User's Manual

Atop ABLELink® SE5404 Series

4-Port Ethernet Serial Server

Version 1.2

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IMPORTANT ANNOUNCEMENT

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This document is intended to provide customers with brief descriptions on the product and to assist customers to get started. For detail information and operations of the product, please refer to this manual or the CD attached.

FCC WARNING

Class A for Ethernet Serial Server (Model SE5404 series)

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 the device's ' RS-232 or RS-485 port.

Be cautioned that changes or modifications not explicitly approved by ATOP Technologies could void your authority to operate the equipment.

Contents

1. INTRODUCTION

Many industrial and Commercial devices equipped with slow serial communication ports—RS-232, RS-485, and RS-422—are limited in their transmission distance of 15 m. Examples of these devices are PLC controllers, card readers, display signs, security controls, CNC controller, etc. ATOP Technologies has overcome the limit with a family of SE5404 Series Ethernet Serial Servers. The SE5404 sever family is designed to transmit data between one-or-more serial device and one-or-more TCP/IP device through Ethernet, and hence enhance the accessibility of the serial device through the ubiquitous TCP/IP based Ethernet.

Of the SE series, the SE5404 is for RS-232/RS-422/RS-485 without isolation protection built-in, while the SE5404-S5is is for RS-422 and RS-485 devices built-in isolation protection.

1.1 Packaging

Check your package to make certain it contains the following items:

◎ SE5404 /SE5404-S5is Ethernet Serial Device Server

◎ Quick Installation Guide

◎ Product Warranty

◎ Product CD

◎ Rack mounting L type ears*2 (include screw*6)

◎ Wall mounting screws*2

◎ 3-pin terminal block*1 for power input only for SE5404-S5is

◎ 5-pin terminal block *4 only for SE5404-S5is

◎ Optional Accessories：

1. Power Adapter - DC Jack 12VDC,1.25A with Lock only for SE5404

1.2 Modes of Operation

The SE5404 Series can be operated in one of the following 3 modes:

TCP Server Mode：SE5404 can be configured in a TCP server mode on an Ethernet Network to wait for the host computer to establish a connection with the serial device (the client). After the connection is established, data can flow in both directions (Figure 1.1).

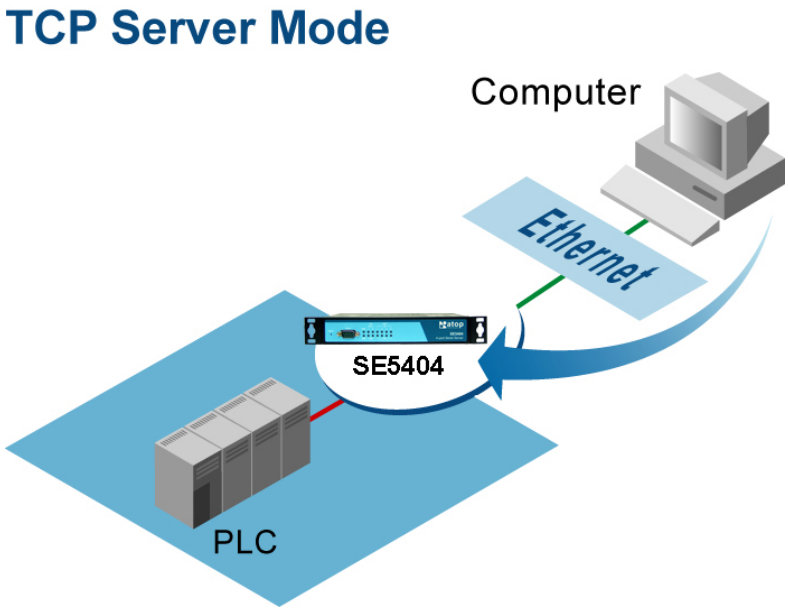


Figure 1.1 TCP Server Mode

TCP Client Mode：SE5404 can be configured in a TCP client mode on a TCP/IP Network to actively establish a connection with an applications server –the host computer. After the connection is established, data can flow in both directions (Figure 1.2).

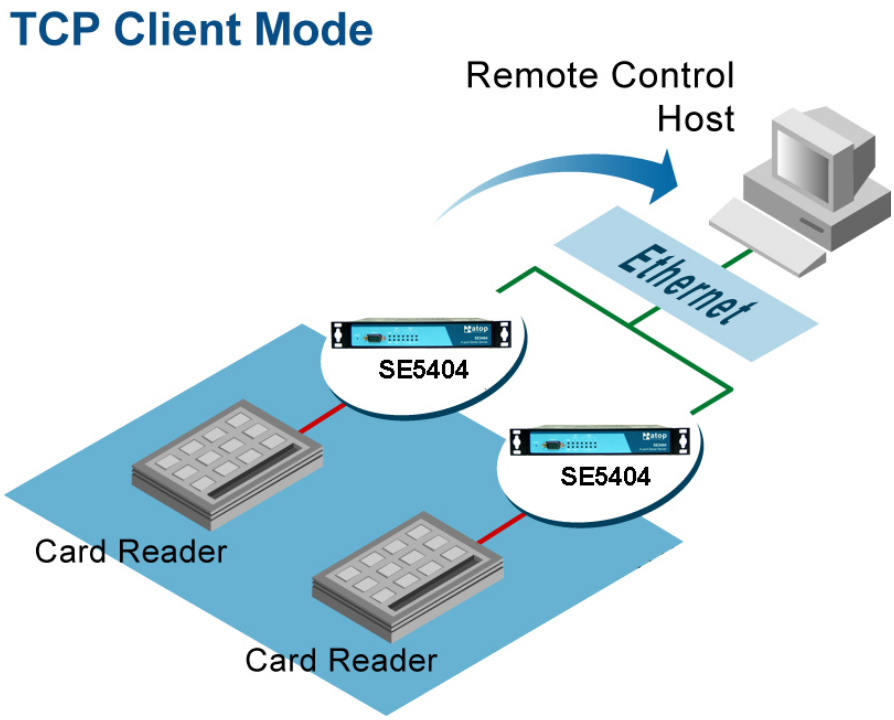


Figure 1.2 TCP Client Mode

UDP Mode：UDP is a fast but non-guaranteed datagram delivery protocol. SE5404 can be configured in a UDP mode on a TCP/IP Network to establish a connection, using

unicast data to and from a serial device to one or multiple host computers (Figure 1.3).

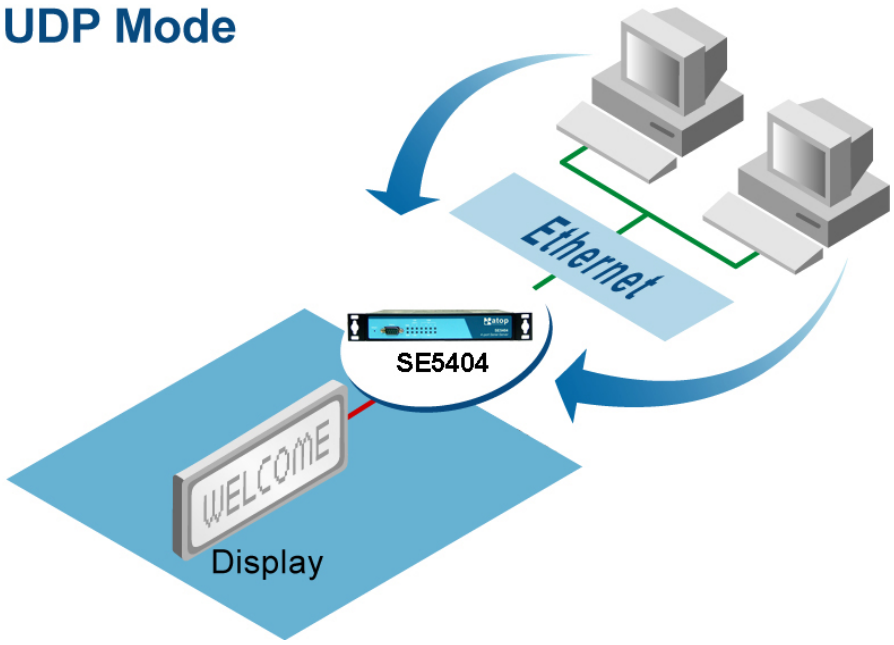


Figure 1.3 UDP Mode

2. HARDWARE DESCRIPTION

NOTE:

1. **Model SE5404** is for RS-232/RS-422/RS-485 without isolation protection built-in; **SE5404-S5is** is for RS-422/ RS-485 with isolation protection built-in. See Appendix A.3.1 for full Panel layout.
2. Press the **Default** button to reset to the default values

Figure 2.1 Show the interfaces

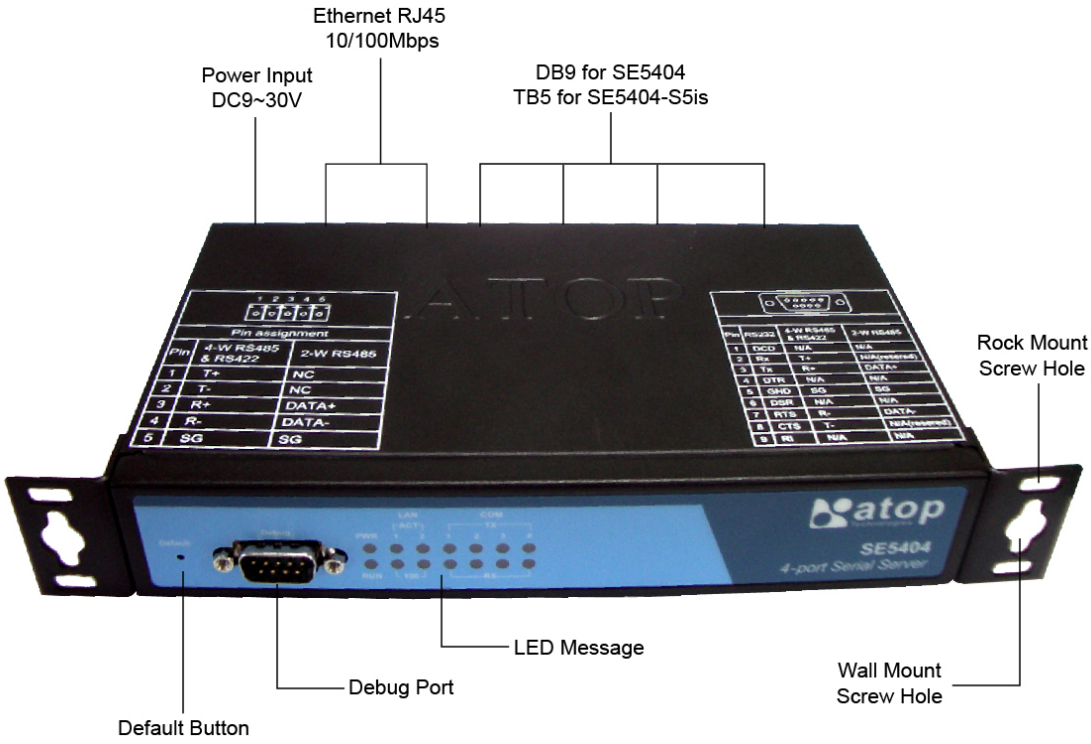


Figure 2.1 SE5404 Interfaces and DIN-Rail Mounting settings

2.1 LED Status

2.1.1 LAN

Message	Description
LAN1(2) 100 Off and ACT Off	Ethernet Disconnected
LAN1(2) 100 Off and ACT On	Ethernet 10Mbps connected
LAN1(2) 100 On	Ethernet 100Mbps connected
ACT Blinking Green	Data transmitting on Ethernet at 100Mbps

Table 1. LAN LED Status

2.1.2 COM

Message	Description
COM1(2/3/4) TX LED off	No data is transmitting on COM port
COM1(2/3/4) TX LED on blinking state	Data is transmitting on COM port
COM1(2/3/4) RX LED off	No data is receiving on COM port
COM1(2/3/4) RX LED on blinking state	Data is receiving on COM port

Table 2. COM Port LED Status

2.1.3 RUN

Message	Description
Off	AP firmware malfunction or power is not properly on
Blinking (rate: 0.5 Sec)	AP firmware running normally

Table 3. RUN LED Status

2.1.4 Power

Message	Description
Off	AP firmware malfunction or power is not properly on
On	Power on normally

Table 3. Power LED Status

2.2 Installation Procedures

Step 1: Connect SE5404 to a 12V DC power source Jack. (Or to a 9~30VDC Terminal Block power source which only for SE5404-S5is)

Step 2: Connect SE5404 to the Ethernet network. Use a standard straight-through Ethernet cable when connect to a hub/switch, or connect to a PC's Ethernet port via a crossover Ethernet cable. However, Always make sure ones PC is on the same sub-net as the SE5404.

Step 3: Connect SE5404's serial port to a serial device.

Step 4: Mount SE5404 to a Rack with one pair L type Rack mounting ears included

3. SOFTWARE

The SE5404 default parameters are shown in the following table.

Property		Default Value
LAN1	IP Address	**10.0.50.100**
	Gateway	**10.0.0.254**
	Subnet Mask	**255.255.0.0**
LAN2	IP Address	**192.168.1.1**
	Gateway	**192.168.1.254**
	Subnet Mask	**255.255.255.0**
User Name		**admin**
Password		**null (leave it blank)**
COM 1(2/3/4)		9600,None, 8, 1, No flow control, buffer disabled, packet delimiter disable
COM 1(2/3/4) Link1 Mode		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

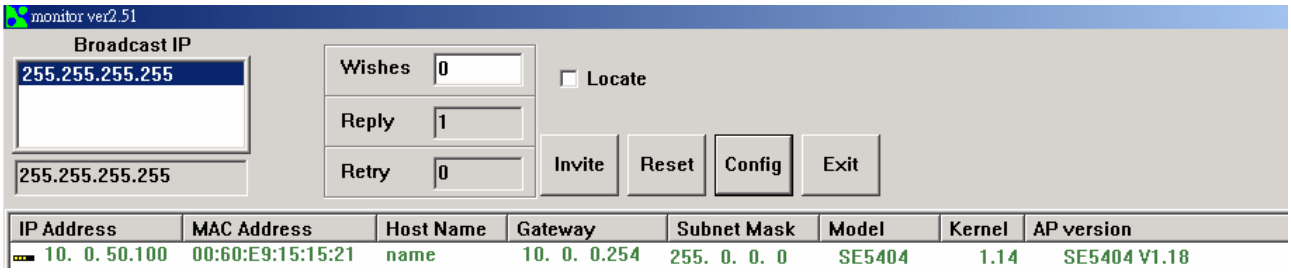


Figure 3.1. Configuring the static IP with monitor.exe utility

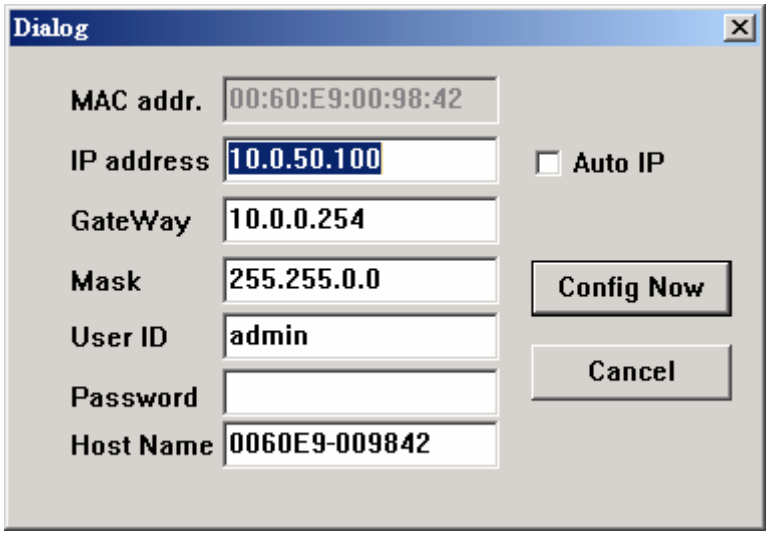


Figure 3.2 Static IP dialog window

3.1.2 DHCP client (Dynamic IP)

A DHCP server can automatically assign the IP address and all the network settings, and SE5404 supports the DHCP client functions.. By default, the DHCP client function on SE5404 is disabled; one may activate the DHCP client functions by the following steps：

->Execute Monitor.exe (Figure 3.1)

->Click on the **IP address** (of SE5404)

->Click "***Config***" to pop-up the static IP Dialog Window (Figure 3.2)

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

->Click " ***Config Now***" (The SE5404 will restart and obtain the IP from the DHCP server automatically)

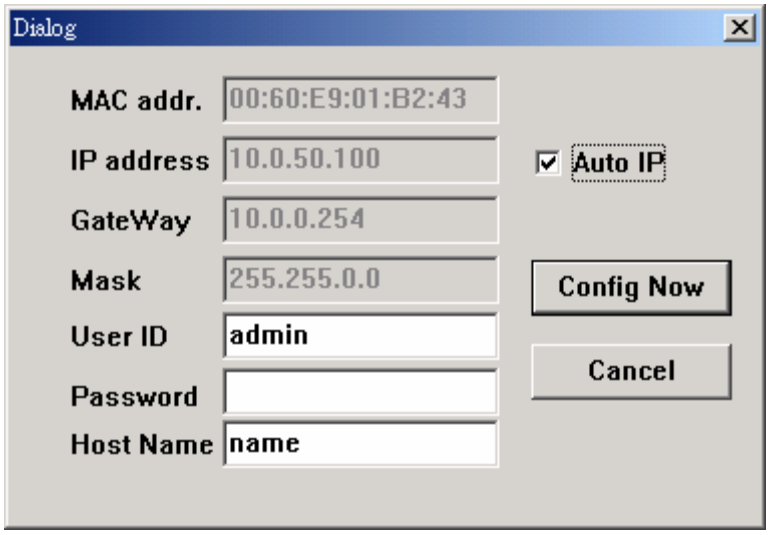


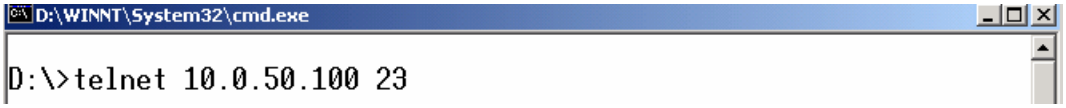
Figure 3.3. monitor.exe Auto IP Dialog Window

3.2 Configuration by Telnet utility

One may also use Telnet utility to change configuration settings.

3.2.1 Login

->Open Ms-DOS command prompt window



->Enter in the "**Telnet IP_address 23**".(For example, **Telnet 10.0.50.100 23**). The system then prompts for a Username and Password, the default username is **admin** and the default password is **null (leave it blank)**. (Figure 3.4)

Figure 3.4 Telnet to the system

NOTE:

(1) One may press the **Default** button over 2 seconds to reset username and password..

(2) Login username and password are case sensitive

1. Then the following main menu shall appear (Figure 3.5)

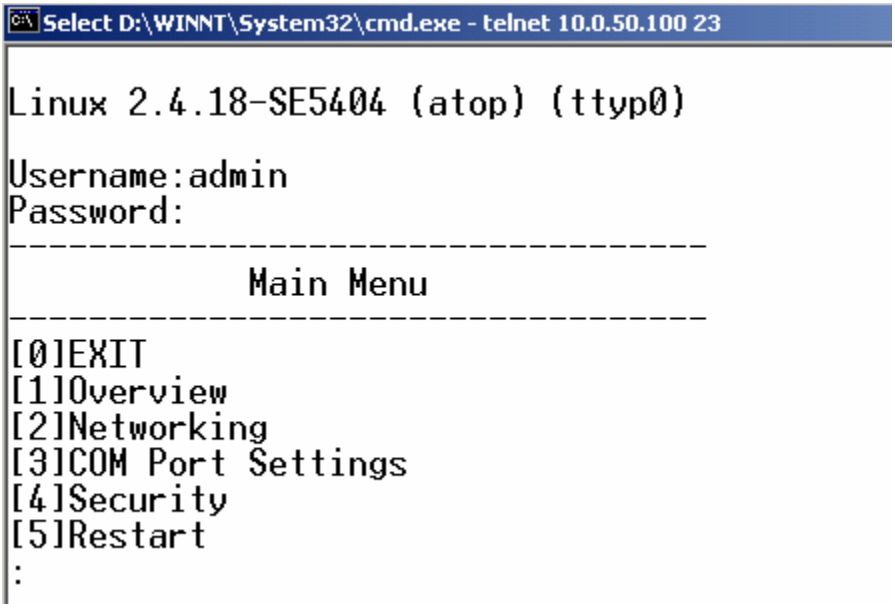


Figure 3.5 System main menu

3.2.2 System Overview

->Enter "***1***" from "***Main Menu***" to select "***overview***" .:(Figure 3.6)

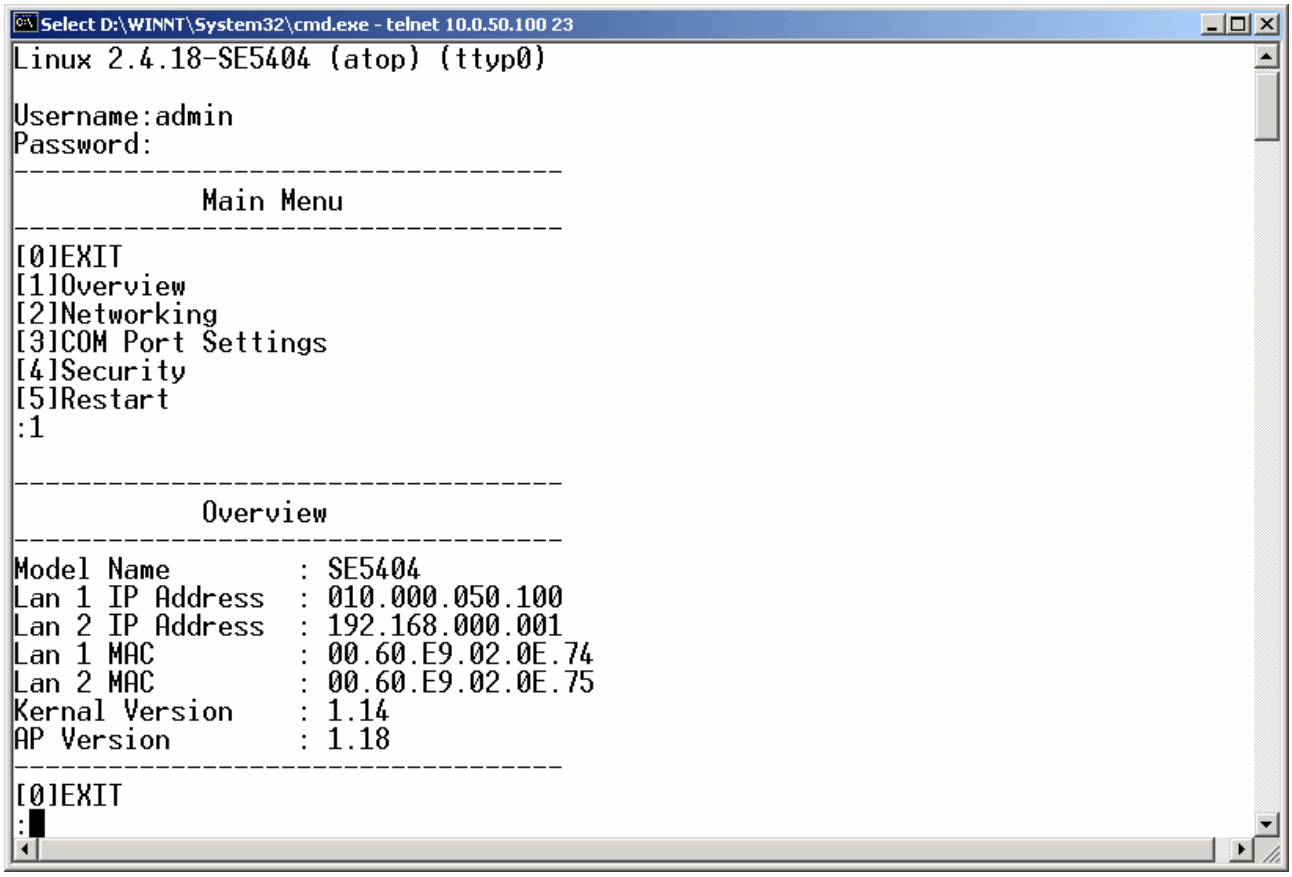


Figure 3.6 System configuring using Telnet

This system overview window gives the general information on **Model Name**, **IP Address**, **MAC address**, **kernel** and **AP version**.

3.2.3 Networking

Enter "***2***" on "***Main Menu***" to select "***Networking*****"** (Figure 3.7).

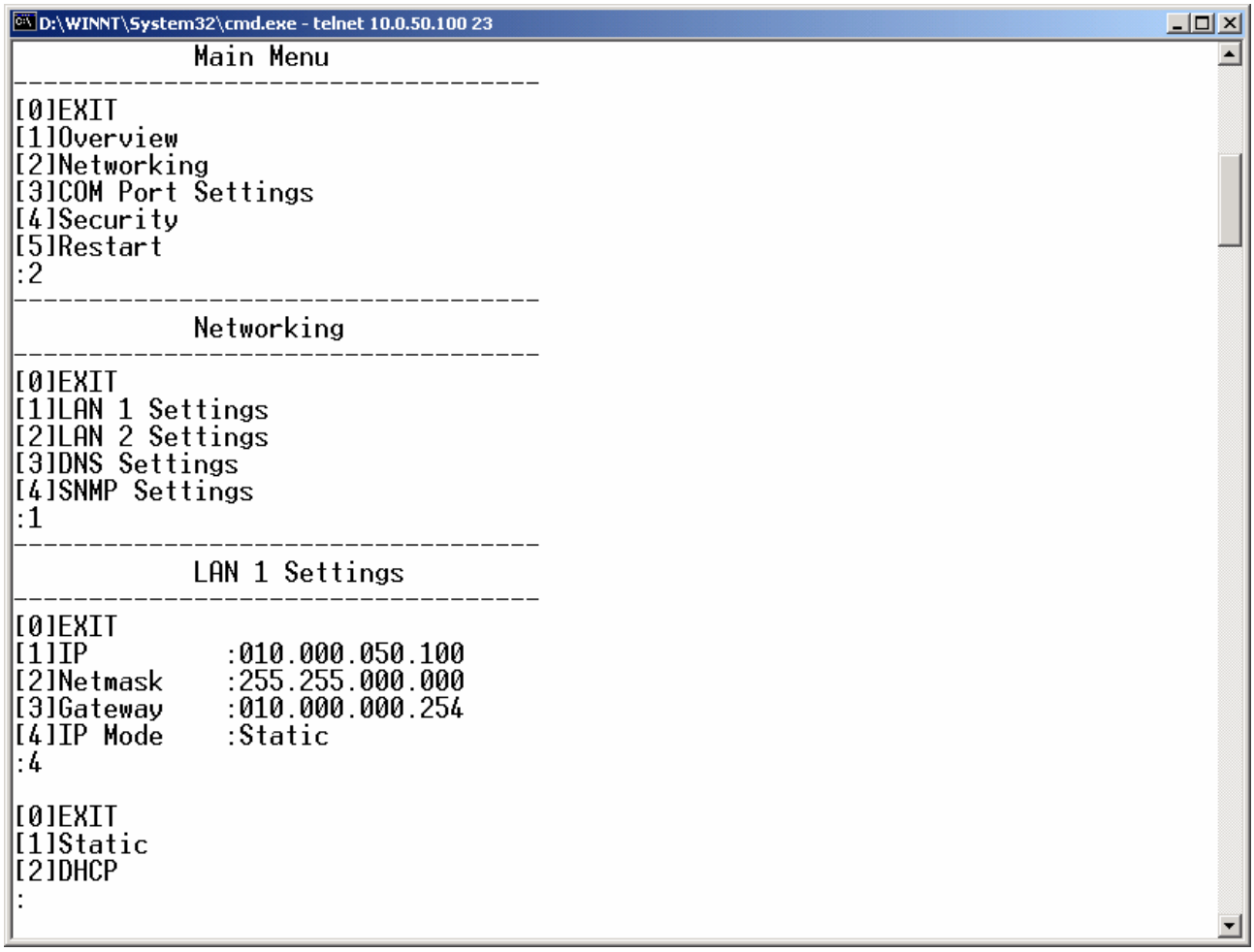


Figure 3.7 LAN IP configuring using Telnet

This screen allows for changes in "***LAN1 Settings***", "***LAN2 Settings***", "***DNS Settings***" and "***SNMP Settings***" information.

NOTE:

1. The changes of networking parameters will take effect only after the SE5404 series is exited and restarted.
2. SE5404 has 2 LAN Ports that can be connected to different subnet. It is helpful for one to take control from one subnet to another once one of the subnet crashes.

3.2.3.1 LAN1 and LAN2 Settings

->Enter "***1*** "or "***2***" to change LAN1 or LAN2 in "***IP***", "***Netmask***", "***Gateway***" and "***IP Mode*** "information.

-> Enter "***1*** "to "***3*** "separately on" ***LAN1 Settings***" to change **IP**、**Netmask** and **Gateway** in sequence

-> Enter "***4***" in "***IP Mode***" to change the settings to Static IP or DHCP client alternative.

Note:

(1) Enter "***0***" to return to the previous menu.

(2) Setting changes will not take effect until the device is restarted.

(3) The default IP Mode is Static IP Mode.

3.2.3.2 DNS Settings

->Enter "***3***" on "***Networking***" to select "***DNS Settings***" (Figure 3.8)

->Enter "***1*** "or "***2***" to change DNS1 or DNS2 's IP in "***DNS Settings*****"**

->Input DNS Server's IP address

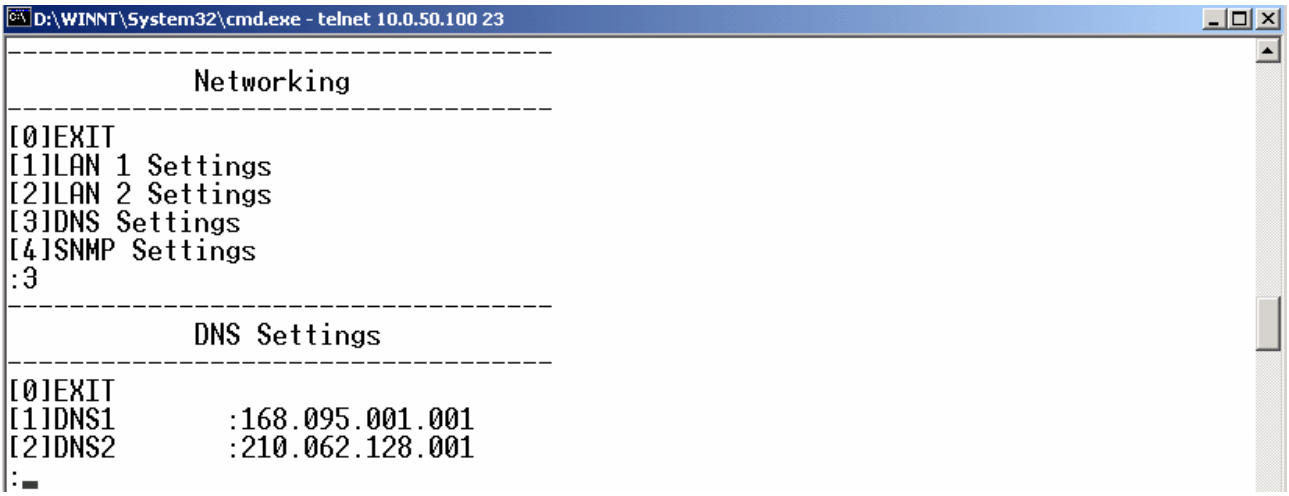


Figure 3.8 DNS configuring using Telnet

3.2.3.3 SNMP Settings

1. Enter "**4**" on "***Networking***" to select "***SNMP Settings***" (Figure 3.9)
2. Enter "***1*** " on "***SNMP Settings*****"** to enable or disable SNMP function alternative
3. Enter "**2"** to **"*4"*** separately to change the "***System Name***" 、"***System Location***" 、"***System Contact***" in sequence.

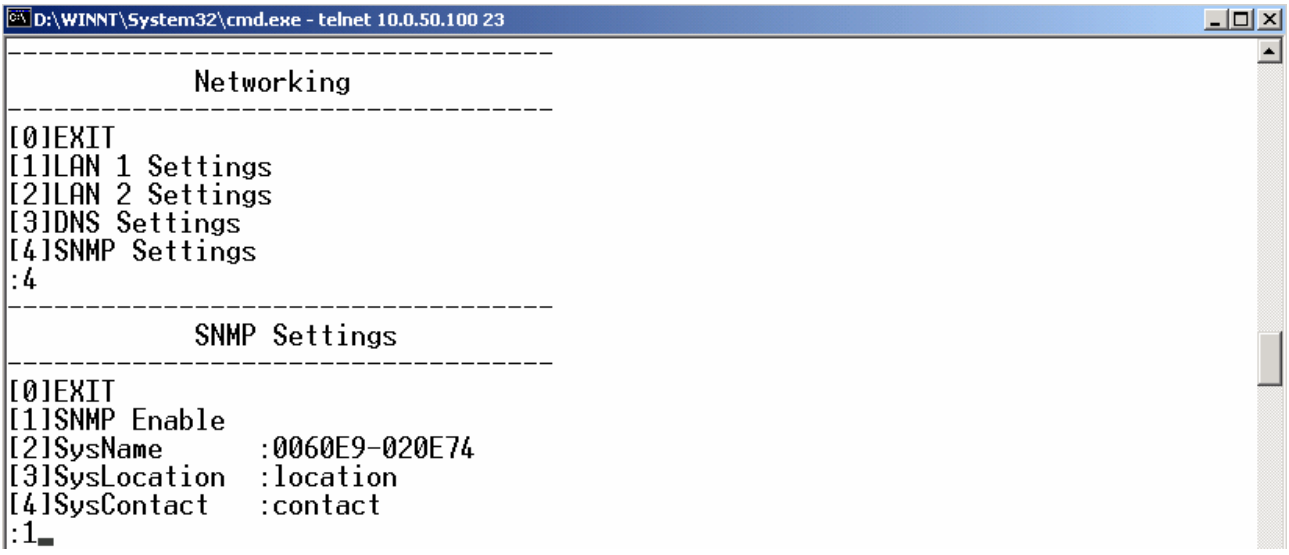


Figure 3.9 SNMP configuring using Telnet

3.2.4 COM1 Setup

Enter "**3**" on "***Main Menu***" to select "***Com Port Settings***" (Figure 3.10).

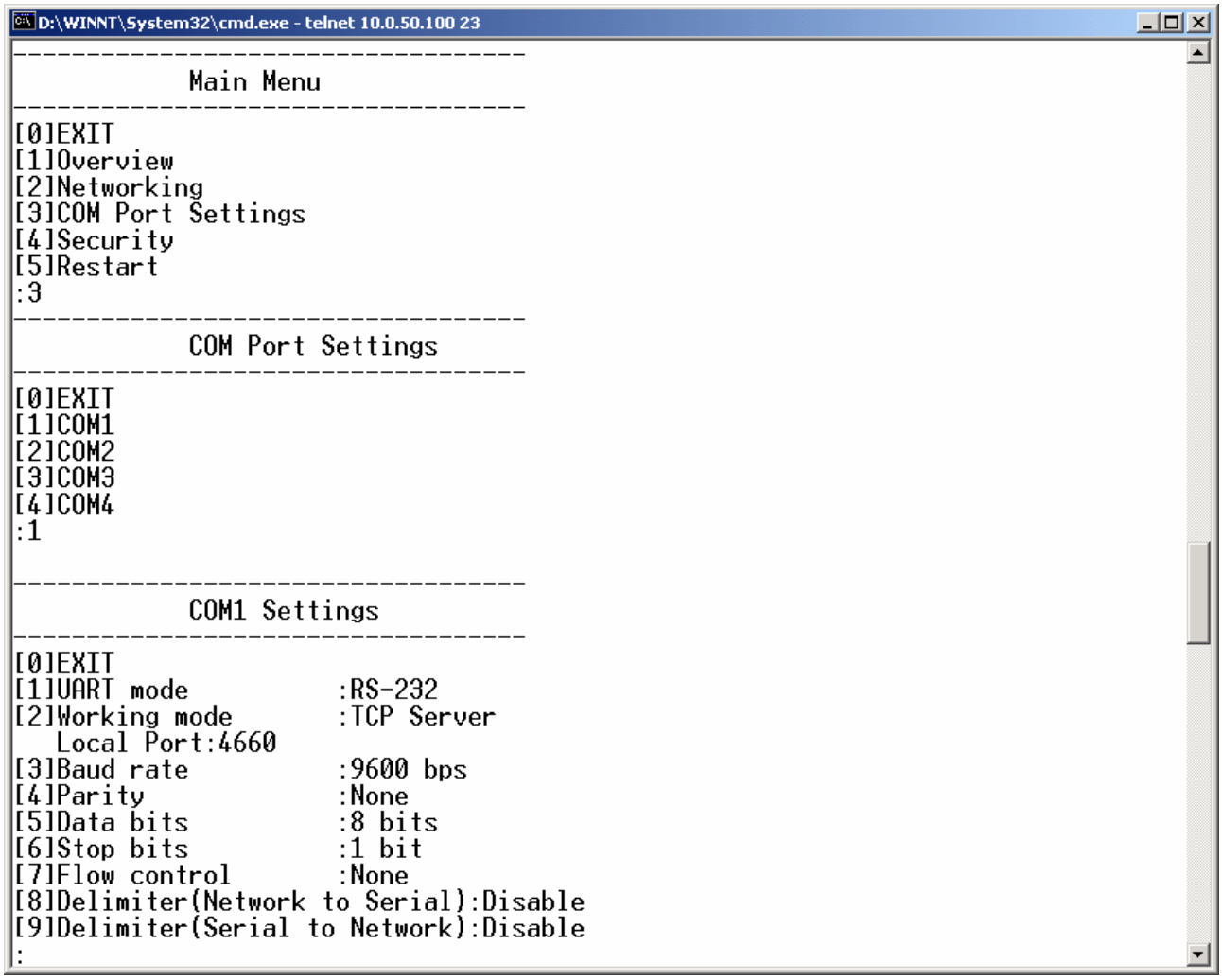


Figure 3.10 Com1 setup

Here one may configure COM1~COM4 serial port parameters, include "***UART mode***", "***Working Mode***", "***Baud rate***", "***Parity***", "***Data bits***", "***Stop bits***", "***Flow control***", enabling or disabling "***Delimiter (Network to serial data buffer)***" and "***Delimiter (Serial to Network data buffer)***".

3.2.4.1 Configure UART Mode：(Figure 3.11)

➔ For Example：Enter "***1"*** on "***COM Port Settings***" to select "***COM1***"

➔ Enter "***1*** "on "***COM1 Settings***" to select "***UART mode"***.

➔ One shall Input one of the number 1~3 to select ***RS-232/RS-422/RS-485*** on "***Set UART Mode for COM1***"

3.2.4.2 Configure SE5404 as TCP server：(Figure 3.11)

➔ Enter" ***2"*** on "***COM1 Settings***" to select "***Working Mode"***

➔ One shall Input one of the number 1~3 to select ***TCP server/TCP client/UDP*** on "***Set Working Mode***

for COM1"

1. Enter "**0**" on "***Set IP filter use***" to disable IP filter function
2. Enter" **1**" on "***Set IP filter use***" to Enable IP filter

If one want to enable IP filter：

➔ Input Source IP on "***Set Source IP1：***" (for instance: **10. 0. 0. 100**)

➔ Input Local port on "***Set Local port ：***"(for instance: **4660**)

NOTE:

1. One may configure COM1 ~COM4 serial port parameters by entering **1**~ **4**.
2. IP filter is disabled by default
3. If IP filter is enabled, only the source IP assigned can be connected to SE5404.

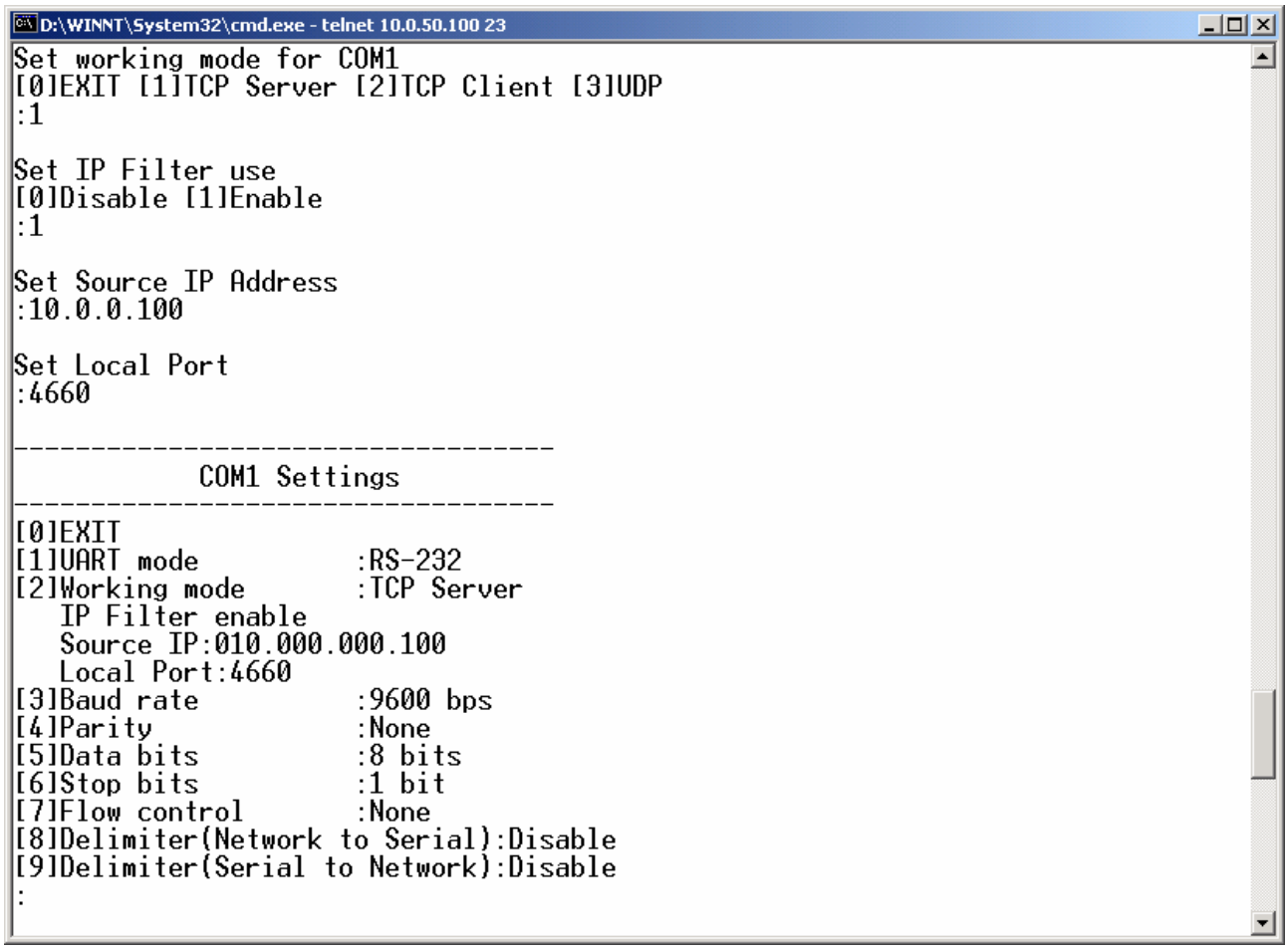


Figure 3.11 Working Mode-TCP server setup

3.2.5 Configuring SE5404 as TCP client

➔ Enter" **2**" on "***Set Working Mode for COM 1：***"(Figure 3.12)

➔ Input destination IP on "***Set Destination IP 1：***" (for instance: **10. 0. 29. 130**)

➔ Input destination port on "***Set Destination port 1：***"(for instance: **4660**)

➔ "***Set Destination 2 use***" Disable/Enable：

1. Enter "**0**" to Disable "***Destination 2 IP address***"：

2. Enter "**1**" to Enable "***Destination 2 IP address***"：

If one enable **"*Destination 2 IP address*"：**

➔ Input destination IP on "***Set Destination IP 2：***" (for instance: **10. 0. 29. 131**)

➔ Input destination port on "***Set Destination port 2：***"(for instance: **4661**)

NOTE：SE5404 shall establish the connection with Both TCP servers (both Destination IP addresses) of different port number at the same time and transmit data from the serial device to one or multiple host computer. Vice versa is also true.

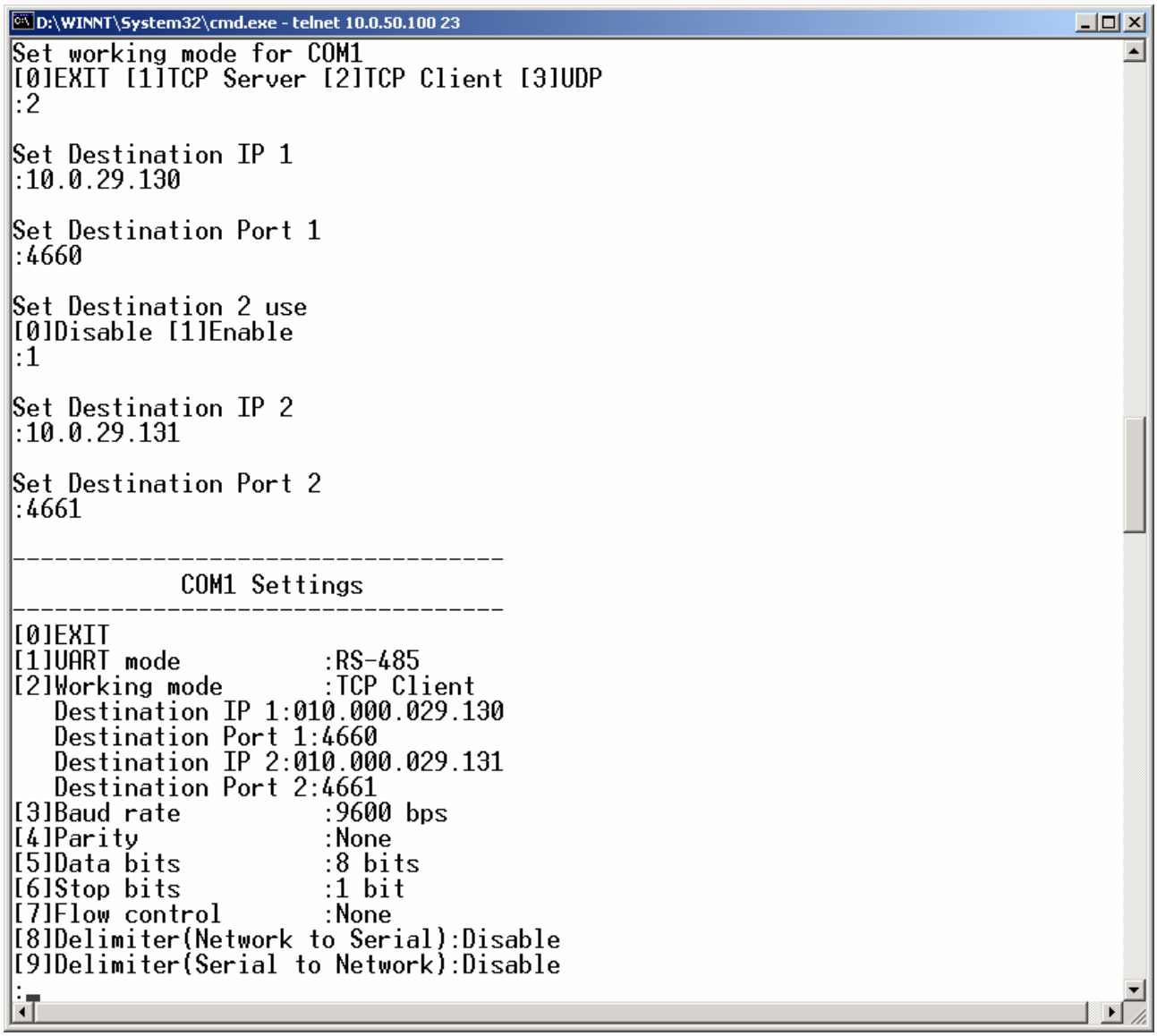


Figure 3.12 Link Mode-TCP client setup

3.2.6 Configuring SE5404 as UDP client

SE5404 can be configured on a UDP mode to establish connection using unicast data from the serial device to one or multiple host computer. Vice versa is also true.

In this example (Figure 3.13)：

->Enter Local port on "***Set local port***" to "***4660***";

->Enter destination IP address1 on "***Set Destination IP 1***" to "***10.0.29.254***"

->Enter destination Port1 on "***Set destination port 1*** " to "***6666***"

- ➔ Enter destination IP address2 on "***Set destination IP 2***" to "***10.0.29.253***"
- ➔ Enter destination Port2 on "***Set destination port 2***" to "***6665***"

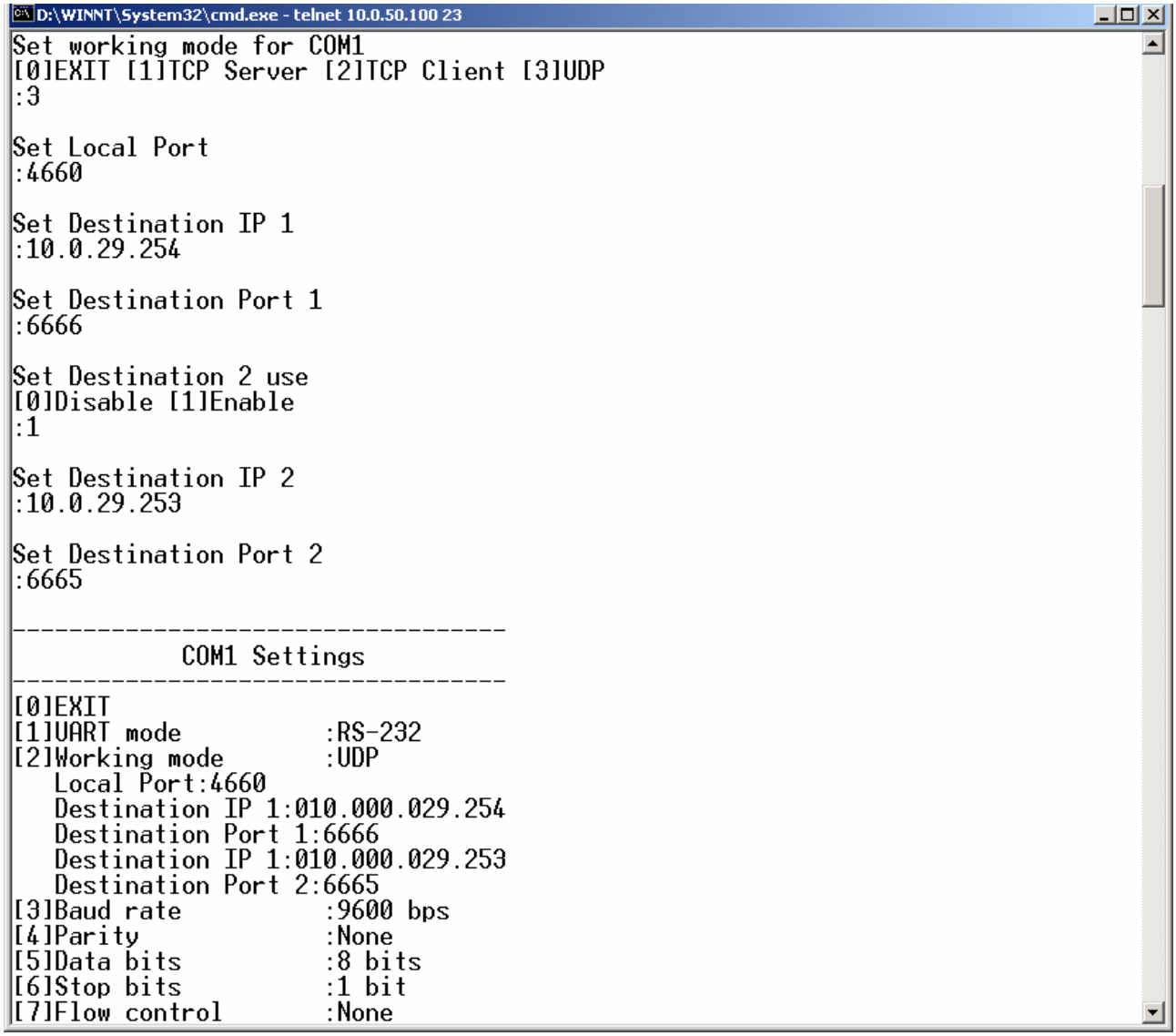


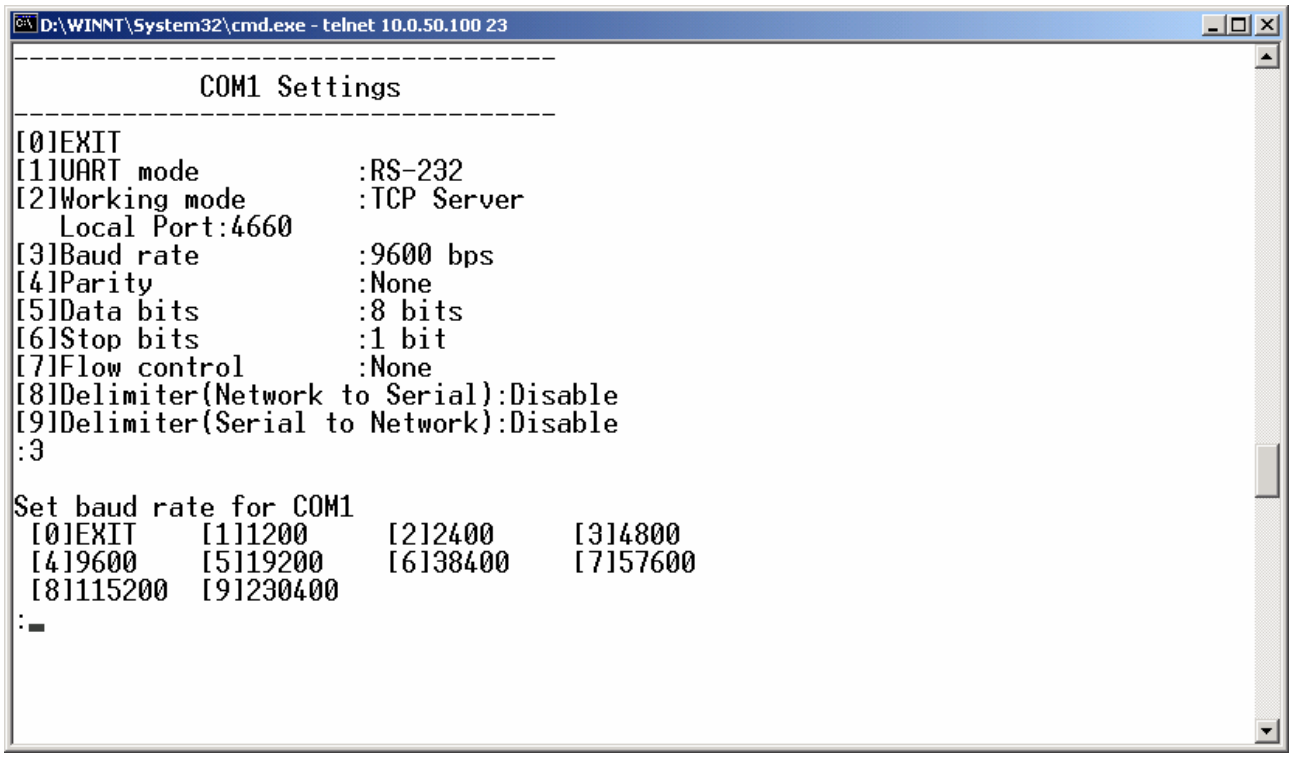
Figure 3.13 Link Mode-UDP client setup

3.2.7 Setting COM port

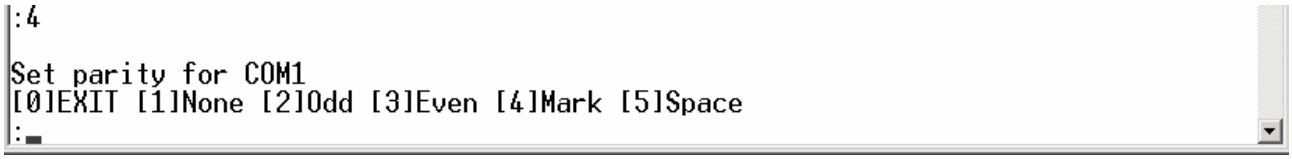
Enter **3~7** separately on "***COM1 Settings***" of COM1, then proceed to assign the COM port **baud rate、parity**, determine number of **data bits** and **stop bits**, and decide on the need of **flow control** (Figure 3.14)

Note：**The baud rate of SE5404-S5is with optical isolation Model only up to 230400 bps**

1. For Baud rate setting： Enter "**3"** on "***COM1 Settings***" of COM1

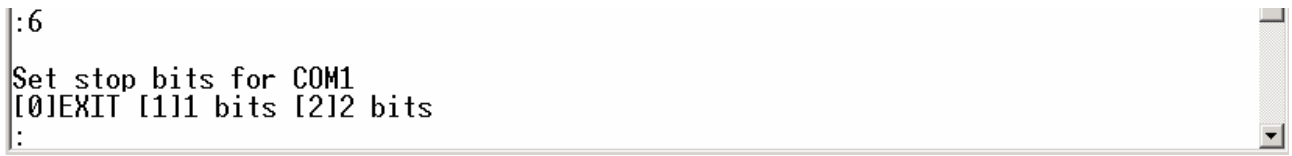


2. For Parity setting：Enter "**4"** on "***COM1 Settings***" of COM1



3. For Data bits setting：Enter "**5"** on "***COM1 Settings***" of COM1

4. For Stop bits setting：Enter "**6"** on "***COM1 Settings***" of COM1



5. For Flow control setting：Enter **"7"** on "***COM1 Settings***" of COM1

```
:7

Set flow control for COM1
[0]EXIT [1]None [2]Xon/Xoff [3]Hardware
:
```

Figure 3.14 Com port setting

3.2.8 Enabling Network to Serial (Serial to Network) data buffer

Example：Enter" ***9***" from "***Delimiter(Serial to Network)***" of COM1, by default COM port serial data buffer is disabled meaning that when TCP/IP Ethernet connection is broken, serial data collected from serial device won't be emptied on SE5404 once TCP/IP connection is resumed, the serial data will be sent through Ethernet connection, one may enable it if one wish(Figure 3.15)

1. Enter "**0**" on "***Set Delimiter (Serial to Network)***" to **disable** Serial to Network data buffer
2. Enter "**1**" on "***Set Delimiter (Serial to Network)***" to **set packet delimiter timer**
3. Enter "**2**" on "***Set Delimiter (Serial to Network)***" to **set character pattern terminator**

One may also Enter "***8***" from "***Delimiter (Network to Serial)***" to enable or disable Network to Serial data buffer

NOTE：

(1) Enabling "***Delimiter (Serial to Network)***" to clear the input buffer when the network connection to or from the device is disconnected

(2) Enabling "***Delimiter (Network to Serial)***" to clear the output buffer when the network connection to or from the device is disconnected

```
D:\WINNT\System32\cmd.exe - telnet 10.0.50.100 23
-----------------------------------
            COM1 Settings
-----------------------------------
[0]EXIT
[1]UART mode           :RS-232
[2]Working mode        :TCP Server
   Local Port:4660
[3]Baud rate           :9600 bps
[4]Parity              :None
[5]Data bits           :8 bits
[6]Stop bits           :1 bit
[7]Flow control        :None
[8]Delimiter(Network to Serial):Disable
[9]Delimiter(Serial to Network):Disable
:9

Set Delimiter(Serial to Network)
[0]Disable [1]Timer [2]Characters
:1

Set Timer(10~30000 ms)
:10
```

Figure 3.15 Com port-Enabling serial data buffer

3.2.9 Setting packet delimiter

Packet delimiter is a way of controlling the number of packets in a serial communication. It is designed to keep packets intack. SE5404 provides two ways in parameter setting: 1 "**Packet delimiter timer"** and 2 "**Character pattern terminator"**. By default, packet delimiter timer is 1 ms. The range of packet delimiter timer is from 0 to 30,000 mSec, as shown in Figure 3.16.

1.For **Packet delimiter timer** setting：

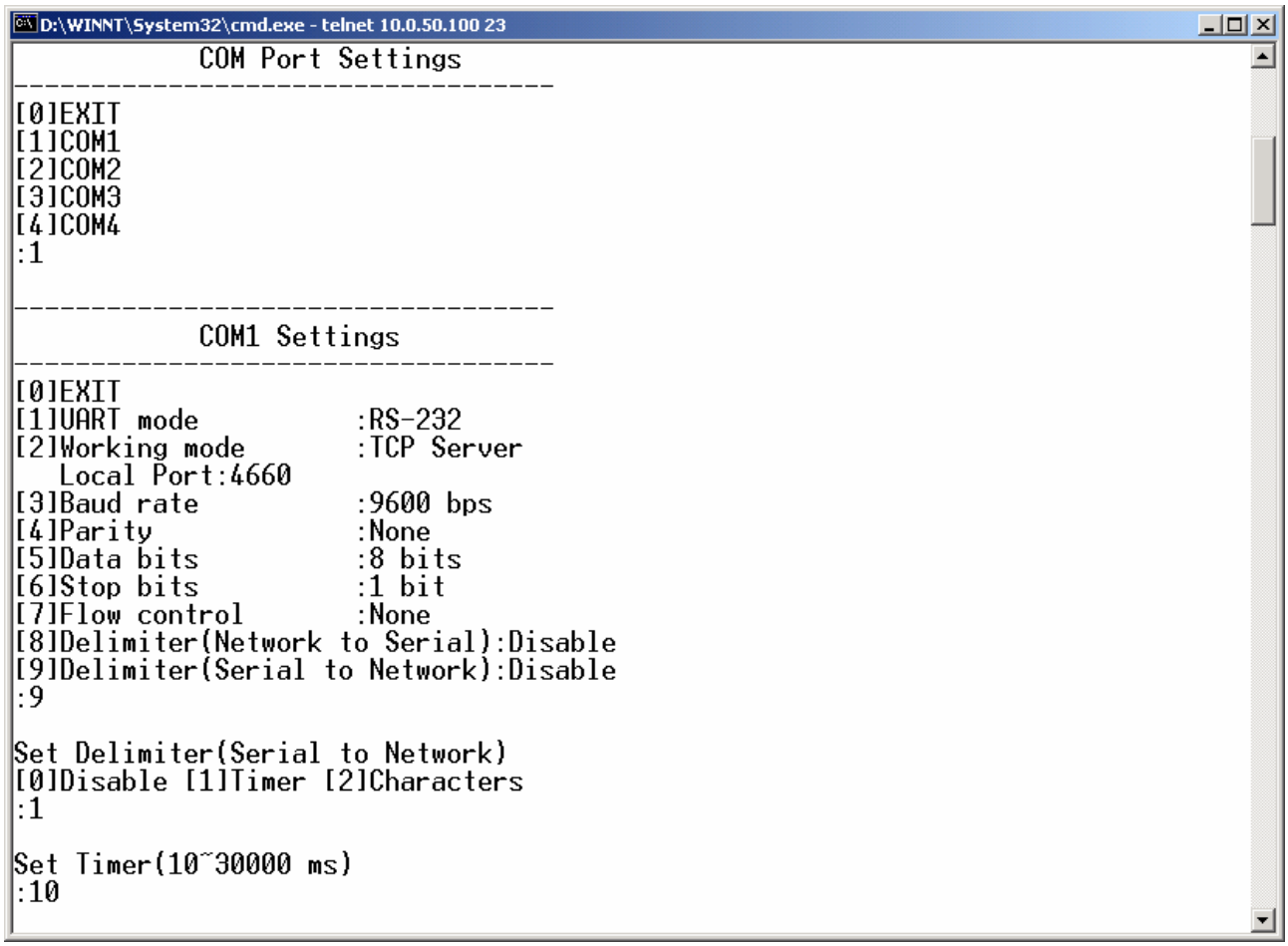


Figure 3.16 Setting packet delimiter timer-Packet delimiter timer

2. For **Character pattern terminator** setting：

One may also choose character pattern as the packet delimiter indicated in Figure 3.17. If "character pattern" is selected, for a data stream ended with "0x0d0a", then the entire data buffer of the serial device is transmitted.

NOTE：The characters are case sensitive, make sure to use lower case.

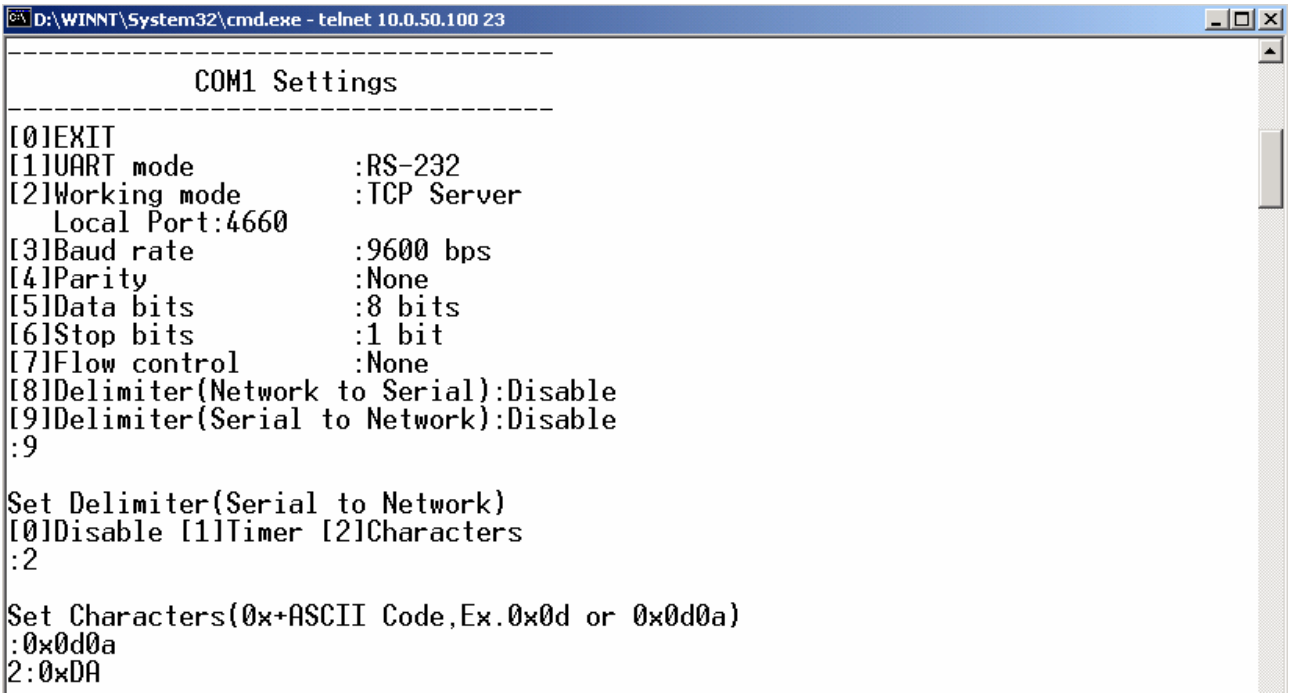


Figure 3.17 Setting packet delimiter-character pattern terminator

3.2.10 Security-Changing username and password

1. Select "**4**" on "***Security***" (Figure 3.18).

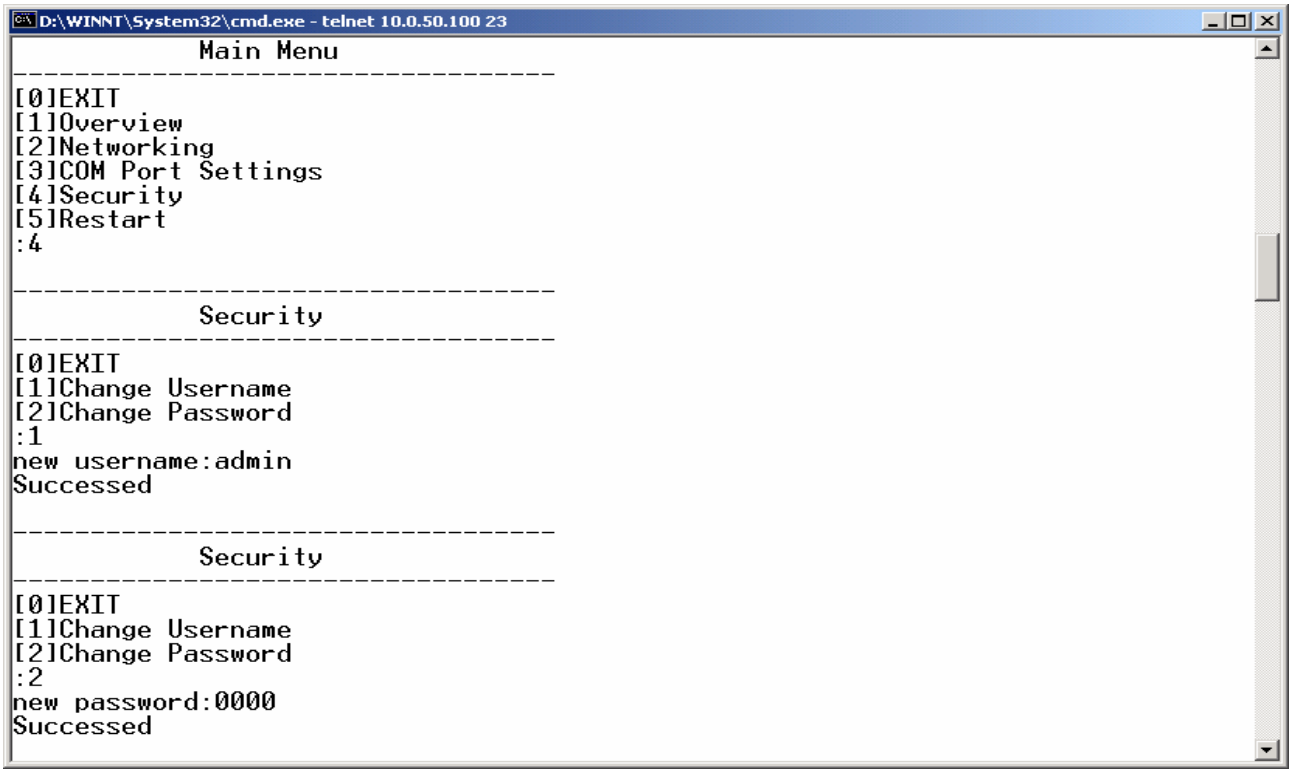


Figure 3.18 changing password using Telnet

2. Enter "***1***" on "***Change Username***" to enter in the new username , and Enter "***2***" on "***Change password***" field to enter in the new password.

NOTE:

1. One may press the **Default** button on the product to reset username and password.
2. Login username and password are case sensitive
3. The default username is **admin**
4. The default password is **null (leave it blank)**

3.2.11 Restart

After input "***5***" on "***Main Menu***" and then click "***enter***" key, SE5404 shall restart immediately.

3.3 Configuring Using Web Browser

1. Make sure the PC is on the same network as SE5404
2. Open a web browser, then Enter in the same IP address as the SE5404. The default user name is **admin** and the default password is **null (leave it blank)**.
3. The SE5404's **network**, **link mode** and **COM ports settings** can be configured on different web pages.
4. Click "***Save Configuration***" to save settings.
5. Click "***Restart***" button in "***System***" link to initial the change.

To modify settings through the web server interface, follow the steps below.

3.3.1 Log in

1. While on the web browser, Enter in the IP address of SE5404 of the URL.

   Example: http://10.0.50.100 for LAN1

   http://192.168.1.1 for LAN2

2. The following authentication screen shall appear (Figure 3.19) Enter desired "***user name*"** and "***password*"** then click on OK. The default user name is **admin** and the default password is **null (leave it blank)**.

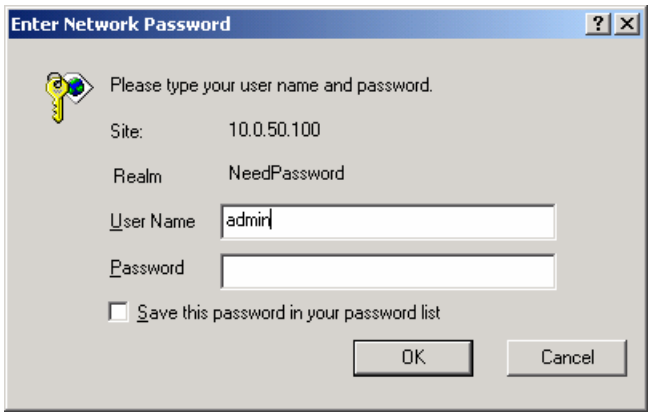


Figure 3.19 login the system via Web

NOTE：Login username and password are case sensitive.

3. The following overview screen shall appear (Figure 3.20)

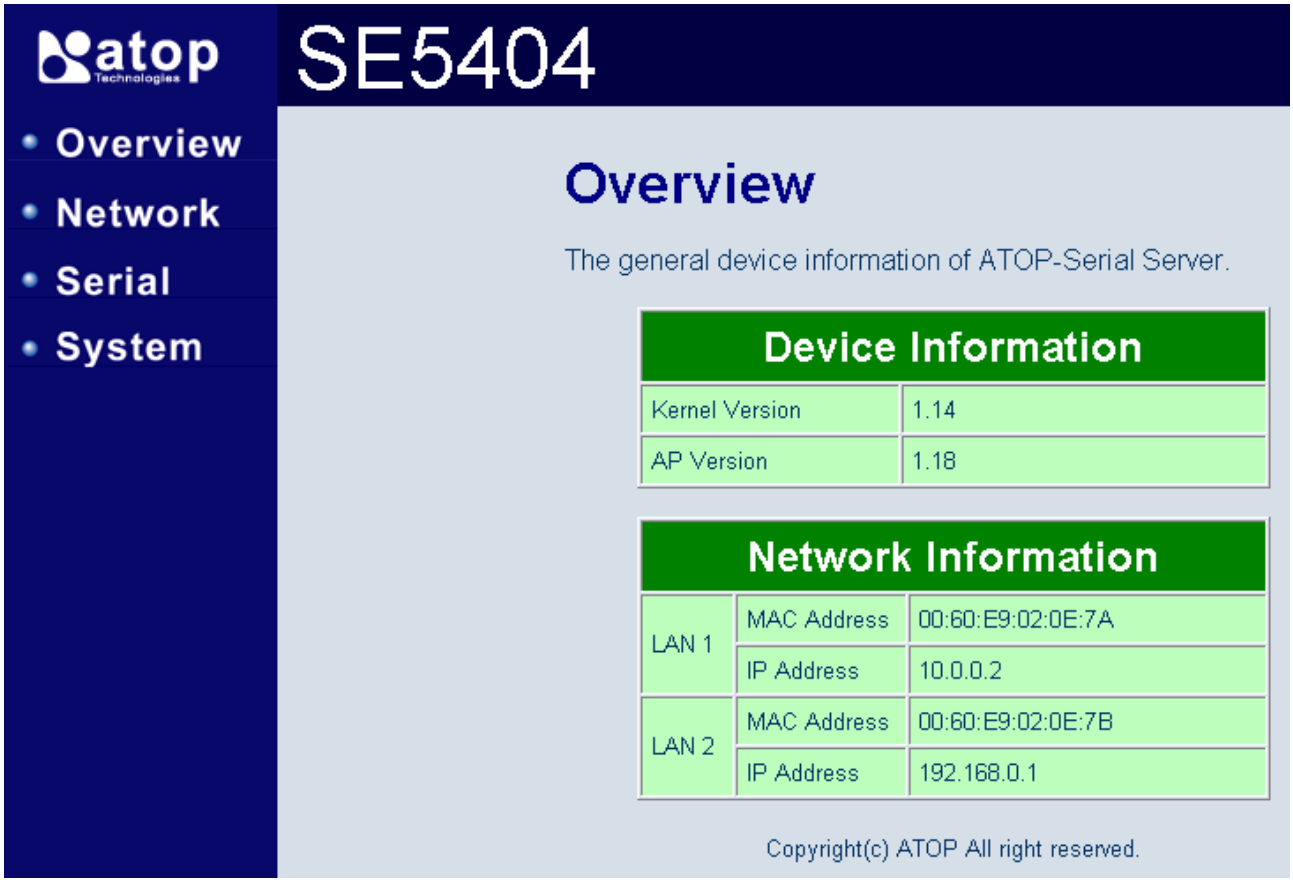


Figure 3.20 Overview

3.3.2 Network Settings

Click on ***"Networking"*** link and the following screen (Figure 3. 20) shall appear.

->Fill in IP information on the **TCP/IP** "***IP address***", "***Subnet Mask***" **and** "***Default Gateway***" fields, or check on "***Obtain an IP automatically***" Alternatively to obtain "***IP address***", "***Subnet Mask***" **and** "***Default Gateway***" automatically.

->Enable SNMP by checking "***Enable SNMP***"

->Input DNS Server's IP address(for instance：DNS1->168.95.1.1,DNS2->210.62.128.1)

->Fill in network identification information on **SNMP**

->Click on the "**Save Configuration**" button to save the changes.

Note：

1. SE5404 has 2 LAN Ports that can be connected to different subnet. It is helpful for one to take control from one subnet to another once one of the subnet crashes.
2. The changes will not become effective until SE5404 is restarted (Figure 3.21)

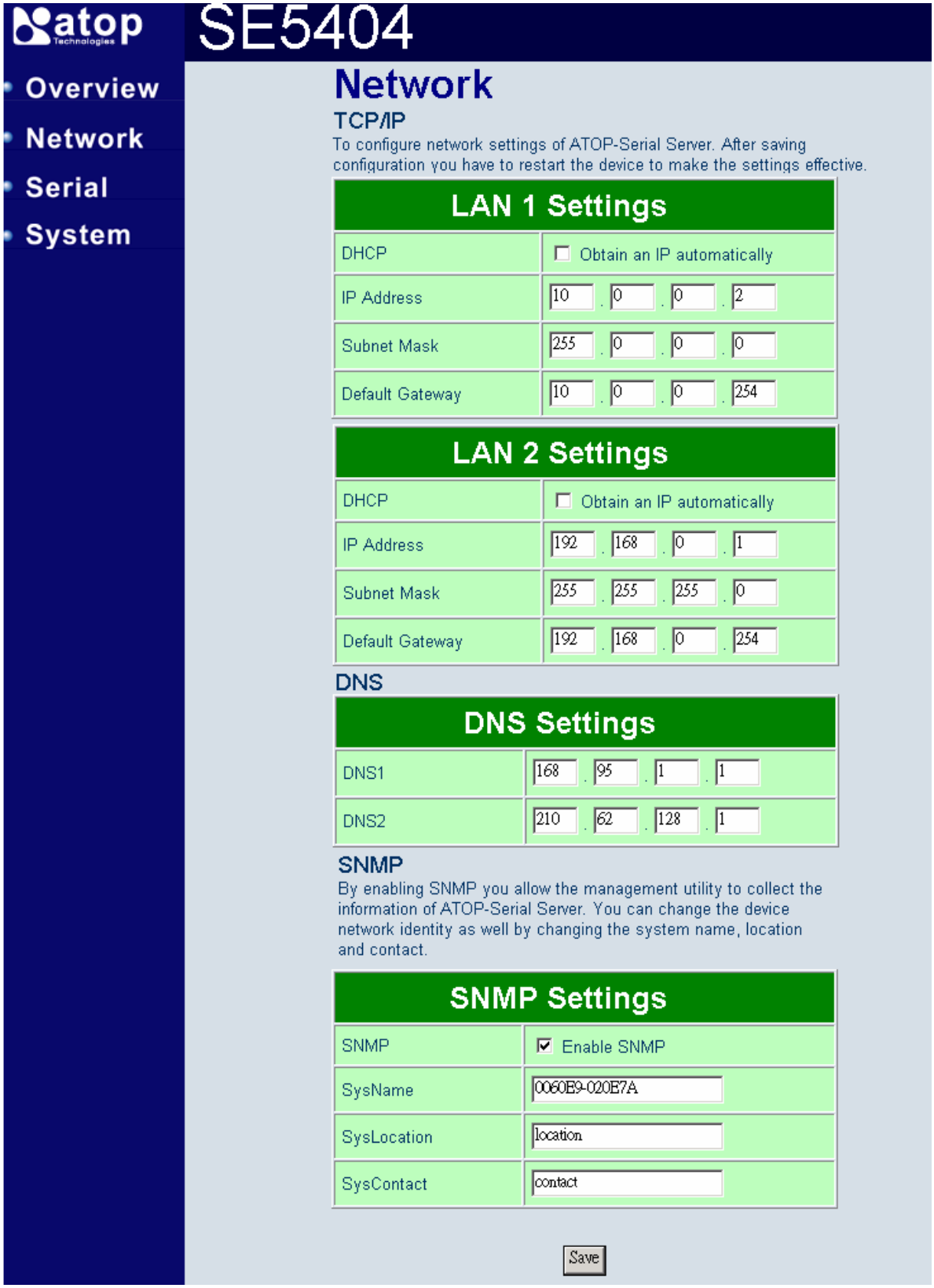


Figure 3.21 Network setup

3.3.3 Configuring SE5404 as TCP server

SE5404 is configured in a transparent mode by default (Figure 3.22)

- ➔ Click on ***"COM1"*** link and the following screen shall appear.
- ➔ Configure SE5404 as TCP server
- ➔ Input local listening port "***4660***"

1.**To enable IP filter：**

- ➔ Check "***IP filter***"
- ➔ Input source IP on "***Source IP"***

2.**If not to enable IP filter：**

- ➔ Don't check "***IP filter***"
- ➔ One may also check "***Virtual Com***" to enable Com drivers that work with Windows systems and TTY drivers for Linux systems
- ➔ Click on "***Save Configuration***" button to save the changes

NOTE:

1.One may configure serial parameter by choosing COM1 or COM2/COM3/COM4 Link

2.IP filtering function is disabled by setting FILTER_IP to "0.0.0.0".

3.IP filter is disabled by default

4.If IP filter is enabled, only source IP assigned is connected to SE5404.

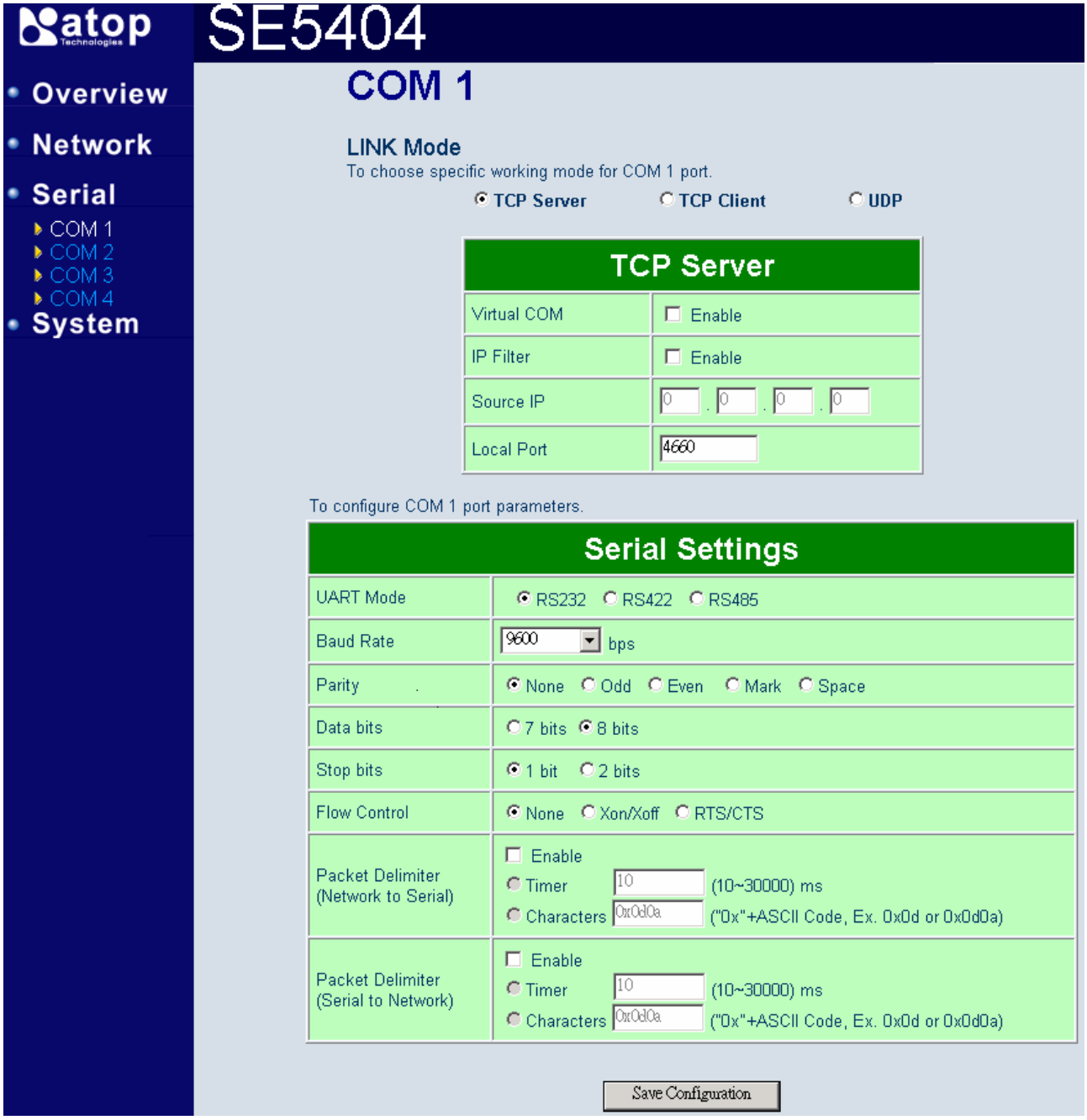


Figure 3.22 Com1 setup-TCP server

NOTE:

1. Default COM port numbers of SE5404 is from 4660 to 4663 and it is associated with the serial port COM1 ~ COM4. For example：After the application program being connected to the TCP port 4660 on the SE5404 COM1, data of ones application program are transparent to both COM1 and SE5404.
2. **SE5404-S5is only have RS-422 and RS-485 serial interface** for one to configure.

3.3.4 Configuring SE5404 as TCP client

- ➔ Configure SE5404 as a TCP client. For example, the destination IP is 10.0.29.11, and the destination port is 4660 (Figure 3.23)
- ➔ On "***destination IP1*"**, enter "***10.0.29.11***"
- ➔ On "***destination Port1***", enter "***4660***"
- ➔ One may configure 2 sets of destination IP addresses after check "***Destination 2***" to enable Destination IP2
- ➔ Enter "***destination IP2***" & ***"destination Port2***"
- ➔ Click on "***Save Configuration***" button to save the changes

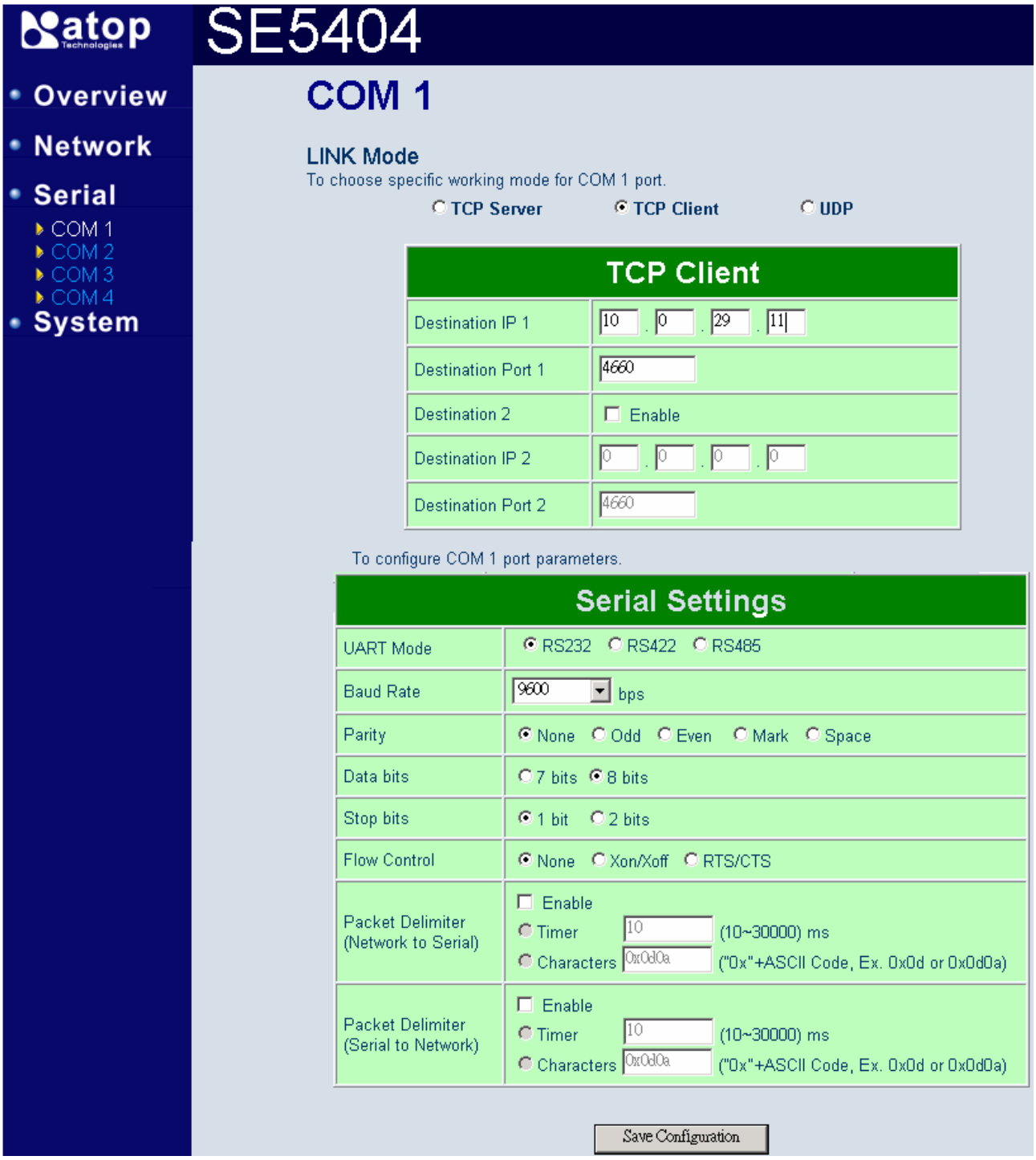


Figure 3.23 Com1 setup-TCP client

3.3.5 Configuring SE5404 in UDP mode

SE5404 can be configured on a UDP mode to establish connection using unicast data from the serial device to one or multiple host computer. Vice versa is also true.

There are 2 UDP communication Modes：

1. **Master (Client) Mode**：To establish a connection using unicast data from the serial device to one or multiple host computer(Figure 3.26).

NOTE：

1.The configuration is limited by **Destination IP** and **Destination Port**

2.One may configure 4 sets Destination IP addresses with different IP range and different port numbers (Figure 3.24)

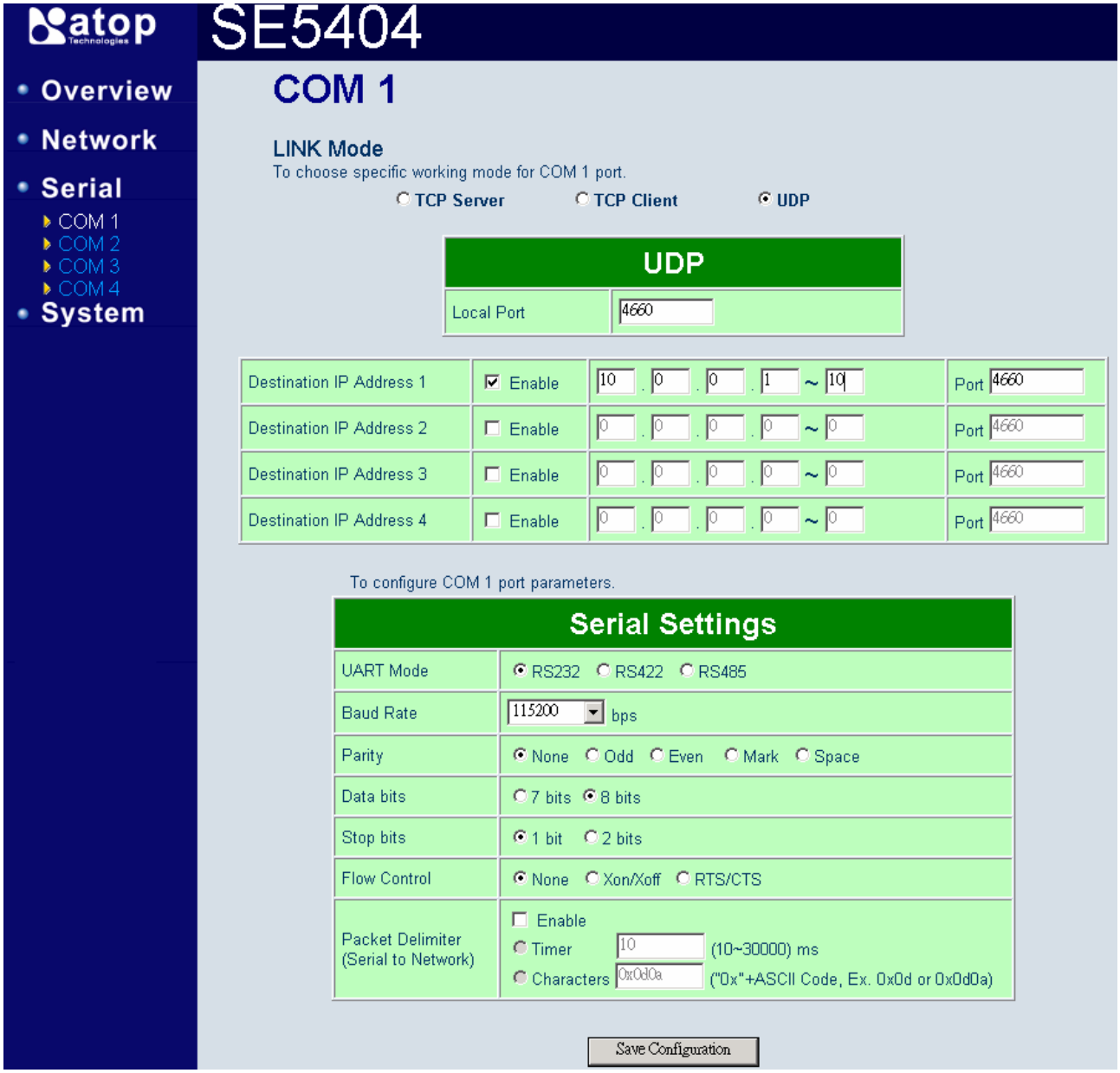


Figure 3.24 Com 1 setup –UDP mode

➔ On **"*Local port*** " enter "***4660***".

➔ On "***destination IP***" enter "***10.0.0.1*** "~"***10***"

➔ On "***destination port*** " enter "***4660***".

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

NOTE：If the update is successful, the following screen shall appear (Figure 3.25)

Figure 3.25 Configuration successfully updated

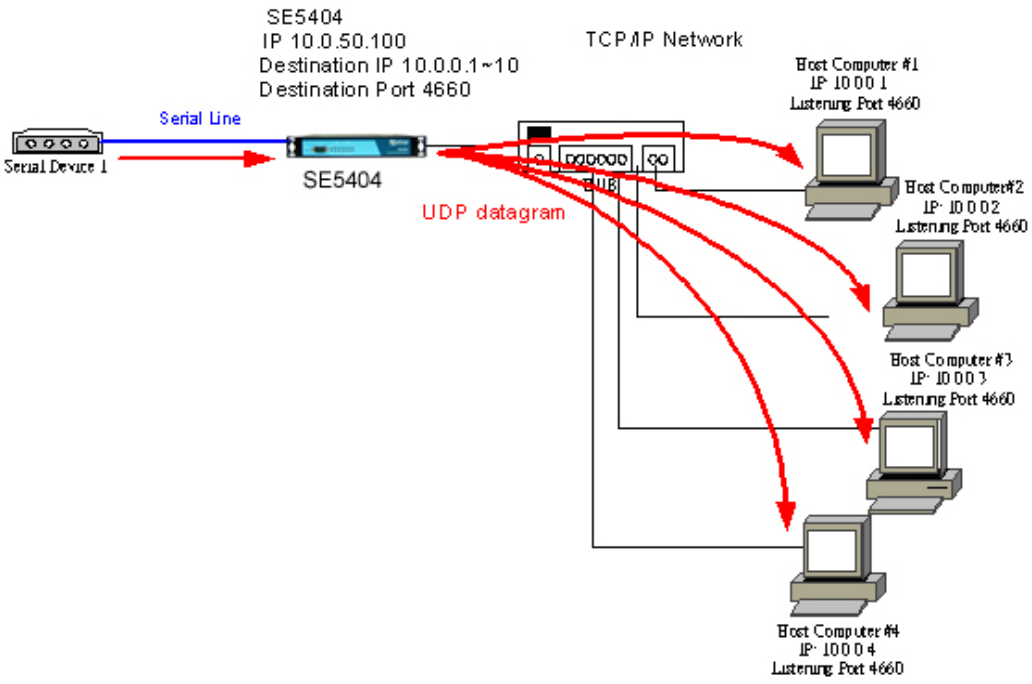


Figure 3.26 Data Transmission in a UDP Master(Client) Mode

2. **Slave (Server) Mode：**To establish a connection using unicast data from one or multiple host computer to a serial device.(Figure 3.27)

NOTE：The configuration is limited by the Local Listening Port (For example, on the SE5404 listening the port is 4660 which receives data from the Host Computer).

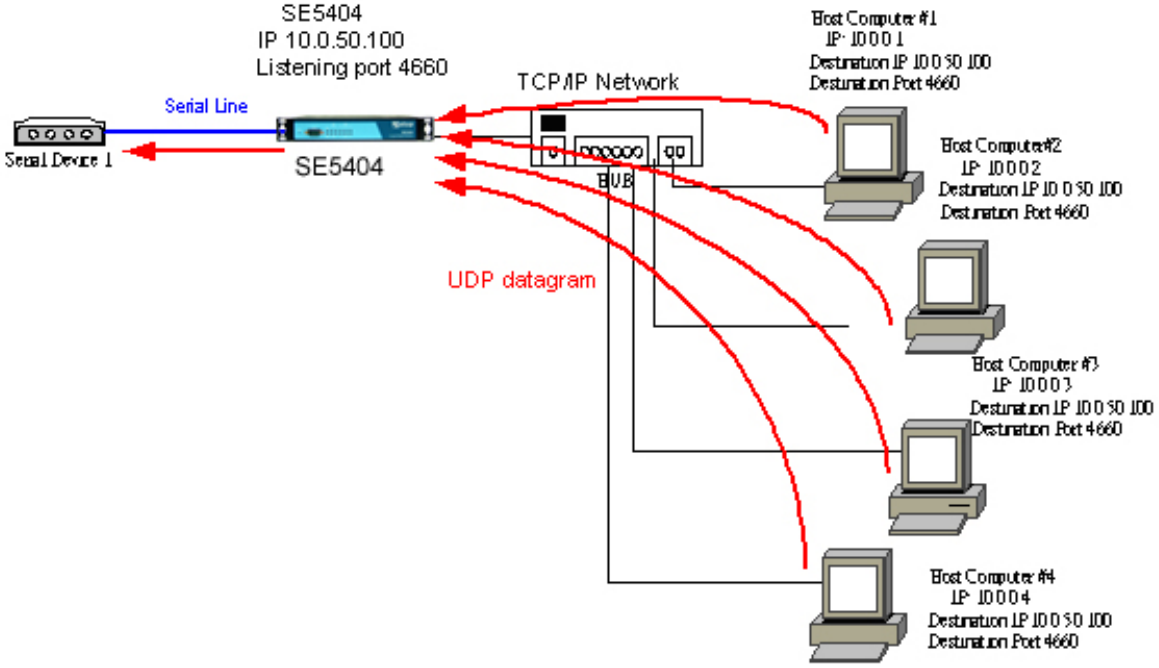


Figure 3.27 Data Transmission in a UDP Slave (server) Mode

3.4 System configuration

3.4.1Enabling NTP

NTP settings allow SE series to obtain internet time from NTP server after check "***Enable NTP***" and assigned proper NTP server's IP address. In addition, one may assign a time zone to match where ones location is(Figure 3.28).

Don't check "***Enable NTP***" If one want to configure system date and time manually.

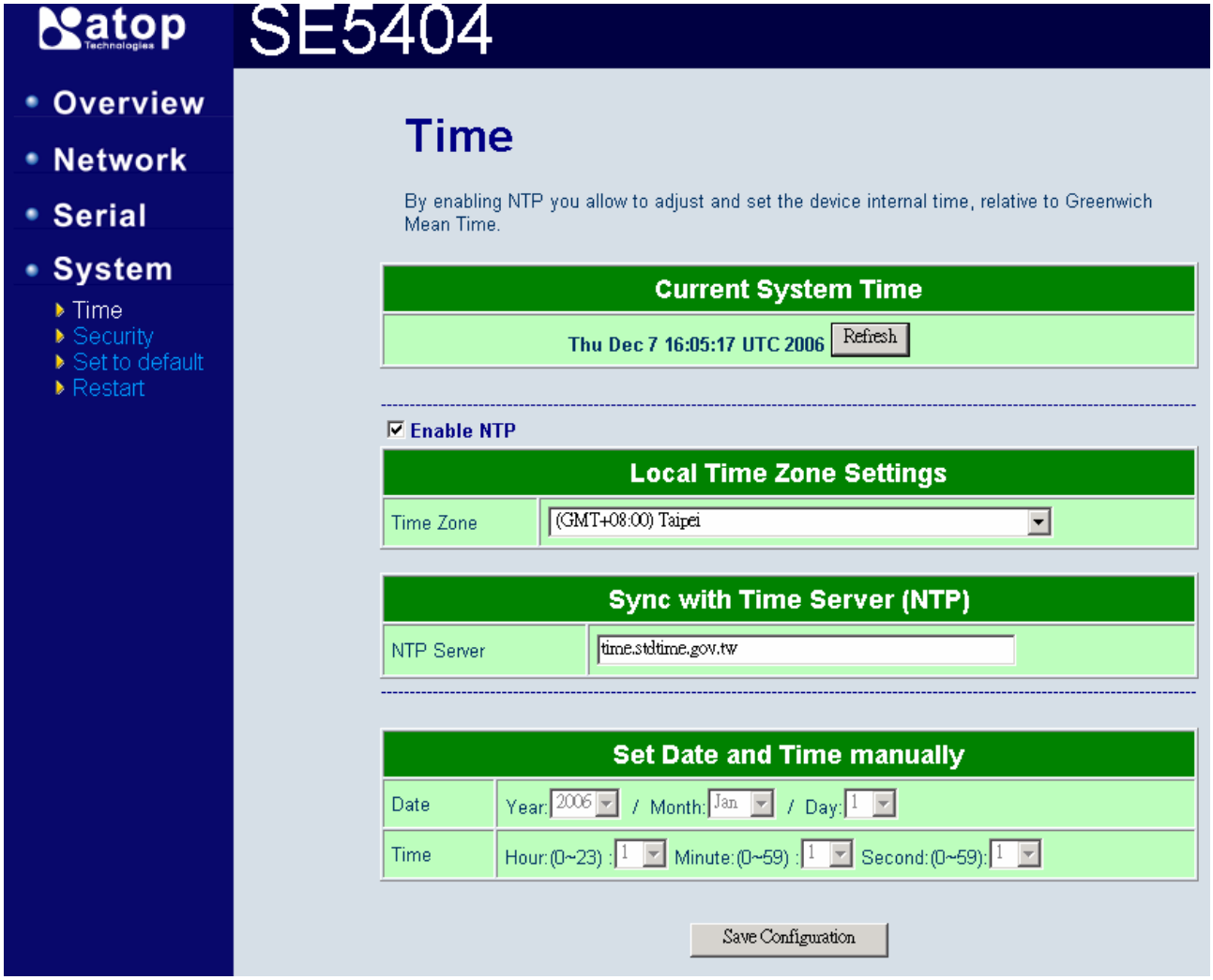


Figure 3.28 System-NTP setup

3.4.2 Changing password

1. Click on the "***Security***" link and the following screen shall appear (Figure 3.29)

Figure 3.29 Change the password

2. Enter the old password on "***Old Password***" field;
3. Enter the new password on "***New Password***"
4. Enter the "***Verified Password***" fields,
5. Click on "***Save Configuration***" to update the password.

Note:

(1) One may press the **Default** key on the product to reset password to the default value.

(2) Login Password is case sensitive.

3.4.3 Set to Default

Press "***Set to Default and Restart***" button to restore all the SE5404 parameters to default value and the restart will be completed when the RUN LED starts blinking again(Figure 3.30) .

Figure 3.30 System-Set to default

3.4.4 Restart

Press "***Restart***" button to restart SE5404, the restart will be completed when the RUN LED starts blinking again (Figure 3.31).

Figure 31 System-Restart

4. USING VIRTUAL COM

Virtual COM driver mode for windows converts COM data to LAN data for control of the COM port on SE5404 via 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 SE5404 that connects the serial line device to the network. Figure 4.1 illustrates a Virtual COM connection diagram.

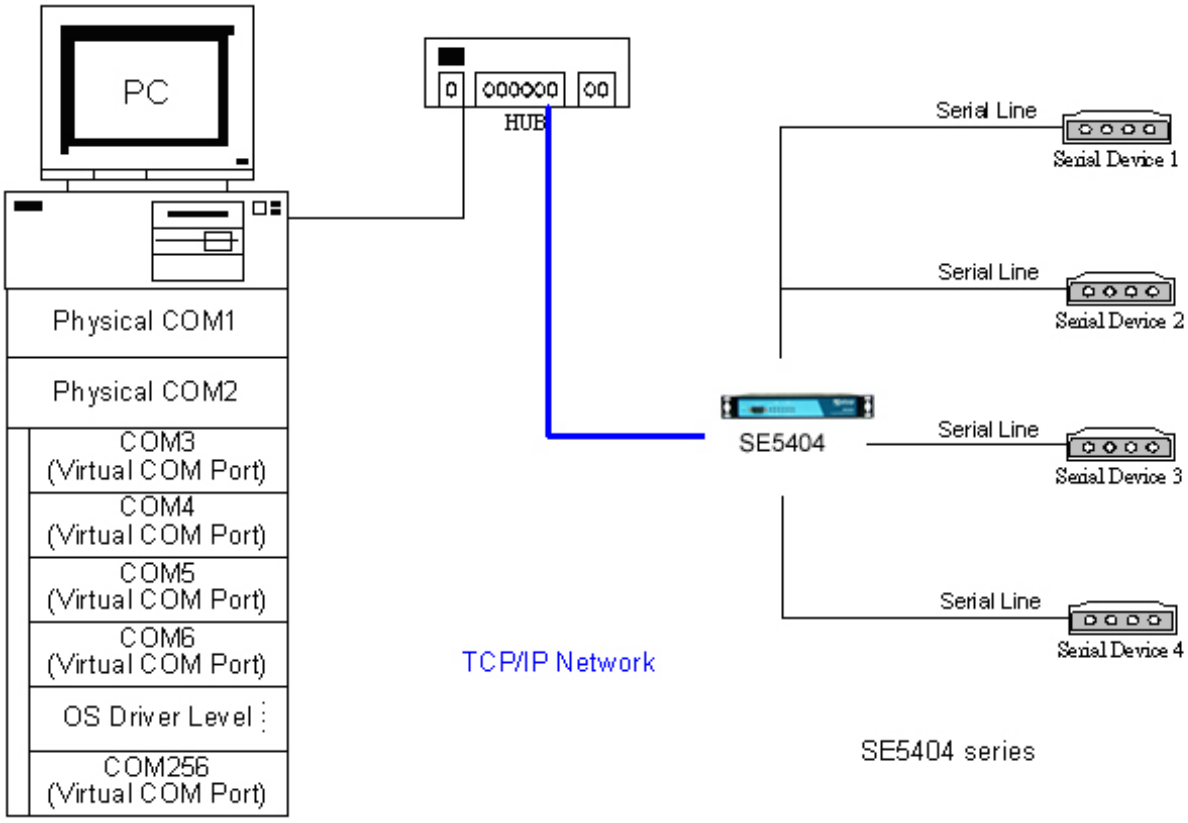


Figure 4.1 Virtual Com connection diagram

4.1 Setup of a virtual COM driver

4.1.1 PC requirements

- Processor: Intel-compatible, Pentium class or faster
- 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 or later for the SE5404 Ethernet Serial Server.

4.1.3 Limitation

The Virtual COM driver provides users with up to 256 Virtual COM ports. Users may select from COM1 to COM256.

4.1.4 Installation

Make sure to turn off all anti-virus software before installation. Run the Virtual COM setup file included in the CD to install Virtual COM driver.

Select one or two COM port 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** 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** to remove the program.

4.2 Virtual COM communications

4.2.1 Enabling Virtual COM on SE5404

From the web browser, access SE5404 by typing its IP address.

➔ Click on "***COM1*"** link to access COM1 window.

➔ On the window, click on "***TCP Server***"

➔ Check "***Virtual COM***" button to Enable COM drivers.

➔ Enter in the local port number on "***Local Port***" field as indicated in Figure 4.2.

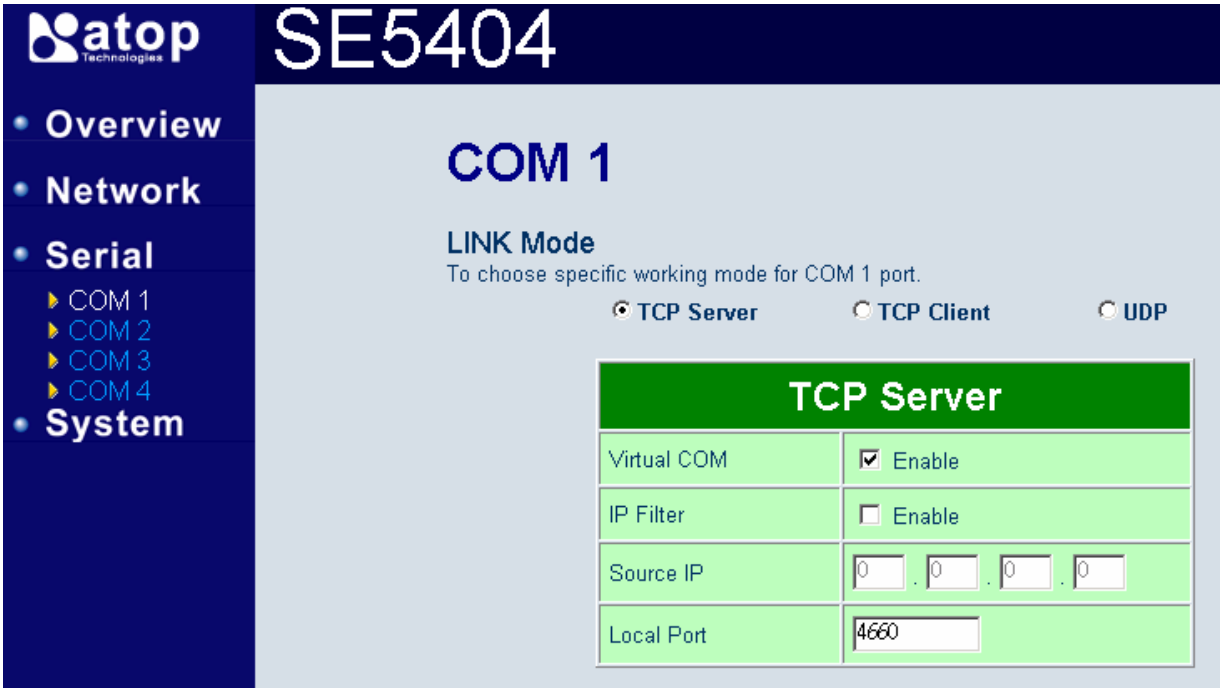


Figure 4.2 Enabling Virtual COM port

4.2.2 Running Serial/IP on monitoring PC

On Window Start Menu, go to \program\serial/IP for ATOP\control panel\Select Port\, then select the serial port. Then the " Serial I/P for Atop Control Panel" window appears (Figure 4.4).

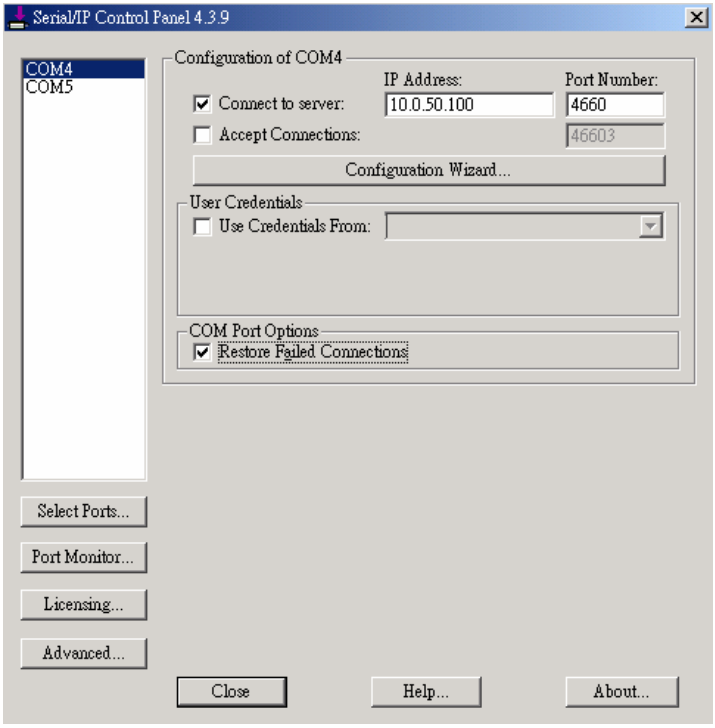


Figure 4.4 Serial/IP for Atop control panel

On the right of the panel is a sample for COM 4 settings. On the left is the list of the COM ports that have been selected (on **Select Ports** window) for use by the Virtual COM Redirector. Change the list by clicking the **Select Ports** button.

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

NOTE: COM port changes become effective immediately.

4.3 Configuring Virtual COM Ports

Serial/IP COM port can be changed as follows:(Figure 4.5)

1. Select a COM port on the list.
2. On **IP Address of Server**, enter the serial serve IP address.
3. On **Port Number**, enter the TCP port number of the serial server.
4. On **Server Credentials**, the default is **No Login Required**. If the serial server does require login by the Virtual COM Redirector, the Virtual COM Redirector must provide a username and/or password every time an application tries to access the serial server.
5. Click the **Configuration Wizard** button and then click the **Start** button that shall appear on the wizard window. This step verifies that the Virtual COM Redirector communicates with the serial

server. If **Log** display does not show errors, click **Use Settings**, return to the Control Panel (Figure 4.5)

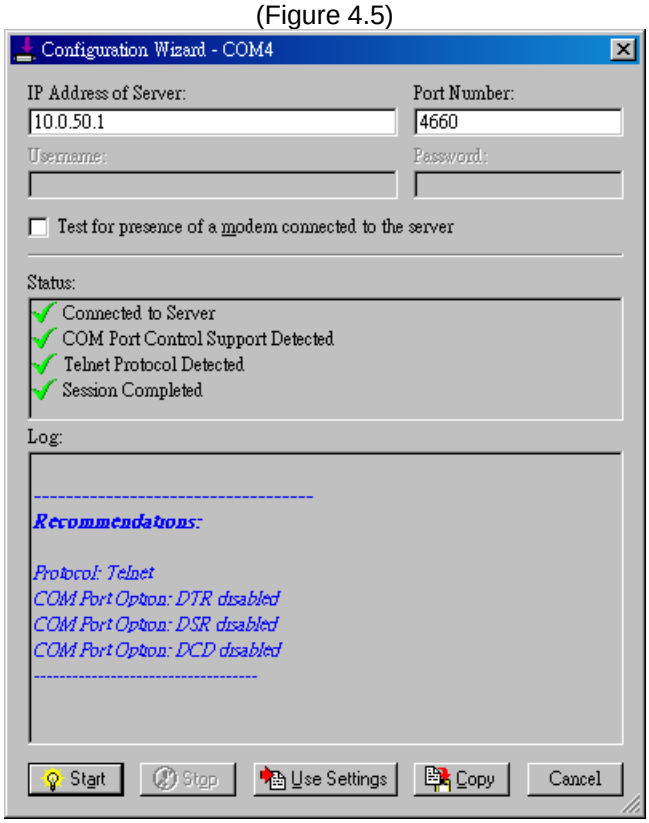


Figure 4.5 Configuration Wizard

6. Settings on the **Connection Protocol** must match the TCP/IP protocol supported by the serial server. The Configuration Wizard is capable of determining the correct settings.
7. On **COM Port Options**, the settings must match the COM port behavior expected by the PC application. The Configuration Wizard will recommend such settings.

5. SNMP SETUP

5.1 SNMP Network Management Platform

SE5404 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 used, SE5404 information can be collected from running the management tools, including **IP address, DNS name, system descriptions and NIC** information.

5.2 Using NetworkView: An Example

NetworkView is a free 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.

First, download and install the tool on ones PC (**Windows NT and Windows 9x only**), then start NetworkView.

1. Click on the  button to open a new file. The following screen shall appear, on **Addresses field**, Enter in the IP address range for searching(Figure 5.1).

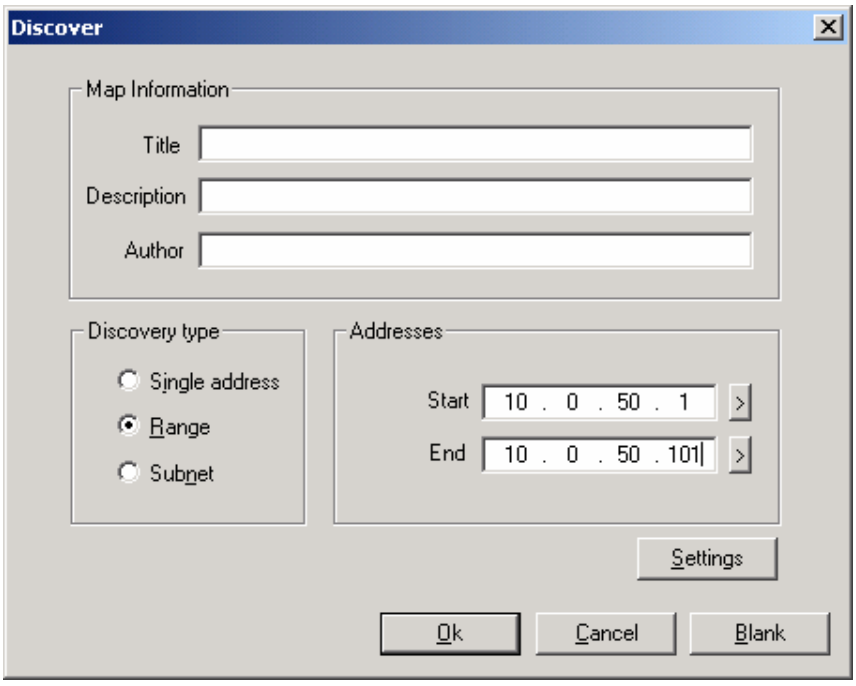


Figure 5.1 NetworkView-IP discovery parameters setup

Click on “OK” and the following dialog box shall display the searching progress(Figure 5.2).

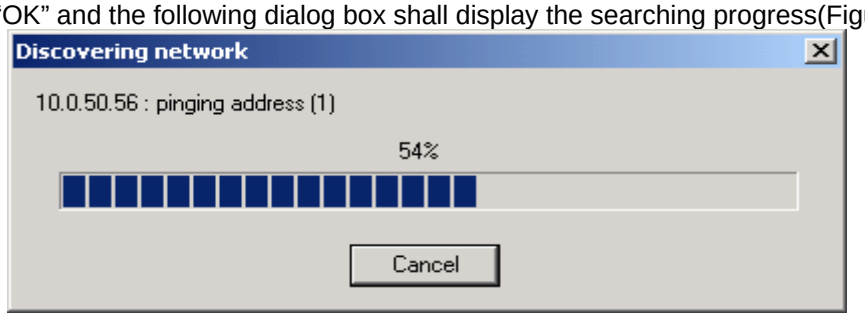


Figure 5.2 Discovering network

2. After the search is completed, NetworkView will display the devices found on the main window, as shown Figure 5.3.

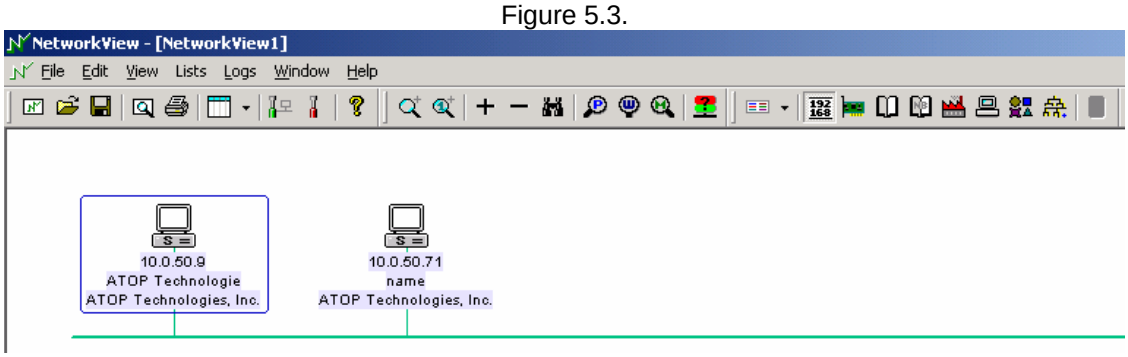


Figure 5.3 Network View- main window

3. 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(Figure 5.4).

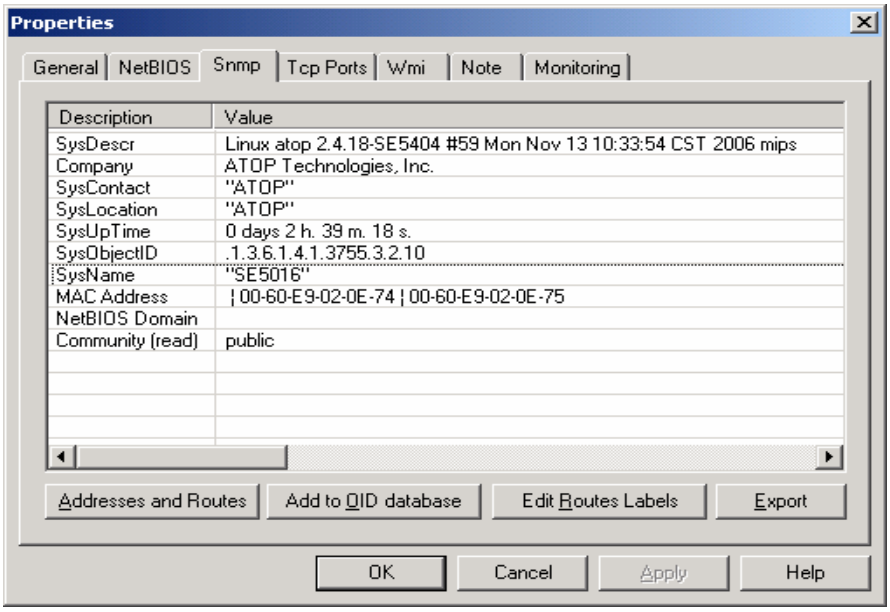


Figure 5.4 Network View-Node details

NOTE:

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

6. WRITING ONES OWN APPLICATIONS

Before writing ones own host applications or programs to interact with SE5404, make sure one have done the following.

6.1 Preparing System

1. Connect SE5404 to power, Ethernet and serial cables
2. Configure SE5404: connection type, IP address, gateway IP address, and network mask (see chapter 3 **Hardware Installation**).
3. Configure SE5404 as TCP Server, using the default TCP port number 4660.
4. The host (PC) application program must be configured as a TCP client and connected to SE5404 with designated TCP port number 4660 for COM1.
5. Check SE5404 running status through **monitor.exe** configuration utility.

6.2 Running Sample Program

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

Two test programs, TCPTEST in Visual Basic and TCPTEST2 in Visual C++ are included.

6.2.1 TCPTEST in Visual Basic

This sample program (Figure 6.1), written in Visual Basic 5.0 with Winsock Controls, shows how to exchange data between host (PC) and SE5404 via Ethernet in two socket ports.

One may start the sample program tcptest.vbp to test different functions. For more information, please press **Help**..

NOTE: Be sure Microsoft visual studio family or its equivalent software is installed.

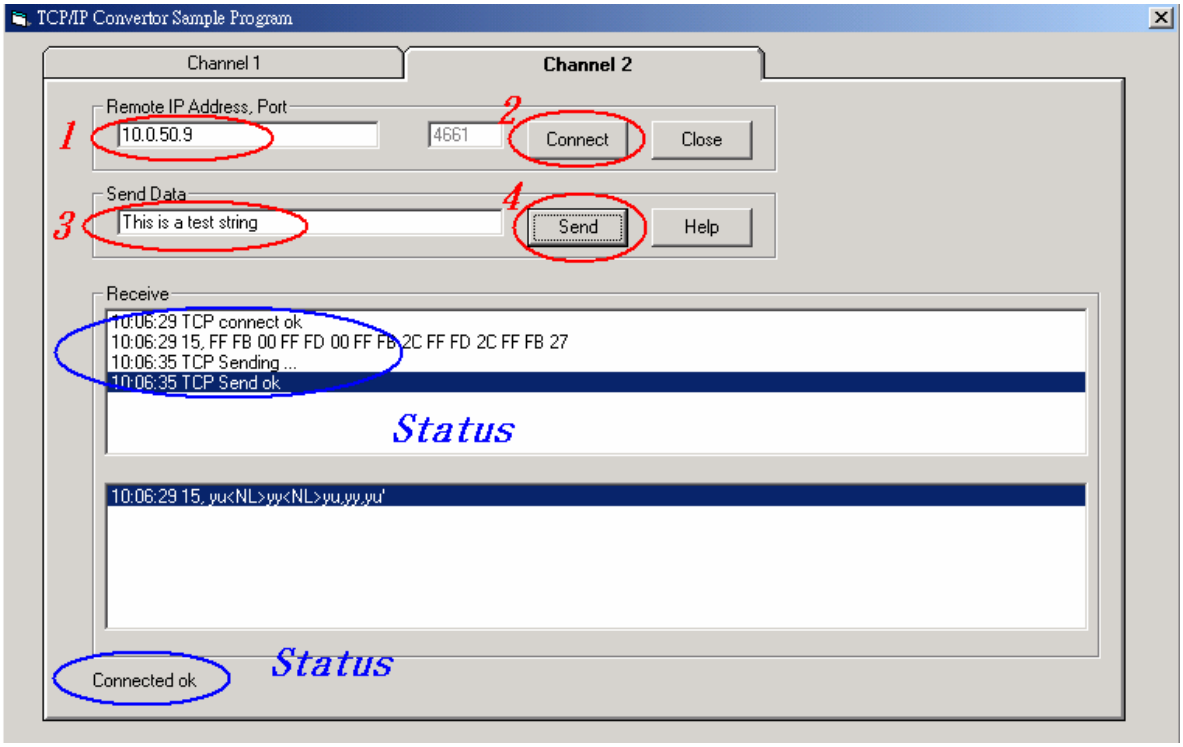


Figure 6.1 TCP test sample program in Visual B

6.2.2 TCPTEST2 in Visual C

Enter in the following command on the command line prompt to run the program(Figure 6.2):

TCPTEST2 IP_Address Port_Number

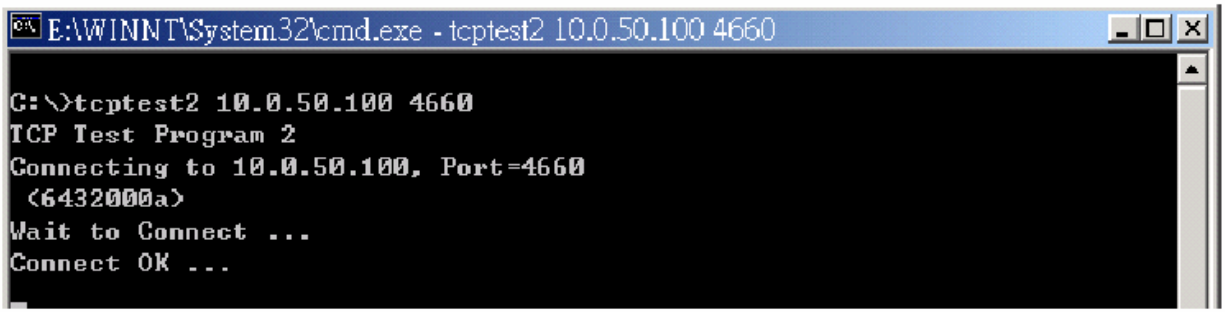


Figure 6.2 TCP test sample program in Visual C

The command ***tcptest2 10.0.50.100 4660*** connects a TCP server of IP address *10.0.50.100* to port number *4660*. The received data is displayed on the screen and the input data is sent to the TCP server. Binary data in hex format with a leading character "\" can also be sent. For example, "\00" and "\FF" represent ASCII code 0 and 255, respectively.

A modem can also be used 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 to check the status and availability of SE5404.

7.1 Using Standard TCP/IP Utility *ping* Command

Go to Windows **Start** menu, select **Run** and Enter in "**ping <TCP Server IP address>**"(Figure 7.1).

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

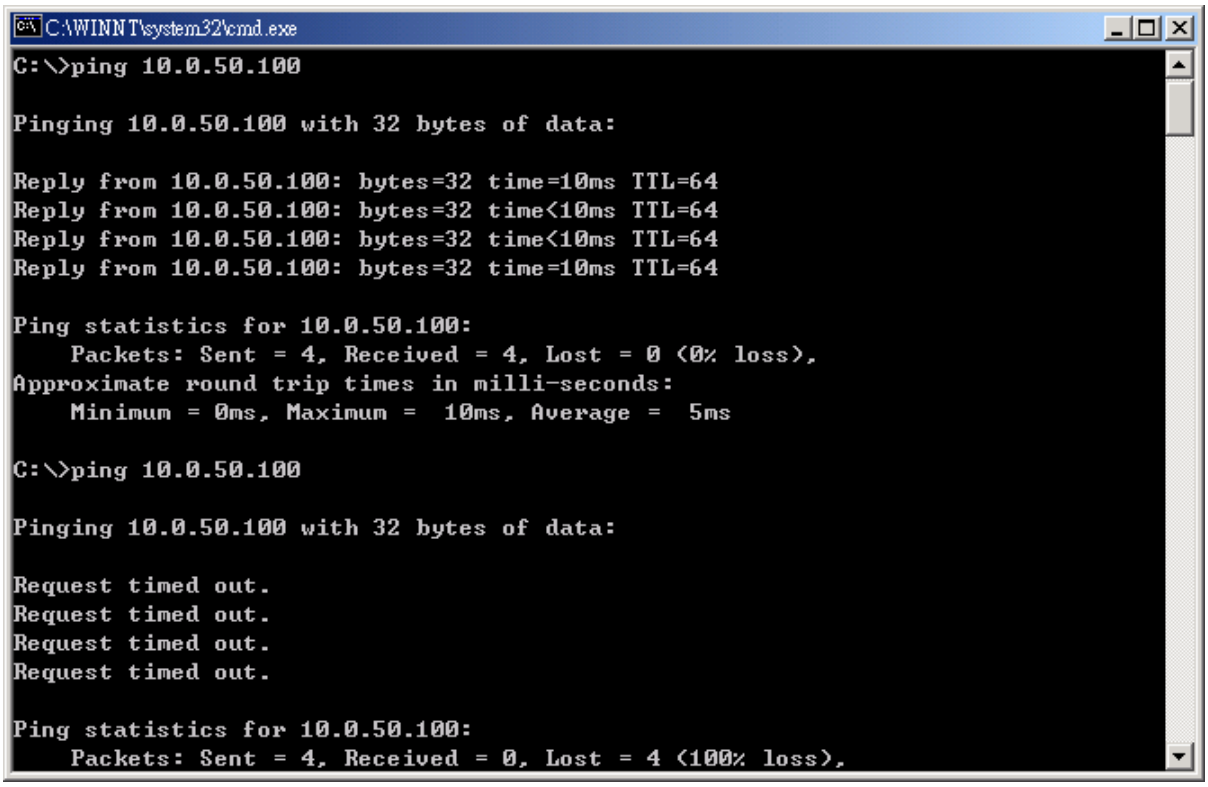


Figure 7.1 Standard TCP/IP utility ping command

7.2 Using monitor.exe Configuration Utility Program

Use monitor.exe configuration program on the product CD to check the status of SE5404. 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 in server mode and is not connected(Figure 7.2).

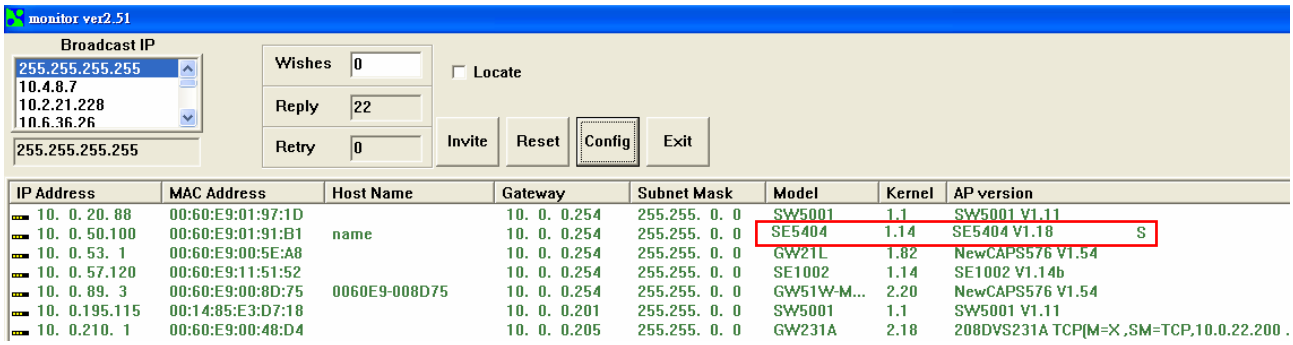


Figure monitor configuration utility

7.3 Using TCPTEST.EXE or TCPTEST2.EXE Sample Program

Sample programs TCPTEST.EXE and TCPTEST2.EXE can be used to check the status of SE5404. Refer to chapter 6.2 for running the sample programs.

APPENDIX A: SPECIFICATION

A.1. Hardware Specification

	Specifications
CPU	• 32-bit Embedded CPU • 266MHz
Flash Memory	• 8M Bytes
DDRAM	• 32M Bytes
EEPROM	• 8K Bytes
Host Communication	• IEEE802.3 base band • TCP/IP, UDP, SNMP, HTTP, Telnet, ARP, BOOTP, DHCP, ICMP,NTP
Default	• Built-in default key to restore factory default settings
Network Interface	• Dual 10/100Mbps Fast Ethernet auto-detection
Networking Protection	• Built-in 2.0KV magnetic isolation
Serial Interface for SE5404	• RS-232/ RS-422/ RS-485 software selectable. The default setting is RS-232
Serial Interface for SE5404-S5is	• RS-422/ RS-485 software selectable. The default setting is RS-422
SerialPort Communication	• RS-232: EIA-RS-232C standard, Full Duplex, DB9 • RS-485: 2/4 wires, Half/Full duplex, Terminal Block • RS-422: 4 wires, Half/Full duplex, Terminal Block • Parameters 1) Baud-rate: 1200 bps ~ 921600 bps (**SE5404-S5is only up to 230400**) 2) Parity: None, Even, Odd, Mark, Space 3) Data bits: 7,8 4) Stop bits: 1,2 5) Packet Delimiter: by inter-character timer, or by characters pattern terminator 6) Flow Control: None, Hardware CTS/RTS, Software Xon/Xoff
LED indication	• RUN * 1 • 100Mbps LAN * 2 • LAN Active *2 • COM Port TX* 4 • COM Port RX* 4

- Power *1

Power Requirement	• DC +9~30V DC Jack or Terminal Block, 500mA@ 12VDC =6 Watt Max
Temperature	• Operation: 0℃ to 60℃ • Storage: -20℃ to 85℃
Humidity	• 20%~70% non-condensing
Housing	• 197mm(L) x 112mm(W) x 37mm(H)

A.2. Software Specification

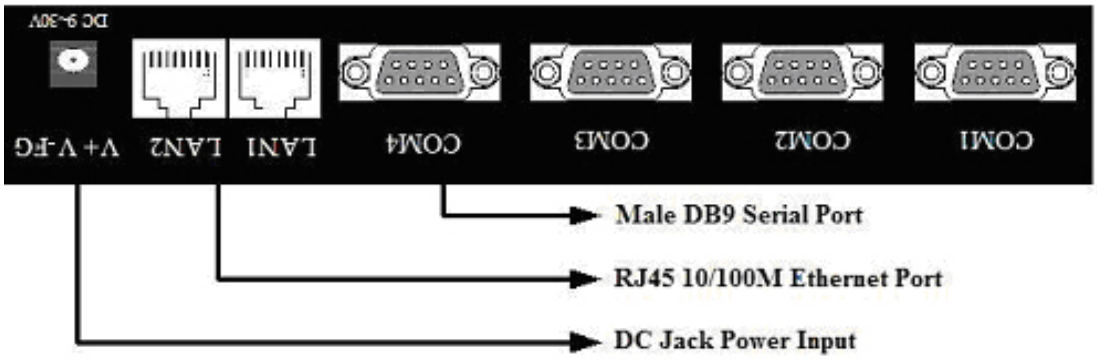
Item	Specifications
Protocol	• TCP, UDP, ARP, ICMP, SNMP, HTTP, Telnet, BOOTP, DHCP,NTP
Configuration	• Configuration information for both TCP/IP and serial ports is written in the EEPROM. • Configuration utilities of Windows 95/98/2000/NT/XP/2003 are provided.
Internal Buffer Size	• TCP receiving buffer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

A.3 Panel Layout and Connector Pin Assignments

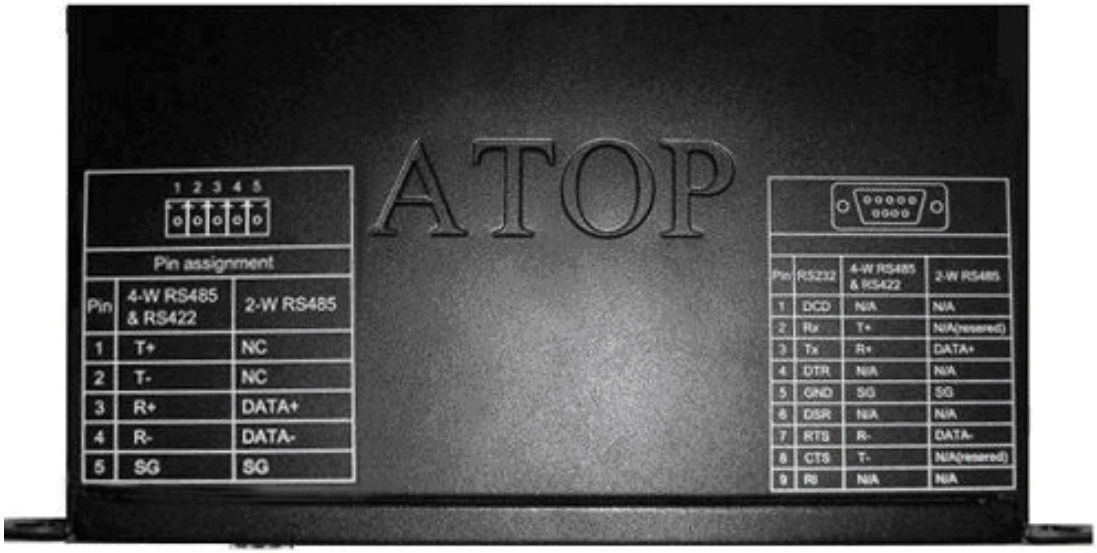
A.3.1. Panel Layout

A.3.1.1 DB9 for SE5404 (RS-232/RS-422/RS-485)

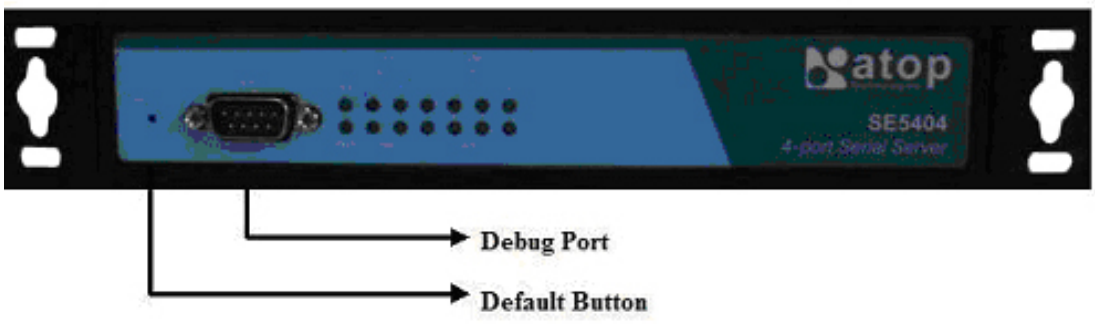
Rear Panel View



Top Panel View

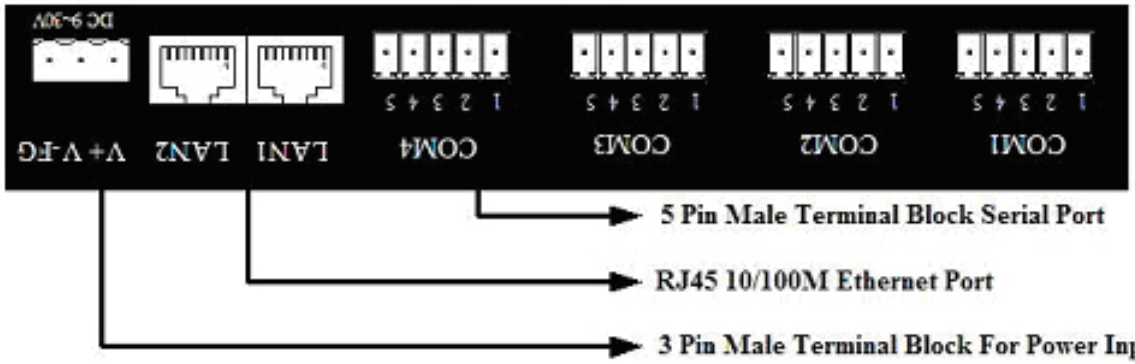


Front Panel View

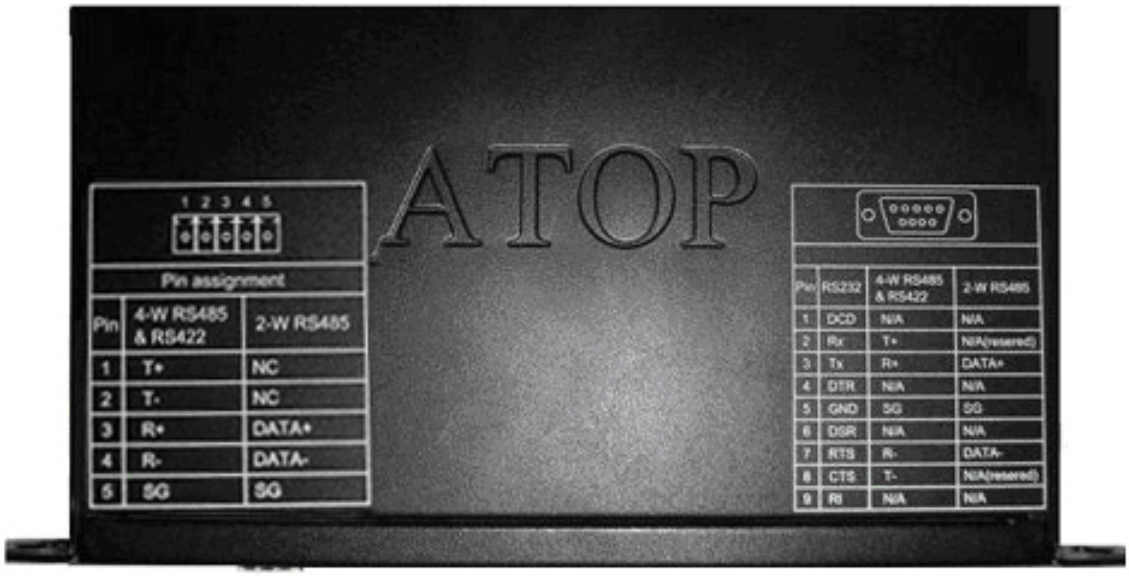


A.3.1.2 SE5404-S5is (only RS-422/RS-485)

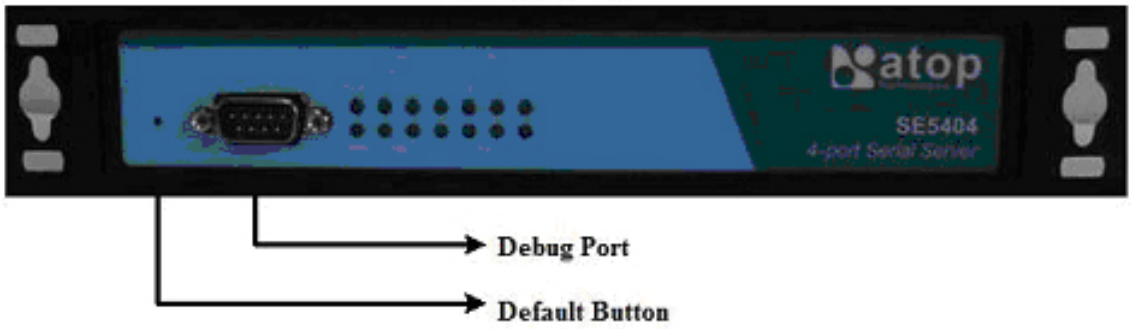
Rear Panel View



Top Panel View



Front Panel View



A.3.2.1 DB9 Pin Assignments

The pin assignments of DB9 connector on SE5404 are shown in the following table:

Pin#	RS-232 **Full Duplex** for SE5404 Model	RS-485/RS-422 **2 wire, Half Duplex** for SE5404 Model	RS-485 **4 wire, Full Duplex** for SE5404 Model
1	DCD	N/A	N/A
2	RXD	N/A (reserved)	**T+**
3	TXD	**DATA+**	**R+**
4	DTR	N/A	N/A
5	SG (Signal Ground)	SG (Signal Ground)	SG (Signal Ground)
6	DSR	N/A	N/A
7	RTS	**DATA-**	**R-**
8	CTS	N/A (reserved)	**T-**
9	RI	N/A	N/A

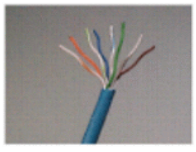
A.3.2.2 Terminal Block Pin Assignments

The pin assignments of Terminal Block connector on SE5404-S55is are shown in the following table:

Pin#	RS-485/RS-422 **4 wire, Half Duplex** For **SE5404-S5is**	RS-485 **2 wire, Full Duplex** For **SE5404-S5is**
1	T+	NC
2	T-	NC
3	R+	Data+
4	R-	Data-
5	SG (Signal Ground)	SG (Signal Ground)

A.3.3.3 Ethernet Port (RJ-45) Pin Assignments

1. Category 5 UTP cable, 8 core wires.

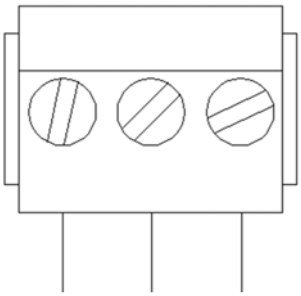


2. RJ45 Connector. 

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

canon RJ-45, choose either 568A or 568B definition. Use 568A and 568B definition, respectively for a crossover cable,



F.G. VIN- VIN+

NOTE: Device will not be damage if the polarity is reverse.

A.4 Buzzer/LED Message

A.4.1 Buzzer

“ ^ “: Beep twice

“ = “: Beep off

Message	Description
^==^========^^^ (5sec.)	Startup OK and AP firmware is enabled

Table 1. Buzzer Message

A.4.2 LAN

Message	Description
100 1(2) Off and Act1(2) Off	Ethernet Disconnected
100 1(2) Off and Act1(2) On	10Mbps Ethernet connected
100 1(2) On with Green	100Mbps Ethernet connected
ACT1(2)Blinking with Green	Data transmitting on Ethernet at 10/100Mbps

Table 2. LAN LED Message

A.4.3 COM Port

Message	Description
COM1(2/3/4) TX LED off	No data is transmitting on COM port
COM1(2/3/4) TX LED on blinking state	Data is transmitting on COM port
COM1(2/3/4) RX LED off	No data is receiving on COM port
COM1(2/3/4) RX LED on blinking state	Data is receiving on COM port

Table 3. COM Port LED Message

A.4.4 RUN

Message	Description
LED on	AP firmware malfunction or power is not properly on.
LED blinking (rate: 0.5Sec)	AP firmware is running

Table 4. RUN LED Message

APPENDIX B: UPGRADING SYSTEM FIRMWARE

New version of firmware can be downloaded from www.Atop.com.tw

B.1 System Upgrading Procedure

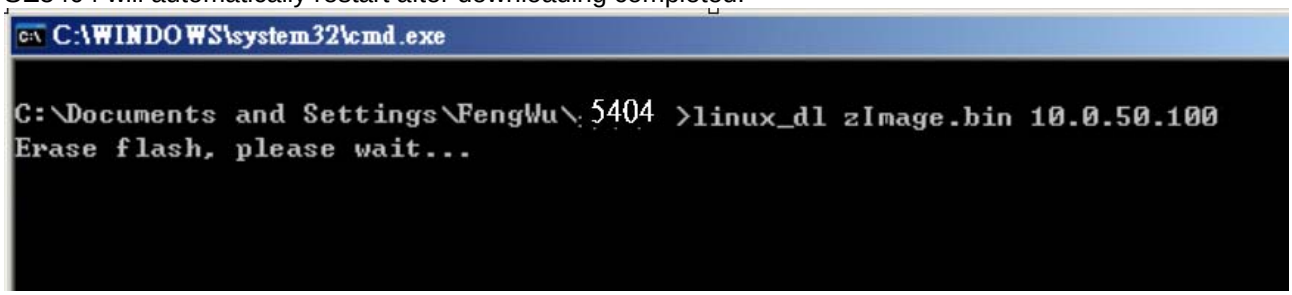
Follow the upgrading procedures below to upgrade the latest new version of firmware:

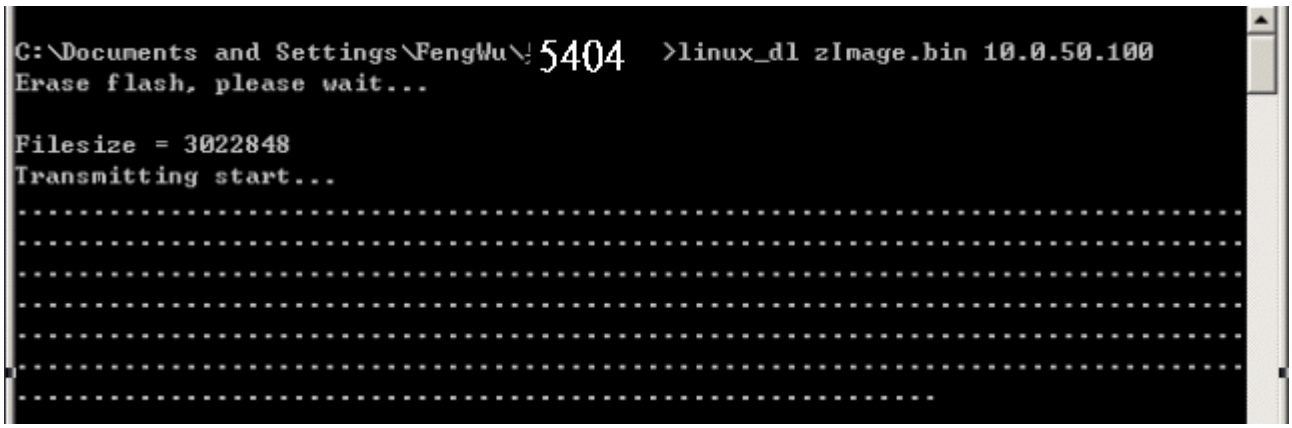
- Make sure the PC and the SE5404 series on the same network. Use command **ping** or **monitor.exe** utility program to verify their availability.
- Edit "dll.bat " to fit the system requirements, Be sure to save ones modification
- Run linux_dl ,the following screen shall appear .

  For example：**linux_dl zImage.bin 10.0.50.100**

  - **Note : "linux_dl"** is the upgraded executing file and **zImage.bin** is the firmware file name; xxx.xxx.xxx.xxx is the IP address of SE5404 series

SE5404 will automatically restart after downloading completed.





B.2 Critical Issues

If the upgrade is successful, SE5404 shall program the flash memory and the buzzer will beep 1 time before restarting. It takes around 5 seconds to complete the programming process. If an error occurs during the programming process, SE5404 will clear the corresponding memory and the system remains the same before the process.

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	
SE5404 handshaking problem	SE5404 ACK Start Address Error	
	SE5404 ACK Length Error	
	SE5404 Response Command Error	
Configuration file	Remote IP not found	
	Open configuration file failure	

APPENDIX C: RUNNING MONITOR.EXE UTILITY

The configuration utility **monitor.exe** is the main utility program used to display and to configure SE5404 settings.

C.1 Running Monitor.exe utility

Start the program under Windows 98/NT/2000 environment and the following window shall appear (Figure D1).

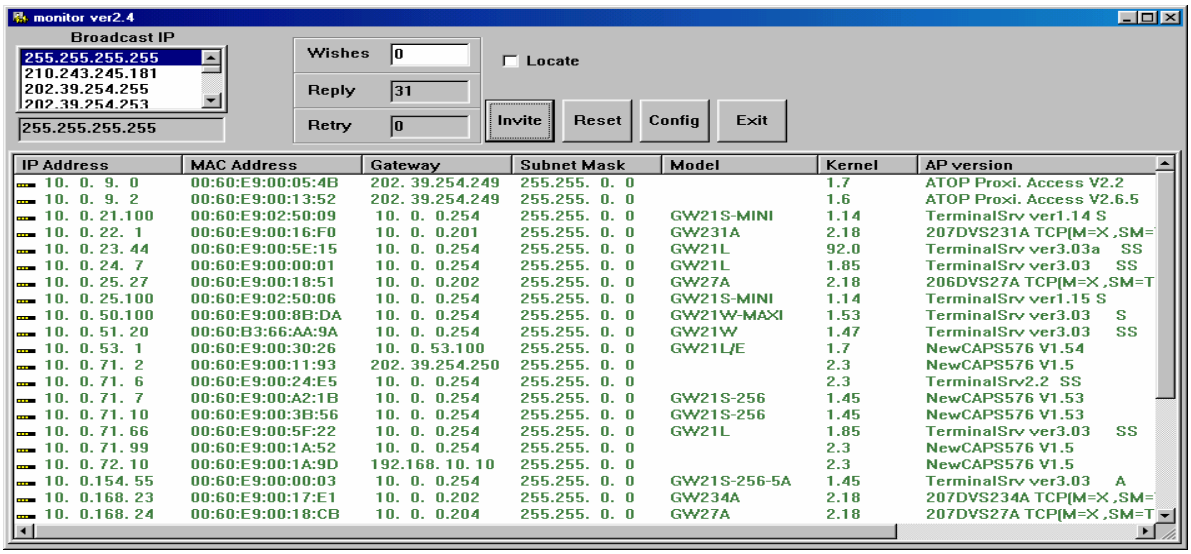


Figure C1. Main window of monitor.exe utility program

C.2 Detecting Operational Devices

Follow steps below to detect all 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 on **Wishes** box.
4. Click on the **Invite** button. This will display all the devices requested.

C.3 Configuring Devices

Use **monitor.exe** to configure the settings of devices on the network.

1.Repeat the steps in **C.2** to bring up devices information.

2 Select the device to be configured from **IP Address**. Click on the "***Config*"** button, a configuration dialog box will popup as shown in Figure C2:

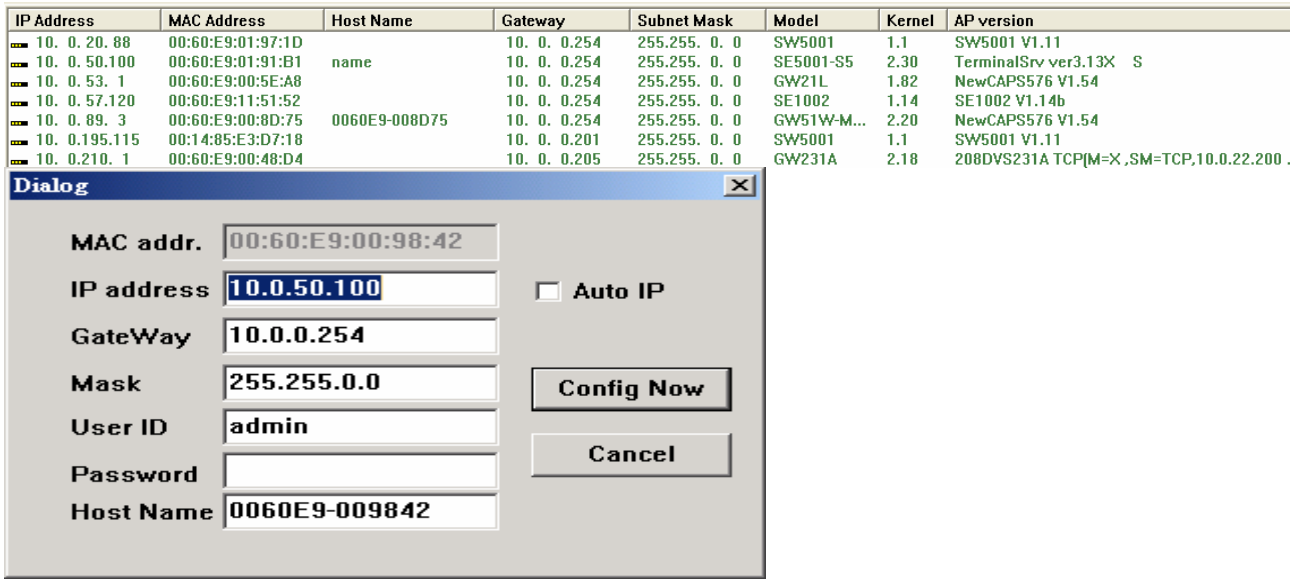
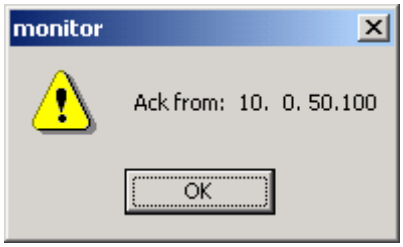


Figure C2. Configuration dialog box

3. After clicking on the "***Configure Now***" button, the target device returns an "***ACK***" message, indicating the modification is successful as shown as follows:



The following table lists the functional description for each field.

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 one wish to get reply from after sending an **Invite** request. If there is not as many as devices responding to ones invitation, the system repeatedly sends invitation until ones 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 ones request. • Leading tag "!" stands for IP address collision, possibly caused by duplicated IP addresses on the network. • 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.