

54Mbps Wireless-G Access Point



networks@work

USER'S MANUAL



COMPEX NETPASSAGE SERIES

NetPassage WPE54G

NetPassage WPE54G

NetPassage WPE54G

NetPassage WPE54G

NetPassage WPE54G

Manual number : U-0397-V1.1C

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Firmware

Please note that this User's Manual is written based on NetPassage WPE54G Firmware Release 1.00.

FCC NOTICE

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This device generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this device does cause harmful interference to radio or television

reception, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Connect the computer into an outlet on a circuit different from that to which the receiver is connected.
- Increase the separation between the computer and receiver.
- Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

FCC Compliance Statement: This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

Declaration of Conformity

Compex, Inc. declares the following:

Product Name: Compex NetPassage WPE54G 54Mbps Wireless-G Access Point

Model No.: NetPassage WPE54G conforms to the following Product Standards:

This device complies with the Electromagnetic Compatibility Directive (89/336/EEC) issued by the Commission of the European Community. Compliance with this directive implies conformity to the following European Norms (in brackets are the equivalent international standards.)

Electromagnetic Interference (Conduction and Radiation): EN 55022 (CISPR 22)

Electromagnetic Immunity: EN 55024 (IEC61000-4-2,3,4,5,6,8,11)

Power Line Harmonics: EN 61000-3-2 (IEC610000-3-2)

Power Line Flicker: EN 61000-3-3 (IEC610000-3-3)

Therefore, this product is in conformity with the following regional standards:

FCC Class B — following the provisions of FCC Part 15 directive;

CE Mark — following the provisions of the EC directive.

This Class B digital apparatus complies with Canadian ICES-003.

About This Document

The product described in this document, Compex 54Mbps Wireless-G Access Point series, NetPassage WPE54G, is a licensed product of Compex Systems Pte Ltd.

Information provided: This document provides an overview of the key features and applications of the WPE54G. It also contains instructions for installing, configuring and using the Compex NetPassage WPE54G.

Audience: This manual is intended for both Network Administrators and end-users who possess a basic knowledge of networking structures and protocols.

Assumptions: Procedures listed in the document are intended for *Microsoft Windows* users. If you are running a different operating system, you may need to refer to your operating system's documentation for networking instructions.

How to use this document: If you want to get started without having to read everything

- ◆ Skip to Chapter 3 for the hardware setup procedure
- ◆ Follow Chapter 4 for logging onto the configuration interface
- ◆ Tag on with Chapter 5 for basic configurations
- ◆ Advanced users can pursue further configuration with Chapter 6
- ◆ The Table of Contents will guide you to specific topics.

Conventions: The Compex 54Mbps Wireless-G Access Point NetPassage WPE54G is often referred to as WPE54G. Here is a list of icons used throughout the manual:



This symbol alerts the user of an important notice to be heeded. The user is advised to read instructions carefully before proceeding further.

expert

This symbol characterises sections meant for advanced users or specific features meant for exceptional non-standard applications. The user is assumed to have sufficient relevant network knowledge to carry out the necessary configuration or understand the information given.

Technology Primer

This symbol suggests that the user find additional networking information from our unique Technology Primer documents included on the Product CD. The documents explain specific network concepts, Compex-exclusive features and provide illustrated walkthroughs for common networking scenarios.



This symbol highlights exclusive features found on this Compex product or on Compex's family of products.

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Chapter 1: Introduction

Thank you for purchasing the Compex NetPassage WPE54G 54 Mbps Wireless-G Access Point! We are committed to deliver, meet and even exceed your expectations of a high-performance, feature-rich, user-friendly and cost-effective network access point device. You will soon be discovering more about a product which we have proudly developed.

The Compex NetPassage WPE54G is a high-performance IEEE 802.11g-compliant wireless access point which supports industry-leading security standards. It features PRISM Nitro™ Technology which allows you to achieve up to 50% higher throughput in pure wireless “G” networks and 300% better throughput in mixed mode environments.



Advanced Features

- New **54Mbps** Wireless-G 802.11g **5X faster** than 802.11b!
- Turbo-charge your wireless networks with **PRISM Nitro™ Technology** for 50% greater throughput in “G” and 300% in mixed networks consisting “B” and “G” devices.
- Secure your data transmissions with **IEEE 802.1x authentication** and **64/128-bits WEP Encryption!**

Read on to find out more about these features!

In addition to fast performance, the WPE54G supports IEEE 802.1x authentication and 64/128-bits Wired Equivalent Privacy (WEP) encryption as a guarantee of peace of mind when it comes to transmitting confidential data. Moreover, the WPE54G supports Compex’s unique Wireless Pseudo VLAN feature to provide further privacy and security among wireless users in the network or hotspot.

What makes the WPE54G more than great is that it may be operated in up to 5 different modes! The flexibility of its functions, as Access Point, Access Point Client, Gateway, Wireless Routing Client or Wireless Ethernet Adapter, makes it suitable for nearly all kinds of network applications that you may require.

In the Access Point mode operation, the WPE54G allows you to perform wireless to wired Ethernet bridging, linking up your wired network with the wireless clients. On the other hand, you may also configure the WPE54G as an Access Point Client so as to set up a wireless bridge between two wired LANs. The Gateway mode offers a unique setup, allowing you to share a broadband Internet access with up to 253 wireless clients using NAT technology. This feature-rich mode lets you configure a full-fledged gateway with built-in DHCP server, and further supports Virtual Servers based on IP and Port Forwarding, De-Militarized Zone, Packet Filtering and more!

The Compex NetPassage WPE54G presents the most comprehensive features that will meet your highest expectations as a network user.

Compex Exclusive!

- Enhance your wireless network privacy with **Wireless Pseudo VLAN!**
- Operate the WPE54G in up to **5 advanced modes** for any kind of network operations!
- Quickly access your network device's administration setup with **uConfig!**

Read on to find out more about these features!

Chapter 2: Getting to Know Your Product

The Compex NetPassage WPE54G has been designed for high performance and offers a rich suite of features, with which you should acquaint yourself in order to exploit your WPE54G's full potential.

Key features

Compatible with IEEE 802.11g and IEEE 802.11b standards

Adopting the 802.11g standard, the Compex NetPassage WPE54G provides you the fastest wireless access within your office or home network. Since it is fully backward compatible with 802.11b, you can safeguard your existing network investments.

Featuring PRISM Nitro™ Technology

PRISM Nitro™ Technology is incorporated into the Compex NetPassage WPE54G so as to reduce data packet collisions when using mixed "G" and "B" wireless network devices. By employing an advanced algorithm for burst mode transmission, the Compex NetPassage WPE54G can achieve up to 50% higher throughput for "G" networks and up to 300% increased throughput in mixed mode operation situations.

Read more on this at <http://www.intersil.com>.

Static IP, Dynamic IP, PPP and PPTP over Ethernet WAN types

Whether you are using the Compex NetPassage WPE54G in a fixed IP network, in a VPN or for broadband Cable /ADSL modem connection sharing, our free and easy web-based configuration interface will get your network up and functioning in no time.

Built-in Dynamic Host Configuration Protocol (DHCP) Server

As a network administrator, you can easily manage your network's IP address allocation with the Compex NetPassage WPE54G's built-in DHCP server. Once set up, it will automatically and dynamically allocate addresses from a pool, to devices or computers connected to your network.

Learn more from our **DHCP Technology Primer**

Wireless Distributed System (WDS)

Cost-effective and highly flexible, WDS is your key to creating a roaming network! Using WDS enables you to wirelessly connect several access points, and in so doing, extend your wired infrastructure to cover locations where cabling is not implemented.

Security Features

You will be glad to learn about the security elements we have put in place to better protect your data and privacy.

64/128-bit WEP encryption support for wireless security

The Compex NetPassage WPE54G uses a private key encryption known as Wired Equivalent Privacy protocol with key lengths of either 64-bit or 128-bit, to protect data communication in your wireless network can.

802.1x Authentication

Compex supports the industry standard IEEE 802.1x authentication for enhanced security in wireless networks. By using the existing Extensible Authentication Protocol (EAP, RFC 2284) that works on both wired and wireless LANs for message exchange during the authentication process, 802.1x authenticates the user with a central authority.

Built-in “NAT” firewall

As the Compex NetPassage WPE54G handles the incoming and outgoing data packet transactions between the internal and external network, it looks at and validates individual packet information before passing it onto a client in the network. This checking provides effective firewall protection and automatically discards rogue packets.

Internet Access Policies: Packet filtering

To complement the NAT technologies incorporated into the Compex NetPassage WPE54G, you can use the packet filtering features to regulate the types of Internet Access permitted and control the transmission of TCP, UDP packets for different ports.

Wireless Pseudo VLAN

Compex's exclusive Wireless Pseudo VLAN feature extends the security advantages of the Ethernet-based VLAN to wireless networks. This feature offers data privacy and protection between individual clients in a wireless network, and is especially useful in a corporate network or in a public 'hotspot'.

Virtual Servers based on Port-forwarding

Virtual servers on the Compex NetPassage WPE54G allow you to set up application servers such as FTP file servers and HTTP web servers based on Port-forwarding.

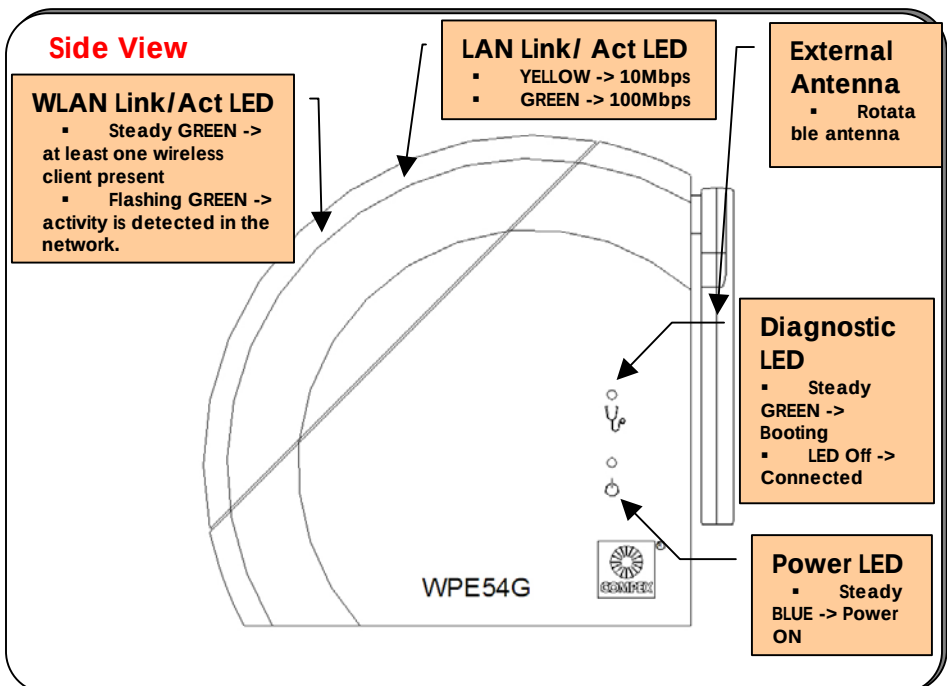
The NetPassage WPE54G Package

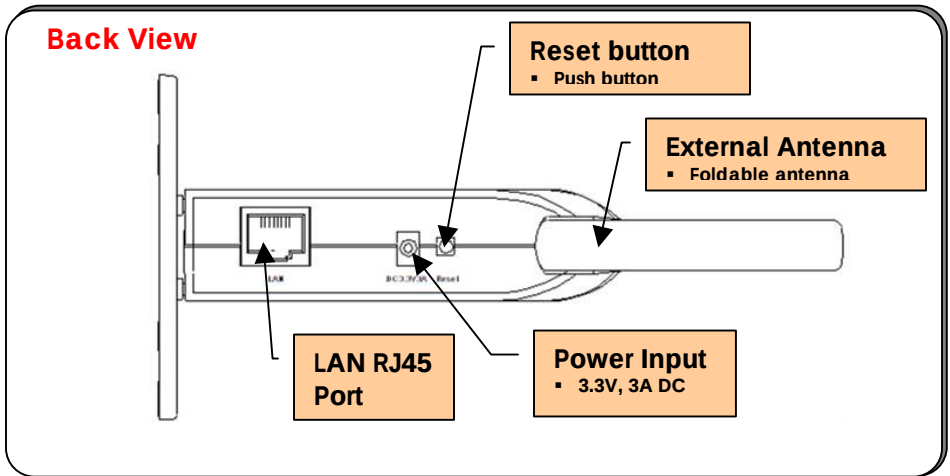
The Compex NetPassage WPE54G retail package contains the following items:

- ♦ 1x Compex NetPassage WPE54G
- ♦ 1x External Power Adapter (3.3V_{DC}, 3A)
- ♦ 1x UTP cross cable
- ♦ 1x Quick Install Guide with Warranty Registration Form
- ♦ 1x Product CD consisting of User's Manual, Firmware Recovery Tool & Utilities

Schematic Overview of the NetPassage WPE54G

The following diagrams provide a schematic overview of the WPE54G.





When to use which mode

The WPE54G is unique in the sense that it may operate in up to 5 different complex modes in order to best suit any type of network applications that you might require.

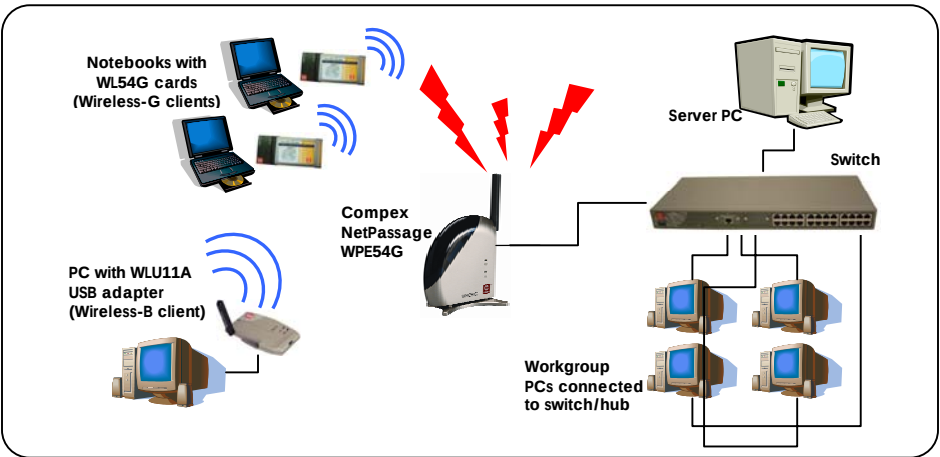
We will henceforth employ the generic term **AP mode** when referring to the *Access Point* and *Gateway* modes and the generic term **wireless client mode** to refer to the *Access Point Client*, the *Wireless Routing Client* and the *Wireless Ethernet Adapter* modes.

This section presents a brief outline of the different network applications that can be accommodated through the different modes of the WPE54G.

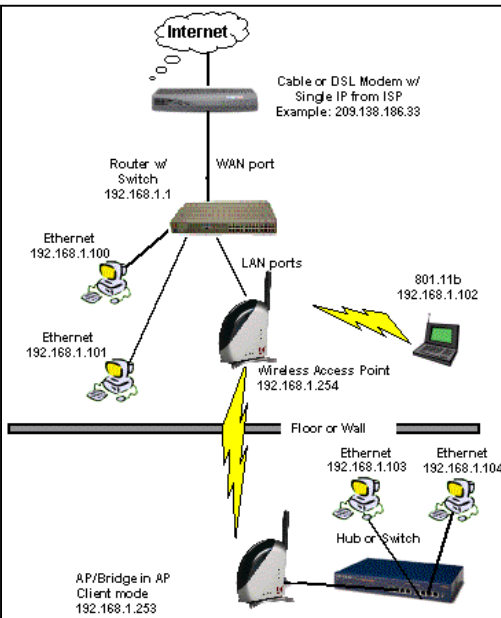
The Access Point Mode

This is the default mode of the NetPassage WPE54G. The **Access Point** mode enables you to bridge the wireless clients in your network to the wired network infrastructure.

The diagram below illustrates the WPE54G bridging a *Fast Ethernet* network with *Wireless 802.11b* and *802.11g* networks.



The Access Point Client Mode



When configured in the **AP Client** mode, the WPE54G acts as a wireless client which can operate concurrently with another access point to perform transparent bridging between two Fast Ethernet networks.

In this diagram, the top local bridge device is just a normal access point which also supports wireless clients. The bottom remote end uses an AP/bridge which is set to AP client mode and does not support wireless clients.

The Gateway Mode

Or more simply put: Broadband Internet sharing in a wireless network!

Since the WPE54G supports different types of broadband connections, the first step towards a successful setup of the WPE54G as a *Broadband Internet Gateway* is to identify the type of broadband Internet access you are subscribed to.

Static IP address

Use this type of connection if you have subscribed to a fixed IP address or a range of fixed IP addresses from your Internet Service Provider.

Dynamic IP address

When powered through this type of connection, the WPE54G will request for an IP address which will be automatically assigned to it by your Internet Service Provider.

For instance, this type of connection applies for:

- Singapore Cable Vision subscribers
- @HOME Cable Service users

Certain Internet Service Providers request for a *DHCP Client ID* before allocating an IP address. In such a case, you should configure the **System Identity** with the DHCP Client ID.

PPP over Ethernet (PPPoE)

Select this type of connection if you are using ADSL services in a country utilising standard PPP over Ethernet for authentication.

For instance:

- if you are in Germany which uses T-1 connection or
- if you are using SingNet Broadband or Pacific Internet Broadband in Singapore.

Singapore ADSL (Ethernet 512K)

All other ADSL subscribers in Singapore including SingTel Magix SuperSurf users should opt for this type of connection.

Australia BPA Cable

This type of connection is especially customised for Big Pond Cable Internet users in Australia.

PPTP

The Point-to-Point Tunneling Protocol (PPTP) mode enables the implementation of secure multi-protocol Virtual Private Networks (VPNs) through public networks.

The Wireless Routing Client Mode

When set up in the Wireless Routing Client mode, the WPE54G connects your network on client site to any Internet connection while ensuring communication among the clients on your network as well. The Routing Client would thus act as a secure Internet gateway on your LAN, not only protecting the LAN against outside intruders but also filtering internal users' access to the Internet, if so configured.

An application of this mode could be for the WPE54G to act as a wireless client bridge for broadband routing. In such a case, the Ethernet port of the wireless routing client would be used for ad hoc connection with other devices on the network while access to the Internet would be achieved through wireless communication with another access point, which connects to the Internet via an ADSL/Cable modem.

The Wireless Ethernet Adapter Mode

This mode is intended for usage by Internet Service Providers. It is conceptually close to the *Access Point Client* mode in that the WPE54G used in this mode, is able to communicate wirelessly with another access point to perform transparent bridging between two networks.

The difference lies in that the function of a network adapter is to interface a computer to a network. Thus, the Wireless Ethernet Adapter connects with a single wired workstation only. This characteristic implies more leeway for the user to set up more explicit parameters for better control over communication to and from the workstation.

Chapter 3: Hardware Installation

NetPassage WPE54G Hardware Setup

In two simple steps, you may power ON and begin configuring the WPE54G device.

Hardware Setup

1

To configure the device, connect the Ethernet cable from a PC on one end, and then connect the cable to the socket labeled LAN on the NetPassage WPE54G.

**2**

Attach the power adapter to the main electrical supply, and connect the power plug onto the socket labeled DC3.3V3A on the NetPassage WPE54G.

You may turn the device ON.

Chapter 4: Web-based configuration interface

Log-in to web-based configuration interface

Once you have verified that the WPE54G is switched on and that your PC is connected to the WPE54G's LAN port, you can set up the WPE54G to meet your network requirements through the web-based configuration interface.

There are 2 alternative ways of accessing the web-based configuration interface:

1. Through the uConfig utility

Compex has developed **uConfig** to give the user direct access to web-configurable Ethernet devices.

Accessing the Web-based Configuration Interface

(a). Through the uConfig utility:

- 1 Insert the Product CD into the CD-ROM drive.

It will automatically run to the page shown below.



2

1. Click on **Utilities**.
2. Click on the **uConfig** program to run it.

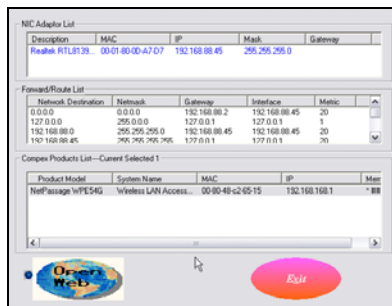
You will see the screen shown in step 3.

3

1. Ensure that the entry for the **NetPassage WPE54G** is selected under the **Complex Products List**.

2. Click on **Open Web**.

This opens the WPE54G's configuration screen shown in the next step.



Wireless LAN Access Point Management

Please enter your password:

Log On!

(Forget your password? - see the User's Guide for instructions.)

4

The password is set to **password** by default.

Press the **Log On!** button to enter the set up pages.



NOTE: The **uConfig** feature appears on all Compuex devices offering web-based configuration.

2. Through your web browser

Accessing the Web-based Configuration Interface

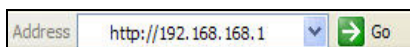
(b). Through your Web browser:

1. Open your web browser.

2. At the **Address** bar, enter the default IP address of the WPE54G, which is <http://192.168.168.1>

3. Press **Enter**.

This opens the WPE54G's configuration screen shown on the right.



4. Press the **Log On!** button to enter the set up pages.

Chapter 5: Basic configuration

Basic configuration

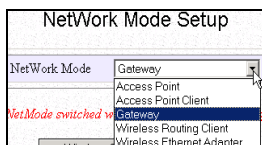
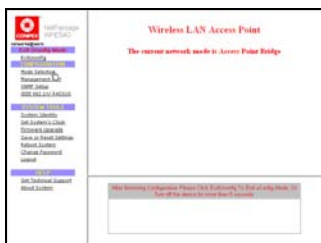
The default mode set by the WPE54G is the **Access Point** mode.

From the **Configuration** menu, the few steps illustrated below will enable you to change to your required mode of operation.

Basic Configuration

- 1** The screen illustrated on the right is the default web page of the WPE54G.

Click on **Mode Selection** from the **Configuration** menu as shown below right to set the WPE54G to your required mode.



2

1. Select your required mode from the **Network Mode** drop-down list.
2. Click on the **Wireless Setup Details** button to access the setup page for your selected mode.

We illustrated with the **Wireless Routing Client** mode as shown below left.

3

You can overwrite the default parameters set by Compex to enter the parameters for your own network.

- 1. The **Access Point Name** field appears when the **WPE54G** is in **AP mode** and refers to the identity of the device. Each name can reach a maximum of 31 alphanumeric characters.

Access Point Name	WPE54G
-------------------	--------

When the WPE54G is operated in **wireless client mode**, this field is referred to as **Station Name** instead.

Station Name	WPE54G
--------------	--------

It is a good practice to name the access points uniquely, particularly when there are several devices in the network.

- 2. In **AP mode**, the **ESSID** represents a unique identifier for the network group. It is a case-sensitive string consisting of a maximum of 32 characters.

ESSID	wpe54g
-------	--------

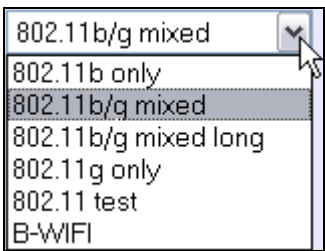
When the WPE54G is operated in **wireless client mode**, this field is referred to as **SSID** instead.

SSID	compex
------	--------

All devices connecting to a specific network should have the same ESSID value.

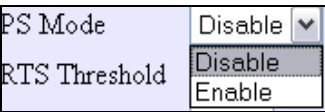
3. The **Wireless Mode** drop-down list provides a selection of network environment types in which to operate the WPE54G:

- **802.11b only**;
- **802.11b/g mixed**, which stands for both b and g environments;
- **802.11b/g mixed long**, used when long preamble is configured;
- **802.11g only**;
- **802.11 test**, which supports data transmission rates of 1, 2, 5.5 and 11 Mbps;
- **B-WIFI**, which is useful when WI-FI compatibility is required.



4. Whenever the WPE54G is operated in **wireless client mode**, a **PS Mode** option appears.

PS mode stands for Power Saving mode and if enabled, allows more efficient power usage.



5. The **Channel** drop-down list indicates which active channel is being used for data transmission.

Different countries have different number of channels available for transmission.



6. The **RTS Threshold** value determines the minimum size of a packet in bytes that would trigger the RTS mechanism.



The value extends from 0 to 3000 bytes, where a value of 0 indicates that all the packets would be transmitted using RTS. We illustrate with **2432**.

- 7. The **Frag Threshold** value indicates the maximum size that a packet can reach without being fragmented. The value ranges from 256 to 2346 bytes. We illustrate with **2346**.
- 8. A **Frame Burst Size** value is required when using Nitro technology to help improve network performance. A suggested value is **1500**.

Frag Threshold	2346
----------------	------

Frame Burst Size	1500
------------------	------

For **Access Point** and **Gateway** modes only:

- 9. When running in **Closed System**, the WPE54G will not broadcast its SSID. This enhanced security mode requires any wireless user to enter the WPE54G's SSID before being able to gain access to it.
- 10. The **Transmit Power** drop-down lists a range of transmission

Closed System	Disable
	Disable
	Enable

Transmit Power	13dBm
	3dBm
	4dBm
	5dBm
	6dBm
	7dBm

4

Exit Uconfig Mode
ExitUconfig

You can exit the configuration interface by clicking on **ExitUconfig**.

Otherwise, to change the WPE54G to a different mode:
Repeat Steps 1 & 2.

system is rebooting please wait for 50 seconds to log in again.
Logon

You will have to wait a few seconds for the system's automatic reboot before being able to log in again for configuration.

NOTE: The values illustrated in the above examples are suggested values for their respective parameters.

Show Link Information – a helpful feature

The *Show Link Information* function offers a summary of the link data when the WPE54G is in either of the *Access Point Client*, *Wireless Routing Client* or the *Wireless Ethernet Adapter* mode.

Show Link Information

Access Point Client/Wireless Routing Client/Wireless Ethernet Adapter:

1 Click on the **Show Link Information** button as shown on the right.



Link Information	
State	Associated:BSS ID=00:80:48:27:04:B0
Current Channel	6
Current TxRate	1Mbps
Signal Strength	67%

2 When an AP is connected to a wired network and a set of wireless stations, it is referred to as a **Basic Service Set (BSS)**.

The **Link Information** table illustrates the following data:

1. The **State** refers to the MAC address of the BSS.
2. The **Current Channel** is the channel being presently used for transmission.
3. The **Current TxRate** refers to the rate of data transmission and is measured in Mbps.
4. The **Signal Strength**, given in percentage form, shows the intensity of the signal received and hence the connection strength.

Using the SYSTEM TOOLS Menu

System Identity

If your network operates with several Compex NetPassage WPE54G, you would find it useful to have a means of identifying each individual device.

In certain cases, your Internet Service Provider might request for a **System Name** before allowing you to access the Internet. This **System Name** also serves as a **DHCP Client ID** during negotiations with the DHCP Server for dynamic IP address allocation.

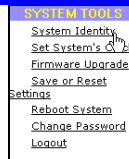
You can define the **System Identity** of the WPE54G to be also utilised as **System Name** or as **DHCP Client ID**.

Follow the next few steps to define a **System Identity** for your WPE54G.

Using the SYSTEM TOOLS Menu

System Identity:

- 1 Click on **System Identity** from the **System Tools** menu.



 A screenshot of the 'System Identity' configuration form. It has three input fields: 'System Name' with the value 'Wireless LAN Access Point', 'System Contact' with the value 'unknown', and 'System Location' with the value 'unknown'. At the bottom are 'Apply' and 'Help' buttons.

- 2
 1. Enter the DHCP Client ID assigned by your ISP in the **System Name** field.
 2. Fill in the name of a person to contact in the **System Contact** field.
 3. Fill up the **System Location** field. If there are multiple devices in your network or building, this entry might help to identify the device.
 4. Click on the **Apply** button to effect the changes.

Set System's Clock

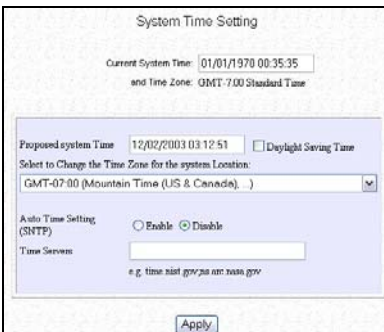
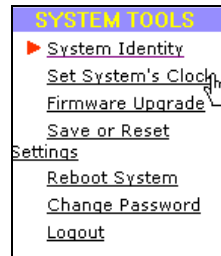
Synchronising the built-in clock of the WPE54G with the time kept by your workstation will enable you to effectively manage and operate the time-based functions provided by the WPE54G.

Follow these steps to set your system's clock.

Using the SYSTEM TOOLS Menu

Set System's Clock:

- 1** Click on **Set System's Clock** from the **System Tools** menu.



- 2**
1. Select the appropriate time zone from the **Select to Change the Time Zone for the system Location** drop-down list.
 2. Enable the **Auto Time Setting (SNTP)** radio button.
- SNTP** stands for Simple Network Time Protocol and is used to synchronise computer clocks in the Internet.
3. Fill in the **Time Servers** field.
 4. Click on the **Apply** button to effect the changes.

Firmware Upgrade

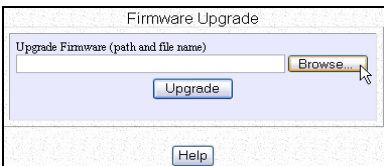
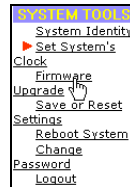
Compex products are designed for upgradeability. You can check the current version of your firmware by clicking on **About System** from the **HELP** menu.

Keep your WPE54G updated with the latest capabilities by downloading its latest firmware revision from either of Compex's corporate web sites at www.compex.com.sg or www.cpx.com and by following the next steps.

Using the SYSTEM TOOLS Menu

Firmware Upgrade:

- 1** Click on **Firmware Upgrade** from the **System Tools** menu.



- 2** To begin with, ensure that you have downloaded the latest firmware onto your local hard disk drive.

1. Key in the path and file name of the downloaded file in the **Upgrade Firmware (path and file name)** field.

Alternatively, click on the **Browse** button to locate the file.

2. Click on the **Upgrade** button.
3. Follow the instructions given during the upgrading process.

When the process is complete, the WPE54G will automatically restart.



NOTE: The firmware upgrade process must NOT be interrupted otherwise the device might become unusable.

Save or Reset Settings

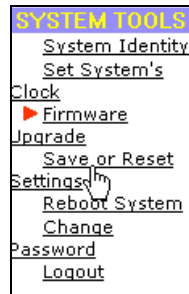
This feature enables you to save the configuration settings with which you have customised your WPE54G. You may choose to save the configuration profile, to make a backup of it onto your hard disk, to restore an earlier profile saved on file or to reset the WPE54G back to its default settings.

The following steps illustrate how to use this feature.

Using the SYSTEM TOOLS Menu

Save or Reset Settings:

- 1 Click on **Save or Reset Settings** from the **System Tools** menu.



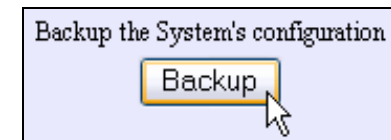
- 2 If you want to save the current settings with which you have configured the WPE54G:

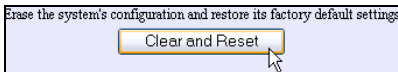
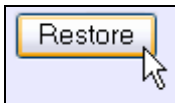
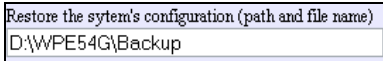
1. Click on the **Save** button.
2. Restart the WPE54G to ensure that it is using the right profile.



If you want to back up the WPE54G's current settings onto your hard disk drive:

Click on the **Backup** button.





If you want to return the WPE54G to an earlier configuration from a backup file:

1. Click on the **Browse** button to search for the backup file.

Or you may type in the path name of the file in the **Restore the Machine's configuration (path and file name)** field as illustrated left.

2. Click on the **Restore** button.

If you want to discard ALL the configuration you have made and thus restore the WPE54G to its initial factory settings:

Click on the **Clear and Reset** button.

Reboot System

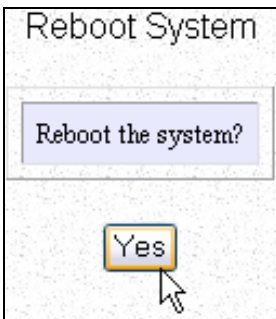
Most of the changes you make to the system's settings require a reboot of the WPE54G before the new configuration can take effect.

The following steps will guide you through the rebooting process.

Using the SYSTEM TOOLS Menu

Reboot System:

- 1 Click on **Reboot System** from the **System Tools** menu.



- 2 You will be prompted to confirm whether to execute a system reboot.

Click on the **Yes** button whenever you are ready to restart.

Change Password

It is recommended that you change the password of the WPE54G, which is case sensitive and is set by default, to **password**. This system password is required for accessing the web-based configuration interface as well as in Telnet sessions.

You can change the system password by following the next few steps.

Using the SYSTEM TOOLS Menu

Change Password:

- 1** Click on **Change Password** from the **System Tools** menu.



Change System Password

Current Password	
New Password	
Confirm Password	

Change Password

- 2**
1. Key in the current password. The factory default is **password**.
 2. Enter the new password in the **New Password** field as well as in the **Confirm Password** field.
 3. Click on the **Apply** button.

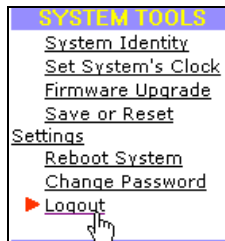
Logout

To exit the web-based configuration environment, follow the next few steps.

Using the SYSTEM TOOLS Menu

Logout:

- 1 Click on **Logout** from the **System Tools** menu.



- 2 The system will take you to a Login prompt as shown in the figure on the left.

Management session was suspended. Please log in again.

Logon

If you need to access the WPE54G's configuration interface again:

Click on the **Logon** button.

Using the HELP menu

Get Technical Support

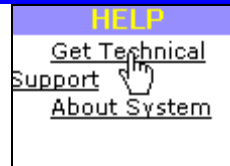
This page presents the contact information of Compex's technical support centres around the world.

To access this page:

Using the **HELP** Menu

Get Technical Support:

- 1 Click on **Get Technical Support** from the **HELP** menu.



Support Information

For technical support email to:
support@compex.com.sg

For updates connect to the following Web Sites:
<http://www.cpx.com>
<http://www.compex.com.sg>

Regional Technical Support Centers

U.S.A., Canada, Latin America and South America :

Compex, Inc.
4051 E. La Palma, Unit A
Anaheim, CA 92807, USA
HotLine : (714) 630-7302
Fax : (714) 630-6521

Europe :

ReadyLINK Networktechnology
GmbH
Albert Einstein Strasse 34 /M21
63322 Rodermark, Germany

- 2 The WPE54G is a feature-packed device. If you require further information than provided in the manual or data sheet, please contact one of Compex's Technical Support Centres by mail, email, fax or telephone.

About System

The **About System** page displays a summary of your system configuration information. Support technicians might require specific information about your system data when they are troubleshooting your configuration. You can use the information displayed in this page to quickly find the data they need to resolve your system problem.

Follow the next steps to have a glance at the settings applied in your network.

Using the HELP Menu

About System:

- 1** Click on **About System** from the **HELP** menu.



System Information

Device	System Up Time	0 months 0 days 00:41:27
	Firmware Version	1.00 Build 1117, Nov 17 2003
	Loader Version	1.00
	NetWork Mode	Inherent Bridge
Management Port	MAC Address	00-80-48-c2-65-15
	IP Address	192.168.168.1
	Network Mask	255.255.255.0
	DHCP Server	Enabled
Wireless Card	MAC Address	00-80-48-c1-15-46

2

The **System Information** page will supply information concerning WPE54G's configuration settings.

Chapter 6: Advanced Configuration

Management Port Setup

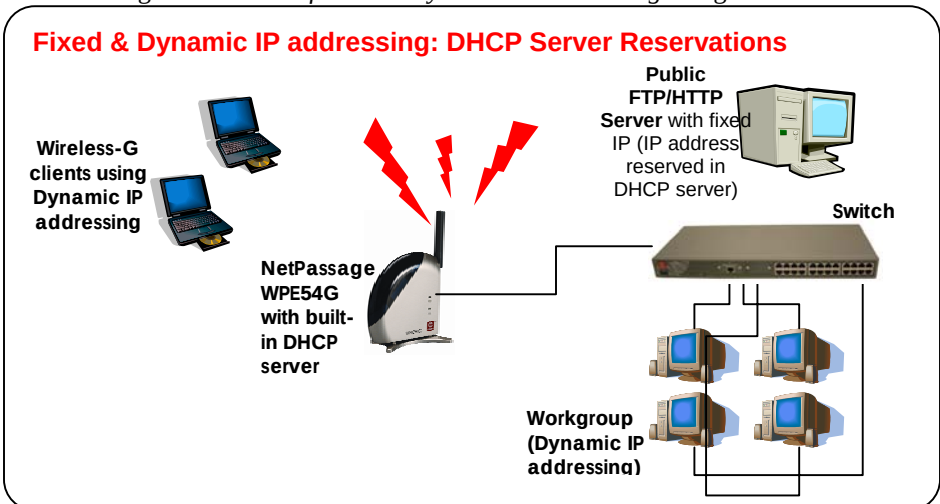
This section addresses the *Advanced DHCP Server Options* made available to the network administrator.

The built-in DHCP server in the WPE54G facilitates the IP address allocation management of your network by automatically and dynamically allocating addresses to the devices connected to the network.

However, you may in addition, require DHCP server reservations for specific IP and MAC addresses. For instance, if you set up a publicly accessible FTP/HTTP server that resides within a private LAN, while that server would require a fixed IP address, you would still want the DHCP server to dynamically allocate IP addresses to the rest of the PCs on the private LAN.

The ability to make IP reservations enables you to assign a fixed IP address to your FTP/HTTP server and subsequently inform the DHCP server to exclude that specific address from the pool of addresses it draws on for its dynamic address allocation.

The next diagram illustrates *fixed and dynamic IP addressing* using the WPE54G.



For more information on DHCP, you can refer to the **DHCP Technology Primer** section on the Product CD.

Learn more from our **DHCP**

Technology Primer !

Configuring Advanced DHCP Server Options

Go through the following steps to configure the Advanced DHCP Server Options of the WPE54G.

Management Port Setup

Advanced DHCP Server Options:

expert

1. Click on **Management Port** from the **Configuration** menu.

You will find the **Advanced DHCP Server Options** near the bottom of the page.

2. Click on **Show Active DHCP Leases** to view information of the current IP leases managed by the DHCP server as in the figure below right.
3. Click on **DHCP Server Reservations** to reserve any specific IP Address for a specific network MAC address.

This will bring up the screen displayed below in Step 2.

Management Port Setup

IP Address	192	168	168	1
Network Mask	255	255	255	0
DHCP Start IP Address	192	168	168	100
DHCP End IP Address	192	168	168	254
DHCP Gateway IP Address	0	0	0	0
☐ Always use these DNS servers				
Primary DNS IP Address	0	0	0	0
Secondary DNS IP Address	0	0	0	0
DHCP Server	☒ Enable ☐ Disable			

Advanced DHCP Server Options

DHCP Active Leases

Host Name	IP Address	Hardware Address	Lease Time
e0a7	192.168.1.100	00:01:80:0d:c3:1d	Sun Jan 11 07:59:47 1970

DHCP Server Reservations

IP Address	Host Name	Hardware Address
------------	-----------	------------------

Apply

IP Address: 192.168.168.1 Host Name:

Hardware Address:

Add Help

2

1. Enter the host IP that you wish to reserve in the **IP address** field.
2. Fill in the **Host Name** field.
3. Key in the MAC address of the PC's Ethernet card in the **Hardware Address** field.
4. Click on the **Add** button to add this entry to the **DHCP Server Reservations**.

3

1. The IP address and Hardware address you have keyed in will be added to the table as shown on the right.
2. Repeat Step 2 if you want to add more reservations.

DHCP Server Reservations

IP Address	Hardware Address
192.168.168.92	00:24:35:24:54:ee

Add Back

SNMP Setup

Simple Network Management Protocol (SNMP) is a set of communication protocols that separates the management architecture from the architecture of the hardware devices. Since it is an extensible but yet simple solution, requiring little code to be implemented, SNMP has quickly become a de facto standard for network management.

Enabling SNMP

The following will guide you in enabling SNMP in the WPE54G.

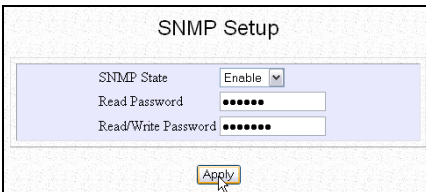
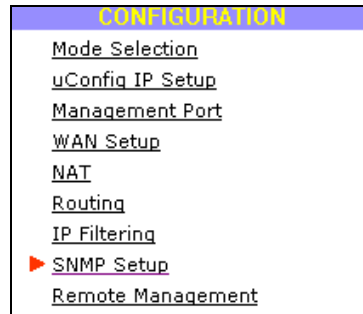
SNMP Setup

Enabling SNMP:

1

Click on **SNMP Setup** from the **Configuration** menu.

The screen shown below will appear.



2

1. Select **Enable** from the **SNMP State** drop-down list.

The default **Read Password** is set to *public* while the default **Read/Write Password** is *private*.

2. Click on the **Apply** button.

SNMP Parameters accepted will appear in the Message Window.

WEP Encryption

Wired Equivalent Privacy (WEP) is a security protocol for wireless local area networks (WLANs). It aims to provide security by encrypting data over radio waves so that it is protected while being transmitted from one end point to another.

Both the access point and the client device use the same WEP key to encrypt and decrypt messages. WEP keys encrypt both unicast and multicast messages within the network.

The WPE54G supports both 64-bit as well as 128-bit WEP encryption keys in both alphanumeric as well as hexadecimal format.

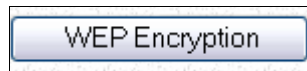
Configuring WEP Encryption

Follow the next steps to enable the WEP encryption feature in your WPE54G.

Configuring WEP Encryption

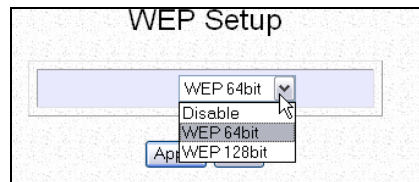
expert

1. Click on the **WEP Encryption** button.



On the **WEP Setup** page which appears as shown below right:

2. Select your required level of WEP encryption from the drop-down list as shown in the figure on the right.



WEP Encryption is disabled by default.

3. Click on the **Apply** button.

2

For **64-bit WEP Encryption**:

If you are using alphanumeric notation:

Enter 5 alphanumeric characters into each **Key** field.

If you are using hexadecimal notation:

Enter 5 pairs of hexadecimal values into each of the **Key** fields.

Key 1	abcde
Key 2	0ab12
Key 3	v3t6y
Key 4	klw21

Key 1	abcdef0123
Key 2	0ab122389c
Key 3	78910acbd
Key 4	a4b56d7ef1

For **128-bit WEP Encryption**:

If you are using alphanumeric notation:

Enter 13 alphanumeric characters into each **Key** field.

If you are using hexadecimal notation:

Enter 13 pairs of hexadecimal values into each of the **Key** fields.

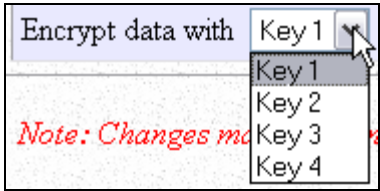
Key 1	12ef45adc5689
Key 2	abcdef9876543
Key 3	52fbcaed58123
Key 4	bab3caba2345f

Key 1	123456789abc12ef45adc5689
Key 2	bcdef9876543acbed4315790a
Key 3	a1b2c3d4e5f6a52fbcaed5812
Key 4	bab3caba2345f9012cbfede45

3

1. Select the key which you want to use for data encryption from the **Encrypt data with** drop-down list.
2. Click on the **Apply** button.

WEP key applied will appear in the Message Window.



IEEE 802.1X/RADIUS Setup

The use of IEEE 802.1X offers an effective framework for authenticating and controlling user traffic to a protected network, as well as for dynamically varying encryption keys. This feature is only accessible when the WPE54G is configured in the *Access Point* mode.

These steps act as a guide in the IEEE 802.1X/RADIUS setup.

The IEEE 802.1X/RADIUS Setup

The Access Point mode:

expert

- Click on **IEEE 802.1X/RADIUS** from the **Configuration** menu.

The screen shown on the right will appear.

2

You can overwrite the default parameters set by Compex to enter the parameters for your network.

- If **MAC Authentication** is enabled, the client's MAC address will have to be authenticated before it can access network resource.

802.1X Security Mode	None
Primary RADIUS Server IP	None
Secondary RADIUS Server IP	802.1x
	Mixed mode

Primary RADIUS Server IP	0.0.0.0
Secondary RADIUS Server IP	0.0.0.0

Authentication Port	1812
---------------------	------

Shared Secret Key	••••••••
-------------------	----------

2. The **802.1X Security Mode** offers 3 options:

(a). **None**

The 802.1x security mode is disabled and only WEP encryption is used.

(b). **802.1X**

The 802.1x security mode is enabled. WEP keys are not required since this mode creates keys dynamically.

(c). **Mixed Mode**

This mode combines the 802.1x mode with WEP. You will have to provide WEP key from WEP tab entry and can only use key index 0.

3. The **Primary/Secondary RADIUS Server IP** addresses will be used for authentication.

4. The **Authentication Port** has to match the port number that the RADIUS server is using. It is set to **1812** by default

5. The RADIUS **Shared Secret Key** serves to validate RADIUS communication between clients and servers. The key has to be the same for the user and the RADIUS server. You can choose any alphanumeric string as shared secret. The key is case-sensitive and set to **private** by default.

Broadcast Key Rotation (seconds)	900
-------------------------------------	-----

Maximum Retransmissions	3 (1~10)
-------------------------	----------

Transient Key Length	64 bits
MD5 Authentication	64 bits
	128 bits

MD5 Authentication	Enable
	Disable
	Enable

Note: Changes made will only take effect after a reboot.

6. The **Broadcast Key Rotation** refers to the length of time in seconds before the network broadcast WEP key is changed.

7. The **Maximum Retransmission** is the maximum number of times an authentication value may be allowed to retransmit before authentication fails.

8. When in the **802.1X** or in the **Mixed** mode, you can select the key length to be either 64 bits or 128 bits long, from the **Transient Key Length** drop-down list.

9. By default, **EAP-MD5 authentication** is disabled. If you enable this feature, you will have to key in a static WEP key since EAP-MD5 authentication does not generate dynamic WEP keys.

WAN Setup

The WAN setup is only operational when the WPE54G is configured in either the *Gateway* mode or the *Wireless Routing Client* mode.

If your ISP requires your Ethernet MAC address to be authenticated before assigning an IP address to the WAN interface, the MAC address of the Ethernet adapter originally installed on your PC with the cable modem will need to be cloned to the WPE54G. That PC must be used to log on to the WPE54G to change its Ethernet MAC address to that of the Ethernet card.

The following steps will act as guideline for your WAN setup.

WAN Setup

Gateway/Wireless Routing Client mode:

expert

- 1 Click on **WAN Setup** from the **Configuration** menu.

The **WAN Setup** screen on the right will appear.

WAN Setup	
Wan Type	Dynamic
IP	Change
IP Address	0.0.0.0
Network Mask	0.0.0.0
Gateway IP Address	0.0.0.0
Primary DNS	0.0.0.0
Secondary DNS	0.0.0.0

MAC Cloning

Ethernet Adapter's MAC Address: 00-01-80-0d-a7-d7
Current Router's MAC Address: 00-80-48-c2-65-15

Wan Type	Dynamic
IP Address	0.0.0.0
Network Mask	0.0.0.0
Gateway IP Address	0.0.0.0
Primary DNS	0.0.0.0
Secondary DNS	0.0.0.0

Select Wan Type

☐ Static IP Address
☒ Dynamic IP Address
☐ PPP over Ethernet
☐ Singapore ADSL (Ethernet 512K)
☐ Australia BPA Cable
☐ PPTP

3

Enable the radio button corresponding to your Internet connection type.

If you are using **Static IP Address** allocation:

1. Replace the current **IP Address** and **Gateway IP Address** fields with the relevant IP addresses given by your ISP.
2. Click on the **Save** button.
3. Click on the **Reboot** button to restart the system and enable the changes to take effect.

2

The WPE54G is set to Dynamic IP address allocation by default.

If you need to change the type of Internet connection at any time during setup:

Click on the **Change** button.

The **Select WAN Type** screen shown below left will appear.

If you need to test the connection with your user profile at any time during setup:

Click on the **Connect** button present in all the setup pages to manually activate the session.

WAN Setup

Wan Type	Static IP	Change
IP Address	203 . 120 . 12 . 240	
Network Mask	255 . 255 . 255 . 0	
Gateway IP Address	203 . 120 . 12 . 2	

Note: Changes made will only take effect after rebooting.

If you are changing to **PPP over Ethernet** mode:

1. You can specify a different **MTU** than the default 1462.
2. Key in the account name assigned by your ISP in the **Username** field.
3. Follow with your ISP account **Password**.
4. If you want the WPE54G to maintain an established connection with the ISP:

Select the **Always-On** radio button.

Then, if you want to change the maximum time the WPE54G should wait before attempting to connect to your ISP:

Fill in the **Reconnect Time Factor** field set to 30 seconds by default.

Otherwise, the **On-Demand** mode is set by default so that the WPE54G connects to the ISP automatically only upon receiving Internet requests from your clients.

The **Idle Timeout** feature associated with the **On-demand** option allows you to specify the time span in seconds after which your WPE54G should automatically disconnect if there is no Internet activity.

Key in '0' if you want to disable the idle timeout.

5. Click on the **Save** button.

6. Click on the **Reboot** button to restart the system and enable the changes to take effect.

The screenshot shows the 'WAN Setup' window with the 'Wan Type' set to 'PPPoE'. A 'Change' button is visible next to it. The 'MTU(1400 - 1492)' is set to '1462' with '(default 1462)' in parentheses. The 'Username' and 'Password' fields are empty, with the password field masked with dots. The 'Service Name' field is also empty. Under the 'On-Demand' section, the 'Idle Timeout (0/Disable)' is set to '0' seconds. Under the 'Always-On' section, the 'Reconnect Time Factor' is set to '30' seconds. There is a checkbox for 'Use non-standard PPPOE ethernet type' which is unchecked. The 'Status' is 'Disconnected'. A 'Connect' button is highlighted with a mouse cursor. At the bottom, there are 'Save' and 'Reboot' buttons.

If you are changing to **Singapore ADSL (Ethernet 512K)** mode:

1. Key in the account name assigned by your ISP in the **Username** field.
2. Follow with your ISP account **Password**.
3. The **Idle Timeout** feature allows you to specify the time span in seconds during which your WPE54G should remain disconnected from the ISP after the last Internet activity.

Key in '0' if you want to disable the idle timeout.

Else, type in a value ranging from 30 to 3600 seconds.

4. Click on the **Save** button.
5. Click on the **Reboot** button to restart the system and enable the changes to take effect.

The screenshot shows the 'WAN Setup' window with the 'Wan Type' set to 'Singapore ADSL(Ethernet 512K)'. The 'Username' field contains 'Username@INT512', the 'Password' field is masked with dots, and the 'Idle Timeout' is set to '300' seconds. The 'Status' is 'Disconnected' with a 'Connect' button. Network settings like IP Address, Network Mask, Gateway IP Address, Primary DNS, and Secondary DNS are all set to '0.0.0.0'. A 'Change' button is visible next to the Wan Type.



If you are switching to **Australia BPA Cable** connection:

1. Key in the account name assigned by your ISP in the **Username** field.
2. Follow with your ISP account **Password**.
3. Fill in the **Authentication Server** field as indicated by your ISP.
4. The **Idle Timeout** feature associated with the **On-demand** option allows you to specify the time span in seconds after which your WPE54G should automatically disconnect if there is no Internet activity.

The screenshot shows the 'WAN Setup' window with the 'Wan Type' set to 'Australia BPA Cable'. The 'Username' field contains 'Username', the 'Password' field is masked with dots, and the 'Authentication Server' field is empty. The 'Idle Timeout' is set to '0' seconds. The 'Status' is 'Disconnected' with a 'Connect' button. Network settings like IP Address, Network Mask, Gateway IP Address, Primary DNS, and Secondary DNS are all set to '0.0.0.0'. A 'Change' button is visible next to the Wan Type.

Key in '0' if you want to disable the idle timeout.
Else, type in a value ranging from 30 to 3600 seconds.

- 4. Click on the **Save** button.
- 5. Click on the **Reboot** button to restart the system and enable the changes to take effect.



If you are using **PPTP** connection:

- 1. You can modify the **Client IP** and the **Netmask** according to your network parameters.
- 2. Key in the account name assigned by your ISP in the **Username** field.
- 3. Follow with your ISP account **Password**.
- 4. Fill in the appropriate VPN server's IP address in the **VPN Server** field.
- 5. The **Idle Timeout** feature allows you to specify the time span in seconds during which your WPE54G should remain disconnected from the ISP after the last Internet activity.

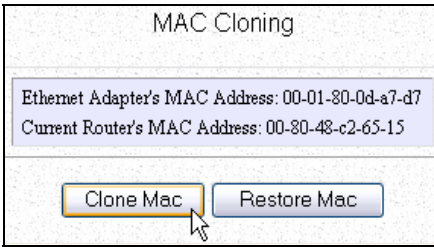
WAN Setup

Wan Type	PPTP	Change
Client IP	203 ... 120 ... 12 ... 240	
Net Mask	255 ... 255 ... 255 ... 0	
Username	Username	
Password		
VPN Server		
Pls input IP of the server. e.g. 100.100.100.100		
Idle Timeout (30-3600, 0:Disable)	0 seconds	
Status	Disconnected Connect	
IP Address	0.0.0.0	
Network Mask	0.0.0.0	
Gateway IP Address	0.0.0.0	
Primary DNS	0.0.0.0	
Secondary DNS	0.0.0.0	

Key in '0' if you want to disable the idle timeout.
Else, type in a value ranging from 30 to 3600 seconds.

- 6. Click on the **Save** button.
- 7. Click on the **Reboot** button to restart the system and enable the changes to take effect.



**4**

To clone the MAC address of the PC onto the router:

Click on the **Clone Mac** button.

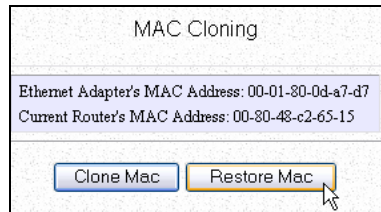
You will be asked to reboot the system for the change to take effect.

5

To revert to the original MAC address of the router:

Click on the **Restore Mac** button.

You will be asked to reboot the system for the change to take effect.



Wireless Setup - The Wireless Distributed System (WDS)

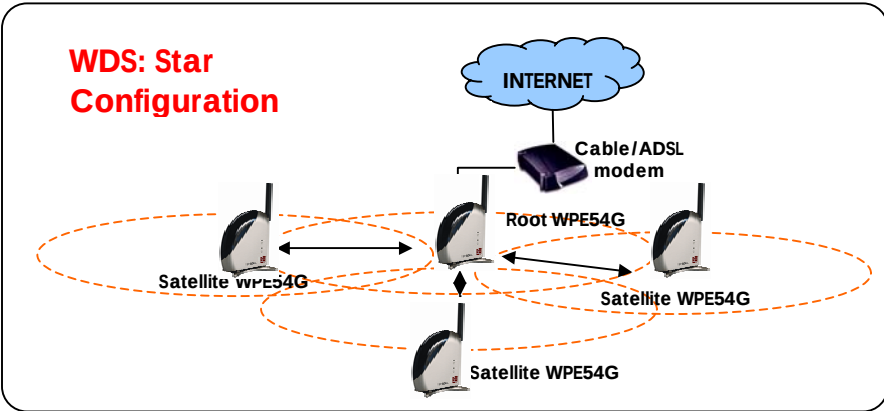
The Wireless Distribution System (WDS) feature allows you to indefinitely extend the range of your network infrastructure by simply connecting access points wirelessly.

The inherent flexibility of the WDS allows the setup of numerous advanced configurations for your network infrastructure -- each having specific operational benefits. We shall list two popular WDS network configurations which can be set up using the WPE54G:

Star Configuration Infrastructure Network

In a star configuration WDS, links are established between one root (central) WPE54G which acts as an access point and several other (satellite) WPE54G's. The satellite WPE54G's are positioned to cover an area beyond that covered by the single root device.

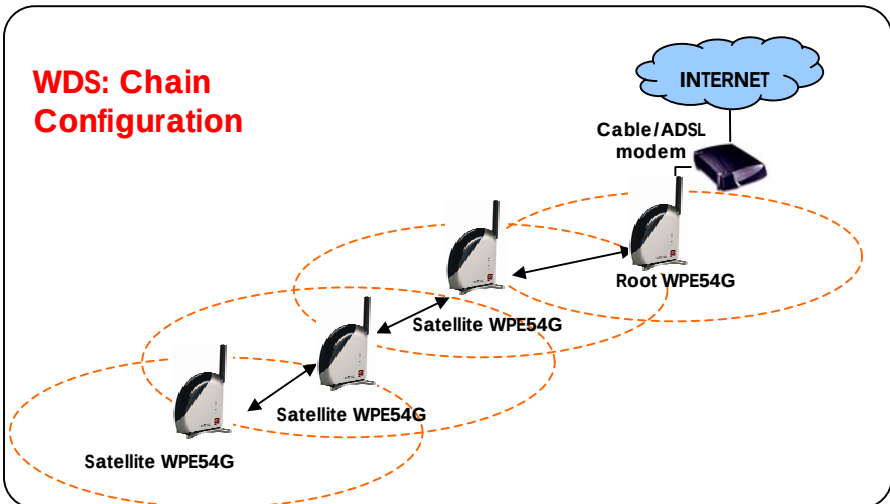
In addition to the extended coverage area, since the WPE54G is an advanced router switching device, each WPE54G can service its own wired and wireless infrastructure network.



In this setup, the root access point has three WDS ports enabled for three different links while each of the three satellite access points has only one WDS port enabled.

Chain Configuration Infrastructure Network

A chain configuration WDS spans an area in length, for instance a long corridor. The satellite access points are chained together starting from a root access point as illustrated below:

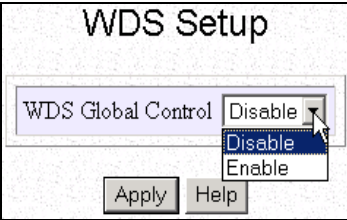


In this setup, the WPE54G at either end of the chain will have one WDS port enabled, while the access points in the middle will have two WDS ports configured to associate with the neighbouring WPE54G upward and downward in the chain.

The following steps will guide you in setting up WDS in your WPE54G.

WDS Configuration Setup
expert

1 Click on the **WDS Configuration** button.



WDS Setup

WDS Global Control: Disable, Disable, Enable

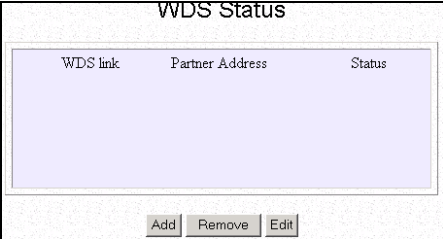
Apply Help

WDS Configuration

2 As illustrated on the **WDS Setup** page above left, the **WDS** feature is *Disabled* by default.

1. Select **Enable** from the **WDS Global Control** drop-down list to operate WDS.
2. Click on the **Apply** button.

The **WDS Status** page displayed below left will appear.



WDS Status

WDS link	Partner Address	Status

Add Remove Edit