APC

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APC 3-in-1 Wireless Mobile Router
User's Manual

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Preface

The *APC 3-in-1 Wireless Mobile Router User's Manual* provides information on configuring, setting up, and using the APC 3-in-1 Wireless Mobile Router. It also provides information on troubleshooting common problems, background information about using wireless LANs, and specifications for the APC 3-in-1 Wireless Mobile Router.

Intended Audience

This manual is designed for users who want to:

- Use the APC 3-in-1 Wireless Mobile Router
- Configure and use the APC 3-in-1 Wireless Mobile Router software

Contents of this Manual

The *APC 3-in-1 Wireless Mobile Router User Manual* contains seven chapters and three appendixes.

Chapter 1, "Introduction," provides an overview of the APC 3-in-1 Wireless Mobile Router.

Chapter 2, "The Initial Configuration," provides information about the initial configuration of the router.

Chapter 3, "Configuring the Router for Access Point (AP) Mode," provides setup information for the AP Mode.

Chapter 4, "Configuring the Router for AP/Router Mode," provides setup information for the AP/Router Mode.

Chapter 5, "AP/Router Mode - Advanced Features," explains when and how to use the APC 3-in-1 Wireless Mobile Router's advanced features in AP/Router mode.

Chapter 6, "Configuring the Router for Client Mode," provides configuration details for Client Mode.

Chapter 7, "Operation and Usage," details the operation of the APC 3-in-1 Wireless Mobile Router and the status screens.

Appendix A, "Troubleshooting and Maintenance," covers some common problems that may be encountered while using the APC 3-in-1 Wireless Mobile Router and provides some possible solutions to them.

Appendix B, "About Wireless LANs," provides some background information about using wireless LANs.

Appendix C, "Specifications," provides APC 3-in-1 Wireless Mobile Router specifications.

Conventions and Typefaces Used in This Manual

Note: emphasizes a key point.

Caution: notifies users of potential damage to hardware or software.

Warning: notifies users of a potential to cause injury.

Bold indicates a screen, menu, field, mode, or key name, or is used for emphasis.

`Courier` indicates text that is typed into a Web browser or in response to a prompt.

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American Power Conversion

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West Kingston, RI 02892

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Software

This software was developed by Sercom for APC.

Regulatory Approvals

CE Standards

This product complies with the 73/23/EEC directives, including the following safety and EMC standards:

- EN300328-2
- EN301489-1/-17
- EN60950

CE Marking Warning

This is a Class B product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Compliance Statement

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

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

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Additional Information

For additional information about the APC 3-in-1 Wireless Mobile Router, or for any documentation inquiries, consult the APC web site at **www.apc.com**.

Chapter 1: Introduction

This chapter provides an overview of the APC 3-in-1 Wireless Mobile Router and describes the following:

• Features
• Package Contents
• Physical Features
• Modes

Warning: Be careful when using the APC 3-in-1 Wireless Mobile Router for an extended period of time, as the unit can become extremely hot.

Features

The APC 3-in-1 Wireless Mobile Router incorporates many advanced features, and is designed to provide sophisticated functions while being easy to use.

General

• **Compact Size.** The APC 3-in-1 Wireless Mobile Router and its power supply are small and light, making them easy to move from one location to another as required.
• **Easy Setup.** Use the Web browser for configuration. In **Config mode**, the IP address of the APC 3-in-1 Wireless Mobile Router is not required.
• **Configuration File Upload/Download.** Save (download) the configuration data from the APC 3-in-1 Wireless Mobile Router to the computer, and restore (upload) a previously-saved configuration file to the APC 3-in-1 Wireless Mobile Router. This feature makes it easy to change the configuration to match the current environment.

Wireless

• **Standards Compliant.** The APC 3-in-1 Wireless Mobile Router complies with the IEEE802.11g (DSSS) and IEEE802.11b specifications for wireless LANs.
• **Supports both 802.11g and 802.11b Wireless Stations.** The 802.11g standard provides for backward compatibility with the 802.11b standard, so both 802.11g and 802.11b wireless stations can be used simultaneously.
• **Speeds to 54 Mbps.** All speeds up to the 802.11g maximum of 54 Mbps are supported.
• **WEP Support.** Support for WEP (Wired Equivalent Privacy) is included. Key sizes of 128 bit and 64 bit are supported.
• **WPA-PSK Support.** The WPA-PSK standard for data encryption is supported. This standard provides better encryption than WEP.
• **Wireless MAC Access Control.** The Wireless Access Control feature can check the MAC address (hardware address) of wireless stations to ensure that only trusted wireless stations can access the LAN.
• **Simple Configuration.** If the default settings are unsuitable, they can be changed quickly and easily.

Router Mode Features

• **DHCP Server Support. D**ynamic **H**ost **C**onfiguration **P**rotocol provides a dynamic IP address to PCs and other devices upon request. The APC 3-in-1 Wireless Mobile Router can act as a **DHCP Server** for PCs using the Access Point.
• **Shared LAN/WAN Access.** All users on the wireless LAN can share the IP Address on the Ethernet port of the APC 3-in-1 Wireless Mobile Router, providing shared access to the LAN or WAN. This process is called NAT (Network Address Translation).
• **Fixed or Dynamic IP Address.** On the Ethernet (WAN) port connection, the APC 3-in-1 Wireless Mobile Router supports both Dynamic IP address (IP address is allocated on connection) and Fixed IP address.
• **PPPoE, PPTP Support.** On the Ethernet (WAN), port connection supports PPPoE (PPP over Ethernet) and PPTP (Point-to-Point Tunneling Protocol) login methods.
• **Communication Applications.** Support for Internet communication applications, such as interactive Games, Telephony, and Conferencing applications, (often difficult to use when behind a firewall) is included.
• **Port Forwarding.** This feature allows Internet users to access Internet servers on the LAN. The required setup is quick and easy.

- **DDNS Support.** DDNS (Dynamic DNS) allows Internet users to connect to Port Forwarding on the LAN using a domain name, even if the IP address is not fixed.
- **DMZ.** One (1) computer on the local LAN can be configured to allow unrestricted 2-way communication with servers or individual users on the Internet. This provides the ability to run programs which are incompatible with firewalls.
- **VPN Pass through Support.** computers with VPN (Virtual Private Networking) software using PPTP, L2TP and IPSec are transparently supported; no configuration is required.
- **Network Diagnostics.** Use the APC 3-in-1 Wireless Mobile Router to perform a Ping or DNS lookup.
- **Stateful Inspection Firewall.** All incoming data packets are monitored and all incoming server requests are filtered, thus protecting the network from malicious attacks from external sources.
- **Protection against DoS attacks.** DoS (Denial of Service) attacks can flood internet connections with invalid packets and connection requests, using so much bandwidth and so many resources that internet access becomes unavailable. The APC 3-in-1 Wireless Mobile Router incorporates protection against DoS attacks.

Package Contents

The following items are included with the APC 3-in-1 Wireless Mobile Router:

- The APC 3-in-1 Wireless Mobile Router Unit
- 5-Volt, 2-Amp AC/DC Power Adapter
- Category 6 (CAT6) Ethernet Cable
- Quick Installation Guide
- Documentation CD
- Universal Serial Bus (USB) Power Cable

If any of the above items are damaged or missing, please contact the dealer immediately.

Physical Features

The physical features of the APC 3-in-1 Wireless Mobile Router are displayed in the following figure.
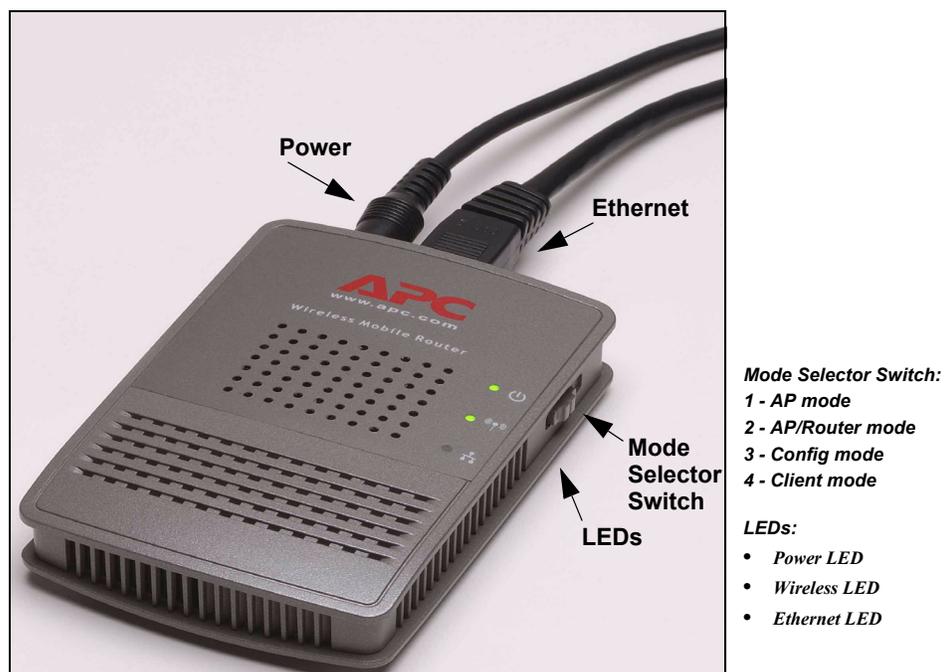
Figure 1. The APC 3-in-1 Wireless Mobile Router

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Feature	Functionality
Power	Connect the supplied power adapter here.
Ethernet Port	Connect the 10/100BaseT ethernet cable here.
	In **AP mode** or **AP/Router mode**, this is connected to the LAN or WAN.
	In **Config mode**, this is connected to the computer.
	In **Client mode**, this is connected to the computer.
LEDs:	
• **Power LED**	**On -** Power is available.
	Off - No power.
• **Wireless LED**	**On -** Wireless interface available.
	Off - Wireless interface unavailable.
	Flashing - Data being transferred.
• **Ethernet LED**	**On -** Ethernet connection established.
	Off - No Ethernet connection.
	Flashing - Data being transferred.
Mode Selector Switch (4-position switch)	Switch position: **1 -** AP mode **2 -** AP/Router mode **3 -** Config mode **4 -** Client mode
Reset Button (2-function switch)	**Restart** (reboot) - press & release.
	Set all settings to factory defaults - press & hold (for 8 seconds), then release.
	Note: Do not perform this function while connected or using the APC 3-in-1 Wireless Mobile Router.

Modes

The APC 3-in-1 Wireless Mobile Router an function in the following four modes:

- **Switch position 1 - Access Point (AP) mode** is used for 802.11g and 802.11b wireless stations.
- **Switch position 2 - AP/Router mode** provides Broadband LAN/WAN access for all wireless stations.
- **Switch position 3 - Config (Configuration) mode**, used only for configuration, makes it easy to connect to the APC 3-in-1 Wireless Mobile Router and change its configuration.
- **Switch position 4 - Client mode** is used to convert the Ethernet port on a computer to a wireless interface. The APC 3-in-1 Wireless Mobile Router is connected to a computer's Ethernet port and converts that port to a wireless interface. The computer then uses the APC 3-in-1 Wireless Mobile Router to join a wireless network.

The mode is set ONLY by the mode selector switch on the side of the APC 3-in-1 Wireless Mobile Router (wait a few seconds after changing modes). It is important to understand these different modes, and the benefits and limitations of each.

Access Point (AP) Mode
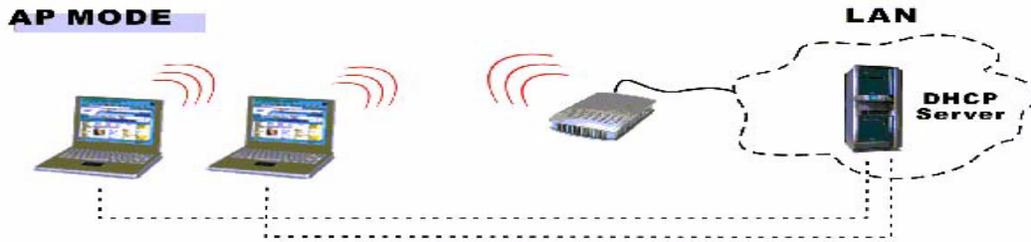
Figure 2. Access Point Mode Configuration

Access Point (AP) mode is used with existing secure home and corporate networks. In AP mode, the APC 3-in-1 Wireless Mobile Router connects wireless stations to each other, and to the LAN on the Ethernet port. Because the APC 3-in-1 Wireless Mobile Router is "transparent" (that is, it does not have an IP address) it cannot be configured in AP mode (use Config mode instead).

Use Access Point (AP) mode in any of the following situations:

• There is only one user (wireless client).

• There are multiple wireless clients, and all have explicit permission to connect to the LAN or WAN to which the Ethernet port is connected.

• A user wants to create a private wireless LAN (not using the Ethernet port), using Infrastructure mode instead of Ad hoc mode. In this case, each computer must "self-assign" an IP address, since there is no DHCP server available. If using Windows XP, this self-assignment will work correctly; all wireless stations will have compatible IP addresses.

Do NOT use Access Point (AP) mode in the following situations:

• There are multiple users (wireless clients).

• There are no permissions for multiple users to connect to the LAN or WAN on the Ethernet port (use AP/Router mode instead).

AP/Router Mode

Figure 3. AP/Router Mode Configuration

AP/Router mode is used with unsecured networks, such as those in hotels and airports. In AP/Router mode, the APC 3-in-1 Wireless Mobile Router acts as an AP and a DHCP Server, allocating IP addresses for wireless stations (clients). It also acts as a NAT Router, sharing the IP address on the Ethernet (LAN/WAN) port with all wireless clients. (It has 2 IP addresses, one on the LAN/WAN port and another on the wireless LAN.)

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Use AP/Router mode in any of the following situations:

• The Ethernet port is connected to a broadband modem rather than an Ethernet port.

• There is permission for ONLY ONE (1) user to connect to the LAN or WAN, but multiple user connections are required. (In AP/Router mode, the IP address on the Ethernet port is shared by all wireless clients.)

Notes: 1. AP/Router mode uses a technology called "NAPT" (Network Address Port Translation), and NAPT may cause problems with some complex multi-user communication applications. (There is no problem with common services such as HTTP, FTP, E-mail, etc.). Should problems occur, try getting permission for all users to connect to the LAN/WAN and use AP mode instead.

2. It is possible to connect to the APC 3-in-1 Wireless Mobile Router and change its configuration while it is AP/Router mode.

The IP address used is the wireless LAN IP address, which can be set on the AP/Router Setup screen. The default value is 192.168.0.1 (the same as the Config mode IP address); however, this address can be modified as needed.

Note: Users must change the wireless LAN IP address if the LAN/WAN is using the address range 192.168.0.1 ~ 192.168.0.254.

Config Mode

Config mode is used to perform any required configuration. In Config mode, the following settings are always used.

Password	The current password is `Admin`. The default password is `APC`. If the password is set, use `admin` as the login name.
IP Address	`192.168.1.1` (Mask: `255.255.255.0`)
DHCP Server	Enabled (for both Ethernet and wireless)
SSID	Default
Wireless Security	Disabled

Connect to the APC 3-in-1 Wireless Mobile Router using either the wireless interface or the wired Ethernet connection. (the wired connection is recommended). See Chapter 2, "" for information.

Client Mode

Figure 4. Client Mode Configuration

Client mode is used with PC game consoles that have an existing Ethernet connection, In Client mode, the APC 3-in-1 Wireless Mobile Router is connected to the Ethernet port of the computer (or other device), and will connect to a wireless LAN. This has the effect of converting the Ethernet port to a wireless interface.

Note: In Client mode, the APC 3-in-1 Wireless Mobile Router is transparent; it has no IP address.

Use Client mode in any of the following situations:

- The device does not have a wireless interface.
- The device's wireless interface does not support the required features.
- Simultaneous connection to two (2) wireless networks is needed - one via the wireless interface, the other via the Ethernet port and the APC 3-in-1 Wireless Mobile Router.

Chapter 2: The Initial Configuration

This chapter provides information about the initial configuration of the APC 3-in-1 Wireless Mobile Router, including the following:

• Requirements
• How to Perform the Initial Configuration
• Using The System Setup Screen
• Using The Config File Screen
• Upgrading the Firmware

Requirements

The following are required to do the initial configuration:

• Network cable. Use a standard 10/100BaseT network (UTP) cable with RJ45 connectors.
• TCP/IP protocol must be installed on the computer.
• To use the wireless interface, the computer must be equipped with an IEEE802.11g or IEEE802.11b wireless adapter.

How to Perform the Initial Configuration

Use the following steps to perform the initial configuration:

1. Use the mode selector switch on the side on the APC 3-in-1 Wireless Mobile Router to select **Config mode** (switch position #3).

2. Power up and wait for the Ethernet LED to turn on. This indicates the APC 3-in-1 Wireless Mobile Router is ready.

3. Establish a wired or wireless connection to the APC 3-in-1 Wireless Mobile Router (a Wired connection is recommended).

   Wired - connect a standard LAN cable from the computer's 10/100BaseT Ethernet port to the Ethernet port on the APC 3-in-1 Wireless Mobile Router.

   Wireless - select the wireless network with the SSID `default`

4. Start the Web browser.

5. In the **Location** or **Address** bar, enter the following: `config.ap`

   Notes: 1. **This will work only while in Config mode. In AP mode, the router does not connect. In AP/Router mode, connect using the Wireless LAN IP address.**

   2. **This may not work when using a Wireless connection with a computer that also has an active 10/100BaseT Ethernet connection.**

6. By default, the admin username is `Admin` and password is `APC`.
   If the admin password has been set (on the System screen), a prompt appears for the username and password. Enter `admin` for the user name, and enter the current password. The Mode Configuration screen appears.
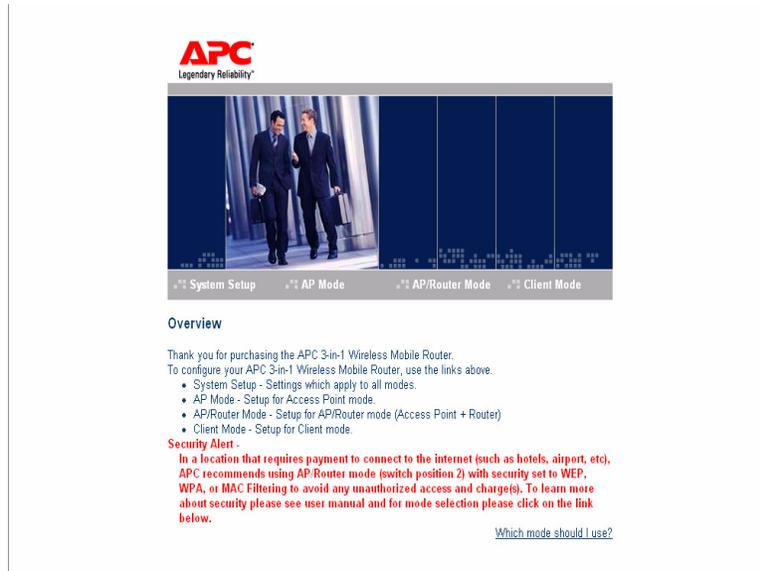
Figure 5. The Mode Configuration Screen

The Mode Configuration screen provides access to the three main setup screens:

- **AP mode** - settings for AP (Access Point) mode.
- **AP/Router mode** - settings for AP/Router mode.
- **Client mode** - settings for Client mode.

7. Configure the **System screen** and the modes (**AP** or **AP/Router**) to use.

   The **System screen** is described in the following section.

   AP mode settings are detailed in Chapter 3, "Configuring the Router for Access Point (AP) Mode."

   AP/Router mode settings are described in Chapter 4, "Configuring the Router for AP/Router Mode" and Chapter 5, "AP/Router Mode - Advanced Features."

   Client mode settings are detailed in Chapter 6, "Configuring the Router for Client Mode."

Using The System Setup Screen

Use the System Setup screen to enter settings that are mode-independent.

Figure 6. The System Setup Screen

The following table describes the fields in the System Setup screen.

Administrator PC Mac Address	This is used to identify the computer. Provide this information if this computer is normally used.
	If the computer has both a 10/100BaseT Ethernet port, and a Wireless interface, then it will have a different MAC address for each. The MAC address is also called the "Physical Address". This address is obtained by checking the **Properties** for the desired interface, but the provided **Set to my PC** buttons make this unnecessary.
	Ethernet Port - the MAC address, on the computer, for the 10/100BaseT Ethernet port.
	Wireless Interface - the MAC address, on the computer, for the Wireless interface.
	Set to my PC - only one of these buttons will work. If connected via **Wireless**, the button for the Wireless interface will insert the computer's Wireless MAC address into the field provided. If connected via the Wired Ethernet interface, the button for the Ethernet port will insert the computer's Ethernet MAC address into the field provided.
No login required for admin PC	If enabled, and the MAC address of the computer is provided, users are not prompted for the password when they connect using the computer.
	Users **should** set a password for the admin login, using the password fields below. This option is provided to allow users to set a password, but avoid the inconvenience of being prompted for the password whenever they want to change the settings.
Change Admin login	This login is required to change any settings on the APC 3-in-1 Wireless Mobile Router. (By default, the password is APC, so the first time a connection is made, there is no prompt for the password.)
	Check this box to change the current password, and then enter the required password in the fields below. If this checkbox is enabled, and the password fields left blank, then the password is cleared (set to no password).
New Password	Enter the new password here.
	Note that if the password is set, a prompt appears for the username and password when a connection is made. Use Admin as the user name.
Verify Password	Re-enter the new password in this field to ensure it is correct.

System	
Device Name	The name of the APC 3-in-1 Wireless Mobile Router. This field can be modified as needed.
Firmware version	Displays the current version of the firmware.
	Click the Upgrade Firmware button to install a new version of the firmware (the new firmware file must be downloaded first).
	Clicking the button will display the Upgrade Firmware screen. See the following section for further details.
Config File	Use this feature to download (save) the current settings to a file on the computer or upload (restore) a previously-saved config file. Click the desired button:
	Download prompts for the location of the configuration file on the computer.
	Upload displays the Config File screen. See below for details.

Using The Config File Screen

Use this screen to download the current settings from the APC 3-in-1 Wireless Mobile Router and save them to a file on the computer.

Users can restore a previously-downloaded configuration file to the APC 3-in-1 Wireless Mobile Router simply by uploading it to the router.

Additionally, use this screen to set the APC 3-in-1 Wireless Mobile Router back to its factory default configuration. Any existing settings will be deleted.

A sample Config File screen is shown below.
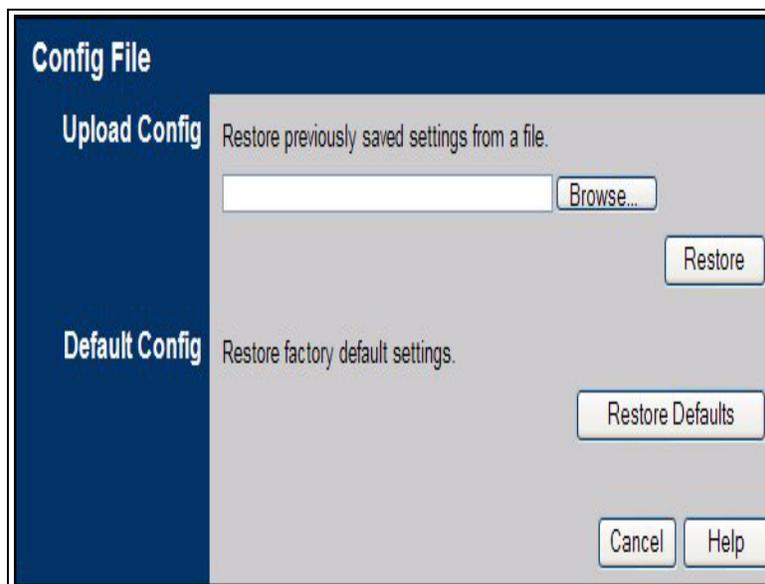
Figure 7. The Config File Screen

The following table describes the fields on the Config File screen.

Upload Config	Use this option to restore a previously saved configuration file back to the APC 3-in-1 Wireless Mobile Router.
	Click Browse to select the configuration file, then click Restore to upload the configuration file.
	Caution:Uploading a configuration file will destroy (overwrite) ALL of the existing settings.
Default Config	Clicking the Restore Defaults button will reset the APC 3-in-1 Wireless Mobile Router to its factory default settings.
	Caution:This action deletes ALL of the existing settings.

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Upgrading the Firmware

The firmware (software) in the APC 3-in-1 Wireless Mobile Router can be upgraded using the Web browser. To do this:

1. Download the upgrade file.

2. Select Upgrade on the System Setup screen. A screen similar to the following appears.

Figure 8. The Upgrade Firmware Screen

Use these steps to upgrade the firmware:

1. Click the Browse button and navigate to the location of the upgrade file.

2. Select the upgrade file. Its name will appear in the Upgrade File field.

3. Click the Start Upgrade button to commence the firmware upgrade.

Note: The APC 3-in-1 Wireless Mobile Router is unavailable during the upgrade process, and must restart when the upgrade is completed. Any connections to or through the APC 3-in-1 Wireless Mobile Router will be lost.

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Chapter 3: Configuring the Router for Access Point (AP) Mode

This chapter provides setup information for the Access Point (AP) mode of the APC 3-in-1 Wireless Mobile Router including:

• Connecting the Router to a Wired or Wireless Network

• Using the Wireless Security Screen

• Using the Trusted Wireless Stations Screen

It is not possible to connect to the APC 3-in-1 Wireless Mobile Router while it is in this mode. Configuration for AP mode must be performed while in Config mode. By default, the APC 3-in-1 Wireless Mobile Router will allow both 802.11g and 802.11b connections.

Connecting the Router to a Wired or Wireless Network

1. Use the mode selector switch on the side on the APC 3-in-1 Wireless Mobile Router to select Config mode (switch position #3).

2. Power up and wait for the Ethernet LED to turn on. This indicates that the APC 3-in-1 Wireless Mobile Router is ready.

3. Establish a wired or wireless connection to the APC 3-in-1 Wireless Mobile Router (a wired connection is recommended).

   Wired - Connect a standard LAN cable from the computer's 10/100BaseT Ethernet port to the Ethernet port on the APC 3-in-1 Wireless Mobile Router.
   Wireless - Select the wireless network with the SSID `APC_AP`

4. Start the Web browser.

5. In the Location or Address bar, enter the following: `config.ap`

   Note: This will work only while in Config mode.

6. If the admin password has been set (on the System screen), a prompt displays for the username and password. Enter `Admin` for the user name, and enter the current password. The Mode Configuration screen displays.

7. Click the Configure button for AP mode.The AP Mode Setup screen displays.

Figure 9. The AP Mode Setup Screen

The following table describes the fields on the AP Mode Setup Screen.

Wireless	
Region	Select the region where the computer is located.
SSID	If using an ESS (Extended Service Set, with multiple access points) this ID is called an ESSID (Extended Service Set Identifier).
	It is possible to change the SSID to a preferred value.
	AP mode and AP/Router mode must use different SSIDs. Using the same SSID for both modes would confuse wireless clients.
Broadcast SSID	If enabled, the SSID will broadcast its name to all wireless stations.
	On the computer, the APC 3-in-1 Wireless Mobile Router is listed as an Available Wireless Network, using the SSID above. If this wireless network is selected, the computer adopts this SSID
802.11 Mode	Select the desired mode:
	g & b - Both 802.11g and 802.11b wireless stations will be able to use the APC 3-in-1 Wireless Mobile Router.
	g only - Only 802.11g wireless stations can use the APC 3-in-1 Wireless Mobile Router.
Channel No.	This selection determines which operating frequency will be used. The channel list changes according to the selected region.
	Select the desired channel. Adjacent access points should use different channels to avoid interference.
Security	The current security setting for wireless connections is displayed.
	Note: The default value is *Off*, meaning no security.
Wireless Security Button	Click this button to access the Wireless Security sub-screen, and modify the security settings as required.
Allow trusted stations only	This feature can be used to prevent unknown wireless stations from using this access point. To use this feature:
	1. Enable this checkbox.
	2. Click the Trusted Stations button to open a sub-window containing the Trusted Wireless Stations screen.
	3. Enter details of the Trusted Wireless Stations. See the following section for further details.
	Caution:Ensure that the computer being used is in the Trusted Stations list before enabling this feature.
Copy AP/Router Mode Settings	Clicking this button copies the wireless settings, including the Trusted Station list, from the AP/Router screen to this screen.
	This is only useful if the AP/Router Setup screen is already configured.
	The SSID will not be copied. Each mode must use a different SSID. Using the same SSID for different modes would confuse wireless clients.

Using the Wireless Security Screen

This screen displays after clicking the Wireless Security button on the AP Setup screen.

The default security setting is Disabled. No configuration is required. Data is not encrypted before transmission. One of the following screens displays, depending on the security system selected:

- The Wireless Security (WEP) Screen
- The Wireless Security (WPA-PSK) Screen

The Wireless Security (WEP) Screen

The Wireless Security screen displays when WEP is selected.

Figure 10. The Wireless Security Screen (AP Mode - WEP)

The following table describes the fields on the WEP Wireless Security screen.

Security System	Select the desired option: • Disabled • WEP • WPA-PSK The screen will change according to the current selection. The following settings are visible only if WEP is selected.
Authentication	Normally, this should be left at the default value of Auto. If changed to Open System or Shared Key, ensure that the wireless stations use the same setting.
Key Size	Select the desired option. Wireless stations must use the same setting. 64 Bit (10 Hex chars) - data is encrypted, using the default key, before being transmitted. Enter at least the default key. For 64-bit encryption, the key size is Hex 10 chars. 128 Bit (26 Hex chars) - data is encrypted, using the default key, before being transmitted. Enter at least the default key. For 128-bit encryption, the key size is 26 Hex chars. Note: Hex chars are 0~9 and A~F.
Key 1, Key 2, Key 3, Key 4	Select the key to use as the default. The Default key is used to encrypt transmitted data; the other keys are for decryption only. It is necessary to enter a Key Value for the Default key. Other stations must have the same key.
Passphrase	Use this option to generate a key from a phrase, instead of entering the key value directly. Enter the desired phrase, and click the Generate Keys button.

The Wireless Security (WPA-PSK) Screen

The following image shows the **Wireless Security** screen when WPA-PSK is selected.

Figure 11. The Wireless Security Screen (WPA-PSK)

The following table describes the fields on the Wireless Security (WPA-PSK) screen.

Security System	Select the desired option: • Disabled • WEP • WPA-PSK The screen will change according to the current selection. The following settings are visible only if WPA-PSK is selected.
PSK	Enter the PSK (Pre-shared key), sometimes called the Network key. Wireless clients must use the same key.
Key Lifetime	The time (in seconds) that must pass before the Encryption key changes.
Encryption	Select the desired encryption algorithm. Wireless stations must use the same setting.

Using the Trusted Wireless Stations Screen

After clicking the Trusted Stations button on the AP Setup screen, the Trusted Wireless Stations screen displays.

Figure 12. The Trusted Wireless Stations Screen (AP Mode)

The following table describes the fields and buttons on the Trusted Wireless Stations screen.

Trusted Wireless Stations	Lists any wireless stations which are designated as Trusted.
Other Wireless Stations	Lists any wireless stations detected by the access point that are not designated as Trusted.
Address	The MAC (physical) address of the Trusted Wireless Station. Use this when adding or editing a Trusted Station.
Buttons:	
<<	Add a Trusted Wireless Station to the list (move from the Other Stations list). Select an entry (or entries) in the Other Stations list, and click the << button. Enter the Address (MAC or physical address) of the wireless station, and click the Add button.
>>	Delete a Trusted Wireless Station from the list (move to the Other Stations list). Select an entry (or entries) in the Trusted Stations list. Click the >> button.
Select All	Select all of the Stations listed in the Other Stations list.
Select None	De-select any Stations currently selected in the Other Stations list.

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Edit	To change an existing entry in the Trusted Stations list: 1. Select the Station in the Trusted Stations list. 2. Click the Edit button. The address will be copied to the Address field, and the Add button will change to Update. 3. Edit the address (MAC or physical address) as required. 4. Click Update to save any changes.
Add	To add a Trusted Station which is not in the Other Wireless Stations list, enter the required data and click this button.
Clear	Clears the Address field.

Chapter 4: Configuring the Router for AP/Router Mode

This chapter provides setup information for the AP/Router mode of the APC 3-in-1 Wireless Mobile Router. In AP/Router mode, the router provides the following services:

- Wireless Access Point
- DHCP Server
- Shared IP address
- Firewall Protection for Wireless stations.

To configure the router in AP/Router mode, connect while in Config mode or in AP/Router mode. To connect in Config mode, use the method described in Chapter 2, "The Initial Configuration." To connect while in AP/Router mode, use the steps contained in the following sections:

- Connecting in AP/Router Mode
- Using the AP/Router Setup Screen
- The Wireless Security Screen
- The Ethernet (WAN) Port Configuration Screen
- The Ethernet (WAN) Port Status

Connecting in AP/Router Mode

Ensure that the computer has established a wireless connection to the APC 3-in-1 Wireless Mobile Router before using the following steps:

1. Start the Web browser.

2. In Location or Address, enter `HTTP://` and the current IP address for the Wireless LAN, as set on the AP/Router screen. The default value is 192.168.1.1, for example:

   `HTTP://192.168.1.1`

3. If the admin password has been set (on the System screen), a prompt appears for the username and password. Enter `admin` for the user name, and enter the current password. The Mode Configuration screen appears.

4. Click the Configure button for AP/Router mode.The AP/Router Setup screen appears.

   Note: **By default, the APC 3-in-1 Wireless Mobile Router will allow both 802.11g and 802.11b connections.**

Using the AP/Router Setup Screen

This screen displays after clicking the Config button for AP/Router mode on the Mode Configuration screen.

Figure 13. The AP/Router Setup Screen

The following table describes the fields on the AP/Router Setup screen.

Wireless	
SSID	If using an ESS (Extended Service Set, with multiple access points) this ID is called an ESSID (Extended Service Set Identifier).
	It is possible to change the SSID to a preferred value.
	AP mode and **AP/Router mode** must use different SSIDs. Using the same SSID for both modes would confuse Wireless clients.
Broadcast SSID	If enabled, the SSID will broadcast its name to all Wireless stations.
	On the computer, the APC 3-in-1 Wireless Mobile Router is listed as an **Available Wireless Network**, using the SSID above. If this Wireless network is selected, the computer adopts this SSID
802.11 Mode	Select the desired mode:
	g & b - Both 802.11g and 802.11b Wireless stations will be able to use the APC 3-in-1 Wireless Mobile Router.
	g only - Only 802.11g Wireless stations can use the APC 3-in-1 Wireless Mobile Router.
Channel No.	This selection determines which operating frequency will be used. The channel list changes according to the selected region.
	Select the desired channel. Adjacent access points should use different channels to avoid interference.
Security	The current security setting for Wireless connections is displayed.
	The default value is **Off**, meaning no security.
Wireless Security Button	Click this button to access the **Wireless Security** sub-screen, and modify the security settings as required.

Allow trusted stations only	This feature can be used to prevent unknown Wireless stations from using this access point. To use this feature:
	1. Enable this checkbox.
	2. Click the **Trusted Stations** button to open a sub-window containing the **Trusted Wireless Stations** screen.
	3. Enter details of the Trusted Wireless Stations. See the following section for further details.
	Caution:Ensure that the computer being used is in the Trusted Stations list before enabling this feature.
Copy AP Mode Settings	Clicking this button copies the Wireless settings, including the **Trusted Station** list, from the **AP** screen to this screen.
	This is only useful if the **AP Setup** screen is already configured.
	The SSID will not be copied. Each mode must use a different SSID. Using the same SSID for different modes would confuse Wireless clients.

Ethernet (WAN) Port

IP Address	The current IP address for the Ethernet port. This will be blank if:
	• The APC 3-in-1 Wireless Mobile Router is not in AP/Router mode.
	• The APC 3-in-1 Wireless Mobile Router is in AP/Router mode, but there is no active connection on the Ethernet (WAN) port.
	Note: In AP/Router mode, the APC 3-in-1 Wireless Mobile Router has 2 IP addresses, one for the Wireless interface, and another for the Ethernet (WAN) port.
MAC Address	The MAC address, also called the Physical address, is a low-level identifier for Ethernet connections. This field displays the MAC address for the Ethernet (WAN) port.
Login Method	The login method is the type of connection used on the Ethernet (WAN) port.
	The default value is Travel Mode (Hotel). This mode requires no additional information.
	To change the Login Method, click the Configure button.
Connection Status	This field indicates the current status of the connection on the Ethernet (WAN) port.
	This field can only display Connected if the APC 3-in-1 Wireless Mobile Router is in AP/Router mode.
DMZ PC	The DMZ PC will receive all incoming traffic for which the correct destination PC is unknown.
	This field shows the current DMZ PC.
	The default value is None, meaning the DMZ feature is disabled.

Wireless LAN

AP/Router IP Address	The IP address of the APC 3-in-1 Wireless Mobile Router on the Wireless LAN.
	The default value is 192.168.1.1
	To change any settings while in AP/Router mode, connect to the APC 3-in-1 Wireless Mobile Router using this IP address.
	Normally, it is not necessary to change this IP address.
	Users MUST change this address if the LAN/WAN on the Ethernet (WAN) port is using the same IP address range (192.168.1.1 ~ 192.168.1.254).
	Note: In AP/Router mode, the APC 3-in-1 Wireless Mobile Router has 2 IP addresses, one for the Wireless interface, and another for the Ethernet (WAN) port.
Subnet Mask	The subnet mask for the IP address above.
	The default value is 255.255.255.0, which is the standard value for small networks.
Enable DHCP Server for Wireless Clients	The DHCP Server will provide an IP address and related information to Wireless clients when they connect to the APC 3-in-1 Wireless Mobile Router.
	The default value is Enabled.
	Caution:It is strongly recommended that this feature be enabled. Do not disable this feature unless absolutely necessary.

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The Wireless Security Screen

The Wireless Security screen displays after clicking the Wireless Security button on the AP/Router Setup screen. The default security setting is Disabled. No configuration is required. Data is not encrypted before transmission. Depending on the security system selected, the following screens display:

• Security System: WEP

• Security System: WPA-PSK

Security System: WEP

When WEP is selected on the Wireless Security screen, the following screen displays.

Figure 14. The Wireless Security Screen (AP Mode - WEP)

The following table describes the fields on the WEP Wireless Security screen.

Security System	Select the desired option: • Disabled • WEP • WPA-PSK The screen will change according to the current selection. The following settings are visible only if WEP is selected.
Authentication	Normally, this should be left at the default value of Auto. If changed to Open System or Shared Key, ensure that the Wireless stations use the same setting.
Key Size	Select the desired option. Wireless stations must use the same setting. 64 Bit (10 Hex chars) - data is encrypted, using the default key, before being transmitted. Enter at least the default key. For 64-bit encryption, the key size is Hex 10 chars. 128 Bit (26 Hex chars) - data is encrypted, using the default key, before being transmitted. Enter at least the default key. For 128-bit encryption, the key size is 26 Hex chars. **Note: Hex chars are 0~9 and A~F.**
Key 1, Key 2, Key 3, Key 4	Select the key to use as the default. The Default key is used to encrypt transmitted data; the other keys are for decryption only. It is necessary to enter a Key Value for the Default key. Other stations must have the same key.
Passphrase	Use this option to generate a key from a phrase, instead of entering the key value directly. Enter the desired phrase, and click the Generate Keys button.

Security System: WPA-PSK

When WPA-PSK is selected on the Wireless Security screen, the following screen displays.

Figure 15. The Wireless Security Screen (WPA-PSK)

The following table describes the fields on the WPA-PSK Wireless Security screen.

Security System	Select the desired option: • Disabled • WEP • WPA-PSK The screen will change according to the current selection. The following settings are only visible if WPA-PSK is selected.
PSK	Enter the **PSK** (Pre-shared key), sometimes called the **Network** key. Wireless clients must use the same key.
Key Lifetime	The time (in seconds) that must pass before the **Encryption** key changes.
Encryption	Select the desired encryption algorithm. Wireless stations must use the same setting.

The Trusted Wireless Stations Screen

The Trusted Wireless Stations screen displays after clicking the Trusted Stations button on the AP/Router Setup screen.
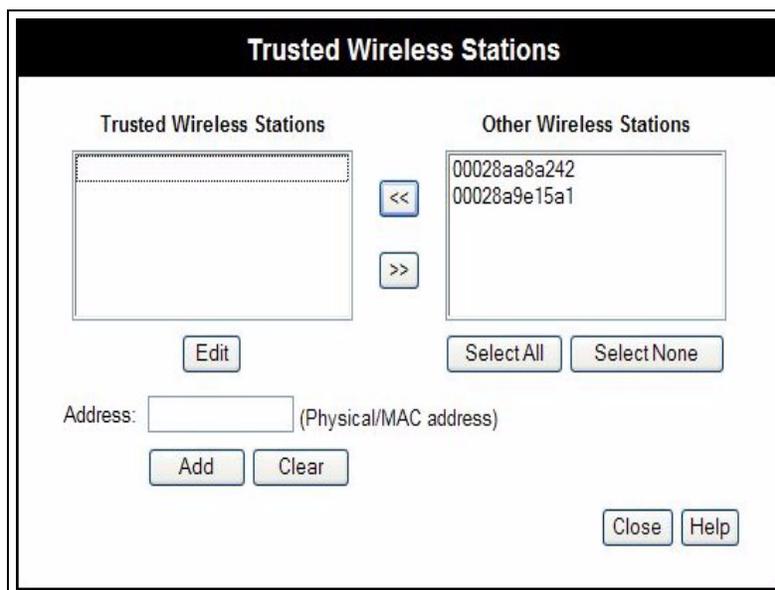
Figure 16. The Trusted Wireless Stations Screen (AP/Router Mode)

The following table describes the fields on the Trusted Wireless Stations screen.

Trusted Wireless Stations	This lists any Wireless stations which are designated as Trusted.
Other Wireless Stations	This list any Wireless stations detected by the access point that are not designated as Trusted.
Address	The MAC (physical) address of the Trusted Wireless Station. Use this when adding or editing a Trusted Station.
Buttons:	
<<	Add a Trusted Wireless Station to the list (move from the Other Stations list).
	Select an entry (or entries) in the Other Stations list, and click the << button.
	Enter the Address (MAC or physical address) of the Wireless station, and click the Add button.
>>	Delete a Trusted Wireless Station from the list (move to the Other Stations list).
	Select an entry (or entries) in the Trusted Stations list.
	Click the >> button.
Select All	Select all of the stations listed in the Other Stations list.
Select None	De-select any stations currently selected in the Other Stations list.
Edit	To change an existing entry in the Trusted Stations list:
	1. Select the Station in the Trusted Stations list.
	2. Click the Edit button. The address will be copied to the Address field, and the Add button will change to Update.
	3. Edit the address (MAC or physical address) as required.
	4. Click Update to save any changes.
Add	To add a Trusted Station which is not in the Other Wireless Stations list, enter the required data and click this button.
Clear	Clears the Address field.

The Ethernet (WAN) Port Configuration Screen

By default, the APC 3-in-1 Wireless Mobile Router will try to obtain an IP address automatically on the Ethernet (WAN) port. If this does not work in the current environment, click the Configure button to change the settings for the Ethernet (WAN) port. The following sections describe the possible Connection Types:

• Connection Type: Travel Mode (Hotel)

• Connection Types: PPPoE, PPTP, L2TP, and No Login

Connection Type: Travel Mode (Hotel)

The default connection method is **Travel Mode (Hotel)** as shown below.

Figure 17. The Ethernet (WAN) Port Configuration Screen (Travel Mode)

The following table describes the fields on the Ethernet Port Configuration screen (Travel Mode).

Connection Type	
Connection Type	The default is Travel Mode (Hotel).
	See the following section for details of the other options, and the settings associated with each option.
IP Address	
IP Address is assigned automatically	Also called Dynamic IP Address. This is the default, and the most common. Only change this if advised to do so by the person or organization providing the LAN/WAN port connection.
Specified IP Address	Also called a Static IP Address. If this option is selected, the following data must be entered.
	• IP Address - The IP address on the LAN or WAN.
	• Network Mask - The subnet mask associated with the IP address above.
	• Gateway IP Address - The address of the router or gateway on the LAN or WAN that the user is connecting to.
DNS	
Automatically obtain from Server	The DNS (Domain Name Server) address is normally obtained automatically from the DHCP Server which provides the IP address.
	Note: This option cannot be used with a fixed IP address, since no server is used.
Use this DNS	If this option is selected, enter the IP address of the DNS (Domain Name Server) to use.
	Note: Select this option when using a Specified (Static) IP address.

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MAC Address	
MAC Address	Also called Network Adapter Address or Physical Address. This is a low-level network identifier, as seen from the WAN port.
	Normally there is no need to change this field, but if necessary, use the Copy from PC button to copy the computer's address into this field. This is only necessary if the computer's MAC address has been recorded.
	Use the Default button to insert the default value, or enter a value directly, if desired.
	Note: To avoid problems regarding the MAC address, do NOT swap the LAN/WAN connection from the computer to the APC 3-in-1 Wireless Mobile Router, or from the APC 3-in-1 Wireless Mobile Router to the computer.
Identification	
Hostname	Normally, this field has no effect.
	If the System Administrator requires users to enter a specific hostname, do so here.
Domain Name	Normally, this field has no effect.
	If the System Administrator requires users to enter a specific domain name, do so here.

Connection Types: PPPoE, PPTP, L2TP, and No Login

In addition to **Travel Mode (Hotel)**, the following connections are possible:

- **PPPoE** - The most common login method for DSL modems. Normally, the ISP will provided some software to connect and login. If using the APC 3-in-1 Wireless Mobile Router, this software is not required, and should not be used.
- **PPTP** - Used mainly in Europe. The PPTP Server address, username, and password are required.
- **L2TP** - Not widely used. The L2TP Server address, username, and password are required.
- **No Login (Static IP address)** - Used with a static (fixed) IP address. Users do not need to log in to a server to gain access to the LAN or WAN.

To determine which method to use, contact the System Administrator. The following screen shows all the available settings.

Figure 18. Ethernet Port Configuration (All Settings)

The following table describes all possible fields on the Ethernet Port Configuration screen.

Connection Type	
Connection Type	The available options are: **Travel Mode (Hotel)** - This is the default. No data needs to be input. This setting will work in many situations, not just hotels. **PPPoE** - The most common login method for DSL modems. Normally, the ISP will provide some software to connect and login. If using the APC 3-in-1 Wireless Mobile Router, this software is not required, and should not be used. **PPTP** - Used mainly in Europe. The PPTP Server address, username, and password are required. **L2TP** - Not widely used. The L2TP Server address, username, and password are required. **No Login (Static IP address) -** Used with a static (fixed) IP address. Users do not need to log in to a server to gain access to the LAN or WAN.
Login User Name	The username (or account name) provided by the ISP.
Login Password	The password for the login name above.
Server IP Address	For PPTP or L2TP, enter the server IP address. For other connection methods, this field should be ignored.
Connection Behavior	Select the desired option: Automatic Connect/Disconnect A connection is automatically made when required, and disconnected when idle for the time period specified by the Auto-disconnect Idle Time-out. Manual Connect/Disconnect Manually establish and terminate the connection. Keep alive (maintain connection) The connection will never be disconnected by this device. If disconnected by the server, the connection will be re-established immediately. **Note: Selecting this option does not ensure that the Ethernet (WAN) Port IP address will remain unchanged.**
Auto-disconnect Idle TIme-out	This field has no effect unless using the Automatic Connect/Disconnect setting. If using this setting, enter the desired idle time-out period (in minutes). After the connection has been idle for this time period, the connection will be terminated.

IP Address	
IP Address is assigned automatically	Also called Dynamic IP Address. This is the default, and the most common. Only change this if advised to do so by the person or organization providing the LAN/WAN port connection.
Specified IP Address	Also called a Static IP Address. If this option is selected, the following data must be entered. • IP Address - The IP address on the LAN or WAN. • Network Mask - The subnet mask associated with the IP address above. • Gateway - The address of the router or gateway on the LAN or WAN that the user is connecting to. **Note: If using PPPoE, enter only the IP Address.**

DNS	
Automatically obtain from Server	The DNS (Domain Name Server) address is normally obtained automatically from the DHCP Server which provides the IP address. **Note: This option cannot be used with a fixed IP address, since no server is used.**
Use this DNS	If this option is selected, enter the IP address of the DNS (Domain Name Server) to use. **Note: Select this option when using a Specified (Static) IP address.**

MAC Address	
MAC Address	Also called Network Adapter Address or Physical Address. This is a low-level network identifier, as seen from the WAN port. Normally there is no need to change this field, but if necessary, use the Copy from PC button to copy the computer's address into this field. This is only necessary if the computer's MAC address has been recorded. Use the Default button to insert the default value, or enter a value directly, if desired. **Note: To avoid problems regarding the MAC address, do NOT swap the LAN/WAN connection from the computer to the APC 3-in-1 Wireless Mobile Router, or from the APC 3-in-1 Wireless Mobile Router to the computer.**

The Ethernet (WAN) Port Status

To check the status of the Ethernet (WAN) port connection, click the Status button on the AP/Router Setup screen. This opens a window and the screen that displays depends upon the connection method currently in use.

* Fixed/Dynamic IP Address
* Connection Status - PPPoE (Point-to-Point Protocol over Ethernet) Screen
* Connection Status - PPTP (Point-to-Point Tunneling Protocol) Screen
* Connection Status - L2TP Screen

Fixed/Dynamic IP Address

If the access method is Travel mode or No Login, a screen similar to the following displays when the Status button is clicked.

Figure 19. Connection Details (Fixed/Dynamic IP Address)

The following table describes all possible fields on the Fixed/Dynamic IP Address Screen.

Internet	
Physical Address	The hardware address of this device, as seen by remote devices on the Internet. (This is different to the hardware address seen by devices on the local LAN.)
IP Address	The IP Address of this device, as seen from the Ethernet (WAN) Port interface. If using DHCP, and there is no current connection, this field will be blank or display 0.0.0.0.
Network Mask	The Network Mask associated with the IP Address above.
Default Gateway	The IP Address of the remote gateway or router associated with the IP Address above.
DNS IP Address	The IP Address of the Domain Name Server that is currently used.
DHCP Client	This indicates whether or not this device is functioning as a DHCP client.
	If acting as a DHCP client, the IP address above has been allocated by the DHCP Server on the LAN or WAN.
	If not a DHCP client, the IP address (if shown) is fixed or static.
	If using DHCP, the **Lease Obtained** and **Remaining lease time** fields indicate when the IP address allocated by the DHCP Server was obtained and when it will expire. The lease is automatically renewed on expiration.

Buttons	
Release/Renew Button will display EITHER *Release* **OR** *Renew*	This button is only useful if the IP address shown above is allocated automatically on connection. (Dynamic IP address). This button is not used with a Fixed (Static) IP address.
	If the ISP's DHCP server has NOT allocated an IP address for the APC 3-in-1 Wireless Mobile Router, this button reads **Renew**. Click the **Renew** button to try and re-establish the connection and obtain an IP address from the ISP's DHCP Server.
	If an IP Address has been allocated to the APC 3-in-1 Wireless Mobile Router (by the ISP's DHCP Server), this button reads **Release**. Click the **Release** button to break the connection and release the IP Address.
Refresh	Updates the data shown on screen.

Connection Status - PPPoE (Point-to-Point Protocol over Ethernet) Screen

If using PPPoE (Point-to-Point Protocol over Ethernet), a screen similar to the following displays when the Status button is clicked.
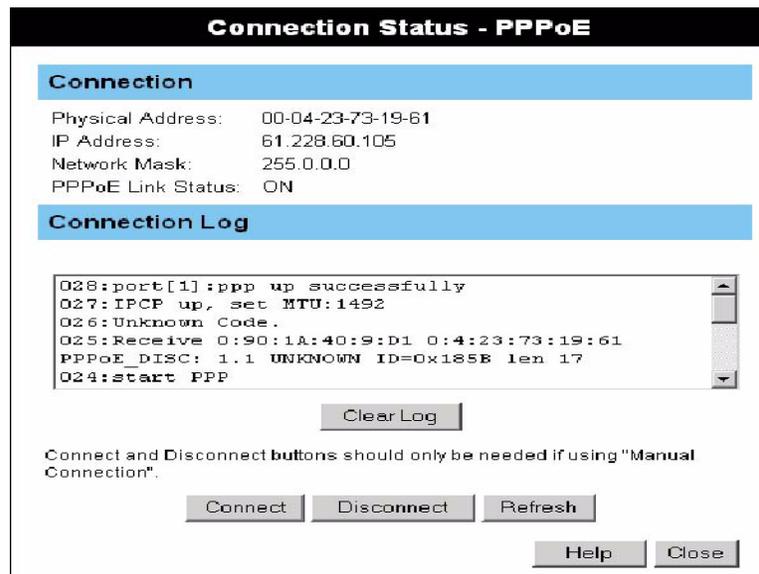
Figure 20. The PPPoE Status Screen

The following table describes the fields on the PPPoE Screen.

Connection	
Physical Address	The hardware address of this device, as seen by remote devices on the Internet. (This is different from the hardware address seen by devices on the local LAN.)
IP Address	The IP Address of this device, as seen from the Ethernet (WAN) Port interface. If using DHCP, and there is no current connection, this field will be blank or display 0.0.0.0.
Network Mask	The Network Mask associated with the IP Address above.
PPPoE Link Status	Indicates whether or not the connection is currently established.
	If the connection does not exist, the Connect button can be used to establish a connection.
	If the connection currently exists, the Disconnect button can be used to break the connection.
Connection Log	

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Connection Log	The Connection Log shows status messages relating to the existing connection.
	The most common messages are listed in the section "The following table describes the Connection Log Messages.."
	The Clear Log button will restart the log, while the Refresh button will update the messages shown on screen.
Buttons	
Clear Log	Deletes all data currently in the log, making it easier to read new messages.
Connect	If not connected, establishes a connection to the ISP.
Disconnect	If connected to the ISP, hangs up the connection.
Refresh	Updates the data on screen.

The following table describes the Connection Log Messages.

Message	Description
Connect on Demand	Connection attempt has been triggered by the **Connect automatically, as required** setting.
Manual connection	Connection attempt started by the **Connect** button.
Reset physical connection	Preparing line for connection attempt.
Connecting to remote server	Attempting to connect to the ISP's server.
Remote Server located	ISP's server has responded to connection attempt.
Start PPP	Attempting to log in to ISP's Server and establish a PPP connection.
PPP up successfully	Able to login to ISP's server and establish a PPP connection.
Idle time-out reached	The connection has been idle for the time period specified in the **Idle Time-out** field. The connection will now be terminated.
Disconnecting	The current connection is being terminated, due to either the **Idle Time-out** above, or **Disconnect** button being clicked.
Error: Remote Server not found	ISP's server did not respond. This could be a server problem, or a problem with the link to the server.
Error: PPP Connection failed	Unable to establish a PPP connection with the ISP's server. This could be a login problem (name or password) or a server problem.
Error: Connection to Server lost	The existing connection has been lost. This could be caused by a power failure, a link failure, or server failure.
Error: Invalid or unknown packet type	The data received from the ISP's server could not be processed. This could be caused by data corruption (from a bad link), or the server using a protocol which is not supported by this device.

Connection Status - PPTP (Point-to-Point Tunneling Protocol) Screen

If using PPTP (Point-to-Point Tunneling Protocol), a screen similar to the following is displayed when the **Status** button is clicked.
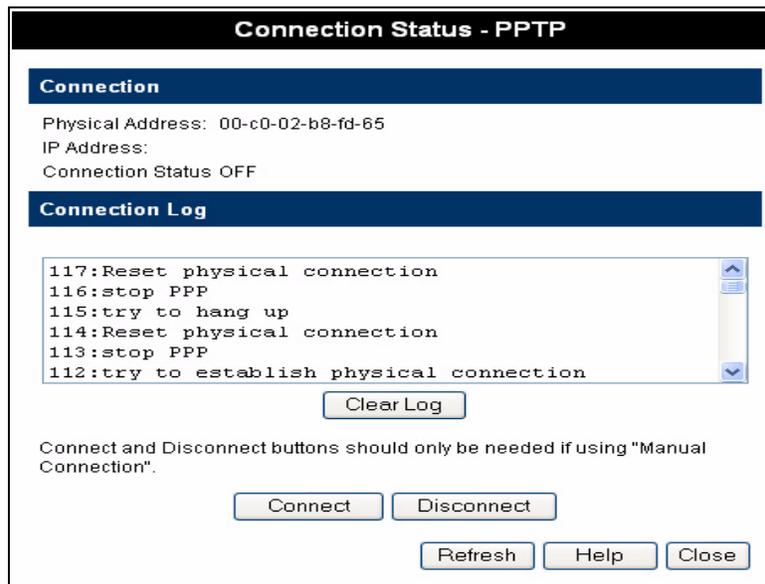
Figure 21. The PPTP Status Screen

The following table describes the fields on the PPTP Screen.

Connection	
Physical Address	The hardware address of this device, as seen by remote devices on the Internet. (This is different from the hardware address seen by devices on the local LAN.)
IP Address	The IP Address of this device, as seen from the Ethernet (WAN) Port interface. If using DHCP, and there is no current connection, this field will be blank or display 0.0.0.0.
PPTP Status	Indicates whether or not the connection is currently established.
	If the connection does not exist, the **Connect** button can be used to establish a connection.
	If the connection currently exists, the **Disconnect** button can be used to break the connection.
Connection Log	
Connection Log	The Connection Log shows status messages relating to the existing connection.
	The most common messages are listed in the section "The following table describes the Connection Log Messages.."
	The **Clear Log** button will restart the log, while the **Refresh** button will update the messages shown on screen.
Buttons	
Clear Log	Deletes all data currently in the log, making it easier to read new messages.
Connect	If not connected, establishes a connection to the ISP.
Disconnect	If connected to the ISP, hangs up the connection.
Refresh	Updates the data on screen.

Connection Status - L2TP Screen

If using L2TP, a screen similar to the following is displayed when the **Status** button is clicked.
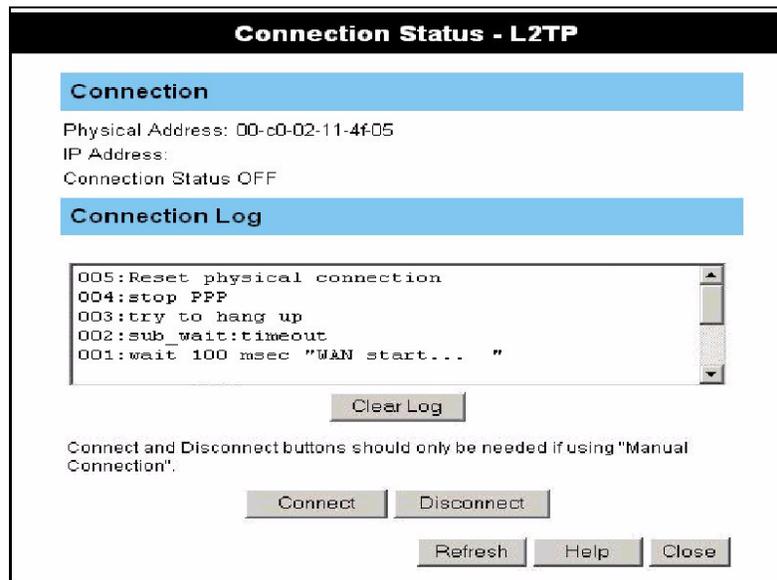
Figure 22. The L2TP Status Screen

The following table describes the fields on the L2TP Screen.

Connection	
Physical Address	The hardware address of this device, as seen by remote devices on the Internet. (This is different from the hardware address seen by devices on the local LAN.)
IP Address	The IP Address of this device, as seen from the Ethernet (WAN) Port interface. If using DHCP, and there is no current connection, this field will be blank or display 0.0.0.0.
Connection Status	Indicates whether or not the connection is currently established.
	If the connection does not exist, the Connect button can be used to establish a connection.
	If the connection currently exists, the Disconnect button can be used to break the connection.
Connection Log	
Connection Log	The Connection Log shows status messages relating to the existing connection.
	The most common messages are listed in the section "The following table describes the Connection Log Messages.."
	The Clear Log button will restart the log, while the Refresh button will update the messages shown on screen.
Buttons	
Clear Log	Deletes all data currently in the log, making it easier to read new messages.
Connect	If not connected, establishes a connection to the ISP.
Disconnect	If connected to the ISP, hangs up the connection.
Refresh	Updates the data on screen.

Chapter 5: AP/Router Mode - Advanced Features

This chapter explains when and how to use the advanced features in AP/Router mode.of the APC 3-in-1 Wireless Mobile Router. The following advanced features are provided in AP/Router mode.

• The Advanced Internet Screen

• The Port Forwarding Screen

• Using Self-defined Servers

• Using Dynamic DNS (Domain Name Server)

• The Options Screen

• The Advanced PC Database Screen

• The Security Screen

These features are accessed via the Advanced button on the AP/Router Setup screen.

The Advanced Internet Screen

This screen allows configuration of all advanced features relating to Internet access:

• Communication Applications

• DMZ

• MTU (Maximum Transmission Unit)
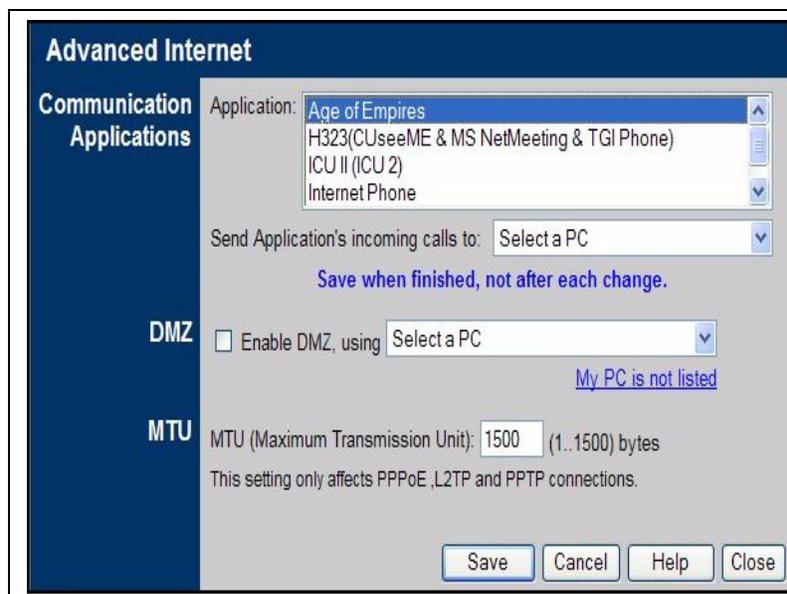
Figure 23. The Advanced Internet Screen

Communication Applications

Most applications are supported transparently by the APC 3-in-1 Wireless Mobile Router. However, sometimes it is not clear which device should receive an incoming connection. This problem could arise with the Communication Applications listed on this screen.

If this problem arises, use this screen to set which device should receive an incoming connection, as described below.

Communication Applications	
Application	Lists applications which may generate incoming connections, where the destination computer (on the local LAN) is unknown. For each application, select the computer to which incoming connections may be sent.

Send Application's incoming calls to:	Lists the computers on the Wireless LAN.
	For each application listed above, choose a destination computer.
	If necessary, add devices manually, using the PC Database menu option.
	There is no need to press Save after each change; simply set the destination computer for each application, then click Save.
DMZ	
Enable DMZ using...	Enables the DMZ feature as required.
	The DMZ PC will receive all "Unknown" connections and data. This feature is normally used with applications that do not usually work behind a firewall.
	The DMZ PC is effective outside the firewall, making it more vulnerable to attacks. For this reason, enable the DMZ feature only when required.
	If enabled, select the PC to be used as the DMZ PC.
My PC is not listed	If the computer uses a fixed IP address, and is not in the list, click here and add it using the PC Database menu option.
MTU	
MTU size	MTU (Maximum Transmission Unit) determines the size of network packets. This value should only be changed when advised to do so by Technical Support.
	Enter a value between 1 and 1500.
	This device will still auto-negotiate with the remote server to set the MTU size. The smaller of the 2 values (auto-negotiated, or entered here) will be used.
	For direct connections (not PPPoE or PPTP), the MTU used is always 1500.

Port Forwarding

This feature, sometimes called "Virtual Servers," allows users to make servers on the LAN accessible to Internet users. Normally, Internet users would not be able to access a server on the LAN because:

1. The server does not have a valid external IP address.

2. Attempts to connect to devices on the LAN are blocked by the firewall in this device.

The Port Forwarding feature solves these problems and allows Internet users to connect, as illustrated below.

Note: In the following illustration, both Internet users are connecting to the same IP address, but with different protocols.
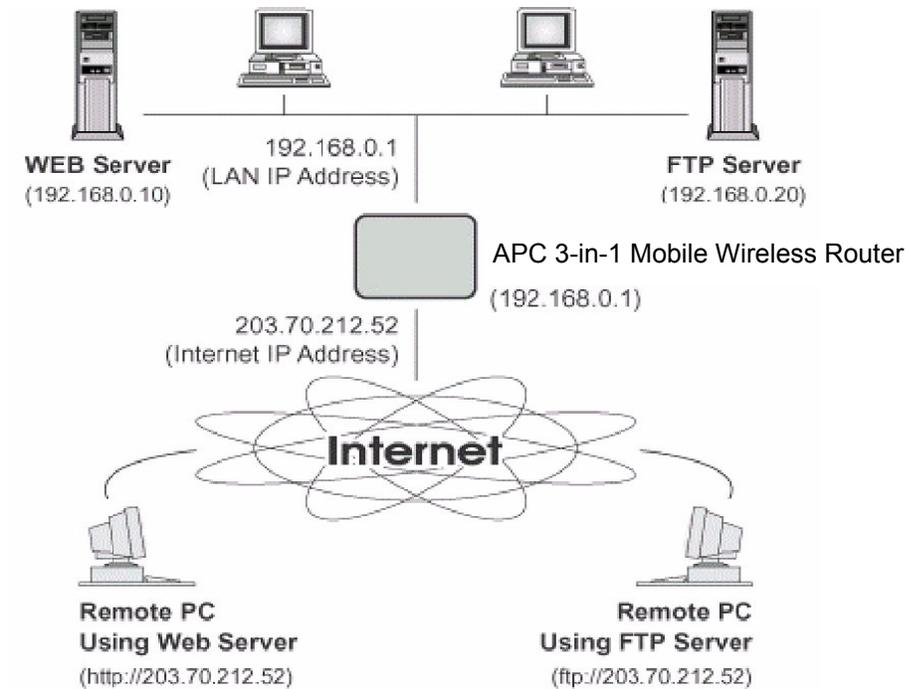
Figure 24. Port Forwarding

IP Address Seen by Internet Users

To Internet users, all virtual servers on the LAN have the same IP address. This IP address is allocated by the ISP.

This address should be static, rather than dynamic, to make it easier for Internet users to connect. If desired, use the **DDNS (Dynamic DNS)** feature to allow users to connect to Port Forwarding using a URL instead of an IP address.

The Port Forwarding Screen

The Port Forwarding screen is reached by the Port Forwarding link. The following is a sample screen.

Figure 25. The Port Forwarding Screen

This screen lists a number of pre-defined servers and allows users to define their own servers. Details of the selected server are shown in the Properties area. The following table describes the fields on the Port Forwarding Screen.

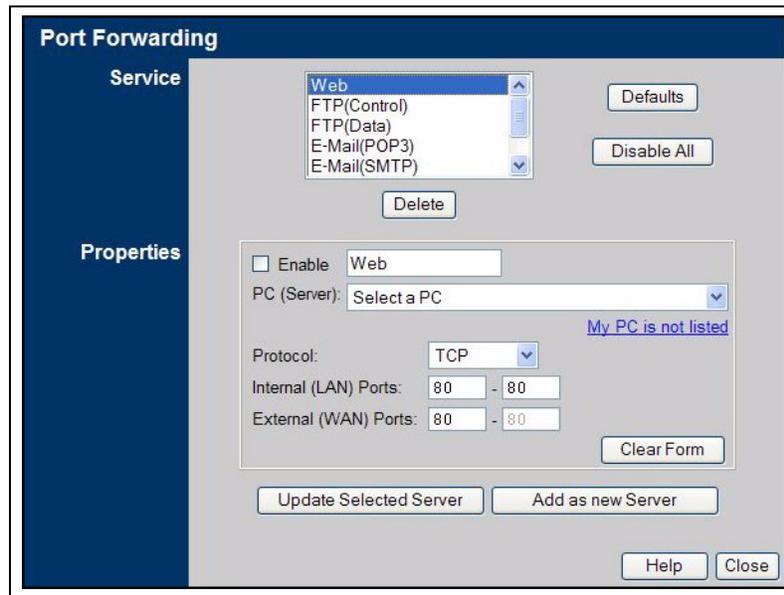| Service	
Service	Lists a number of pre-defined and user-defined services. Details of the selected service are shown in the Properties area.
Properties	
Enable	Enables/Disables Port Forwarding for this service, as required.
PC (Server)	Selects the computer to be used as the server for this service. The computer must be running the appropriate Server software.
My PC is not listed	If the computer uses a fixed IP address, and is not in the list, click here and add it using the PC Database menu option.
Protocol	Selects the protocol (TCP, UDP or TCP/UDP) used by the service.
Internal (LAN) Ports	Enter the range of port numbers that the server software is configured to use.
External (WAN) Ports	Traffic from the Internet using this range of port numbers will be sent to the selected server. These ports are normally the same as the internal port numbers. If they are different, this computer will perform a mapping or translation function, allowing the server to use a different port range to the clients. Using this feature allows the server to distinguish traffic from the WAN from traffic on the local LAN by using the port number, rather than having to check IP addresses.
Buttons:	
Defaults	Deletes any user-defined servers, and sets the pre-defined servers to use their default port numbers.
Disable All	Causes the Enable setting of all entries to be set Off.
Delete	Deletes the current server entry. Note that the pre-defined servers cannot be deleted; only those servers that are user-defined can be deleted.
Clear Form	Clears all data from the Properties area.

Update Selected Server	Updates the current entry, using the data shown in the Properties area on screen.
Add as new Server	Adds a new entry to the list, using the data shown in the Properties area on screen. The entry selected in the list is ignored, and has no effect.

Note: For each entry, the computer must be running the appropriate server software.

Using Self-defined Servers

If a server is not listed on the Port Forwarding screen, users can define and manage their own servers, using the following steps.

Create a new Server:
1. Click Clear Form.
2. Enter the required data, as described above.
3. Click Add a new Server.
4. The new server appears in the Service list.

Modify (Edit) a Server:
1. Select the server from the Service list.
2. Make any changes.
3. Click Update Selected Server to save changes to the selected server.

Delete a Server:
1. Select an entry from the Service list.
2. Click Delete.

Note: Only user-defined servers can be deleted. Pre-defined servers cannot be deleted.

Note: From the WAN or Internet, ALL Port Forwarding have the same IP address - the IP address assigned to the WAN port.

Connecting to User-defined Servers

Once configured, anyone on the WAN or Internet can connect to the user-defined servers. They must use the WAN (Internet) IP address, for example:

```
http://203.70.212.52
ftp://203.70.212.52
```

It is more convenient to use a Fixed IP address (rather than Dynamic). However, to allow users to connect to Port Forwarding using a URL, rather than an IP address, use the **Dynamic DNS** feature, described in the following section.

Using Dynamic DNS (Domain Name Server)

This free service is very useful when combined with the Port Forwarding feature. It allows Internet users to connect to user-defined servers using a URL, rather than an IP address. This also solves the problem of having a dynamic IP address, since these change whenever a connection is made. The service works as follows:

1. Register for the service at one of the listed DDNS service providers.

2. After registration, follow the service provider's procedure to request a domain name.

3. Enter the DDNS data on the APC 3-in-1 Wireless Mobile Router's DDNS screen.

4. The APC 3-in-1 Wireless Mobile Router will then automatically ensure that the current IP address is recorded at the DDNS server.

    If the DDNS Service provides software to perform this IP address update; disable the Update function, or do not use the software at all.

5. From the Internet, users will be able to connect to the user-defined servers (or DMZ PC) using the specified domain name.

When DDNS is selected, a screen similar to the following displays.

Figure 26. The DDNS Screen

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The following table describes the fields on the Dynamic DNS Screen.

DDNS Service	
DDNS Service	Select the desired DDNS service provider from the list. Register for the service at one of the listed service providers. Users can access the service provider's Web site by selecting it in the list and clicking the Web Site button.
	Apply for a domain name, and ensure it is allocated.
	Details of the DDNS account (name, password, domain name) must then be entered and saved on this screen.
	This device will then automatically ensure that the current IP address is recorded by the DDNS Service Provider. (There is no need to use the Client program provided by some DDNS Service providers.)
	From the Internet, users will now be able to connect to the defined servers (based on the Port Forwarding setup) or DMZ PC using the specified domain name.
Web Site Button	Click this button to open another browser window and connect to the Web site of the selected DDNS service provider.
DDNS Status	This message is returned by the DDNS Server
	Normally, this message should be "Update successful".
	If the message is "No host" or some other error message, connect to the DDNS service provider and correct the problem.
DDNS Data	
User Name	Username for the DDNS Service.
Password/Key	The current password for the DDNS Service.
Domain Name	The domain name allocated by the DDNS service. If there is more than one name, enter the desired name.

The Network Diagnostics Screen

Use this screen to perform a Ping or a DNS lookup. These activities can be useful in solving network problems.
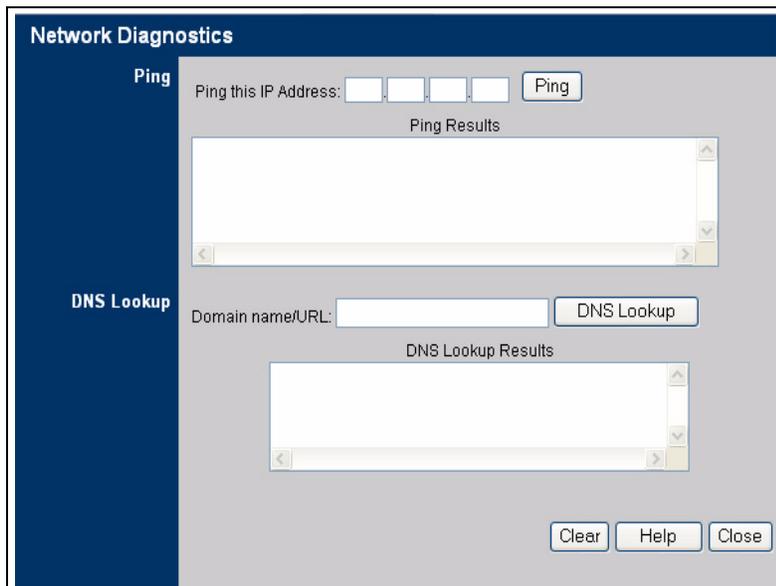
Figure 27. The Network Diagnostics Screen

The following table describes the fields on the Network Diagnostics screen.

Ping	
Ping this IP Address	Enter the IP address to ping. The IP address can be on the LAN or on the Internet. Note that if the address is on the Internet, and no connection currently exists, a "Timeout" error may result. In this case, wait a few seconds and try again.
Ping Button	After entering the IP address, click this button to start the Ping procedure. The results will be displayed in the **Ping Results** window.
DNS Lookup	
Domain name/URL	Enter the domain name or URL that needs a DNS (Domain Name Server) lookup. Note that if the address is on the Internet, and no connection currently exists, a "Timeout" error may result. In this case, wait a few seconds and try again.
DNS Lookup Button	After entering the domain name/URL, click this button to start the DNS Lookup procedure. The results will be displayed in the **DNS Lookup Results** window.

The Options Screen

This screen allows advanced users to enter or change settings. For normal operation, there is no need to use this screen or change any settings.
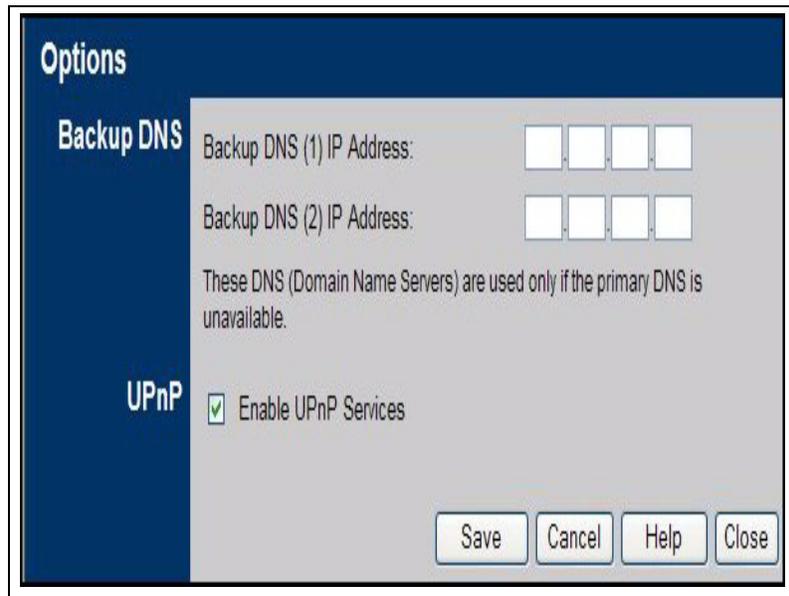
Figure 28. The Options Screen

The following table describes the fields on the Options Screen.

Backup DNS	
Backup DNS IP Address	Enter the IP address of the DNS (Domain Name Servers) here. These DNS' will be used only if the primary DNS is unavailable.
UPnP	
Enable UPnP Services	UPnP (Universal Plug and Play) allows automatic discovery and configuration of equipment attached to the LAN. UPnP is supported by Windows ME, XP, or later.
	If **Enabled**, this device will be visible via UPnP.
	If **Disabled**, this device will not be visible via UPnP.

The Advanced PC Database Screen

This screen displays when the Advanced button on the PC Database screen is clicked. It provides more control than the standard PC Database screen. Use this screen to select a computer (such as for the DMZ PC). It eliminates the need to enter IP addresses and use fixed IP addresses on the wireless LAN.

Figure 29. The Advanced PC Database Screen

Computers that are DHCP clients are automatically added to the database, and updated as required. By default, non-server versions of Windows® act as DHCP clients; this setting is called, Obtain an IP address automatically. The APC 3-in-1 Wireless Mobile Router uses the hardware address to identify each computer, not the name or IP address. The hardware address can only change if the computer's network card or adapter is changed. Users do not need to use fixed (static) IP addresses on their LAN. However, they can add devices using fixed (static) IP addresses to the PC database if required.

The following table describes the fields on the Advanced PC Database Screen.

Known PCs	Lists all current entries. The data displayed is the **name**, **IP address**, and **type**. The "type" indicates whether the computer is connected to the LAN.
PC Properties	
Name	If adding a new computer to the list, enter its name here. This entry should match the computer's hostname.
IP Address	Enter the IP address of the computer. The computer will be sent a ping to determine its hardware address. If the computer is not available (not connected, or not powered on), it cannot be added. Select the appropriate option: **Automatic** - The computer is set to be a DHCP client (Windows: "Obtain an IP address automatically"). The APC 3-in-1 Wireless Mobile Router will allocate an IP address to this computer when requested to do so. The IP address could change, but normally won't. **DCHP Client - Reserved IP Address** - The computer is set to be a DCHP client, and a user wants to guarantee that the APC 3-in-1 Wireless Mobile Router will always allocate the same IP address to this computer. Enter the required IP address. Only the last field is required; the other fields must match the APC 3-in-1 Wireless Mobile Router's IP address. **Fixed IP Address** - The computer is using a Fixed (Static) IP address. Enter the IP address allocated to the computer. (The computer must be configured to use this IP address.)
MAC Address	Enter the MAC address of the computer. The computer will be sent a ping to determine its hardware address. If the computer is not available (not connected, or not powered on), it cannot be added. Select the appropriate option: **Automatic discovery** - The APC 3-in-1 Wireless Mobile Router contacts the computer and finds its MAC address. This is only possible if the computer is connected to the LAN and powered on. **MAC address is** - Enter the MAC address on the computer. The MAC address is also called the **Hardware Address, Physical Address, or Network Adapter Address**. The APC 3-in-1 Wireless Mobile Router uses this entry to provide a unique identifier for each computer. Because of this, the MAC address can NOT be left blank.
Buttons:	
Edit	Changes the data for the selected computer in the list. The data for the selected computer will then be shown in the **Properties** area, where it may be edited. (Click **Update** to save any changes.)
Delete	Deletes the selected computer from the list. This should be done in 2 situations: • The computer has been removed from the LAN. • The entry is incorrect.
Clear Form	Clears the **Properties** box.
Add as New Entry	Adds a new computer to the list, using the data in the **Properties** box. If **Automatic discovery** (for MAC address) is selected, the computer will be sent a ping to determine its hardware address. The ping will fail unless the computer is connected to the LAN, and powered on.
Update Selected PC	Updates (modifies) the selected computer, using the data in the **Properties** box.
Refresh	Updates the data on screen.
Standard Screen	Click to view the standard **PC Database** screen.

The Security Screen

Use this screen to set firewall and other security-related options.
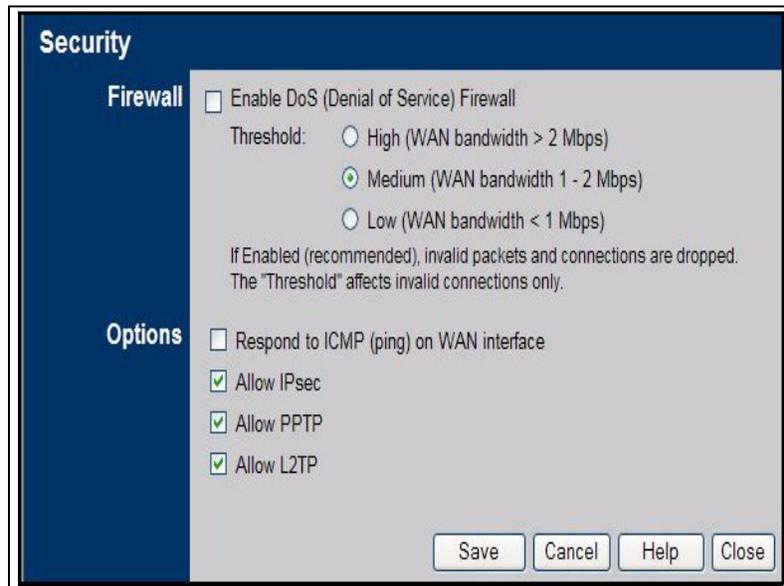
Figure 31. The Security Screen

The following table describes the fields on the Security Screen.

Firewall	
Enable DoS Firewall	If enabled, DoS (Denial of Service) attacks will be detected and blocked. The default is enabled. It is strongly recommended that this setting be left enabled.
	Note: A DoS attack does not attempt to steal data or damage devices, but overloads the Internet connection to the point where the service is unavailable.
	This device uses "Stateful Inspection" technology. This system can detect situations where individual TCP/IP packets are valid, but collectively they become a DoS attack.
Threshold	This setting affects the number of "half-open" connections allowed.
	A "half-open" connection arises when a remote client contacts the server with a connection request, but then does not reply to the server's response.
	While the optimum number of "half-open" connections allowed (the "Threshold") depends on many factors, the most important factor is the available bandwidth of the Internet connection.
	Select the setting that matches the bandwidth of the Internet connection.
Options	
Respond to ICMP	The ICMP protocol is used by the ping and traceroute programs, and by network monitoring and diagnostic programs.
	If checked, the APC 3-in-1 Wireless Mobile Router will respond to ICMP packets received via the WAN port.
	If not checked, ICMP packets from the WAN port will be ignored. Disabling this option provides a slight increase in security.
Allow IPsec	The IPSec protocol is used to establish a secure connection, and is widely used by VPN (Virtual Private Networking) programs.
	If checked, IPSec connections from the Wireless LAN are allowed.
	If not checked, IPSec connections are blocked.

Allow PPTP	PPTP (Point-to-Point Tunneling Protocol) is widely used by VPN (Virtual Private Networking) programs.
	If checked, PPTP connections from the Wireless LAN are allowed.
	If not checked, PPTP connections are blocked.
Allow L2TP	L2TP is a protocol developed by Cisco for VPNs (Virtual Private Networks).
	If checked, L2TP connections from the Wireless LAN are allowed.
	If not checked, L2TP connections are blocked.

Chapter 6: Configuring the Router for Client Mode

This chapter describes how to configure the APC 3-in 1 Wireless Mobile Router for Client mode.

Note: It is not possible to connect to the APC 3-in-1 Wireless Mobile Router while it is in Client mode. Configuration for Client mode must be performed while in Config mode.

The following sections describe:

- Connecting the Computer to the Router
- The Client Mode Setup Screen
- The Wireless Client Profile Screen

Connecting the Computer to the Router

1. Use the mode selector switch on the side on the APC 3-in-1 Wireless Mobile Router to select Config mode.

2. Power up and wait for the Ethernet LED to turn on. This indicates the APC 3-in-1 Wireless Mobile Router is ready.

3. Establish a wired or wireless connection to the APC 3-in-1 Wireless Mobile Router (a wired connection is recommended).

    Wired - connect a standard LAN cable from the computer's 10/100BaseT Ethernet port to the Ethernet port on the APC 3-in-1 Wireless Mobile Router.

    Wireless - select the wireless network with the SSID `APC_Router`

4. Start the Web browser.

5. In the Location or Address bar, enter the following:

    `config.ap`

    Note: **This works only in Config mode**.

6. If the admin password has been set (on the System screen), a prompt appears for the username and password. Enter `Admin` for the user name, and `APC` for the password. The Mode Configuration screen appears.

7. Click the Config button for Client Mode, to view the Client Mode Setup screen.

In Client mode, it is possible to create a profile for each regularly used wireless network.

- A profile contains all settings for the wireless network, including the security settings.
- Only one (1) profile can be enabled at any time.
- If the wireless network defined by the currently-enabled profile is not available, then no wireless connection will be made.

The Client Mode Setup Screen
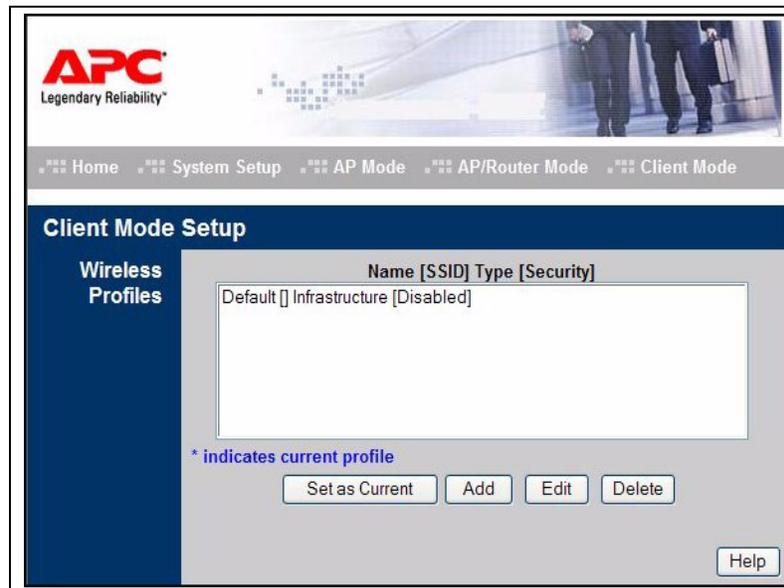
Figure 32. The Client Mode Setup Screen

The following table describes the fields on the Client Mode Setup screen.

Wireless Profiles	All available profiles are listed. For each profile, the following data is displayed:
	* If an * is displayed before the name of the profile, this indicates the profile is the current profile (it is enabled).
	Profile Name - The current profile name is displayed.
	[SSID] - The current SSID associated with this profile. After entering the SSID, click Set as Current.
	Type - The network type - Auto, Ad hoc, or Infrastructure.
	Security - The current security system (for example, WEP) is displayed.
Buttons	
Set as Current	Makes the selected profile the current profile. The selected profile will be enabled, and all other profiles will be disabled.
Add	Creates a new profile. This will display the Wireless Client Profile screen.
Edit	Changes the settings for the selected profile.
Delete	Deletes the selected profile.

The Wireless Client Profile Screen

This screen displays when the Add or Edit button on the Client Mode Setup screen is clicked.

Figure 33. The Wireless Client Profile Screen

The following table describes the fields on the Wireless Client Profile screen.

General	
Profile Name	Enter a unique name for this profile.
Network Type	Select the desired option:
	Auto - This device willl attempt to join a wireless network with the same SSID, regardless of whether the network is using Infrastructure mode or Ad hoc mode.
	Ad hoc - Only an Ad hoc netowrk will be used; Infrastructure networks will be ignored.
	Infrastructure - Only an Infrastructure network will be used; Ad hoc networks will be ignored.
SSID	Enter the SSID of the wireless network to join.
	In Infrastructure mode, this field may be left blank; this device will then join any available wireless network. This is possible only if the access point is broadcasting its SSID and the security settings for this profile match the security settings on the access point.
	If more than one access point is available with this profile, then the one with the strongest signal will be used.
Channel No.	This field determines which operating frequency will be used.
	If the network type is Auto or Infrastructure, only the Auto channel selection is available, because this station must use the channel used by the wireless network it is joining.
	For Ad hoc mode, set the channel to be used. However, to join an existing wireless network, this station must adopt the channel already in use. So this setting is meaningful only when creating a new wireless network.

Security	
Security Sytem	Select the desired option and then enter the settings for the selected method: **Disabled** - No security is used. Data is not encrypted before transmission. **WEP** - The 802.11b standard. Data is encrypted before transmission. Threre are 2 options: • **WEP 64 Bit** uses 64-bit encryption. Users must enter the WEP kep (10 Hex characters). • **WEP 128 Bit** uses 128-bit encryption. Users must enter the WEP key (26 Hex characters). **WPA-PSK**-like WEP, data is encrypted before transmission. WPA-PSK is a later standard than WEP and provides better security. If all wireless stations support WPA-PSK, use this rather than WEP. **Note: WPA-PSK is available only in Infrastructure mode.**

Chapter 7: Operation and Usage

This chapter provides information on what to consider when changing modes on the APC 3-in-1 Wireless Mobile Router and the status screens:

- When Changing Modes
- Using AP Mode
- Using AP/Router Mode
- Using Client Mode

The mode can be changed ONLY by using the mode selector switch on the side of the APC 3-in-1 Wireless Mobile Router. This switch has four positions:

> Switch position 1 — AP mode
>
> Switch position 2 — AP/Router mode
>
> Switch position 3 — Config mode
>
> Switch position 4 — Client mode

See Chapter 1, "Introduction," for details about each mode, and some tips on which mode to use in different environments.

Warning: Be careful when using the APC 3-in-1 Wireless Mobile Router for an extended period of time, as the unit can become extremely hot and may cause injury if not handled properly.

When Changing Modes

While modes can be changed at any time, note the following:

- Whenever the mode is changed, the APC 3-in-1 Wireless Mobile Router will restart. Wait for the restart to complete, which takes a few seconds. When the restart is completed, the Ethernet LED will be on.
- After changing modes, any wireless connections will be lost. On the computer, select the SSID (Wireless LAN) for the new mode in order to re-establish a wireless connection to the APC 3-in-1 Wireless Mobile Router.

Using AP Mode

1. Use a standard LAN cable to connect the Ethernet port on the APC 3-in-1 Wireless Mobile Router to the desired LAN.

2. Use the mode selector switch on the side on the APC 3-in-1 Wireless Mobile Router to select AP mode.

3. Wait for the restart to complete, and the Ethernet LED to come on.

4. On the computer, select the Wireless LAN matching the SSID of the APC 3-in-1 Wireless Mobile Router in AP mode. The default SSID for AP mode is:

   `APC_AP`

5. If necessary, configure the computer's Wireless interface to match the AP mode settings of the APC 3-in-1 Wireless Mobile Router.

6. Connect to the LAN via the APC 3-in-1 Wireless Mobile Router, and check the status of the computer's Wireless interface to see if the computer in use has obtained an IP address. This IP address must come from a server on the LAN; the APC 3-in-1 Wireless Mobile Router itself is transparent.

Note: If the Ethernet port is not connected to a functional LAN, then the computer will self-assign an IP address.

Using AP/Router Mode

1. Use a standard LAN cable to connect the Ethernet port to the desired LAN or WAN.

   Note: **To avoid potential problems, do not change the LAN/WAN connection from the APC 3-in-1 Wireless Mobile Router to the computer, or vice versa. Doing so may cause the connection to fail.**

2. Use the mode selector switch on the side on the APC 3-in-1 Wireless Mobile Router to select AP/Router mode.

3. Wait for the restart to complete and for the Ethernet LED to turn on.

4. On the computer, select the wireless LAN matching the SSID of the APC 3-in-1 Wireless Mobile Router in AP/Router mode. The default SSID for AP/Router mode is `default_Router`

5. If necessary, configure the computer's wireless interface to match the settings of the APC 3-in-1 Wireless Mobile Router's AP/Router mode.

6. Check the status of the computer's wireless interface to determine if the computer in use has obtained an IP address. If it has, then the wireless connection to the APC 3-in-1 Wireless Mobile Router is working correctly.

7. Access the LAN or WAN. If access fails, connect to the APC 3-in-1 Wireless Mobile Router (while still in AP/Router mode) to check its status and configuration.

Connecting in AP/Router Mode

1. Start the Web browser

2. In the Location or Address bar, enter `HTTP://` and the current IP address for the Wireless LAN, as set on the AP/Router screen. The default value is 192.168.1.1, for example:

   `HTTP://192.168.1.1`

3. If the password has been set (by default, it is blank), a prompt appears for the username and password. Enter `admin` for the user name, and enter the current password. The Mode Configuration screen appears. Click the Configure button for AP/Router Mode. The following screen appears.

Figure 34. The AP/Router Setup Screen (annotated)

4. Check the Ethernet (WAN) port status and settings.

If the APC 3-in-1 Wireless Mobile Router has not obtained a valid IP address — click the Configure button and change the settings as required. Check with the LAN administrator, if necessary, to determine the correct settings.

If the LAN/WAN is using the same IP address range as the Wireless LAN — change the wireless LAN AP/Router IP address to use a different address range.

If the connection is working, but some applications do not function correctly — it may be necessary to change some Advanced settings. See Chapter 5, "AP/Router Mode - Advanced Features" for information about Advanced settings.

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Using Client Mode

In Client mode, the Ethernet port of the APC 3-in-1 Wireless Mobile Router must be connected to the Ethernet port of the computer.

Before using Client mode, ensure that the Client mode configuration is correct. Configuration must be performed in Config mode. (Admin connections are not possible while in Client mode.) See Chapter 6, "Configuring the Router for Client Mode" for information about Client mode setup. If the configuration is correct, follow these steps to use Client mode:

1. Use a standard LAN cable to connect the Ethernet port on the APC 3-in-1 Wireless Mobile Router to the computer.

2. Use the mode selector switch on the side of the APC 3-in-1 Wireless Mobile Router to select Client mode.

3. Wait for the restart to complete, and the Ethernet LED to come on.

4. The APC 3-in-1 Wireless Mobile Router will then connect, if possible, to the Wireless LAN specified by the current client profile.

    Notes: 1. **It is not possible to connect to the APC 3-in-1 Wireless Mobile Router while in Client mode. Specify the desired Wireless LAN using Config mode.**

    2. **In Client mode, the APC 3-in-1 Wireless Mobile Router is transparent; it does not have an IP address.**

3. Check the properties of the computer's Ethernet connection to see if it has obtained a valid IP address.

    If using Infrastructure mode (connecting to an access point) — The IP address must be a valid IP address on the LAN to which the access point is connected.

    If using Ad hoc mode — The IP address should be self-assigned ("Auto-configuration"). If other computers in the Ad hoc Wireless LAN behave the same way, everyone will have compatible IP addresses.

Appendix A: Troubleshooting and Maintenance

This appendix covers the following common problems that may be encountered while using the APC 3-in-1 Wireless Mobile Router and some possible solutions to them:

• General Problems
• Wireless Access — AP or AP/Router Mode
• Router Mode

If problems still exist after performing these procedures, contact the dealer.

General Problems

Problem 1: Cannot connect to the APC 3-in-1 Wireless Mobile Router to configure it.

Solution: Try using the wired Ethernet connection and the APC 3-in-1 Wireless Mobile Router's IP address.

1. Connect a LAN cable from the APC 3-in-1 Wireless Mobile Router to the Ethernet port on the computer.

2. Set the APC 3-in-1 Wireless Mobile Router to Config mode.

3. Restart the APC 3-in-1 Wireless Mobile Router.

4. Restart the APC 3-in-1 Wireless Mobile Router.

5. Restart the computer, or perform a Release and Renew of the IP address (on the Ethernet Port).

6. Start the Web browser.

7. Enter the address as: `HTTP://192.168.1.1`

Wireless Access — AP or AP/Router Mode

Problem 1: The computer cannot locate the wireless access point.
Solution:

• Check the Broadcast SSID setting. Has it been disabled? If it has, the AP will not be listed in Available Wireless Networks. The computer must be configured manually using Infrastructure mode (not ad hoc mode).
• To determine if radio interference is causing a problem, see if connection is possible when close to the APC 3-in-1 Wireless Mobile Router.
  Remember that the connection range can be as little as 50 feet in poor environments.

Problem 2: Can locate the APC 3-in-1 Wireless Mobile Router, but cannot establish a connection.
Solution:

• The SSID on the computer and the wireless access point must be the same.
  Remember that the SSID is case-sensitive. So, for example "Workgroup" does NOT match "workgroup".
• Both the computer and the APC 3-in-1 Wireless Mobile Router must have the same settings for Wireless Security. The default setting for the APC 3-in-1 Wireless Mobile Router is disabled, so the wireless station will also have Wireless Security disabled.
  If Wireless Security is enabled on the APC 3-in-1 Wireless Mobile Router, wireless stations must use the same settings as the APC 3-in-1 Wireless Mobile Router.

If the APC 3-in-1 Wireless Mobile Router is set to Allow Trusted Stations only, then each of the Wireless stations must be in the Trusted Wireless Stations list, or access will be blocked.

Problem 3: The wireless connections speed is very slow.

Solution:

The wireless system will connect at the highest possible speed, depending on the distance and the environment. To obtain the highest possible connection speed, experiment with the following:

- Location of the APC 3-in1 Wireless Mobile Router
  Try adjusting the location and orientation of the APC 3-in-1 Wireless Mobile Router.
- Wireless Channel
  If interference is the problem, changing to another channel may show a marked improvement.
- Radio Interference
  Other devices may be causing interference. Try switching off other devices. Any "noisy" devices should be shielded or relocated.
- RF Shielding
  The environment may block transmission between the wireless stations. Thus, high-access speed is possible only when close to the APC 3-in-1 Wireless Mobile Router.

Router Mode

Problem 1: A time-out error occurs when a URL or IP address is entered.

Solution:

A number of things could be causing this problem. Try the following troubleshooting steps.

- Check if other computers work. If they do, ensure that the computer's IP settings are correct. If using a fixed (static) IP address, check the network mask, default gateway, and DNS as well as the IP address.
- If the computers are configured correctly, but are still not working, check the APC 3-in-1 Wireless Mobile Router. Ensure that it is connected and on. Connect to it and check its settings. (If connection is not possible, check the LAN and power connections.)
- If the APC 3-in-1 Wireless Mobile Router is configured correctly, check the Internet connection to see that it is working correctly.

Problem 2: Some applications do not run properly when using the APC 3-in-1 Wireless Mobile Router.

Solution:

The APC 3-in-1 Wireless Mobile Router processes the data passing through it, so it is not transparent.

Use the Special Applications feature to allow the use of Internet applications which do not function correctly.

If this does solve the problem, use the DMZ function. This should work with almost every application. However, be aware of the following:

- It is a security risk, since the firewall is disabled.
- Only one (1) device can use this feature.

Appendix B: About Wireless LANs

This appendix provides some background information about using wireless LANs (WLANs) and describes the following:

- Modes for Wireless LANs
- Basic Service Set (BSS) and Extended Service Set (ESS)
- Wired Equivalent Privacy (WEP)

Modes for Wireless LANs

Wireless LANs can work in either of two modes:

- Ad hoc Mode
- Infrastructure Mode

Ad hoc Mode

Ad hoc mode does not require an access point or a Wired (Ethernet) LAN. Wireless stations (such as notebook PCs with Wireless cards) communicate directly with each other.

Infrastructure Mode

In **Infrastructure mode**, one or more access points are used to connect Wireless stations (such as notebook PCs with Wireless cards) to a Wired (Ethernet) LAN. The Wireless stations can then access all LAN resources.

Note: Access points can only function in Infrastructure mode, and can communicate only with Wireless stations which are set to Infrastructure mode.

Basic Service Set (BSS) and Extended Service Set (ESS)

The following section describes the following types of wireless stations and the wireless channel:

- BSS
- ESS
- Channels

BSS

A group of wireless stations and a single access point, all using the same ID (SSID), form a Basic Service Set (BSS).

Note: Using the same SSID is essential. Devices with different SSIDs are unable to communicate with each other.

ESS

A group of wireless stations and multiple access points, all using the same ID (ESSID), form an Extended Service Set (ESS). Different access points within an ESS can use different channels. In fact, to reduce interference, it is recommended that adjacent access points use different channels.

As wireless stations are physically moved through the area covered by an ESS, they will automatically change to the access point which has the least interference or best performance. This capability is called Roaming. (Access points do not have or require roaming capabilities.)

Channels

The wireless channel sets the radio frequency used for communication.

- Access points use a fixed channel — Users select the channel used. This allows choice of a channel that provides the least interference and best performance. In the USA and Canada, 11 channels are available. If using multiple access points, it is better if adjacent access points use different channels to reduce interference.
- In Infrastructure mode — Wireless stations normally scan all channels, looking for an access point. If more than one access point is available, the one with the strongest signal is used. (This can only happen within an ESS.)
- If using Ad hoc mode (no access point) — All wireless stations should be set to use the same channel. However, most wireless stations

will still scan all channels to see if there is an existing ad hoc group they can join.

Wired Equivalent Privacy (WEP)

WEP (Wired Equivalent Privacy) is a standard for encrypting data before it is transmitted. This function is desirable because it is impossible to secure any data that is transmitted by wireless stations. However, if the data is encrypted, then it is meaningless unless the receiver can decrypt it. If WEP is used, the wireless stations and the access point must have the same settings for each of the following:

WEP	Off, 64 Bit, 128 Bit
Key	For 64 Bit encryption, the Key value must match. For 128 Bit encryption, the Key value must match
WEP Authentication	Open System or Shared Key.

To allow wireless stations to use the access point, the wireless stations and the access point must use the same settings, as follows:

Mode	On client wireless stations, the mode must be set to Infrastructure (The access point is always in Infrastructure mode.)
SSID (ESSID)	Wireless stations should use the same SSID (ESSID) as the access point to which they want to connect. Alternatively, the SSID can be set to Any or null (blank) to allow connection to any access point.
WEP	The wireless stations and the access point must use the same settings for WEP (Off, 64 Bit, 128 Bit). WEP Key — If WEP is enabled, the Key must be the same on the Wireless stations and the access point. WEP Authentication — If WEP is enabled, all wireless stations must use the same setting as the access point (either Open System or Shared Key).

Appendix C: Specifications

This appendix provides the following information:

- Multi-Function APC 3-in-1 Wireless Mobile Router Specifications
- Wireless Interface Specifications
- Regulatory Approvals
- Warranty
- Technical Support

Multi-Function APC 3-in-1 Wireless Mobile Router Specifications

Model	APC 3-in-1 Wireless Mobile Router
Dimensions	70 mm (W) * 105 mm(D) * 22 mm (H)
Operating Temperature	0° C to 40° C (32° F to 104° F)
Storage Temperature	-10° C to 70° C (14° F to 158° F)
Network Protocol	TCP/IP
Network Interface	1 * 10/100BaseT Ethernet 1 * Wireless Interface
LEDs	3
Power Adapter	5 V DC External

Wireless Interface Specifications

Standards	IEEE802.11g and IEEE802.11b WLAN, JEIDA 4.2, roaming support
Frequency	2.4 to 2.4835GHz (Industrial Scientific Medical Band)
Channels	Maximum 14 Channels, depending on regulatory authorities
Modulation	DSSS BPSK/QPSK/CCK, OFDM/CCK
Data Rate	Up to 54 Mbps
Coverage Area	Indoors: 10m @54 Mbps, 80m @6 Mbps or lower Outdoors: 30m @54 Mbps, 200m @6 Mbps or lower
Security	WEP 64Bit, WEP 128Bit, WPA-PSK
Output Power	13 dBm (typical)
Receiver Sensitivity	-80 dBm Min.

Regulatory Approvals

CE Standards

This product complies with the 73/23/EEC directives, including the following safety and EMC standards:

- EN300328-2
- EN301489-1/-17
- EN60950

CE Marking Warning

This is a Class B product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Warranty

The standard warranty is two (2) years from the date of purchase. APC's standard procedure is to replace the original unit with a factory reconditioned unit. APC will ship the replacement unit once the defective unit has been received by the repair department, or cross-ship upon the receipt of a valid credit card number. The customer pays for shipping the unit to APC. APC pays ground freight transportation costs to ship the replacement unit to the customer.

To register this product for purposes of the warranty, please go to **warranty.apc.com**.

Technical Support

For technical support:

- Go to the APC Web site at **www.apc.com/support**.
- In the U.S. call toll-free, 1-866-WIFI-APC (1-866-943-4272).

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