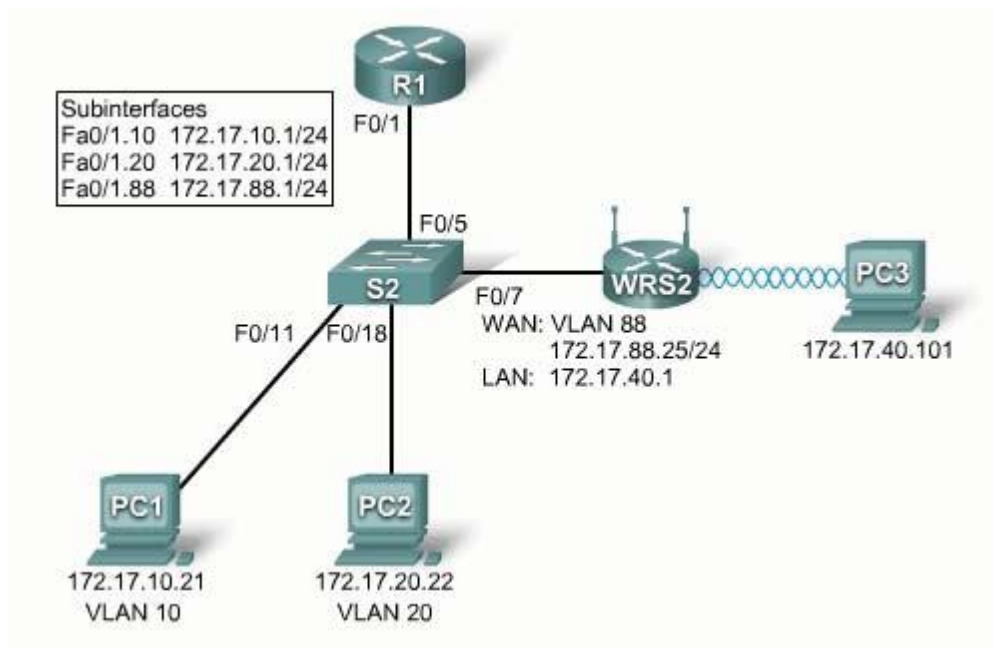


LAB: Basic Wireless Configuration (Linksys)

Topology Diagram



Learning Objectives

- Configure options in the Linksys Setup tab.
- Configure options in the Linksys Wireless tab.
- Configure options in the Linksys Administration tab.
- Configure options in the Linksys Security tab.
- Add wireless connectivity to a PC.
- Test connectivity.

Introduction

In this activity, you will configure a Linksys wireless router (WRS2, Wireless Remote System 2), allowing for remote access from PCs as well as wireless connectivity with WEP security.

Task 1: Load the starting configurations.

Step 1. Load R1's configurations.

```
hostname R1
!
interface FastEthernet0/0
ip address 172.17.50.1 255.255.255.0
no shutdown
!
interface FastEthernet0/1
no ip address
no shutdown
!
interface FastEthernet0/1.10
encapsulation dot1Q 10
ip address 172.17.10.1 255.255.255.0
!
interface FastEthernet0/1.20
encapsulation dot1Q 20
ip address 172.17.20.1 255.255.255.0
!
interface FastEthernet0/1.88
encapsulation dot1Q 88
ip address 172.17.88.1 255.255.255.0
!
```

Step 2. Load S2's configurations.

```
hostname S2
!
interface FastEthernet0/5
switchport mode trunk
no shutdown
!
interface FastEthernet0/7
switchport access vlan 88
switchport mode access
no shutdown
!
interface FastEthernet0/11
switchport access vlan 10
switchport mode access
no shutdown
!
interface FastEthernet0/18
switchport access vlan 20
switchport mode access
no shutdown
!
```

Task 2: Connect and log into the Wireless Router.

To clear any previous configurations, do a hard reset. Find the reset button on the back of the router. Using a pen or other thin instrument, hold down the reset button for 5 seconds. The router should now be restored to its factory default settings.

The WEB GUI will be used to configure the settings on the wireless router. The GUI can be accessed by navigating to the router's LAN/Wireless IP address with a web browser. The factory default address is 192.168.1.1.

Step 1. Establish physically connectivity.

Connect a straight through cable from the PC to one of the wireless router's LAN ports, labeled Ethernet 1 - 4. By default, the wireless router will provide an IP address to the PC using default DHCP configurations.

Step 2. Open a web browser.

Step 3. Navigate to the wireless router's Web Utility.

- Set the URL of the browser to <http://192.168.1.1>.

The default login credentials are a blank username and a password of: **admin**. Note that this is very insecure since it is the factory default and provided publicly. We will set our own unique password in a later task.

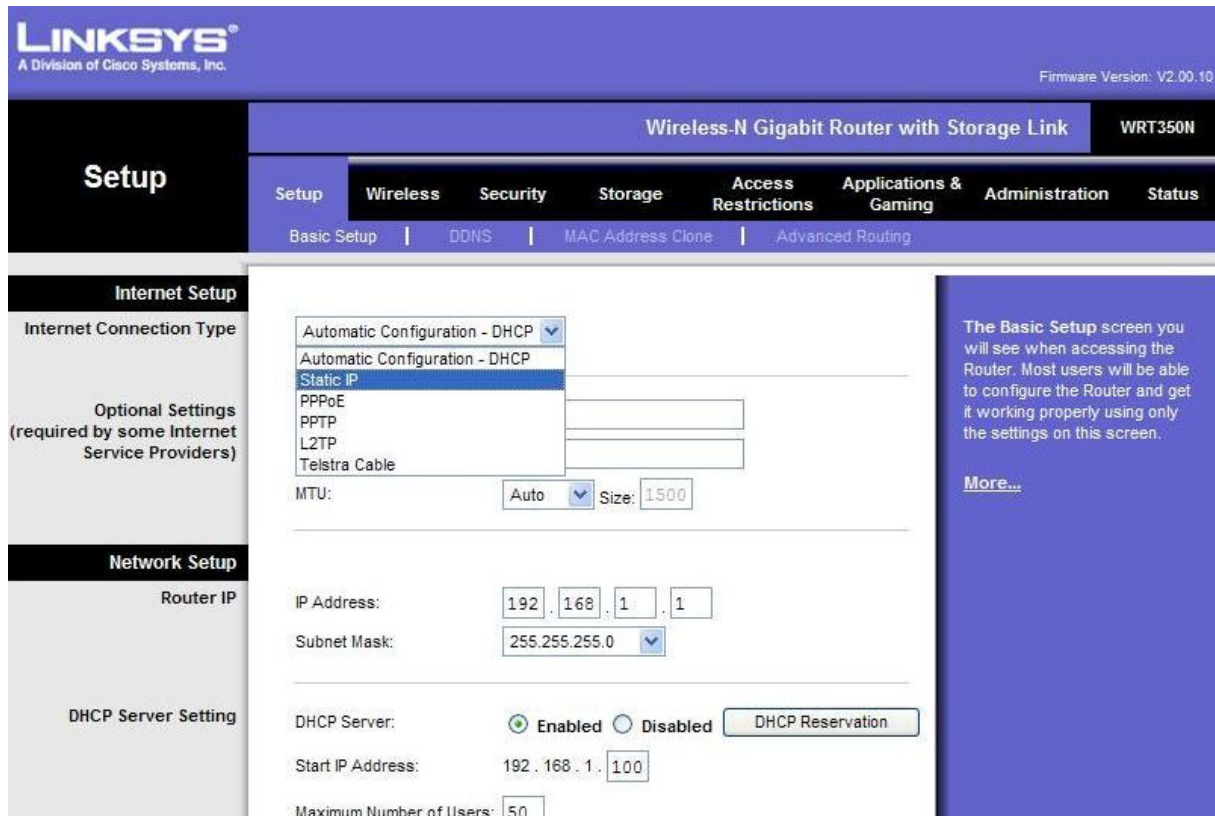
Step 4. Log in

- Leave the username blank and set the password to: **admin**.

Task 3: Configure Options in the Linksys Setup Tab.

Step 1. Set the Internet connection type to static IP.

- By default the start up page is the **Setup** screen. In the menus at the top notice you are in the Setup section and under the **Basic Setup** tab.
- In the Setup screen for the Linksys router, locate the **Internet Connection Type** option in the **Internet Setup** section of this page. Click the drop-down menu and select **Static IP** from the list.

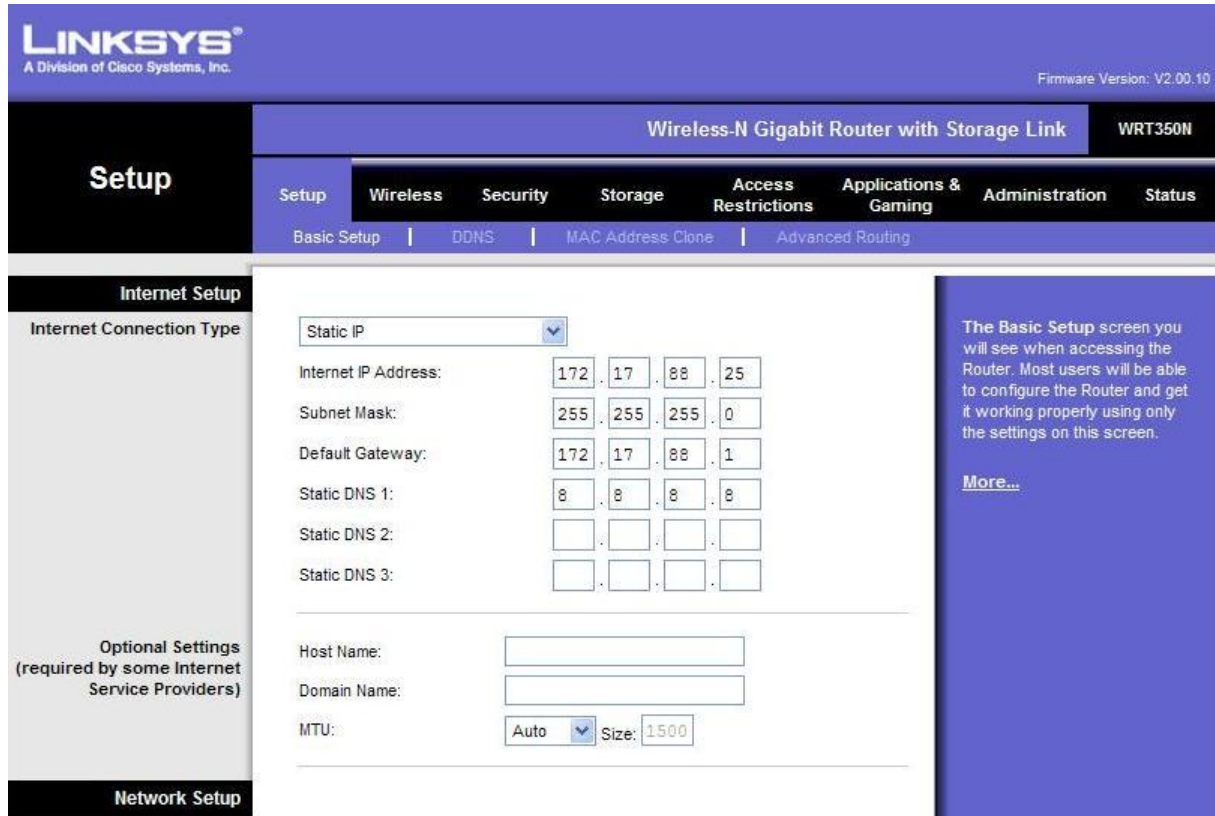


The screenshot displays the Linksys Basic Setup interface. At the top, the Linksys logo and 'A Division of Cisco Systems, Inc.' are visible, along with the firmware version 'V2.00.10'. The main navigation bar includes 'Setup', 'Wireless', 'Security', 'Storage', 'Access Restrictions', 'Applications & Gaming', 'Administration', and 'Status'. The 'Setup' tab is active, and the 'Basic Setup' sub-tab is selected. The 'Internet Setup' section is expanded, showing the 'Internet Connection Type' dropdown menu set to 'Static IP'. Other options in the dropdown include 'Automatic Configuration - DHCP', 'PPPoE', 'PPTP', 'L2TP', and 'Telstra Cable'. Below the dropdown, the MTU is set to 'Auto' with a size of '1500'. The 'Network Setup' section shows the 'Router IP' with an IP Address of '192.168.1.1' and a Subnet Mask of '255.255.255.0'. The 'DHCP Server Setting' section shows the 'DHCP Server' as 'Enabled' with a 'DHCP Reservation' button. A 'Maximum Number of Users' field is set to '50'. A blue sidebar on the right contains a note: 'The Basic Setup screen you will see when accessing the Router. Most users will be able to configure the Router and get it working properly using only the settings on this screen.' with a 'More...' link.

Step 2. Configure the VLAN 88 IP address, subnet mask, and default gateway for WRS2.

- Set the **Internet IP address** to 172.17.88.25.
- Set the **Subnet Mask** to 255.255.255.0.
- Set the **Default Gateway** to 172.17.88.1.

Note: Typically in a home or small business network, this Internet IP address is assigned by the ISP through DHCP or PPPoE. (The specifics of PPPoE are outside the scope of this course.)



LINKSYS
A Division of Cisco Systems, Inc. Firmware Version: V2.00.10

Wireless-N Gigabit Router with Storage Link WRT350N

Setup

Setup | **Wireless** | Security | Storage | Access Restrictions | Applications & Gaming | Administration | Status

Basic Setup | DDNS | MAC Address Clone | Advanced Routing

Internet Setup

Internet Connection Type: Static IP

Internet IP Address: 172 . 17 . 88 . 25

Subnet Mask: 255 . 255 . 255 . 0

Default Gateway: 172 . 17 . 88 . 1

Static DNS 1: 8 . 8 . 8 . 8

Static DNS 2:

Static DNS 3:

Host Name:

Domain Name:

MTU: Auto Size: 1500

Optional Settings (required by some Internet Service Providers)

Network Setup

The Basic Setup screen you will see when accessing the Router. Most users will be able to configure the Router and get it working properly using only the settings on this screen.

[More...](#)

Step 3. Configure the router IP parameters.

- Still on the Basic Setup page, scroll down to **Network Setup**. For the **Router IP** fields do the following:
- Set the IP address to **172.17.40.1** and the subnet mask to **255.255.255.0**.
- Under the **DHCP Server Setting**, ensure that the DHCP server is **Enabled**.

Step 4. Save settings.

Click the **Save Settings** button at the bottom of the **Setup** screen.

Note that the IP address range for the DHCP pool adjusts to a range of addresses to match the Router IP parameters. These addresses are used for wireless clients and clients that connect to the router's internal switch. Clients receive an IP address and mask, and are given the router IP to use as a gateway.

Step 5. Reconnect to WRS2.

Since we have changed the router's IP address and DHCP pool, we will have to reconnect to it using the new address previously configured.

- Reconnect to the router. You will need to reacquire an IP address from the router via DHCP or manually set your own.
- Reconnect to the router's configuration GUI using an IP address of **172.17.40.1**. Remember to use the default password of **admin**.

Task 4: Configure Options in the Linksys Wireless Tab.

Step 1. Set the network name (SSID).

- Click the **Wireless** tab.
- Under **Network Name (SSID)**, rename the network from **linksys** to **WRS_LAN_#**, where **#** is a unique ID assigned by your instructor corresponding to your group number. This will help to avoid conflicts with other students working on this lab at the same time.
- Click **Save Settings**.



The screenshot shows the Linksys configuration interface for a Wireless-N Gigabit Router with Storage Link (WRT350N). The 'Wireless' tab is selected, and the 'Basic Wireless Settings' sub-tab is active. The settings are as follows:

- Network Mode: Mixed
- Network Name (SSID): WRS_LAN_1
- Radio Band: Wide - 40MHz Channel
- Wide Channel: 6
- Standard Channel: 4 - 2.427GHz
- Wireless SSID Broadcast: Enabled

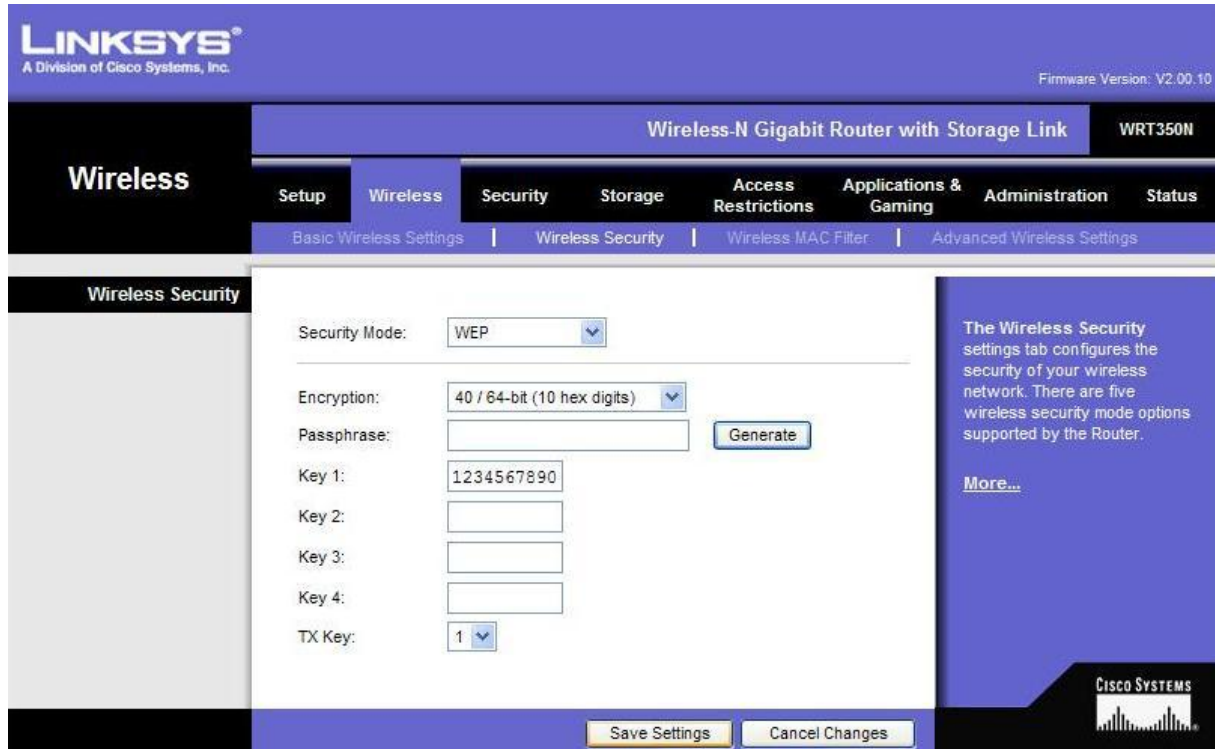
Buttons for 'Save Settings' and 'Cancel Changes' are visible at the bottom. A help box on the right states: 'This screen allows you to choose your wireless network mode and other basic features. More...'

Which (wireless) 802.11x standards work in the 2.4 ghz spectrum?

Explain the differences between those standards:

Step 2. Set the security mode.

- Click **Wireless Security**. It is located next to **Basic Wireless Settings** in the main **Wireless** tab.
- Change **Security Mode** from **Disabled** to **WEP**.
- Using the default Encryption of 40/64-Bit, set **Key1** to **1234567890**,
- Click **Save Settings**.



The screenshot shows the Linksys WRT350N router's configuration interface. The main navigation bar includes 'Setup', 'Wireless', 'Security', 'Storage', 'Access Restrictions', 'Applications & Gaming', 'Administration', and 'Status'. The 'Wireless' tab is active, and the 'Wireless Security' sub-tab is selected. The 'Wireless Security' settings are displayed, showing 'Security Mode' set to 'WEP', 'Encryption' set to '40 / 64-bit (10 hex digits)', and 'Key 1' set to '1234567890'. There are also fields for 'Passphrase', 'Key 2', 'Key 3', 'Key 4', and 'TX Key'. A 'Generate' button is next to the 'Passphrase' field. At the bottom, there are 'Save Settings' and 'Cancel Changes' buttons. A sidebar on the right provides information about the Wireless Security settings.

How many bits of the WEP 64-bit encryption method is used for the actual encryption?

What other Security Modes are available in the drop down menu?

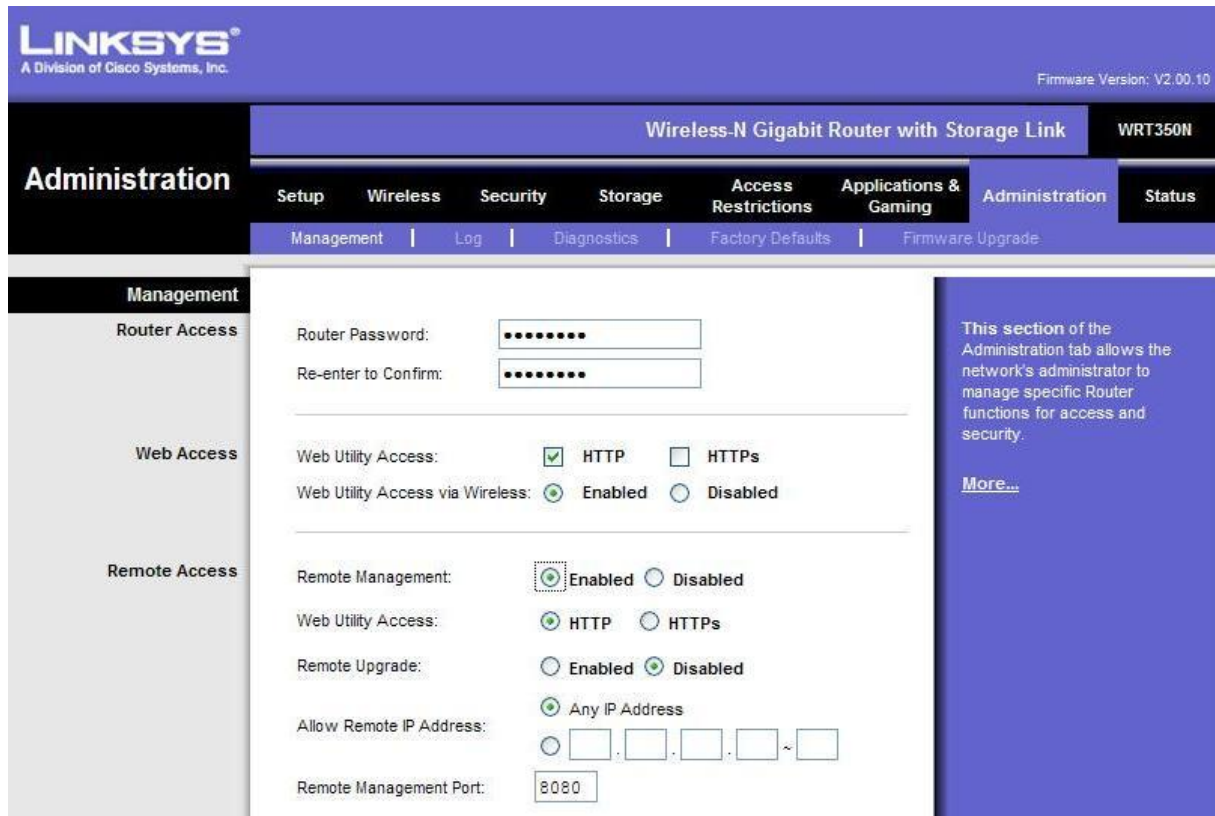
Task 5: Configure Options in the Linksys Administration Tab

Step 1. Set the router password.

- Click the **Administration** tab.
- Under **Management** in the **Router Access** section, change the router password to **cisco123**. Re-enter the same password to confirm.

Step 2. Enable remote management.

- In the **Remote Access** section, set **Remote Management** to **Enabled**.
- Click **Save Settings**.
- You may be prompted to log in again. Use the new password of **cisco123** and still keep the username blank



The screenshot shows the Linksys Administration web interface for a WRT350N router. The top navigation bar includes tabs for Setup, Wireless, Security, Storage, Access Restrictions, Applications & Gaming, Administration, and Status. The Administration tab is active, and the Management section is expanded to show Router Access, Web Access, and Remote Access.

Router Access Configuration:

- Router Password: [.....]
- Re-enter to Confirm: [.....]

Web Access Configuration:

- Web Utility Access: HTTP HTTPs
- Web Utility Access via Wireless: Enabled Disabled

Remote Access Configuration:

- Remote Management: Enabled Disabled
- Web Utility Access: HTTP HTTPs
- Remote Upgrade: Enabled Disabled
- Allow Remote IP Address: Any IP Address
- Allow Remote IP Address: [] . [] . [] . [] ~ []
- Remote Management Port: [8080]

Informational Text:

This section of the Administration tab allows the network's administrator to manage specific Router functions for access and security.

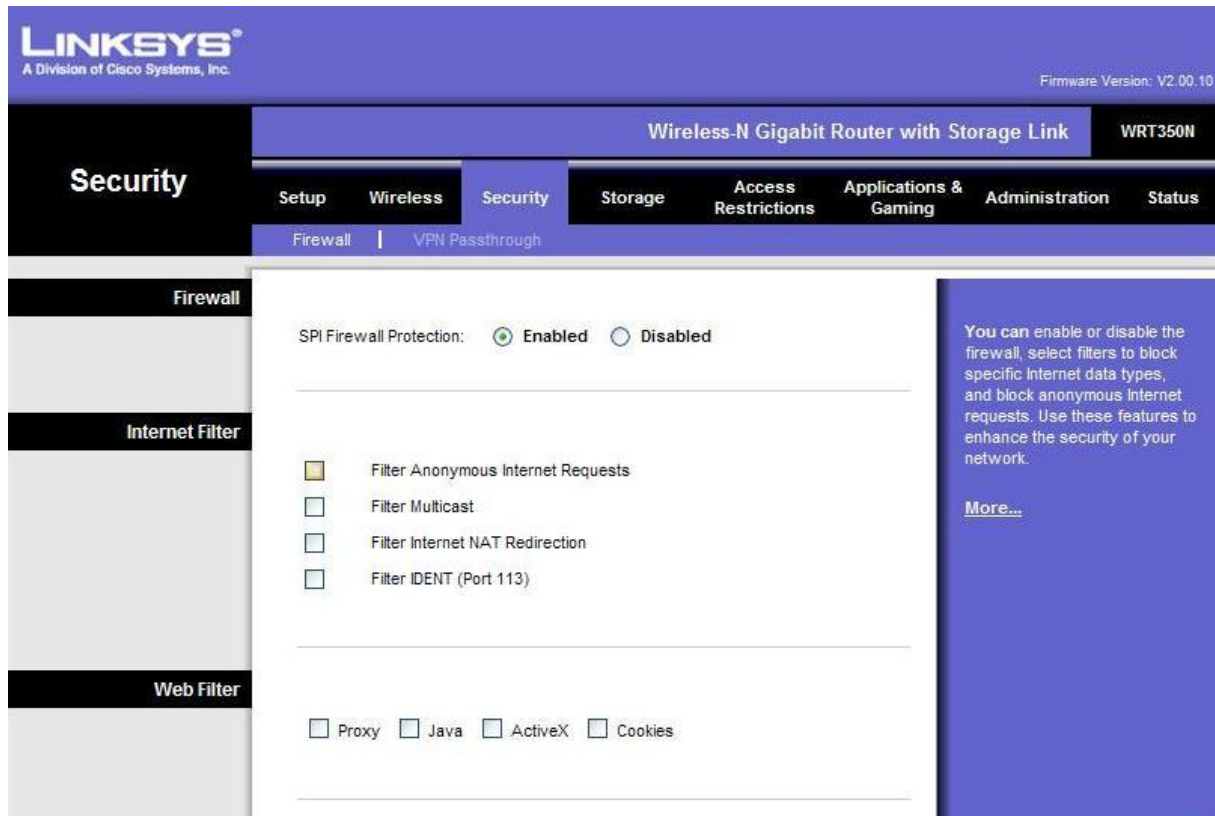
[More...](#)

Task 6: Configure Options in the Linksys Security Tab

By default ping requests to WRS2's LAN/Wireless interface (172.17.40.1) from sources on its WAN interface (for example PC1 & PC2) will be blocked for security reasons implemented by the wireless router. For the purpose of verifying connectivity in this lab we would like to allow these pings.

Step 1. Allow anonymous internet requests.

- Click the **Security** tab.
- Under **Internet Filter**, uncheck **Filter Anonymous Internet Requests**.
- Click **Save Settings**.



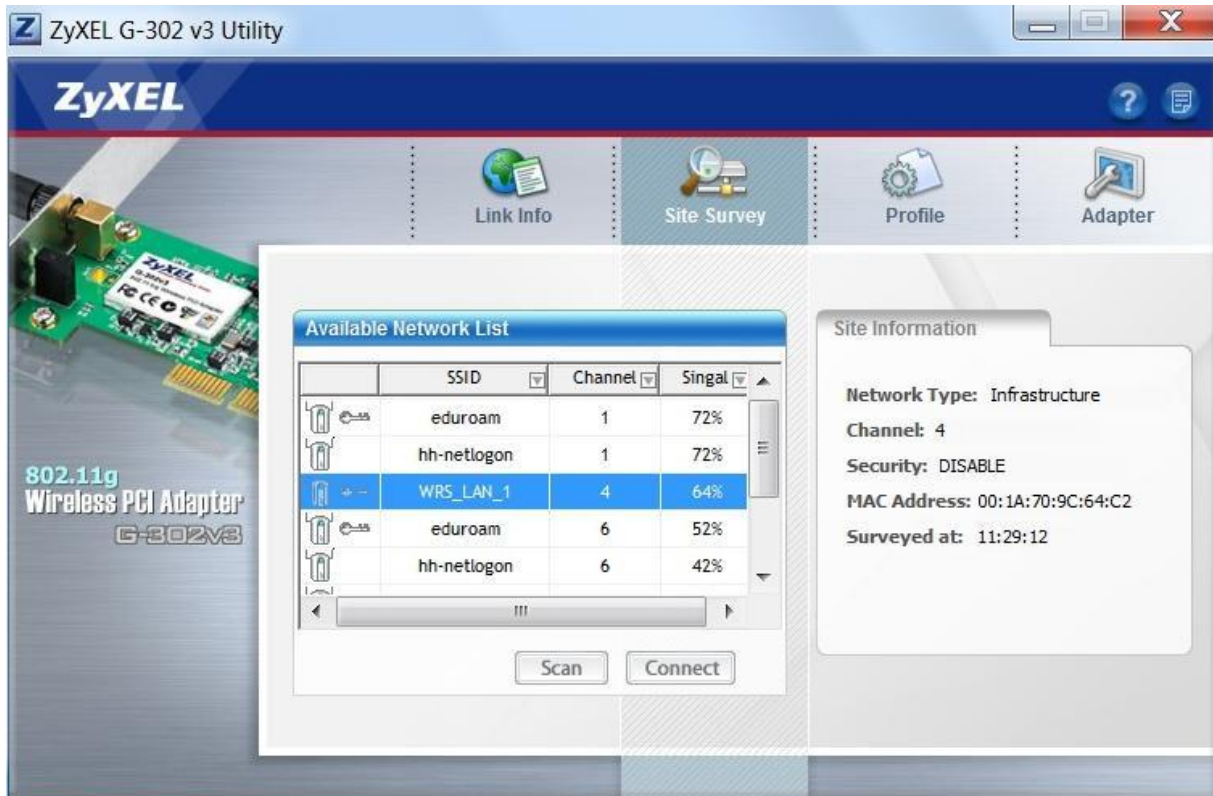
The screenshot displays the Linksys web interface for a WRT350N router. The 'Security' tab is active, and the 'Internet Filter' section is expanded. The 'SPI Firewall Protection' is set to 'Enabled'. Under the 'Internet Filter' section, the 'Filter Anonymous Internet Requests' checkbox is checked, while 'Filter Multicast', 'Filter Internet NAT Redirection', and 'Filter IDENT (Port 113)' are unchecked. The 'Web Filter' section shows checkboxes for 'Proxy', 'Java', 'ActiveX', and 'Cookies', all of which are currently unchecked. A blue sidebar on the right contains a message about enabling or disabling the firewall and a 'More...' link.

Why would you filter IDENT (Port 113)?

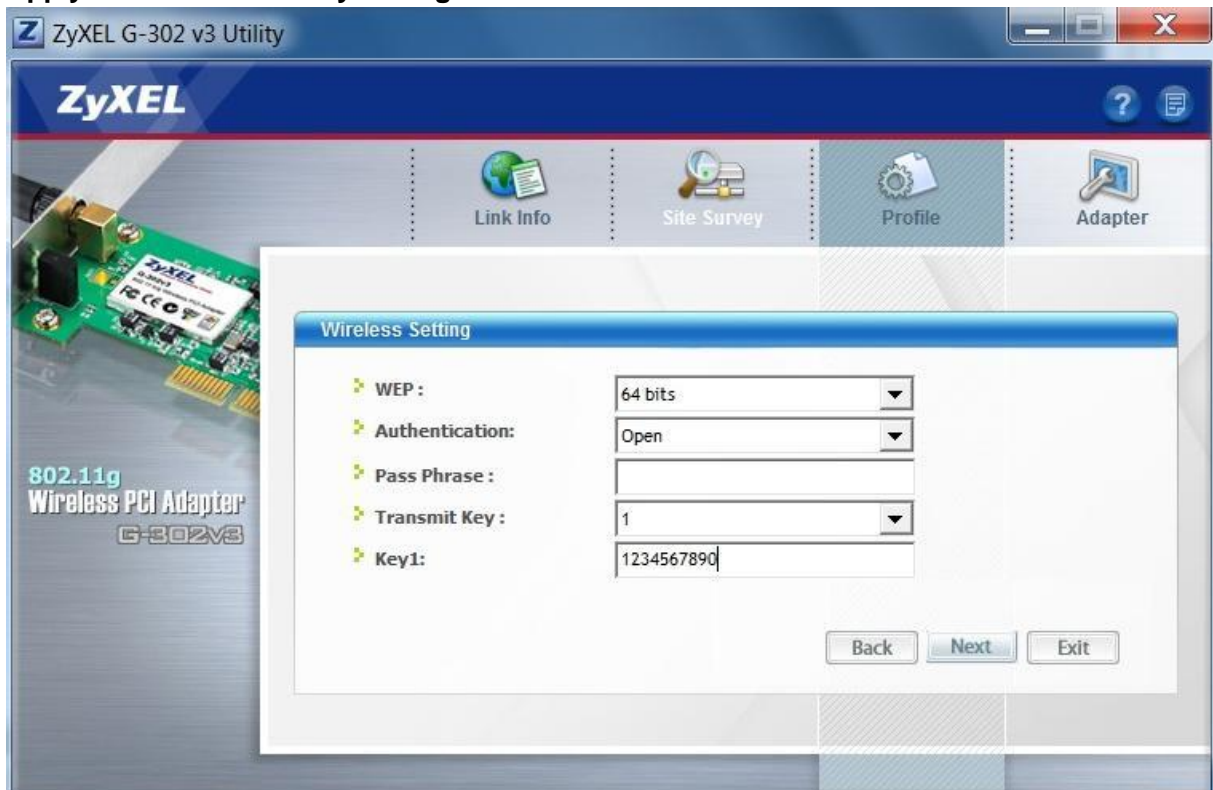
Task 7: Add Wireless Connectivity to a PC

Open the ZyXEL G-302 v3 Utility

Identify and connect to your WRS_LAN_Number



Apply the correct security settings



Verify Connection



Task 8: Test Connectivity

Step 1. Ping WRS2's LAN/Wireless interface.

- On PC3, click **Start->Run**
- Type **cmd** and select open. This will open the command prompt
- In the command prompt type (without quotes) "**ping 172.17.40.1**".

Step 2. Ping R1's Fa0/1.88 Interface.

- In the command prompt type (without quotes) "**ping 172.17.88.1**".

Step 3. Ping PC1 and PC2 from PC3.

- In the command prompt type (without quotes) "**ping 172.17.10.21**" to ping PC1.
- Repeat on PC2's address, 172.17.20.22.

Note: Due to the security on the WRS, PC 3 can ping both PC 1 and 2, but PC 1 and 2 are not able to ping PC 3.

Task 9: Erase Configuration

Erase the configuration on the WRS by navigating to the **Administration** page, selecting the **Factory Defaults** tab, and clicking the **Restore Factory Defaults** button.

