



## **STW-611C & STW-612C**

### **(3-Way Communication & Wi-Fi Direct)**

**Industrial IEEE802.11b/g/n Wireless Serial Device Server,  
W/Bridge Mode, 1/2-Port (RS232/422/485)**



## **User Manual**

Version 1.0



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## FCC NOTICE

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

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

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

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

## CE Mark Warning

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

## Industrial Serial Connectivity

Industrial IEEE 802.11 Wireless Serial Device Servers

### User Manual

Version 1.0 (December, 2014)

#### **This manual supports the following models:**

- STW-611C
- STW-612C

This document is the current official release manual. Please check our website ([www.antaira.com](http://www.antaira.com)) for any updated manual or contact us by E-mail ([support@antaira.com](mailto:support@antaira.com)).

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# 1 Preface

---

## **Purpose of the Manual**

This user manual will help support users with some technical information regarding the installation and configuration with Antaira Technologies' STW-61xC series. This manual contains some advanced network management knowledge, instructions, examples, guidelines and general theories designed to help users manage the device and its corresponding software. It is helpful if the user has a background in general theory when reading.

## **Who Should Use This User Manual**

This manual is to be used by qualified network personnel or support technicians who are familiar with network operations. It may also be useful for system programmers or network planners. This manual will provide helpful and handy information for first-time users. For any related problems please contact Antaira Technologies at (844)268-2472 for further assistance.

## **Supported Platform**

This manual is designed for the Antaira Technologies' STW-61xC series and that model only.

## **Warranty Period**

5-year limited warranty

## **Manufacturers Federal Communication Commission Declaration of Conformity Statement**

Model: STW-61xC Series

**NOTE:** This equipment has been tested and found to comply with the limits for class A digital device, pursuant to Part 15 of the FCC Rules. The limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions manual, may cause harmful interference to radio communications. Operation of this equipment in residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

- 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.

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 device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter except in accordance with FCC multi-transmitter product procedures.

**FCC Caution:** Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

For product available in the USA/Canada market, only channel 1~11 can be operated. Selection of other channels is not possible.

### **FCC Radiation Exposure Statement:**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 25cm between the radiator & your body.

### **European Community, Switzerland, Norway, Iceland, and Liechtenstein**

Model: STW-61xC Series

### **Declaration of Conformity with regard to the R&TTE Directive 1999/5/EC**

This equipment is in compliance with the essential requirements and other relevant provisions of 1999/5/EC.

The following standards were applied:

EMC : EN 301 489-1 v1.9.2 (2011-09), EN 301 489-17 v2.2.1 (2012-09)  
47 CFR FCC Part 15 Subpart B

Radio : 47 CFR FCC Part 15 Subpart C § 15.247, 47 CFR FCC Part 15 Subpart E § 15.407  
EN300 328 v1.8.1 (2012-06), EN301.893 v1.7.1 (2012-06)

EMF : 47 CFR FCC Part 2 Subpart J, section 2.1091, EN 62311:2008 and EN50385:2002

Health & Safety : EN60950-1: 2001; EN 50385: 2002

The conformity assessment procedure referred to in Article 10.4 and Annex III of Directive 1999/5/EC has been followed. This device also conforms to the EMC requirements of the Medical Devices Directive 93/42/EEC.

**NOTE:** This equipment is intended to be used in all EU and EFTA countries. Outdoor use may be restricted to certain frequencies and/or may require a license for operation. For more details, contact Cisco Corporate Compliance.

## **European Union**

This system has been evaluated for RF exposure for Humans in reference to the ICNIRP (International Commission on Non-Ionizing Radiation Protection) limits. The evaluation was based on the EN 50385 Product Standard to Demonstrate Compliance of Radio Base stations and Fixed Terminals for Wireless Telecommunications Systems with basic restrictions or reference levels related to Human Exposure to Radio Frequency Electromagnetic Fields from 300 MHz to 40 GHz. The minimum separation distance from the antenna to general bystander is 20cm (7.9 inches).

## **UL Notice for Power Supplier**

The STW-61xC Series products are intended to be supplied by a Listed Power Unit marked with “LPS” (Limited Power Source), or “Class 2” and output rate of 9~48 VDC, 1.0 A minimum, or use the recommended power supply listed in “Optional Accessories”

## 2 Introduction

---

### 2.1 Product Overview

Antaira Technologies' STW-61xC series is an industrial wireless serial device server having IEEE802.11b/g/n with 2.4GHz bandwidth. It provides connectivity to clients and serial devices creating a complete solution for wireless networking.

This series is IP50 rated and has a compact rugged aluminum case design that supports wide operating temperatures (-10° to 60° C). The unit has a high EMC protection that meets industrial application requirements.

Antaira Technologies' STW-61xC series has built-in advanced features, such as, "bridge mode" (Fig.2.1) to allow any serial and Ethernet device to link with the wireless network at the same time, in order to perform a "3-way communication" solution. Plus, it comes with hassle free "Wi-Fi direct" technology (Fig.2.2) allowing for an easy setup for "point-to-point" applications using a "push button" method that does not require any software configurations.



Fig.2.1



Fig.2.2

#### **\*\*Caution**

From this point, please use caution when reading and following device instructions.

---



- Never install or work on electrical or cabling during periods of lightning activity.
- Never connect or disconnect power when hazardous gases are present.



**WARNING:** Disconnect the power and allow to cool 5 minutes before touching.

## 3 Getting Started

---

### 3.1 Inside the Package

The package includes the following items:

Table 3.1

STW-611C		
Item	Qty	Description
STW-611C	1	Industrial Wireless Serial Device Server
Antenna	1	2 dBi antennas
DB9	1	9-pin plug of the D-Sub connector family
TB3	1	3-pin 5.08mm lockable Terminal Block x 1 (Power)
TB5	1	5-pin 5.08mm lockable Terminal Block x 1 (Serial)
Installation Guide	1	Hardware Installation Guide
Din-Rail Bracket	1	Already mounted to the device
CD (Utilities)	1	<ul style="list-style-type: none"> <li>■ User Manual</li> <li>■ Hardware Installation Guide</li> <li>■ Serial Manager© Utility</li> </ul>

Table 3.2

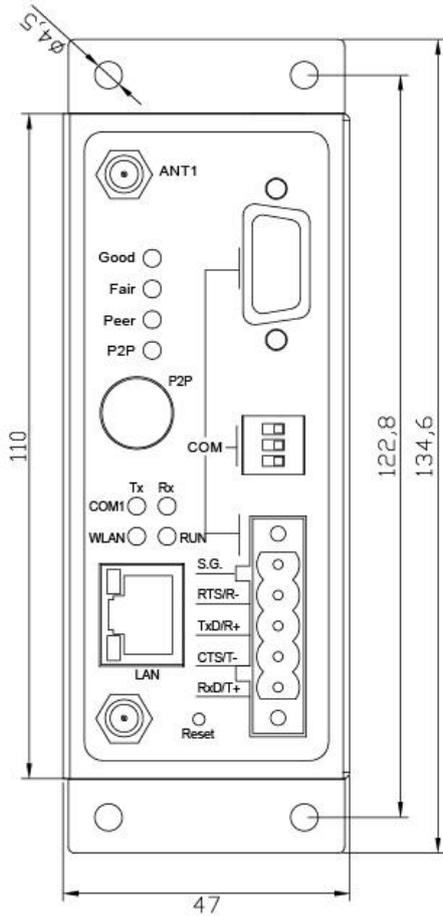
STW-612C		
Item	Qty	Description
STW-612C	1	Industrial Wireless Serial Device Server
Antenna	1	2 dBi antennas
DB9	2	9-pin plug of the D-Sub connector family
TB5	1	3-pin 5.08mm lockable Terminal Block x 1 (Serial)
Installation Guide	1	Hardware Installation Guide
Din-Rail Bracket	1	Already mounted to the device
CD (Utilities)	1	<ul style="list-style-type: none"> <li>■ User Manual</li> <li>■ Installation Guide</li> <li>■ Serial Manager© Utility</li> </ul>

**NOTE:** Please contact an Antaira Technologies sales representative at (844) 268-2472 or a local sales channel if any of the above items are missing or damaged in any form upon delivery.

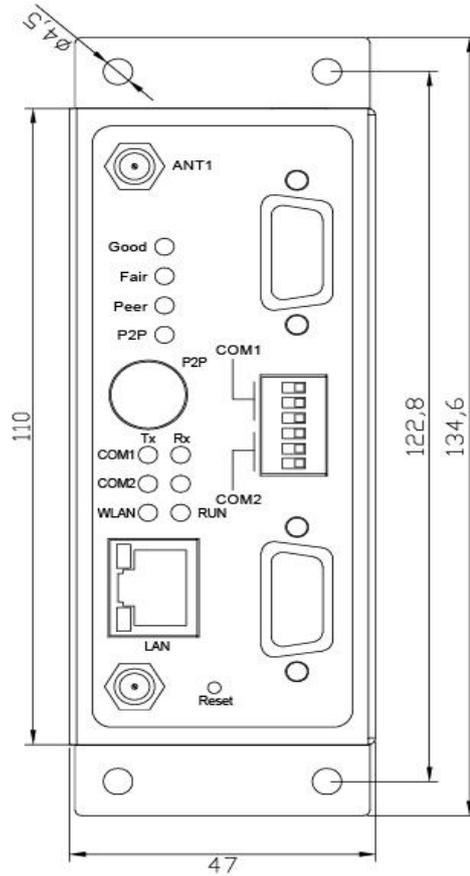
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### 3.2 Front & Power Panels

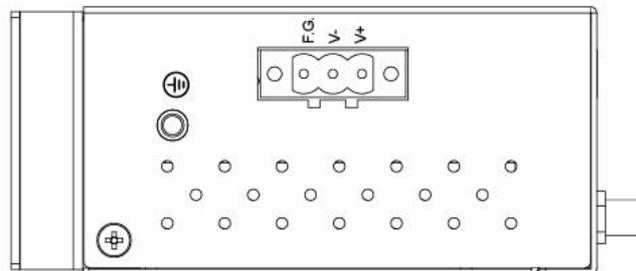
The front and power panels are as follows:



STW-611C



STW-612C



Top View

The **rear panel** of the device is built with pre-mounted with DIN-Rail brackets (*Figure 3.1*). Users can follow *Figure 3.2* for instructions on how to mount the device using DIN-Rail.

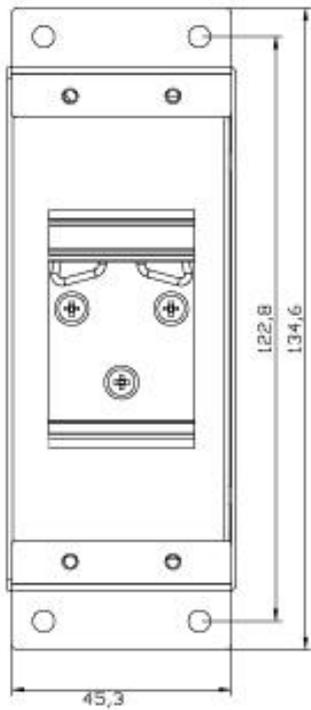


Figure 3.1

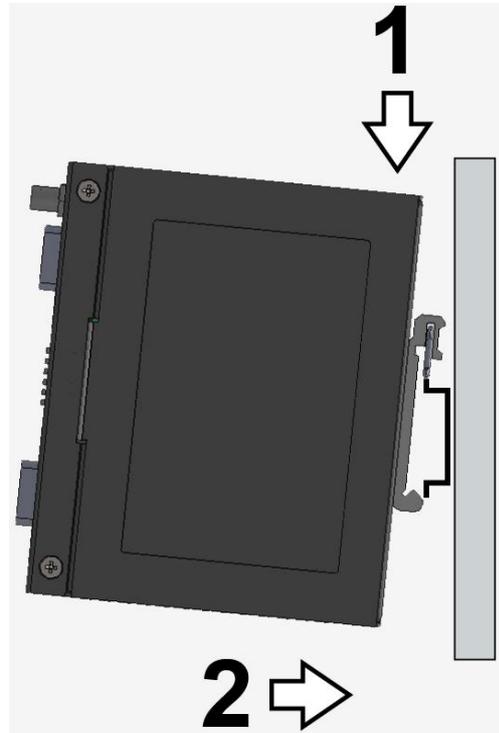
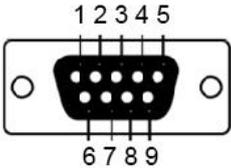


Figure 3.2

## Serial Port Pin Assignments

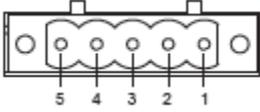
### 3.2.1 DB9

Table 3.3

			
Pin#	RS-232 Full Duplex	4-W RS-422/RS-485 Half Duplex	2-W RS-485 Half Duplex
1	DCD	N/A	N/A
2	RXD	TXD+	N/A (reserved)
3	TXD	RXD+	DATA+
4	DTR	N/A	N/A
5	SG (Signal Ground)	SG (Signal Ground)	SG (Signal Ground)
6	DSR	N/A	N/A
7	RTS	RXD-	DATA-
8	CTS	TXD-	N/A (reserved)
9	RI	N/A	N/A

### 3.2.2 Terminal Block

Table 3.4

			
Pin#	RS-232 Full Duplex	4-W RS-422/RS-485 Half Duplex	2-W RS-485 Half Duplex
1	SG	SG	SG
2	RTS	R-	DATA-
3	TxD	R+	DATA+
4	CTS	T-	N/A
5	RxD	T+	N/A

## 3.3 First Time Installation

Before installing the device, please adhere to all safety procedures described below, users are responsible for any damages to property or personal injuries resulting from mishandling during installation or just the overall use of the device. **Please do not attempt to manipulate the product in any way. If you are unsure of the steps described here<sup>2</sup>, please feel free to contact Antaira Technologies' technical support at (844) 268-2472 or call the local sales channel for immediate assistance.**

- 1 Prepare the necessary cables, DC adapter, power cord, LAN cable, serial cable, etc.; **do not connect the unit yet.**
- 2 Install the antenna to the SMA connectors.
- 3 Then proceed to plug the power source to the unit, starting from the ground and then the terminal block.
- 4 Place the device in the desired location and connect it to the **LAN** via an **Ethernet cable** with an **RJ45 connector**.
- 5 Connect the computer to the **LAN** network. Default configurations will be addressed later on in [Sec. 3.5](#).

---

**NOTE:** Please refer to the hardware installation guide when attempting an installation. Also, please follow all procedures in a safe manner.

---

### 3.4 User Interface Overview

Antaira Technologies' STW-61xC series is designed as a wireless client with the ability to choose between two different WLAN and LAN networks, the device's user interface is designed intuitively for ease of use to suit the customer needs. The web configuration appears in *Figure 3.3*.

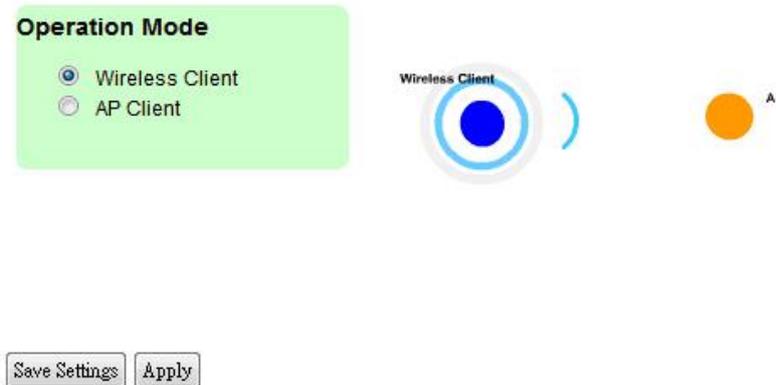


Figure 3.3

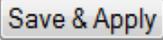
On the left side, a menu-tree appears with all the modes and options available (Figure 3.4), while on the right side of the screen the contents of each mode/option will be displayed in a graphical state. For more information on each selection, please refer to each option's section throughout this manual.

- Operation Mode**
- **System Status**
  - Overview
  - Wireless Status
  - Site Monitor
- Network Settings**
- **Wireless**
  - Profiles
  - Basic Settings
  - Advanced Settings
- **Serial**
  - COM1
  - COM2
- SNMP/ALERT Settings**
- E-mail Settings**
- **Log Settings**
  - System Log Settings
  - COM Log Settings
  - Event Log
  - COM Datalog
- **System Setup**
  - Date/Time Settings
  - Admin Settings
  - Firmware Upgrade
  - Backup/Restore Setting
  - Management List
  - Ping
- Reboot**

Figure 3.4

Users can use the Serial Manager© (the utility provided in the CD) to view the device’s overall settings. Please be aware that there are three buttons as shown in Table 3.5 that will be present in almost every section.

Table 3.5

Button	Function
	Saves and applies the current configuration input on the page.
	As the caption implies, it applies the current configuration until the device is restarted.
	Cancel the current configuration input and shows the original setting.

### 3.5 Factory Default Settings

All brand new STW-61xC units will be set with *two* different factory default IP addresses for LAN and WLAN as show in Table 3.6.

Table 3.6

Interface	Device IP	Subnet mask	Gateway IP	DNS1
LAN	10.0.50.100	255.255.0.0	10.0.0.254	168.95.1.1
WLAN	192.168.1.1	255.255.255.0	192.168.1.254	

Once the device is connected to the network, users can open an internet browser to start configuring the device. An authentication request will appear as in Figure 3.5.



Figure 3.5

Other relevant default settings that may be needed are displayed in Table 3.7.

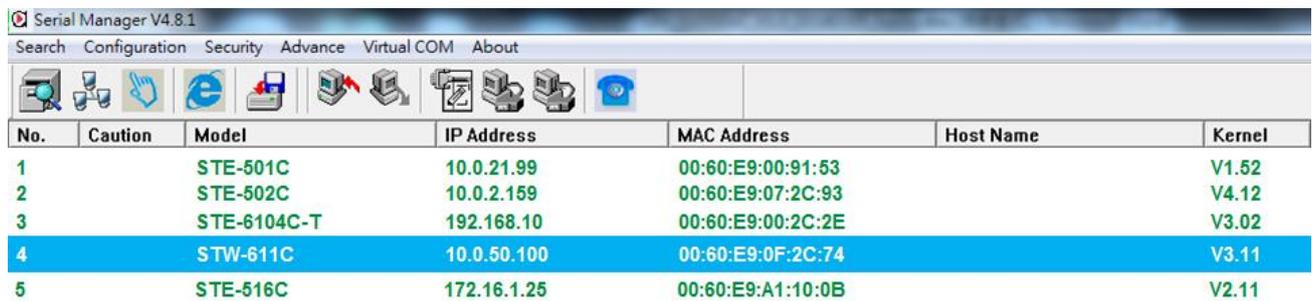
Table 3.7

Parameter	Default Values
<b>Security</b>	
Username	Admin
Password	Null ( <i>blank</i> )
<b>Serial</b>	
■ COM1	RS-232 (RS-422 for Sis models), 9600 bps, 8 data bits, None Parity bit, 1 stop bit, None Flow Control Packet Delimiter timer: Auto
■ COM2 (only STW-612C)	
<b>SNMP</b>	
SysContact of SNMP	Contact
SysName of SNMP	0060E9XXXXXX
SysLocation of SNMP	Location
SNMP	Disabled
Read Community	Public
Write Community	Private
SNMP Trap Server	0.0.0.0

## 4 Configuration

### 4.1 Administrator Login

Users can also login to the STW-61xC series unit by using the Serial Manager (utility that comes in the product CD) as shown in *Figure 4.1*. Users can click the search button, and the utility software will display various information, such as the IP and MAC address.



The screenshot shows the Serial Manager V4.8.1 application window. The title bar reads "Serial Manager V4.8.1". Below the title bar is a menu bar with "Search", "Configuration", "Security", "Advance", "Virtual COM", and "About". A toolbar contains several icons. Below the toolbar is a table with the following data:

No.	Caution	Model	IP Address	MAC Address	Host Name	Kernel
1		STE-501C	10.0.21.99	00:60:E9:00:91:53		V1.52
2		STE-502C	10.0.2.159	00:60:E9:07:2C:93		V4.12
3		STE-6104C-T	192.168.10	00:60:E9:00:2C:2E		V3.02
4		STW-611C	10.0.50.100	00:60:E9:0F:2C:74		V3.11
5		STE-516C	172.16.1.25	00:60:E9:A1:10:0B		V2.11

Figure 4.1

Highlight the device (STW-611C) and then double-click, a window will pop-up and it will request the user to login with a username and password and then proceed to click “Login” (*Figure 4.2*). For more information, please see the [Factory Default Settings](#).



The screenshot shows a "Login" dialog box with the following content:

Enter a user name and password to login to this device.  
Note: This function is only available for the standard Serial Server.

Device: **STW-611C IP: 10.0.50.100**

User Name:

Password:

Apply for all selected devices

Buttons: Login, Cancel

Figure 4.2

Users can access the device by this utility’s interface, or by choosing the “Config by browser” option by selecting the device.

## 4.2 Operation Mode

Figure 4.3 shows the home screen of the STW-61xC series and it shows two operation modes that the user can choose from: **Wireless Client** and **AP Client**.

In **Wireless Client** mode, the STW-61xC series will have **two independent** network interfaces - LAN and WLAN. Each interface will have its own IP address; hence traffics from the LAN interface will not be bypassed to the WLAN interface, and vice versa. In the **AP Client** mode, the LAN and WLAN interfaces would **bridge together** to create one single bridge interface with one IP address. Traffic from either side of the network will be passed onto the other side of the network.

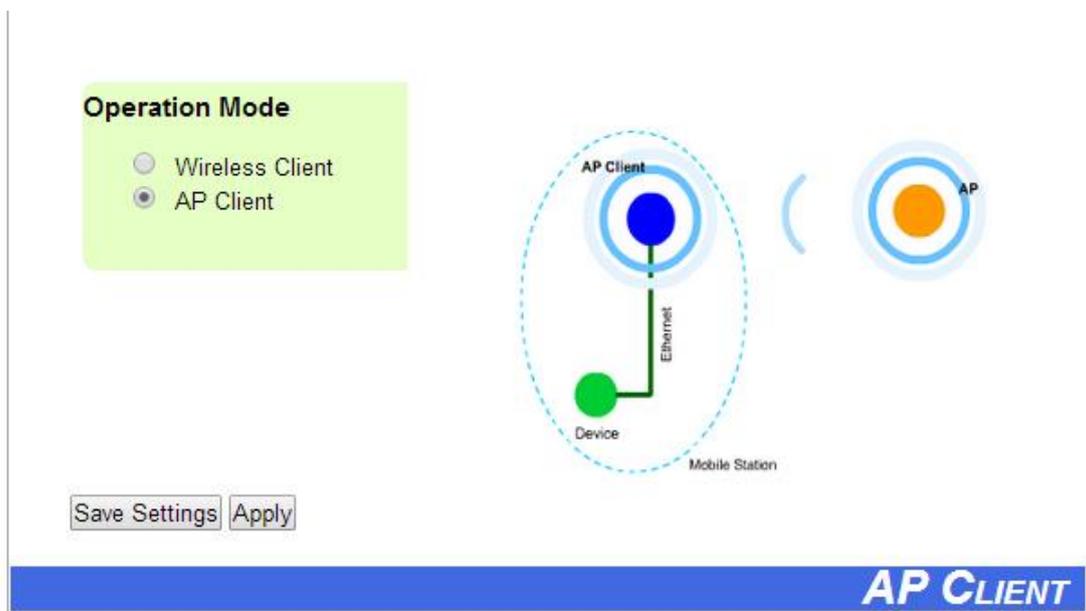


Figure 4.3

### 4.3 Overview

Figure 4.4 shows the STW-611C's overall general information, and Figure 4.5 shows the COM 2 information for STW-612C.

Overview

The general device information of Serial Server.

Device Information		
Model Name		STW-611C
Device Name		0060E90F2C82
Kernel Version		3.11
AP Version		3.12
Network Information		
LAN	MAC Address	00:60:e9:0f:2c:82
	IP Address	192.168.1.151
WLAN	MAC Address	00:60:e9:0f:2c:83
	Country code	US
	IP Address	10.0.50.100
	Status	Disconnected
COM 1 Information		
Serial Interface		RS-232
Link Mode		TCP Server
Baud Rate		9600
Parity		None
Data bits		8
Stop bits		1
Flow Control		None
Link Status		SERVER MODE: Listening[0]

Figure 4.4 (STW-611C)

COM 2 Information	
Serial Interface	RS-232
Link Mode	TCP Server
Baud Rate	9600
Parity	None
Data bits	8
Stop bits	1
Flow Control	None
Link Status	SERVER MODE: Listening[0]

Link Status: [N] is the session number connected.  
 It's [0] when the link is connecting or listening.

Figure 4.5 (STW-612C – 2<sup>nd</sup> COM Port)

### 4.3.1 Wireless Status

Figure 4.6 displays the wireless networking values. Please remark the preferred setting and always keep a copy for future reference.

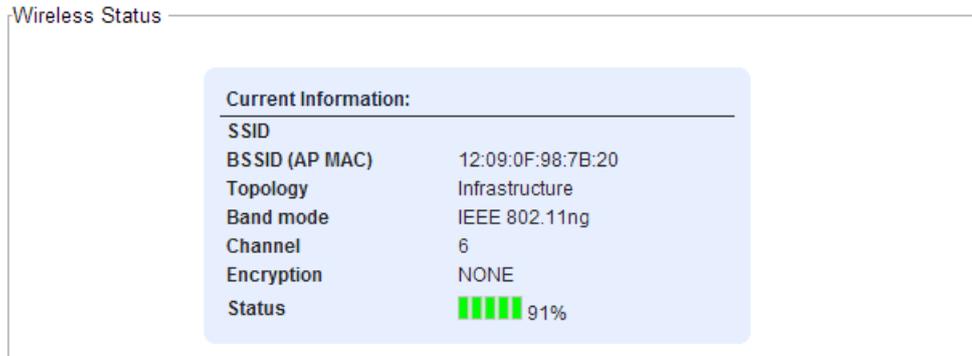


Figure 4.6

### 4.3.2 Site Monitor

**Site Monitor** allows users to view other wireless networks in the neighborhood. It also provides information on other access points such as the SSID, channel, **Received Signal Strength Indicator (RSSI)**, security and other parameters used by other access points. It can be helpful when setting the SSID and channel for this device to avoid the SSID name and channel from conflicting and to prevent unexpected errors or degraded performance. When running this option, it will take more than 10 seconds to gather information of the surrounding wireless networks' information (Figure 4.7). When completed, the site monitor will result with the screen in Figure 4.8.

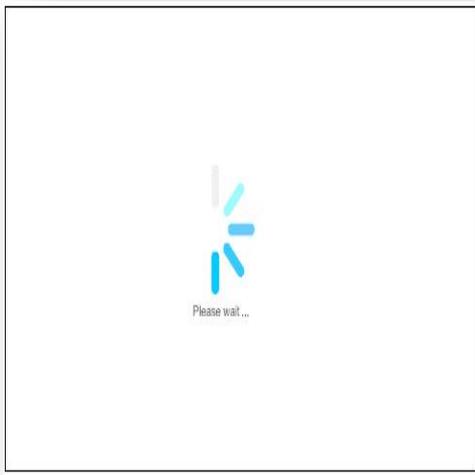


Figure 4.7

The screenshot shows a 'Site Monitor' window with a table of wireless networks. The table has the following data:

SSID	Mode	Channel	Authentication	Encryption	Mbps	Signal%
VK	b/g/n	1	WPA-PSK	TKIP	130	4
VaporKote	b/g/n	6	WPA-PSK	TKIP/AES	144	3
antaira-office	b/g/n	11	WPA2-PSK	AES	300	22
ATT064	b/g/n	1	WPA-PSK	TKIP/AES	144	1

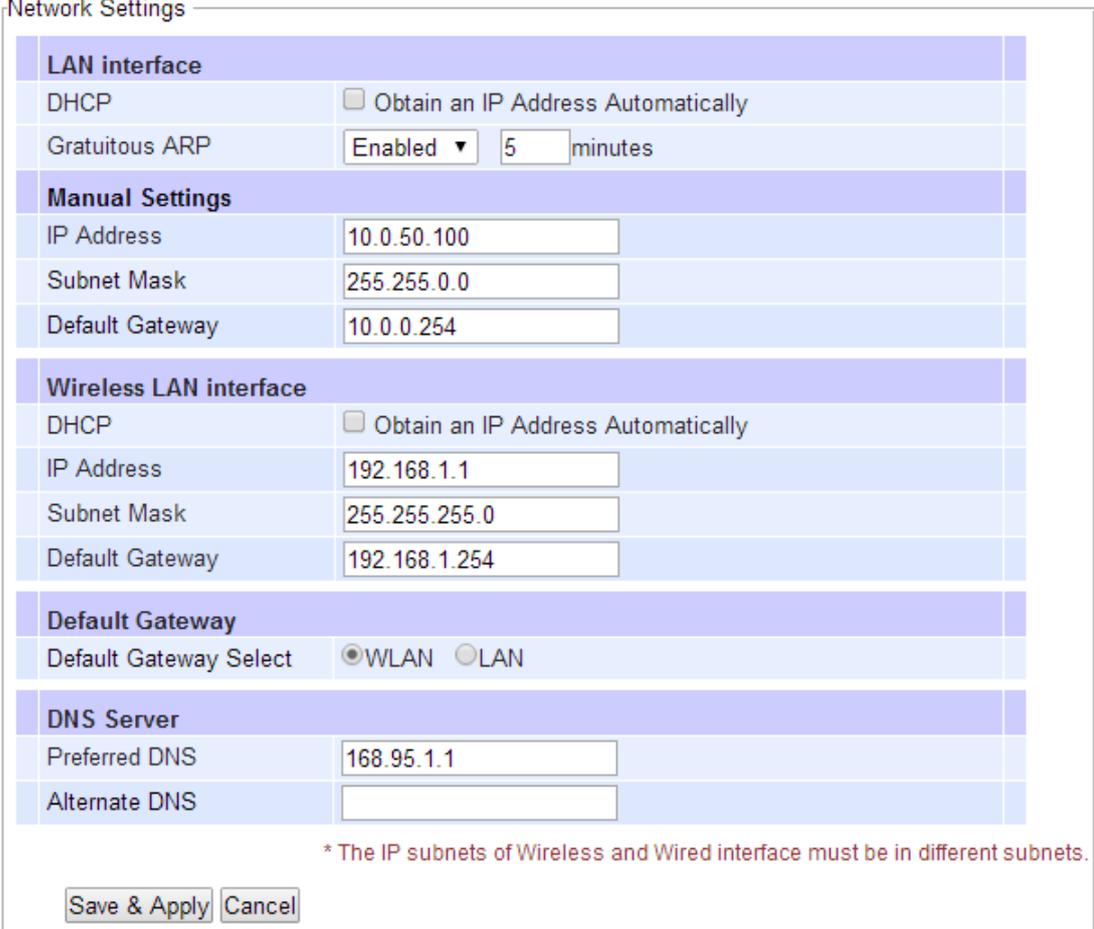
Figure 4.8

## 4.4 Network Settings

Under the **Wireless Client Operation Mode**, Antaira Technologies' STW-61xC series has the ability for dual connections at the same time, i.e., WLAN and LAN. It can also automatically get IP information from a DHCP server as well. Users can choose “**Obtain an IP Address Automatically**”, or manually enter the values.

**Gratuitous ARP** – By choosing the “Enable” option, it allows the device to automatically send out an ARP response periodically to announce the device is in the network. Users can define the frequency period with any minute length.

Please note that there are *two* separate interfaces under the Wireless Client mode - LAN interface and Wireless LAN interface. Users should setup both LAN and WLAN separately into different subnets and choose either the LAN or WLAN interface as the **Default Gateway** (Figure 4.9).



LAN interface	
DHCP	<input type="checkbox"/> Obtain an IP Address Automatically
Gratuitous ARP	Enabled ▾ 5 minutes
Manual Settings	
IP Address	10.0.50.100
Subnet Mask	255.255.0.0
Default Gateway	10.0.0.254
Wireless LAN interface	
DHCP	<input type="checkbox"/> Obtain an IP Address Automatically
IP Address	192.168.1.1
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.254
Default Gateway	
Default Gateway Select	<input checked="" type="radio"/> WLAN <input type="radio"/> LAN
DNS Server	
Preferred DNS	168.95.1.1
Alternate DNS	

\* The IP subnets of Wireless and Wired interface must be in different subnets.

Save & Apply Cancel

Figure 4.9

- The **Default Gateway** Selection – This is the selected interface the gateway is using for internet connection. If the WLAN is selected as default gateway over the LAN interface, the LAN interface settings will be OFF, such as the IP address, subnet mask, etc. Users can still change the values of the one not in use (WAN or LAN) and save those parameters.

Under the **AP Client Operation Mode**, the STW-61xC unit will only display one bridged interface and the default gateway (*Figure 4.10*).

The screenshot shows a 'Network Settings' configuration window. It is divided into several sections: 'LAN & WLAN interfaces', 'Manual Settings', and 'DNS Server'. The 'LAN & WLAN interfaces' section includes a DHCP checkbox (unchecked), a 'Gratuitous ARP' dropdown set to 'Enabled', and a '5 minutes' timer. The 'Manual Settings' section has three text input fields: 'IP Address' (10.0.50.100), 'Subnet Mask' (255.255.0.0), and 'Default Gateway' (10.0.0.254). The 'DNS Server' section has two text input fields: 'Preferred DNS' (168.95.1.1) and 'Alternate DNS' (empty). At the bottom, there are 'Save & Apply' and 'Cancel' buttons. A red asterisk note states: '\* The IP subnets of Wireless and Wired interface must be in different subnets.'

LAN & WLAN interfaces	
DHCP	<input type="checkbox"/> Obtain an IP Address Automatically
Gratuitous ARP	Enabled ▾ 5 minutes

Manual Settings	
IP Address	10.0.50.100
Subnet Mask	255.255.0.0
Default Gateway	10.0.0.254

DNS Server	
Preferred DNS	168.95.1.1
Alternate DNS	

\* The IP subnets of Wireless and Wired interface must be in different subnets.

Save & Apply Cancel

Figure 4.10

## 4.5 Wireless

### 4.5.1 Profiles

The STW-61xC series comes with the function shown below in *Figure 4.11* that allows users to save up to 10 wireless profiles inside the unit. After this “Profiles” feature is enabled, the unit will try to reach the wireless profile list in order, first by the one minute period before continuing to the next profile. If the current profile failed to connect, please use the **Sort** column to adjust the precedence of the profiles.

This “Profiles” function is disabled by default, users are required to click “Enable” and “Apply” to have this function work.

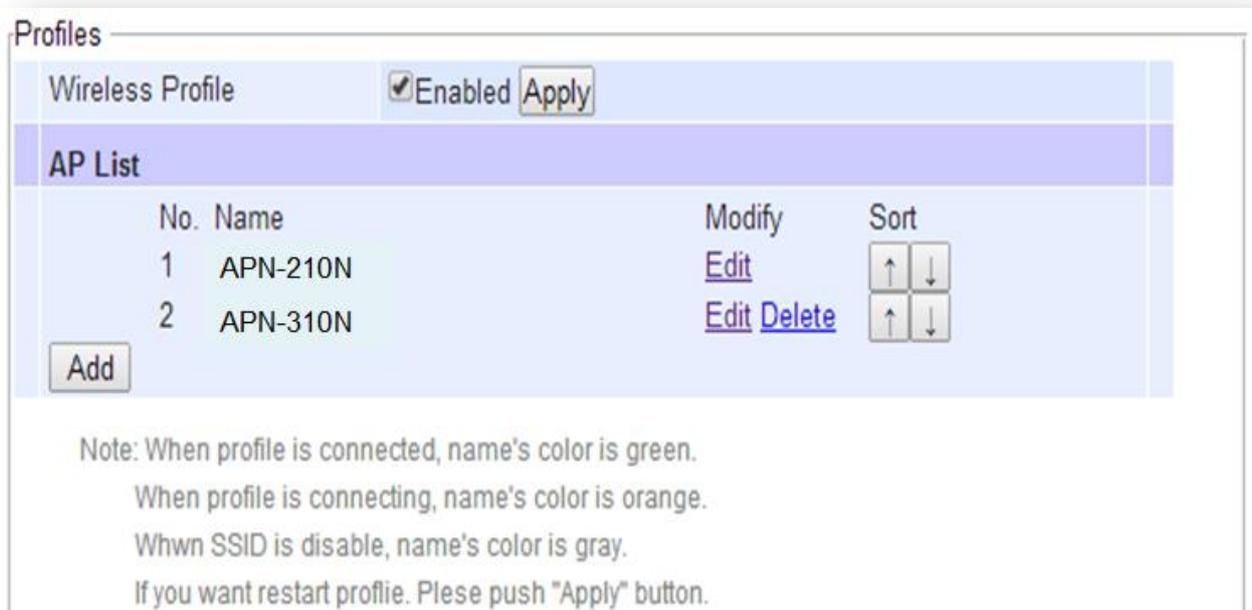


Figure 4.11

### 4.5.2 Basic Settings

To set up a wireless network, users are required to setup several parameters, as shown in *Figure 4.12*.

Basic Settings	
SSID	<input type="text"/> <input type="button" value="scan network"/>
BSSID(MAC Address)	(Any) <input type="checkbox"/> Enabled
WPS BUTTON	<input type="button" value="Start WPS PBC"/>
Topology	Infrastructure <input type="button" value="v"/>
Band mode	802.11b <input type="button" value="v"/> <input checked="" type="checkbox"/> Auto
BandWidth	Auto 20/40 MHz <input type="button" value="v"/>
Channel	Auto <input type="button" value="v"/>
Authentication Mode	OPEN <input type="button" value="v"/>
Encryption Type	NONE <input type="button" value="v"/>
<b>WEP Key</b>	
<input checked="" type="radio"/> Key 1:	HEX (10 or 26 digits) <input type="button" value="v"/> 0123456789
<input type="radio"/> Key 2:	HEX (10 or 26 digits) <input type="button" value="v"/> 0123456788
<input type="radio"/> Key 3:	HEX (10 or 26 digits) <input type="button" value="v"/> 0123456787
<input type="radio"/> Key 4:	HEX (10 or 26 digits) <input type="button" value="v"/> 0123456786
<b>WPA-PSK/WPA2-PSK</b>	
Passphrase	<input type="text"/> <input checked="" type="checkbox"/> Hide
<b>WPA2(with Radius)</b>	
User	SWXXXX
Password	.....
Certificates	<input type="text"/> <input type="button" value="Browse..."/>
	<input type="button" value="Upload CA certificate"/> <input type="button" value="Upload Client certificate"/>
	<input type="button" value="Show Certificates Information"/>
Private key password	.....
In Ad-Hoc mode, Device will change its settings to adapt to other, if there are same SSID nearby.	
<input type="button" value="Save &amp; Apply"/> <input type="button" value="Cancel"/>	

Figure 4.12



#### Attention

It is recommended to use the LAN interface to setup wireless configurations to avoid disconnection issues. The Web UI might freeze or lock up if the setup is made using the wireless interface, because the connection can be lost whenever wireless settings are changed.

**Default Settings in Infrastructure Mode:**

Table 4. 1

<b>Caption</b>	<b>Default</b>
SSID	Null
BSSID (MAC Address)	Any (unless enabled)
Topology	Infrastructure
Band Mode	Automatic Detection
Bandwidth <sup>1</sup>	Automatic Detection
Channel	Automatic Detection
Authentication Mode	OPEN
Encryption Type	NONE

**Default Settings in Ad-Hoc Mode:**

Table 4.2

<b>Caption</b>	<b>Default</b>
SSID	Null
BSSID (MAC Address)	Any (unless enabled)
Topology	Ad-Hoc
Band Mode	802.11b
Bandwidth <sup>1</sup>	Automatic Detection
Channel	1
Authentication Mode	OPEN
Encryption Type	NONE
Secondary Channel	Disabled
Authentication Mode	OPEN
Encryption Type	NONE

- **Number:** This row only appears when the **Wireless Profile** function is enabled. Users can choose the profile to configure itself by selecting its number.
- **Enable:** This row only appears when the **Wireless Profile** function is enabled. Only the enabled profiles will show in the **Profiles** page.
- **SSID:** Specifies the SSID (network name) that the STW-61xC should connect to wirelessly. There is a “**Scan Network**” button to the right of the empty box, once this button is clicked, the device will search for an available wireless networks to connect to.
- **BSSID:** This refers to the access point MAC address on which the STW-61xC should connect to. Enabling this option will lock the STW-61xC to that access point, so the unit will not roam to another access point with the same SSID.
- **Wi-Fi Direct Group Owner Mode:** The Wi-Fi Direct function allows users to configure a secured wireless network between the devices without using access points. In a Wi-Fi Direct group, the group owner works as an access point in the Wi-Fi infrastructure mode and the other devices join the group as clients. The STW-61xC supports the Wi-Fi Direct Group Owner (GO) mode using the push button method of the WPS with the WPA2-PSK security and AES encryption.
- **WPS BUTTON:** The acronym stands for Wi-Fi Protected Setup and PBC stands for Push Button Configuration. To use this feature, first trigger the WPS process in the access point and click on the WPS PBC button on the STW-61xC's UI. The AP and the STW-61xC should connect automatically. **Note** that the topology set in this case should be 'infrastructure' and the Wireless Mode should be 'Auto'. Note that this button is unavailable when the **Wireless Profiles** is enabled.
- **Topology:** Infrastructure (for connecting to an Access Point) or Adhoc (for connecting to a wireless client). Note that **Ad-Hoc** mode is unavailable when the **Wireless Profiles** is enabled.
- **Band Mode:** 802.11b, 802.11b/g, 802.11b/g/n are available. It is recommended to leave this option as **Auto** for STW-61xC to sense the best available mode.
- **Tx Rate:** Different rates are available, it is suggested to leave this to **Best (auto)**. This option is disabled when the band mode is set to 'Auto'.
- **Channel:** The available channels will depend on the band mode and the regulatory domain selected in the Wireless Advanced Settings. This option is disabled when the band mode is set to 'Auto'.
- **Bandwidth:** Select between 20 MHz or 40 MHz; the latter fills a larger spectrum, hence it provides a better throughput if it is allowed by the access point. It is not recommended to use 40 MHz@2.4 GHz (802.11b/g/n).
- **Secondary Channel:** The second channel that the STW-61xC will use, when the 40 MHz bandwidth is enabled.
- **Authentication Mode:** Select between OPEN, WPA-PSK, WPA2-PSK, WPA2 (PEAP), WPA2(EAP-TLS), and WPA2(EAP-TTLS).
- **Encryption Type:** Select between WEP, TKIP and AES. Please be aware that WEP and TKIP are not

supported by the 802.11n standard, so the wireless link speed would be limited to 54Mbps.

- **WEP Key:** Enabled when 'Authentication' is set to OPEN and 'Encryption' is set to WEP. Up to 4 different hexadecimal or ASCII keys can be entered in this section.
- **WPA-PSK/WPA2-PSK Passphrase:** Enabled when 'Authentication' is set to WPA-PSK or WPA2-PSK. It can be between 8 and 63 characters long.
- **WPA2 (with RADIUS):** Depending on the 'Authentication' mode selected, different fields will be enabled. **WPA2 (PEAP)** would require the user to provide the username, password, and the certificates. **WPA2 (EAP-TLS)** would require the user to provide the certificates and private key password. **WPA2 (EAP-TTLS)** would require the user to provide the username, password, and the certificates. *\*\*Please note that only \*.pem certificates are supported.*

\*\*Please remember that 2.4 GHz frequency is easily interfered by other devices that operate in the same region (namely, Bluetooth, Zigbee, Microwave, etc.).

### Steps to Connect to an Access Point

Input the SSID of the connecting access point, or use the "Scan network" to let the STW-61xC search for the necessary wireless information of the surrounding access points within the device's area coverage. Please note that this process may take around 10 seconds.

Once the unit has finished the scanning, the names and basic properties of the available networks will be available as shown in *Figure 4.13*.

SSID	MAC Address	*T	Mode	Channel	Authentication	Encryption	Mbps	Signal%
<input type="radio"/> ATT064	B8:16:19:73:64:80	Infra	b/g/n	1	WPA-PSK	TKIP/AES	144	22
<input type="radio"/> Antaira Guest	7C:CB:0D:08:01:86	Infra	b/g/n	1	WPA2-PSK	AES	300	92
<input type="radio"/> VK	00:1F:33:F6:07:4D	Infra	b/g/n	1	WPA-PSK	TKIP	130	15
<input type="radio"/> VaporKote	80:A1:D7:C7:DD:D4	Infra	b/g/n	6	WPA-PSK	TKIP/AES	144	19
<input type="radio"/> antaira-office	7C:CB:0D:08:01:C2	Infra	b/g/n	11	WPA2-PSK	AES	300	19
<input type="radio"/> Datavo	00:02:61:19:75:C6	Infra	b/g	11	WPA-PSK	TKIP	54	4

T is Topology (Infra = Infrastructure, Adhoc)

Figure 4.13

Then, users can select an AP from the list and the settings would be loaded to the device's UI automatically. Below, *Figure 4.14* shows that there is no wireless network available.



Figure 4.14

### 4.5.3 Advanced Settings

The Advanced Settings provides details on wireless network parameters for performance tuning. Please note that any changes in this section may affect the overall performance. Please reference *Figure 4.15*.

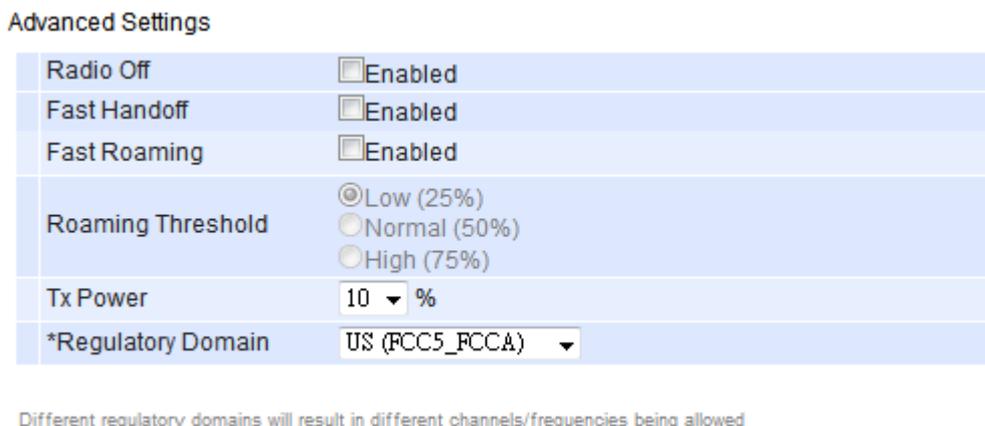


Figure 4.15

- **Radio Off** – This allows the user to turn off the wireless completely, when it is enabled.
- **Fast Handoff** – This allows the STW-61xC to reduce the roaming time to pick up the next access point signal, when it is enabled.
- **Fast Roaming** – It allows the STW-61xC series unit to scan for available access points in the background to speed up the roaming when necessary, and only when this option is enabled.
- **Roaming Threshold** – When this option is enabled, it will allow the STW-61xC unit to try and connect to another access point when the wireless signal falls below the selected range.
- **Tx Power** – The user can reduce the transmission power rate for the STW-61xC series unit, in order to prevent wireless interference to other wireless networks.

## 4.6 Serial

### 4.6.1 COM Port Overview

This section will only focus on the serial settings. *Figure 4.16* shows the COM Port overview that gives details about the connectivity protocols and the settings will be described in Section 5.1 [Link Modes and Applications](#).

#### COM 1 Port Settings

##### LINK Mode

To choose specific working mode for COM 1 port.

TCP Server  TCP Client  UDP

<i>TCP Server</i>	
Application	RAW
IP Filter	<input type="checkbox"/> Enable
Source IP	0 . 0 . 0 . 0
Local Port	4660
Maximum Connection	1
Response Behavior	<input type="radio"/> Request & Response Mode <input type="radio"/> Reply to requester only <input checked="" type="radio"/> Reply to all <input checked="" type="radio"/> Transparent Mode

To configure COM 1 port parameters.

<i>Serial Settings</i>	
Serial Interface	<input checked="" type="radio"/> RS232 <input type="radio"/> RS422 <input type="radio"/> RS485
Baud Rate	9600 bps
Parity	<input checked="" type="radio"/> None <input type="radio"/> Odd <input type="radio"/> Even <input type="radio"/> Mark <input type="radio"/> Space
Data bits	<input type="radio"/> 5 bits <input type="radio"/> 6 bits <input type="radio"/> 7 bits <input checked="" type="radio"/> 8 bits
Stop bits	<input checked="" type="radio"/> 1 bit <input type="radio"/> 2 bits
Flow Control	<input checked="" type="radio"/> None <input type="radio"/> Xon/Xoff <input type="radio"/> RTS/CTS

Figure 4.16

## 4.6.2 COM Configuration

Users are required to configure the serial settings as shown in *Figure 4.7* with the exact parameter information as the serial device.

Serial Settings	
Serial Interface	<input checked="" type="radio"/> RS232 <input type="radio"/> RS422 <input type="radio"/> RS485
Baud Rate	9600 bps
Parity	<input checked="" type="radio"/> None <input type="radio"/> Odd <input type="radio"/> Even <input type="radio"/> Mark <input type="radio"/> Space
Data bits	<input type="radio"/> 5 bits <input type="radio"/> 6 bits <input type="radio"/> 7 bits <input checked="" type="radio"/> 8 bits
Stop bits	<input checked="" type="radio"/> 1 bit <input type="radio"/> 2 bits
Flow Control	<input type="radio"/> None <input checked="" type="radio"/> Xon/Xoff <input type="radio"/> RTS/CTS
	Xon 0x11 Xoff 0x13
	("0x"+ASCII Code, Ex. 0x0d)
	<input type="checkbox"/> Permit Xon/Xoff Character Pass Through
Save & Apply Cancel Advanced Settings	

Figure 4.17

**Serial Interface:** Users are required to select the serial interface, either RS-232, RS-422, or RS-485 to match the exact serial interface from the serial device.

**Baud Rate:** Users can use the dropdown box to select one of the baud rates as the serial device.

**Parity / Data Bits / Stop Bits:** Users are required to configure them according to the serial device's parameter information.

**Flow Control:** Users can have the option to choose the flow control by either selecting 'None' (No Flow Control), 'Xon/Xoff' (Software Flow Control), or 'RTS/CTS' (Hardware Flow Control) for the application.

- If Xon/Xoff is selected, Xon and Xoff characters are changeable. Defaults are 0x11 for Xon and 0x13 for Xoff.
- The check box for **“Permit Xon/Xoff Character Pass Through”** is required to be checked, if the connecting program or serial device is required to receive the Xon/Xoff signals as well.

### 4.6.3 COM Configuration: Advanced Settings

COM 1 Advance Settings

ADVANCED SETTINGS		
TCP	TCP Timeout	<input checked="" type="checkbox"/> Enable <input type="text" value="3600"/> (0~60000) seconds
Delimiters	Serial to Network Packet Delimiter	<input checked="" type="checkbox"/> Interval timeout <input type="text" value="2"/> (1~30000) ms <input checked="" type="radio"/> Auto(caculate by baudrate) <input type="radio"/> Manual setting
		<input type="checkbox"/> Max. Bytes <input type="text" value="1452"/> (within one packet:1~1452 bytes)
		<input type="checkbox"/> Character <input type="text" value="0x0d0a"/> ("0x"+ASCII Code, Ex. 0x0d or 0x0d0a)
	Network to Serial Packet Delimiter	<input type="checkbox"/> Interval timeout <input type="text" value="10"/> (1~30000) ms <input type="checkbox"/> Max. Bytes <input type="text" value="1452"/> (within one packet:1~1452 bytes) <input type="checkbox"/> Character <input type="text" value="0x0d0a"/> ("0x"+ASCII Code, Ex. 0x0d or 0x0d0a)
	Character Send Interval	<input type="checkbox"/> Enable <input type="text" value="0"/> (0~1000) ms
	Response Interval Timeout	<input checked="" type="checkbox"/> Enable <input type="text" value="1000"/> (0~60000) ms (Work with Request & Response Mode only)
Serial	Serial FIFO	<input checked="" type="checkbox"/> Enable (Disabling this option at baud rates higher than 115200bps would result in data loss).
	Serial Buffer	<input checked="" type="checkbox"/> Empty serial buffer when a new TCP connection is established
	Interface Checking	<input type="checkbox"/> Close socket when interface is down.

Figure 4.18

#### TCP

- **TCP Timeout:** Specify the value in “TCP Timeout” to force the STW-61xC series to actively close a TCP connection after a certain amount of inactivity time (no packets). The default value for it is 3600 seconds. Disabling this option means the unit would never actively close an established connection.

#### Delimiters

- **Serial to Network Packet Delimiter:** Packet delimiters are a way of packing data into the serial communication. It is designed to keep packets on track. The STW-61xC series provides three types of delimiters: Time Delimiter, Maximum Bytes and Character Delimiter. Note that the following delimiters (Interval, Max Byte and Character) are programmed in the OR logic. Meaning that if any of the three conditions were met, the STW-61xC series would transmit the serial data in its buffer over the network.
- **Interval Timeout:** The STW-61xC series will transmit the serial data in its buffer when the specified time interval has been reached and no more serial data comes in. The default value is calculated automatically based on the baud rate. If the automatic value results in chopped data, the timeout could be increased manually by switching to “Manual setting” and specifying a larger value.



## Attention

### Interval Timeout Manual Calculation

The optimal “Interval timeout” depends on the application, but it must be at least larger than one character interval within the specified baud rate. For example, assuming that the serial port is set to 1200 bps, 8 data bits, 1 stop bit, and no parity; the total number of bits needed to send a character is 10 bits, and the time required to transfer one character is

$$(10 \text{ (bits)}/1200 \text{ (bits/s)}) * 1000 \text{ (ms/s)} = 8.3 \text{ ms.}$$

Therefore, users should set the “Interval timeout” to be larger than 8.3 ms. Rounding 8.3 ms to the next integer would be 9 ms.

- **Max Byte:** The STW-61xC series will transmit the serial data in its buffer when the specified length has been reached. Enabling this option will allow the unit to queue the data until it reaches a specific length. This option is disabled by default.
- **Character:** The STW-61xC series will transmit the serial data in its buffer when it sees the incoming data include the specified character (in HEX format). This field allows one or two characters. If the character delimiter is set to 0x0d, the unit will push out its serial buffer when it sees 0x0d (carriage return) in the serial data. This option is disabled by default.
- **Network to Serial Packet Delimiter:** Same as the delimiters above, but controls data flow in the opposite direction. It will store data from the network interface in the queue and send it to over to the serial interface until one of the delimiter conditions is met.
- **Character Send Interval:** This option specifies the time gap between each character. When set to 2 seconds, the STW-61xC series will split the data in the queue and only transmit one character (byte) every two second. This option is disabled by default.
- **Response Interval Timeout:** This option only affects the ‘Request & Response Mode’ and has no effect on the ‘Transparent Mode’. When TCP data is received (request) and passed to the serial side, the device will wait for the set time before transferring another set of TCP data if the serial side did not receive any data (response).

## Serial

**Serial FIFO:** By default, the STW-61xC series has its FIFO function enabled to optimize its serial performance. In some applications (particularly when the flow control is enabled), it may deem necessary to disable the FIFO function to minimize the amount of data that is transmitted through the serial interface after a flow of events is triggered to reduce the possibility of overloading the buffer inside the serial device. Please note that disabling this option on baud rates higher than 115200bps would reduce the data integrity noticeably.

**Serial Buffer:** By default, the STW-61xC series will empty its serial buffer when a new TCP connection is established. This means that the TCP application will not receive buffered serial data during a TCP link breakage. To keep the serial data when there is no TCP connection and to send out the buffered serial data immediately after a TCP connection is established, disable this option.

## 4.7 SNMP/ALERT Settings

The SNMP is used by the network management software to monitor the devices in a network to retrieve network status information and to configure network parameters. Below are the SNMP settings for this device (Figure 4.9); of which, it would be allowed to be viewed by third-party SNMP software.

### SNMP/ALERT Settings

The *SNMP* is used in network management systems to monitor network-attached devices for conditions that warrant administrative attention.

<b>Basic Data Objects</b>	
System Contact	<input type="text" value="contact"/>
System Name	<input type="text" value="0060E90B4EB0"/>
System Location	<input type="text" value="location"/>
<b>SNMP</b>	<input type="checkbox"/> <b>Enable</b>
Read Community	<input type="text" value="public"/>
Write Community	<input type="text" value="private"/>
<b>SNMP Trap Server</b>	
SNMP Trap Server	<input type="text" value="0.0.0.0"/>

### Event alert settings

Alert Type	Email	SNMP Trap
Cold start	<input type="checkbox"/>	<input type="checkbox"/>
Warm start	<input type="checkbox"/>	<input type="checkbox"/>
Wireless Disassociated	<input type="checkbox"/>	<input type="checkbox"/>
Wireless Associated	<input type="checkbox"/>	<input type="checkbox"/>
Authenticate failed	<input type="checkbox"/>	<input type="checkbox"/>
IP Address changed	<input type="checkbox"/>	
Password changed	<input type="checkbox"/>	

Figure 4.19

The STW-61xC provides 3 SNMP fields:

- **System Contact**- Usually used to specify the device's contact information in case of an emergency.
- **System Name** - Usually used to identify this device.
- **System Location**- Usually used to specify the device's location.

**Enabling** the SNMP function will allow users to make the device information available for public viewing/editing. By filling in the passphrase for the "**Read Community**", it allows the group to read the device's information; and by filling in the passphrase for the "**Write Community**", it allows the group to read/modify the device's information.

The default settings will have "**public**" for **Read Community** and "**private**" for **Write Community**. In case the device raises an alert due to any unexpected incident, a message will be dispatched to an SNMP trap server. Users are required to specify the **IP Address** of the **SNMP Trap Server** to collect all alert messages. Any changes made will take effect after the device is restarted.

There are *five* events that will trigger the alarm. These alerts are useful for security control or security monitoring.

- **Cold Start**, when there is a power interruption.
- **Warm Start**, when the device resets.
- **Authentication Failure**, when an incorrect username or password is entered.
- **IP Address Changed**, when the device's IP is changed.
- **Password Changed**, when the administrator password is changed.

Any of the five events would trigger an alert. When these options are checked and enabled, an email alert will be sent to the designated address that was entered in the e-Mail settings. A trap alert will be sent to the designated trap server in the SNMP settings.

## 4.8 E-mail Settings

In case the device raises an alert and/or warning message, it will send an email to the administrator’s mailbox.

**Email Settings** allow users to set up the device to be able to send an email.

1. Fill in an email address in the box next to **“Sender”**, which will be the **“From”** on the email.
2. Then, fill in any email addresses in the box next to **“Receiver”**, which the alert email will send to.

Users can send the alert email to several recipients by using a semicolon (;) to separate each email address.

### Email Server

In order to allow the alert email to be sent, the **Mail Server IP address** information is required to be filled in the box next to **SMTP Server**.

Check and enable the box for “SMTP server authentication required”, and if the **Mail Server** requires a user authentication, then fill in **Username** and **Password**.

Users may need to contact the network administrator for the **Mail Server IP address**, **Username** and **Password** information.

After the information setup, users can click on **“Send Test Mail”** to verify the mail settings as shown in *Figure 4.20*.

E-mail Settings

E-mail Address Settings	
Sender	<input type="text"/>
Receiver	<input type="text"/> <small>Use a semicolon (;) to delimit the receiver's e-mail address.</small>
E-mail Server	
SMTP Server	<input type="text"/>
Authentication	<input type="checkbox"/> SMTP server authentication required.
User name	<input type="text"/>
Password	<input type="password"/>

Figure 4.20



## Attention

It is important to properly setup the default gateway and for the DNS servers in the network settings, so the STW-61xC units can lookup the DNS names and route the mails to the proper default gateway.

## 4.9 Log Settings

### 4.9.1 System Log Settings

The Syslog function is turned on by default and cannot be turned off. It is used to log system events and report to an external Syslog server, if necessary.

#### System Log Settings

Enable Log Event to Flash	<input type="checkbox"/> Enabled
Log Level	3: (LOG_ERR) ▼
Enable Syslog Server	<input type="checkbox"/> Enabled
IP Address	0.0.0.0
Syslog Server Service Port	514 (1~65535, default=514)

Figure 4.21

- **Enable Log Event to Flash:** It would write log events to the local flash, otherwise the logs would be cleared when the device restarts because they are stored in the RAM by default.
- **Log Level:** 3 (LOG\_ERR) is by default.
- **Enable Syslog Server:** Enabling this option would allow the unit to send Syslog events to a remote Syslog server.
- **Syslog Server IP:** A specific remote Syslog Server IP address is required to be filled in.
- **Syslog Server Service Port:** A specific remote Syslog Server Port is required to be filled in.

## 4.9.2 COM Log Settings

The transmitted data can be logged for recording or debugging purposes, and the logging information can be reported to an external Syslog server by setting up the COM Log settings as show in *Figure 4.22*.

COM Log Settings

<input type="checkbox"/> Log Data Contents	Types <input checked="" type="radio"/> HEX <input type="radio"/> ASCII
COM Ports	<input type="checkbox"/> COM1 <input type="checkbox"/> COM2
Enable Syslog Server	<input type="checkbox"/> Enabled
IP Address	<input type="text" value="0.0.0.0"/>
Syslog Server Service Port	<input type="text" value="514"/> (1~65535, default=514)

Figure 4.22

### ■ Log Data Contents:

- ◆ If it is enabled, the COM logging function will log the content's data that is being transmitted and received (raw bytes).
- ◆ If it is disabled, the COM logging function will only log data for a specific length to reduce the system's load.

---

### \*\*Note:

- Antaira Technologies' STW-61xC series can store up to 1500 lines internally.
  - A request or a response will consist of one line.
  - If data is longer than 512 bytes, it will go into another line.
  - Users can retrieve the logs by using a **FTP Client**, FTP login is the same as the WebUI.
  - It is located in **/var/log/logcomxx** (xx is the port number).
  - When the reserved space is full, new logs will replace old logs.
  - It is strongly recommended to send COM logs to a remote Syslog server.**
- 

- **Data Types:** Select the logged data's format (HEX or ASCII).
- **COMx:** Select the ports to log.
- **Enable Syslog Server:** Enabling this option would allow users to send COM logs to a remote Syslog server. Users can send COM logs to the same Syslog server used previously for event logging.
- **Syslog Server IP:** Please specify the remote Syslog server IP.
- **Syslog Server Service Port:** Please specify the remote Syslog server port.

### 4.9.3 Event Log

Displays the current event log stored in the device, an example is shown in *Figure 4.23*.



The screenshot shows a web interface titled "Event Log". It contains a table with 7 rows of event data. Below the table are four buttons: "Last Page", "Next Page", "Show All Events", and "Clear All Events". At the bottom left, there is a "Save To File" button.

Index	Date	Time	Startup Time	Level	Event
1/35	2000.01.02	19:33:25	01d19h32m12s	error	Syslog: Wireless Associated with APN-310N
2/35	2000.01.02	19:32:17	01d19h31m04s	error	Syslog: Wireless Associated with APN-310N
3/35	2000.01.02	19:31:53	01d19h30m41s	error	Syslog: Wireless Associated with APN-310N
4/35	2000.01.02	19:31:46	01d19h30m34s	error	Syslog: Wireless Associated with APN-310N
5/35	2000.01.02	19:31:04	01d19h29m52s	error	Syslog: Wireless Associated with APN-310N
6/35	2000.01.02	19:30:57	01d19h29m44s	error	Syslog: Wireless Associated with APN-310N
7/35	2000.01.02	19:23:11	01d19h21m58s	error	Syslog: Wireless Associated with APN-310N

Last Page Next Page  
Show All Events Clear All Events  
Save To File

Figure 4.8

- Click on "Last Page" to go to the last page.
- Click on "Show All Events" to show all events in one page.
- Click on "Clear All Events" to clear the events stored in the device.
- Click on "Save To File" to save all the events to a file locally.

### 4.9.4 COM Datalog

Displays the current COM log stored in the device, an example is shown in *Figure 4.24*.

COM Datalog

COM 1 Log

Index	Date	Time	Startup Time	Level	Event
1/7	2006.01.01	00:49:01	00d00h48m33s	info	: [COM1]R:(5)
2/7	2006.01.01	00:49:01	00d00h48m33s	info	: [COM1]T:(5)
3/7	2006.01.01	00:49:00	00d00h48m32s	info	: [COM1]R:(5)
4/7	2006.01.01	00:48:53	00d00h48m25s	info	: [COM1]R:(5) 48 65 6C 6C 6F
5/7	2006.01.01	00:48:53	00d00h48m25s	info	: [COM1]T:(5) 48 65 6C 6C 6F
6/7	2006.01.01	00:48:52	00d00h48m24s	info	: [COM1]R:(5) 48 65 6C 6C 6F
7/7	2006.01.01	00:48:52	00d00h48m24s	info	: [COM1]T:(5) 48 65 6C 6C 6F

Last Page Next Page

Show All Event Clear All Event

Save To File

Figure 4.24

Users can select from the COMx dropdown box to display logs from different COM ports. The first *three* lines are set to log the data length and the last *four* lines are set to log the data content.

- Click on “**Last Page**” to go to the last page.
- Click on “**Show All Events**” to show all events in one page.
- Click on “**Clear All Events**” to clear the events stored in the device.
- Click on “**Save To File**” to save all the events to a file locally.

## 4.10 System Setup

### 4.10.1 Date/Time Settings

The date and time can be set manually, or by using the **Network Time Protocol (NTP)** to automatically synchronize with a time server. For auto-synching, check the box below for the **NTP Server Settings “Obtain date/time automatically”**, then proceed to fill in the IP address or host name. If a hostname is entered, the DNS server must be configured properly, a time zone can also be selected (*Figure 4.25*).

Date/Time Settings	
The NTP (Network Time Protocol) is used to synchronize the date/time from the NTP server.	
Current Date/Time	
2 / Jan / 2000 20:10:31	
NTP Server Settings	
NTP	<input type="checkbox"/> Obtain date/time automatically
NTP Server	<input type="text" value="pool.ntp.org"/>
Time Zone	<input type="text" value="(GMT+08:00) Taipei"/>
Daylight Saving Time Settings	
<input type="checkbox"/> Enable Daylight Saving Time	
Start Date	<input type="text" value="--"/> / <input type="text" value="--"/> / <input type="text" value="Sun"/> / <input type="text" value="00"/> (Month / Week / Date / Hour)
End Date	<input type="text" value="--"/> / <input type="text" value="--"/> / <input type="text" value="Sun"/> / <input type="text" value="00"/> (Month / Week / Date / Hour)
Offset	<input type="text" value="0"/>
Manual Time Settings	
Date	<input type="text" value="02"/> / <input type="text" value="Jan"/> / <input type="text" value="2000"/>
Time	<input type="text" value="20"/> : <input type="text" value="10"/> : <input type="text" value="20"/> (HH : MM : SS)
<input type="button" value="Save &amp; Apply"/> <input type="button" value="Cancel"/>	

Figure 4.25



### Attention

It is important to properly setup the default gateway and for the DNS servers in the network settings, so the STW-61xC units can lookup the DNS names and route the mails to the proper default gateway.

### 4.10.2 Admin Settings

Antaira Technologies' STW-61xC series allows users to change the “**User Name and Password**” information.

The default information for the Username is “**admin**” and the password will be left **blank**.

Users can just set/change the new value and follow the steps for filling in the corresponding blanks and finishing by clicking on **Save & Apply** (Figure 4.26).

Admin Settings

Set up the login user name and password.

Account Settings	
User name	<input type="text" value="admin"/>
Old password	<input type="text"/>
New password	<input type="text"/>
Repeat new password	<input type="text"/>

Web mode	
Web mode	<input checked="" type="radio"/> HTTP <input type="radio"/> HTTPS

Figure 4.26

There are two ways to access the STW-61xC series Web UI. The first one being Hypertext Transfer Protocol (HTTP) and the other is Hypertext Transfer Protocol Secure (HTTPS). For enhanced security, it is recommended to use the encrypted HTTPS protocol. Note that the HTTP uses port 80 while HTTPS uses port 443.

### 4.10.3 Firmware Upgrade

During the firmware upgrade, please DO NOT turn off or power off the STW-61xC series. The upgrade process may take more than 7 minutes.

Before upgrading the firmware, please make sure that the device has a reliable power source that will not be powered off or restarted during the upgrading process.

To upgrade a new firmware, once downloaded, copy the new firmware file to the local computer, and then click “**Browse**” to find the new firmware file as shown in *Figure 4.27*, and then click “**Upload**”. The program will show the upload status, so please wait until the uploading process is finished (the amount of time varies depending on the equipment used). The device will then proceed to restart itself.

#### Firmware Upgrade

To upgrade the firmware, browse to the location of the new firmware binary file (.did) and click **Upload** button. In some cases, the device reconfiguration is required.



The screenshot shows a web interface for firmware upgrade. It features a light blue background. At the top, the text "Firmware Upgrade" is displayed. Below this, there is a paragraph of instructions. Underneath the instructions, there is a form with a text input field labeled "Select new firmware", a "Browse..." button to its right, and an "Upload" button positioned below the input field.

Figure 4.27

---

**\*\*Note:** if the firmware upgrade process fails and the device becomes unreachable, follow the TFTP Recovery procedure within the [Emergency System Recovery](#) section.

---

#### 4.10.4 Backup/Restore Setting

Once all the configurations are set and the device is working properly, it is recommended to back up the configuration. The backup can be used when the new firmware is uploaded and it is reset to a factory default settings. This is done to prevent accidental loading of incompatible old settings. The backup file could also be used to efficiently deploy multiple STW-61xC series devices of similar settings by uploading these settings to the devices.

To backup the configuration, click **“Backup”**, and a pop-up dialog will prompt you to save the backup file on the local computer. It is important **NOT to modify the saved configuration file. Any modification to the file may corrupt the file, and it may not be used to restore itself at a later date.** Please contact Antaira Technologies’ technical support at (844) 268-2472 or a local authorized distributor for more information on this subject.

To restore the configuration backup, click **“Browse”** to locate the backup file, and then click **“Upload”** to upload the configuration backup file to the device. Once, the backup file is successfully uploaded; the device will restart, the time needed for this process may vary on the equipment used (*Figure 4.8*).

##### Backup & Restore Configuration

The image shows two separate dialog boxes. The first dialog box is titled "Backup Configuration" and contains the text "Click Backup to save the current configuration to your computer." followed by a "Backup" button. The second dialog box is titled "Restore Configuration" and contains the text "Browse a backup configuration file and click Upload button to restore the device's configuration." Below this text is a text input field, a "Browse..." button, and an "Upload" button.

Figure 4.28

### 4.10.5 Management List

The Management List is used to filter the MAC address that has access to the Web management interface. When enabled, only the MAC addresses entered in the access control list shown in *Figure 4.29* can have access to the Web UI.

#### Management List

The *Management List* is used to filter the MAC address that has access to the Web management interface.

- Disable Management List
- Allow uses with MAC addresses listed below

Access Control List	
MAC Address 1	<input type="text"/>
MAC Address 2	<input type="text"/>
MAC Address 3	<input type="text"/>
MAC Address 4	<input type="text"/>
MAC Address 5	<input type="text"/>
MAC Address 6	<input type="text"/>
MAC Address 7	<input type="text"/>
MAC Address 8	<input type="text"/>
MAC Address 9	<input type="text"/>
MAC Address 10	<input type="text"/>

Figure 4.29

## 4.10.6 Ping

Use the Ping function to determine whether the STW-61xC series unit can reach the gateway or other devices in the network. This process takes around 20 seconds. *Figure 4.30* shows a successful ping example, and *Figure 4.31* shows the connecting device is not reachable.

```
Ping
-----
Ping To 10.0.50.201 Start
-----
PING 10.0.50.201 (10.0.50.201): 56 data bytes
64 bytes from 10.0.50.201: seq=0 ttl=128 time=0.768 ms
64 bytes from 10.0.50.201: seq=1 ttl=128 time=0.648 ms
64 bytes from 10.0.50.201: seq=2 ttl=128 time=0.705 ms
64 bytes from 10.0.50.201: seq=3 ttl=128 time=0.696 ms

--- 10.0.50.201 ping statistics ---
4 packets transmitted, 4 packets received, 0% packet loss
round-trip min/avg/max = 0.648/0.704/0.768 ms
```

Figure 4.30

```
Ping
-----
Ping To 10.0.50.202 Start
-----
PING 10.0.50.202 (10.0.50.202): 56 data bytes

--- 10.0.50.202 ping statistics ---
4 packets transmitted, 0 packets received, 100% packet loss
```

Figure 4.31

## 4.11 Reboot and Restore Default Settings

To manually reboot the device, users can click “**Reboot**”, and then the device will restart. If a factory default setting is required, check the “**Reset**” box, and then click on **Reboot** (*Figure 4.32*).

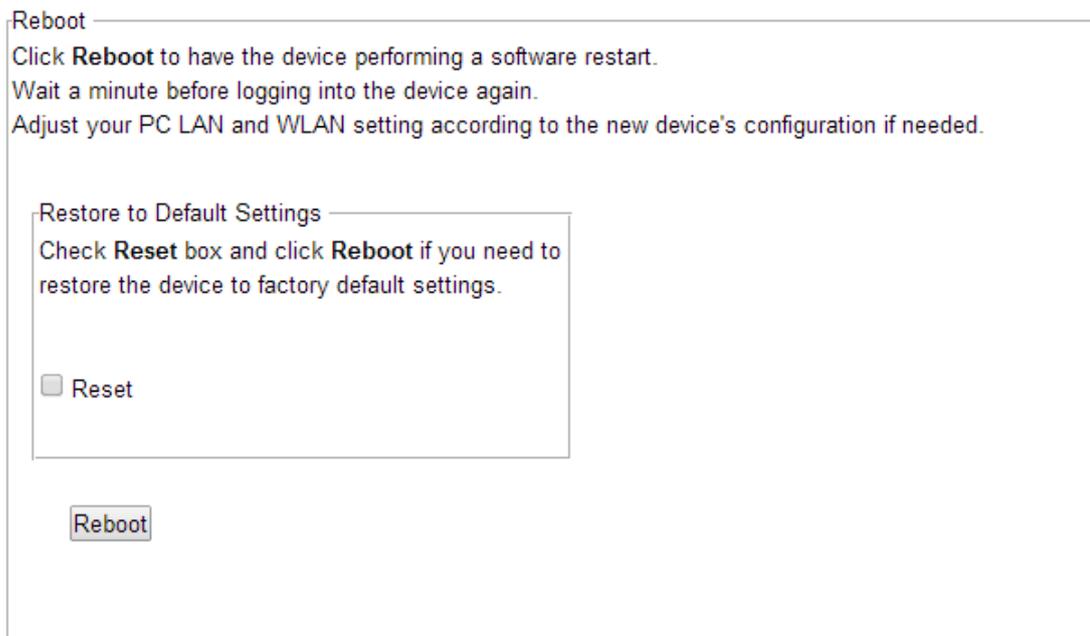


Figure 4.32

## 5 Link Modes and Applications

---

### 5.1 Link Mode Configuration

Antaira Technologies' STW-61xC series supports different link modes that include: TCP Server, TCP Client, and UDP. Under the three link modes (*Figure 5.1*), the TCP Server can support RAW, Virtual COM, or Reverse Telnet applications, and TCP Client can support Virtual COM applications.



Figure 5.1

#### 5.1.1 Link Mode: Configure STW-61xC as a TCP Server

The STW-61xC series can be configured as a TCP server in a TCP/IP Network to listen for an incoming TCP client connection to a serial device. After the connection is established between the serial device server and the host computer, data can be transmitted in both directions. This also applies whenever the VCOM is running on server mode. Please remember that this is the device's default link mode.

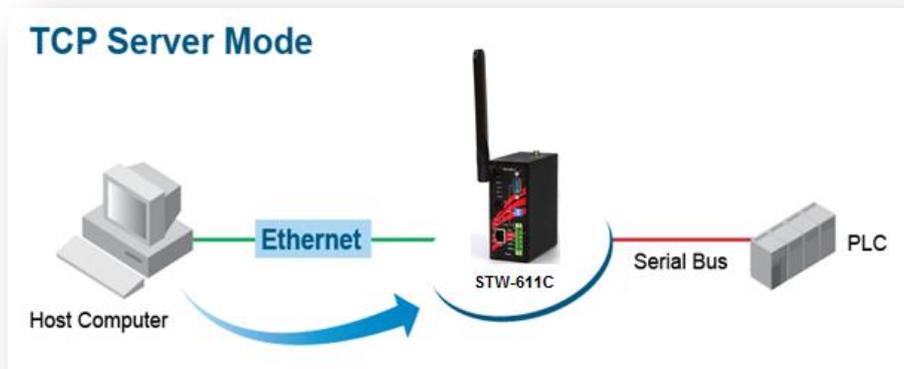


Figure 5.2

**LINK Mode**  
 To choose specific working mode for COM 1 port.

TCP Server
  TCP Client
  UDP

TCP Server	
Mode	RAW
IP Filter	<input type="checkbox"/> Enable
Source IP	0 . 0 . 0 . 0
Local Port	4660
Maximum Connection	1
Response Behavior	<input type="radio"/> Request & Response Mode <input type="radio"/> Reply to requester only <input checked="" type="radio"/> Reply to all <input checked="" type="radio"/> Transparent Mode

Figure 5.3

The STW-61xC series defaults in TCP Server mode. There are additional connection settings that can be configured as shown above in *Figure 5.3*.

Click on the **“COM1”** side.

COM 1 Port Settings

**LINK Mode**  
 To choose specific working mode for COM 1 port.

TCP Server
  TCP Client
  UDP

TCP Server	
Application	RAW
IP Filter	<input type="checkbox"/> Enable
Source IP	0 . 0 . 0 . 0
Local Port	4660
Maximum Connection	1
Response Behavior	<input type="radio"/> Request & Response Mode <input type="radio"/> Reply to requester only <input checked="" type="radio"/> Reply to all <input checked="" type="radio"/> Transparent Mode

link on the left hand

To configure COM 1 port parameters.

Serial Settings	
Serial Interface	<input checked="" type="radio"/> RS232 <input type="radio"/> RS422 <input type="radio"/> RS485
Baud Rate	9600 bps
Parity	<input checked="" type="radio"/> None <input type="radio"/> Odd <input type="radio"/> Even <input type="radio"/> Mark <input type="radio"/> Space
Data bits	<input type="radio"/> 5 bits <input type="radio"/> 6 bits <input type="radio"/> 7 bits <input checked="" type="radio"/> 8 bits
Stop bits	<input checked="" type="radio"/> 1 bit <input type="radio"/> 2 bits
Flow Control	<input checked="" type="radio"/> None <input type="radio"/> Xon/Xoff <input type="radio"/> RTS/CTS

Figure 5.4

- TCP Server is the default link mode – There are 3 different options when selecting **TCP Server** in the Link Modes for the application.
  - ◆ **RAW** - There is no protocol on this mode, meaning the data is passed transparently.
  - ◆ **Virtual COM** - It allows the device to communicate with a virtualized port from the client. It will create a Virtual COM port on Windows/Linux, in order to communicate with the device as a Client.
  - ◆ **Reverse Telnet** - It is used to connect the device and another serial device (usually a Terminal Server) with a Telnet program. Telnet programs in Windows / Linux usually require special handshaking to get the outputs and formatting show properly. The STW-61xC series will interact with those special commands (CR/LF commands) once Reverse Telnet is enabled.
  
- Enter the **Local Port**, this option specifies the port number that the server should listen to. It is used by the client to connect to the server and the default local port is 4660.
- When finished with the settings, please scroll to the bottom of the page and click on the “**Save & Apply**” button to save the changes.
- For more information about serial settings, please refer to [Sec. 4.6.2](#).
- For more information about advanced settings, please refer to [Sec.4.6.3](#).
- **Response Behavior**
  - ◆ **Request & Response Mode**, it determines how the device will proceed when it receives requests from connected hosts. Under this mode, the port will hold requests from all other connected hosts until the serial device replies or the **Response Interval timeout** takes into effect to discard it. However, unrequested data sent from the serial device would be forwarded to all connected hosts.
    - ◆ **Reply to requester only**, the port will reply to the connected host who requested the data only.
    - ◆ **Reply to all**, a reply is sent to all connected hosts.
  - ◆ **Transparent mode**, the port will forward requests from all connected hosts to the serial device immediately and reply to all connected hosts once it receives data from the serial device.

Other important variables to consider are:

- **IP Filter** - Enables the Source IP option below to block an IP address from accessing the COM port.
- **Source IP** - Specifies the device's source IP which will be transmitting data to the server. In other words, the server will only allow data from this IP to flow (hence its own name implies Source IP), and only one source is allowed.
- **Maximum Connection** - The number of devices/clients (max. of 4 clients), to be served is set in this section.

---

**Note:** LINK1 is associated with COM1; LINK2 is associated with COM2, and so on.

---

### 5.1.2 Link Mode: Configure STW-61xC as a TCP Client

The STW-61xC series can be configured as a TCP client in TCP/IP Network to establish a connection with a TCP server in the host computer. After the connection is established, data can be transmitted between a serial device and a host computer in both directions. This also applies to Virtual COM running in the client mode.

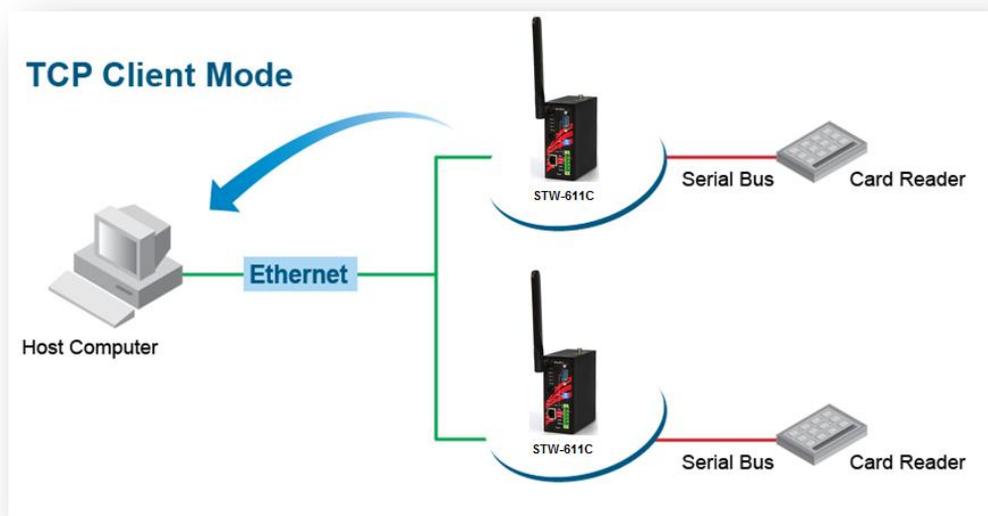


Figure 5.5

TCP Server  TCP Client  UDP

TCP Client	
Application	RAW
Destination IP 1	10 . 0 . 50 . 1
Destination Port 1	4660
Destination 2	<input type="checkbox"/> Enable
Destination IP 2	0 . 0 . 0 . 0
Destination Port 2	4660
Response Behavior	<input type="radio"/> Request & Response Mode <input type="radio"/> Reply to requester only <input checked="" type="radio"/> Reply to all <input checked="" type="radio"/> Transparent Mode

Figure 5.6

By selecting the TCP client mode, it means that a TCP server program should be prepared to connect to STW-61xC series unit. *Figure 5.6* shows all the settings provided for the TCP Client.

- Click on the “**COM1**” link on the left hand side.

COM 1 Port Settings

**LINK Mode**

To choose specific working mode for COM 1 port.

TCP Server  TCP Client  UDP

<i>TCP Client</i>	
Application	RAW
Destination IP 1	10 . 0 . 50 . 1
Destination Port 1	4660
Destination 2	<input type="checkbox"/> Enable
Destination IP 2	0 . 0 . 0 . 0
Destination Port 2	4660
Response Behavior	<input type="radio"/> Request & Response Mode <input type="radio"/> Reply to requester only <input checked="" type="radio"/> Reply to all <input checked="" type="radio"/> Transparent Mode

To configure COM 1 port parameters.

<i>Serial Settings</i>	
Serial Interface	<input checked="" type="radio"/> RS232 <input type="radio"/> RS422 <input type="radio"/> RS485
Baud Rate	9600 bps
Parity	<input checked="" type="radio"/> None <input type="radio"/> Odd <input type="radio"/> Even <input type="radio"/> Mark <input type="radio"/> Space
Data bits	<input type="radio"/> 5 bits <input type="radio"/> 6 bits <input type="radio"/> 7 bits <input checked="" type="radio"/> 8 bits
Stop bits	<input checked="" type="radio"/> 1 bit <input type="radio"/> 2 bits
Flow Control	<input checked="" type="radio"/> None <input type="radio"/> Xon/Xoff <input type="radio"/> RTS/CTS

Figure 5.7

- Select **TCP Client** in the link modes.
- Only two communication modes are available here - RAW and Virtual COM (definitions are the same as above in [Sec. 5.1.1](#)).
- Enter the preferred **Destination IP** and **Port**. This should match the IP settings of the TCP Server program.
- Enable and enter Destination IP 2 and Port 2 if necessary. Two different servers can be set here (for redundancy), and the second server has to be enabled by ticking the box.
- Scroll to the bottom of the page and click on the “**Save & Apply**” button to save the changes.

### 5.1.3 Link Mode: Configure STW-61xC in UDP

UDP is a faster but connectionless network protocol. It does not guarantee the delivery of a network datagram. The STW-61xC series can be configured to transfer data using a unicast or multicast UDP from the serial device to one or multiple host computers, data can be transmitted between the serial device and the host computer in both directions.

There is no **server** or **client** concept on this protocol, they are called **peers** or **nodes**. So here you only need to specify the **Local Port** that we should listen to and specify the **Destination IPs** of the remote **UDP nodes**.

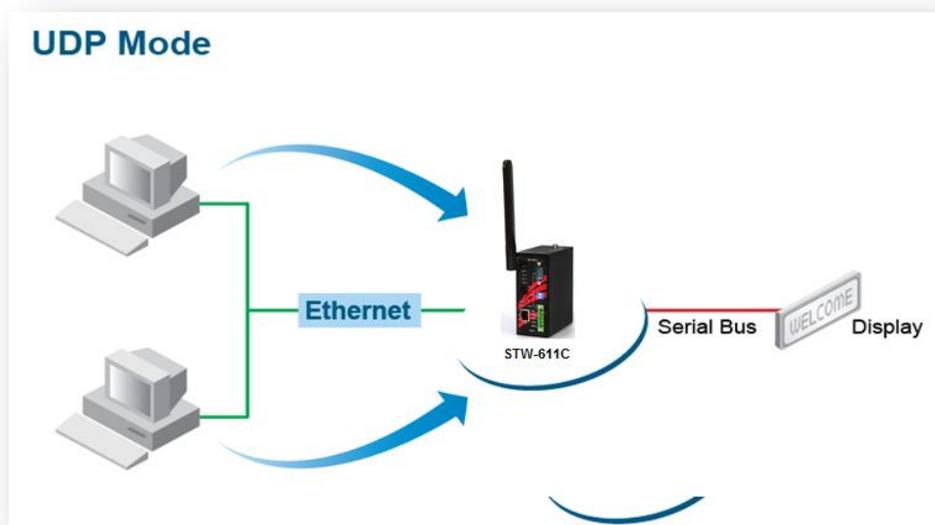


Figure 5.8

#### LINK Mode

To choose specific working mode for COM 1 port.

TCP Server  TCP Client  UDP

UDP					
Local Port: 4660					
<input checked="" type="checkbox"/> Destination IP Address 1	10	0	50	1 ~ 100	Port: 4660
<input type="checkbox"/> Destination IP Address 2	0	0	0	0 ~ 0	Port: 4660
<input type="checkbox"/> Destination IP Address 3	0	0	0	0 ~ 0	Port: 4660
<input type="checkbox"/> Destination IP Address 4	0	0	0	0 ~ 0	Port: 4660

Figure 5.9

The STW-61xC series also supports a connectionless UDP protocol compared to the connection-oriented TCP protocol. Please be aware that it does not guarantee data delivery. It is recommended to utilize UDP only with cyclic polling protocols where each request is repeated and independent, such as Modbus Protocol. *Figure 5.10* shows the UDP settings.

- Click on the “**COM1**” link on the left hand side.

COM 1 Port Settings

**LINK Mode**  
 To choose specific working mode for COM 1 port.

TCP Server
  TCP Client
  UDP

UDP

Local Port: 4660

<input checked="" type="checkbox"/> Destination IP Address 1	10 . 0 . 50 . 1 ~ 10	Port: 4660
<input type="checkbox"/> Destination IP Address 2	0 . 0 . 0 . 0 ~ 0	Port: 4660
<input type="checkbox"/> Destination IP Address 3	0 . 0 . 0 . 0 ~ 0	Port: 4660
<input type="checkbox"/> Destination IP Address 4	0 . 0 . 0 . 0 ~ 0	Port: 4660

To configure COM 1 port parameters.

Serial Settings

Serial Interface	<input checked="" type="radio"/> RS232 <input type="radio"/> RS422 <input type="radio"/> RS485
Baud Rate	9600 bps
Parity	<input checked="" type="radio"/> None <input type="radio"/> Odd <input type="radio"/> Even <input type="radio"/> Mark <input type="radio"/> Space
Data bits	<input type="radio"/> 5 bits <input type="radio"/> 6 bits <input type="radio"/> 7 bits <input checked="" type="radio"/> 8 bits
Stop bits	<input checked="" type="radio"/> 1 bit <input type="radio"/> 2 bits
Flow Control	<input checked="" type="radio"/> None <input type="radio"/> Xon/Xoff <input type="radio"/> RTS/CTS

Figure 5.10

- Select **UDP** in the Link Modes.
- **Destination IP and Port** - Specify the **Begin** and **End IP** here. Four groups of IP ranges are allowed. This is the **IP** address of the UDP program and the **Port** it is listening to. Note- that the maximum number of UDP nodes that the STW-61xC can handle would highly depend on the traffic load.
- *Antaira Technologies has tested that the STW-61xC can handle up to 200 UDP nodes (baud rate 9600 bps, request interval 100ms, and data length 30bytes).*
- Enter the **Local Listening Port**. This is the port that the STW-61xC should listen to. Match this setting in the UDP program (usually called destination port in the UDP program).
- Scroll to the bottom of the page and click on the “**Save & Apply**” button to save the changes.

## 5.2 Link Mode Applications

### 5.2.1 TCP Server Application: Enable Virtual COM

The STW-61xC series will encapsulate control packets on top of the real data when Virtual COM is enabled. This will allow the Virtual COM port in the Windows/Linux system to access the STW-61xC series unit's COM ports. The benefit of using the Virtual COM is that rewriting an existing COM program to read IP packets is not necessary. In other words, it is possible to use an ordinary serial (COM) program. The conversion/virtualization of the IP to COM is all done transparently in the system driver. Below, *Figure 5.11* shows that the STW-61xC series unit is set in TCP Server mode with the Virtual COM enabled.

**LINK Mode**  
To choose specific working mode for COM 1 port.

TCP Server  TCP Client  UDP

TCP Server	
Mode	Virtual COM ▾
IP Filter	<input type="checkbox"/> Enable
Source IP	0 . 0 . 0 . 0
Local Port	4660
Maximum Connection	1 ▾
Response Behavior	<input type="radio"/> Request & Response Mode <input type="radio"/> Reply to requester only <input checked="" type="radio"/> Reply to all <input checked="" type="radio"/> Transparent Mode

Figure 5.11

- Follow [Sec. 5.1.1](#) to properly configure the STW-61xC series in TCP Server mode.
- Click on the dropdown box of the **Application** option and switch to “**Virtual COM**” to enable the Virtual COM application in the unit.
- Scroll to the bottom of the page and click on the “**Save & Apply**” button to save the changes.
- Configure Virtual COM in the Operating System. For Windows, please refer to [Chapter 6](#).
- Please write down the unit's **IP address** and the **Local Port** information. This will be needed later when entering the information for the Serial/IP Virtual COM's Control Panel.

### 5.2.2 TCP Server Application: Enable RFC 2217

The underlying protocol of Virtual COM is based on RFC 2217, the Telnet COM control option. Therefore, it is possible to use RFC 2217 with the STW-61xC series unit in the TCP server mode. To do so, please refer to [Sec. 5.2.1](#) to enable Virtual COM, so the unit will become aware of the commands. Please note that there is no need to configure Virtual COM on the Operating System, because Virtual COM ports will not be used.

### 5.2.3 TCP Client Application: Enable Virtual COM

It is also possible to run VCOM in TCP Client mode *Figure 5.1212*. It is usually easier to use Virtual COM in the Client mode if the unit uses dynamic IP (DHCP), because it is impossible to set a static IP address in the Virtual COM's control panel within the operating system.

#### LINK Mode

To choose specific working mode for COM 1 port.

TCP Server  TCP Client  UDP

TCP Client	
Application	Virtual COM
Destination IP 1	10 . 0 . 50 . 1
Destination Port 1	4660
Destination 2	<input type="checkbox"/> Enable
Destination IP 2	0 . 0 . 0 . 0
Destination Port 2	4660
Response Behavior	<input type="radio"/> Request & Response Mode <input type="radio"/> Reply to requester only <input checked="" type="radio"/> Reply to all <input checked="" type="radio"/> Transparent Mode

Figure 5.12

- Follow [Sec. 5.1.2](#) to properly configure the STW-61xC series in TCP Client mode.
- Click on the dropdown box of the **Application** option and switch to “**Virtual COM**” to enable the Virtual COM application in the unit.
- Scroll to the bottom of the page and click on the “**Save & Apply**” button to save the changes.
- Please write down the **Destination Port** information. This will be needed later to enter the information for the Serial/IP Virtual COM's control panel.

## 5.2.4 TCP Client Application: Enable RFC 2217

The underlying protocol of Virtual COM is based on RFC 2217, the Telnet COM control option. Therefore, it is possible to use RFC 2217 with the STW-61xC series in TCP Client mode. To do so, refer to [Sec. 5.2.3](#) to enable Virtual COM, so that the STW-61C series unit will become aware of the commands. Note that there is no need to configure the Virtual COM on the operation system, because Virtual COM ports will not be used.

## 5.2.5 TCP Server Application: Configure STW-61xC as a Pair Connection Master

Pair Connection is useful when pairing up two serial devices over the Ethernet. Pair connection requires two units of the STW-61xC series to work as a pair; one unit would be setup as the “Pair Connection Master” and the other would be setup as the “Pair Connection Slave”.

### LINK Mode

To choose specific working mode for COM 1 port.

TCP Server  TCP Client  UDP

TCP Server	
Application	Pair Connection Master ▾
IP Filter	<input type="checkbox"/> Enable
Source IP	0 . 0 . 0 . 0
Local Port	4660
Maximum Connection	1 ▾
Response Behavior	<input type="radio"/> Request & Response Mode <input type="radio"/> Reply to requester only <input checked="" type="radio"/> Reply to all <input checked="" type="radio"/> Transparent Mode

Figure 5.13

- Follow [Sec.5.1.1](#) to properly configure the STW-61xC series in TCP server mode.
- Click on the dropdown box for the **Application** option and switch to “**Pair Connection Master**” in order to enable the ‘Pair Connection’ application in the unit.
- Scroll to the bottom of the page and click on the “**Save & Apply**” button to save the changes.
- Please write down the Pair Connection Master’s IP address info, in order to enter it in the ‘Slave’ later.
- Proceed to the [section below](#) to configure a ‘Slave’ to connect to this ‘Master’.

## 5.2.6 TCP Client Application: Configure STW-61x C as a Pair Connection Slave

A **Pair Connection Slave** setup is shown below in *Figure 5.14*. It is necessary to pair up with a **Pair Connection Master**. Please setup a **Pair Connection Master** *before* proceeding.

### LINK Mode

To choose specific working mode for COM 1 port.

TCP Server  TCP Client  UDP

TCP Client	
Application	Pair Connection Slave ▾
Destination IP 1	10 . 0 . 50 . 1
Destination Port 1	4660
Destination 2	<input type="checkbox"/> Enable
Destination IP 2	0 . 0 . 0 . 0
Destination Port 2	4660
Response Behavior	<input type="radio"/> Request & Response Mode <input type="radio"/> Reply to requester only <input checked="" type="radio"/> Reply to all <input checked="" type="radio"/> Transparent Mode

Figure 5.14

- Follow [Sec. 5.1.2](#) to properly configure the STW-61xC series in TCP Client mode.
- Click on the dropdown box for the **Application** option and switch to “**Pair Connection Slave**” in order to enable the Pair Connection application in the unit.
- Match the **Destination IP** with the settings of the Pair Connection Master’s IP that was previously setup.
- Scroll to the bottom of the page and click on the “**Save & Apply**” button to save the changes.

## 5.2.7 TCP Server Application: Enable Reverse Telnet

Reverse Telnet is useful if a telnet program is used to connect to the STW-61xC series and the serial interface of the unit is connected to a terminal server. Telnet programs in Windows/Linux require special handshaking to get the outputs and formatting to show properly. After Reverse Telnet is enabled, the unit will interact with those special commands (CR/LF commands).

### LINK Mode

To choose specific working mode for COM 1 port.

TCP Server  TCP Client  UDP

TCP Server	
Mode	Reverse Telnet ▾
IP Filter	<input type="checkbox"/> Enable
Source IP	10 . 0 . 190 . 7
Local Port	4660
Maximum Connection	1 ▾
Response Behavior	<input type="radio"/> Request & Response Mode <input type="radio"/> Reply to requester only <input checked="" type="radio"/> Reply to all <input checked="" type="radio"/> Transparent Mode

Figure 5.15

- Follow [Sec 5.1.1](#) to properly configure the STW-61xC in TCP Server mode.
- Click on the dropdown box for the **Application** option and switch to “**Reverse Telnet**” in order to enable the telnet application in the unit.
- Scroll to the bottom of the page and click on the “**Save & Apply**” button to save the changes.

### 5.2.8 UDP Application: Multi-Point Pair Connection

It is also possible to setup a pair connection in UDP mode to have more than one 'Pair Connection Master' or 'Slave' to communicate with each other. For example, it is possible to setup one Modbus Master and six Modbus Slaves in UDP (*Figure 5.16*).

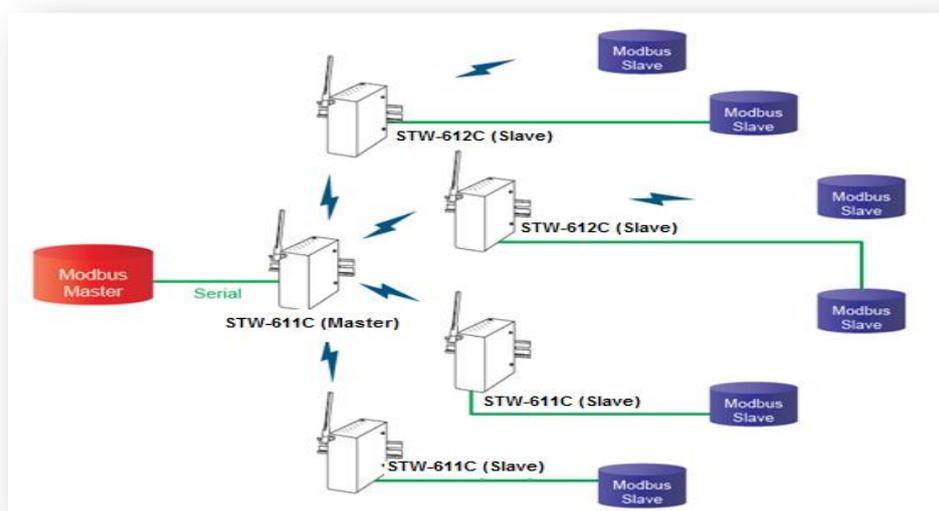
If RS-232 is used with flow control, it is recommended to use a 'Multi-Point Pair Connection' in TCP. Please refer to [Sec.TCP Server Application: Multi-Point TCP Pair Connections](#).

**\*\*Note:** The destination IP and port of the slaves need to be equal to the master's IP and port. The local listening port of the slaves need to be equal to the master's destination port, see Table 5.1 for an example.

Table 5.1

	IP Address	Link Mode	Local Listening Port	Destination IP	Destination Port
STW-611C Master COM1	10.0.50.100	UDP	5000	10.0.50.200~10.0.50.203	5000
STW-611C Master COM1	10.0.50.100	UDP	5001	10.0.50.200~10.0.50.201	5001
STW-612C Slave 1 COM1	10.0.50.200	UDP	5000	10.0.50.100	5000
STW-612C Slave 1 COM2	10.0.50.200	UDP	5001	10.0.50.100	5001
STW-612C Slave 2 COM1	10.0.50.201	UDP	5000	10.0.50.100	5000
STW-612C Slave 2 COM2	10.0.50.201	UDP	5001	10.0.50.100	5001
STW-611C Slave 3 COM1	10.0.50.202	UDP	5000	10.0.50.100	5000
STW-611C Slave 4 COM1	10.0.50.203	UDP	5000	10.0.50.100	5000

Figure 5.16



### 5.2.9 TCP Server Application: Multiple TCP Connections

The Multi-Connection option will allow up to a maximum of *four* TCP Client connections. Note that it is also possible to use this multi-connection feature in conjunction with other TCP server applications, such as Virtual COM, Pair Connection, and Reverse Telnet. For example, enabling multi-connection along with pair connection will result in multi-point pair connection in TCP mode ([Sec. 5.2.10](#)). For more information on response behavior please go to [Sec. 5.1.1](#).

**LINK Mode**  
To choose specific working mode for COM 2 port.

TCP Server  TCP Client  UDP

TCP Server	
Mode	RAW ▾
IP Filter	<input type="checkbox"/> Enable
Source IP	0 . 0 . 0 . 0
Local Port	4660
Maximum Connection	4 ▾
Response Behavior	<input type="radio"/> Request & Response Mode <input type="radio"/> Reply to requester only <input checked="" type="radio"/> Reply to all <input checked="" type="radio"/> Transparent Mode

Figure 5.17

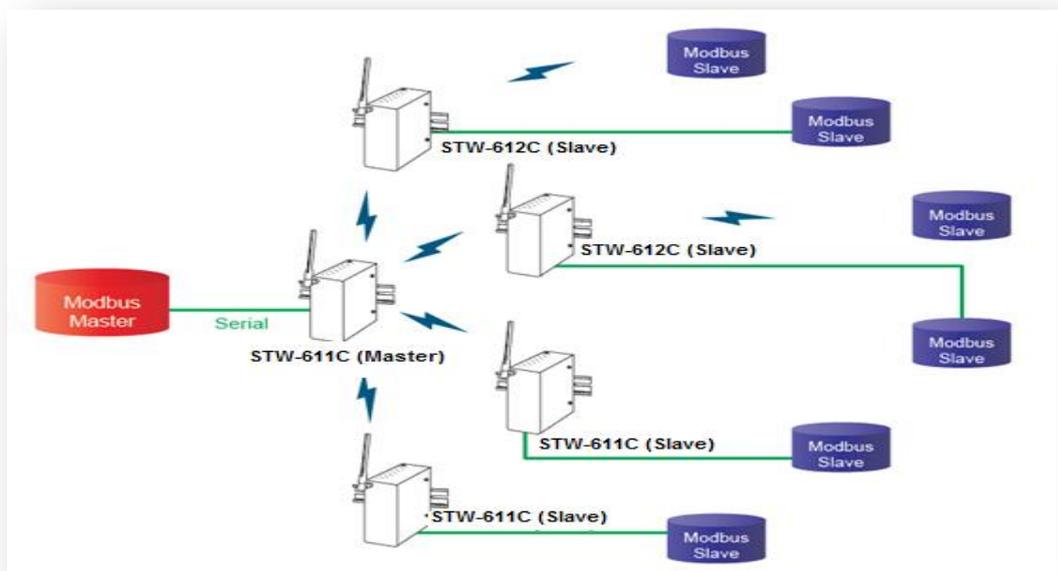
### 5.2.10 TCP Server Application: Multi-Point TCP Pair Connections

The difference between 'Multi-Point TCP Pair Connection' and 'Multi-Point UDP Pair Connection' is that the TCP implementation would also exchange the flow control pins for RS-232. However, the TCP server is limited to a maximum of *four* connections. If there are four serial devices and they don't use flow control pins with RS-232 or RS-485, it is possible to setup a pair connection in UDP mode, [Sec. 5.2.8](#). After multi-connection is enabled in the Web UI, refer to [Table 5.2](#) to setup the Pair Connection featured in [Figure 5.18](#).

Table 5.2

	IP Address	Link Mode	Application	Local Listening Port	Destination IP	Destination Port
STW-611C Master COM1	10.0.50.100	TCP Server	Pair Connection Master	4660	-	-
STW-612C Slave 1 COM1	10.0.50.200	TCP Client	Pair Connection Slave	-	10.0.50.100	4660
STW-612C Slave 1 COM2	10.0.50.200	TCP Client	Pair Connection Slave	-	10.0.50.100	4660
STW-611C Slave 2 COM1	10.0.50.201	TCP Client	Pair Connection Slave	-	10.0.50.100	4660
STW-611C Slave 3 COM1	10.0.50.202	TCP Client	Pair Connection Slave	-	10.0.50.100	4660

Figure 5.18



## 5.3 Wireless Topology

### 5.3.1 Configure STW-61xC Series as a Wireless Ad-Hoc Peer

Basic Settings

Radio Off	<input type="checkbox"/> Enabled
SSID	Adhoc_Peer <input type="button" value="scan network"/>
BSSID(MAC Address)	(Any) <input type="checkbox"/> Enabled
WPS BUTTON	<input type="button" value="Start WPS PBC"/>
Topology	Ad-Hoc
Band mode	802.11b
TxRate	Best (auto)
Channel	1
BandWidth	40MHz
Secondary Channel	5
Authentication Mode	OPEN
Encryption Type	NONE
<b>WEP Key</b>	
<input checked="" type="radio"/> Key 1	HEX (10 or 26 digits) 0123456789
<input type="radio"/> Key 2	HEX (10 or 26 digits) 0123456788
<input type="radio"/> Key 3	HEX (10 or 26 digits) 0123456787
<input type="radio"/> Key 4	HEX (10 or 26 digits) 0123456786
<b>WPA-PSK/WPA2-PSK</b>	
Passphrase	<input type="text"/> <input checked="" type="checkbox"/> Hide
<b>WPA2(with Radius)</b>	
User	SWXXXX
Password	<input type="password"/>
Certificates	<input type="text"/> <input type="button" value="Browse..."/> <input type="button" value="Upload CA certificate"/> <input type="button" value="Upload Client certificate"/> <input type="button" value="Show Certificates Information"/>
Private key password	<input type="password"/>
<input type="button" value="Save &amp; Apply"/> <input type="button" value="Temporary Apply"/> <input type="button" value="Cancel"/>	

Figure 5.19

Please refer to *Table 5.3* when configuring the STW-61xC series as a ‘Wireless Ad-hoc Peer’.

Table 5.3

<b>Topology</b>	Adhoc
<b>Band Mode</b>	802.11b - it provides better wireless sensitivity with lower maximum rate at 11Mbps.
<b>Tx Rate</b>	Auto
<b>Channel</b>	1; it is recommended to use 1, 6, or 11 (for 2.4 GHz).
<b>Authentication</b>	Open
<b>Encryption</b>	WEP
<b>WEP Key</b>	For 64-bit encryption, enter 5 ASCII value or 13 Hexadecimal digits. For 128-bit encryption, enter 13 ASCII value or 26 Hexadecimal digits. Use 128-bit when possible.

### 5.3.2 Configure STW-61xC as a Wireless Client in Infrastructure Mode (PSK)

The screenshot displays the configuration page for a wireless client in Infrastructure Mode (PSK). The settings are as follows:

- Radio Off:**  Enabled
- SSID:** A W5500 (scan network button)
- BSSID(MAC Address):** (Any)  Enabled
- WPS BUTTON:** Start WPS PBC
- Topology:** Infrastructure
- Band mode:** Auto
- TxRate:** Best (auto)
- Channel:** 1
- BandWidth:** 40MHz
- Secondary Channel:** 5
- Authentication Mode:** WPA2-PSK
- Encryption Type:** AES
- WEP Key:**
  - Key 1: HEX (10 or 26 digits) 0123456789
  - Key 2: HEX (10 or 26 digits) 0123456788
  - Key 3: HEX (10 or 26 digits) 0123456787
  - Key 4: HEX (10 or 26 digits) 0123456786
- WPA-PSK/WPA2-PSK:**
  - Passphrase:** [Masked]  Hide
- WPA2(with Radius):**
  - User:** SWXXXX
  - Password:** [Masked]
  - Certificates:** Upload CA certificate, Upload Client certificate, Show Certificates Information, Browse...
  - Private key password:** [Masked]

Buttons at the bottom: Save & Apply, Temporary Apply, Cancel.

Figure 5.20

Please refer to **Table 5.4** when configuring the STW-61xC series as a wireless client in infrastructure mode (PSK).

Table 5.4

<b>Topology</b>	Infrastructure
<b>Band Mode</b>	Auto
<b>Tx Rate</b>	Auto
<b>Channel</b>	Disabled (auto sensing)
<b>Authentication</b>	As defined by the Access Point
<b>Encryption</b>	As defined by the Access Point
<b>WPA2-PSK passphrase</b>	8~63 characters



**Attention-** It is recommended to use the WPA2-PSK authentication with AES encryption as it is the most secure password-type security option without utilizing 802.1x.

### 5.3.3 Wi-fi Direct Group Owner Mode

Below is the quick setup procedure for the Wi-Fi Direct Group Owner mode:

1. There are two ways to switch the STW-61xC series unit to Wi-Fi Direct Group Owner.
  - Press and hold the button (on the side of the housing) for 4 seconds to trigger the unit to switch to Wi-Fi Direct Group Owner mode.
  - Enable Wi-Fi Direct Group Owner by logging into the unit's Web Console (*Figure 5.21*).

The screenshot shows the 'Basic Settings' web console. The 'Wi-Fi Direct Group Owner' checkbox is checked and labeled 'Enabled'. The 'WPS BUTTON' field contains a 'Start WPS PBC' button. Other settings include SSID: 123576544, BSSID(MAC Address): (Any), Topology: Infrastructure, Band mode: 802.11b (highlighted), TxRate: Best (auto), Channel: 1, BandWidth: 40MHz, Secondary Channel: 5, Authentication Mode: OPEN, and Encryption Type: NONE. The WEP Key section is partially visible at the bottom.

Figure 5.21

2. Activate the Wi-Fi Direct or WPS PBC on the wireless client unit, and then the station unit will automatically try to connect to the Wi-Fi Direct GO.

➤ When another station unit is required to join the Wi-Fi group:

**Original:** Press and hold Wi-Fi Direct Group Owner's WPS button for 1 second to trigger the WPS PBC or click the Start WPS PBC software button on the Web.

**Modified:** Press and hold P2P Button (on the side of the **housing**) for 1 second to trigger the WPS PBC or click the Start WPS PBC software button on the Web.

**\*\*Note:**

- Reboot or apply settings on the Web GUI that will break the Wi-Fi Direct Group.
- Profiles will be disabled if the Wi-Fi Direct is enabled.
- Press and hold the button for 8 seconds and then it will disable the Wi-Fi Direct Group Owner mode, the unit will switch to AP Client mode.

### 5.3.4 Configure STW-61xC as a Wireless Client in the Infrastructure Mode (PEAP-MSCHAPv2)

Basic Settings

Radio Off	<input type="checkbox"/> Enabled
SSID	A W5500 <input type="button" value="scan network"/>
BSSID(MAC Address)	(Any) <input type="checkbox"/> Enabled
WPS BUTTON	<input type="button" value="Start WPS PBC"/>
Topology	Infrastructure
Band mode	Auto
TxRate	Best (auto)
Channel	1
BandWidth	40MHz
Secondary Channel	5
Authentication Mode	WPA2(PEAP)
Encryption Type	AES
<b>WEP Key</b>	
<input checked="" type="radio"/> Key 1:	HEX (10 or 26 digits) 0123456789
<input type="radio"/> Key 2:	HEX (10 or 26 digits) 0123456788
<input type="radio"/> Key 3:	HEX (10 or 26 digits) 0123456787
<input type="radio"/> Key 4:	HEX (10 or 26 digits) 0123456786
<b>WPA-PSK/WPA2-PSK</b>	
Passphrase	<input type="password"/> <input checked="" type="checkbox"/> Hide
<b>WPA2(with Radius)</b>	
User	testuser
Password	<input type="password"/>
Certificates	<input type="text"/> <input type="button" value="Browse..."/> <input type="button" value="Upload CA certificate"/> <input type="button" value="Upload Client certificate"/> <input type="button" value="Show Certificates Information"/>
Private key password	<input type="password"/>

Figure 5.22

Please refer to Table 5.5 when configuring the STW-61xC series as a wireless client in infrastructure mode (PEAP-MSCHAPv2).

Table 5.5

<b>Topology</b>	Infrastructure
<b>Band Mode</b>	Auto
<b>Tx Rate</b>	Auto
<b>Channel</b>	Disabled (auto sensing)
<b>Authentication</b>	WPA2 (PEAP)
<b>Encryption</b>	As defined by the Access Point
<b>Username</b>	Defined by the RADIUS Server
<b>Password</b>	Defined by the RADIUS Server

## 5.4 P2P Button (External Physical WPS Button)

Antaira Technologies' STW-61xC series provides a hassle-free "Easy Setup" Wi-Fi Direct (WPS) technology for "point-to-point" applications. Each STW-61xC unit has an external physical WPS button – P2P Button, which can build the "WI-FI direct" and "serial auto link" function.

First, please login to the web console and "Enable" the 'Serial Auto Link' settings under "Serial Settings" as shown in the screenshot to the right.

Then follow the steps below for the P2P button setup.



1. Users have to click this option to enable the 'point-to-point' button. This option can be found in the web console under Wireless → Advanced Settings. The default setting is enabled which is shown below in Figure 5.23.

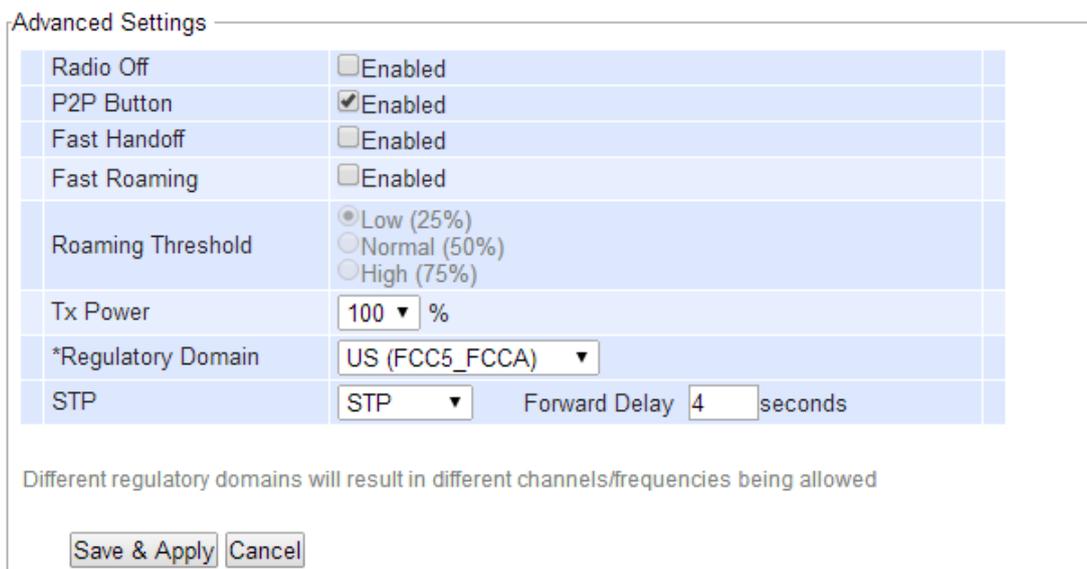


Figure 5.23

2. In order to establish a connection successfully, all devices' IP addresses and subnet mask settings should be correct. Users can use the serial manager utility software to do the setup.

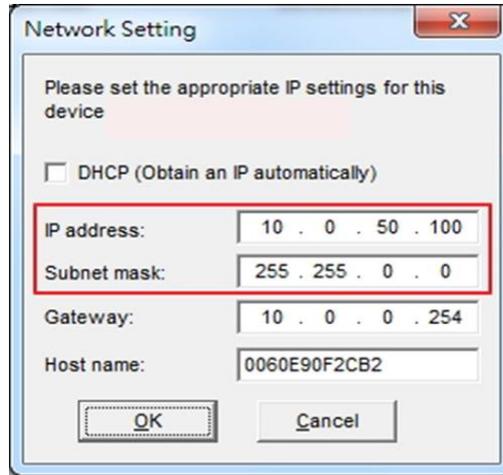


Figure 5.24

3. The STW-61xC series unit can be assigned to different modes by pressing the 'point-to-point' button. The following table (Table 5.6) shows the timing relationship.

Table 5.6

Pressing Seconds	1~3(s)	4~7(s)	8~(s)
Working Mode	Restart Connection	AP(Wi-fi direct)	AP Client

4. The STW-61xC series unit can make a WIFI connection by just pressing the 'point-to-point' (P2P) button.
  - a. To set the AP mode, press the P2P button for 4-7 seconds.
  - b. To set as an AP client, press for over 8 seconds.
  - c. If users want the AP to connect to other clients, just press 1-3 seconds to restart the connection.
5. Before building a serial auto link, please make sure the STW-61xC series unit's COM port has connected with the serial device. The rest connection steps are the same as the WIFI direct (refer to step 4).
6. Software will establish a new SSID: "DIRECT-Xx" for WIFI Direct and Serial Auto Link (Figure 5.25).
 

\*\*\* The SSID will be "DIRECT - Xx" and the 'Xx' are two random alphabet letters.

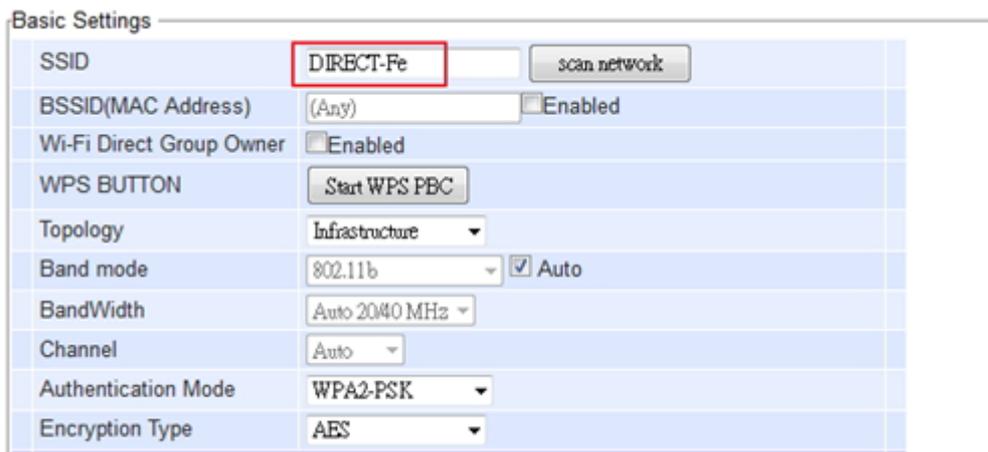


Figure 5.25

Users can check the connection status by using the LED indicators in front of the unit. The follow table represents the meanings of each LED color.

Table 5.7

LED Status			
Color	Off	Blinking	On
Orange	P2P is not enabled.	P2P is connecting at Soft AP mode	Device's P2P mode is enabled in Soft AP mode.
Green	P2P is not enabled.	P2P is connection at Client mode	Device's P2P mode is enabled in AP client mode.

➤ **Limitation**

- After pressing the WDS button, the whole pairing sequence time is 120 seconds, which means the user has to set both devices in 120 seconds or the pairing will fail.
- WDS protocol doesn't support having the multi AP to the AP client link in the same time, so pairing two or more devices in the same time might cause pairing failure.
- For two pairings of the STW-612C's COM ports, device A COM1 will only reflect to device B COM1. Same rule as COM2 to COM2.
- STW-61xC series' AP mode is simulated by software, so if the device is restarted, the settings will not be recovered.
- The pairing time might be influenced by environmental complexity.

## 6 VCOM Installation & Troubleshooting

### 6.1 Enabling VCOM

The STW-61xC series captures the control packets on top of the real data when Virtual COM is enabled. This will allow the Virtual COM port in the Windows/Linux system to access the STW-61xC series units' COM ports. Please note that the VCOM can only be enabled on TCP Server Mode ([Sec. 5.1.1](#)) or TCP Client ([Sec. 5.1.1](#)).

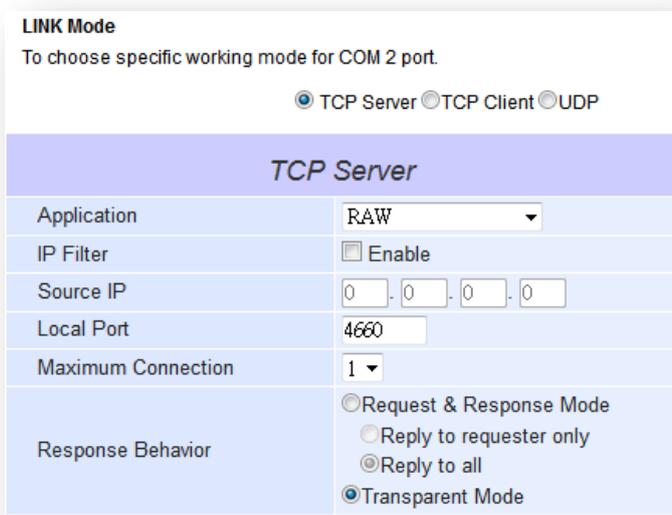


Figure 6.1

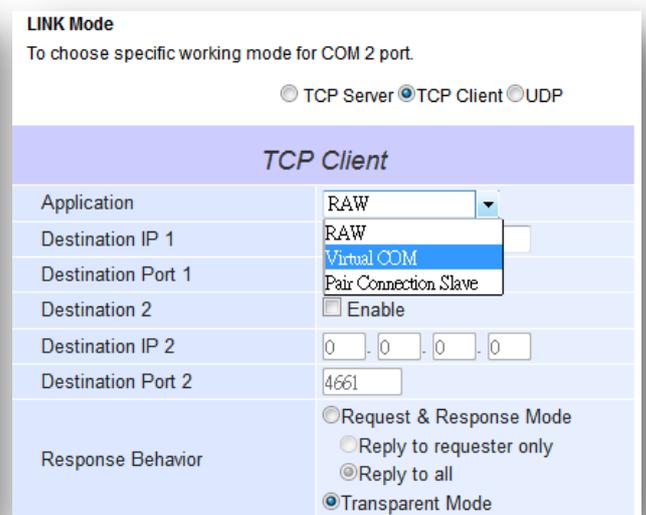
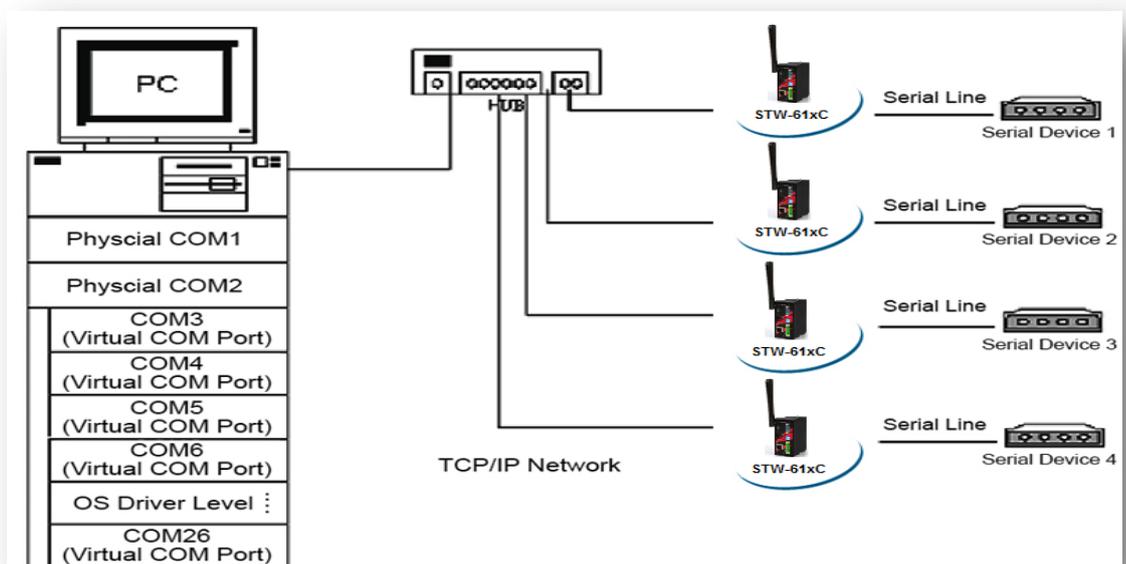


Figure 6.2

Virtual COM allows remote access of serial devices over TCP/IP networks through Serial/IP Virtual COM ports that work like local native COM ports. *Figure 6.3* is a Virtual COM connection diagram.

Figure 6.3



## 6.1.1 VCOM Driver Setup

### System Requirements

Windows Platform (32/64 bits)

Win7

2008

Vista

XP

2003 (also Microsoft 2003 Terminal Server)

2000 (also Microsoft 2000 Terminal Server)

NT (also Microsoft NT Terminal Server)

4.0

9x

Citrix MetaFrame Access Suite

**Linux** - It is available with a separate package called Virtual COM driver for Linux (**TTYredirector**) within the product CD. The zipped package includes a binary file for installation and a manual for Linux systems.

## 6.1.2 Limitation

The Virtual COM driver allows up to 256 **Virtual COM ports** in a single PC. Selecting within COM1 to COM4096 is allowed. Note that the COM ports already occupied by the system or other devices will not be available.

## 6.1.3 Installation

Run the Virtual COM setup file included in the CD to install the Virtual COM driver for the operating system. Turn off any anti-virus software and try again if installation fails. At the end of the installation, please select at least one Virtual COM port from the Serial/IP control panel.

## 6.1.4 Uninstalling

From the Windows start menu select the control panel, 'Add/Remove Programs'. Then, select the Serial/IP Version x.x.x in the list of installed software. Lastly, click the 'Remove' button to remove the program.

## 6.2 Enable VCOM Serial Device Servers and Select VCOM in Windows

### 6.2.1 Enable VCOM in Serial Device Servers

Enable Virtual COM in the serial device servers by logging into the WebUI under **COM configuration**. *Figure 6.4* shows how to enable the Virtual COM in the STW-61xC series. For a detailed **Link Mode configuration** with **Virtual COM**, please refer to the previous chapter starting from [Sec. 5.1](#) on **Link Mode configurations**.

#### LINK Mode

To choose specific working mode for COM 2 port.

TCP Server  TCP Client  UDP

TCP Server	
Application	Virtual COM ▾
IP Filter	<input type="checkbox"/> Enable
Source IP	0 . 0 . 0 . 0
Local Port	4660
Maximum Connection	1 ▾
Response Behavior	<input type="radio"/> Request & Response Mode <input type="radio"/> Reply to requester only <input checked="" type="radio"/> Reply to all <input checked="" type="radio"/> Transparent Mode

Figure 6.4

## 6.2.2 Running Serial/IP in Windows

Below are the instruction on how to find the Serial/IP Control Panel:

- Start → All Programs → Serial/IP → Control Panel
- In the Windows Control Panel, open the Serial/IP applet.
- In the Windows notification area, (Figure 6.5); right click in the Serial/IP tray icon and click on **Configure** to open the control panel.

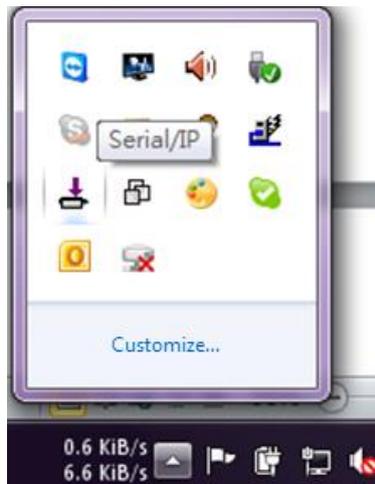


Figure 6.5

If no Virtual COM port is selected, a dialog will pop up that asks to select at least one port as the Virtual COM port before proceeding (Figure 6.6).

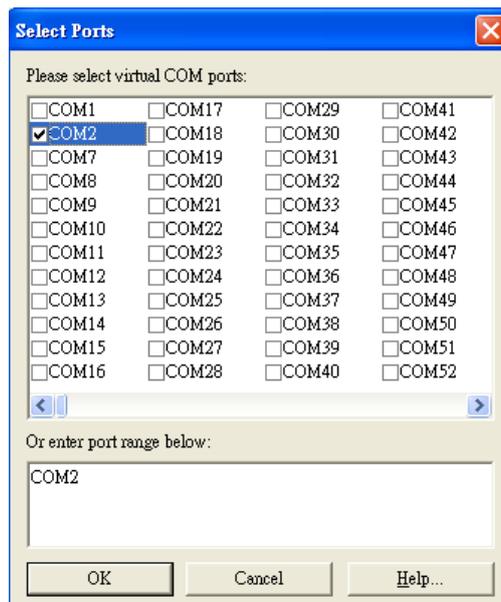


Figure 6.6

After at least one Virtual COM port is selected, the Control Panel will show. Please see (Figure 6).

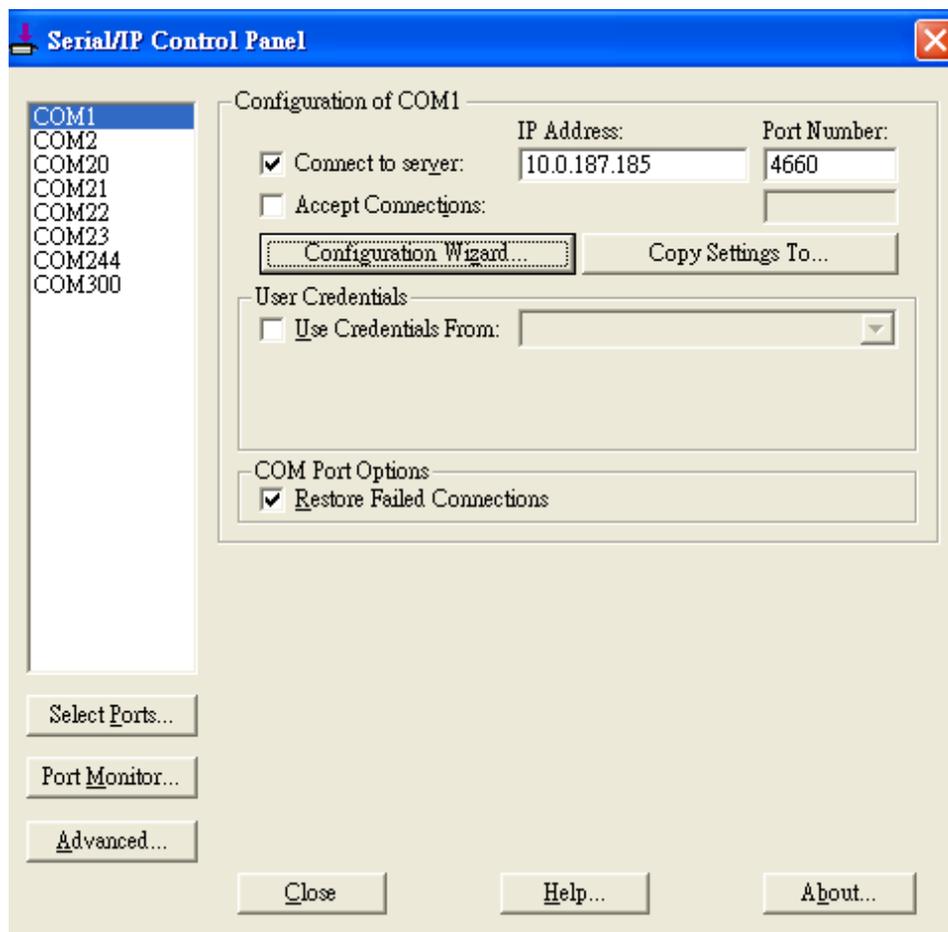


Figure 6.7

The left hand side of the control panel shows the list of selected Virtual COM ports. Click on **Select Ports** to add or remove Virtual COM ports from the list. The right hand side of the control panel shows the configurations of the selected Virtual COM port marked in blue. Each Virtual COM port can have its own settings.

---

**\*\*Note:** The changes of the Virtual COM ports will apply immediately and it is not required to save the settings manually. However, if the Virtual COM port is already in use, it is necessary to close the Virtual COM port and open it after the TCP connection closes completely in order for the changes to take effect.

---

### 6.2.3 Configuring VCOM Ports

If the serial device server is running in TCP Server mode (recommended), a Serial/IP should be the TCP Client connecting to the serial device server. Enable 'Connect to Server' and enter the IP Address of the serial device server with the port number specified. The port number here is the local listening port for the serial device server.

If the serial device server is running in TCP Client mode, Serial/IP should be the TCP Server waiting for a serial device server to connect it. Enable 'Accept Connections' and enter the port number. The port number here is the destination port of the serial device server. Do not enable 'Connect to Server' and 'Accept Connections' together.

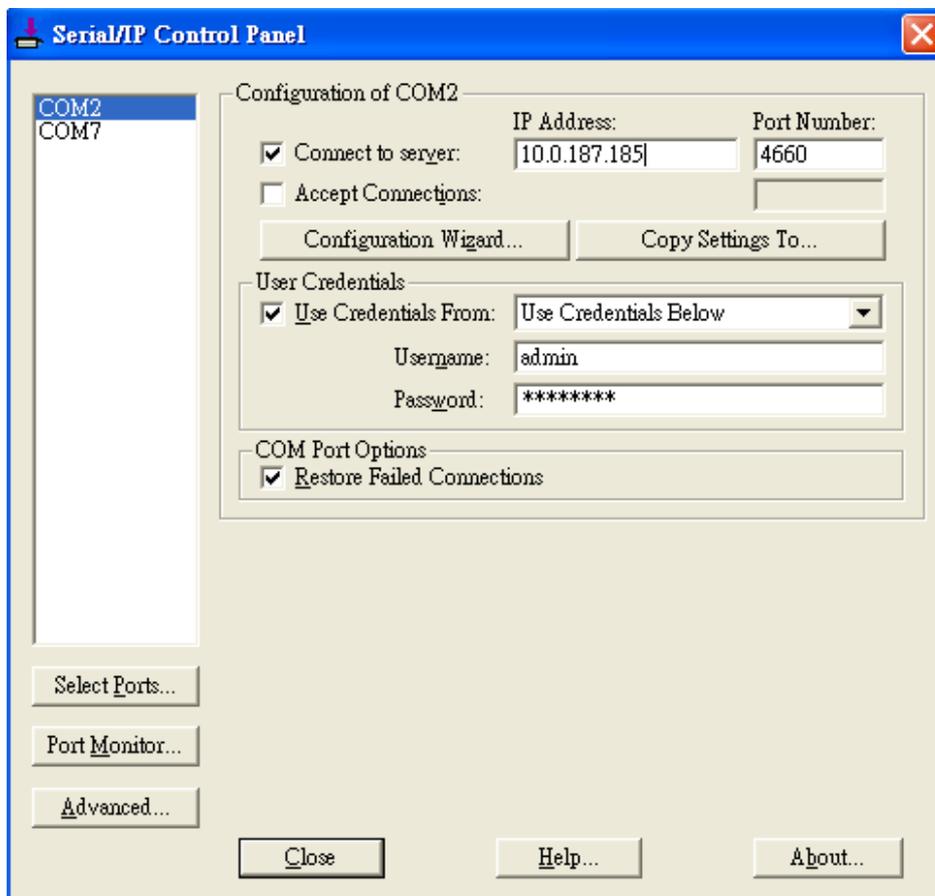


Figure 6.8

Enable **Restore Failed Connections** to force the Virtual COM to automatically restore failed connections with the serial device server in the case of unstable network connections.

To test the Virtual COM connection, click the 'Configuration Wizard' button and then click the **Start** button in the pop up window (Figure 6.9). If the test passes, all checks should be in green. To apply the changes in the 'Configuration Wizard' window to the 'Control Panel', click on **Use Settings**. Click on **Copy** to copy the results to the system clipboard.

To transfer the settings between Virtual COM ports, click on the **Copy Settings To** button.

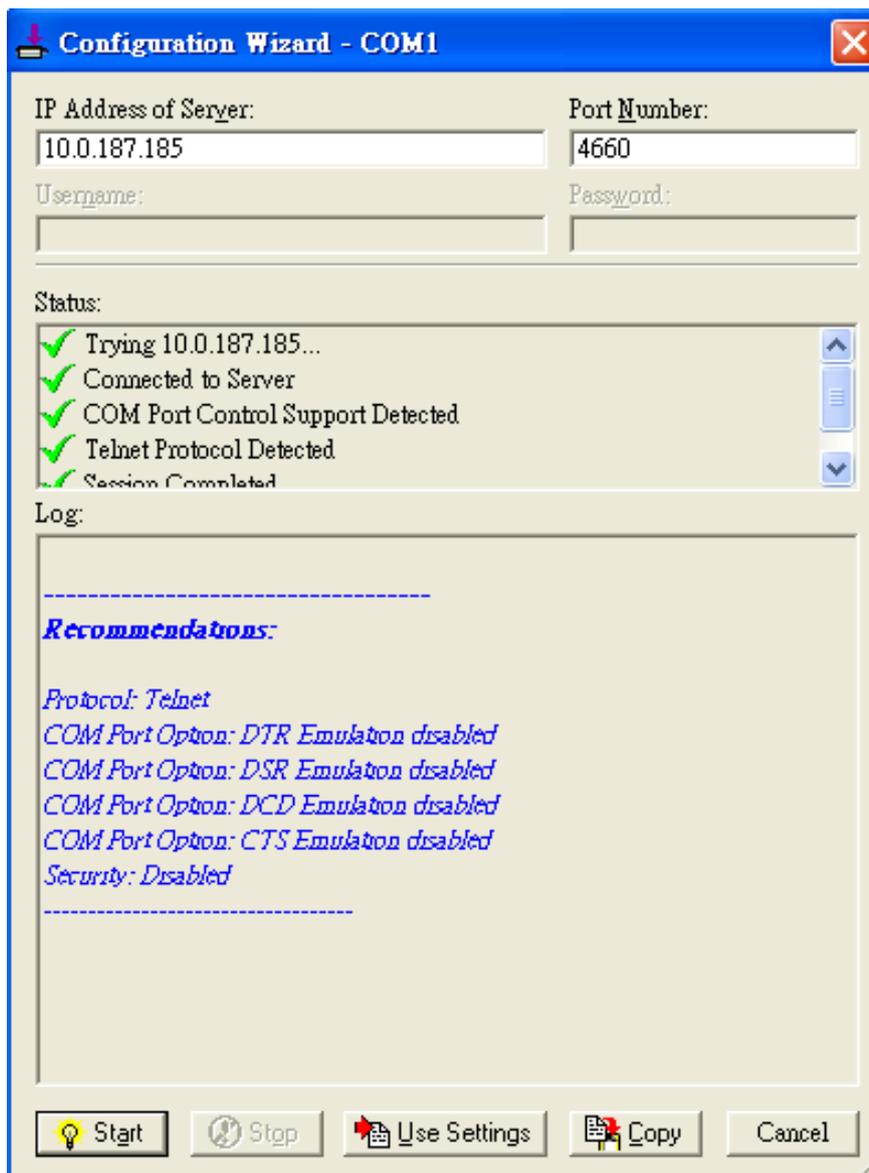


Figure 6.9

## 6.3 Exceptions

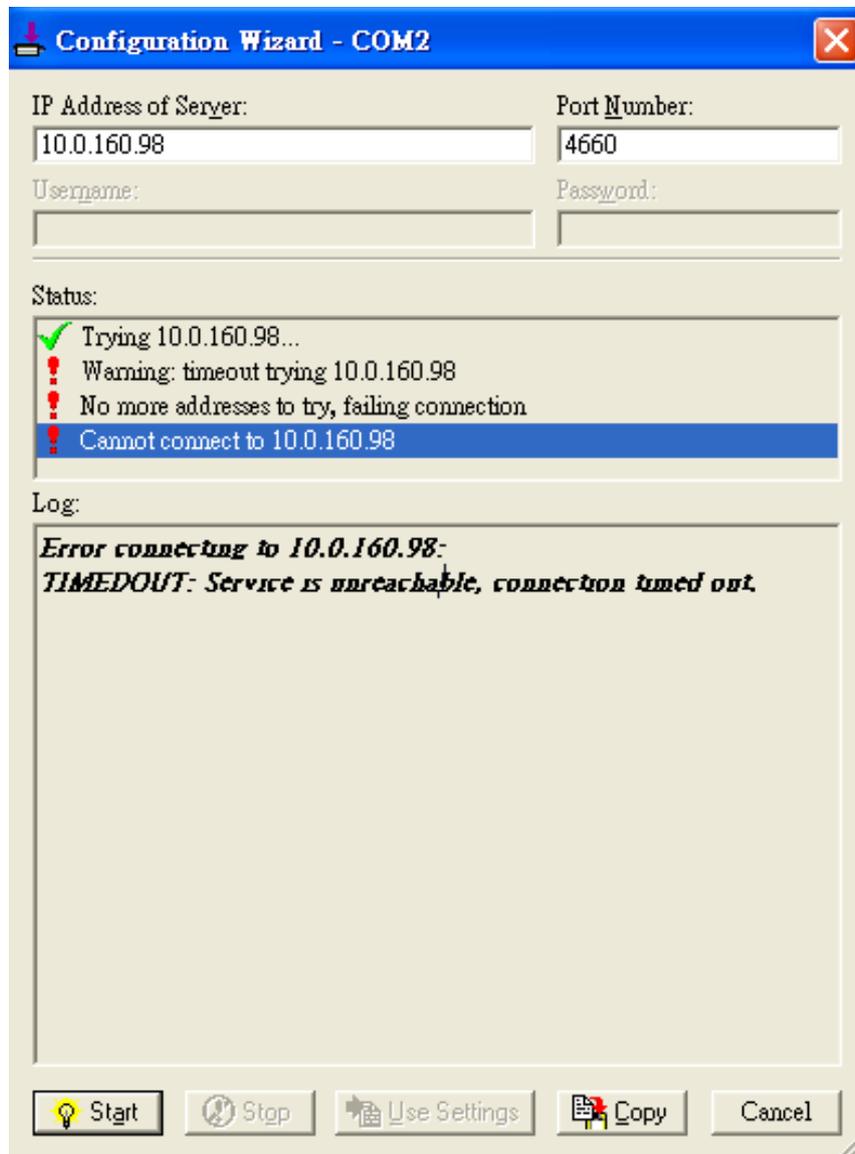


Figure 6.10

If the exclamation mark begins with **Warning: timeout trying x.x.x.x** as in *Figure 6.10*, recheck the **VCOM IP** and **Port configuration** or the PC's **network configuration**.

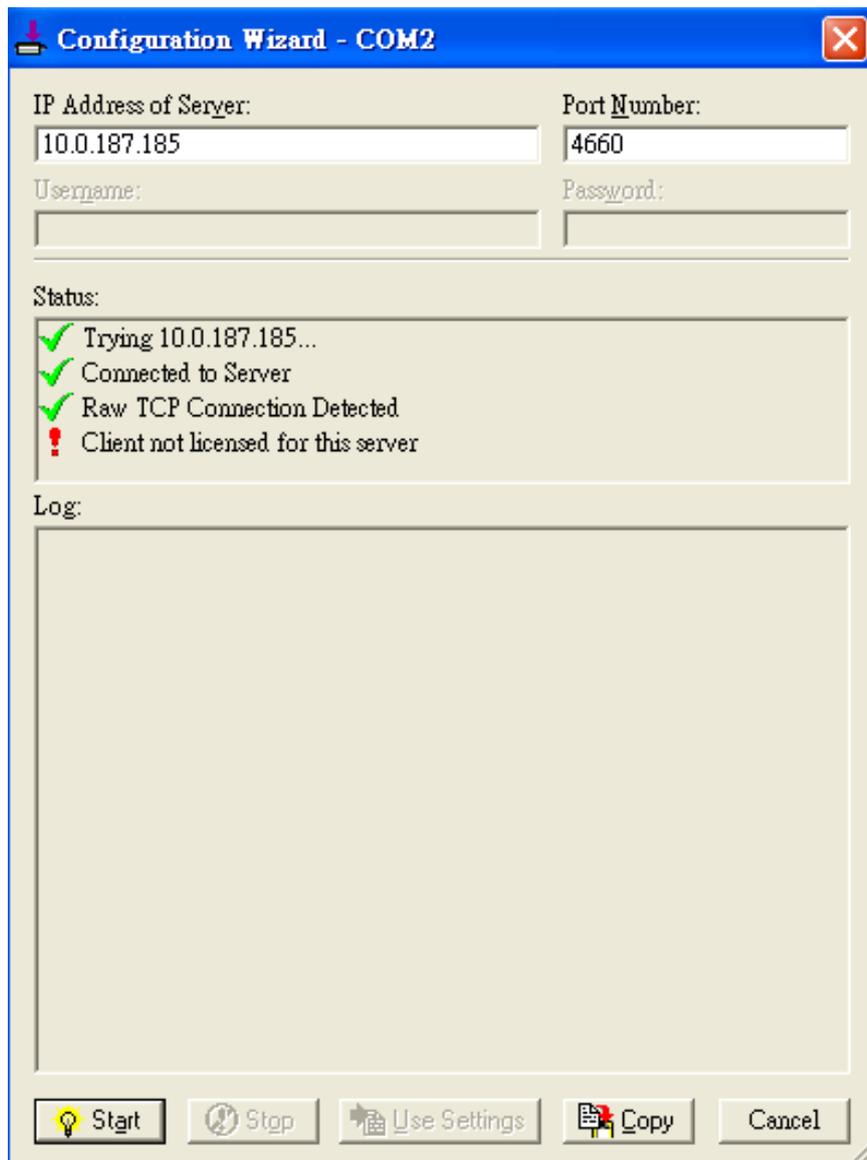


Figure 6.11

If there is a check with **Raw Connection Detected** and an exclamation mark with **Client not licensed for this server**, *Figure 6.11*, enable **VCOM** in the serial device server.

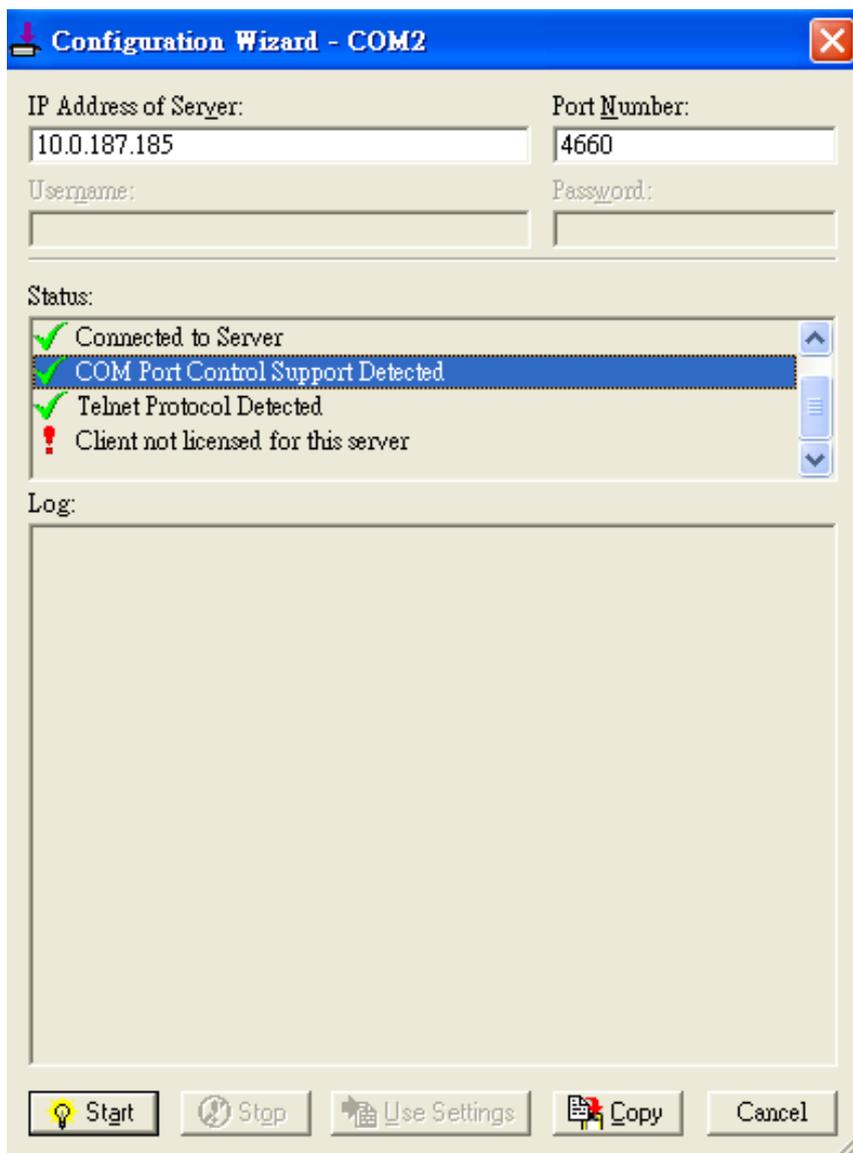


Figure 6.12

If there is a check with **Telnet Protocol Detected** and an exclamation mark with **Client not licensed for this server** as in *Figure 6.12*, this means that there is a licensing issue between the serial device server and Serial/IP. Please contact Antaira Technologies' technical support at (844) 268-2472 to obtain the correct VCOM software.

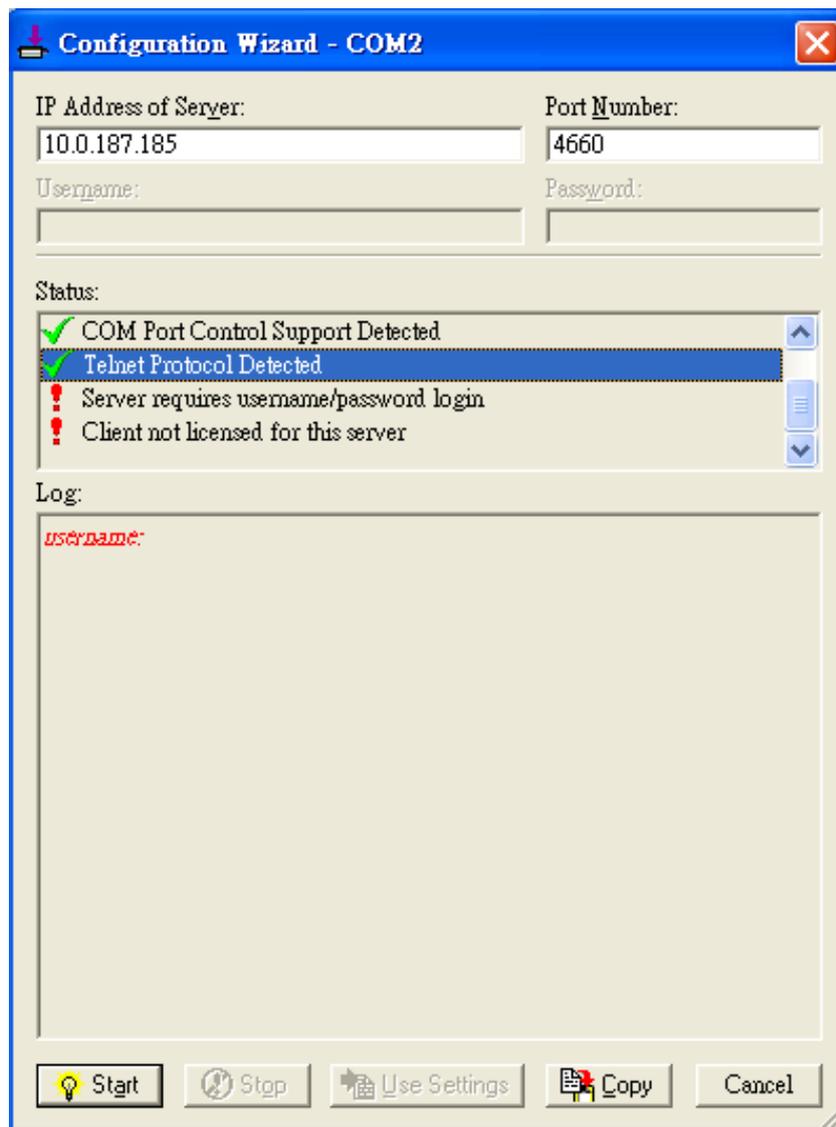


Figure 6.13

If the exclamation mark begins with **Server requires username/password login**, *Figure 6.1313*, it means the **VCOM Authentication** in the serial device server is enabled, but credentials in the **Serial/IP** are not enabled.

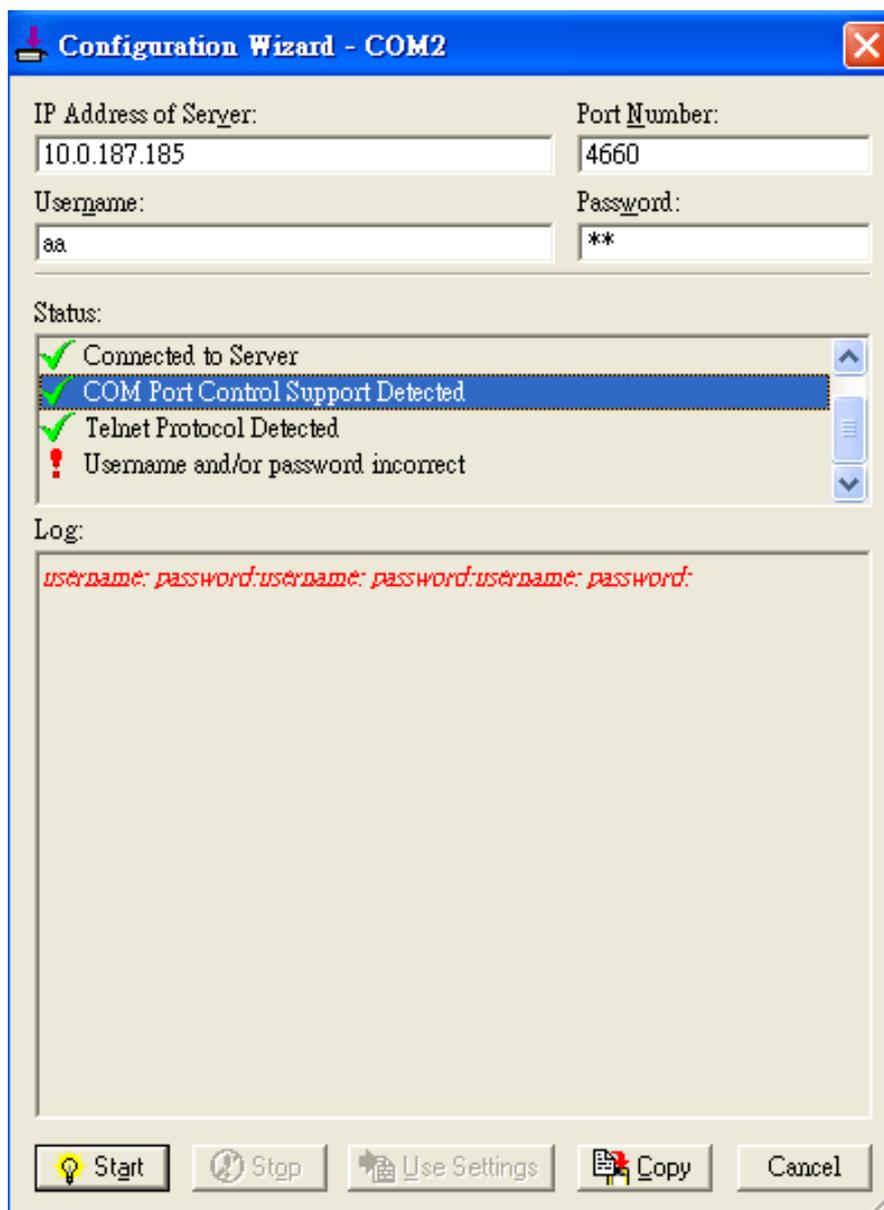


Figure 6.14

If the exclamation mark begins with **“Username and/or password incorrect”**, *Figure 6.14*, this means that the wrong username and/or password were entered and the authentication process failed.

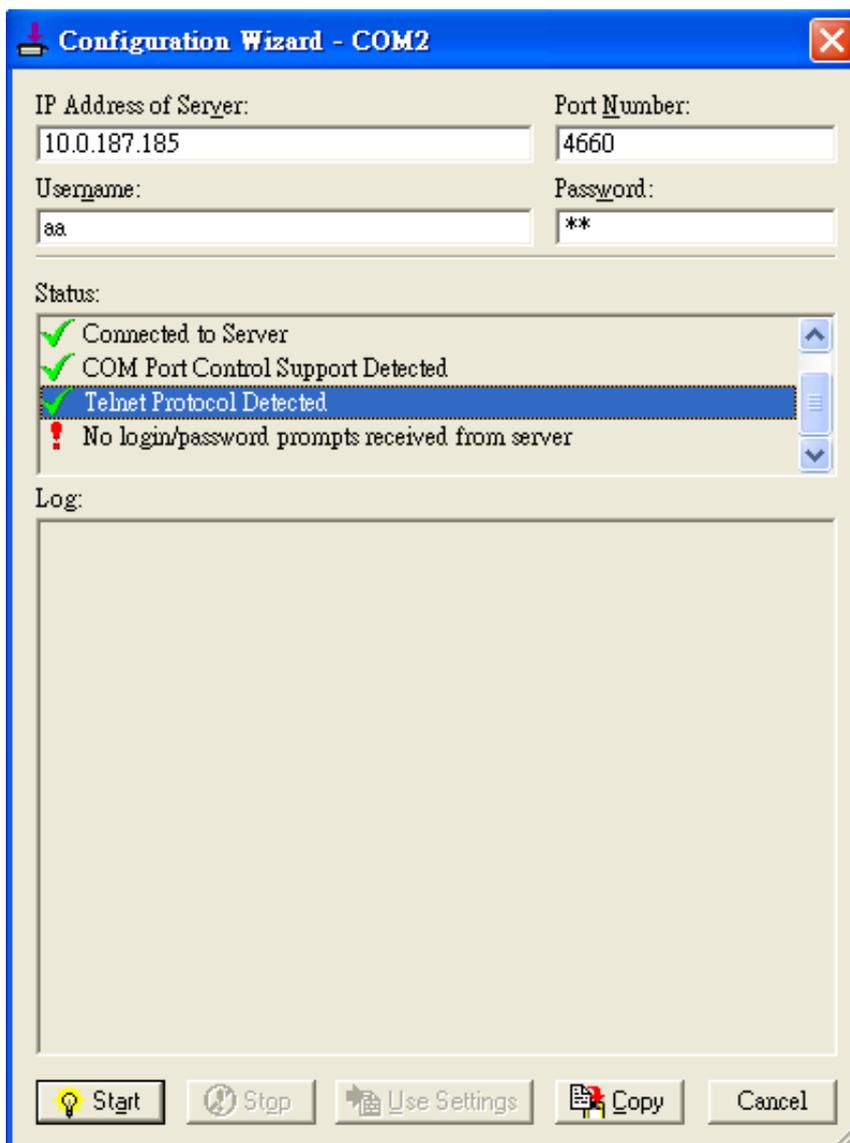


Figure 6.15

If the exclamation mark begins with **No login/password prompts received from server** *Figure 6.15*, it means that the credentials in the **Serial/IP** are enabled, but the **VCOM Authentication** in the serial device server is not enabled.

## 6.4 Using Serial/IP Port Monitor

### 6.4.1 Opening the Port Monitor

The Serial/IP Port Monitor can be opened by:

- Start → All Programs → Serial/IP → Port Monitor
- Double click the Serial/IP tray icon in the Windows notification area.
- In the Windows notification area, right click in the Serial/IP tray icon and click on **Port Monitor** to open the Port Monitor.
- Click on the **Port Monitor** button in the Serial/IP Control Panel.

### 6.4.2 The Activity Panel

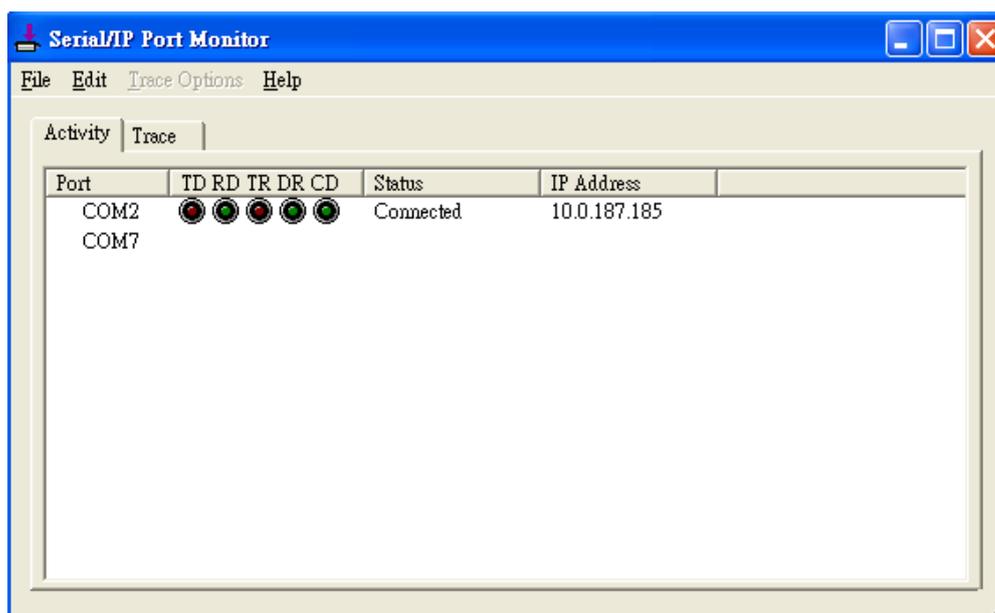


Figure 6.16

The 'Activity Panel' provides a real-time display of the status for all Serial/IP COM ports (*Figure 6.16*). If the Virtual COM Port is open and is properly configured to connect to a serial device server, the status should be **connected**. If Serial/IP cannot find the specified serial device server, the status would be **Offline**.

### 6.4.3 The Trace Panel

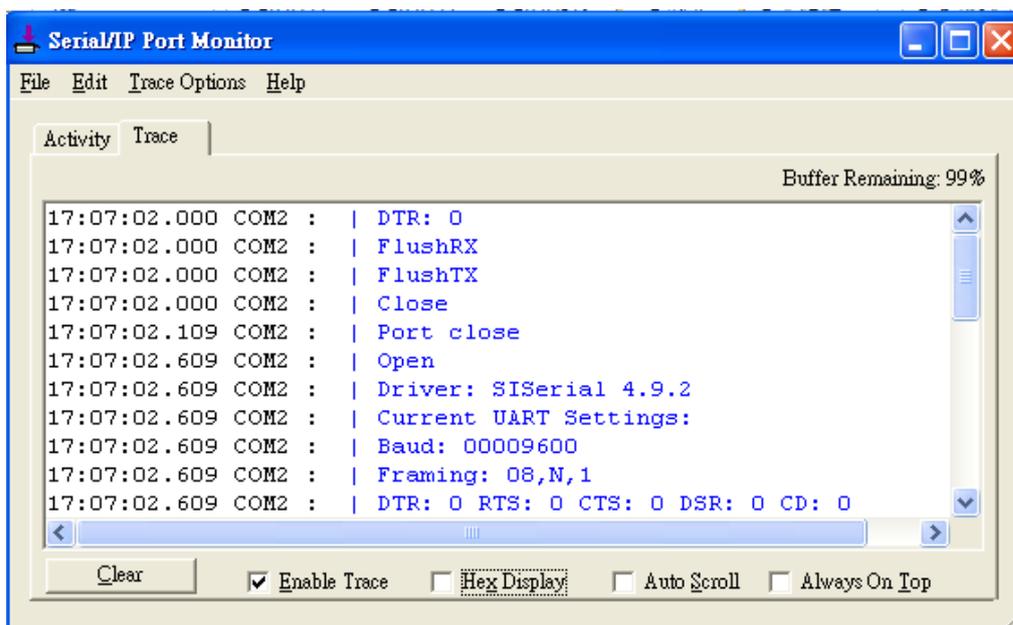


Figure 6.17

The 'Trace Panel' provides a detailed, time-stamped, real-time display of all the Serial/IP COM ports operations (Figure 6.17). Click on **Enable Trace** to start logging the Virtual COM communication. Click on File → Save As and send the log to Antaira Technologies' technical support team at [support@antaira.com](mailto:support@antaira.com) for analysis if problems arise with Virtual COM.

## 6.5 Serial/IP Advanced Settings

In the Serial/IP control panel, click on the “**Advanced**” button to open the ‘Advanced Settings’ window (Figure 6.18). Click on **Use Default Settings** to load the default settings.

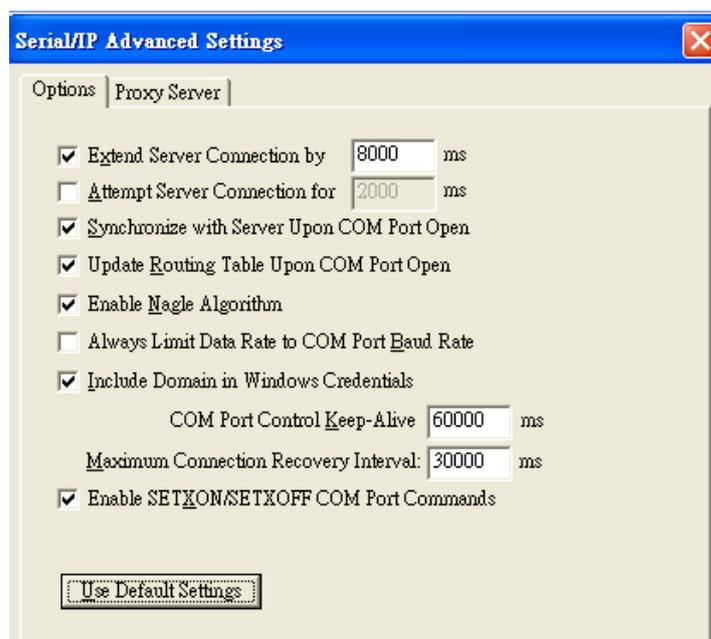


Figure 6.18

- **Extend Server Connection** maintains the TCP connection for a specified amount of time after the COM port is closed.
- **Attempt Server Connection** terminates the pending connection attempts if they do not succeed in the specified time.
- **Synchronize with Server Upon COM Port Open** is required by NT Systems (2000, XP, Vista, 7).
- **Update Routing Table Upon COM Port Open** maintains the IP route to a server in a different subnet by modifying the IP routing table.
- **Enable Nagle Algorithm** provides better network efficiency by imposing a minor latency on the data stream while it waits to fill network packets.
- **Always Limit Data Rate to COM Port Baud Rate** limits the data rate to the baud rate that is in effect for the virtual COM port.
- **Attempt Server Connection** is used if the credential is set to Windows Credentials; VCOM automatically adds the current Windows domain to the username.

- **COM Port Control Keep-Alive** controls the interval at which the VCOM will issue the keep-alive message, if no there is no activity.
- **Maximum Connection Recovery Interval** controls the maximum time for “Restore Failed Connection”.
- **Enable SETXON/SETXOFF COM Port Commands-** This option enables additional negotiation on SETXON and SETXOFF commands and is only available for the “V” series serial device servers. If the application requires the SETXON/SETXOFF feature, please contact Antaira Technologies’ technical support team at (844) 268-2472.

### 6.5.1 Using Serial/IP with a Proxy Server

The Serial/IP redirector supports TCP network connections made through a proxy server, which may be controlling access to external networks (such as the Internet) from a private network that lacks transparent IP-based routing, such as NAT. Find the ‘Proxy Server’ settings from the ‘Advanced Settings’ windows and switch to the **Proxy Server** tab (*Figure 6.19*).

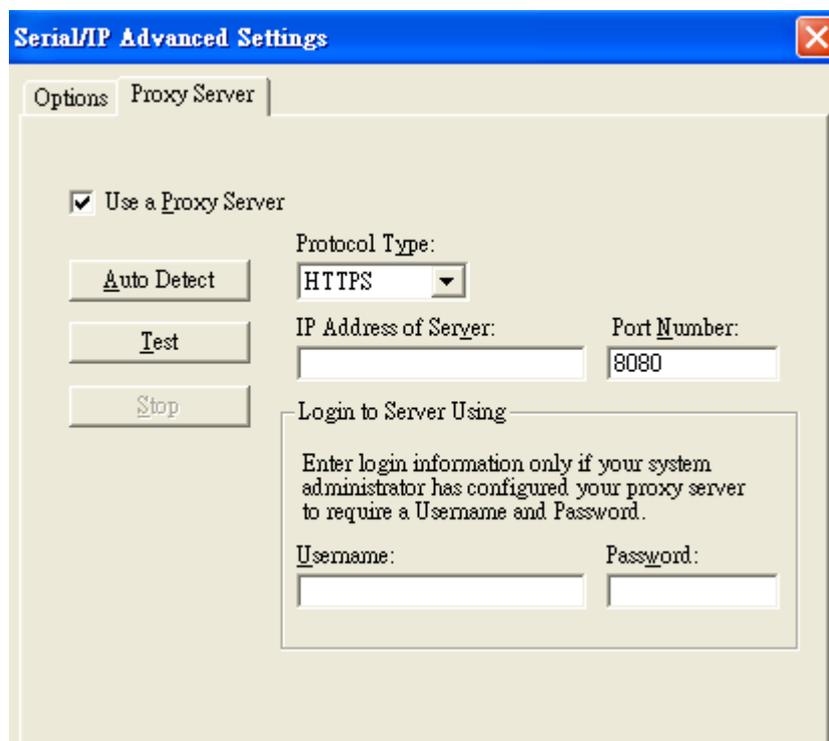


Figure 6.19

## 7 Specifications

### 7.1 Hardware

#### Models

Table 7.1

Name	Serial Port		Ethernet
	DB9	TB5	RJ45
STW-611C	1	1	1
STW-612C	2	--	1

#### Physical Characteristics

Table 7.2

Housing	Front-Panel	Weight	Dimensions	Installation
IP50 Protection, Metal Case	Common ID Design	500g (approx.)	47 mm x 110 mm x 90mm	DIN-Rail Wall Mount (optional kit)

#### LED Indicators

Table 7.3

Name	Color	Status	Description
COM	Green	Blinking	Data transmitting on the serial port
		Off	Data is not transmitting on the serial port
LAN	Orange	Blinking	Data is transmitting on Ethernet
		On	Ethernet is connected on 100Mbps
		Off	Ethernet is disconnected on 100Mbps
	Green	Blinking	Data is transmitting on Ethernet
		On	Ethernet is connected on 10Mbps
		Off	Ethernet is disconnected on 10Mbps
WLAN	Green	On	Wireless Radio is enabled

		Blinking	Wireless Radio is enabled and data is transmitting
		Off	Wireless Radio is disabled
RUN	Green	Off	System is not powered on
		Blinking Steadily	AP firmware is running normally
		Blinking Rapidly	AP firmware is not running
P2P	Orange	On	WPS connected
		Blinking	WPS is connecting at Wi-Fi Direct Go mode
	Green	On	WPS connected
		Blinking	WPS is connecting at client mode

## Signal LEDs

Table 7.4

Operations		Poor	Fair	Good
Connecting	Searching for an AP			
	Cannot connected to the AP			
	No IP provided by the DHCP Server			
Connected	Poor Signal Strength 30%			
	Fair Signal Strength (31-60%)			
	Good Signal Strength (61-100%)			

○ Off      ● On      ☀ blinking

### Dip Switch (STW-611C)

Table 7.5

COM	Dip	Function	SW	$\Omega$
COM1	3	Pull High	On	1K
			Off	100K
	2	Pull Low	On	1K
			Off	100K
	1	Termination	On	120
			Off	N/A

### Dip Switch (STW-612C)

Table 7.6

COM	Dip	Function	SW	$\Omega$
COM1	6	Pull High	On	1K
			Off	100K
	5	Pull Low	On	1K
			Off	100K
	4	Termination	On	120
			Off	N/A
COM2	3	Pull High	On	1K
			Off	100K
	2	Pull Low	On	1K
			Off	100K
	1	Termination	On	120
			Off	N/A

## Wireless Specifications

Table 7.7

PCI-e Module	Tx/Rx	Wireless Standard Conformance	Antenna
Atheros AR9382	1T1R MIMO (1x1 with MCS 0-7)	802.11b 802.11g 802.11n	2 dBi Antenna Design SMA(R) Female Connector

## Frequency Range

Table 7.8

	2.4Ghz
United States (FCC)	2412-2462(20Mhz)
	2422-2452(40Mhz)
Europe (ETSI)	2412-2472(20Mhz)
	2422-2462(40Mhz)

## Data Rate

Table 7.9

<b>802.11b</b>	1, 2, 5.5 and 11Mbps
<b>802.11g</b>	6, 9, 12, 18, 24, 36, 48, 54Mbps
<b>802.11n</b>	20 MHz ■ 1Nss: 65Mbps @ 800GI, 72.2Mbps @ 400GI (Max.)
	40MHz ■ 1Nss: 135Mbps @ 800GI, 150Mbps @ 400GI (Max.)

## Receiver Sensitivity

Table 7.10

	Data Rate	IEEE Spec (1 Rx dBm)
802.11b	1M	not specified
	5.5M	not specified
	11M	not specified
802.11g	6M	-82
	9M	-81
	12M	-79
	18M	-77
	24M	-74
	36M	-70
	48M	-66
	54M	-65
802.11b/g/n HT20	MCS0	-82
	MCS1	-79
	MCS2	-77
	MCS3	-74
	MCS4	-70
	MCS5	-66
	MCS6	-65
	MCS7	-64
802.11b/g/n HT40	MCS0	-79
	MCS1	-76
	MCS2	-74
	MCS3	-71

	MCS4	-67
	MCS5	-63
	MCS6	-62
	MCS7	-61

## Security

- 64-bit and 128-bit WEP encryption
- 802.1x authentication
- AES and TKIP, WPA/WPA2

## Regulatory Requirements:

Table 7.10

<b>EMC</b>	<ul style="list-style-type: none"> <li>■ EN 301 489-1 V1.9.2 (2011-09)</li> <li>■ EN 301 489-17 V2.2.1 (2012-09)</li> <li>■ 47 CFR FCC Part 15 Subpart B</li> </ul>
<b>Radio</b>	<ul style="list-style-type: none"> <li>■ 47 CFR FCC Part 15 Subpart C § 15.247</li> <li>■ 47 CFR FCC Part 15 Subpart E § 15.407</li> <li>■ EN 300 328 V1.8.1 (2012-06)</li> <li>■ EN 301 893 V1.7.1 (2012-06)</li> </ul>
<b>EMF</b>	<ul style="list-style-type: none"> <li>■ 47 CFR FCC Part 2 Subpart J, section 2.1091</li> <li>■ EN 62311:2008 and EN 50385:2002</li> </ul>

Table 7.11

Test	Item	Value	Level	
<b>IEC61000-4-2</b>	<b>ESD</b>	Contact Discharge	± 4KV	2
		Air Discharge	± 8KV	3
<b>IEC61000-4-3</b>	<b>RS</b>	Radiated(Enclosure)	3(V/m)	2
<b>IEC61000-4-4</b>	<b>EFT</b>	AC Power Port	± 2.0 KV	3
		DC Power Port	± 0.5 KV / ± 1.0 KV	1 / 2
		Signal Port	± 0.5 KV	2
<b>IEC61000-4-5</b>	<b>Surge</b>	AC Power Port	Line-to-Line ± 1.0 KV Line-to-Earth ± 2.0 KV	3
		DC Power Port	Line-to-Earth ± 0.5KV / ± 1.0 KV	1 / 2
		Signal Port	Line-to-Line±1.0 KV Line-to-Earth±1.0 KV	2
<b>IEC61000-4-6</b>	<b>CS</b>	Conducted(Enclosure)	3 V rms	2
<b>IEC61000-4-8</b>	<b>PFMF</b>	(Enclosure)	3(A/m)	2
<b>IEC61000-4-11</b>	<b>DIP</b>	AC Power Port	-	-

\* AC ports are tested through a power adaptor available in the accessory.

## Environmental Limits

- **Operating Temperature:** -10°C ~ 60°C (14°F ~140°F)
- **Storage Temperature:** -40°C ~ 85°C (-40°F ~ 185°F)
- **Ambient Relative Humidity:** 5 ~ 95%RH, (non-condensing)

## Other

- Safety: UL60950-1/CB, EN60950-1
- Shock: IEC 60068-2-27
- Freefall: IEC 60068-2-32
- Vibration: IEC 60068-2-64
- MTBF: TBD
- RoHS II: Yes

## 7.2 Software Specifications

Table 7.12

<b>Configuration</b>	Serial Manager© (Windows utility) Web UI
<b>Protocol</b>	<input type="checkbox"/> ICMP <input type="checkbox"/> DNS <input type="checkbox"/> HTTP <input type="checkbox"/> RADIUS <input type="checkbox"/> TCP <input type="checkbox"/> SNMP <input type="checkbox"/> Telnet <input type="checkbox"/> Syslog <input type="checkbox"/> UDP <input type="checkbox"/> NTP <input type="checkbox"/> IPv4 <input type="checkbox"/> RFC2217 <input type="checkbox"/> DHCP <input type="checkbox"/> SMTP <input type="checkbox"/> 802.1x <input type="checkbox"/> WPS
<b>Alert Events</b>	<input type="checkbox"/> E-mail <input type="checkbox"/> SNMP Trap
<b>Radio OFF option</b>	Yes
<b>Other</b>	<input type="checkbox"/> Config Import / Export from Web with Wireless settings <input type="checkbox"/> Firmware upgrade through Web or <b>Serial Manager</b> Utility Software <input type="checkbox"/> Site Monitor / Site Survey <input type="checkbox"/> LAN / WLAN Bridge (AP Client) <input type="checkbox"/> Management List

## 8 Emergency System Recovery

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If the device becomes inaccessible and the management utility cannot find the device, please use the following procedure to recover the device over the Trivial File Transfer Protocol (TFTP).

### System Recovery Procedures

System recovery is based on the TFTP Client embedded in the device. It can recover the device from a bad firmware or other unknown reasons that corrupted the firmware image inside the flash. Follow the procedures below to force the device to download a valid firmware from the TFTP Server to recover its Operating System.

Table 8.1

Default Settings	
TFTP Server	10.0.50.201
TFTP Server Subnet Mask	255.255.0.0
Name of firmware Image*	firmware.dld

- If the device is beeping continuously after power up, the bootloader is damaged and there is no way to recover it. Please contact Antaira Technologies' RMA department at (844) 268-2472 for assistance.
- Obtain and setup a **TFTP server** on your **PC**. Make sure that the **PC's network settings** are set properly according to the default settings above.
- Rename the firmware image to firmware **.dld** and place it in the TFTP server's root directory. For Solarwinds TFTP Server, it is usually **C:\TFTP-Root**.
- Make sure that the device is powered OFF and the Ethernet cable is plugged in.
- Press and hold the reset to default pin next to Antenna 2 then power ON the device. If the bootloader is still functioning, you will hear one long beep followed by two shorter beeps.
- Release the reset pin after hearing *seven* consecutive short beeps. Users should see that the device requested files from the TFTP Server. Please wait until the device shows up on the management utility. This process could take more than five minutes.

### Important Note

Users can download free TFTP servers from the following locations:

<b>Solarwinds TFTP Server</b>	<a href="http://www.solarwinds.com/products/freetools/free_tftp_server.aspx">http://www.solarwinds.com/products/freetools/free_tftp_server.aspx</a>
<b>**Note:</b> For Solarwinds, please remember to Start the TFTP Server Service, the default is set to Stop.	
TFTPD32 TFTP Server	<a href="http://tftpd32.jounin.net/tftpd32.html">http://tftpd32.jounin.net/tftpd32.html</a>

## 9 Warranty

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### Limited Warranty Conditions

Products supplied by Antaira Technologies are covered in this warranty for undesired performance or defects resulting from shipping, or any other event deemed to be the result of Antaira Technologies' mishandling. The warranty does not cover however, equipment which has been damaged due to accident, misuse, abuse, such as:

- Use of incorrect power supply, connectors, or maintenance procedures
- Use of accessories not sanctioned by us
- Improper or insufficient ventilation
- Improper or unauthorized repair
- Replacement with unauthorized parts
- Failure to follow Our operating Instructions
- Fire, flood, "Act of God", or any other contingencies beyond our control.

### RMA and Shipping Reimbursement

- Customers must always obtain an authorized "RMA" number from Antaira Technologies before shipping the goods to be repaired.
- Within the warranty period, Antaira Technologies has the right to provide a refurbished unit or a new one to the customer as a replacement service.
- Within the warranty period, any repair service, which includes any parts and/or labor are free of charge to the customers.
- After the warranty period, the customer will cover the cost for parts and labor.

### Limited Liability

Antaira Technologies will not be held responsible for any consequential losses from using Antaira products.

### Warranty

5 Years

#### Antaira Customer Service and Support

(Antaira US Headquarter) + 844-268-2472

(Antaira Europe Office) + 48-22-862-88-81

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Please report any problems to Antaira:

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