STW-61xC & STW-62xC

(3-Ways Communication & Wi-Fi Direct)

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

User's Manual

Version 2.0 (October 2018)

www.antaira.com

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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 2.0 (October 2018)

This manual supports the following models:

STW-611C

STW-612C

STW-621C

STW-622C

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

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1 Preface

Purpose of the Manual

This user's manual is to support the users for the installation and configuring of the Antaira STW-61xC and STW-62xC Series, as well as it explains some technical options available with the mentioned product. As such, it contains some advanced network management knowledge, instructions, examples, guidelines and general theories designed to help users manage the device and its corresponding software; a background in general theory is required when reading it. Please refer to the Glossary for technical terms and abbreviations.

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 might be useful for system programmers or network planners as well. This manual also provides helpful and handy information for first time users. For any related problems please contact Antaira for further assistance.

Supported Platform

This manual is designed for the Antaira STW-61xC and STW-62xC Series models only.

Warranty Period

5-year limited warranty

Manufacturers Federal Communication Commission Declaration of Conformity Statement

Models: STW-61xC and STW-62xC 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 instruction 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.

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 20cm between the radiator & your body.

Federal Communication Commission Interference Statement

This device is going to be operated in 5.15~5.25GHz frequency range. This device is restricted for indoor use.

European Community, Switzerland, Norway, Iceland, and Liechtenstein

Models: STW-61xC & STW-62xC 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 Pat 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 & STW-62xC 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

The Antaira STW-61xC & STW-62xC series – is an Industrial Wireless Serial Device Server with IEEE802.11b/g/n in 24.GHz band, and IEEE802.11a/b/g/n in 2.4/5GHz; it provides connectivity to clients and serial devices creating a complete solution for the wireless networking.

It is an IP30 rated and Compact Rugged Aluminum Case design with Wide Operating Temperature support **-10° to 60° C** and High EMC protection to meet Industrial Applications requirement.

Antaira STW-61xC & STW-62xC series built-in with the advanced features: AP Client "Bridge" Mode (Fig.2.1) to allow any Serial and Ethernet Devices to link with the Wireless Network – in order to perform a "3-ways communication" solution; plus the hassle free "Wi-Fi Direct" Technology (Fig.2.2) Easy Setup for "Point-to-Point" Application via "Push Button" method without requiring software configuration.

Fig.2.1

Fig.2.2

Caution

Beginning from here there will be extreme caution exercised.

Never install or work on electrical or cabling during periods of lighting 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 is including the following items:

Table 3.1

STW-611C		
Item	**Qty**	**Description**
STW-611C	1	Industrial Wireless Serial Device Server
Antenna	1	2.4GHz：2dBi
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	■ User's Manual ■ Hardware Installation Guide ■ Serial Manager© Utility

Table 3.2

STW-612C		
Item	**Qty**	**Description**
STW-612C	1	Industrial Wireless Serial Device Server
Antenna	1	2.4GHz：2dBi
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	■ User's Manual ■ Installation Guide ■ Serial Manager© Utility

Table 3.3

STW-621C		
Item	**Qty**	**Description**
STW-621C	1	Industrial Wireless Serial Device Server
Antenna	2	2.4GHz：2dBi / 5GHz: 3dBi antenna
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	■ User's Manual ■ Hardware Installation Guide ■ Serial Manager© Utility

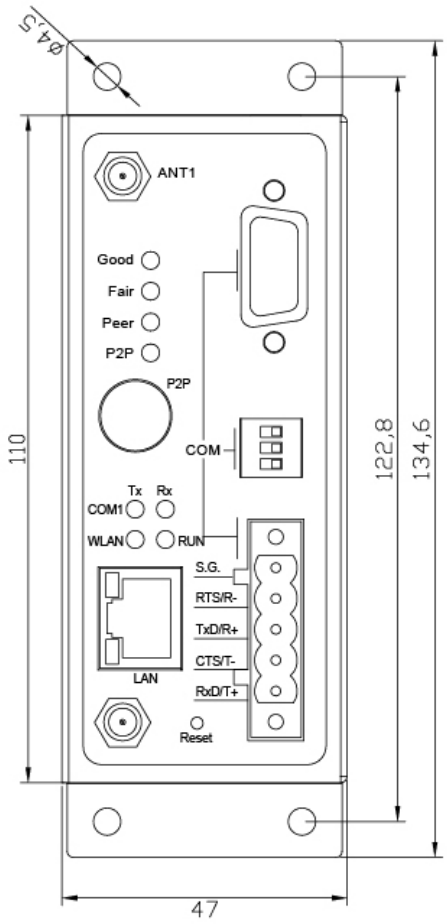
Table 3.4

STW-622C		
Item	**Qty**	**Description**
STW-622C	1	Industrial Wireless Serial Device Server
Antenna	2	2.4GHz：2dBi / 5GHz: 3dBi antenna
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	■ User's Manual ■ Installation Guide ■ Serial Manager© Utility

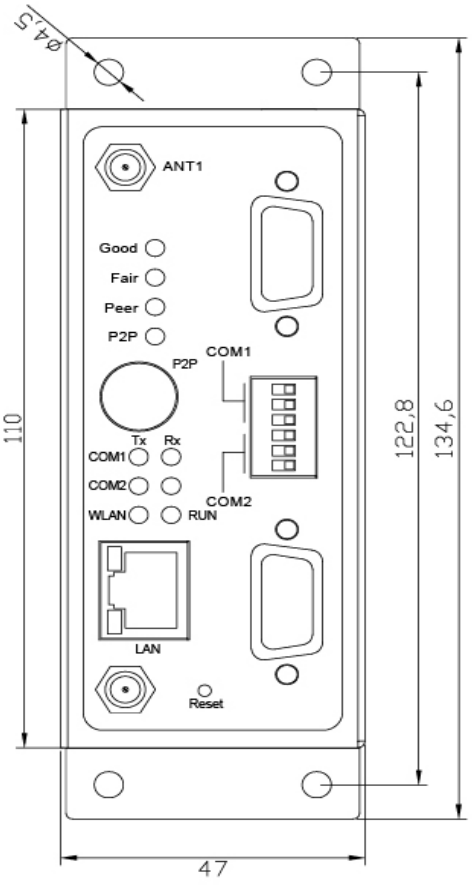
NOTE: Please contact Antaira sales representative or local sales channel if any of the above items is missing or damaged in any form upon delivery.

3.2 Front & Power Panels

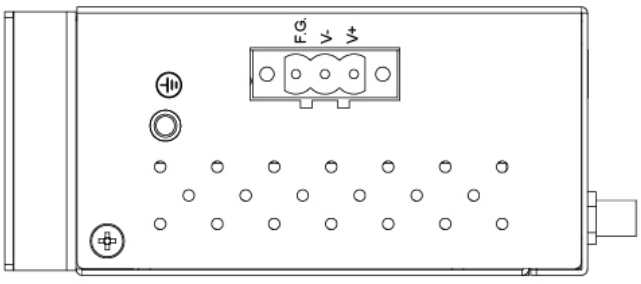
The **Front**, and **Power panels**, are as follow:



STW-611C & STW-621C



STW-612C & STW-622C



Top view

The **Rear panel** of the device is built with pre-mounted DIN-Rail Bracket, as in Figure 3.1.

Users can follow below Figure 3.2 for the DIN-Rail mounting instruction.

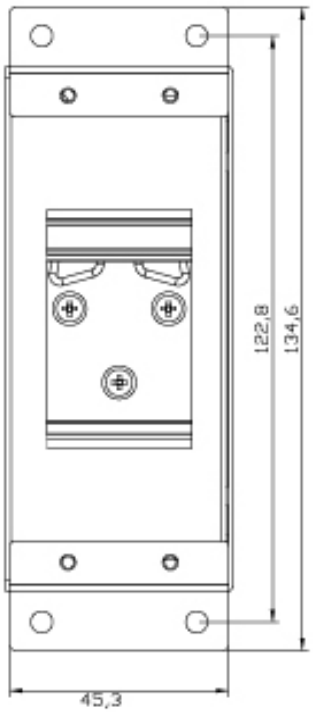


Figure 3.1

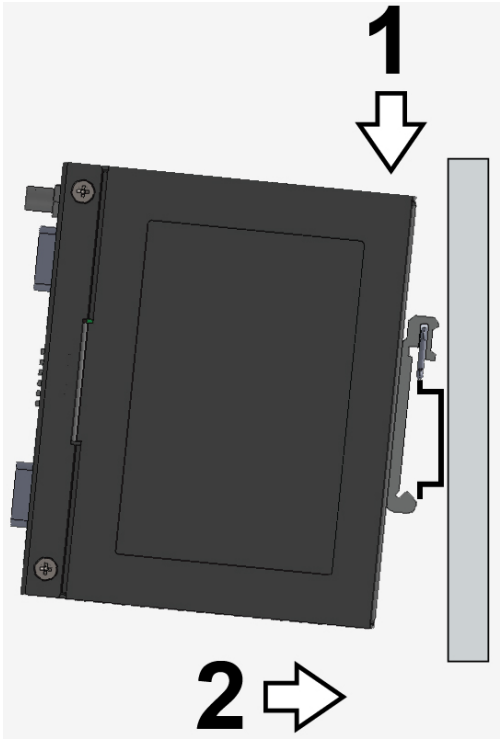
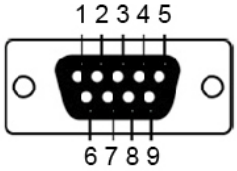


Figure 3.2

Serial Port Pin Assignments

3.2.1 DB9

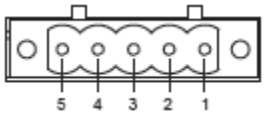
Table 3.5



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 3.6



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 required to responsible for any damages to property or personal injuries resulting from mishandling the installation or overall use of the device. **Please do not attempt to manipulate the product in any way if unsure of the steps described here[2], and please feel free to contact Antaira Technical Support or the local Sales Channel for assistance immediately.**

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 Proceed then 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 Sec. 2.5.

NOTE: Please refer to the Hardware Installation Guide when attempting an installation. Also, please follow all safe procedures when doing so.

3.4 User Interface Overview

The Antaira STW-61xC & STW-62xC 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 as follows, Figure 3..

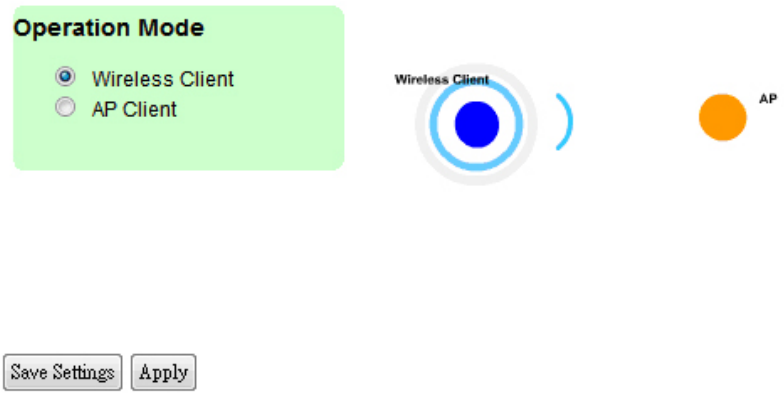


Figure 3.3

On the left side, a menu-tree appears with all the modes and options available (Figure 3.), 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 the manual.

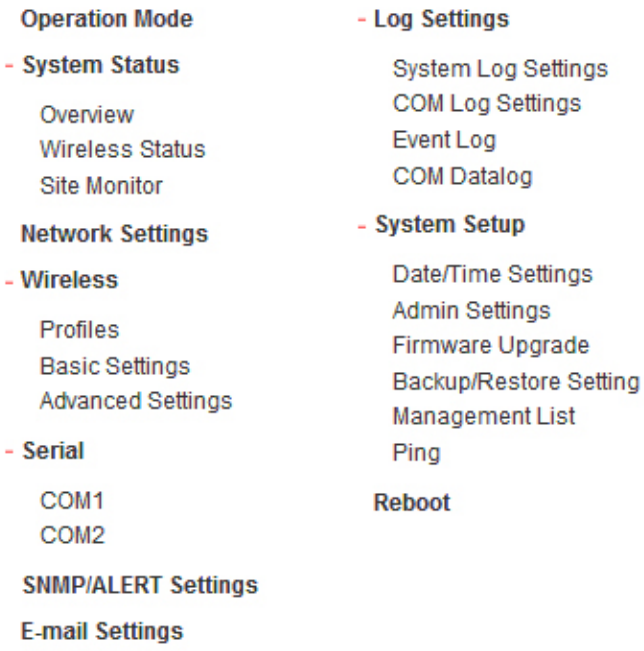


Figure 3.4

Users can use the Serial Manager© (the utility provided in the CD) to view the device's overall settings. Please be attention that there are tree buttons as shown in below Table 3.5 will be presenting during almost each section:

Table 3.5

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

3.6 Factory Default Settings

All brand new STW-61xC series unit will be set with Two different factory default IP addresses for LAN and WLAN as show in below 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, user you 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 are as in Table 3.3.

Table 3.3

Parameter	**Default Values**	
Security	**Firmware Version 3.28 or earlier**	**Firmware Version 3.29 or later**
User Name	admin	admin
Password	Null *(leave blank)*	"default"
Serial		
■ 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)		
SNMP		
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 the STW-61xC & STW-62xC series unit by using the Serial Manager (utility that comes in the product CD); as shown in Figure 4.1 below. Users can click search button, and the utility software will report/display ion such as the IP, MAC address, etc is going to be displayed.

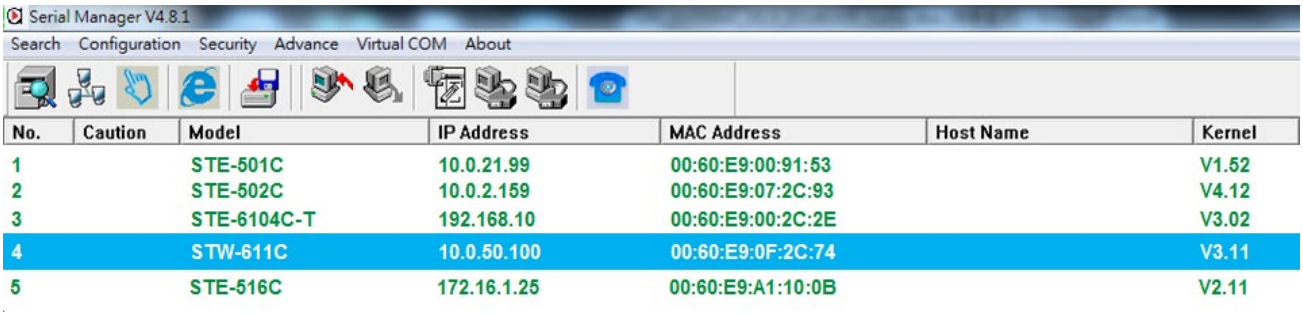


Figure 4.1

Highlight the device (STW-611C) and then double-clicked, a window will pop-out and will request the login username and password, as shown in below Figure 4.2. that will prompt you to enter username and password (see Factory Default Settings for more information), proceed then to click **"Login",** Figure 4.2.

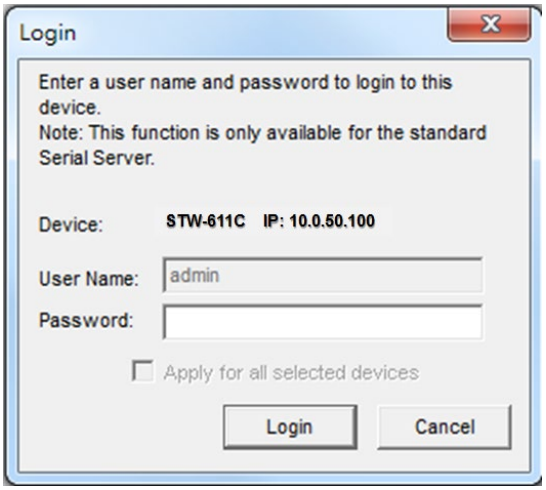


Figure 4.2

Users can access the device by this utility's interface, or choosing the "Config by browser" option by selecting the device.

4.2 Operation Mode

Below Figure 4.3 is the home screen of the STW-61xC & STW-62xC series and it shows two operation modes to choose from: **Wireless Client** and **AP Client.**

In **Wireless Client** mode, STW-61xC & STW-62xC series will have **two independent** network interfaces, LAN and WLAN. Each interface would have its own IP address; hence traffics from the LAN interface would 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 one side of the network would be passed onto the other side of the network.

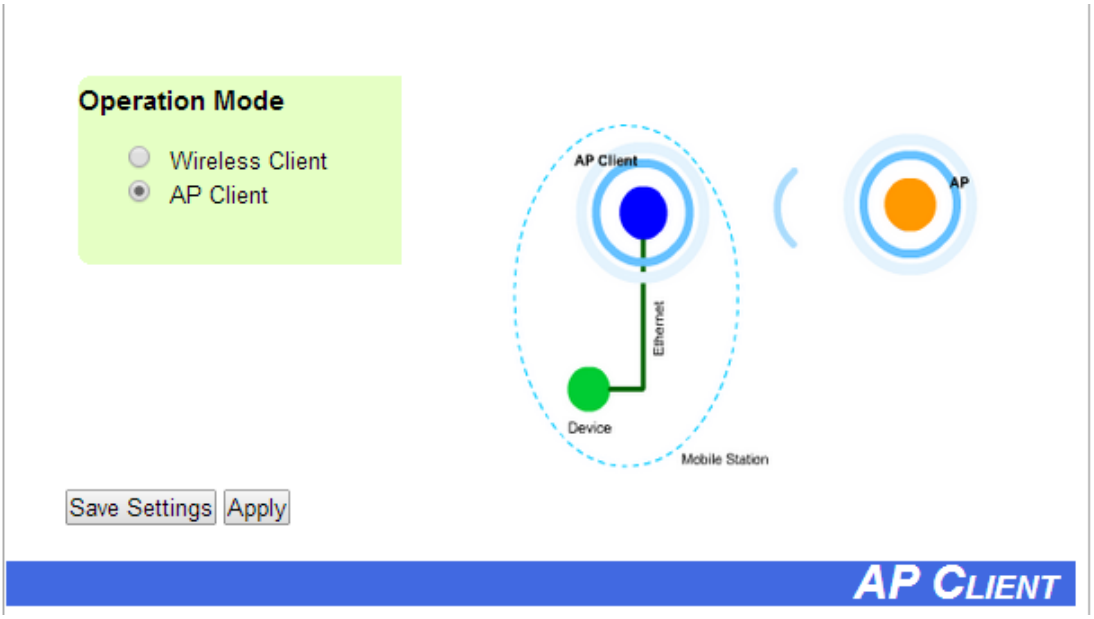


Figure 4.3

4.3 Overview

The following Figure 4.4 is showing the overall of STW-611C & STW-621C, as well as general information; and Figure 4.5 is showing the COM 2 info for STW-612C & STW-622C.

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 & STW-621C)

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 & STW-622C – 2nd COM Port)

4.3.1 Wireless Status

Below Figure 4.6 displays the Wireless Network values. Please remark the preferred setting and always keep a copy for future reference.

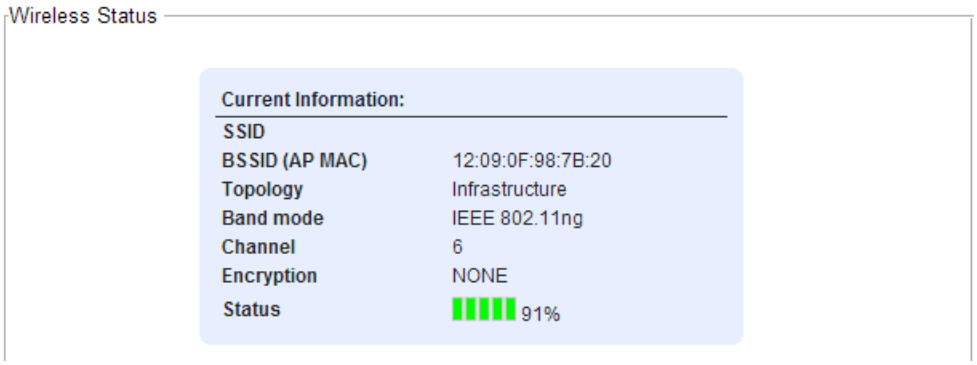


Figure 4.6

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 SSID, Channel used, the RSSI (**R**eceived **S**ignal **S**trength **I**ndicator), Security and other parameters used by other access points. It can be helpful when setting SSID and Channel for this device to avoid SSID name and Channel conflict and 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 info as shown in below Figure 4.7. Then the site monitor result will be shown as below Figure 4.8.

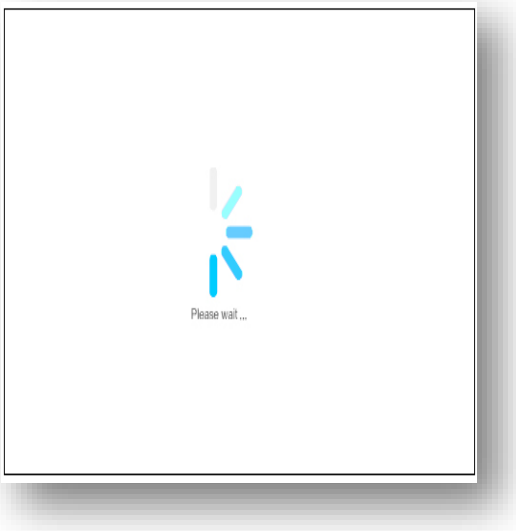


Figure 4.7

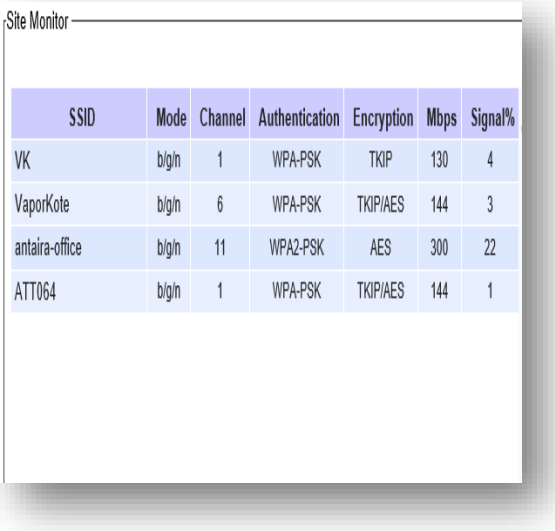


Figure 4.8

4.4 Network Settings

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

Gratuitous ARP – By choosing "Enable" for this option, it allows the device automatic send out an ARP response periodically to announce the device is in the network. Users can define the frequency period in any minutes.

Please be noted 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 LAN or WLAN interface as the **Default Gateway,** as shown in below Figure 4.8.

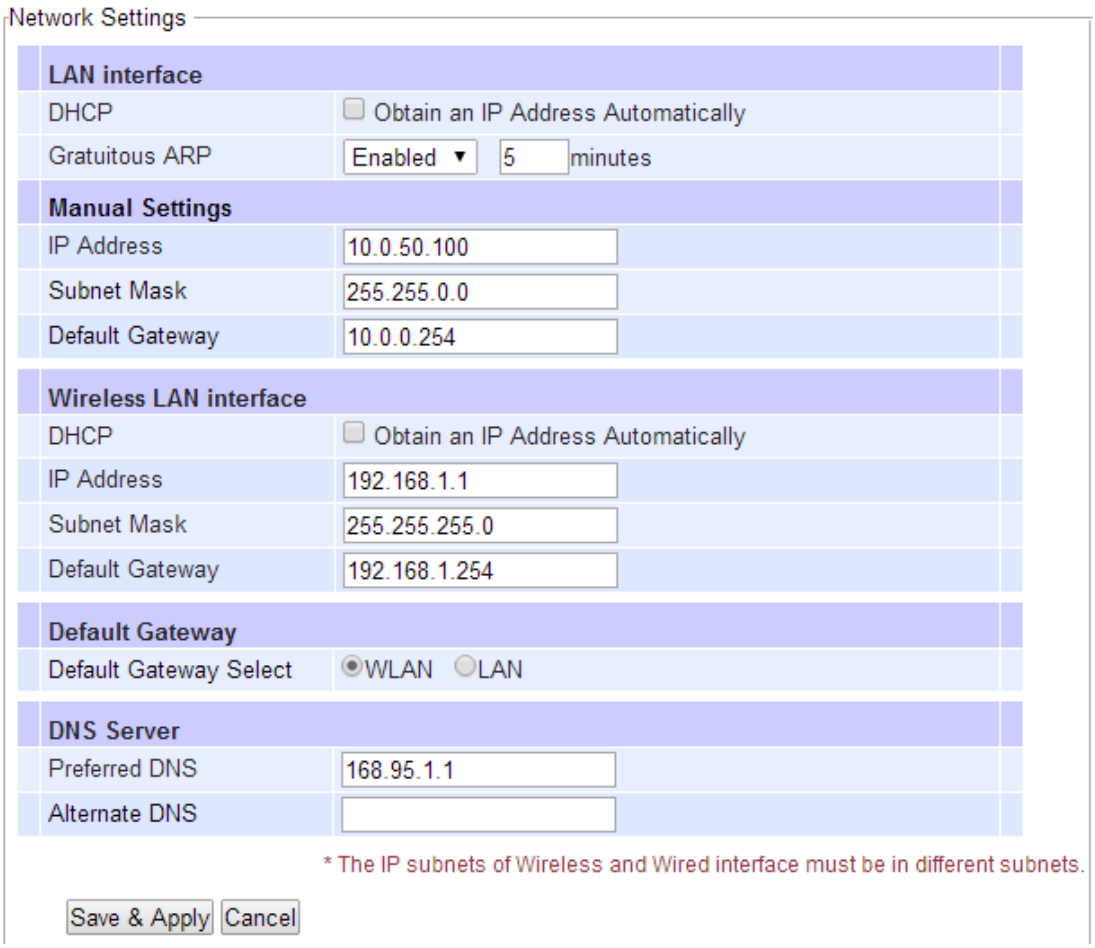


Figure 4.8

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

Under the AP Client Operation Mode, the STW-61xC series unit will only display one bridged interface and the default gateway, as shown in below Figure 4.9.

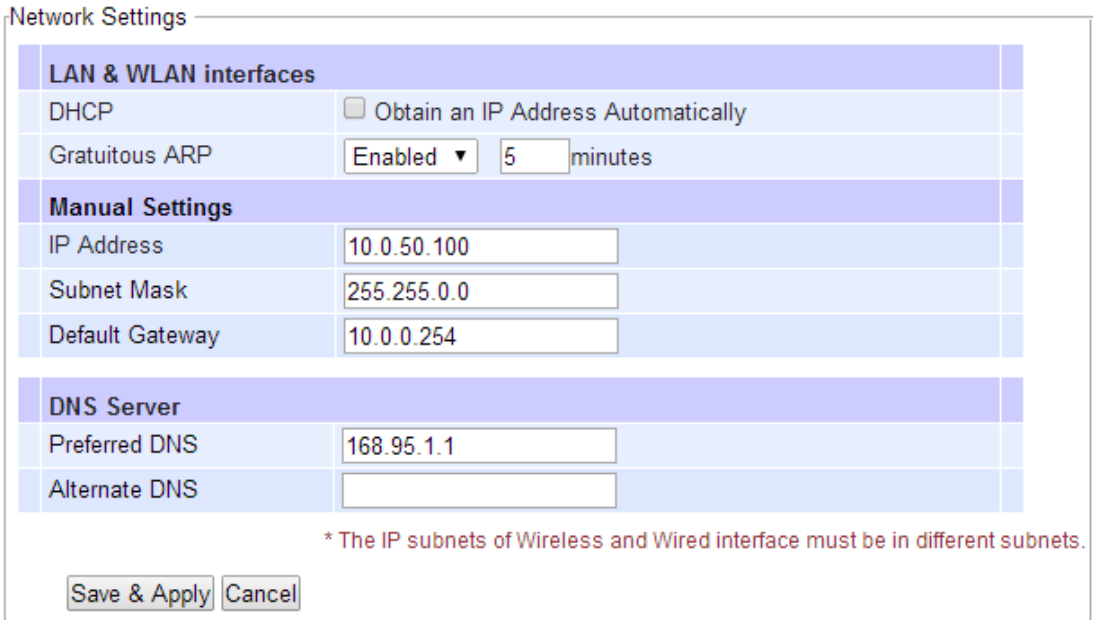


Figure 4.9

4.5 Wireless

4.5.1 Profiles

The STW-61xC & STW-62xC series comes with the function as below Figure 4.11 to allow users to save up to ten wireless profiles inside the unit. After this “Profiles” feature is enabled, the unit will try to reach the wireless profile list by order for 1 minute period before continuing to the next profile - if the current profile failed to connect. Use the **Sort** column to adjust the precedence of the profiles.

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

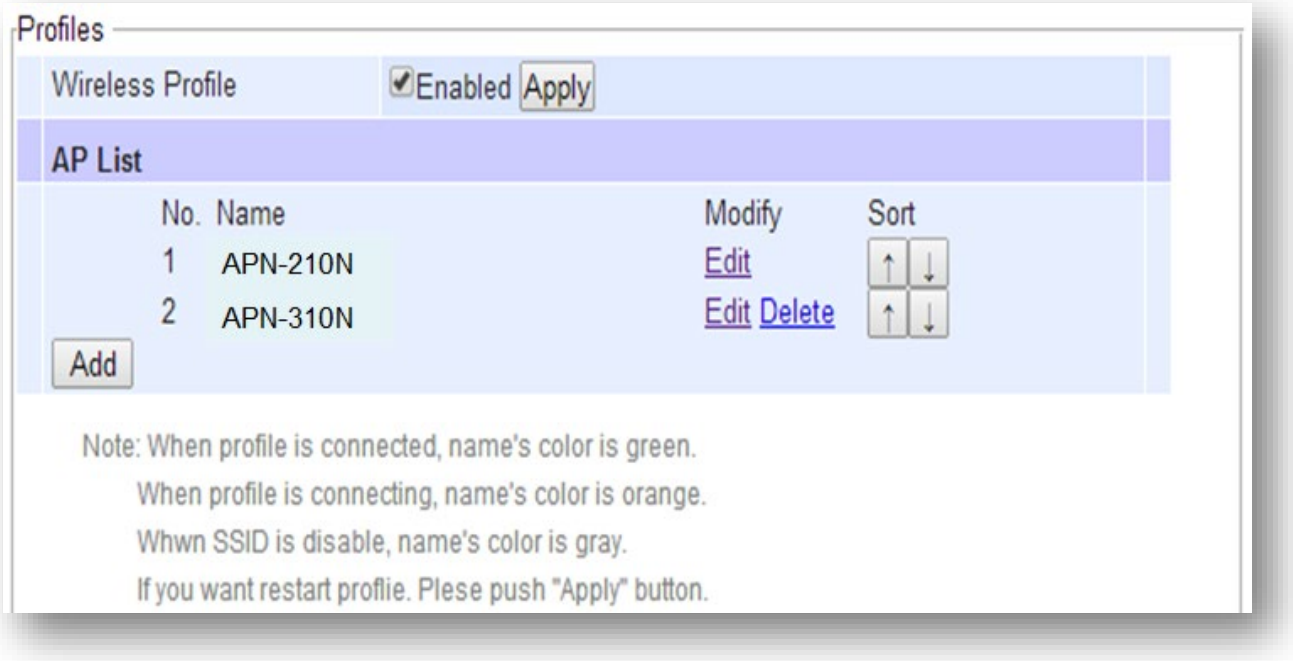


Figure 4.10

4.5.2 Basic Settings

To set up a wireless network, users are required to setup several parameters, as shown in Figure 4.11

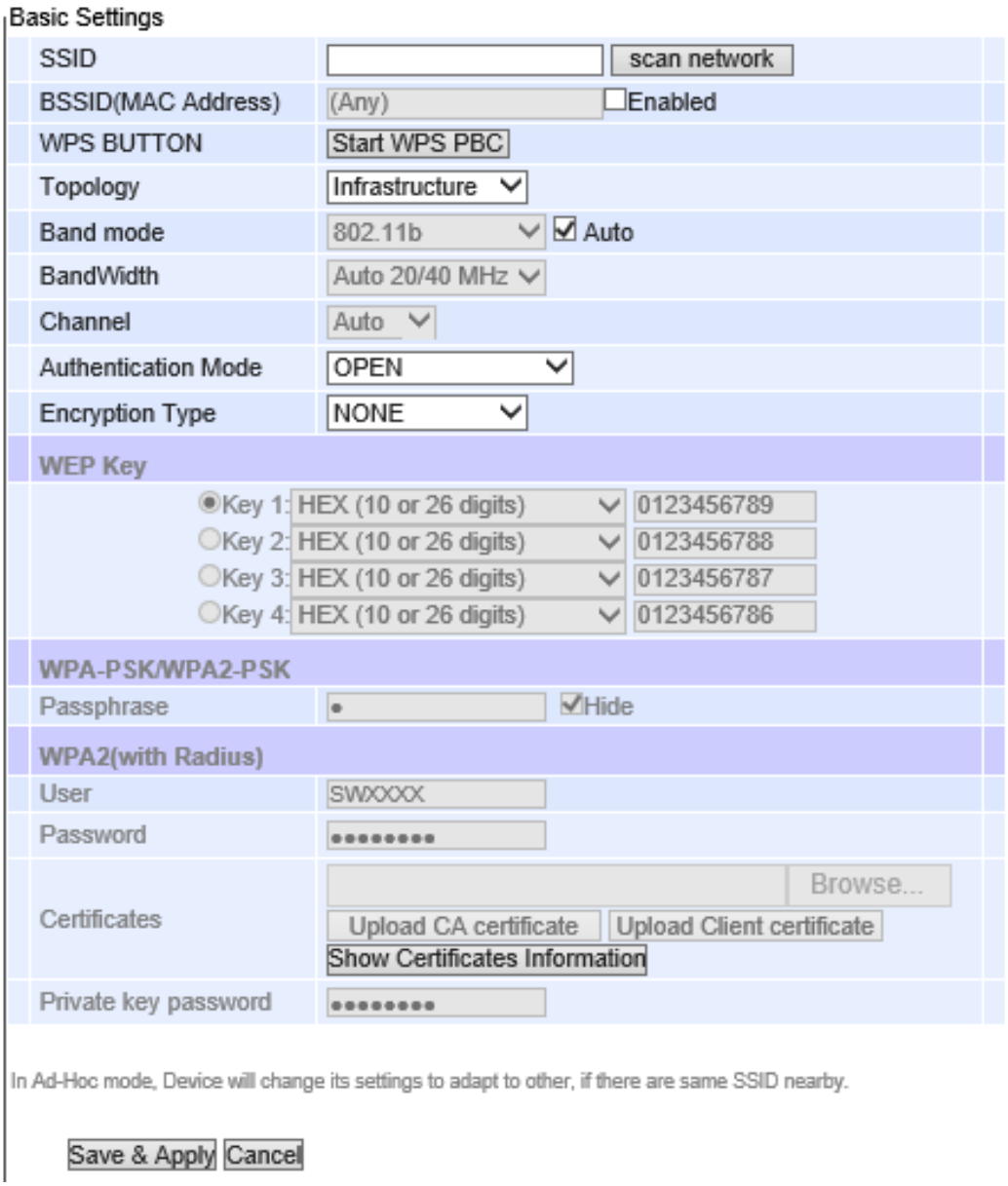


Figure 4.11

Attention

This is recommended to using 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 would be lost whenever wireless settings are changed.

Default Settings in Infrastructure Mode:

Table 4. 1

Caption	Default
SSID	Null
BSSID (MAC Address)	Any (unless enabled)
Topology	Infrastructure
Band Mode	Automatic Detection
Bandwidth[1]	Automatic Detection
Channel	Automatic Detection
Authentication Mode	OPEN
Encryption Type	NONE

Default Settings in Ad-Hoc Mode:

Table 4.2

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

- **Number:** This row only shows when the **Wireless Profile** function is enabled. Users can choose the profile to configure it by selecting its number.

- **Enable:** This row only shows when the **Wireless Profile** function is enabled. Only the enabled profiles will show in the **Profiles** page.
- **SSID:** specifies the SSID (network name) that 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 available wireless networks to connect to.
- **BSSID:** this refers to the Access Point MAC address on which the STW-61xC & STW-62xC series should connect to. Enabling this option will lock the unit to that Access Point, so the unit would 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. STW-61xC supports Wi-Fi Direct Group Owner (GO) mode using push button method of WPS with WPA2-PSK security and AES encryption.
- **WPS BUTTON:** the acronym stands for Wi-Fi Protected Setup, 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 unit'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. This 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 would 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 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:** Enable 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:** Enable 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 would be enabled. **WPA2 (PEAP)** would require you to provide the user, password, and the certificates. **WPA2 (EAP-TLS)** would require you to provide the certificates and private key password. **WPA2 (EAP-TTLS)** would require you to provide the user, password, and the certificates. Please note that only *.pem certificates are supported.

Please be reminded 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 using the "Scan network" to let the unit search the necessary wireless information of surrounding access points within the device's coverage area. Please be noted the process may take around 10 seconds.

Once the unit has finished the scanning, names and basic properties of available networks will be shown as in Figure 4.12.

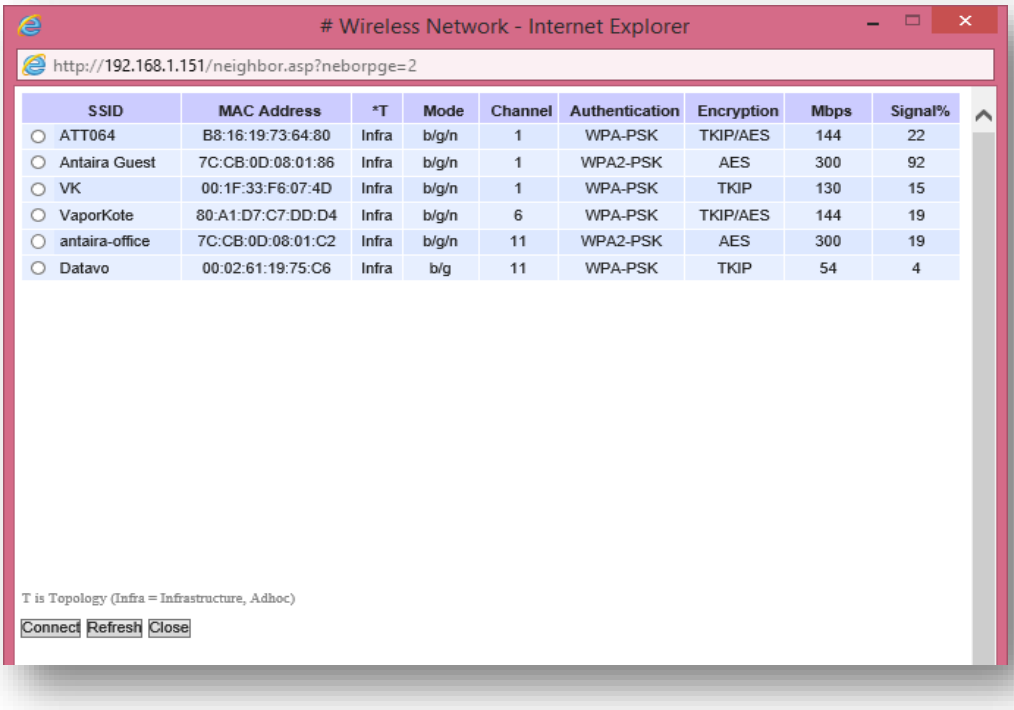


Figure 4.12

Then, users can select an AP from the list and the settings would be loaded to the device's UI automatically.

Below Figure 4.13 shows there's no wireless network is available.

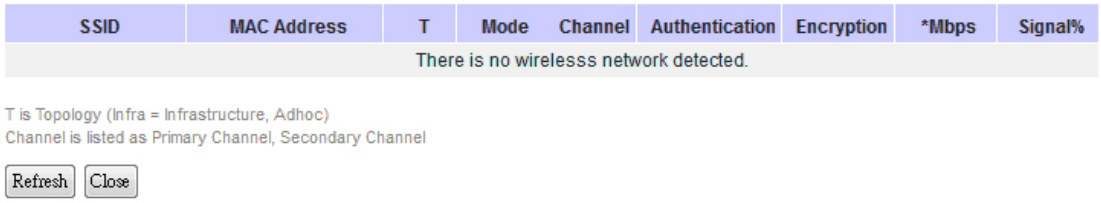


Figure 4.13

4.5.3 Advanced Settings

The Advanced Settings provides details on wireless network parameters for performance tuning. Please be aware any changes in this section may affect overall performance. Please refer to Figure 4.14 as a reference.

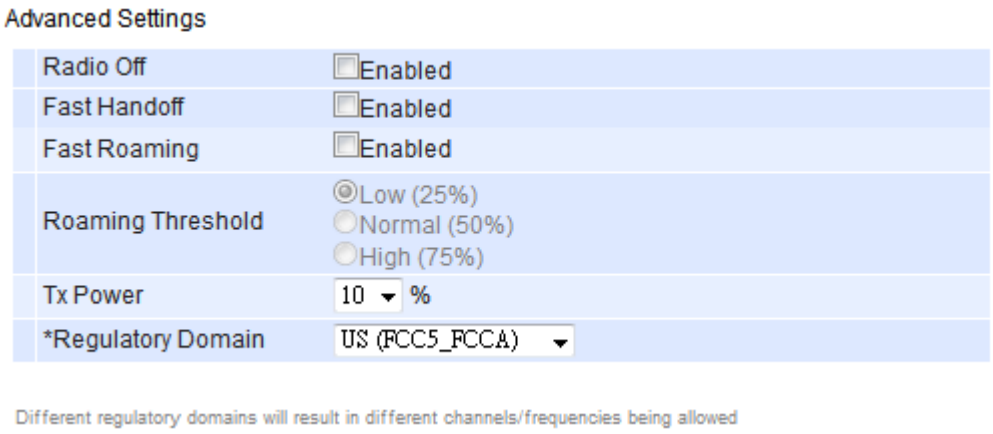


Figure 4.14

- **Radio Off** – This allows the users to turn off the wireless completely, when it is enabled.
- **Fast Handoff –** This allows the unit to reduce the roaming time to pick up next access point signal, when it is enabled.
- **Fast Roaming –** It allows STW-61xC & STW-62xC series unit to scan for available Access Points in the background to speed up roaming when necessary, when this option is enabled.
- **Roaming Threshold –** When this option is enabled, it will allow STW-61xC & STW-62xC series unit try to connect to another Access Point when the wireless signal falls below the selected range.
- **Tx Power –** The users can reduce the Transmission Power rate for the STW-61xC & STW-62xC 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. Below Figure 4.15 shows the COM Port overview. Detail about the Connectivity Protocols and the settings will be described in the Section 5.1 **Link Modes and Applications**.

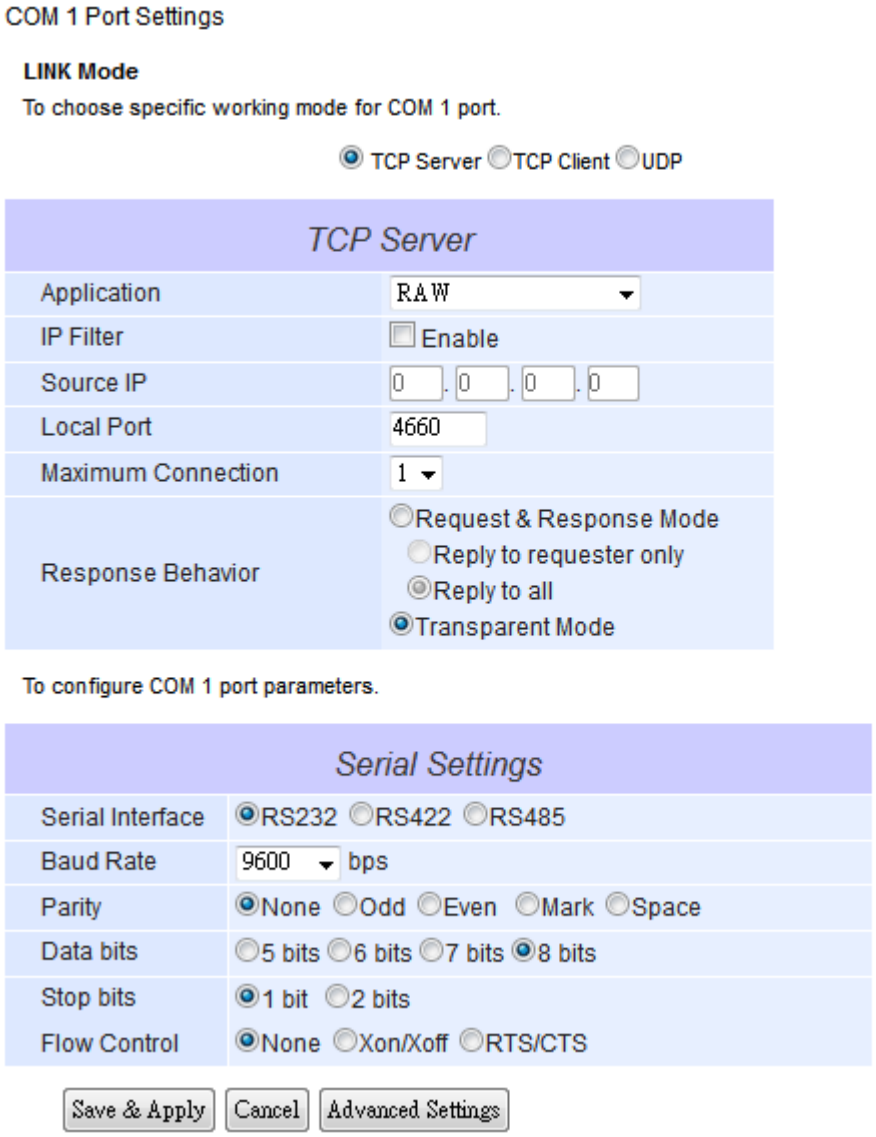


Figure 4.15

4.6.2 COM Configuration

Users are required to configure the Serial Settings as below shown Figure 4.16 with the exact parameter information as the serial device.

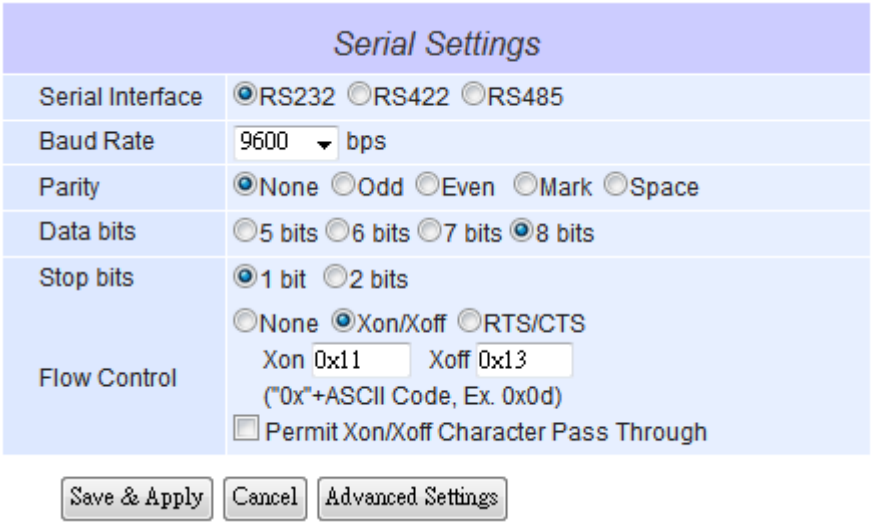


Figure 4.16

Serial Interface: Users are required to select the serial interface among 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 option to choose the Flow Control among 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 of **"Permit Xon/Xoff Character Pass Through"** is required to be checked, if the connecting program or serial device would require to receive the Xon/Xoff signals as well,

4.6.3 COM Configuration: Advanced Settings

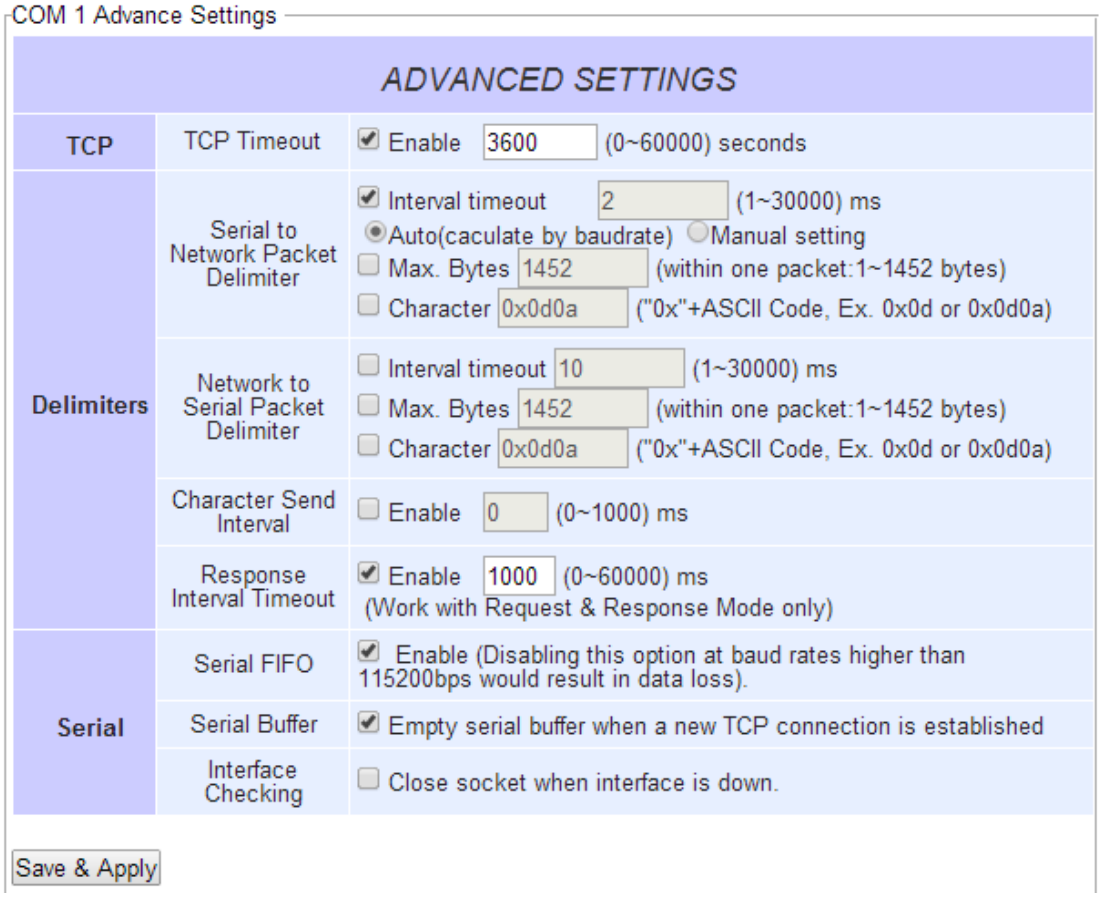


Figure 4.7

TCP

- **TCP Timeout:** Specify the value in “TCP Timeout” to force STW-61xC & STW-62xC series actively close a TCP connection after some specific 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 delimiter is a way of packing data in the serial communication. It is designed to keep packets in track. STW-61xC & STW-62xC series provides three types of delimiter: 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, STW-61xC & STW-62xC series would transmit the serial data in its buffer over the network.
  - **Interval timeout:** STW-61xC & STW-62xC series will transmit the serial data in its buffer when the specified time interval has 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. In this case, the total number of bits needed to send a character is 10 bits, and the time required to transfer one character is

(10 (bits)/1200 (bits/s))*1000 (ms/s) = 8.3 ms.

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

- **Max Byte:** STW-61xC & STW-62xC series will transmit the serial data in its buffer when the specified length has reached. Enable this option will allow the unit to queue the data until it reaches a specific length. This option is disabled by default.
- **Character:** STW-61xC & STW-62xC 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 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 second, STW-61xC & STW-62xC series would 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 Serial side, the device will wait for the set time before transferring another TCP data if the Serial side did not receive any data (response).

Serial

Serial FIFO: By default, STW-61xC & STW-62xC 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 off event 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, STW-61xC & STW-62xC 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 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 network management software to monitor devices in a network to retrieve network status information and to configure network parameters. Below is the SNMP Settings of this device as shown in Figure 4.18; of which, it would allow to be viewed by third-party SNMP software.

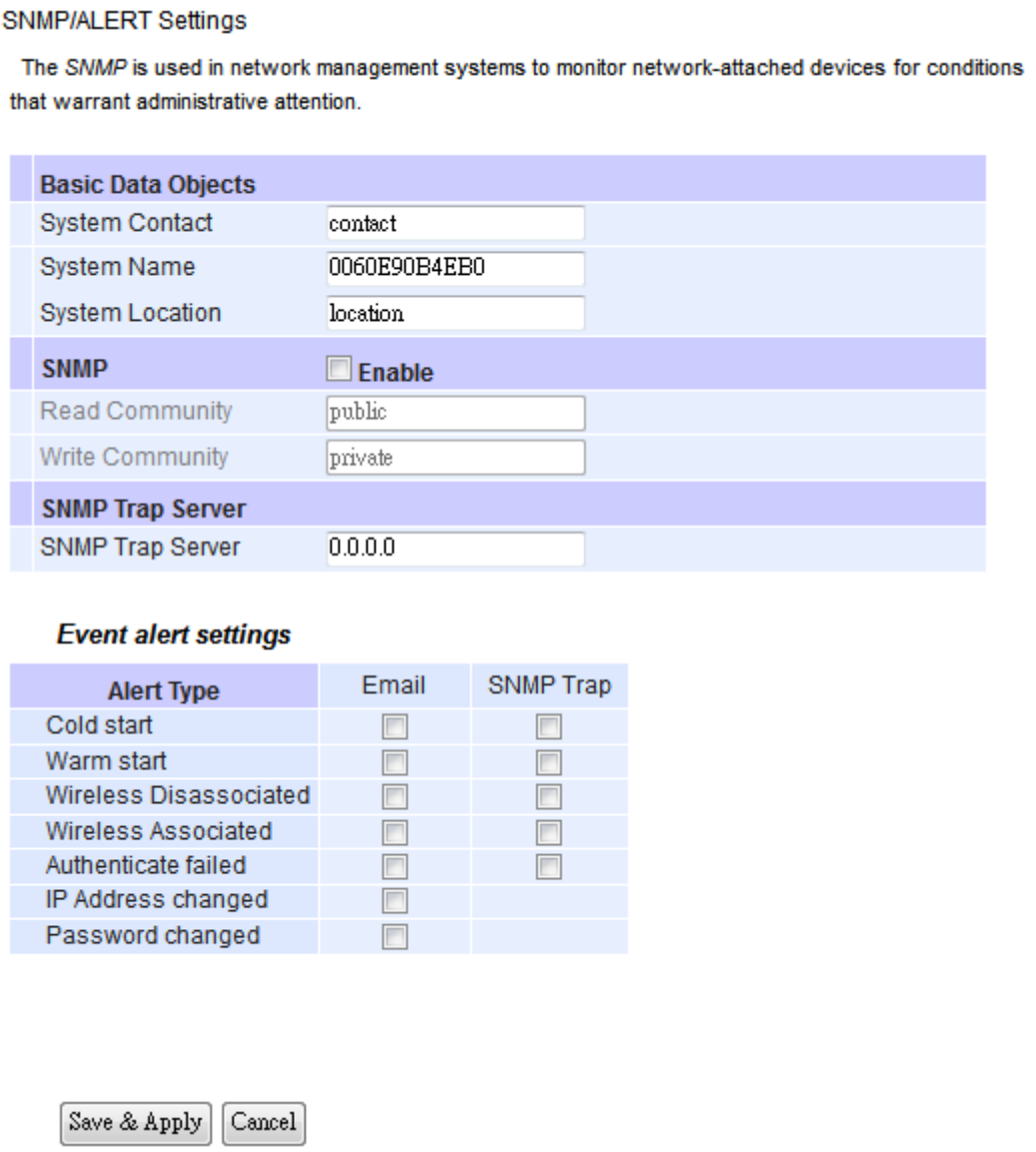


Figure 4.18

STW-61xC & STW-62xC series provides 3 SNMP fields:

- **"System Contact",** usually used to specify the device's contact information in case of emergency;
- **"System Name",** usually used to identify this device; and
- **"System Location",** usually used to specify the device location.

Enable the SNMP function will allow users to make the device information available for public viewing/editing. By fill in the passphrase for the **"Read Community"**, it allows the group to read the device information; and by fill in the passphrase for the **"Write Community"**, it allows the group to read/modify the device 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 a 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 would be sent to the designated address in the E-Mail Settings. A Trap alert would 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** allows 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 Semicolon (;) to separate each email address.

Email Server

In order to allow the alert email sending out, the **Mail Server IP address** info is required to fill in with the box next to **SMTP Server**;

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

Users may require contacting the network administrator for **Mail Server IP address**, **Username** and **Password** info.

After the info setup, users can click on "**Send Test Mail**" to verify the mail settings as shown in below Figure 4.19.

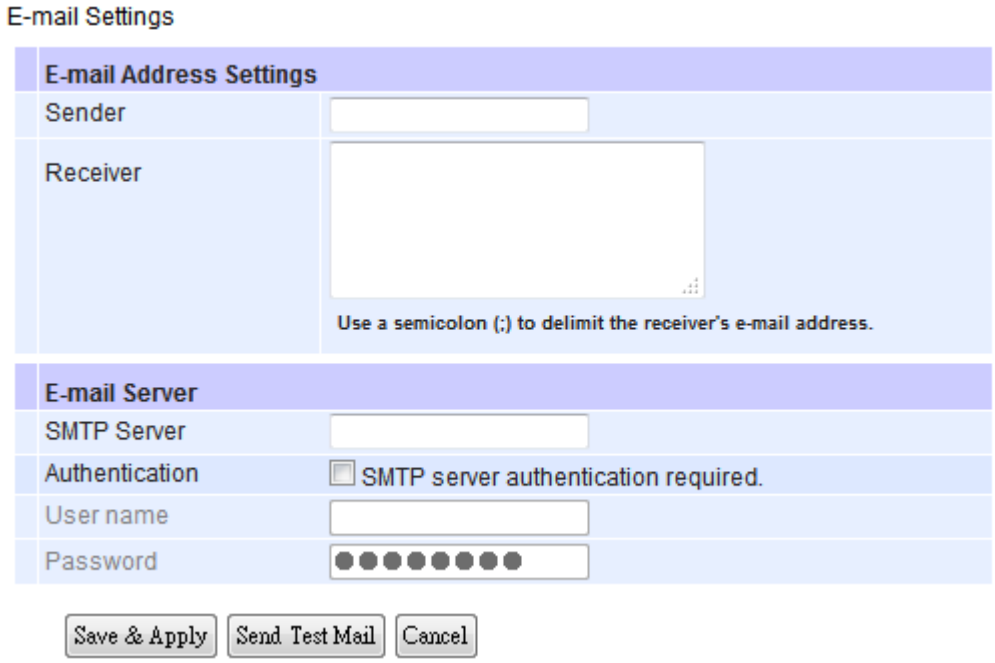


Figure 4.19

Attention

It is also important to setup Default Gateway and DNS Servers in the Network Settings properly, so the STW-61xC series units can lookup 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.

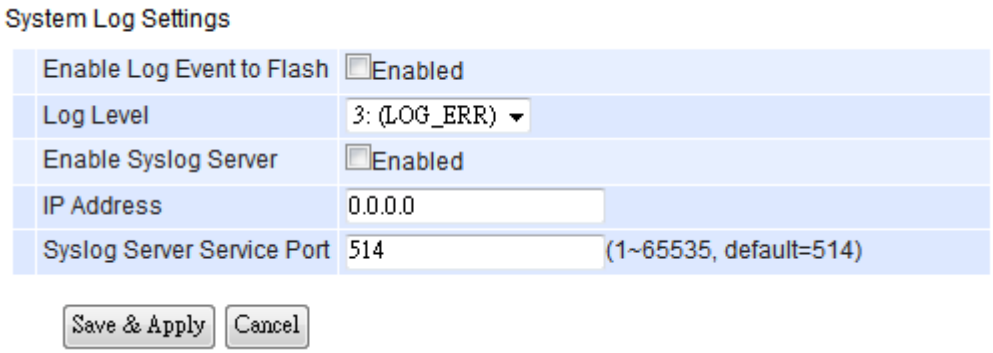


Figure 4.20

- **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 fill in.
- **Syslog Server Service Port:** A specific remote Syslog Server Port is required to fill in.

4.9.2 COM Log Settings

The transmitted data could be logged for recording or debugging purposes, and the logs info could be reported to an external Syslog server by setting up the COM Log Settings as below show Figure 4.21.

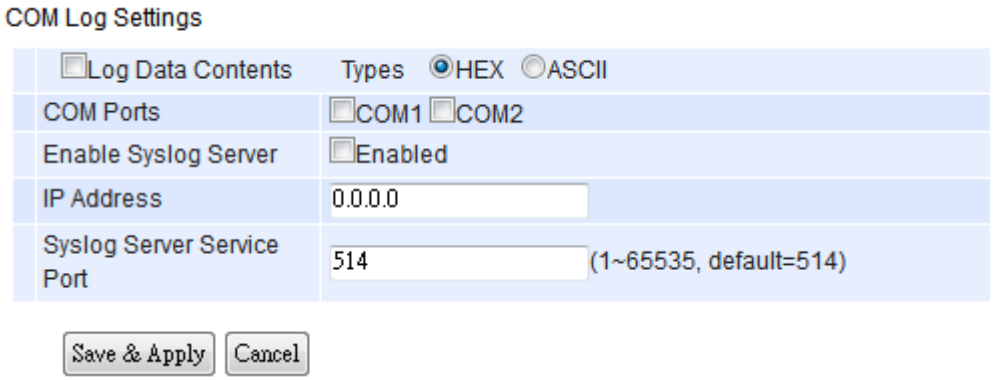


Figure 4.12

- **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, COM logging function will only log data length to reduce system load.

Note: Antaira STW-61xC & STW-62xC 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 sending 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

Display the current event log stored in the device, example as shown in below Figure 4.22

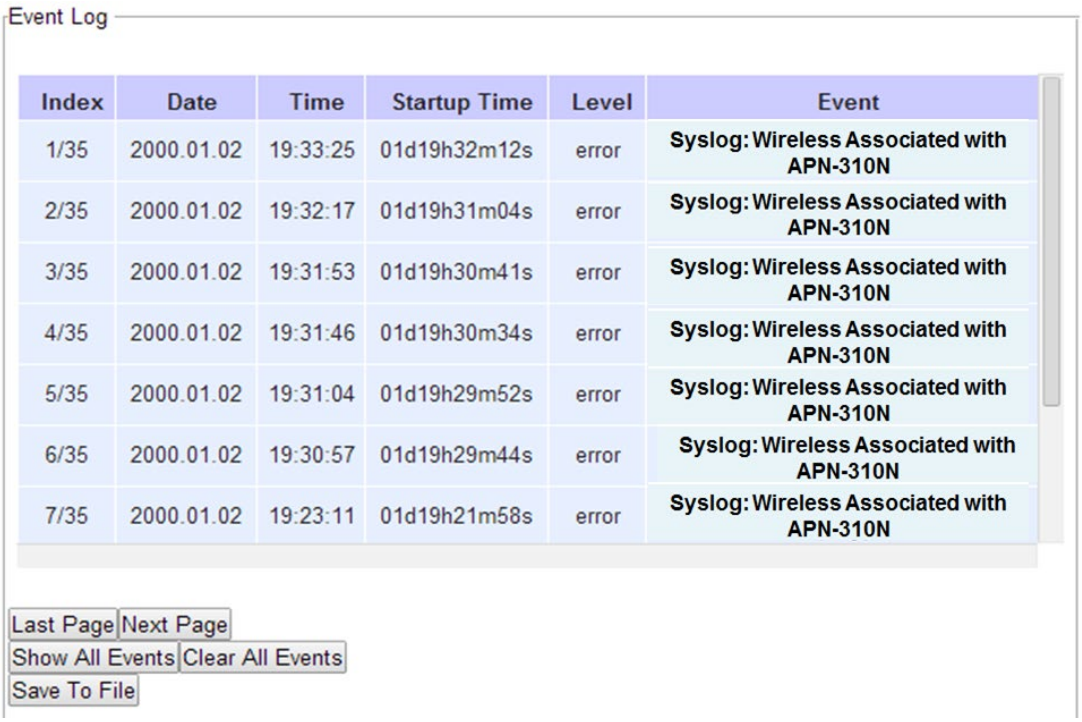


Figure 4.22

- 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

Display the current COM log stored in the device, example as shown in below Figure 4.23

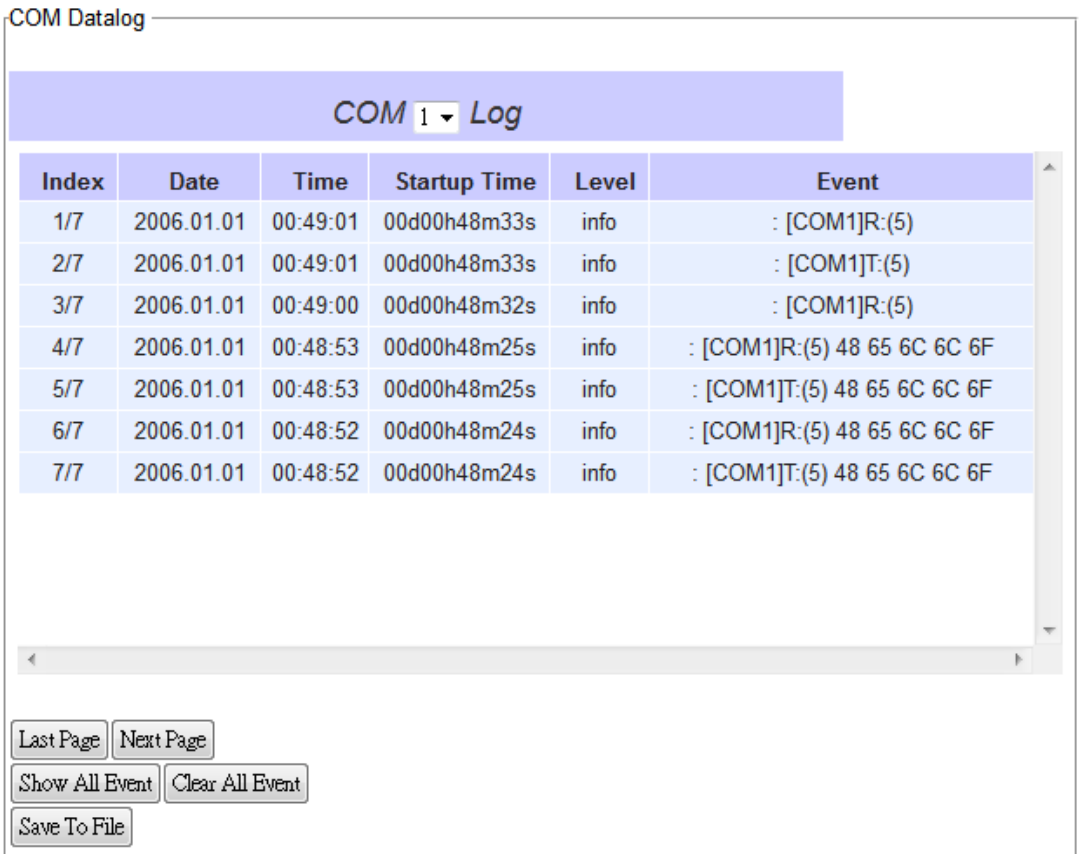


Figure 4.23

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

Date and time can be set manually, or using **N**etwork **T**ime **P**rotocol (NTP) to automatically synchronizes with a Time Server. For auto-synching check the box below **NTP Server Settings "Obtain date/time automatically"** proceeding then to fill the IP address or host name for it. If a hostname is entered, the DNS server must be configured properly; a Time Zone can be selected as well, Figure 4.24.

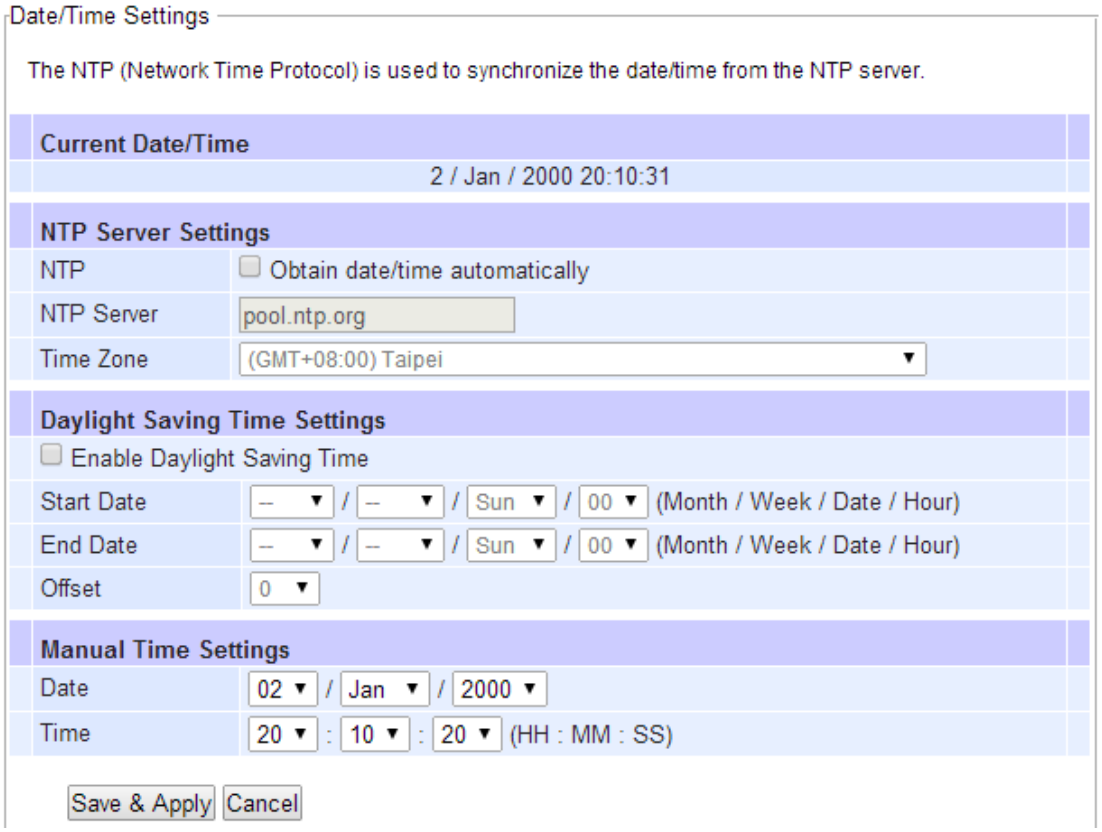


Figure 4.24

Attention

It is also important to setup Default Gateway and DNS Servers in the Network Settings properly, which the STW-61xC series units can lookup DNS names and route the mails to the proper default gateway.

4.10.2 Admin Settings

Antaira STW-61xC series unit allows users to change the **"User Name and Password"** information.

The default info of User Name is **"admin"** and the password will be "**in blank"** for firmware version 3.28 or earlier and **"defaul**t" for firmware 3.29 and later**.**

Users can just set/change the new value and follow the steps filling in the corresponding blanks and choose **Save & Apply** in the end, as below example in Figure 4.25.

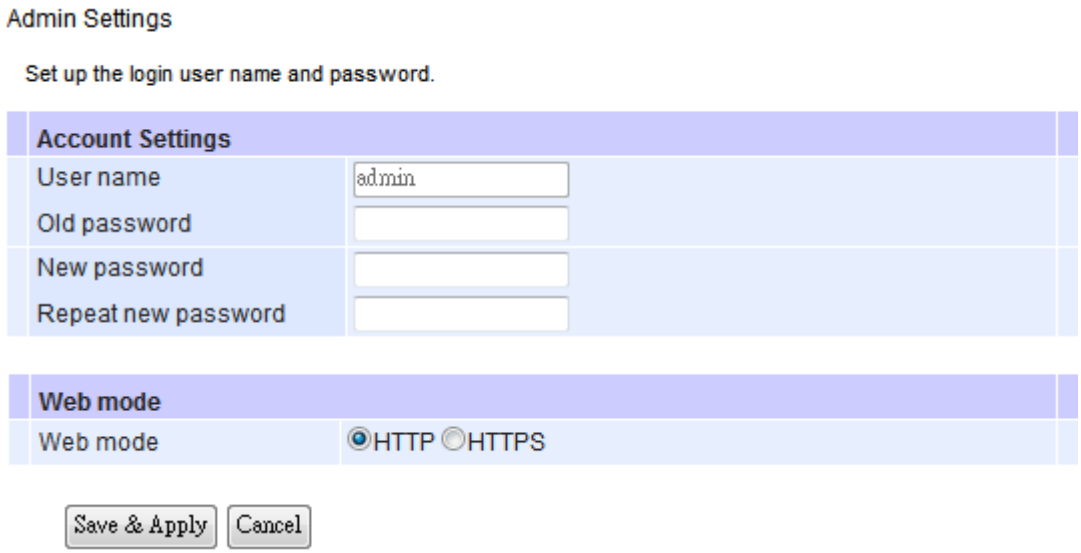


Figure 4.13

There are two ways to access 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 HTTP uses port 80 while HTTPS uses the 443 port.

4.10.3 Firmware Upgrade

During Firmware Upgrading, please DO NOT turn off or power off the STW-61xC & STW-62xC 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 below example Figure 4.26; then click **"Upload".** The program will show the upload status, 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.

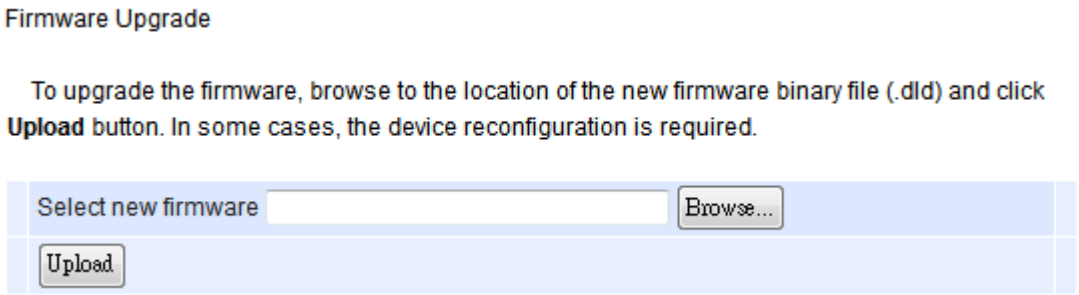


Figure 4.14

Note: if the firmware upgrade process fails and the device becomes unreachable, follow the TFTP Recovery procedure on the Appendix.

4.10.4 Backup/Restore Setting

Once all the configurations are set and the device is working properly, users may want to back up the configuration. Backup can be used when the new firmware is uploaded and it is reset to a factory default settings, it 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 is prompted for saving the backup file on the local computer. It is important **NOT to modify the saved configuration file by any editor. Any modification to the file may corrupt the file, and it may not be used for restore.** Please contact Antaira technical support or local authorized distributors 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 4.27.

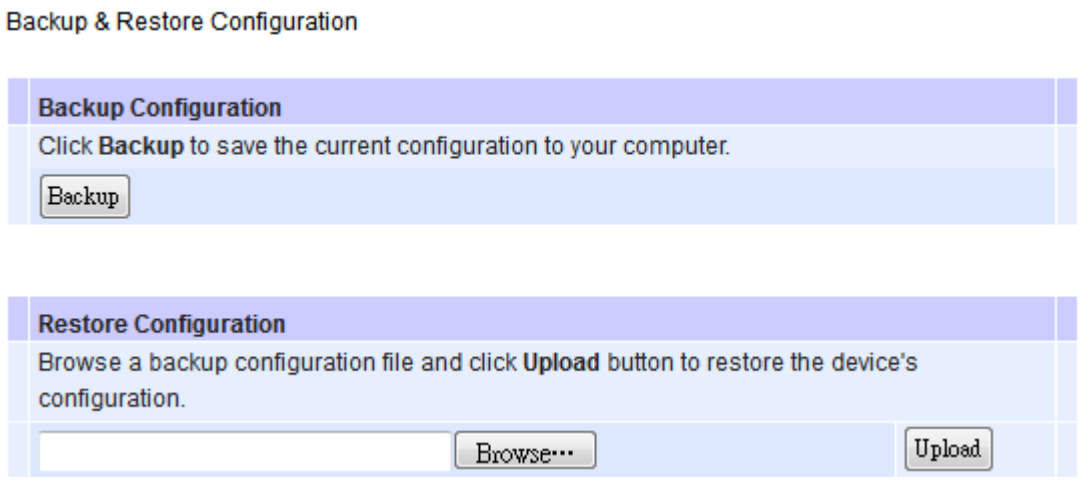


Figure 4.15

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 can access to the We UI, as shown in below Figure 4.30.

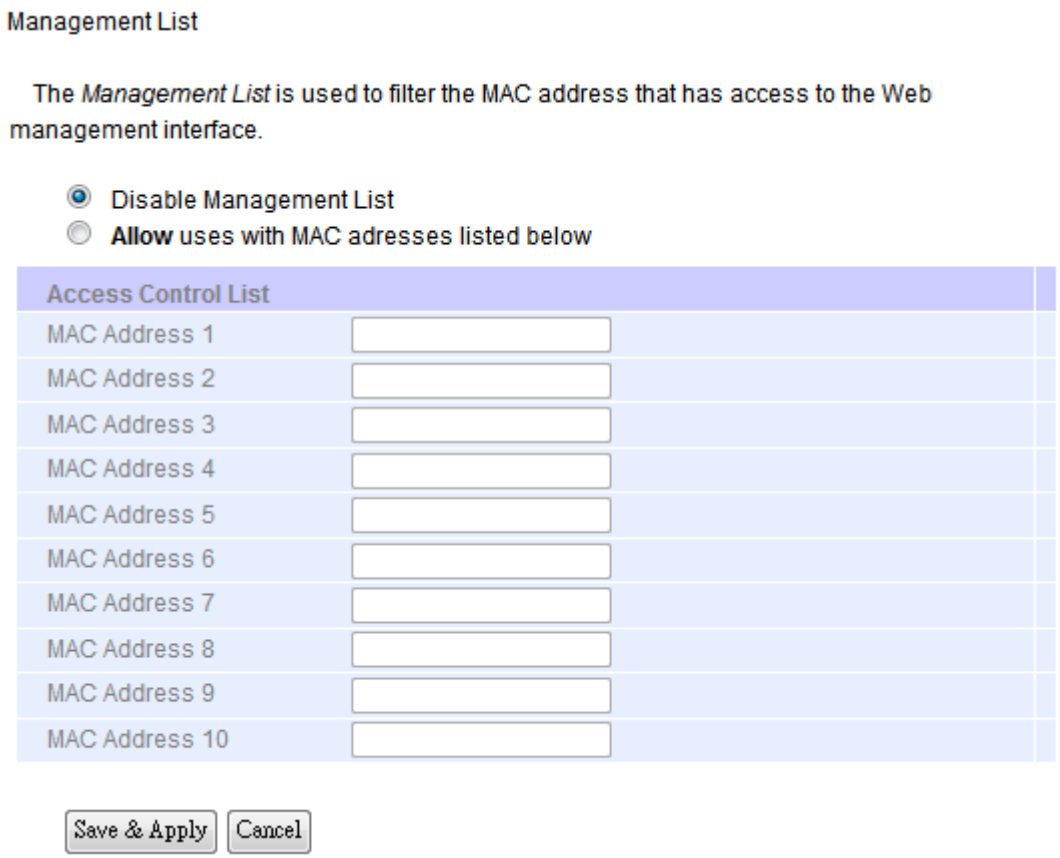


Figure 4.16

4.10.6 Ping

Use the Ping function to determine whether STW-61xC & STW-62xC series unit can reach the gateway or other devices in the network or not. This process takes around 20 seconds. Below Figure 4.29 shows a successful ping example, and Figure 4.28 shows the connecting device is not reachable.

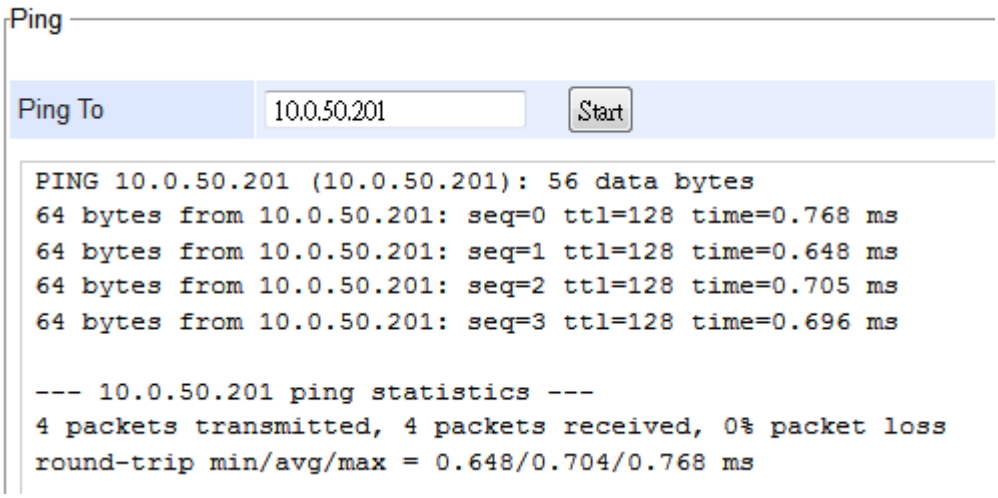


Figure 4.17

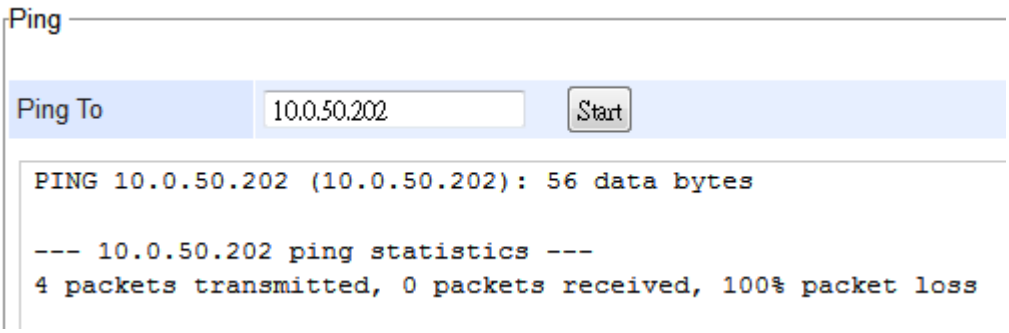


Figure 4.18

4.11 Reboot and Restore Default Settings

To manually reboot the device, users can click **"Reboot"**, after the click the device will restart. If a factory default setting is required, the **"Reset"** checking box can be chosen, and then click on **Reboot,** as below example shown in Figure 4.31.

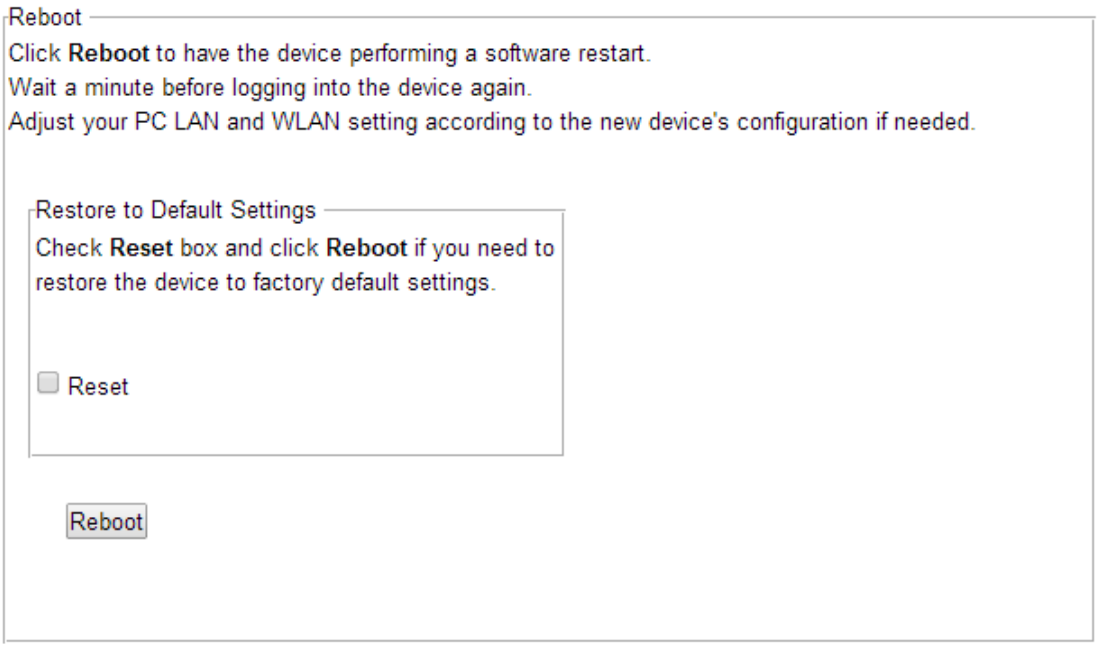


Figure 4.31

5 Link Modes and Applications

5.1 Link Mode Configuration

Antaira STW-61xC & STW-62xC Series supports different Link Modes, and they are TCP Server, TCP Client, and UDP. Under the three Link Modes, as shown in below Figure 5.1, TCP Server can support RAW, Virtual COM, or Reverse Telnet applications. TCP Client can support Virtual COM application.

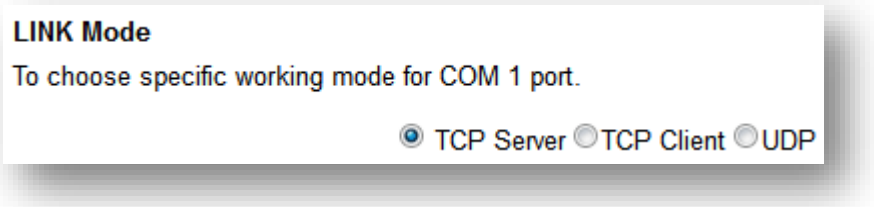


Figure 5.1

5.1.1 Link Mode: Configure STW-61xC & STW-62xC series as a TCP Server

STW-61xC & STW-62xC 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 be reminded that this is the device's default link mode.

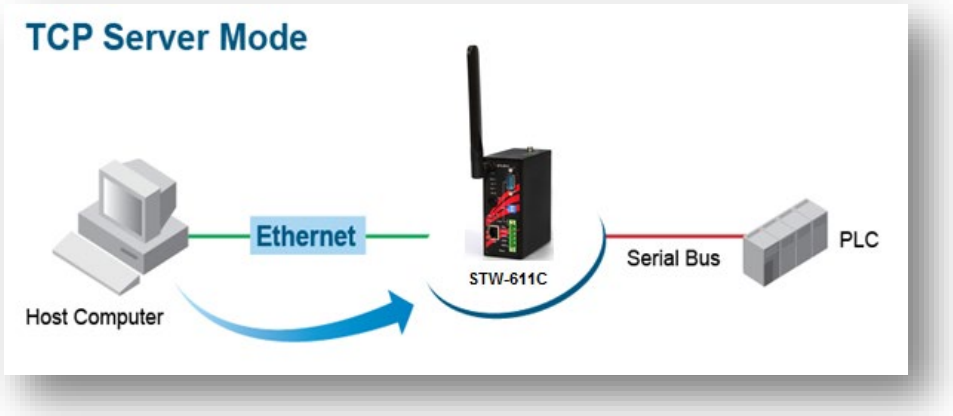


Figure 5.2

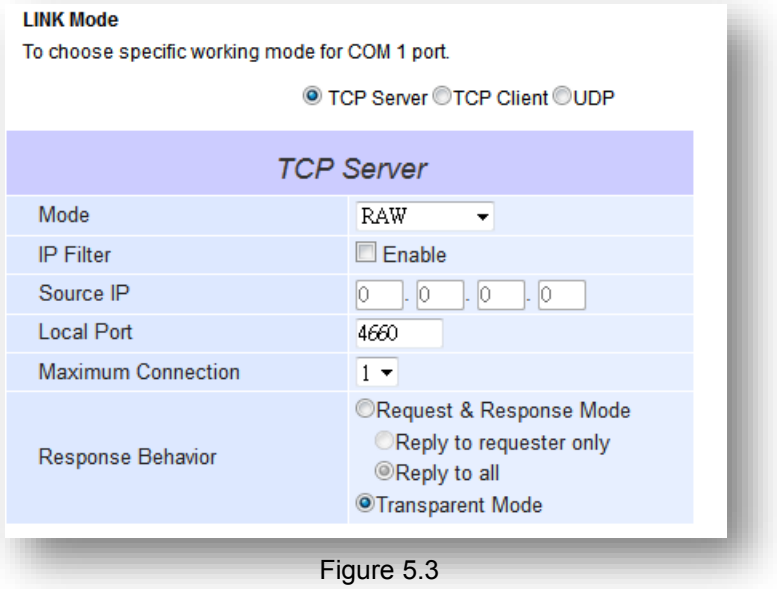


Figure 5.3

STW-61xC & STW-62xC series defaults in TCP Server mode, there are additional connection settings that can be configured as above

- Click on the ***"COM1"*** link on the left hand side.

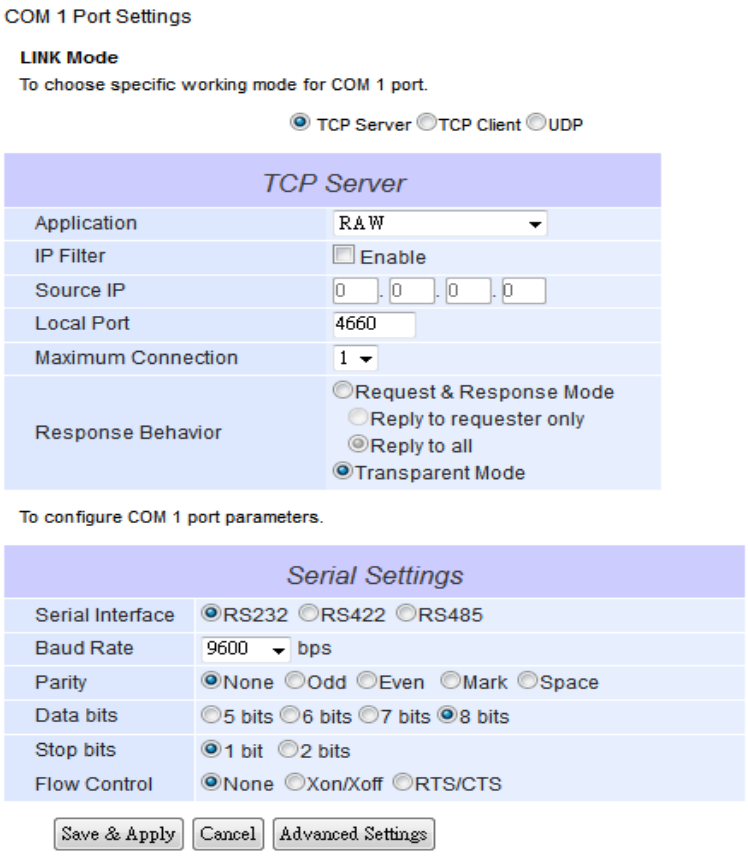


Figure 5.3

- 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. Default local port is 4660.
- When finished the setting, please scroll to the bottom of the page and click on "**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 information, 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 our Server. In other words, our Server will only allow data from this IP to flow (hence its own name implies Source IP); 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

STW-61xC & STW-62xC 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.

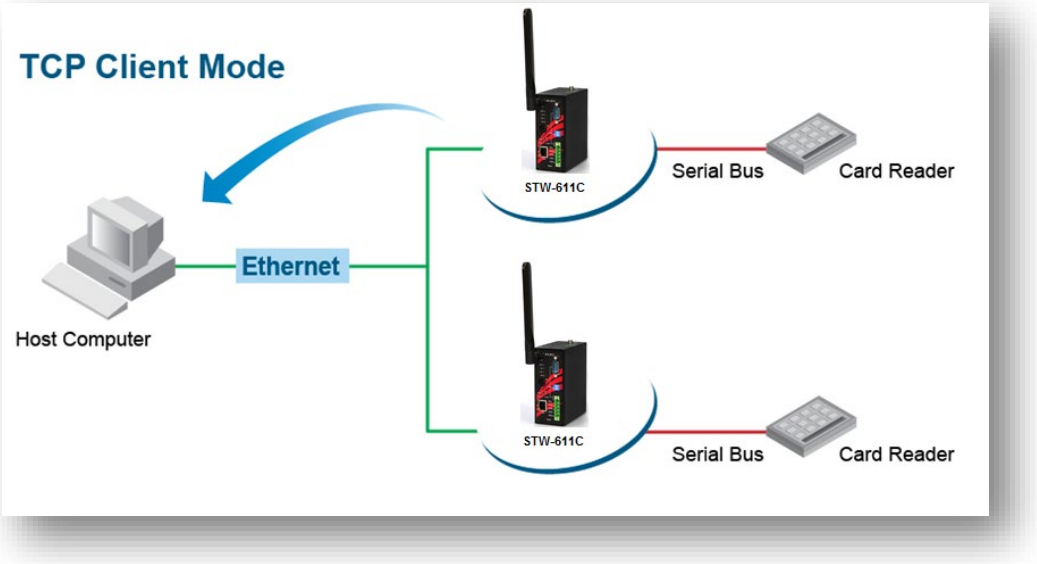


Figure 5.4

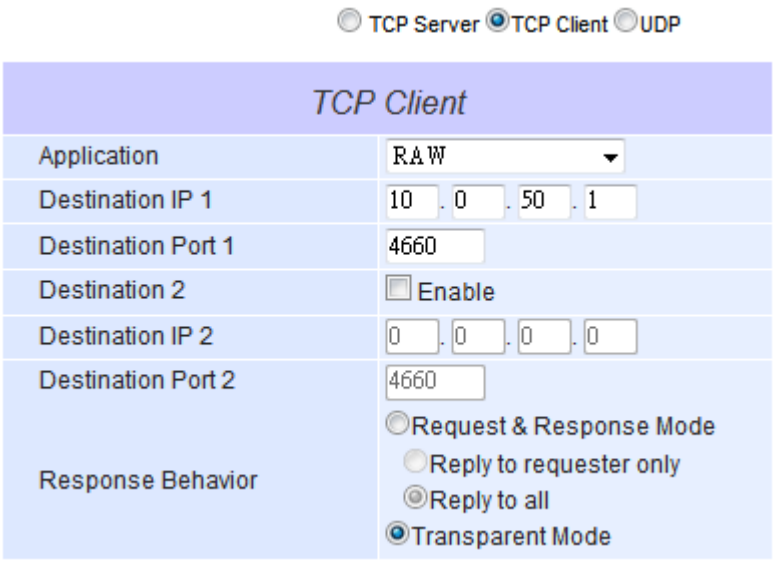


Figure 5.5

By selecting the TCP Client mode, it means that a TCP Server program should be prepared to connect to

STW-61xC & STW-62xC series unit. Above Figure 5.5 shows all the settings provided for the TCP Client.

- Click on the ***"COM1"*** link on the left hand side.

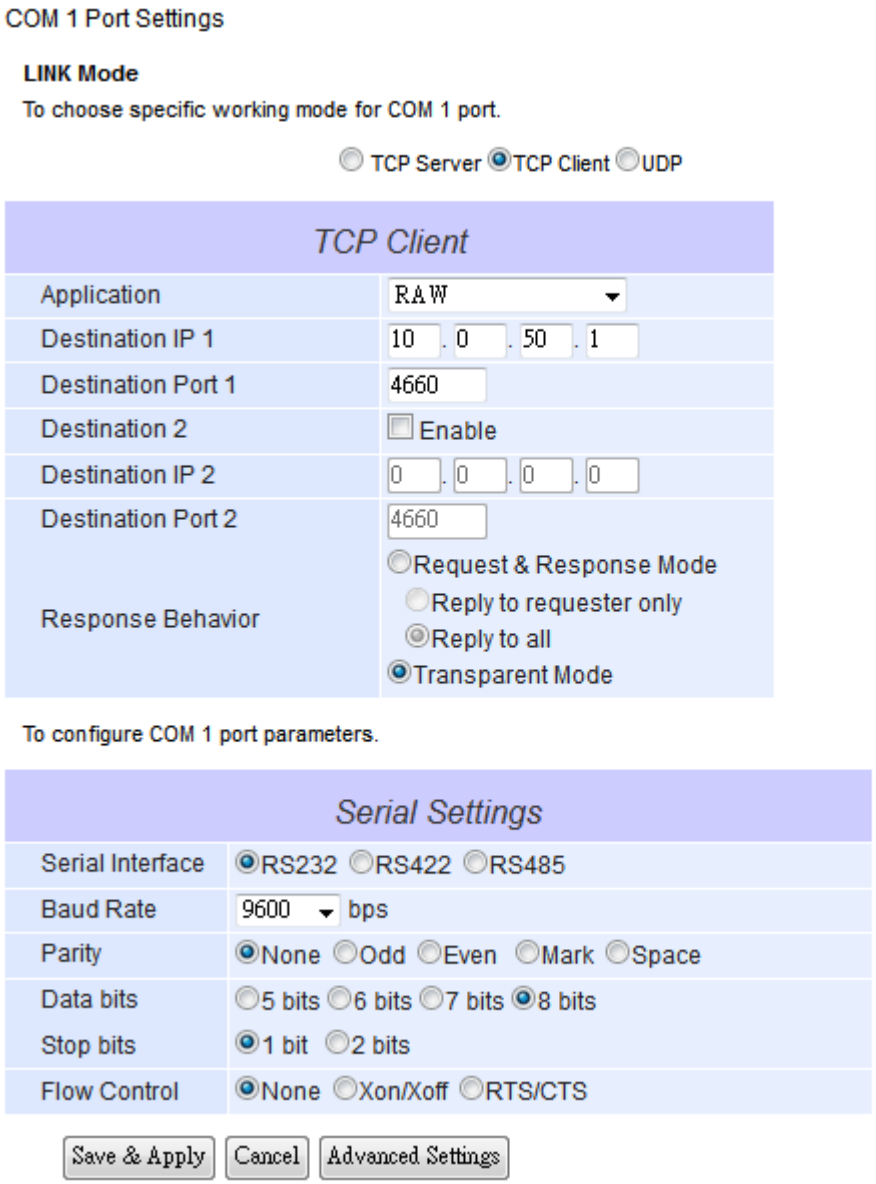


Figure 5.6

- Select **TCP Client** in the Link modes.
- Only two communication modes are available here: RAW and Virtual COM which 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), the second server has to be enabled by ticking the box.
- Scroll to the bottom of the page and click on "**Save & Apply**" button to save the changes.

5.1.3 Link Mode: Configure STW-61xC & STW-62xC series in UDP

UDP is a faster but connectionless network protocol; it does not guarantee the delivery of network datagram. The STW-61xC & STW-62xC series can be configured to transfer data using unicast or multicast UDP from the serial device to one or multiple host computers, data can be transmitted between serial device and 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.**

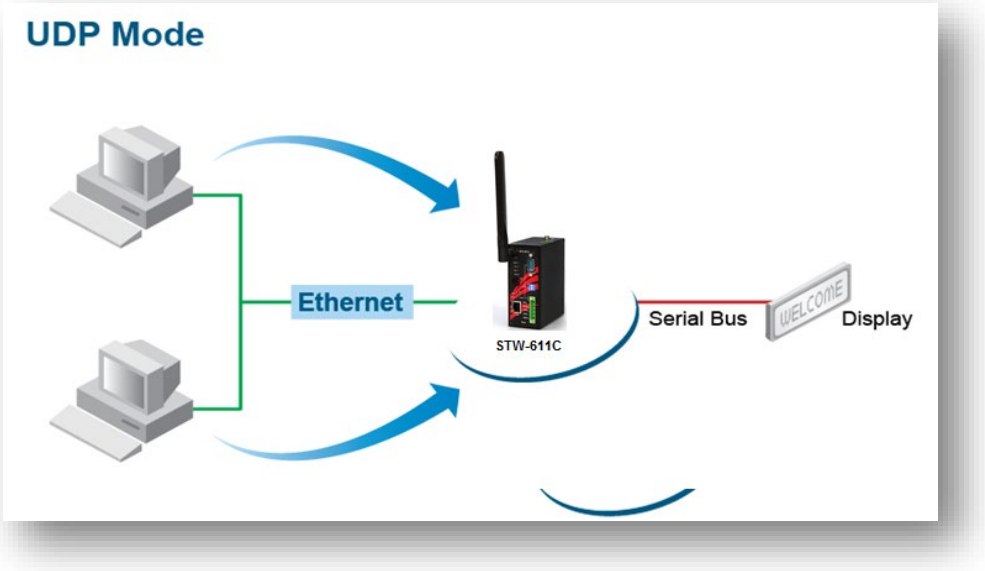


Figure 5.7

LINK Mode

To choose specific working mode for COM 1 port.

TCP Server TCP Client UDP

UDP		
Local Port: 4660		
Destination IP Address 1	10 . 0 . 50 . 1 ~ 100	Port: 4660
Destination IP Address 2	0 . 0 . 0 . 0 ~ 0	Port: 4660
Destination IP Address 3	0 . 0 . 0 . 0 ~ 0	Port: 4660
Destination IP Address 4	0 . 0 . 0 . 0 ~ 0	Port: 4660

Figure 5.8

STW-61xC & STW-62xC series also supports 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 5.9 shows the UDP settings.

- Click on the ***"COM1"*** link on the left hand side.

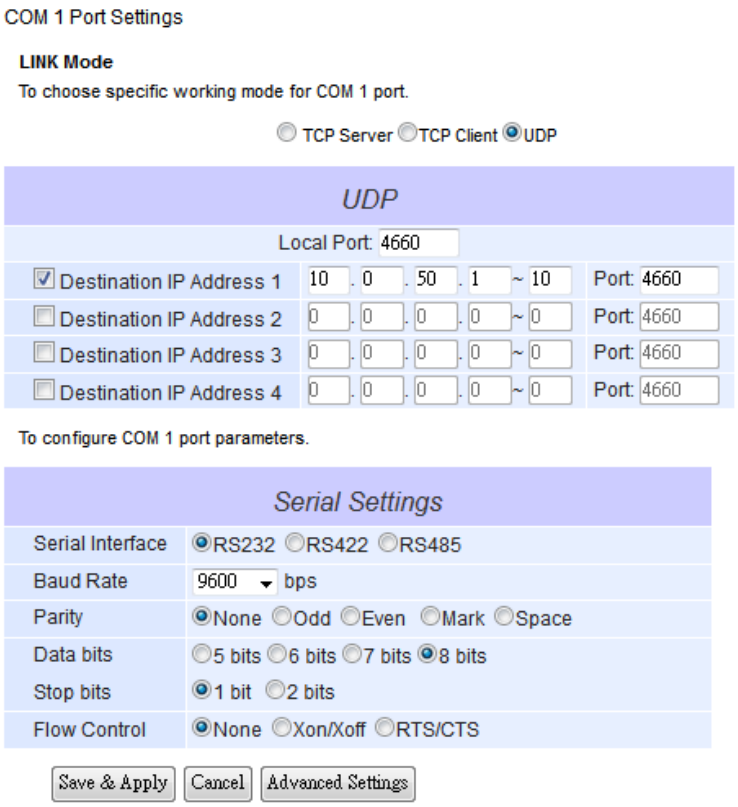


Figure 5.9

- Select **UDP** in the Link Modes.
- **Destination IP and Port:** Specify the **Begin** and **End IP** here. Four groups of range IPs 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 unit can handle would highly depend on the traffic load. *We have tested that* 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 unit 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 "**Save & Apply**" button to save the changes.

5.2 Link Mode Applications

5.2.1 TCP Server Application: Enable Virtual COM

STW-61xC & STW-62xC 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 STW-61xC & STW-62xC series unit's COM ports. The benefit of using Virtual COM is that rewriting an existing COM program to read IP packets is unnecessary. In other words, it is possible to use an ordinary serial (COM) program. The conversion/virtualization of IP to COM is all done in the system driver transparently. Below Figure 5.10 shows STW-61xC & STW-62xC series unit is in TCP Server mode with Virtual COM enabled.

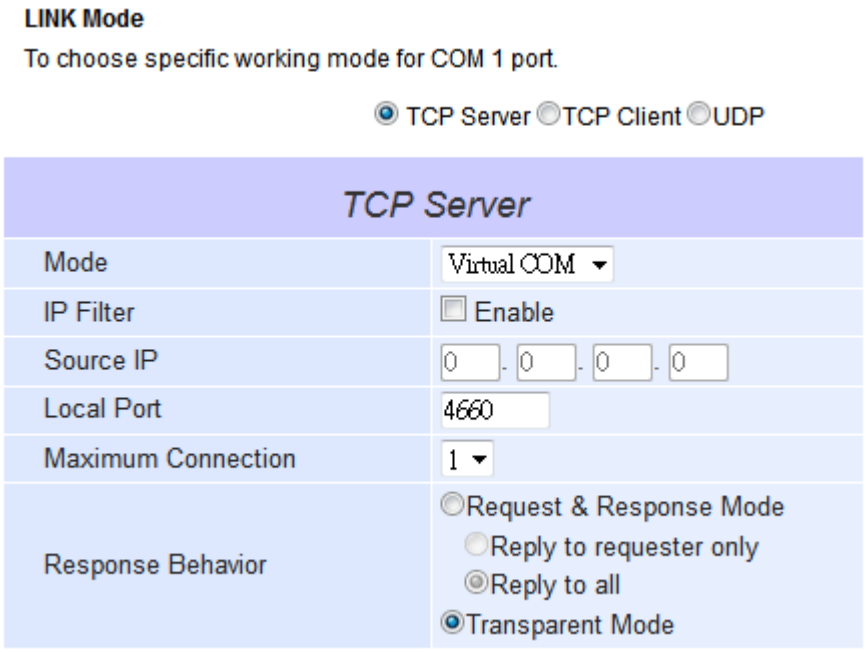


Figure 5.10

- Follow **Sec. 5.1.1** to configure STW-61xC & STW-62xC series unit in TCP Server mode properly.
- Click on the dropdown box of the **Application** option and switch to "**Virtual COM**" to enabled Virtual COM application in the unit.
- Scroll to the bottom of the page and click on "**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** info, in order to enter the information for the Serial/IP Virtual COM's Control Panel later.

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 STW-61xC & STW-62xC 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 be noted that there is no need to configure Virtual COM on the Operating System, due to Virtual COM ports would not be used.

5.2.3 TCP Client Application: Enable Virtual COM

It is also possible to run VCOM in TCP Client mode as below example shown in below Figure 5.11. It is usually easier to use Virtual COM in the Client mode if the unit uses dynamic IP (DHCP), due to it is impossible to set a static IP address in the Virtual COM's Control Panel within the Operating System.

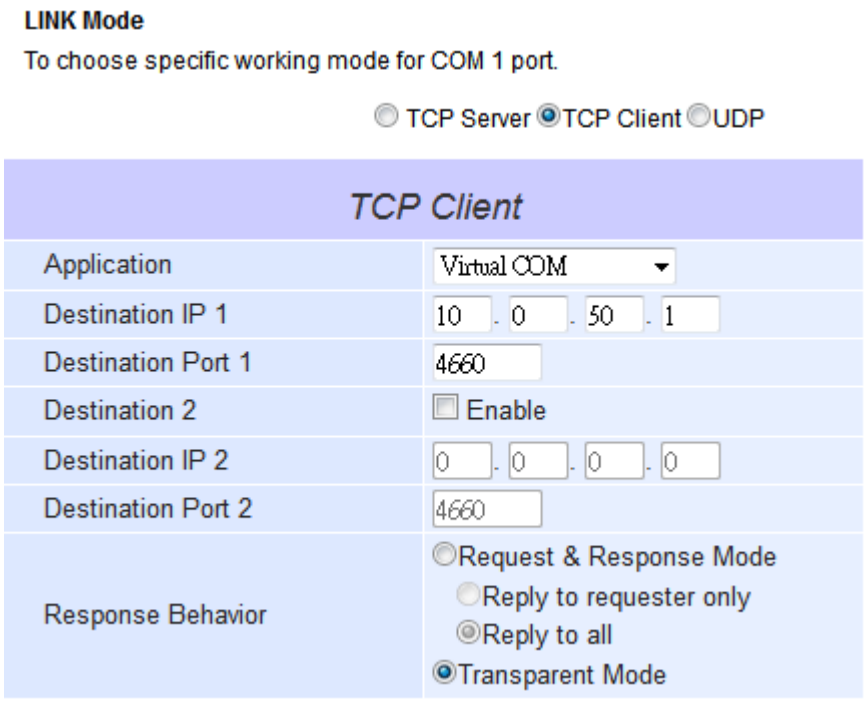


Figure 5.11

- Follow Sec. 5.1.2 to configure STW-61xC series in TCP Client mode properly.
- Click on the dropdown box of the **Application** option and switch to "**Virtual COM**" to enabled Virtual COM application in the unit.
- Scroll to the bottom of the page and click on "**Save & Apply**" button to save the changes.
- Please write down the **Destination Port** info, in order to enter the information for the Serial/IP Virtual COM's Control Panel later.

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 STW-61xC in the TCP Client mode. To do so, refer to Sec. 5.2.3 to enable

Virtual COM, so that STW-61xC & STW-62xC series unit will become aware of the commands. Note that there is no need to configure Virtual COM on the Operation System because Virtual COM ports would not be used.

5.2.5 TCP Server Application: Configure STW-61xC & STW-62xC series units as a Pair Connection Master

Pair Connection is useful when pairing up two serial devices over the Ethernet. Pair connection requires two units of STW-61xC & STW-62xC series to work in pair, one unit would be setup as the “Pair Connection Master” and the other would be setup as the “Pair Connection Slave”.

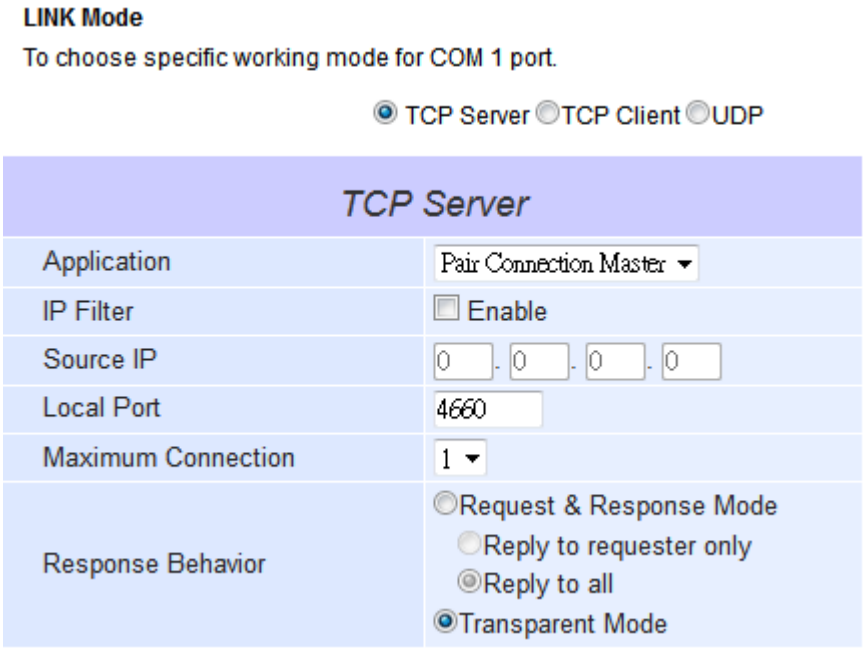


Figure 5.12

- Follow **Sec.5.1.1** to configure the unit in TCP Server mode properly.
- Click on the dropdown box of the **Application** option and switch to “**Pair Connection Master**” to enabled Pair Connection application in the unit.
- Scroll to the bottom of the page and click on “**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-61xC & STW-62xC series units as a Pair Connection Slave

A **Pair Connection Slave** setup is shown as below Figure 5.13; it is necessary to pair up with a **Pair Connection Master**. Please setup a **Pair Connection Master** first before proceeding.

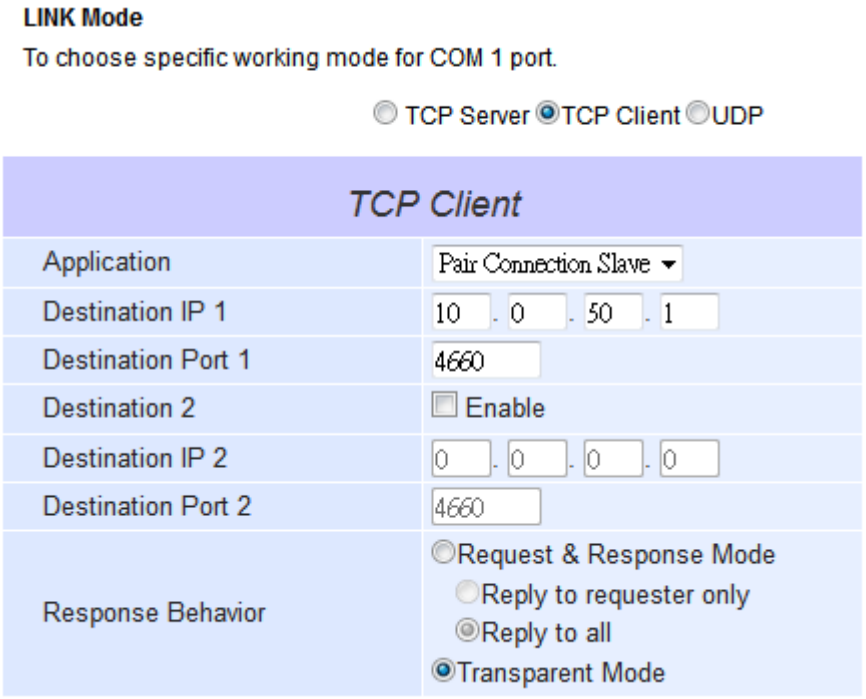


Figure 5.13

- Follow **Sec. 5.1.2** to configure the units in TCP Client mode properly.
- Click on the dropdown box of the **Application** option and switch to "**Pair Connection Slave**" to enabled Pair Connection application in the unit.
- Match the **Destination IP** with the settings of Pair Connection Master's IP that was setup previously.
- Scroll to the bottom of the page and click on "**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 STW-61xC & STW-62xC 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 show properly. After Reverse Telnet is enabled, the unit will interact with those special commands (CR/LF commands).

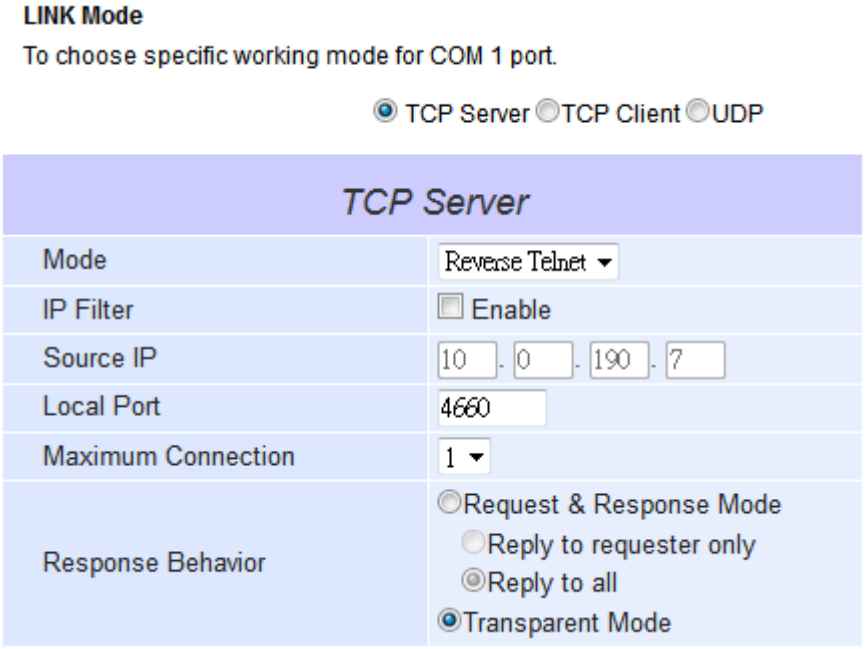


Figure 5.14

- Follow **Sec 5.1.1** to configure the unit in TCP Server mode properly.
- Click on the dropdown box of the **Application** option and switch to "**Reverse Telnet**" to enabled telnet application in the unit.
- Scroll to the bottom of the page and click on "**Save & Apply**" button to save the changes.

5.2.8 UDP Application: Multi-Point Pair Connection

It is also possible to setup pair connection in UDP mode to have more than one Pair Connection Master or Slave to communicate to each other. For example, it is possible to setup one Modbus Master and six Modbus Slaves in UDP as example shown in Figure 5.15. If RS-232 along with flow control, it is recommended to use 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. Local Listening Port of the Slaves need to be equal to the Master's Destination Port, see Table 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

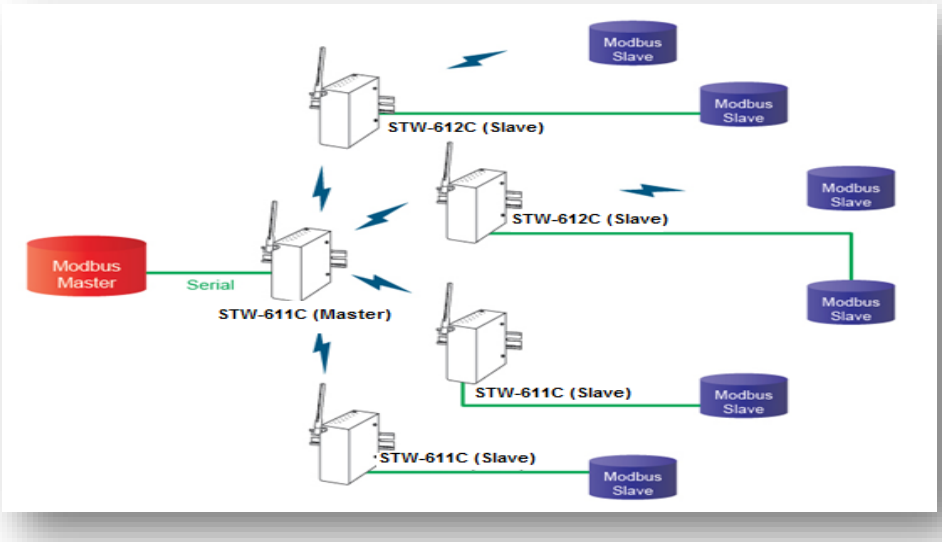


Figure 5.15

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.**

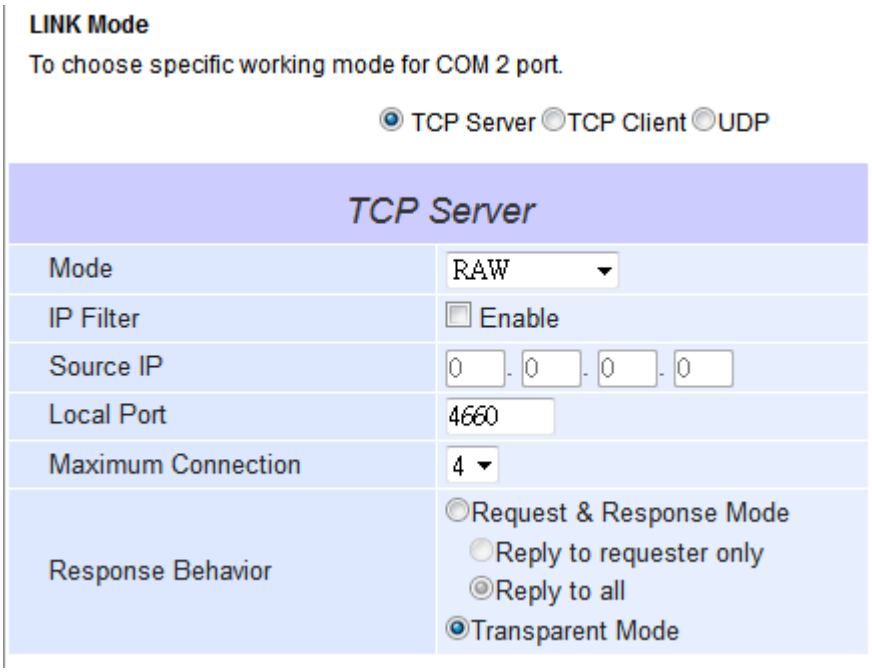


Figure 5.16

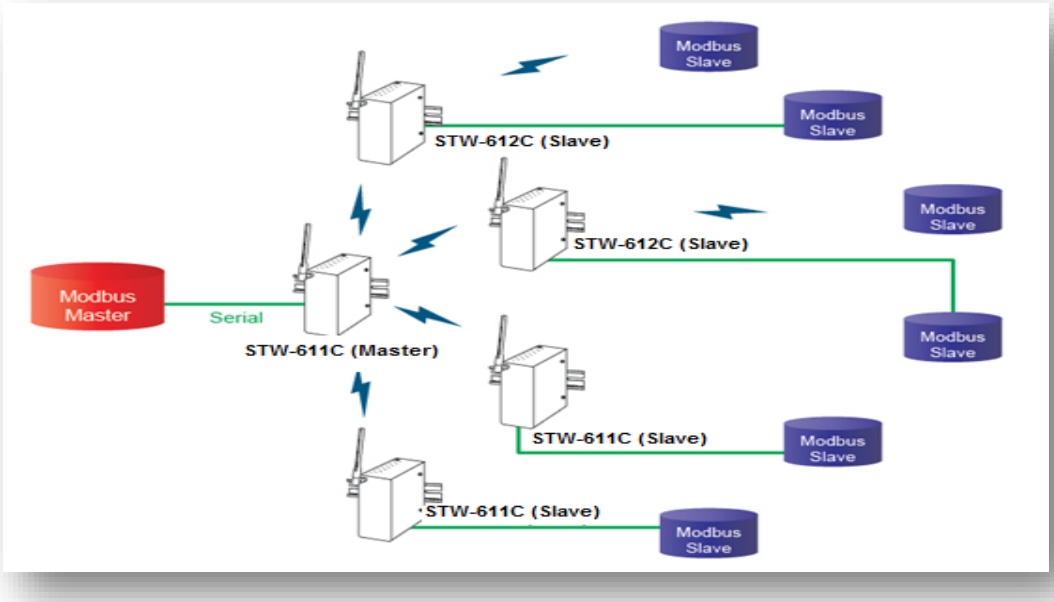
5.2.10 TCP Server Application: Multi-Point TCP Pair Connections

The difference between Multi-Point TCP Pair Connection and Multi-Point UDP Pair Connection is that the TCP implementation would also exchange 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 pair connection in UDP mode, **Sec. 5.2.8** .After multi-connection is enabled in the WebUI, refer to the following table to setup Pair Connection as in Figure 5.17

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 5.17



5.3 Wireless Topology

5.3.1 Configure STW-61xC & STW-62xC series as a Wireless Ad-Hoc Peer

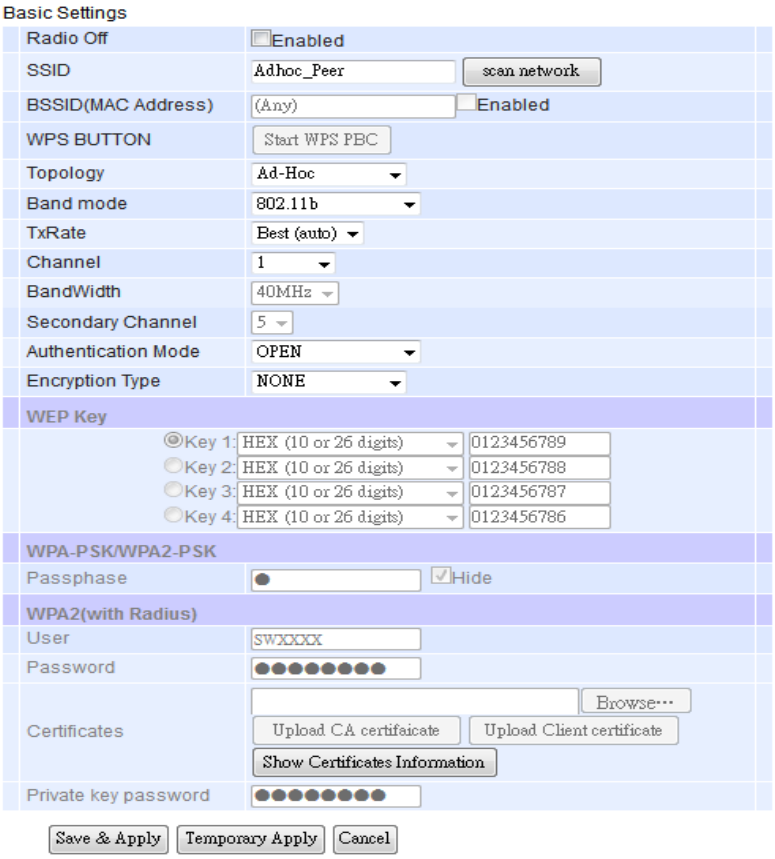


Figure 5.18

Please refer below Table 5.3 for configure STW-61xC & STW-62xC series as Wireless Ad-hoc Peer.

Table 5.3

Topology	Adhoc
Band Mode	802.11b - it provides better wireless sensitivity with lower maximum rate at 11Mbps.
Tx Rate	Auto
Channel	1; it is recommended to use 1, 6, or 11 (for 2.4 GHz).
Authentication	Open
Encryption	WEP
WEP Key	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 & STW-62xC series as a Wireless Client in Infrastructure mode (PSK)

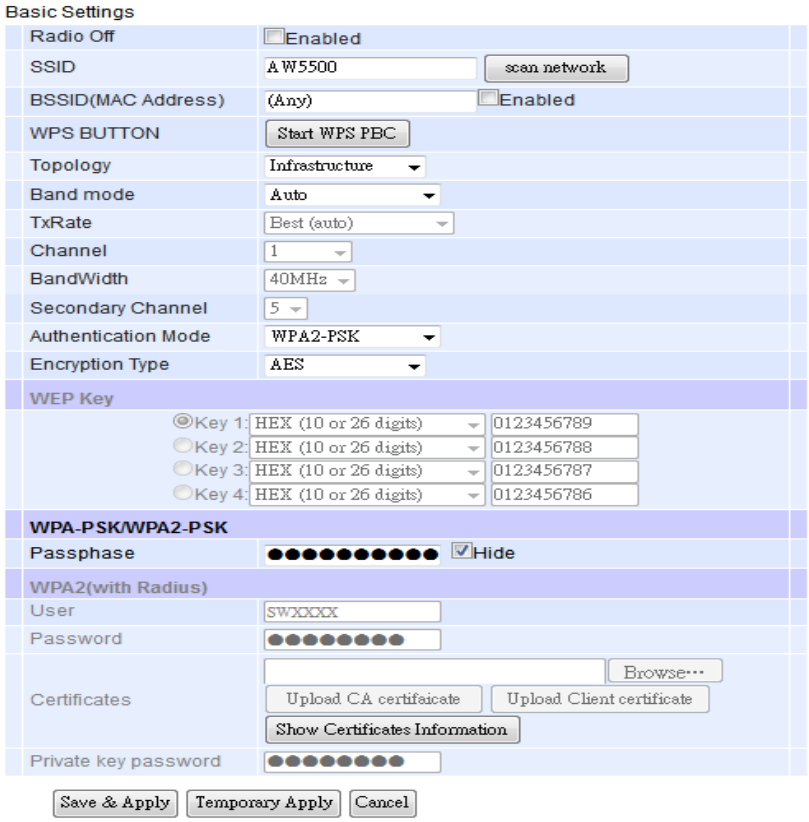


Figure 5.19

Please refer below Table 5.4 for configure STW-61xC series as Wireless Client in Infrastructure mode (PSK).

Table 5.4

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

Attention It is recommended using 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 to setup in Wi-Fi Direct Group Owner mode:

1. There are two ways to switch the STW-61xC & STW-62xC series unit to Wi-Fi Direct Group Owner.

- Press and hold the button (on the side of the housing) four seconds to trigger the unit to switch to Wi-Fi Direct Group Owner mode.
- Enable Wi-Fi Direct Group Owner by login the unit's Web Console as below Figure 5.27

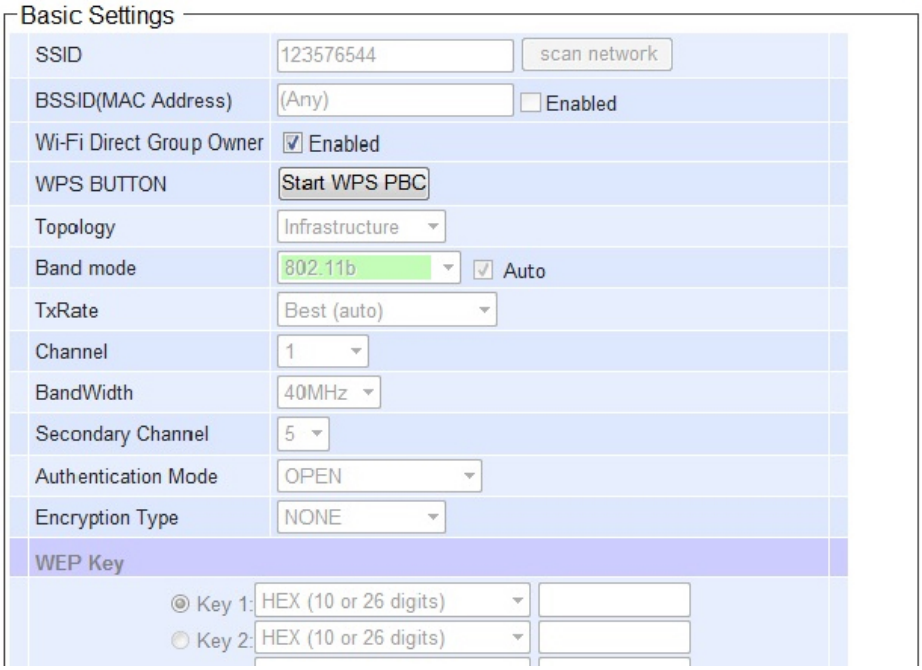


Figure 5.20

2. Active Wi-Fi Direct or WPS PBC on the wireless client unit, the station unit will try to connect to Wi-Fi Direct GO automatically. When there's another station unit is required to join the Wi-Fi group:

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

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

Note:

Reboot or apply settings on Web GUI will break Wi-Fi Direct Group.

Profiles will disable if Wi-Fi Direct enabled.

Press and hold the button eight seconds will disable Wi-Fi Direct Group Owner mode, the unit will switch to AP Client mode.

5.3.4 Configure STW-61xC & STW-62xC series as a Wireless Client in the Infrastructure mode (PEAP-MSCHAPv2)

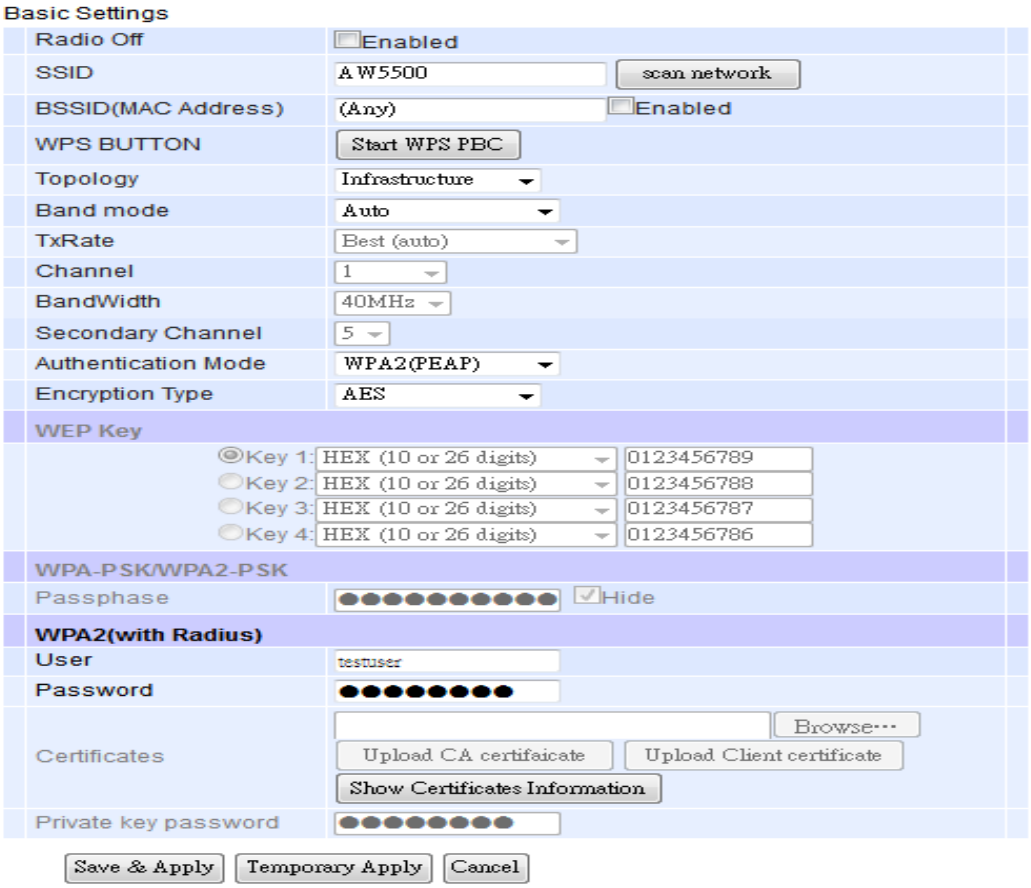


Figure 5.21

Please refer below Table 5.5 for configure STW-61xC & STW-62xC series as Wireless Client in Infrastructure mode (PEAP-MSCHAPv2)

Table 5.5

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

5.4 P2P Button (External Physical WPS button)

Antaira STW-61xC & STW-62xC provides hassle free “Easy Setup” Wi-Fi Direct (WPS) Technology for “Point-to-Point” application. Each STW-61xC & STW-62xC series unit has an external physical WPS button – P2P Button, which can build “WI-FI direct” and “serial auto link” Function.

1. Users have to tick this option to enable P2P button working. This option can be found in Web Console under Wireless → Advanced Settings label. The default setting is enabled as shown in below Figure 5.29.

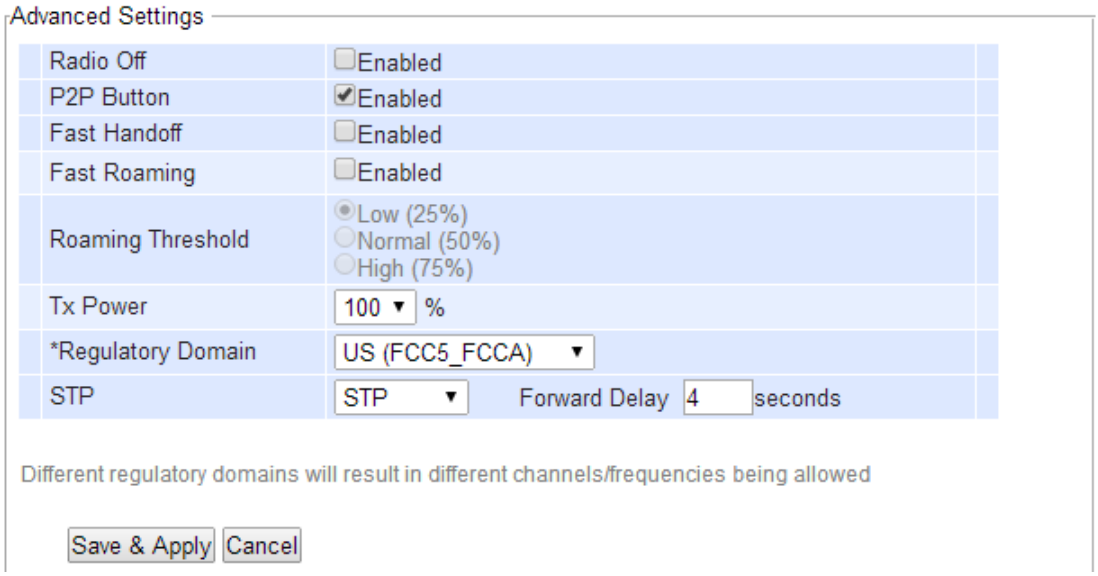


Figure 5.22

2. In order to establish 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.

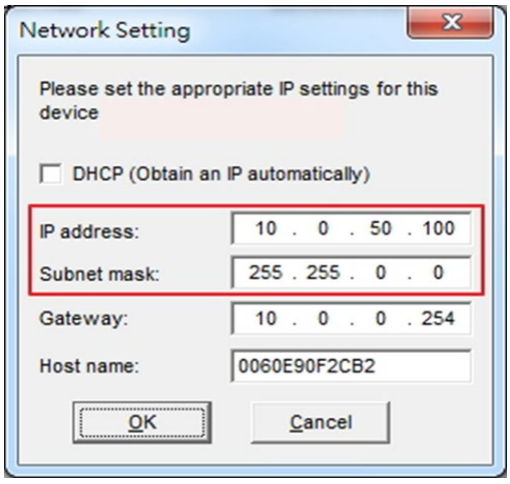


Figure 5.23

3. STW-61xC & STW-62xC series unit can be assigned to different mode by pressing P2P button; the following table shows the timing relationship.

Table 5.5

Pressing seconds	1~3(s)	4~7(s)	8~(s)
Working mode	Restart connection	AP(Wi-fi direct)	AP client

4. STW-61xC & STW-62xC series unit can make WIFI connection by just pressing P2P button.
   a. To set AP mode, press P2P button for 4~7 seconds.
   b. To set as AP client, press over 8 seconds.
   c. If users want the AP connect to other clients, just press 1~3 seconds to restart connection.

5. Before building serial auto link, please make sure the STW-61xC & STW-62xC series unit's COM port has connected with the serial device. The rest connection steps are the same as WIFI direct, please refer to steps "4".

6. Software will establish a new SSID: "DIRECT-Xx" for WIFI Direct and Serial Auto Link as below Figure 5.31.
   ***** The SSID would be "DIRECT - Xx" Xx is two random alphabet.**

Figure 5.24

7. Users can check connection status by LED indicators in front of the unit. The follow table represents the meaning of LED color.

Table 5.6

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 WDS button, the whole pairing sequence time is 120 seconds, which means user has to set both device in 120 seconds or pairing will be failed.
- WDS protocol doesn't support making multi AP to AP client link in the same time, pairing two or more devices in the same time might cause pairing failed.
- For two pairing STW-612C's or STW-622C's COM ports, device A COM1 will only reflect to device B COM1. Same rule as COM2 to COM2.
- STW-61xC & STW-62xC series' AP mode is simulated by software, so if the device is restarted, the setting will not be recovered.
- The pairing time might be influenced by environmental complexity.

6 VCOM Installation & Troubleshooting

6.1 Enabling VCOM

STW-61xC & STW-62xC series will capture 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 STW-61xC & STW-62xC series units' COM ports. Please be aware the VCOM can only be enabled on TCP Server Mode (**Error! Reference source not found.**) or TCP Client (**Error! Reference source not found.**).

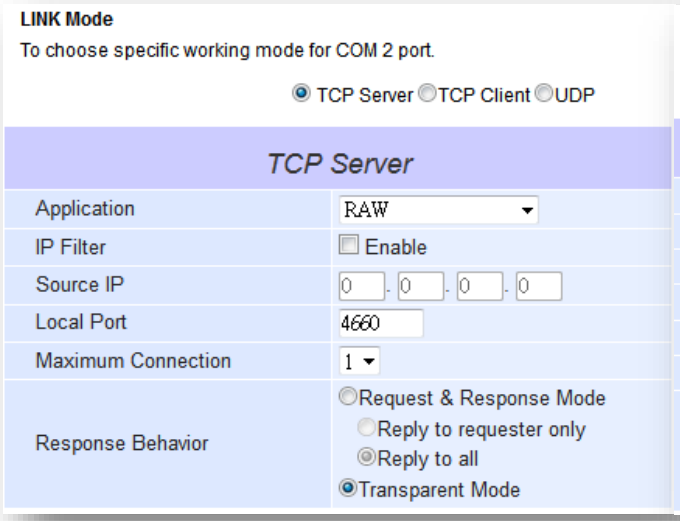


Figure 6.1

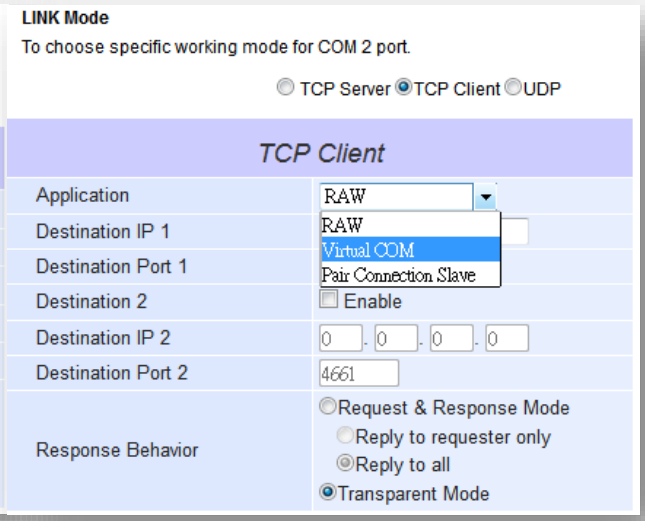
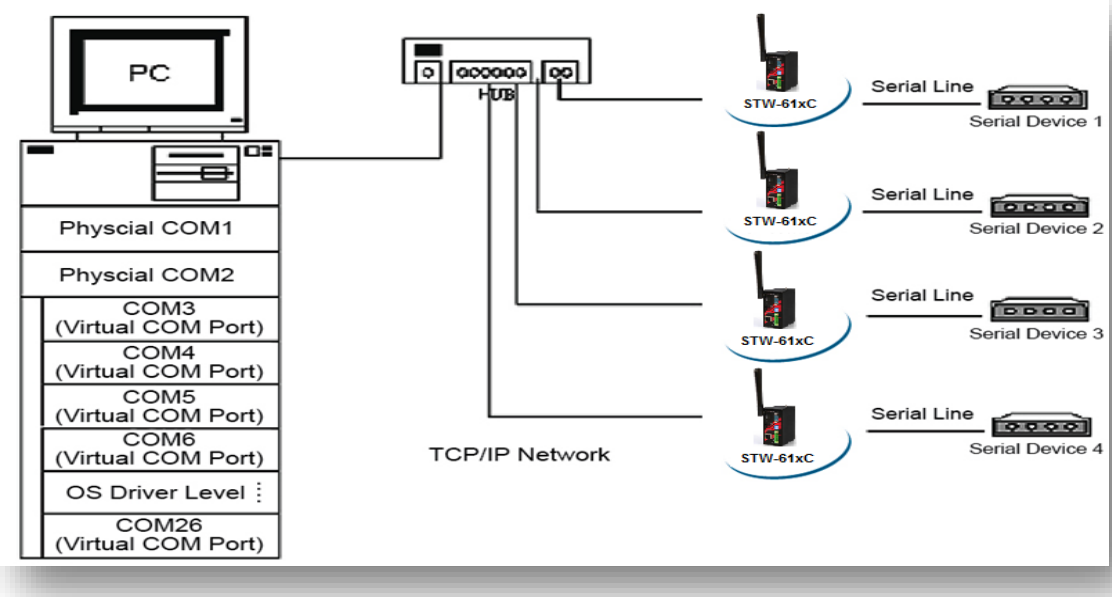


Figure 6.2

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 6.1 is a Virtual COM connection diagram.



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 in the range from COM1 to COM4096 is allowed. Note that 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 Windows Start Menu select Control Panel, Add/Remove Programs.

Select **Serial/IP Version x.x.x** in the list of installed software.

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**. The following figures show how to enable Virtual COM in STW-61xC & STW-62xC 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.**

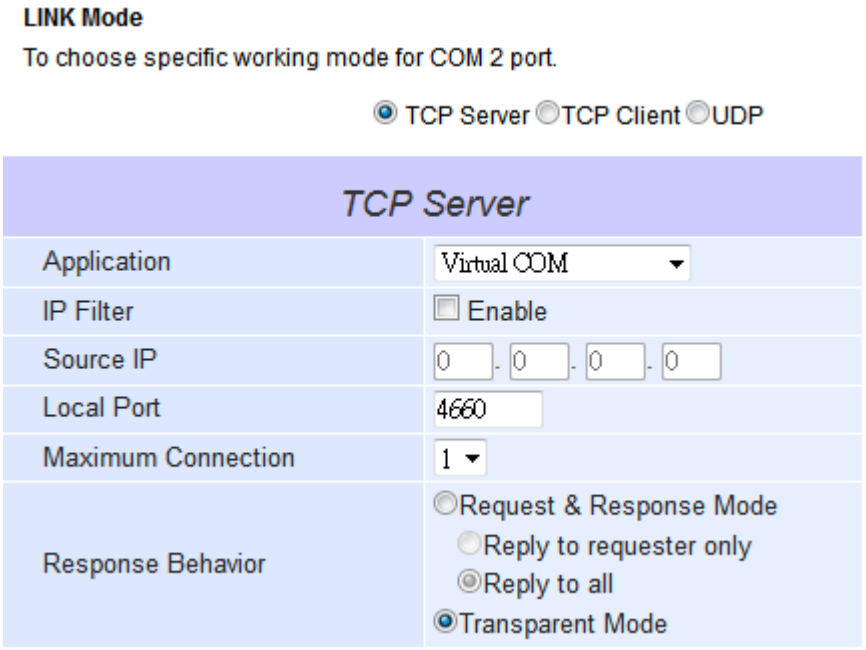


Figure 6.1

6.2.2 Running Serial/IP in Windows

Find Serial/IP Control Panel from:

- Start → All Programs → Serial/IP → Control Panel
- In the Windows Control Panel, open the Serial/IP applet.
- In the Windows notification area, Figure 6.3; right click in the Serial/IP tray icon and click on **Configure** to open the Control Panel.

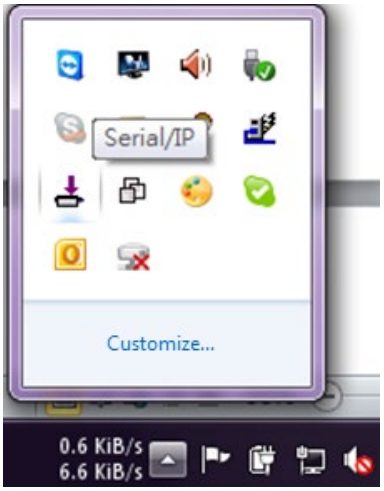


Figure 6.2

If no Virtual COM port is selected, a dialog will pop up and asks to select at least one port as the Virtual COM port before proceeding, Figure 6.4.

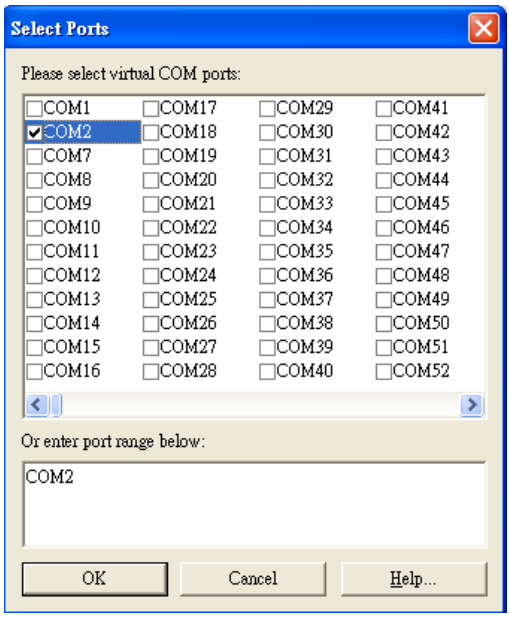


Figure 6.3

After at least one Virtual COM port is selected, the Control Panel will show, Figure 6.5

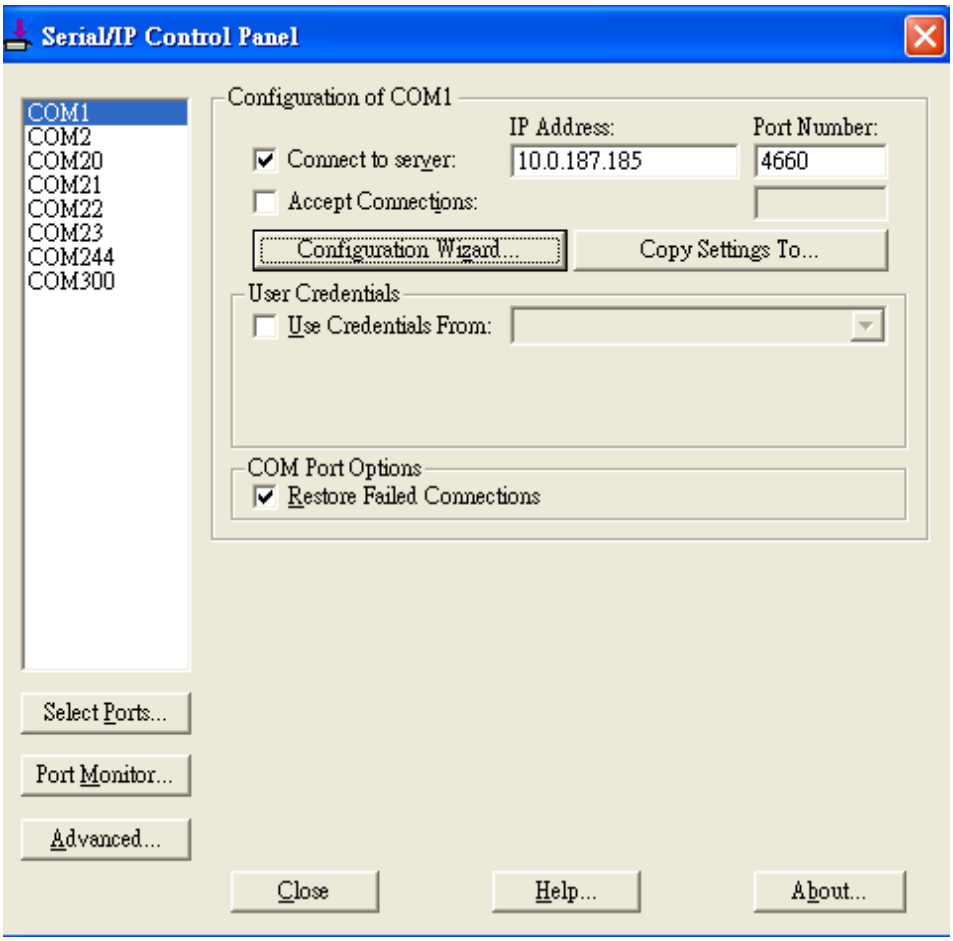


Figure 6.4

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 Virtual COM ports would apply immediately and there is no 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.

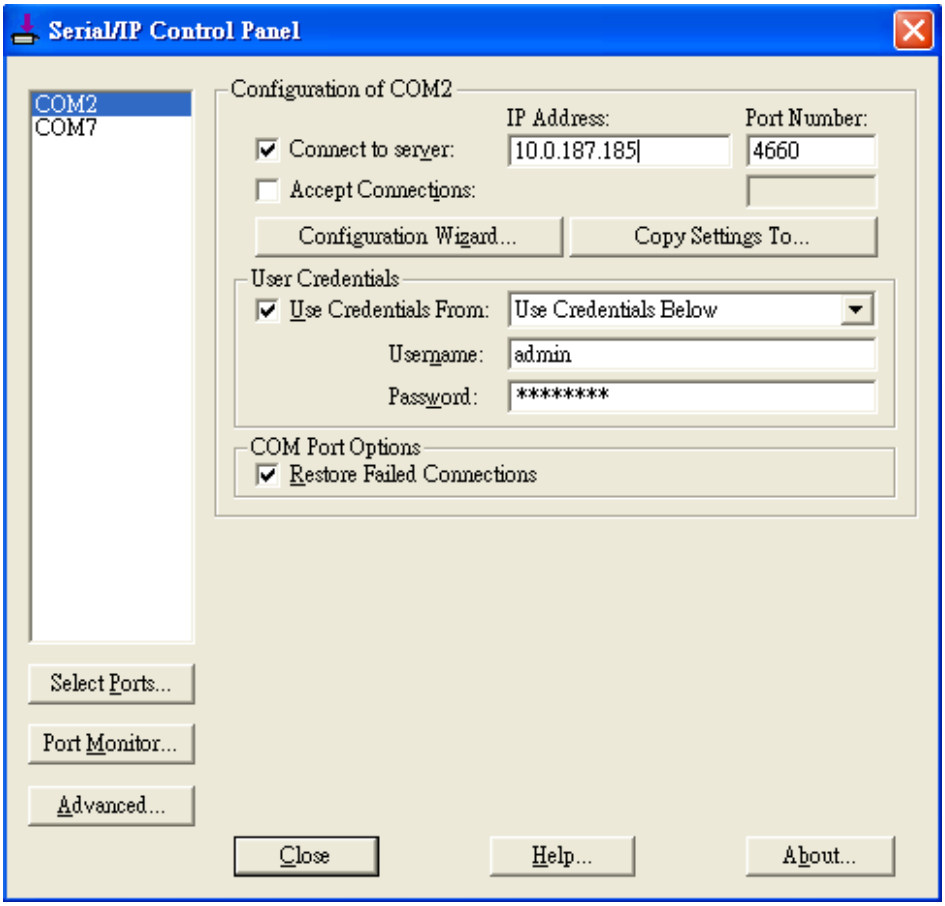


Figure 6.5

Enable **Restore Failed Connections** to force 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 **Start** button in the pop up window (Figure 6.7). 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.

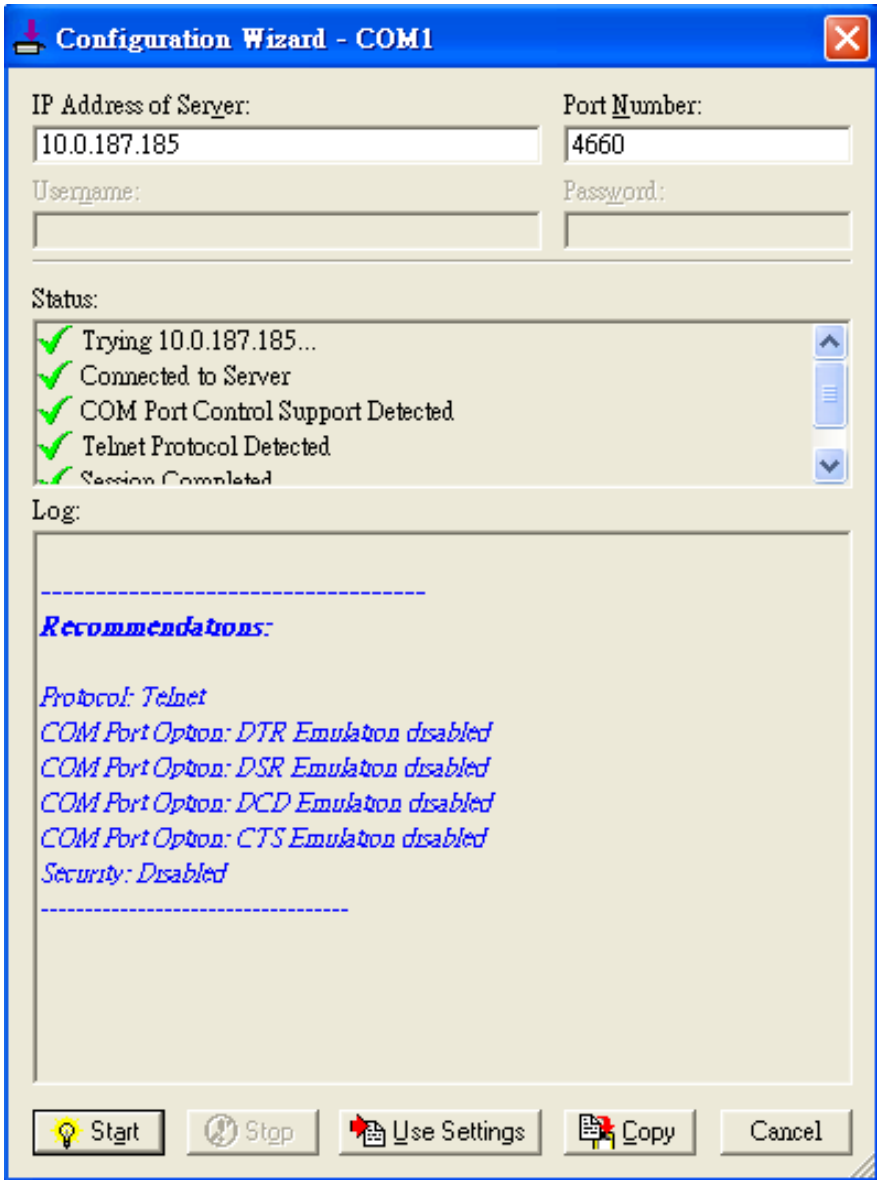


Figure 6.6

6.3 Exceptions

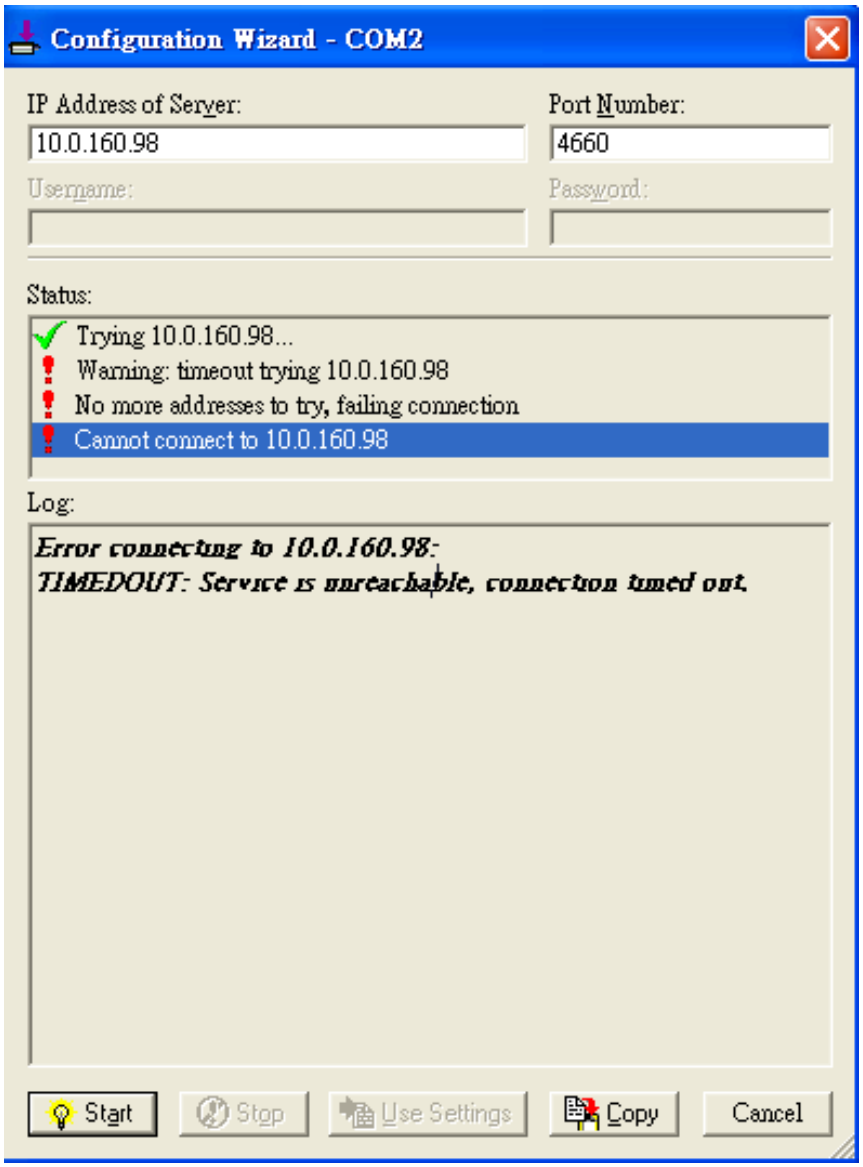


Figure 6.7

If the exclamation mark begins with **Warning: timeout trying x.x.x.x** as in Figure 6.8, recheck the **VCOM IP** and **Port configuration** or the PC's **network configuration.**

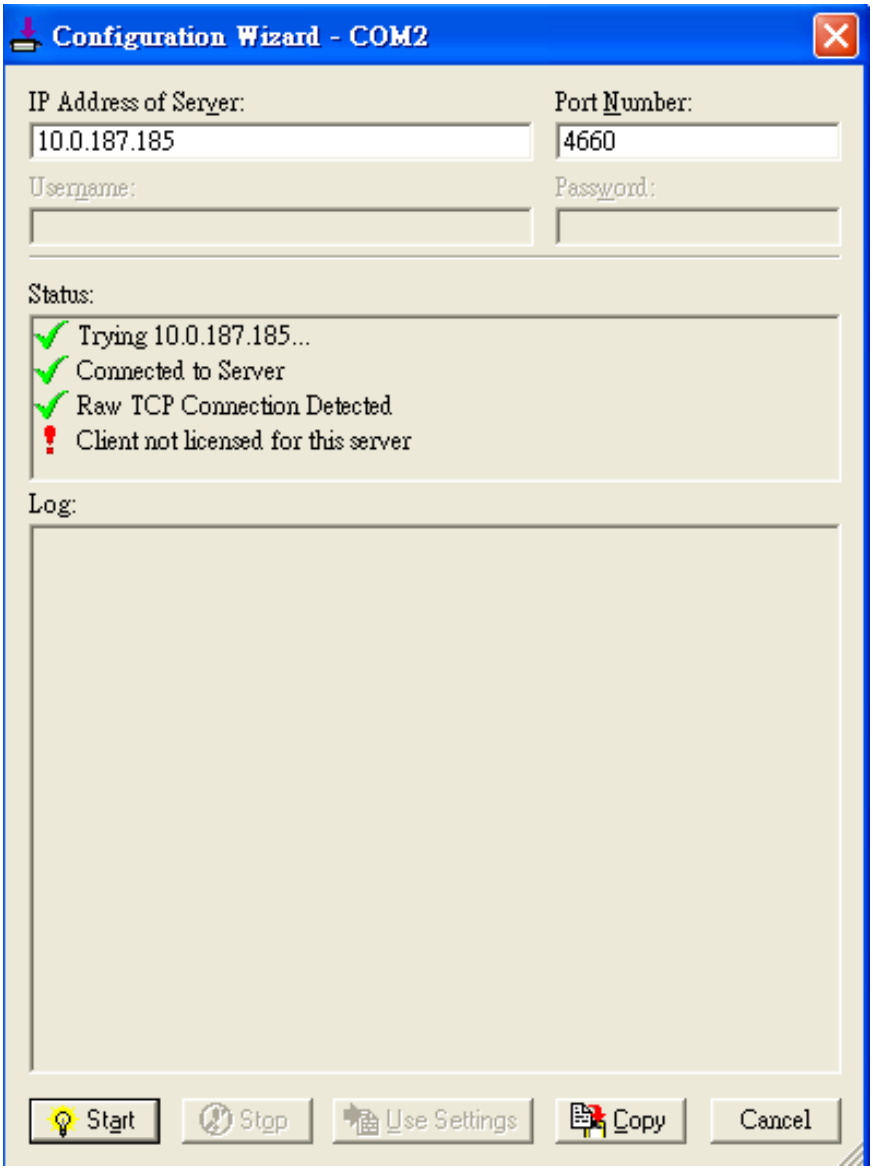


Figure 6.8

If there is a check with **Raw Connection Detected** and an exclamation mark with **Client not licensed for this server,** Figure 6.9, enable **VCOM** in the serial device server.

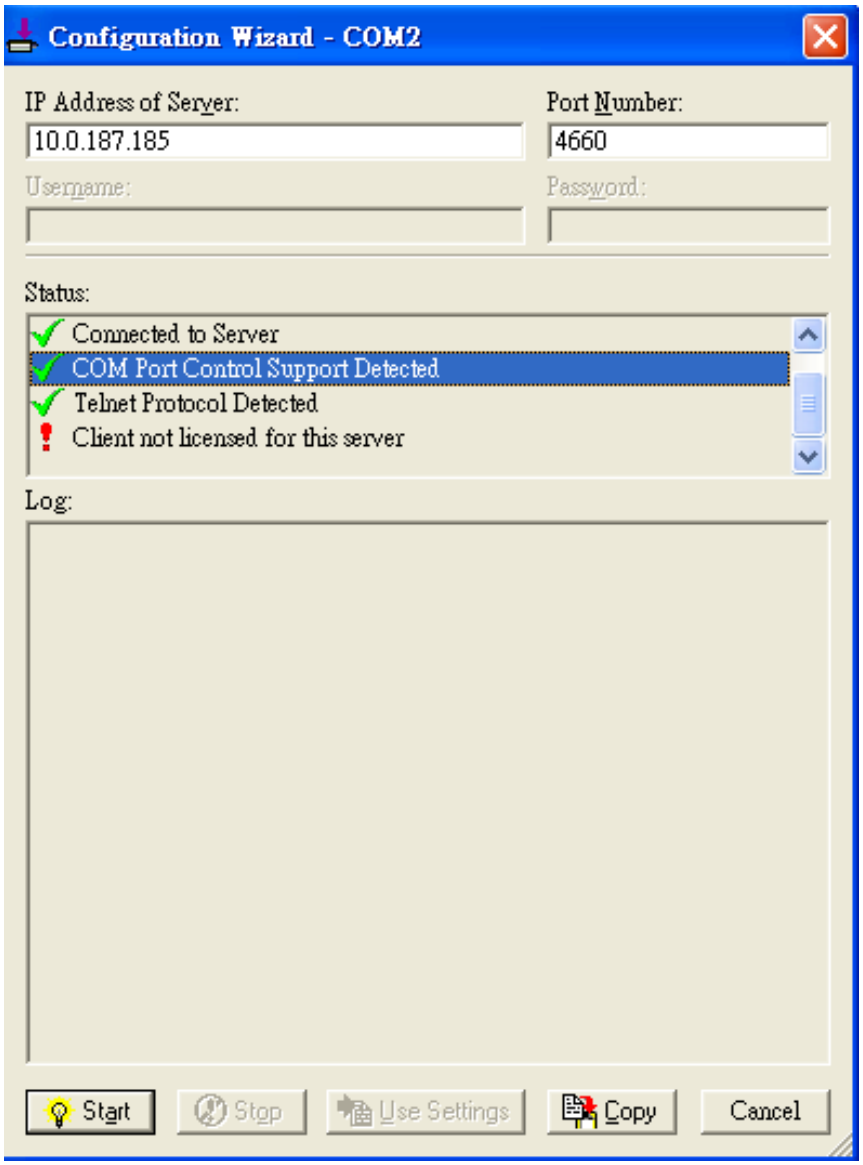


Figure 6.9

If there is a check with **Telnet Protocol Detected** and an exclamation mark with **Client not licensed for this server** as in Figure 6.10, this means that there is a licensing issue between the serial device server and Serial/IP. Please contact Antaira technical support to obtain the correct VCOM software.

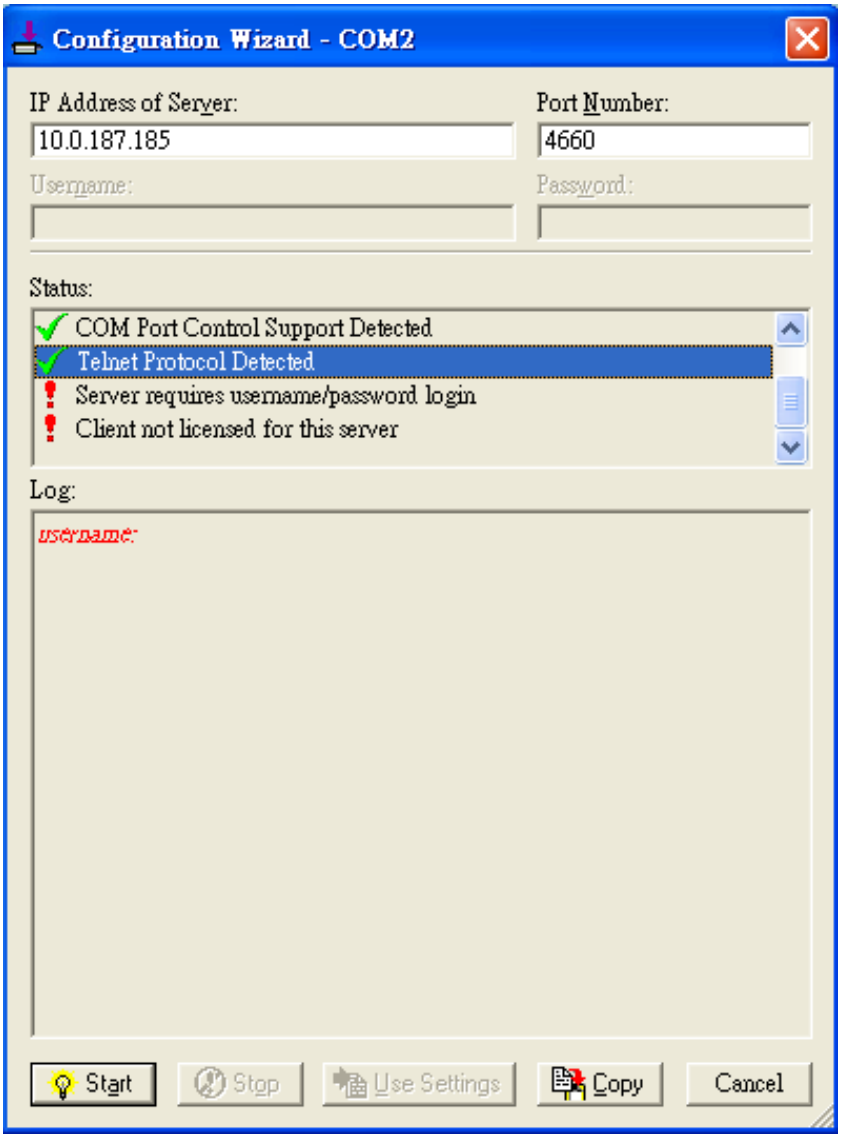


Figure 6.10

If the exclamation mark begins with **Server requires username/password login** Figure 6.11, it means **VCOM Authentication** in the serial device server is enabled, but credentials in the **Serial/IP** is not enabled.

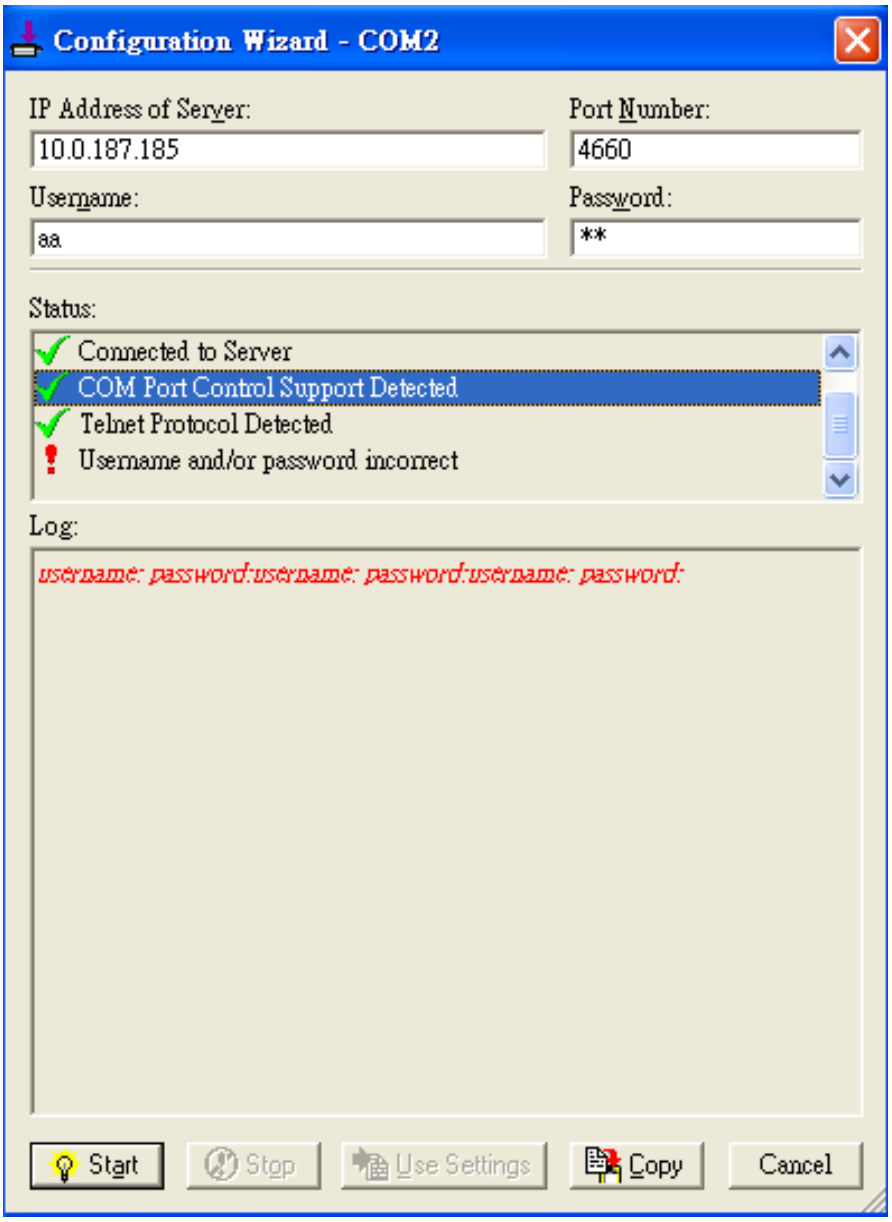


Figure 6.11

If the exclamation mark begins with a **"Username and/or password incorrect",** Figure 6.12, this means the wrong username and/or password were entered and the authentication process failed.

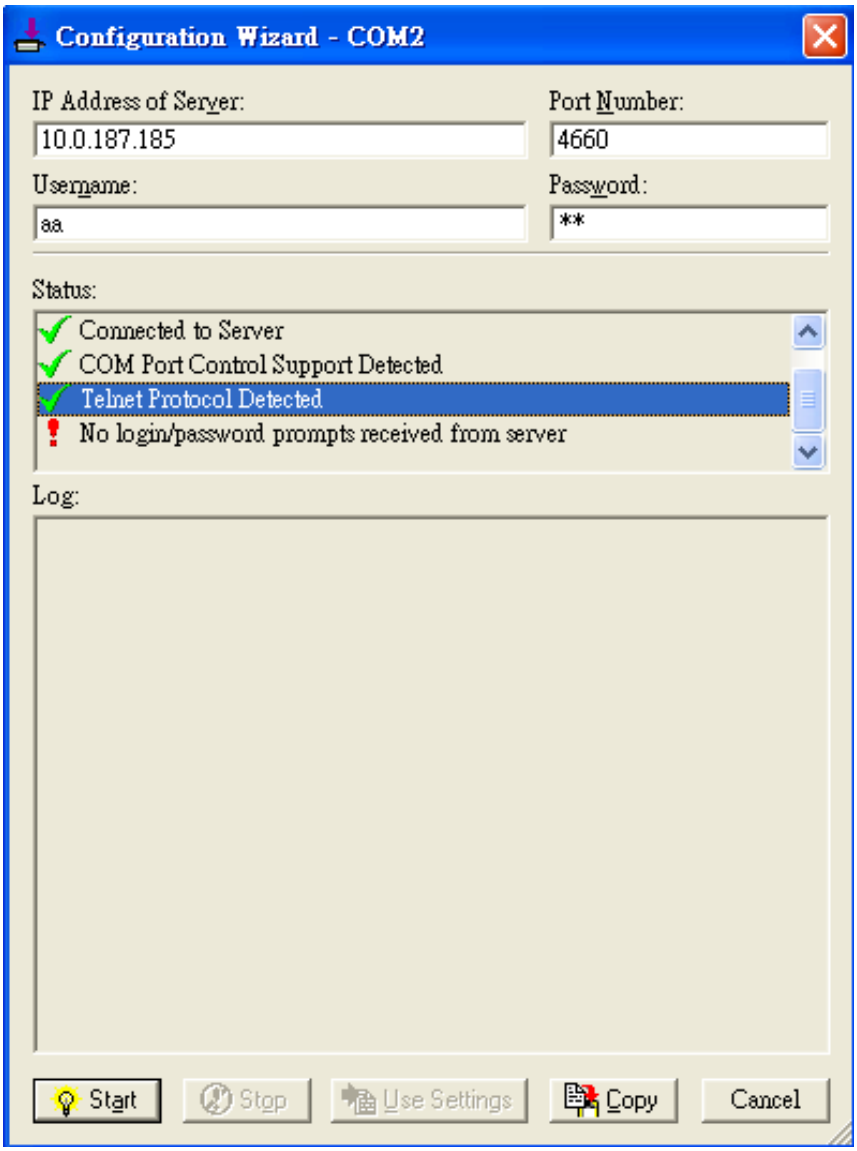


Figure 6.12

If the exclamation mark begins with **No login/password prompts received from server** Figure 6.13, it means credentials in the **Serial/IP** is enabled, but **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

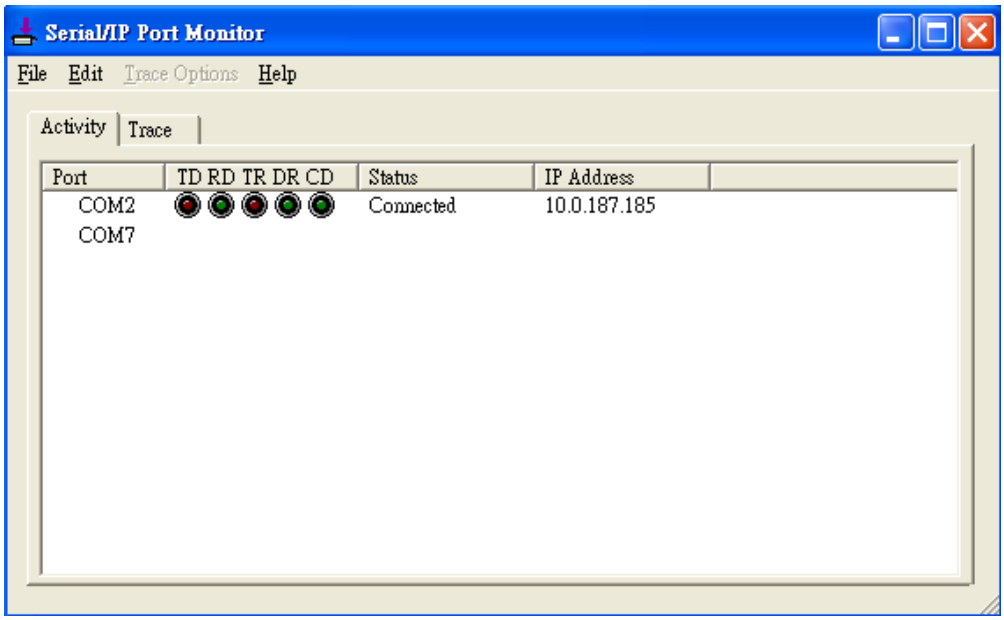


Figure 6.13

The Activity panel provides a real-time display of the status of all Serial/IP COM ports, Figure 6.14. If the Virtual COM Port is open and is properly configured to connect to a serial device server, the status would be **connected.** If Serial/IP cannot find the specified serial device server, the status would be **Offline**.

6.4.3 The Trace Panel

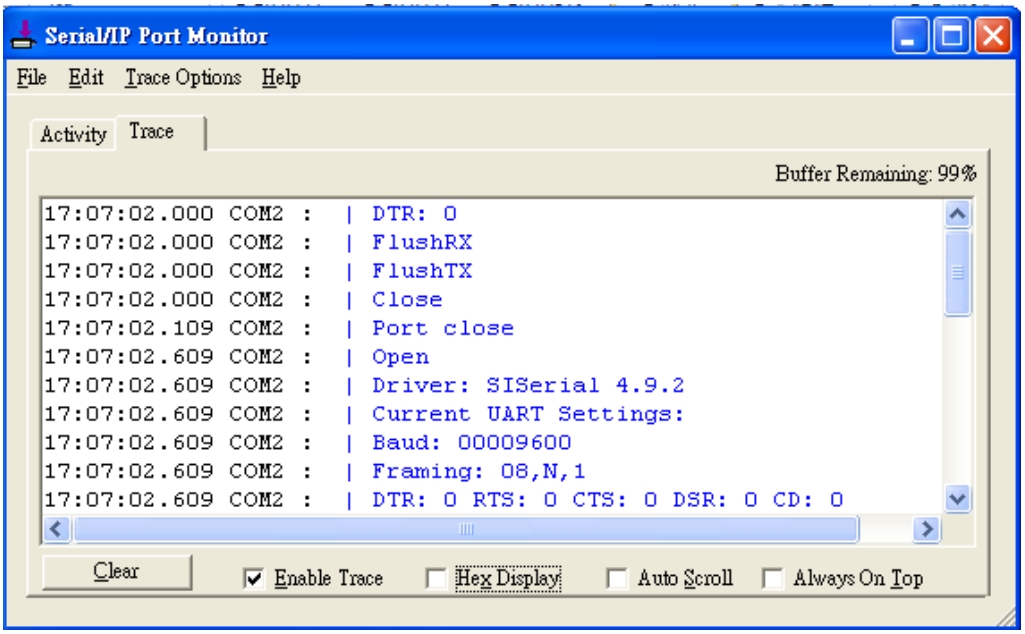


Figure 6.14

The Trace panel provides a detailed, time-stamped, real-time display of all Serial/IP COM ports operations, Figure 6.15. Click on **Enable Trace** to start logging Virtual COM communication. Click on File → Save As and send the log to Antaira technical support for analysis if problems arise with Virtual COM.

6.5 Serial/IP Advanced Settings

In the Serial/IP Control Panel, clicks on the "**Advanced"** button to open Advanced Settings window (Figure 6.16). Click on **Use Default Settings** to load the default settings.

- **Extend Server Connection** Maintains the TCP connection for specified amount of time after COM port is closed
- **Attempt Server Connection** Terminates pending connection attempts if they do not succeed in the specified time
- **Synchronize with Server Upon COM Port Open** Required by NT Systems (2000, XP, Vista, 7)
- **Update Routing Table Upon COM Port Open** Maintains 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** If 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 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 SETXON/SETXOFF feature, please contact Antaira Technical Support.

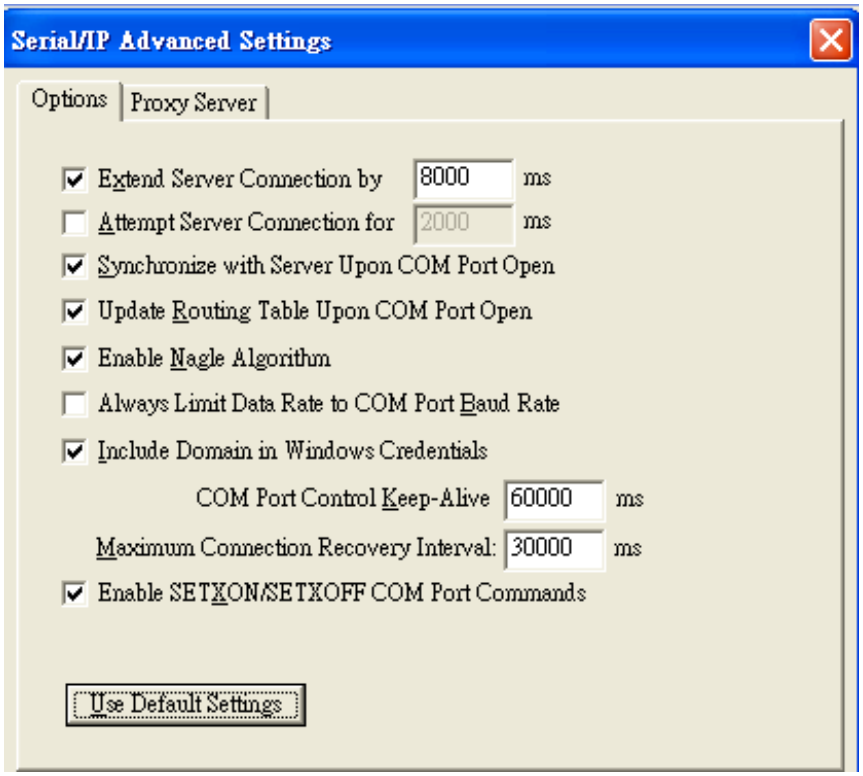

Serial/IP Advanced Settings
Options
Proxy Server
Extend Server Connection by
8000
ms
Attempt Server Connection for
2000
ms
Synchronize with Server Upon COM Port Open
Update Routing Table Upon COM Port Open
Enable Nagle Algorithm
Always Limit Data Rate to COM Port Baud Rate
Include Domain in Windows Credentials
COM Port Control Keep-Alive
60000
ms
Maximum Connection Recovery Interval:
30000
ms
Enable SETXON/SETXOFF COM Port Commands
Use Default Settings

Figure 6.15

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 Proxy Server settings from the Advanced Settings windows and switch to the **Proxy Server** tab, Figure 6.17

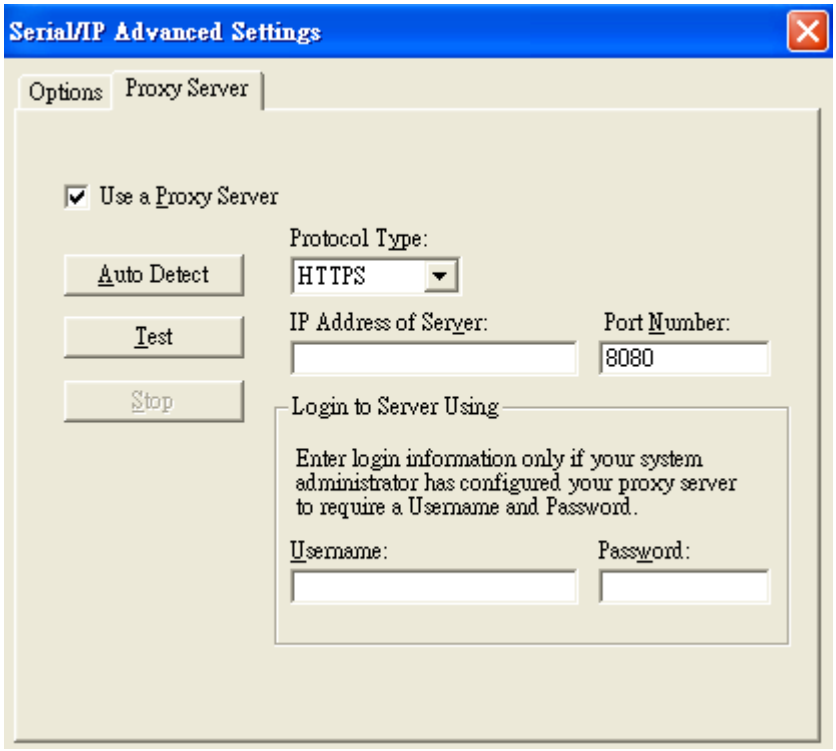


Figure 6.16

7 Specifications

7.1 Hardware

Models

Table 7.1

Name	Serial Port		Ethernet
	DB9	TB5	RJ45
STW-611C or STW-621C	1	1	1
STW-612C or STW-622C	2	--	1

Physical Characteristics

Table 7.2

Housing	Front-Panel	Weight	Dimensions	Installation
IP30 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 or STW-621C)

Table 7.5

COM	Dip	Function	SW	Ω
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 or STW-622C)

Table 7.6

COM	Dip	Function	SW	Ω
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	2T2R MIMO (2xt with MCS 8-15)	802.11b 802.11g 802.11n 802.11a	2.4GHz：2dBi / 5GHz: 3dBi antenna design SMA(R) Female connector

Frequency Range:

Table 7.8

	2.4Ghz	5Ghz
United States (FCC)	2412-2462(20Mhz)	5180-5240, 5745-5825 (20 MHz)
	2422-2452(40Mhz)	5190-5230, 5755-5795(40MHz)
Europe (ETSI)	2412-2472(20Mhz)	5180-5240(20MHz)
	2422-2462(40Mhz)	5190-5230(40MHz)

Data Rate:

Table 7.9

802.11b	1, 2, 5.5 and 11Mbps	
802.11g	6, 9, 12, 18, 24, 36, 48, 54Mbps	
802.11n	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
802.11a/n HT20	MCS0	-82
	MCS1	-79
	MCS2	-77
	MCS3	-74
	MCS4	-70
	MCS5	-66
	MCS6	-65
	MCS7	-64
802.11a/n HT40	MCS0	-79
	MCS1	-76
	MCS2	-74
	MCS3	-71

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

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 ■ EN 300 328 V1.8.1 (2012-06) ■ EN 301 893 V1.7.1 (2012-06)
EMF	■ 47 CFR FCC Part 2 Subpart J, section 2.1091 ■ EN 62311:2008 and EN 50385:2002

Table 7.11

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

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

8 Emergency System Recovery

If the device becomes inaccessible and the management utility cannot find te device, please use the following procedure to recover the device over 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 directly Antaira RMA department for further 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 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 the 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 five more minutes or more.

Important Note

Users can download free TFTP Servers from the following locations:

Solarwinds TFTP Server	http://www.solarwinds.com/products/freetools/free_tftp_server.aspx **Note:** for Solarwinds, please remember to Start the TFTP Server Service, the default is Stop.
TFTPD32 TFTP Server	http://tftpd32.jounin.net/tftpd32.html

9 Warranty

Limited Warranty Conditions

Products supplied by Antaira 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 before shipping the goods to be repaired.
- Within the warranty period, Antaira has the right to provide a refurbish unit or a new one to customer as replacement service.
- Within the warranty period, any repair service, includes any parts and labor are free of charge to the customers.
- After the warranty period, the customer shall cover the cost for parts and labor.

Limited Liability

Antaira Technologies shall not be held responsible for any consequential losses from using Antaira's products.

Warranty

5 Years.

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