

NetLink™

User Installation and Setup Manual



Cutler – Hammer

EAT•N

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Introduction

Overview

The NetLink™ product is a gateway for linking the two (2) distinct types of networks comprising Cutler-Hammer's PowerNet™ system. More specifically, NetLink is a dedicated and ruggedized implementation of the PowerNet DeviceServer.

NetLink performs the job of mastering one or more IMPACC networks, providing IMPACC device data to and from the PowerNet clients via a TCP/IP network. Additionally, NetLink offers the optional capability of Modbus RTU communications.

This manual will provide you with the basic information that you will need in order to install and set up your new NetLink unit. After completing this process, you will be ready to use the PowerNet software tools to configure your NetLink for your particular power management needs.

What's in the box

Your NetLink package should include the following:

- ◆ The NetLink unit;
- ◆ One (1) or two (2) RJ/11-to-RJ/11 INCOM cables;
- ◆ One (1) or two (2) Modular Interface Adapters for adapting RJ/11 INCOM to blue IMPCABLE;
- ◆ One D725 Hardware Manual which details the mechanical, electrical, and environmental specifications of the NetLink unit;
- ◆ PowerNet CD ROM with Core configuration software for PowerNet and NetLink Tools
- ◆ PowerNet Users Manual volumes 1 & 2
- ◆ This manual.

What else you will need

You'll also need these items to set up your NetLink:

- ◆ A Windows 9X/NT PC with a 10baseT ethernet port;
- ◆ The NetLink Tool program. This 32-bit MS-Windows application is included on the PowerNet CD-ROM or it may be downloaded from the Cutler-Hammer PowerNet support web site at:
<http://www.ch.cutler-hammer.com/pmp>
- ◆ One (1) standard RJ/45-to-RJ/45, 10baseT, ethernet cable used for connecting the NetLink unit to your 10baseT hub.

Installation

Placement

Decide upon a physical placement for your NetLink™ based on the needs of your particular installation, but mindful of the operating environment restrictions specified in the included D725 Hardware Manual.

It may prove convenient to orient the unit for easy access and viewability of the network connections and power switch.

Connections

Relatively few connections are needed order to enable the operation of your NetLink. **Figure 1** below shows the NetLink product interfaces:

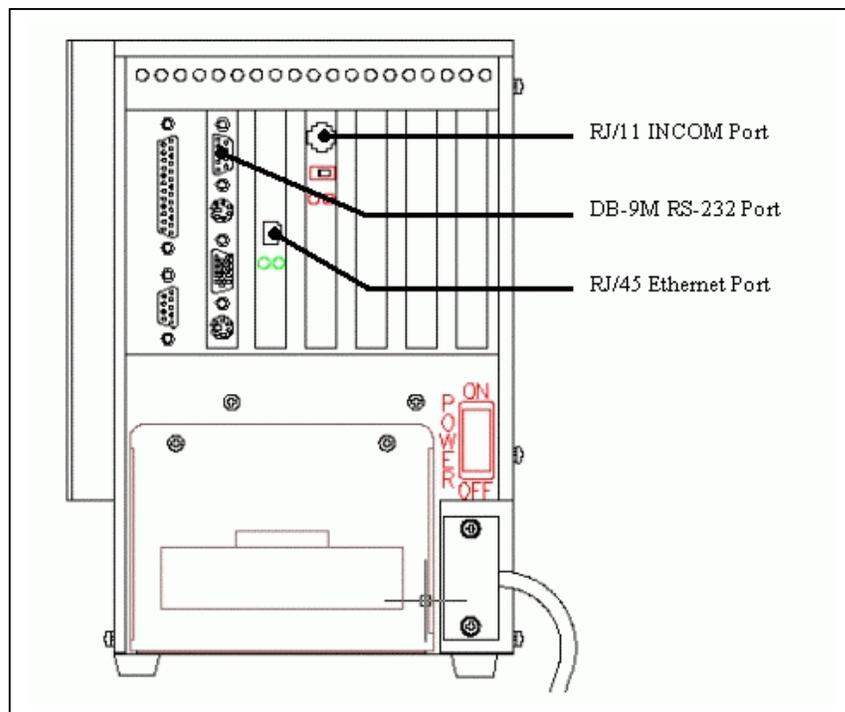


Figure 1 - NetLink Interfaces

To set up your NetLink unit, follow these steps:

- Ensure the NetLink unit power switch is in the OFF position.
- Plug the unit into a surge-protected 120 VAC / 60 Hz or 230 VAC / 50 Hz power outlet. The NetLink unit is auto-sensing and will automatically adjust to operate at either voltage.
- Connect the NetLink ethernet port to your 10baseT ethernet hub using a standard RJ/45-to-RJ/45 workstation cable.
- Connect the NetLink INCOM port(s) to your IMPACC network(s) using the included RJ/11 cable(s) and Modular Interface Adapter(s).
- If you purchased the Modbus RTU interface option, connect your Modbus master to the NetLink RS-232C port.

Figure 2 below depicts the connections for an example, fully-optional NetLink installation:

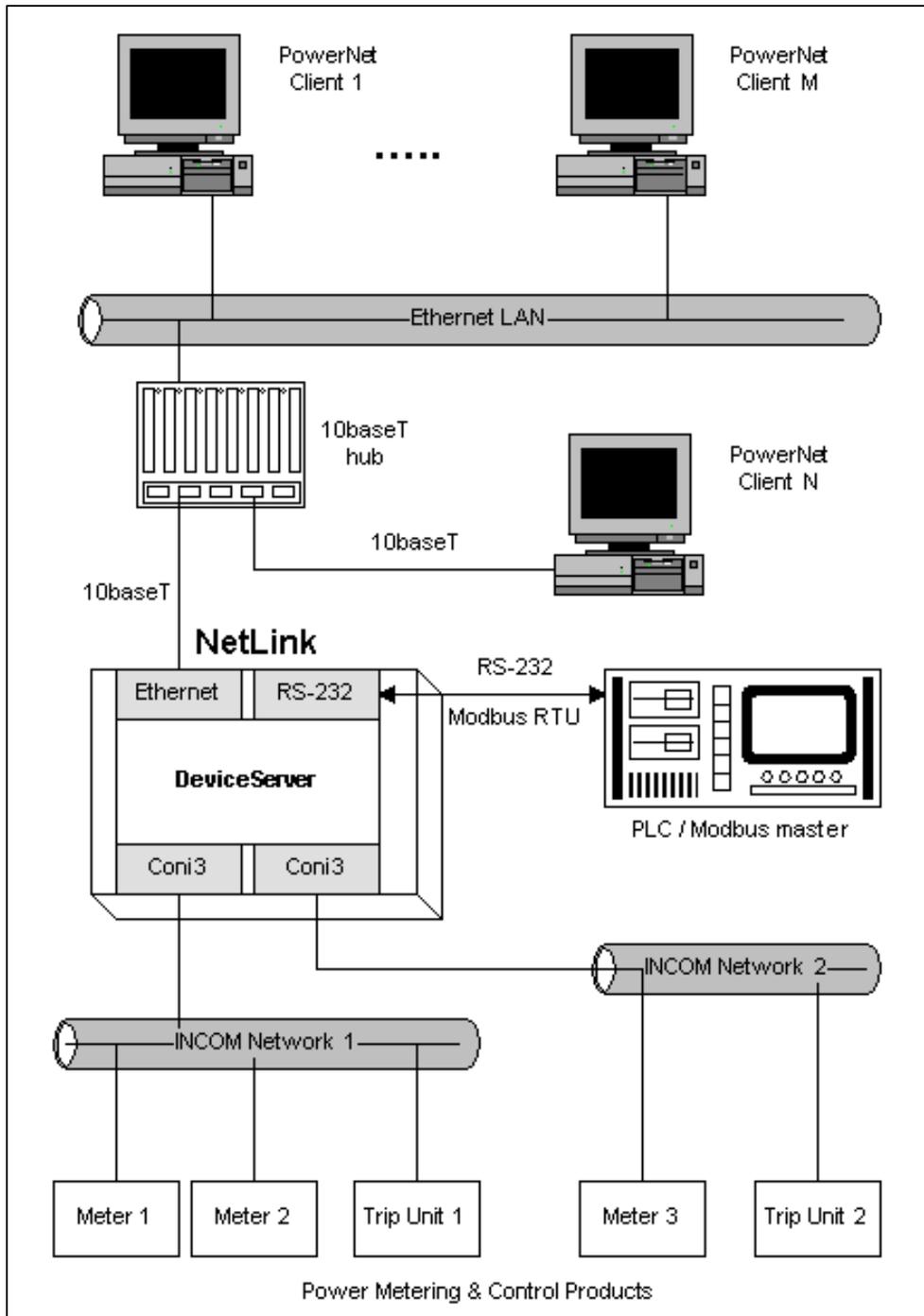


Figure 2 - An Example NetLink Installation

Powering Up

After connecting your NetLink as described above, you are ready to power it on for initial set up: just turn the power switch to the ON position.

Whenever powered up, normal NetLink product operation is indicated by the following sequence of audible beeps:

- ◆ One (1) single beep after approximately 15 seconds;
- ◆ Three (3) quick ascending beeps approximately 15 seconds later signaling that the NetLink unit is online and functioning.

Overview

In order for the NetLink to be operational in your PowerNet installation, you must provide it with two (2) types of configuration information:

NetLink Configuration Data

This data specifies the basic communication parameters of the NetLink unit's ethernet interface.

You use the [NetLink Tool](#) application to view or modify this information. This configuration must be done at least once on a new NetLink unit before any further configuration can be done.

DeviceServer Configuration Data

This data specifies the NetPower DeviceServer parameters for the NetLink unit. This information maintains which IMPACC devices are connected to and whose data is polled by NetLink, how the IMPACC devices are physically connected to the device network, what information will be logged by NetLink, and the status and data scan rates to be used by NetLink.

You use the [NetPower Configurator](#) application to view or modify this information, just as you would for any Windows NT hosted NetPower DeviceServer.

Both of these two types of configuration data are communicated exclusively via the NetLink's ethernet port and, once specified, are stored within the NetLink unit, remaining intact even when it is powered down.

This manual focuses only upon the NetLink-specific configuration and how to utilize the NetLink Tool. This is a necessary first step on all new NetLinks prior to using NetPower Configurator. For information on how to use NetPower Configurator, please refer to the PowerNet Software documentation.

Default IP Address

All NetLink configuration items are set up via the unit's ethernet port. As shipped from Cutler-Hammer, your new NetLink utilizes a temporary Internet Protocol (IP) address within the available range specified by the Internet Assigned Numbers Authority (IANA) for testing on Class C networks.

More specifically, all NetLink units are shipped from the factory to listen for connection attempts on the following IP address:

NetLink Factory IP Address	192 . 168 . 1 . 2
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This default NetLink IP address may not be used on any network that is directly connected to the Internet. What's more, this address will automatically be filtered by most network routers preventing it from ever being passed from your site's intranet onto a wide area network.

Like all IP addresses, the NetLink default IP address is composed by concatenating a network address and a host address into a single, unique 32-bit number. Since it has been reserved as a special address by IANA, the network address component of the NetLink's default IP address will always be different from your site's network address. This means that, as shipped from Cutler-Hammer, the new NetLink unit may not be accessed by a computer on your site's network.

Hence, when setting up a new NetLink, the first order of business is to configure the unit with a valid and unique IP address for use on your site's network. Ask your network administrator to provide you with an IP address for the new NetLink unit. When you receive an assigned IP address we strongly recommend that you write it on the NetLink unit's product label for future reference.

Tool PC Setup

In order to change the IP address or set up other NetLink configuration options on a new unit, you'll need to properly set up an MS-Windows 9X or NT machine, as well as the proper network connection, so that you can run the NetLink Tool application. We term this Windows PC used to perform the initial NetLink configuration the "Tool PC" and discuss how to set it up below.

Note that this discussion applies only to **new** NetLink units, which are shipped with a temporary default IP address. After the NetLink has been configured by you to use your assigned IP address and is connected to your site LAN, any PC on your LAN may subsequently run the NetLink Tool application to view or modify the NetLink configuration data.

Network Connection

First we'll get a physical network connection in place between the new NetLink and the Tool PC. Since we are focusing on the ethernet communications, we can leave the INCOM and modbus ports on the NetLink unit unconnected for now.

There are three (3) ways to set up a network connection to your NetLink in order to initialize the unit's basic communication parameters:

Direct Hub

The surest and usually easiest means of setting up the Tool PC's network connection to a new NetLink unit is to connect it directly to the same 10baseT hub as the NetLink unit using a standard workstation 10BaseT cable. This connection method would be as shown in Figure 2 above for the PC labeled "PowerNet Client N". For our immediate purpose, the hub may or may not be connected to the larger ethernet LAN at your site as it is shown to be in Figure 2.

Cross-Wired Cable

Alternatively, since we are seeking only to connect exactly two (2) nodes at this point, the NetLink unit and the Tool PC, you can eliminate the hub altogether and directly connect the NetLink and the Tool PC with a single "cross-wired" 10baseT cable. This may be particularly convenient if you intend to use a laptop as your Tool PC.

Please note however that cross-wired 10baseT cables, while readily available from most computer supply stores, are special networking cables that cannot generally be used to connect workstations to hubs.

Site LAN

Lastly, you may connect to a new NetLink unit from a Tool PC that is anywhere on your site's LAN as long as the NetLink and the Tool PC are on the same network segment. This means that there can be no network bridges, routers, or gateways between the NetLink and the Tool PC. This connection method would be such as the PC labeled "PowerNet Client M" in Figure 2 above.

Since it is often not apparent whether or not this is true without consulting a layout diagram of your site's LAN, this means of connecting is less deterministically correct; for a given site it may or may not work. For this reason is not the preferred connection method for setting up your new NetLink.

TCP/IP Configuration

NetLink always communicates over ethernet via the communication protocol of the Internet: TCP/IP. Hence, even to use the NetLink Tool application just once to modify the default IP address, you must be able to establish an initial TCP connection to the new NetLink from your Tool PC.

Since the NetLink's default network address will be different from the network address of your site, you'll need to modify a few specific settings in your Tool PC's TCP/IP protocol properties, at least temporarily, to make the initial connection to a new NetLink unit.

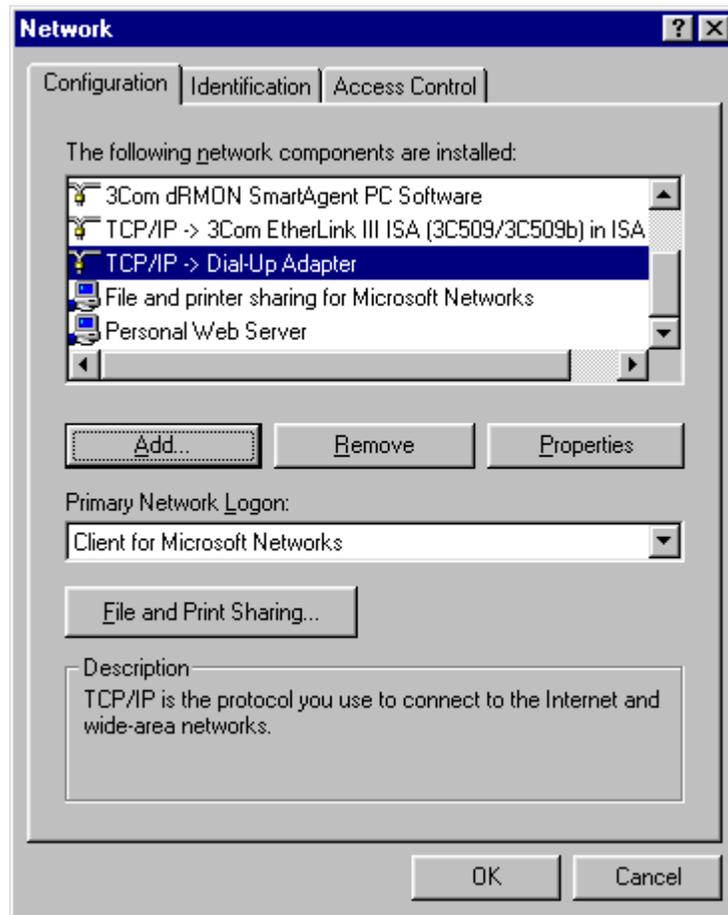
We'll make the following assumptions before we begin establishing our initial TCP connection to the new NetLink:

- Your Tool PC is running MS-Windows 95, 98, or NT4.0.
- You have a working 10baseT ethernet compatible networking card installed in the Tool PC.
- You have the Windows TCP/IP protocol for your networking card installed in the Tool PC and know that it works, e.g. you have browsed the web or used FTP on the Tool PC previously.
- The new NetLink unit and the Tool PC are now physically connected in one of the three ways described above.
- NetLink is powered up and has already given its three-beep "ready" salutation.
- All applications (programs) on the Tool PC are presently closed.

Now follow these steps:

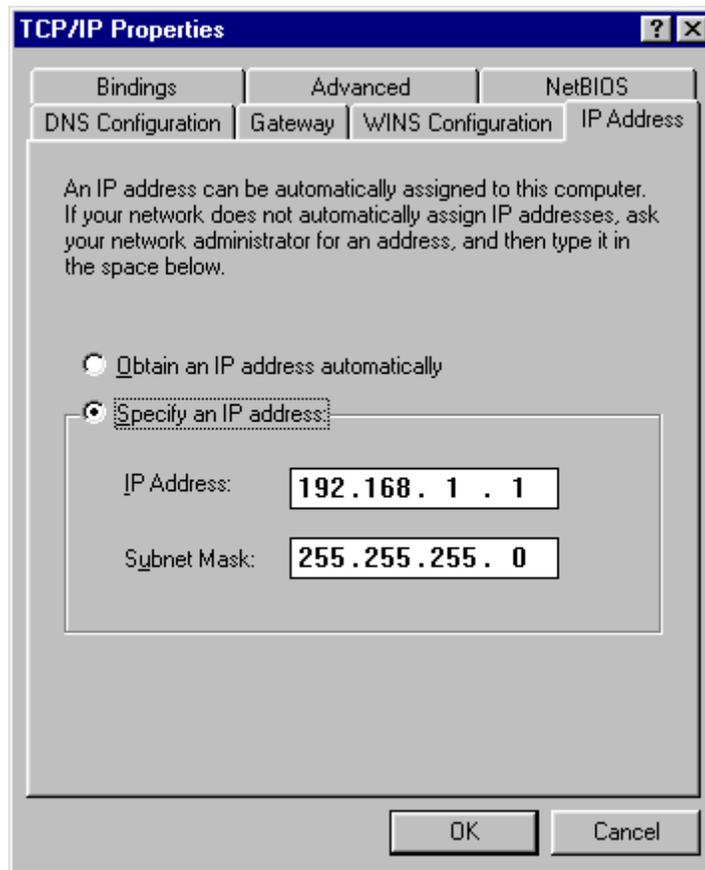
1. Right-click on the "Network Neighborhood" icon on the Tool PC's Windows desktop, then select "Properties" from the pop-up menu.

In Windows 9X, a dialog box similar to the following will appear:



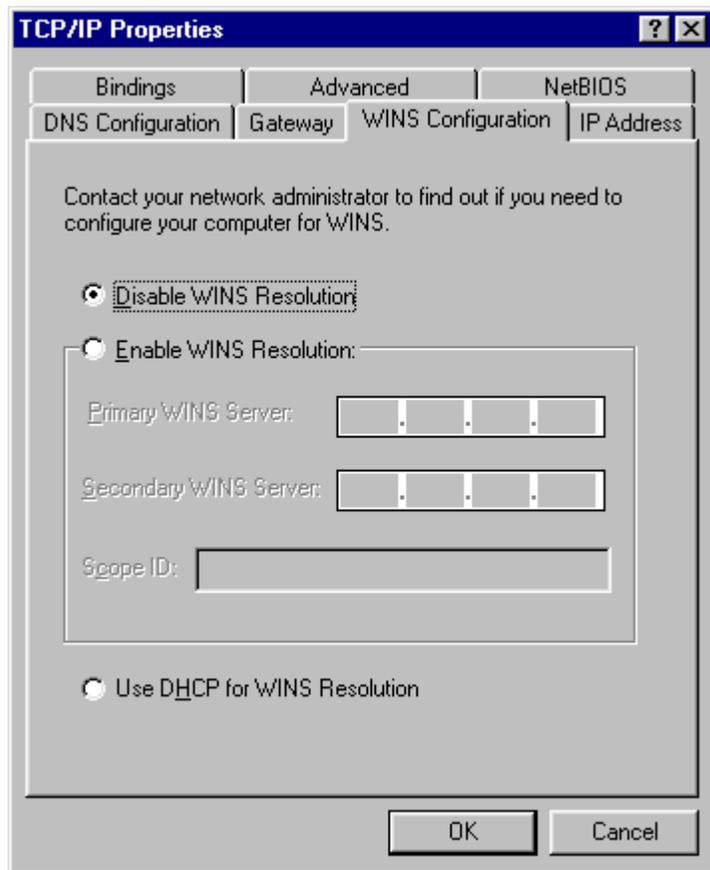
2. Select the TCP/IP protocol in the list box, then left-click the "Properties" button.

In Windows 9X, a dialog box like the following will appear:



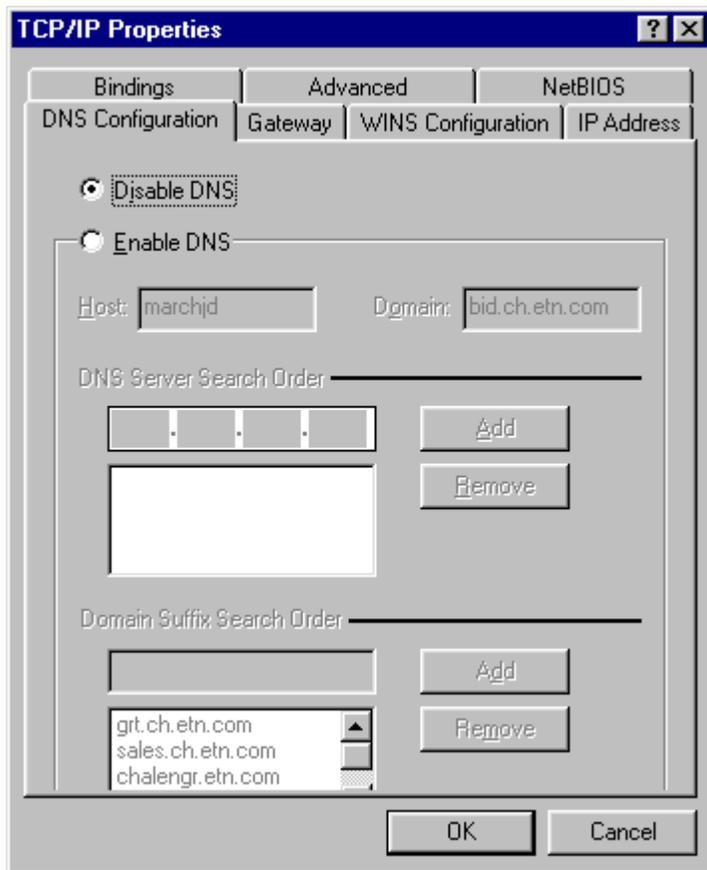
3. Jot down all information and settings on this dialog before changing anything. Then modify it using the specific settings shown above.
4. Now left-click on the "WINS Configuration" tab at the top of this dialog.

In Windows 9X, a dialog box like the following will appear:



5. Jot down all information and settings on this dialog before changing anything. Then left-click on the "Disable WINS Resolution" radio button as shown above.
6. Now left-click on the "DNS Configuration" tab at the top of this dialog.

In Windows 9X, a dialog box like the following will appear:



7. Jot down all information and settings on this dialog before changing anything. Then left-click on the "Disable DNS" radio button as shown above.
8. Now left-click the "OK" button. Windows will then ask if you want to reboot the PC now. Click "OK" to allow Windows to reboot the Tool PC.

The NetLink Tools Application

Having established a physical connection to the NetLink and with the proper TCP/IP setup on your Tool PC, you are now ready to run the NetLink Tools application. The NetLink Tools application provides three (3) primary capabilities:

- **Setup**
 - Set the NetLink's IP address.
 - Set the NetLink's internal clock and timezone information.
 - Set whether NetLink should periodically synchronize its internal clock to an SNTP time server and set the server's IP address.
- **Upgrade License** on the NetLink unit
- **Upgrade Firmware** on the NetLink unit

Since your NetLink is shipped with purchased licenses and the latest firmware pre-installed, only the **Setup** capability of the NetLink Tools application is normally required for new NetLink installations.

However, you may wish to upgrade the licensable capabilities of a new or existing NetLink unit beyond those originally purchased with the unit. You can use the NetLink Tools **Upgrade License** selection, along with a purchased license diskette, to, for example, add control capability to a NetLink unit at your site that was originally shipped without the control option.

Lastly, the NetLink Tools **Upgrade Firmware** selection provides a means for users to ensure that they have the most up-to-date NetLink functionality.

Starting NetLink Tools

Assuming that you have already installed the IMPACC PowerNet Suite software, and that you have established a PPP direct cable connection between the tool PC and the NetLink unit:

- From the Windows NT Start button PowerNet Suite menu, select the **NetLink Tools** application.

The NetLink Tool presents its window with three (3) buttons and a main menu.

Connect

- From the main menu select: **Connection | Connect...**

This will bring up the “Connecting to NetLink” dialog box. Enter these two strings:

User Name: **admin**

Password: **netlink**

- Accept all other defaults on this dialog clicking the **Connect...** button for this dialog box.

Assign IP Addresses

- At the NetLink Tool main window click the **Assign IP Address** button. This brings up the “Assign IP Address To NetLink” dialog box.
- Click the **Change IP Address** checkbox. Now enter the four (4) TCP/IP parameters in “dotted-decimal” format for your specific installation:

NetLink IP Address

Subnet Mask

DNS Server

Gateway

- Next click the **OK** button.

You will see a confirmation dialog presented that the new IP addresses have been set up on the NetLink and asking if you wish to reset the NetLink unit so that it begins using the newly configured addresses.

- Click the **No** button.

Exit, Disconnect, and Reset

- From the NetLink Tool main menu select: **File | Exit** to leave the application.
- Go to **Dial-Up Networking** under **My Computer** click the **Hang Up** button to release the PPP connection to the NetLink unit.
- Turn the NetLink power switch to the **OFF** position and then disconnect the keyboard and the null-modem serial cable from the NetLink.
- Ensure that your ethernet and IMPACC networks are connected and then turn the NetLink power switch to the **ON** position. Wait for the start sequence described in the Powering Up Section.

Your NetLink unit is now online and may be configured for use in your IMPACC PowerNet system with the PowerNet DeviceServer Configurator.