NPort *Server Pro User's Manual*

for DE-303/308

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1

Overview

Welcome to Moxa NPort Server Pro, an Industrial Serial Device Server that greatly enhances the ability of a Windows NT/95/98 host to control multiple serial port devices over a TCP/IP based Ethernet network.

This chapter is an overview of NPort Server Pro and includes the following:

- Features
- Package Checklist
- Front Panel View
- Rear Panel View

NPort Server Pro provides a data communication solution for connecting Windows NT/95/98 hosts to multiple asynchronous RS-232 serial ports through a TCP/IP network. Each model has 8 (DE-308) or 16 (DE-303) asynchronous RS-232 serial port connections, and one 10/100 Mbps Ethernet connection, allowing any device that supports primarily the asynchronous communications protocol to attach to a network. NPort Server Pro works like an add-on multi-port serial board to the NT/95/98 server, but with one major advantage—the TCP/IP network. Since the Windows NT/95/98 host communicates with the COM ports on Nport Server Pro over a TCP/IP network, you are able to control asynchronous serial devices from virtually anywhere in the world.

Although it connects through the virtual link of the Ethernet, the ports on NPort Server Pro are recognized as real COM ports by the Windows NT/95/98 operating system. NPort Server Pro provides the basic transmit/receive data functions, as well as RTS, CTS, DTR, DSR, and DCD control signals. Moreover, the NPort Server Pro driver is fully compatible with the Windows NT/95/98 standard COM driver.

NPort Server Pro can be used with your existing applications that support serial communication. It also comes with a utility program providing a simple step-by-step installation procedure, and a maintenance wizard that gives you easy access to your asynchronous devices.

Features

- Provides a stand-alone multi-port serial solution, over a TCP/IP network, for connecting 8 or 16 COM ports for each NPort Server Pro
- Long range connection and distributed serial device control over an Ethernet network
- Easy expansion to provide up to 256 serial ports for one Windows NT server
- Supports sharing of the server and its ports to multiple hosts
- Remote control of NPort Server Pro over the Internet and Intranet
- Driver for Windows NT/95/98 platform
- Fixed TTY driver for SCO Unix and Linux
- Easy configuration and management under Windows NT/95/98
- Secured access control to network hosts
- Free Moxa PComm Pro Serial Control Library for easy serial device control
- Serial connection speed from 50 to 230.4 Kbps
- 19-inch rack-mountable

Package Checklist

- One 8 or 16 port NPort Server Pro
- NPort Server Pro User's Manual
- Driver and utility programs on 3 1/2-inch floppy diskette or CD
- PComm Pro CD
- PComm Pro registration card
- Power cable
- RJ45 to male DB25 cable
- Cross-wired Ethernet cable
- Rackmount kit, including 2 L-shape metal plates and 12 screws

Front Panel View

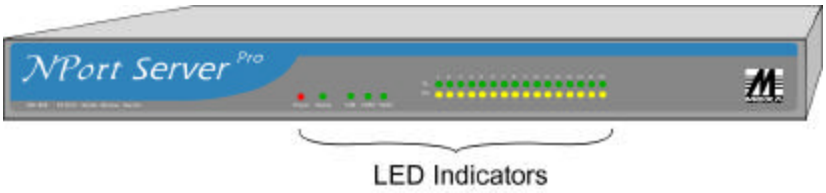

Figure 1-1. 16-Port NPort Server Pro Front Panel (DE-303)

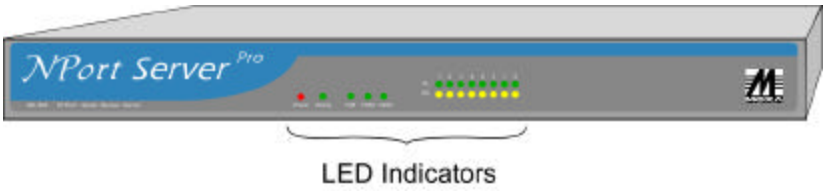

Figure 1-2. 8-Port NPort Server Pro Front Panel (DE-308)

Rear Panel View

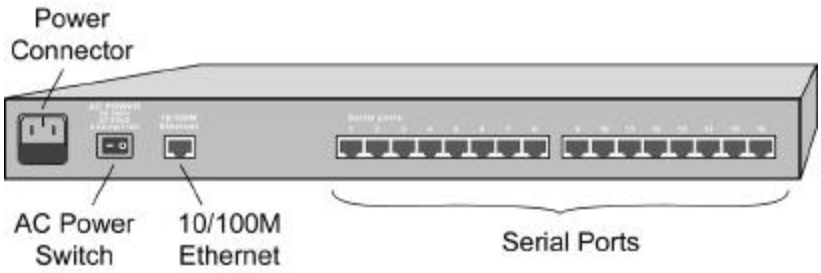

Figure 1-3. 16-Port NPort Server Pro Rear Panel (DE-303)

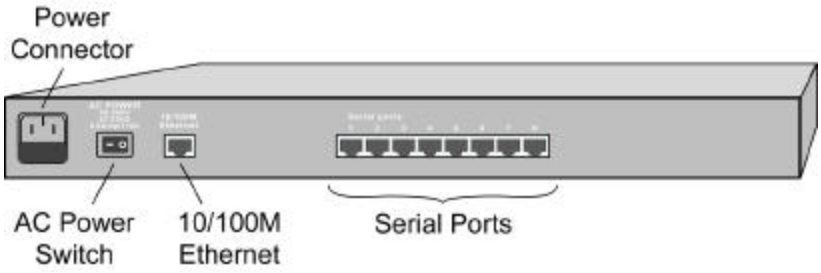

Figure 1-4. 8-Port NPort Server Pro Rear Panel (DE-308)

2

Getting Started

Now that you are familiar with NPort Server Pro's features and specifications, it's time to install the hardware and get your system up and running.

We begin this chapter with a brief explanation of the operation modes available when using NPort Server Pro, and then discuss the basics of setting it up.

This chapter includes:

- Knowing Your Application
  - Single-Host Mode
  - Multi-Host Mode
  - Custom Mode
- Connecting the hardware
  - Locating NPort Server Pro
    - Desktop
    - Rack-Mount
  - Connecting to the Network
  - Connecting the Power
  - Connecting Asynchronous Serial Devices

Knowing Your Application

NPort Server Pro is an advanced Industrial Serial Device Server designed to fit into today's ever-expanding networking world. It extends the usage of traditional COM ports on a PC–an isolated machine with restricted ports–to being able to access the ports over a TCP/IP network. Through the nature of networking, you are able to control your serial devices from a distance, either over a LAN, or even over the Internet.

Since NPort Server Pro is connected through a TCP/IP network, you will need to know some basic facts about networking in order to get the server hooked up correctly. In the next section we discuss the Single-Host Mode.

Single-Host Mode

Traditional serial port communication uses a COM port board that slides into one of the slots on the back of your PC. In this case, only the computer containing the board can access the serial port. With Moxa's 8/16-port NPort Server Pro serial device server, communicating with COM ports is much more versatile, since you are now able to access the COM ports from a distance. For example, the server could be located in Stockholm, and the serial devices in Frankfurt.

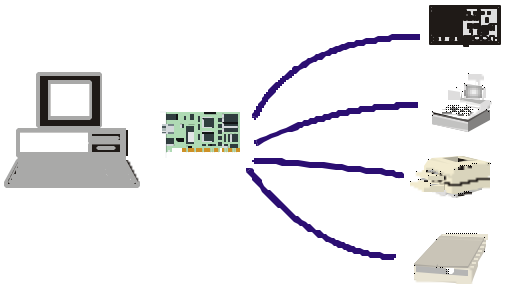

Figure 2-1. Traditional Multi-Port Serial Communication

If you use the type of application described in the previous paragraph, NPort Server Pro with its Ethernet connection is the best solution available for adding RS-232 serial devices to your computer. It allows you to extend the range of your operation, increase the number of ports used, and provides high throughput. The installation procedure is as simple as installing a traditional multi-port serial board. You don't have to spend a lot of time learning advanced networking concepts to configure NPort Server Pro. The least you will need to do is install an Ethernet card in your computer.

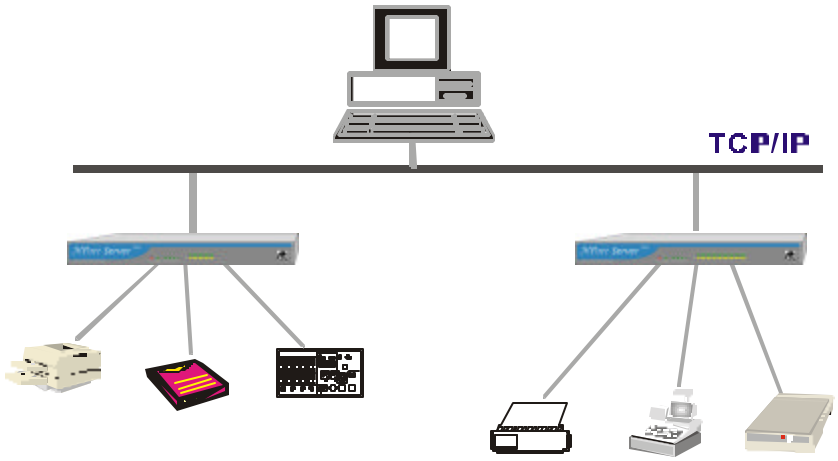

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Figure 2-2. Single-Host Mode using two NPort Server Pros

Multi-Host Mode

For advanced applications you may share one NPort Server Pro with multiple hosts on a Local Area Network (LAN). Unlike serial devices bundled to a dedicated host, sharing one NPort Server Pro with several computers saves resources, since you no longer need to add multi-port serial boards to each computer. Figure 2-3 shows the basic concept of the Multi-Host application.

For example, let's assume that you have three hosts on the same network, and each host requires 5 serial ports to communicate with five serial devices. All you need to do is install one 16 port NPort Server Pro, and connect 5 ports to each of the three hosts. In some types of applications, such as a modem pool, or other RS-232 device pooling situations, you can allow different hosts to access the same serial devices. The TCP/IP protocol automatically handles the time-sharing problem introduced by this type of application.

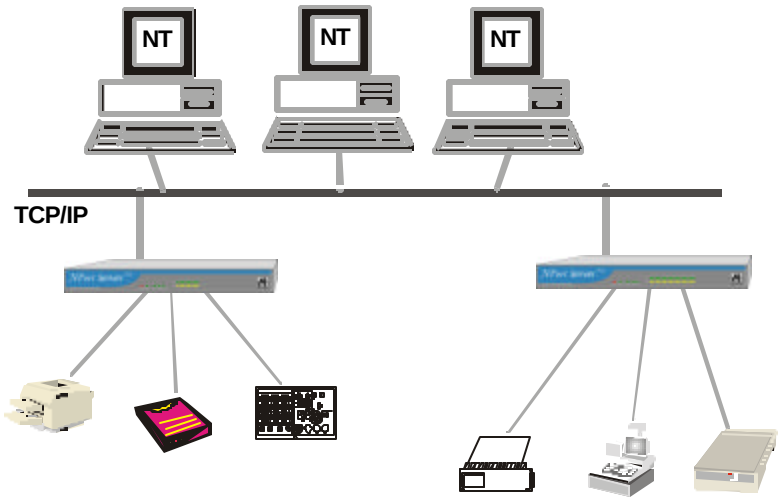


Figure 2-3. Three-Hosts sharing two NPort Server Pros

If you decide to configure your NPort Server Pro as Multi-Host, you will need to know something about the networking concept of assigning IP addresses. There are two basic roles at play with this application mode–the administrator, and general users. The administrator assigns a dedicated IP address to NPort Server Pro, so that other Windows NT/95/98 hosts on the network, i.e., the general users, are able to locate the server that is being administered. The administrator also decides who has the right to access which ports. General users only need to install the driver and software, add NPort Server Pro to their system, and then run their application. These procedures protect NPort Server Pro's security, and help keep the server running as a clean, simple device for serial communication.

Note: Multi-Host Mode is designed to be used only at the local level, such as over a LAN.

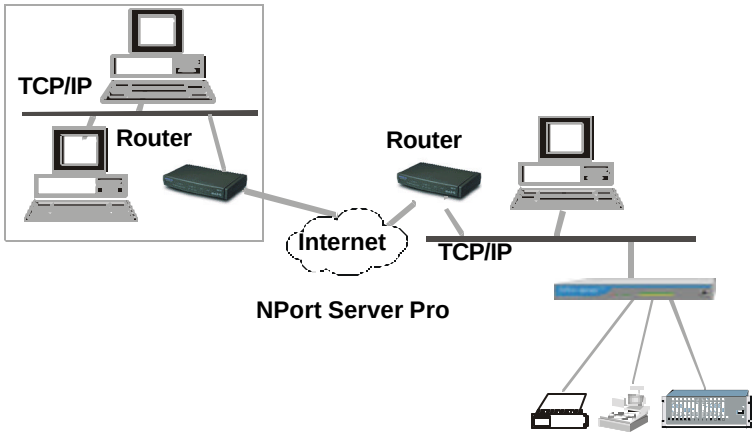


Figure 2-4. A remote control link diagram

Custom Mode

The Custom Mode of operating NPort Server Pro allows for situations more complex than those mentioned in the two previous subsections. These functions include remote control from an Internet host, setting the ports on NPort Server Pro as WAN ports for remote control, and adding complicated routing protocols. Setting up these types of application requires more network knowledge, and possibly knowledge about the Internet and Intranet. Figure 2-4 shows a complex remote-control example.

In most cases, if NPort Server Pro is used for remote access or control, you will need to customize the server to suit your needs. You could be the administrator setting up NPort Server Pro for other Windows NT/95/98 hosts, or you could be a general user with access to NPort Server Pro from a remote site.

Connecting the Hardware

In the previous section we illustrated the general operation modes of NPort Server Pro. In this section we begin by describing how to find a proper location for your server, and then explain how to connect to the network, hook up the power cable, and connect to the server's serial port.

Locating NPort Server Pro

There are two placement options available. NPort Server Pro can be:

- placed on a desktop,
- fixed to a 19-inch rack-mount.

Desktop

This option involves placing NPort Server Pro on a clean, flat, well-ventilated desktop. There are four rubber pads fixed to the bottom of the server, and we recommend leaving sufficient room between NPort Server Pro and neighboring equipment to create clearance for air to circulate.

Note: Please remember to not put anything on top of NPort Server Pro, since this could damage the internal components.

Rack Mount

NPort Server Pro can also be mounted on a standard 19-inch rack-mount. First use four screws to attach the L-shaped brackets to the server. Next, attach the server to the rack-mount with two screws, as shown below.

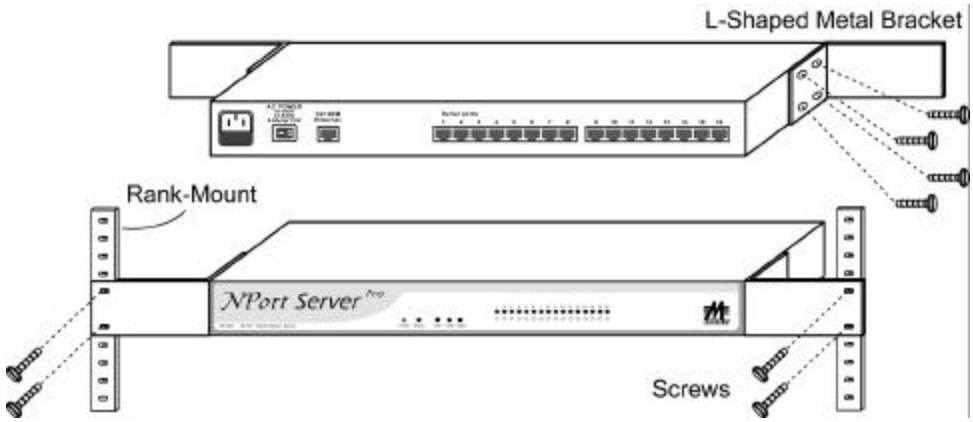


Figure 2-5. Rack Mount

Connecting to the Network

There are two ways to use the 10/100BaseT Ethernet jack located on NPort Server Pro's back panel (see Figs. 1-3 and 1-4):

1. For many of the applications using NPort Server Pro, you will simply plug one end of your Ethernet cable into the 10/100BaseT jack, and the other end into the hub connected to your network.
2. In some cases, such as when configuring drivers and software, you will find it convenient to hook NPort Server Pro directly to your computer' s Ethernet card. To do this you will need to use a "crossed-cable", such as the one supplied with your server.

Connecting the Power

After connecting NPort Server Pro to your network, you should take the following steps to connect the power cable.

NPort Server Pro' s power supply is designed to support 90-260V AC, making it possible for you to use the server regardless of your AC power supply' s voltage.

Note: It is strongly recommended that NPort Server Pro be connected to the network before turning on the power.

1. Connect the power cord to NPort Server Pro' s rear panel.
2. Plug the other end of the power cord into an electrical outlet.
3. Turn the on/off switch to the I–position.
4. Check the power LED on the front panel to verify that the server is receiving power.

Connecting Asynchronous Serial Devices

You may use the RJ-45 to female DB-25 cable included with NPort Server Pro to connect serial devices to the server. Plug the RJ-45 connector into one of the serial port jacks on the server' s rear panel, and then connect the DB25 connector to the serial device.

Refer to Appendix C for details on NPort Server Pro' s RJ-45 pinouts to make your own cable.

Note: You can also use the RJ-45 to male DB25 cable to connect the server to a modem. Check with Appendix C for pinout details to make your own modem cable.

3

IP Address Configuration

In this chapter we explain how to configure NPort Server Pro's IP address, using:

- Telnet Console
- DHCP Server

The first method uses the Telnet program to access the server over the network. The second method applies if you have a Dynamic Host Configuration Protocol (DHCP) server.

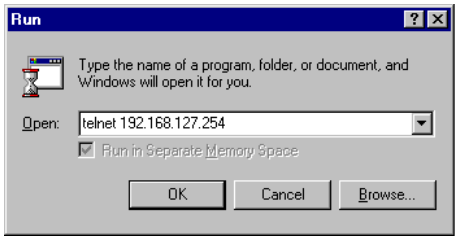
Telnet Console

You may use the Telnet program to easily communicate with NPort Server Pro over a TCP/IP Ethernet network. All you need is the server's current IP address and a computer running the Telnet program, provided the computer is hooked up to the server's network. The example in this section was generated using a Windows NT/95/98 host.

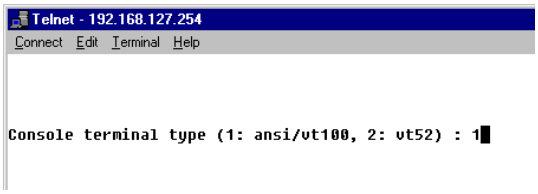
Note: After activating the Telnet Console, you will need to use the keyboard keys to maneuver about the VT100 screen.

- While in the Telnet Console MAIN MENU, the left/right arrow keys move the cursor between menu headings, and pressing the Enter key activates whichever menu heading is highlighted.
- After pressing Enter from the MAIN MENU, the Tab key and up/down arrow keys are used to move between configurable options.
- The Esc key is used to maneuver backwards. For example, if you have made modifications to the settings listed under the serverConfig menu, press the Esc key to return to the MAIN MENU.
- Carry out the following procedure to configure the server's IP address.

1. From the Windows NT/95/98 desktop click on **Start** and then choose **Run**.



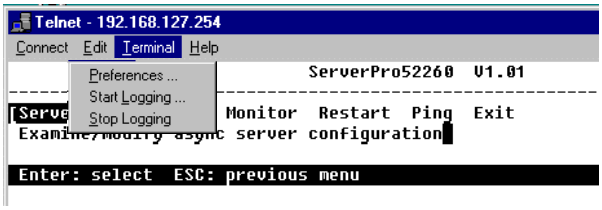
2. Type `telnet [IP_address]` in the **Open** text input box, where `[IP_address]` is the IP address of the NPort Server Pro you intend to configure. Click **OK** to continue.
3. When the Telnet window opens up, type **1** to select **ansi/vt100** for **Console terminal type**, and then press **Enter** on the computer keyboard.



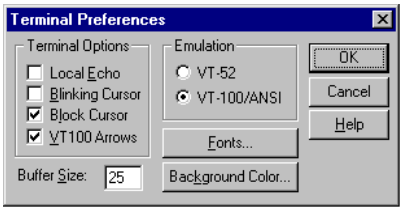
4. A connection between your computer and NPort Server Pro should now be established, and the MOXA NPort Server Pro utility program will automatically start running.

*Note: After activating the Telnet console, use the following procedure to make sure that the **VT100 Arrows** option is selected. Not doing so could cause the server's name to be changed inadvertently.*

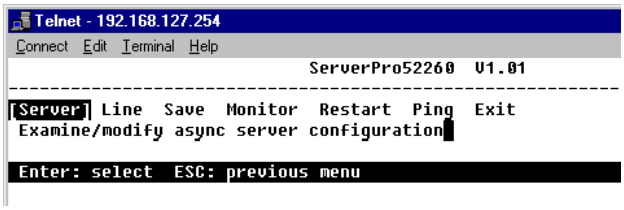
5. Choose **Preferences** from the Telnet Console **Terminal** menu.



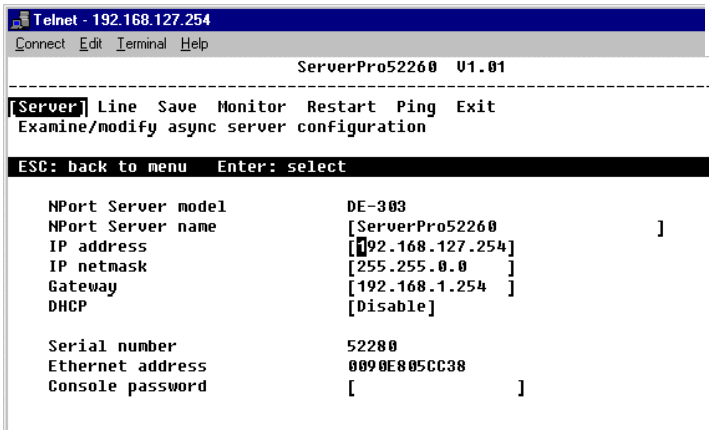
6. Make sure that the **VT100 Arrows** box in the lower left hand corner of the window is checked, and then click **OK** to return to the Telnet Console window.



7. Use the keyboard arrow keys to highlight **[serverConfig]** as shown below, and then press **Enter** to select this option.



8. Use the keyboard arrow keys to position the cursor over the first digit of the IP address.



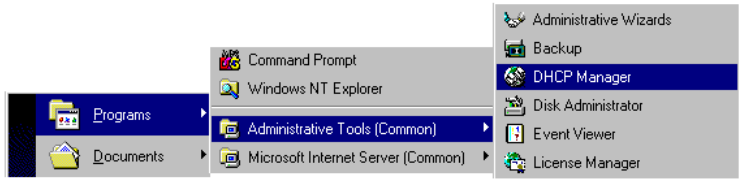
9. Type in the correct IP address and then press **Enter** to accept this value.
10. Press **ESC** to return to the main menu, and then select **Restart** to activate the change.

DHCP Server

This section applies if you are using your Windows NT host as a DHCP server. This type of server is set up to provide IP addresses for new devices as they log onto a network. As the operation of NPort Server Pro requires a fixed IP address, we strongly recommend that you establish an IP reservation list in DHCP in order to maintain fixed IP assignments based on the server's MAC address. NPort Server Pro's unique MAC address, which is required when setting up the DHCP server, can be found on the server's back panel.

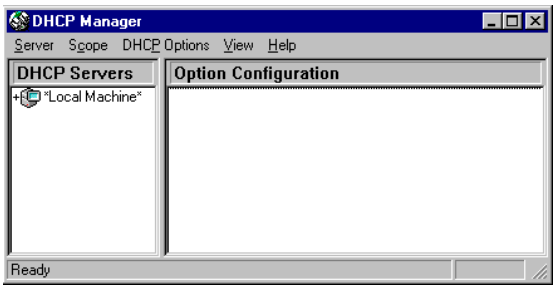
Note: For NPort Server pro, the DHCP setting is ENABLED by default.

1. Access **DHCP Manager** from the Windows NT desktop by clicking on **Start → Programs → Administrative Tools → DHCP Manager**.



2. The left info box of the **DHCP Manager** window will show a list of DHCP hosts currently hooked up to the network.

   Note that before you can make changes to the host's parameters, there must be a minus sign (–) located to the left of the server name (**Local Machine** in the example shown below.) If, as shown, there is a plus sign (+) to the left of the server name, use the left mouse button to click on the name of the host until the minus sign appears.

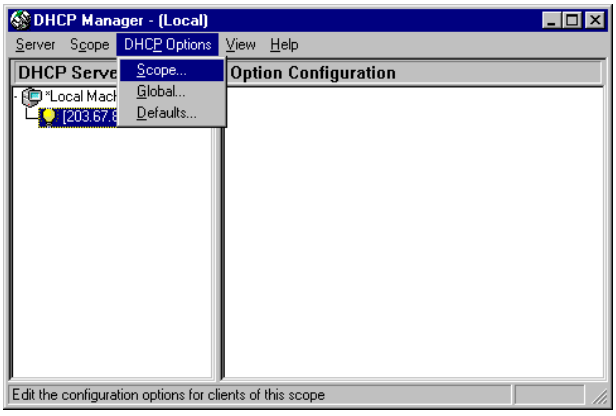


3. You must now define the DHCP server "scope".

   A scope is simply a range of IP addresses that the server assigns to machines as they log onto the network. Since the assignment is dynamic, the IP address assigned to a particular device can change each time the device is logged in. What we will do is use DHCP Manager to set aside a specific IP address that will always be assigned to your NPort Server Pro when it is hooked up to the network. When the device is not hooked up, the reserved IP address is not used.

   If you have already defined a scope, continue with step 5 below.

4. To get started, click on **DHCP Options** and then chose **Scope** from the pull down menu.



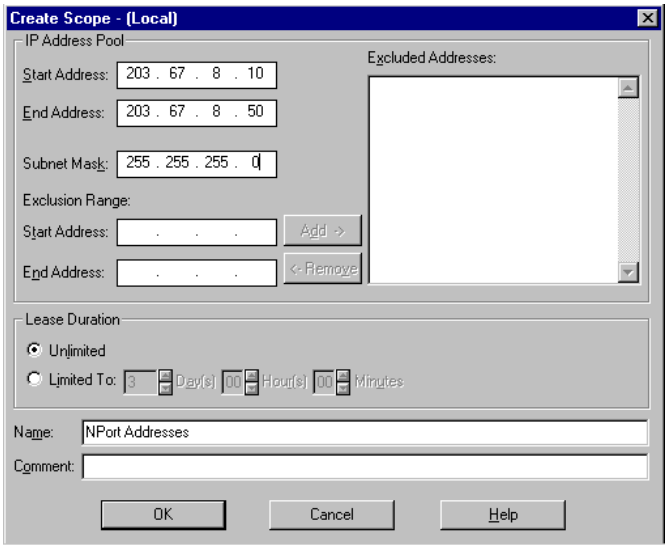
5. Once the **Create Scope (Local)** window opens (see below), you will be required to input a range of IP addresses in the **IP Address Pool**.

   There is also an **Exclusion Range** used to prevent the DHCP server from issuing addresses to existing devices that have already been assigned IP addresses from this range. By using the **Add** and **Remove** buttons, several different ranges can be excluded, and later included.

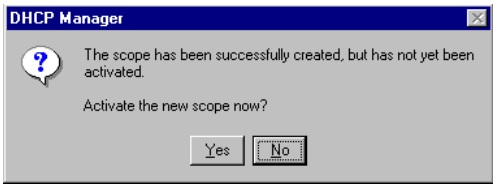
6. Another item that must be attended to is the **Subnet Mask**. This is a number that is combined with a device's IP address to determine which subnet the device belongs to. For a Class C address you should input 255.255.255.0, and for Class B addresses use 255.255.0.0.

7. Make sure the **Unlimited** option under **Lease Duration** is checked. This prevents the system from automatically disconnecting devices that are using IP addresses in the specified range.

8. Assign a name to the scope, and if you would like, include a comment. Click **OK** to accept the values.

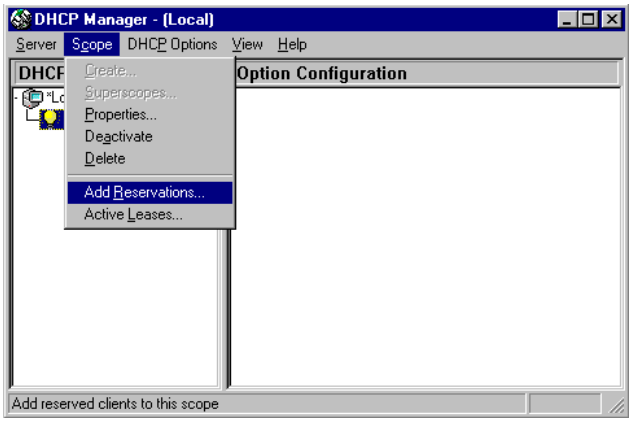


9. A window opens with the question: **Activate the new scope now?** Click on **Yes** to activate.



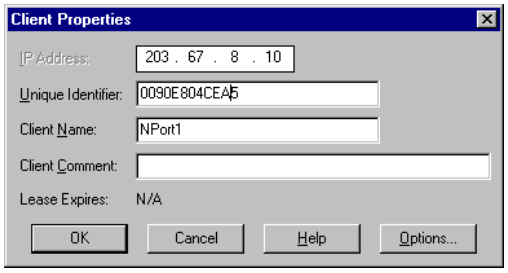
At this point we explain how to input a unique IP address reserved exclusively for use by your NPort Server Pro.

10. From the **DHCP Manager – (Local)** menu bar, click on **Scope**, and then select **Add Reservations**.

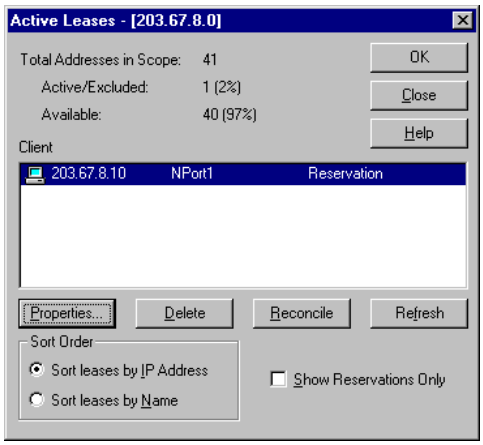


11. The **Client Properties** window that opens contains text input boxes for **IP address**, **Unique Identifier**, **Client Name**, and **Client Comment**. First enter the selected IP address, and then locate and enter your NPort Server Pro's MAC address in the Unique Identifier field. (The MAC address is located on NPort Server Pro's back panel.)

Be sure to enter the same **Client Name** that was entered in the **Name** field of the **Create Scope - (Local)** window (see step 8 above). The **Client Comment** is optional. At this point you should double-check the MAC address and IP address, and then click **OK** to accept the values.



12. To check that the numbers just entered are correct, return to the DHCP Manager main window, click on **Scope**, and then choose **Active Leases** from the pull down menu. The IP address reserved for your NPort Server Pro will be displayed in the window that opens up. Check to make sure that it is accurate.



4

Setting Up Single-Host

In this chapter we explain how to set up NPort Server Pro for Single-Host Mode. This type of application uses one Windows NT/95/98 server to control several serial devices in a manner similar to the way you would use a traditional multi-port serial board.

We cover the following topics:

- Driver and Software Installation
- Using NPort Pro Manager
  - Saving Your Configuration
  - Adding an NPort Server Pro—Add Server Wizard
  - Deleting a Server
  - Modifying COM Name Mappings
    - Changing All COM Names Consecutively
    - Changing the COM Name of One Port
  - Un-Mapping a Port
  - Configuring Server Properties
    - Server Properties—General
    - Server Properties—Password
    - Server Properties—Transmission
  - Upgrading NPort Server Pro Firmware

❑ Replacing a Server

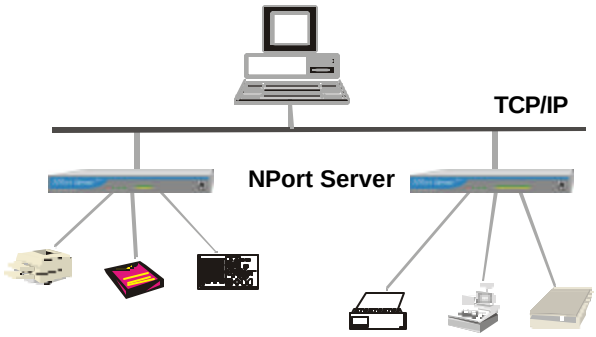


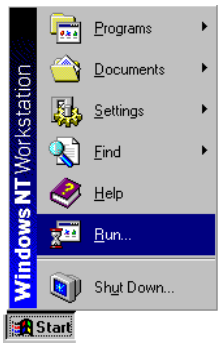
Figure 4-1 Application with one host and two NPort Server Pros

Note: If you need to set up Multi-Host Mode or Custom Mode, refer to Chapters 5 and 6, respectively, for complete descriptions of these types of application.

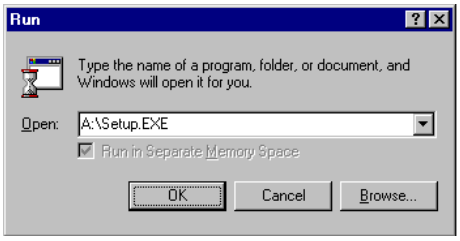
Driver and Software Installation

1. Insert the NPort Server Pro disk into either the floppy disk drive or CD ROM drive, depending on the type of disk that was provided.

   From the Windows NT/95/98 desktop, click on **Start** and then choose **Run**.

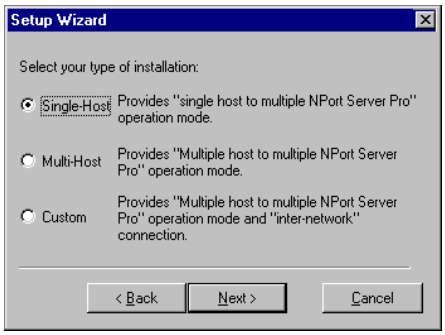


2. Type `A:\setup` in the **Open** input box if using drive A and then click **OK** (replace A with the correct drive letter if you are using a different drive).

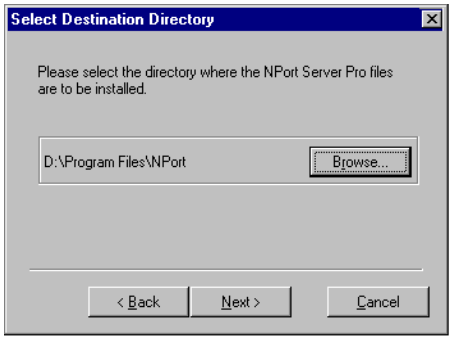


3. The **Welcome to NPort Server Pro** window opens, giving you the option to continue with the installation process. Click on **Next** to continue.

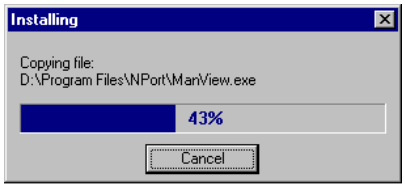
4. When the **Setup Wizard** window opens, choose **Single-Host**, and then click on **Next** to continue.



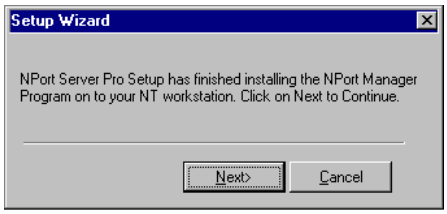
5. The **Select Destination Directory** window gives you the option to change the directory which program files will be copied to. Click on **Next** to copy NPort Server Pro files to the given default directory. To choose a different directory, click on **Browse**, navigate to the desired directory, and then click on **Next**.



6. The **Installing** window shows the progress of the installation process. Click on **Cancel** at any time to terminate the installation.



7. The next window verifies that the installation process has completed. Click on **Next** to continue.



*Note: If you click on **Cancel** you will need to run Add Server Wizard at a later time to install your NPort Server Pro.*

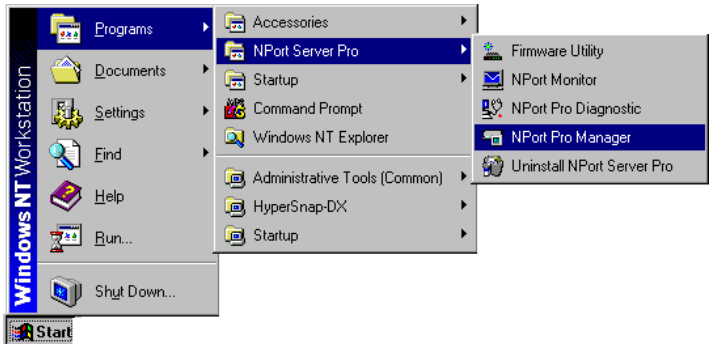
8. Clicking on **Next** in the previous window activates the **Add Server Wizard**.

   Refer to the subsection *Adding an NPort Server Pro—Add Server Wizard* in the section for instructions on how to add an NPort Server Pro.

Using NPort Pro Manager

When you run the Setup program to install NPort Server Pro software, you are given the option to run the Add Server Wizard. However, you may run NPort Pro Manager at a later time if you decide to add more servers, change server names, remove servers, or change COM names. To start NPort Pro Manager, click on:

Start → Programs → NPort Server Pro → NPort Pro Manager.



This activates the NPort Pro Manager main window, shown below, with server names and model numbers displayed in the left info box. When a particular NPort Server Pro is highlighted, the ports associated with that server, the associated COM port names, and other relevant information, are shown in the right info box.

NPort Pro Manager functions can be selected from either the main menu or the toolbar. As shown below, functions related to servers are listed under the **Server** menu, and port functions are under the **Port** menu. Moreover, when you use the right mouse button to click on a port or server, a window with a list of functions available for the selected item opens up. If you forget the function associated with a particular icon, position the mouse pointer over the icon. This will cause a message window containing the name of the function to pop up.

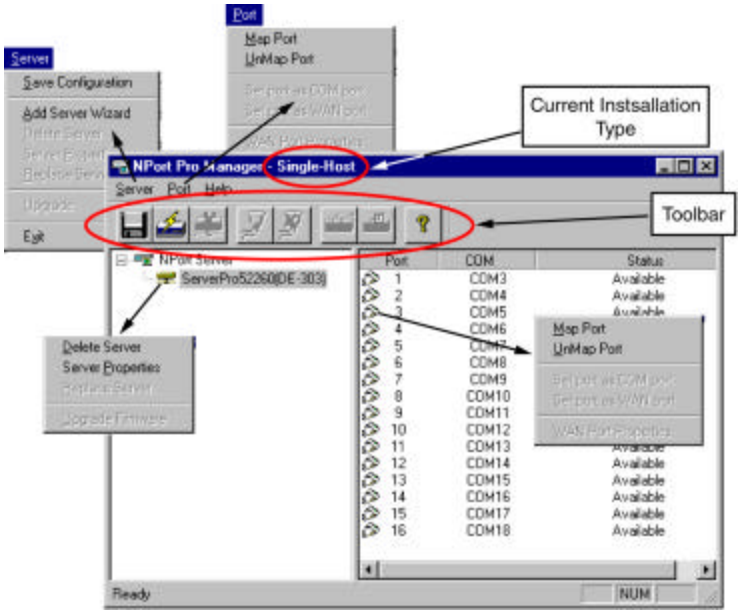


Figure 4-2. NPort Pro Manager menus and toolbar functions.

Saving Your Configuration

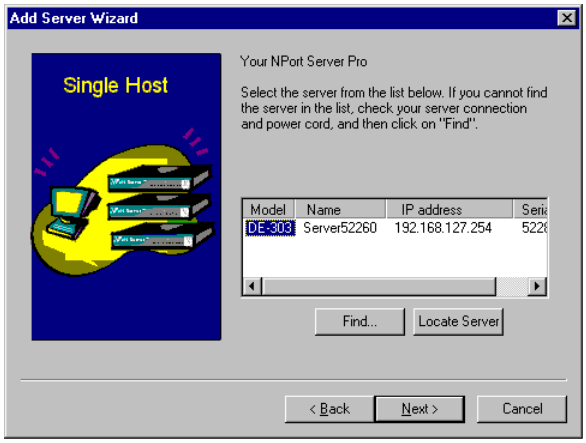
Modifications of Nport Server Pro, or changes to port configurations, must be saved in order to be activated. Choose **Save Configuration** from the **Server** menu, or click on the toolbar **Save all Servers icon** to automatically detect any changes and save them in the appropriate places.

Adding an NPort Server Pro—Add Server Wizard

The Add Server Wizard is activated automatically during the driver and sofware installation procedure. If you need to add another NPort Server Pro to your system at a later time, run NPort Pro Manager, and then choose **Add Server Wizard** from the **Server** menu, or click on the toolbar **Add Server** button.

1. Select **Yes** and then click on **Next** to start the Add Server Wizard.

2. If the NPort Server Pro you wish to add is listed in the **Add Server Wizard** window, use the mouse to highlight the server **Model** and then click on **Next** to continue.



Note: If the server you want to add is not listed in the above window, you will receive the warning window shown below. Check to make sure that the power cord is connected, and the power switch is in the "on" position. Click ***OK*** *to return to the window shown above, and click on* ***Find****. The new server should now be listed as shown above.*

Note: If you have several servers hooked up to your network, and it's not clear which server is the one you are currently adding, click on ***Locate*** *in the* ***Add Server Wizard*** *window shown in step 2 above. The "Ready" LED on the listed server will start blinking, allowing you to identify it.*

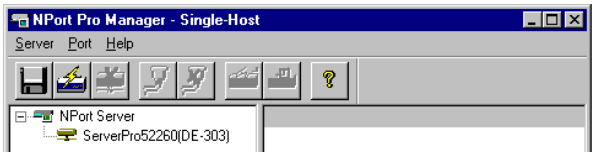
3. Select the COM port name that you would like the first port on the server to map to. This will add all of NPort Server Pro's ports (8 or 16, depending on the server model number) to your NT/95/98 system, using consecutively numbered COM names. Click on **Next** to continue.

4. You will be asked to assign a server password if you are installing a new server. We highly recommend assigning a password, since this will help to prevent other users from changing the server's configuration. Click on **Next** to continue.

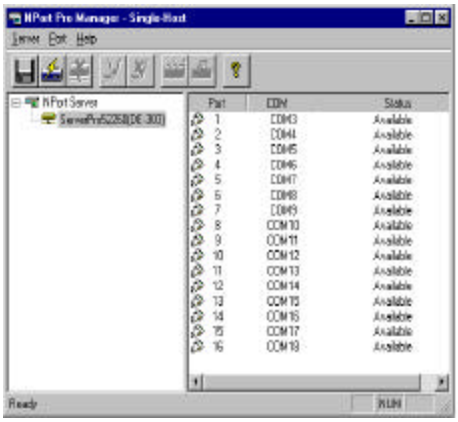
*Note: Make sure the **Auto Saved** check box is selected if you want your NT/95/98 system to remember the password.*

5. Check the Add Server Wizard **Complete!** window to verify that all of the information is correct. Click on **Finish** if everything is correct, or click on **Back** to return to the previous window.

6. The **NPort Pro Manager** window opens, with the newly installed server listed.



7. Click on the server name to highlight it. Basic information about the server's COM ports will be listed in the right info box.



Note: The NPort Pro Manager title bar shows the application mode of the newly installed server—Single-Host in this case.

8. To add another server, choose **Add Server Wizard** from the **Server** menu, or click on the toolbar **Add Server** icon, and then repeat the above steps.
9. Before exiting NPort Pro Manger you should save the new configuration. Choose **Save Configuration** from the **Server** menu, or click on the toolbar **Save all Servers** icon to carry this out.
10. Exit NPort Pro Manager when you finish.

Deleting a Server

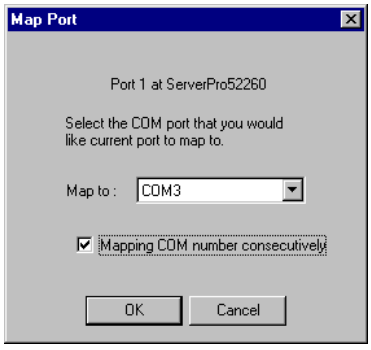
If for some reason you need to delete a server from your system, click on the server name to highlight it, and then choose **Delete Server** from the **Server** menu, or click on the toolbar **Delete Server** icon. A warning window will pop up asking if you really want to delete the server. Click **OK** to delete.

Modifying COM Name Mappings

You may use NPort Pro Manager to change previously assigned COM names. Choose **Map Port** from the **Port** menu, or click on the toolbar **Map Port** icon. You will be asked to choose from two options. You may change the name of all servers simultaneously, provided you want the COM port numbers to be consecutive, or, you may change the names one port at a time. The procedure is as follows:

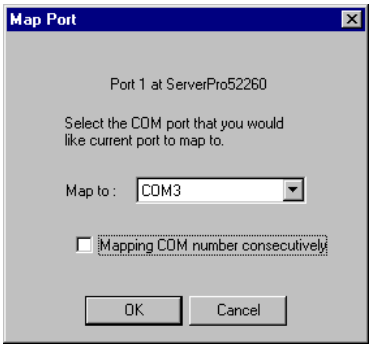
Changing All COM Names Consecutively:

1. Click on the server name whose port names you would like to modify.
2. Click on port 1 in the right info box.
3. Choose **Map Port** from the **Port** menu, or click on the toolbar **Map Port** icon to activate the function.
4. Select the COM name that the first port will be mapped to.
5. Check the **Mapping COM number consecutively box**.
6. Click **OK** to activate the change.



Changing the COM Name of One Port

1. Click on the server name whose port you would like to modify.
2. Click on the port, in the right info box, whose COM name you would like to modify.
3. Choose **Map Port** from the Port menu, or click on the toolbar **Map Port** icon to activate the function.
4. Select the COM name that the port will be mapped to.
5. Click **OK** to activate the change.



Un-Mapping a Port

If you do not need to use a port any more, you may use the **UnMapPort** function to remove it from your Windows NT/95/98 operating system.

1. Click on the port (in the right info box) that you want to remove.
2. Choose **UnMap Port** from the **Port** menu, or click on the toolbar **Unmap Port** icon

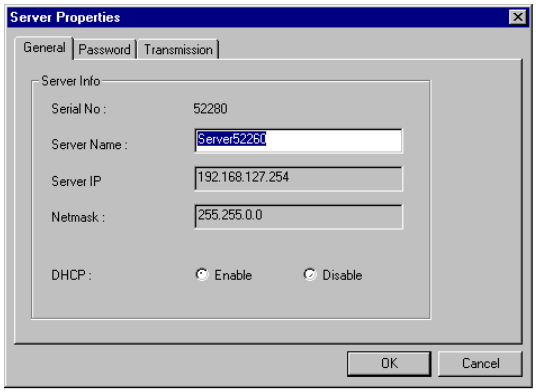
Note: The screen at the right shows the display after un-mapping ports 3 and 5.

Port	COM	Status
1	COM3	Available
2	COM4	Available
3	---	Available
4	COM6	Available
5	---	Available
6	COM8	Available
7	COM9	Available
8	COM10	Available
9	COM11	Available

Configuring Server Properties

The Server Properties function can be used to change the server's name, password, and transmission parameters. Choose **Server Properties** from the **Server** menu, or click on the toolbar **Server Properties** icon to open the **Server Properties** window.

Server Properties—General



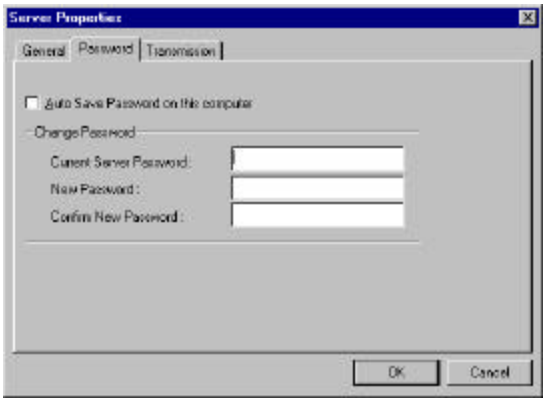
1. Select the **General** tab in the **Server Properties** window.
2. Modify the server name as desired.
3. Select **Enable** or **Disable**, for **DHCP**, depending on whether or not you are using a DHCP server.

Server Properties—Password

To add more security to your NPort Server Pro, it is highly recommended that you set a password as soon as you complete the installation. If you did not set the password while running Add Server Wizard, or you would like to change the current password, you may use the toolbar **Properties** function to do so.

You may also use this function to "Auto-Save", i.e., to have Windows NT/95/98 remember your password for you. By auto saving the password, you will not be asked to enter the password when modifying server properties *from this computer*.

Note: Keep in mind that other people using your computer will also have ready access to the NPort Pro Manager functions.



Steps for configuring the server's password:

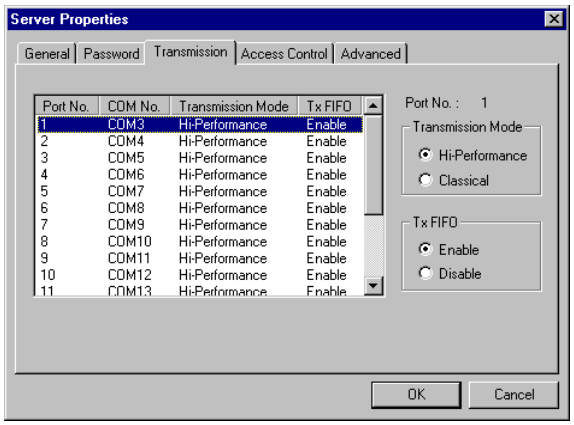
1. Select the **Password** tab in the **Server Properties** window.
2. Enter the current password and new password as indicated.
3. Check the **Auto Save Password on this computer** box if you want Windows NT/95/98 to remember your password.

Note: If you do not check the Auto Save Password on this computer box, you will need to enter the correct password each time you want to view Server Properties.

Server Properties—Transmission

The **Transmission** page allows the user to set the **Transmission Mode** and **Tx FIFO** options for each of NPort Server Pro's ports.

Transmission Mode



Select **Hi-Performance** to use buffering technology to accelerate data writing. This allows your communication software to reach maximum data throughput when transmitting large amounts of data. The driver will notify the user that the transmission is complete when the output data length is lower than the LOW WATER setting.

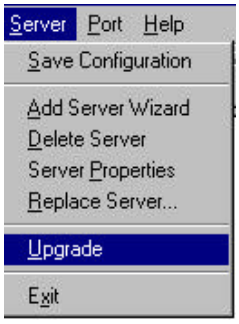
Classical Mode lets the port behave like a generic COM port. Transmission of small data packets is more precise and reliable. In this case, the driver will notify the user that the transmission is complete when all data has been transmitted.

Tx FIFO

Set to **Enable** to the get the best performance from the board.

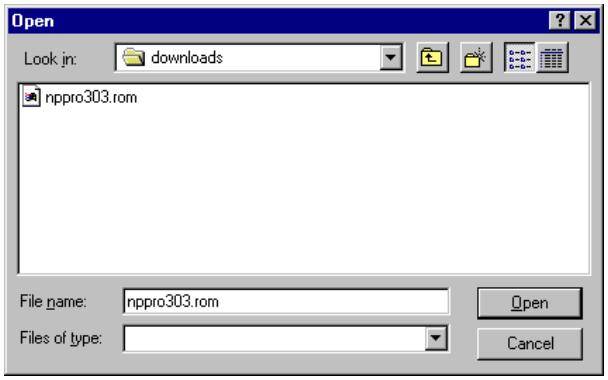
Set to **Disable** to avoid data loss when communicating with plain communication devices using S/W flow control. In this case only one byte will be put into the UART when the FIFO is empty.

Upgrading NPort Server Pro Firmware



Moxa continually upgrades its driver software and server firmware to keep pace with the ever-expanding world of computing. You can use NPort Pro Manager's Upgrade function to carry out the upgrade procedure. Access Moxa's Web site at www.moxa.com to download the required computer file (contact our sales department if you need assistance with this), and then follow these instructions.

1. Stop all port action related to the server you are upgrading.
2. Choose **Upgrade Server** from the **Server** menu, or click on the toolbar **Upgrade** icon.
3. Locate and then select the filename of the firmware that you downloaded.



4. Click on **Open** and then wait until you see an "upgrade completed" message. The server will restart automatically.

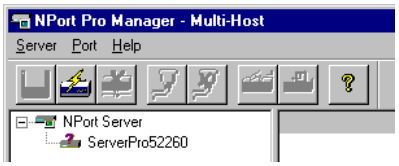
Note: When using this procedure, only the selected server's firmware is upgraded. If you know that new NPort Pro Manager software has been released, it is recommended that you uninstall the old NPort Pro Manager program from your NT/95/98 host's hard drive, and then install the new one.

Replacing a Server

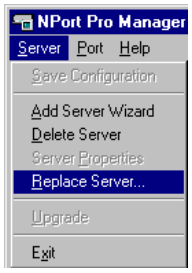
In the unlikely event that your NPort Server Pro needs to be replaced, you can use NPort Pro Manager's **Replace Server**. .function. This procedure uses NPort Server Pro's "hot-swap" feature, and gives you an easy way to locate the replacement server. The configurations that were set while installing the now defective server will also be saved. Otherwise, you would need to use NPort Pro Manager to delete the old server, and then configure the new server and all of its ports.

Follow the steps below to perform hot-swap:

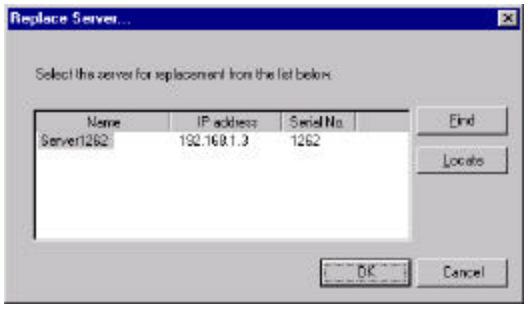
1. Click on the server that has a question mark (?) on top of it to highlight it.
2. Choose **Replace Server**. . from the **Server** menu.



3. The **Replace Server…**window that opens up shows a list of servers that you have not configured. You can identify the new server by looking at the serial number.
4. Confirm the Server with the pop-up window.
5. If the new server is password protected, enter the pre-set password when prompted to do so.
6. Click **OK** to save the current settings to the new server.
7. Click on **Save Configuration** to activate.



Note:Previous configurations, including server name and port settings, are retained after going through the above described Replace Server procedure. However, the server password will be set to the one you entered during the replacement procedure, so you will need to start using the new password to access the server.



5

Setting Up Multi-Host

In this chapter we explain how to set up NPort Server Pro for Multi-Host Mode. This type of application uses more than one host on a local network to control several serial port devices.

We cover the following topics:

- Driver and Software Installation
- Using NPort Pro Manager
  - Saving Your Configuration
  - Adding an NPort Server Pro—Add Server Wizard
  - Deleting a Server
  - Modifying COM Name Mappings
    - Change All COM Names Consecutively
    - Change the COM Name of One Port
  - Un-Mapping a Port
  - Upgrading NPort Server Pro Firmware
  - Configuring Server Properties
    - Server Properties—General
    - Server Properties—Password
    - Server Properties—Transmission

- Access Control
  - Configuring Through View by IP
    - Adding Access Permission of One Host
    - Modifying the Host Settings
    - Removing Ports from a Granted Host
    - Removing a Granted Host
  - Configuring Through View by Port
    - Adding a Host IP Address to a Specific Port
    - Modifying a Granted Host
    - Removing Granted Host

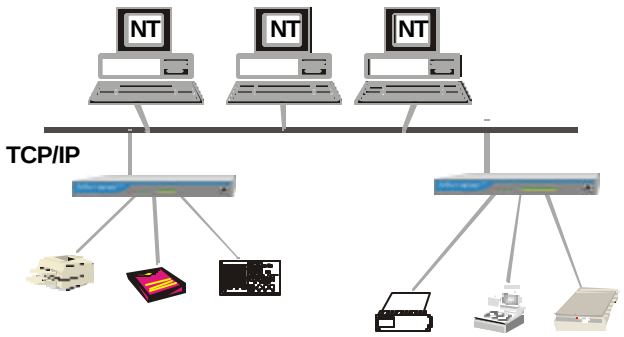


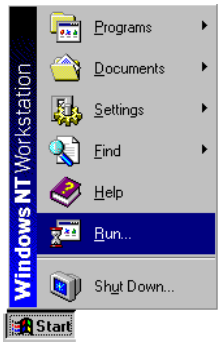
Figure 5-1. Application with three hosts and two NPort Server Pros.

Note: If you need to set up Single-Host Mode or Custom Mode, refer to Chapters 4 and 6, respectively, for complete descriptions of these types of application.

Driver and Software Installation

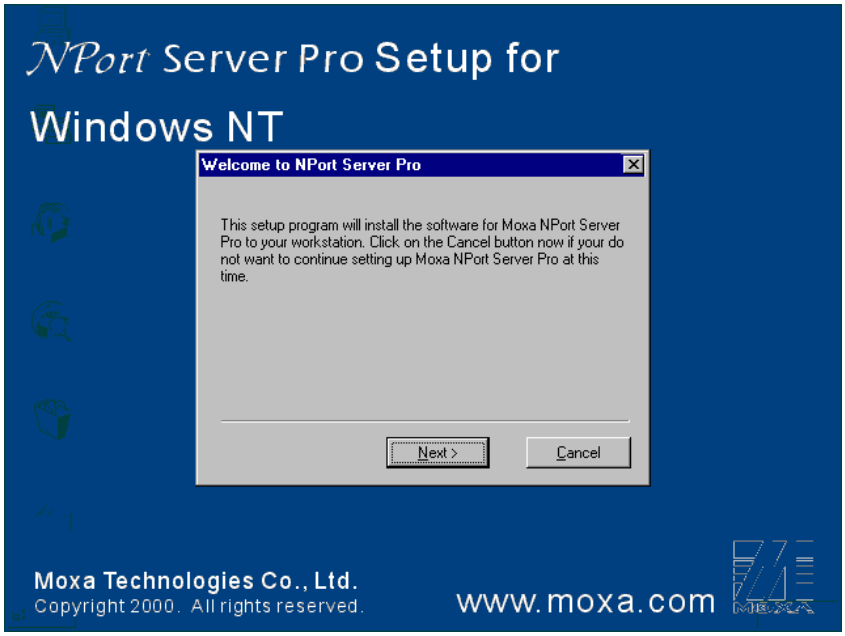
1. Insert the NPort Server Pro disk into either the floppy disk drive or CD ROM drive, depending on the type of disk that was provided.

   From the Windows NT/95/98 desktop, click on **Start** and then choose **Run**.

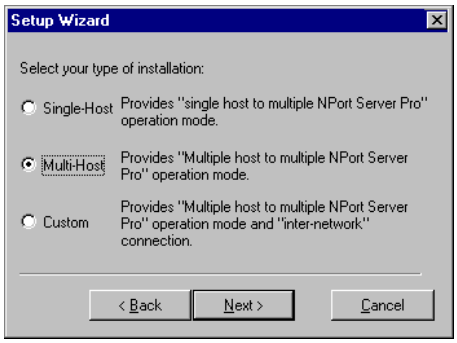


2. Type `A:\setup` in the **Open** input box if using drive A and then click **OK** (replace A with the correct drive letter if you are using a different drive).

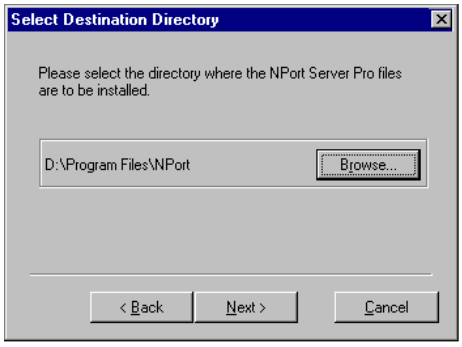
3. The **Welcome to NPort Server Pro** window opens, giving you the option to continue with the installation process. Click on **Next** to continue.



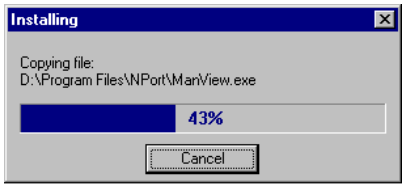
4. When the **Setup Wizard** window opens, choose **Multi-Host**, and then click on **Next** to continue.



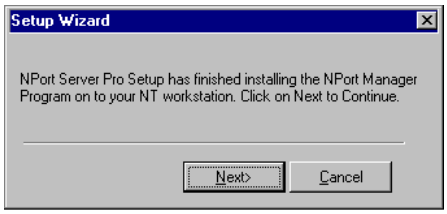
5. The **Select Destination Directory** window gives you the option to change the directory which program files will be copied to. Click on **Next** to copy NPort Server Pro files to the given default directory. To choose a different directory, click on **Browse**, navigate to the desired directory, and then click on **Next**.



6. The **Installing** window shows the progress of the installation process. Click on **Cancel** at any time to terminate the installation.



7. The next window verifies that the installation process has completed. Click on **Next** to continue.



*Note: If you click on **Cancel** you will need to run Add Server Wizard at a later time to install your NPort Server Pro.*

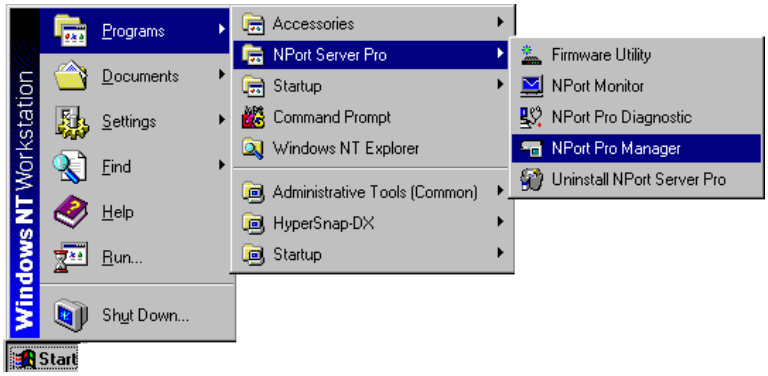
8. Clicking on **Next** in the previous window activates the **Add Server Wizard**.

Refer to the subsection *Adding an NPort Server Pro—Add Server Wizard* in the next section for instructions on how to add an NPort Server Pro.

Using NPort Pro Manager

When you run the Setup program to install NPort Server Pro software, you are given the option to run the Add Server Wizard. However, you may run NPort Pro Manager at a later time if you decide to add more servers, change server names, remove servers, or change COM names. To start NPort Pro Manager, click on:

Start → Programs → NPort Server Pro → NPort Pro Manager.



This activates the NPort Pro Manager main window, shown below, with server names and model numbers displayed in the left info box. When a particular NPort Server Pro is highlighted, the ports associated with that server, the associated COM port names, and other relevant information, are shown in the right info box.

NPort Pro Manager functions can be selected from either the main menu or the toolbar. As shown below, functions related to servers are listed under the **Server** menu, and port functions are under the **Port** menu. Moreover, when you use the right mouse button to click on a port or server, a window with a list of functions available for the selected item opens up. If you forget the function associated with a particular icon, position the mouse pointer over the icon. This will cause a message window containing the name of the function to pop up.

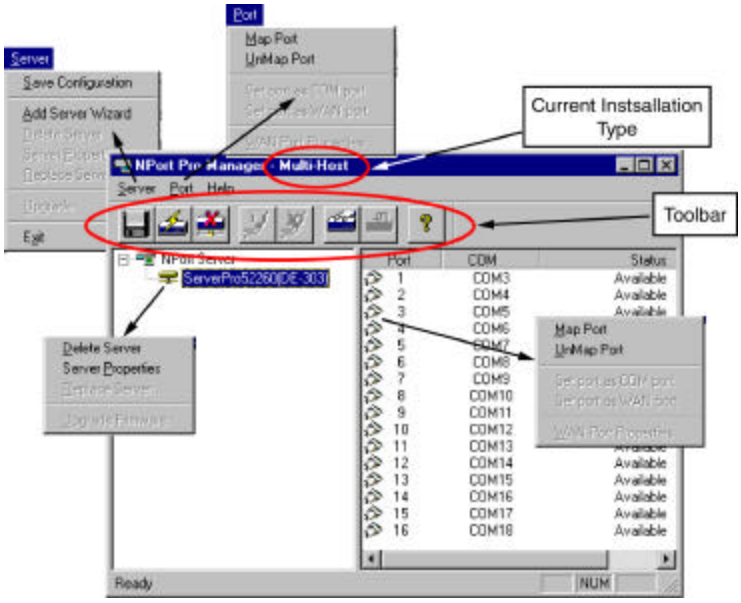


Figure 5-2. NPort Manager and the menus.

Saving Your Configuration

Modifications of NPort Server Pro, or changes to port configurations, must be saved in order to be activated. Choose **Save Configuration** from the **Server** menu, or click on the toolbar **Save all Servers** icon to automatically detect any changes and save them in the appropriate places.

Adding an NPort Server Pro—Add Server Wizard

The Add Server Wizard is activated automatically during the driver and software installation procedure. If you need to add another NPort Server Pro to your system at a later time, run NPort Pro Manager, and then choose **Add Server Wizard** from the Servers menu, or click on the toolbar **Add Server** button.

1. Select Yes and then click on Next to continue the installation process.

2. If the NPort Server Pro you wish to add is listed in the **Add Server Wizard** window, use the mouse to highlight the server **Model** and then click on **Next** to continue.

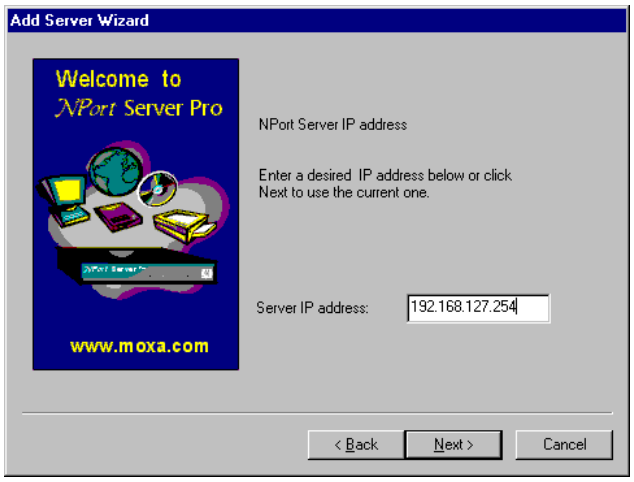
Note: If the server you want to add is not listed in the above window, you will receive the warning window shown below. Check to make sure that the power cord is connected, and the power switch is in the "on" position. Click ***OK*** *to return to the window shown above, and then click* ***Find****. The new server should now be listed as shown above.*

Note: If you have several servers hooked up to your network, and it's not clear which server is the one you are currently adding, click on ***Locate*** *in the* ***Add Server Wizard*** *window shown in step 2 above. The "Ready" LED on the listed server will start blinking, allowing you to identify it.*

3. If you are the system administrator and know the current password, or if you are setting up a new password, select **Yes, I am the administrator** and then enter the password in the text input box.

If you select **No, I am a general user**, you will be allowed to install your NPort Server Pro, but you will not be able to change any of the parameter settings. Click on **Next** to continue.

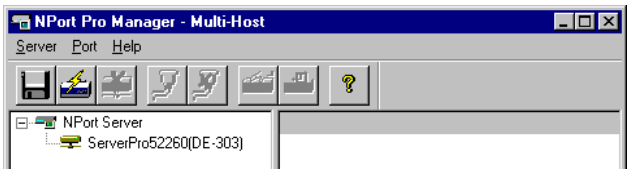
4. The next window lists NPort Server Pro's current IP address. Change the number if needed, and then click on **Next** to continue.



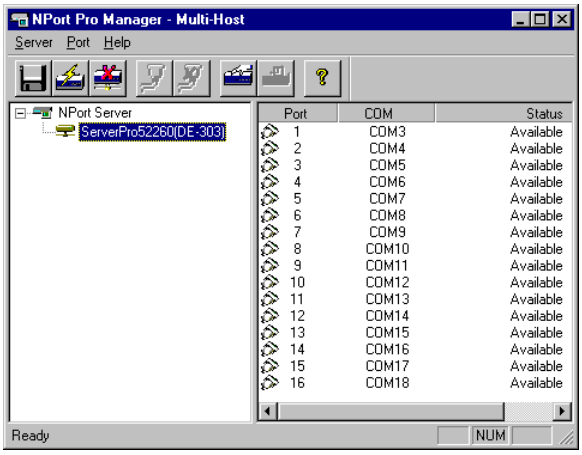
5. Select the COM port name that you would like the first port on the server to map to. This will add all of NPort Server Pro's ports (8 or 16, depending on the server model number) to your NT/95/98 system, using consecutively numbered COM names. Click on **Next** to continue.

6. When the **Complete!** window opens, check the information to make sure that everything is correct, and then click on **Finish** to continue.

7. This evokes the **NPort Pro Manager** program, with the newly installed server listed.



8. Click on the server name to highlight it. Basic information about the server's COM ports will be listed in the right info box.



Note: If you see ports with status 'Non-authorized', and you are a general user, be sure to ask your server administrator to add access permission so that you may make modifications to the server.

Note: The NPort Pro Manager title bar shows the application mode of the newly installed server—Multi-Host in this case.

9. To add another server, choose **Add Server Wizard** from the **Server** menu, or click on the toolbar **Add Server** icon, and then repeat the above steps.
10. Before exiting NPort Pro Manger you should save the new configuration. Choose **Save Configuration** from the **Server** menu, or click on the toolbar **Save all Servers** icon to carry this out.
11. Exit NPort Pro Manager when you finish.

Deleting a Server

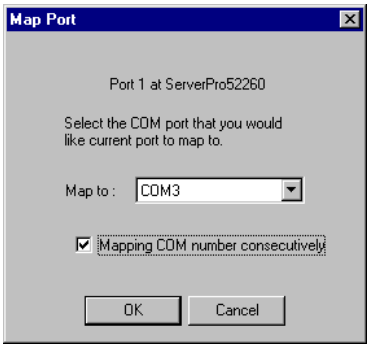
If for some reason you need to delete a server from your system, click on the server name to highlight it, and then choose **Delete Server** from the **Server** menu, or click on the toolbar **Delete Server** icon. A warning window will pop up asking if you really want to delete the server. Click **OK** to delete.

Modifying COM Name Mappings

You may use NPort Pro Manager to change previously assigned COM names. Choose **Map Port** from the **Port** menu, or click on the toolbar **Map Port** icon. You will be asked to choose from two options. You may change the name of all servers simultaneously, provided you want the COM port numbers to be consecutive, or, you may change the names one port at a time. The procedure is as follows:

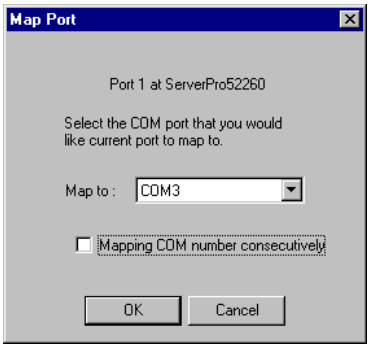
Change All COM Names Consecutively:

1. Click on the server name whose port names you would like to modify.
2. Click on port 1 in the right info box.
3. Choose **Map Port** from the **Port** menu, or click on the toolbar **Map Port** icon to activate the function.
4. Select the COM name that the first port will be mapped to.
5. Check the **Mapping COM number consecutively box**.
6. Click **OK** to activate the change.



Changing the COM Name of One Port

1. Click on the server name whose port name you would like to modify.
2. Click on the port, in the right info box, you would like to modify.

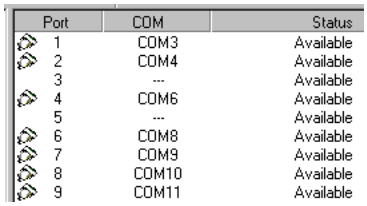


3. Choose **Map Port** from the **Port** menu, or click on the toolbar **Map Port** icon to activate the function.
4. Select the COM name that the port will be mapped to.
5. Click **OK** to activate the change.

Un-Mapping a Port

If you do not need to use a port any more, you may use the **UnMap Port** function to remove it from your Windows NT/95/98 operating system.

1. Click on the port (in the right info box) that you want to remove.
2. Choose **UnMap Port** from the **Port** menu, or click on the toolbar **Unmap Port** icon

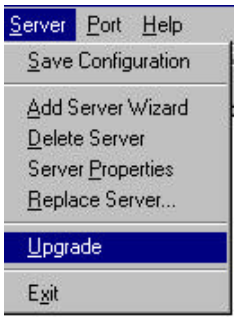


Port	COM	Status
1	COM3	Available
2	COM4	Available
3	---	Available
4	COM6	Available
5	---	Available
6	COM8	Available
7	COM9	Available
8	COM10	Available
9	COM11	Available

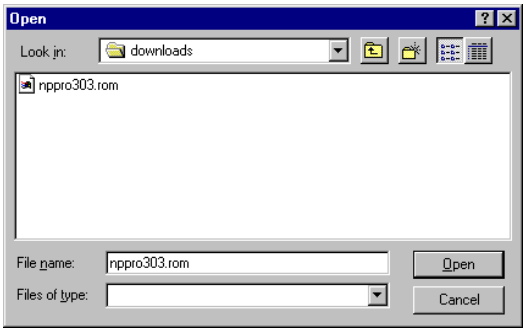
Note: The screen at the right shows the display after un-mapping ports 3 and 5.

Upgrading NPort Server Pro Firmware

Moxa continually upgrades its driver software and server firmware to keep pace with the ever-expanding world of computing. You can use the **Upgrade** function located on NPort Pro Manager's toolbar to carry out the upgrade procedure. Access Moxa's Web site at www.moxa.com to download the required computer file (contact our sales department if you need assistance with this), and then follow these instructions.



1. Stop all port action related to the server you are upgrading.
2. Choose **Upgrade Server** from the **Server** menu, or click on the toolbar **Upgrade** icon.
3. Locate and then select the filename of the firmware that you downloaded.



4. Click on **Open** and then wait until you see an "upgrade completed" message. The server will restart automatically.

Note: When using this procedure, only the selected server's firmware is upgraded. If you know that new NPort Pro Manager software has been released, it is recommended that you uninstall the old NPort Pro Manager program from your NT/95/98 host's hard drive, and then install the new one.

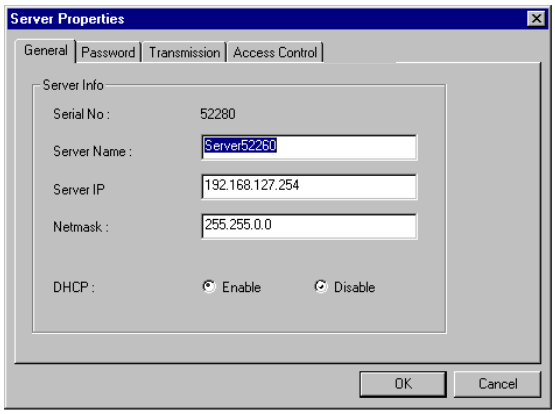
Configuring Server Properties

The Server Properties function can be used to change the server's name, password, and transmission parameters. Choose **Server Properties** from the **Server** menu, or click on the toolbar **Server Properties** icon to start the function.

Server Properties–General

You may modify the Server Name, Server IP, and Netmask by using the toolbar Properties function.

1. Select the **General** tab in the **Server Properties** window.
2. Modify the **Server Name**, **Server IP**, and **Netmask**, as needed.
3. Select **Enable** or **Disable**, for **DHCP**, depending on whether or not you are using a DHCP server.



Server Properties–Password

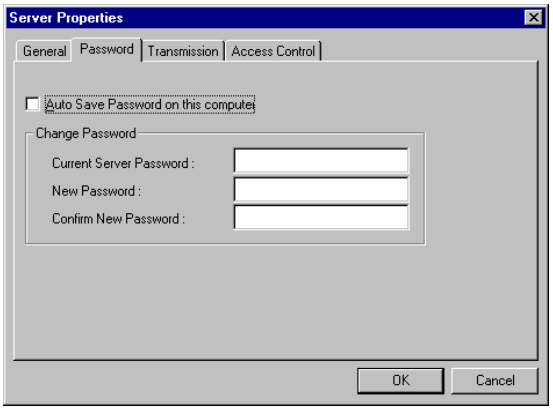
To add more security to your NPort Server Pro, it is highly recommended that you set a password as soon as you complete the installation. If you did not set the password while running Add Server Wizard, or you would like to change the current password, you may use the toolbar **Properties** function to do so.

You may also use this function to "Auto-Save", i.e., to have Windows NT/95/98 remember your password for you. By auto saving the password, you will not be asked to enter the password when modifying server properties *from this computer*.

Note: Keep in mind that other people using your computer will also have ready access to the NPort Pro Manager functions.

Steps for configuring the server's password:

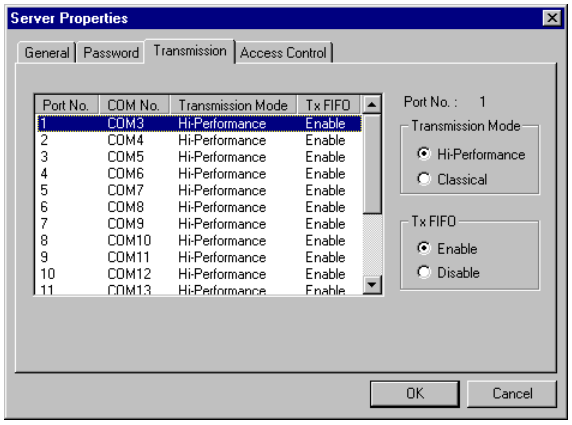
1. Select the **Password** tab in the **Server Properties** window.
2. Enter the current password and new password as indicated.
3. Check the **Auto Save Password on this computer** box if you want Windows NT/95/98 to remember your password.



*Note: If you do not check the **Auto Save Password on this computer** box, you will need to enter the correct password each time you want to view Server Properties.*

Server Properties—Transmission

The Transmission page allows the user to set the **Transmission Mode** and **Tx FIFO** options for each of NPort Server Pro's ports.



Transmission Mode

Select **Hi-Performance** to use buffering technology to accelerate data writing. This allows your communication software to reach maximum data throughput when transmitting large amounts of data. The driver will notify the user that the transmission is completed when the output data length is lower than the LOW WATER setting.

Classical Mode lets the port behave like a generic COM port. Transmission of small data packets is more precise and reliable. In this case, the driver will notify the user that the transmission is complete when all data has been transmitted.

Tx FIFO

Set to **Enable** to the get the best performance from the board.

Set to **Disable** to avoid data loss when communicating with plain communication devices using S/W flow control. In this case only one byte will be put into the UART when the FIFO is empty.

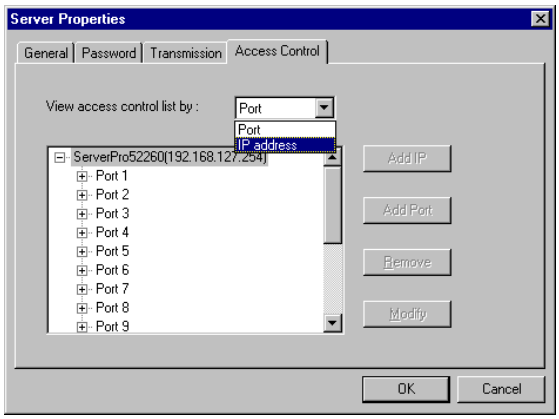
Access Control

It is possible to assign access permission to hosts to allow them access to the ports on a shared NPort Server Pro. For security reasons, the access control list can only be defined by the server's administrator. If you have not been granted access to a port, you will see a screen with the message 'Non-authorized' for that port.

After running Add Server Wizard and typing in your password showing that you are the administrator, you are granted access to the server you have added. You may go to server properties to check that. However, if you did not enter the correct password, you can still map the ports to your NT/95/98, but you will not have access to the ports. You will need to ask your administrator to add your IP address to the access control list of the server to grant you access. If you are not sure of the IP address of the host you want to add, run 'ipconfig' from the host's NT/95/98 MS-DOS prompt.

Note: If you empty the access control list, then by default, only the connecting host's IP address is granted.

1. Select the **Access Control** tab.
2. The screen will show a list of ports, and two methods of adding permission.



*Note: When adding access permission, you may either view the access control list by **Port**, or by **IP address**. These two approaches also apply to the procedure for adding new hosts. The next two sections describe how to add hosts using both approaches.*

Configuring Through View by IP

Using the view access control list by IP address option displays the access control list by listing server IP addresses. It will be clear which IP addresses have been granted access to which ports, and which IP addresses are allowed onto the server.

Adding Access Permission of One Host

If a particular host is permitted access to all ports on a specific server, we recommend that you configure using the view access control list by IP address option.

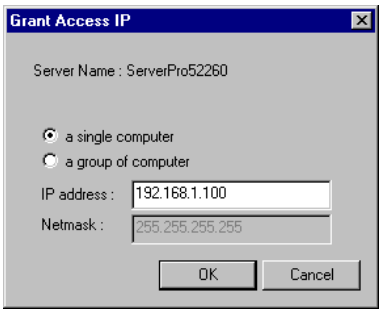
1. Click on the **Access Control** tab, and then select the **IP address** option next to **View access control list by:**

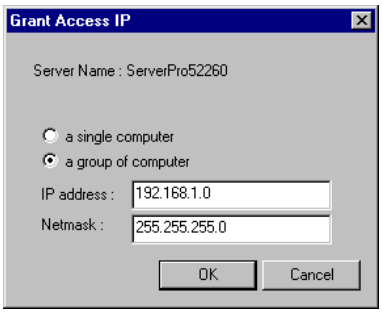
2. Click on the server you would like to modify.

3. Click on **Add IP** to open the **Grant Access IP** window.

4. To add access for only one computer, select **a single computer**, and then enter the host' s IP address in the appropriate text box.

   To add access for a group of computers, select **a group of computer,** and then enter the **IP address** and **netmask**. (E.g., for network class C computers, you might enter 192.168.1.0 for **IP address** and then 255.255.255.0 for **netmask**.)

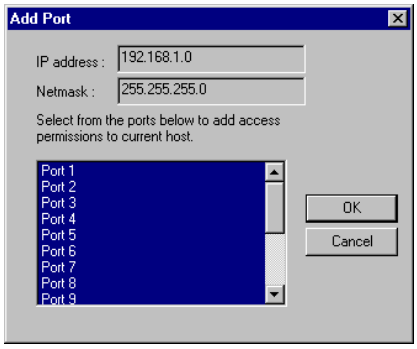




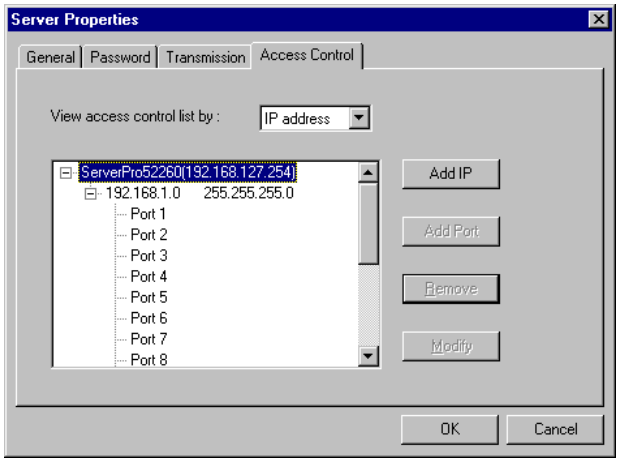
5. Click **OK**.

6. When the **Add Port** window opens up, highlight the port(s) that the host will be granted access to.

Note: You can select blocks of ports by holding down the left mouse button while scrolling through the list of ports.



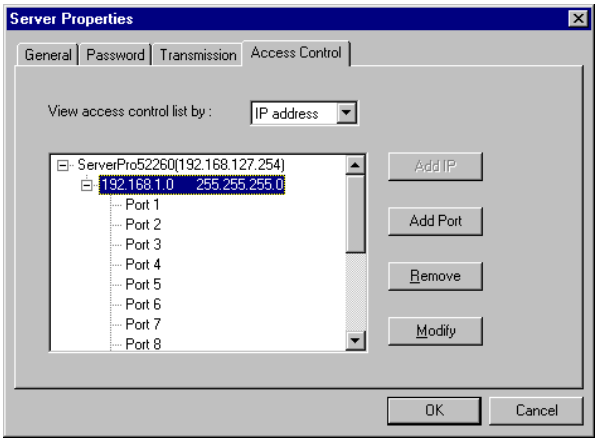
7. Click **OK** to finish and return to the **Access Control** page.



8. The ports granted access to will be listed under the host's IP address.
   Click **OK** to finish, and then choose **Save Configuration** to activate the settings.

Modifying the Host Settings

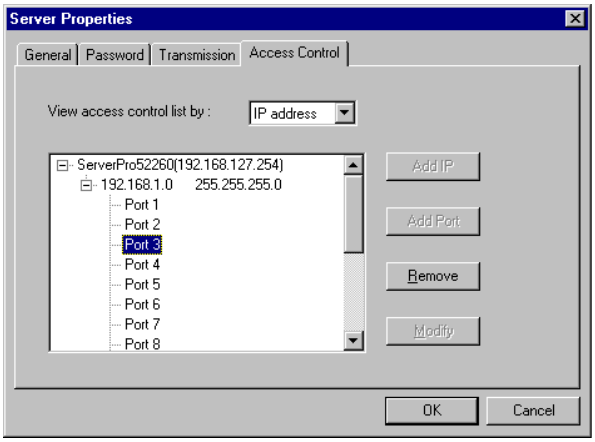
1. Select the IP address of the host you would like to modify.
2. Click on the **Modify** button.



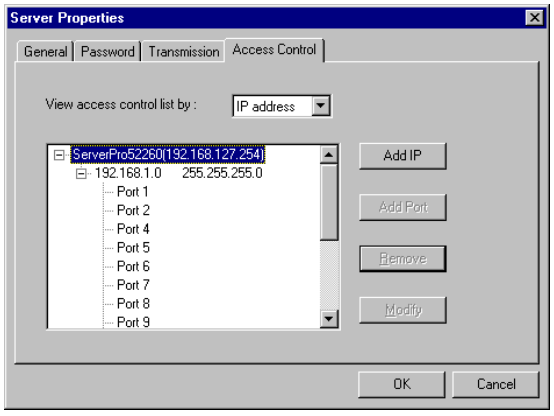
3. Modify the configuration as desired.
4. Click **OK** to exit.

Removing Ports from a Granted Host

1. Select the IP address of the host you would like to modify.
2. Click on the **Port** that you would like to remove from the list.



3. Click on **Remove**, and then click **OK** to exit. As you can see from the window shown below, Port 3 has been removed from the host's access control.

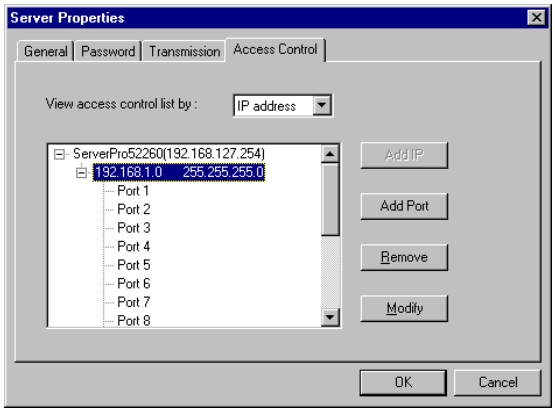


Removing a Granted Host

If you do not allow a particular host to use any of the ports, simply remove the host from the list.

Note: If you empty the access control list, then by default, only the connecting host's IP address is granted.

1. Click on the host's IP address to highlight it.



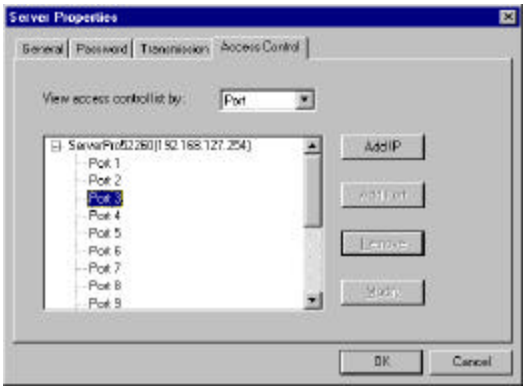
2. Click on the **Remove** button, and then click **OK** to exit.

Configuring Through View by Port

By choosing the option View access control list by Port, it is easy to see the access permission granted for each port. This viewing option is particularly useful for adding hosts to specific ports.

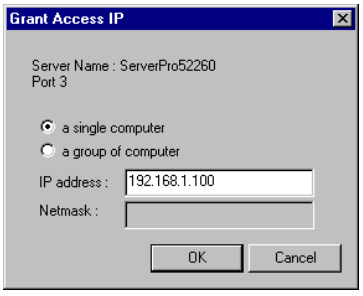
Adding a Host IP Address to a Specific Port

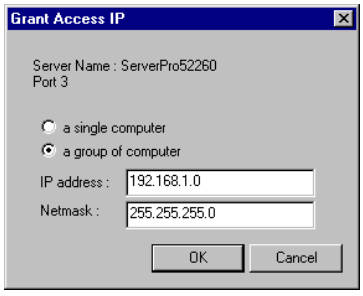
1. Click on the Port you would like to add a host to.



2. Click on **Add IP**.
3. To add access for only one computer, select **a single computer**, and then enter the host's IP address in the appropriate text box.

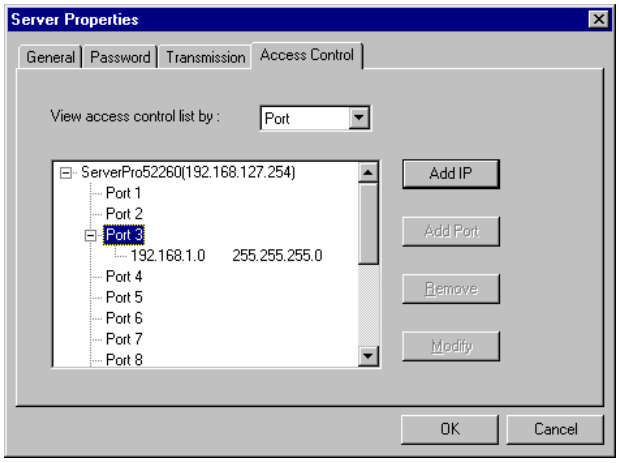
   To add access for a group of computers, select **a group of computers,** and then enter the **IP address** and **netmask**. (E.g., for network class C computers, you might enter 192.168.1.0 for **IP address,** and then 255.255.255.0 for **netmask**.)





4. Click **OK** to finish.

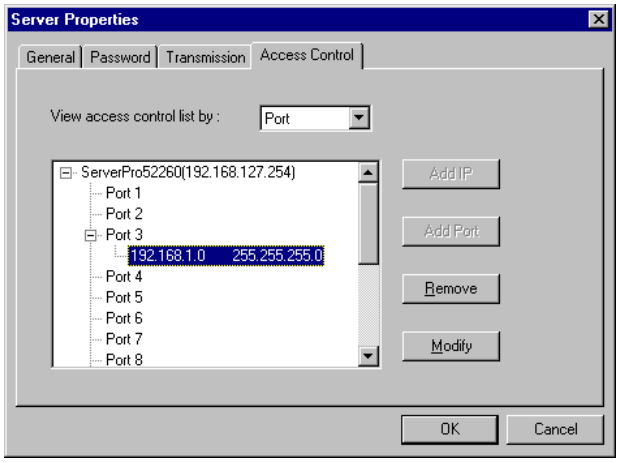
5. When the **Server Properties** window opens up, you can look at the **Access Control** page to verify that the host was added to the port.



6. Click **OK** to finish.

Modifying a Granted Host

1. Click on the port whose host you would like to modify.
2. Click on the IP address you want to change, and then click on **Modify**.

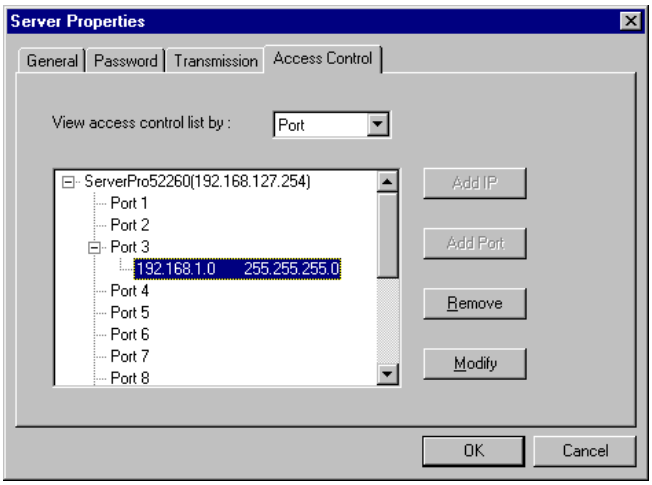


3. Modify the IP address as needed.

Note: The modification will only be valid for this port.

Removing a Granted Host

1. Click on the port whose host you would like to remove.
2. Click on the IP address you want to delete, and then click on **Remove**.



3. Click **OK** to finish.

6

Setting Up Custom

In this chapter we explain how to set up NPort Server Pro for Custom Mode. Custom Mode users can apply NPort Server Pro for multi-port serial applications with remote control or monitoring, and as stand-alone machines connected to serial devices at a remote site.

We cover the following topics:

- Driver and Software Installation
- Using NPort Pro Manager
  - Saving Your Configuration
  - Adding an NPort Server Pro–Add Server Wizard
  - Deleting a Server
  - Modifying COM Name Mappings
    - Change All COM Names Consecutively
    - Change the COM Name of One Port
  - Un-Mapping a Port
  - Upgrading NPort Server Pro Firmware
  - Configuring Server Properties
    - Server Properties–General
    - Server Properties–Password
    - Server Properties–Transmission

- Access Control
  - Configuring Through View by IP
    - Adding Access Permission of One Host
    - Modifying the Host Settings
    - Removing Ports from a Granted Host
    - Removing a Granted Host
  - Configuring Through View by Port
    - Adding a Host IP Address to a Specific Port
    - Modifying a Granted Host
    - Removing a Granted Host
- Adding Routes to NPort Server Pro
  - Adding Routes Through Server Properties
  - Modifying Routes
  - Removing Routes
  - Examples of Internet/Intranet Routing Configurations
    - Configuring Router for Internet Connection
    - Configuring Router for One Internet and One Intranet Connection

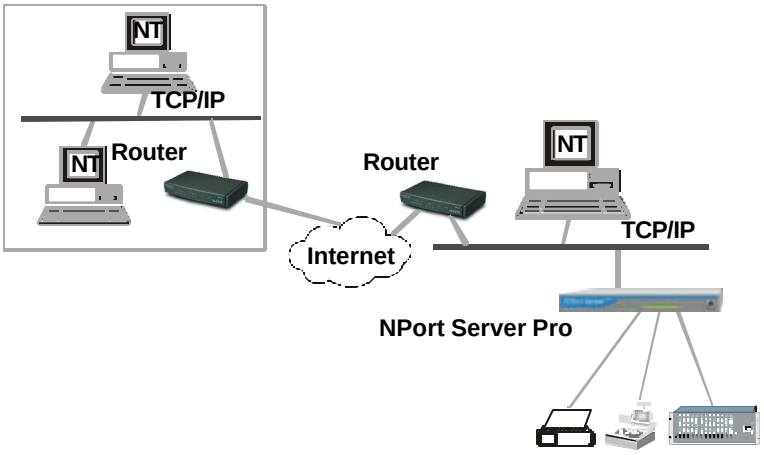


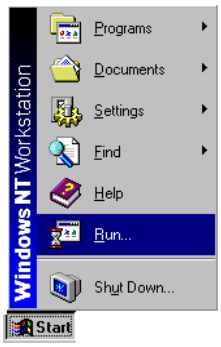
Figure 6-1. A remote control link diagram

Note: If you need to set up Single-Host Mode or Multi-Host Mode, refer to Chapters 4 and 5, respectively, for complete descriptions of these types of application.

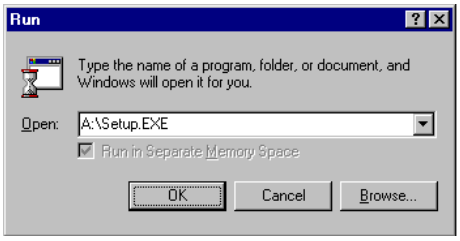
Driver and Software Installation

1. Insert the NPort Server Pro disk into either the floppy disk drive or CD ROM drive, depending on the type of disk that was provided.

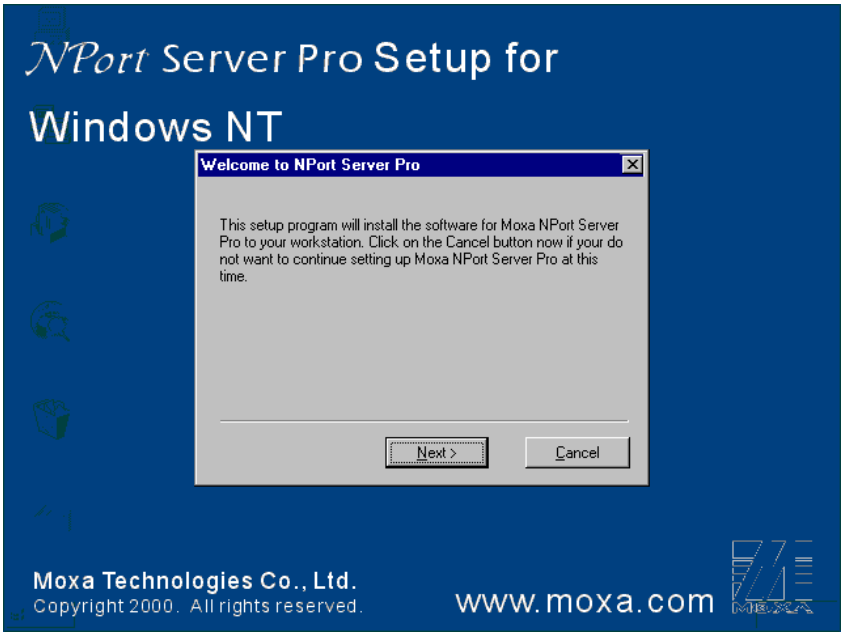
   From the Windows NT/95/98 desktop, click on **Start** and then choose **Run**.



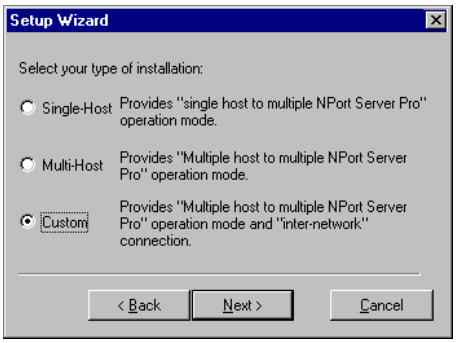
2. Type `A:\setup` in the **Open** input box if using drive A and then click **OK** (replace A with the correct drive letter if you are using a different drive).



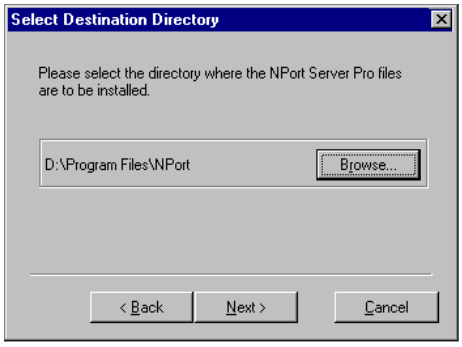
3. The **Welcome to NPort Server Pro** window opens, giving you the option to continue with the installation process. Click on **Next** to continue.



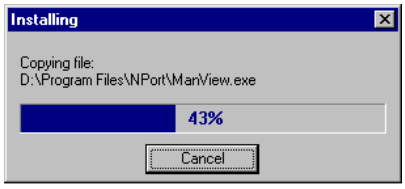
4. When the **Setup Wizard** window opens, choose **Custom**, and then click on **Next** to continue.



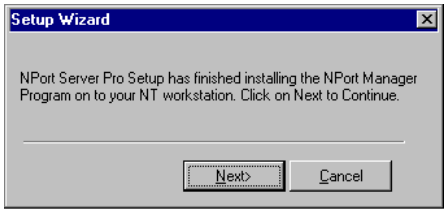
5. The **Select Destination Directory** window gives you the option to change the directory that program files will be copied to. Click on **Next** to copy NPort Server Pro files to the given default directory. To choose a different directory, click on **Browse**, navigate to the desired directory, and then click on **Next**.



6. The **Installing** window shows the progress of the installation process. Click on **Cancel** at any time to terminate the installation.



7. The next window verifies that the installation process has completed. Click on **Next** to continue.



*Note: If you click on **Cancel** you will need to run Add Server Wizard at a later time to install your NPort Server Pro.*

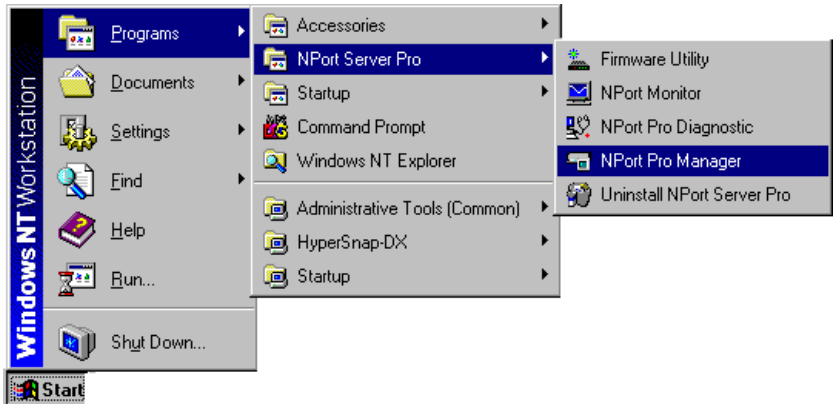
8. Clicking on **Next** in the previous window activates the **Add Server Wizard**.

   Refer to the subsection *Adding an NPort Server Pro—Add Server Wizard* in the next section for instructions on how to add an NPort Server Pro.

Using NPort Pro Manager

When you run the Setup program to install NPort Server Pro software, you are given the option to run the Add Server Wizard. However, you may run NPort Pro Manager at a later time if you decide to add more servers, change server names, remove servers, or change COM names. To start NPort Pro Manager, click on:

Start → Programs → NPort Server Pro → NPort Pro Manager.



This activates the **NPort Pro Manager** main window, shown below, with server names and model numbers displayed in the left info box. When a particular NPort Server Pro is highlighted, the ports associated with that server, the associated COM port names, and other relevant information, are shown in the right info box.

NPort Pro Manager functions can be selected from either the main menu or the toolbar. As shown below, functions related to servers are listed under the **Server** menu, and port functions are under the **Port** menu. Moreover, when you use the right mouse button to click on a port or server, a window with a list of functions available for the selected item opens up. If you forget the function associated with a particular icon, position the mouse pointer over the icon. This will cause a message window containing the name of the function to pop up.

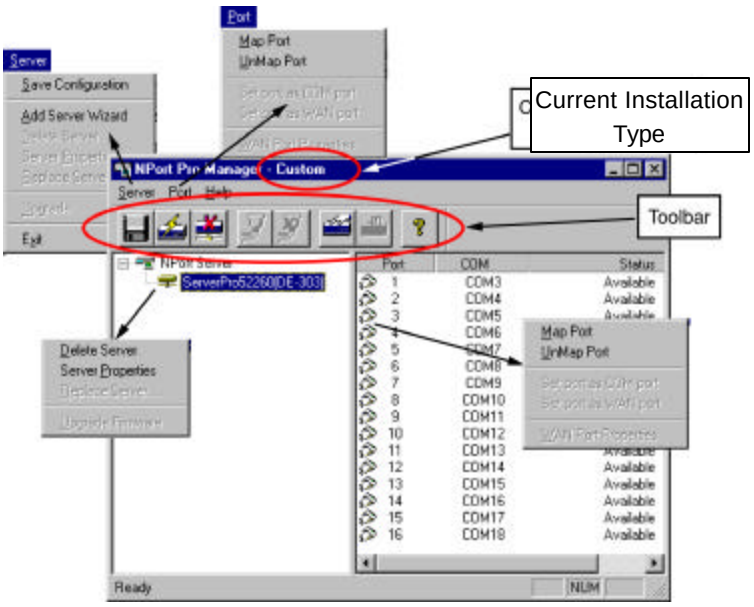


Figure 6-2. NPort Manager and the menus

Saving Your Configuration

Moditications of NPort Server Pro, or changes to port configurations, must be saved in order to be activated. Choose **Save Configuration** from the **Server** menu, or click on the toolbar **Save all Servers** icon to automatically detect any changes and save them in the appropriate places.

Adding an NPort Server Pro—Add Server Wizard

The Add Server Wizard is activated automatically during the driver and software installation procedure. If you need to add another NPort Server Pro to your system at a later time, run NPort Pro Manager, and then choose **Add Server Wizard** from the **menu**, or click on the toolbar **Add Server** button.

1. Select **Yes** and then click on **Next** to continue the installation process.

2. If the NPort Server Pro you wish to add is listed in the **Add Server Wizard** window, use the mouse to highlight the server **Model** and then click on **Next** to continue.

Note: If the server you want to add is not listed in the above window, you will receive the warning window shown below. Check to make sure that the power cord is connected, and the power switch is in the "on" position. Click ***OK*** *to return to the window shown above, and then click on* ***Find****. The new server should now be listed as shown above.*

Note: If you have several servers hooked up to your network, and it's not clear which server is the one you are currently adding, click on ***Locate*** *in the* ***Add Server Wizard*** *window shown in step 2 above. The "Ready" LED on the listed server will start blinking, allowing you to identify it.*

3. If you are the system administrator and know the current password, or if you are setting up a new password, select **Yes, I am the administrator** and then enter the password in the text input box.

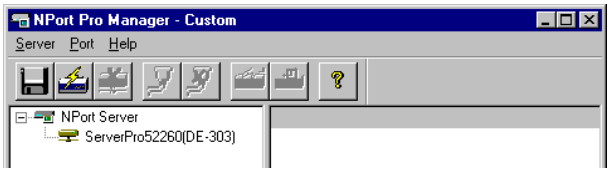
If you select **No, I am a general user**, you will be allowed to install your NPort Server Pro, but you will not be able to change any of the parameter settings Click on **Next** to continue.

4. The next window lists the NPort Server Pro's current IP address. Change the number if needed, and then click on **Next** to continue.

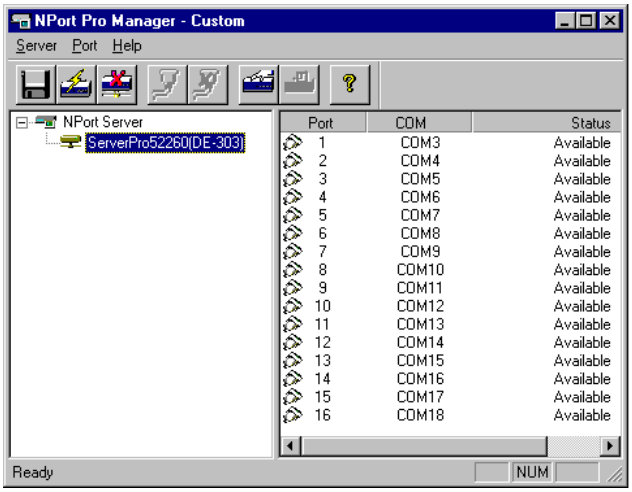
5. Select the COM port name that you would like the first port on the server to map to. This will add all of NPort Server Pro's ports (8 or 16, depending on the server model number) to your NT/95/98 system, using consecutively numbered COM names. Click on **Next** to continue.

6. When the **Complete!** window opens, check the information to make sure that everything is correct, and then click on **Finish** to continue.

7. This evokes the **NPort Pro Manager** program, with the newly installed server listed.



8. Click on the server name to highlight it. Basic information about the server's COM ports will be listed in the right info box.



Note: If you see ports with the status 'Non-authorized', and you are a general user, be sure to ask your server administrator to add access permission so that you can make modifications to the server settings.

Note: The NPort Pro Manager title bar shows the application mode of the newly installed server—Custom in this case.

9. To add another server, choose **Add Server Wizard** from the **Server** menu, or click on the toolbar **Add Server** icon, and then repeat the above steps.
10. Before exiting NPort Pro Manger you should save the new configuration. Choose **Save Configuration** from the **Server** menu, or click on the toolbar **Save all Servers** icon to carry this out.
11. Exit NPort Pro Manager when you finish.

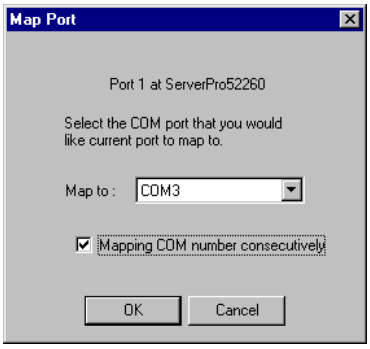
Deleting a Server

If for some reason you need to delete a server from your system, click on the server name to highlight it, and then choose **Delete Server** from the **Server** menu, or click on the toolbar **Delete Server** icon. A warning window will pop up asking if you really want to delete the server. Click OK to delete.

Modifying COM Name Mappings

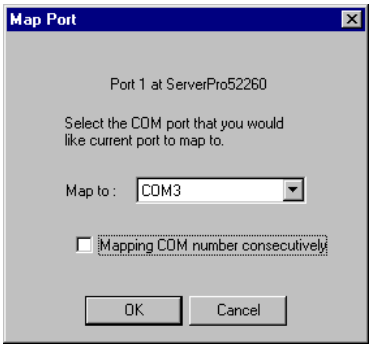
You may use NPort Pro Manager to change previously assigned COM names. Choose **Map Port** from the **Port** menu, or click on the toolbar **Map Port** icon. You will be asked to choose from two options. You may change the name of all servers simultaneously, provided you want the COM port numbers to be consecutive, or, you may change the names one port at a time. The procedure is as follows:

Change All COM Names Consecutively:



1. Click on the server name whose port names you would like to modify.
2. Click on port 1 in the right info box.
3. Choose **Map Port** from the **Port** menu, or click on the toolbar **Map Port** icon to activate the function.
4. Select the COM name that the first port will be mapped to.
5. Check the **Mapping COM number consecutively** box.
6. Click **OK** to activate the change.

Change the COM Name of One Port

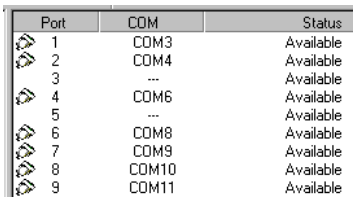


1. Click on the server name whose port name you would like to modify.
2. Click on the port, in the right info box, you would like to modify.
3. Choose **Map Port** from the **Port** menu, or click on the toolbar **Map Port** icon to activate the function.
4. Select the COM name that the port will be mapped to.
5. Click **OK** to activate the change.

Un-Mapping a Port

If you do not need to use a port any more, you may use the **UnMap Port** function to remove it from your Windows NT/95/98 operating system.

1. Click on the port (in the right info box) that you want to remove.
2. Choose **UnMap Port** from the **Port** menu, or click on the toolbar **Unmap Port** icon

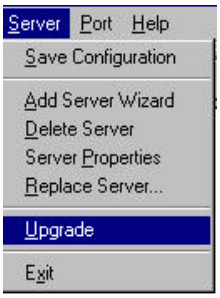


Port	COM	Status
1	COM3	Available
2	COM4	Available
3	---	Available
4	COM6	Available
5	---	Available
6	COM8	Available
7	COM9	Available
8	COM10	Available
9	COM11	Available

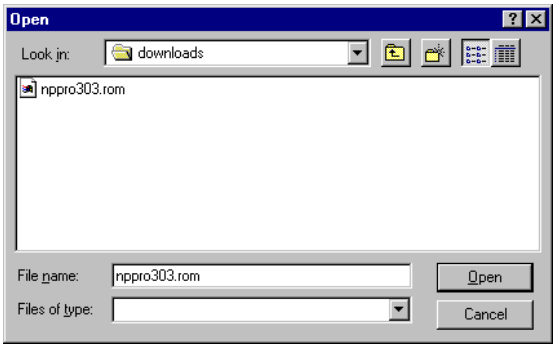
Note: The screen at the right shows the display after un-mapping ports 3 and 5.

Upgrading NPort Server Pro Firmware

Moxa continually upgrades its driver software and server firmware to keep pace with the ever-expanding world of computing. You can use the **Upgrade** function located on NPort Pro Manager's toolbar to carry out the upgrade procedure. Access Moxa's Web site at www.moxa.com to download the required computer file (contact our sales department if you need assistance with this), and then follow these instructions.



1. Stop all port action related to the server you are upgrading.
2. Choose **Upgrade Server** from the **Server** menu, or click on the toolbar **Upgrade** icon.
3. Locate and then select the filename of the firmware that you downloaded

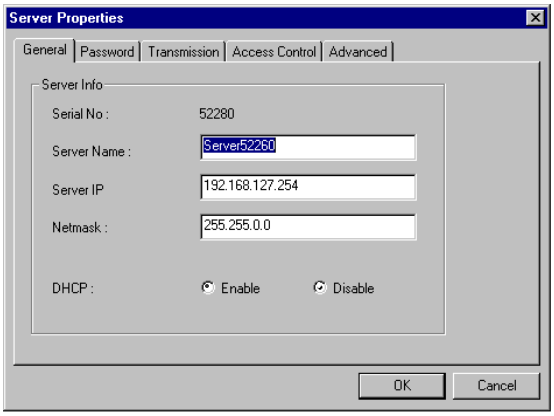


Click on **Open** and then wait until you see an "upgrade completed" message. The server will restart automatically.

Note: When using this procedure, only the selected server's firmware is upgraded. If you know that new NPort Pro Manager software has been released, it is recommended that you uninstall the old NPort Pro Manager program from your NT/95/98 host's hard drive, and then install the new one.

Configuring Server Properties

The **Server Properties** function can be used to change the server's name, password, and transmission parameters. Choose **Server Properties** from the **Server** menu, or click on the toolbar **Server Properties** icon to start the function.



Server Properties—General

You may modify the **Server Name**, **Server IP**, and **Netmask** by using the toolbar Properties function.

1. Select the **General** tab in the **Server Properties** window.
2. Modify the **Server Name**, **Server IP**, and **Netmask**, as needed.
3. Select **Enable** or **Disable**, for **DHCP**, depending on whether or not you are using a DHCP server.

Server Properties—Password

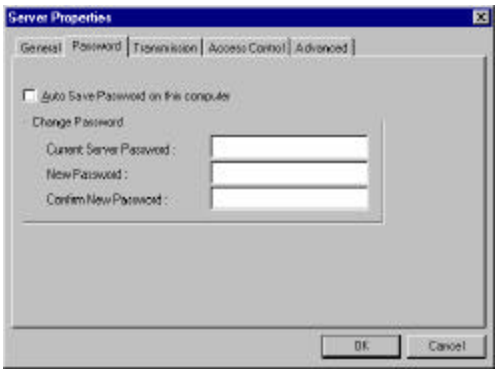
To add more security to your NPort Server Pro, it is highly recommended that you set a password as soon as you complete the installation. If you did not set the password while running Add Server Wizard, or you would like to change the current password, you may use the toolbar **Properties** function to do so.

You may also use this function to "Auto-Save", i.e., to have Windows NT/95/98 remember your password for you. By auto saving the password, you will not be asked to enter the password when modifying server properties *from this computer*.

Note: Keep in mind that other people using your computer will also have ready access to the NPort Pro Manager functions.

Steps for configuring the server's password:

1. Select the **Password** tab in the **Server Properties** window.
2. Enter the current password and new password as indicated.
3. Check the **Auto Save Password on this computer** box if you want Windows NT/95/98 to remember your password.

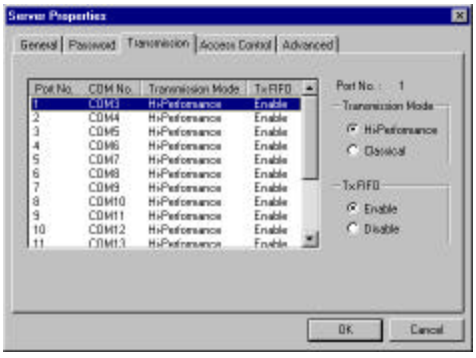


*Note: If you do not check the **Auto Save Password on this computer** box, you will need to enter the correct password each time you want to view Server Properties.*

Server Properties—Transmission

The Transmission page allows the user to set the **Transmission Mode** and **Tx FIFO** options for each of NPort Server Pro's ports.

Transmission Mode



Select **Hi-Performance** to use buffering technology to accelerate data writing. This allows your communication software to reach maximum data throughput when transmitting large amounts of data. The driver will notify the user that the transmission is completed when the output data length is lower than the LOW WATER setting.

Classical Mode lets the port behave like a generic COM port. Transmission of small data packets is more precise and reliable. In this case, the driver will notify the user that the transmission is complete when all data has been transmitted.

Tx FIFO

Set to **Enable** to the get the best performance from the board.

Set to **Disable** to avoid data loss when communicating with plain communication devices using S/W flow control. In this case only one byte will be put into the UART when the FIFO is empty.

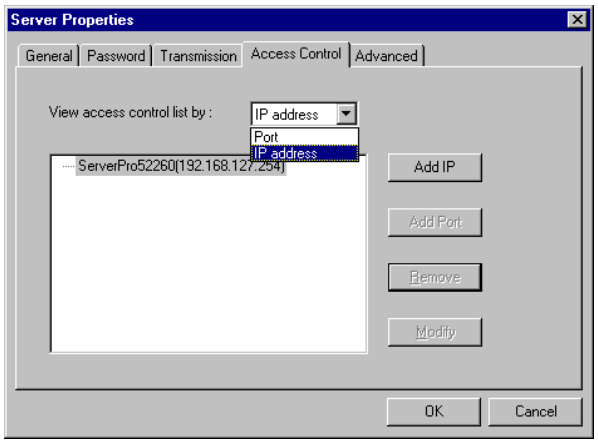
Access Control

It is possible to assign access permission to hosts to allow them access to the ports on a shared NPort Server Pro. For security reasons, the access control list can only be defined by the server's administrator. If you have not been granted access to a port, you will see a screen with the message 'Non-authorized' for that port.

After running Add Server Wizard and typing in your password showing that you are the administrator, you are granted access to the server you have added. You may go to server properties to check that. However, if you did not enter the correct password, you can still map the ports to your NT, but you will not have access to the ports. You will need to ask your administrator to add your IP address to the access control list of the server to grant you access. If you are not sure of the IP address of the host you want to add, run 'ipconfig' from the host's NT MS-DOS prompt.

Note: If you empty the access control list, then by default, only the connecting host's IP address is granted.

1. Select the **Access Control** tab.
2. The screen will show a list of **ports**, and two methods of adding permission.



Note: When adding access permission, you may either view the access control list by ***Port****, or by* ***IP address****. These two approaches also apply to the procedure for adding new hosts. The next two sections describe how to add hosts using both approaches.*

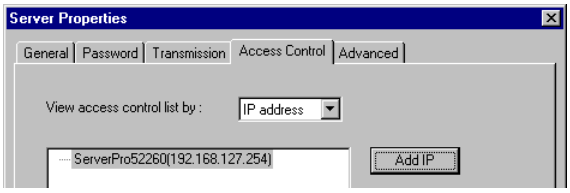
Configuring Through View by IP

Using the view access control list by IP address option displays the access control list by giving the server IP addresses. It is clear to see which IP addresses have been granted access to which ports, and which IP addresses are allowed onto the server.

Adding Access Permission of One Host

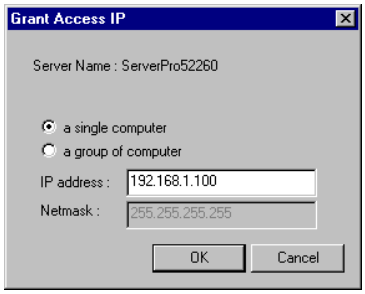
If a particular host is permitted access to all ports on a specific server, we recommend that you configure using the view access control list by IP address option.

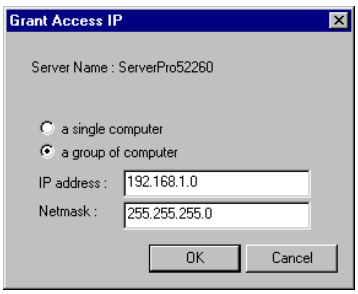
1. Click on the **Access Control** tab, and then select the **IP address** option next to **View access control list by:**
2. Click on the Server you would like to modify.



3. Click on **Add IP** to open the **Grant Access IP** window.
4. To add access for only one computer, select **a single computer**, and then enter the host' s IP address in the appropriate text box.

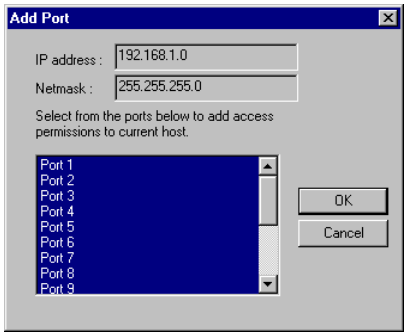
   To add access for a group of computers, select a **group of computer**, and then enter the IP address and netmask. (E.g., for network class C computers, you might enter 192.168.1.0 for IP address and then 255.255.255.0 for netmask.)



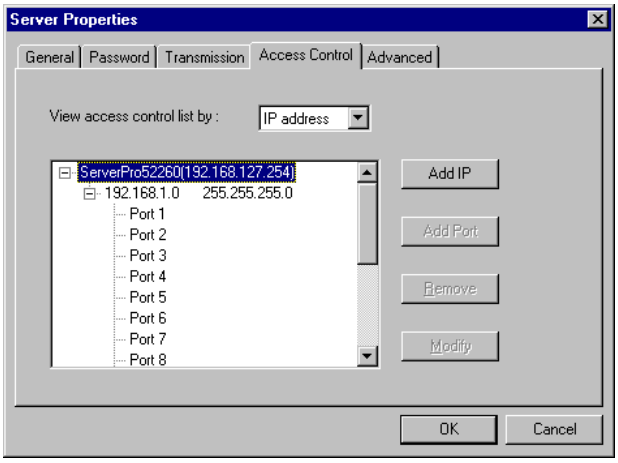


5. Click **OK**.
6. When the **Add Port** window opens up, highlight the port(s) that the host will be granted access to.

Note: You can select blocks of ports by holding down the left mouse button while scolling through the list of ports.



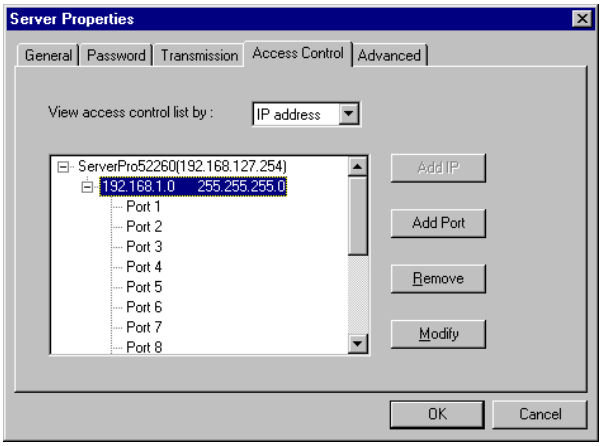
7. Click **OK** to finish, and return to the **Access Control** page.



8. The ports granted access to will be listed under the host's IP address.
   Click **OK** to finish, and the choose **Save Configuration** to activate the settings.

Modifying the Host Settings

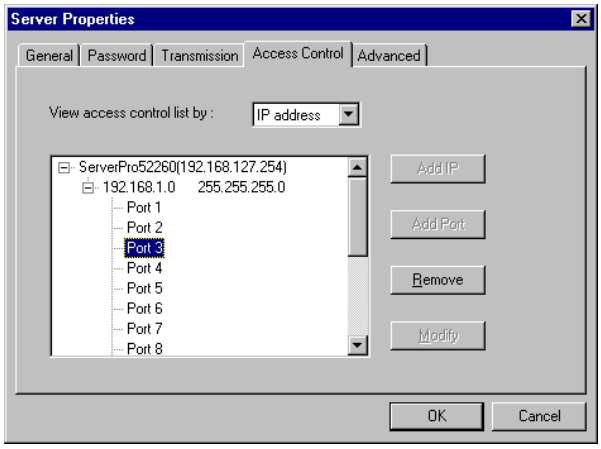
1. Select the IP address of the host you would like to modify.
2. Click on the **Modify** button.



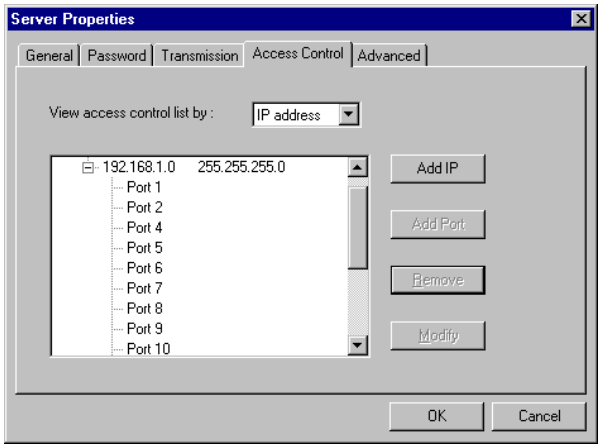
3. Modify the configuration as desired.
4. Click **OK** to exit.

Removing Ports from a Granted Host

1. Select the IP address of the host you would like to modify.
2. Click on the Port you would like to remove from the list.



3. Click on **Remove**, and then click **OK** to exit. As you can see from the window shown below, Port 3 has been removed from the host's access control.

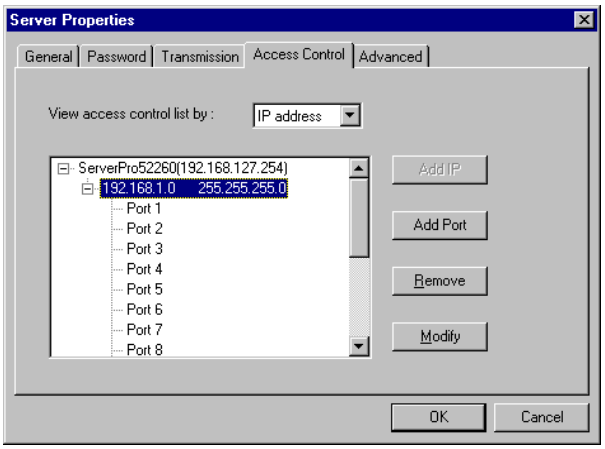


Removing a Granted Host

If you do not allow a particular host to use any of the ports, simply remove the host from the list.

Note: If you empty the access control list, then by default, only the connecting host's IP address is granted.

1. Click on the host's IP address to highlight it.



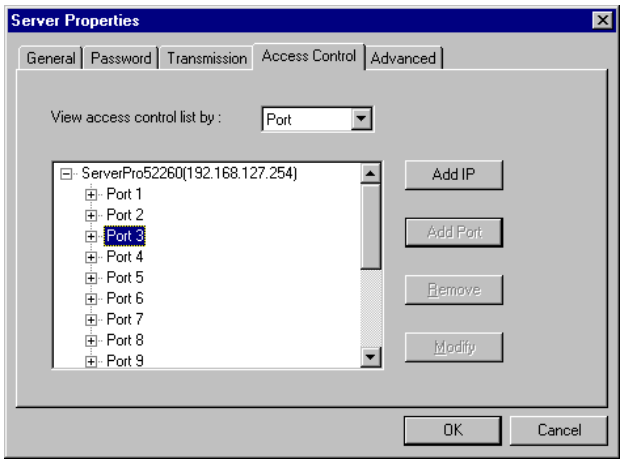
2. Click on the **Remove** button, and then click **OK** to exit.

Configuring Through View by Port

By choosing the option View access control list by Port, it is easy to see the access permission granted for each port. This viewing option is particularly useful for adding hosts to specific ports.

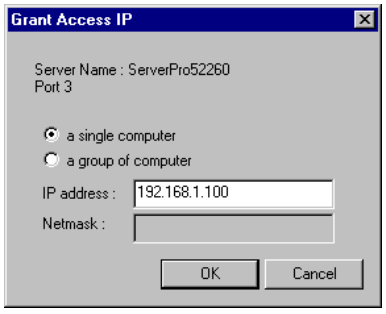
Adding a Host IP Address to a Specific Port

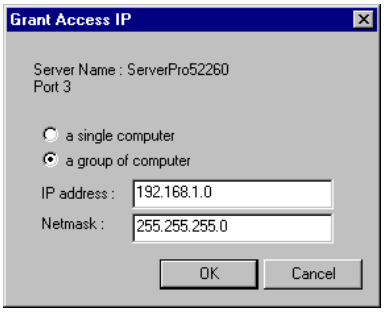
1. Click on the Port you would like to add a host to.



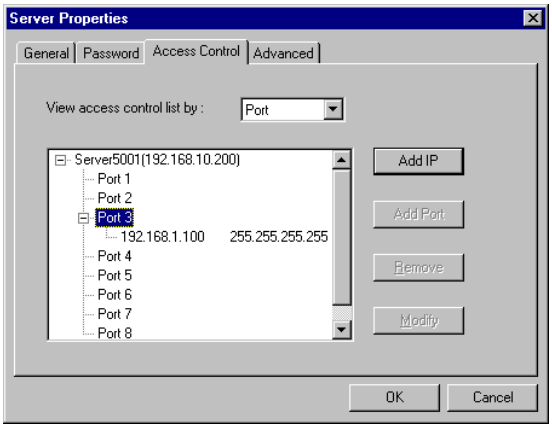
2. Click on **Add IP**.
3. To add access for only one computer, select **a single computer**, and then enter the host's IP address in the appropriate text box.

   To add access for a group of computers, select **a group of computer,** and then enter the **IP address** and **netmask**. (E.g., for network class C computers, you might enter 192.168.1.0 for **IP address,** and then 255.255.255.0 for **netmask**.)





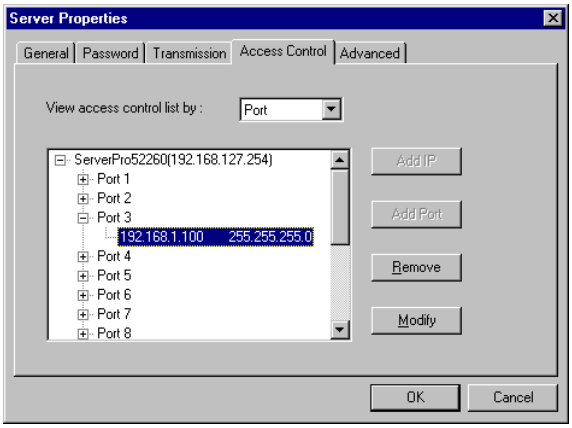
4. Click **OK** to finish.
5. When the **Server Properties** window opens up, you can look at the **Access Control** page to verify that the host was added to the port.



6. Click **OK** to finish.

Modifying a Granted Host

1. Click on the port whose host you would like to modify.
2. Click on the IP address you want to change, and then click on **Modify**.

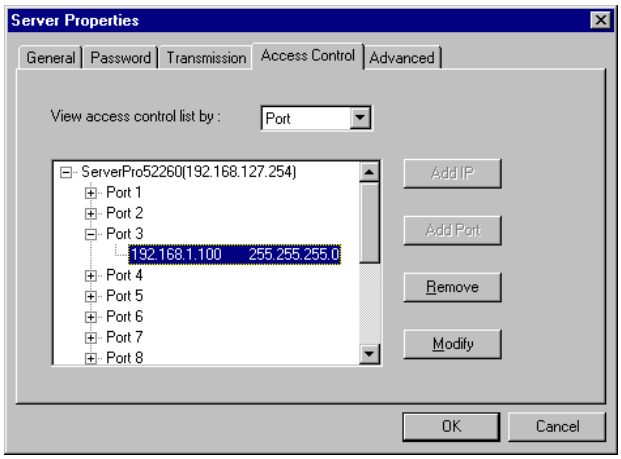


3. Modify the IP address as needed.

Note: The modification will only be valid for this port.

Removing a Granted Host

1. Click on the port whose host you would like to modify.
2. Click on the IP address you want to delete, and then click on **Remove**.



3. Click **OK** to finish.

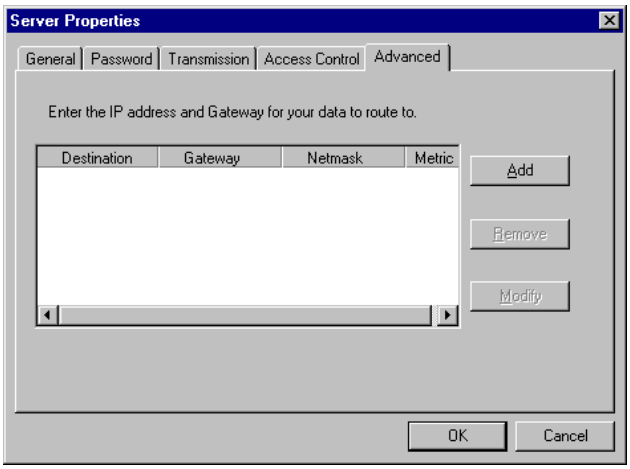
Adding Routes to NPort Server Pro

To enable access from an Internet/Intranet host, first make sure your NPort Server Pro can be connected through the Internet.

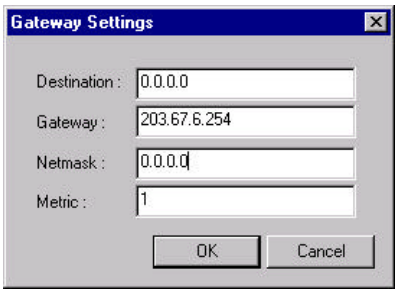
You may add routes into NPort Server Pro if your Windows NT/95/98 host is at a remote site. This section lists the steps you should follow to add new routes, including examples you can refer to.

Adding Routes Through Server Properties

1. Select the **Advanced** tab in the **Server Properties** window, and then click on **Add**.



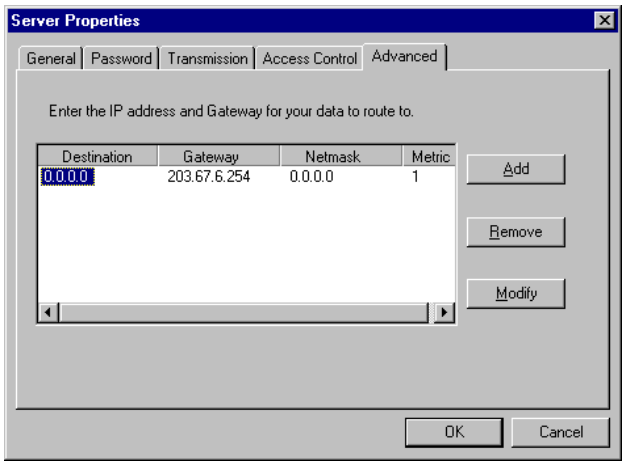
2. Enter the **Destination**, **Gateway**, **Netmask** and **Metric** as needed.



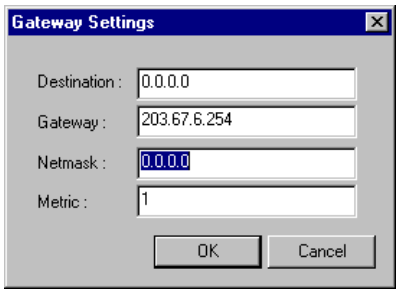
3. Click **OK** to exit Gateway Settings.

Modifying Routes

1. Select the **Advanced** tab in the **Server Properties** window.
2. Click on the route setting you would like to modify to highlight it.



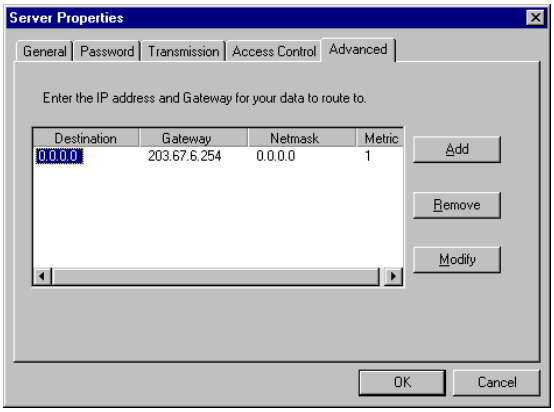
3. Click on **Modify** and then make any necessary modifications.



4. Click **OK** to exit Gateway Settings.

Removing Routes

1. Select the **Advanced** tab in the **Server Properties** window.
2. Click on the route setting you would like to remove to highlight it.



3. Click on **Remove**.

Examples of Internet/Intranet Routing Configurations

Configuring Router for Internet Connection

Some routers have the capability to learn routes automatically. To ensure that your Internet connection will work properly, you can consider adding the routes without RIP protocol. Figure 5-1 shows an example of connecting to the Internet through a Router.

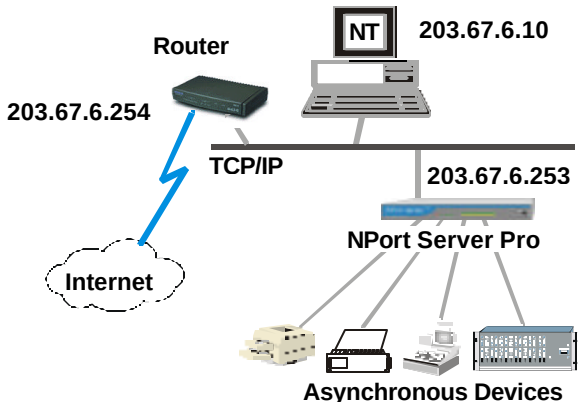
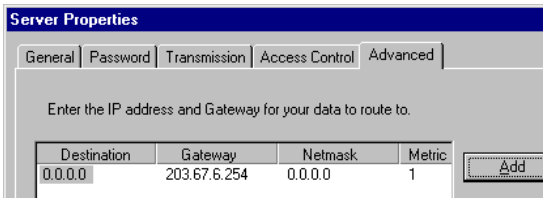


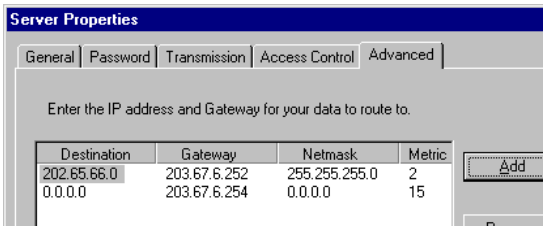
Figure 6-3. Scheme for LAN with NPort Server Pro connecting to the Internet

For the case shown above, you should set up the **Destination**, **Gateway**, **Netmask**, and Metric as shown below:



Configuring Router for One Internet and One Intranet Connection

In the more complex case in which NPort Server Pro connects to both the Internet and Intranet, you will need to add two routes to the server.



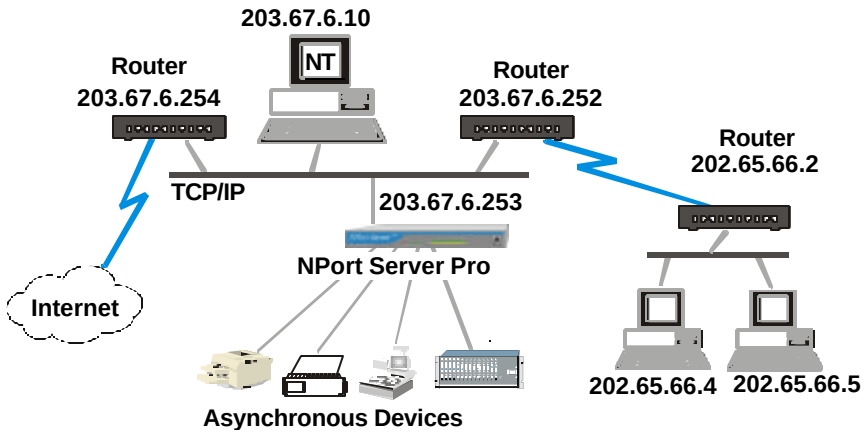
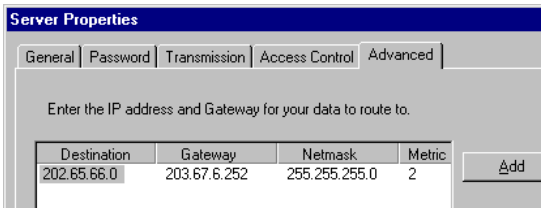


Figure 6-4. Scheme for NPort Server Pro connecting to the Intranet and Internet.

If you are under the same environment as shown above but your NPort Server Pro only needs to be accessed by the private network as opposed to the global Internet, then just add the first route to the server. In this case the routing setup is as follows:



7

Utility Programs

In this chapter we cover the following topics:

- Firmware Utility
  - Toolbar Functions
    - NPort Server General Info
    - Search All NPort Servers
    - Connect to an NPort Server Pro
    - Upgrade Firmware
- NPort Server Monitor
  - Toolbar Functions
    - Configuring NPort Monitor
    - Save Configuration
    - Load Configuration
    - Monitor
    - Port Status
    - Refresh Monitor
    - Reset Port
    - Reset Server
    - Exiting NPort Server Monitor

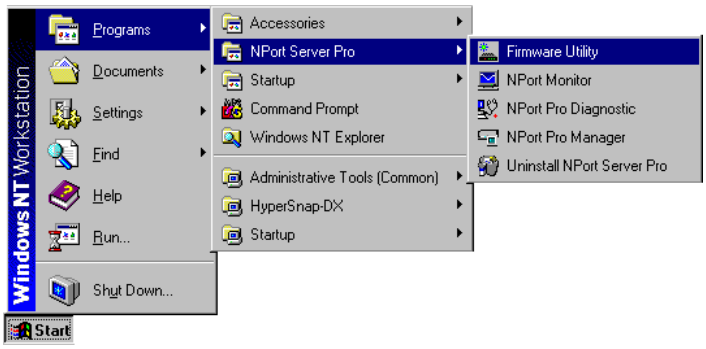
- NPort Pro Diagnostic
  - Toolbar Functions
    - Configuration
    - Viewer Status and Diagnose
    - Test Initiation
    - Printing
    - Saving the Configuration
    - Exiting NPort Pro Diagnostic
- Uninstalling the Software

Firmware Utility

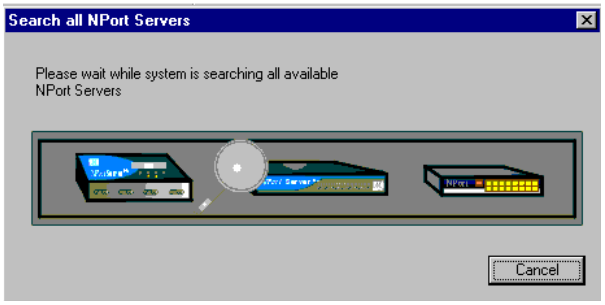
Moxa continually upgrades its driver software and server firmware to keep pace with the ever-expanding world of computing. You can use the **Firmware Utility** to carry out the upgrade procedure. Access Moxa's Web site at www.moxa. com to download the required computer file (contact our sales department if you need assistance with this), and then follow these instructions.

1. To start **Firmware Utility**, click on

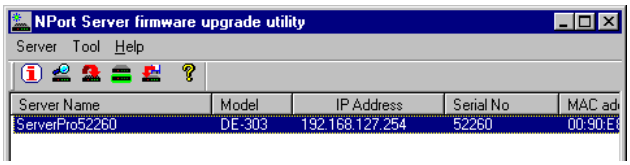
   Start → Programs → NPort Server Pro → Firmware Utility.



2. The **Search all NPort Servers** window opens, indicating that the program is searching the network for all active NPort Server Pros.



3. After completing the search, the **NPort Server firmware upgrade utility** window opens, listing all NPort Server Pros that were found.



Toolbar Functions

In this section we describe how to use the Firmware Utility toolbar functions.

NPort Server General Info

The **General Info** function can be used to display basic information about a specific NPort Server Pro. To apply the function, do the following:

1. Click on the server you would like to obtain information about to highlight it.
2. Choose **General Info**. from the **Server** menu, or click on the toolbar **General Info**. icon.
3. If the server in question is password protected, enter the password in the **Enter Server Password** text input box.

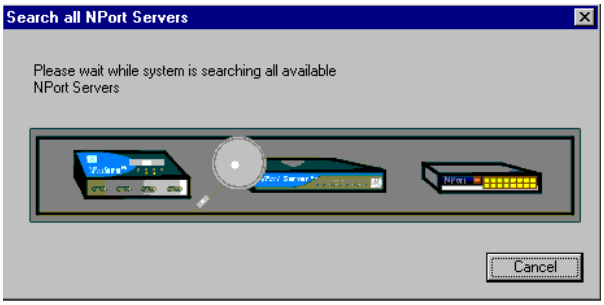
4. The **NPort Server General Info** window opens, displaying the **Server Name**, **IP address, Model Number, Serial Number, MAC Address,** and **Firmware Version**. Attributes that can be modified are displayed in a text input box.

5. Make modifications as needed, and then click OK to close the window.

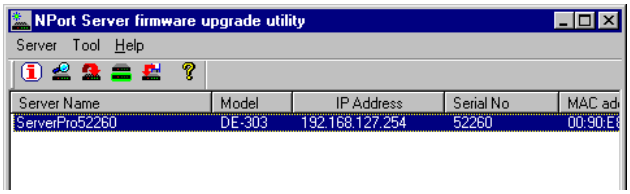
Search All NPort Servers

The **Search all NPort Servers** function can be used to search the network for all active NPort Server Pros.

1. Choose **Search all servers** from the **Server** menu, or click on the toolbar **Search all NPort Servers** icon. A search will be initiated, during which time the following window will be visible.



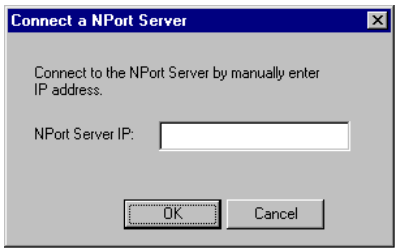
2. Click on **Cancel** if during the search you decide that it's no longer necessary to continue. Otherwise, when the search is complete, you will see the **NPort Server firmware upgrade utility** window. The servers located by the search will be listed in the info box.



Connect to an NPort Server Pro

The **Connect an NPort Server** function can be used to manually connect to a specific NPort Server Pro.

1. Choose **Connect** from the **Server** menu, or click on the toolbar **Connect an NPort Server** icon.
2. The **Connect an NPort Server** window opens up. Enter the IP address of the server you would like to connect to in the **NPort Server IP** text input box.

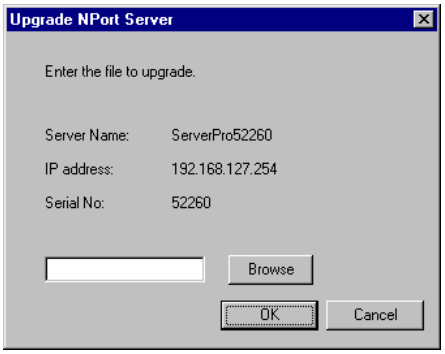


3. Click **OK**.

Upgrade Firmware

The **Upgrade NPort Server** function can be used to upgrade the server firmware.

1. Access Moxa's Web site at www.moxa.com to download the required computer file (contact our sales department if you need assistance with this).
2. Click on the server whose firmware you would like to upgrade to highlight it.
3. Choose **Upgrade** from the **Tool** menu, or click on the toolbar **Upgrade firmware** icon.
4. The **Upgrade NPort Server** window opens. Either type the upgrade file name in the text input box, or use the **Browse** button to navigate to the folder containing the software, click on the file name to transfer the name to the text input box, and then click **OK** to start upgrading.

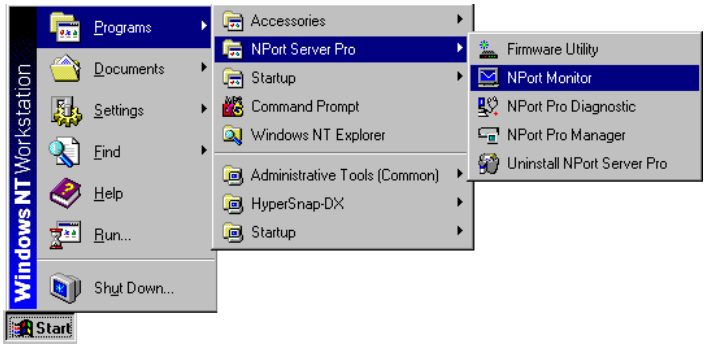


NPort Server Monitor

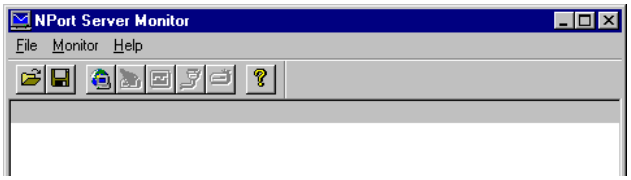
The first time you run NPort Monitor you will need to set up the configuration by selecting target servers, target ports, and monitoring items. You will be able to save the configuration for the next time you use it, or go back to NPort Server Monitor to check the monitoring information. Check the Help menu if you have trouble using this program.

1. To start NPort Server Monitor, click on

   Start → Programs → NPort Server Pro → NPort Monitor.



2. The **NPort Server Monitor** window opens.



Note: You will need to configure your server before using any of the NPort Server Monitor toolbar functions. Refer to the next section for instructions on how to configure.

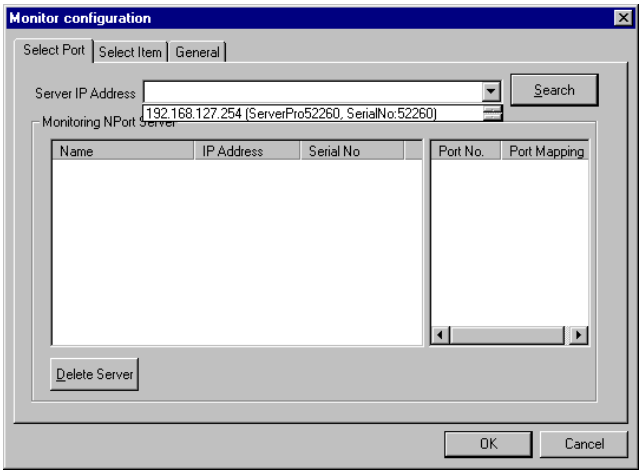
Toolbar Functions

In this section we describe how to use the NPort Monitor toolbar functions.

Configuring NPort Monitor

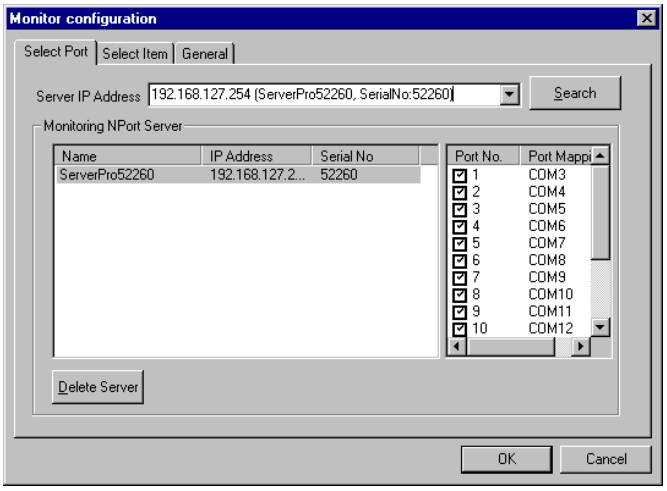
You will need to run the **Configure** function before using any of the other functions provided by NPort Server Monitor.

1. Choose **Configure** from the **Monitor** menu, or click on the toolbar **Configur**e icon to open the **Monitor configuration** window.



*Note: There are three tabs, **Select Port**, **Select Item**, and **General**, located at the top of the window. The **Select Port** page will be opened by default, and the program will find all NPort Server Pros currently connected to the network.*

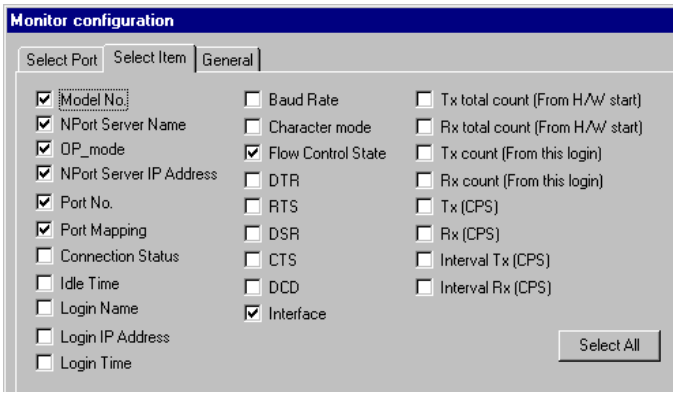
2. Select the server that you want to monitor from the **Server IP Address** pull down menu. The server information will appear in the **Monitoring NPort Server** info box.



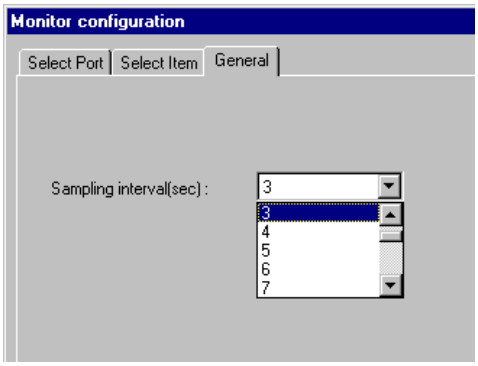
3. The **Port No**. check box, for ports needing to be monitored, should be checked as shown above. For those ports that no longer need monitoring, click inside of the checked box to remove the check mark.

4. If you need to delete some servers from the list, highlight the servers to be deleted, and then click on the **Delete Server** button in the lower left hand corner of the Monitor configuration window.

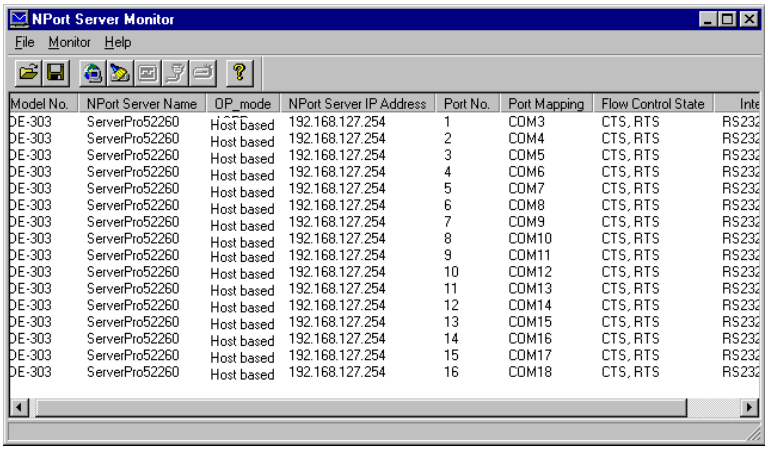
5. Click on the **Select Item** tab to open the list of options shown below. This function is provided so that you can select monitoring items according to your needs. Items selected will be displayed in the NPort Server Monitor window. Some operations can be activated simultaneously. Check or uncheck the boxes as needed.



6. Click on the **General** tab to set up the **Sampling interval**. This is the time interval the program waits before updating NPort Server Pro's current data. Select a number from the pull-down list, and then click **OK**.



7. The servers and ports that were selected will be listed in the info box upon returning to the **NPort Server Monitor** window. General information such as **Model No.**, **NPort Server Pro Name**, **OP_mode**, **NPort Server Pro IP Address**, and **Port No**. will also be displayed.



Save Configuration

This function is provided so that you can save new or updated configurations for future use after making modifications to the monitoring program.

To save a configuration, do the following:

1. Choose **Save Configuration** from the **File** menu, or click on the toolbar **Save Configuration** icon.
2. Navigate to the directory where you would like to store the file.
3. Type the desired file name in the **File Name** text input box, and then click on **Save**.

Note: The configuration file will be saved in `.mnt` *format.*

Load Configuration

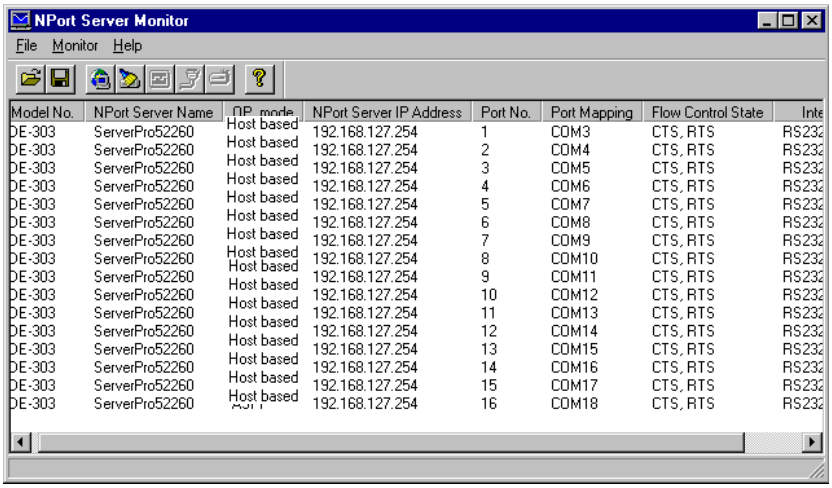
This function is provided so that you can load a configuration file that was previously saved. When initating NPort Server Monitor, you will be give the option to load a previously save file.

To load a saved configuration file, do the following (refer to the figure in the previous subsection):

1. Choose **Load Configuration** from the **File** menu, or click on the toolbar **Load Configuration** icon.
2. Navigate to the directory that contains the configuration file you would like to load (recall that the file extension is `.mnt`).
3. Click on the file name, or type the name into the **File name** text input box
4. Click on **Open** to load the selected configuration file.

Monitor

Once a configuration has been set up, or a configuration file has been loaded, NPort Server Monitor will automatically start monitoring servers and ports. Refer to the figure below for an example of the type of monitoring information that will be displayed. (Check the Help menu to find additional information about using this program.)

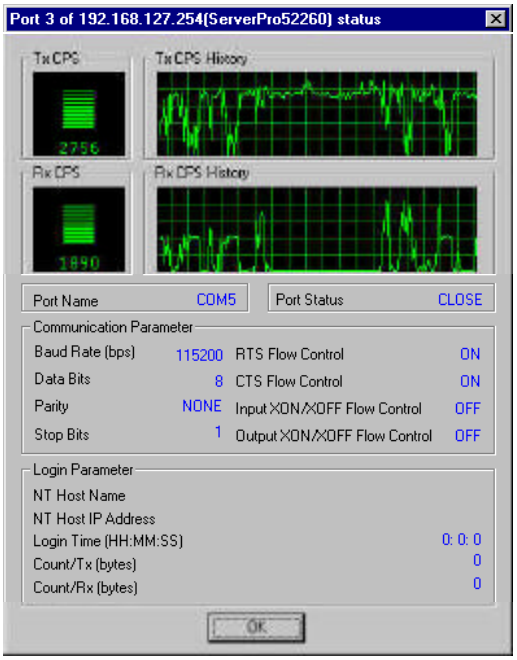


NPort Server Monitor will use different colors to indicate the status of the ports.

- Black means that the port is currently hooked up to your LAN and is active.
- Red means that the port is currently not accessible. It could either be inactive, removed from the LAN, or have a routing error.
- Pink means that two or more NPort Server Pros have been assigned the same IP address. You must use NPort Pro Manager to rectify the situation.

Port Status

This function is used to display a status graph for each port being monitored. It also provides additional information such as TX/RX CPS history.



1. Click on the port item you wish to check to highlight it.
2. Choose **Port Status** from the **Monitor** menu, or click on the toolbar **Port Status** icon.
3. Click **OK** to return to the **NPort Server Monitor** window.

Refresh Monitor

This function is provided to allow you to manually update or refresh port information.

1. Click on the port you would like to refresh to highlight it.
2. Click on **Monitor** and choose **Refresh Monitor**, or click on the toolbar **Refresh Monitor** icon to update port information manually.

Reset Port

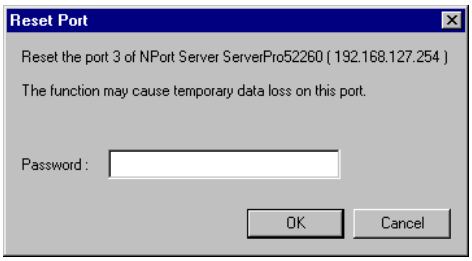
This function is provided to allow you to reset the port whenever the NT/95/98 server was not shut down properly, or the network was disconnected. Normally, NPort Server Pro will be launched automatically five minutes after the NT/95/98 server is reconnected. This function allows you to restart the port manually if necessary. While resetting the port, the port transmission process will be halted, and all temporary data will be lost.

Note: Do not use Port Reset while transmitting IMPORTANT data.

1. Click on the port that you are going to reset to highlight it.
2. Choose **Reset Port** from the **Monitor** menu, or click on the toolbar **Reset Port** icon to reset the port.

*Note: If you have previously set up the security password using NPort Pro Manager, a **Reset Port** dialog box will open requesting a password before resetting the port. If you did not set up the security password, the following dialog box will not be displayed.*

3. Enter the correct password and then click **OK**.



Reset Server

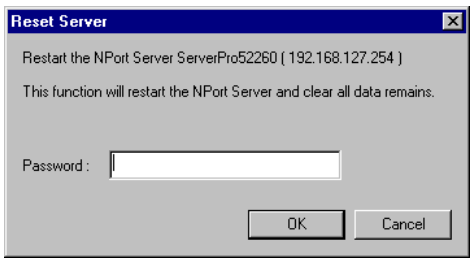
This function is provided to allow you to reset NPort Server Pro whenever the NT/95/98 server was not shut down properly or the network was disconnected. Normally, NPort Server Pro will automatically launch five minutes after the NT/95/98 server is reconnected. This function allows you to restart the server manually if necessary. While resetting the server, the server transmission process will be halted and all remaining data will be cleared.

Note: Do not use Reset Server while transmitting IMPORTANT information.

1. Click on the server that you are going to reset to highlight it.
2. Choose **Reset Server** from the **Monitor** menu, or click on the toolbar **Reset Server** icon to reset the server.

*Note: If you have previously set up a security password using NPort Pro Manager, a **Reset Server** window will open requesting a password before resetting the port. If you did not set up the security password, the following dialog box will not be displayed.*

3. Enter the correct password, and then click **OK**.



Exiting NPort Server Monitor

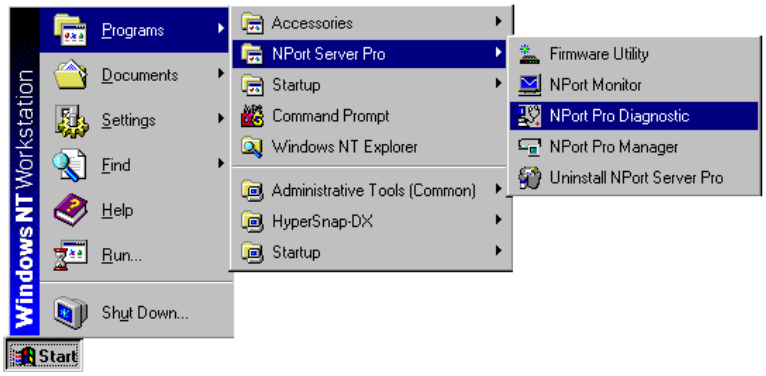
When you have finished using NPort Server Monitor, choose **Exit** from the **File** menu, or click on the close window box in the upper right hand corner of the NPort Server Monitor window.

NPort Pro Diagnostic

NPort Pro Diagnostic is used to test the operation of NPort Server Pro. In this section we explain how to configure and use Nport Pro Diagnostic.

To start NPort Server Diagnostic, click on:

1. **Start → Programs → NPort Server Pro → NPort Pro Diagnostic**.



2. The **NPort Server Diagnostics** window will open, from which you can navigate to the different functions provided by this utility.

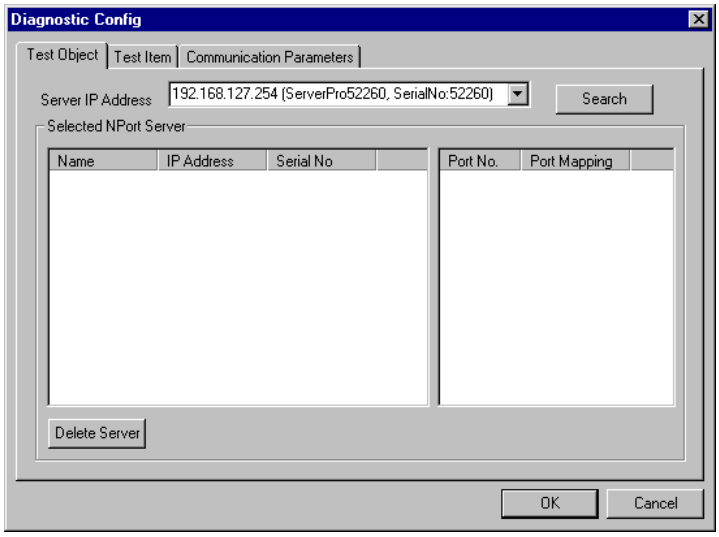
Toolbar Functions

In this section we describe how to use the NPort Pro Diagnostic toolbar functions.

Configuration

The first time you run NPort Server Diagnostics you will need to choose configuration settings by selecting target servers, ports, and diagnostics items.

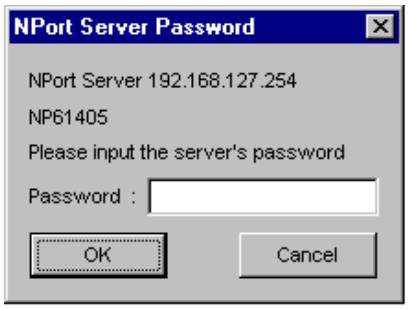
1. To start the configuration procedure, either choose **Config** from the **Diagnose** menu, or click on the toolbar **Config** icon.
2. The **Diagnostic Config** window will open, displaying the tabs **Test Object**, **Test Item** and **Communication Parameters**. We start with the **Test Item** tab, which is chosen by default when the window opens.



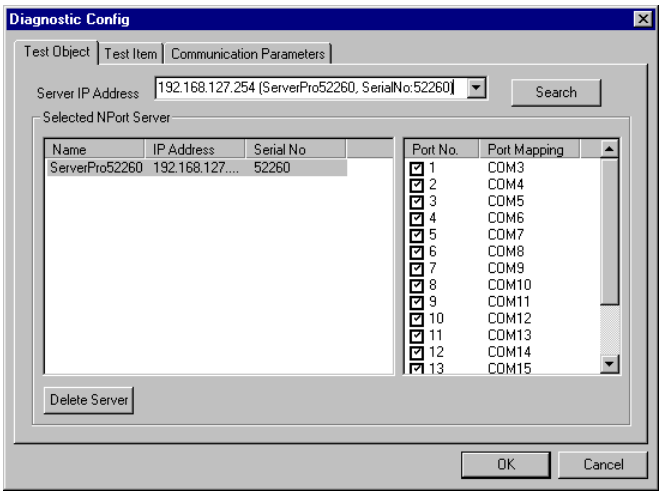
3. When the **Diagnostic Config** window first opens, the **Selected NPort Server** info box under the **Test Object** tab is empty. Click on the text box' s pull down button and choose the desired server, and then press **Enter** to select.

   If the server you' re looking for is not on the list, click on Search to let the program search the network for all connected NPort Server Pros, and then choose the desired server.

4. If the NPort Server Pro you chose is password protected, the following window will open. Type in the correct password and then click **OK**.



5. The server information will now appear in the **Selected NPort Server** information window.



*Note: Click the **Search** button before selecting a server from the pull down menu if you add more NPort Server Pros after the Diagnostics utility is initiated.*

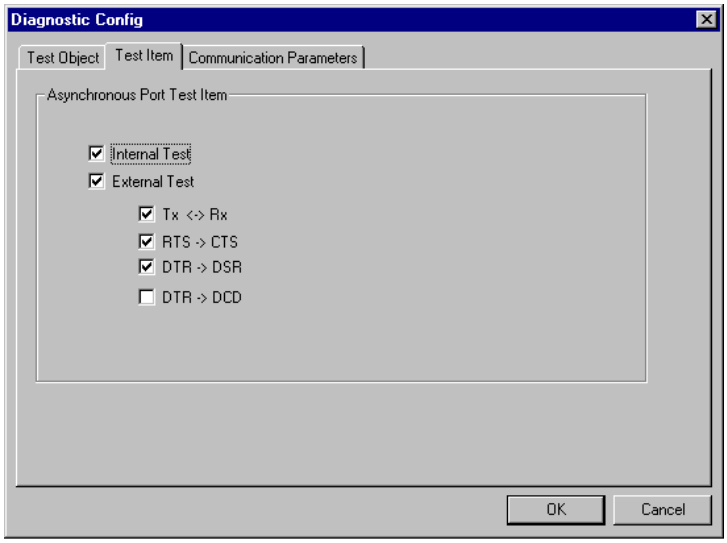
6. The check box for all ports needing to be tested should be checked (refer to the figure in step 5). For those ports that no longer need to be tested, click inside the checked box to remove the check mark.
7. If you do not need to change any **Test Items** or **Communication Parameters**, click **OK** to return to the **NPort Server Diagnostics** window. Otherwise continue the configuration process described in the next sub sections.

Test Item Selection

1. Click the **Test Item tab** in the **Diagnostic Config** window.
2. The tests that you want to run should be checked. Add or remove check marks as necessary by clicking inside the appropriate check box.

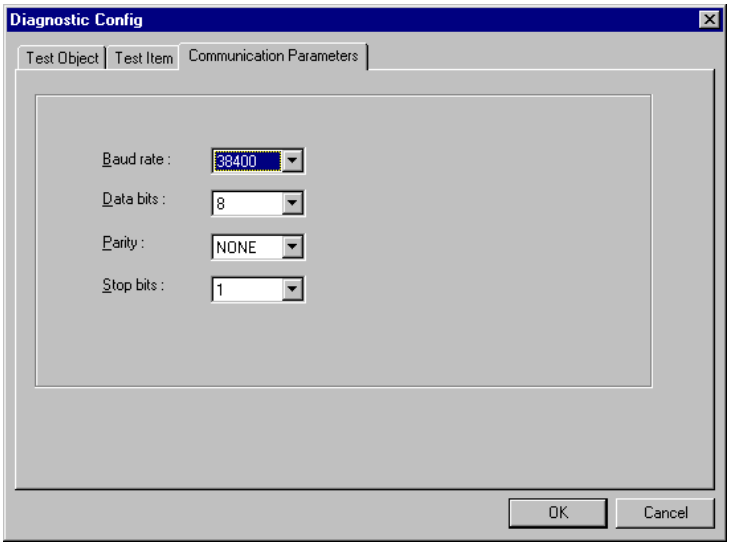
   - **Internal Test**: If this test item is selected an internal test will be done on the RS-232 serial port, and the result (successful or failed) will be displayed when the test is completed.
   - **External Test**: If this test item is selected an external test will be done to check that the connection signals between NPort Server Pro and other points on the line are OK.

- The items described below which are check marked will be tested.
- **Tx ↔ Rx**: Displays test result of transmitting and receiving data between two ports.
- **RTS → CTS**: Displays test result of the RTS and CTS signals between two ports.
- **DTR → DSR**: Displays test result of the DTR and DSR signal between two ports.
- **DTR → DCD**: Displays test result of the DTR and DCD signal between two ports.



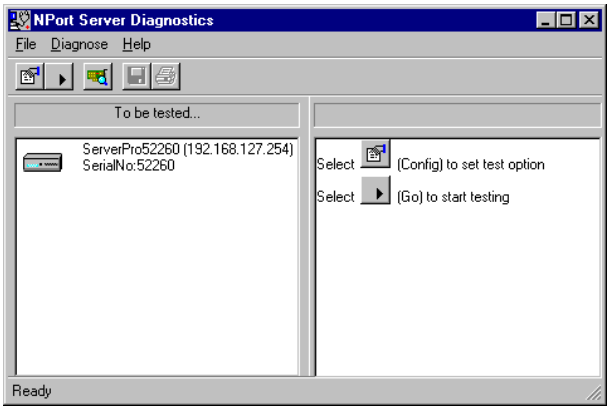
Communication Parameters Selection

1. Click on the **Communication Parameters** tab to set up communication parameters.
2. Set **Baud rate**, **Data bits**, **Parity**, and **Stop bits**, to the appropriate values.



Exiting Config

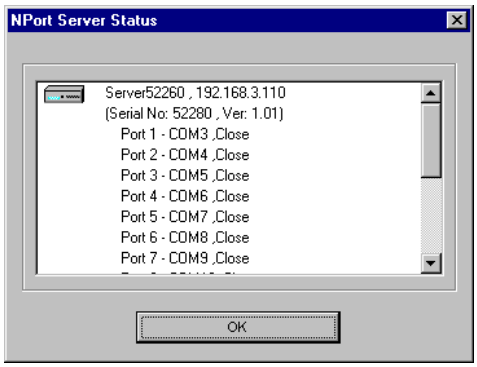
Click **OK** in the bottom right corner of the **Diagnostic Config** window to return to the **NPort Server Diagnostics** window.



Viewer Status and Diagnose

Before starting the testing procedure, you can use the **Server Status** function to check the status of your NPort Server Pro.

1. Choose **Server Status** from the **Diagnose** menu, or click on the toolbar **Server Status** icon to open the **NPort Server Status** window. The server information displayed is **server name**, **IP address**, **model number**, **serial number**, and **firmware version**. The port information displayed is the COM name (COM3 in the example below), serial port interface, and current port status.

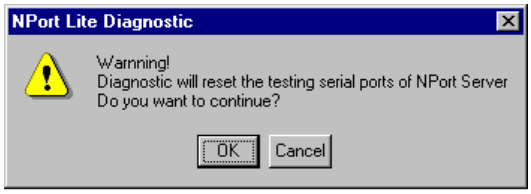


2. Click **OK** to return to the **NPort Server Diagnostics** window.

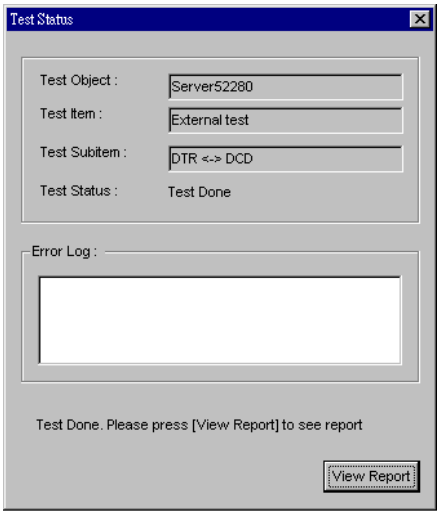
Test Initiation

You can begin testing once all modifications have been made to the test procedure.

1. To begin testing, either choose **Go** from the **Diagnose** menu, or click on the toolbar **Go** icon.
2. A window containing a warning message opens up. Click **OK** to proceed with the testing.

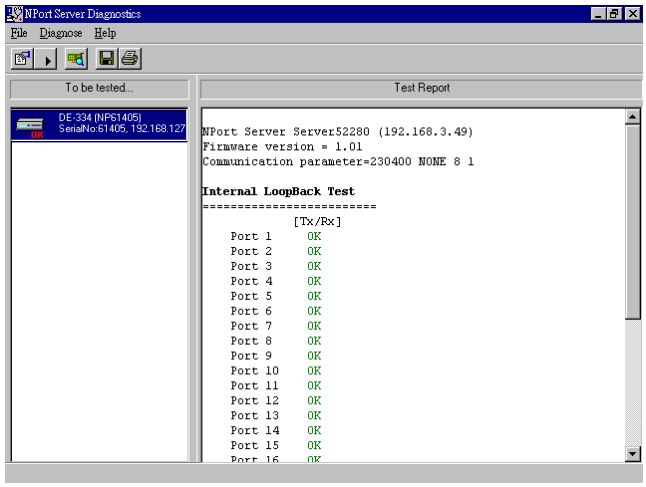


3. The **Test Status** window that opens displays some basic information about the test and test results. Click on **View Report** to see details about the tests that were done.



4. The report will be displayed in the **Test Report** info box. Items that tested okay will be marked with a green **OK**. Error codes are in red. To check error messages with corresponding error codes, choose **Error** Code Reference from the **Help** menu in the **NPort Server Diagnostic**s window.

   If one or more of the test items for a particular server fails, the test object in the To be tested. . info box is marked with a red colored Fail.



Printing

The printing function is included to provide a convenient way to print out test reports.

1. Click on the NPort Server Pro shown in the **To be tested**.. info box to determine which testing report to print.
2. Choose **Print**.. from the **File** menu, or click on the toolbar **Printer** icon to print out the report.

Saving the Configuration

This function allows you to save the diagnostic report in a `.txt` file for future reference.

1. Click on the test object in the **To be tested**.. info box.
2. Choose **Save Report** from the **File** menu, or click on the toolbar **Save Report** icon to save the report.
3. You will be prompted to enter a file name in the **File name** text input box. Click on **Save** to save the file to disk.

Exiting NPort Pro Diagnostic

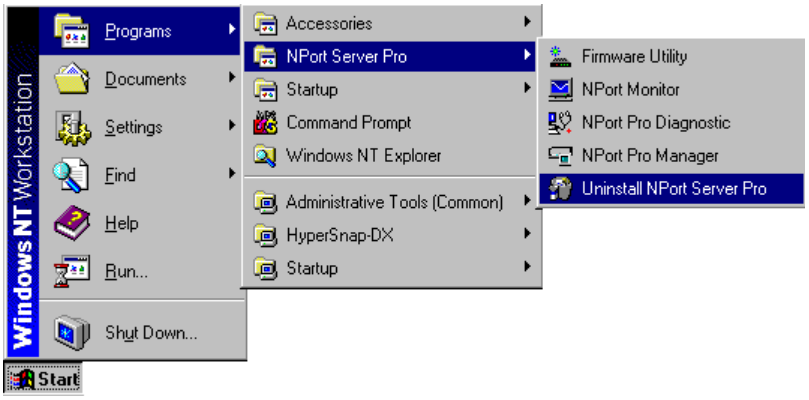
When you have finished all testing and report procedures, click on **File** and choose **Exit**, or click on the close window box in the upper right hand corner of the NPort Server Diagnostics window.

Uninstalling the Software

If your Windows NT/95/98 host no longer needs access to any NPort Server Pros, you may use the **Uninstall NPort Server** utility to uninstall the driver and software.

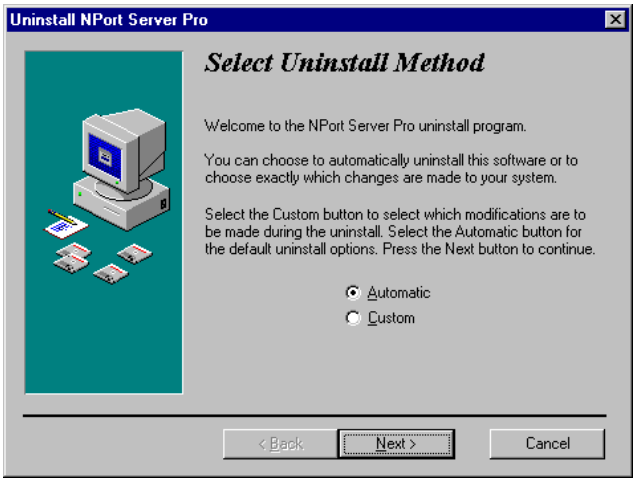
To activate Uninstall NPort Server Pro, click on

1. **Start → Programs → NPort Server Pro → Uninstall NPort Server Pro**.

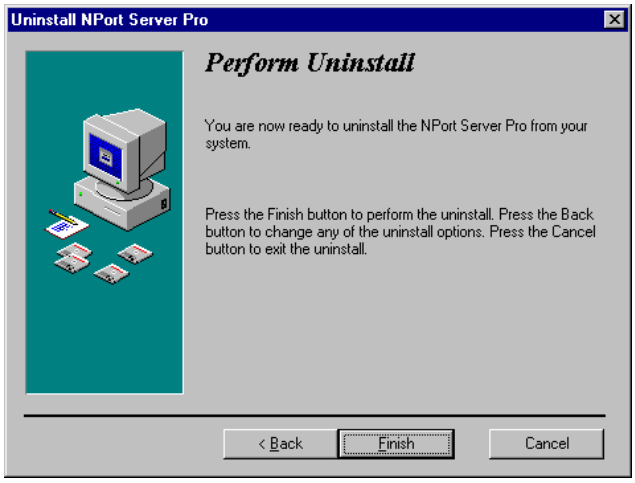


2. To completely remove the driver and utility programs, select **Automatic**. To remove or modify only part of the installed software, select **Custom**.

   Click on **Next** to continue.



3. Click on **Finish** to complete the uninstall procedure.



8

Changing Your Installation Type

This chapter describes how to change between the three application modes —Single-Host, Multi-Host, and Custom–after installation. The only way to change from one application mode to another is to rerun the driver/software Setup program.

If you started off by installing your server as Single-Host, you will have noticed, for one thing, that it is not possible to change the server's IP address from this application type. If at some point during the server's operation you find it necessary to change the IP address, share the ports with another NT/95/98 server, or initiate some type of remote control function, you will need to change to a different application mode.

Note that changing between application types will not automatically wipe out previously set configurations. Be sure to select the correct mode for your application. See chapter 2 of this manual for details.

Note: To change to a different application mode, you will need to rerun the Setup program. See chapter 4 to install Single-Host, chapter 5 to install Multi-Host, and chapter 6 to install Custom.

9

Windows 2000–Installation and Configuration

In this chapter, we explain how to configure NPort Server Pro under the Windows 2000 operating system. The installation and configuration procedure is substantially different than for Windows NT/95/98/ME, so read carefully.

We discuss the following topics:

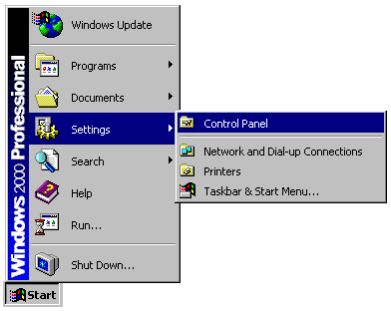
- ❑ Windows 2000 Driver Intallation
  - Installing NPort Server Pro
  - Installing NPort Server Pro's Serial Port
- ❑ NPort Server Pro Properties
  - General
  - Configuration
    - ➢ NPort Server
    - ➢ Port Status
  - Driver

Windows 2000 Driver Installation

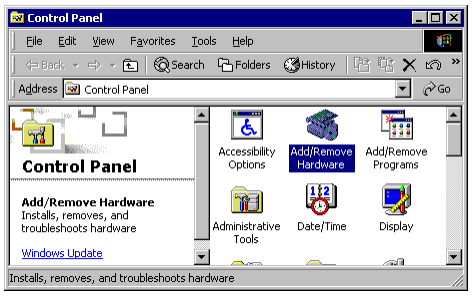
Installing NPort Server Pro to run under Windows 2000 involves installing the drivers that are used to operate the NPort Server Pro and its port. This is done by running the Windows 2000 "Add/Remove Hardware Wizard". In fact, unless you have previously installed and then uninstalled an NPort Server Pro on your system, you will need to run the "Add/Remove Hardware Wizard" twice, once to install NPort Server Pro itself, and then once to install NPort Server Pro's ports.

Installing NPort Server Pro

1. **From the Windows 2000 desktop, click on** Start → Settings → Control Panel**.**

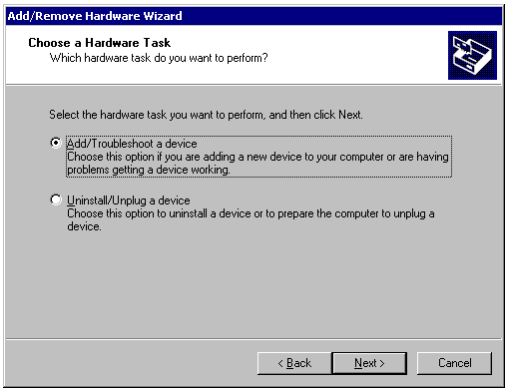


2. **Double click on the** Add/Remove Hardware **icon.**

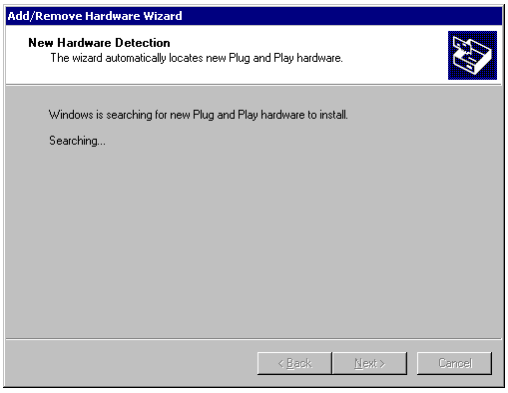


3. **When the** Welcome to the Add/Remove Hardware Wizard **window opens, click on** Next **to continue with the installation process.**

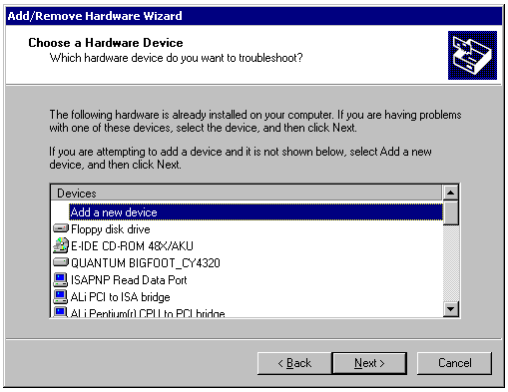
4. Select the Add/Troubleshoot a device **option, and then click on** Next **to continue.**



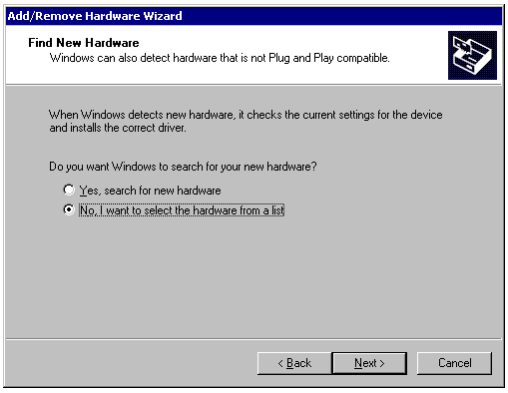
5. Windows 2000 will spend some searching for a device that is connected directly to your computer. Keep in mind, however, that this procedure does not detect devices that are connected over a network.



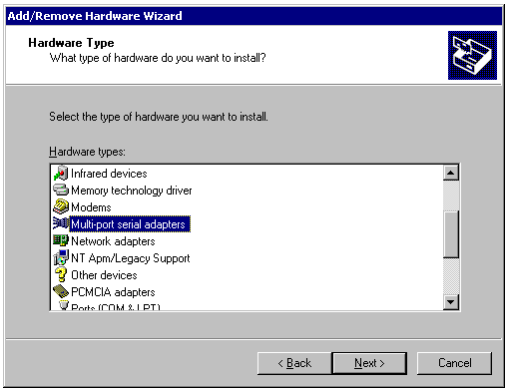
6. **Select** Add a new device **and then click on** Next **to continue.**



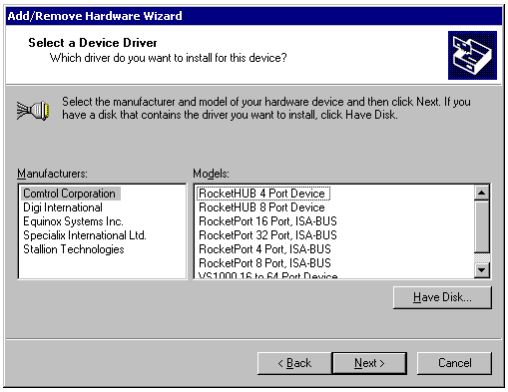
7. **Choose the** No, I want to select the hardware from a list **option from the next window, and then click on** Next **to continue.**



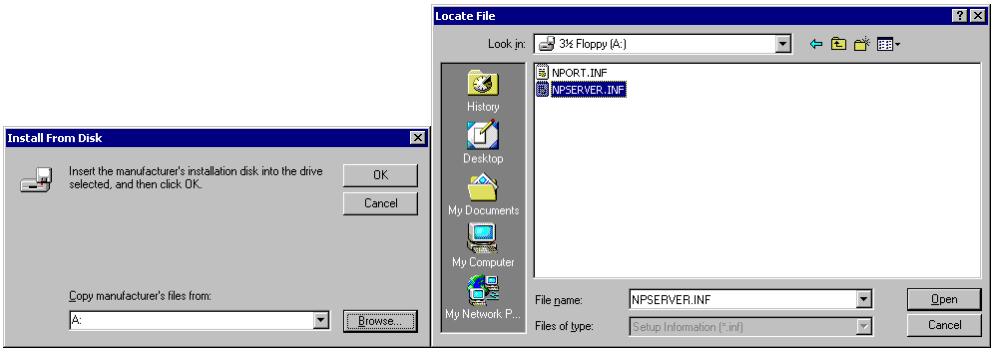
8. Select Multiport serial adapters **and then click on** Next **to continue.**



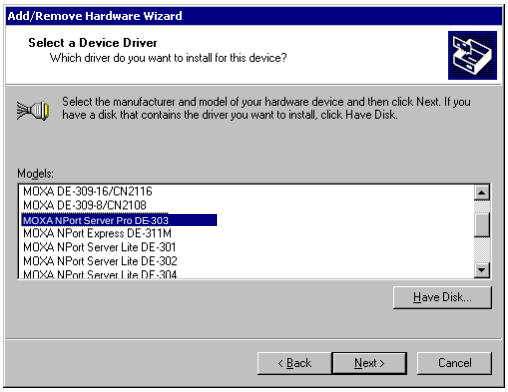
9. The Select a device driver **window displays a list of manufacturers and products. If Moxa's name is not listed, you will need to click on** Have Disk.. **and then select the NPort Server Pro driver from diskette, CD, or from your hard drive.**



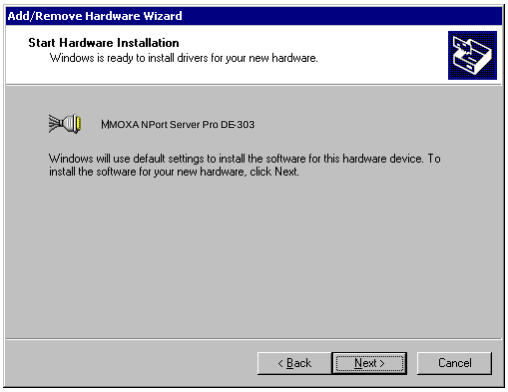
10. If necessary, click on Browse... **to locate the directory that contains the NPort Server Pro driver. During the installation shown here, the driver was located on the A: drive, so the next step is to click** OK**. Note from the second figure that the driver name is NPSERVER.**



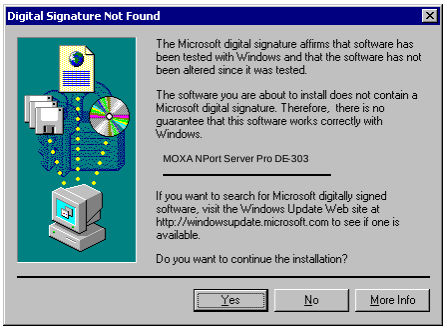
11. The next window will contain a list of NPort Family products. Select MOXA NPort Server Pro DE-311 **and then click on** Next **to continue.**



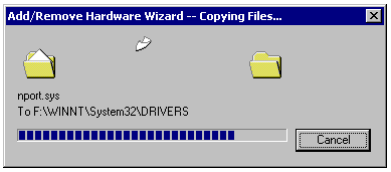
12. The Start Hardware Installation **window should verify that you have chosen the correct driver. Click on** Next **to continue.**

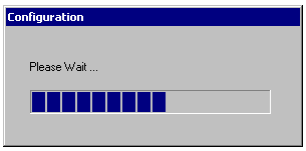


13. You may safely ignore any admonitions such as Digital Signature Not Found**. Simply click on** Next **to continue.**

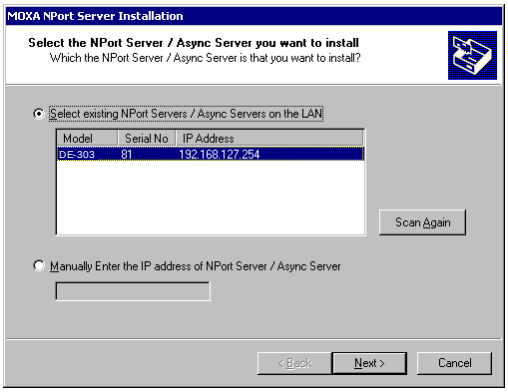


14. A series of windows indicating the progress of the installation procedure will open and then close.

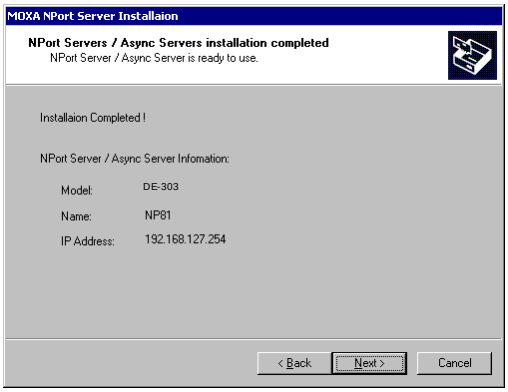




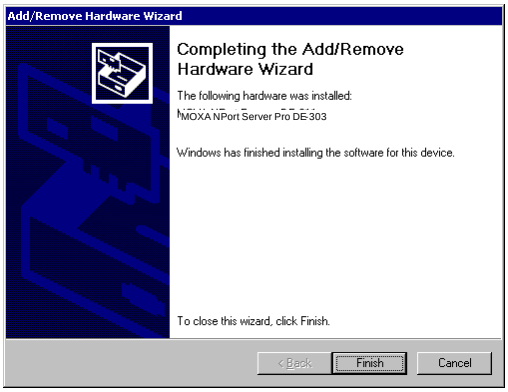
15. The next window lists all NPort Server Pro units that are currently connected to your network. Select the server you wish to install, or manually enter an IP address of your server if it does not show up in the list. Click on Next **to continue.**



16. When the Installation Completed! **window opens, check to make sure that the information displayed is correct.**



17. Click on Finish **to complete the installation of NPort Server Pro. Keep in mind, however, that you may still need to install the port.**

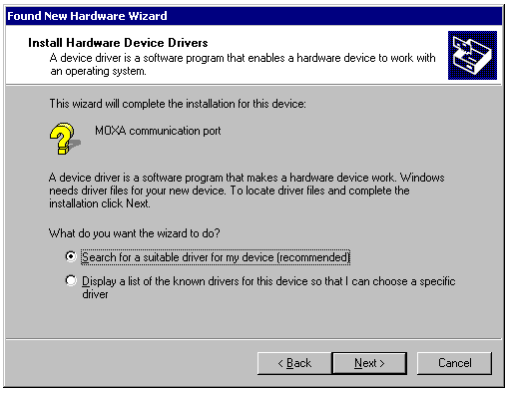


Installing NPort Server Pro' s Serial Port

If you or someone else has previously installed an NPort Server Pro on your system, then NPort Server Pro' s serial port should be installed automatically. In this case, you may skip this section and continue to the section "NPort Server Pro Properties".

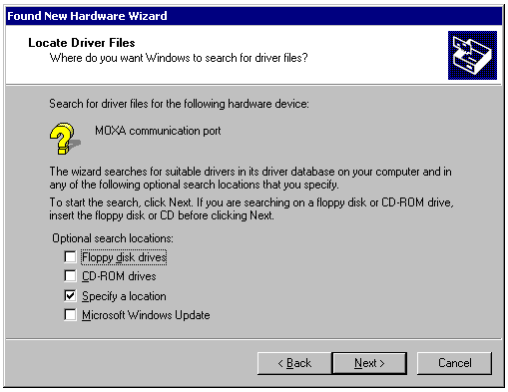
If this is the first time that anyone has installed an NPort Server Pro on your system, the following window should open automatically.

1. When the Found New Hardware Wizard **starts up, choose the option** Search for a suitable driver for my device (recommended) **and then click on** Next **to continue.**

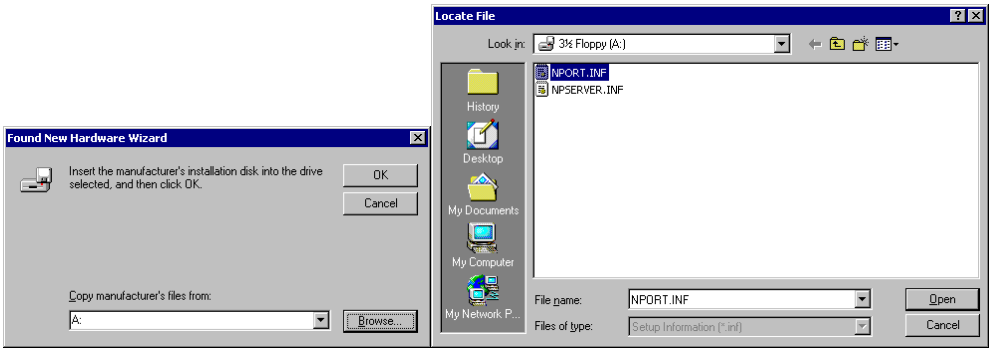


2. Choose the Specify a location **option from the** Locate Driver Files **window, and then click on** Next

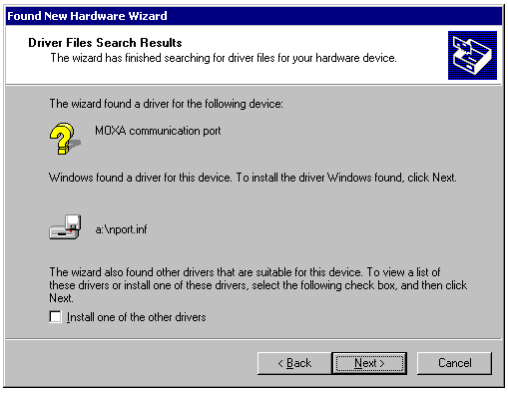
to continue.



3. If necessary, click on Browse… **to locate the directory that contains the NPort Server Pro driver. During the installation shown here, the driver was located on the A: drive, so the next step is to click** OK**. Note from the second figure that the driver name is NPORT.**



4. The next window verifies that a MOXA communication port **will be installed, and the correct driver, nport.ini, will be used for the installation.**

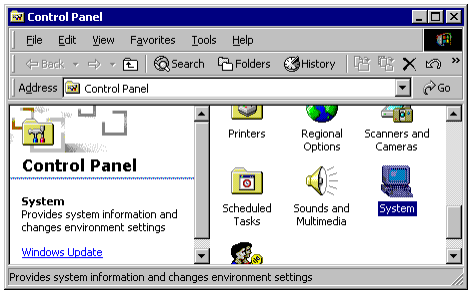


5. Click on Finish **to complete the installation procedure.**

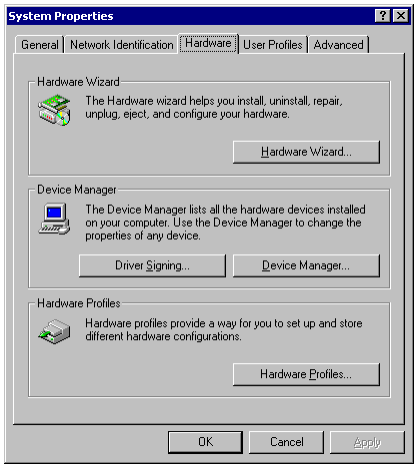
NPort Server Pro Properties

NPort Server Pro' s configuration parameters, such as IP address, COM port number, etc., are easily changed from within the Windows 2000 system' s device manager.

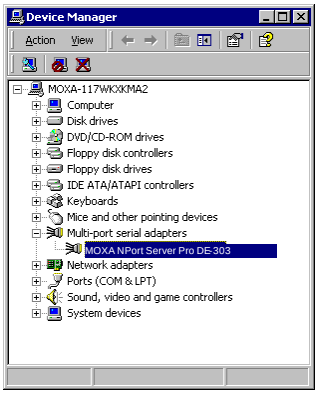
1. To evoke the device manager, double click on the System **icon from the** Control panel **window.**



2. Select the Hardware **tab, and then click on** Device Manager**…**

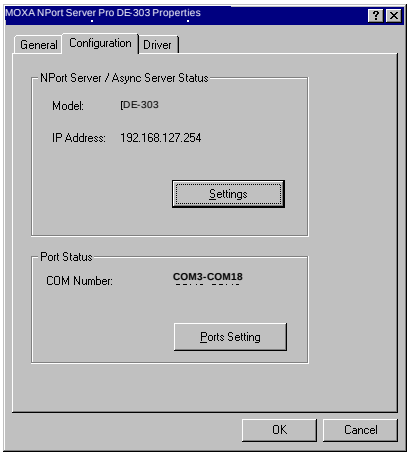


3. Click on the plus sign to the left of Multi-port serial adapters **and then double click on** MOXA NPort Server Pro DE-303 or DE-308 **to open the** Properties **window.**



Configuration

Select the Properties **window's** Configuration **tab to change parameter settings for your NPort Server Pro. Most of the system settings are accessed by clicking on** Settings **(see the "NPort Server" subsection below). The COM port number can be changed by clicking on** Ports Setting **(see the "Port Status" subsection below).**



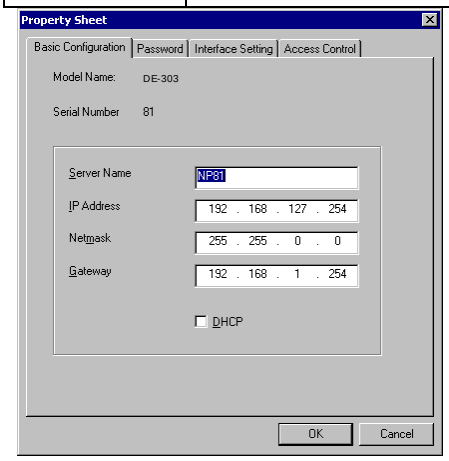
NPort Server

Clicking on Settings **in the above** Properties **window causes NPort Server Pro's** Property Sheet **to open. If prompted, enter NPort Server Pro's password, and then click** OK **to continue.**

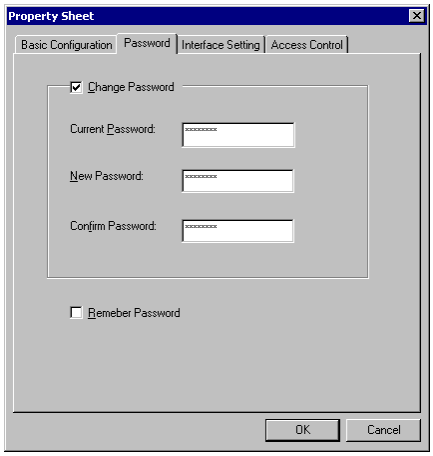
The Basic Configuration **page, open by default, allows you to make changes to the following items.**

Server Name	**Choose an appropriate name for NPort Server Pro. The default name is simply "NP" followed by the serial number.**
IP Address	**Check with your network administrator.**
Netmask	**255.255.0.0 is for Class B networks.** **255.255.255.0 is for Class C networks.**
Gateway	**This is the IP address of the router connecting your LAN to the Internet.**
DHCP	**Click on the DHCP box to allow NPort Server Pro's IP address to be chosen automatically by a DHCP server**

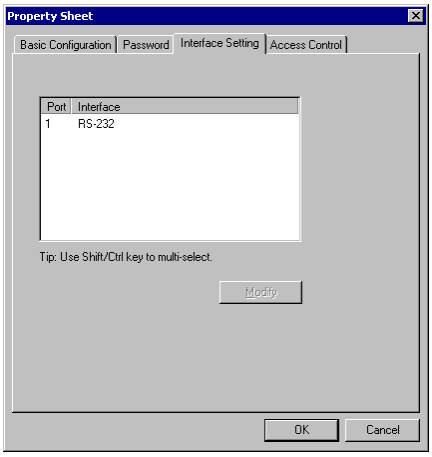
	connected to your LAN.



The Password **page allows you to change the password. Click the** Remember Password **box to have the password automatically stored by your operating system.**

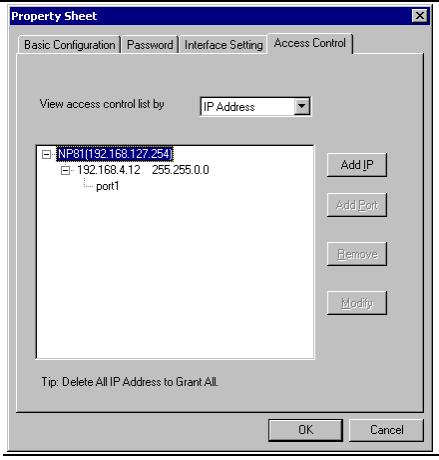


The Interface Setting **page shows the current Serial Port interface setting. You must use the DIP switch settings on NPort Server Pro's front panel to make any changes. To see changes in the setting, click** OK **at the bottom of the** Property Sheet **window to close the window, and then follow the instructions given above to reopen the window.**

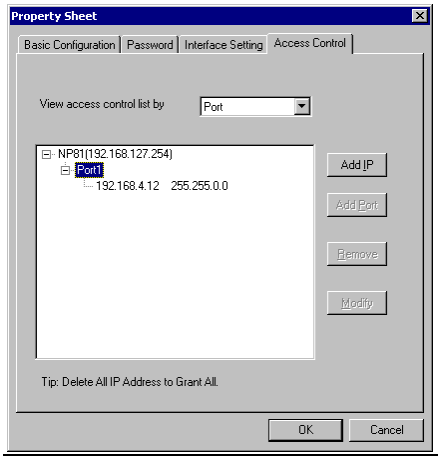


The Access Control **page can be used to allow access to NPort Server Pro' s serial port. The process of adding and removing IP addresses is straightforward, although three comments are in order.**

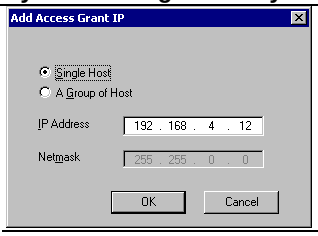
- **You may add access by** IP Address **as shown here.**

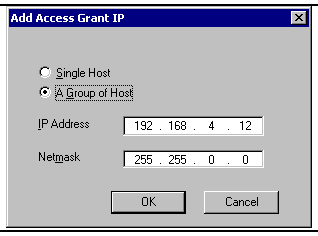


- **You may add access by** Port **as shown here.**



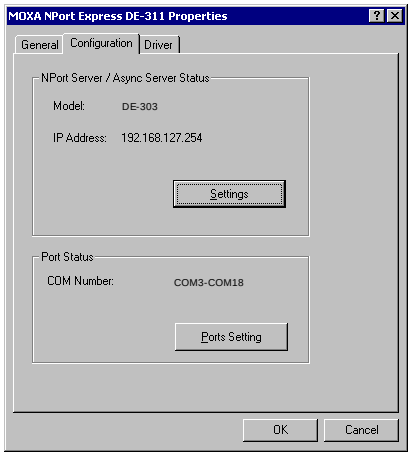
- **There are two options to choose from when adding access. Choose** Single Host **to only allow access to the computer with the given IP Address. Choose** A Group of Host **to allow access to a group of computers. In the example shown here, computers connected to the same LAN as NPort Server Pro, and with IP addresses of the form 192.168.xxx.xxx, will all be given access. More specific (limited or wider) access can be granted by considering the bit-by-bit versions of both the IP Address and Netmask.**



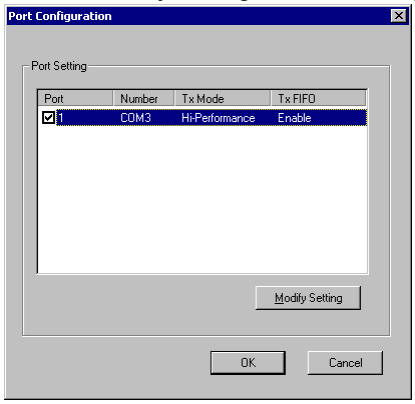


Port Status

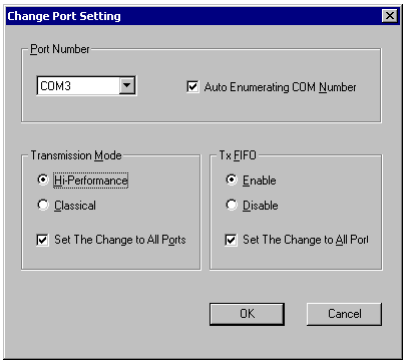
NPort Server Pro' s serial port' s COM number can be changed by clicking on the Ports Setting **button.**



Click on Modify Setting **to make changes.**



Use the following window to change the Port Number**,** Transmission Mode**, and** TxFIFO**.**



Driver

The Driver **page displays important information about the driver. Use the buttons at the bottom of the window for** Driver Details.**,** Uninstall **the driver, or** Update Driver**.**

A

Troubleshooting

This appendix explains how to solve some of the most common problems you could encounter while using NPort Server Pro. If you are still having problems after reading this chapter, contact your dealer, or e-mail Moxa for help. You may also use the "Problem Report Form" at the end of this manual to notify your dealer that you require prompt technical support.

We cover the following topics.

- Installation and Configuration Troubleshooting
- Programming Problems
- LED Descriptions

Installation and Configuration Troubleshooting

- *Cannot use the first computer installed with the Single-Host NPort Pro Manager to access NPort Server Pro.*

  For security reasons, and to simplify operations, the Single-Host Mode allows only one host to connect to NPort Server Pro at a time. Thus, if while using the single-host type of installation you discover that the server has already been configured with password protection, it is advised that you check to see if two or more NT/95/98 hosts are sharing the same NPort Server Pro configured for Single-Host Mode. If you wish to use more than one host to access the same NPort Server Pro, you will need to install NPort Server Pro under Custom Mode.

- *Cannot change IP address or other server properties.*

  There are two situations that could give rise to this problem.

  1. *Password Mismatch* – If you type the wrong password while running NPort Pro Manager, the Manager program automatically assumes that you are not the administrator. The administrator of the server is the only one allowed to modify the server's configuration. Keep in mind that even when multiple hosts share the same server, access to the server's administrative functions is still protected. If you need to change some configuration settings, you will have to ask your administrator for help. If you are the administrator but forget the password, you can erase the current password yourself by pressing the RESET key on NPort Server Pro's back panel for three seconds.
  2. *Error Installation Type* – You cannot change the server IP address if you are installing NPort Server Pro under Single-Host Mode. Setting the installation procedure up in this way makes the Single-Host Mode configuration procedure very similar to installing a traditional multi-port serial board. Under Single-Host Mode, users are only allowed to modify the server's name and password. This is because Single-Host users are not sharing their NPort Server Pro with other hosts. If you do need to modify other properties, run the setup program and change to another mode of operation (see Chapter 8 for details).

- *You would like to allow one more host to access your NPort Server Pro, but are unable to reach the page for Access Control.*

  1. Check the NPort Manager mode. If it is Single-Host Mode, reinstall it as either Multi-Host Mode or Custom Mode.
  2. Double check your credentials to make sure that you are the administrator.

- *After installing NPort Server Pro, the NPort Pro Manager program indicates "'Un-authorized" status for some of the ports.*

  This means that NPort Server Pro's Access Control List does not contain your computer's correct IP address. This can happen in one of two ways:

  1. Your NT/95/98 machine is just one of the hosts sharing the ports on the selected server, and you do not provide the server password while installing NPort Server Pro.
  2. You install NPort Server Pro at a local site, with no access problems, but later move the server to a remote site and connect through a WAN. Due to the different network interface connection, your IP address might have changed, and as a consequence, you are no longer on the server's Access Control List.

To solve this problem:

1. Confirm your IP address with NPort Server Pro.
2. Ask the administrator to set up the server configuration so that you are on NPort Server Pro's Access Control List.

◆ *While running NPort Pro Manager, a question mark, '?', shows up on top of the server icon, and you are unable to enter server properties.*

This means that the host cannot find the server. Here are some steps you can take to recover from this problem:

If the host and server are in the same location:

1. Make sure NPort Server Pro's power cable is plugged in, and the server is receiving power.
2. Check that the server's network connector is plugged in properly.
3. Make sure your computer is properly connected to the network.
4. Double click on the server icon that has the question mark (?) on top. This will evoke NPort Pro Manager to reconnect with the server.

If the server is at remote site:

1. Make sure the network connection to the remote site is okay. If no route can be established to the remote server, and you are connecting through the Internet, you may need to wait until the route is reestablished.
2. If the route is okay, try running

   `ping [server-IP-address]`

   from your NT host, where `[server-IP-address]` is the server's IP address. If the server cannot be pinged, you will need to ask someone at the remote site to check and see if the power is on, and make sure that the connection is okay. And then double click on the server icon that has the question mark (?) on top. This will evoke NPort Pro Manager to reconnect with the server.

   If the problem is still not fixed, contact Moxa technical support for further information.

- *You cannot find the server after rebooting your Windows NT/95/98 server.*

  It's possible that you have a DHCP server on your network. Since DHCP servers can assign IP addresses, the IP address for either the host or NPort Server Pro might have been changed. To recover from this problem, you should:

  1. Ask the administrator of your DHCP server to assign a dedicated IP address to both your Windows NT/95/98 host and to NPort Server Pro.
  2. Make sure your NPort Manager Pro operating mode is either Multi-Host or Custom.
  3. Change the IP address of the server to the dedicated IP address assigned by your DHCP administrator.
  4. Change the IP address of your Windows NT/95/98 host to the dedicated IP address assigned by your DHCP administrator.

  Note: Please refer to Appendix D to learn how to configure your Windows NT/95/98 to the dedicated IP address.

  5. Modify the Security list to include your NT/95/98 host.
  6. Save Configuration.

Programming Problems

- *Win32 COMM API functions return fail, or the PComm Pro library functions return a Fail code - SIO_WIN32FAIL*

  The fail code for the COMM API functions implies something different than the fail code received from the standard COM driver. For example, you get the fail code when the network connected to the server is unreachable, or the server is offline. If the network connection is through the Internet, the network could be unreachable if Internet traffic is jammed. This does not mean you have a defective server. To recover from this type of error, you can modify your program so that the port is automatically closed and then re-opened.

  You should also check the following to make sure that the problem is only with the TCP/IP network:

  1. If the server is off-line, turn it on.
  2. If the route to NPort Server Pro is reachable, you may test it by using

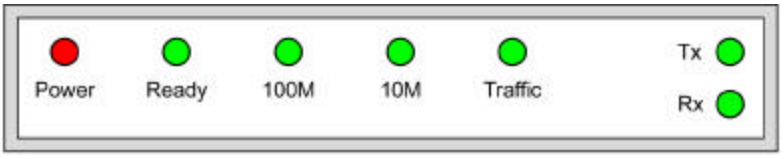
     `Ping [NPort-Server-Pro-IP-address]`

     If a route to the server cannot be established, check your routing table or the server's routing table.

To solve this problem, programs should:

1. Try to re-open the port if the fail code is returned during the open (i.e. sio_open) session.
2. If the fail code returns while writing data, reading data, changing settings, etc., you should close the file handler, and then try to open the port again.

LED Description



LED	COLOR	Description
Power	Red	Indicates that NPort Server Pro is turned on, and power is being supplied to the server.
Ready	Green	Steady on indicates that NPort Server Pro is running without problem. Flashing indicates the server is being located by the NPort Pro Manager Locate Server function.
100M	Green	Steady on indicates that NPort Server Pro's Ethernet connection is running at 100 Mbps.
10M	Green	Steady on indicates that NPort Server Pro's Ethernet connection is running at 10 Mbps.
Traffic	Green	Blinking indicates data is being received from the Ethernet Interface.
Tx	Green	Blinking indicates that there's outgoing data through the serial port.
Rx	Green	Blinking indicates that there's incoming data through the serial port.

NOTE: The number of Tx/Rx LEDs depends on the model you use. For DE-303, there are 16 Tx and Rx LEDs. For DE-308, there are 8.

B

About PComm Pro

PComm Pro is a professional serial comm developing tool for PCs running Windows NT or Windows 95/98. It consists of a powerful serial communication library for easy programming in most popular programming languages. Furthermore, it contains useful utilities, such as Terminal Emulator, Data Scope, and Performance Analyzer, as well as illustrative example programs and comprehensive online documents.

With the serial communication library, you can develop systems for data communication, remote access, data acquisition or industrial control in the Windows NT and Windows 95/98 environment. PComm Pro offers an easier solution as compared to the more complex Windows Win32 COMM API.

PComm Pro includes over 50 easy-to-use API functions specially designed for serial comm., and prevents you from struggling with sophisticated Microsoft Win32 API. Hence, it greatly saves developing time and cost. (The API functions can be used for any serial comm hardware that supports Microsoft Win32 driver, e.g. DIGI boards, standard com ports, etc.)

We cover the following topics in this chapter:

- Features
- Benefits

Features

- Easy-to-use API (more than 50 functions)
- Supports Zmodem, Ymodem, Xmodem
- VB, C++, Delphi, examples
- Compatible to standard COMs
- Terminal Emulator, Datascope

Benefits

- Eliminates the need to use the more complicated Microsoft Win32 API
- Easy to develop
- Easy to debug
- Quick time to market
- Portable API, investment guaranteed

For more information, check the PComm Pro CD included with your NPort Server Pro.

Note: NPort Server Pro only includes the PComm Pro software. For a Pcomm diagnostic cable, refer to the PComm Pro manual to make the cable yourself, or contact Moxa to purchase a cable.

C

Cable Pinouts

This appendix lists the cables that you may use with NPort Server Pro, and includes information needed to make your own cable.

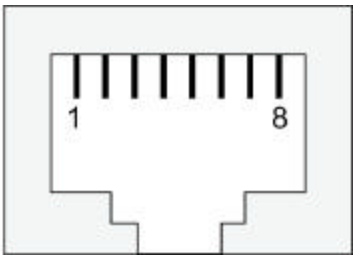
We cover the following topics:

- 10/100BaseT Port Pinouts
- Asynchronous Port Pinouts
- CN20040-RJ45 to Male DB25 RS-232 Cable Pinouts

10/100BaseT Port Pinouts

Listed below are the pinouts for the 10BaseT port on NPort Server Pro.

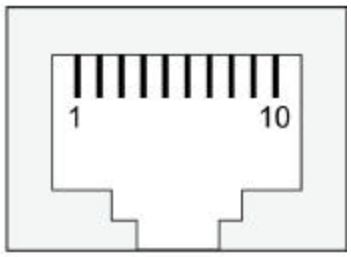
8-Pin	Description
1	Tx+
2	Tx-
3	Rx+
6	Rx-



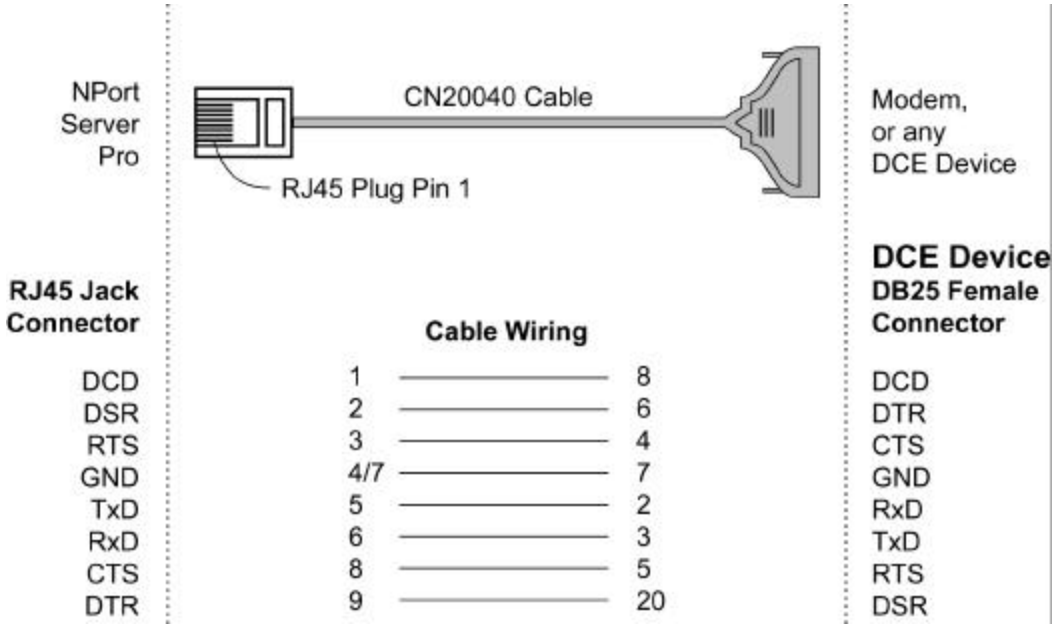
Asynchronous Port Pinouts

Listed below are the pinouts for the asynchronous port on NPort Server Pro.

10-Pin	Description
1	DCD
2	DSR
3	RTS
4	GND
5	TxD
6	RxD
7	GnD
8	CTS
9	DTR
10	-----



CN20040 – RJ45 to Male DB25 RS-232 Cable Pinouts



D

Setting Up a Windows NT/95/98 Network

In order use a PC via an Ethernet network to control serial devices connected to NPort Server Pro, you must first have a host running Windows NT/95/98 This type of application also requires the host to have an Ethernet card and TCP/IP protocol installed. If your computer does not already have an Ethernet card installed, you will need to purchase one, and then follow the instructions provided by the Ethernet card manufacturer to install and set up the card.

*Note: We recommend installing a **PCI Ethernet card** on your NT/95/98 host. Because of the BUS difference, a PCI bus Ethernet card will perform much better than an ISA Ethernet card. The PCI card reduces system loading under high speed and multiple port usage.*

Problem Report Form

NPort *Server Pro*

Customer name:	
Company:	
Tel:	**Fax:**
Email:	**Date:**

1. **Moxa Product:** ☐ DE-308 (8 RS-232 ports) ☐ DE-303 (16 RS-232 ports)
2. **Serial Number:** _____
3. **NPort Pro Firmware Version:** _____
4. **NPort Pro Manager Version:** _____
5. **PC Host:** Make _____ Model _____
6. **CPU:** Speed _____MHz Make _____ Model ____
7. **Ethernet Card :** ☐ ISA Card Make_____ ☐ PCI Card Make: _____
8. **Your Installation Type:** ☐ Single-Host ☐ Custom
9. **Problem Description:** Please describe the symptoms as clearly as possible, including any error messages you see. We may have to follow your description to reproduce the symptoms, so please give a complete description of the problem.

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RETURN PROCEDURE

For product repair, exchange, or refund, the customer must:

Provide evidence of original purchase.

Obtain a Product Return Agreement (PRA) from the sales representative or dealer.

Fill out the Problem Report Form (PRF). Include as much detail as possible for a shorter product repair time.

Carefully pack the product in an anti-static package, and send it, pre-paid, to the dealer. The PRA should be visible on the outside of the package, and include a description of the problem, along with the return address and telephone number of a technical contact.