# Ethernet-Serial Server

## GW212 / GW215

## User's Manual


**Version 1.3**

**Updated on 2009/05/15**

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Thank you for purchasing GW212/GW215 Ethernet-Serial Server product. This document intends to provide customers with brief descriptions about the product and to assist customers to get started. For detail information and operations of the product, please refer to the product user's manual in the product CD or diskette.

## FCC WARNING

## Class A for Ethernet-Serial Server (Model GW212/GW215)

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and radiates radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expenses.

A shielded-type power cord is required in order to meet FCC emission limits and also to prevent interference to the nearby radio and television reception. It is essential that only the supplied power cord can be used.

Use only shielded cables to connect other devices to this equipment by RS-232 or RS-485/RS-422 ports.

Be cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

# Contents

# 1. Introduction

The GW212/GW215 Ethernet-Serial Server is a gateway between Ethernet (TCP/IP) and RS-232 or RS-485/RS-422 communications. The information transmitted by GW212/GW215 is transparent to both host computers (Ethernet) and devices (RS-232 or RS-485/RS-422). Data coming from the Ethernet (TCP/IP) is sent to the designated RS-232 or RS-485/RS-422 port and data being received from RS-232 or RS-485/RS-422 port is sent to the Ethernet (TCP/IP) transparently.

In the computer integration manufacturing or industrial automation area, the GW212/GW215 Ethernet-Serial Server is used for field devices to direct connect to Ethernet network. Terminal Server (main control program run in GW212/GW215) transforms whatever data received from RS-232 or RS-485/RS-422 to TCP/UDP port then connect devices to the Ethernet network via a single application program or multiple application programs.

Many control devices provide the ability to communicate with hosts through RS-232 or RS-485/RS-422 however RS-232 or RS-485/RS-422 serial communication has its limitations. For one, it is hard to transfer data through a long distance. With GW212/GW215, it is possible to communicate with a remote device in the Intranet environment or even in the Internet and thus, increases the communication distance dramatically.

GW212/GW215 offers one RS-232 or RS-485/RS-422 port, one RJ45 Ethernet and Watch-Dog Timer etc.

## 1.1 Packaging

Please check your package contains the following items:

◎ GW212 or GW215 Serial Device Server

◎ Quick Install Guide

◎ For GW212 (RS232) Model Only: AC/DC Power Adapter

◎ Product CD

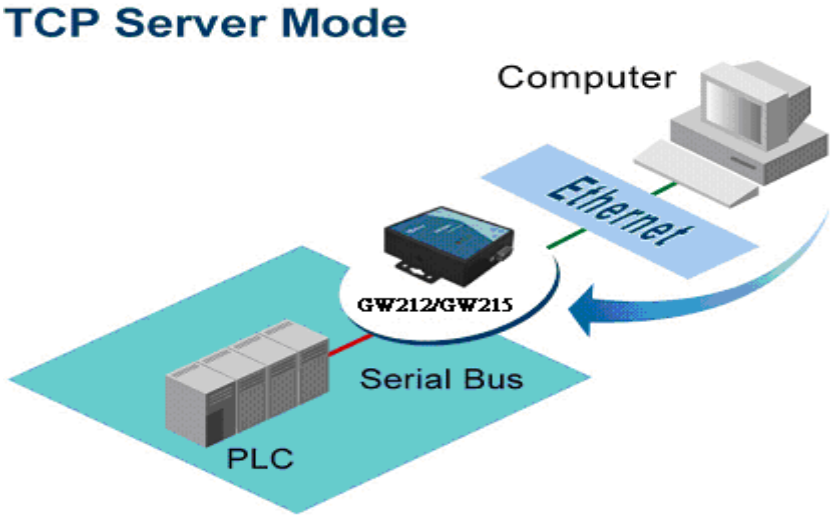
◎ Wall mounting screws

◎ Optional Items：

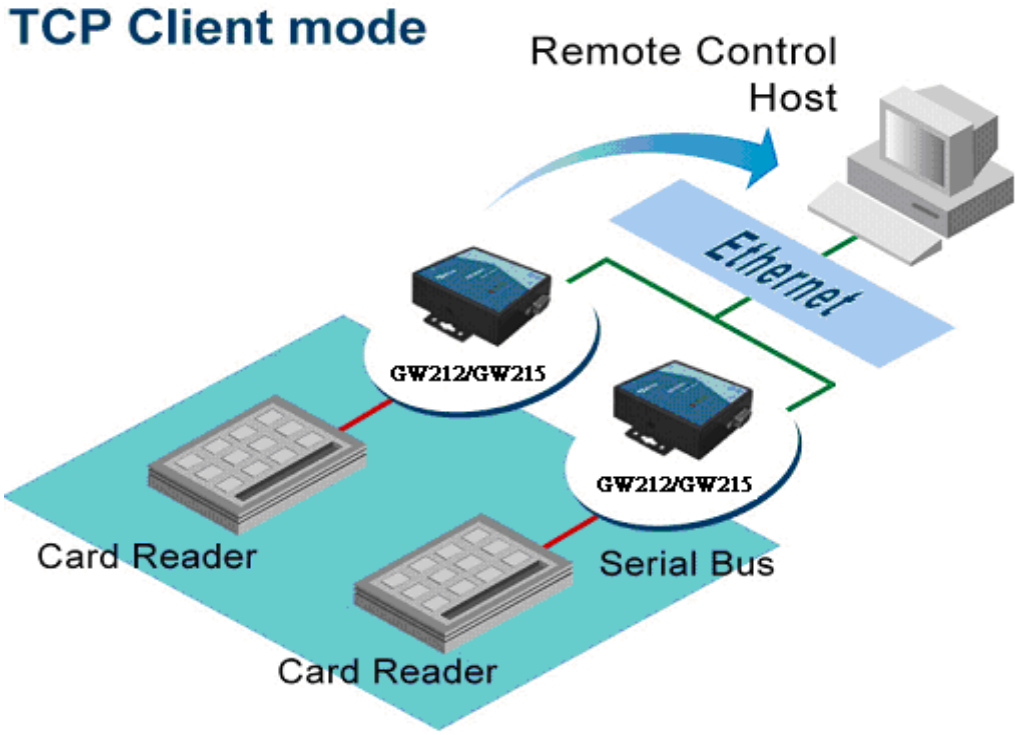
1. Model No: AC24VT (110V AC to 24V DC Power Adapter for use with Terminal Block)
2. Model No: Din-Rail-Kit (for use with GW212/GW215 DIN Rail Mounting)

## 1.2 Application Connectivity

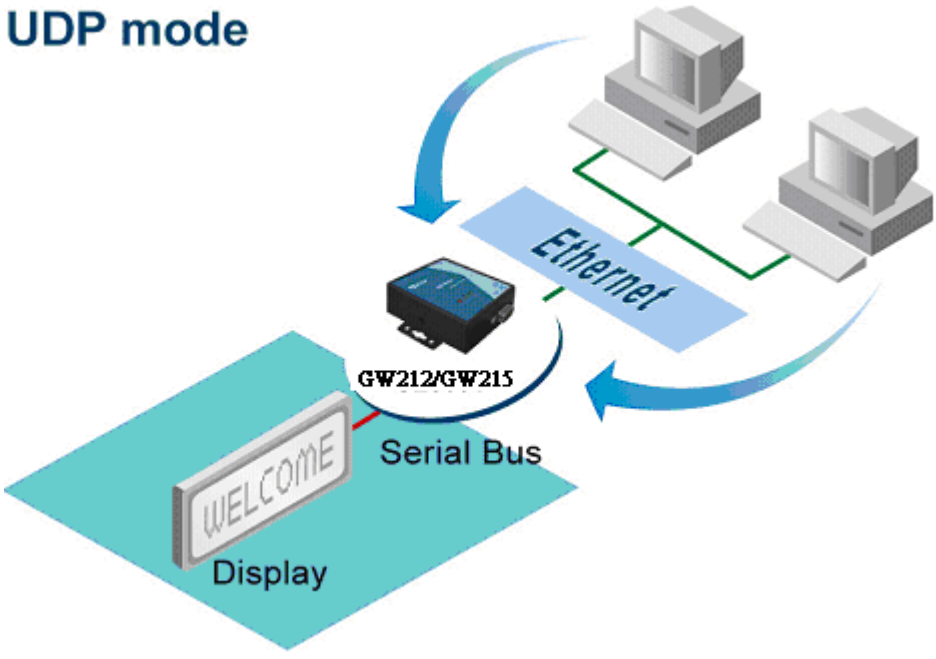
**TCP Server Mode**：GW212/GW215 can be configured as a TCP server on TCP/IP Network to wait for other applications (clients) in host computer to establish a connection with the serial device. After the connection is established between serial device and host computer, data can be transmitted in both directions.



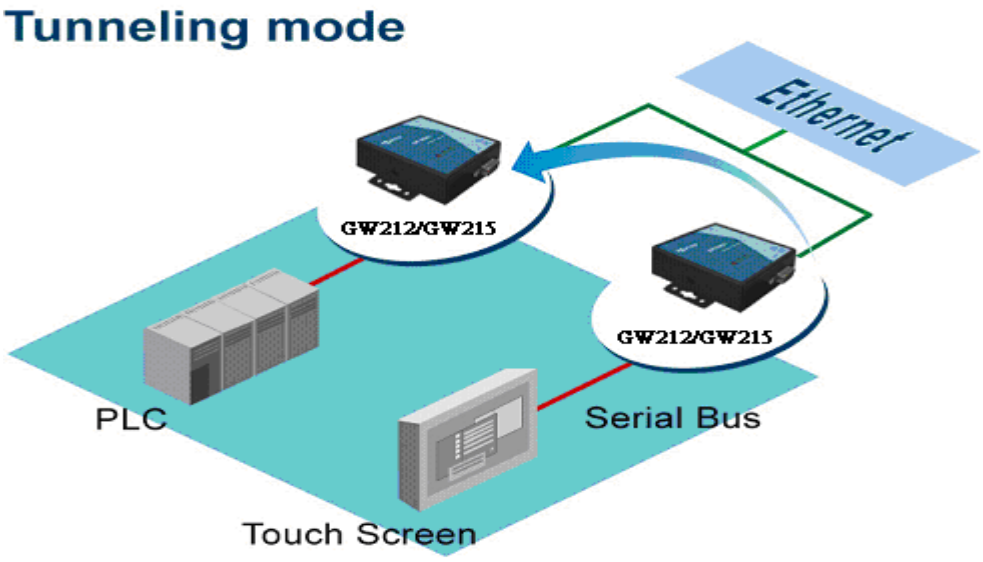
**TCP Client Mode**：GW212/GW215 can be configured as a TCP client on TCP/IP Network to actively establish a connection with other applications (server) in host computer. After the connection is established, data can be transmitted between serial device and host computer in both directions.




**UDP Mode**：UDP is a faster but non-guaranteed datagram delivery protocol. GW212/GW215 can be configured as a UDP mode on TCP/IP Network to establish a connection using unicast or broadcast data from the serial device to one or multiple host computers. Vice versa is also true.



**Tunneling Mode :** In the case of the serial connection is established with two or more GW212/GW215 to send data over TCP/IP Network .It can avoid RS-232 interface 15 meter distance limitation imposed.




# 2. Hardware Setup

**NOTE:**

1. **GW212** (for RS-232), **GW215** (for RS422/485). Panel layout in Appendix A.3.1
2. You can press the reset button of GW212/GW215 to reset the settings to the default value

Figure 2.1 shows the names of GW212/GW215 components. In the figure, the indicated switch settings represent factory settings.

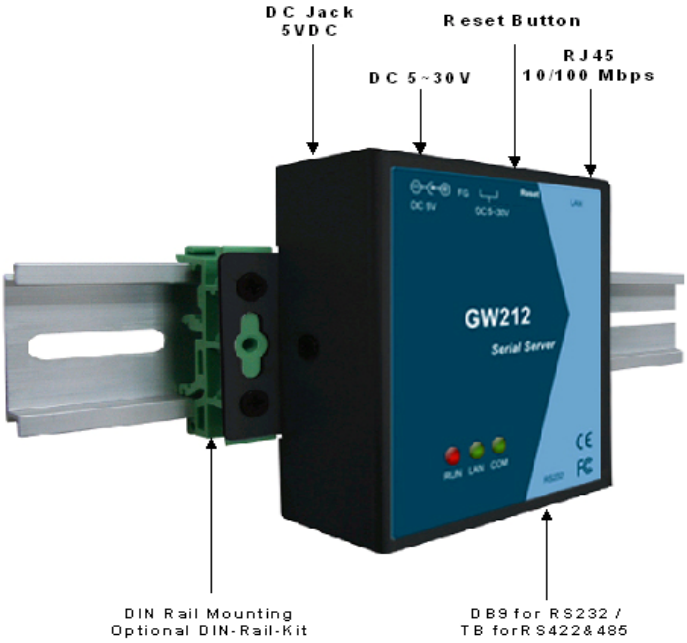



Figure 2.1. GW212/GW215 DIN-Rail Mounting

## 2.1 LED Indicators:

### 2.1.1 LAN LED

| Message | Description |
|---|---|
| Off | Ethernet Disconnected |
| Blinking with Green | Data is transmitting on Ethernet for 100Mbps |
| Blinking with Orange | Data is transmitting on Ethernet for 10Mbps |

**Table 1. LAN LED Message**

### 2.1.2 COM Port LED

| Message | Description |
|---|---|
| Off | No data is transmitting on COM port |
| Blinking | Data is transmitting on COM port |

**Table 2. COM Port LED Message**

### 2.1.3 RUN LED

| Message | Description |
|---|---|
| On | Jumper JP1 Pin1 and Pin2 are shorted to disable AP firmware running |
| Blinking (rate: 0.5 Sec) | AP firmware is running normally |

**Table 3. RUN LED Message**

## 2.2 Installation Procedures:

**Step 1**: Connect GW212/GW215 to power source using 5V DC Jack (DC Adapter included) or 24V DC Terminal Block.

**Note：GW212/GW215 provide two power inputs can be connected simultaneously to live DC power sources. Anyone of the power inputs fails, the other live source acts as a backup to support power needs automatically. The redundant dual DC power inputs give you extra assurance of non-stop operation.**

**Step 2**: Connect GW212/GW215 to your Ethernet network. Use a standard straight-through Ethernet cable when you connect it to a hub/switch, or connect to PC's Ethernet port directly via a cross-over Ethernet cable for easy set up. However, in this case you need to make sure your PC is in the same network sub-net as GW212/GW215.

**Step 3**: Connect GW212/GW215's serial port to a serial device.

**Step 4**: Mounting options. GW212/GW215 can be mounted via wall/panel (Mounting screws included) or Din-Rail rack (Require optional item model: Din-Rail-Kit).

# 3. Software Setup

GW212/GW215 Ethernet-Serial Server is shipped with default settings shown in the following table:

| Property | Default Value |
|---|---|
| IP Address | **10.0.50.100** |

| | |
|---|---|
| Gateway | **10.0.0.254** |
| Subnet Mask | **255.255.0.0** |
| User Name | **admin** |
| Password | **Null(leave it blank)** |
| COM 1 | 9600,None, 8, 1, No flow control, buffer disabled, packet delimiter timer 2ms |
| Link 1 | Type: TCP Server, Listen port 4660, Filter=0.0.0.0, Virtual COM disabled |
| SysName of SNMP | name |
| SysLocation of SNMP | location |
| SysContact of SNMP | contact |

## 3.1 Configuration by monitor.exe utility

### 3.1.1.Static IP

Use **monitor.exe** that comes with product CD to configure the network parameters of GW212/GW215. Please click "**Config**" button(ref Figure 3.1) then give it a static IP information.(ref Figure 3.2)

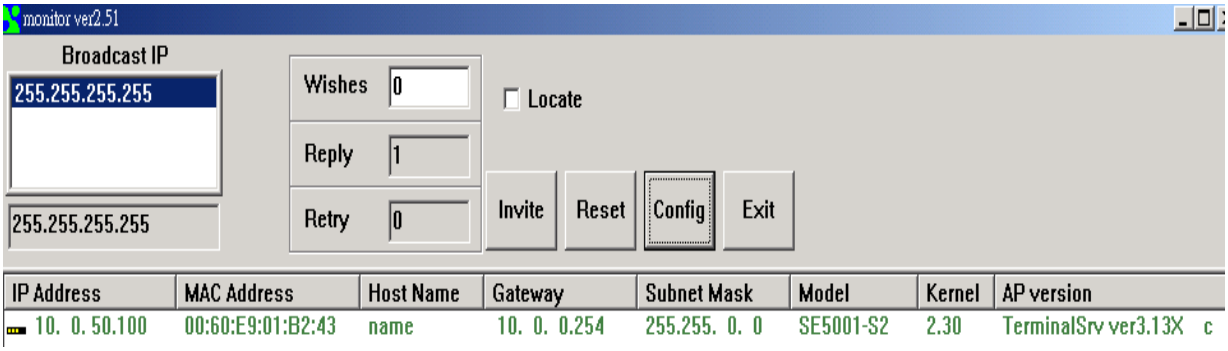



Figure 3.1. Configure by monitor.exe utility

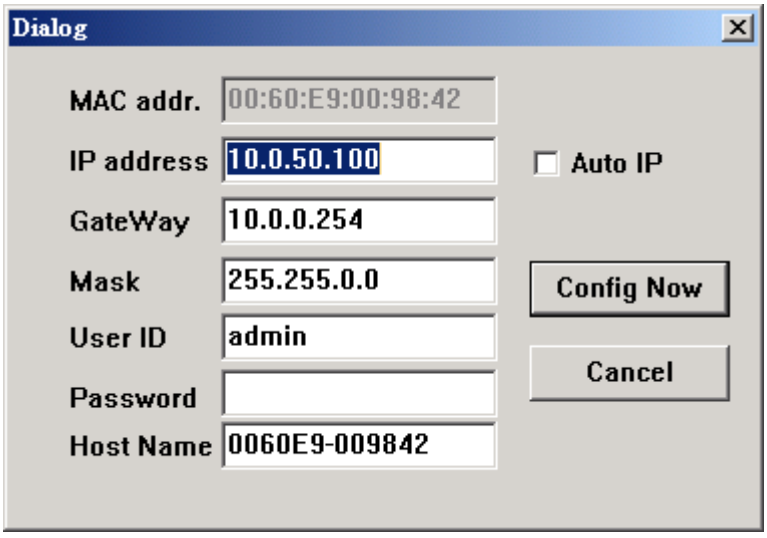



Figure 3.2 Static IP setup dialog window

### 3.1.2 Auto IP (Dynamic IP):

A DHCP server can automatically assign the IP address and network settings. GW212/GW215 supports the DHCP function. By default, the DHCP function on GW212/GW215 is disabled; you can

use Monitor.exe software to search network information automatically by following steps：

->Execute Monitor.exe(ref Figure 3.1)

->Click on the IP address of GW212/GW215 in monitor

->Click "***Config***" button(It will pop-up Dialog Window)

->Check "***Auto IP***" (ref Figure 3.3)

->Click " ***Config Now***" button(The GW212/GW215 will restart and get IP from DHCP server automatically)

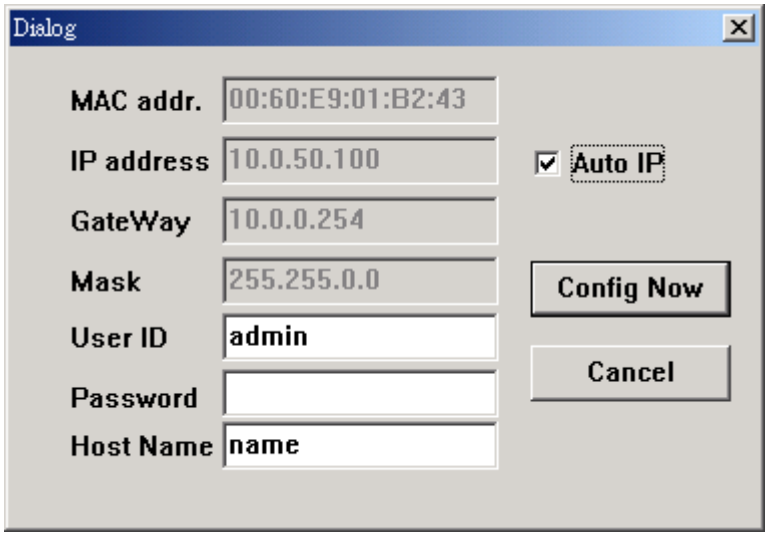



Figure 3.3. monitor.exe Auto IP Dialog Window

## 3.2 Configuration by Telnet utility:

GW212/GW215 can be configured via Telnet utility by following steps：

### 3.2.1 Login to the system

**->**Open Ms-DOS command prompt window

**->**Telnet to GW212/GW215 using command "**Telnet IP_address**".( For example：Input **Telnet 10.0.50.100** in Ms-DOS command prompt window).After telnet to GW212/GW215, system prompts for a password, the default password is left it blank. (ref Figure 3.4)


Figure 3.4 Login to the system

**Note:** Password can be reset to default value by press the deafault button of GW212/GW215.You can press the default button of GW212/GW215 to reset the password to the default value.

1. After verifying the password, the following terminal screen appears. (ref Figure 3.5)

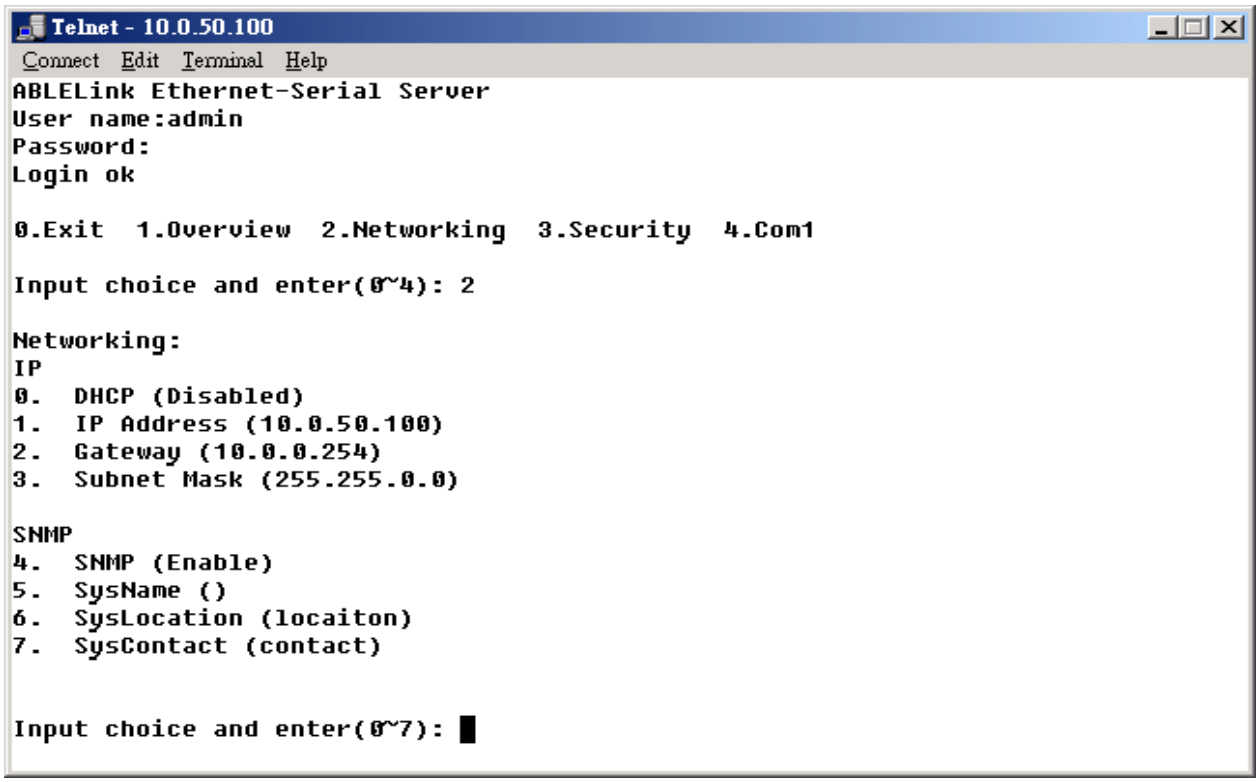



Figure 3.5 Main menu

**Notes:**

1. If GW212/GW215 does not receive any command within 1 **minute**, Telnet will be terminated automatically.
2. The changes of networking parameters will take effect only when you exit and restart GW212/GW215.

**->**Select "**1**" from "***Input choice and enter (0~4):***" to enter overview page as following: (ref Figure 3.6)

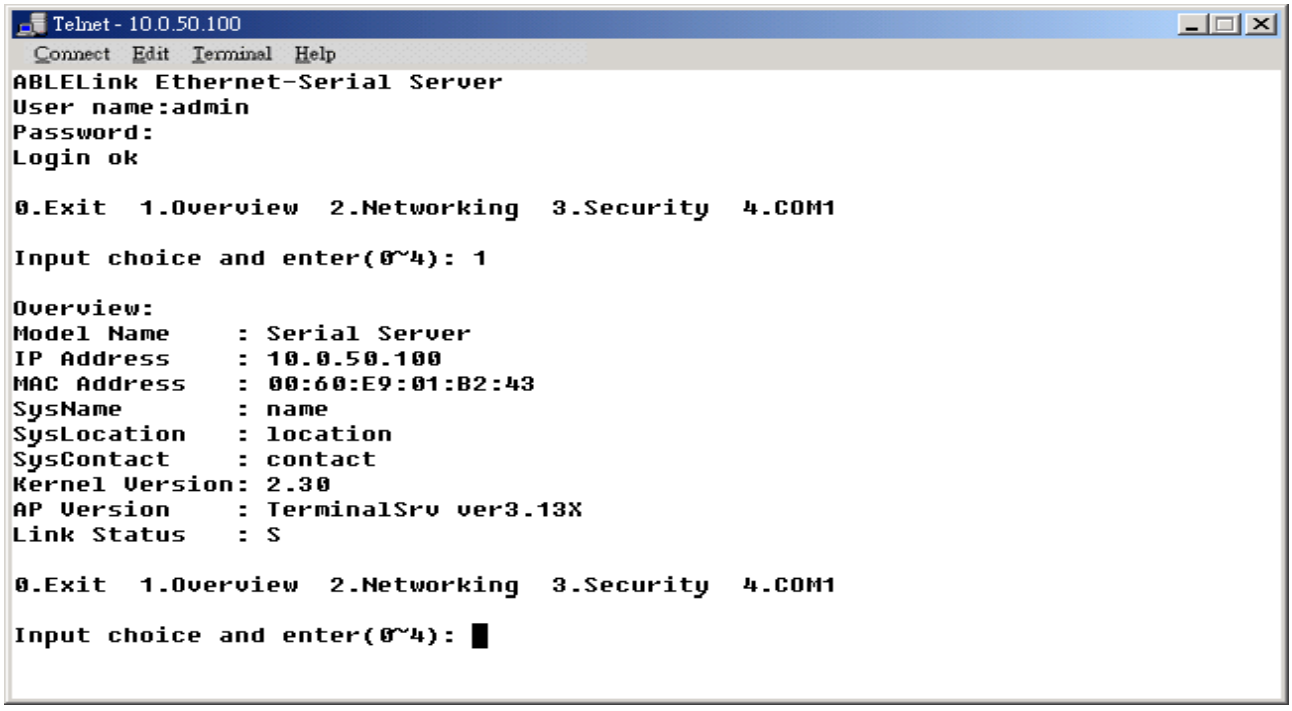



Figure 3.6 Overview

This page gives you the general information of GW212/GW215 including IP and MAC address, SNMP

information, kernel and AP version, and connection status of the device.

### 3.2.2 Networking

Select "**2**" from "***Input choice and enter (0~4)***:" to enter Networking page as following: ( ref Figure 3.7)

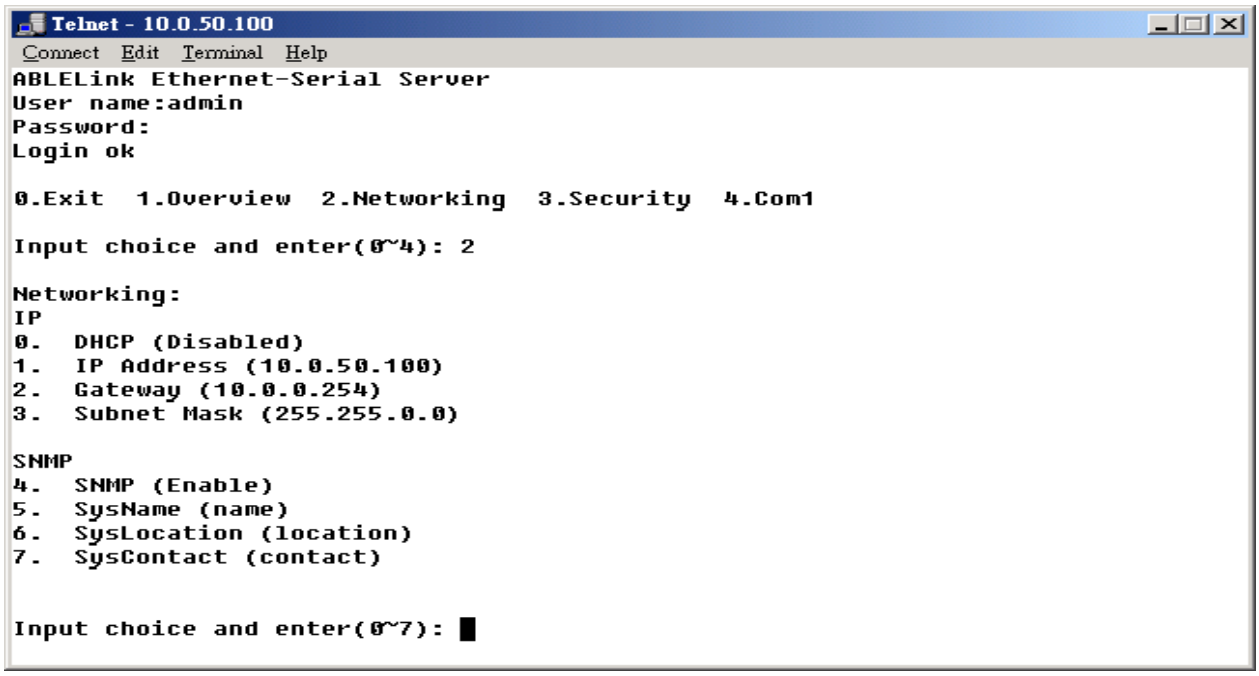



Figure 3.7 Network settings

This page allows you to change network settings of the device including IP address, subnet mask, gateway IP address and SNMP information of GW212/GW215. Please notice that any setting change made on this page won't take effect until you restart the device.

**Notes:** Press "***ESC***" key to return to the previous menu.

### 3.2.3 Change the password

1. Select "***3***" from "***Input choice and enter (0~4):***" the following screen appears. (ref Figure 3.8)

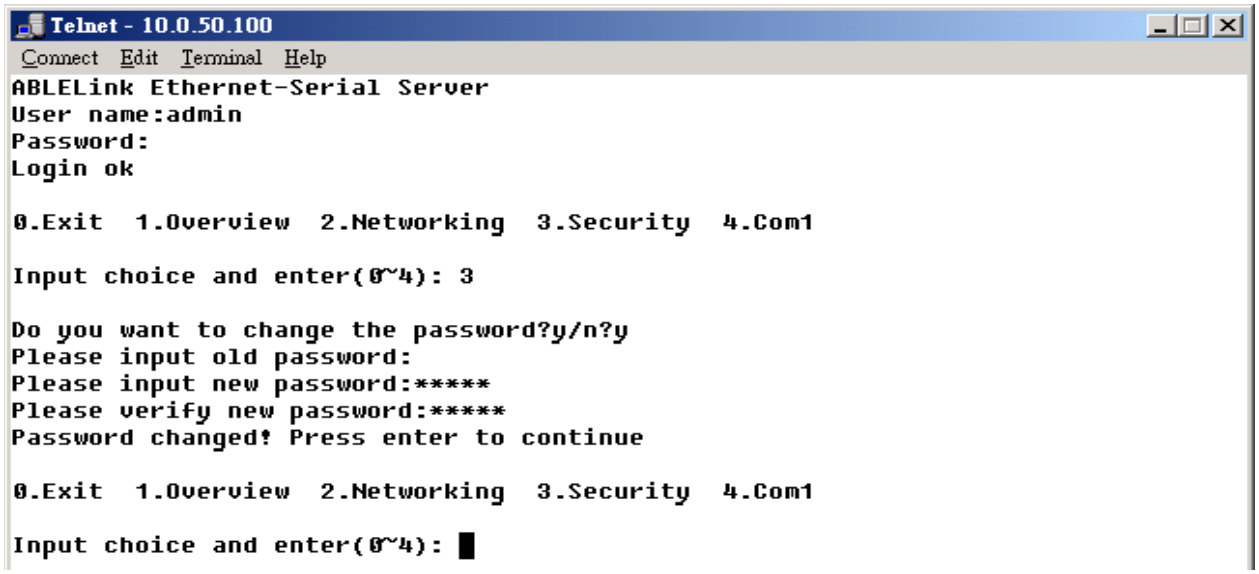



Figure 3.8 change the password

2. If you want to change the password, please type the old password in the "***Please input old password***" field, type the new password in the "***Please input new password***" and the "***Please verify new password***" fields.

**Note:** Password can be reset to default value by press default key.

### 3.2.4 COM1 Setup

Select "**4**" from "***Input choice and enter (0~4):***" the following screen appears: (ref Figure 3.9)

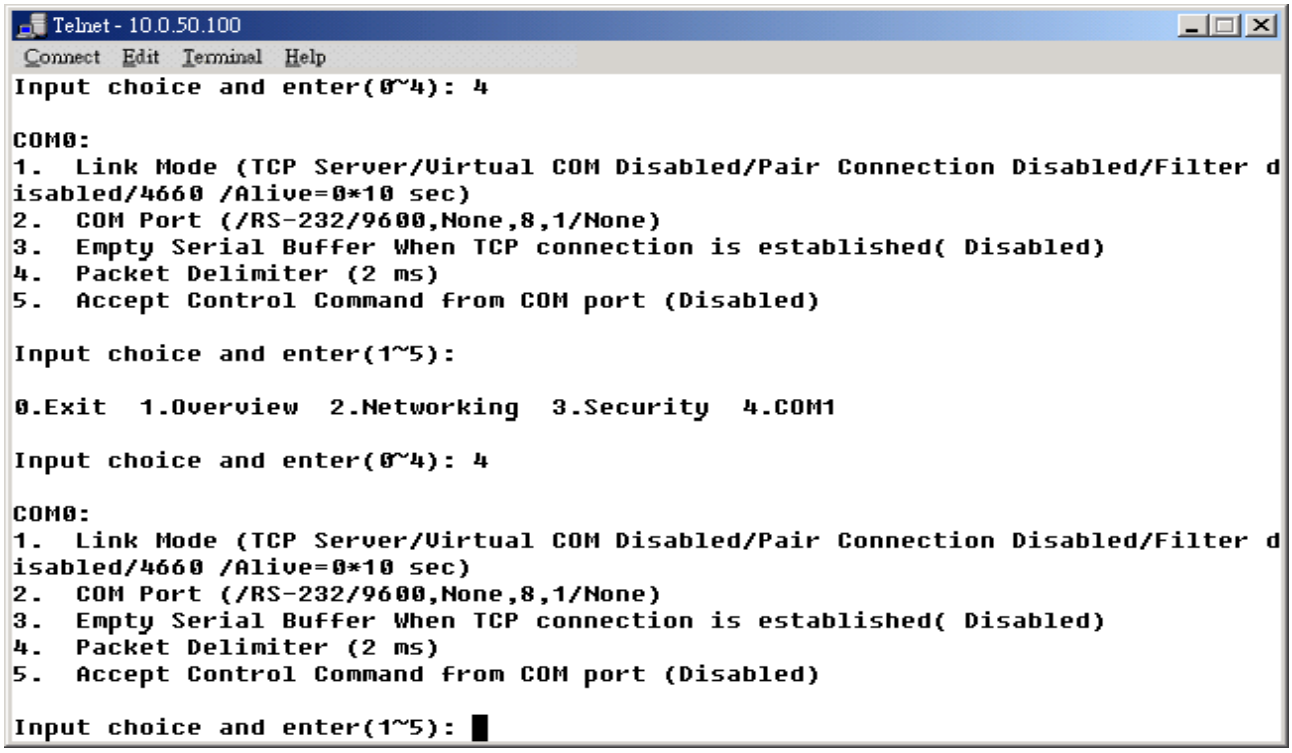



Figure 3.9 Com1 setup

The page gives you the opportunity to configure parameters of COM1 setting which include COM1 working mode, port parameters, enabling or disabling serial buffer's data and setting packet delimiter.

LINK Mode Setup **Configure GW212/GW215 as TCP server:** (ref Figure 3.10)

->Type **1** from "***Input choice and enter (1~4):***" of COM1

➔ Type **1** in the "***Input choice(1~5) and enter：***"

➔ Input local port in the "***Please input local port：***"

1. **If you want to enable IP filter：**

➔ Input **y** in the "***Do you want to enable IP filter(y/n)?***"

➔ Input source IP in the "***Please input Filter_IP ："***

➔ Double click "***Enter***" key

2. **If you don't want to enable IP filter：**

➔ Input **n** in the "***Do you want to enable IP filter(y/n)?***"

➔ Double click "***Enter***" key

➔ Input idle time in "***Please input idle time to send TCP alive packet(4*10sec)：***"(If you input **2**->the sending TCP keep alive packet period will be change to 2*10 sec)

**Notes:**

1. IP filtering function is disabled if setting FILTER_IP to "0.0.0.0".

2. IP filter is disabled by default
3. If IP filter is enabled, only source IP assigned can connect to GW212/GW215.

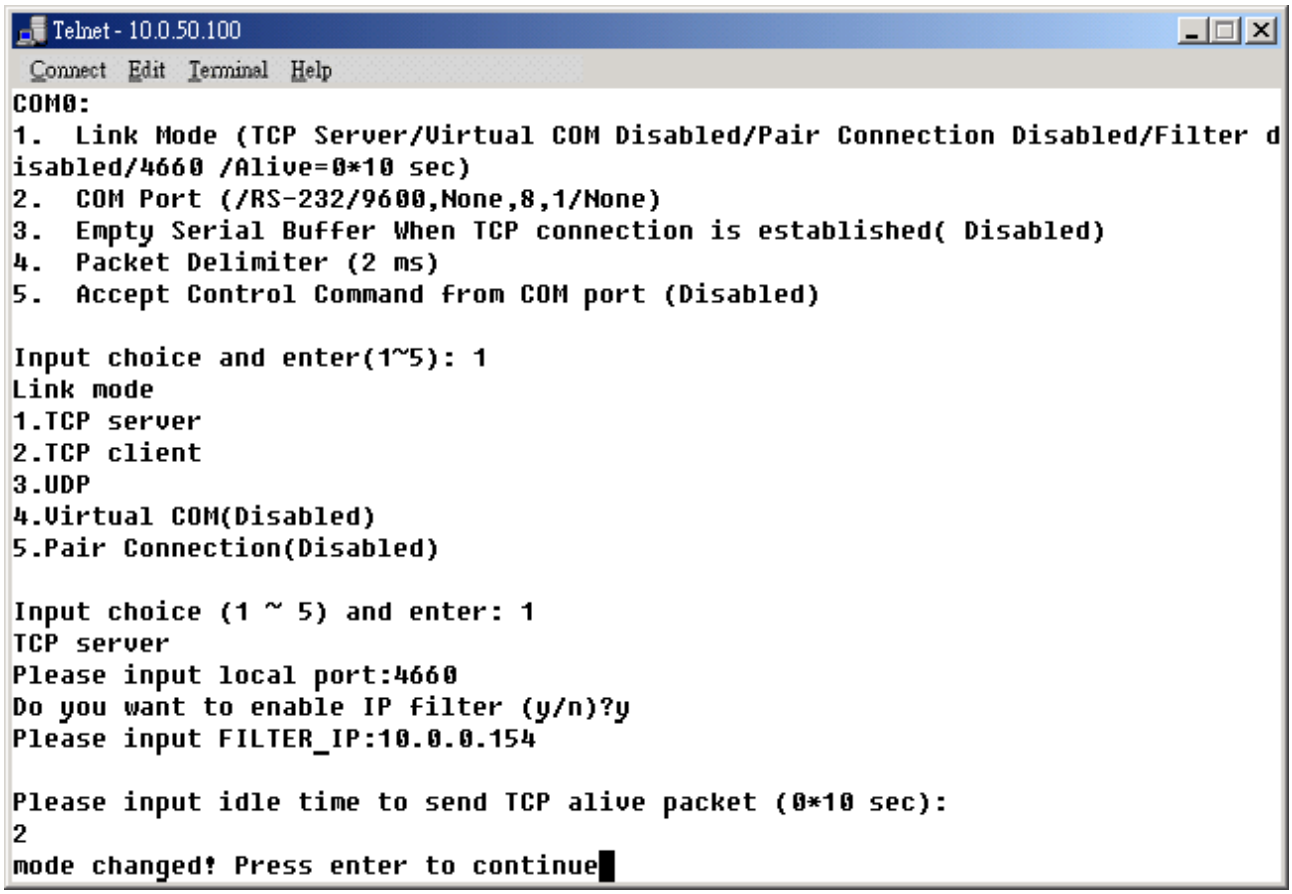



Figure 3.10 Link Mode-TCP server setup

### 3.2.5 Configure GW212/GW215 as TCP client：

➔ Type **2** in the "***Input choice(1~5) and enter：***"(ref Figure 3.11)

➔ Input destination IP in the "***Please input Destination IP：***"

➔ Input destination port in the "***Please input Destination port：***"

1. Type **1** for Connected always：

➔ Double click "***Enter***" key

➔ Input idle time in "***Please input idle time to send TCP alive packet(4*10sec)：***"(If you input **2**->the sending TCP keep alive packet period will be change to 2*10 sec)

2. Type **2** for Trigger by receiving COM port data：

➔ Input idle time to disconnect in the "***Please input idle time to disconnect(0sec , 1~255)：***" (If you input **0**->disable the function; if you input **2** ->the serial Inactivity beyond 2 sec will cause disconnect)

➔ Input error retrying time in "***Please input waiting time for error retrying(0 minute,1~255)：***" (If you input **0**->disable the function; if you input **2** ->It will retry to establish the connection per 2 minutes)

➔ Double click "***Enter***" key

➔ Input idle time in "***Please input idle time to send TCP alive packet(4*10sec)：***"(If you input **2**->the sending TCP keep alive packet period will be change to 2*10 sec)

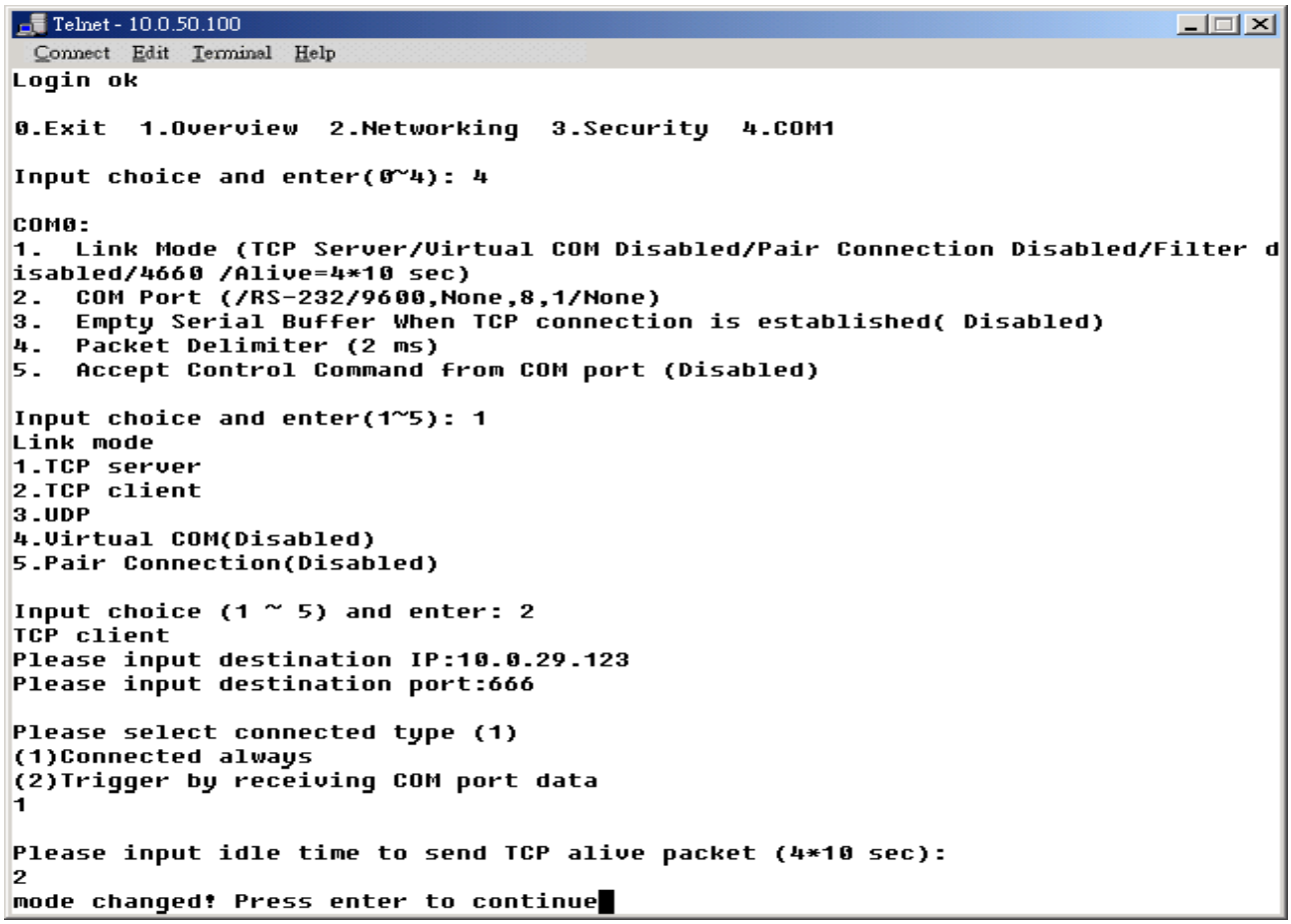



Figure 3.11 Link Mode-TCP client setup

### 3.2.6 Configure GW212/GW215 as UDP client：

For example the local port is 4660, the destination IP is 10.0.29.254, destination port is 666.(ref Figure 3.12)


Figure 3.12 Link Mode-UDP client setup

### 3.2.7 COM port setting

Type **2** from "***Input choice and enter (1~4):***" of COM1, the following screen appears, you can then give the COM port alias name, set the baud rate and parity, determine number of data bit and stop bit, and decide if you want to use flow control and the type of flow control you want to use.(ref Figure 3.13)

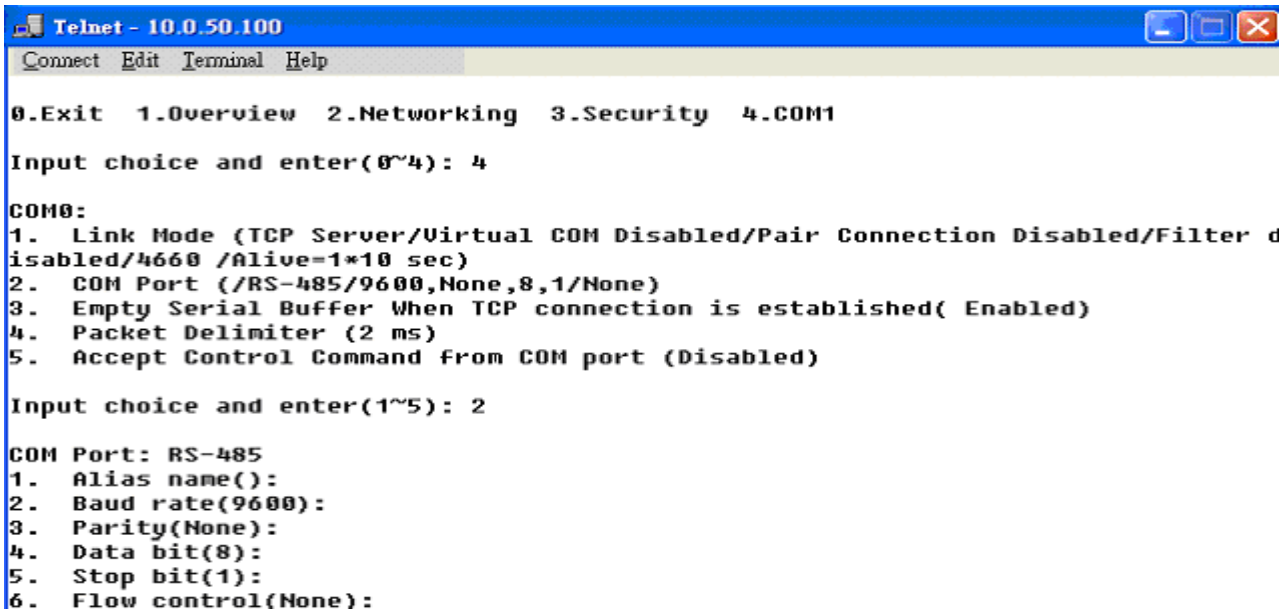



Figure 3.13 Com port setting

### 3.2.8 Enabling serial data buffer

Type **3** from "***Input choice and enter (1~4):***" of COM1, by default COM port serial data buffer is enabled meaning that when TCP/IP Ethernet connection is broken, serial data collected from serial device will be empty in GW212/GW215 once TCP/IP connection is resumed, the serial data will be sent through Ethernet connection, you can disable it if you wish.(ref Figure 3.14)

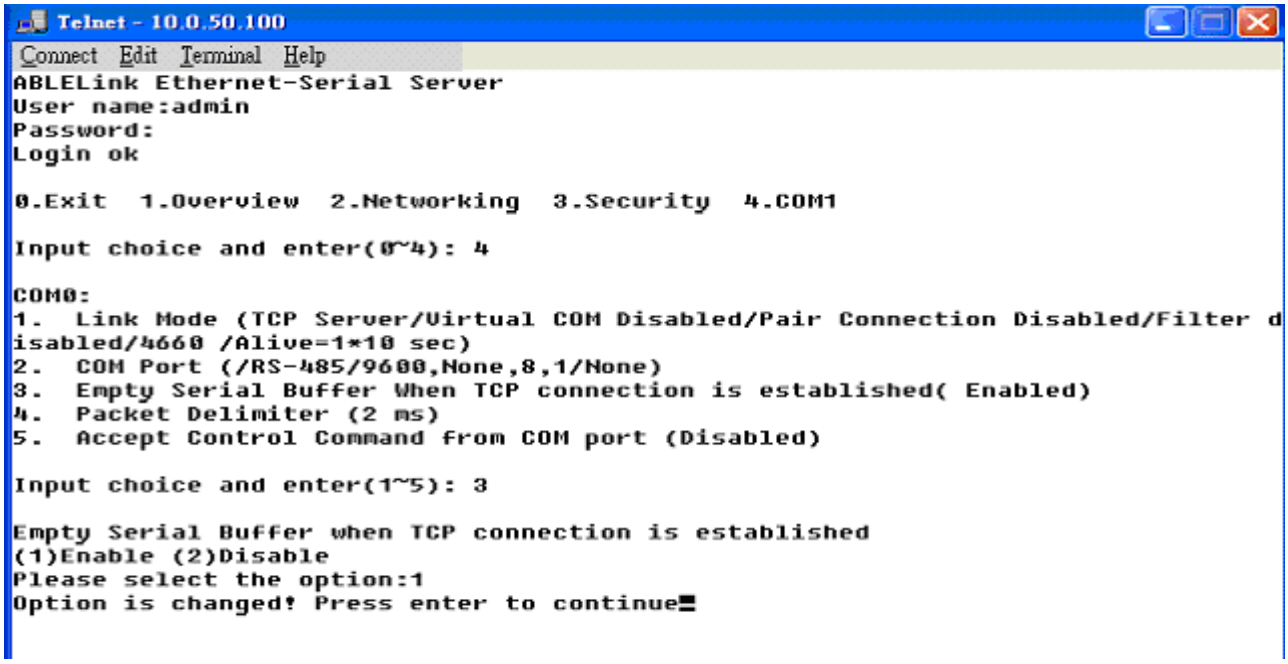



Figure 3.14 Com port-Enabling serial data buffer

### 3.2.9 Setting packet delimiter

Packet delimiter is a way of controlling packets within serial communication. It can prevent packets from being cut thus keep the packets complete. GW212/GW215 provides two ways of parameter setting as inter

character timer and terminator. By default packet delimiter timer is 1 ms, you can change timer shown in the following figure: (ref Figure 3.15)

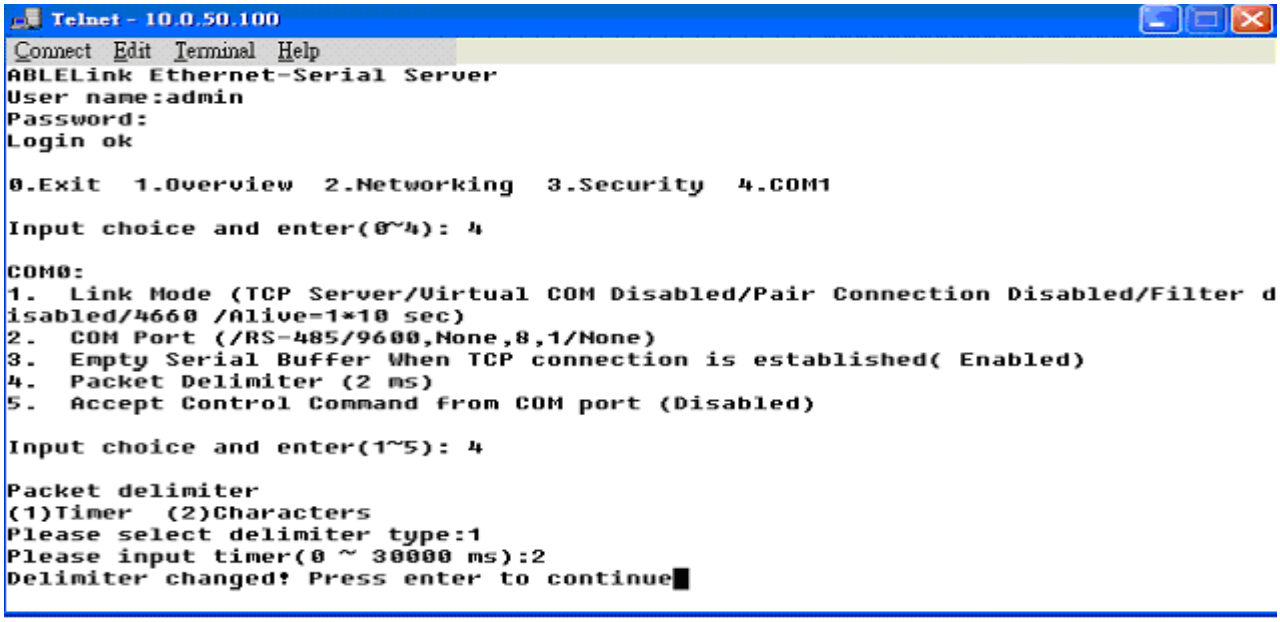



Figure 3.15 Setting packet delimiter timer

You can also choose character pattern as the packet delimiter indicated in the following figure: (ref Figure 3.16)

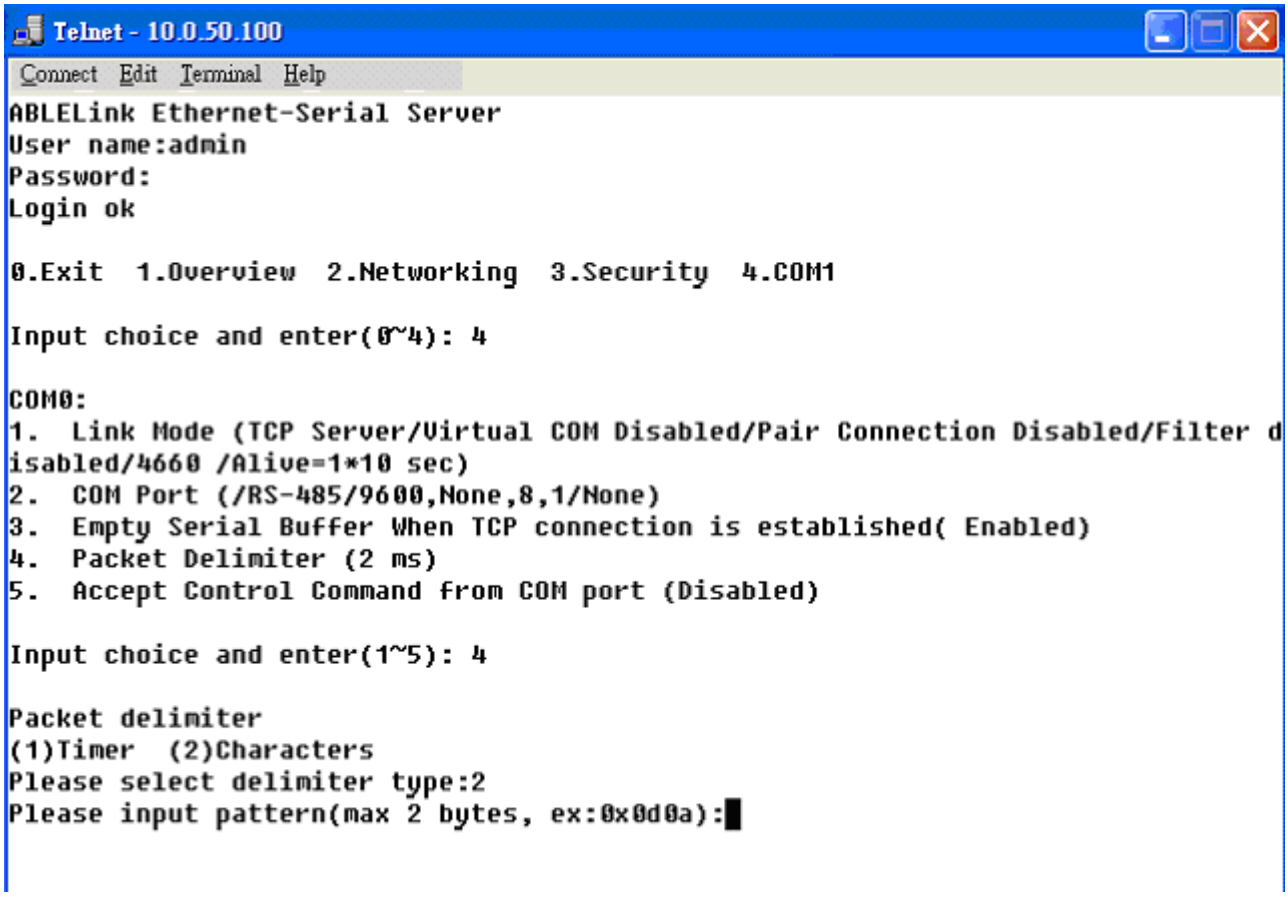



Figure 3.16 Setting packet delimiter-character pattern

### 3.2.10 Accept Control Command from COM port：

GW212/GW215 can also accept serial control commands directly over the network following RFC2217 format. For more detail about this function, please contact Technical Support for more information.

## 3.3 Configuration Using Web Browser

1. Make sure your PC is located on the same network sub-net as GW212/GW215
2. Open a web browser, then type in the IP address of GW212/GW215 to be configured. Default user name is **admin** and default password is **null (leave it blank)**.
3. GW212/GW215's network, link mode and COM ports settings can be configured in different web pages.
4. Click "***Save Configuration***" to save settings.
5. Click "***Restart***" button to make the change effective if necessary.

It is also possible to modify various settings through the web server interface. To do so, please follow the steps below.

### 3.3.1 Log in to the system

1. From web browser, type in the IP address of GW212/GW215 in the URL.

   **Example: http://10.0.50.100**

2. The following authentication screen appears. (ref Figure 3.17) Please type in user name and password then click on OK. The user name is admin and password is left it blank by default.

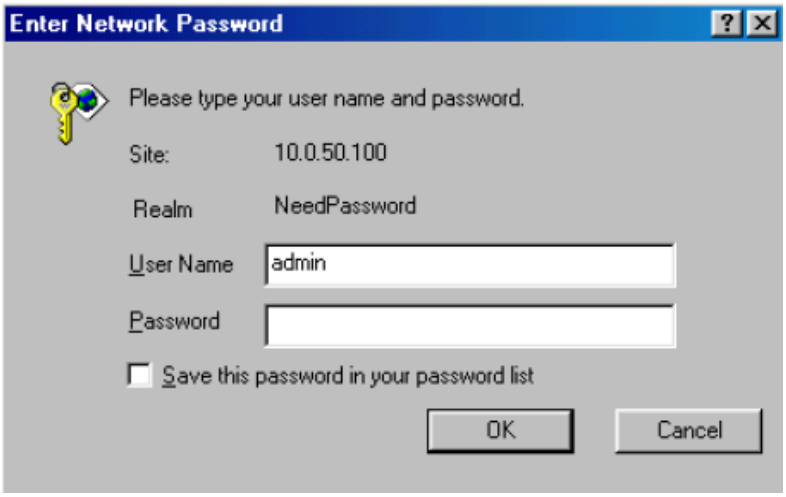



Figure 3.17 login the system via Web

3. The following overview page appears.(ref Figure 3.18)

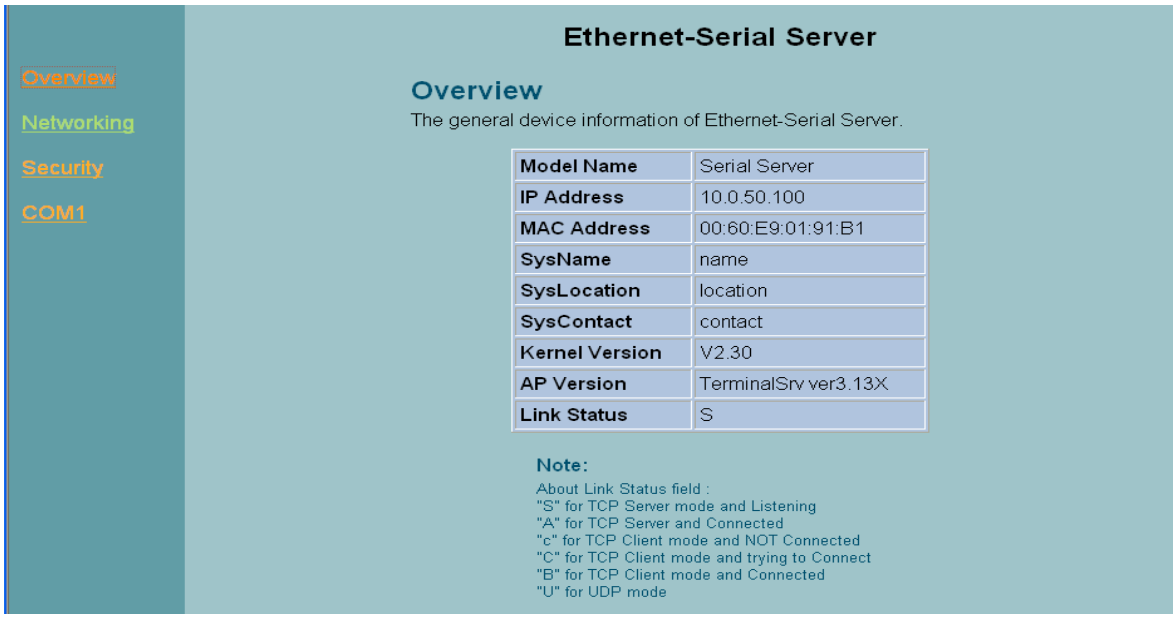



Figure 3.18 Overview

### 3.3.2 Change the password

1. Click on the "***Security***" link and the following screen appears.(ref Figure 3.19)

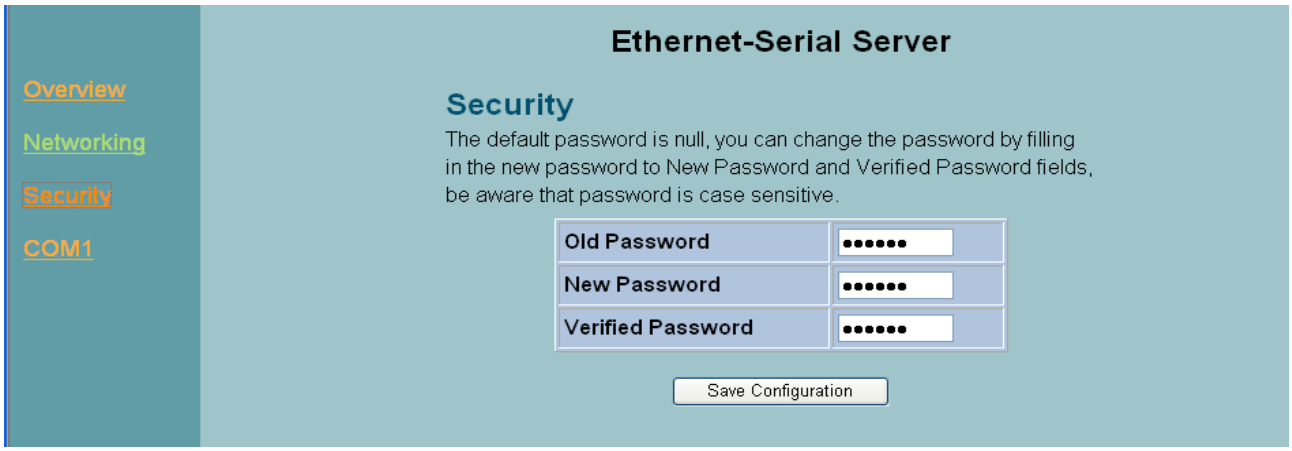



Figure 3.19 Change the password

2. Please input the old password in the "***Old Password***" field, input the new password in the "***New Password***" and the "***Verified Password***" fields, and then click on "***Save Configuration***" to update the password.

   **Note:** You can press the default key of product to reset password to the default value.

### 3.3.3 Network setup

Click on the ***"Networking"*** link and the following screen appears. Fill in IP information under TCP/IP field. Alternatively, you can do the configuration by clicking on DHCP to obtain auto IP address, gateway and subnet mask information.

Enable SNMP by checking "***Enable***", fill in network identification information under SNMP field and click on the "Save Configuration" button to save the changes, please notice that the setting will not become effective until you restart GW212/GW215.(ref Figure 3.20)

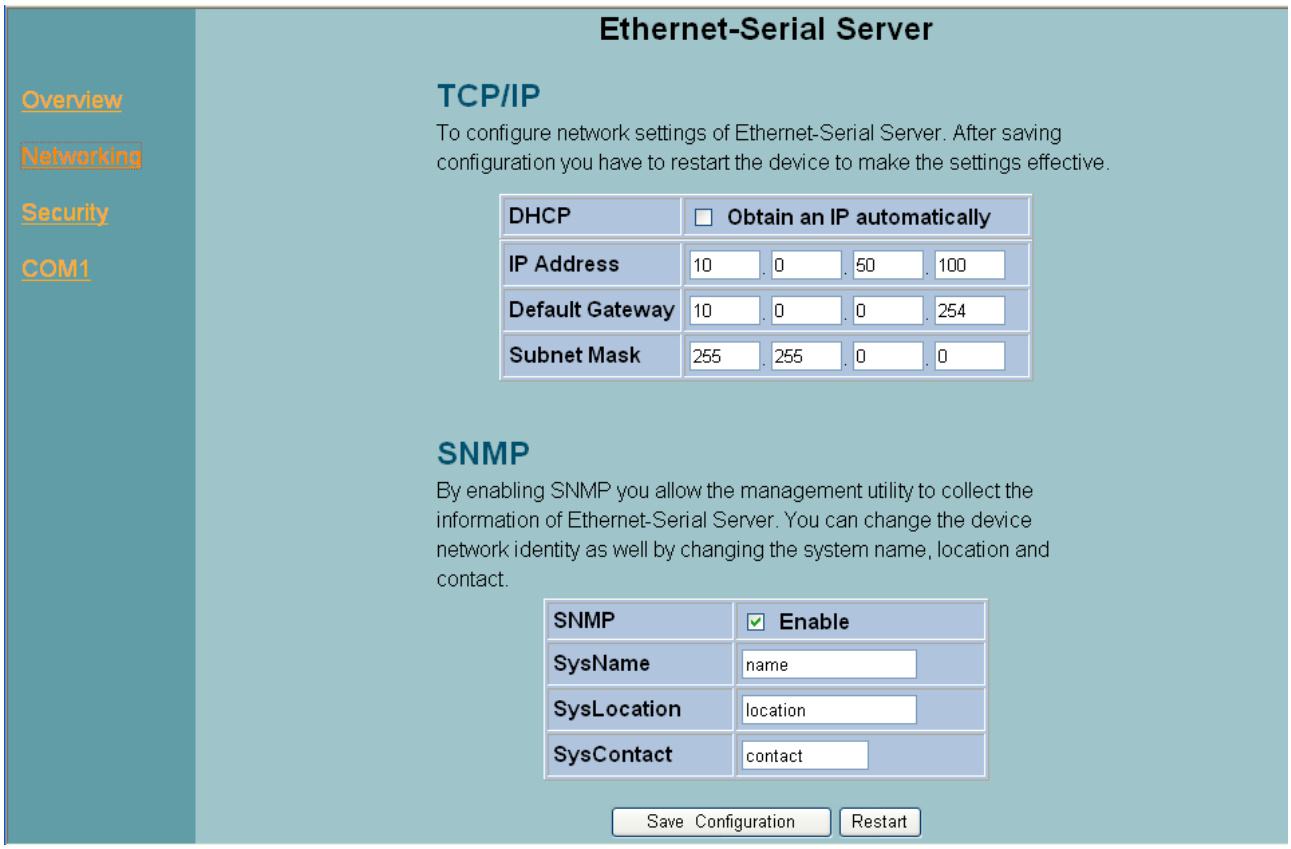



Figure 3.20 Network setup

### 3.3.4 Configure GW212/GW215 as TCP server：

you can configure GW212/GW215 as transparent mode by default (ref Figure 3.21)

-> Click on the ***"COM1"*** link and the following screen appears.

➔ Configure GW212/GW215 as TCP server

➔ Input local listening port "***4660***"

1.**If you want to enable IP filter：**

➔ Check "***IP filter***"

➔ Input source IP in the "***Source IP"***

2.**If you don't want to enable IP filter：**

➔ Don't check "***IP filter***"

➔ Input idle time in "***Please input idle time to send TCP alive packet(sec)：***"(If you input **2**->the sending TCP keep alive packet period will be change to 2*10 sec)

➔ Input TCP Inactivity time in "***TCP Inactivity Time Before Disconnect( sec)：***"(If you input **2**->TCP Inactivity beyond 2 sec will cause disconnect )

➔ Click on "***Save Configuration***" button to save the changes

**Notes:**

1.IP filtering function is disabled if setting FILTER_IP to "0.0.0.0".

2.IP filter is disabled by default

3.If IP filter is enabled, only source IP assigned can connect to GW212/GW215.

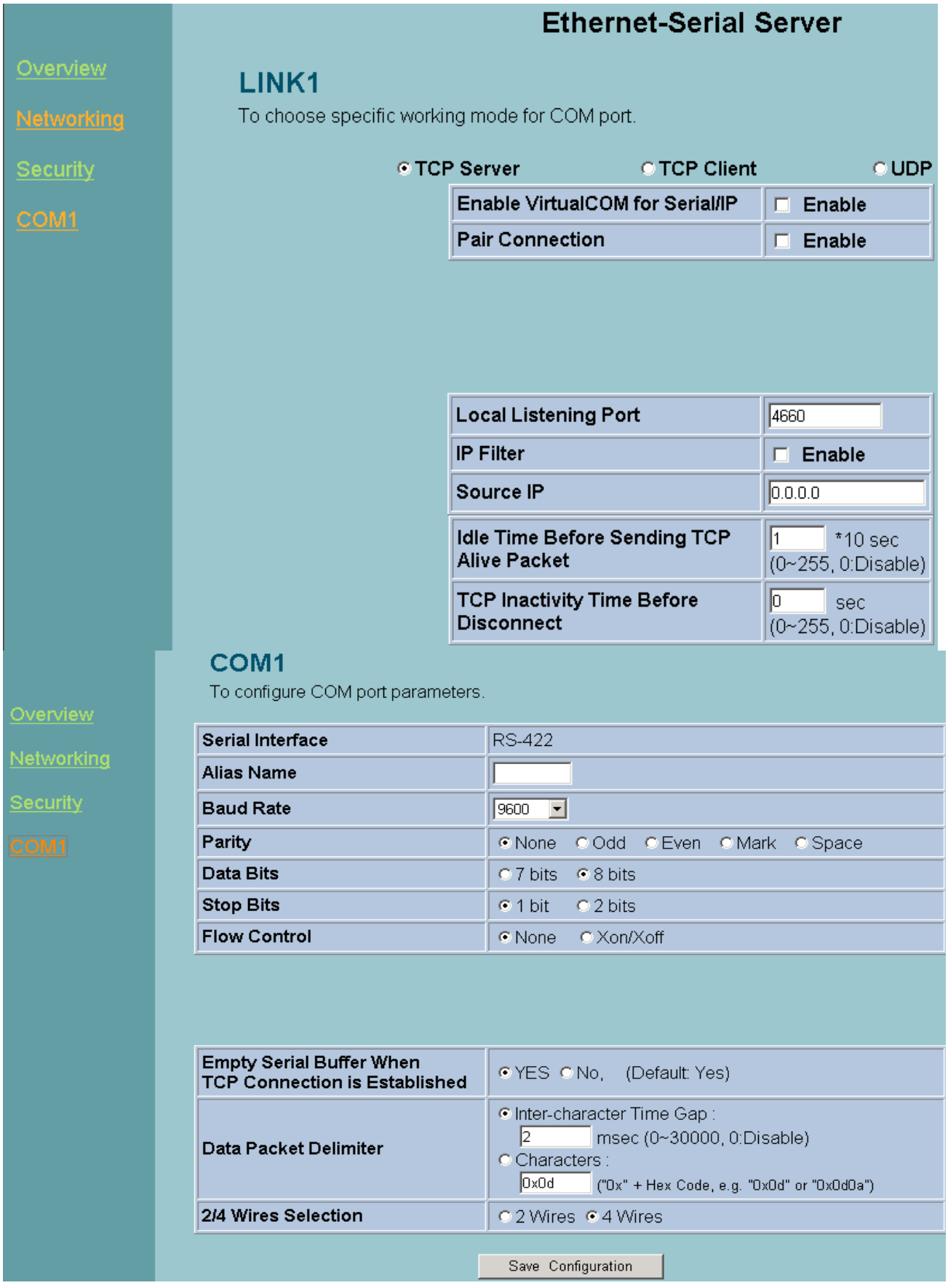



Figure 3.21 Com1 setup-TCP server

***Note**:*

1. Default Port number of GW212/GW215 is 4660 and it is associated with serial port COM1 respectively. After your application program connects to the TCP port 4660 of GW212/GW215, data being sent to this TCP connection from your application program are transparent to the COM1 of GW212/GW215. Vice versa is also true.
2. The serial interface will show different port interface according to the model of the serial server.

### 3.3.5 Configure GW212/GW215 as TCP client：

➔ Configure GW212/GW215 as TCP client, for example the destination IP is 10.0.29.11, destination port is 4660 .(ref Figure 3.22)

➔ Input destination IP "***10.0.29.11***"

➔ Input destination port "***4660***"

➔ Input idle time in "***Please input idle time to send TCP alive packet ( sec)：***"(If you input **4**->the sending TCP keep alive packet period will be change to 4*10 sec)

1.Select "***TCP Connect On Power-on***"：to keep trying to establish TCP connection after Power on

2.Select "***TCP Connect On Any Serial Character***"：Any serial character will trigger to establish the TCP connection

➔ Input idle time to disconnect in the "***Serial Inactivity Time before disconnect(0sec , 1~255)：***" (If you input **0**->disable the function; if you input **2** ->the serial Inactivity beyond 2 sec will cause disconnect)

➔ Input error retrying time in "***Waiting Time Between Re-connect Attempts(0 minute,1~255)：***" (If you input **0**->disable the function; if you input **2** -> It will retry to establish the connection per 2 minutes)

➔ Click on "***Save Configuration***" button to save the changes

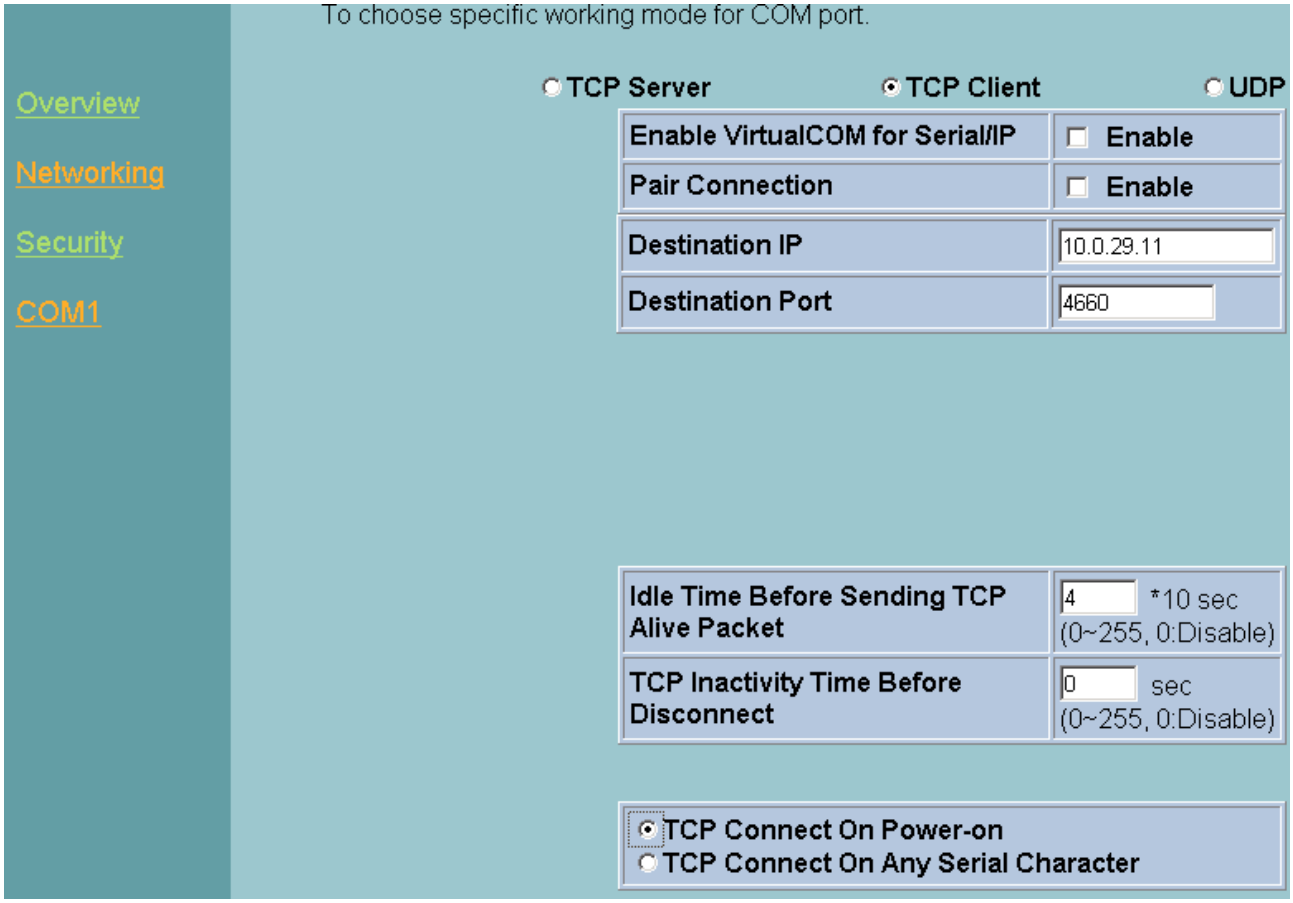



Figure 3.22 Com1 setup-TCP client

### 3.3.6 Pair Connection

In the case of the serial connection is established with two or more GW212/GW215 to send data over Ethernet network, i.e. pair connection mode, you can choose "***pair connection***" which is indicated in the following figure to cope with any type of serial device. (ref Figure 3.23)

- ➔ Configure GW212/GW215 as TCP server, for example the destination IP is 10.0.29.11, destination port is 4660 .(ref Figure 3.22)
- ➔ Input destination IP "***10.0.29.254***"
- ➔ Input destination port in the Local Listening Port "***4660***"
- ➔ Click on "***Save Configuration***" to save the changes.

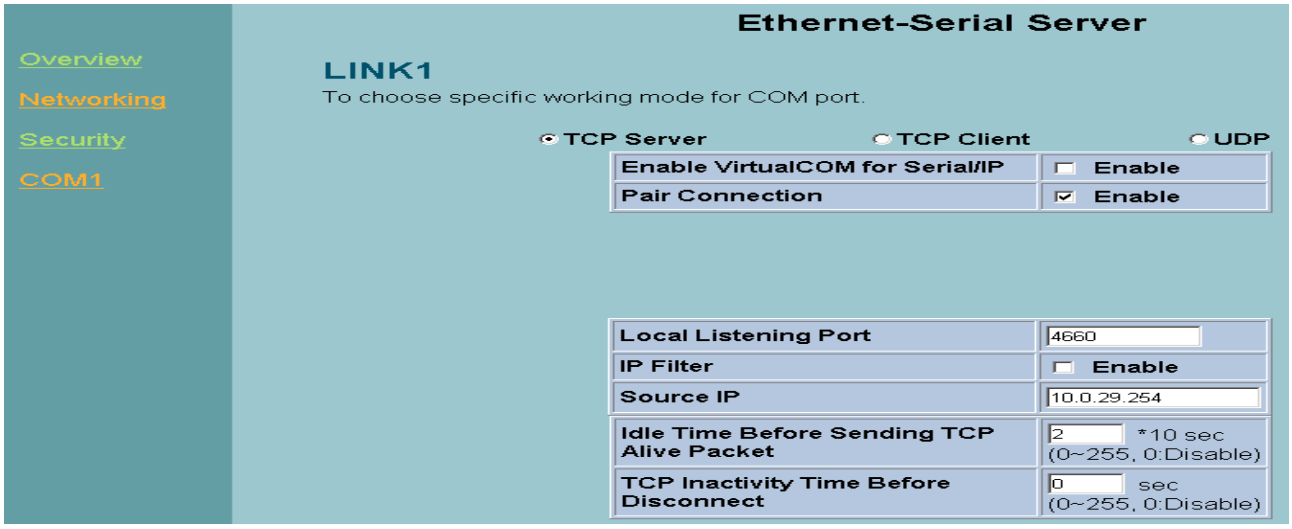



Figure 3.23 Com1 setup –pair connection

### 3.3.7 GW212/GW215 as UDP mode：

GW212/GW215 can be configured as a UDP mode on TCP/IP Network to establish a connection using uni-cast or broadcast data from the serial device to one or multiple host computers. Vice versa is also true. There are 2 types of UDP communication Mode：

1. **Master(Client) Mode**：To establish a connection using unicast or broadcast data from serial device to one or multiple host computer.
   Note：The configuration is up to the Destination IP and Destination Port

**Using broadcast data from serial device to multiple host computer**：For example, you can configure the destination IP is "**10.255.255.255** "and destination port is "**4660**". Anyone host computer's IP address within the range from 10.0.0.1~10.255.255.254 and listening Port is 666 would receive the data sending from serial device. (ref Figure 3.24)
Note：The broadcast IP address is up to the Class of IP address and subnet mask. For example if your network is Class C subnet 192.168.1.X and the subnet mask is 255.255.255.0
->then you can configure the broadcast IP address is 192.168.1.255. (ref Figure 3.26)

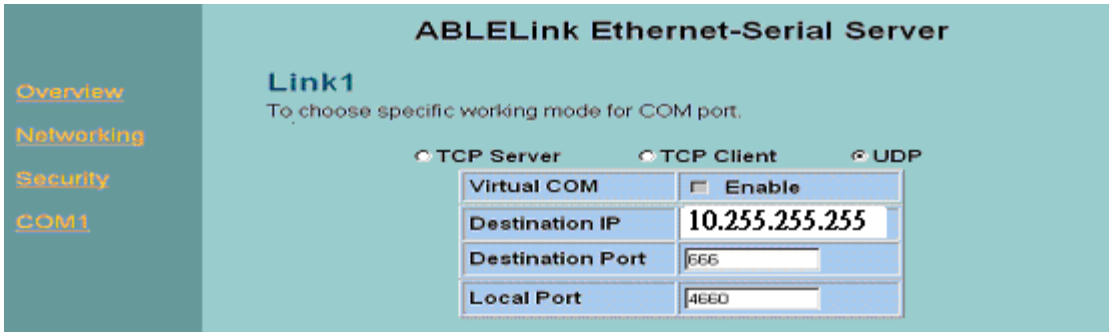



Figure 3.24 Com 1 setup –UDP mode

- ➔ Input destination IP" **10.0.255.255** "

➔ Input destination port " **666**".

➔ Input Local port " **4660**".

➔ Click on "***Save Configuration***" to save the changes.

Note：If the update is successful, the following screen appears.(ref Figure 3.25)

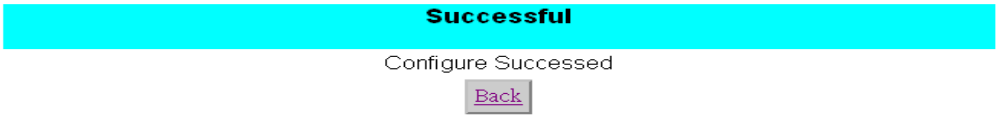



Figure 3.25 Configure successed

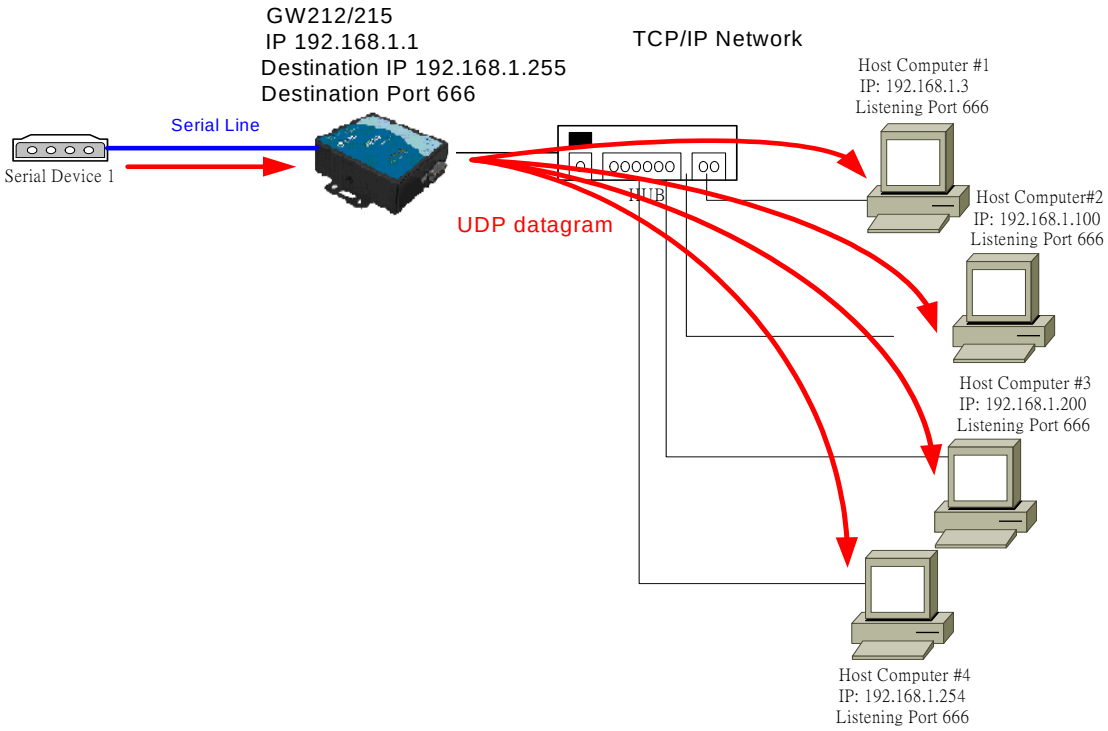



Figure 3.26 Example for UDP Master(Client) Mode

2. **Slave(Server) Mode：**To establish a connection using unicast or broadcast data from one or multiple host computer to serial device.(Figure 3.27)
   Note：The configuration is up to the Local Listening Port (For example, the GW212/GW215 is listening the port 4660.It would receive the data sending from Host Computer).

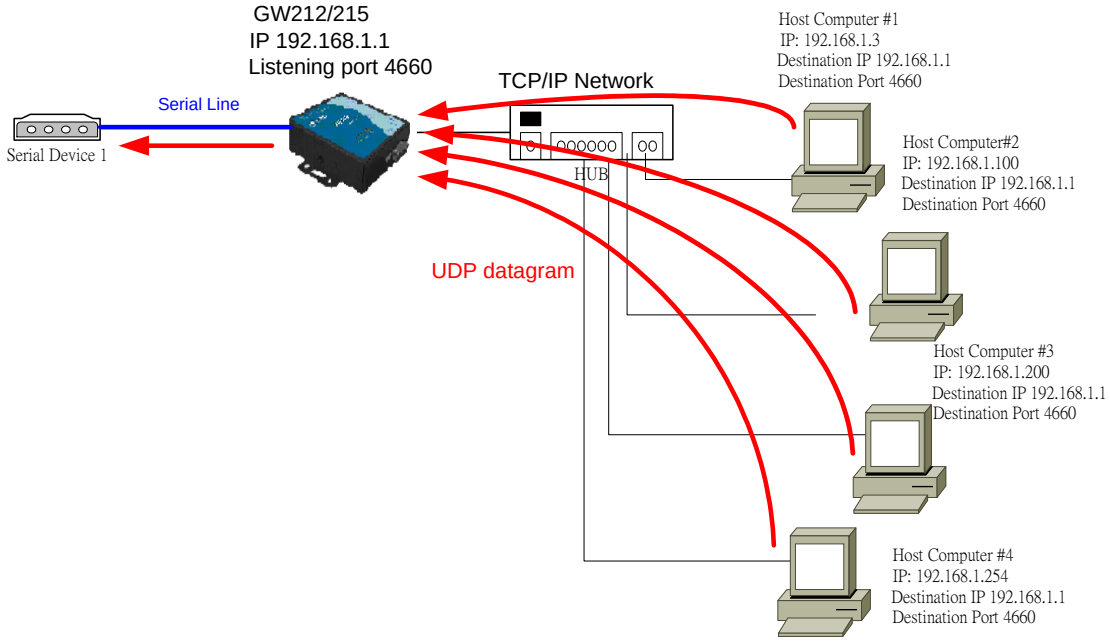



Figure 3.27 Example for UDP Slave(server) Mode

## 3.4 Assign a new IP Address by ARP command

Use ARP command to assign a static IP address of GW212/GW215 using its hardware MAC address. The MAC address is printed on the rear side of device in the format of "0060E9-xxxxxx". The following example shows how it works within MS-DOS command prompt window.

(For example change IP from 10.0.50.100 to 10.0.50.101,and the MAC address of GW212/GW215 is 00-60-e9-11-11-01)

**Step1:** Add the new host IP to ARP table

->Open Ms-DOS command prompt window

->Input **arp -s 10.0.50.101 00-60-E9-11-11-01** (ref Figure 3.28)

```
C:\Documents and Settings\Administrator>arp -s 10.0.50.101 00-60-e9-11-11-01

C:\Documents and Settings\Administrator>_
```

Figure 3.28. Ms-DOS command prompt window

**Step2:** Change to new IP via telnet port 1 (ref Figure 3.29)

->Input **telnet 10.0.50.101 1**

Note：The telnet will be fail and GW212/GW215 will be restarted automatically, after restart the IP address should be change to 10.0.50.101

**Step3:** Using new IP to configure GW212/GW215 via telnet

->Input **telnet 10.0.50.101**

Note:1. When using this method to change IP address, PC's IP address and GW212/GW215 's IP address must belong to the same subnet.

2. The changed IP address must be legal, otherwise it will be changed back to the default value (10.0.50.100) after restart.


Figure 3.29. Assigning a new IP address by ARP command

# 4. Using Virtual COM

Virtual COM driver mode for windows converts COM data to LAN data to control the COM port on a GW212/GW215 via the LAN. By creating virtual COM ports on the PC, the Virtual COM driver redirects the communications from the virtual COM ports to an IP address and port number on a GW212/GW215 that connects the serial line device to the network. The following figure is Virtual COM connection diagram. (ref Figure 4.1)

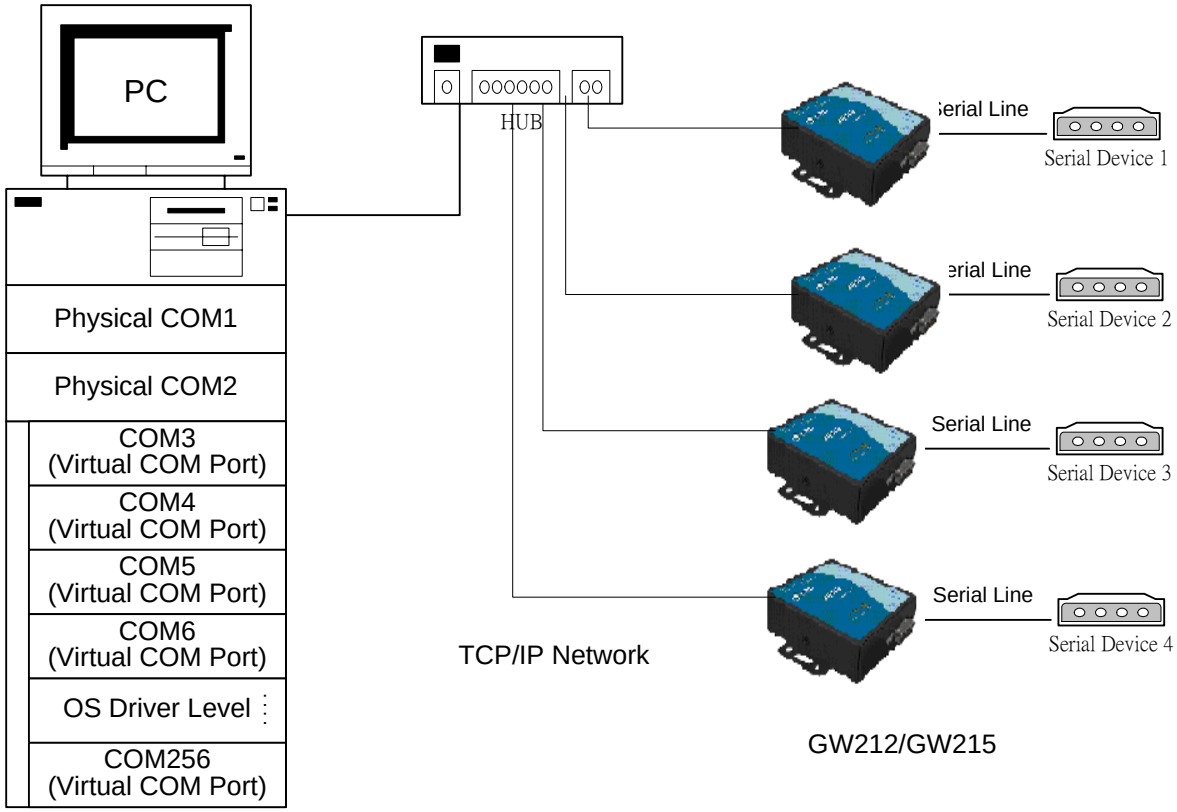



Figure 4.1 Virtual Com connection diagram

# 4.1 Setup of a virtual COM driver

## 4.1.1 Pre-installation requirements

Please check the operation system on your PC complied with the following requirements:

- Processor: Intel-compatible, Pentium class
- Operation system: Windows Server 2003, Windows XP, Windows 2000, Windows NT 4.0 SP5 or later, Windows Me, Windows 98, Windows 95, Microsoft NT/2000 Terminal Server, Citrix MetaFrame

## 4.1.2 Cautions on Use

The Virtual COM driver supports firmware AP v3.0 and later of GW212/GW215 Serial-Ethernet Servers.

## 4.1.3 Limitation

The Virtual COM driver provides user to select up to 256 **COM ports** as Virtual COM ports in a monitoring PC. User can select them from a list of COM ports, which is from COM1 up to COM256.

## 4.1.4 Installation

Make sure you have turned off all anti-virus software before beginning the installation. Run the Virtual COM setup file included in the CD to install Virtual COM driver for your operating system.

In the end of the installation, please select one or two COM ports to become the Virtual COM ports.

## 4.1.5 Uninstalling

1. From Windows Start menu select Setting, Control Panel, Add/Remove Programs.
2. Select **Serial IP for ATOP** in the list of installed software.
3. Click the **Add/Remove** button to remove the program, or From Windows Start menu select Programs, Serial IP for ATOP, **Uninstall Serial IP for ATOP** to remove the program.

# 4.2 Virtual COM communication

## 4.2.1 Enable Virtual COM on GW212/GW215

From web browser access to GW212/GW215 by typing its IP address, click on COM1 link to access COM1 page, on the top half of the page click on "***TCP Server***" and enable Virtual COM by putting a check in front of the "Enable" button, then type in the local port number in the "***Local Port***" field as indicated in the following figure: (ref Figure 4.2)

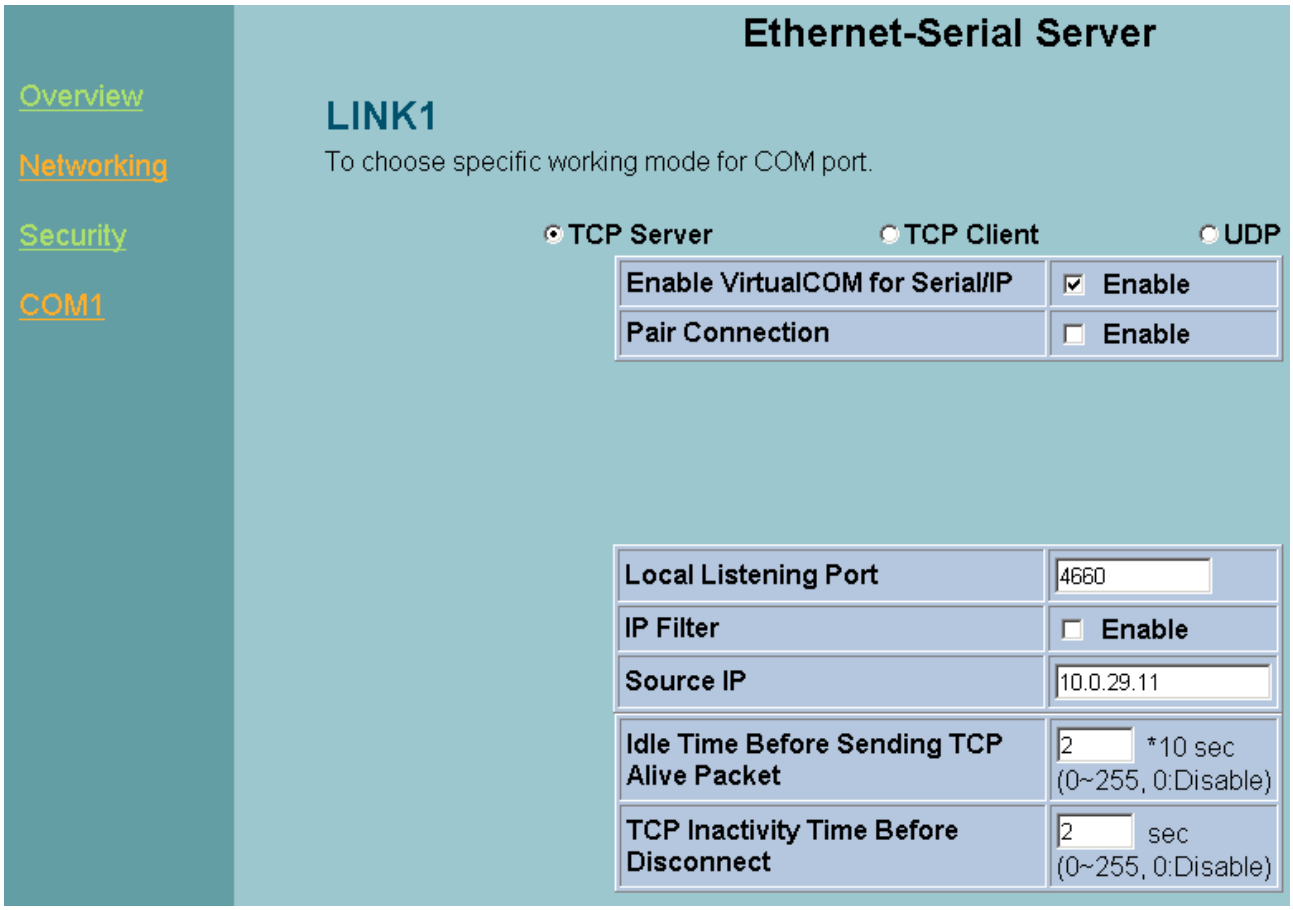



Figure 4.2 Enable Virtual Com

Or you can enable Virtual COM through telnet configuration by setting COM1 as TCP server, and type in the local port number for COM1, then enable virtual COM as shown in the following figure: (ref Figure 4.3)

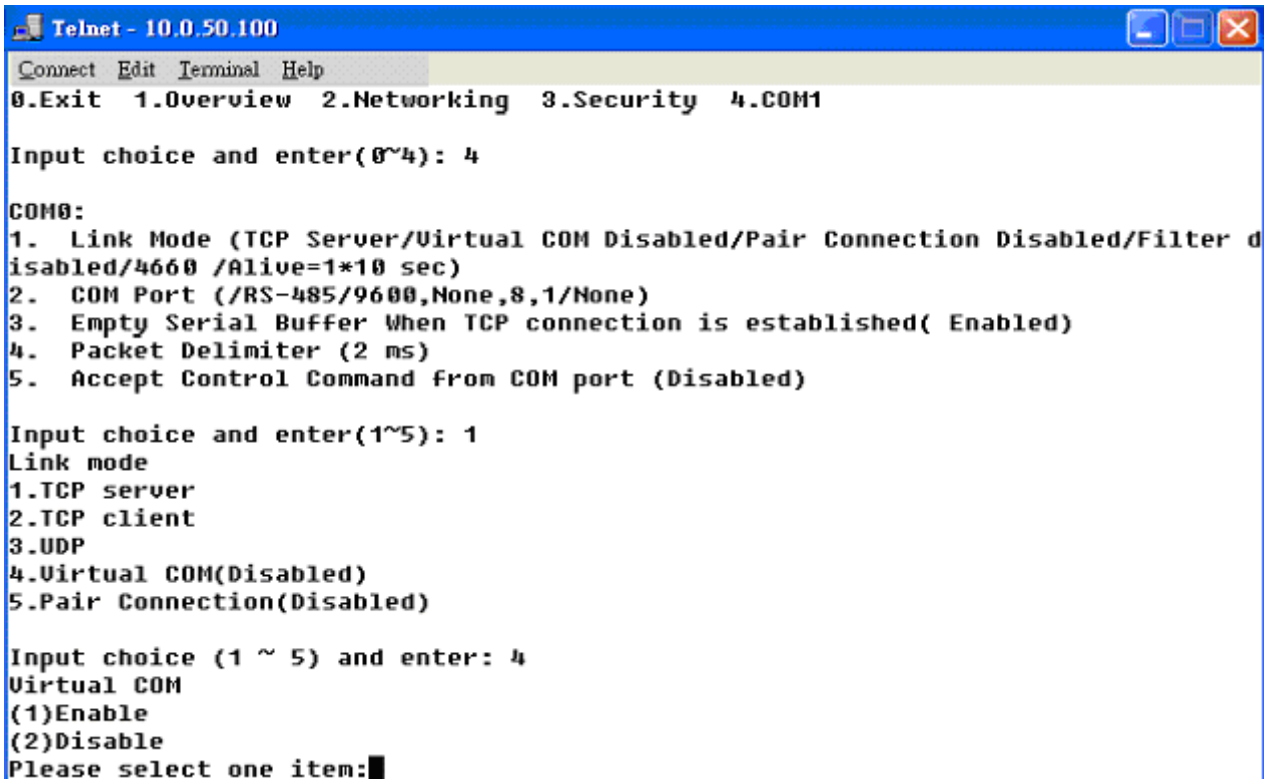



Figure 4.3 Enable Virtual Com via telnet

### 4.2.2 Run Serial/IP on monitoring PC

In the Window Start Menu, go to "Programs", select "Serial/IP for ATOP" and select "Control Panel". When "Select Port" windows pop-up, please select the serial port you want to configure. Then the configuration window will appear. (ref Figure 4.4)

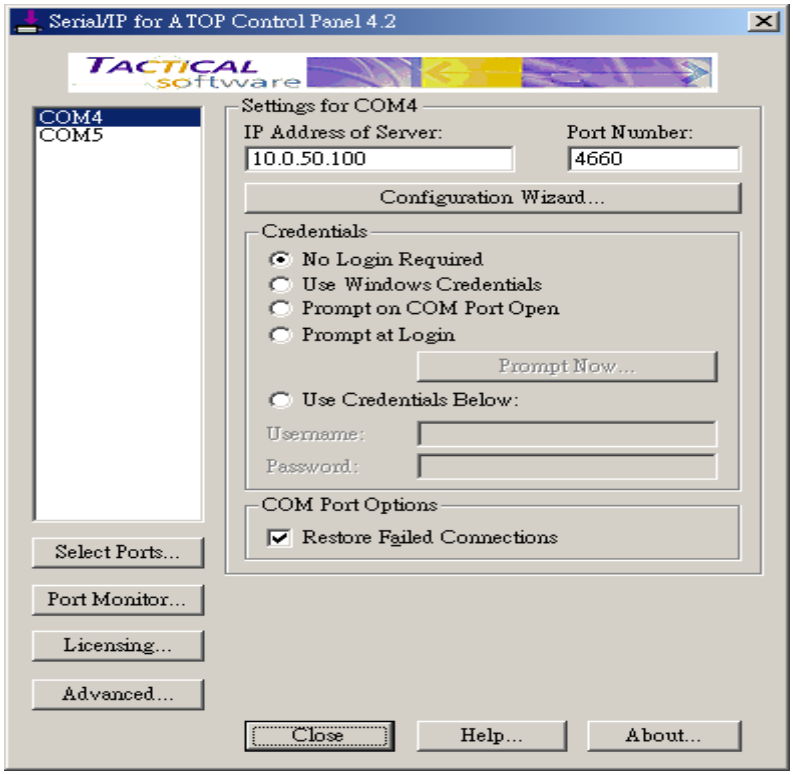



Figure 4.4 Serial/IP configuration

At the right side of Figure 4.4 is a sample Virtual COM Control Panel window. At the left side is the list of the COM ports that you have selected (in the Select Ports window) for use by the Virtual COM Redirector. If you wish to change which ports appear in this list, use the **Select Ports** button.

Each COM port has its own settings. When you click on a COM port, the Control Panel display changes to reflect the settings for that COM port.

**Note:** When you change settings for a COM port, the changes are effective immediately. There is no separate confirmation dialog to confirm or cancel your changes.

## 4.3 Configuring Virtual COM Ports

You configure each Serial/IP COM port as follows: (ref Figure 30)

1. Select a COM port in the list.
2. For **IP Address of Server**, enter a numeric IP address for the serial server.
3. For **Port Number**, enter the TCP port number that the serial server uses to provide its serial ports to the network.
4. For **Server Credentials**, the default is **No Login Required**. If your serial server does require a login by the Virtual COM Redirector, the Virtual COM Redirector needs to provide a username and/or password every time an application tries to use the serial server.
5. Click the **Configuration Wizard** button and then click the **Start** button that appears in the wizard window. This important step verifies that the Virtual COM Redirector can communicate with the serial server using the settings you have provided. If the **Log** display does not show errors, click the **Use Settings** button in the wizard, which makes the recommended settings effective and returns you to the Control Panel to continue with the following steps.(ref Figure 4.5)

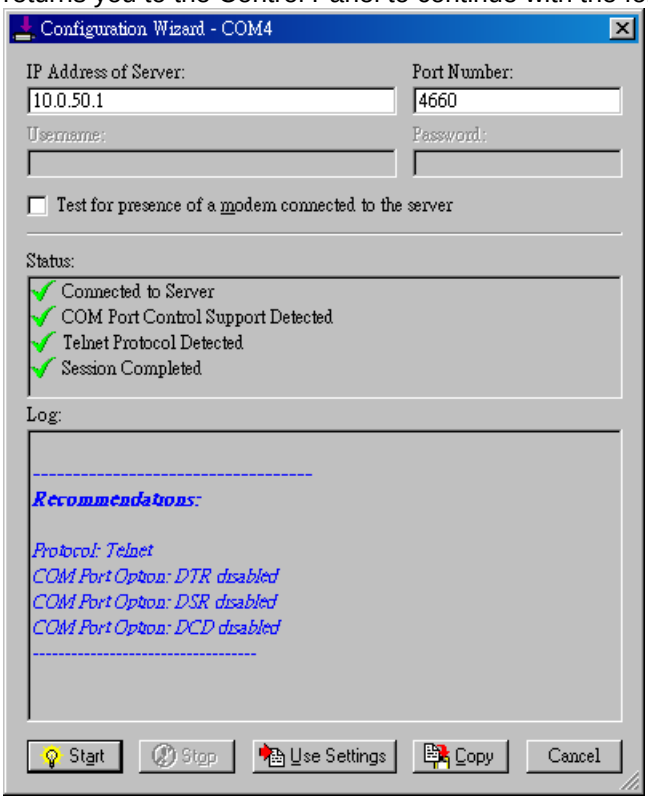



Figure 4.5 Configuration Wizard

6. For **Connection Protocol**, the setting must match the TCP/IP protocol that the serial server supports. The Configuration Wizard is usually able to determine the correct setting.
7. For **COM Port Options**, the settings must match the COM port behavior expected by the PC application that will use this COM port. The Configuration Wizard will recommend a combination of settings.

# 5. SNMP Setup

## 5.1 SNMP Network Management Platform

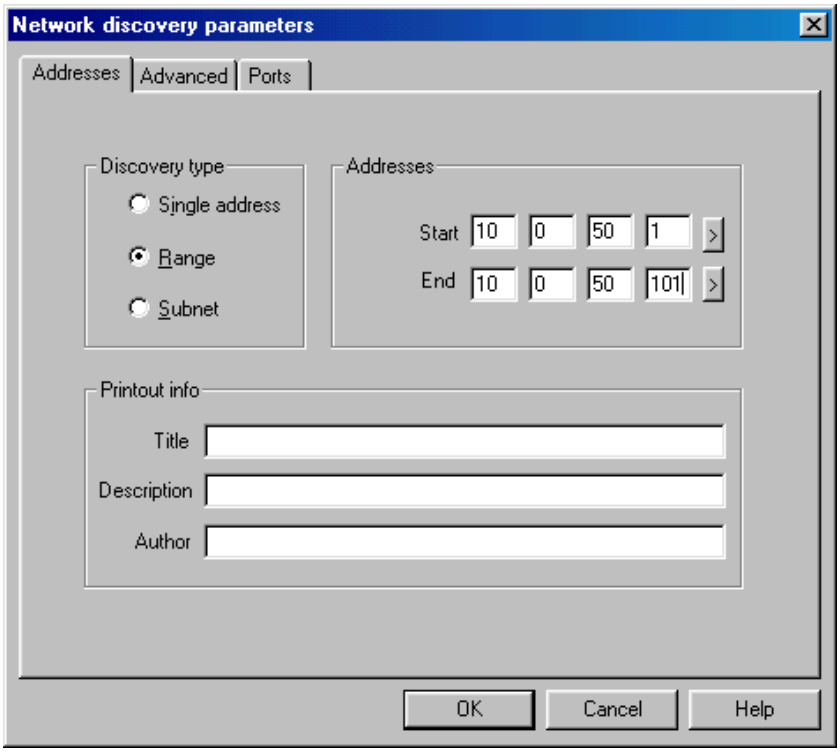
GW212/GW215 is an SNMP device that allows many popular SNMP Network management platforms such as HP OpenView and SunNet Manager to conduct monitoring on the device.

Depending on the network management tools you are using, device (GW212/GW215) information can be collected from running the management tools including IP address, DNS name, system descriptions and NIC information etc.

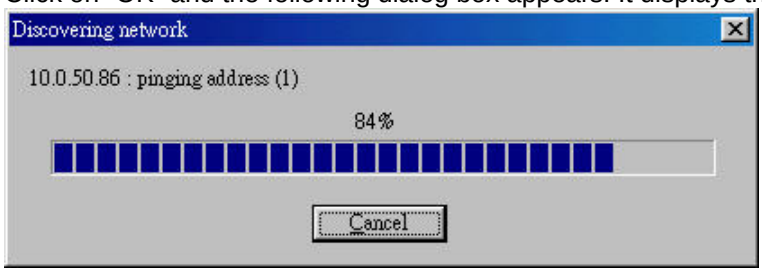
## 5.2 Using NetworkView As An Example

The NetworkView is a compact network management tool from NetworkView Software, Inc. (www.networkview.com). It discovers all TCP/IP nodes in a network using DNS, SNMP and ports information and documents with printed maps and reports for future use. You may visit their web sites and get a free download.

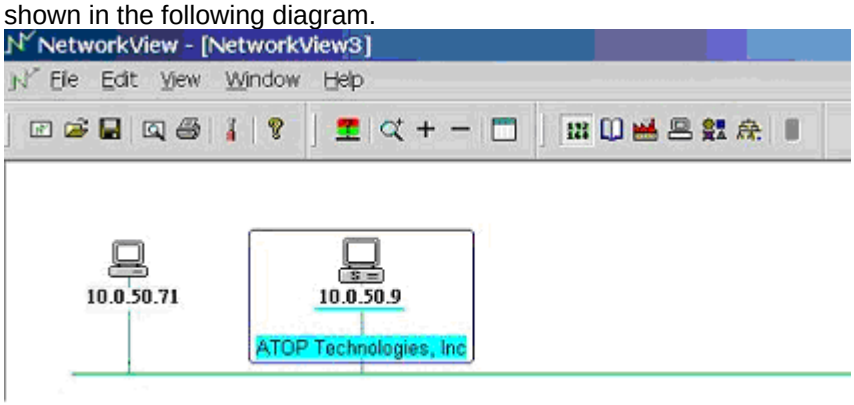
To use NetworkView, you will need to download and install the tool on your PC (**Windows NT and Windows 9x only**). Please refer to the installation instructions that come with the tool.

1. After you have done the NetworkView installation, start NetworkView.
2. Click on the  button to open a new file. The following screen appears, in the Addresses field, type in the IP address range to search.
3. 

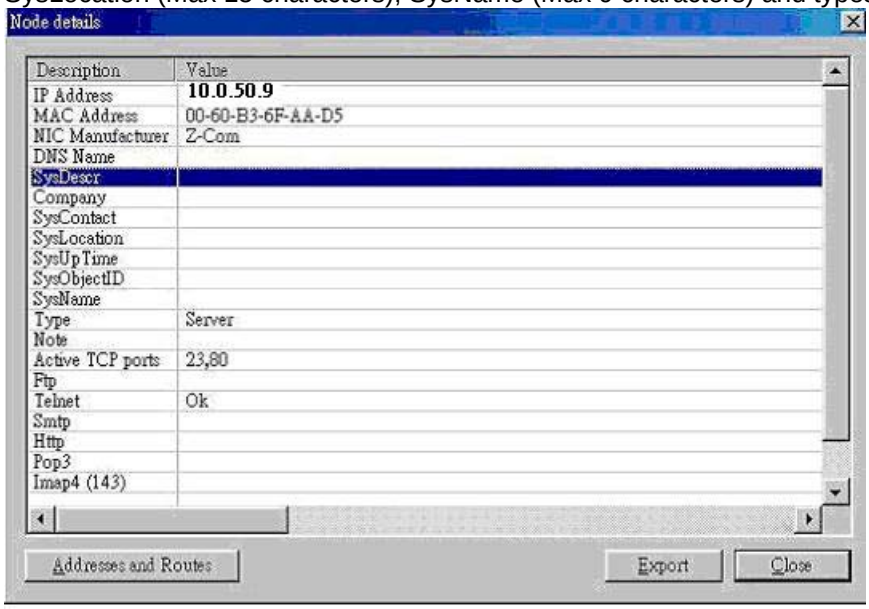
Click on "OK" and the following dialog box appears. It displays the searching progress.




**4.** When the search is completed, NetworkView will display the devices found in the main window, as shown in the following diagram.




5. Double-click on the device icon to display information about the device, including IP Address, Company, SysLocation (Max 15 characters), SysName (Max 9 characters) and types etc.




**Note:**

1. The NetworkView tool is limited to information extracting and viewing only.
2. To modify the configurations please use the web server, Telnet or monitor.exe configuration utilities.

# 6. Start Writing Your Own Applications

Before you start writing your host applications or programs to interact with GW212/GW215, please make sure you have done the following.

## 6.1 Preparing The System

1. Properly connect GW212/GW215 hardware including power, Ethernet and serial cable
2. Properly configure the parameters of GW212/GW215 including connection type, IP address, gateway IP address, and network mask accordingly (see chapter 3 **Hardware Installation** section).
3. Configure GW212/GW215 as TCP Server using default TCP port number 4660.
4. The host (PC) application program must be configured as a TCP client and connects to GW212/GW215 with designated TCP port number 4660 for COM1.
5. Make sure GW212/GW215 is running by checking the running status through **monitor.exe** configuration utility.

## 6.2 Running The Sample Program

Sample programs written in VB and VC++ included in package are provided for your reference, source codes are also included. Test program can be found in the product CD or diskette under the directory of ***\sample\vb_ap*** and ***\sample\vc_ap*** respectively.

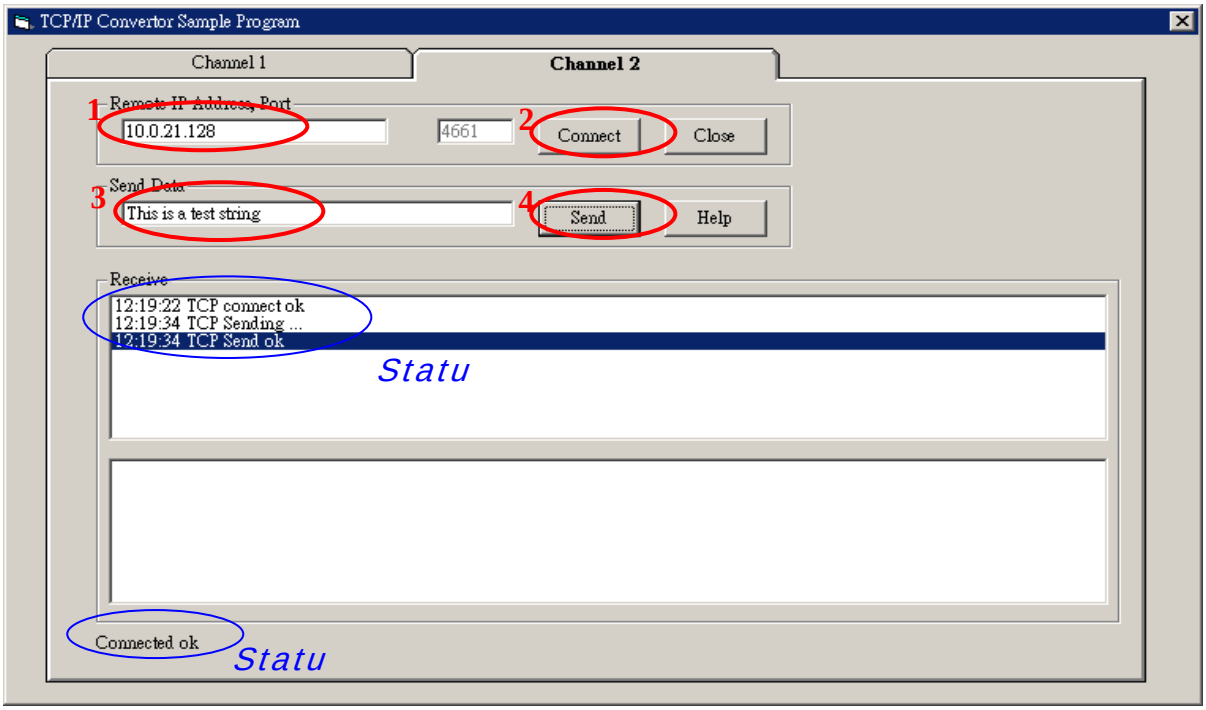
There are two test programs, TCPTEST written in Visual Basic and TCPTEST2 written in Visual C++.

### 6.2.1 TCPTEST in Visual Basic

This sample program is written in Visual Basic 5.0 with Winsock Controls. It shows you how to send and receive data between host (PC) and GW212/GW215 via Ethernet in two socket ports.

Run Visual Basic and open sample program tcptest.vbp, after the program is started successfully, you can start testing functions. For more information, please press **Help** in the program to get detail explanation.

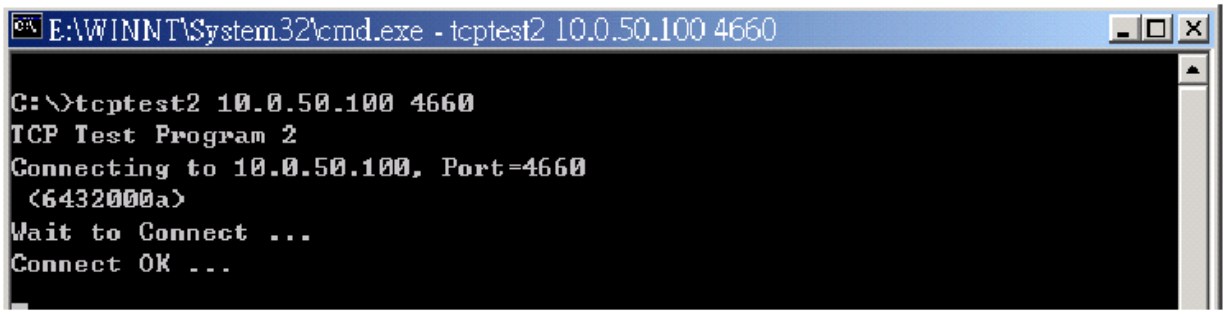
**Note**: Please be sure the Microsoft visual studio family software is installed on the computer. Otherwise the sample program will not run.




### 6.2.2 TCPTEST2 in Visual C

To start the program, please type in the following command in the command line prompt:

**TCPTEST2 IP_Address Port_Number**




The command ***tcptest2 10.0.50.100 4660*** brings you to connect to a TCP server of IP address *10.0.50.100* and port number *4660*, the received data is displayed on the screen and the data typed in is sent to the TCP server of the designated port number. You can also send binary data in hex format with a leading character "\". For example, "\00" and "\FF" represent ASCII code 0 and 255 respectively.

You can also use modem to connect to the serial server. Command "***AT\Od***" sends standard AT command to the modem which in return responds with "***OK\0D\0A***" message to the host application.

Always use '**=**' then Enter key to exit the program.

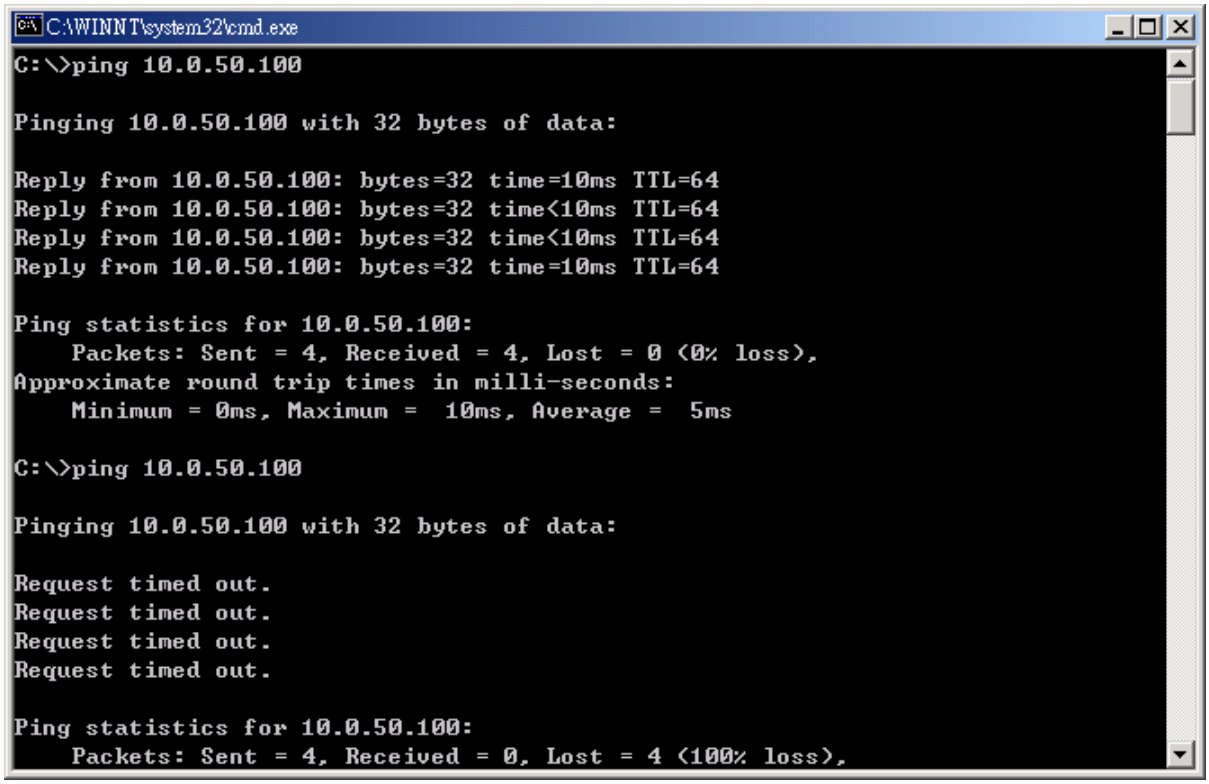
# 7. Diagnostics

There are several ways you can check on the status and availability of GW212/GW215.

## 7.1 Use Standard TCP/IP Utility *ping* Command

From Windows **Start** menu, select **Run** and type in "**ping <TCP Server IP address>**".

If the connection is established, the Reply messages are displayed, otherwise it will indicate Request timed out.

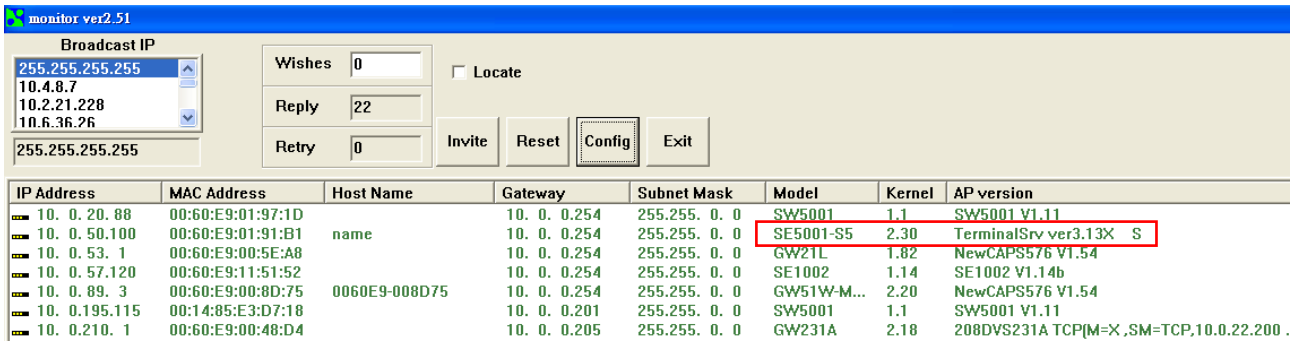



## 7.2 Use monitor.exe Configuration Utility Program

Use monitor.exe configuration program that comes with the product CD or diskette to check on the status of GW212/GW215. The status can be read from "***AP version***" column of the tool.

| Status | Descriptions |
|---|---|
| **S** | The system is configured as a TCP Server and Listing. |
| **A** | The TCP Server is connected. |
| **c** | The system is configured as a TCP Client and not yet connected. |
| **C** | The system is configured as a TCP Client and trying to Connect. |
| **B** | The TCP Client is connected. |
| **U** | The system is configured as an UDP Mode. |

For example, **'S'** means that COM1 is server mode and is not connected.




## 7.3 Use TCPTEST.EXE or TCPTEST2.EXE Sample Program

Use sample programs TCPTEST.EXE and TCPTEST2.EXE that comes with the product CD or diskette to check on the status of GW212/GW215. Please refer to chapter 6.2 to run the sample programs.

# Appendix A: Specifications

## A.1. Hardware Specifications

| | Specifications |
|---|---|
| **CPU** | • 16-bit Embedded CPU |
| | • 100MHz |
| **Flash Memory** | • 512K Bytes |
| **SDRAM** | • 512K Bytes |
| **EEPROM** | • 512 Bytes |
| **Host Communication** | • IEEE802.3 base band |
| | • TCP/IP, UDP, SNMP, HTTP, Telnet, ARP, BOOTP, DHCP, ICMP |
| **Reset** | • Built-in default key to restore factory default settings |
| **Watch Dog Timer** | • 1.34 second hardware auto reset |
| | • Power failure threshold: 4.75V |

| | |
|---|---|
| **Serial Port Communication** | • One RS-232 or RS-485/RS-422 selectable<br>• RS-232: EIA-RS-232C standard, Full Duplex, DB9<br>• RS-485: 2/4 wires, Half/Full duplex, Terminal Block<br>• RS-422: 4 wires, Half/Full duplex, Terminal Block<br>• Parameters<br>1) Baud-rate: 1200 bps ~ 230400 bps<br>2) Parity: None, Even, Odd, Mark, Space<br>3) Data bits: 7,8<br>4) Stop bits: 1,2<br>5) Packet Delimiter: by inter-character timeout, by characters delim<br>6) Flow Control: None, Hardware CTS/RTS, Software Xon/Xoff |
| **LED indication** | • RUN x 1<br>• LAN x 1<br>• COM port1 |
| **Power Requirement** | • 5VDC Jack or DC +5~30V Terminal Block, 2.8 Watt Max |
| **Temperature** | • Operation: 0℃ to 60℃<br>• Storage: -20℃ to 70℃ |
| **Humidity** | • 20%~90% non-condensing |
| **Housing** | • 90mm(L) x 45mm(W) x 63mm(H) |

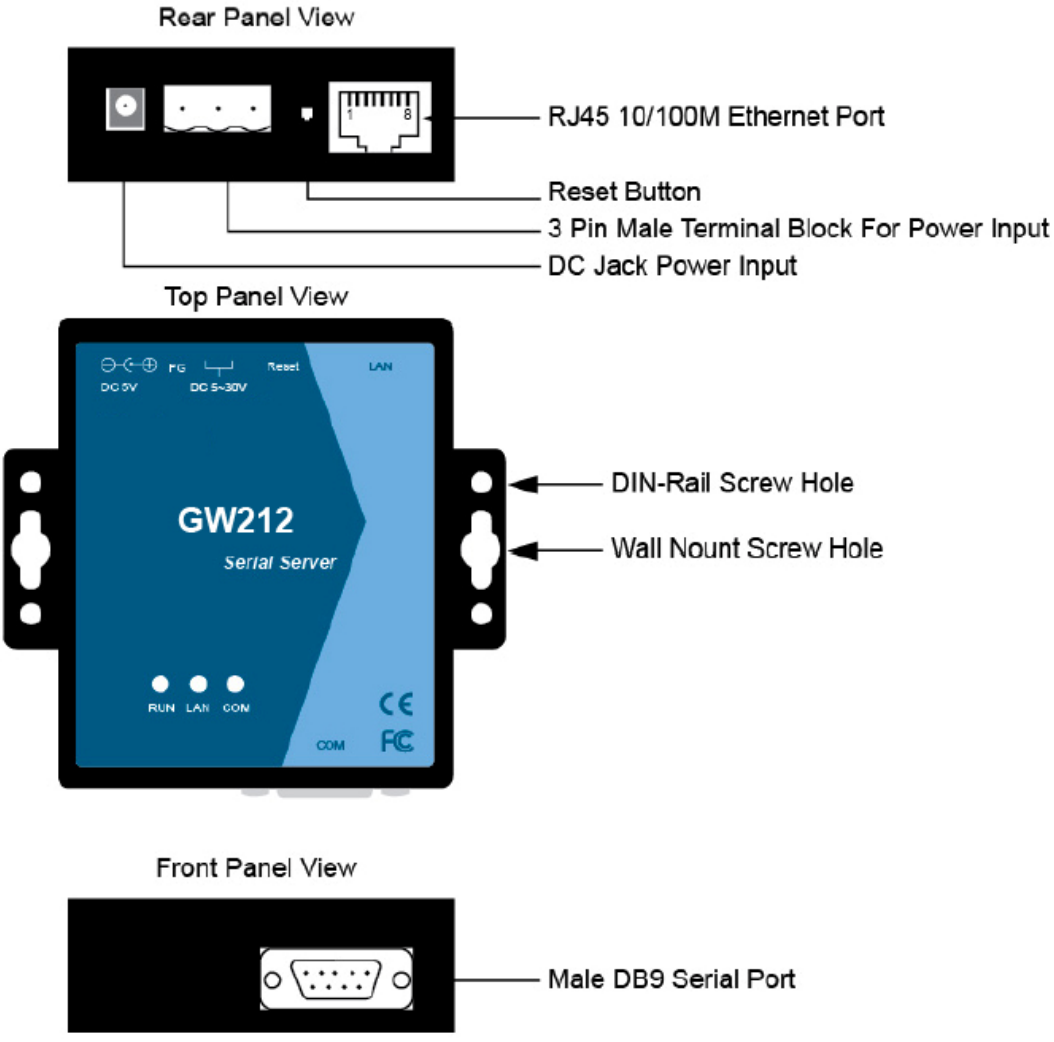
## A.2. Software Specifications

| Item | Specifications |
|---|---|
| **Protocol** | TCP, UDP, ARP, ICMP, SNMP, HTTP, Telnet, BOOTP, DHCP |
| **Configuration** | • Configuration information for both TCP/IP and serial ports is kept in the EEPROM.<br>• Configuration utilities of Windows 95/98/2000/NT/XP/2003 are provided for configuring settings. |
| **Internal Buffer Size** | • TCP receiving buffer size = 8K bytes<br>• TCP transmitting buffer size = 16K bytes<br>• RS-232 or RS-485/RS-422 receiving buffer size = 4K bytes<br>• RS-232 or RS-485/RS-422 transmitting buffer size = 4K bytes |

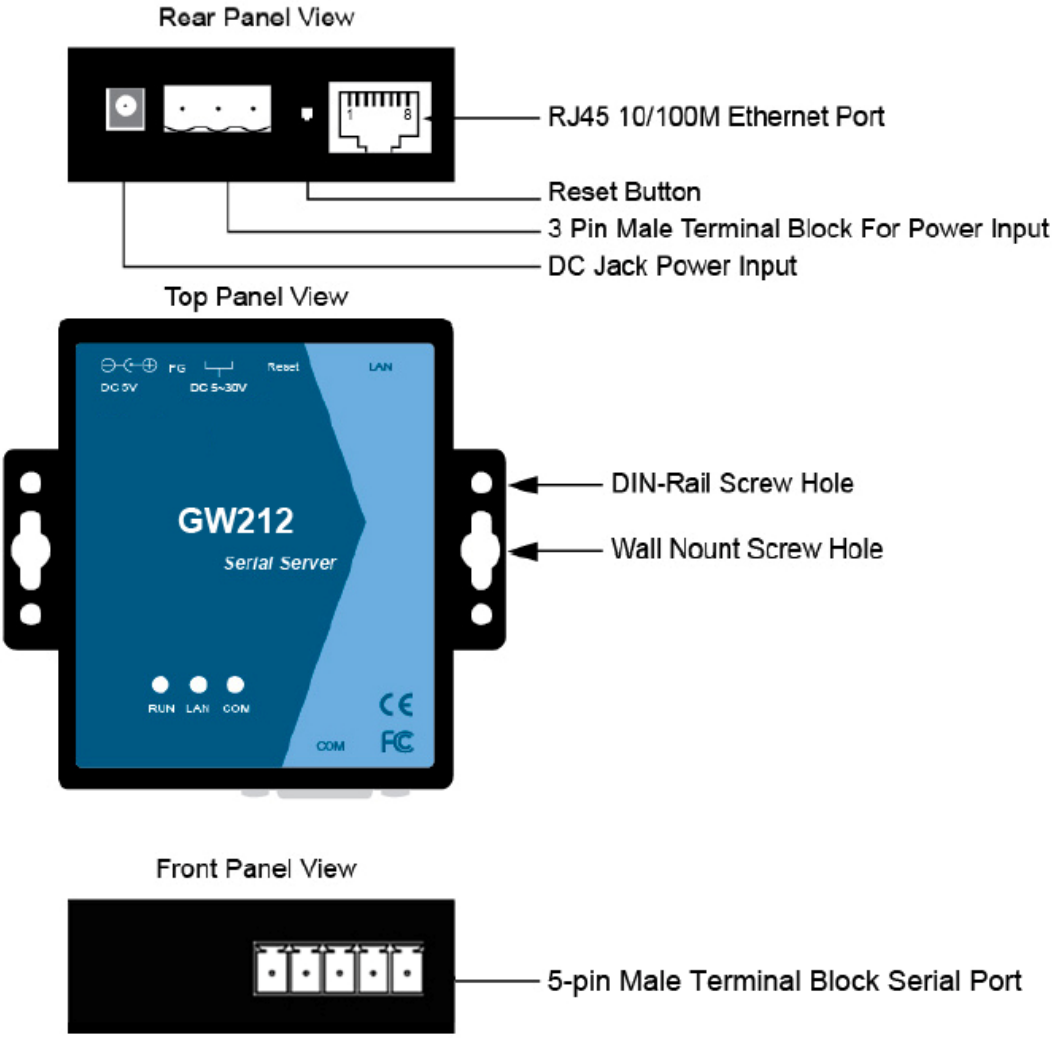
## A.3 Panel Layout and Connector Pin Assignments

### A.3.1. Panel Layout

#### A.3.1.1 GW212 (RS-232)



### A.3.1.2 GW215 (RS-422/RS-485)




### A.3.2.1 DB9 Pin Assignments

The pin assignments of DB9 connector on GW212 is shown in the following table:

| Pin# | RS-232 Full Duplex for **GW212** Model |
|---|---|
| 1 | DCD |
| 2 | RX |
| 3 | TX |
| 4 | DTR |
| 5 | GND (Signal Ground) |
| 6 | DSR |
| 7 | RTS |
| 8 | CTS |
| 9 | N/A |

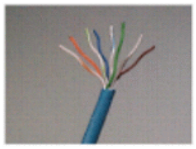
### A.3.2.2 Terminal Block Pin Assignments

The pin assignments of Terminal Block connector on GW215 is shown in the following table:

| Pin# | RS-485/RS-422<br>4 wire, Half Duplex<br>For **GW215** | RS-485<br>2 wire, Full Duplex<br>For **GW215** |
|---|---|---|
| 1 | T+ | NC |
| 2 | T- | NC |
| 3 | R+ | Data+ |
| 4 | R- | Data- |
| 5 | SG (Signal Ground) | SG (Signal Ground) |

### A.3.3 Ethernet Port (RJ-45)

1. Category 5 UTP cable, 8 core wire.



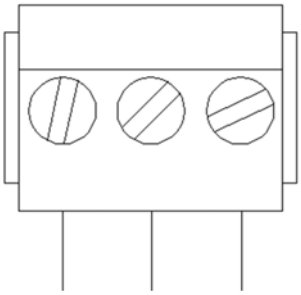
2. RJ45 Connector.

3. RJ45 Pin Assignment

| Pin Assignment | **568A** Definition | **568B** Definition |
|---|---|---|
| Pin1 | Green-White | Orange-White |
| Pin2 | Green | Orange |
| Pin3 | Orange-White | Green-White |
| Pin4 | Blue | Blue |
| Pin5 | Blue-White | Blue-White |
| Pin6 | Orange | Green |
| Pin7 | Brown-White | Brown-White |
| Pin8 | Brown | Brown |

You can choose either 568A or 568B definition. If you want to make a crossover cable, you should use 568A and 568B definition respectively in each terminal of a UTP cable.

### A.3.4 Power terminal block connector



F.G. VIN- VIN+

**Note: It could be reversed for the pin of VIN- and VIN+.**

## A.4 Buzzer/LED Message

#### A.4.1 Buzzer

**" ^ ":** Beep twice

**" = ":** Beep off

| Message | Description |
|---|---|
| **^===^===^===^===^===^===^...** | Watchdog problem, return service is required |
| (1sec) | |
| **^^^^^^^^^^^^^^^^^^^^^^^^...** | Memory problem, return service is required |
| **^==^========^^** | Startup OK but AP firmware is disabled |
| (5sec) | |
| **^==^========^^^** | Startup OK and AP firmware is enabled |
| (5sec) | |

**Table 1. Buzzer Message**

#### A.4.2 LAN LED

| Message | Description |
|---|---|
| LED Off | Ethernet Disconnected |
| LED blinking with Green | Data is transmitting on Ethernet for 100Mbps |
| LED blinking with Orange | Data is transmitting on Ethernet for 10Mbps |

**Table 2. LAN LED Message**

#### A.4.3 COM Port LED

| Message | Description |
|---|---|
| LED off | No data is transmitting on COM port |
| LED on blinking state | Data is transmitting on COM port |

**Table 3. COM Port LED Message**

### A.4.4 RUN LED

| Message | Description |
|---|---|
| LED on | Jumper JP1 pin1 and pin2 are short to disable AP firmware in the flash memory. |
| LED blinking (rate: 0.5Sec) | AP firmware is running |

**Table 4. RUN LED Message**

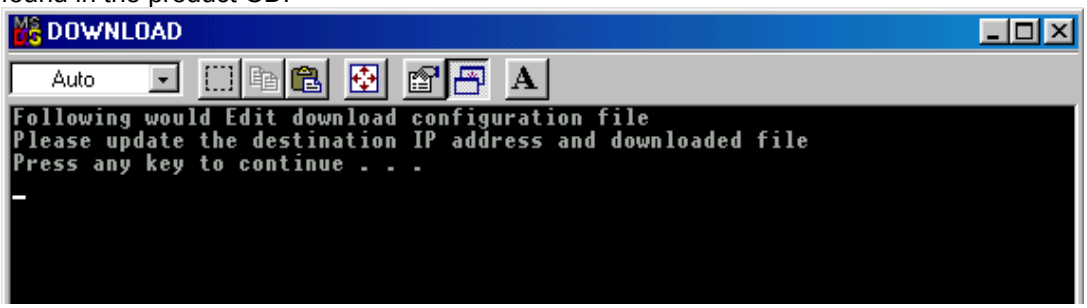
# Appendix B: Upgrade System Firmware

After the new version of firmware is released, customers can download it from www.neteon.net. After you download the firmware, please follow these instructions listed below.

## B.1 Upgrade Procedures

When you get a new software version, please follow the sequences below to upgrade your GW212/GW215.

1. Connect a PC (Windows 95/98/NT/2000) and GW212/GW215 you wish to upgrade the firmware in the same TCP/IP network. Use command **ping** or **monitor.exe** utility program to verify their availability.
2. Prepare the download tool and press any key to edit its configuration file **dapdl.cfg**. dapdl.cfg file can be found in the product CD.

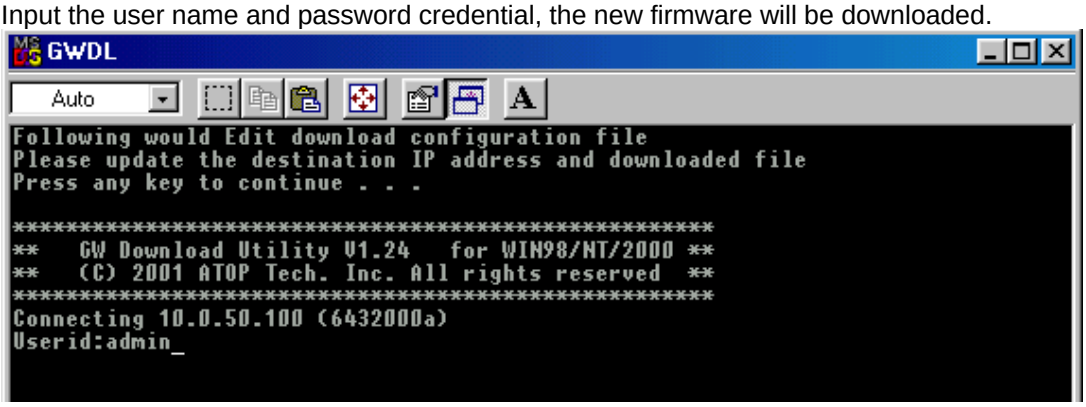



3. Edit the **"dapdl.cfg"** file to fit your system need, the content of the file looks like as the following. Be sure to save your modifications after the change is made.

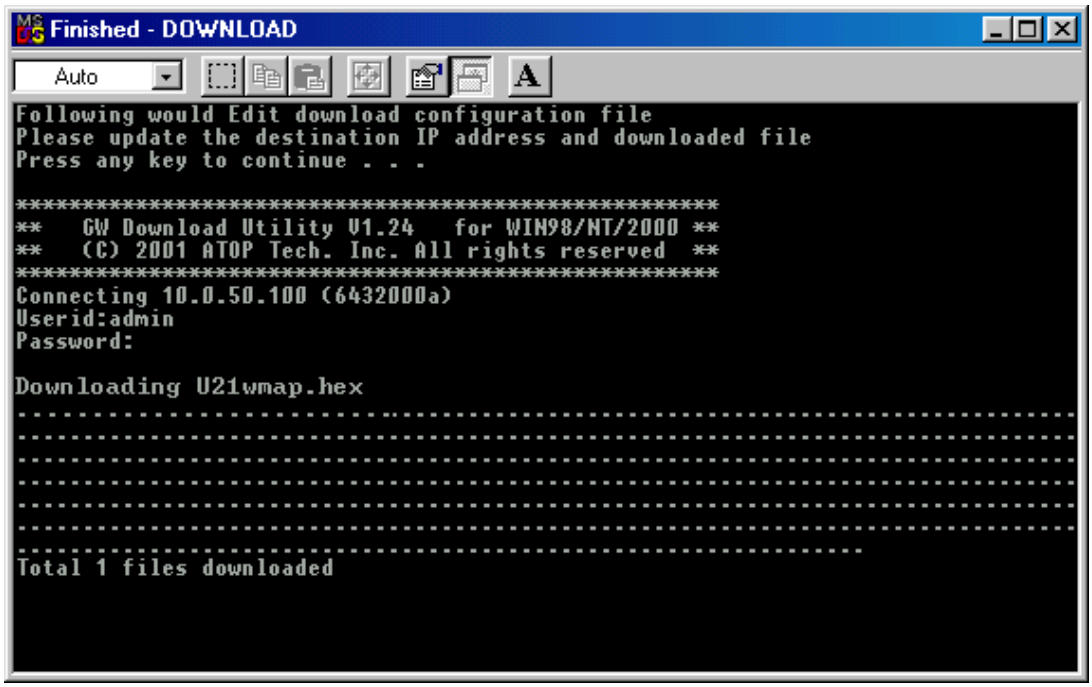
   **Remote_IP 10.0.50.100**

   **Load U5001ap.hex**

   The first line identifies the IP address of GW212/GW215, the second line identifies the firmware (.Hex file) name to be downloaded.
4. Execute the utility program **download.bat,** it can be found in the product CD.
5. Input the user name and password credential, the new firmware will be downloaded.




6. GW212/GW215 will automatically restart each time the firmware is successfully downloaded.




## B.2 Critical Issues of Upgrading

1. You can always abort the upgrading process by pressing the **<Esc>** key from host PC during the upgrading process. GW212/GW215 will restart automatically and the system remains intact.
2. If GW212/GW215 does not receive any upgrading data within **30 seconds**, GW212/GW215 will restart automatically and the system remains intact.
3. After the upgrading process finishes, GW212/GW215 will program the flash memory and buzzer beeps 6 times then restarts. Normally, it takes around 10 seconds to complete the programming process. If an error occurs during the programming process, GW212/GW215 will clear the corresponding memory and the system remains intact of what it was.

## B.3 Error Messages

Firmware upgrade may not be successful if errors occur during the process.

| Error Cause | Message | Comments |
|---|---|---|
| Illegal Hex file format | Hex File Text Error | |
| | Hex File Check-Sum Error | |
| | Hex File Format Error | |
| | Hex File End of Record Error | |
| GW212/GW215 handshaking problem | GW212/GW215 ACK Start Address Error | |
| | GW212/GW215 ACK Length Error | |
| | GW212/GW215 Response Command Error | |
| Configuration file | Remote IP not found | |
| | Open configuration file failure | |

# Appendix C: Disable System Firmware

The AP (application program) firmware of GW212/GW215 can be disabled. This function is used in the situation that you downloaded a wrong version of firmware that caused the system crashed.

To disable the current version of firmware and prevent it from executing, please do the followings:

1. Turn the power off, open GW212/GW215 case.
2. Short pin1 and pin2 of jumper JP1 on the right-top corner from the main board to disable AP firmware.
3. Power on GW212/GW215.
4. Download the correct AP firmware to GW212/GW215.
5. Remove the pin 1 and pin2 of jumper JP1 to enable AP firmware.
6. Close the case and continue your operations.

# Appendix D: Using Monitor.exe Utility

The configuration utility **monitor.exe** comes with the product CD or diskette is the main utility program to demonstrate and configure GW212/GW215's settings.

## D.1 Run the utility

Start the program under Windows 95/98/NT/2000 environment and the following window appears.

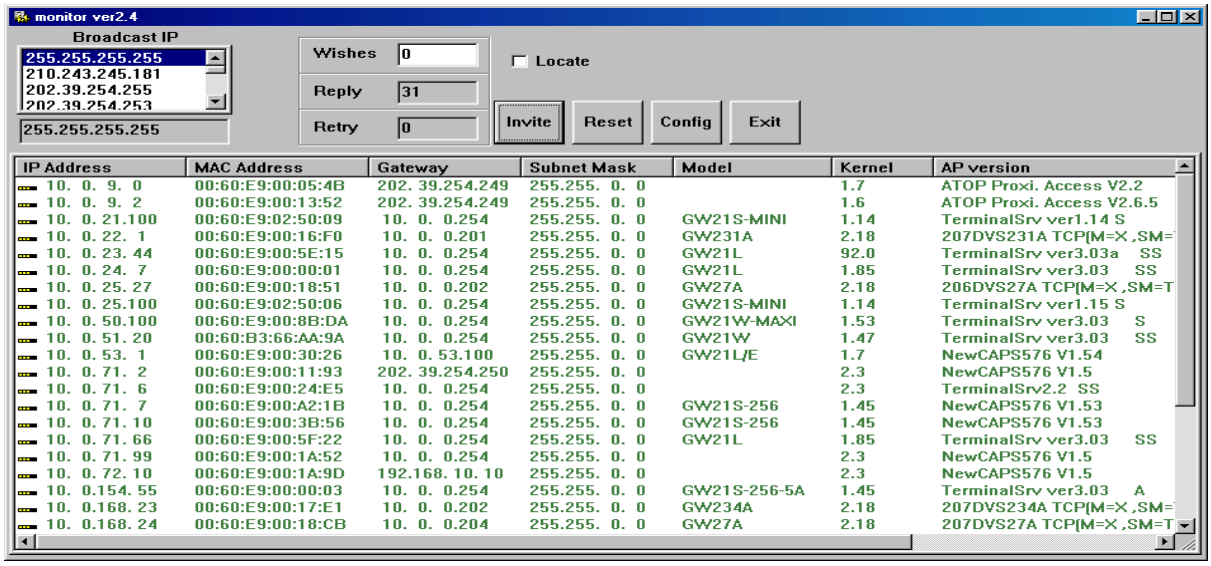



Figure D1. Main window of monitor.exe utility program

## D.2 Detect Operational Devices

You may do the following steps to detect devices currently available on the network.

1. Start **monitor.exe** utility program.
2. Select an item from the **Broadcast IP** list.
3. Specify a number in the **Wishes** box.
4. Click on the **Invite** button. This will display all the devices information you have requested.

## D.3 Configure Devices

You may use **monitor.exe** configuration utility to configure the settings of devices on the network. To do so, please follow the steps below.

1. Repeat the steps in the section of **D.2** to bring up the devices information.
2. Select the device you want to configure from the **IP Address** column, click on the **Config** button, a configuration window will popup as shown in Figure D2:

| IP Address | MAC Address | Host Name | Gateway | Subnet Mask | Model | Kernel | AP version |
|---|---|---|---|---|---|---|---|
| 10. 0. 20. 88 | 00:60:E9:01:97:1D | | 10. 0. 0.254 | 255.255. 0. 0 | SW5001 | 1.1 | SW5001 V1.11 |
| 10. 0. 50.100 | 00:60:E9:01:91:B1 | name | 10. 0. 0.254 | 255.255. 0. 0 | SE5001-S5 | 2.30 | TerminalSrv ver3.13X S |
| 10. 0. 53. 1 | 00:60:E9:00:5E:A8 | | 10. 0. 0.254 | 255.255. 0. 0 | GW21L | 1.82 | NewCAPS576 V1.54 |
| 10. 0. 57.120 | 00:60:E9:11:51:52 | | 10. 0. 0.254 | 255.255. 0. 0 | SE1002 | 1.14 | SE1002 V1.14b |
| 10. 0. 89. 3 | 00:60:E9:00:8D:75 | 0060E9-008D75 | 10. 0. 0.254 | 255.255. 0. 0 | GW51W-M... | 2.20 | NewCAPS576 V1.54 |
| 10. 0.195.115 | 00:14:85:E3:D7:18 | | 10. 0. 0.201 | 255.255. 0. 0 | SW5001 | 1.1 | SW5001 V1.11 |
| 10. 0.210. 1 | 00:60:E9:00:48:D4 | | 10. 0. 0.205 | 255.255. 0. 0 | GW231A | 2.18 | 208DVS231A TCP(M=X ,SM=TCP,10.0.22.200 . |

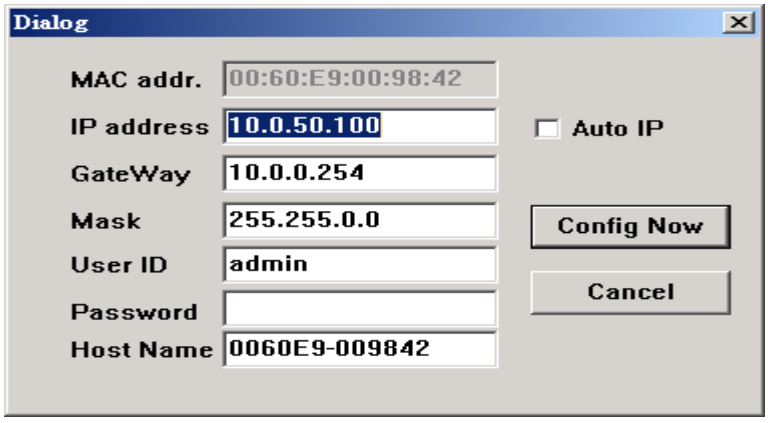
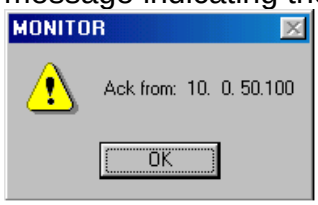



Figure D2. Configuration dialog box

3. After you click the "Configure Now" button, the target device will return an ACK message indicating the modification is successful as shown in the following:




The following table lists the functional descriptions for all the fields.

| Field Name | Field Descriptions |
|---|---|
| **Broadcast IP** | Except for the default IP 255.255.255.255, other items (IPs) are read from the file "seg.cfg". This field specifies a detecting IP range. It may be a designated IP or a broadcast IP. |
| **Wishes** | Specifies minimum number of the devices you wish to get reply from after sending an **Invite** request. If there is not as many as devices responding to your invitation, the system repeatedly sends invitation until your request is fulfilled. |
| **Reply** | Indicates the actual number of devices this utility program detected. |
| **Retry** | Specify the number of times that an Invite request is re-sent. |
| **Locate** | Locate the specified device. |
| **Reset** | Reset the selected device. |
| **Config** | Configure the selected device. |
| **Exit** | Exit this utility. |
| **IP Address** | Indicate the IP address of the device that replied to your request.<br>• Leading tag "!" stands for IP address collision, possibly caused by duplicated IP addresses on the network.<br>• Leading tag "?" stands for Mac address collision, possibly caused by duplicated Mac addresses on the network. |
| **MAC Address** | Indicates the MAC address of responding device. |
| **Gateway** | Indicates the IP address of the gateway. |

| | |
|---|---|
| **Subnet Mask** | Indicates the TCP/IP network mask. |
| **OS** | Indicates the OS version of the responding device. |
| **AP Version** | Indicates the AP version of the responding device. |
| **Model** | Indicates the model number of the responding device. This field is only available for monitor.exe version 2.0 and above. |

# Customer Technical Service and Support:

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