LES301A
LES301A-KIT
LES301AE-KIT

1-Port 10/100 Device Server, RS-232/422/485, DB9 M

Access a serial RS-232 or RS-422/485 device over a 10- or 100-Mbps network.

- Remotely monitor, manage, and control an industrial device in the field.
- Easy to configure through a Web browser, serial console, Telnet™ or Windows® utility.

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This equipment generates, uses, and can radiate radio-frequency energy, and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

Instrucciones de Seguridad
(Normas Oficiales Mexicanas Electrical Safety Statement)

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser connectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.
12. Precaución debe ser tomada de tal manera que la tierra fisica y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las lineas de energia.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objectos liquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
    - A: El cable de poder o el contacto ha sido dañado; u
    - B: Objectos han caído o líquido ha sido derramado dentro del aparato; o
    - C: El aparato ha sido expuesto a la lluvia; o
    - D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
    - E: El aparato ha sido tirado o su cubierta ha sido dañada.

Table of Contents

1. Specifications

1.1 Hardware Specifications

Baud Rate — 1200 bps to 230 kbps

CPU — 16-bit embedded CPU, 100 MHz

Data Bits — 7, 8

EEPROM — 512 bytes

Flash Memory — 512 KB

Flow Control — None, Hardware CTS/RTS, Software X-ON/X-OFF

Host Communication — IEEE 802.3 baseband, TCP/IP, UDP, SNMP, HTTP, Telnet, ARP, BOOTP, DHCP, ICMP

Packet Delimiter — By intercharacter timeout, by characters delimiter

Parity — None, even, odd, mark, space

Reset — Built-in default key to restore factory settings

Stop Bits — 1, 2

SDRAM — 512 KB

Watchdog Timer — 1.34 second hardware auto reset, Power Failure Threshold: 4.75 V

SerialPort Communication — (1) RS-232 or RS-485/RS-422 selectable:
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

Connectors — (1) DB9 M, (1) 3-pin terminal block (power), (1) RJ-45, (1) 5-VDC power connector

Indicators — (3) LEDs: (1) Run, (1) LAN, (1) COM Port 1

Power — 9-30V terminal block, 2.8 watt

Temperature Tolerance — Operating: 32 to 140° F (0 to 60° C)

Humidity — 20-90%, noncondensing

Size — 1.1"H x 3.1"W x 2.6"D (2.8 x 7.8 x 6.5 cm)

1.2 Software Specifications

Configuration — Configuration information for both TCP/IP and serial ports is kept in the EEPROM; Windows configuration utilities are provided for configuring settings

Protocol — TCP/IP, UDP, HTTP, SNMP, ARP, Telnet, ICMP, BOOTP, DHCP, SMTP

Internal Buffer Size — TCP receiving buffer size: 8 KB

TCP Transmitting Buffer Size — 16 KB

RS-232 or RS-485/RS-422 Receiving Buffer Size — 4 KB

RS-232 or RS-485/RS-422 Transmitting Buffer Size — 4 KB

1.3 DB9 Pin Assignments

Table 1-1 shows the LES301A unit's DB9 connector pin assignments.

Table 1-1. DB9 connector pin assignments.

Pin	RS-232 full-duplex	2-Wire RS-485 half-duplex	RS-422/4-Wire RS-485 full-duplex
1	DCD	N/A	N/A
2	RXD	N/A	TXD+
3	TXD	DATA+	RXD+
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-	RXD-
8	CTS	N/A	TXD-
9	N/A	N/A	N/A

NOTE: You may need an LES30X-TB5 adapter for RS-485 or RS-422 applications.

1.4 Ethernet Port (RJ-45)

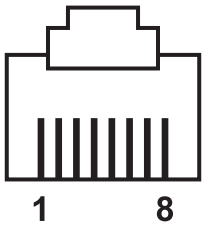

Figure 1-1. RJ-45 connector pinout.

Table 1-2. RJ-45 connector pin assignment.

Pin Assignment	568A Definition	568B Definition
1	Green-White	Orange-White
2	Green	Orange
3	Orange-White	Green-White
4	Blue	Blue
5	Blue-White	Blue-White
6	Orange	Green
7	Brown-White	Brown-White
8	Brown	Brown

You can choose either 568A or 568B pinning. To make a crossover cable, use 568A pinning at one end of a UTP cable and use 568B pinning at the other end of the UTP cable.

1.5 Power Terminal Block Connector

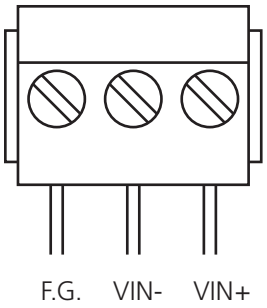

Figure 1-2. Terminal block signals.

NOTE: VIN- and VIN+ can be reversed.

1.6 Buzzer/LED Message

1.6.1 Buzzer

"^": Beep twice

"=": Beep off

Table 1-3. Buzzer message.

Message	Description
^===^===^===^===^===^===^…(1sec)	Watchdog problem, contact Black Box Technical Support*
^^^^^^^^^^^^^^^^^^^^^^^^^^^^…	Memory problem, contact Black Box Technical Support*
^==^========^^ (5sec)	Startup OK but AP firmware is disabled
^==^========^^^ (5sec)	Startup OK and AP firmware is enabled

*Contact Black Box Technical Support at 724-746-5500 or info@blackbox.com.

1.6.2 LAN LED

Table 1-4. LAN LED.

Message	Description
LED off	Ethernet is disconnected
LED is blinking green	Data is transmitted at 100 Mbps on Ethernet
LED is blinking orange	Data is transmitted at 10 Mbps on Ethernet

1.6.3 COM Port LED

Table 1-5. COM port LED message.

Message	Description
LED off	No data is being transmitted on COM port
LED is blinking	Data is being transmitted on COM port

1.6.4 RUN LED

Table 1-6. RUN LED.

Message	Description
LED on	Jumper JP1 Pin 1 and Pin 2 are short; this disables AP firmware in flash memory
LED is blinking at the rate once every 0.5 sec	AP firmware is running

2. Overview

2.1 Introduction

The LES301A Ethernet Serial Server is a gateway between Ethernet (TCP/IP) and RS-232 or RS-485/RS-422 communications. The information transmitted by the LES301A 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 the 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 Ethernet Serial Server is used to directly connect field devices to an Ethernet network. Terminal Server (the main control program that runs in LES301A) transforms whatever data is received from RS-232 or RS-485/RS-422 to a TCP/UDP port, then connects the 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 example, it is hard to transfer data through a long distance. The LES301A can communicate with a remote device in the Intranet environment or even in the Internet, which increases the communication distance dramatically.

The LES301A has (1) RS-232/RS-485/RS-422 port (software selectable), (1) RJ-45 Ethernet and Watch-Dog Timer etc.

2.2 What's Included

Your package should contain the following items. If anything is missing or damaged, contact Black Box Tech Support at 724-746-5500 or info@blackbox.com.

LES301A-KIT and LES301AE-KIT:

- (1) Ethernet Serial Server
- (1) CD-ROM containing configuration utility and this user manual in PDF format
- (2) wallmounting screws
- (1) printed quick-start guide
- (1) power adapter (PS012 for LES301A-KIT); (PS012E for LES301AE-KIT)
- (1) 3-pin Phoenix connector

LES301A:

- (1) Ethernet Serial Server
- (1) CD-ROM containing configuration utility and this user manual in PDF format
- (1) printed quick-start guide

Optional Accessories:

- DIN Rail Kit (LES30X-DR)
- DB9 to TB5 Adapter (LES30X-TB5)

2.3 Hardware Description

Figures 2-1 through 2-3 show the Ethernet Serial Server's back panel, top panel, and front panel views. Table 2-1 describes its components.

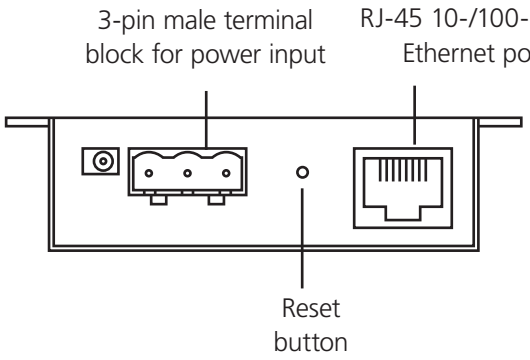

Figure 2-1. Back panel.

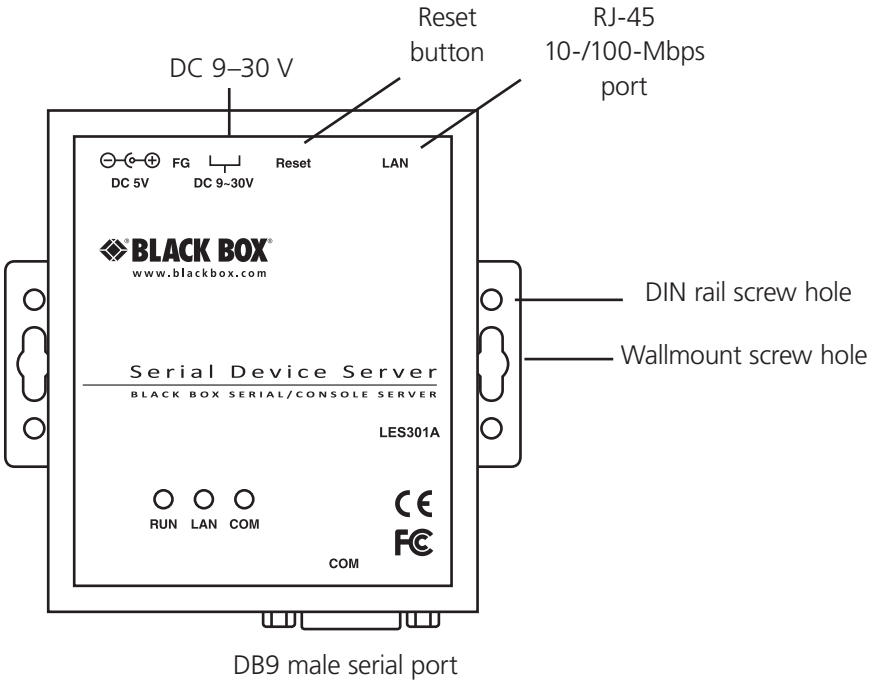

Figure 2-2. Top panel.

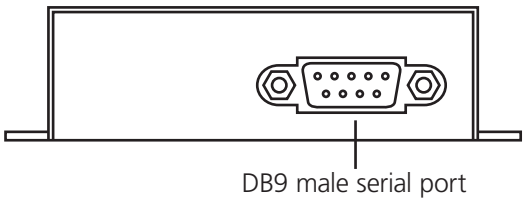

Figure 2-3. Front panel.

Table 2-1. Ethernet Serial Server components.

Message	Description
LED off	Ethernet is disconnected
LED is blinking green	Data is transmitted at 100 Mbps on Ethernet
LED is blinking orange	Data is transmitted at 10 Mbps on Ethernet

2.4 Application Connectivity

TCP Server Mode: LES301A can be configured as a TCP server on a TCP/IP Network to wait for other applications (clients) in the host computer to establish a connection with the serial device. After the connection is established between the serial device and the host computer, data can be transmitted in both directions.

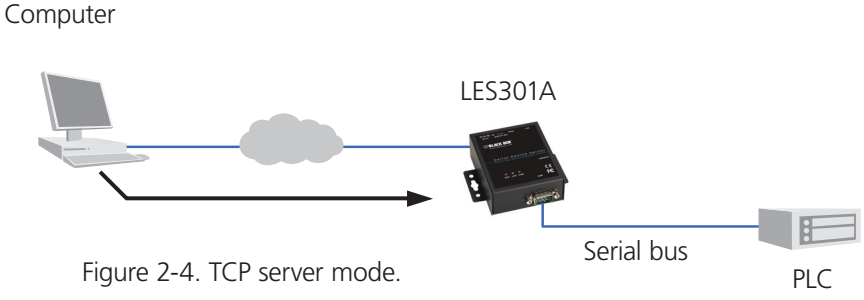

Figure 2-4. TCP server mode.

TCP Client Mode: LES301A can be configured as a TCP client on TCP/IP network to establish a connection with other applications (server) in the host computer actively. After the connection is established, data can be transmitted between the serial device and the host computer in both directions.

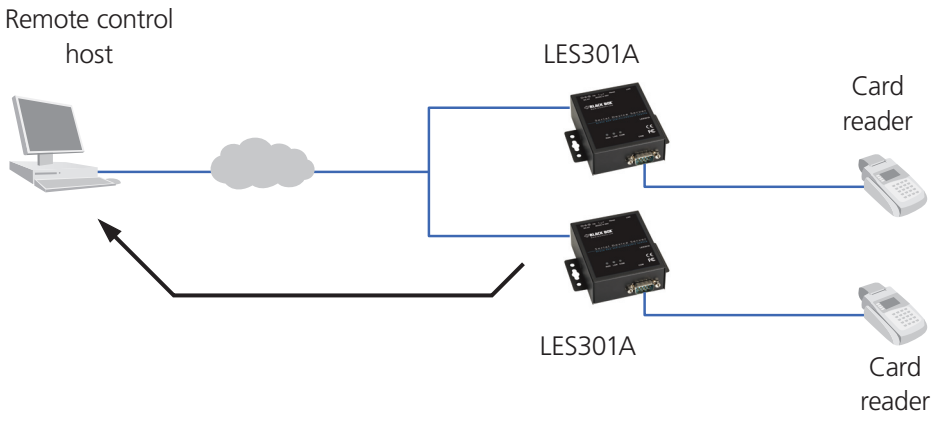

Figure 2-5. TCP Client mode.

UDP Mode: UDP is a faster but non-guaranteed datagram delivery protocol. LES301A can be configured as a UDP mode on TCP/IP Network to establish a connection using unicast or multicast data from the serial device to one or multiple host computers. The opposite is also true.

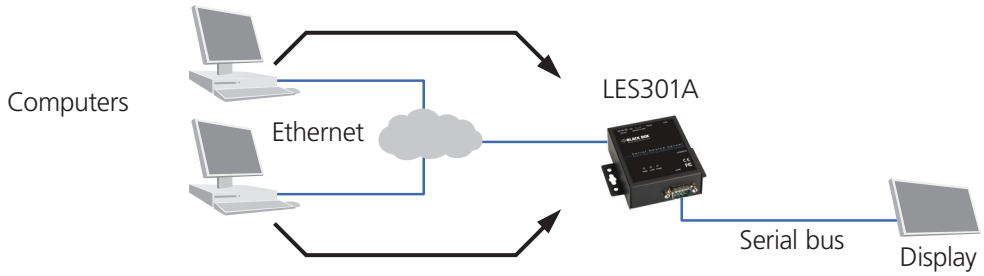

Figure 2-6. UDP mode.

Tunneling Mode: In this mode, a serial connection with two or more LES301A units established sends data over TCP/IP Network. This extends the 50-foot (15-m) RS-232 distance limit.

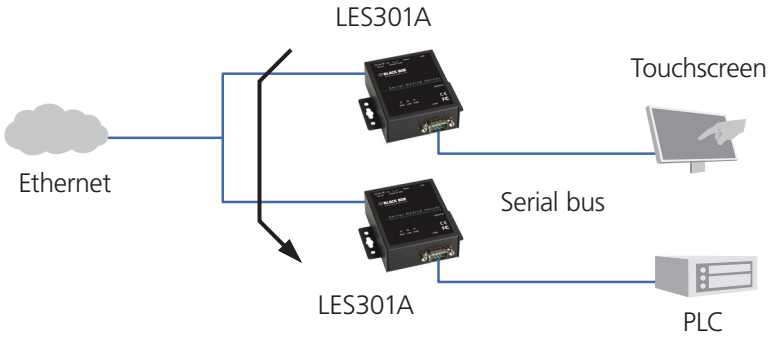

Figure 2-7. Tunneling mode.

3. Hardware Setup

NOTE: Figures 2-1 through 2-3 in Chapter 2 show the LES301A unit's back, top, and front views.

NOTE: To reset the settings to the default value, press the LES301A's reset button.

Figure 3-1 shows the interfaces.

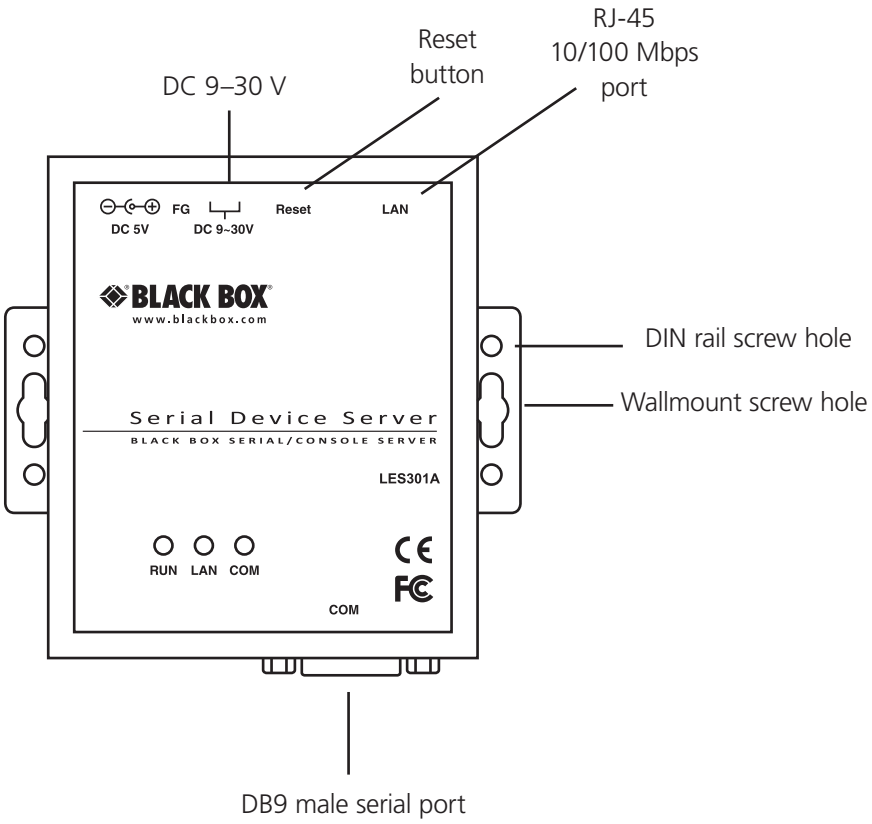

Figure 3-1. LES301A interfaces.

3.1 LED Indicators

3.1.1 LAN LED

Table 3-1. LAN LED message.

Message	Description
LED off	Ethernet is disconnected
LED is blinking green	Data is transmitted at 100 Mbps on Ethernet
LED is blinking orange	Data is transmitted at 10 Mbps on Ethernet

3.1.2 COM Port LED

Table 3-2. COM port LED message.

Message	Description
Off	No data is transmitted on the COM port
LED is blinking	Data is transmitted on the COM port

3.1.3 RUN LED

Table 3-3. RUN LED message.

Message	Description
On	Jumper JP1 Pin 1 and Pin 2 are shorted to disable AP firmware running
LED is blinking every 0.5 second	AP firmware is running normally

3.2 Installation Procedures (LES301A-KIT or LES301AE-KIT)

Step 1: Connect an LES301A to the included power supply (PS012 or PS012E) or to a 9–30 VDC source.

Step 2: Connect the LES301A to an Ethernet network. Use a standard straight-through Ethernet cable to connect to a hub/switch, or connect it to a PC's Ethernet port via a cross-over Ethernet cable.

NOTE: The PC must be in the same subnetwork as the LES301A.

Step 3: Connect the LES301A's serial port to a serial device.

NOTE: You may need an adapter (LES30X-TB5) for RS-485 or RS-422 applications.

Step 4: Mount the LES301A to a wall or panel using the included mounting screws. Or, mount the unit to a DIN rail rack using the DIN Rail Kit (LES30X-DR).

NOTES: Disconnect the device from power source completely before installing and wiring the server.

Do not exceed the maximum allowable current of the power cord and common wire. If you don't, the wire might overheat and cause serious damage to the connected and neighboring equipment.

The casing will be too hot to touch when operating in harsh environments. Please handle with care.

NOTE: Ground the LES301A properly through frame ground.

4. Software Setup

The LES301A Ethernet Serial Server is shipped with default settings shown in Table 4-1.

Table 4-1. Default software settings.

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 2 ms
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

4.1 Configuration by SerialManager

4.1.1 Static IP

Use SerialManager that's included on the product CD to configure the LES301A's network parameters. Click on the "Configuration" button (see Figure 4-1) then give it static IP information (see Figure 4-2.)

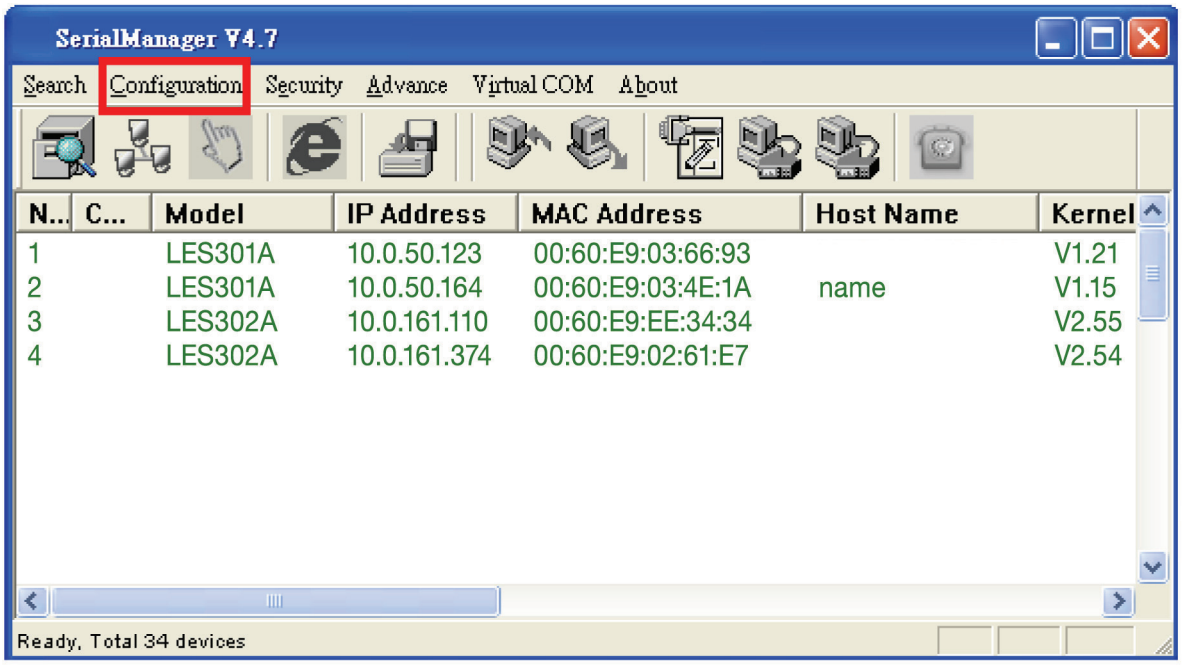

Figure 4-1. Configure using SerialManager.

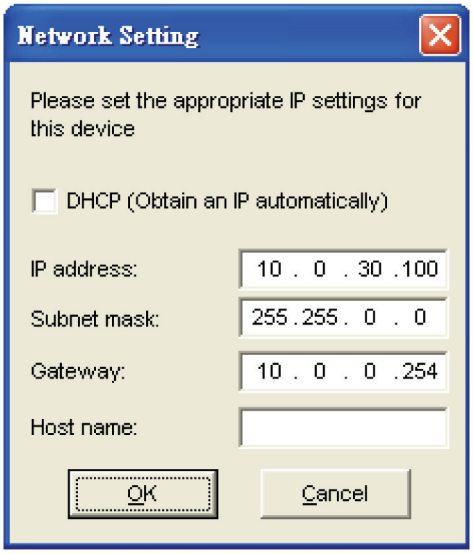

Figure 4-2. Static IP setup dialog window.

4.1.2 Auto IP (Dynamic IP)

A DHCP server can automatically assign the IP address and network settings. The LES301A supports the DHCP function. By default, the DHCP function on the LES301A is disabled; you can use SerialManager software to search network information automatically by following these steps:

1. Execute SerialManager (Figure 4-1).
2. Click on the IP address of the LES301A in SerialManager.
3. Click on the "Config" button, and the dialog window will pop up (Figure 4-2).
4. Check "DHCP (Obtain an IP automatically)" (Figure 4-3).
5. Click on the "Config Now" button (The LES301A will restart and get its IP from the DHCP server automatically.)

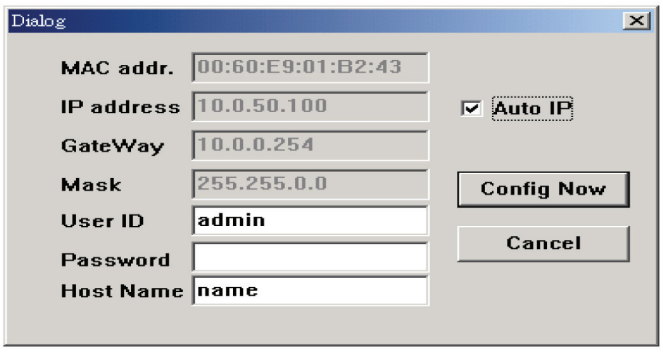

Figure 4-3. SerialManager auto IP dialog window.

4.2 Configuration by Telnet Utility

You can use the Telnet utility to change configuration settings of the LES301A.

4.2.1 Log into the System

Open the MS-DOS® command prompt window.

Telnet to the LES301A using the command "Telnet IP_address." (For example: Input Telnet 10.0.50.100 in the MS-DOS command prompt window). After you Telnet to LES301A, the system prompts for a password; the default password is blank. (Figure 4-4).

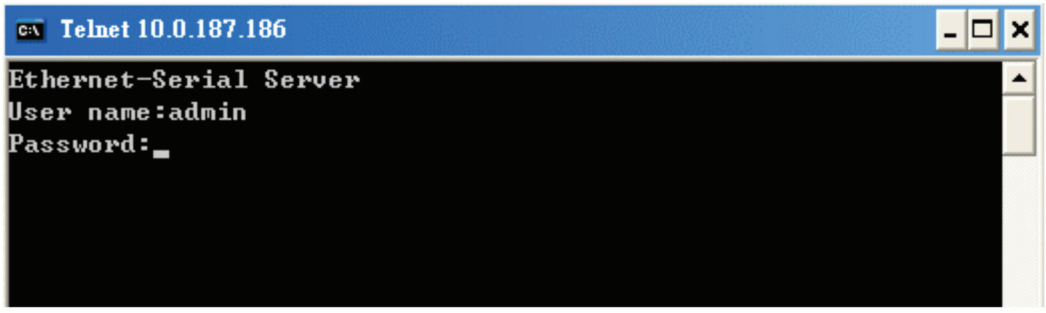

Figure 4-4. Log into the system.

NOTE: Press the LES301A default button to reset the password to the default value.

After verifying the password, the following terminal screen appears (see Figure 4-5).

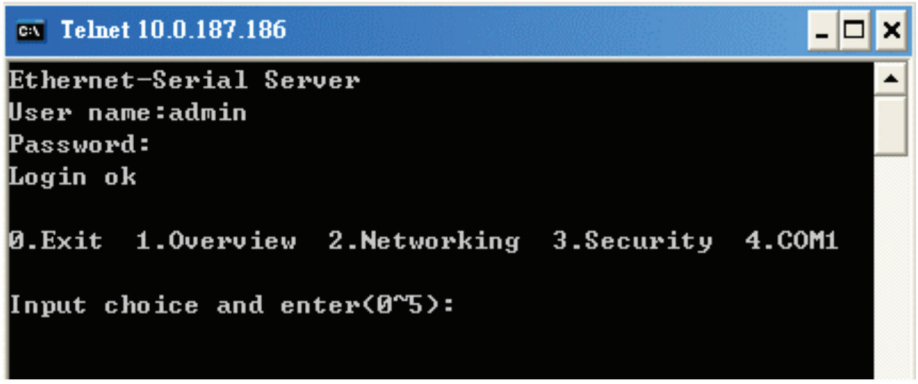

Figure 4-5. Main menu.

NOTES: If the LES301A does not receive any command within one minute, Telnet will be terminated automatically.

The networking parameter changes will take effect only when you exit and restart the LES301A.

Select "1" from "Input choice and enter (0–4):" to enter the overview page as shown in Figure 4-6.

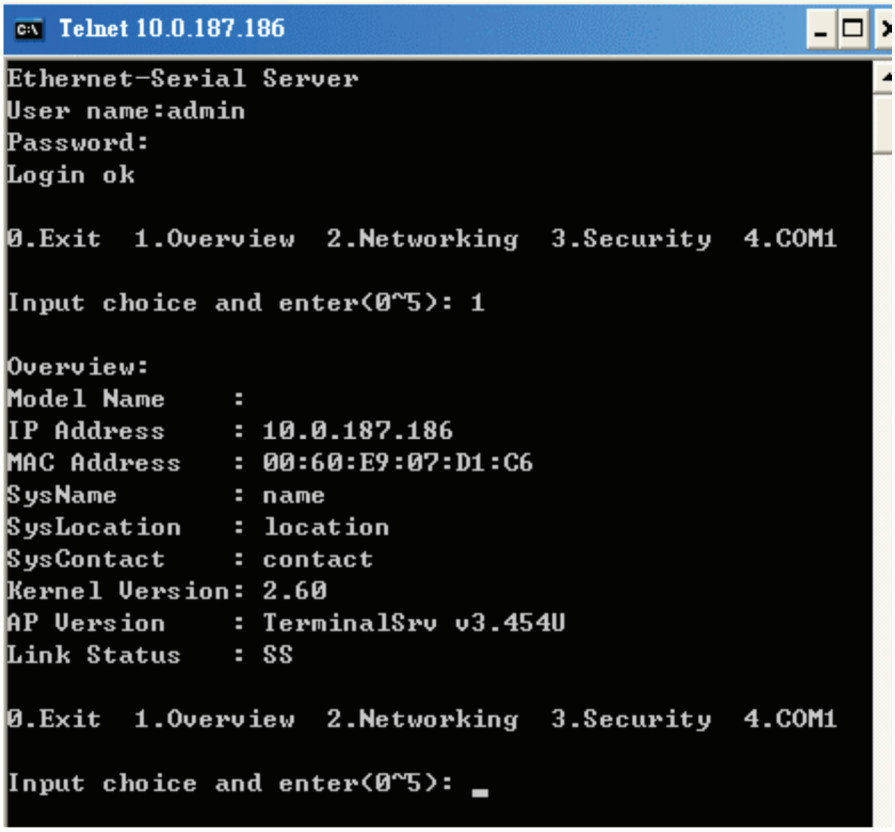

Figure 4-6. Overview.

This page gives you general information about the LES301A, including IP and MAC address, SNMP information, kernel and AP information, and connection status of the device.

4.2.2 Networking

Select "2" from "Input choice and enter (0–4):" to enter the Networking page (see Figure 4-7).

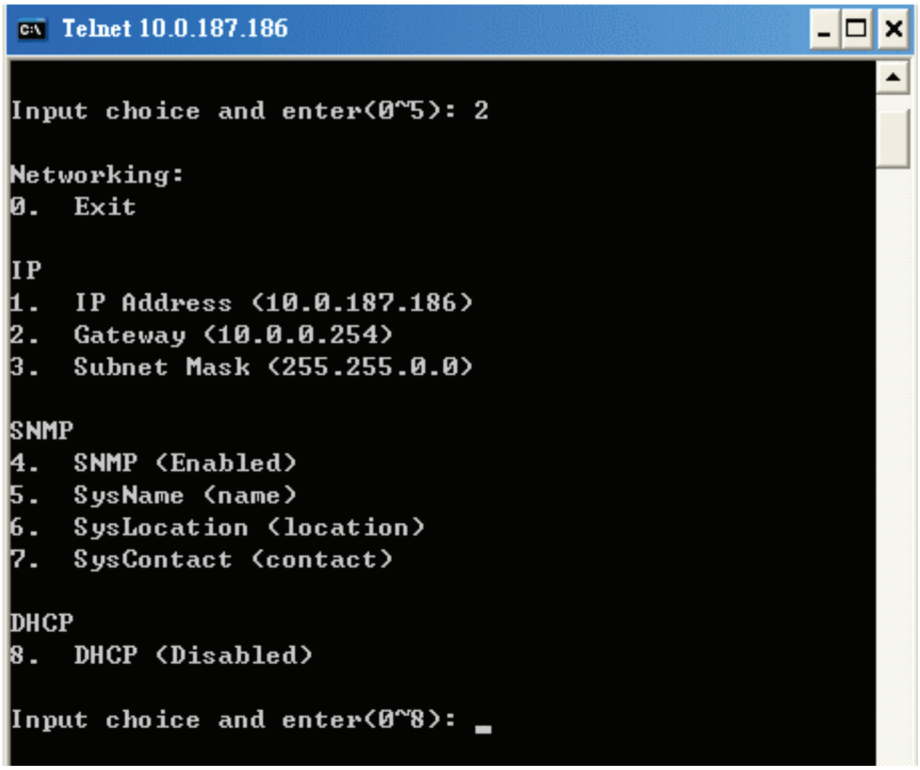

Figure 4-7. Network settings.

This page allows you to change the LES301A's network settings, including IP address, subnet mask, gateway IP address, and SNMP information.

NOTE: Any setting change made on this page won't take effect until you restart the device.

NOTE: Press the "ESC" key to return to the previous menu.

4.2.3 Change the Password

1. Select "3" from "Input choice and enter (0–4):" and the following screen appears (see Figure 4-8).

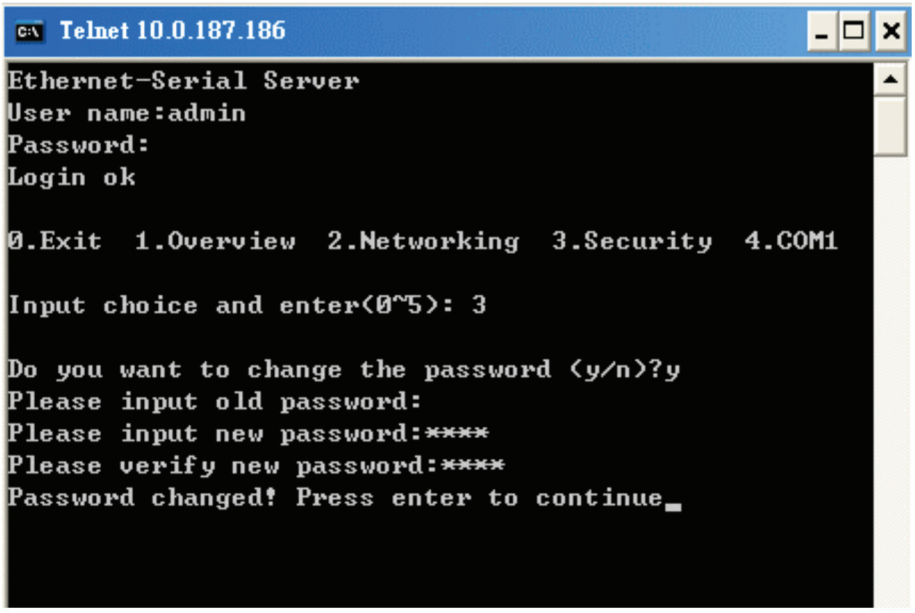

Figure 4-8. Change the password.

2. To change the password, type the old password in the "Please input old password" field, then type the new password in the "Please input new password" and the "Please verify new password" fields.

NOTE: Press the product's default key to reset the password to the default value.

4.2.4 COM1 Setup

Select "4" from "Input choice and enter (0–4):" The following screen appears (see Figure 4-9).

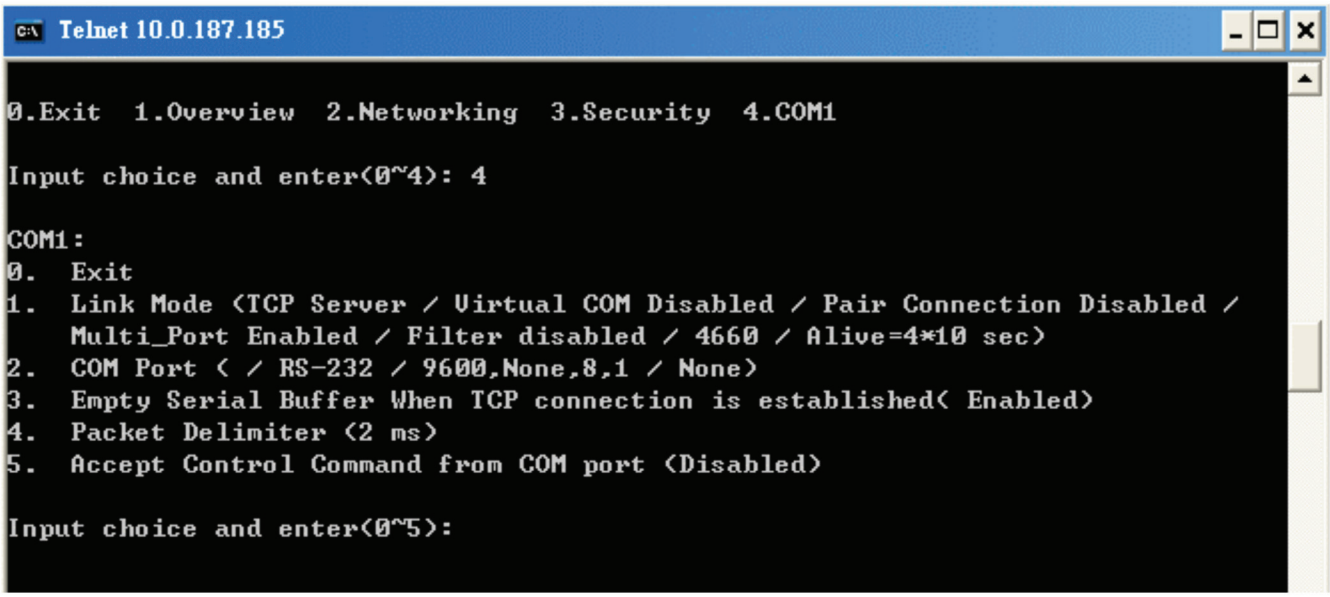

Figure 4-9. COM1 setup.

The page enables you to configure COM1 parameter settings, including COM working mode, port parameters, enabling or disabling serial buffer's data, and setting packet delimiter.

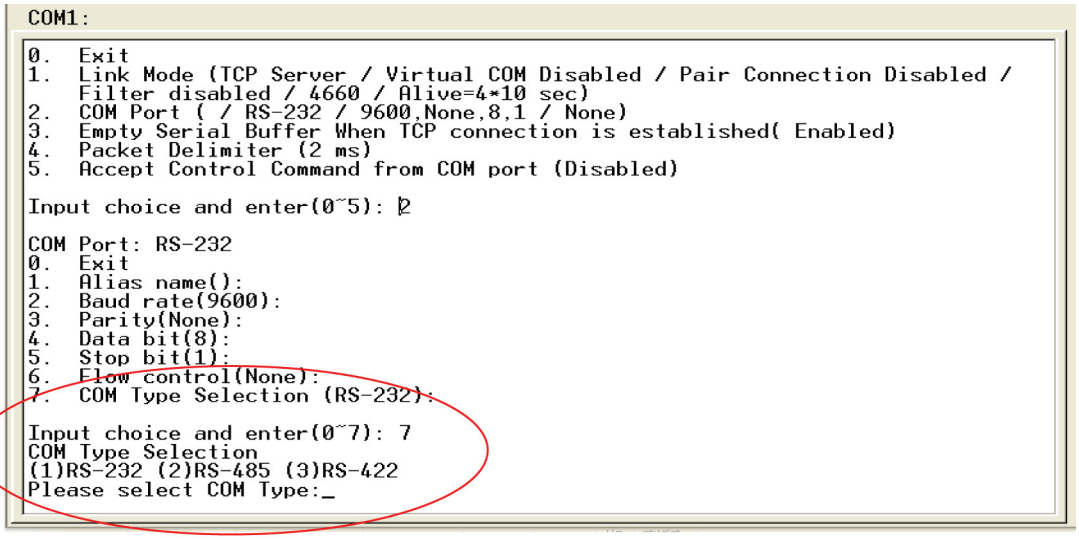

Figure 4-10. COM port selection screen.

LINK Mode Setup: Configure LES301A as a TCP server (see Figure 4-10).

1. Type "1" when prompted "Input choice and enter (1–4):" of COM1.
2. Type "1" when prompted "Input choice (1–5) and enter: "
3. Input the local port in the "Please input local port: " prompt.

To enable the IP filter:

1. Type "y" at the "Do you want to enable the IP filter (y/n)?" prompt.
2. Input the source IP in the "Please input Filter_IP: "
3. Double-click the "Enter" key.

To disable the IP filter:

1. Type "n" at the "Do you want to enable the IP filter (y/n)?" prompt.
2. Double-click the "Enter" key.
3. Input idle time in "Please input idle time to send TCP alive packet(4*10sec):" prompt. (If you input 2, the sending TCP keep alive packet period will change to 2*10 sec.)

NOTES:

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

2. The IP filter is disabled by default.

3. If the IP filter is enabled, only the assigned source IP can connect to the LES301A.

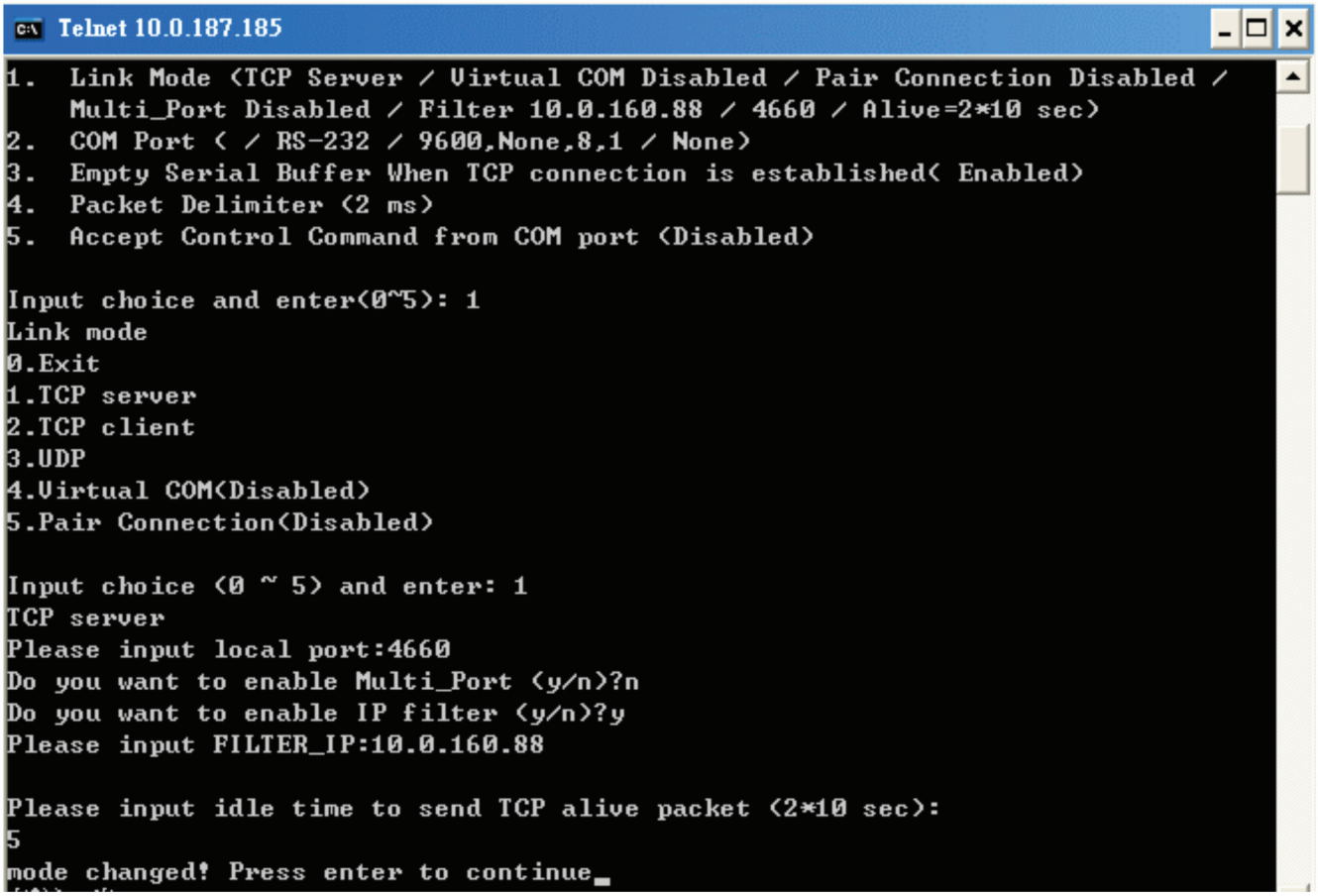

Figure 4-11. Link Mode—TCP server setup.

4.2.5 Configure the LES301A as a TCP Client

1. Type "2" at the "Input choice (1–5) and enter:" prompt (see Figure 4-11)
2. Input the destination IP in the "Please input Destination IP:" prompt.
3. Input the destination port in the "Please input Destination port:" prompt.

Type "1" for Connected always:

1. Double-click the "Enter" key.
2. Input idle time at the "Please input idle time to send TCP alive packet(4*10sec):" prompt. (If you input "2", the sending TCP keep alive packet period will change to 2*10 sec)

Type "2" for Trigger by receiving COM port data:

1. Input the idle time to disconnect at the "Please input idle time to disconnect (0 sec , 1–255):" prompt. (If you input "0" disable the function; if you input "2", the serial Inactivity beyond 2 sec will cause the unit to disconnect.)
2. Input the error retrying time in the "Please input waiting time for error retrying (0 minute, 1–255):" prompt. (If you input "0", the function is disabled; if you input "2", the serial Inactivity beyond 2 sec will cause the unit to disconnect.)
3. Double-click the "Enter" key.
4. Input the idle time at the "Please input idle time to send TCP alive packet(4*10sec)" prompt. (If you input "2," the sending TCP keep alive packet period will change to 2*10 sec.)

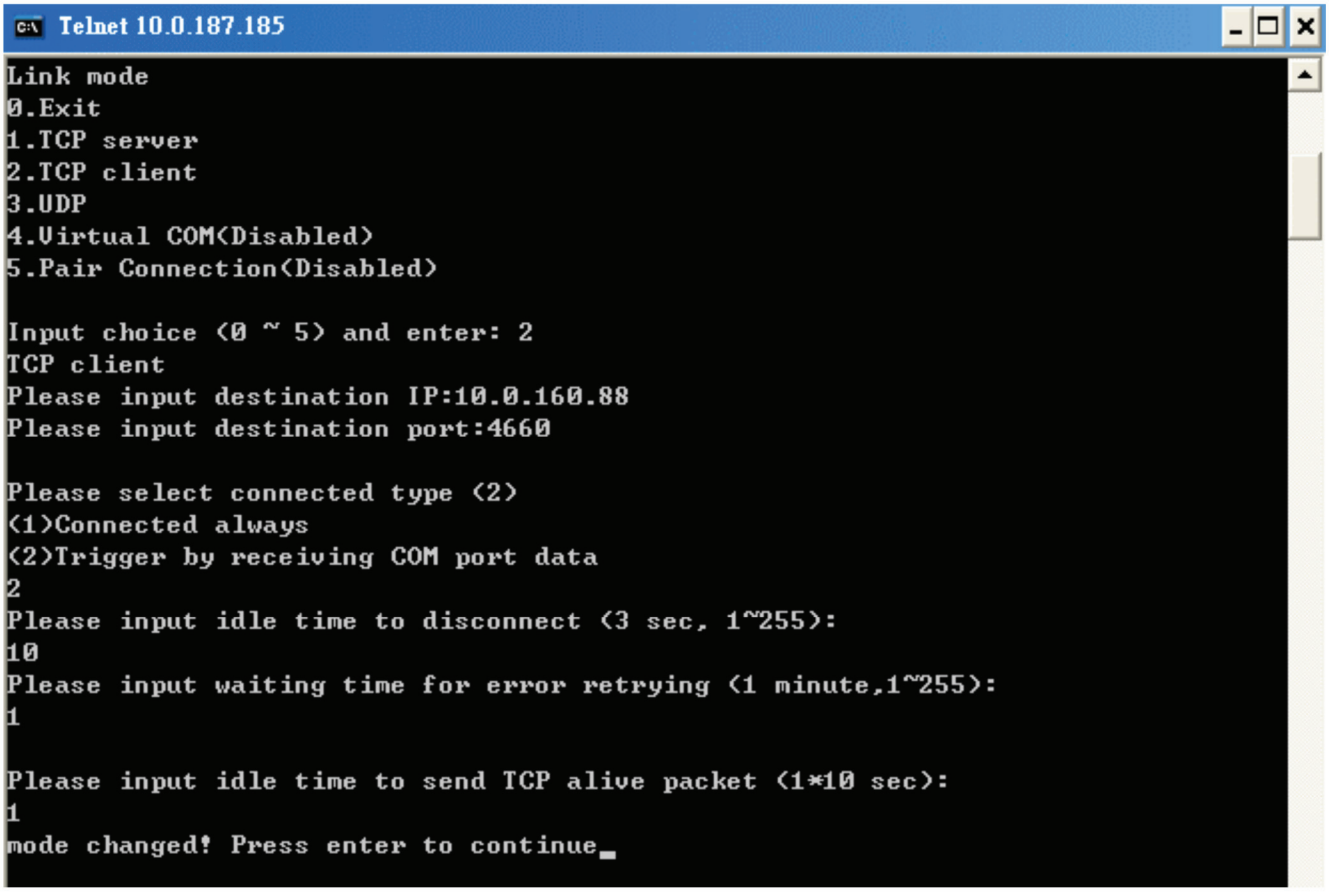

Figure 4-12. Link mode TCP client setup.

4.2.6 Configure the LES301A as a UDP Client

For example, the local port is 4660, the destination IP is 10.0.29.254, and the destination port is 666 (see Figure 4-13).

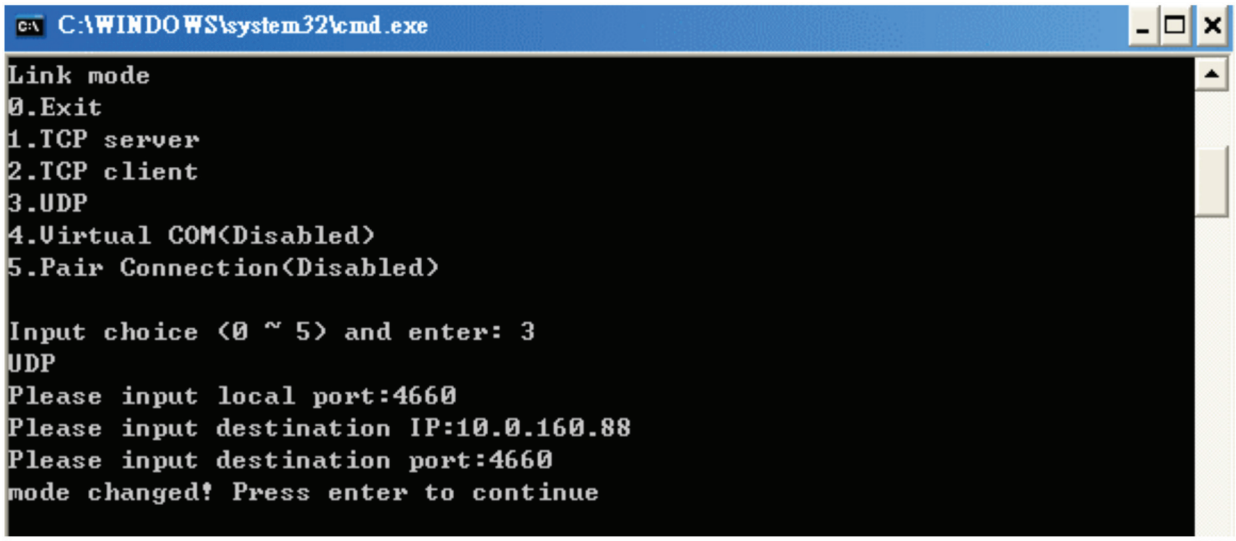

Figure 4-13. Link Mode-UDP client setup.

4.2.7 COM Port Setting

Type "2" at the "Input choice and enter (1–4):" prompt for COM1. The following screen will appear. You can then give the COM port an alias name, set the baud rate and parity, determine the number of data bits and stop bits, and decide if you want to use flow control (and also the type of flow control you want to use). See Figure 4-14.

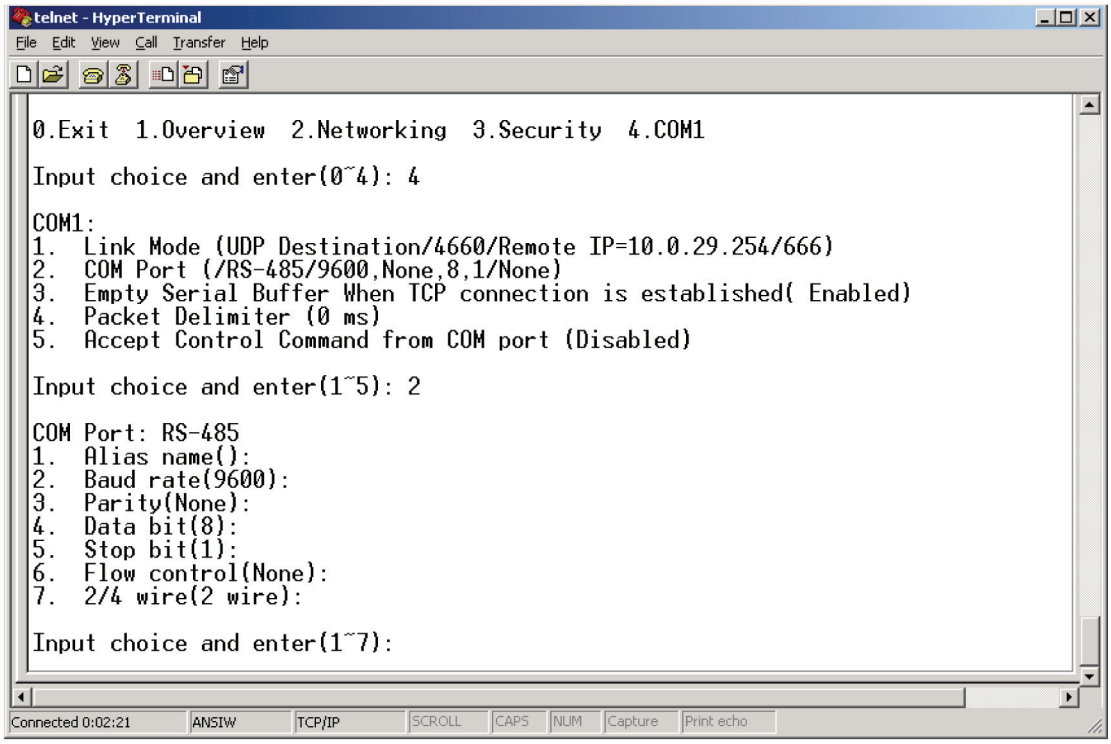

Figure 4-14. COM port setting.

4.2.8 Enabling the Serial Data Buffer

Type "3" at the "Input choice and enter (1–4):" prompt. By default, the 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 LES301A. Once the TCP/IP connection is resumed, the serial data will be sent through Ethernet connection. You can enable or disable this. (See Figure 4-15.)

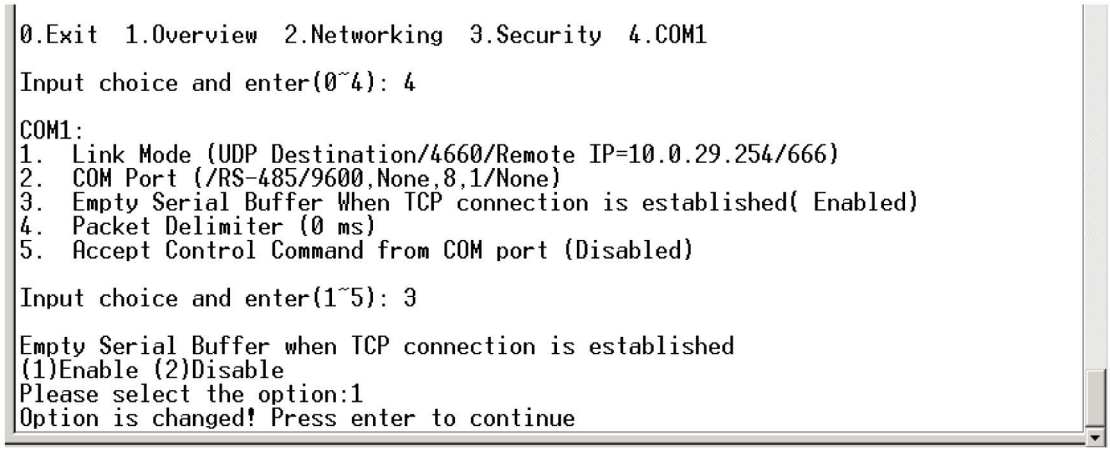

Figure 4-15. COM port—Enable or disable serial data buffer.

4.2.9 Setting Packet Delimiter

Packet delimiter is a way of controlling packets within serial communication. It can prevent packets from being cut, thus keeping the packets complete. The LES301A provides two ways to set the parameters: inter-character timer and terminator. By default, the packet delimiter timer is 1 ms. You can change the timer shown in Figure 4-16.

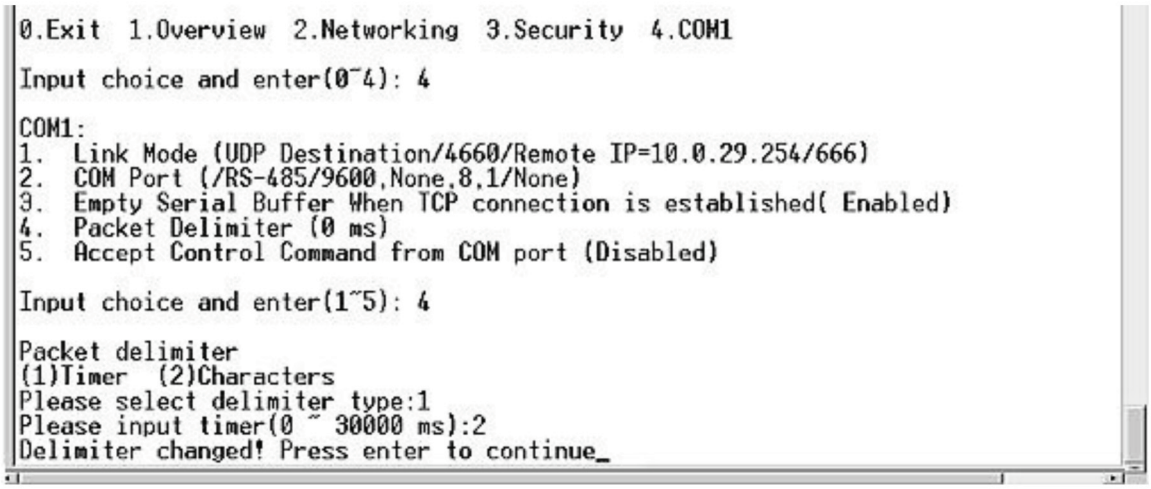

Figure 4-16. Setting packet delimiter timer.

You can also choose the character pattern as the packet delimiter as shown in Figure 4-17.

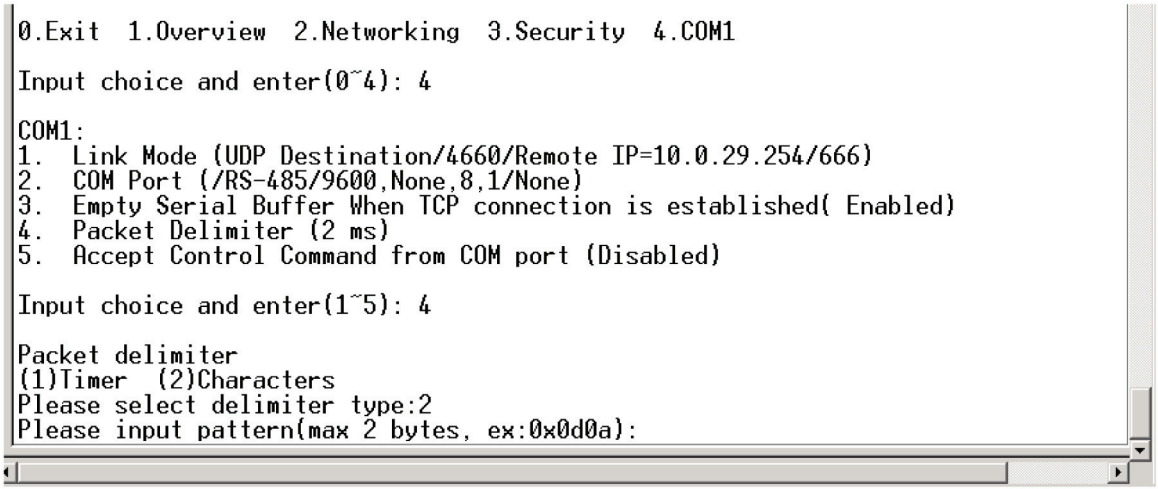

Figure 4-17. Setting the packet delimiter-character pattern.

4.2.10 Accept Control Command from COM Port

The LES301A can also accept serial control commands directly over the network following RFC2217 format. For more details about this function, contact Black Box Tech Support at 724-746-5500 or info@blackbox.com.

4.3 Configuration Using Web Browser

1. Make sure your PC is located on the same network subnet as the LES301A.
2. Open a Web browser, then type in the LES301A IP address to configure. The default user name is “admin” and the default password is null (leave it blank).
3. The LES301A’s network, link mode, and COM ports settings can be configured in different Web pages.
4. Click “Save Configuration” to save the settings.

5. Click on the "Restart" button to activate the change.

You can also modify various settings through the Web server interface. To do so, follow the steps below.

4.3.1 Log in to the System

1. From the Web browser, type the LES301A's IP address in the URL.

   Example: http://10.0.50.100

2. The following authentication screen appears. (See Figure 4-18.) Type in the user name and password, then click on "OK." The user name is admin, and password is left blank by default.

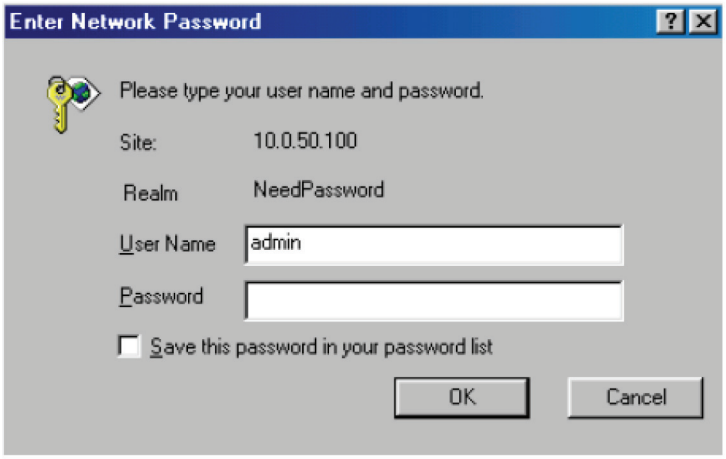

Figure 4-18. Log into the system via Web.

3. The following overview page appears. (See Figure 4-19.)

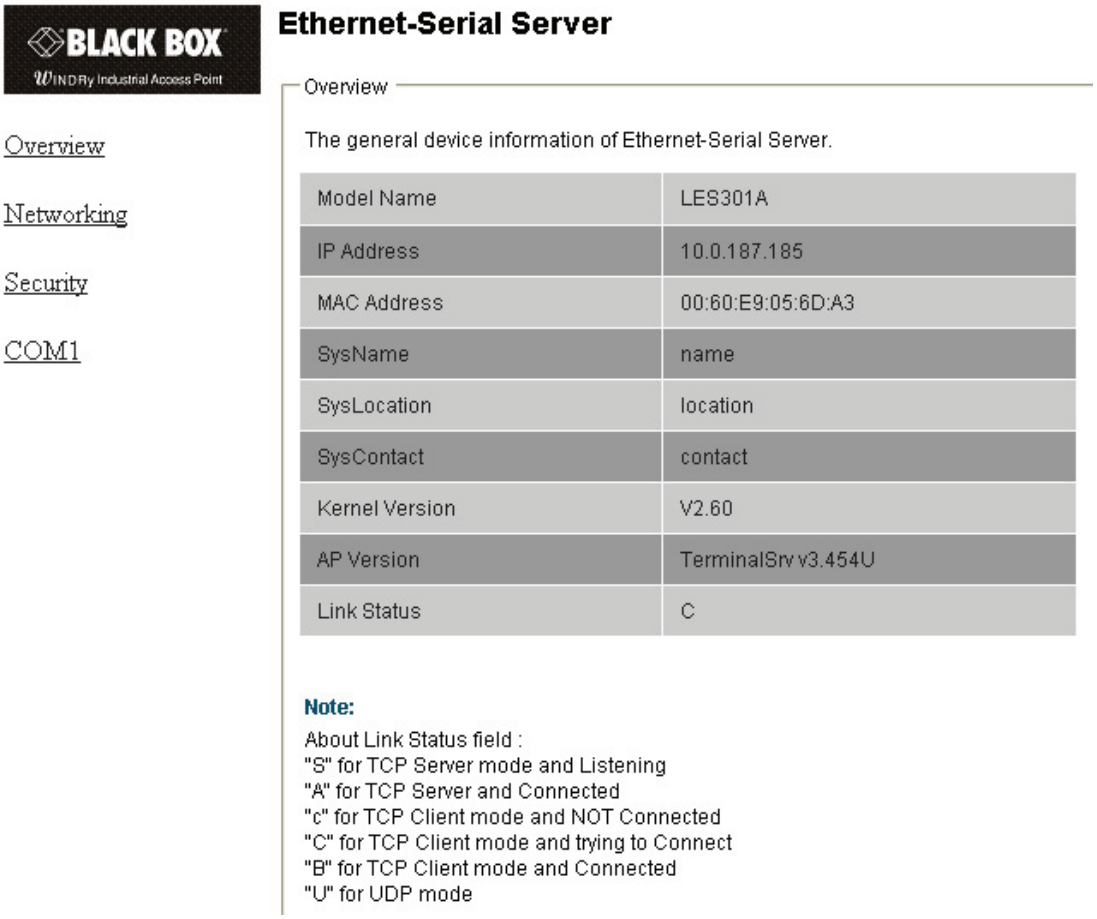

Figure 4-19. Overview.

4.3.2 Change the Password and RS-232/RS-485/RS-422 Type Selection

1. Click on the "Security" link and the screen shown in Figure 4-20 appears.

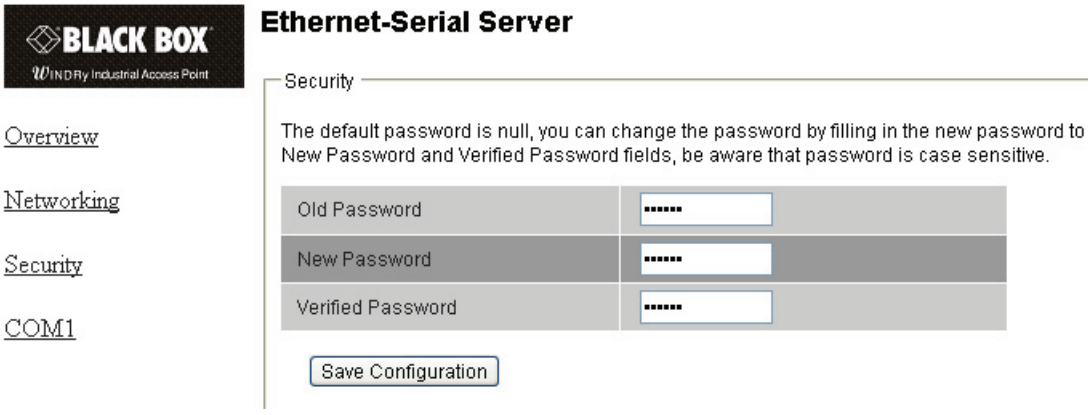

Figure 4-20. Change the password.

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

NOTE: Press the default key to reset password to the default value.

3. COM type selection: Click on "COM1" Link and the following screen appears (see Figure 4-21). Select the COM type and click on "Save" to update the COM port typesetting.

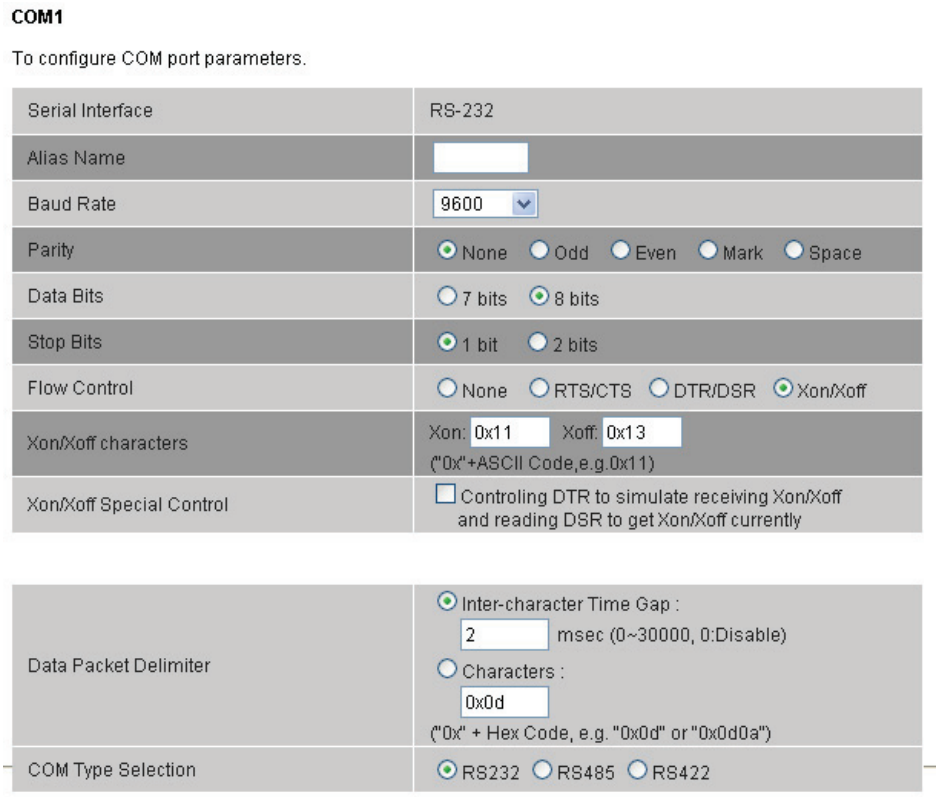

Figure 4-21. COM type selection.

4.3.3 Network Setup

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

Enable SNMP by checking "Enable," then fill in network identification information under SNMP field and click on the "Save Configuration" button to save the changes.

NOTE: The setting will not become effective until you restart the LES301A.

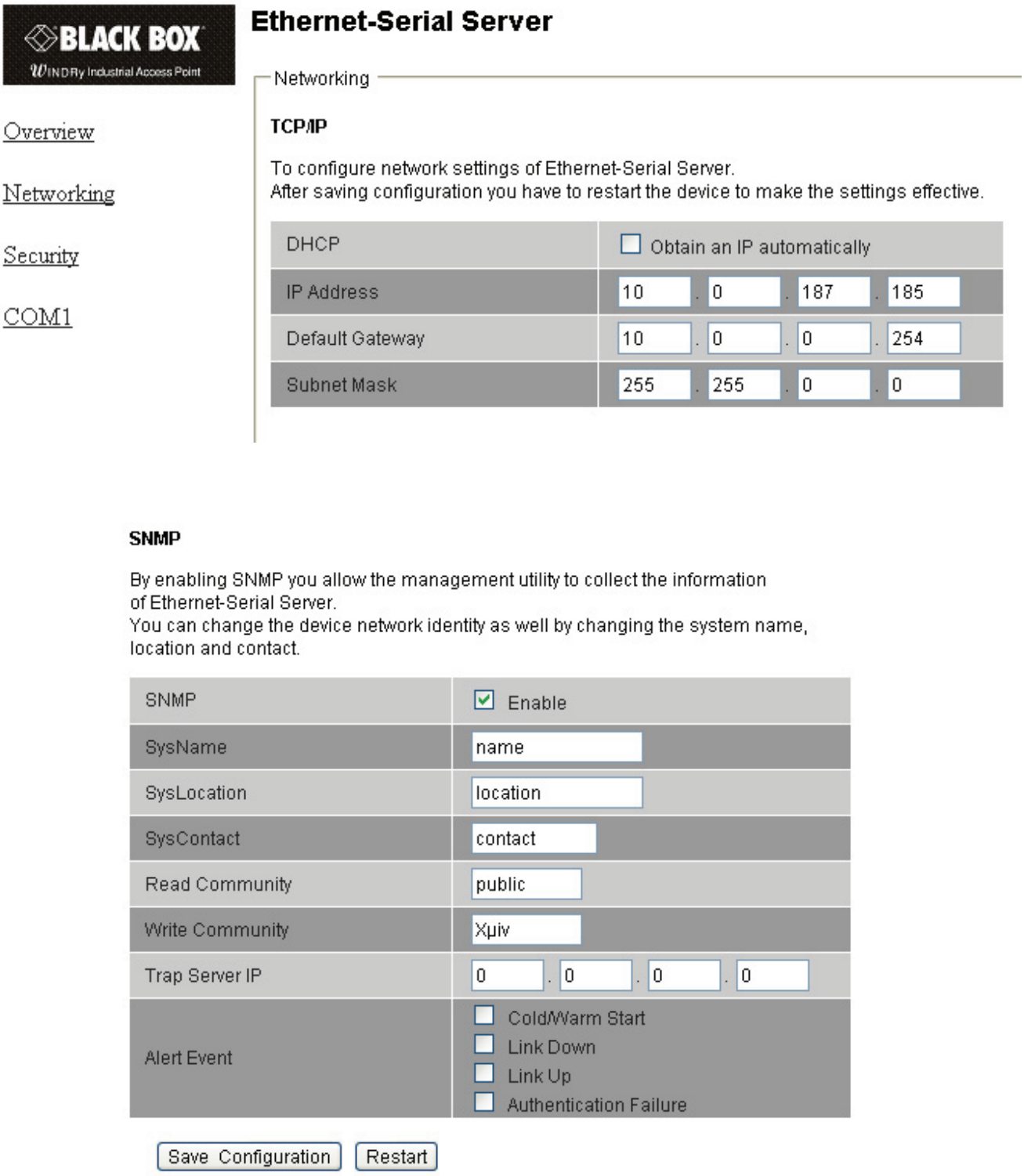

Figure 4-22. Network setup.

4.3.4 Configure the LES301A as a TCP Server

You can configure the LES301A with transparent mode as the default.

1. Click on the "COM1" link.
2. Configure the LES301A as a TCP server.
3. Input the local listening port "4660."

To enable the IP filter:

1. Check "IP filter."
2. Input the source IP in the "Source IP" field.

If you don't want to enable the IP filter:

1. Don't check "IP filter."
2. Input the idle time at the "Please input idle time to send TCP alive packet(sec):" prompt. (If you input "2," the sending TCP keep alive packet period will be changed to 2*10 sec.)
3. Input the TCP Inactivity time at the "TCP Inactivity Time Before Disconnect(sec):" prompt. (If you input "2," TCP Inactivity beyond 2 sec will cause a disconnect.)
4. Click on the "Save Configuration" button to save the changes.

NOTE:

1. The IP filtering function is disabled if you set the FILTER_IP to "0.0.0.0".

2. The IP filter is disabled by default.

3. If the IP filter is enabled, only the source IP assigned can connect to the LES301A.

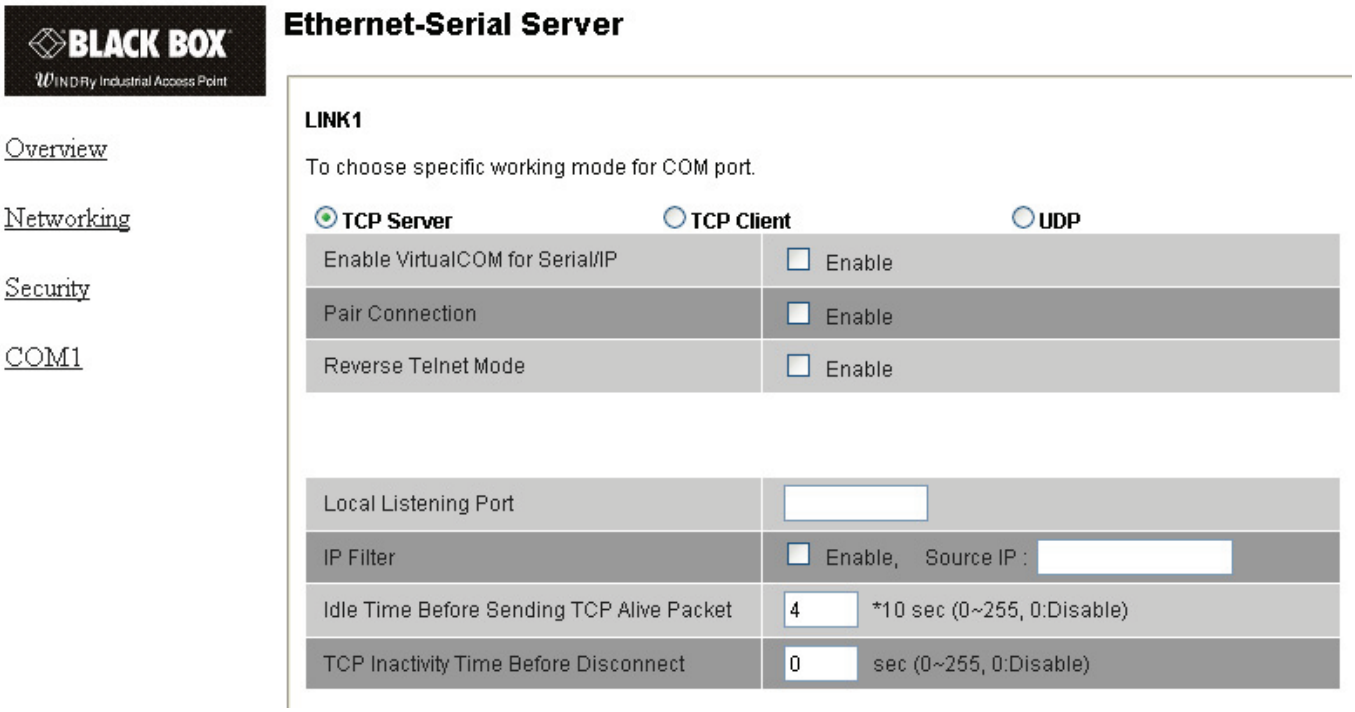

Figure 4-23. LINK1 setup—TCP server.

Figure 4-24. COM1 setup—TCP server.

NOTES:

1. *The default port number for the LES301A is 4660 and it is associated with serial port COM1 respectively. After your application program connects to the TCP port 4660 of the LES301A, data sent to this TCP connection from your application program is transparent to the LES301A's COM1. The opposite is also true.*
2. *The serial interface will show a different port interface according to the model of the serial server.*

4.3.5 Configure the LE301A As a TCP Client

Configure the LES301A as a TCP client, for example, the destination IP is 10.0.29.11, and the destination port is 4660.

1. Input destination IP "10.0.29.11"
2. Input destination port "4660"
3. Input idle time at the "Please input idle time to send TCP alive packet(sec):" prompt. (If you input 4, the sending TCP keep-alive packet period will change to 4*10 sec.)
4. Select "TCP Connect On Power-on" to keep trying to establish a TCP connection after Power on.
5. Select "TCP Connect On Any Serial Character," and any serial character will trigger to establish the TCP connection.
6. Input idle time to disconnect at the "Serial Inactivity Time before disconnect (0sec , 1–255):" prompt. Input "0" to disable the function; input "2" and the serial Inactivity beyond 2 sec will cause a disconnect.

7. Input the error retrying time at the "Waiting Time Between Re-connect Attempts (0 minute, 1–255):" prompt. Input "0" to disable the function; input "2" and the serial Inactivity beyond 2 sec will cause a disconnect.
8. Click on the "Save Configuration" button to save the changes.

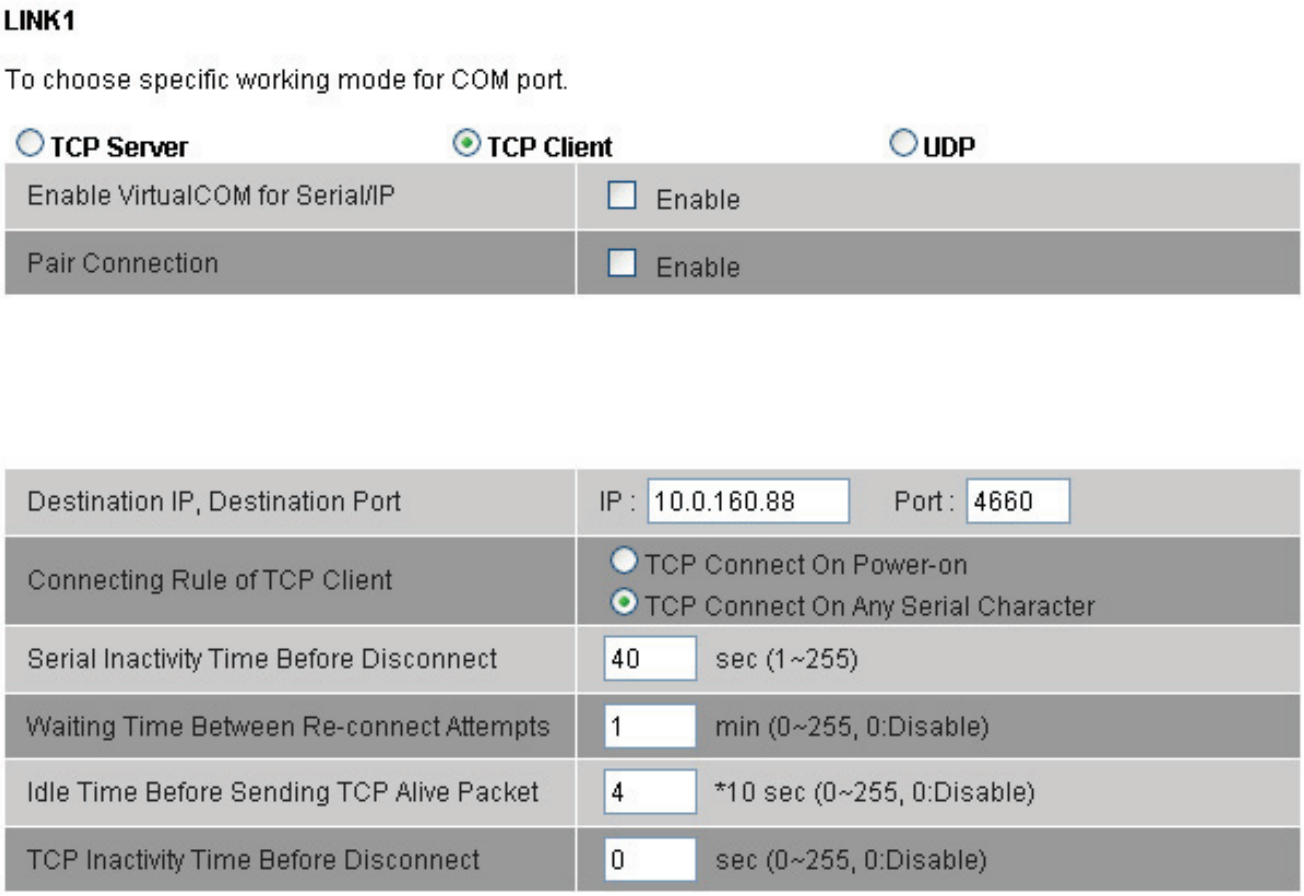

Figure 4-25. COM1 setup—TCP client

4.3.6 Pair Connection

If the serial connection is established with two or more LES301A units to send data over Ethernet network, that is, pair connection mode, you can choose "pair connection," which is indicated in the following figure for any type of serial device.

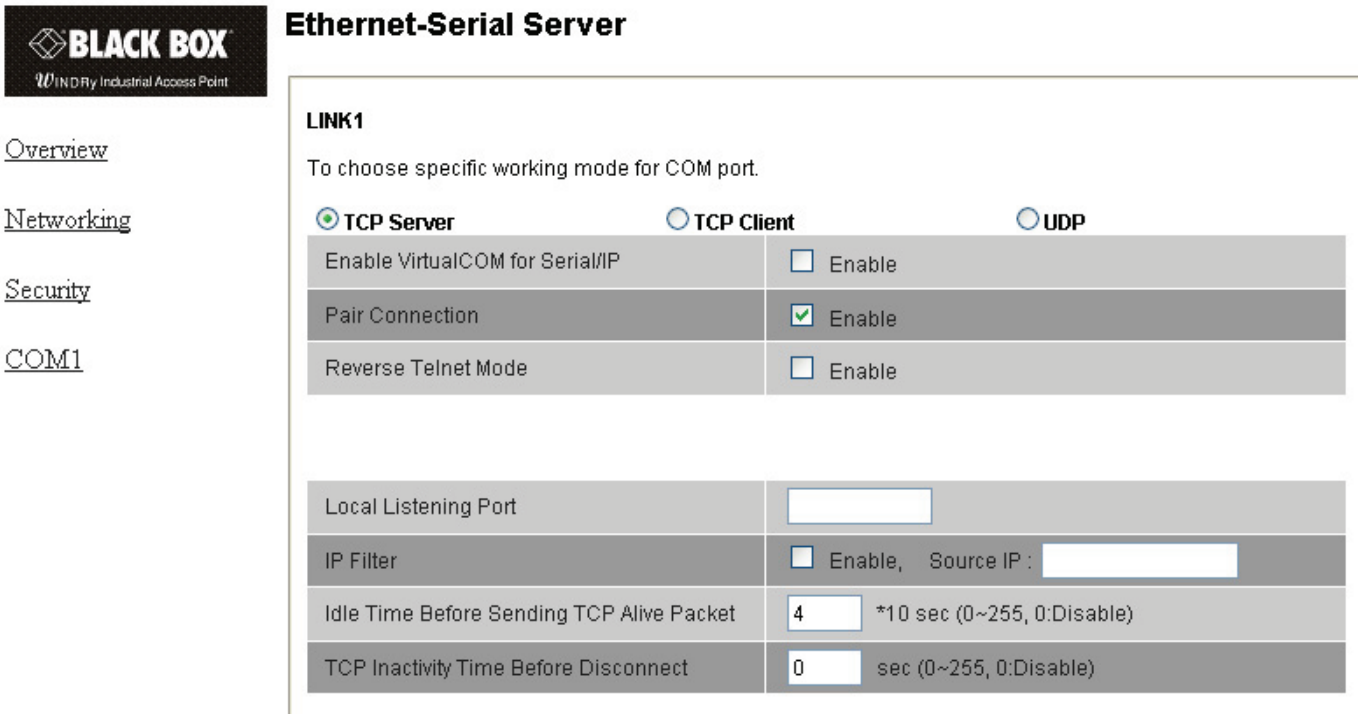

Figure 4-26. COM1 setup—pair connection.

Configure the LES301A as UDP mode. The local port is 4660, the destination IP is 10.0.29.254, and the destination port is 4660.

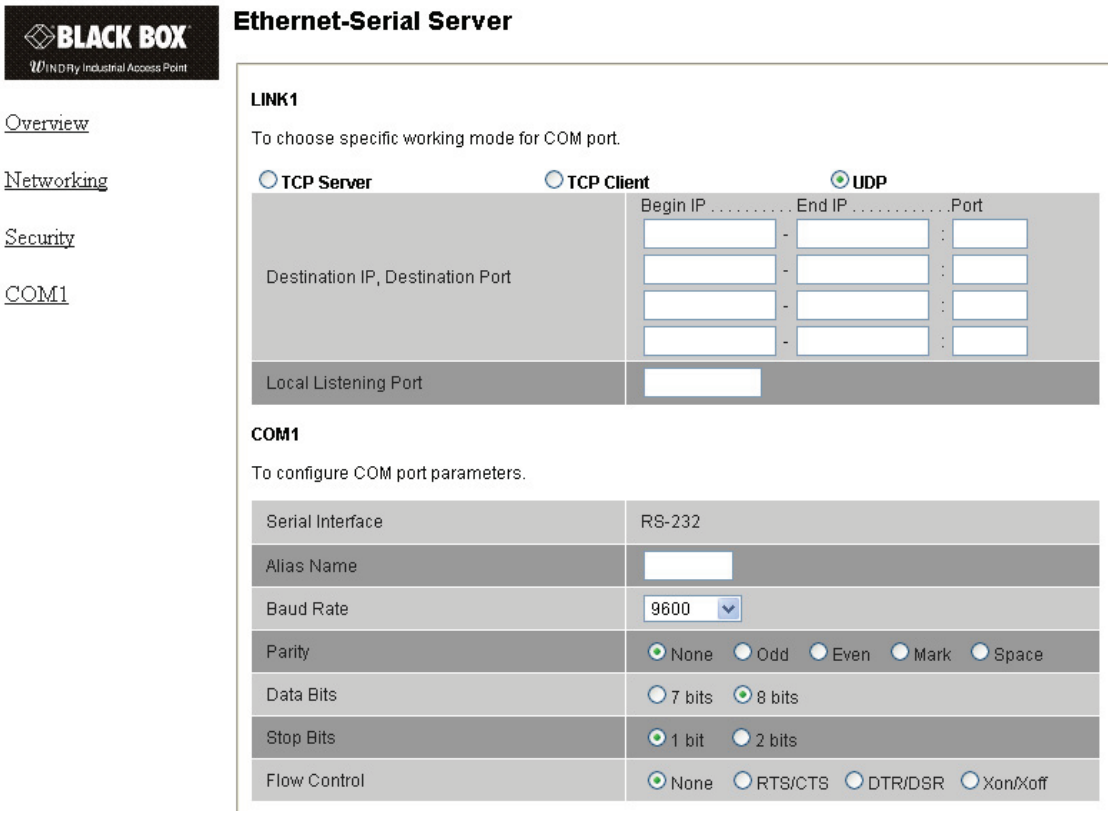

Figure 4-27. COM1 setup—UDP mode.

1. Click on "Save Configuration" to save the changes.
2. If the update is successful, the following screen appears.

Figure 4-28. Configuration is successful.

4.4 Assign a New IP Address by ARP Command

Use ARP command to assign a static IP address to LES301A 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 in the MS-DOS command prompt window.

For example, change IP from 10.0.50.100 to 10.0.50.101, and the MAC address for LES301A is 00-60-e9-11-11-01.

Step 1: Add the new host IP to ARP table.

- Open the MS-DOS command prompt window.
- Input "arp -s 10.0.50.101 00-60-E9-11-11-01."

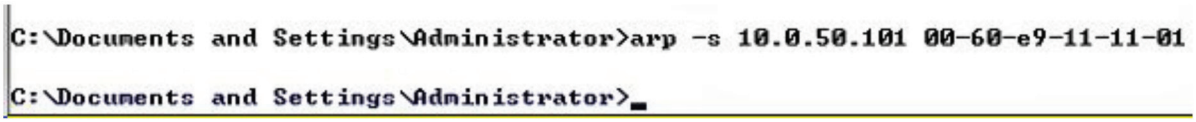

Figure 4-29. MS-DOS command prompt window.

Step 2: Change to new IP via Telnet Port 1.

• Input "telnet 10.0.50.101 1"

NOTE: The Telnet will fail, and the LES301A will restart automatically. After restart, the IP address should change to 10.0.50.101.

Step 3: Use a new IP to configure LES301A via Telnet.

• Input "telnet 10.0.50.101"

NOTE: When using this method to change the IP address, the PC's IP address and the LES301A's IP address must belong to the same subnet.

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

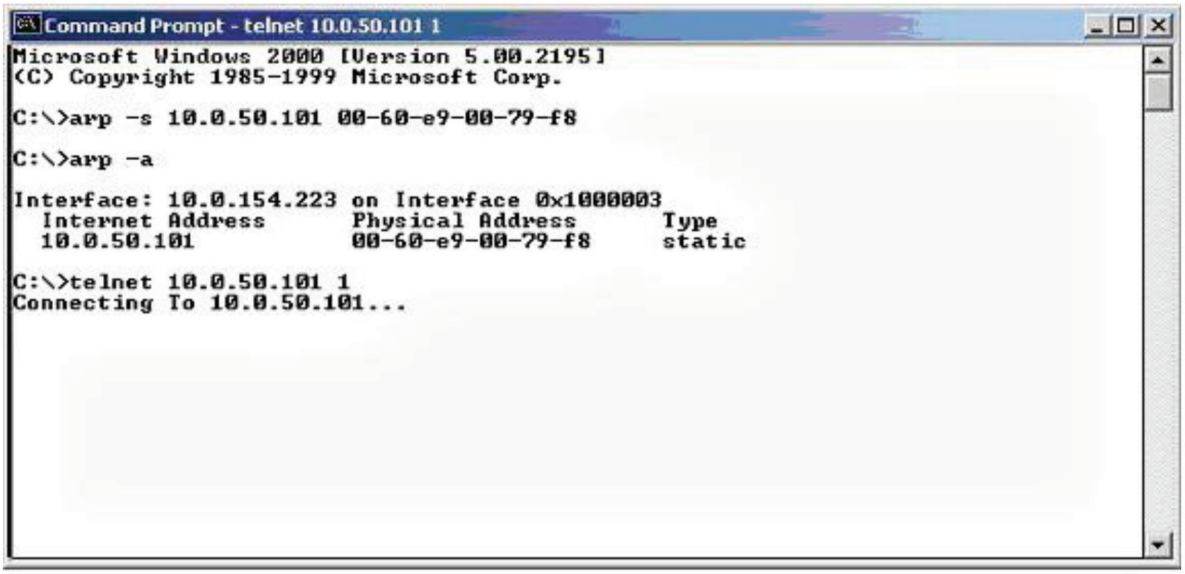

Figure 4-30. Assigning a new IP address by ARP command.

5. Using Virtual COM

Virtual COM driver mode for windows converts COM data to LAN data to control the RS-232 port on an LES301A 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 an LES301A that connects the serial line device to the network. Figure 5-1 shows the Virtual COM connection diagram.

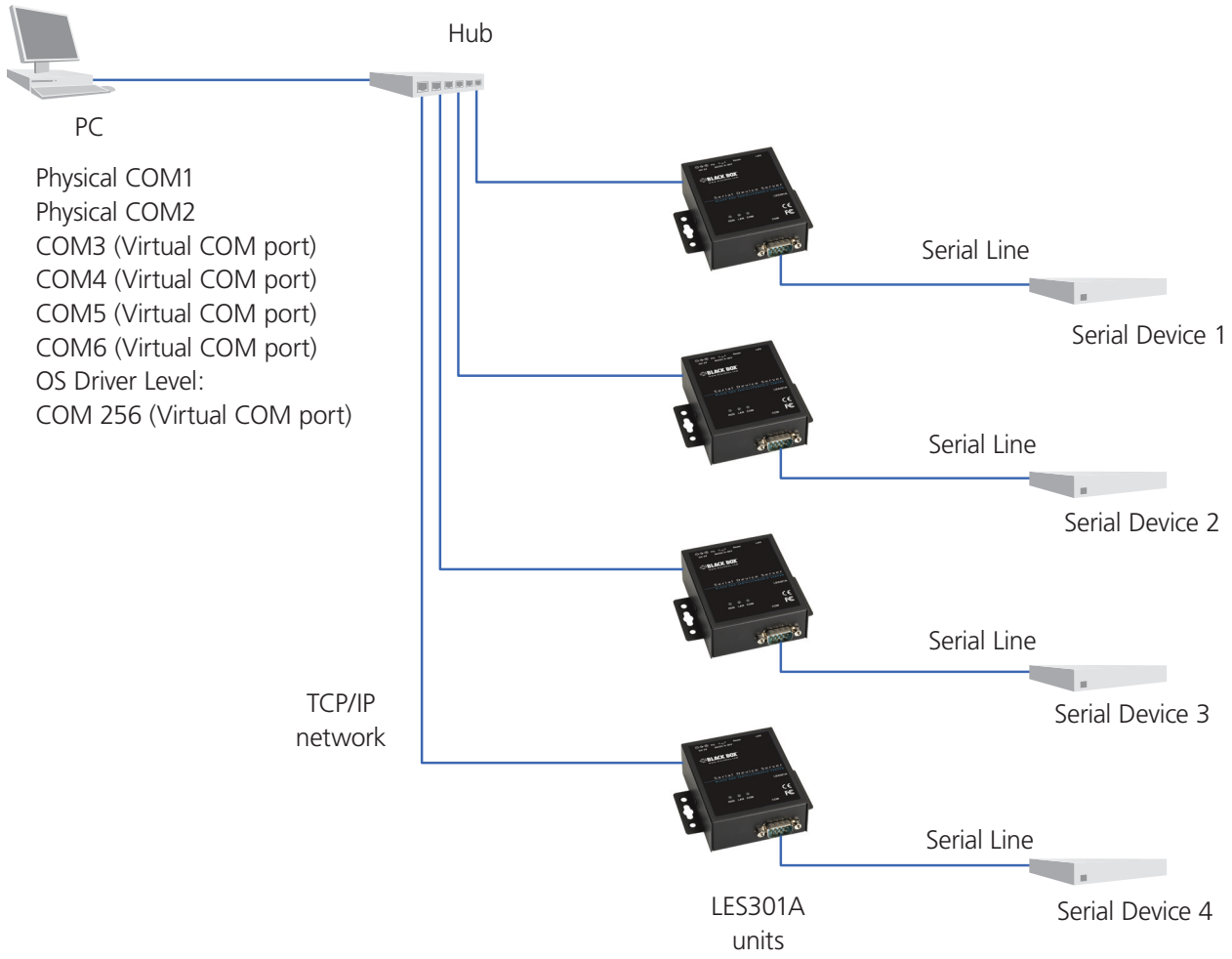

Figure 5-1. Virtual COM connection diagram.

5.1 Setup of a Virtual COM Driver

5.1.1 Pre-installation Requirements

The PC's operating system should comply with the following requirements:

- Processor: Intel® compatible, Pentium® class
- Operating 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

5.1.2 Supported Firmware

The Virtual COM driver supports firmware AP v3.0 and later of LES301A device servers.

5.1.3 Limitation

The Virtual COM driver enables you to select up to 256 COM ports as Virtual COM ports in a SerialManagerPC. You can select from a list of COM ports from COM1 to COM256.

5.1.4 Installation

Turn 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.

Select one or two COM ports to become the Virtual COM ports.

5.1.5 Uninstalling

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

5.2 Virtual COM Communication

5.2.1 Enable Virtual COM on LES301A

From a Web browser, access the LES301A by typing its IP address, then click on the COM1 link to access the 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.

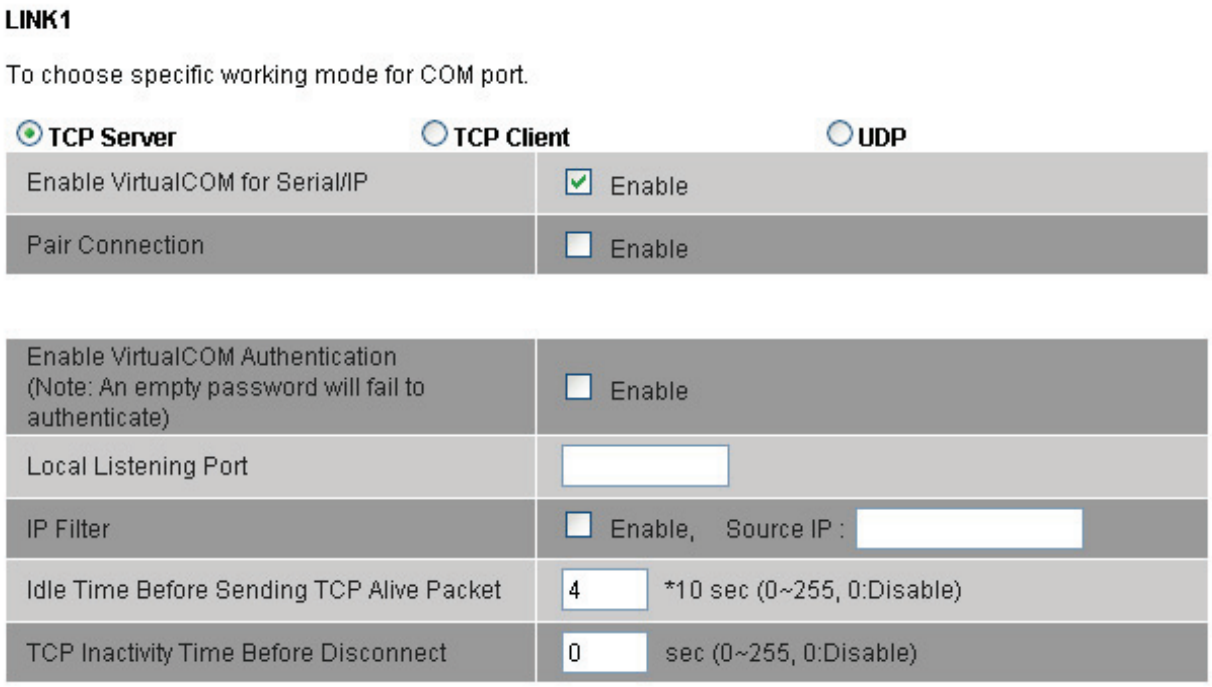

Figure 5-2. Enable VirtualCOM.

Or, you can enable Virtual COM through Telnet configuration by setting COM1 as TCP server (Figure 9-2), and type in the local port number for COM1, then enable Virtual COM as shown in Figure 5-3.

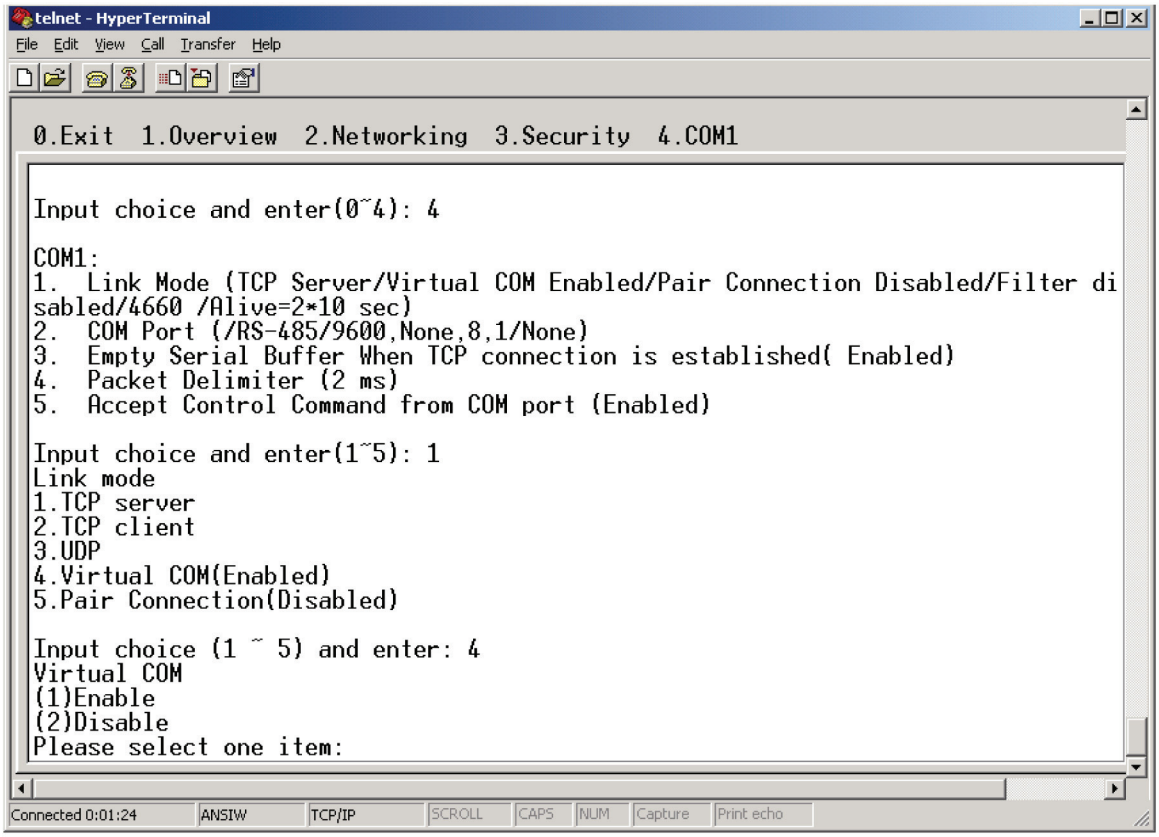

Figure 5-3. Enable Virtual COM via Telnet.

5.2.2 Run Serial/IP on PC

In the Window Start Menu, go to "Programs," select "Serial/IP" and select "Control Panel." When the"Select Port" window pops up, select the serial port you want to configure. The configuration window will appear (see Figure 5-4).

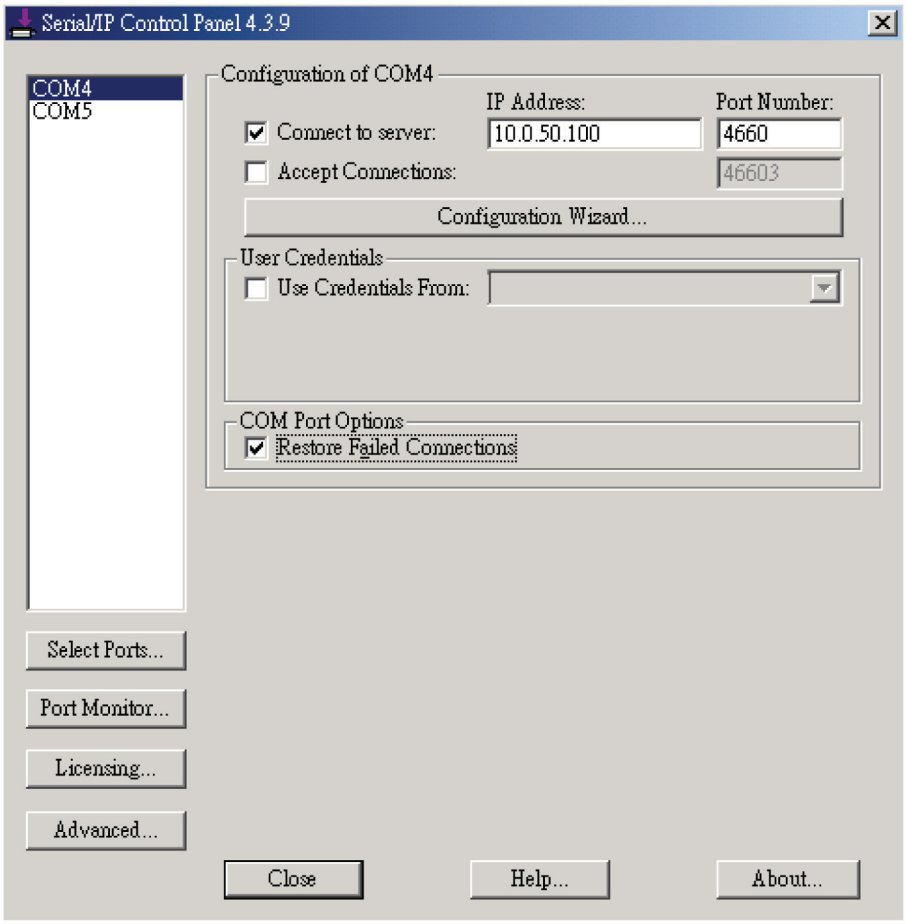

Figure 5-4. Serial/IP configuration.

On the right side of Figure 5-4 is a sample Virtual COM Control Panel window. On the left side is the list of the COM ports that you have selected (in the Select Ports window) for use by the Virtual COMRedirector. If you want 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.

5.3 Configuring Virtual COM Ports

Configure each Serial/IP COM port as follows:

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 COMRedirector, the Virtual COMRedirector 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 COMRedirector 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. This makes the recommended settings effective and returns you to the Control Panel to continue with the following steps.

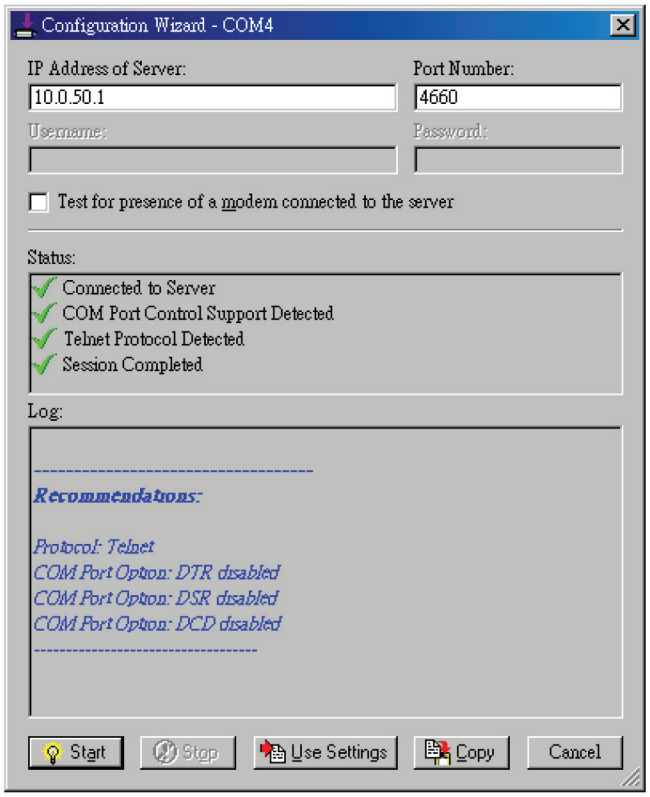

Figure 5-5. Configuration Wizard.

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.

6. SNMP Setup

6.1 SNMP Network Management Platform

LES301A is an SNMP device that allows many popular SNMP network management platforms such as HP® OpenView® and SunNet Manager to conduct SerialManager.

Depending on the network management tools you are using, you can collect device LES301A information from running the management tools including IP address, DNS name, system descriptions, and NIC information, etc.

6.2 Using NetworkView as an Example

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 their printed maps and reports for future use.

First, download and install the tool on your PC (Windows 2000 and Windows XP), then start NetworkView.

1. Click on the button to open a new file. The following screen will appear. In the Addresses field, enter the IP address range to search.

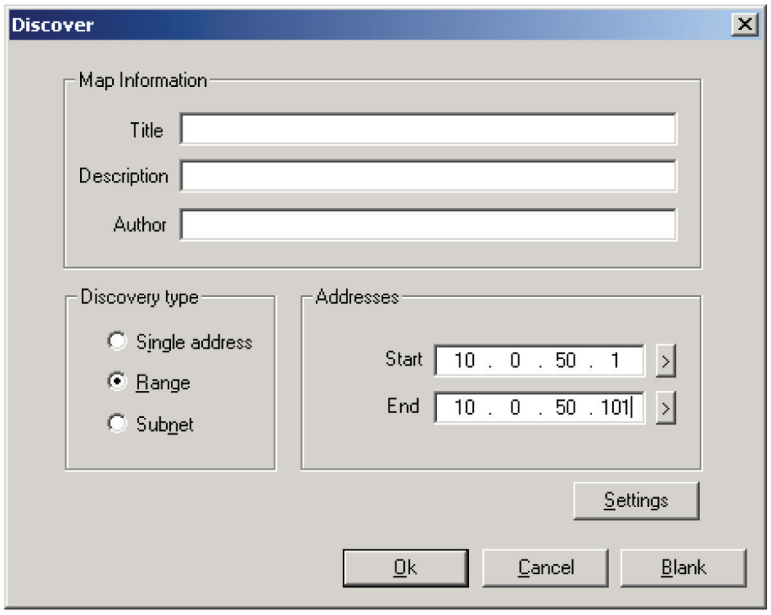

Figure 6-1. IP address searching.

2. Click on "OK" and the following dialog box will display the searching progress.

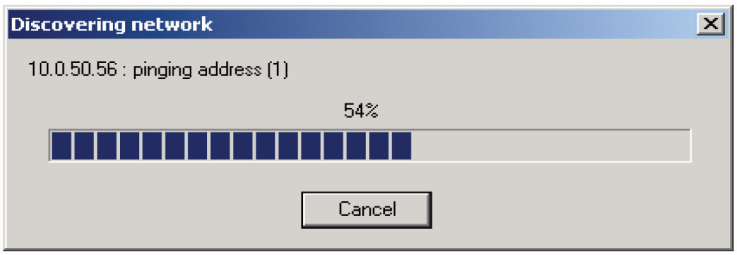

Figure 6-2. Searching progress.

3. After the search is completed, NetworkView will display the devices found in the main window.

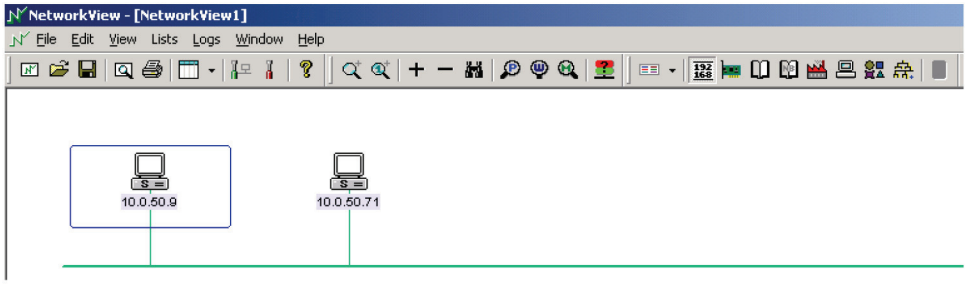

Figure 6-3. NetworkView displays the devices found.

4. 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.

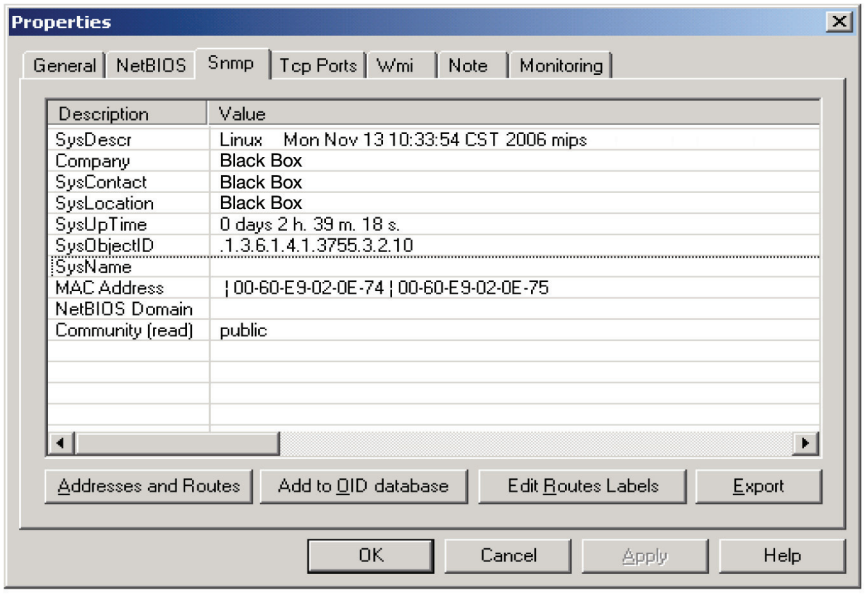

Figure 6-4. NetworkView display device information.

NOTES:

1. The NetworkView tool is limited to information extracting and viewing only.

2. To modify the configurations, use the Web server, Telnet, or SerialManager configuration utilities.

7. Start Writing Your Own Applications

Before you start writing host applications or programs to interact with LES301A, make sure you have done the following.

7.1 Preparing the System

1. Properly connect the LES301A hardware, including power, Ethernet, and serial cable.
2. Properly configure the LES301A parameters, including connection type, IP address, gateway IP address, and network mask (see Chapter 3).
3. Configure the LES301A as a TCP Server using the default TCP port number "4660."
4. The host (PC) application program must be configured as a TCP client and connects to the LES301A with a designated TCP port number "4660" for COM1.
5. Make sure the LES301A is running by checking the running status through the SerialManager configuration utility.

7.2 Running the Sample Program

Sample programs written in VB and VC++ are included in the package for reference; source codes are also included. You can find test programs on 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++.

7.2.1 TCPTEST in Visual Basic

This sample program is written in Visual Basic 5.0 with Winsock Controls. It shows how to send and receive data between host (PC) and LES301A 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, press "Help" in the program for a detailed explanation.

NOTE: Make sure the Microsoft visual studio family software is installed on the computer. Otherwise, the sample program will not run.

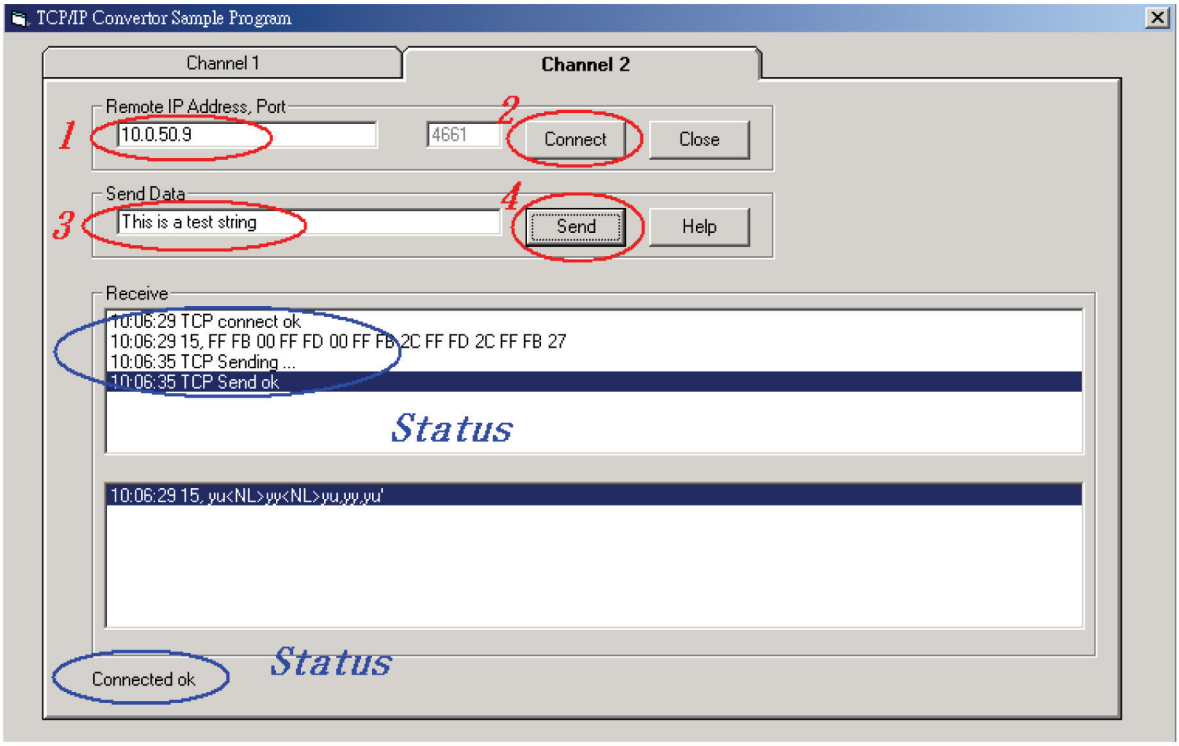

Figure 7-1. TCP test sample program in Visual Basic.

7.2.2 TCPTEST2 in Visual C

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

TCPTEST2 IP_Address Port_Number

Figure 7-2. TCP test sample program in Visual C

The command "tcptest2 10.0.50.100 4660" connects to a TCP server that has 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 a modem to connect to the serial server. Command "AT\Od" sends a standard AT command to the modem, which in return responds with an "OK\0D\0A" message to the host application.

To exit the program, type "=" then press the Enter key.

8. Diagnostics

There are several ways that you can check on the status and availability of the LES301A.

8.1 Use the 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 that the request timed out.

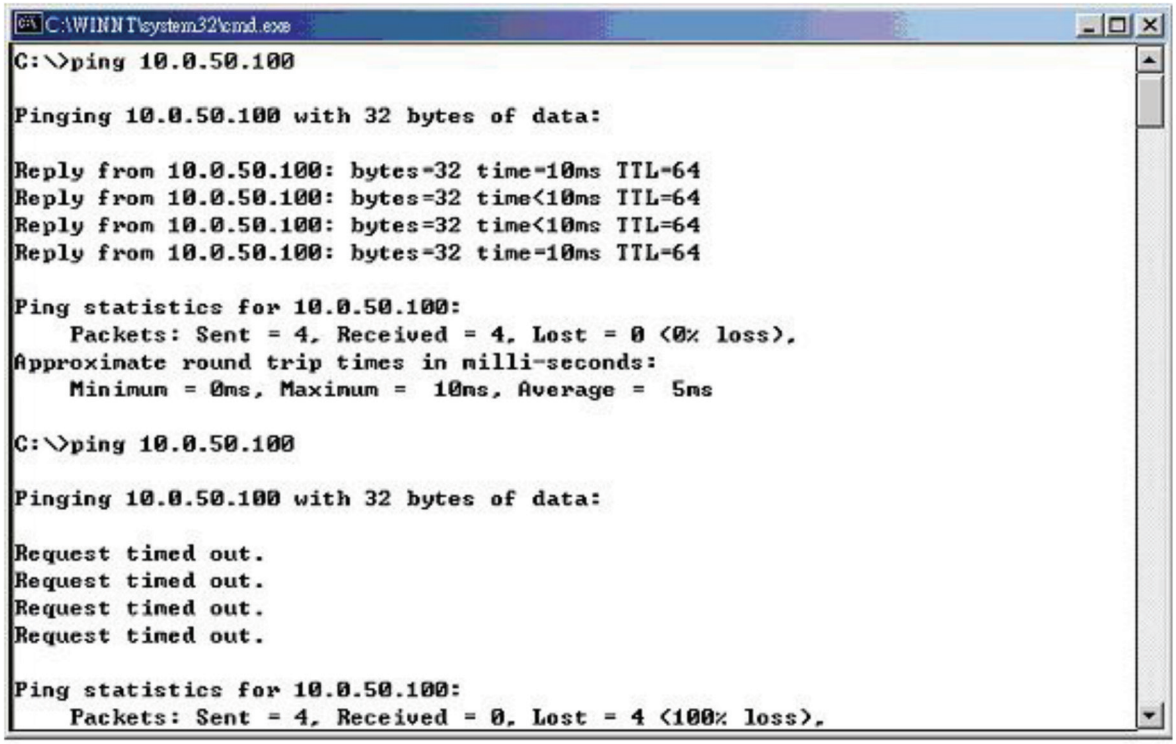

Figure 8-1. Standard TCP/IP utility ping command.

8.2 Use the SerialManager Configuration Utility Program

Use the SerialManager configuration program that's included on the product CD or diskette to check on the status of the LES301A. You can read the status and version from the tool.

For example, "S" means that COM1 is the server mode and it is not connected.

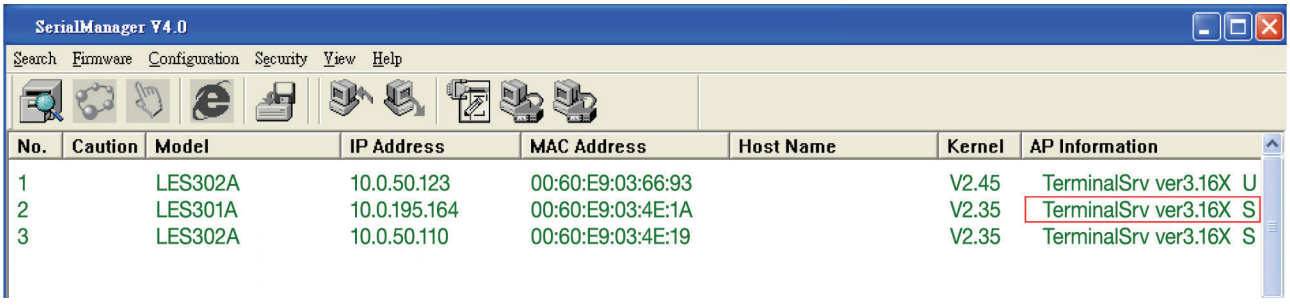

Figure 8-2. SerialManager configuration Utility.

8.3 Use TCPTEST.exe or TCPTEST2.exe Sample Program

Use sample programs TCPTEST.exe and TCPTEST2.exe that are included on the product CD to check on the status of LES301A. Refer to Section 7.2 to run the sample programs.

Appendix A: Upgrade System Firmware

After a new version of firmware is released, you can download it from www.blackbox.com. After you download the firmware, follow the instructions listed below.

A.1 Upgrade Procedures

When you get a new software version, follow the sequences below to upgrade the LES301A.

1. To upgrade the firmware, connect a PC (Windows 95/98/NT/2000/XP) and the LES301A in the same TCP/IP network. Use a ping command or the SerialManager program to verify their availability.
2. Prepare the download tool and press any key to edit its configuration file: "dapdl.cfg." The dapdl.cfg file is on the CD you received with your LES301A.

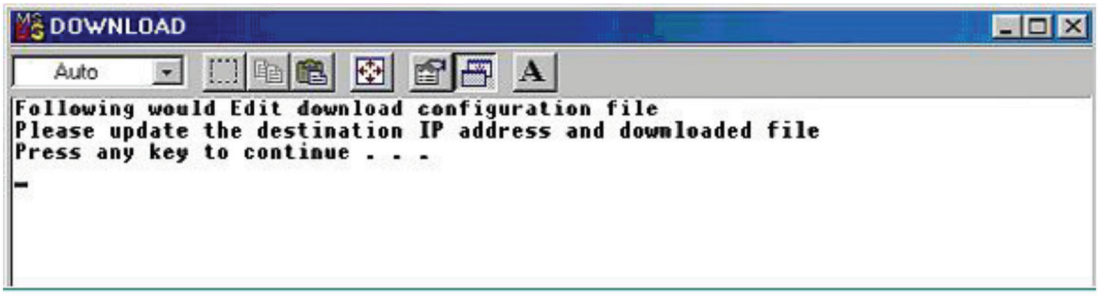

Figure A-1. Download screen.

3. Edit the "dapdl.cfg" file to fit your system's needs. The content of the file looks like the following. Be sure to save the modifications after you make the change.

   Remote_IP10.0.50.100

   LoadU5001ap.hex

The first line identifies the IP address of the LES301A, and the second line identifies the firmware (.Hex file) name to be downloaded.

4. Execute the utility program "download.bat" (it's on the product CD).
5. Input the user name and password, and the new firmware will be downloaded.

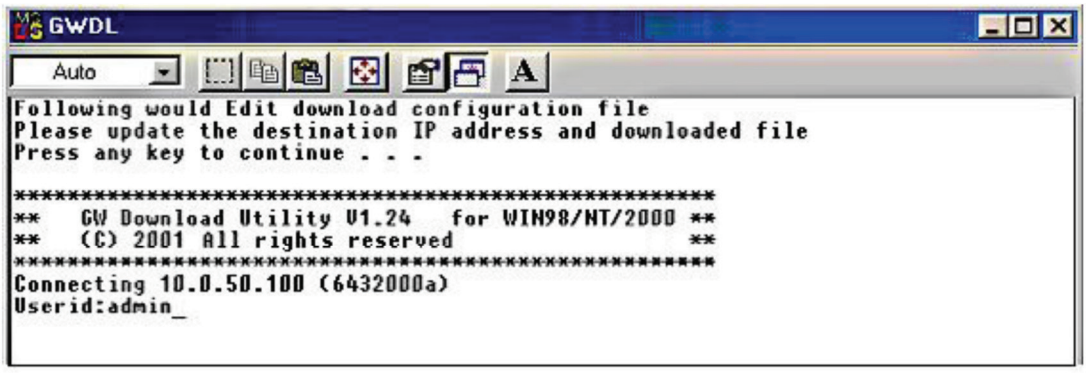

Figure A-2. Input user name and password.

6. The LES301A will automatically restart each time the firmware is successfully downloaded.

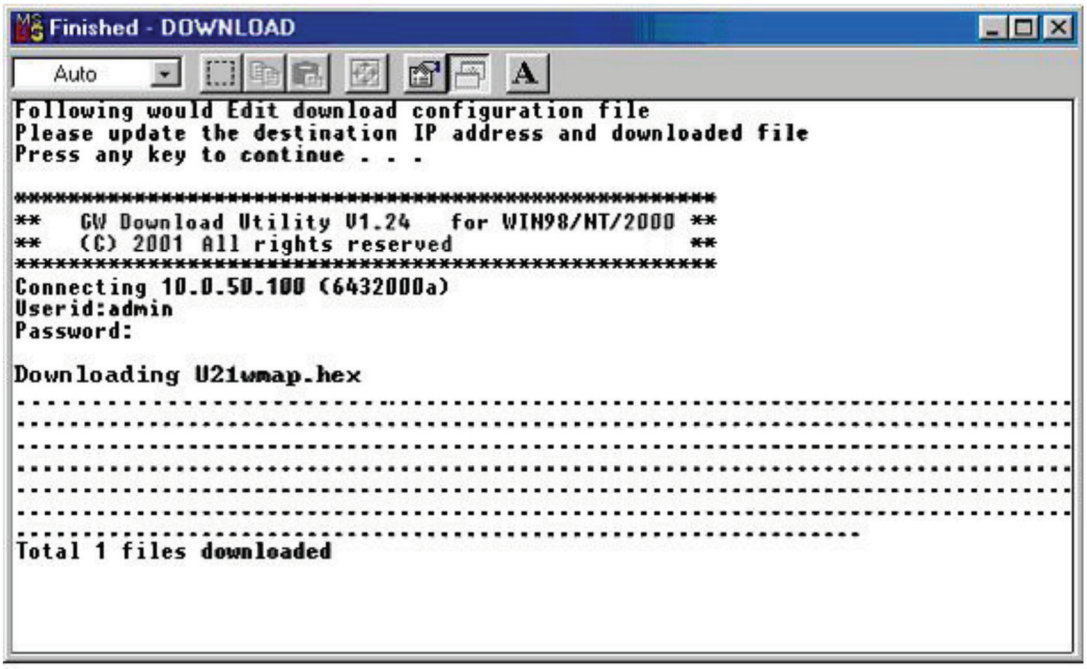

Figure A-3. Download finished screen.

A.2 Critical Issues of Upgrading

1. You can abort the upgrading process by pressing the "Esc" key on the host PC during the upgrading process. The LES301A will restart automatically, and the system remains intact.
2. If the LES301A does not receive any upgrading data within 30 seconds, it will restart automatically and the system will remain intact.
3. After the upgrading process finishes, the LES301A will program the flash memory, and the buzzer will beep 6 times, then restart. Normally, it takes about 10 seconds to complete the programming process. If an error occurs during the programming process, the LES301A will clear the corresponding memory, and the system remains intact.

A.3 Error Messages

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

Table A-1. Firmware upgrade errors.

Error cause	Message
Illegal hex file format	Hex file text error
	Hex file checksum error
	Hex file format error
	Hex File end-of-record error
LES301A handshaking problem	LES301A ACK start address error
	LES301A ACK length error
	LES301A response command error
Configuration file	Remote IP not found
	Open configuration file failure

Appendix B: Disable System Firmware

The application program (AP) LES301A firmware can be disabled. Do this if you downloaded a wrong version of firmware that caused the system to crash.

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

1. Turn off the power, open the LES301A case.
2. Short Pin 1 and Pin 2 of Jumper JP1 on the right-top corner of the main board to disable AP firmware.
3. Power on the LES301A.
4. Download the correct AP firmware to LES301A.
5. Remove Pin 1 and Pin 2 of Jumper JP1 to enable AP firmware.
6. Close the case and continue operation.

Appendix C: Using SerialManager Utility

C.1 SerialManager Utility Introduction

The SerialManager utility is a special tool for device management and configuration. Use it daily to manage various network devices for address search, device positioning, parameter configuring, and firmware downloading.

C.2 Interface

The operating interface of the SerialManager utility is shown below:

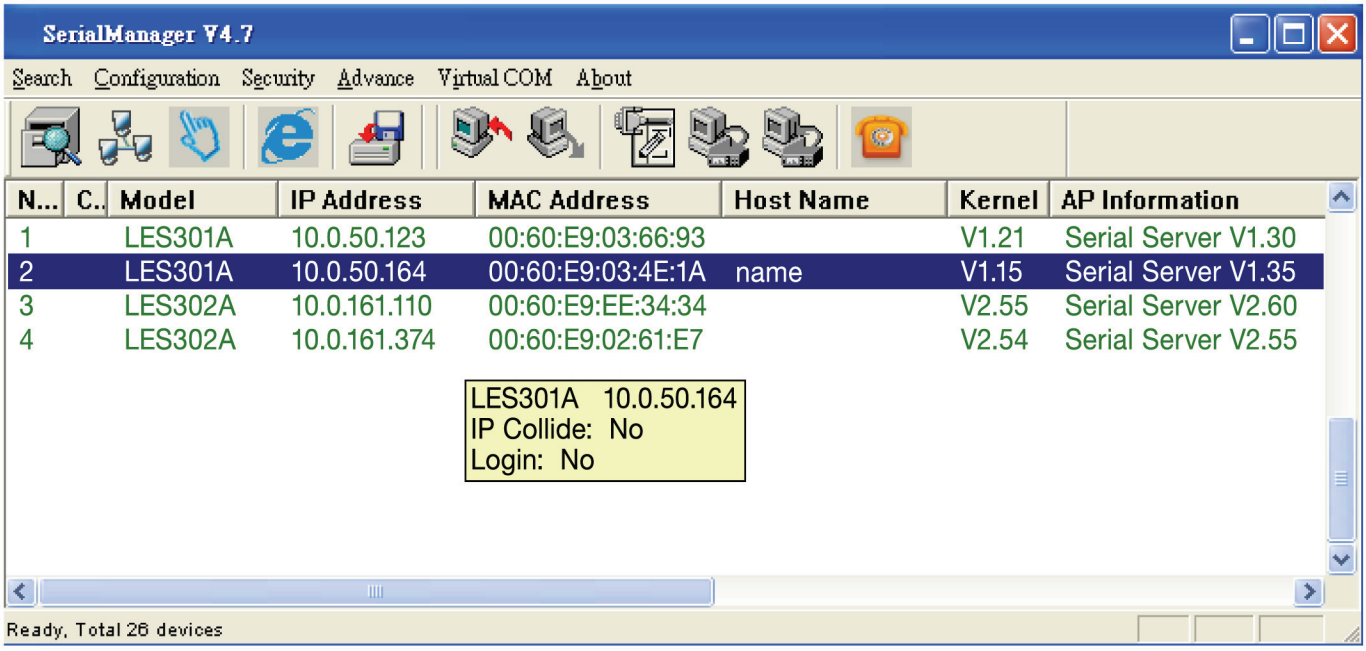

Figure C-1. Operating interface of the SerialManager utility.

Table C-1. Cautions.

Caution field	Description
!	IP conflict. There are two devices with the same IP address in the network.
@	The device is using DHCP.
<	The device is being located.
+	You have logged into the device.
?	MAC conflict. There are two devices with the same MAC address in the network.

C.3 Functions

C.3.1 Device Search

Use this function to search devices in the network. There are four methods to search devices: Search by Broadcast, Search by IP addresses, Search by MAC addresses, and Re-scan devices using the current search method. To select the Search method, click on "Search" in the main menu.

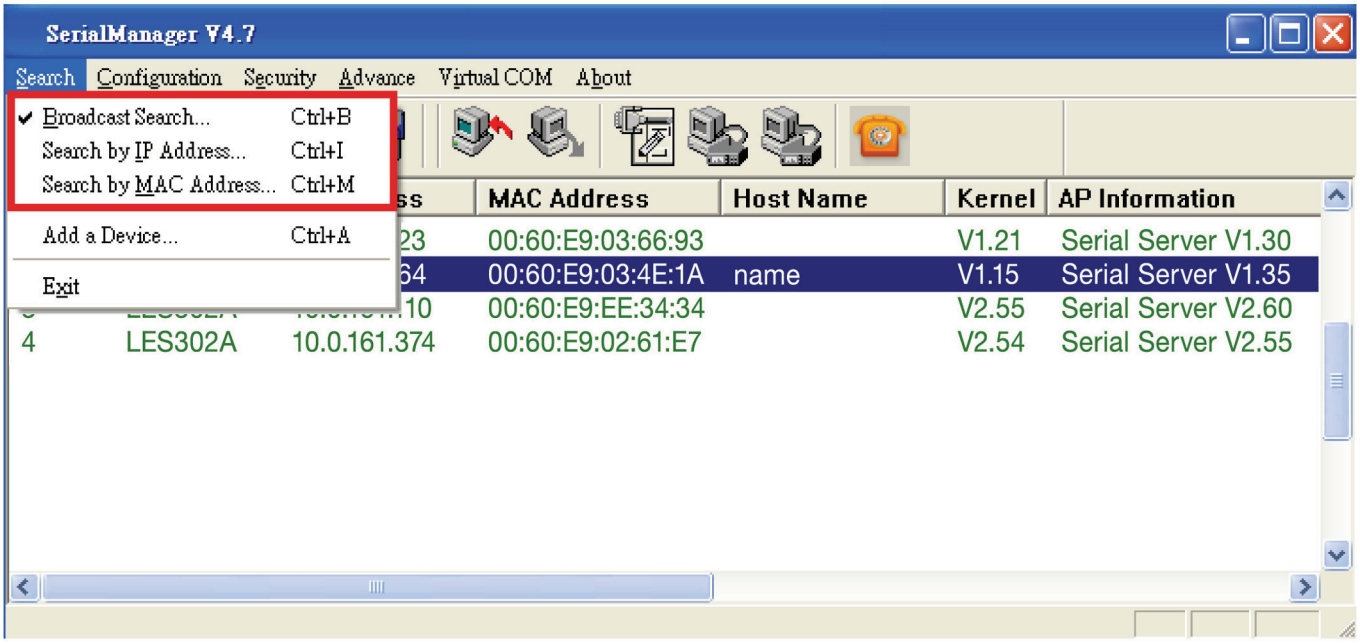

Figure C-2. Main menu.

Alternatively, you can select the search method by clicking the "Rescan button" on the toolbar.

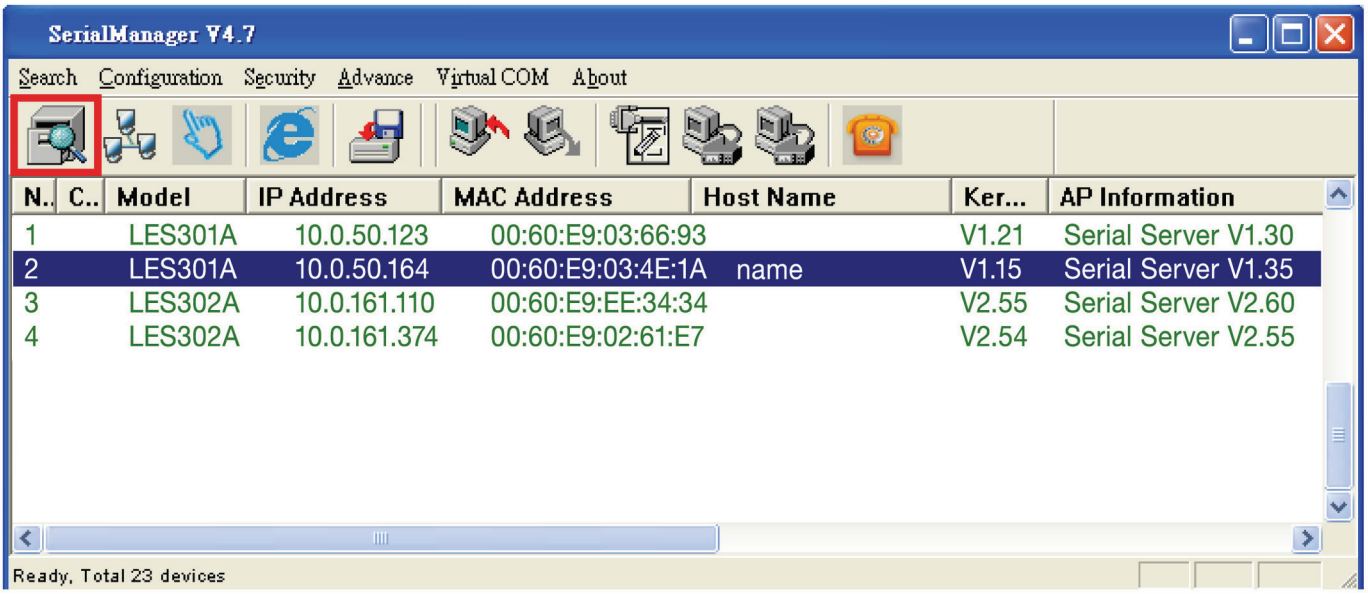

Figure C-3. Rescan button.

Broadcast Search

Once "Broadcast Search" is selected, a box will pop up as in Figure C-4. You may type in or select a different broadcast address based on the requirement.

Figure C-4. Broadcast Search screen.

Search by IP Address

Once "Search by IP Address" is selected, an interface will pop up. Here, you have two options: "Select an IP address to search" or "Search device in the range of IP address."

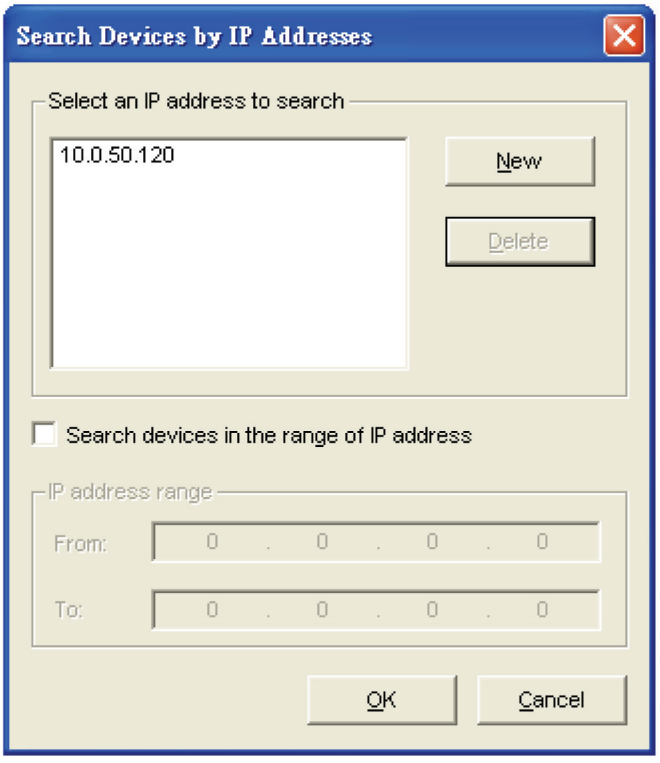

Figure C-5. Search Devices by IP Addresses screen.

Search by MAC Address

If "Search by MAC Address" is selected, another box will pop up. Here, you can search in two ways: "Search a MAC address to search" or "Search devices in the range of MAC address."

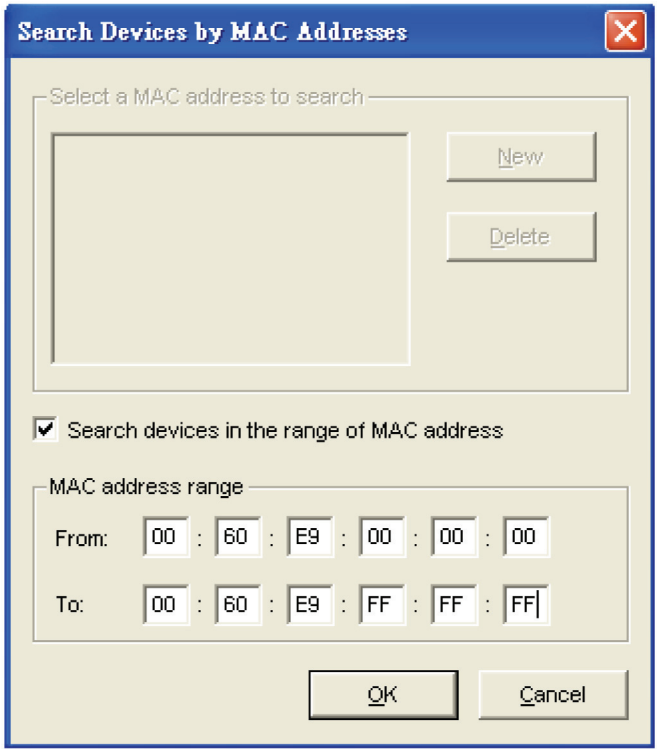

Figure C-6. Search Devices by MAC Addresses screen.

Rescan

Once you click the "Rescan" button on the toolbar, the SerialManager utility will re-search devices by using the current search way.

C.3.2 Firmware

This function is applied to downloading a firmware into the selected device. You can enter the window for downloading by first clicking a designated network device, and then selecting the submenu option "Firmware Download" in the main menu option "Firmware", or by directly clicking the "Upgrade" button from the disk.

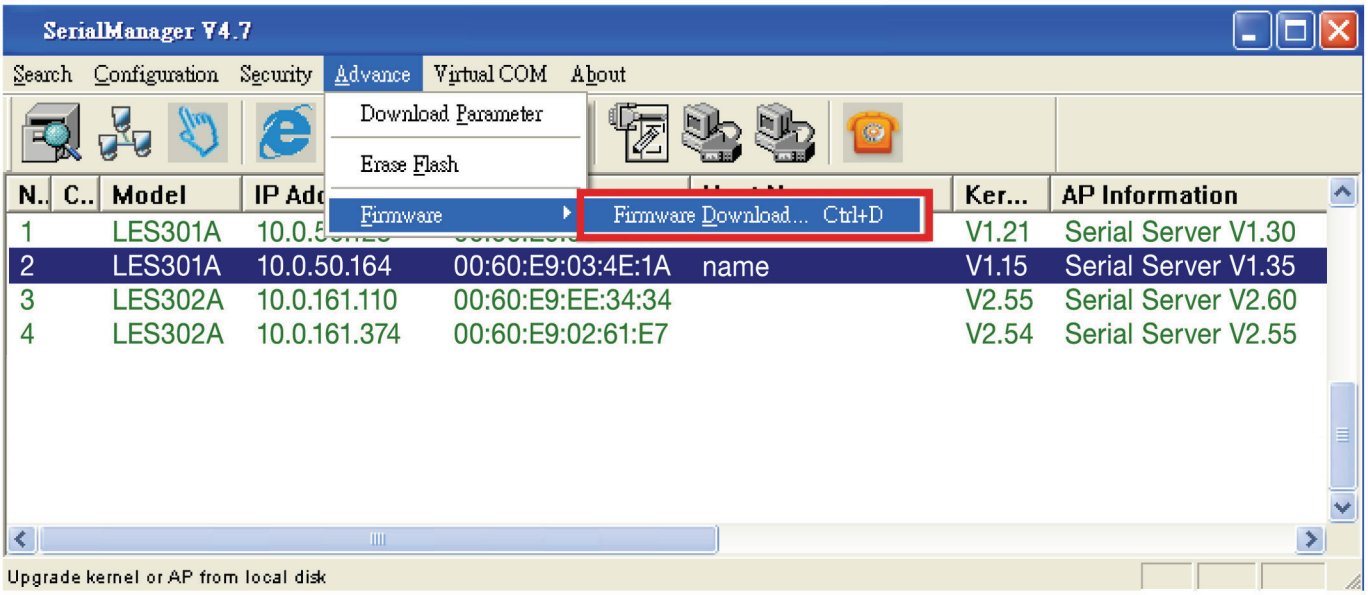

Figure C-7. Download firmware.

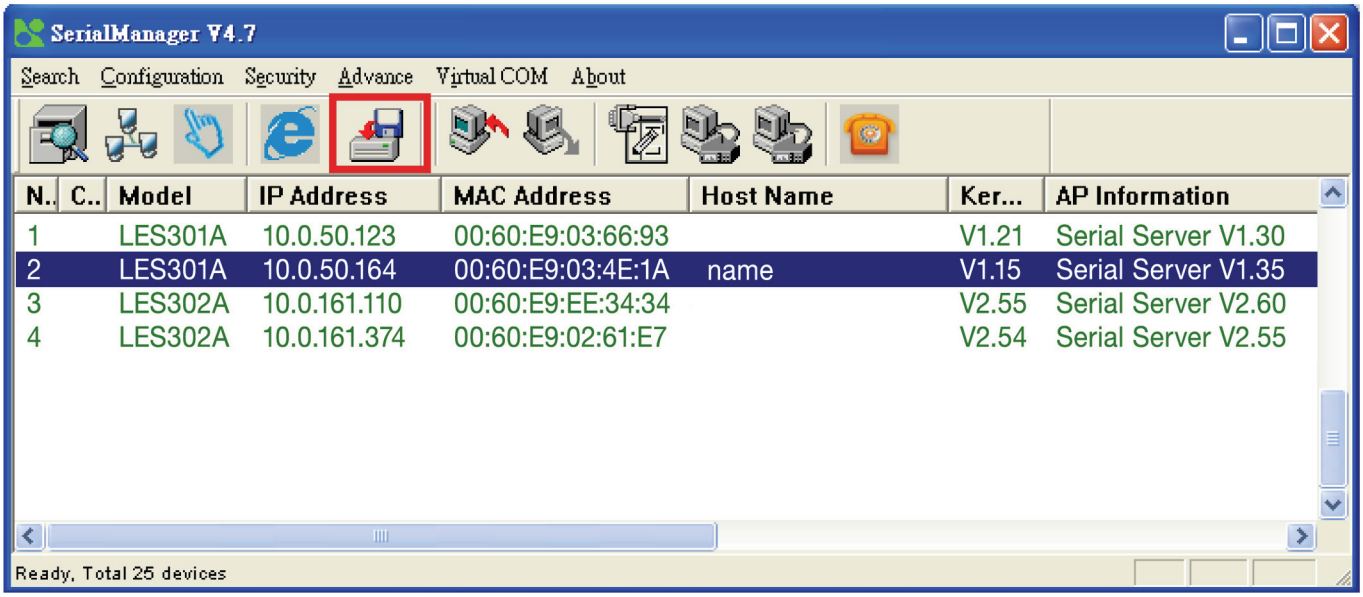

Figure C-8. SerialManager screen.

You can select and download the required firmware from the disk. You can also select several same devices at one time, and update the firmware by selecting "Apply for all selected devices."

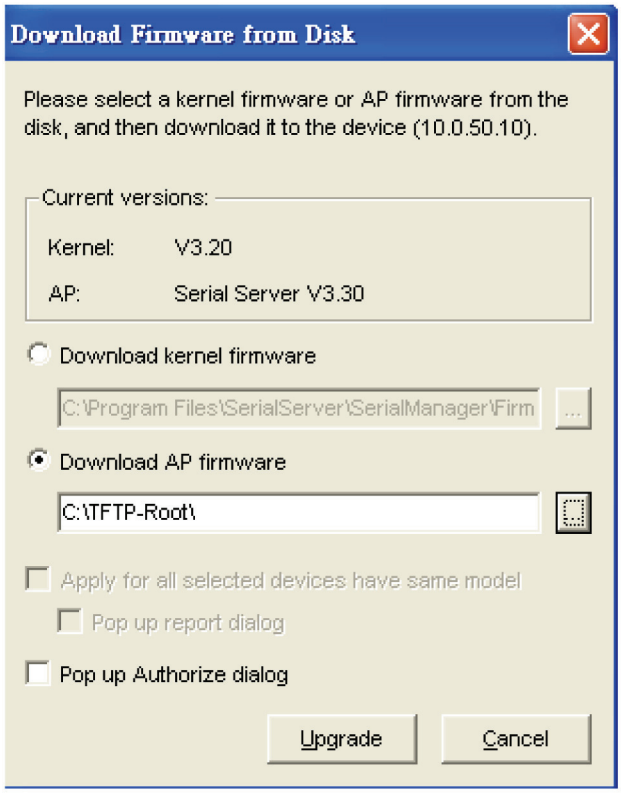

Figure C-9. Download firmware from disk.

C.3.3 Configuration

Use this function to set up parameters in the device configuration, to import and to export the parameters, and to set up some options. You can configure: "Network," "SNMP," "COM Port," "Locate," "Reset," "Import Setting," "Export Setting," "Virtual COM," "Config by browser," and "Options." Configure the parameters through the menu or by clicking the corresponding button on the toolbar.

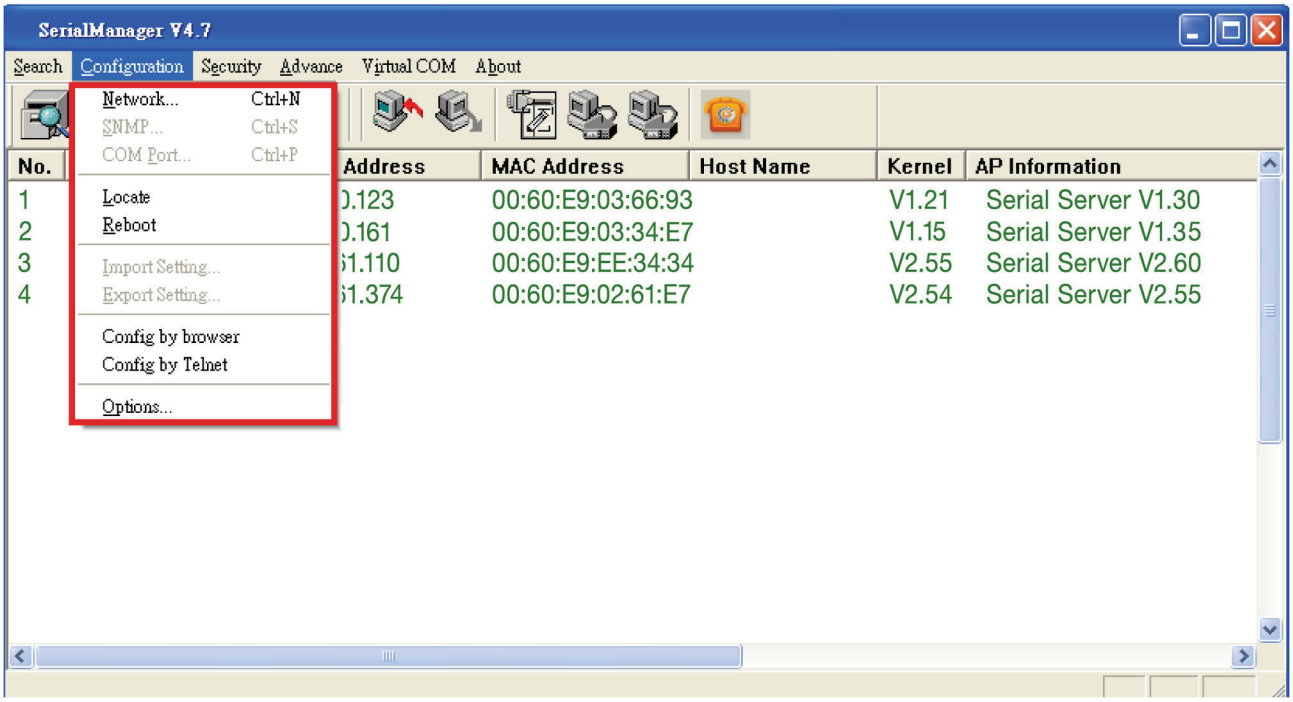

Figure C-10. Configuration button on toolbar.

Network

You can modify the IP address of any selected device. You can statically assign IP address, subnet mask, and gateway. Optionally, you can set up the device with a host name. You can select DHCP option to obtain an IP address automatically.

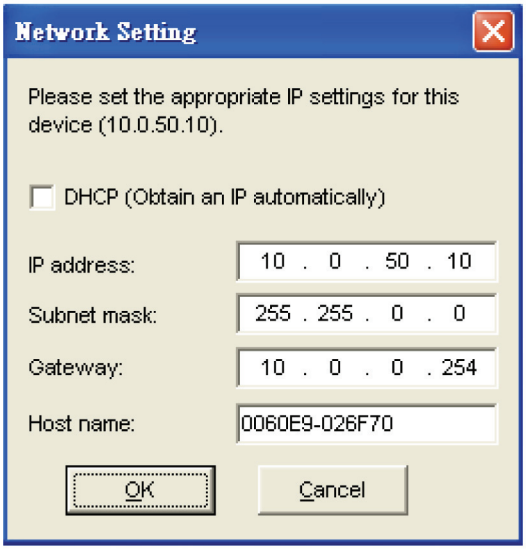

Figure C-11. Network Setting screen.

SNMP

You can modify SNMP settings of any selected device. The supported SNMP fields are Name, Location, and Contact.

NOTE: This function will be enabled after a successful login.

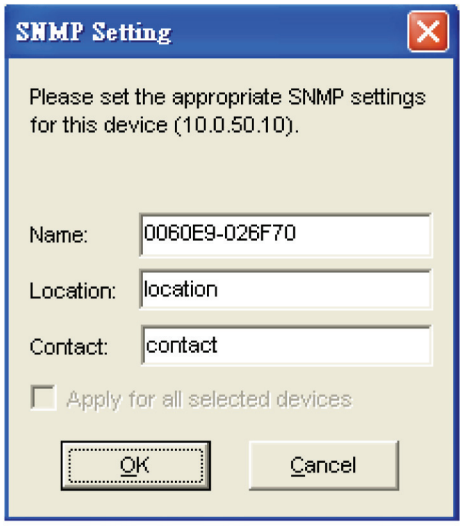

Figure C-12. SNMP Setting screen.

COM Port

This function is applied to the configuration of COM port parameters only. The COM Port setting dialog is shown in Figure C-13.

NOTE: This function will be enabled after a successful login.

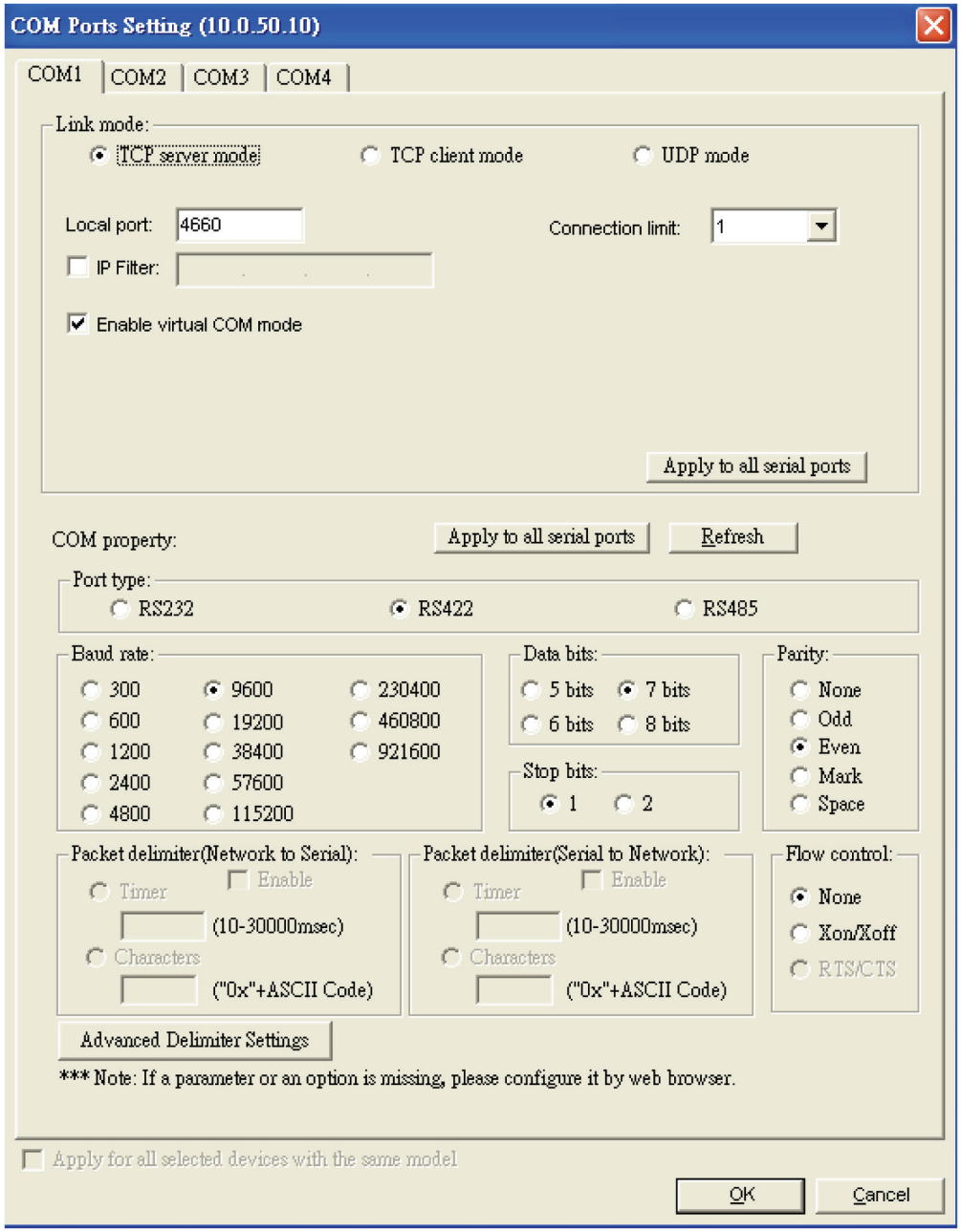

Figure C-13. COM Ports Setting screen.

You can also select several devices at once, and carry out the configuration for them at the same time by selecting "Apply for all selected devices with the same model."

NOTE: COM tabs are generated automatically according to the COM port number of the device. If a device has four COM ports, there will be four tabs, for example: COM1, COM2, COM3, and COM4.

Link mode sets up a TCP or UDP connection between the serial port and the other network devices. Each COM port corresponds to a link mode, TCP or UDP, which is used to transfer data. You can set each link mode and the working parameters according to requirements.

COM property represents the parameter of the serial port including: serial port type, baud rate, data bit, stop bit, parity bit, data packet delimiter, and flow control, etc.

Locate

Apply this function to locate a device when you know its IP address but you don't know its position. If you locate the device, it will beep. Locate the device by selecting the Configuration submenu "Locate" or by clicking the "Locate" button on the toolbar.

Reset

Restart the device after you configure the parameters. You can also carry out a restart through the submenu option "Reset."

Import Setting

If a network has a large number of devices that are used for the same purpose, it would be very complicated to configure the parameters for each device in the network one by one. You can import the parameter configuration from a parameter file directly into all the devices in the network through the submenu option "Import setting" or by clicking the "Import setting" button on the toolbar. The import parameter settings dialog box is shown below.

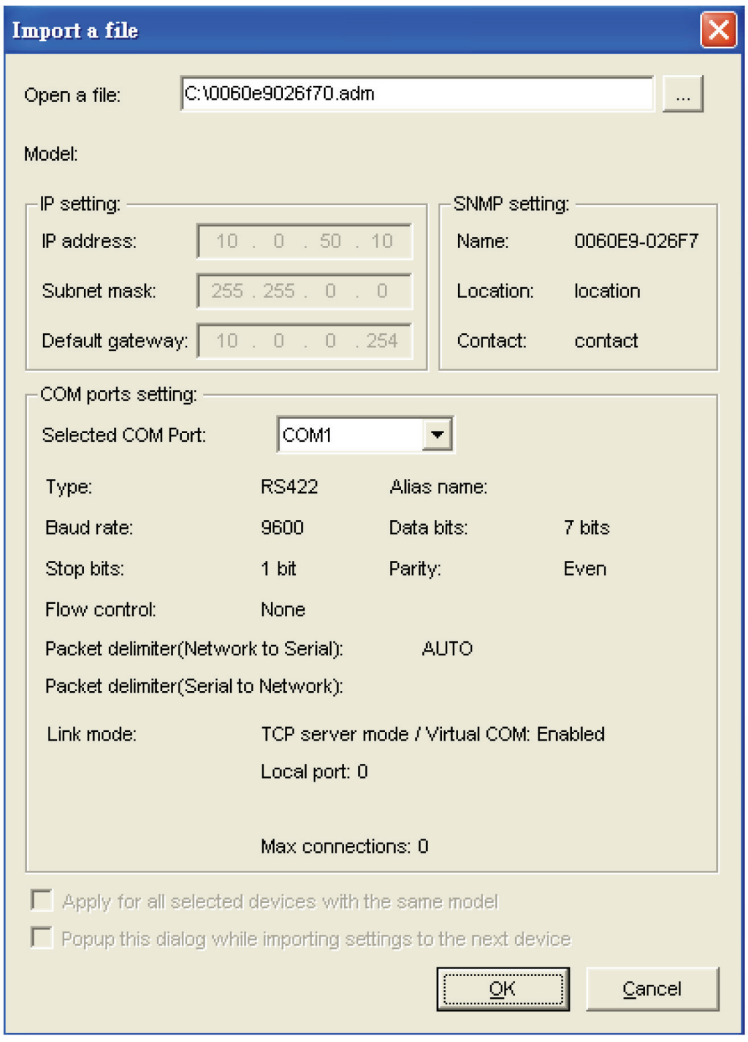

Figure C-14. Import a File dialog box.

You can also select several devices at once, and upload the configuration file into all the selected devices by selecting "Apply for all selected devices have same model."

Export Settings

You can save the parameter information to a standard device into a parameter file through the submenu option "Export setting" or by clicking the "Export settings" button on the toolbar for backup purposes or to be imported to other device. The "Export Settings" dialog box is shown in the figure below.

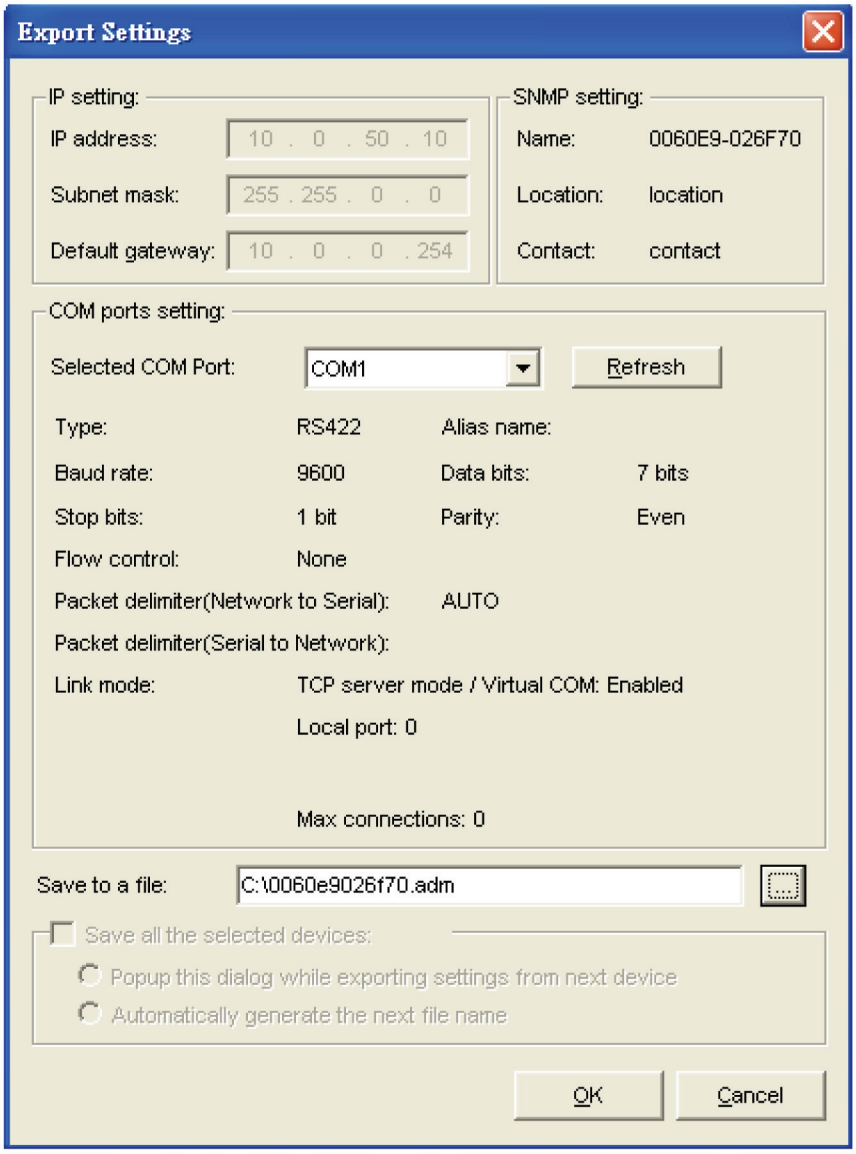

Figure C-15. Export Settings dialog box.

You can also select several devices at one time, and save the parameter information of these selected devices into a designated parameter file by selecting "Save all the selected devices."

Configure by Browser

If the device has a Web server built in, it will provide additional device-specific parameters that SerialManager does not supply. You can set parameters directly through the submenu option "Config by Browser." A Web browser is shown next.

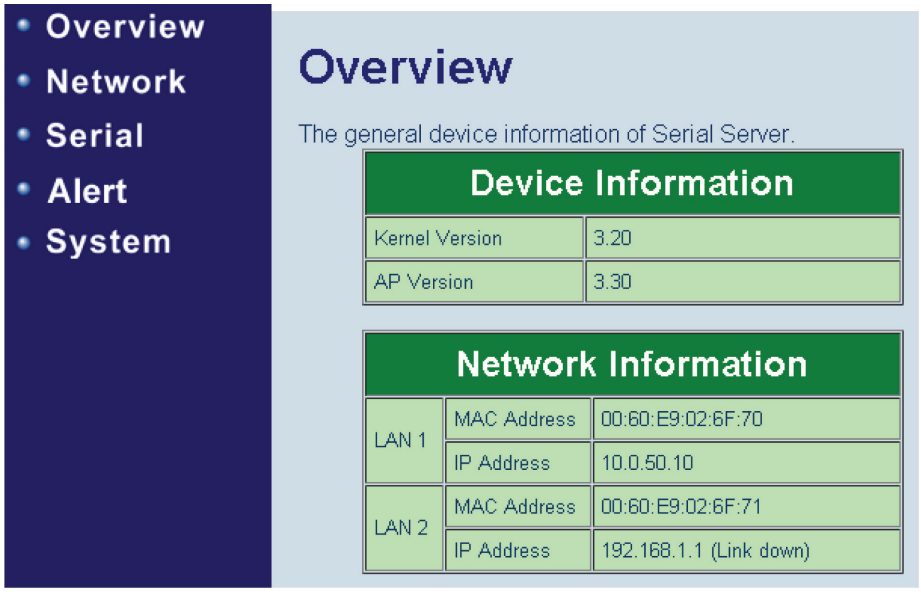

Figure C-16. Web browser.

Configure by Telnet

Most devices support Telnet login. It will provide additional device-specific parameters that SerialManager does not supply. You can set parameters directly through the submenu option, "Config by Browser." A Web browser is shown in Figure C-16.

Option

In this dialog, you can:

1. Set the SerialManager's scan interval.
2. If the device tip option is turned on, SerialManager will show additional information when your mouse cursor stays on the device.
3. You can select which network interface card SerialManager uses. If this option is set to "DEFAULT," SerialManger will use the default NIC that the operating system assigns.

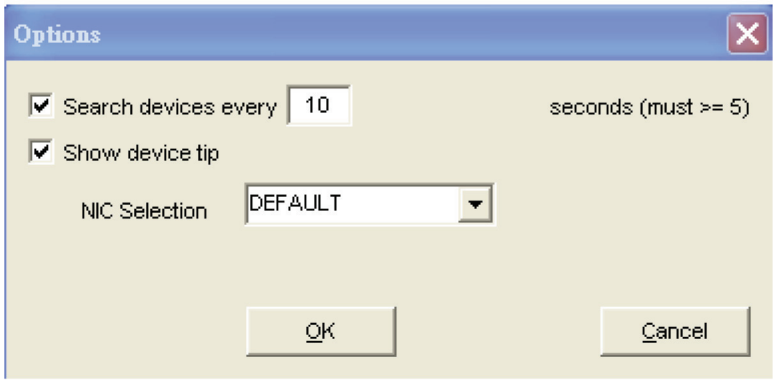

Figure C-17. Options.

C.3.4 Security

This function is applied to the security protection for the network devices, to protect the device when modifying, leading-in, leading-out configuration, and some other important functions. Here three functions are mainly supplied, including: "Login," "Logout," and "Change Password," shown in the figure below.

Login

Use this function to log into any network device. Some sensitive functions can only be operated after a successful login. You can also select several devices at one time, and log into them at the same time by selecting "Apply for all selected devices."

NOTE: Double clicking on the device would also login/log out from the device.

Figure C-18. Login screen.

Logout

Use this function to logout from any network device. You should always log out after you alter the operating parameters of any important device, shown in the figure below. You can also select several devices at one time, and log them out at the same time by selecting "Apply for all selected devices."

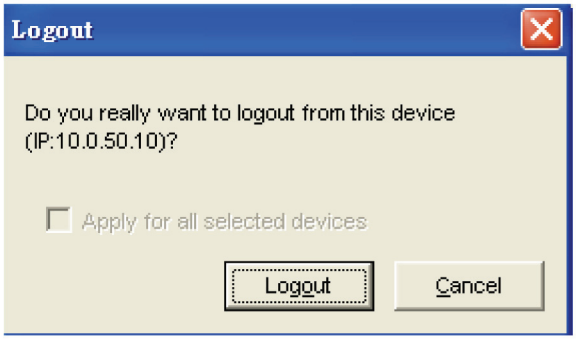

Figure C-19. Logout screen.

Change Password

Use this function to modify the password for logging in to any network device. This option only works after a successful login, shown in Figure C-20. You can also select several devices at one time, and modify their PINs at the same time by selecting "Apply for all selected devices."

Figure C-20. Change Password screen.

C.3.5 Virtual COM

Some devices support virtual serial port function. You can configure these devices via "Virtual COM." The VirtualCOM settings are integrated into the Serial Manager. You can still select "Serial/IP Tools"to call original VirtualCOM configuration utilities. You can either use this integrated Virtual COM working area or the original Serial/IP Tools to configure Virtual COM.

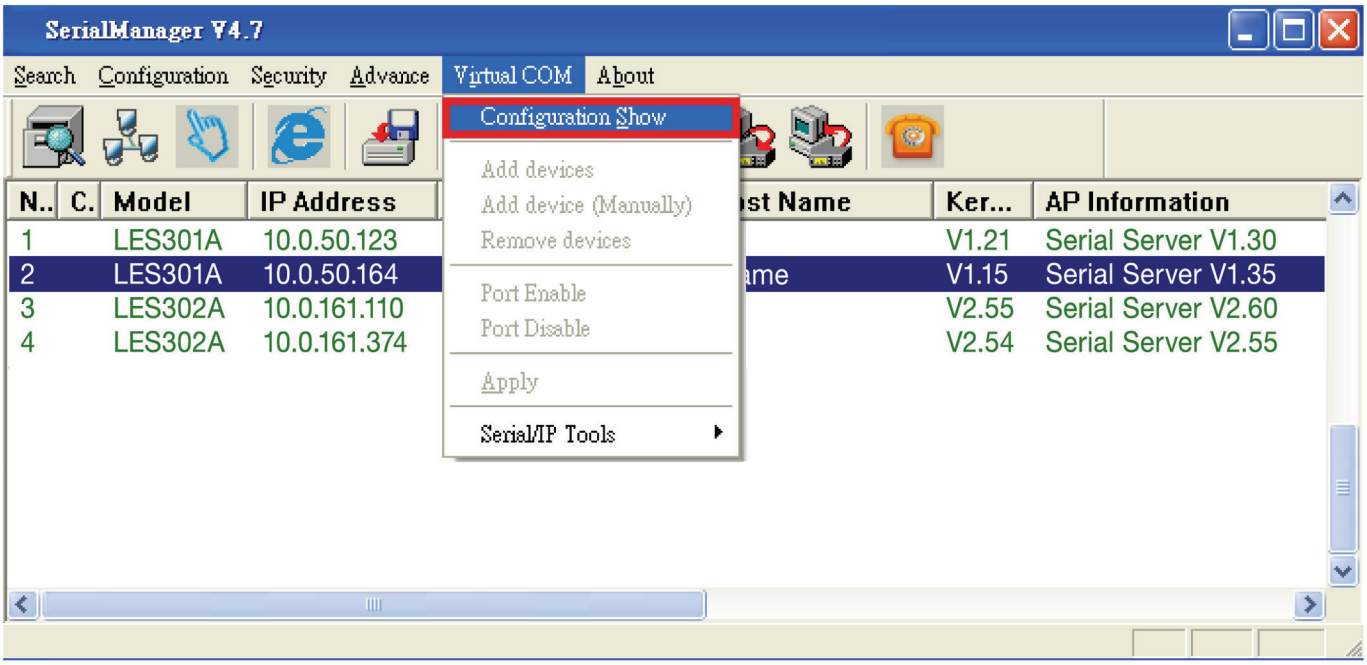

Figure C-21. Virtual COM screen.

After you select "Configuration Show," a new Virtual COM working area will appear.

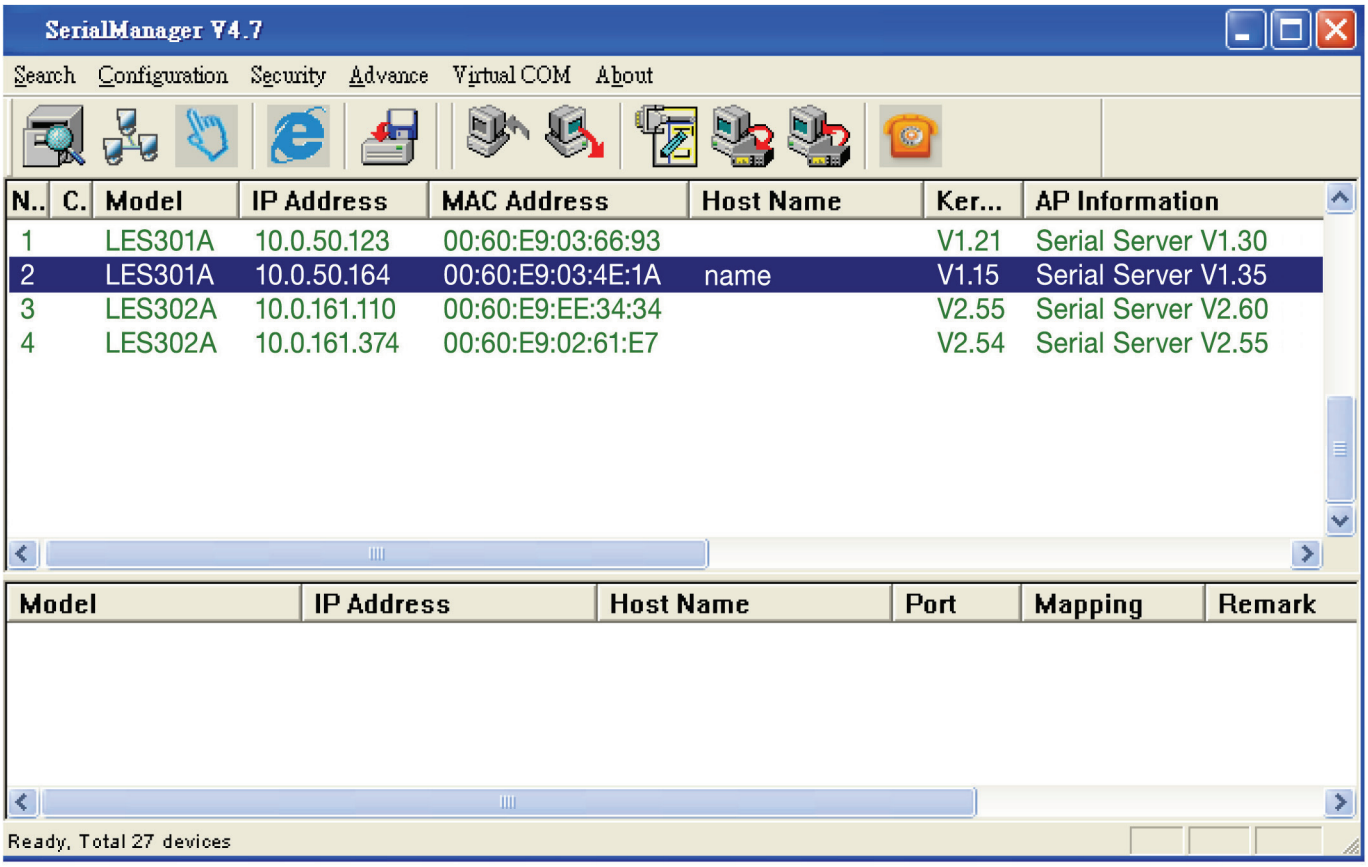

Figure C-22. Virtual COM working area.

Select the device you want to establish a Virtual COM connection with—you can select multiple devices. After the device is selected, right click in the blank working area and select "Add devices."

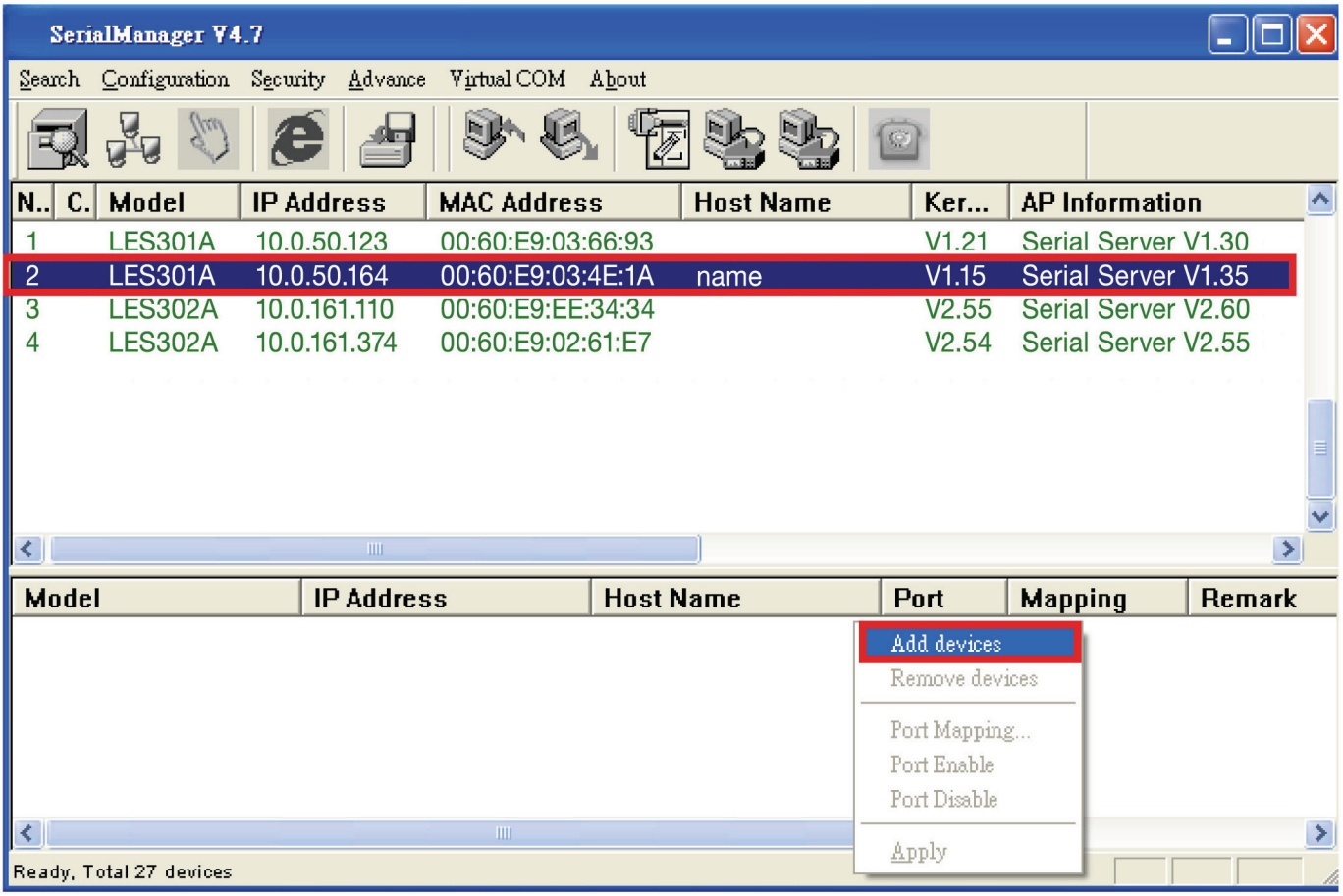

Figure C-23. Add devices.

The device is added. Right-click on any port and a menu will appear. You can remove the device from the Virtual COM working area by selecting "Remove devices." You can disable Virtual COM for a specific port by selecting "Port Disable." Remember to click "Apply" to apply any changes.

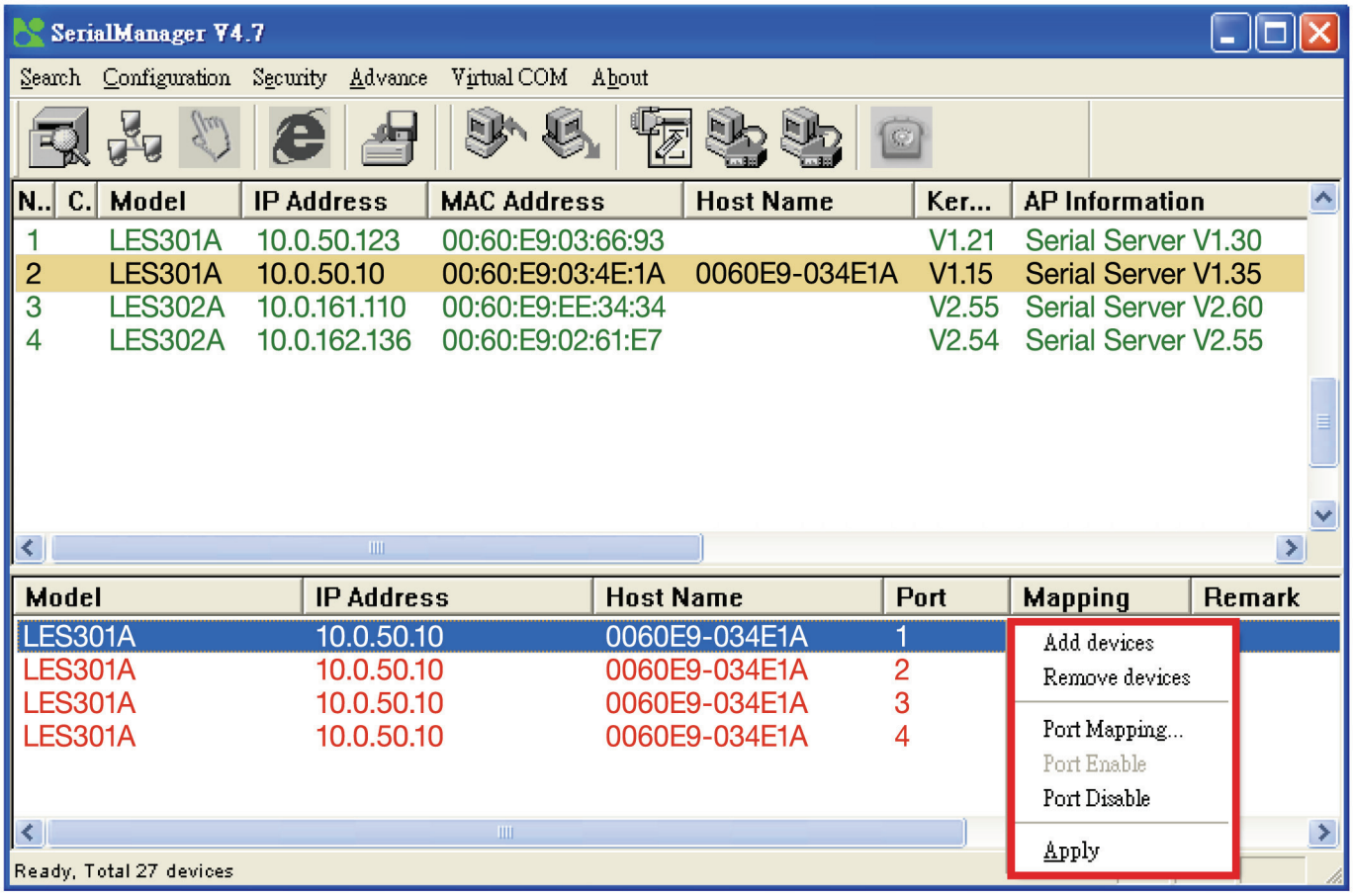

Figure C-24. Mapping drop-down menu.

If you select Port Mapping…, a new window will appear. You can set up the Virtual COM accordingly.

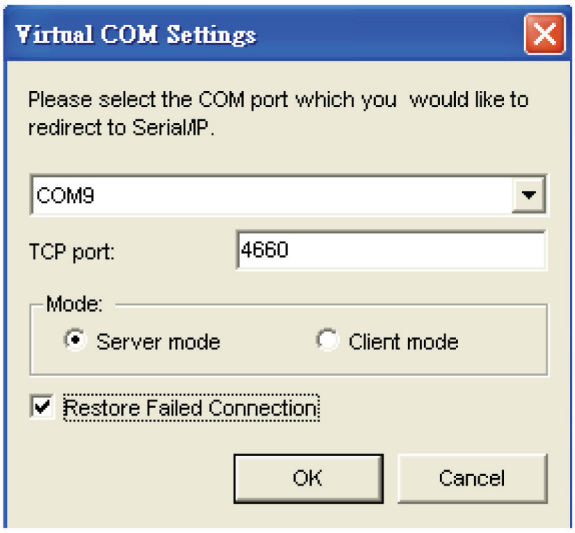

Figure C-25. Virtual COM Settings screen.

C.3.6 About

Use this function to display SerialManager utility information.

Figure C-26. SerialManager screen.

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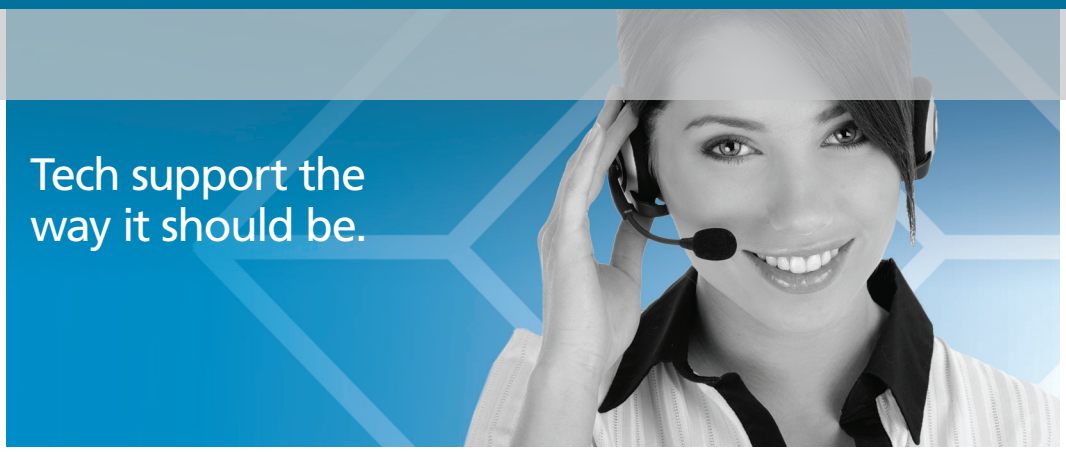

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