaton : | Auto Default Auto Disable Cenable Cen | (Default : Auto) (Default : Auto) (Default : Default) Default : Default) Default : Disable) Default : Enable) uutt : 100, Millseconds, (uutt : 100, Millseconds, (uutt : 1, Range : 1 - 255) sult : 2346, Range : 256 sult : 2347, Range : 0 - 2 t : Off) | Range : 1 - 65535) - 2346) 347) | Authentication may choose fro Shared Key Sh authentication is but all devices must also supp authentication. More | n Type : You m Auto or ared key more secur in your network ort Shared Ke |

Click on the security tab to make sure routers hardware **Firewall** is enabled The picture below shows default values.

| | Wireless-G Broadband Router with SpeedBooster WRT54GS | | | | | | | |
|--------------------|---|----------|----------|------------------------|--------------------------|--|--------|--|
| Security | Setup | Wireless | Security | Access Restrictions | Applications & Gaming | Administration | Status | |
| | Firewall | VPN | | | | | | |
| Firewall | Firewall Firewall Protection : ③ Enable 〇 Disable | | | | | Firewall Protection: Enable disable the SPI firewall. More | | |
| Block WAN Requests | Block Anonymous Internet Requests | | | | | | | |
| | Filter Multicast Filter Internet NAT Redirection Filter IDENT(Port 113) | | | | | | | |

If you have a laptop computer that you use at home to connect with your place of work through a VPN (Virtual Private Network) you need to enable VPN pass through privileges.

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|---|----------------|------------------|----------|--------------------------------|-------------|---|----------------------|
| Security | Satur Wicalaas | | Win | less-G Broadband Router with S | | peedBooster WRT54GS | |
| | Firewall | I VPN | Sconty | Restrictions & Gaming | | | |
| VPN Passthrough | IPSec F | Passthrough : () | Enable (| Disable | | You may choos PPTP, L2TP of I | se to enable PSec |
| | PPTP P | assthrough : 💿 | Enable C |) Disable) Disable | | passthrough to allow your network devices to communicate via VPN. More | |
| | 2 | | Save Se | ettings Can | cel Changes | | CISCO SYSTEMS |

The administration page is the last page we will discuss, and in most cases the only thing you have to set on this page is the password of your router.

| LINKSYS [®] A Division of Cisco Systems, Inc. | | Firmware Version : v4.50.8 | | | | | | |
|---|--|--|--|--|--|--|--|--|
| | Wireless-G Broadband Router with SpeedBooster WRT54GS | | | | | | | |
| Administration | Setup Wireless Security Access Restrictions Applications & Gaming Administ Management Log Diagnostics Factory Defaults Firmware Upgrade | ration Status Config Management | | | | | | |
| Router Password Local Router Access | Router Password : coan ch Re-enter to confirm : confirm : confirm conf | Router Access : You ange the Router's ord from here. Enter a puter password and then again in the Re-enter to field to confirm. | | | | | | |
| Web Access | Access Server: HTTP HTTPS Wreless Access Wreb: Disable Disable Nore. | ccess: Allows you to re access options to the s web utility. | | | | | | |
| Remote Router Access | Remote © Enable Disable Remote Management : B000 Disable Alows Wase https : Image: Construction of the second s | Remote Router Access : Allows you to access your router remotely, choose the port you would lie to use You must change the password to the router if it is still using its default password. UPAP : Used by certain ports for communication. More | | | | | | |
| UPnP | pass w UPnP: ③Enable ①Disable program ports More. | | | | | | | |
| | Save Settings Cancel Changes | CISCO SYSTEMS | | | | | | |

There are number of other settings available on the router, and we won't cover all of them in this troubleshooter. We are only covering what you need to know to connect to your MSS II and the internet. If you need more help with your router settings contact the manufacturer of your router.