Air Live®
Powered by OvisLink Corp.

WN-300ARM-VPN

11n ADSL2/2+VPN Router

User's Manual

www.airlive.com

Declaration of Conformity

We, Manufacturer/Importer

OvisLink Corp.
5F., NO.6, Lane 130, Min-Chuan Rd.,
Hsin-Tien City, Taipei County, Taiwan

Declare that the product

11n ADSL VPN Router (Annex A / Annex B)
AirLive WN-300ARM-VPN
is in conformity with

In accordance with 1999/5 EC-R & TTE Directive

Clause	Description
■ **EN 300 328 v1.7.1 (2006-10)**	Electromagnetic compatibility and Radio spectrum Matters (ERM) Wideband transmission equipment operating in the 2.4GHz ISM banc And using spread spectrum modulation techniques; Part 1：technical Characteristics and test conditions Part2：Harmonized EN covering Essential requirements under article 3.2 of the R&TTE Directive
■ **EN 301 489-1 V1.6.1 (2005-09)**	Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic compatibility(EMC) standard for radio equipment anc
■ **EN 301 489-17 V1.2.1 (2002-08)**	Services; Part 17：Specific conditions for wideband data anc HIPERLAN equipment
■ **EN 50385:2002**	Product standard to demonstrate the Compliance of radio base stations and Fixed terminal stations for wireless Telecommunicatio System with the Basic restrictions or the reference levels related to human exposure to radio Frequency electromagnetic fields (110 MHz – 40 GHz) - General public
■ **EN 60950-1:2001/A11 :2004**	Safety for information technology equipment including electrica business equipmen
■ **CE marking**	CE

Manufacturer/Importer

Signature : Albert Yeh

Name : **Albert Yeh**

Position/ Title : **Vice President** (Stamp) Date： **2008/11/20**

AirLive WN-300ARM-VPN CE Declaration Statement

Country	Declaration	Country	Declaration
cs Česky [Czech]	OvisLink Corp. tímto prohlašuje, že tento AirLive WN-300ARM-VPN je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.	**lt** Lietuvių [Lithuanian]	Šiuo OvisLink Corp. deklaruoja, kad šis AirLive WN-300ARM-VPN atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
da Dansk [Danish]	Undertegnede OvisLink Corp. erklærer herved, at følgende udstyr AirLive WN-300ARM-VPN overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.	**nl** Nederlands [Dutch	Hierbij verklaart OvisLink Corp. dat het toestel AirLive WN-300ARM-VPN in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
de Deutsch [German]	Hiermit erklärt OvisLink Corp., dass sich das Gerät AirLive WN-300ARM-VPN in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet.	**mt** Malti [Maltese]	Hawnhekk, OvisLink Corp, jiddikjara li dan AirLive WN-300ARM-VPN jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Dirrettiva 1999/5/EC.
et Eesti [Estonian]	Käesolevaga kinnitab OvisLink Corp. seadme AirLive WN-300ARM-VPN vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.	**hu** Magyar [Hungarian]	Az OvisLink Corporation kijelenti, hogy az AirLive WN-300ARM-VPN megfelel az 1999/05/CE irányelv alapvető követelményeinek és egyéb vonatkozó rendelkezéseinek.
en English	Hereby, OvisLink Corp., declares that this AirLive WN-300ARM-VPN is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.	**pl** Polski [Polish]	Niniejszym OvisLink Corp oświadcza, że AirLive WN-300ARM-VPN jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.
es Español [Spanish]	Por medio de la presente OvisLink Corp. declara que el AirLive WN-300ARM-VPN cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.	**pt** Português [Portuguese]	OvisLink Corp declara que este AirLive WN-300ARM-VPN está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
el Ελληνική [Greek]	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ OvisLink Corp. ΔΗΛΩΝΕΙ ΟΤΙ AirLive WN-300ARM-VPN ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.	**sl** Slovensko [Slovenian]	OvisLink Corp izjavlja, da je ta AirLive WN-300ARM-VPN v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.
fr Français [French]	Par la présente OvisLink Corp. déclare que l'appareil AirLive WN-300ARM-VPN est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE	**sk** Slovensky [Slovak]	OvisLink Corp týmto vyhlasuje, že AirLive WN-300ARM-VPN spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
it Italiano [Italian]	Con la presente OvisLink Corp. dichiara che questo AirLive WN-300ARM-VPN è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.	**fi** Suomi [Finnish]	OvisLink Corp vakuuttaa täten että AirLive WN-300ARM-VPN tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen
lv Latviski [Latvian]	Ar šo OvisLink Corp. deklarē, ka AirLive WN-300ARM-VPN atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.	Íslenska [Icelandic]	Hér með lýsir OvisLink Corp yfir því að AirLive WN-300ARM-VPN er í samræmi við grunnkröfur og aðrar kröfur, sem gerðar eru í tilskipun 1999/5/EC.
sv Svenska [Swedish]	Härmed intygar OvisLink Corp. att denna AirLive WN-300ARM-VPN står I överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.	**no** Norsk [Norwegian]	OvisLink Corp erklærer herved at utstyret AirLive WN-300ARM-VPN er i samsvar med de grunnleggende krav og øvrige relevante krav i direktiv 1999/5/EF.

A copy of the full CE report can be obtained from the following address:

OvisLink Corp.
5F, No.6 Lane 130,
Min-Chuan Rd, Hsin-Tien City,
Taipei, Taiwan, R.O.C.

This equipment may be used in AT, BE, CY, CZ, DK, EE, FI, FR, DE, GR, HU, IE, IT, LV, LT, LU, MT, NL, PL, PT, SK, SI, ES, SE, GB, IS, LI, NO, CH, BG, RO, TR

Copyright

Trademarks

FCC Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. (Example - use only shielded interface cables when connecting to computer or peripheral devices).

FCC Radiation Exposure Statement

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

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.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

CE Declaration of Conformity

This equipment complies with the requirements relating to electromagnetic compatibility,
EN 300328 v1.7.1, EN 301489-1/-17, EN 50385, EN 60950, Class B.

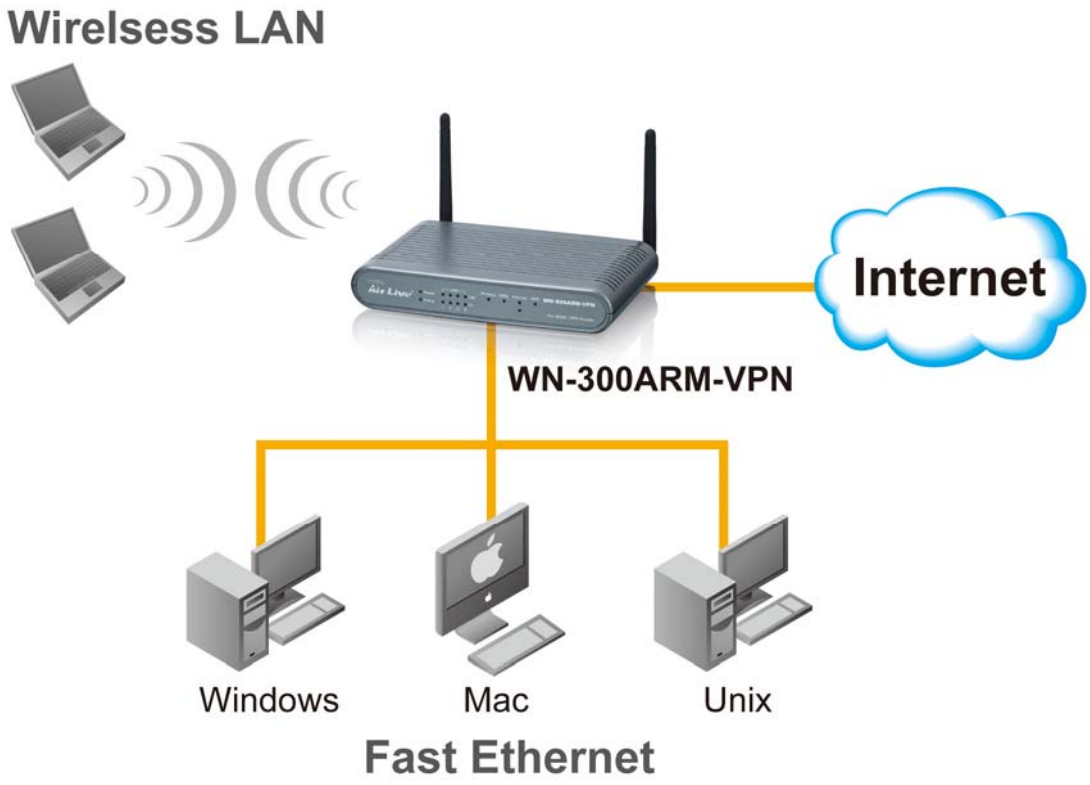
The specification is subject to change without notice.

Table of Contents

Chapter1. Introduction

Congratulations on the purchase of your new WN-300ARM-VPN, AirLive WN-300ARM-VPN. It is a high performance and multi-function device providing the following services:

- ***ADSL 2/2+ Modem Router***.
- ***Shared Broadband Internet Access*** for all LAN users.
- ***Wireless Access Point*** for 802.11n, 802.11b and 802.11g Wireless Stations.
- ***4-Port Switching Hub*** for 10BaseT or 100BaseT connections.



1.1 Features

Internet Access Features

- ***Shared Internet Access.*** All users on the LAN or WLAN can access the Internet through the WN-300ARM-VPN, using only a single external IP Address. The local (invalid) IP Addresses are hidden from external sources. This process is called NAT (Network Address Translation).
- ***Built-in ADSL Modem.*** The WN-300ARM-VPN has a built-in ADSL modem, supporting all common ADSL connections.
- ***IPoA, PPPoE, PPPoA, Direct Connection Support.*** The WN-300ARM-VPN supports all common connection methods.
- ***Auto-detection of Internet Connection Method.*** In most situations, the WN-300ARM-VPN can test your ADSL and Internet connection to determine the connection method used by your ISP.
- ***Fixed or Dynamic IP Address.*** On the Internet (ADSL port) connection, the WN-300ARM-VPN supports both Dynamic IP Address (IP Address is allocated on connection) and Fixed IP Address.

Advanced Internet Functions

- ***Application Level Gateways (ALGs).*** Applications which use non-standard connections or port numbers are normally blocked by the Firewall. The ability to define and allow such applications is provided, to enable such applications to be used normally.
- ***Port Triggering.*** This feature, also called Special Applications, allows you to use Internet applications which normally do not function when used behind a firewall.
- ***Port Forwarding.*** This feature allows Internet users to access Internet servers on your LAN. The required setup is quick and easy.
- ***Dynamic DNS Support.*** DDNS, when used with the Virtual Servers feature, allows users to connect to Servers on your LAN using a Domain Name, even if you have a dynamic IP address which changes every time you connect.
- ***URL Filter.*** Use the URL Filter to block access to undesirable Web sites by LAN users.
- ***Scheduling.*** Both the URL Filter and Firewall rules can be scheduled to operate only at certain times. This provides great flexibility in controlling Internet -bound traffic.
- ***Logs.*** Define what data is recorded in the Logs, and optionally send log data to a Syslog Server. Log data can also be E-mailed to you.
- ***VPN Pass through Support.*** PCs with VPN (Virtual Private Networking) software using PPTP, L2TP and IPSec are transparently supported - no configuration is required.
- ***Multi-PVC Support.*** A permanent virtual circuit (PVC) can provide a continuous connection between two or more points when needed without having to reserve a specific physical path in advance. In this way, many companies can share a common pool of circuits.

VPN Features

- ***IPSec Support.*** IPSec is the most common protocol.
- ***Easy Configuration.*** The configuration required to allow 2 Wireless ADSL Routers to establish a VPN connection between them is easy accomplished.
- ***IPSec VPN Tunnels*.** WN-300ARM-VPN supports to be created up to 5 IPSec tunnels.

Wireless Features

- ***Standards Compliant.*** The WN-300ARM-VPN complies with the IEEE 802.11g (DSSS) specifications for Wireless LANs.
- ***Supports Pre-N Wireless Stations.*** The 802.11n Draft standard provides for backward compatibility with the 802.11b standard, so 802.11n, 802.11b and 802.11g Wireless stations can be used simultaneously.
- ***WEP support.*** Support for WEP (Wired Equivalent Privacy) is included. Key sizes of 64 Bit and 128 Bit are supported. WEP encrypts any data before transmission, providing protection against snoopers.
- ***WPA-PSK support.*** Like WEP, WPA-PSK encrypts any data before transmission, providing protection against snoopers. The WPA-PSK is a later standard than WEP, and provides both easier configuration and greater security than WEP.
- ***WPA2-PSK support.*** Support for WPA2 is also included. WPA2 uses the extremely secure AES encryption method.
- ***802.1x Support.*** Support for 802.1x mode is included, providing for the industrial-strength wireless security of 802.1x authentication and authorization.
- ***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 your LAN.
- ***Simple Configuration.*** If the default settings are unsuitable, they can be changed quickly and easily.
- ***WPS Support.*** WPS (Wi-Fi Protected Setup) can simplify the process of connecting any device to the wireless network by using the push button configuration (PBC) on the Wireless Access Point, or entering a PIN code if there's no button.
- ***WDS Support***. Support for WDS (Wireless Distribution System) allows the Wireless Access Point to act as a Wireless Bridge. Both Point-to-Point and Multi-Point Bridge modes are supported.

LAN Features

- ***4-Port Switching Hub.*** The WN-300ARM-VPN incorporates a 4-port 10/100BaseT switching hub, making it easy to create or extend your LAN.
- ***DHCP Server Support.*** **D**ynamic **H**ost **C**onfiguration **P**rotocol provides a dynamic IP address to PCs and other devices upon request. The WN-300ARM-VPN can act as a **DHCP Server** for devices on your local LAN and WLAN.

Configuration & Management

- ***Easy Setup.*** Use your WEB browser from anywhere on the LAN or WLAN for configuration.
- ***Configuration File Upload/Download.*** Save (download) the configuration data from the WN-300ARM-VPN to your PC, and restore (upload) a previously-saved configuration file to it.
- ***Remote Management.*** The WN-300ARM-VPN can be managed from any PC on your LAN or Wireless LAN. And, if the Internet connection exists, it can also (optionally) be configured via the Internet.
- ***Network Diagnostics.*** You can use the WN-300ARM-VPN to perform a ***Ping*** or ***DNS lookup***.

Security Features

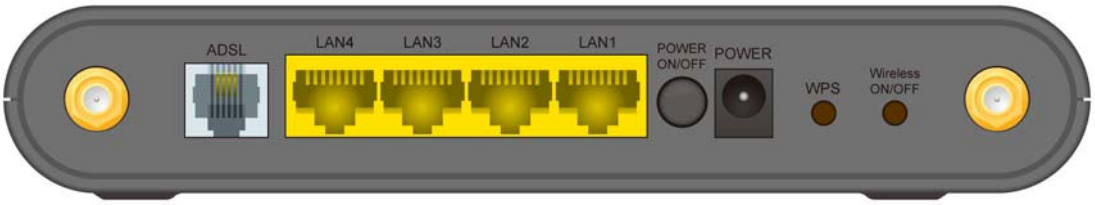
- ***Password - protected Configuration.*** Password protection is provided to prevent unauthorized users from modifying the configuration data and settings.
- ***Wireless LAN Security***. WPA-802.1x, WPA2-802.1x and WEP and Wireless access control by MAC address are all supported. The MAC-level access control feature can be used to prevent unknown wireless stations from accessing your LAN.
- ***NAT Protection.*** An intrinsic side effect of NAT (Network Address Translation) technology is that by allowing all LAN users to share a single IP address, the location and even the existence of each PC is hidden. From the external viewpoint, there is no network, only a single device - the WN-300ARM-VPN.
- ***Firewall.*** All incoming data packets are monitored and all incoming server requests are filtered, thus protecting your network from malicious attacks from external sources.
- ***Protection against DoS attacks.*** DoS (Denial of Service) attacks can flood your Internet connection with invalid packets and connection requests, using so much bandwidth and so many resources that Internet access becomes unavailable. The WN-300ARM-VPN incorporates protection against DoS attacks.

1.2 Front Panel and Rear Panel

Front-mounted LEDs

Power LED	**On (Green)** - Power on. **Off** - No power. **Flashing (Green)** - Device is rebooting.
Status	**On (Orange)** - Device error.
LAN	For each port, there are 2 LEDs • **On (Green)** - Corresponding LAN (hub) port is using 100BaseT. • **On (Orange)** - Corresponding LAN (hub) port is using 10BaseT. • **Off** - No active connection on the corresponding LAN (hub) port. • **Flashing** - Data is being transmitted or received via the corresponding LAN (hub) port.
Wireless	**On** - Wireless enabled. **Off** - No Wireless connections currently exist. **Flashing** - Data is being transmitted or received via the Wireless access point. This includes "network traffic" as well as user data.
ADSL	**On** - ADSL connection established. **Off** - No ADSL connection currently exists. **Flashing** - ADSL is synchronizing.
Internet	**On (Green) -** Internet connection is available. **Off -** No Internet connection available. **On (Orange) -** Authentication error.
WPS	When pressed, the LED will stay On for 10~15 seconds, then it will start blinking for 2 minutes. If any client is associated with the router successfully within 2 minutes, the LED will stay On, otherwise the LED will be Off.

Rear Panel



ADSL port	Connect this port to your ADSL line.
LAN 1~4	Use standard LAN cables (RJ45 connectors) to connect your PCs to these ports.
Power ON/OFF	Press this button to switch power on/off the device.
Power port	Connect the supplied power adapter here.
WPS Button	Push the WPS button on the device and on your other wireless device to perform WPS function that easily creates an encryption-secured wireless connection automatically.
Wireless ON/OFF	Press this button to switch wireless function on or off.

- ***To restore the factory default settings.*** Press the **Wireless** and **WPS** buttons simultaneously for 8 seconds, and wait the WN-300ARM-VPN to restart using the factory default values.

1.3 Packing List

The following items should be included:

- The WN-300ARM-VPN Unit
- Installation CD-ROM
- Quick Installation Guide
- 1 x RJ-45 Ethernet cable
- 1 x RJ-11 cable
- 1 RJ-11 to RJ45 cable (Annex B only)
- AC Adapter

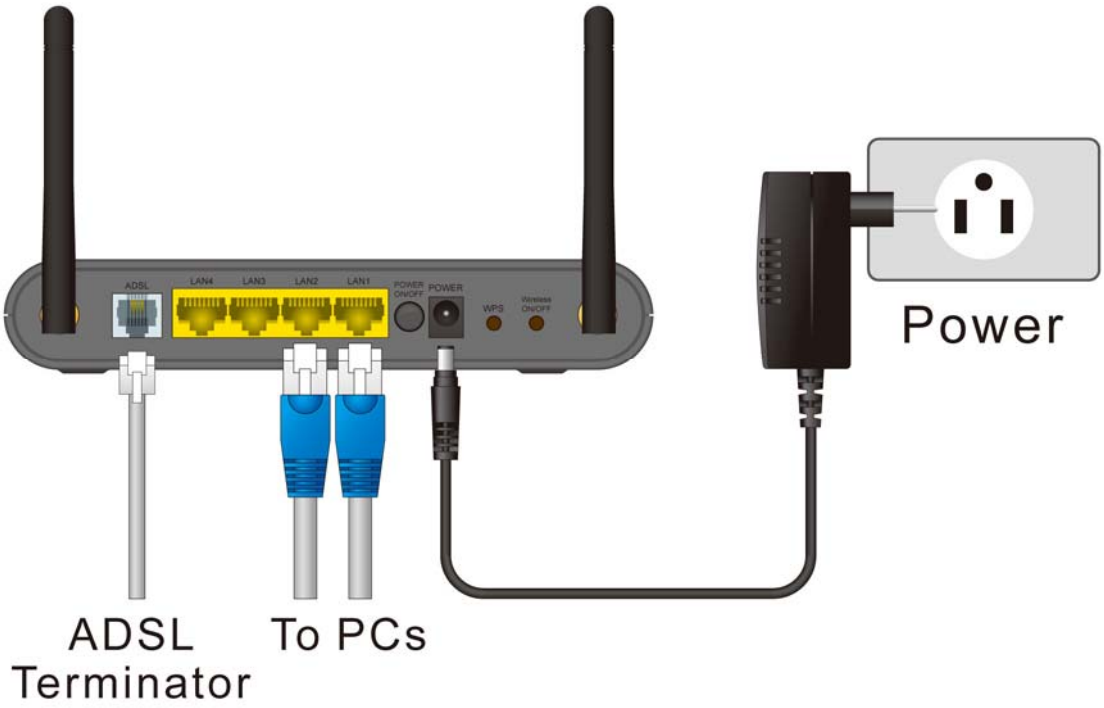
When you open your package, make sure all of the above items are included and not damaged. If you see that any components are damaged, please notify your dealer immediately.

Chapter2. Installation

Requirement

- Network cables. Use standard 10/100BaseT network (UTP) cables with RJ45 connectors.
- TCP/IP protocol must be installed on all PCs
- For Internet Access, an Internet Access account with an ISP, and a DSL connection.
- To use the Wireless Access Point, all Wireless devices must be compliant with the IEEE 802.11g, IEEE 802.11b or IEEE 802.11n Draft specifications.

Procedure



1. Choose an Installation Site

Select a suitable place on the network to install the WN-300ARM-VPN.

Notes:

For best Wireless reception and performance, the WN-300ARM-VPN should be positioned in a central location with minimum obstructions between the WN-300ARM-VPN and the PCs.

Also, if using multiple Access Points, adjacent Access Points should use different Channels.

2. **Connect LAN Cables**

   Use standard LAN cables to connect PCs to the Switching Hub ports on the WN-300ARM-VPN. Both 10BaseT and 100BaseT connections can be used simultaneously.

3. **Connect ADSL Cable**

   Connect the supplied ADSL cable from to the ADSL port on the WN-300ARM-VPN (the RJ11 connector) to the ADSL terminator provided by your phone company.

4. **Power Up**

   Connect the supplied power adapter to the WN-300ARM-VPN. Use only the power adapter provided. Using a different one may cause hardware damage.

5. **Check the LEDs**

   - The ***Power*** LED should be ON.
   - For the LAN (PC) connection, one of the LAN LEDs should be ON (provided the PC is also ON).
   - The ***Wireless*** LED should be ON.
   - The ***ADSL*** LED should be ON if ADSL line is connected.
   - The ***Internet*** (Green) LED may be OFF. After configuration, it should come ON.

6. **Router's default IP**

   - The default IP address of router's LAN port is:

     IP Address: 192.168.0.1

     Subnet Mask: 255.255.255.0

   - For Web Management, please configure client PC as DHCP client to obtain IP address from WN-300ARM-VPN.
   - After configuring the computer's IP properly, please enter the router's IP address "192.168.0.1" in Web browser to manage the router, type the proper user name and password to pass the router's authentication.

7. **User name and password**

   - User's name: ***admin***
   - Password: ***airlive***

Chapter3. Setup

Overview

This chapter describes the setup procedure for:

- Internet Access
- LAN configuration
- Wireless setup
- Assigning a Password to protect the configuration data.

PCs on your local LAN may also require configuration. For details, see ***Chapter 4 - PC Configuration*.**

Other configuration may also be required, depending on which features and functions of the WN-300ARM-VPN you wish to use. Use the table below to locate detailed instructions for the required functions.

To Do this:	**Refer to:**
Configure PCs on your LAN.	Chapter 4: PC Configuration
Check WN-300ARM-VPN operation and Status.	Chapter 5: Operation and Status
Use any of the following Advanced features: • Internet (DMZ, URL Filter) • Access Control • Dynamic DNS • Options • Schedule • Port Trigger • Port Forward • Port Range Forward • QoS • VPN (IPSec)	Chapter 6: Advanced Features

Use any of the following Administration Configuration settings or features: • PC Database • Config File • Logs • E-mail • Diagnostics • Remote Admin • Routing • Upgrade Firmware	Chapter 7 Advanced Administration

Configuration Program

The WN-300ARM-VPN contains an HTTP server. This enables you to connect to it, and configure it using your Web Browser. **Your Browser must support JavaScript**.

The configuration program has been tested on the following browsers:

- Netscape 7.1 or later.
- Mozilla 1.6 or later
- Internet Explorer 5.5 or later

Preparation

Before attempting to configure the WN-300ARM-VPN, please ensure that:

- Your PC can establish a physical connection to the WN-300ARM-VPN. The PC and the WN-300ARM-VPN must be directly connected (using the Hub ports on the WN-300ARM-VPN) or on the same LAN segment.
- The WN-300ARM-VPN must be installed and powered ON.
- If the WN-300ARM-VPN's default IP Address (192.168.0.1) is already used by another device, the other device must be turned OFF until the WN-300ARM-VPN is allocated a new IP Address during configuration.

Using your Web Browser

To establish a connection from your PC to the WN-300ARM-VPN:

1. After installing the WN-300ARM-VPN in your LAN, start your PC. If your PC is already running, restart it.
2. Start your WEB browser.
3. In the ***Address*** box, enter "HTTP://" and the IP Address of the WN-300ARM-VPN, as in this example, which uses the WN-300ARM-VPN's default IP Address:

   http://192.168.0.1

4. When prompted for the User name and Password, enter values as follows:
    - User name ***admin***
    - Password ***airlive***

Notes:

If you can't connect:

If the WN-300ARM-VPN does not respond, check the following:

- The WN-300ARM-VPN is properly installed, LAN connection is OK, and it is powered ON. You can test the connection by using the "Ping" command:
    - Open the MS-DOS window or command prompt window.
    - Enter the command:

      ping 192.168.0.1

      If no response is received, either the connection is not working, or your PC's IP address is not compatible with the WN-300ARM-VPN's IP Address. (See next item.)
- If your PC is using a fixed IP Address, its IP Address must be within the range 192.168.0.2 to 192.168.0.254 to be compatible with the WN-300ARM-VPN's default IP Address of 192.168.0.1. Also, the ***Network Mask*** must be set to 255.255.255.0.
- Ensure that your PC and the WN-300ARM-VPN are on the same network segment. (If you don't have a router, this must be the case.)

Ensure you are using the wired LAN interface. The Wireless interface can only be used if its configuration matches your PC's wireless settings.

3.1 Setup Wizard

The first time you connect to the WN-300ARM-VPN, you should run the ***Setup Wizard*** to configure the ADSL and Internet Connection.

1. Click the ***Setup Wizard*** link on the main menu
2. On the first screen, select ***VC 1 (Router - Primary Internet Connection)***, then click "Next"

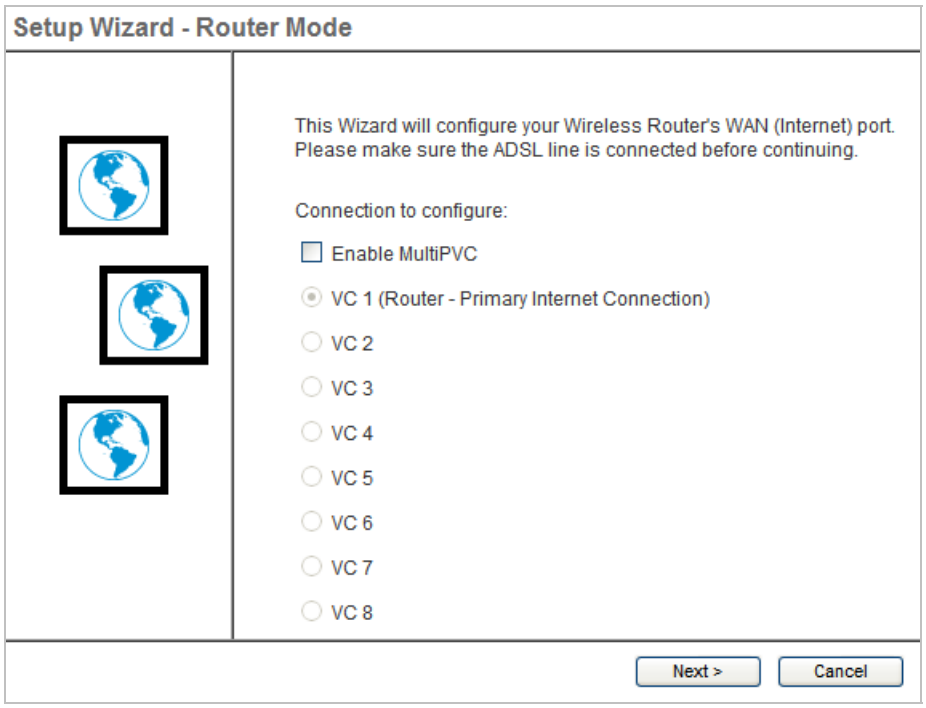


Figure: Setup Wizard Home Page

3. Select the method of determining the type of Internet connection, then click “Next”.

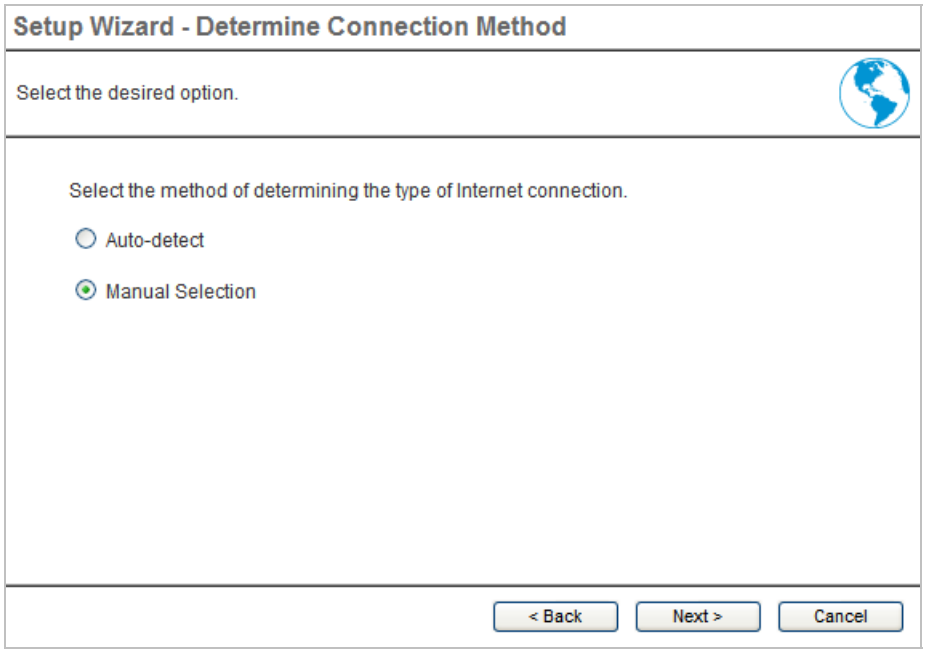


Figure: Select desired option

4. On the VC1 screen, shown below, enter the VPI and VCI values provided by your ISP, then click "Next".

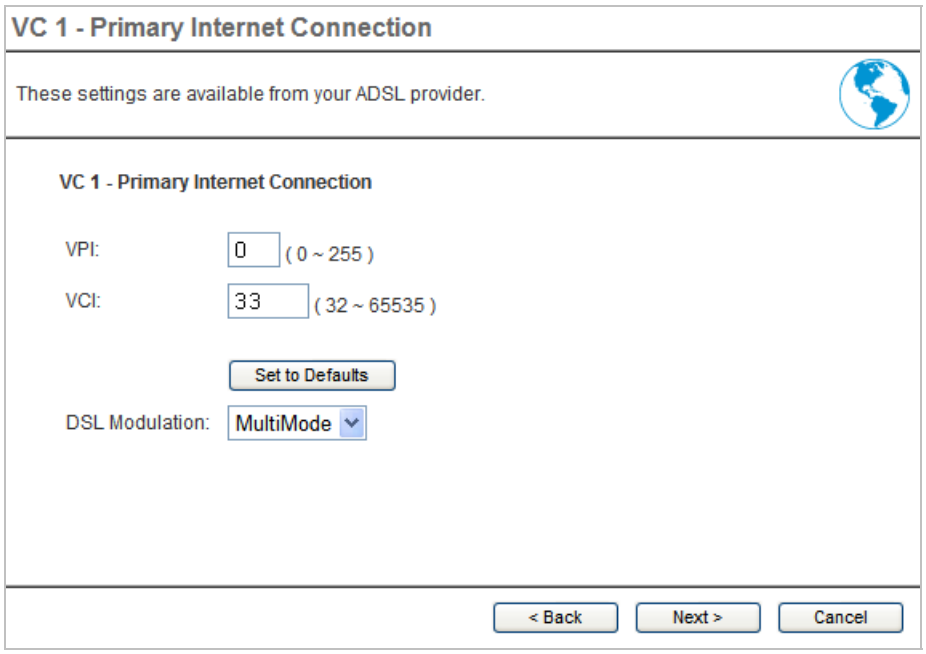


Figure: Setup Wizard - VC1

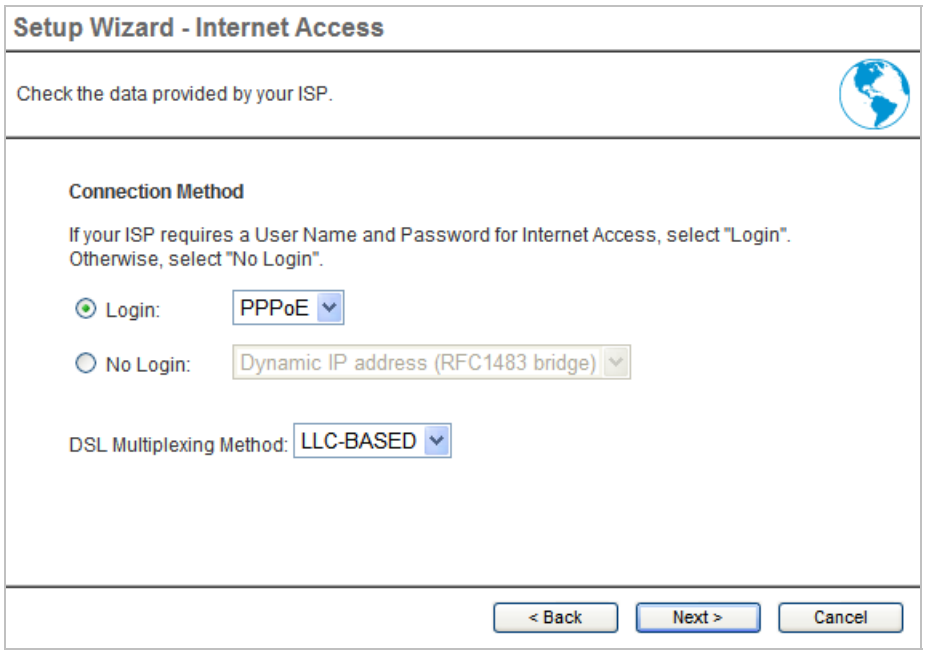


Figure: Setup Wizard - Internet Access

5. On the Internet Access Screen, shown above, select the correct connection type, as used by your ISP. Click "Next" and complete the configuration for your connection method.
   - You need the data supplied by your ISP. Your ISP's data will also have the ***DSL Multiplexing Method*** (LLC or VC)

The common connection types are explained in the following table.

Connection Type	Details	ISP Data required
Dynamic IP Address	Your IP Address is allocated automatically, when you connect to you ISP.	Often, none. Some ISP's may require you to use a particular ***Hostname*** or ***Domain*** name, or MAC (physical) address.
Static (Fixed) IP Address	Your ISP allocates a permanent IP Address to you. Usually, the connection is "Always on".	IP Address allocated to you, and related information, such as Network Mask, Gateway IP address, and DNS address.
PPPoE, PPPoA	You connect to the ISP only when required. The IP address is usually allocated automatically.	a) User name and password are always required. b) If using a Static (Fixed) IP address, you need the IP address and related information (Network Mask, Gateway IP address, and DNS address)
IPoA (IP over ATM)	Normally, the connection is "Always on".	IP Address allocated to you, and related information, such as Network Mask, Gateway IP address, and DNS address.

6. Step through the Wizard until finished.
7. On the final screen of the Wizard, run the test and check that an Internet connection can be established.
8. If the connection test fails:
    - Check all connections, and the front panel LEDs.
    - Check that you have entered all data correctly.

Configuring VCs

The WN-300ARM-VPN supports multiple VCs (Virtual Circuits) on the ADSL connection.
VC1 must be used for general-purpose Internet access. The other VCs are available for special purposes, such as Video-on-Demand.
You can only use these VCs if supported by your ISP and ADSL service provider. In that case, they will provide the necessary configuration data.

Notes:

Some ISP's allow multiple PPPoE connections. This allows multiple PCs to connect to the Internet using PPPoE client software. When using the WN-300ARM-VPN, multiple PPPoE connections are neither necessary nor supported.

To Configure additional VCs

1. Start the ***Setup Wizard*** again.
2. On the first screen, select VC2, and click "Next"
3. Configure the VC setup screen as described below, then click "Next".

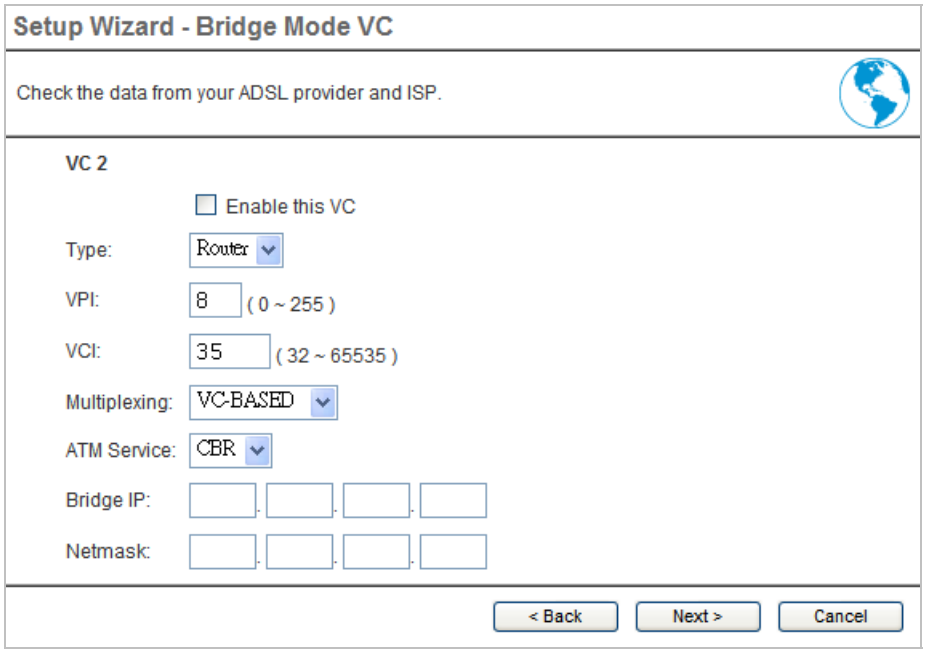


Figure: Setup Wizard - VC2

-1- Setup Wizard VC Screen

VC	The VC number is displayed
Enable	To use this VC, you must enable it by checking this checkbox.
VPI	Enter the VPI value provided by your ISP.
VCI	Enter the VPI value provided by your ISP.
Multiplexing	Select the multiplexing value provided by your ISP.
ATM Service	Select the multiplexing value provided by your ISP.
LAN IP Address	Enter the IP address of the device on your LAN which will receive the data on this VC. • For Video-on-Demand, this would be the IP address of your SetTop Box. • For VoIP, this would be the IP address of your VoIP TA. • Note that this IP address does not have to be in the same IP address range as other devices on your local LAN.

4. When finished, click "Next" and complete the Wizard.
5. After completing the Wizard, you can check the Status screen to see the VC has been corrected established.

Home Screen

After finishing the Setup Wizard, you will see the ***Home*** screen. When you connect in future, you will see this screen when you connect. An example screen is shown below.

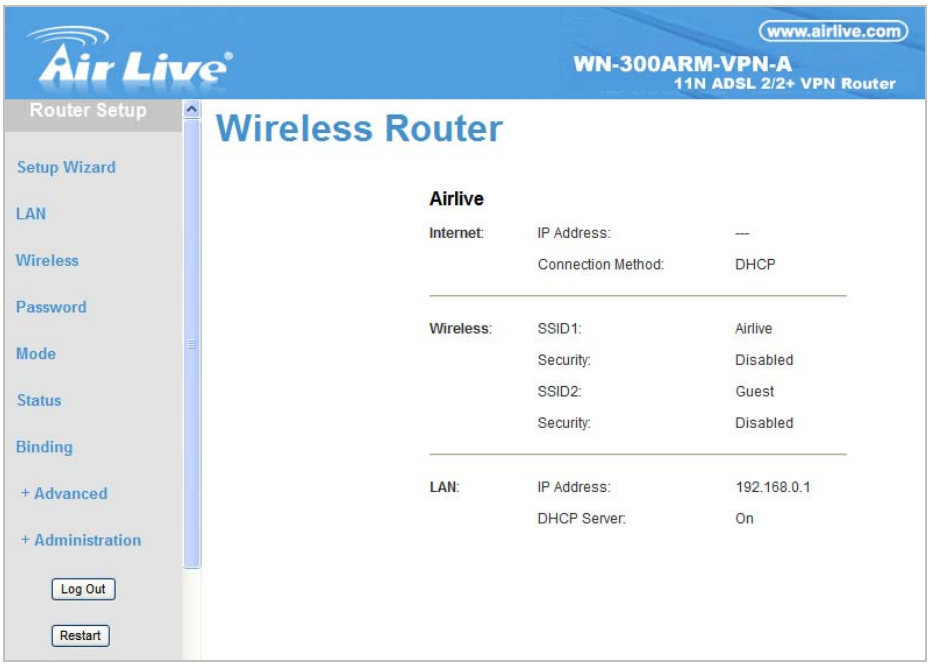


Figure: Home Screen

-2- Main Menu

The main menu, on the left, contains links to the most-commonly used screen. To see the links to the other available screens, click "Advanced" or "Administration".

The main menu also contains 2 buttons:

- **Log Out** - When finished, you should click this button to logout.
- **Restart** - When you configure part of feature, the router will need to restart system.

-3- Navigation & Data Input

- Use the menu bar on the left of the screen, and the "Back" button on your Browser, for navigation.
- Changing to another screen without clicking "Save" does NOT save any changes you may have made. You must "Save" before changing screens or your data will be ignored.

Notes:

On each screen, clicking the "Help" button will display help for that screen.

3.2 LAN Screen

Use the ***LAN*** link on the main menu to reach the LAN screen. An example screen is shown below.

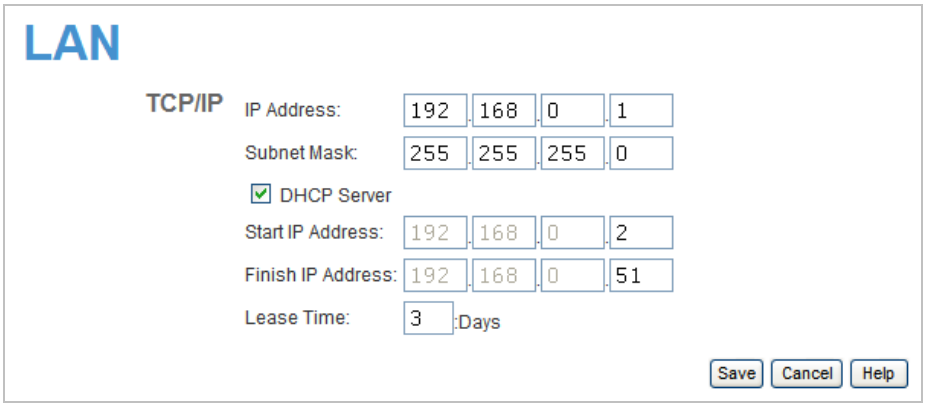


Figure 1: LAN Screen

-1- Data - LAN Screen

TCP/IP	
IP Address	IP address for the WN-300ARM-VPN, as seen from the local LAN. Use the default value unless the address is already in use or your LAN is using a different IP address range. In the latter case, enter an unused IP Address from within the range used by your LAN.
Subnet Mask	The default value 255.255.255.0 is standard for small (class "C") networks. For other networks, use the Subnet Mask for the LAN segment to which the WN-300ARM-VPN is attached (the same value as the PCs on that LAN segment).
DHCP Server	• If Enabled, the WN-300ARM-VPN will allocate IP Addresses to PCs (DHCP clients) on your LAN when they start up. The default (and recommended) value is Enabled. • If you are already using a DHCP Server, this setting must be Disabled, and the existing DHCP server must be re-configured to treat the WN-300ARM-VPN as the default Gateway. See the following section for further details. • The **Start IP Address** and **Finish IP Address** fields set the values used by the DHCP server when allocating IP Addresses to DHCP clients. This range also determines the number of DHCP clients supported. Enter the desired value for the **Lease Time**, which should be between 1 and 7. See the following section for further details on using DHCP.

DHCP

-2- What DHCP Does

A DHCP (Dynamic Host Configuration Protocol) **Server** allocates a valid IP address to a DHCP **Client** (PC or device) upon request.

- The client request is made when the client device starts up (boots).
- The DHCP Server provides the ***Gateway*** and ***DNS*** addresses to the client, as well as allocating an IP Address.
- The WN-300ARM-VPN can act as a **DHCP server**.
- Windows other non-Server versions of Windows will act as a DHCP **client**. This is the default Windows setting for the TCP/IP network protocol. However, Windows uses the term ***Obtain an IP Address automatically*** instead of "DHCP Client".
- You must NOT have two (2) or more DHCP Servers on the same LAN segment. (If your LAN does not have other Routers, this means there must only be one (1) DHCP Server on your LAN.)

-3- Using the WN-300ARM-VPN's DHCP Server

This is the default setting. The DHCP Server settings are on the ***LAN*** screen. On this screen, you can:

- Enable or Disable the WN-300ARM-VPN's *DHCP Server* function.
- Set the range of IP Addresses allocated to PCs by the DHCP Server function.

 **You can assign Fixed IP Addresses to some devices while using DHCP, provided that the Fixed IP Addresses are NOT within the range used by the DHCP Server.**

-4- Using another DHCP Server

You can only use one (1) DHCP Server per LAN segment. If you wish to use another DHCP Server, rather than the WN-300ARM-VPN's, the following procedure is required.

- Disable the DHCP Server feature in the WN-300ARM-VPN. This setting is on the LAN screen.
- Configure the DHCP Server to provide the WN-300ARM-VPN's IP Address as the ***Default Gateway***.

-5- To Configure your PCs to use DHCP

This is the default setting for TCP/IP for all non-Server versions of Windows.

See ***Chapter 4 - Client Configuration*** for the procedure to check these settings.

3.3 Wireless Screen

The WN-300ARM-VPN's settings must match the other Wireless stations.

Note that the WN-300ARM-VPN will automatically accept 802.11b, 11g and 11n connections, and no configuration is required for this feature.

To change the WN-300ARM-VPN's default settings for the Wireless Access Point feature, use the ***Wireless*** link on the main menu to reach the ***Wireless*** screen. An example screen is shown below.

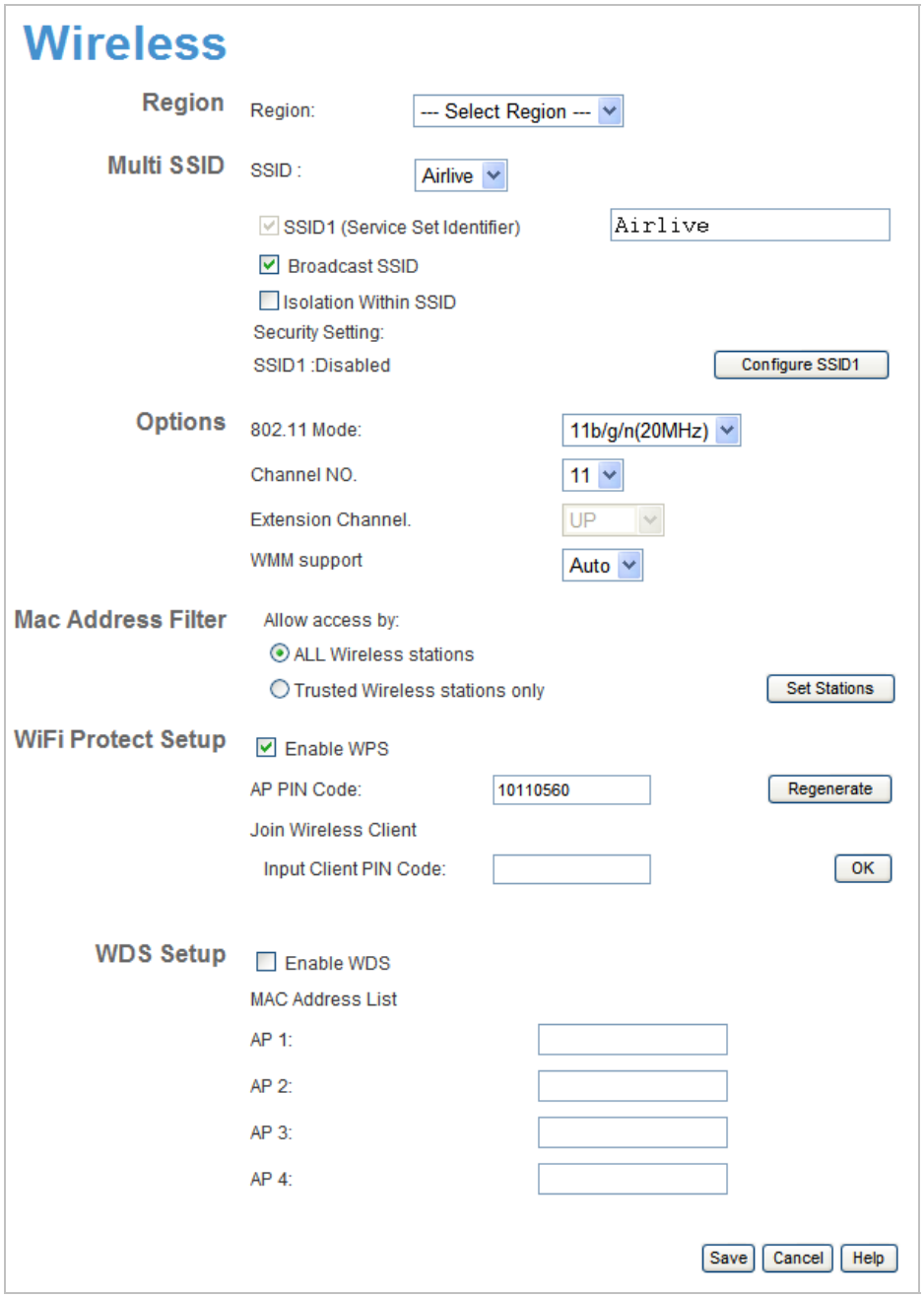


Figure: Wireless Screen

-1- Data - Wireless Screen

Region	
Region	Select the correct domain for your location. It is your responsibility to ensure: • That the WN-300ARM-VPN is only used in domains for which is licensed. • That you select the correct domain, so that only the legal channels for that domain can be selected.
Multi SSID	
SSID	With Multiple SSIDs, you can have 2 SSIDs on one AP. For example, a Guest SSID without encryption for visitors to have Internet access only, and a Admin SSID with encryption for private use to secure your company resources. Select the desired SSID from the list to configure.
SSID 1/2	This is also called the "Network Name". • If using an ESS (Extended Service Set, with multiple access points) this ID is called an ESSID (Extended Service Set Identifier). • To communicate, all Wireless stations should use the same SSID/ESSID.
Broadcast SSID	If enabled, the WN-300ARM-VPN will broadcast its SSID. This allows PCs and other wireless stations to detect this Access Point and use the correct SSID. If disabled, PC users will have to manually enter the SSID and other details of the wireless interface before they can connect to this Access Point.
Isolation within SSID	If Enabled, devices that have the same SSID will not be able to see each other.
Security Setting	The current Wireless security is displayed. The default value is Disabled.
Configure SSID 1/2 Button	Click this button to access the Wireless security sub-screen, and view or change the settings. See the following section for details.

Options	
802.11 Mode	Select the desired mode: • **Off** - Wireless function is off. • **11b** - Only 802.11b connections are available. 802.11g Wireless Stations will only be able to use the Wireless Router if they are fully backward-compatible with the 802.11b standard. • **11g** - Only 802.11g Wireless stations can use the Wireless Router. • **11b + 11g** - Both 802.11.g and 802.11b Wireless stations will be able to use the Wireless Broadband Router. • **11b/g/n (20MHz)** - 802.11.g, 802.11b and 802.11n (20MHz) Wireless stations can use the Wireless Broadband Router. • **11b/g/n (40MHz)** - 802.11.g, 802.11b and 802.11n (40MHz) Wireless stations can use the Wireless Broadband Router.
Channel No.	Select the Channel you wish to use on your Wireless LAN. • If you experience interference (shown by lost connections and/or slow data transfers) you may need to experiment with different channels to see which channel is the best. • If using multiple Access Points, adjacent Access Points should use different Channels to reduce interference.
Extension Channel	Select either UP or DOWN from the list. Noted that the feature is only available when 802.11 mode is set to 11b/g/n (40MHz).
WMM Support	System will auto enable the function. WMM works to classify the packets' priority, so the WN-300ARM-VPN can allow more packets with top priority passing through. This function can only be available when client's wireless card also supports WMM feature.

MAC Address Filter	
Allow access by …	Use this feature to determine which Wireless stations can use the Access Point. The options are: • **All Wireless Stations** - All wireless stations can use the access point, provided they have the correct SSID and security settings. • **Trusted Wireless stations only** - Only wireless stations you designate as "Trusted" can use the Access Point, even if they have the correct SSID and security settings. This feature uses the MAC address to identify Wireless stations. The MAC address is a low-level network identifier which is unique to each PC or network device. To define the trusted wireless stations, use the "Set Stations" button.
Set Stations Button	Click this button to manage the trusted PC database.
WiFi Protect Setup	
Enable WPS	Enable this if you want to use Wireless WPS function.
AP PIN Code	Use the default displayed value or click the ***Regenerate*** button to have the new pin code in the field.
Input Client PIN Code	Enter the client's PIN code in the field and click *OK* to add the client device.
WDS	
Enable WDS	This feature allows you to make a completely wireless network by using multiple access points without connecting them with a wire LAN. In order to make the WDS working successfully, the access point must use the same channel, SSID, as well as the wireless encryption method.
MAC Address List	Enter the MAC address(es) of the AP(s) into the fields to allow the following access points to be connected to the wireless router.

3.4 Wireless Security

This screen is accessed by clicking the "Configure SSID" button on the *Wireless* screen. There are 3 options for Wireless security:

- **Disabled** - no data encryption is used.
- **WEP** - data is encrypted using the WEP standard.
- **WPA-PSK** - data is encrypted using the WPA-PSK standard. This is a later standard than WEP, and provides much better security than WEP. If all your Wireless stations support WPA-PSK, you should use WPA-PSK rather than WEP.
- **WPA2-PSK** - This is a further development of WPA-PSK, and offers even greater security, using the AES (Advanced Encryption Standard) method of encryption.
- **Mixed WPA-PSK/WAP2-PSK** - This method, sometimes called "Mixed Mode", allows clients to use EITHER WPA-PSK OR WPA2-PSK.
- **WPA-802.1x** - This version of WPA requires a Radius Server on your LAN to provide the client authentication according to the 802.1x standard. Data transmissions are encrypted using the WPA standard.

  If this option is selected:

  - This Access Point must have a "client login" on the Radius Server.
  - Each user must have a "user login" on the Radius Server.
  - Each user's wireless client must support 802.1x and provide the login data when required.
  - All data transmission is encrypted using the WPA standard. Keys are automatically generated, so no key input is required.

WEP Wireless Security

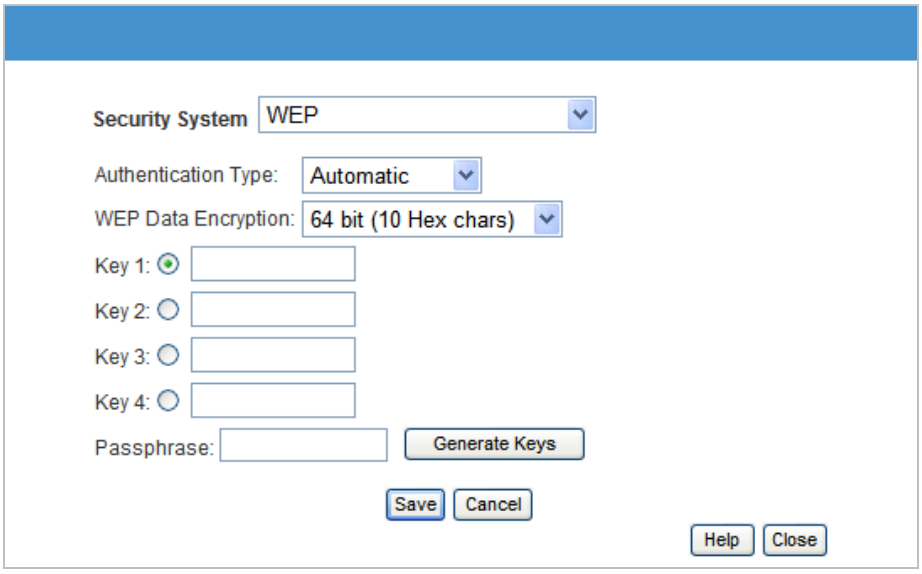


Figure: WEP

-1- Data - WEP Screen

WEP Data Encryption	
Authentication Type	Normally, this should be left at the default value of "Automatic". If changed to "Open System" or "Shared Key", ensure that your Wireless Stations use the same setting.
WEP Data Encryption	Select the desired option, and ensure the Wireless Stations use the same setting. • **64 Bit** - data is encrypted, using the default key, before being transmitted. You must enter at least the default key. For 64 Bit Encryption, the key size is 10 chars in HEX (0~9 and A~F). • **128 Bit** - data is encrypted, using the default key, before being transmitted. You must enter at least the default key. For 128 Bit Encryption, the key size is 26 chars in HEX (0~9 and A~F).
Default Key	Select the key you wish to be the default. Transmitted data is ALWAYS encrypted using the Default Key; the other Keys are for decryption only. You must enter a **Key Value** for the **Default Key**.
Key Value	Enter the key value or values you wish to use. The **Default Key** is required, the other keys are optional. Other stations must have the same key.
Passphrase	If desired, you can generate a key from a phrase, instead of entering the key value directly. Enter the desired phrase, and click the "Generate Keys" button.

WPA-PSK Wireless Security

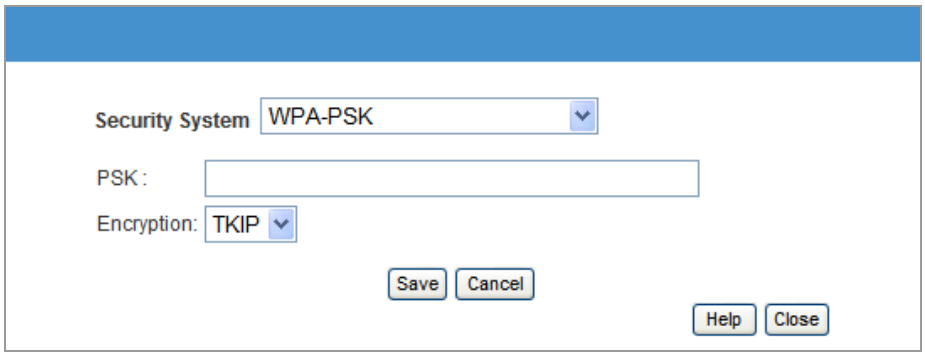


Figure: WPA-PSK

-2- Data - WPA-PSK Screen

WPA-PSK Data Encryption	
PSK	Enter the PSK (network key). Data is encrypted using a key derived from the network key. Other Wireless Stations must use the same network key. The PSK must be from 8 to 63 characters in length.
Encryption	The WPA-PSK standard allows different encryption methods to be used. Select the desired option. Wireless Stations must use the same encryption method.

WPA2-PSK Wireless Security

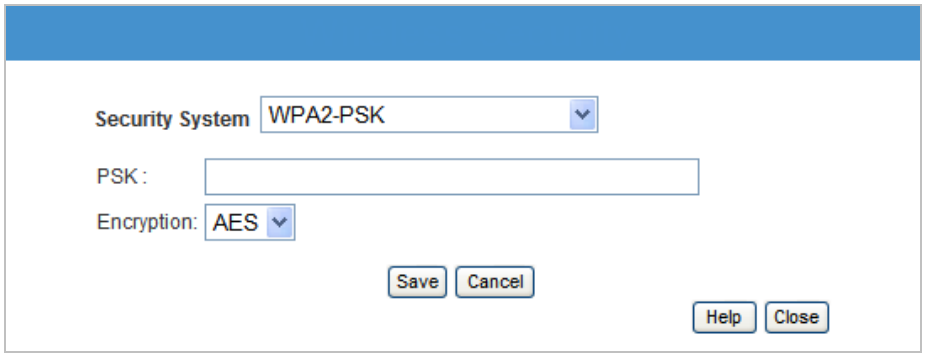


Figure: WPA2-PSK

-3- Data - WPA2-PSK Screen

WPA2-PSK Data Encryption	
Authentication	This is a further development of WPA-PSK, and offers even greater security.
PSK	Enter the PSK (network key). Data is encrypted using a key derived from the network key. Other Wireless Stations must use the same network key. The PSK must be from 8 to 63 characters in length.
Encryption	The WPA2-PSK standard allows different encryption methods to be used. Select the desired option. Wireless Stations must use the same encryption.

Mixed WPA-PSK/WAP2-PSK Wireless Security

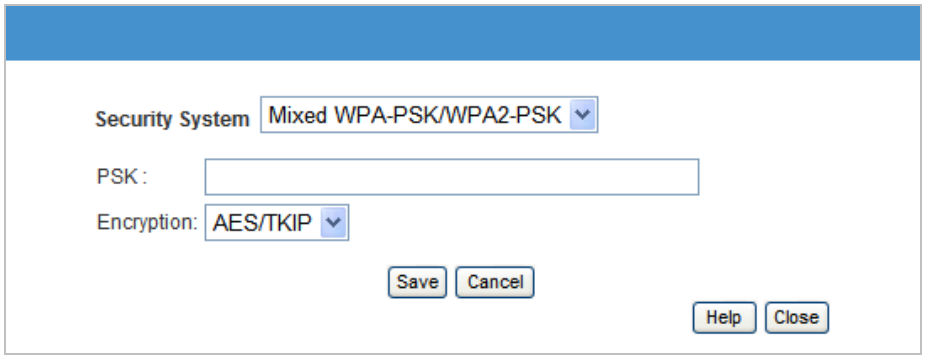


Figure: Mixed WPA-PSK/WAP2-PSK

-4- Data - Mixed WPA-PSK/WAP2-PSK Screen

Mixed WPA-PSK/WPA2-PSK Data Encryption	
Authentication	This method, sometimes called "Mixed Mode", allows clients to use EITHER WPA-PSK OR WPA2-PSK.
PSK	Enter the PSK (network key). Data is encrypted using a key derived from the network key. Other Wireless Stations must use the same network key. The PSK must be from 8 to 63 characters in length.
Encryption	The Mixed WPA-PSK/WAP2-PSK standard allows different encryption methods to be used. Select the desired option. Wireless Stations must use the same encryption method.

WPA-802.1x Wireless Security

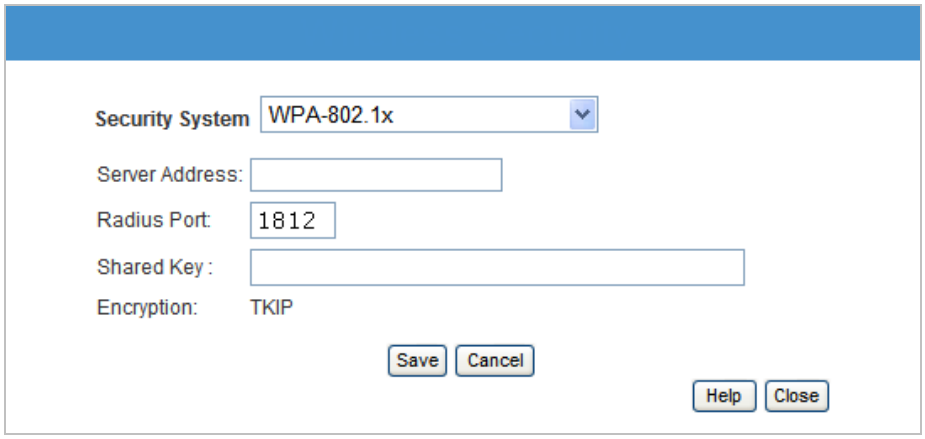


Figure: WPA-802.1x

-5- Data - WPA-802.1x Screen

WPA-802.1x Data Encryption	
Server Address	Enter the server address here.
Radius Port	Enter the port number used for connections to the Radius Server.
Shared Key	Enter the shared key. Data is encrypted using a key derived from the network key. Other Wireless Stations must use the same key. The key must

	be from 8 to 63 characters in length.
Encryption	The encryption method is TKIP. Wireless Stations must also use TKIP.

Trusted Wireless Stations

This feature can be used to prevent unknown Wireless stations from using the Access Point. This list has no effect unless the setting ***Allow access by trusted stations only*** is enabled.

To change the list of trusted wireless stations, use the ***Modify List*** button on the ***Access Control*** screen. You will see a screen like the sample below.

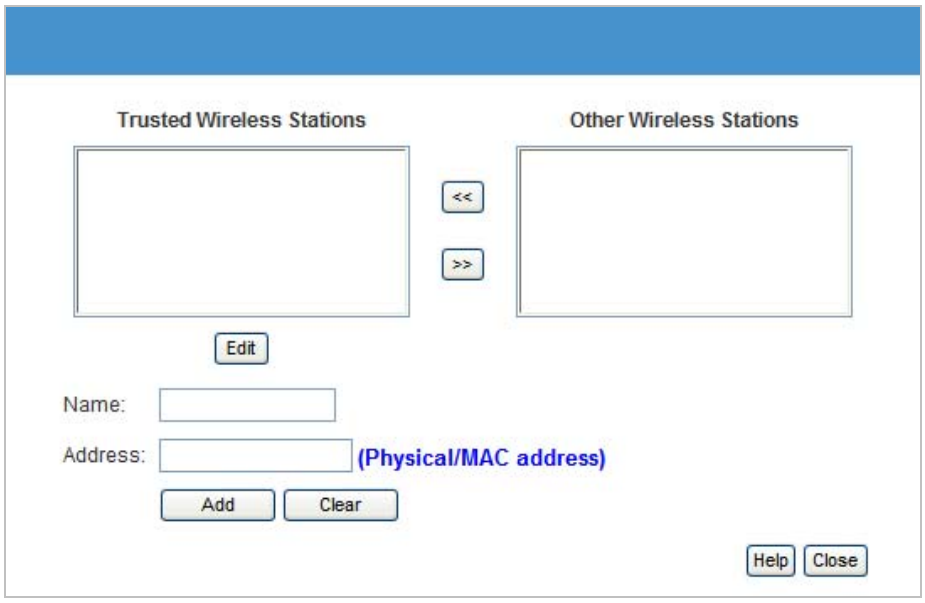


Figure: Trusted Wireless Stations

-6- Data - Trusted Wireless Stations

Trusted Wireless Stations	
Trusted Wireless Stations	This lists any Wireless Stations which you have designated as “Trusted”.
Other Wireless Stations	This list any Wireless Stations detected by the Access Point, which you have not designated as "Trusted".
Name	The name assigned to the Trusted Wireless Station. Use this when adding or editing a Trusted Station.
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.
Edit	Use this to change an existing entry in the "Trusted Stations" list: 1. Select the Station in the ***Trusted Station*** 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 your changes.
Add (Update)	To add a Trusted Station which is not in the "Other Wireless Stations" list, enter the required data and click this button. When editing an existing Wireless Station, this button will change from ***Add*** to ***Update***.
Clear	Clear the *Name* and ***Address*** fields.

3.5 Password Screen

The password screen allows you to assign a password to the WN-300ARM-VPN.

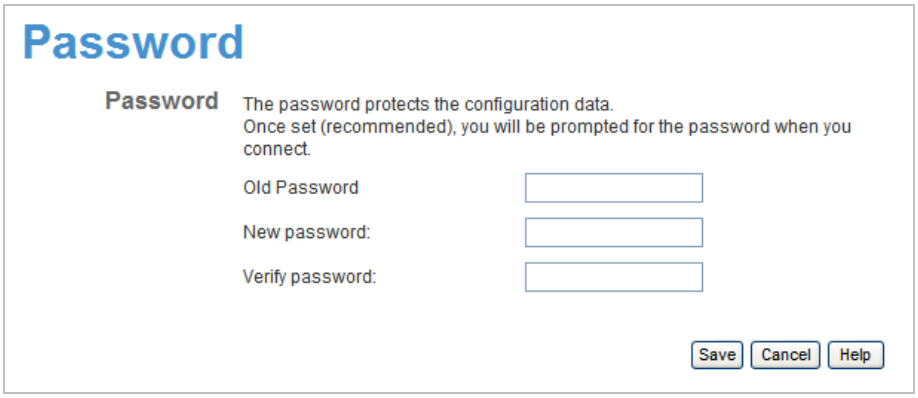


Figure: Password Screen

Old Password	Enter the existing password in this field.
New password	Enter the new password here.
Verify password	Re-enter the new password here.

You will be prompted for the password when you connect, as shown below.

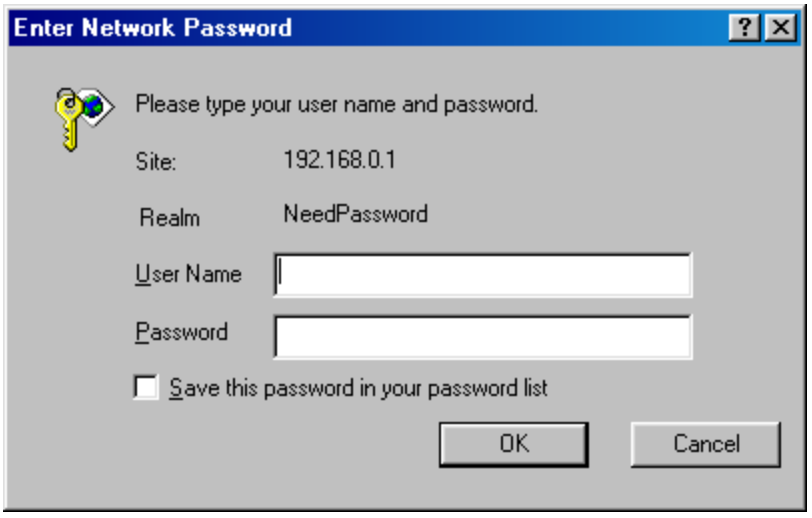


Figure: Password Dialog

- The "User Name" is always admin
- Enter the password for the WN-300ARM-VPN, as set on the ***Password*** screen above.

3.6 Mode Screen

Use this screen to change the mode between Router mode and Modem (Bridge) mode.

Figure: Mode Screen

Select the desired option, and click "Save".

Router	Both the ADSL Modem and the Router features are operational. In this mode, this device can provide shared Internet Access to all your LAN users. Also, by default, it acts a DHCP Server, providing an IP address and related information to all Wireless and LAN users.
Modem	Only the ADSL Modem component is operational. • All Router features are disabled. This device is "transparent" - it does not perform any operations or make any changes to the network traffic passing through it. • You need to have a DHCP Server on your LAN to provide IP addresses to the Wireless clients using this Access Point. • All traffic received on either the Wireless or LAN interface will be sent over the ADSL connection.

Notes:

- Generally, you should NOT use modem mode. Only select this mode if you are sure this is what you want.
- After changing the mode, this device will restart, which will take a few seconds. The menu will also change, depending on the mode you are in.
- The Wireless Access Point can function in either Router or Modem mode. But generally it is not a good idea to combine a Modem with an Access Point, because all data received from the wireless stations will be sent over the modem connection. (Since the modem is transparent, it does not examine the traffic to determine whether the traffic is for the LAN or the WAN.)
- For details on using Modem Mode, see Chapter 8.

3.7 Binding Screen

The Binding feature is for MultiPVC. If you have enabled multiple PVCs and set the WAN connection methods individually, you can bind the LAN Ports and WLAN Port to them using this page. While binding one port to the selected PVC, this port would connect Internet via this PVC. The PVC port should be configured first or the bound port will not access the Internet.

While in Modem mode, Bridge connection can only be set for all the PVCs. You can click ***MultiPVC Details*** in the Status screen to see all the information.

Note: When you switch to Modem mode from Router (Modem+Router), all the connection methods would be changed to Bridge. You may need to reconfigure the Bridge IP/Netmask through wizard pages if you want to access the WEB Server via the relevant port.

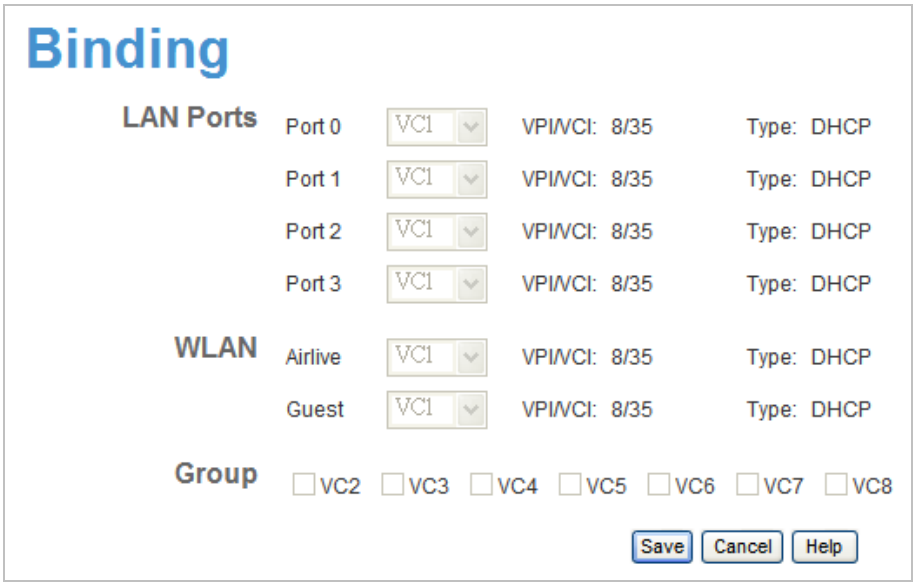


Figure: Binding Screen

-1- Data - Binding Screen

Port 0	This port is always bound to the Primary Internet Connection VC1.
Port 1~3	These ports can be bound to VC2~VC8. If it is not enabled, it would be bound to VC1 as default.
WLAN	The WLAN Port can be bound to VC2~VC8. If it is not enabled,, it would be bound to VC1 as default.
VPI/VCI	It displays the current VPI/VCI information of the selected PVC.
Type	It displays the current connection type of the selected PVC.
Group	It shows the group for one port when you have selected a PVC for this port.

Chapter4. PC Configuration

Overview

For each PC, the following may need to be configured:

- TCP/IP network settings
- Internet Access configuration
- Wireless configuration

4.1 Windows Clients

This section describes how to configure Windows clients for Internet access via the WN-300ARM-VPN.

The first step is to check the PC's TCP/IP settings.

The WN-300ARM-VPN uses the TCP/IP network protocol for all functions, so it is essential that the TCP/IP protocol be installed and configured on each PC.

TCP/IP Settings - Overview

If using the default WN-300ARM-VPN settings, and the default Windows TCP/IP settings, no changes need to be made.

- By default, the WN-300ARM-VPN will act as a DHCP Server, automatically providing a suitable IP Address (and related information) to each PC when the PC boots.
- For all non-Server versions of Windows, the default TCP/IP setting is to act as a DHCP client.

If using a Fixed (specified) IP address, the following changes are required:

- The *Gateway* must be set to the IP address of the WN-300ARM-VPN.
- The *DNS* should be set to the address provided by your ISP.

 **If your LAN has a Router, the LAN Administrator must re-configure the Router itself. Refer to *Chapter 8 - Advanced Setup* for details.**

Checking TCP/IP Settings - Windows NT4.0

1. Select ***Control Panel - Network***, and, on the ***Protocols*** tab, select the TCP/IP protocol, as shown below.

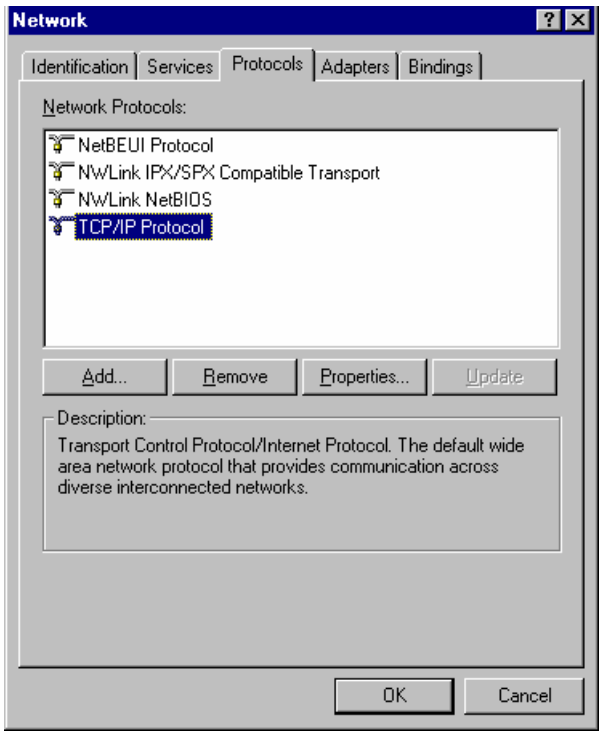


Figure: Windows NT4.0 - TCP/IP

2. Click the ***Properties*** button to see a screen like the one below.

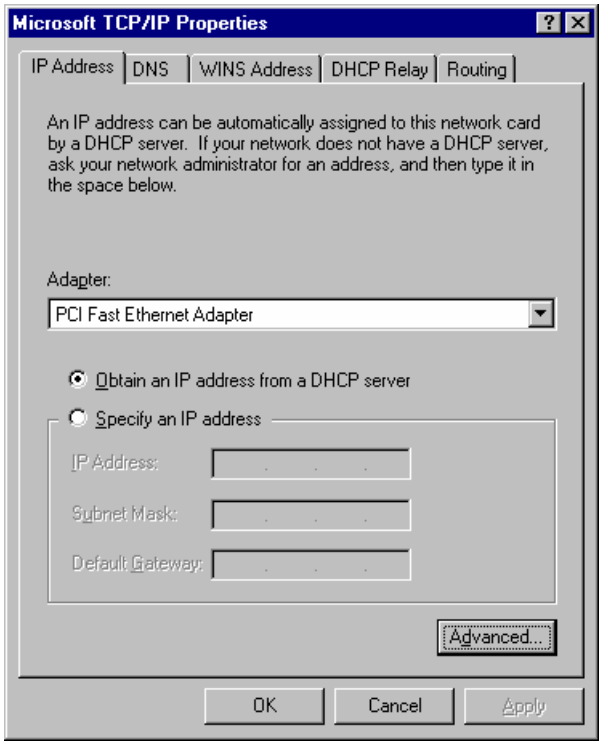


Figure: Windows NT4.0 - IP Address

3. Select the network card for your LAN.
4. Select the appropriate radio button - ***Obtain an IP address from a DHCP Server*** or ***Specify an IP Address***, as explained below.

Obtain an IP address from a DHCP Server

This is the default Windows setting. **Using this is recommended**. By default, the WN-300ARM-VPN will act as a DHCP Server.

Restart your PC to ensure it obtains an IP Address from the WN-300ARM-VPN.

Specify an IP Address

If your PC is already configured, check with your network administrator before making the following changes.

1. The ***Default Gateway*** must be set to the IP address of the WN-300ARM-VPN. To set this:
   - Click the ***Advanced*** button on the screen above.
   - On the following screen, click the ***Add*** button in the ***Gateways*** panel, and enter the WN-300ARM-VPN's IP address, as shown in below.
   - If necessary, use the ***Up*** button to make the WN-300ARM-VPN the first entry in the ***Gateways*** list.

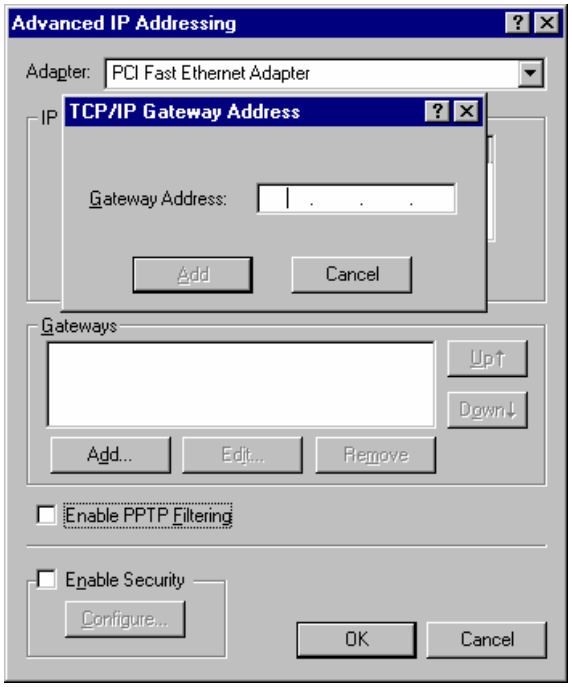


Figure: Windows NT4.0 - Add Gateway

2. The DNS should be set to the address provided by your ISP, as follows:
   - Click the DNS tab.
   - On the DNS screen, shown below, click the ***Add*** button (under ***DNS Service Search Order***), and enter the DNS provided by your ISP.

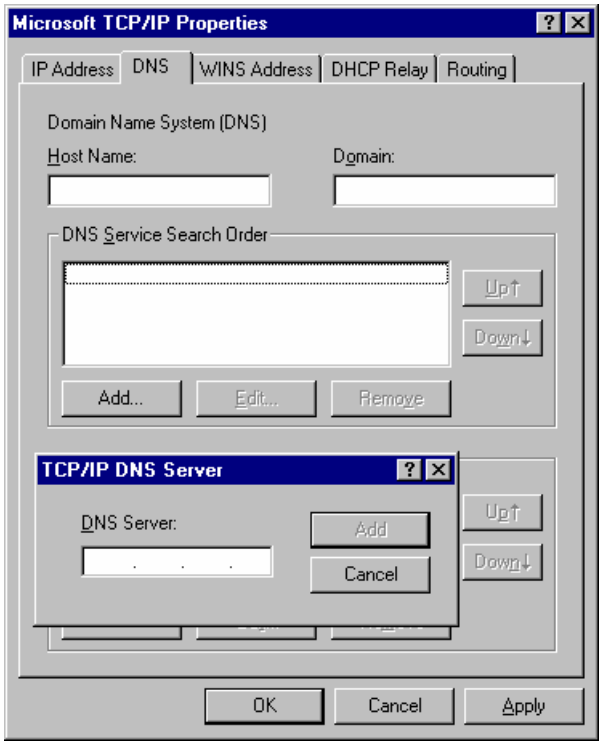


Figure: Windows NT4.0 - DNS

Checking TCP/IP Settings - Windows 2000

1. Select ***Control Panel - Network and Dial-up Connection***.
2. Right - click the ***Local Area Connection*** icon and select ***Properties***. You should see a screen like the following:

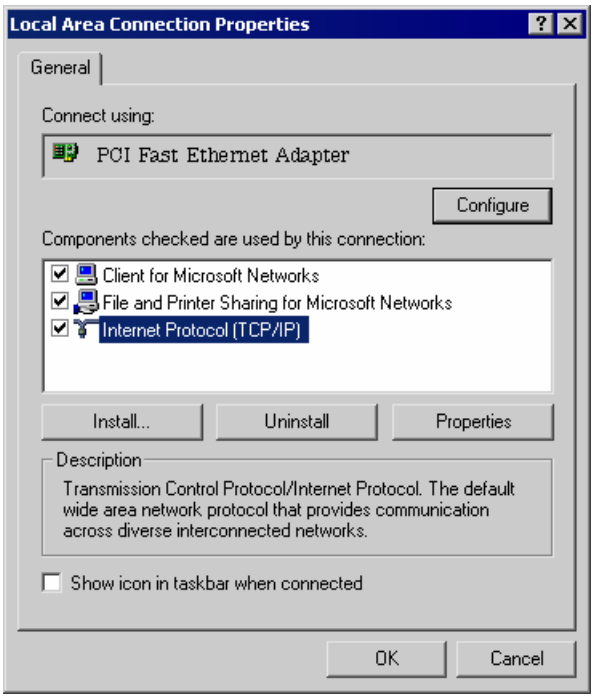


Figure: Network Configuration (Win 2000)

3. Select the ***TCP/IP*** protocol for your network card.
4. Click on the ***Properties*** button. You should then see a screen like the following.

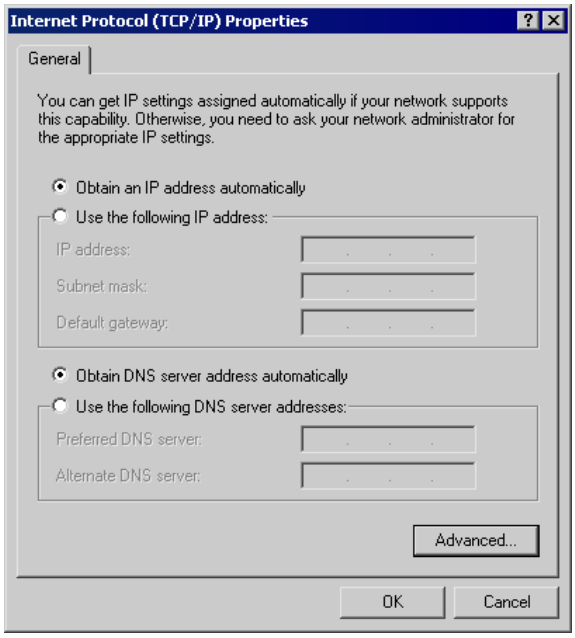


Figure: TCP/IP Properties (Win 2000)

5. Ensure your TCP/IP settings are correct, as described below.

Using DHCP

To use DHCP, select the radio button ***Obtain an IP Address automatically***. This is the default Windows setting. **Using this is recommended**. By default, the WN-300ARM-VPN will act as a DHCP Server.

Restart your PC to ensure it obtains an IP Address from the WN-300ARM-VPN.

Using a fixed IP Address ("Use the following IP Address")

If your PC is already configured, check with your network administrator before making the following changes.

- Enter the WN-300ARM-VPN's IP address in the ***Default gateway*** field and click ***OK***. (Your LAN administrator can advise you of the IP Address they assigned to the WN-300ARM-VPN.)
- If the ***DNS Server*** fields are empty, select ***Use the following DNS server addresses***, and enter the DNS address or addresses provided by your ISP, then click *OK*.

Checking TCP/IP Settings - Windows XP

1. Select ***Control Panel - Network Connection***.
2. Right click the ***Local Area Connection*** and choose ***Properties***. You should see a screen like the following:

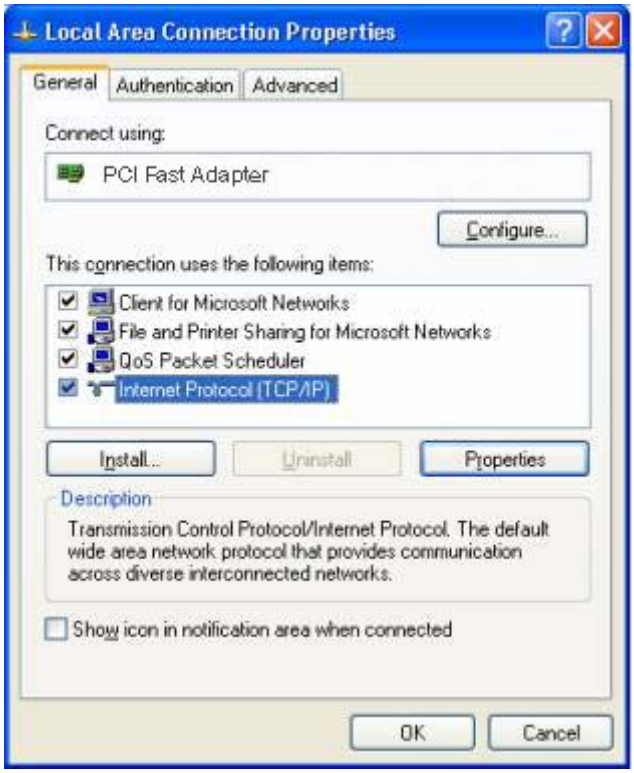


Figure: Network Configuration (Windows XP)

3. Select the ***TCP/IP*** protocol for your network card.
4. Click on the ***Properties*** button. You should then see a screen like the following.

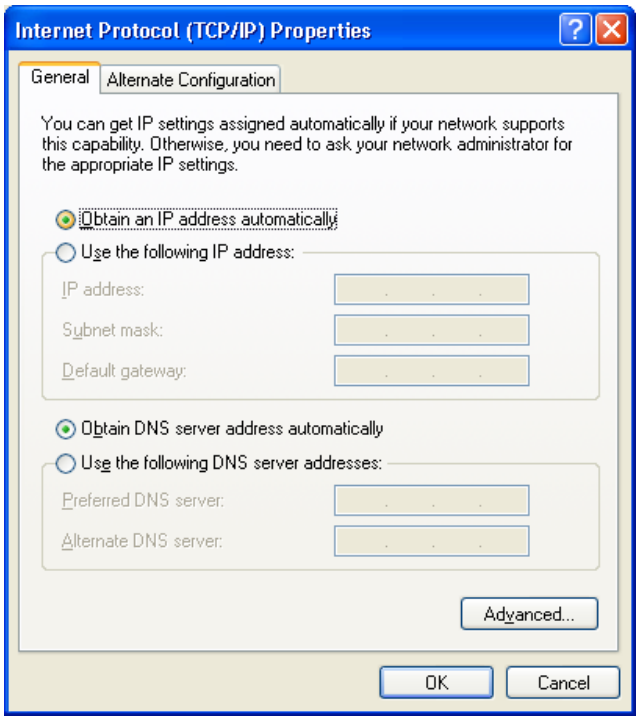


Figure: TCP/IP Properties (Windows XP)

5. Ensure your TCP/IP settings are correct.

Using DHCP

To use DHCP, select the radio button ***Obtain an IP Address automatically***. This is the default Windows setting. **Using this is recommended**. By default, the WN-300ARM-VPN will act as a DHCP Server.

Restart your PC to ensure it obtains an IP Address from the WN-300ARM-VPN.

Using a fixed IP Address ("Use the following IP Address")

If your PC is already configured, check with your network administrator before making the following changes.

- In the ***Default gateway*** field, enter the WN-300ARM-VPN's IP address and click ***OK***. Your LAN administrator can advise you of the IP Address they assigned to the WN-300ARM-VPN.
- If the ***DNS Server*** fields are empty, select ***Use the following DNS server addresses***, and enter the DNS address or addresses provided by your ISP, then click ***OK***.

Checking TCP/IP Settings - Windows Vista

1. Select Control Panel - Network Connections.
2. Right click the ***Local Area Connection Status*** and choose ***Properties***. Click ***Continue*** to the ***User Account Control*** dialog box, then you should see a screen like the following:

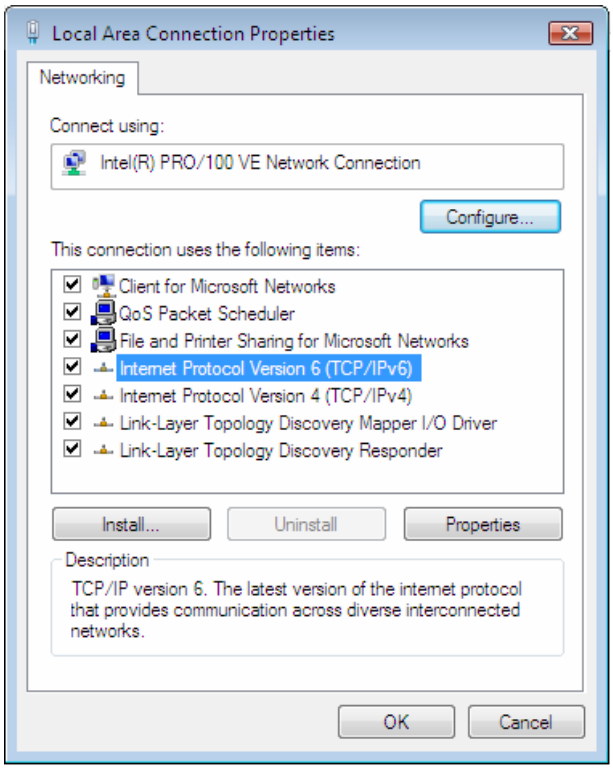


Figure: Network Configuration (Windows Vista)

3. Select the ***TCP/IP*** protocol for your network card.
4. Click on the ***Properties*** button. You should then see a screen like the following.

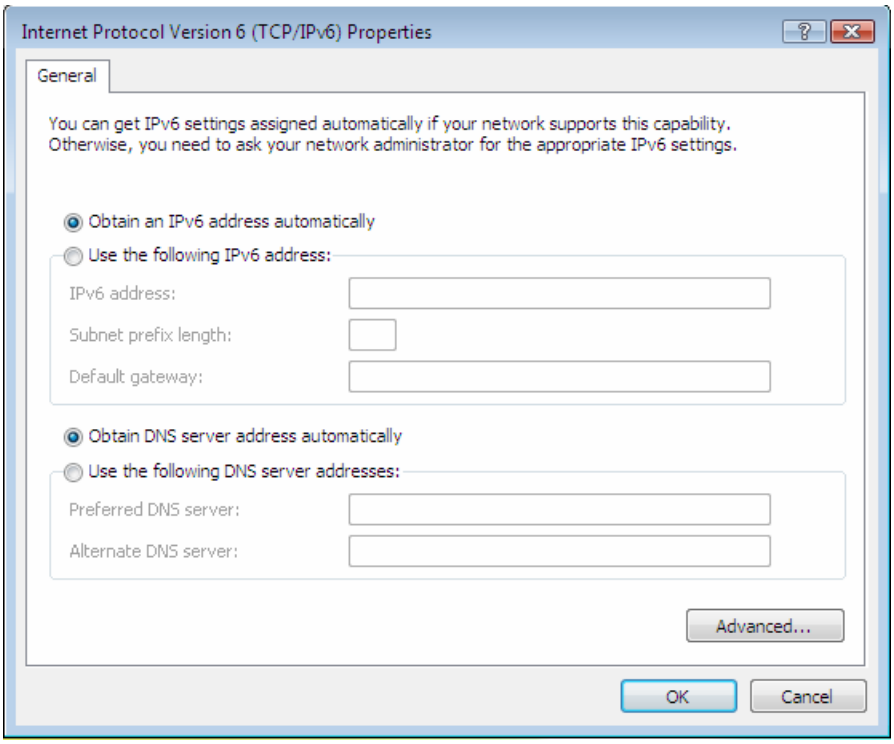


Figure: TCP/IP Properties (Windows Vista)

5. Ensure your TCP/IP settings are correct.

Using DHCP

To use DHCP, select the radio button ***Obtain an IP Address automatically***. This is the default Windows setting. To work correctly, you need a DHCP server on your LAN.

Using a fixed IP Address ("Use the following IP Address")

If your PC is already configured for a fixed (specified) IP address, no changes are required.

(The Administrator should configure the Wireless Access Point with a fixed IP address from the same address range used on the PCs.)

Internet Access

To configure your PCs to use the WN-300ARM-VPN for Internet access:

- Ensure that the DSL modem, Cable modem, or other permanent connection is functional.
- Use the following procedure to configure your Browser to access the Internet via the LAN, rather than by a Dial-up connection.

-1- For Windows 2000

1. Select ***Start Menu - Settings - Control Panel - Internet Options***.
2. Select the Connection tab, and click the ***Setup*** button.

3. Select "I want to set up my Internet connection manually, or I want to connect through a local area network (LAN)" and click ***Next***.
4. Select "I connect through a local area network (LAN)" and click ***Next***.
5. Ensure all of the boxes on the following Local area network Internet Configuration screen are **unchecked**.
6. Check the "No" option when prompted "Do you want to set up an Internet mail account now?"
7. Click ***Finish*** to close the Internet Connection Wizard.
8. Setup is now completed.

-2- For Windows XP

1. Select ***Start Menu - Control Panel - Network and Internet Connections***.
2. Select ***Set up or change your Internet Connection***.
3. Select the ***Connection*** tab, and click the ***Setup*** button.
4. Cancel the pop-up "Location Information" screen.
5. Click ***Next*** on the "New Connection Wizard" screen.
6. Select "Connect to the Internet" and click ***Next***.
7. Select "Set up my connection manually" and click ***Next***.
8. Check "Connect using a broadband connection that is always on" and click ***Next***.
9. Click ***Finish*** to close the New Connection Wizard.
10. Setup is now completed.

-3- Accessing AOL

To access AOL (America On Line) through the WN-300ARM-VPN, the ***AOL for Windows*** software must be configured to use TCP/IP network access, rather than a dial-up connection. The configuration process is as follows:

- Start the ***AOL for Windows*** communication software. Ensure that it is Version 2.5, 3.0 or later. This procedure will not work with earlier versions.
- Click the ***Setup*** button.
- Select ***Create Location***, and change the location name from "New Locality" to "WN-300ARM-VPN".
- Click ***Edit Location***. Select ***TCP/IP*** for the ***Network*** field. (Leave the ***Phone Number*** blank.)
- Click ***Save***, then ***OK***.
- Before clicking "Sign On", always ensure that you are using the "WN-300ARM-VPN" location.
- Configuration is now complete.

4.2 Macintosh Clients

From your Macintosh, you can access the Internet via the WN-300ARM-VPN. The procedure is as follows.

1. Open the TCP/IP Control Panel.
2. Select ***Ethernet*** from the ***Connect via*** pop-up menu.
3. Select ***Using DHCP Server*** from the ***Configure*** pop-up menu. The DHCP Client ID field can be left blank.
4. Close the TCP/IP panel, saving your settings.

Note:

If using manually assigned IP addresses instead of DHCP, the required changes are:

- Set the ***Router Address*** field to the WN-300ARM-VPN's IP Address.
- Ensure your DNS settings are correct.

4.3 Linux Clients

To access the Internet via the WN-300ARM-VPN, it is only necessary to set the WN-300ARM-VPN as the "Gateway".

Ensure you are logged in as "root" before attempting any changes.

Fixed IP Address

By default, most Unix installations use a fixed IP Address. If you wish to continue using a fixed IP Address, make the following changes to your configuration.

- Set your "Default Gateway" to the IP Address of the WN-300ARM-VPN.
- Ensure your DNS (Name server) settings are correct.

To act as a DHCP Client (recommended)

The procedure below may vary according to your version of Linux and X -windows shell.

1. Start your X Windows client.
2. Select ***Control Panel - Network***
3. Select the "Interface" entry for your Network card. Normally, this will be called "eth0".
4. Click the ***Edit*** button, set the "protocol" to "DHCP", and save this data.
5. To apply your changes:
   - Use the "Deactivate" and "Activate" buttons, if available.
   - OR, restart your system.

Other Unix Systems

To access the Internet via the WN-300ARM-VPN:

- Ensure the "Gateway" field for your network card is set to the IP Address of the WN-300ARM-VPN.
- Ensure your DNS (Name Server) settings are correct.

4.4 Wireless Station Configuration

This section applies to all Wireless stations wishing to use the WN-300ARM-VPN's Access Point, regardless of the operating system which is used on the client.

To use the Wireless Access Point in the WN-300ARM-VPN, each Wireless Station must have compatible settings, as follows:

Mode	The mode must be set to ***Infrastructure*** (rather than Ad-hoc) Access points only operate in ***Infrastructure*** mode.
SSID (ESSID)	This must match the value used on the WN-300ARM-VPN. The default value is **Wireless**. **Note! The SSID is case sensitive.**
Wireless Security	By default, Wireless security on the WN-300ARM-VPN is disabled. • If Wireless security remains disabled on the WN-300ARM-VPN, all stations must have wireless security disabled. • If Wireless security is enabled on the Wireless Router (either WEP or WPA-PSK), each station must use the same settings as the Wireless ADLS Router.

4.5 Wireless Configuration on Windows XP

If using Windows XP to configure the Wireless interface on your PC, the configuration procedure is as follows:

1. Open the Network Connections folder. (***Start - Settings - Network Connections***)

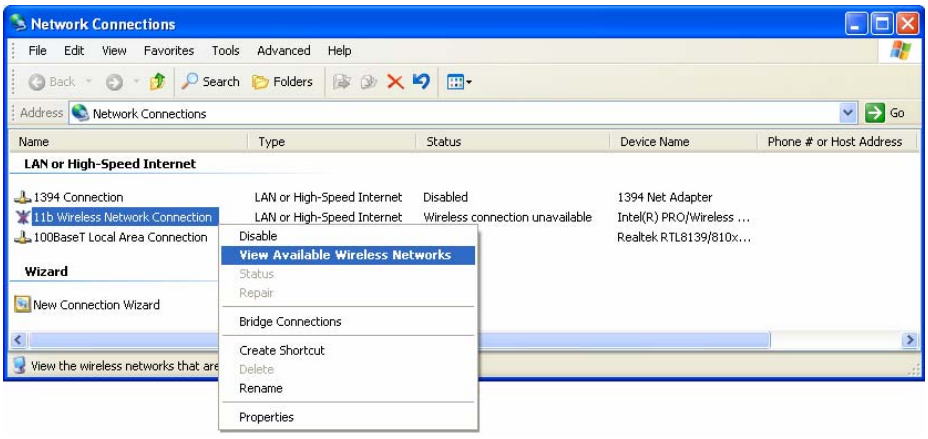


Figure: Network Connections (Windows XP)

2. Right-click the Wireless Network Connection, check that it is enabled (menu option says ***Disable***, rather than ***Enable***) and then select ***View Available Wireless Networks***.
3. You will then see a list of wireless networks.

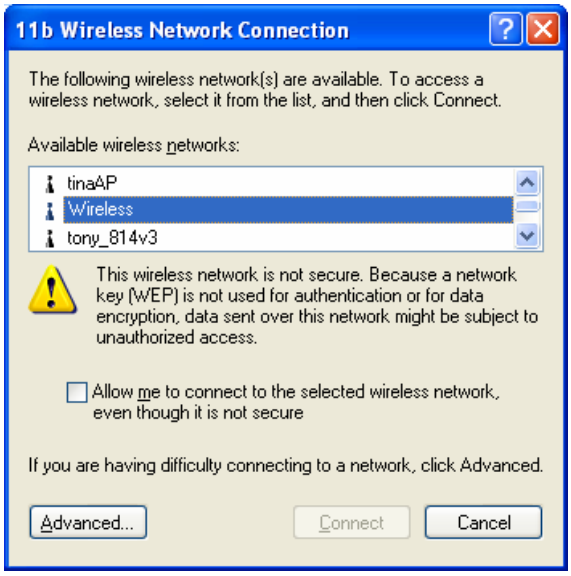


Figure: Wireless Networks (Windows XP)

If the "Broadcast SSID" setting on the WN-300ARM-VPN has been disabled, its SSID will NOT be listed. See the following section "If the SSID is not listed" for details of dealing with this situation.

4. The next step depends on whether or not Wireless security has been enabled on the WN-300ARM-VPN.

If Wireless Security is Disabled

If Wireless security on the WN-300ARM-VPN is disabled, Windows will warn you that the Wireless network is not secure.

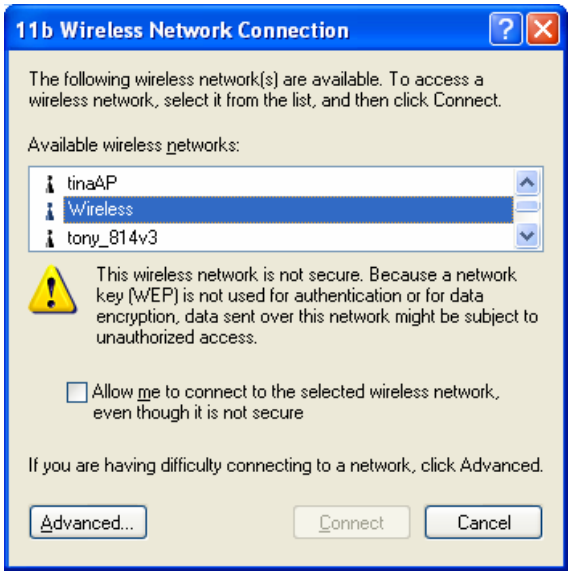


Figure: Insecure Wireless Network (Windows XP)

To connect:

- Check the checkbox ***Allow me to connect to the selected wireless network, even though it is not secure***.
- The ***Connect*** button will then be available. Click the ***Connect*** button, and wait a few seconds for the connection to be established.

If using WEP Data Encryption

If WEP data encryption has been enabled on the WN-300ARM-VPN, Windows will detect this, and show a screen like the following.

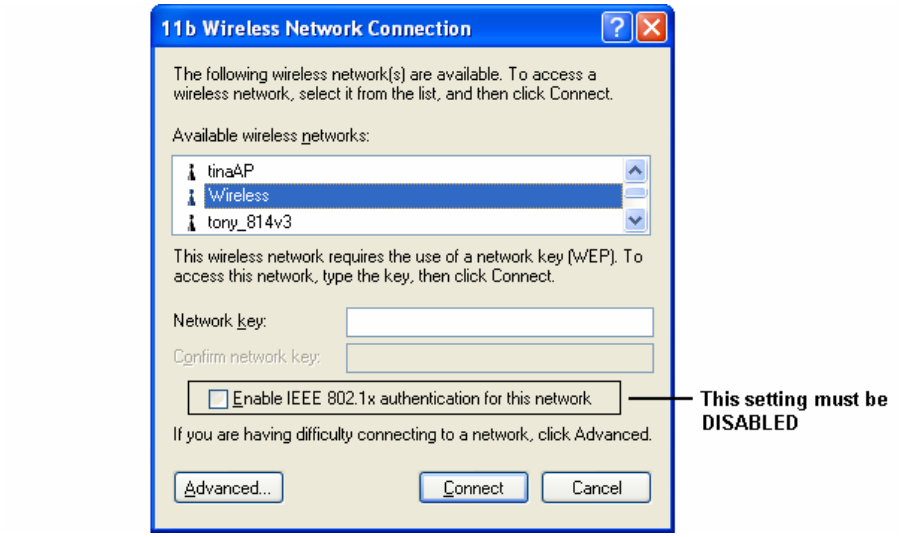
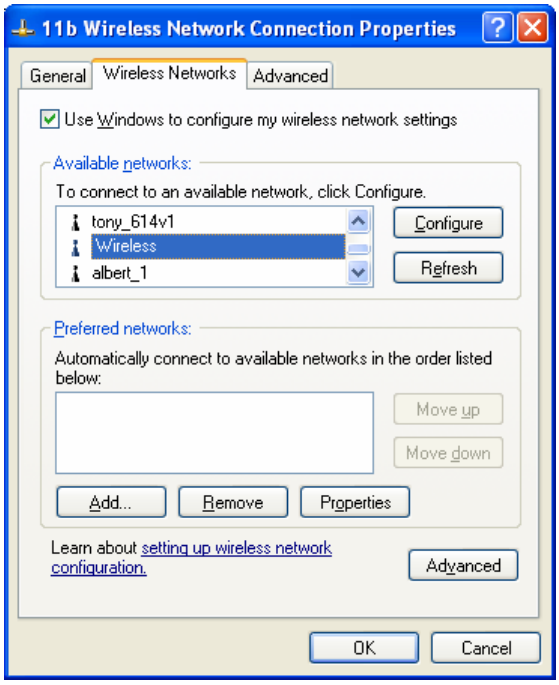


Figure: WEP (Windows XP)

To connect:

- Enter the WEP key, as set on the WN-300ARM-VPN, in the ***Network Key*** field.
- Re-enter the WEP key into the ***Confirm Network key*** field.
- **Disable** the checkbox ***Enable IEEE 802.1x authentication for this network***.
- Click the ***Connect*** button.

If this fails, click the ***Advanced*** button, to see a screen like the following:



Select the SSID for the WN-300ARM-VPN, and click ***Configure***, to see a screen like the following:

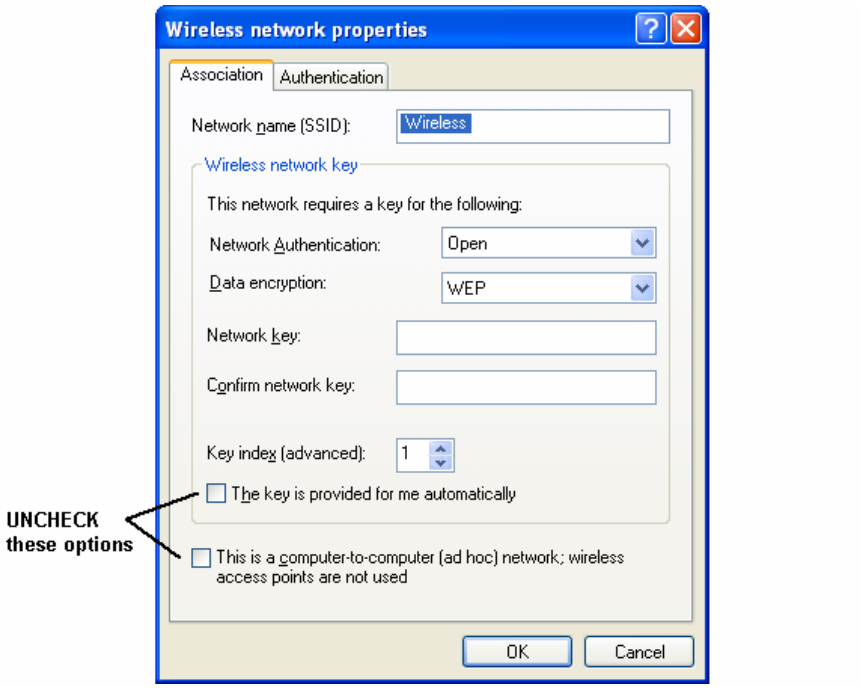


Figure: Wireless Network Properties - WEP

Configure this screen as follows:

- Set ***Network Authentication*** to match the WN-300ARM-VPN. (If the setting on the WN-300ARM-VPN is "Auto", then either ***Open*** or ***Shared*** can be used.)
- For *Data* ***Encryption***, select **WEP**.
- For the ***Network key*** and ***Confirm network key***, enter the **default key value** used on the WN-300ARM-VPN. (Windows will determine if 64bit or 128bit encryption is used.)
- The ***Key index*** must match the **default key index** on the WN-300ARM-VPN. The default value is 1.
- Ensure the options ***The key is provided for me automatically*** and ***This is a computer-to-computer (ad hoc) network*** are unchecked.
- Click OK to save and close this dialog.
- This wireless network will now be listed in ***Preferred Networks*** on the screen below.

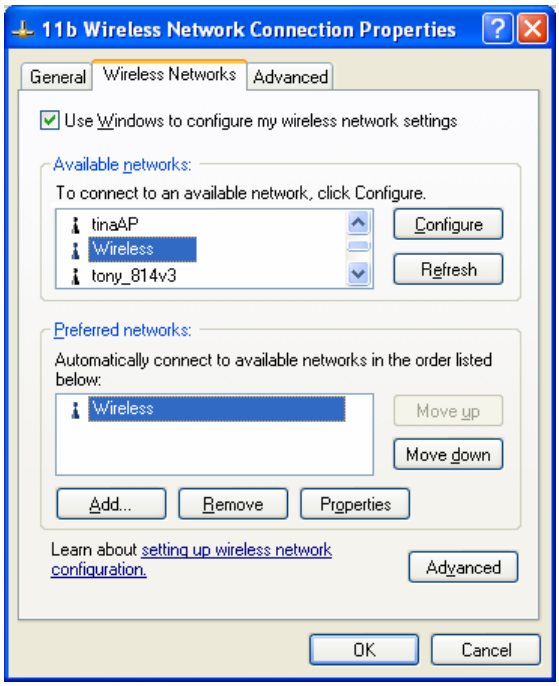


Figure: Preferred Networks

Click OK to establish a connection to the WN-300ARM-VPN.

If using WPA-PSK Data Encryption

If WPA-PSK data encryption has been enabled on the WN-300ARM-VPN, it does not matter which network is selected on the screen below. Just click the ***Advanced*** button.

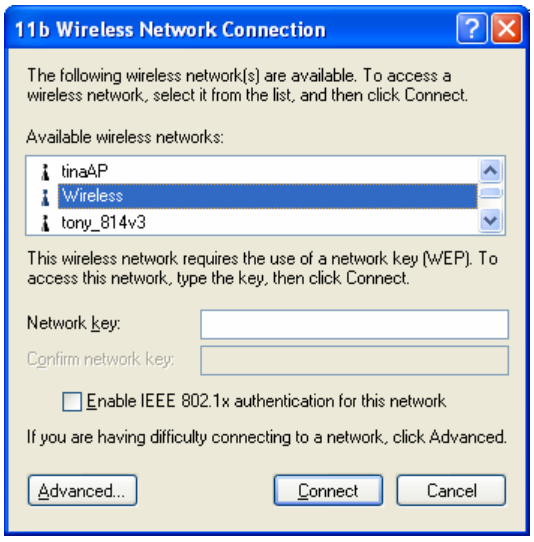


Figure: Wireless Networks (Windows XP)

You will then see a screen like the example below.

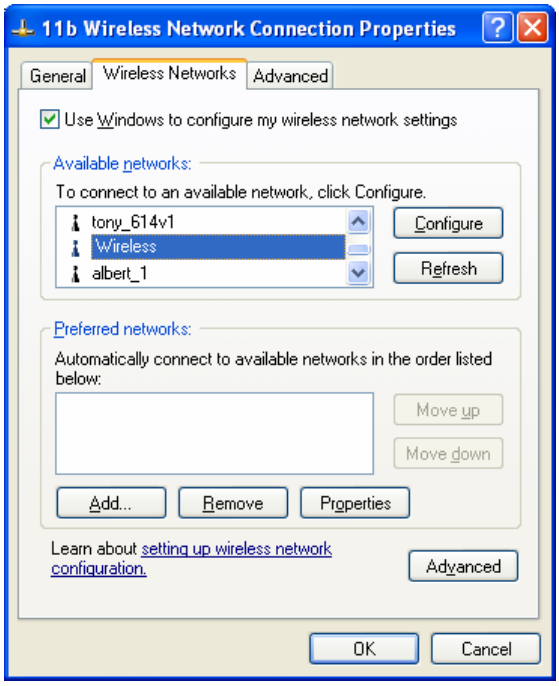


Figure: Advanced - Wireless Networks

Select the SSID for the WN-300ARM-VPN, and click ***Configure***, to see a screen like the following:

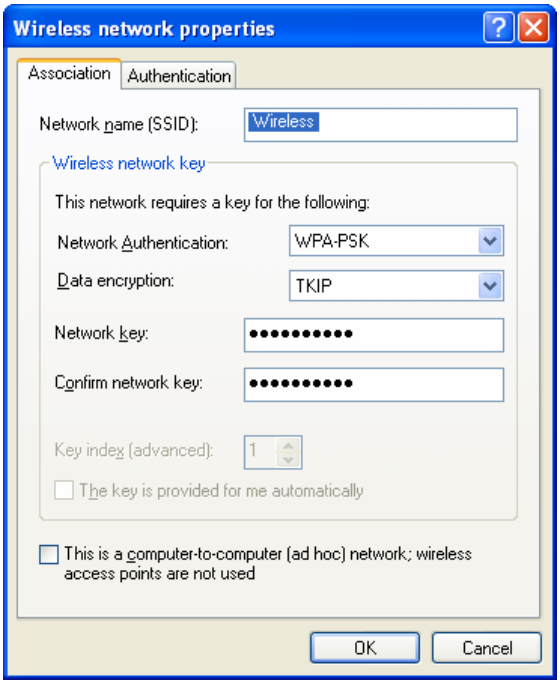


Figure: Wireless Network Properties- WPA-PSK

Configure this screen as follows:

- Set Network Authentication to **WPA-PSK**.
- For ***Data Encryption***, select **TKIP**.
- For the ***Network key*** and ***Confirm network key***, enter the network key (PSK) used on the WN-300ARM-VPN.
- Ensure the option “This is a computer-to-computer (ad hoc) network” is unchecked.
- Click OK to save and close this dialog.
- This wireless network will now be listed in ***Preferred Networks*** on the screen below.

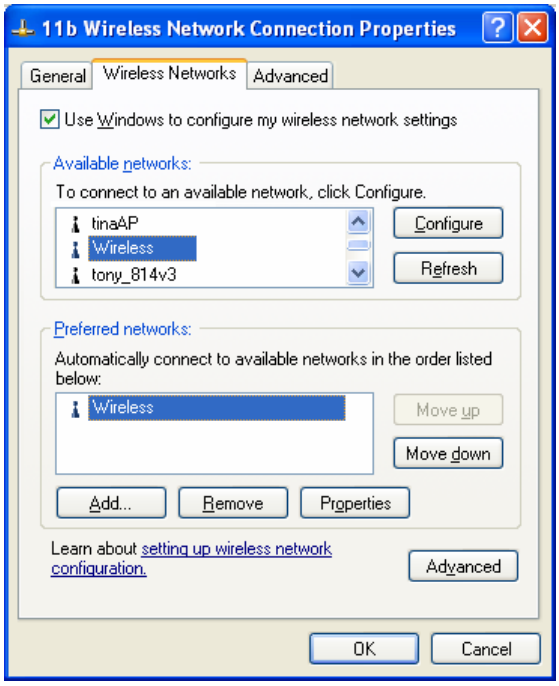


Figure: Preferred Networks

Click OK to establish a connection to the WN-300ARM-VPN.

If the SSID is not listed

If the "Broadcast SSID" setting on the WN-300ARM-VPN has been disabled, its SSID will NOT be listed on the screen below.

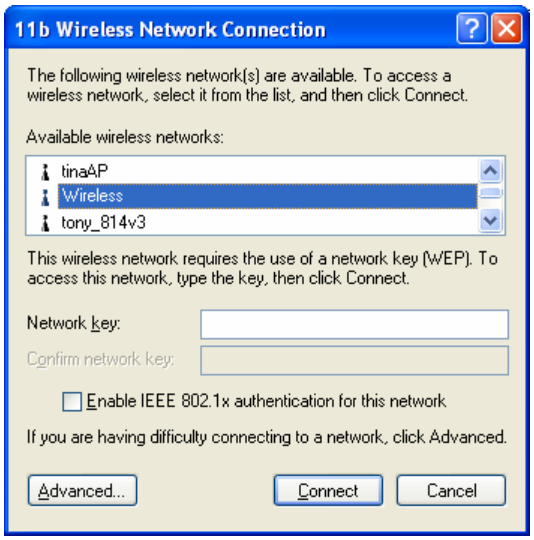


Figure: Wireless Networks (Windows XP)

In this situation, you need to obtain the SSID from your network administrator, then to follow this procedure:

1. Click the ***Advanced*** button to see a screen like the example below.

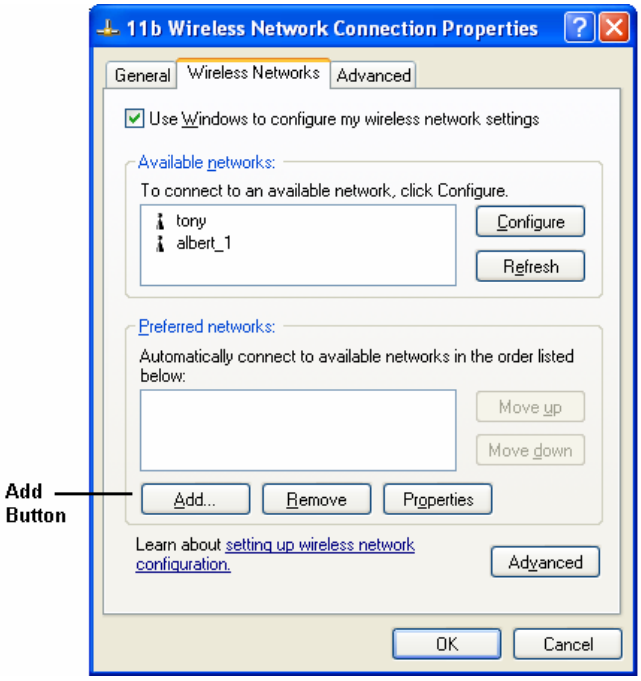


Figure: Unlisted Wireless Network

2. Click the ***Add*** button. You will see a screen like the example below.

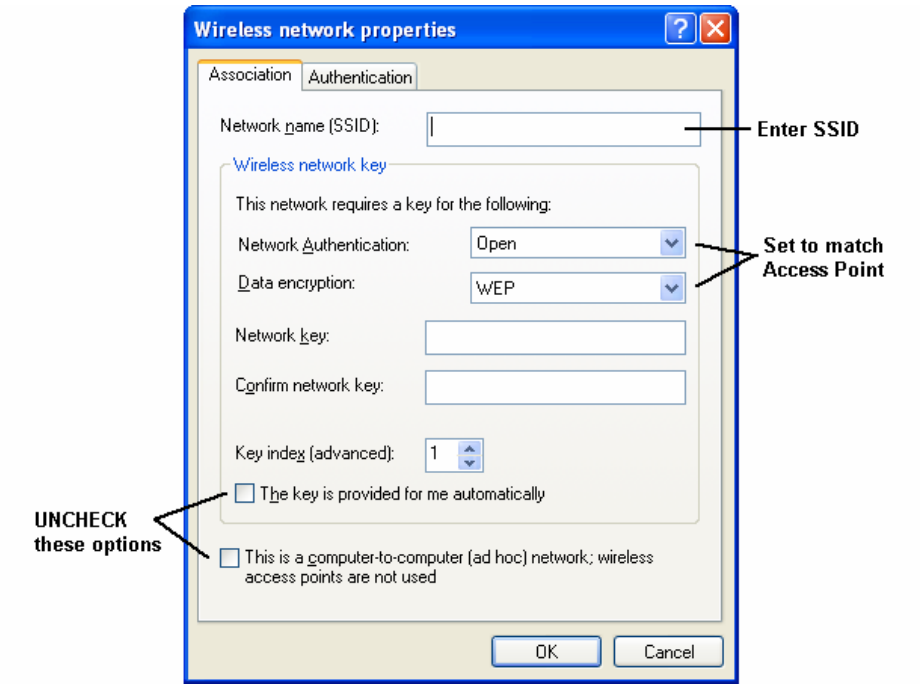


Figure: Add Wireless Network

3. Configure this screen as follows:
   - Enter the correct SSID, as used on the WN-300ARM-VPN. Remember the SSID is case-sensitive, so be sure to match the case, not just the spelling.
   - Set ***Network Authentication*** and ***Data Encryption*** to match the WN-300ARM-VPN.
   - If using data encryption (WEP or WPA-PSK), enter the key used on the WN-300ARM-VPN. See the preceding sections for details of WEP and WPA-PSK.
   - Uncheck the options "***The key is provided for me automatically***" and "***This is a computer-to-computer (ad hoc) network***".
   - Click OK to save and exit.

4. This wireless network will then be listed in ***Preferred Networks*** on the screen below.

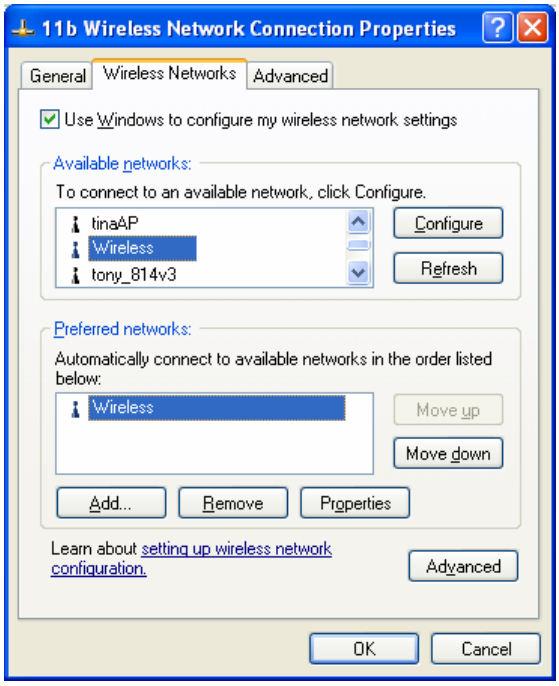


Figure: Preferred Networks

5. Click OK to establish a connection to the WN-300ARM-VPN.

Chapter5. Operation and Status

Operation - Router Mode

Once both the WN-300ARM-VPN and the PCs are configured, operation is automatic.

However, there are some situations where additional Internet configuration may be required. Refer to ***Chapter 6 - Advanced Features*** for further details.

Operation - Router Mode

Use the ***Status*** link on the main menu to view this screen.

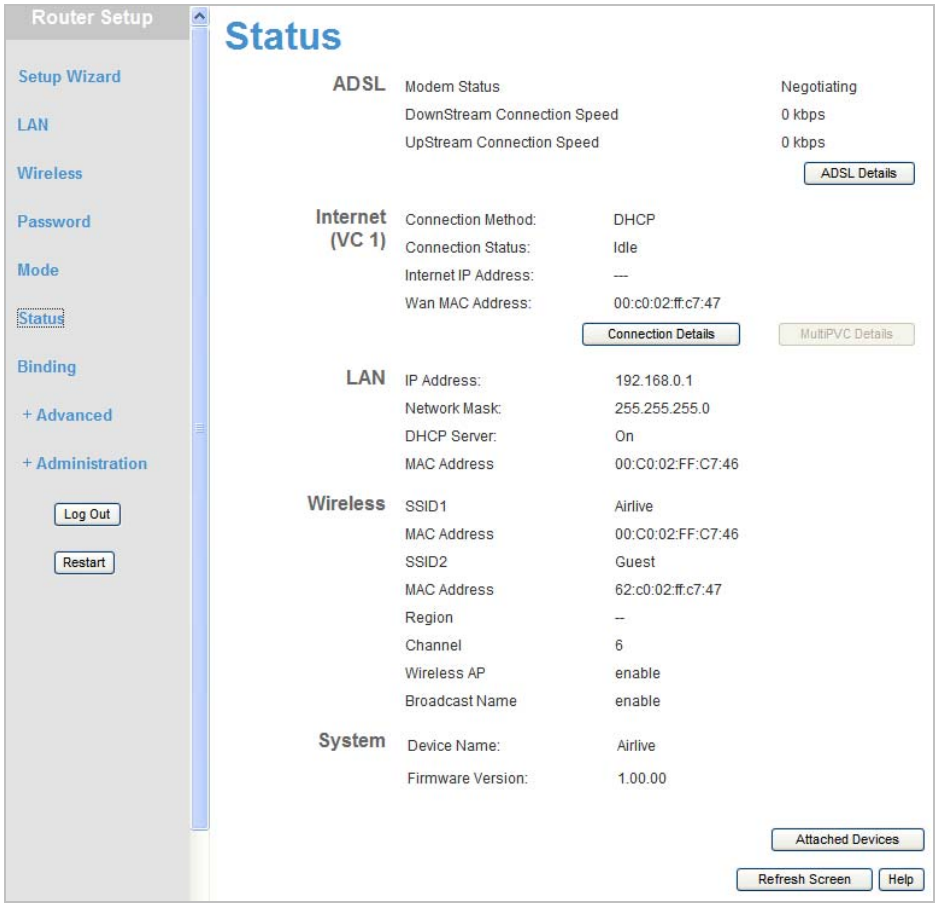


Figure: Status Screen

-1- Data - Status Screen

ADSL	
Modem Status	This indicates the status of the ADSL modem component.
DownStream Connection Speed	Displays the speed for the DownStream Connection.
UpStream Connection Speed	If connected, displays the speed for the Up Stream (upload) ADSL Connection.
ADSLDetails	Click this button to open a sub-window and view the details of each VC (Virtual Circuit).
Internet (VC1)	
Connection Method	Displays the current connection method, as set in the ***Setup Wizard***.
Connection Status	This indicates the current status of the Internet Connection • **Active** - Connection exists • **Idle** - No current connection, but no error has been detected. This condition normally arises when an idle connection is automatically terminated. • **Failed** - The connection was terminated abnormally. This could be caused by Modem failure, or the loss of the connection to the ISP's server. If there is an error, you can click the "Connection Details" button to find out more information.
Internet IP Address	This IP Address is allocated by the ISP (Internet Service Provider). If using a dynamic IP address, and no connection currently exists, this information is unavailable.
WAN MAC Address	It displays the MAC address for the WAN.
Connection Details	Click this button to open a sub-window and view a detailed description of the current connection. Depending on the type of connection, a "log" may also be available.
MultiPVC Details	Click this button to view the details of multi PVC in the sub-screen.
LAN	
IP Address	The IP Address of the WN-300ARM-VPN.
Network Mask	The Network Mask (Subnet Mask) for the IP Address above.
DHCP Server	This shows the status of the DHCP Server function. The value will be "On" or "Off".
MAC Address	This shows the MAC Address for the WN-300ARM-VPN, as seen on the LAN interface.

Wireless	
SSID 1	It displays the name of the SSID 1.
SSID 2	It displays the name of the SSID 2.
Region	The current region, as set on the Wireless screen.
Channel	This shows the Channel currently used, as set on the Wireless screen.
Wireless AP	This indicates whether or not the Wireless Access Point feature is enabled.
Broadcast Name	This indicates whether or not the SSID is Broadcast. This setting is on the Wireless screen.
System	
Device Name	The current name of the Router. This name is also the "hostname" for users with "@Home" type connection.
Firmware Version	The version of the current firmware installed.
Buttons	
ADSL Details	View the details of each VC (Virtual Circuit).
Connection Details	Click this button to open a sub-window and view a detailed description of the current connection.
MultiPVC Details	Click this button to view the details of multi PVC in the sub-screen.
Attached Devices	This will open a sub-window, showing all LAN and Wireless devices currently on the network.
Refresh Screen	Update the data displayed on screen.
Help	The description of Status item.

Connection Status - PPPoE & PPPoA

If using PPPoE (PPP over Ethernet) or PPPoA (PPP over ATM), a screen like the following example will be displayed when the "Connection Details" button is clicked.

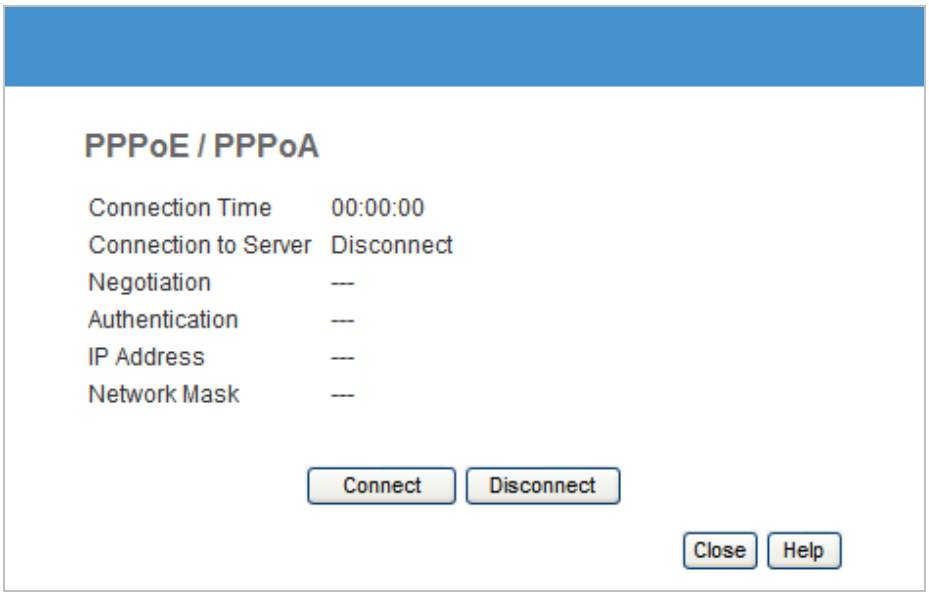


Figure: PPPoE Status Screen

-2- Data - PPPoE/PPPoA Screen

Connection Time	This indicates how long the current connection has been established.
Connection to Server	This 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.
Negotiation	This indicates the status of the PPPoE Server login.
IP Address	The IP Address of this device, as seen by Internet users. This address is allocated by your ISP (Internet Service Provider).
Network Mask	The Network Mask associated with the IP Address above.
Buttons	
Connect	If not connected, establish a connection to your ISP.
Disconnect	If connected to your ISP, hang up the connection.
Close	Close this window.

Connection Details - Dynamic IP Address

If your access method is "Direct" (no login), with a Dynamic IP address, a screen like the following example will be displayed when the "Connection Details" button is clicked.

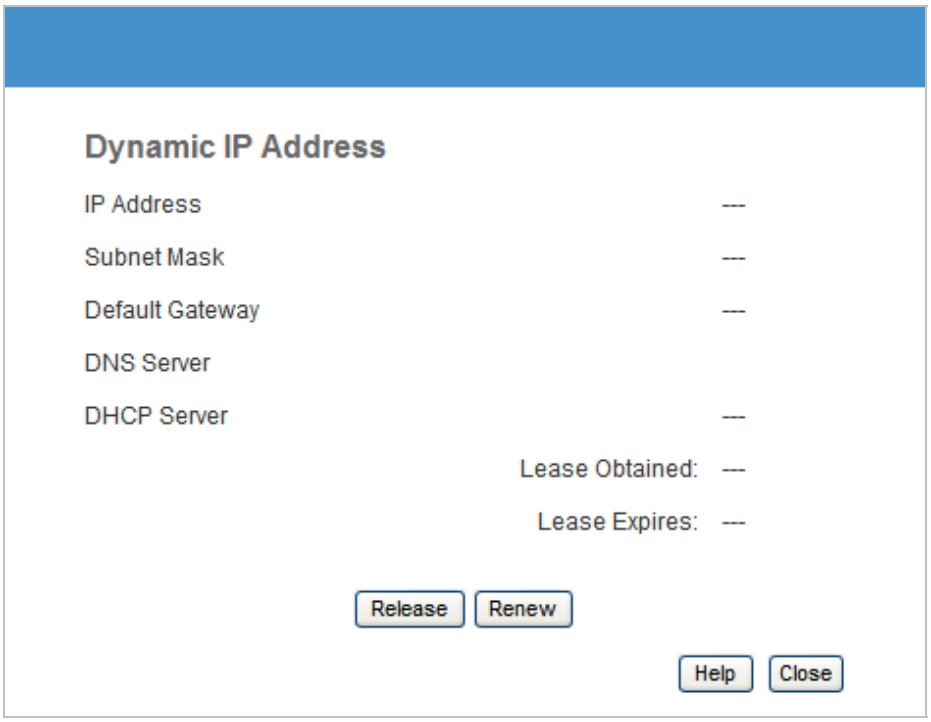


Figure: Connection Details - Fixed/Dynamic IP Address

-3- Data - Dynamic IP address

Internet	
IP Address	The current IP Address of this device, as seen by Internet users. This address is allocated by your ISP (Internet Service Provider).
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 Server	The IP address of the Domain Name Server which is currently used.
DHCP Server	The IP address of your ISP's DHCP Server.
Lease Obtained **Lease Expires**	This indicates when the current IP address was obtained, and how long before this IP address allocation (the DCHP lease) expires.
Buttons	
Release	If an IP Address has been allocated to the WN-300ARM-VPN (by the ISP's DHCP Server), clicking the "Release" button will break the connection and release the IP Address.
Renew	If the ISP's DHCP Server has NOT allocated an IP Address for the WN-300ARM-VPN, clicking the "Renew" button will attempt to re-establish the connection and obtain an IP Address from the ISP's DHCP Server.

Connection Details - Fixed IP Address

If your access method is "Direct" (no login), with a fixed IP address, a screen like the following example will be displayed when the "Connection Details" button is clicked.

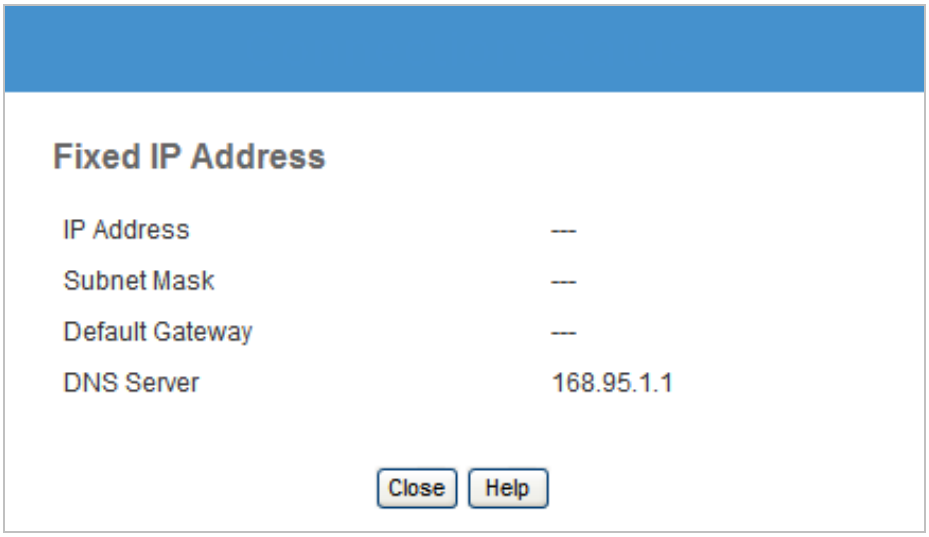


Figure: Connection Details - Fixed/Dynamic IP Address

-4- Data - Fixed IP address Screen

Internet	
IP Address	The IP Address of this device, as seen by Internet users. This address is allocated by your ISP (Internet Service Provider).
Subnet Mask	The Subnet 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 Server	The IP Address of the Domain Name Server which is currently used.

Chapter6. Advanced Features

Overview

The following advanced features are provided:

- Internet:
  - DMZ
  - URL filter
- Access Control
- Dynamic DNS
- Options
- Schedule
- Port Trigger
- Port Foward
- Port Range Forward
- QoS
- VPN (IPSec)

6.1 Internet

This screen provides the access to the DMZ, Special Applications and URL Filter features.

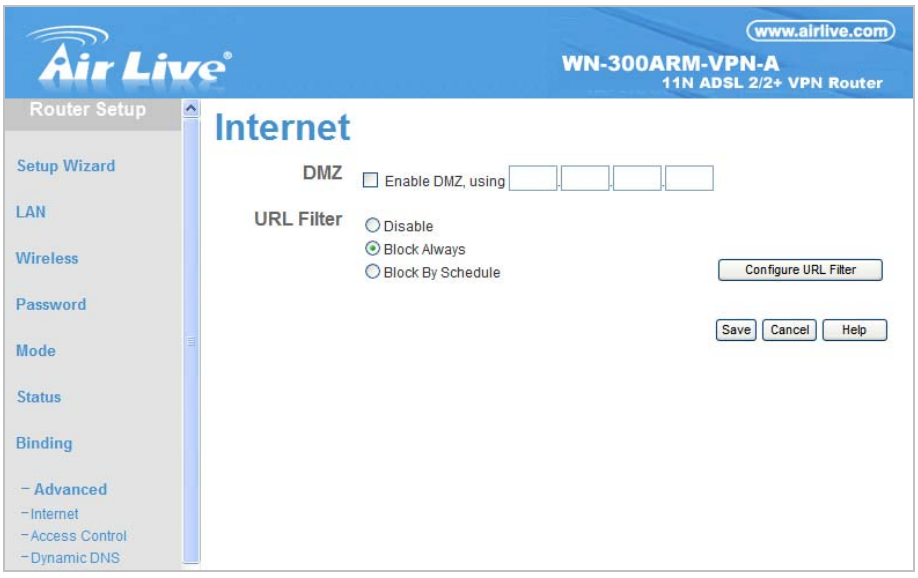


Figure: Internet Screen

DMZ

This feature, if enabled, allows the DMZ computer on your LAN to be exposed to all users on the Internet.

- This allows almost any application to be used on the "DMZ PC".
- The "DMZ PC" will receive all "Unknown" connections and data.
- If the DMZ feature is enabled, you must select the PC to be used as the "DMZ PC".

The "DMZ PC" is effectively outside the Firewall, making it more vulnerable to attacks. For this reason, you should only enable the DMZ feature when required.

URL Filter

If you want to limit access to certain sites on the Internet, you can use this feature. The URL filter will check each Web site access. If the address, or part of the address, is included in the block site list, access will be denied.

On the *Advanced Internet* screen, select the desired setting:

- **Disable** - disable this feature.
- **Block Always** - allow blocking all of the time, independent of the ***Schedule*** page.
- **Block By Schedule** - block according to the settings on the ***Schedule*** page.

Click the **Configure URL Filter** button to open the URL Filter screen, allowing you to create or modify the filter strings which determine which sites will be blocked.

The ***URL Filter*** screen is displayed when the **Configure URL Filter** button on the ***Advanced Internet*** screen is clicked.

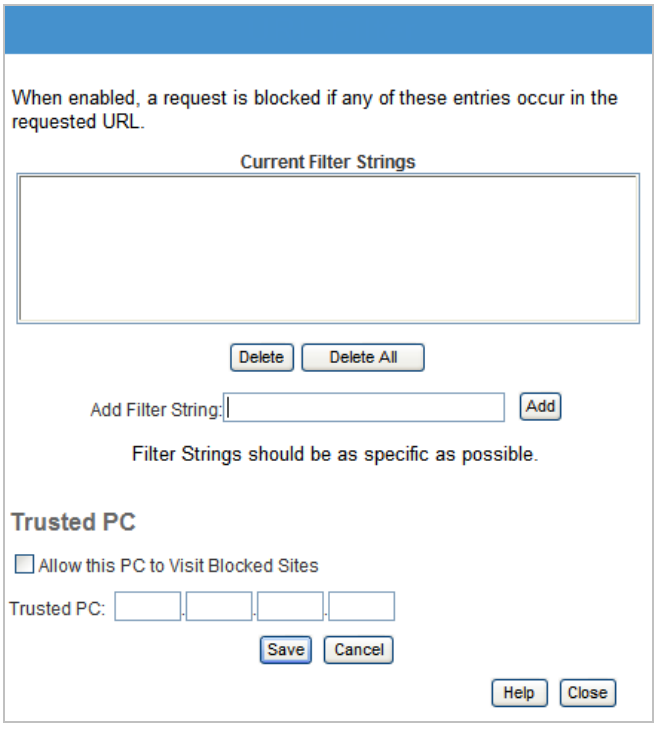


Figure: URL Filter Screen

-1- Data - URL Filter Screen

Current Filter Strings	
Current Filter Strings	The list contains the current list of items to block. • To add to the list, use the "Add" option below. • To delete an entry, select it and click **Delete** button. • To delete all entries, click the **Delete All** button.
Add Filter String	To add to the current list, type the word or domain name you want to block into the field provided, then click the **Add** button. Filter strings should be as specific as possible. Otherwise, you may block access to many more sites than intended.
Trusted PC	
Allow this PC to Visit Blocked Sties	Enable this to allow one computer to have unrestricted access to the Internet. For this PC, the URL filter will be ignored. If enabled, you must select the PC to be the trusted PC.
Trusted PC	Enter the PC to be the Trusted PC.

6.2 Access Control

Overview

The Access Control feature allows administrators to restrict the level of Internet Access available to PCs on your LAN. With the default settings, everyone has unrestricted Internet access.

Access Control Screen

To view this screen, select the ***Access Control*** link on the ***Advanced*** menu.

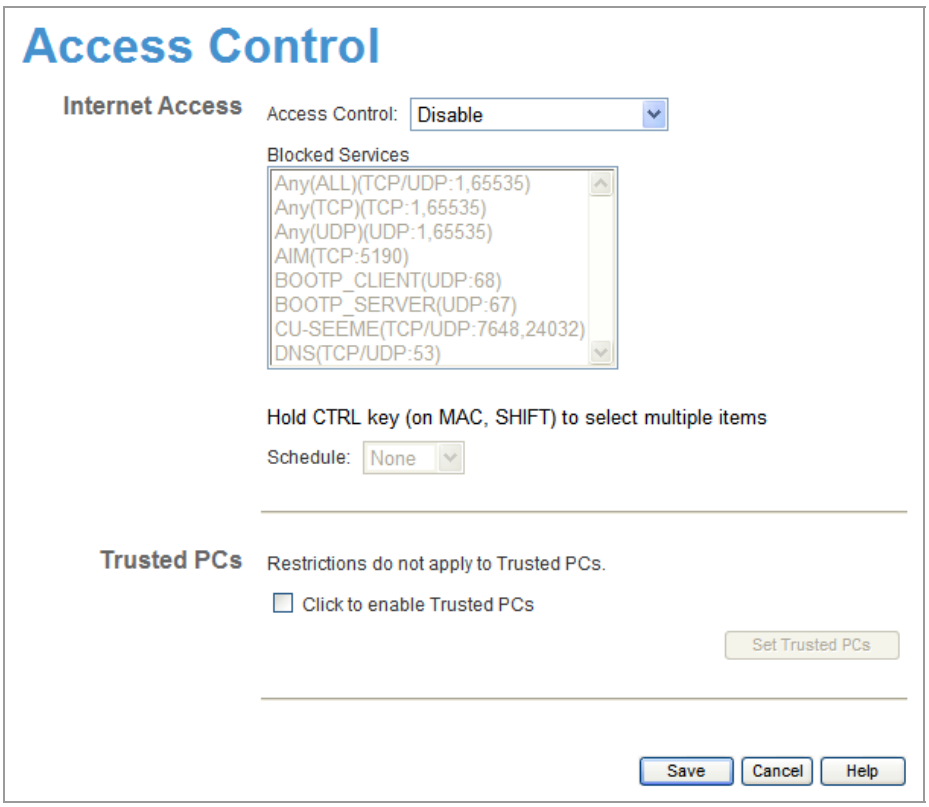


Figure: Access Control Screen

-1- Data - Access Control Screen

Internet Access	
Access Control	Select the desired options for the current group: • **Disable** - Nothing is blocked. Use this to create the least restrictive group. • **Block all Internet access** - All traffic via the WAN port is blocked. Use this to create the most restrictive group. • **Block selected Services** - You can select which Services are to block. Use this to gain fine control over the Internet access for a group.

Blocked Services	This lists all defined Services. Select the Services you wish to block. To select multiple services, hold the CTRL key while selecting. (On the Macintosh, hold the SHIFT key rather than CTRL.)
Schedule	If Internet access is being blocked, you can choose to apply the blocking only during scheduled times. (If access is not blocked, no Scheduling is possible, and this setting has no effect.)
Trusted PCs	
Click to Enable Trusted PC	If enabled, restrictions set on this screen do not apply to Trusted PCs.
"Set Trusted PCs" Button	Click this button to add or remove PCs of the Trusted PCs. See the following section for details of the *Trusted PCs* screen.

Trusted PC Screen

This screen is displayed when the ***Set Trusted PCs*** button on the ***Access Control*** screen is clicked.

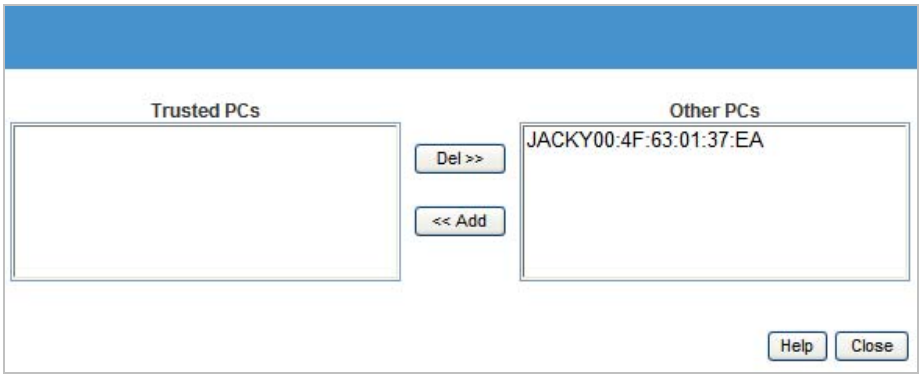


Figure: Trusted PC Screen

Use this screen to add or remove PCs from the current group.

- The "Del >>" button will remove the selected PC (in the ***Trusted PCs*** list) from the current group.
- The "<< Add" button will add the selected PC (in the ***Other PCs*** list) to the Trusted PCs group.

6.3 Dynamic DNS

This free service is very useful when combined with the ***Virtual Server*** feature. It allows Internet users to connect to your Virtual Servers using a URL, rather than an IP Address.

This also solves the problem of having a dynamic IP address. With a dynamic IP address, your IP address may change whenever you connect, which makes it difficult to connect to you.

DDNS Services work as follows:

1. You must register for the service at one of the listed DDNS Service providers.
2. After registration, use the Service provider's normal procedure to obtain your desired Domain name.
3. Enter your DDNS data on the WN-300ARM-VPN's DDNS screen, and enable the DDNS feature.
4. The WN-300ARM-VPN will then automatically ensure that your current IP Address is recorded at the DDNS service provider's Domain Name Server.
5. From the Internet, users will be able to connect to your Virtual Servers (or DMZ PC) using your Domain name, as shown on this screen.

Dynamic DNS Screen

Select ***Advanced*** on the main menu, then ***Dynamic DNS***, to see a screen like the following:

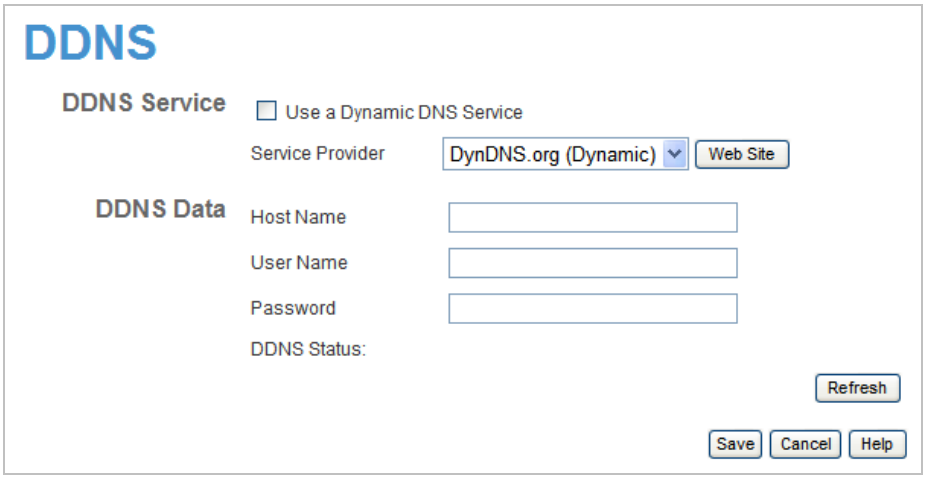


Figure: DDNS Screen

-1- Data - Dynamic DNS Screen

DDNS Service	
Use a Dynamic DNS Service	Use this to enable or disable the DDNS feature as required.
Service Provider	Select the desired DDNS Service provider.
Web Site	Click this button to open a new window and connect to the Web site of the selected DDNS service provider.

DDNS Data	
Host Name	Enter the domain name allocated to you by the DDNS Service. If you have more than one name, enter the name you wish to use.
User Name	Enter your Username for the DDNS Service. (TZO.com uses your E-mail address.)
Password	Enter your current password for the DDNS Service. (TZO.com calls this a key.)
DDNS Status	• This message is returned by the DDNS Server. • Normally, this message should be "Update successful" • If the message indicates some problem, you need to connect to the DDNS Service provider and correct this problem.

6.4 Option

This screen allows advanced users to enter or change a number of settings. For normal operation, there is no need to use this screen or change any settings.

An example ***Options*** screen is shown below.

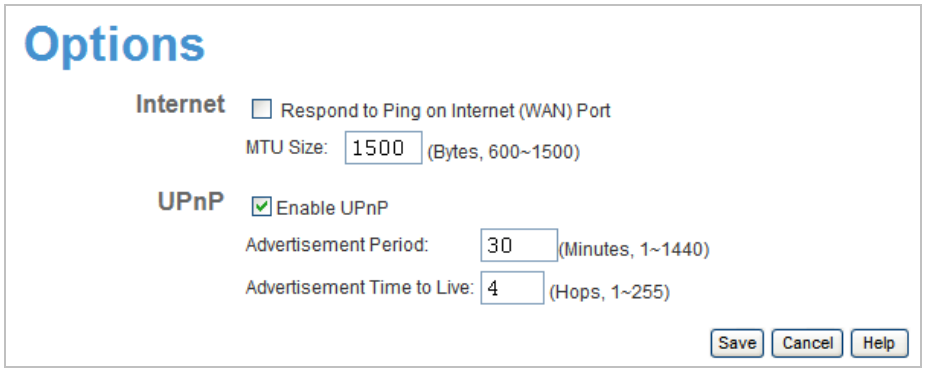


Figure: Options Screen

-1- Data - Options Screen

Internet	
Respond to Ping	• If checked, the WN-300ARM-VPN will respond to Ping (ICMP) packets received from the Internet. • If not checked, Ping (ICMP) packets from the Internet will be ignored. Disabling this option provides a slight increase in security.
MTU Size	Enter a value between 600 and 1500. **Note:** MTU (Maximum Transmission Unit) size should only be changed if advised to do so by Technical Support.
UPnP	
Enable UPnP	• UPnP (Universal Plug and Play) allows automatic discovery and configuration of equipment attached to your 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.
Advertisement Period	Enter the desired value, in minutes. The valid range is from 1 to 1440.
Advertisement Time to Live	Enter the desired value, in hops. The valid range is from 1 to 255.

6.5 Schedule

This Schedule can be used for the Firewall Rules and the URL filter.

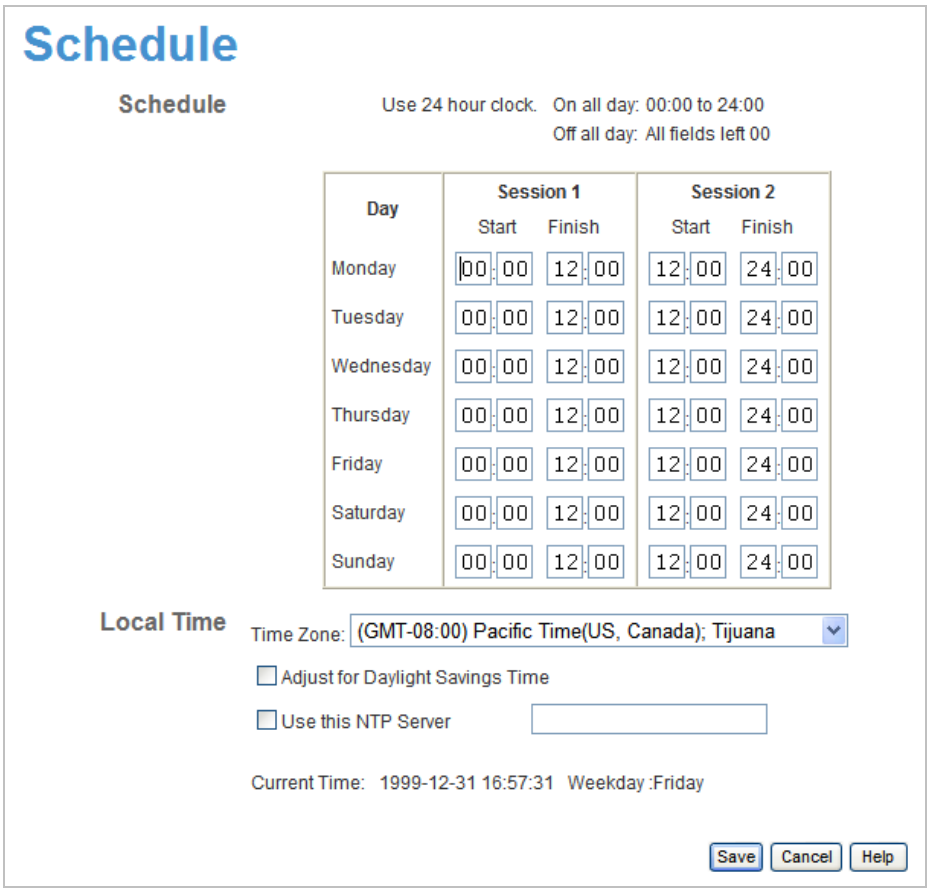


Figure: Schedule Screen

-1- Data - Schedule Screen

Schedule	
Day	Each day of the week can be scheduled independently.
Session 1 **Session 2**	Two (2) separate sessions or periods can be defined. Session 2 can be left blank if not required.
Start Time	Enter the start using a 24 hr clock.
Finish Time	Enter the finish time using a 24 hr clock.
Local Time	
Time Zone	In order to display your local time correctly, you must select your "Time Zone" from the list.
Adjust for Daylight Savings Time	If your region uses Daylight Savings Time, you must manually check "Adjust for Daylight Savings Time" at the beginning of the adjustment period, and uncheck it at the end of the Daylight Savings period.

Use this NTP Server	If you prefer to use a particular NTP server as the primary NTP server, check the checkbox "Use this NTP Server" and enter the Server's IP address in the fields provided. If this setting is not enabled, the default NTP Servers are used.
Current Time	This displays the current time on the WN-300ARM-VPN, at the time the page is loaded.

6.6 Port Trigger

If you use Internet applications which use non-standard connections or port numbers, you may find that they do not function correctly because they are blocked by the WN-300ARM-VPN's firewall. In this case, you can define the application as a "Port Trigger".

The ***Port Trigger*** screen can be reached by clicking the ***Port Trigger*** on the screen.

You can then define your Port Trigger. You will need detailed information about the application; this is normally available from the supplier of the application.
Also, note that the terms "Incoming" and "Outgoing" on this screen refer to traffic from the client (PC) viewpoint

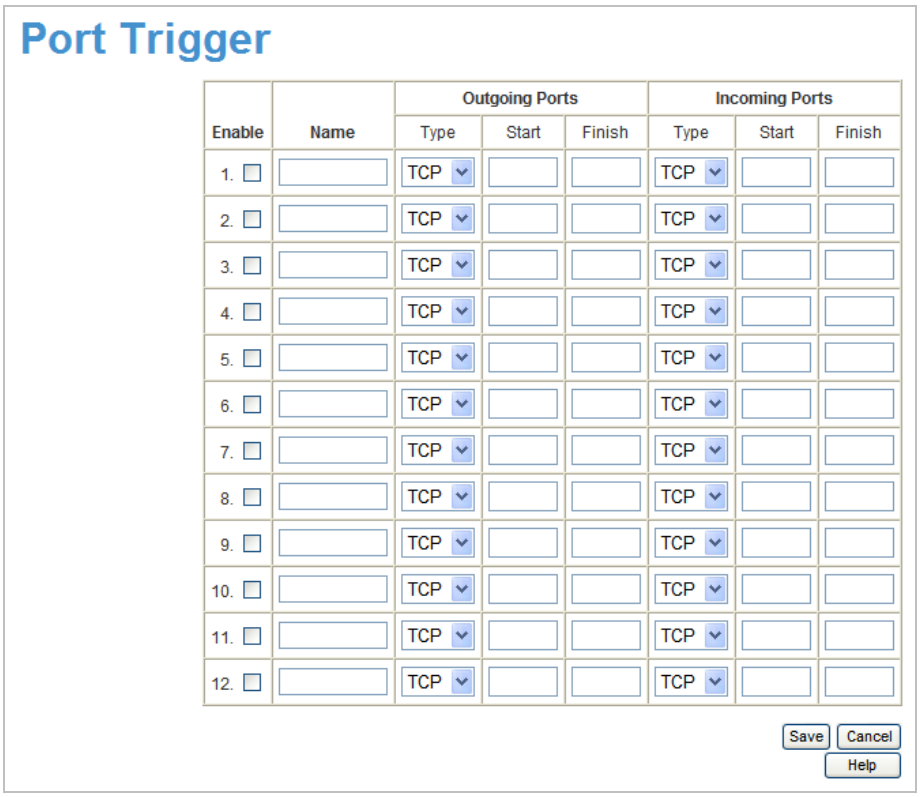


Figure: Port Trigger Screen

-1- Data - Port Trigger Screen

Port Trigger	
Enable	Use this to Enable or Disable this Special Application as required.
Name	Enter a descriptive name to identify this Special Application.

Outgoing Ports	• **Type** - Select the protocol (TCP or UDP) used when you send data to the remote system or service. • **Start** - Enter the beginning of the range of port numbers used by the application server, for data you send to it. If the application uses a single port number, enter it in both the "Start" and "Finish" fields. • **Finish** - Enter the end of the range of port numbers used by the application server, for data you send to it. If the application uses a single port number, enter it in both the "Start" and "Finish" fields.
Incoming Ports	• **Type** - Select the protocol (TCP or UDP) used when you receive data from the special application or service. (Note: Some applications use different protocols for outgoing and incoming data). • **Start** - Enter the beginning of the range of port numbers used by the application server, for data you receive. If the application uses a single port number, enter it in both the "Start" and "Finish" fields. • **Finish** - Enter the end of the range of port numbers used by the application server, for data you receive.

6.7 Port Forward

This feature allows you to make Servers on your LAN accessible to Internet users. Normally, Internet users would not be able to access a server on your LAN because:

- Your Server does not have a valid external IP Address.
- Attempts to connect to devices on your LAN are blocked by the firewall in this device.

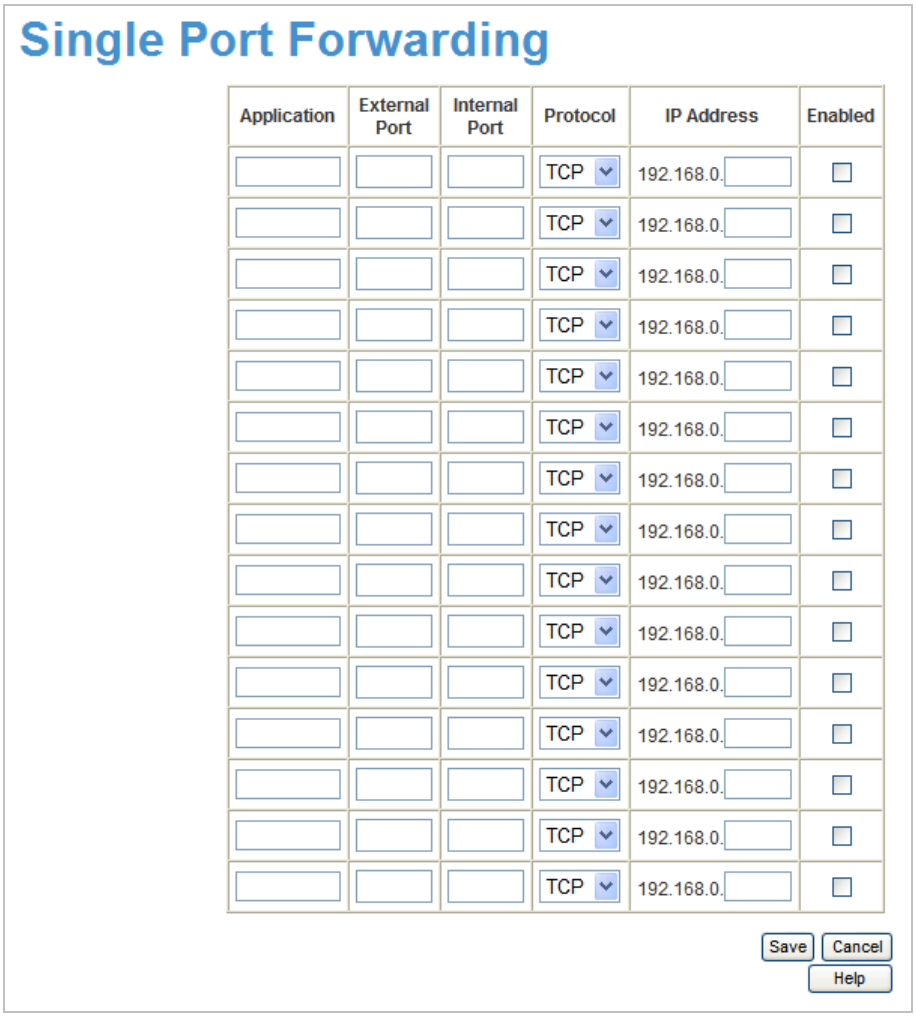


Figure: Port Forwarding Screen

-1- Data - Port Forwarding Screen

Port Forwarding	
Application	Enter the desired application type.
External Port	Traffic from the Internet using this port number will be sent to the Server. This is normally the same as the Internal Port Number. If it is different, this device will perform a "mapping" or "translation" function, allowing the server to use a different port to the clients.
Internal Port	Enter the port numbers which the Server software is configured to use.
Protocol	Select the protocol (TCP or UDP) used by the Server.

IP Address	Enter the desired IP address.
Enabled	Use this to Enable or Disable support for this Server, as required.

6.8 Port Range Forward

This feature allows you to make Servers on your LAN accessible to Internet users. Normally, Internet users would not be able to access a server on your LAN because:

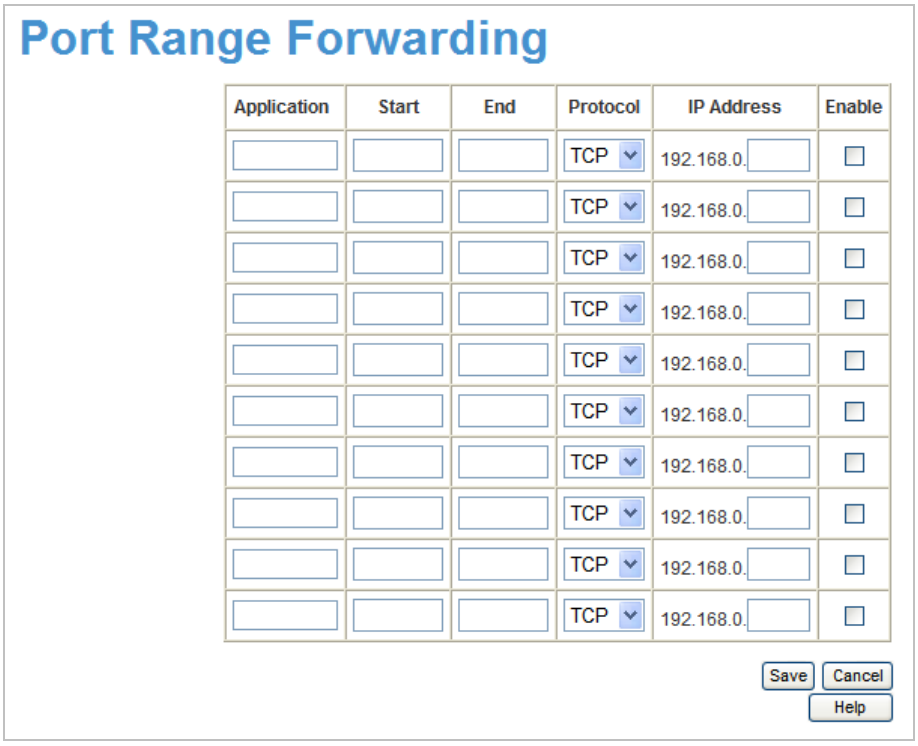


Figure: Port Range Forwarding Screen

-1- Data - Port Range Forwarding Screen

Port Range Forwarding	
Application	Enter the desired application type.
Start	Enter the beginning of the range of port numbers used by the application server.
End	Enter the end of the range of port numbers used by the application server.
Protocol	Select the protocol (TCP, UDP or Both) used by the Server.
IP Address	Enter the desired IP address.
Enable	Use this to Enable or Disable support for this Server, as required.

6.9 QoS

The QoS (Quality of Service) feature allows you specify priorities for different traffic. Lower priority traffic will be slowed down to allow greater throughput or less delay for high priority traffic.

An example ***QoS*** screen is shown below.

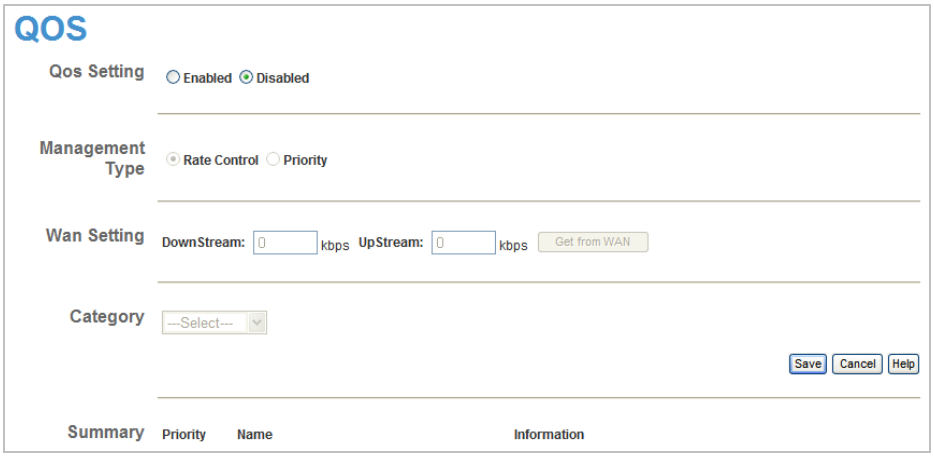


Figure: QoS Screen

-1- Data - QoS Screen

QoS Setting	
QoS Setting	To disable QoS (Quality of Service), keep the default setting, Disable. To enable QoS (Quality of Service), click Enable and follow these instructions.
Management Type	There are 2 options: • Rate Control - The QoS will be managed by the size of the bandwidth. • Priority - The QoS will be managed by the priority.
(1-1) WAN Setting	
DownStream	Enter the desired value for the DownStream Connection.
UpStream	Enter the desired value for the UpStream Connection.
Get from WAN	Click this button to get the values for DownStream and UpStream from WAN.

Category	• Applications:
	  • Add a New Application (Once selected, please complete the following setups.)
	  • Ip/Net: Enter the IP addresses.
	  • Rate: Enter the desired rate value.
	  • Priority: Select the desired option (High, Normal, Low)
	  • Direct: Select Upstream or Downstream as required.
	• Self-Define
	  • Name. Enter a name for your device.
	  • Port Range: Enter the values for the desired port range.
	  • Protocol: Select the desired option.
	  • Ip/Net: Enter the IP addresses of your device.
	  • Rate: Enter the desired rate value.
	  • Priority: Select the option (High, Normal, Low) from the list.
	  • Direct: Select Upstream or Downstream as required.

Summary	
Priority	The priority of the application.
Name	The Name of this Application or IP Address.
Information	The general Information of this Application or IP Address.

6.10 VPN (IPSec)

VPN Setup

The VPN (Virtual Private Network) feature in the WN-300ARM-VPN allows you to create a VPN connection between 2 WN-300ARM-VPN, or a remote PC to establish a VPN connection to the WN-300ARM-VPN.
To establish a VPN connection from a remote PC to the Wireless ADSL Router, you need suitable (IPSec) VPN client software on your PC.
For more information about VPNs, please refer to ***Appendix C - About VPNs***.

VPN Policies

A "VPN Policy" contains all the configuration data for a particular VPN connection. Generally, you will have to create one policy for each site you wish to connect to. The remote VPN Gateway (or client) needs to have matching configuration.

- Traffic covered by an enabled policy will automatically be sent via a VPN tunnel. If the VPN tunnel does not exist, it will be created.
- The VPN tunnel is created according to the parameters in the SA (Security Association).
- The remote VPN Endpoint must have a matching SA, or it will refuse the connection.

The VPN Policies:

- **Auto** - Some parameters for the VPN tunnel are generated automatically. This requires using the IKE (Internet Key Exchange) protocol to perform negotiations between the 2 VPN Endpoints.

VPN Policies Screen

This screen is displayed when you select **VPN** on the ***Advanced*** menu. It allows you to create, modify and manage your VPN Policies.
If you have not created any policies, the Policy Table will be empty.

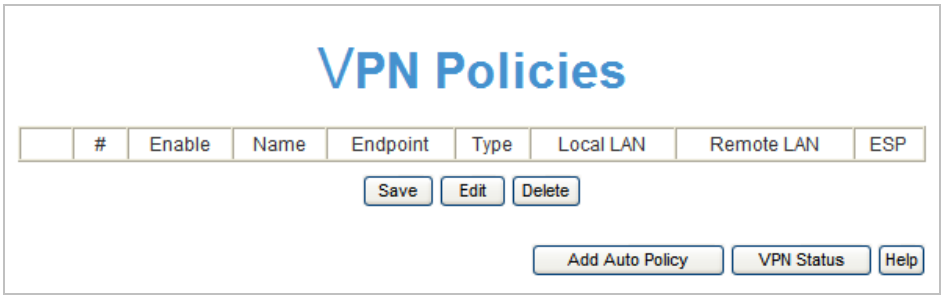


Figure: VPN Policies Screen

-1- Data - VPN Policies Screen

Policy Table	The Policy Table contains the following data • **Enable** - Use this checkbox to Enable or Disable a Policy as required. Click "Save" after making any changes. • **Name** - Each policy is given a unique name to identify it. This name is not known to the remote VPN endpoint; it is used only to assist managing your policies. • **Endpoint** - The address of the remote VPN endpoint. • **Type** - The Type is "Auto" or "Manual" as explained above. • **Local LAN** - IP address or subnet on your local LAN. Traffic must be from (or to) these addresses to be covered by this policy. • **Remote LAN** - IP address or subnet on the remote LAN. Traffic must be to (or from) these addresses to be covered by this policy. • **ESP** - ESP (Encapsulating Security Payload) encryption protocol used for the VPN data.
Buttons	
Save	Save any changes to the "Enable" setting for each policy.
Edit	Edit (modify) the selected policy. (Select a policy by clicking on the radio button.)
Delete	Delete the selected policy. (Select a policy by clicking on the radio button.)
Add Auto Policy	Change to the input screen for an "Auto" policy. See the following section for details. When the new policy is saved, it will appear in the bottom row of the Policy Table.
VPN Status	View details of each current VPN Tunnel (connection) in a sub-window. You also have the option of viewing the VPN Log.

VPN Auto Policies Screen

This screen is displayed when you click the ***Add Auto Policy*** button on the ***VPN Policies*** screen, or when you edit an existing Auto Policy. It allows you to define or edit an "Auto" VPN policy.

An "Auto" VPN policy uses the IKE (Internet Key Protocol) to exchange and negotiate parameters for the IPsec SA (Security Association). Because of this negotiation, it is not necessary for all settings on this VPN Gateway to match the settings on the remote VPN endpoint. Where settings must match, this is indicated.

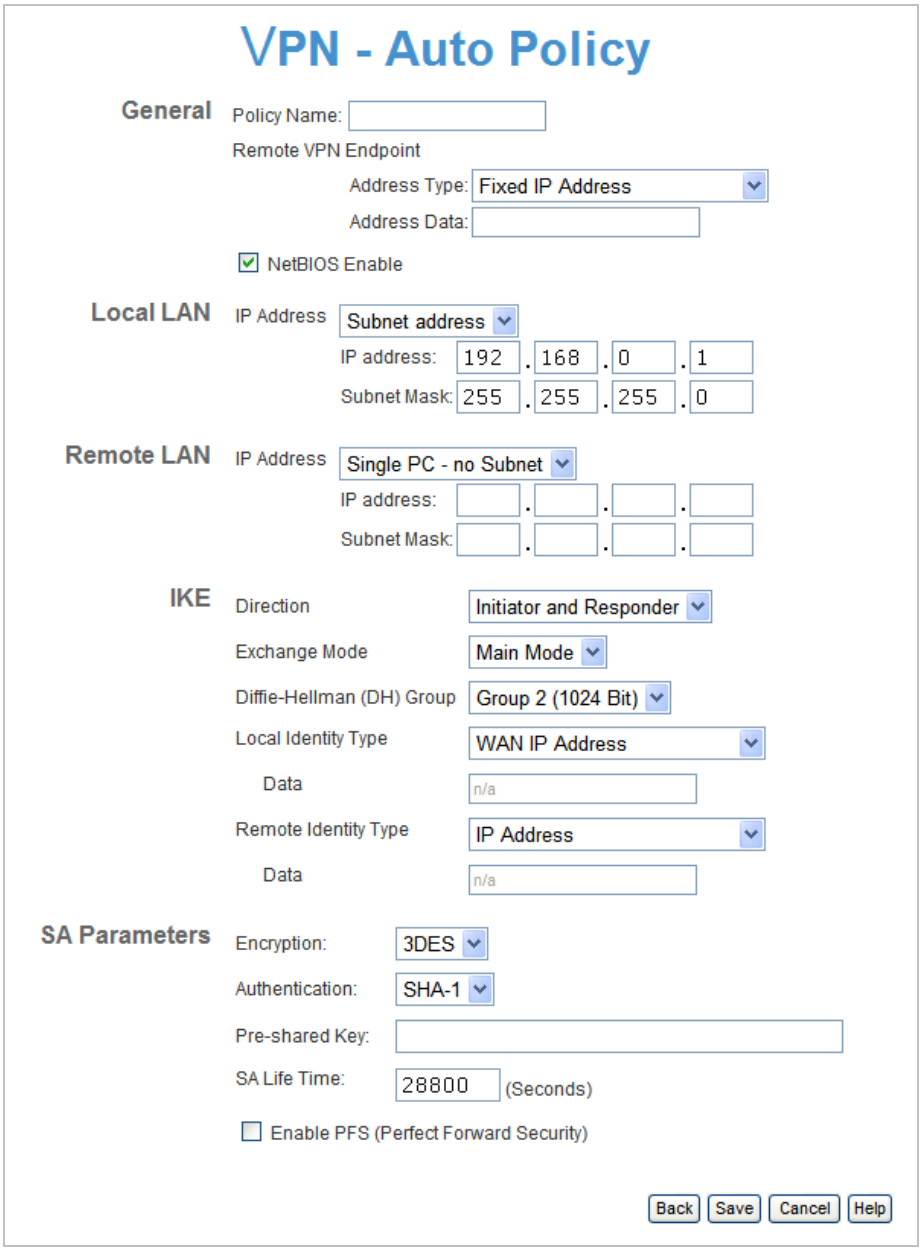


Figure: VPN-Auto Policy Screen

-2- Data - VPN-Auto Policy Screen

General	
Policy Name	Enter a unique name to identify this policy. This name is not supplied to the remote VPN endpoint. It is used only to help you manage the policies.
Remote VPN Endpoint	Select the desired option (Fixed IP address or Fully Qualified Domain Name) and enter the address of the remote VPN endpoint you wish to connect to. **Note:** The remote VPN endpoint must have this VPN Gateway's address entered as its "Remote VPN Endpoint".
NetBIOS Enable	Check this if you wish NETBIOS traffic to be forwarded over the VPN tunnel. The NETBIOS protocol is used by Microsoft Networking.

Local LAN	
Local LAN	This identifies which PCs on your LAN are covered by this policy. For each selection, data must be provided as follows: • Single address Enter an IP address in the "IP address" field. Typically, this setting is used when you wish to make a single Server on your LAN available to remote users. • Subnet address Enter an IP address in the "IP address" field, and the desired network mask in the "Subnet Mask" field. The remote VPN endpoint must have these IP addresses entered as its "Remote" addresses.
Remote LAN	
Remote LAN	This identifies which PCs on the remote LAN are covered by this policy. For each selection, data must be provided as follows: • Single address Enter an IP address in the "IP address" field. This must be an address on the remote LAN. Typically, this setting is used when you wish to access a server on the remote LAN. • Subnet address Enter an IP address in the "IP address" field, and the desired network mask in the "Subnet Mask" field. The remote VPN endpoint must have these IP addresses entered as its "Local" addresses.
IKE	
Direction	This setting is used when determining if the IKE policy matches the current traffic. Select the desired option. • Responder only - Incoming connections are allowed, but outgoing connections will be blocked. • Initiator and Responder - Both incoming and outgoing connections are allowed.
Exchange Mode	IPSec has 2 possibilities - "Main Mode" and "Aggressive Mode". WN-300ARM-VPN only supports "Main Mode". So, user also has to ensure the remote VPN endpoint is set to use "Main Mode".
Diffie-Hellman (DH) Group	The Diffie-Hellman algorithm is used when exchanging keys. The DH Group setting determines the number of bit size used in the exchange. This value must match the value used on the remote VPN Gateway.

Local Identity Type	Select the desired option to match the "Remote Identity Type" setting on the remote VPN endpoint. • WAN IP Address - your Internet IP address. • Fully Qualified Domain Name - your domain name. • Fully Qualified User Name - your name, E-mail address, or other ID.
Local Identity Data	Enter the data for the selection above. (If "IP Address" is selected, no input is required.)
Remote Identity Type	Select the desired option to match the "Local Identity Type" setting on the remote VPN endpoint. • IP Address - The Internet IP address of the remote VPN endpoint. • Fully Qualified Domain Name - the Domain name of the remote VPN endpoint. • Fully Qualified User Name - the name, E-mail address, or other ID of the remote VPN endpoint.
Remote Identity Data	Enter the data for the selection above. (If "IP Address" is selected, no input is required.)
SA Parameters	
Encryption	Encryption Algorithm used for both IKE and IPSec. This setting must match the setting used on the remote VPN Gateway.
Authentication	Authentication Algorithm used for both IKE and IPSec. This setting must match the setting used on the remote VPN Gateway.
Pre-shared Key	The key must be entered both here and on the remote VPN Gateway. This method does not require using a CA (Certificate Authority).
SA Life Time	This determines the time interval before the SA (Security Association) expires. (It will automatically be re-established if necessary.) While using a short time period (or data amount) increases security, it also degrades performance. It is common to use periods over an hour (3600 seconds) for the SA Life Time. This setting applies to both IKE and IPSec SAs.
IPSec PFS (Perfect Forward Secrecy)	If enabled, security is enhanced by ensuring that the key is changed at regular intervals. Also, even if one key is broken, subsequent keys are no easier to break. (Each key has no relationship to the previous key.) This setting applies to both IKE and IPSec SAs. When configuring the remote endpoint to match this setting, you may have to specify the "Key Group" used. For this device, the "Key Group" is the same as the "DH Group" setting in the IKE section.

VPN Auto Policies Screen

This screen is displayed when you click the VPN Log button on the VPN Policies screen, or on the Status

screen.

This screen allows you to view details of each current VPN Tunnel (connection). If there are no current connections, the status table will be empty.

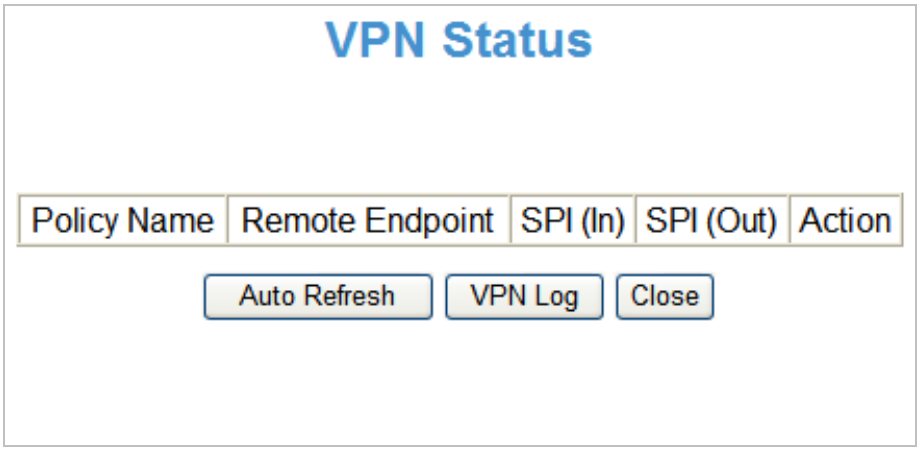


Figure: VPN-Status Screen

-3- Data - VPN Status Screen

Tunnel Table	This table contains the following data about each current connection. • **Policy Name** - The name of the policy. When a policy is created, it must be given a unique name to identify it. • **Remote Endpoint** - The address of the remote VPN endpoint. • **SPI (In)** - This is a unique index number to identify the incoming connection. For "Auto" policies, the SPI is automatically generated. For "Manual" policies, the SPI must be entered when the policy is configured. • **SPI (Out)** - This is a unique index number to identify the outgoing connection. For "Auto" policies, the SPI is automatically generated. For "Manual" policies, the SPI must be entered when the policy is configured. • **Action** - This column will contain a button which allows you to break (terminate) the current the VPN connection.
Buttons	
Auto Refresh	Use this to Enable or Disable auto-refresh for this screen. If enabled, the screen will be updated every few seconds. The status bar on the bottom on the screen will indicate if auto-refresh is enabled or disabled.
VPN Log	Click this button to switch to the VPN log screen. The VPN log shows details of each connection as it is created.

6.11 VPN (IPSec) Example

Common VPN Situations - VPN Pass-through

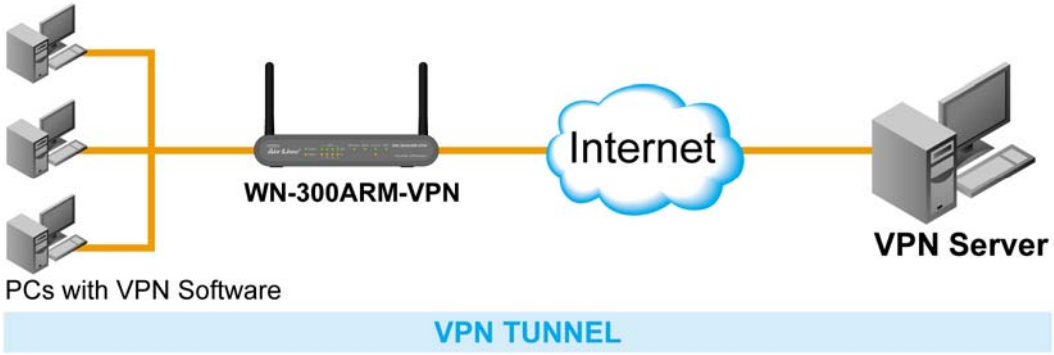


Figure: VPN Pass-through

Here, a PC on the LAN behind the Router/Gateway is using VPN software, but the Router/Gateway is NOT acting as a VPN endpoint. It is only allowing the VPN connection.

- The PC software can use any VPN protocol supported by the remote VPN.
- The remote VPN Server must support client PCs which are behind a NAT router, and so have an IP address which is not valid on the Internet.
- The Router/Gateway requires no VPN configuration, since it is not acting as a VPN endpoint.

Client PC to VPN Gateway

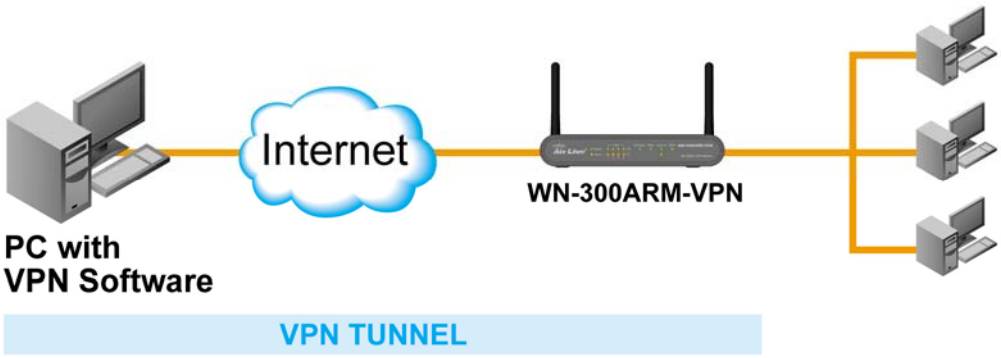


Figure: Client PC to VPN Gateway

In this situation, the PC must run appropriate VPN client software in order to connect, via the Internet, to the WN-300ARM-VPN or other VPN Gateway. Once connected, the client PC has the same access to LAN resources as PCs on the local LAN (unless restricted by the network administrator).

- IPsec is not the only protocol which can be used in this situation, but the Wireless ADSL Router supports IPsec ONLY.

- Windows 2000 and Windows XP include an IPsec VPN client program. However, configuration of this client program for use with the WN-300ARM-VPN is very complex and beyond the scope of this document.

Connecting 2 LANs via VPN

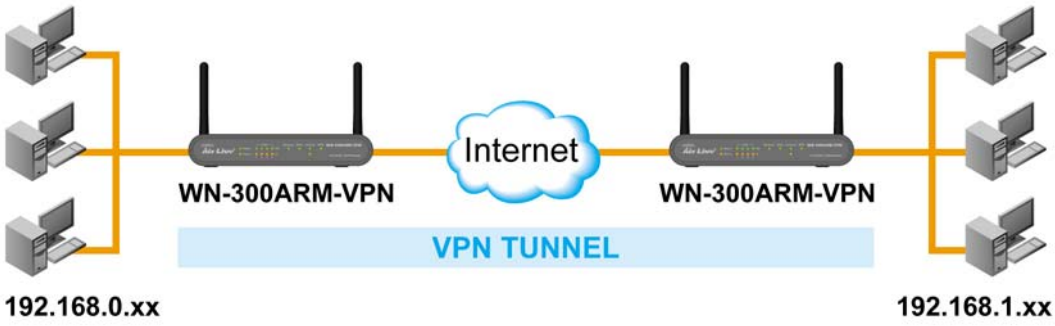


Figure: Connecting 2 VPN Gateways

This allows two (2) LANs to be connected. PCs on each endpoint gain secure access to the remote LAN.

- The 2 LANs MUST use different IP address ranges.
- The VPN Policies at each end determine when a VPN tunnel will be established, and what systems on the remote LAN can be accessed once the VPN connection is established.
- It is possible to have simultaneous VPN connections to many remote sites.

VPN Example - Connecting 2 WN-300ARM-VPN

In this example, 2 LANs are connected via VPN. Each end has a WN-300ARM-VPN.

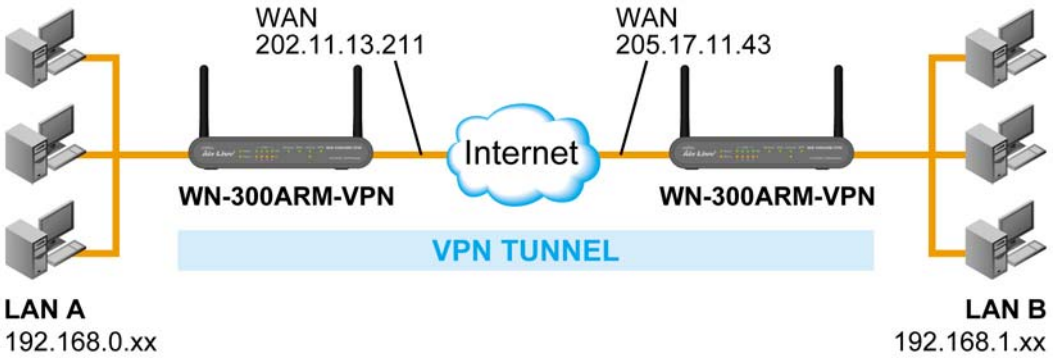


Figure: Connecting 2 WN-300ARM-VPN

Note

- The LANs MUST use different IP address ranges.
- Both endpoints have fixed WAN (Internet) IP addresses.
- This example uses an "Auto" policy, using IKE

Settings

Setting	LAN A Gateway	LAN B Gateway	Notes
Policy Name	Example	Example	Name does not affect operation. Select a meaningful name.
Remote VPN Endpoint	Fixed IP Address 60.250.158.64	Fixed IP Address 61.229.35.12	Other endpoint's WAN (Internet) IP address.
NetBIOS	Enable	Enable	Disable if not required.
Local LAN IP address Mask	192.168.0.0 255.255.255.0	192.168.1.0 255.255.255.0	Local Address subnet. Use a more restrictive definition if possible.
Remote LAN IP address Mask	192.168.1.0 255.255.255.0	192.168.0.0 255.255.255.0	Remote Address subnet. Use a more restrictive definition if possible.
IKE			
Direction	Initiator & responder	Initiator & responder	Does not have to match. Either endpoint can block 1 direction.
Exchange mode	Main Mode	Main Mode	Must match
DH Group	Group 2 (1024 bit)	Group 2 (1024 bit)	Must match
Local Identity	IP address	IP address	IP address is the most common ID method
Remote Identity	WAN IP address	WAN IP address	IP address is the most common ID method
SA Parameters			
Encryption	3DES	3DES	Must match.
Authentication	MD5	MD5	Must match
Pre-shared Key	123456789	123456789	Must match; use any string.
SA Life time	28800	28800	Does not have to match. Shorter period will be used.
PFS	Disabled	Disabled	Must match

Note:

Some VPN Gateways or programs let you specify the following settings separately for IKE and IPSec. For this device, the same settings are used for both IKE and IPSec.

- Authentication
- Encryption
- SA Lifetime

Configuration Settings - Gateway A

Gateway A should be configured as shown below.

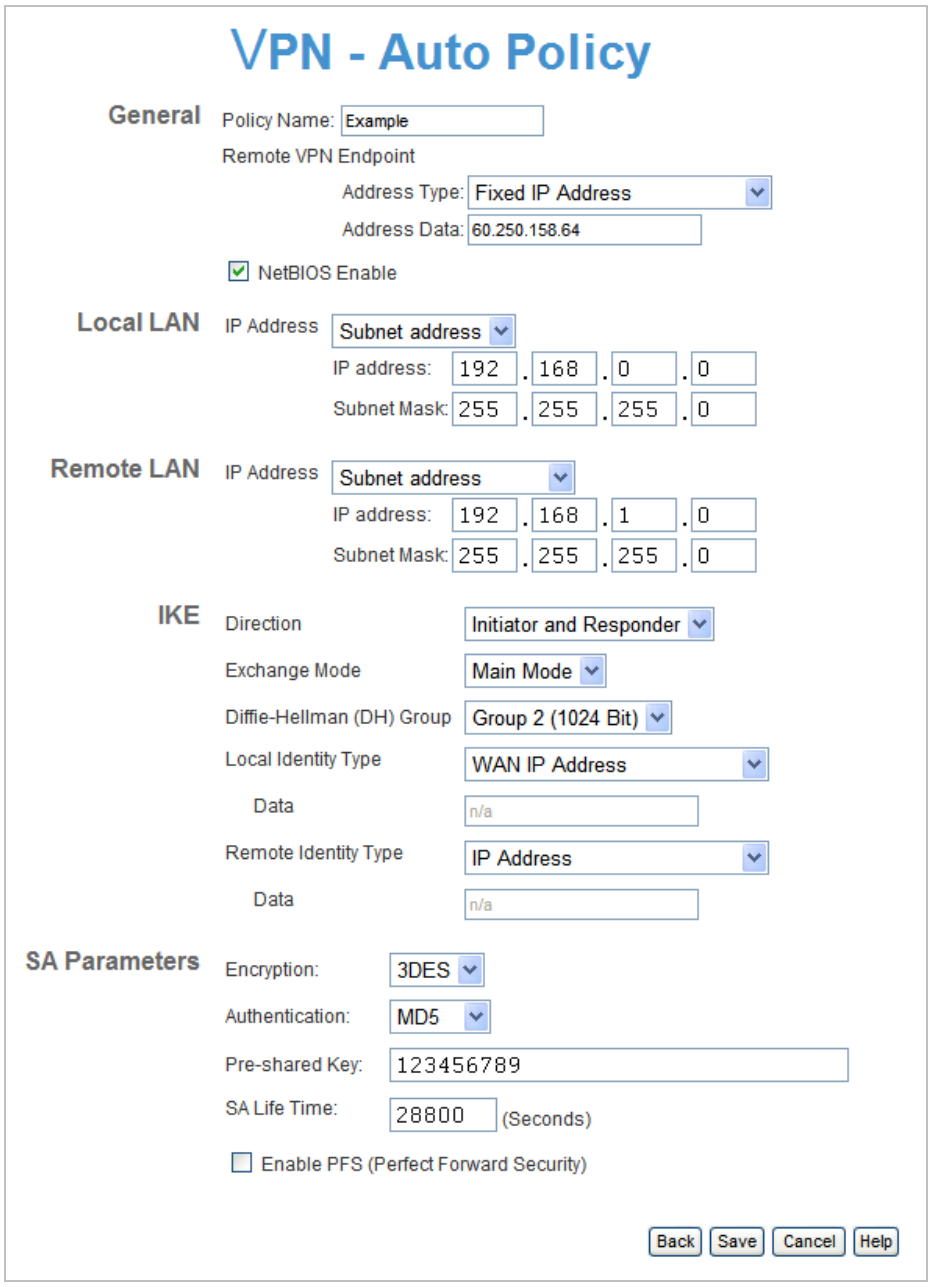


Figure: Gateway A Configuration

Configuration Settings - Gateway B

Gateway B should be configured as shown below.

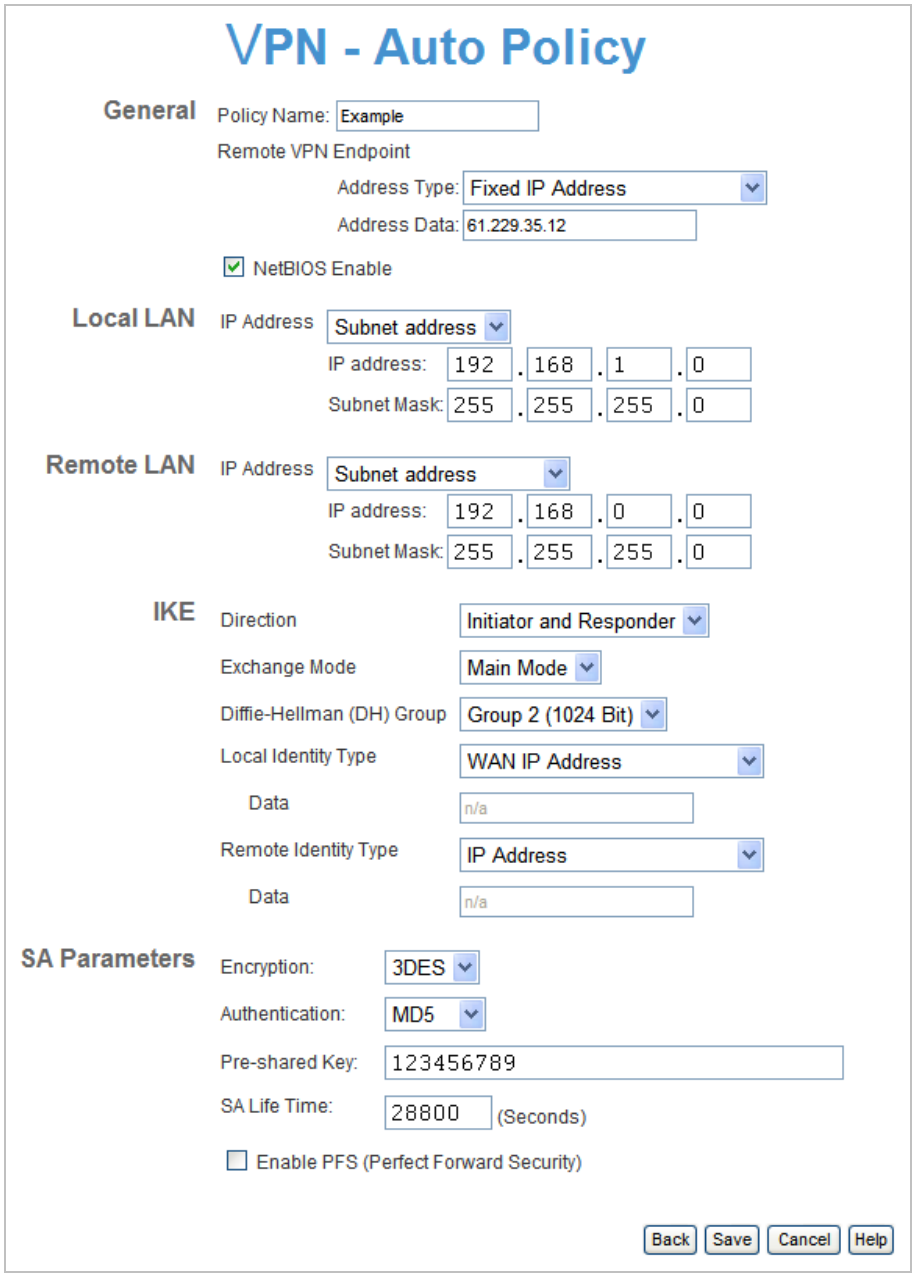


Figure: Gateway B Configuration

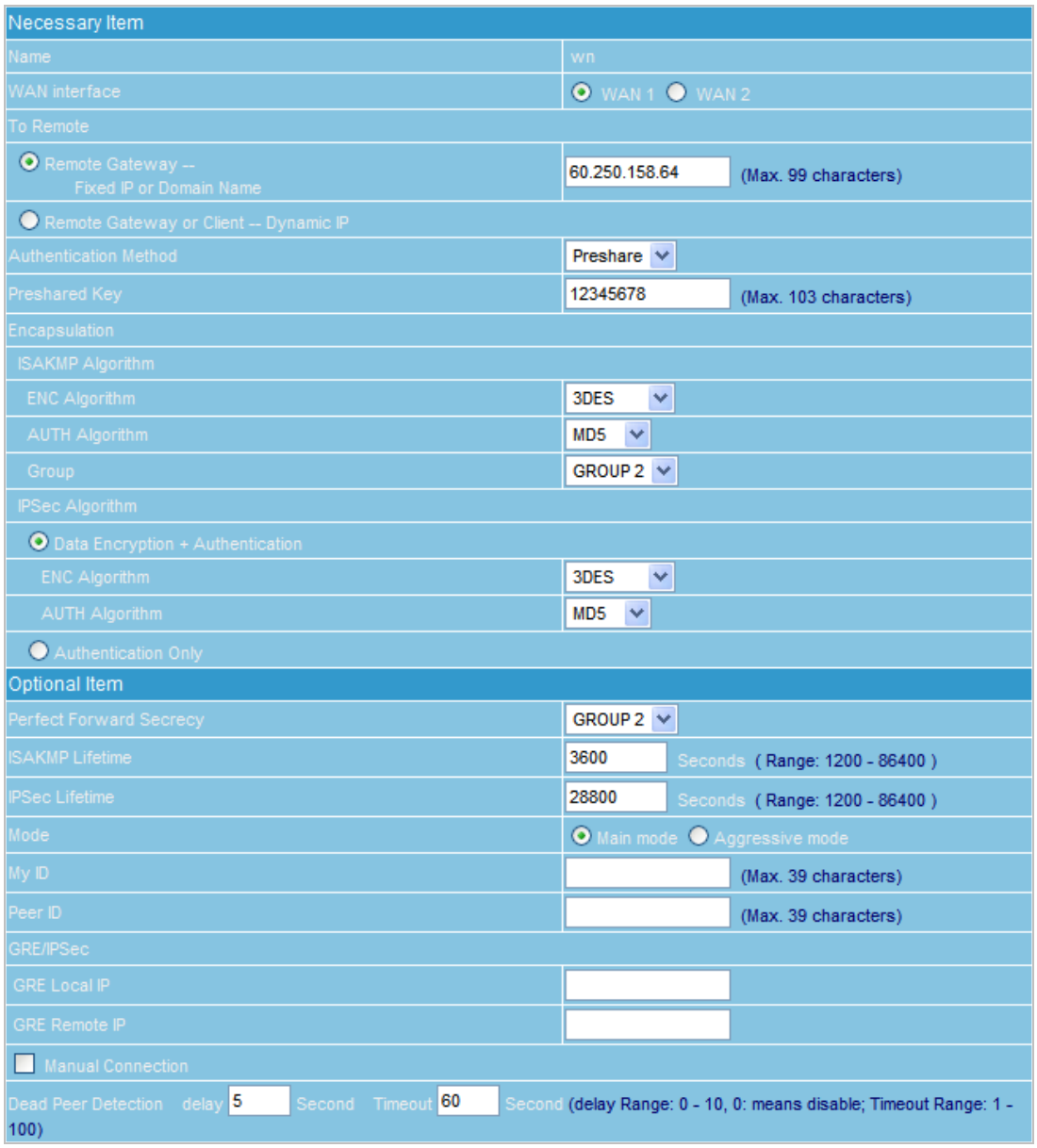
VPN Example - Connecting WN-300ARM-VPN and RS-1200

Settings

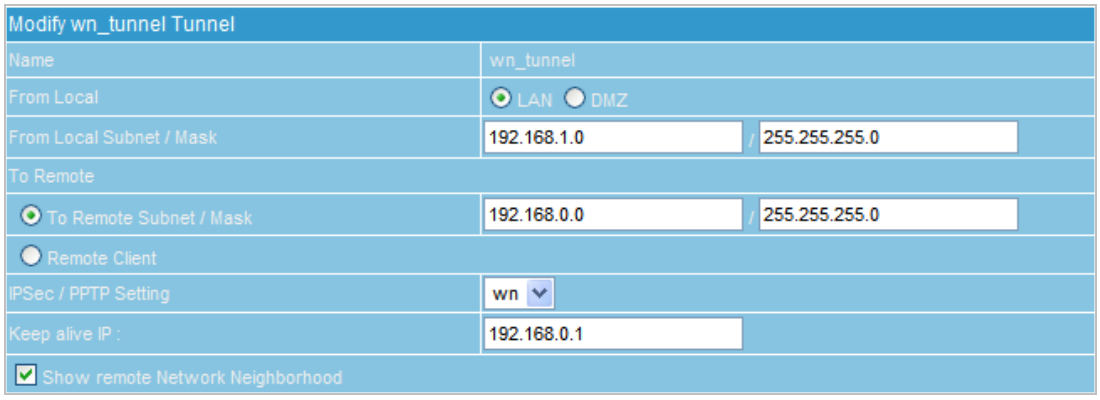
Setting	WN-300ARM-VPN	RS-1200	Notes
Policy Name	wn-300	wn	Name does not affect operation. Select a meaningful name.
Remote VPN Endpoint	Fixed IP Address 60.250.158.64	PPPoE DDNS enable	Other endpoint's WAN (Internet) IP address.
NetBIOS	Enable	Enable	Disable if not required.
Local LAN IP address Mask	192.168.0.0 255.255.255.0	192.168.1.0 255.255.255.0	Local Address subnet. Use a more restrictive definition if possible.
Remote LAN IP address Mask	192.168.1.0 255.255.255.0	192.168.0.0 255.255.255.0	Remote Address subnet. Use a more restrictive definition if possible.
IKE			
Direction	Initiator & responder	--	Does not have to match. Either endpoint can block 1 direction.
Exchange mode	Main Mode	Main Mode	Must match
DH Group	Group 2 (1024 bit)	Group 2 (1024 bit)	Must match
Local Identity	IP address	--	IP address is the most common ID method
Remote Identity	WAN IP address	--	IP address is the most common ID method
SA Parameters			
Encryption	3DES	3DES	Must match.
Authentication	MD5	MD5	Must match
Pre-shared Key	12345678	12345678	Must match; use any string.
SA Life time	Default	Default	Does not have to match. Shorter period will be used.
PFS	Enable	Group 2	If WN-300ARM-VPN sets to enable, it will auto-detect the other VPN device of PFS.

Configuration: RS-1200

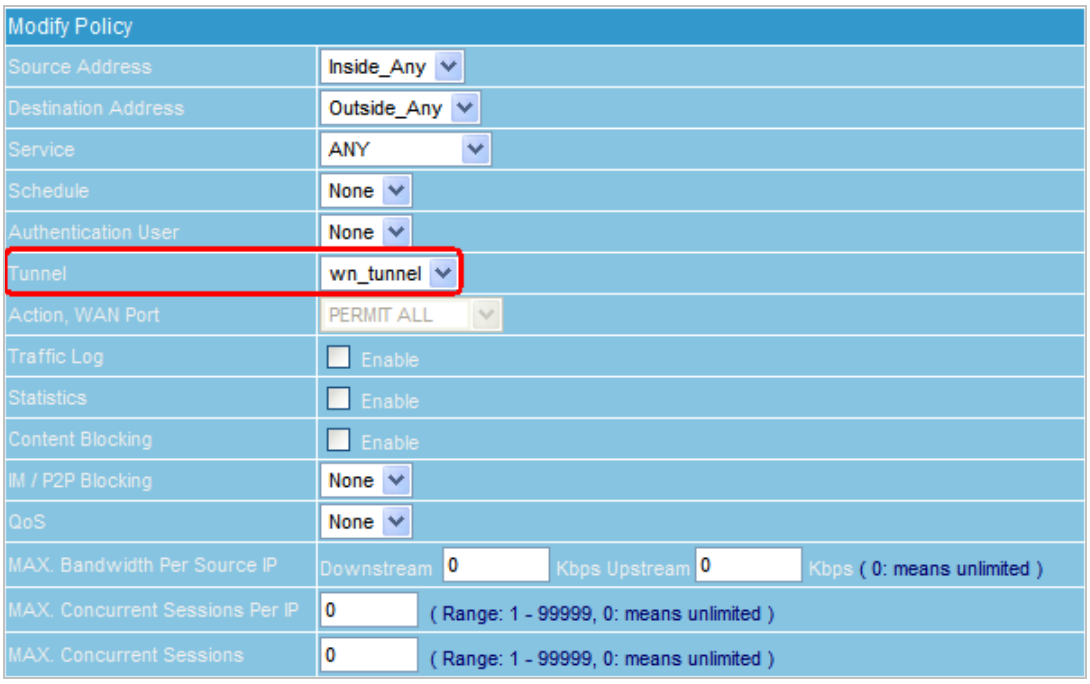
1. **Policy Object → VPN → IPSec Autokey**: Define the IPSec setting



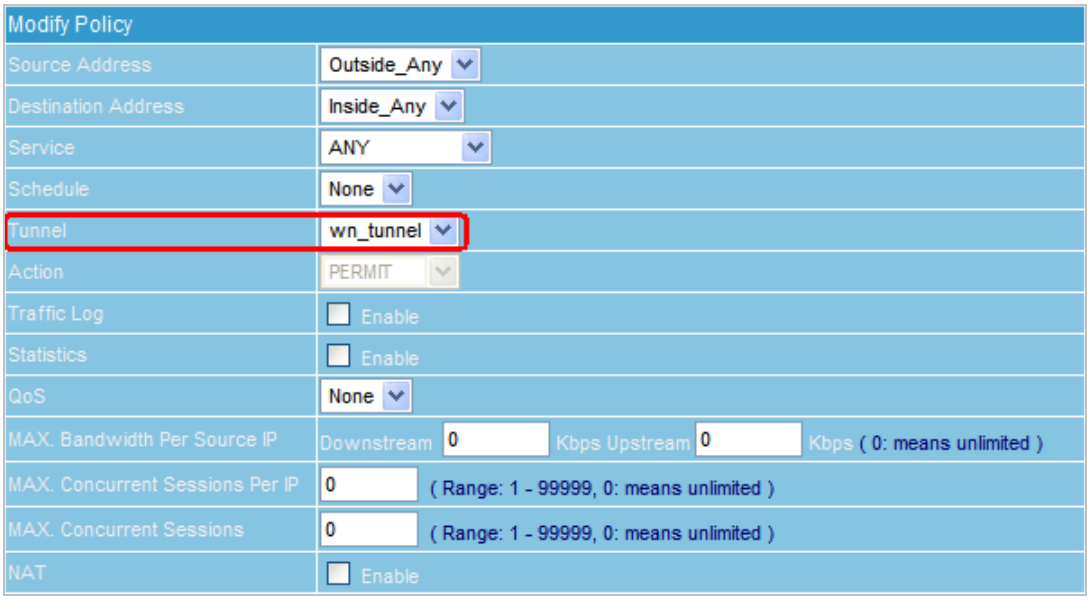
2. **Policy Object → VPN → Tunnel**: Configure the else VPN setting



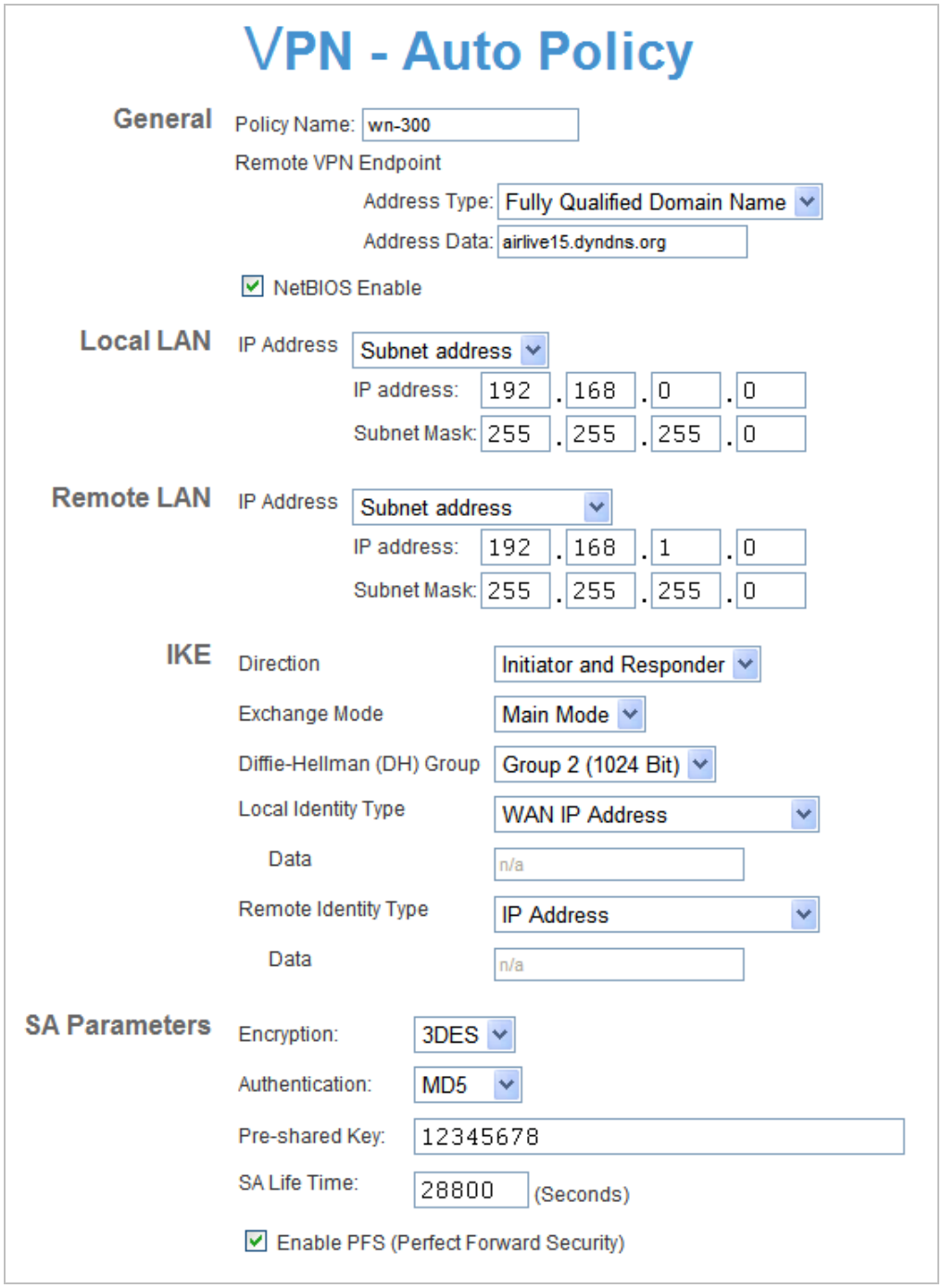
3. **Policy → Outgoing**: Enable IPSec VPN setting



4. **Policy → Incoming**: Enable IPSec VPN setting



Configuration: WN-300ARM-VPN

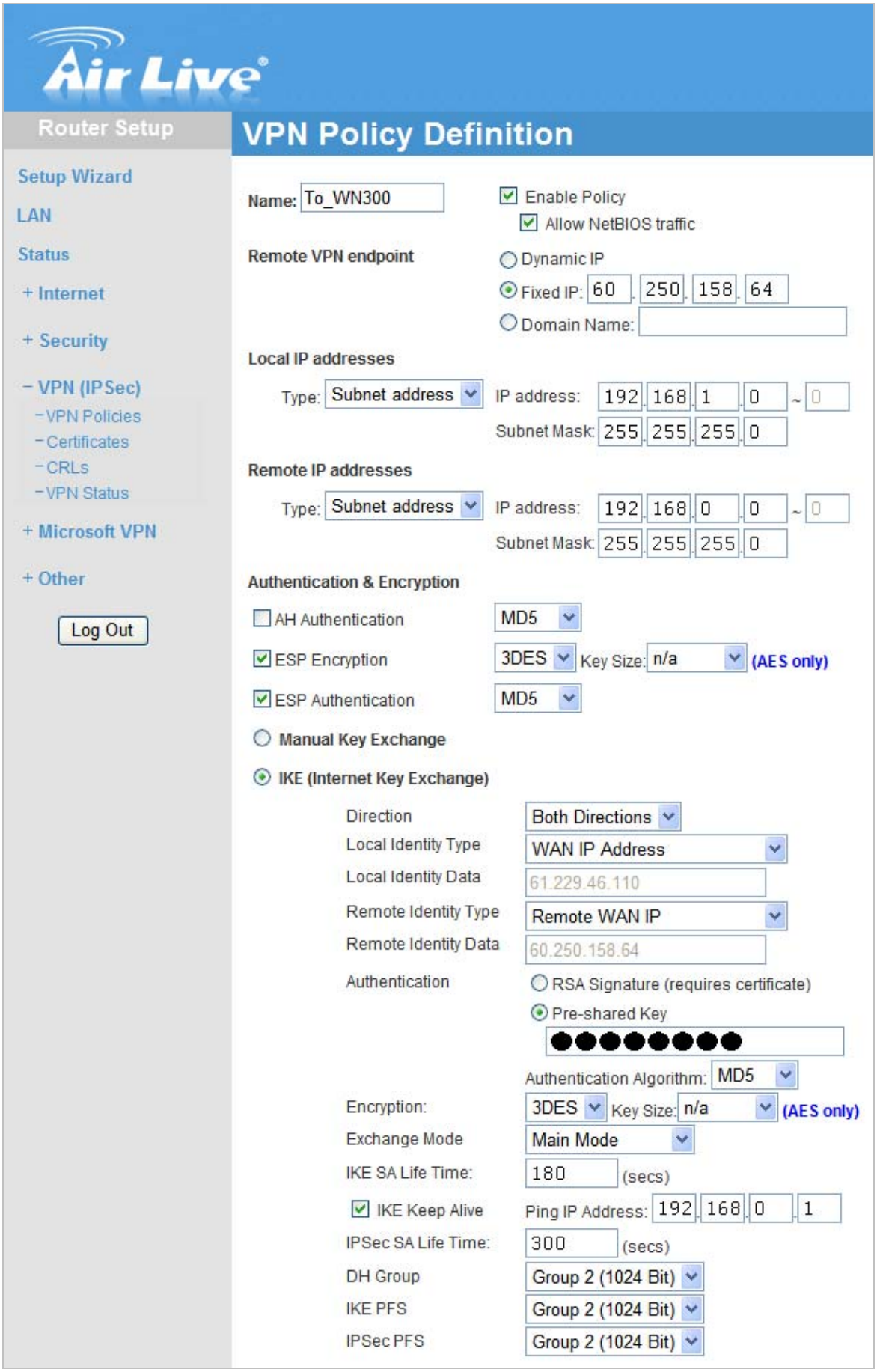


VPN Example - Connecting WN-300ARM-VPN and IP-2000VPN

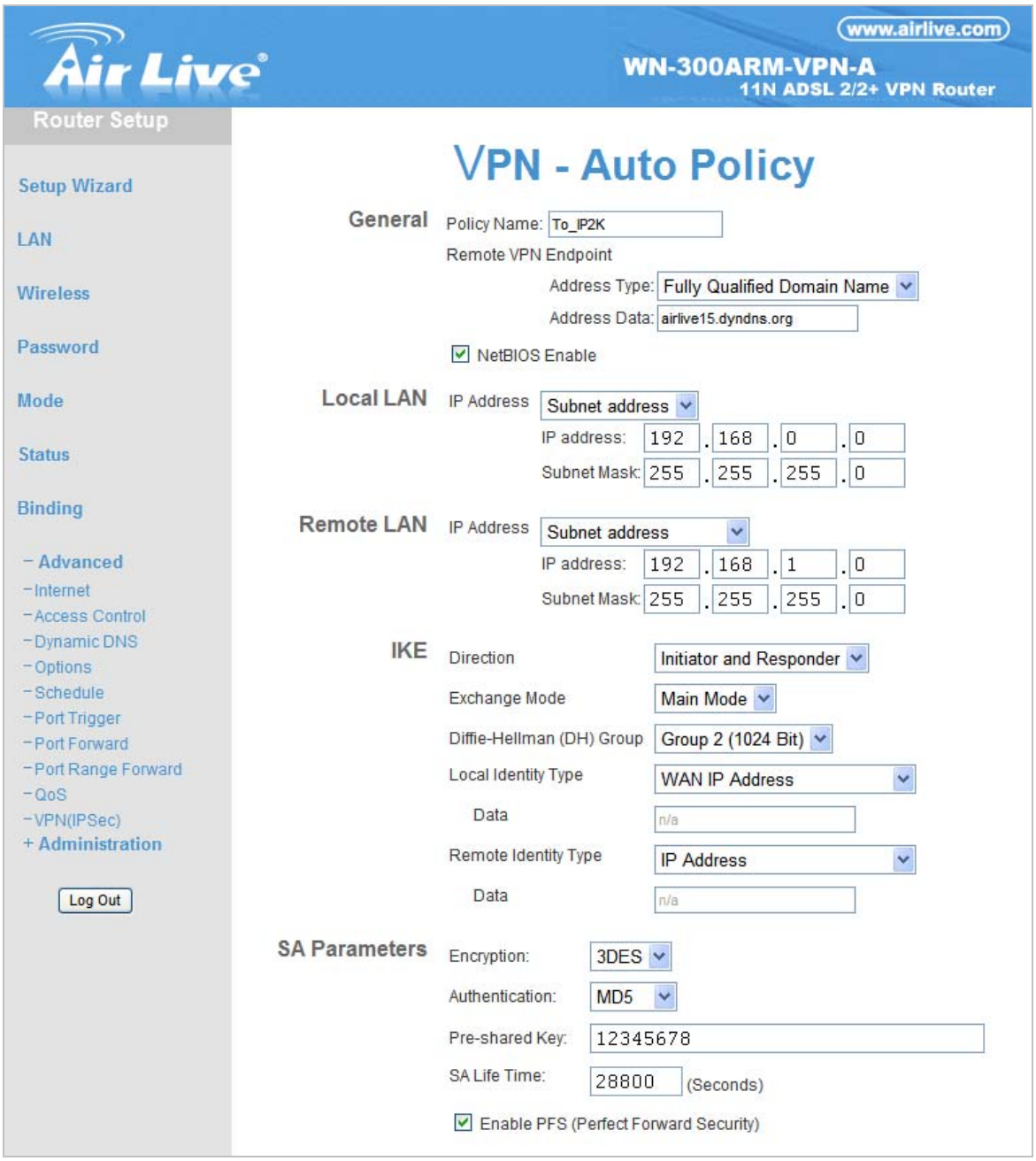
Settings

Setting	WN-300ARM-VPN	IP-2000VPN	Notes
Policy Name	To_IP2K	To_WN300	Name does not affect operation. Select a meaningful name.
Remote VPN Endpoint	Fixed IP Address 60.250.158.64	PPPoE DDNS enable	Other endpoint's WAN (Internet) IP address.
NetBIOS	Enable	Enable	Disable if not required.
Local LAN IP address Mask	192.168.0.0 255.255.255.0	192.168.1.0 255.255.255.0	Local Address subnet. Use a more restrictive definition if possible.
Remote LAN IP address Mask	192.168.1.0 255.255.255.0	192.168.0.0 255.255.255.0	Remote Address subnet. Use a more restrictive definition if possible.
IKE			
Direction	Initiator & responder	Initiator & responder	Does not have to match. Either endpoint can block 1 direction.
Exchange mode	Main Mode	Main Mode	Must match
DH Group	Group 2 (1024 bit)	Group 2 (1024 bit)	Must match
Local Identity	IP address	IP address	IP address is the most common ID method
Remote Identity	WAN IP address	WAN IP address	IP address is the most common ID method
SA Parameters			
Encryption	3DES	3DES	Must match.
Authentication	MD5	MD5	Must match
Pre-shared Key	12345678	12345678	Must match; use any string.
SA Life time	Default	Default	Does not have to match. Shorter period will be used.
PFS	Enable	Group 2	If WN-300ARM-VPN sets to enable, it will auto-detect the other VPN device of PFS.

Configuration: IP-2000VPN



Configuration: WN-300ARM-VPN



Chapter7. Administration

Overview

Normally, it is not necessary to use these screens, or change any settings. These screens and settings are provided to deal with non-standard situations, or to provide additional options for advanced users.
The available settings and features are:

PC Database	This is the list of PCs shown when you select the "DMZ PC" or a "Virtual Server". This database is maintained automatically, but you can add and delete entries for PCs which use a Fixed (Static) IP Address.
Config File	Backup or restore the configuration file for the WN-300ARM-VPN. This file contains all the configuration data.
Logs & E-mail	View or clear all logs, set E-Mailing of log files and alerts.
Diagnostics	Perform a Ping or DNS Lookup.
Remote Admin	Allow settings to be changed from the Internet.
Routing	Only required if your LAN has other Routers or Gateways.
Upgrade Firmware	Upgrade the Firmware (software) installed in your WN-300ARM-VPN.

7.1 PC Database

The PC Database is used whenever you need to select a PC (e.g. for the "DMZ" PC).

- It eliminates the need to enter IP addresses.
- Also, you do not need to use fixed IP addresses on your LAN.

However, if you do use a fixed IP address on some devices on your LAN, you should enter details of each such device into the PC database, using the PC Database screen.

PC Database Screen

An example ***PC Database*** screen is shown below.

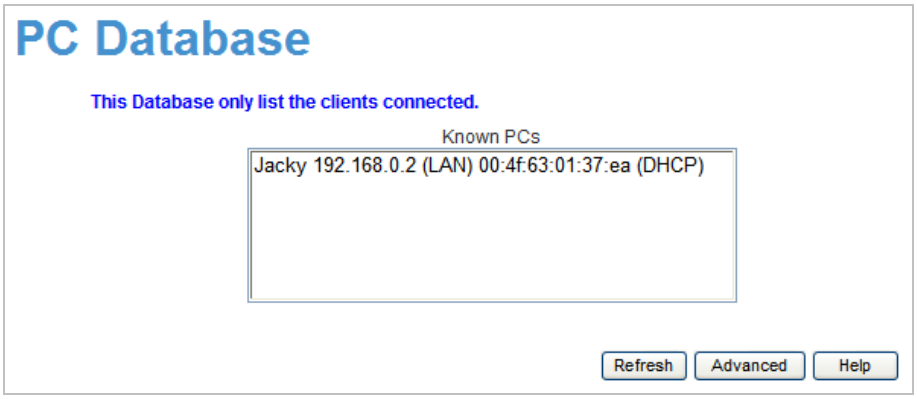


Figure: PC Database

- PCs which are "DHCP Clients" are automatically added to the database, and updated as required.
- The WN-300ARM-VPN uses the "Hardware Address" to identify each PC, not the name or IP address. The "Hardware Address" can only change if you change the PC's network card or adapter.

-1- Data - PC Database Screen

Known PCs	This lists all current entries. Data displayed is *name (IP Address) type*. The "type" indicates whether the PC is connected to the LAN.
Name	If adding a new PC to the list, enter its name here. It is best if this matches the PC's "hostname".
IP Address	Enter the IP Address of the PC. The PC will be sent a "ping" to determine its hardware address. If the PC is not available (not connected, or not powered On) you will not be able to add it.
Buttons	
Refresh	Update the data on screen.
Advanced	View the ***Advanced*** version of the PC database screen. See below for details.

Advanced PC Database Screen

This screen is displayed if the "Advanced" button on the ***PC Database*** is clicked. It provides more control than the standard ***PC Database*** screen.

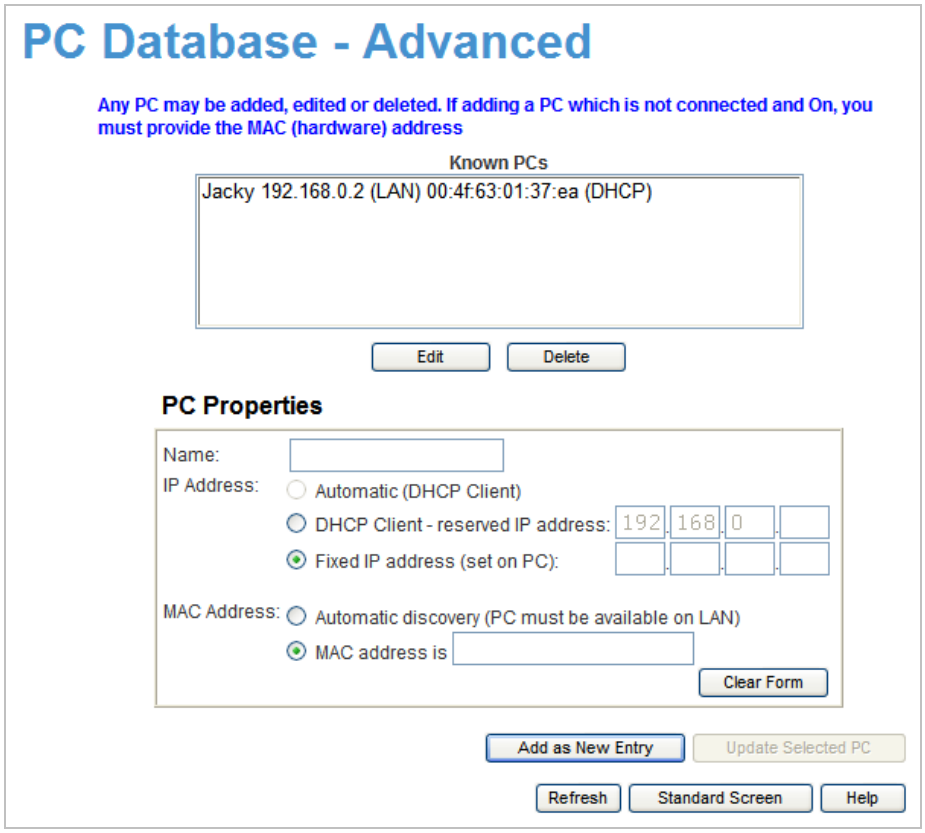


Figure: PC Database - Advanced

-2- Data - Advanced PC Database Screen

Known PCs	This lists all current entries. Data displayed is ***name (IP Address) type***. The "type" indicates whether the PC is connected to the LAN.
PC Properties	
Name	If adding a new PC to the list, enter its name here. It is best if this matches the PC's "hostname".

IP Address	Select the appropriate option: • **Automatic** - The PC is set to be a DHCP client (Windows: "Obtain an IP address automatically"). The WN-300ARM-VPN will allocate an IP address to this PC when requested to do so. The IP address could change, but normally won't. • **DCHP Client - Reserved IP Address** - Select this if the PC is set to be a DCHP client, and you wish to guarantee that the WN-300ARM-VPN will always allocate the same IP Address to this PC. Enter the required IP address. Only the last field is required; the other fields must match the WN-300ARM-VPN's IP address. • **Fixed IP Address** - Select this if the PC is using a Fixed (Static) IP address. Enter the IP address allocated to the PC. (The PC must be configured to use this IP address.)
MAC Address	Select the appropriate option • **Automatic discovery** - WN-300ARM-VPN will contact the PC and find its MAC address. This is only possible if the PC is connected to the LAN and powered on. • **MAC address is** - Enter the MAC address on the PC. The MAC address is also called the "Hardware Address", "Physical Address", or "Network Adapter Address". The WN-300ARM-VPN uses this to provide a unique identifier for each PC. Because of this, the MAC address can NOT be left blank.
Buttons	
Add as New Entry	Add a new PC to the list, using the data in the "PC Properties" box. If "Automatic discovery" (for MAC address) is selected, the PC will be sent a "ping" to determine its hardware address. This will fail unless the PC is connected to the LAN, and powered on.
Update Selected PC	Update (modify) the selected PC, using the data in the "Properties" box.
Clear Form	Clear the "Properties" box, ready for entering data for a new PC.
Refresh	Update the data on screen.
Standard Screen	Click this to view the standard "PC Database" screen.

7.2 Config File

This feature allows you to download the current settings from the WN-300ARM-VPN, and save them to a file on your PC.

You can restore a previously-downloaded configuration file to the WN-300ARM-VPN, by uploading it to the WN-300ARM-VPN.

This screen also allows you to set the WN-300ARM-VPN back to its factory default configuration. Any existing settings will be deleted.

An example ***Config File*** screen is shown below.

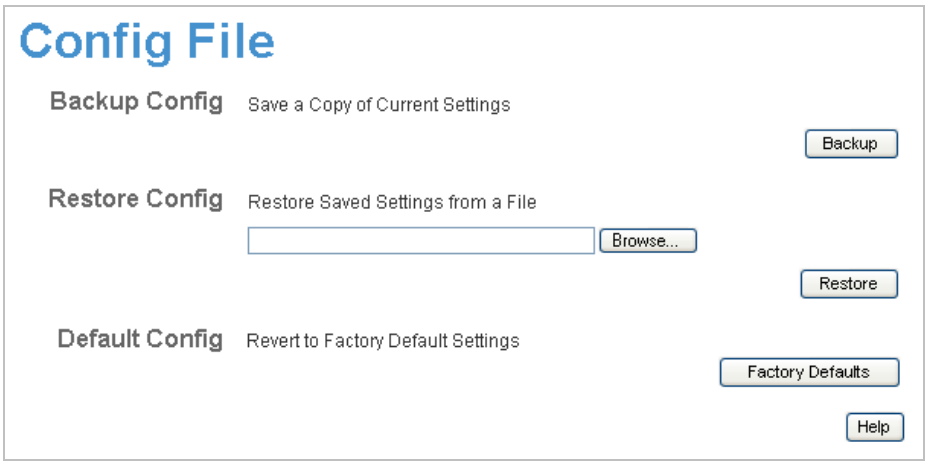


Figure: Config File Screen

-1- Data - Config File Screen

Backup Config	Use this to download a copy of the current configuration, and store the file on your PC. Click ***Backup*** to start the download.
Restore Config	This allows you to restore a previously-saved configuration file back to the WN-300ARM-VPN. Click ***Browse*** to select the configuration file, then click ***Restore*** to upload the configuration file. **WARNING!** Uploading a configuration file will destroy (overwrite) ALL of the existing settings.
Default Config	Clicking the ***Factory Defaults*** button will reset the WN-300ARM-VPN to its factory default settings. **WARNING!** This will delete ALL of the existing settings.

7.3 Logs

The Logs record various types of activity on the WN-300ARM-VPN. This data is useful for troubleshooting, but enabling all logs will generate a large amount of data and adversely affect performance.

Since only a limited amount of log data can be stored in the WN-300ARM-VPN, log data can also be E-mailed to your PC. Use the ***E-mail*** screen to configure this feature.

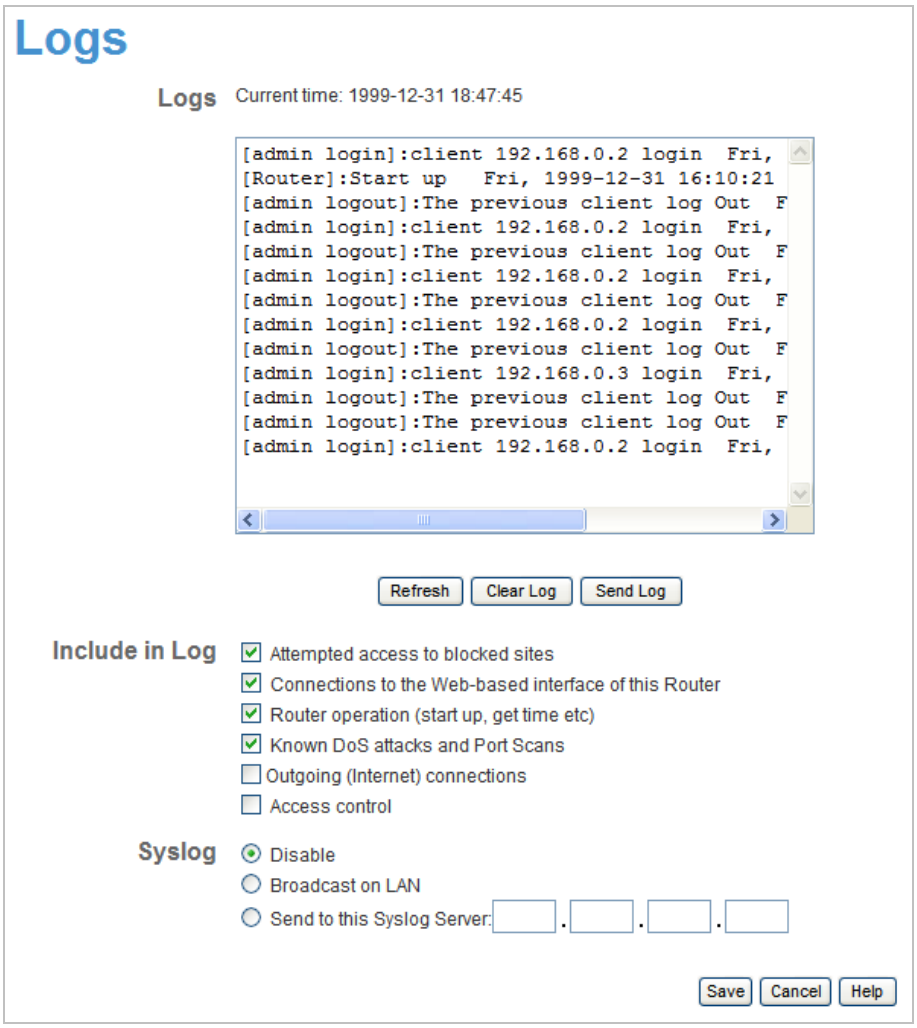


Figure: Logs Screen

-1- Data - Logs Screen

Logs	
Current Time	The current time on the WN-300ARM-VPN is displayed.
Log Data	Current log data is displayed in this panel.

Buttons	There are three (3) buttons • **Refresh** - Update the log data. • **Clear Log** - Clear the log, and restart it. This makes new messages easier to read. • **Send Log** - E-mail the log immediately. This is only functional if the ***E-mail*** screen has been configured.
Include in Log	
Include (Checkboxes)	Use these checkboxes to determine which events are included in the log. Checking all options will increase the size of the log, so it is good practice to disable any events which are not really required. • **Attempted access to blocked sites** - If checked, attempted Internet accesses which were blocked are logged. • **Connections to the Web-based interface of this Router** - If checked, this will log connections TO this Router, rather than through this Router to the Internet. • **Router operation** - If checked, other Router operations (not covered by the selections above) will be logged. • **Known DoS attacks and Port Scans** - If checked, Denial of Service attacks, as well as port scans, will be logged.
Syslog	
Disable	Data is not sent to a Syslog Server.
Broadcast on LAN	The Syslog data is broadcast, rather than sent to a specific Syslog server. Use this if your Syslog Server does not have a fixed IP address.
Send to this Syslog Server	If your Syslog server has a fixed IP address, select this option, and enter the IP address of your Syslog server.

7.4 Email

This screen allows you to E-mail Logs and Alerts. A sample screen is shown below.

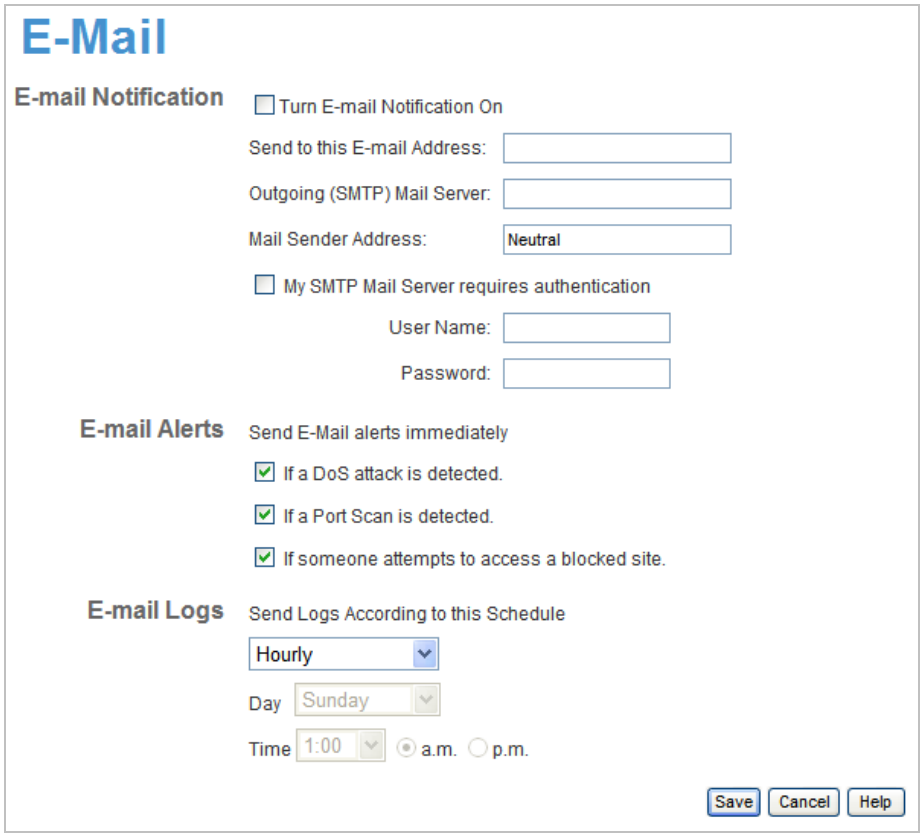


Figure: E-mail Screen

-1- Data - E-mail Screen

E-Mail Notification	
Turn E-mail Notification on	Check this box to enable this feature. If enabled, the E-mail address information (below) must be provided.
Send to this E-mail address	Enter the E-mail address the Log is to be sent to.
Outgoing (SMTP) Mail Server	Enter the address or IP address of the SMTP (Simple Mail Transport Protocol) Server you use for outgoing E-mail.
Mail Sender Address	Enter the mail address of the sender. The E-mail will also show this address as the Sender's address.
My SMTP Mail Server requires authentication	To stop spanners, many SMTP mail servers require you to log in to send mail. In this case, enable this checkbox, and enter the login information (User name and Password) in the fields below.
User Name	If you have enabled "My SMTP Mail Server requires authentication" above, enter the User Name required to login to your SMTP Server.

Password	If you have enabled "My SMTP Mail Server requires authentication" above, enter the password required to login to your SMTP Server.
E-mail Alerts	
Send E-mail alerts immediately	You can choose to have alerts E-mailed to you, by checking the desired checkboxes. The WN-300ARM-VPN can send an immediate alert when it detects a significant security incident such as • A known hacker attack is directed at your IP address • A computer on the Internet scans your IP address for open ports • Someone on your LAN (Local Area Network) tries to visit a blocked site.
E-mail Logs	

Send Logs	Select the desired option for sending the log by E-mail.
	• **Never** (default) - This feature is disabled; Logs are not sent.
	• **When log is full** - The time is not fixed. The log will be sent when the log is full, which will depend on the volume of traffic.
	• **Hourly, Daily, Weekly...** - The log is sent on the interval specified.
	  • If **Daily** is selected, the log is sent at the time specified. Select the time of day you wish the E-mail to be sent.
	  • If **Weekly** is selected, the log is sent once per week, on the specified day, at the specified time. Select the day and the time of day you wish the E-mail to be sent.
	Note:
	If the log is full before the time specified to send it, it will be sent regardless of the day and time specified.

7.5 Diagnostics

This screen allows you to perform a "Ping" or a "DNS lookup". These activities can be useful in solving network problems.

An example ***Network Diagnostics*** screen is shown below.

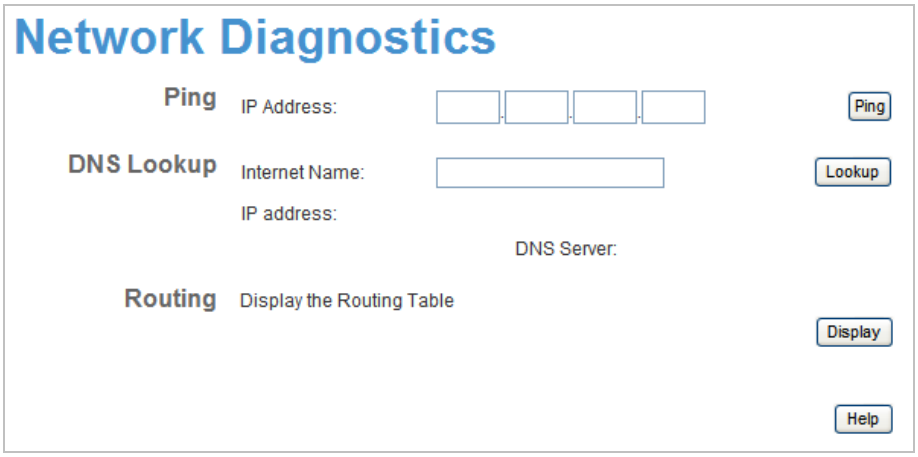


Figure: Network Diagnostics Screen

-1- Data - Network Diagnostics Screen

Ping	
IP Address	Enter the IP address you wish to ping. The IP address can be on your LAN, or on the Internet. Note that if the address is on the Internet, and no connection currently exists, you could get a "Timeout" error. In that 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* pane.
DNS Lookup	
Internet Name	Enter the Domain name or URL for which you want a DNS (Domain Name Server) lookup. Note that if the address in on the Internet, and no connection currently exists, you could get a "Timeout" error. In that case, wait a few seconds and try again.
Lookup Button	After entering the Domain name/URL, click this button to start the "DNS Lookup" procedure.
Routing	
Display	Click this button to display the internal routing table. This information can be used by Technical Support and other staff who understand Routing Tables.

7.6 Remote Administration

If enabled, this feature allows you to manage the WN-300ARM-VPN via the Internet.

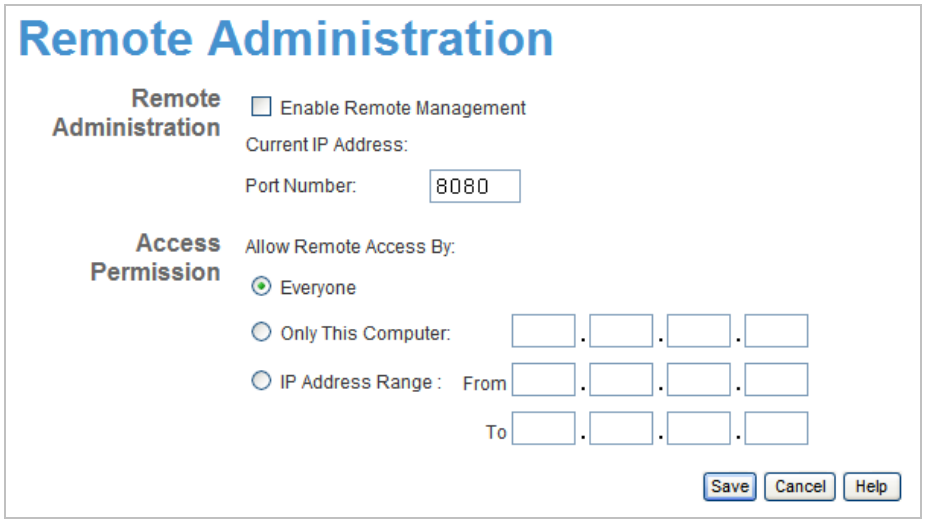


Figure: Remote Administration Screen

-1- Data - Remote Administration Screen

Remote Administration	
Enable Remote Management	Check to allow administration/management via the Internet. (To connect, see below). If Disabled, this device will ignore Administration connection attempts from the Internet.
Current IP Address	This is the current address you will use when accessing this device from the Internet. To connect, see details and an example below.
Port Number	Enter a port number between 1 and 65535. The default for HTTP (Web) connections is port 80, but using port 80 will prevent the use of a Web "Virtual Server" on your LAN. So using a different port number is recommended. The default value is 8080. The port number must be specified in your Browser when you connect. See the following section for details.
Access Permission	
Allow Remote Access	Select the desired option. • **Everyone** - allow access by everyone on the Internet. • **Only This Computer** - allow access by only one IP address. Enter the desired IP address. • **IP Address Range** - allow access from a range of IP addresses on the Internet. Enter a beginning and ending IP address to define the allowed range.

	For security, you should restrict access to as few external IP addresses as practical.

To connect from a remote PC via the Internet

1. Ensure your Internet connection is established, and start your Web Browser.
2. In the "Address" bar, enter "http://" followed by the Internet IP Address of the WN-300ARM-VPN. If the port number is not 80, the port number is also required. (After the IP Address, enter ":" followed by the port number.)

   e.g.

   http://123.123.123.123.8080

   This example assumes the WAN IP Address is 123.123.123.123, and the port number is 8080.
3. You will then be prompted for the login name and password for this device.

7.7 Routing

Overview

You can ignore the “Routing” page if your network topology is constructed as following:

- If you don't have other Routers or Gateways on your LAN.
- If the WN-300ARM-VPN is only acting as a Gateway for the local LAN segment, ignore the "Routing" page even if your LAN has other Routers.

You can ignore the RIP Routing page if your network topology is constructed as following:

- If your LAN has other Gateways and Routers, and you wish to control which LAN segments use each Gateway, do NOT enable RIP (Routing Information Protocol). Configure the Static Routing table instead. (You also need to configure the other Routers.)

You can ignore the Static Routing page if your network topology is constructed as following:

- If your LAN has a standard Router (e.g. Cisco) on your LAN, and the WN-300ARM-VPN is to act as a Gateway for all LAN segments, you can enable RIP (Routing Information Protocol).
- If using Windows 2000 Data center Server as a software Router, enable RIP on the WN-300ARM-VPN, and ensure the following Windows 2000 settings are correct:
  - Open ***Routing and Remote Access***
  - In the console tree, select ***Routing and Remote Access***, ***[server name]***, ***IP Routing***, ***RIP***
  - In the "Details" pane, right-click the interface you want to configure for RIP version 2, and then click "Properties".
  - On the "General" tab, set ***Outgoing packet protocol*** to "RIP version 2 broadcast", and ***Incoming packet protocol*** to "RIP version 1 and 2".

Routing Screen

The routing table is accessed by the ***Routing*** link on the ***Administration*** menu.

-1- Using this Screen

Generally, you will use either RIP (Routing Information Protocol) OR the Static Routing Table, as explained above, although is it possible to use both methods simultaneously.

Static Routing Table

- If RIP is not used, an entry in the routing table is required for each LAN segment on your Network, other than the segment to which this device is attached.
- The other Routers must also be configured. See ***Configuring Other Routers on your LAN*** later in this chapter for further details and an example.

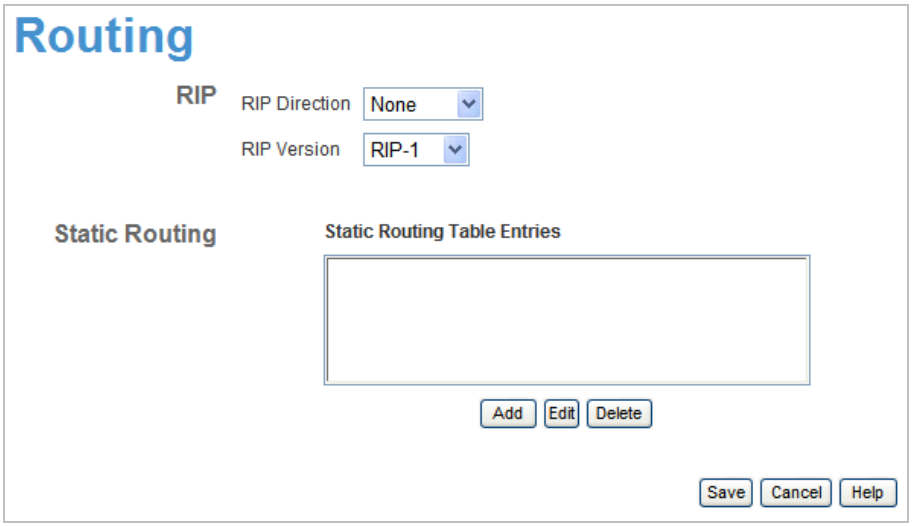


Figure: Routing Screen

-2- Data - Routing Screen

RIP	
(2-1) **RIP Direction**	Select the desired RIP Direction.
RIP Version	Choose the RIP Version for the Server.
Static Routing	
Static Routing Table Entries	This list shows all entries in the Routing Table. • This area shows details of the selected item in the list. • Change any the properties as required, then click the "Edit" button to save the changes to the selected entry.
Buttons	
Add	Add a new entry to the Static Routing table, using the data shown in the "Properties" area on screen. The entry selected in the list is ignored, and has no effect.
Edit	Update the current Static Routing Table entry, using the data shown in the table area on screen.
Delete	Delete the current Static Routing Table entry.
Save	Save the RIP setting. This has no effect on the Static Routing Table.

Configuring Other Routers on your LAN

It is essential that all IP packets for devices are not on the local LAN be passed to the WN-300ARM-VPN, so that they can be forwarded to the external LAN, WAN, or Internet. To achieve this, the local LAN must be configured to use the WN-300ARM-VPN as the ***Default Route*** or ***Default Gateway***.

-3- Local Router

The local router is the Router installed on the same LAN segment as the WN-300ARM-VPN. This router requires that the ***Default Route*** is the WN-300ARM-VPN itself. Typically, routers have a special entry for the ***Default Route***. It should be configured as follows.

Destination IP Address	Normally 0.0.0.0, but check your router documentation.
Network Mask	Normally 0.0.0.0, but check your router documentation.
Gateway IP Address	The IP Address of the WN-300ARM-VPN.
Metric	1

-4- Other Routers on the Local LAN

Other routers on the local LAN must use the WN-300ARM-VPN's ***Local Router*** as the ***Default Route***. The entries will be the same as the WN-300ARM-VPN's local router, with the exception of the ***Gateway IP Address***.

- For a router with a direct connection to the WN-300ARM-VPN's local Router, the ***Gateway IP Address*** is the address of the WN-300ARM-VPN's local router.
- For routers which must forward packets to another router before reaching the WN-300ARM-VPN's local router, the ***Gateway IP Address*** is the address of the intermediate router.

Static Routing - Example

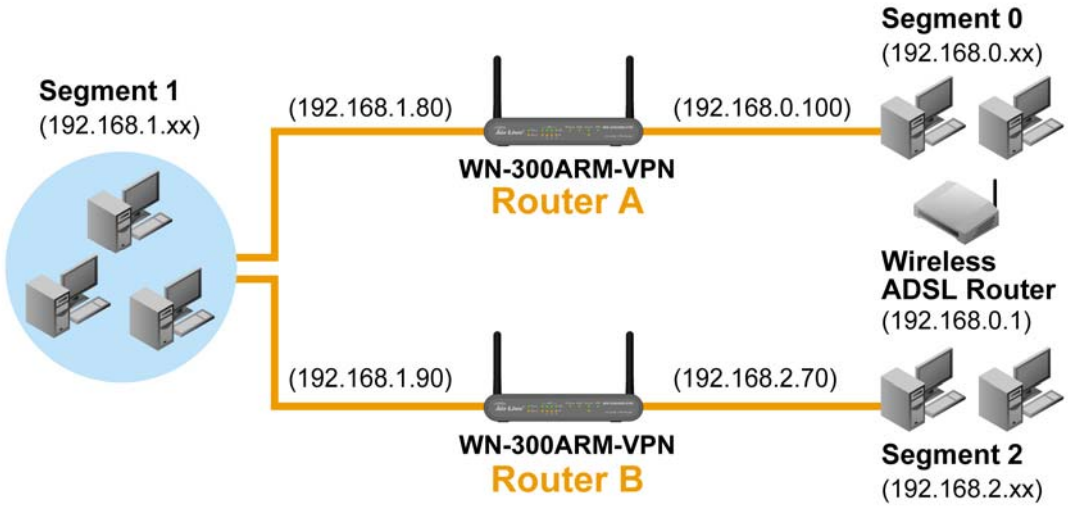


Figure: Routing Example

-5- For the WN-300ARM-VPN's Routing Table

For the LAN shown above, with 2 routers and 3 LAN segments, the WN-300ARM-VPN requires 2 entries as follows.

Entry 1 (Segment 1)	
Destination IP Address	192.168.1.0
Network Mask	255.255.255.0 (Standard Class C)
Gateway IP Address	192.168.0.100 (WN-300ARM-VPN's local Router)
Metric	2
Entry 2 (Segment 2)	
Destination IP Address	192.168.2.0
Network Mask	255.255.255.0 (Standard Class C)
Gateway IP Address	192.168.0.100
Metric	3

-6-

-7- For Router A's Default Route

Destination IP Address	0.0.0.0
Network Mask	0.0.0.0
Gateway IP Address	192.168.0.1 (WN-300ARM-VPN's IP Address)

-8-

-9- For Router B's Default Route

Destination IP Address	0.0.0.0
Network Mask	0.0.0.0
Gateway IP Address	192.168.1.80 (WN-300ARM-VPN's local router)

7.8 Upgrade Firmware

The firmware (software) in the WN-300ARM-VPN can be upgraded using your Web Browser.

You must first download the upgrade file, then to select ***Upgrade Firmware*** on the ***Administration*** menu. You will see a screen like the following.

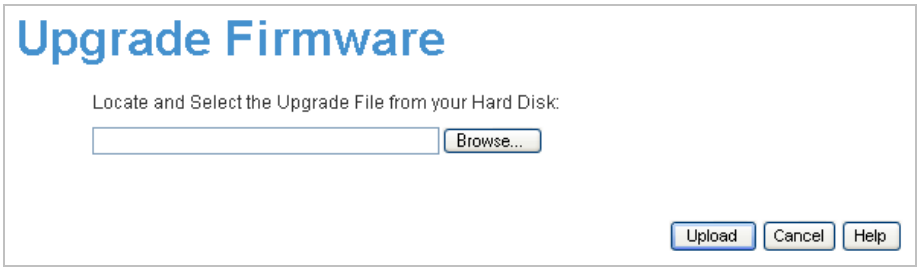


Figure: Router Upgrade Screen

To perform the Firmware Upgrade:

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 ***Upload*** button to commence the firmware upgrade.

Chapter8. Modem Mode

Overview

There are two modes available on the ***Mode*** screen.

- **Router** - Both the ADSL Modem and the Router features are operational. In this mode, this device can provide shared Internet Access to all your LAN users. Also, by default, it acts a DHCP Server, providing an IP address and related information to all Wireless and LAN users.
- **Modem** - Only the ADSL Modem component is operational. All Router features are disabled. This device is "transparent" - it does not perform any operations or make any changes to the network traffic passing through it. You need to have a DHCP Server on your LAN to provide IP addresses to the Wireless clients using this Access Point.

This Chapter describes operation while in **Modem Mode**, also called **Bridge Mode**.

Management Connections

When this device restarts in Modem mode, the IP address does not change, but the DHCP server is disabled. However, your PC will usually retain the IP address provided by the DHCP Server, so the connection will be automatically re-established. You then need to ensure that the IP address of this modem is suitable for your LAN.

- You need to have a DHCP Server on your LAN to provide IP addresses to the Wireless clients using this Access Point.
- This Modem/AP must be a valid device on your LAN, to allow management connections. You must assign a (fixed) IP address which is within the address range used on your LAN, but not within the address range used by your DHCP server.

When you connect in future, just connect normally, using the IP address you assigned.

1. Start your WEB browser.
2. In the ***Address*** box, enter "http://" and the current IP Address of the WN-300ARM-VPN as in this example, which uses the WN-300ARM-VPN 's default IP Address:

   http://192.168.0.1
3. When prompted for the User name and Password, enter admin for the user name, and the current password, as set on the password screen. (The password is the same regardless of the mode.)

Home Screen

If in Modem mode, the home screen will look like the example below.

Figure: Home Screen - Modem Mode

When it sets to Modem mode, the menu has also changed, many of the options in Router mode are not available. The screens available are:

- **Mode** - change back to Router mode, if desired.
- **LAN** - set IP address, mask and gateway. This is the same as in Router mode, except that the DHCP server is not available while in Modem mode.
- **Wireless** - this screen, and related sub-screens, is the same as in Router mode.
- **Password** - this screen is the same as in Router mode.
- **Upgrade FW** - this screen is the same as in Router mode.
- **Status** - displays current settings and status. See the following section for details.
- **Binding** - this screen is the same as in Router mode.

Mode Screen

This screen is change back to Router mode, if desired.

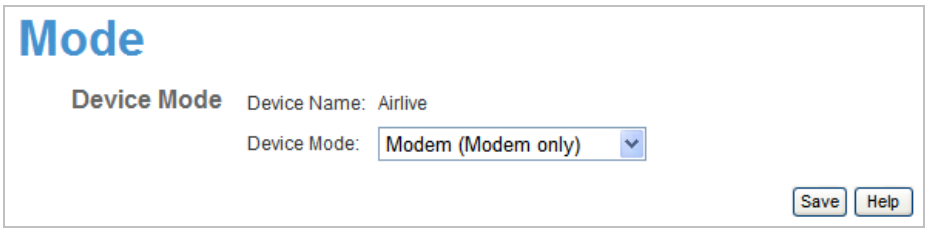


Figure: Mode Screen

-1- Data - Mode Screen

Device Name	This field displays the current name of this device.
Device Mode	Select the desired device mode for the router: • **Router** - Both the ADSL Modem and the Router features are operational. In this mode, this device can provide shared Internet Access to all your LAN users. Also, by default, it acts a DHCP Server, providing an IP address and related information to all Wireless and LAN users. • **Modem** - Only the ADSL Modem component is operational. All Router features are disabled. This device is "transparent" - it does not perform any operations or make any changes to the network traffic passing through it. You need to have a DHCP Server on your LAN to provide IP addresses to the Wireless clients using this Access Point. This mode is also called ***Bridge Mode***. After changing the mode, this device will restart, which will take a few seconds. The menu will also change, depending on the mode you are in.

Operation

Operation is automatic and transparent.

- Wireless clients can connect to the Access Point if they have the correct SSID and security, but they must obtain an IP address from the DHCP Server on your LAN.

The modem will act like any other ADSL modem. No routing will be performed, and no client login will be done. If a client login is required, it must be performed by your Router/Gateway or by software on your PC.

Status Screen

In Modem mode, the Status screen looks like the example below.

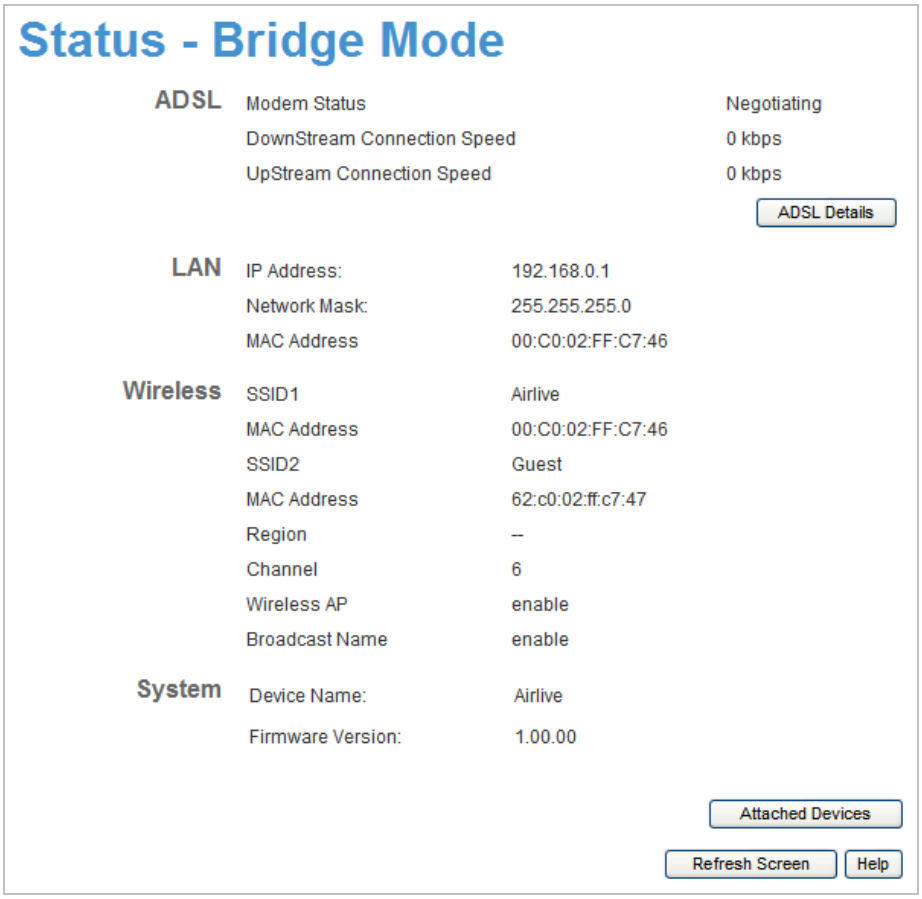


Figure: Status Screen - Bridge Mode

-2- Data - Status Screen (Bridge Mode)

ADSL	
Modem Status	This indicates the status of the ADSL modem component.
DownStream Connection Speed	Displays the speed for the DownStream Connection.
UpStream Connection Speed	If connected, displays the speed for the Up Stream (upload) ADSL Connection.
VC 1~8 Status	For each VC (Virtual Circuit), the current status is displayed. This will be either "Enabled" or "Disabled".
ADSL Details	Click this button to open a sub-window and view the details of each VC (Virtual Circuit).
LAN	
IP Address	The IP Address of the WN-300ARM-VPN.
Network Mask	The Network Mask (Subnet Mask) for the IP Address above.

MAC Address	This shows the MAC Address for the WN-300ARM-VPN, as seen on the LAN interface.
Wireless	
SSID 1/2	If using an ESS (Extended Service Set, with multiple access points) this ID is called an ESSID (Extended Service Set Identifier).
Region	The current region, as set on the Wireless screen.
Channel	This shows the Channel currently used, as set on the Wireless screen.
Wireless AP	This indicates whether or not the Wireless Access Point feature is enabled.
Broadcast Name	This indicates whether or not the SSID is Broadcast. This setting is on the Wireless screen.
System	
Device Name	The current name of the Router. This name is also the "hostname" for users with an "@Home" type connection.
Firmware Version	The version of the current firmware installed.
Buttons	
ADSL Details	View the details of each VC (Virtual Circuit).
Attached Devices	This will open a sub-window, showing all LAN and Wireless devices currently on the network.
Refresh Screen	Update the data displayed on screen.

Appendix A Troubleshooting

Overview

This chapter covers some common problems that may be encountered while using the WN-300ARM-VPN and some possible solutions to them. If you follow the suggested steps and the WN-300ARM-VPN still does not function properly, contact your dealer for further advice.

General Problems

Problem 1: **Can't connect to the WN-300ARM-VPN to configure it.**

Solution 1: Check the following:

- The WN-300ARM-VPN is properly installed, LAN connections are OK, and it is powered ON.
- Ensure that your PC and the WN-300ARM-VPN are on the same network segment. (If you don't have a router, this must be the case.)
- If your PC is set to "Obtain an IP Address automatically" (DHCP client), restart it.
- If your PC uses a Fixed (Static) IP address, ensure that it is using an IP Address within the range 192.168.0.2 to 192.168.0.254 and thus compatible with the WN-300ARM-VPN's default IP Address of 192.168.0.1. Also, the Network Mask should be set to 255.255.255.0 to match the WN-300ARM-VPN.
  In Windows, you can check these settings by using ***Control Panel-Network*** to check the ***Properties*** for the TCP/IP protocol.

Internet Access

Problem 1: **When I enter a URL or IP address I get a time out error.**

Solution 1: A number of things could be causing this. Try the following troubleshooting steps.

- Check if other PCs work. If they do, ensure that your PCs 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 PCs are configured correctly, but still not working, check the WN-300ARM-VPN. Ensure that it is connected and ON. Connect to it and check its settings. (If you can't connect to it, check the LAN and power connections.)
- Check the WN-300ARM-VPN's status screen to see if it is working correctly.

Problem 2: **Some applications do not run properly when using the WN-300ARM-VPN.**

Solution 2: The WN-300ARM-VPN processes the data passing through it, so it is not transparent.

For incoming connections, you must use the Virtual Server or Firewall Rules to specify the PC which will receive the incoming traffic.

You can also use the ***DMZ*** function. This should work with almost every application, but:

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

Wireless Access

Problem 1: **My PC can't locate the Wireless Access Point.**

Solution 1: Check the following.

- Your PC is set to ***Infrastructure Mode***. (Access Points are always in ***Infrastructure Mode***)
- The SSID on your PC and the Wireless Access Point are the same. Remember that the SSID is case-sensitive. So, for example "Workgroup" does NOT match "workgroup".
- Both your PC and the WN-300ARM-VPN must have the same setting for WEP. The default setting for the WN-300ARM-VPN is disabled, so your wireless station should also have WEP disabled.
- If WEP is enabled on the WN-300ARM-VPN, your PC must have WEP enabled, and the key must match.
- If the WN-300ARM-VPN's *Wireless* screen is set to ***Allow Trusted PCs only***, then each of your Wireless stations must have been designated as "Trusted", or the Wireless station will be blocked.
- To see if radio interference is causing a problem, see if connection is possible when close to the WN-300ARM-VPN.
  Remember that the connection range can be as little as 100 feet in poor environments.

Problem 2: **Wireless connection speed is very slow.**

Solution 2: The wireless system will connect at the highest possible speed, depending on the distance and the environment. To obtain the highest possible connection speed, you can experiment with the following:

- WN-300ARM-VPN location.
  Try adjusting the location and orientation of the WN-300ARM-VPN.
- Wireless Channel
  If interference is the problem, changing to another channel may show a

marked improvement.

- Radio Interference
  Other devices may be causing interference. You can experiment by switching other devices Off, and see if this helps. Any "noisy" devices should be shielded or relocated.
- RF Shielding
  Your environment may tend to block transmission between the wireless stations. This will mean high access speed is only possible when close to the WN-300ARM-VPN.

Appendix B About Wireless LANs

Overview

Wireless LANs can work in either of two (2) modes:

- Ad-hoc
- Infrastructure

Ad-hoc Mode

Ad-hoc mode does not require an Access Point or a wired (Ethernet) LAN. Wireless Stations (e.g. 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 (e.g. Notebook PCs with wireless cards) to a wired (Ethernet) LAN. The Wireless Stations can then access all LAN resources.

 **Access Points can only function in "Infrastructure" mode, and can communicate only with Wireless Stations which are set to "Infrastructure" mode.**

BSS/ESS

BSS

A group of Wireless Stations and a single Access Point, all using the same ID (SSID), form a Basic Service Set (BSS).

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 SHOULD 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. You can select the Channel used. This allows you to choose a Channel which 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 can be used, 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.

WEP

WEP (Wired Equivalent Privacy) is a standard for encrypting data before it is transmitted.
This is desirable because it is impossible to prevent snoopers from receiving any data which is transmitted by your Wireless Stations. But 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.

WPA-PSK

WPA-PSK is another standard for encrypting data before it is transmitted. This is a later standard than WEP (Wired Equivalent Privacy), and provides greater security for your data. Data is encrypted using a 256Bit key which is automatically generated and changed often.
If all your Wireless stations support WPA-PSK, you should use this instead of WEP.
If WPA-PSK is used, the Wireless Stations and the Access Point must have the same settings for each of the following:

WPA PSK (Pre-shared Key)	Enter the same value on every station and the AP. The PSK must be from 8 to 63 characters in length. The 256Bit key used for the actual encryption is derived from this key.
Encryption	The same encryption method must be used. The most common encryption method is TKIP. Another widely-supported method is AES.

WPA2-PSK

This is a later version of WPA (WPA-PSK). The major change is the use of AES (Advanced Encryption System) for protecting data. AES is very secure, considered to be unbreakable. The PSK (Pre-shared Key) must be entered on each Wireless station.

If WPA2-PSK is used, the Wireless Stations and the Access Point must have the same settings for each of the following:

WPA2 PSK (Pre-shared Key)	Enter the same value on every station and the AP. The PSK must be from 8 to 63 characters in length. The 256Bit key used for the actual encryption is derived from this key.
Encryption	The same encryption method must be used. The most common encryption method is TKIP. Another widely-supported method is AES.

WPA-802.1x

This version of WPA requires a Radius Server on your LAN to provide the client authentication according to the 802.1x standard. Data transmissions are encrypted using the WPA standard.

If this option is used:

- The Access Point must have a "client login" on the Radius Server.
- Each user must have a "user login" on the Radius Server.
- Each user's wireless client must support 802.1x and provide the login data when required.

All data transmission is encrypted using the WPA standard. Keys are automatically generated, so no key input is required.

Wireless LAN Configuration

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 they wish to connect to. Alternatively, the SSID can be set to "any" or null (blank) to allow connection to any Access Point.
Wireless Security	The Wireless Stations and the Access Point must use the same settings for Wireless security. (None, WEP, WPA-PSK, WPA2-PSK, WPA-802.1x).

Appendix C About VPNs

Overview

A VPN (Virtual Private Network) provides a secure connection between 2 points, over an insecure network - typically the Internet. This secure connection is called a **VPN Tunnel**.

There are many standards and protocols for VPNs. The standard implemented in the WN-300ARM-VPN is **IPSec**.

IPSec

IPSec is a near-ubiquitous VPN security standard, designed for use with TCP/IP networks. It works at the packet level, and authenticates and encrypts all packets traveling over the VPN Tunnel. Thus, it does not matter what applications are used on your PC. Any application can use the VPN like any other network connection.

IPsec VPNs exchange information through logical connections called **SA**s (Security Associations). An SA is simply a definition of the protocols, algorithms and keys used between the two VPN devices (endpoints).

Each IPsec VPN has two SAs - one in each direction. If **IKE** (Internet Key Exchange) is used to generate and exchange keys, there are also SA's for the IKE connection as well as the IPsec connection.

There are two security modes possible with IPSec:

- **Transport Mode** - the payload (data) part of the packet is encapsulated through encryption but the IP header remains in the clear (unchanged).

  The Wireless ADSL Router does NOT support Transport Mode.

- **Tunnel Mode** - everything is encapsulated, including the original IP header, and a new IP header is generated. Only the new header in the clear (i.e. not protected). This system provides enhanced security.

The WN-300ARM-VPN always uses Tunnel Mode.

IKE

IKE (Internet Key Exchange) is an optional, but widely used, component of IPsec. IKE provides a method of negotiating and generating the keys and IDs required by IPSec. If using IKE, only a single key is required to be provided during configuration. Also, IKE supports using **Certificates** (provided by CAs - Certification Authorities) to authenticate the identify of the remote user or gateway.

If IKE is NOT used, then all keys and IDs (SPIs) must be entered manually, and Certificates can NOT be used. This is called a "Manual Key Exchange".

When using IKE, there are 2 phases to creating the VPN tunnel:

- **Phase I** is the negotiation and establishment up of the IKE connection.
- **Phase II** is the negotiation and establishment up of the IPsec connection.

Because the IKE and IPsec connections are separate, they have different SAs (security associations).

Policies

VPN configuration settings are stored in **Policies**.

Note that different vendors use different terms. Generally, the terms "VPN Policy", "IPSec Policy", and "IPSec Proposal" have the same meaning. However, some vendors separate IKE Policies (Phase 1 parameters) from IPSec Policies (Phase 2 parameters).

For the WN-300ARM-VPN; each VPN policy contains both Phase 1 and Phase 2 parameters (if IKE is used). Each policy defines:

- The address of the remote VPN endpoint
- The traffic which is allowed to use the VPN connection.
- The parameters (settings) for the IPsec SA (Security Association)
- If IKE is used, the parameters (settings) for the IKE SA (Security Association)

Generally, you will need at least one (1) VPN Policy for each remote site for which you wish to establish VPN connections.

It is possible, and sometimes necessary, to have multiple Policies for the same remote site. However, you should only Enable one (1) policy at a time.

VPN Configuration

The general rule is that each endpoint must have matching Policies, as follows:

VPN Endpoint address	Each VPN endpoint must be configured to initiate or accept connections to the remote VPN client or Gateway. Usually, this requires having a fixed Internet IP address. However, it is possible for a VPN Gateway to accept incoming connections from a remote client where the client's IP address is not known in advance.
Local & Remote LAN definition	This determines which outgoing traffic will cause a VPN connection to be established, and which incoming traffic will be accepted. Each endpoint must be configured to pass and accept the desired traffic from the remote endpoint. If connecting 2 LANs, this requires that: • Each endpoint must be aware of the IP addresses used on the other

endpoint.

- The 2 LANs MUST use different IP address ranges.

IKE parameters If using IKE (recommended), the IKE parameters must match (except for the SA lifetime, which can be different).

IPsec parameters The IPsec parameters at each endpoint must match.

Appendix D Specifications

Multi-Function WN-300ARM-VPN

Model	802.11N WN-300ARM-VPN
ADSL Interface	T1.413, G.DMT, G.lite, multi-mode
Dimensions	157mm(W) * 99mm(D) * 30mm(H)
Operating Temperature	0° C to 40° C
Storage Temperature	-20° C to 70° C
Network Protocol:	TCP/IP
Network Interface:	4 * 10/100BaseT (RJ45) LAN connection 1 * RJ11 for ADSL line
LEDs	15
Power Adapter	12VDC 1A External

Wireless Interface

Standards	IEEE802.11b, IEEE802.11g, 802.11n Draft
Frequency	2.4 to 2.4835GHz (Industrial Scientific Medical Band)
Channels	Maximum 14 Channels, depending on regulatory authorities
Modulation	CCK, DQPSK, DBPSK, BPSK, QPSK, 16-QAM, 64-QAM, OFDM
Data Rate	Up to 270 Mbps (802.11n Draft)
Security	WEP 64Bit, 128Bit, WPA-PSK, WPA2-PSK, WPA-802.1X, WPS Button Support, MAC address checking
Output Power	13dBm (typical)
Receiver Sensitivity	-80dBm Min.