Wireless Network Defenses.

There are two major areas of concern that people must address with regards to implementing wireless network defenses and these are:

1. Securing a home/small business wireless network.
2. Being secure in a public wireless network.

SECURING A HOME/SMALL BUSINESS WIRELSS NETWORK

Securing a home wireless network is easy. These are the steps necessary for security to be implemented:

1. Lockdown your wireless router.
2. Limit users.
3. Turn-on Wi-Fi Protected Access 2 (WPA2).
4. Configure Network Settings.

LOCKDOWN YOUR WIRELESS ROUTER – STEP 1

Your first task to better secure your wireless router is to change the factory default username and password. The default username and password for your wireless router are known publicly, so don't leave it as default setting.

Here are some known usernames and passwords:

	Default	
	User name	**Password**
Linksys	(blank)	admin
Dlink	admin	(blank)
Netgear	admin	password

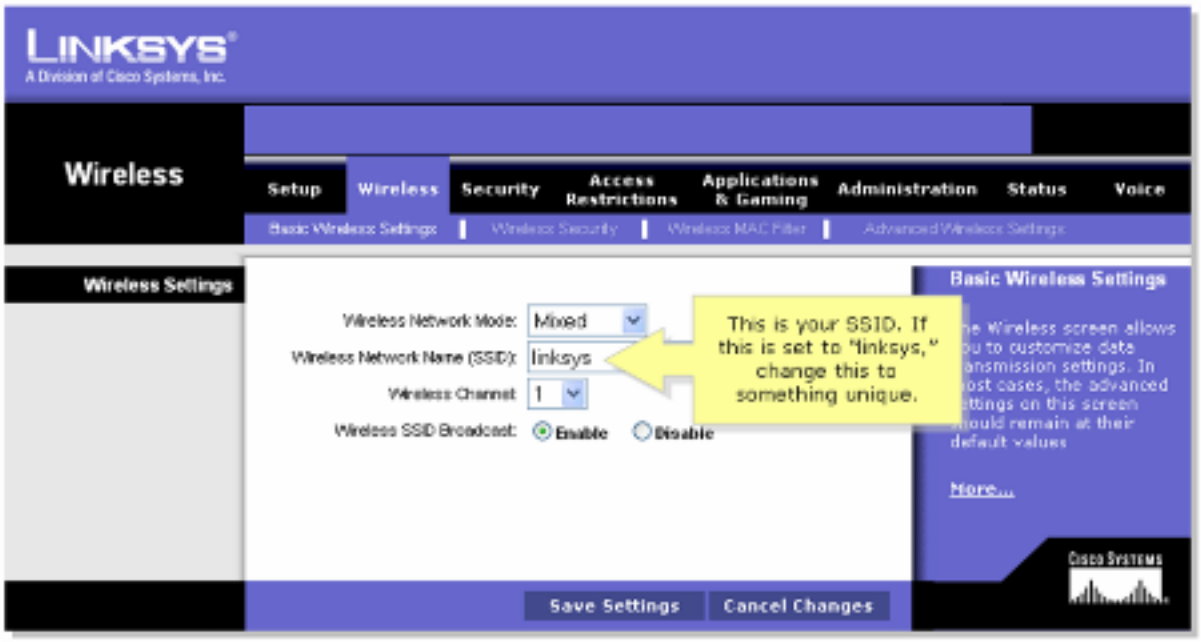
Remember: A good password is composed of number, alphabet (upper case/lower case) and symbol.

LOCKDOWN YOUR WIRELESS ROUTER – STEP 2

Change factory default SSID on the wireless router to an SSID that would not reveal the source of the wireless access point.

Like with the username and password, default SSIDs are known publicly. Here are some examples of default SSID of wireless routers from different vendors:

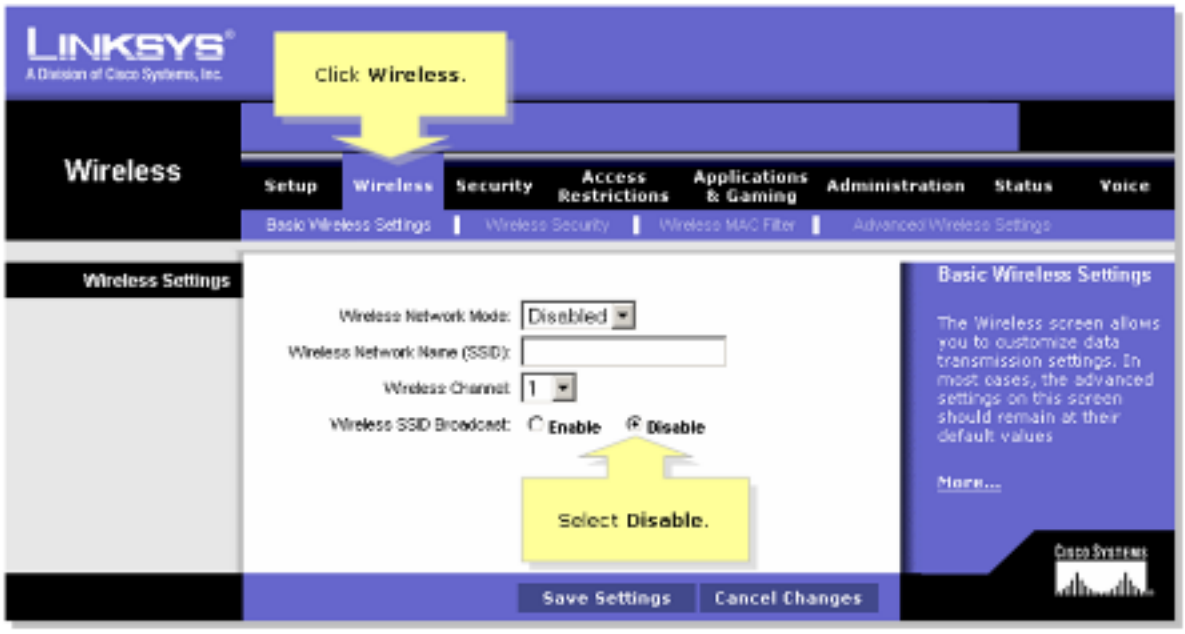
	Default SSID
Linksys	linksys
Dlink	default
Netgear	NETGEAR



LOCKDOWN YOUR WIRELESS ROUTER – STEP 3

Disable SSID Broadcast. By default, most wireless router will broadcast the SSID to all wireless devices. That means your neighbor can detect the SSID you use in your network and gain access to your network with a computer equipped with wireless network adapter.

If you really want to broadcast the SSID, please make sure you enable WPA2 encryption and MAC address filtering to limit the access to your network.



LIMIT USERS – STEP 1

You can enable Media Access Control (MAC) address filtering to allow the computers with specific MAC addresses (the wireless adapter's MAC address) to join the wireless network. This is one of the methods to enhance wireless network security from unauthorized access.

In order to make it work, you need to define a list of MAC addresses that are allowed to join the network.

```
Ethernet adapter Wireless Network Connection:

        Connection-specific DNS Suffix  . : ntc.edu
        Description . . . . . . . . . . . : Broadcom 802.11n Network Adapter
        Physical Address. . . . . . . . . : 00-1F-5B-BB-10-B2
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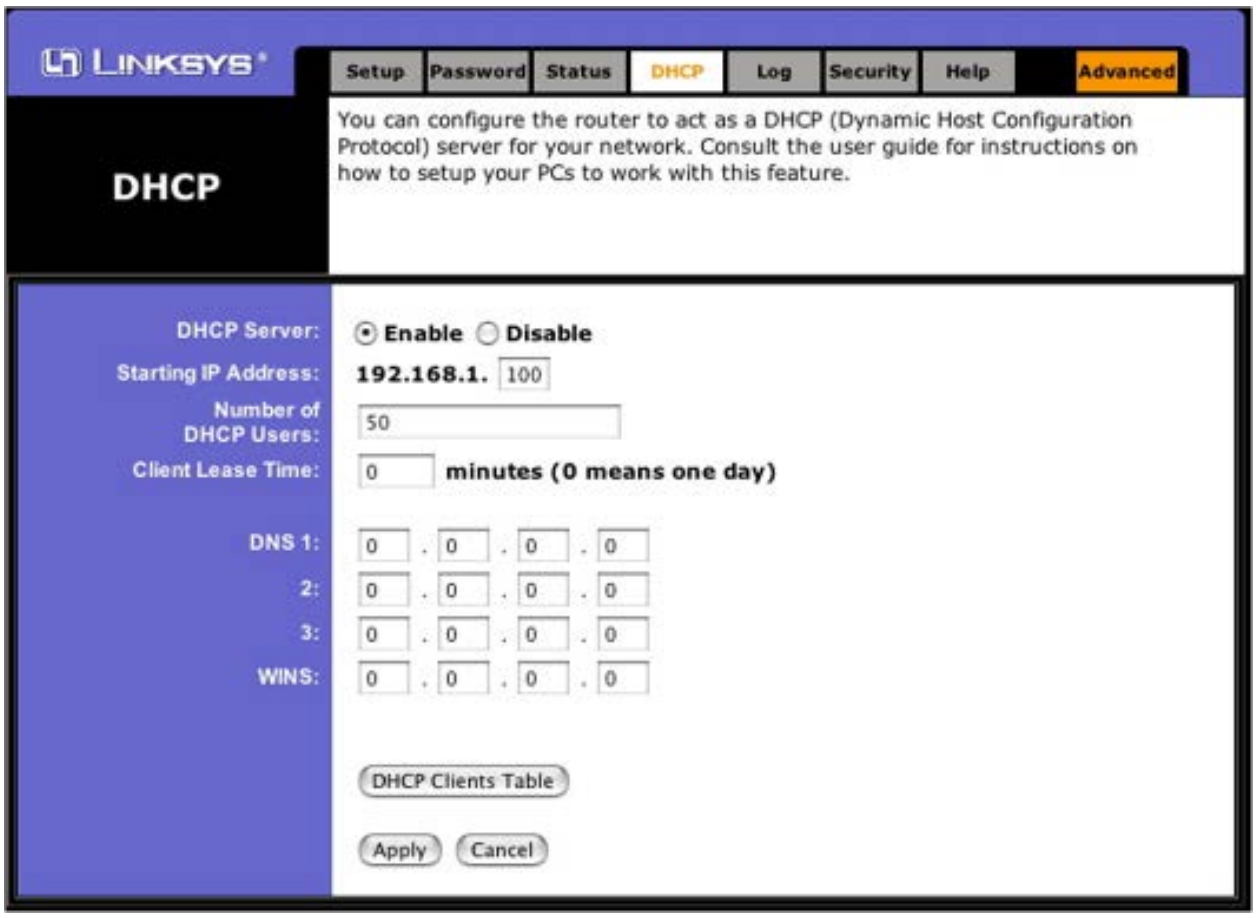
LIMIT USERS – STEP 2

You can also limit the number of IP addresses that are given out to connecting wireless clients by limiting the number of DHCP leases that are given out. If an IP address cannot be given to a client, they simply cannot connect.



TURN-ON WI-FI PROTECTED ACCESS 2 (WPA2) – STEP 1

The standard for encrypting that is used by wireless routers and wireless devices today is known as the personal security model. There are two parts: Wi-Fi Protected Access (WPA) and Wi-Fi Protected Access 2 (WPA2).

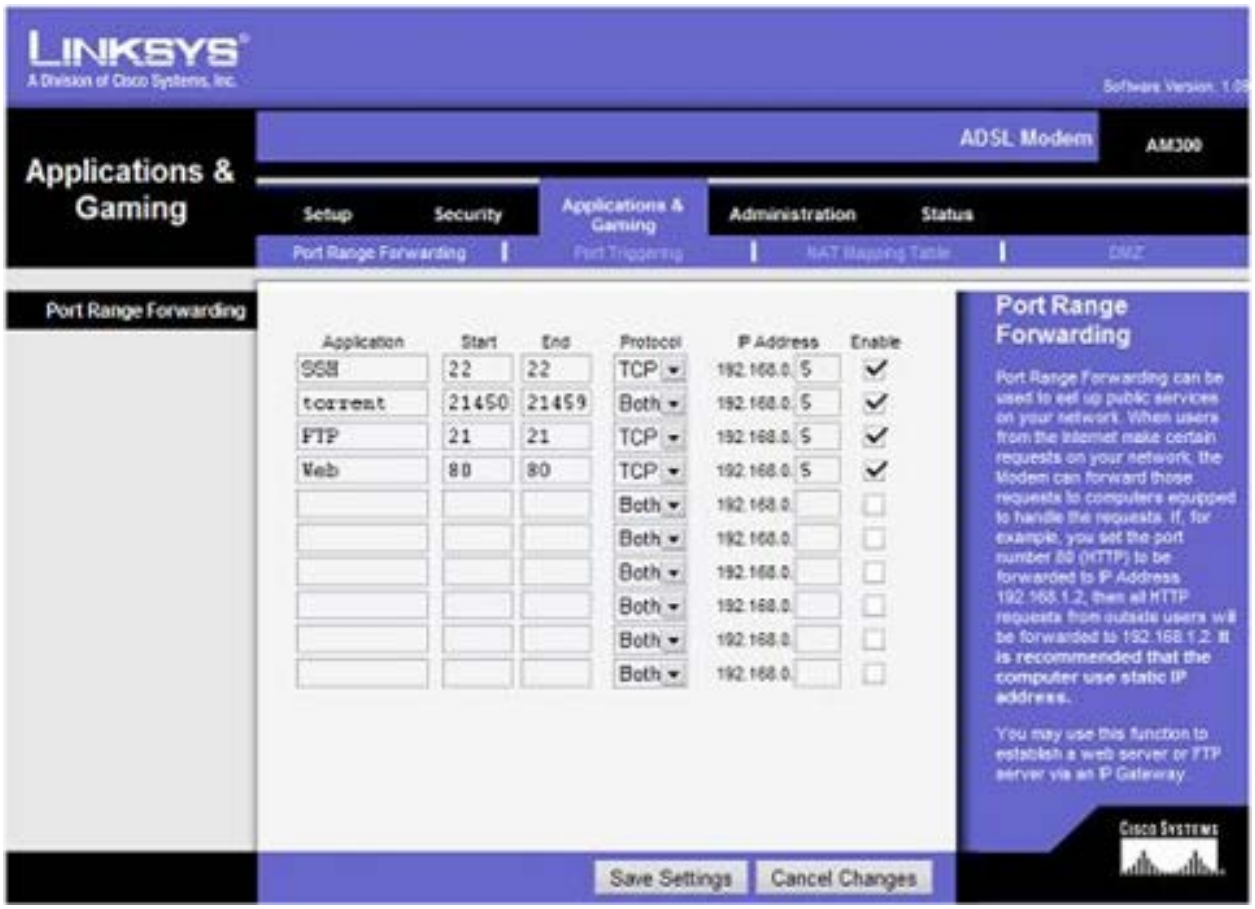
The first step in configuring WPA2 is to select WPA2 Personal.

TURN-ON WI-FI PROTECTED ACCESS 2 (WPA2) – STEP 2

The next step is to set the encryption level. TCIP or AES is usually chosen. This allows both WPA and WPA2 clients to connect.

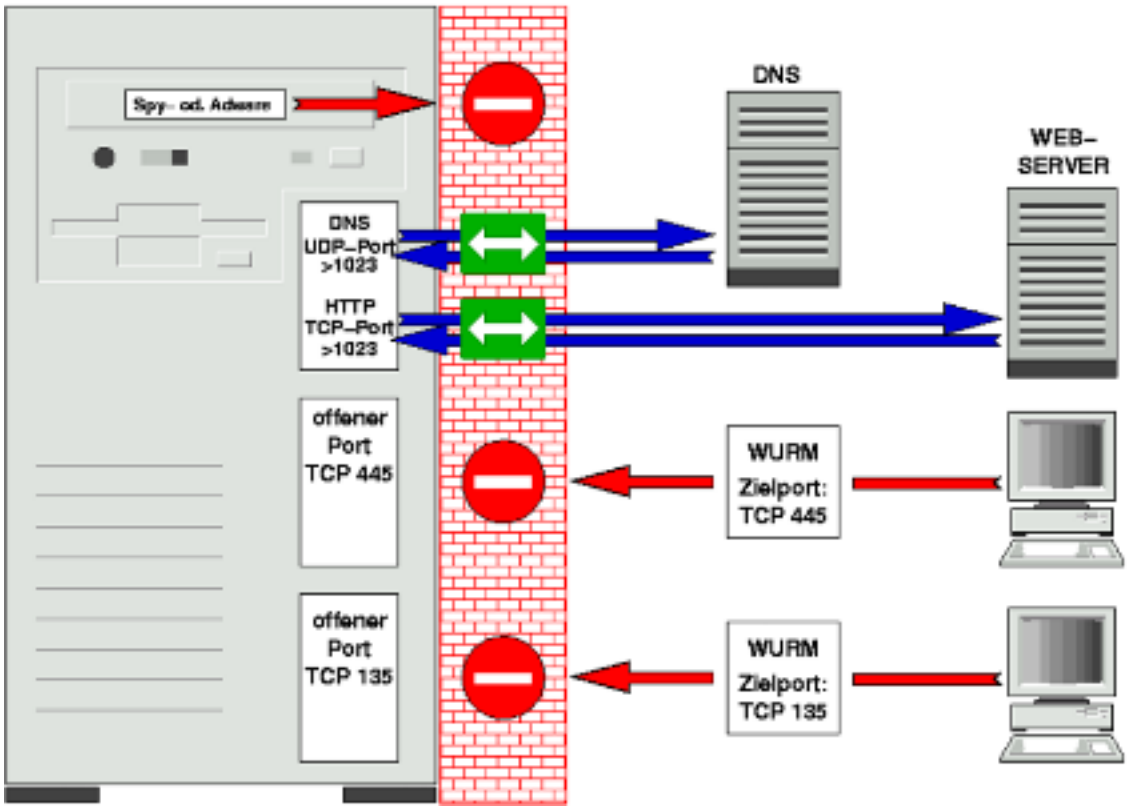
CONFIGURE NETWORK SETTINGS - PORT FORWARDING

When Demilitarized Zones (DMZs) are enabled on wireless routers, all ports are opened to a given computer for access from the Internet. A better alternative is to enable port forwarding. This method enables only the ports that are needed such as HTTP or FTP.



BEING SECURE IN A PUBLIC WIRELESS NETWORK

Whenever you are on a public network you have to protect yourself and use the network cautiously and securely. The two most common means to protect yourself is with a personal firewall and a virtual private network (VPN).



PERSONAL FIREWALL

An essential safety control, the personal firewall should always be enabled when accessing a public network. The personal firewall is software based and runs in the operating system. It is rule based and controls incoming (and outgoing on some personal firewalls) traffic based on the following rules:

Allow - let the packet pass through and continue its journey to the destination computer.

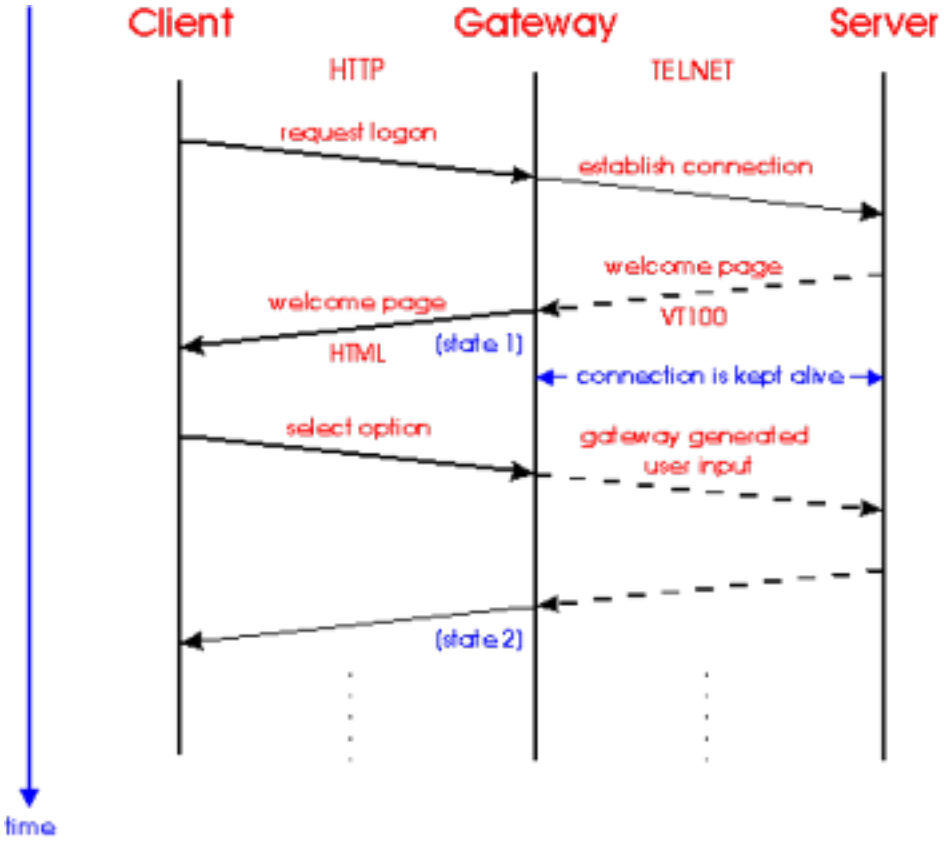
Block – prevents the packet from passing through to the network by dropping it.

Prompt - asks the user to decide whether to allow or block the packet.

PERSONAL FIREWALL – STATELESS VS. STATEFUL FILTERING

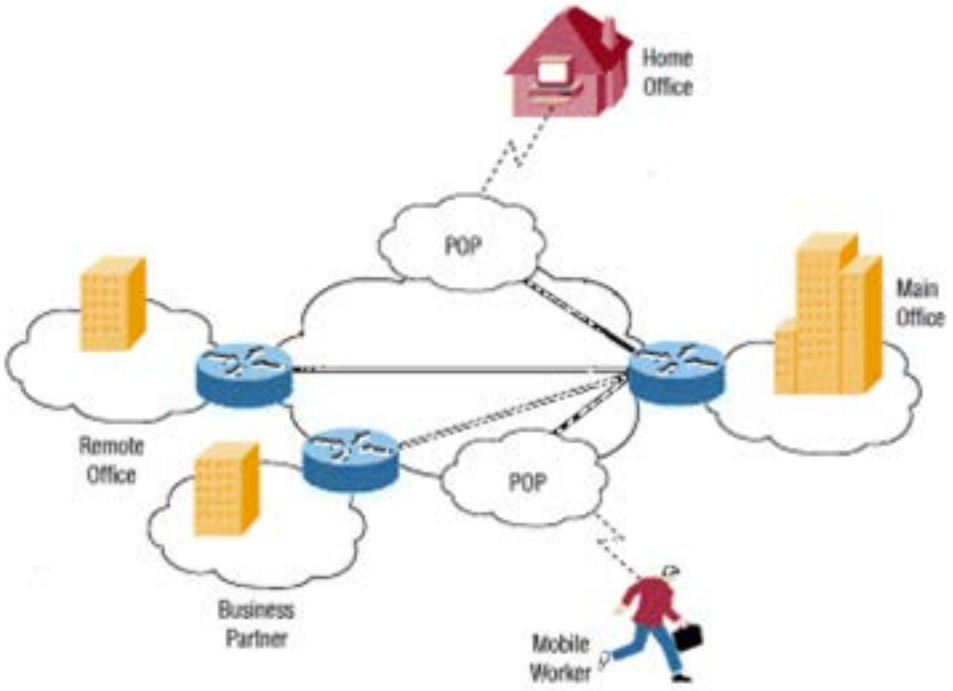
With stateless filtering, packets are allowed or denied based solely on the rule (allowed, denied or prompted). This is not the best security because an attacker can get through a firewall by changing a packet to look like a packet that is allowed (i.e. making it an HTTP packet).

Stateful filtering is also rule based, but also includes a filtering decision based on whether the user made the request for the packet or not. This way, if a packet is destined to a computer from an attacker, the filter will recognize that the packet is not being sent in response to a legitimate request and block the attack.



VIRTUAL PRIVATE NETWORKS

When you need to communicate with a corporate server over a public network like the Internet, it is a common practice to conduct your transactions through a virtual private network "tunnel". The tunnel is a term used to indicate that the data sent and received through the VPN connection is encrypted and thus indecipherable. When a VPN tunnel is established, the connection between the user and the server is transparent, secure, requires authentication, and appears to function like a real local area network.


Home
Office
POP
Main
Office
Remote
Office
POP
Business
Partner
Mobile
Worker