



INSTALLING YOUR NETWORK HARDWARE

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If you bought LANtastic 8.0 as part of a kit that includes network adapter cards and cables – or if you bought your hardware separately and it came with clear instructions – **you don't need to read this chapter.** Instead follow your hardware's instructions.

Note... If you need help installing your adapters, check Artisoft's electronic sites, as described in the Directory of Support Services that you received with this product.

Selecting your network hardware

Unless you bought LANtastic as part of a kit that includes all the necessary cables and other hardware, you're going to have to buy your network hardware separately. This section gives you general guidelines about network hardware requirements – but the specific items you need to buy depend on how many computers you have, what operating system you're running, how far apart the computers are located and many other factors.

LANtastic compatibility

When you buy your adapters, be sure they're NE2000- or NDIS-compatible and supported by LANtastic. For a list of supported adapters, check Artisoft's electronic sites or call the Artisoft Direct Team or your local Artisoft office, as described in the Directory of Support Services. **Be sure to write down the brand name(s) and model of your adapters. You'll need this information when you install the LANtastic software.**

Configuring your network adapters

Configuring adapters for Windows 95/98

Important... All of the adapter configuration guidelines in this section apply only to computers that are going to run the LANtastic for Windows 95/98 software.

If your non-Windows 95/98 computers have adapters that are already operating on a LANtastic network, they'll be able to communicate with your LANtastic for Windows 95/98 computers in the ways described in the previous section.

A network adapter card that's compatible with Windows 95/98 must be installed in every computer on which you're going to install the LANtastic for Windows 95/98 software. Each adapter must then be cabled to the other computers on your network.

Configuring Plug and Play adapters

Little or no configuration is necessary if you've already installed (or are planning to install) a Plug and Play adapter in a Windows 95/98 computer that has Plug and Play technology. Such adapters come preinstalled on many computers.

- If your Plug and Play adapter came preinstalled, you don't need to do anything to configure it. Once you've cabled your computers together, go on to "Installing the Software" on page 29 of the *LANtastic 8.0 Installation and Setup Manual*.
- If you're manually installing a Plug and Play adapter, follow the installation guidelines in the adapter's documentation and this file. After the adapter is installed and cabled to the network, start Windows 95/98 to initiate the automatic configuration process:
 - Typically, Windows 95/98 will copy a driver for your adapter from the Windows 95/98 CD-ROM or diskettes.
 - If Windows 95/98 doesn't have the required driver, you may be instructed to insert the disk that came with your adapter.
 - After the driver has been copied, click Start, Settings, Control Panel. Then double-click Network and check the list of installed components. The name of your adapter should now appear on the list.
 - Go on to go on to "Installing the Software" on page 29 of the *LANtastic 8.0 Installation and Setup Manual*.

TIP...

Because they're compatible with Intel® adapters, Artisoft NodeRunner Pro™ adapters will appear in the Network Components list as "Intel EtherExpress Pro adapter."

Configuring adapters that aren't Plug and Play

If there's an Artisoft NodeRunner Pro adapter installed in your Windows 95/98 computer, you don't need to make any configuration changes. If you have another brand of adapter, check its documentation to see if you need to change any of its settings to make it operate under Windows 95/98.

TIP...

If you have an Artisoft NodeRunner 2000 adapter installed in a 486/66 or faster computer, make sure you use a version of NRSETUP dated March 1996 or later.

If your Windows 95/98 computer has a NodeRunner 2000 adapter installed, you must run the NRSETUP program and change the mode setting from the default choice of Artisoft to the new setting of NE2000. If your computer has an Artisoft AE-Series adapter installed, you must change its mode setting by manually moving jumpers on the board. Instructions for performing both of these operations appear in the sections that follow.

Whether or not you need to change your adapter's configuration, you must know its IRQ and I/O address settings. You'll be asked for these when you install an adapter driver. Depending on the type of adapter, its settings can be checked by running a software utility or by visually inspecting its jumper settings.

Checking or changing the settings on a NodeRunner adapter

To check and (if necessary) change the settings on an Artisoft NodeRunner adapter (other than the NodeRunner Pro, which is discussed on page 5), you'll need to run the NRSETUP program.

If you've already installed LANTastic 8.0 on a DOS or Windows 3.x computer, you can get NRSETUP from that computer's LANTASTI directory. Copy the file onto a diskette and use it to configure the NodeRunner adapter installed in your Windows 95/98 computer.

You'll also find NRSETUP on all of the Artisoft online sites (filename NRU100.EXE). Simply download the file to a floppy diskette.

Important... If you're removing a network adapter from a 386 or 486 and installing it in a Pentium running Windows 95/98, see page 13.

To check and change the settings on your NodeRunner adapter:

1. Insert diskette that contains NRSETUP.EXE into a floppy drive on your Windows 95/98 computer.
2. Click the MS-DOS icon on the Windows 95/98 desktop (or click Start, Programs, MS-DOS prompt).
3. At the DOS prompt, type **A: <Enter>**, then **NRSETUP <Enter>**, where **A:** is the floppy drive containing the diskette.

4. If any network software is running, you'll see the message, "Adapter may be in use!" Press **Enter** to proceed or **Esc** to abort. The Main Options window appears.
5. Use the cursor keys to select Manual Configuration, then press **Enter**. Two windows appear. Check the list of configuration options in the bottom window and write down the IRQ and I/O Base settings.
6. If you have a NodeRunner 2000 adapter, select the Mode option and press **Enter**. On the NodeRunner Adapter Configuration screen, use the cursor keys to change the selection from Artisoft to NE2000, then press **Enter**.
7. Press **Esc** twice to exit NRSETUP and return to the DOS prompt.
8. Type **Exit <Enter>** to return to Windows 95/98.

Checking and changing the settings on your AE-Series adapter If your Windows 95/98 computer has an Artisoft AE-Series adapter installed, you must remove the board and change two jumper settings before installing LANtastic for Windows 95/98. On the W5 jumper bank, remove the jumper from the pins labeled A and install it on the pins labeled N. Then remove the jumper from the pins labeled 8 and install it on the pins labeled 16. Check the adapter's IRQ and I/O Base settings by visually inspecting the appropriate jumpers, as described in your adapter documentation.

Resolving a possible IRQ conflict If you've installed a non-Plug and Play NodeRunner adapter (not a NodeRunner Pro) in a Pentium-type computer, it's likely that your computer's PCI motherboard is set to use the same IRQ that's currently assigned to your adapter, causing a conflict. If this applies to your installation, check the settings in your computer's CMOS setup program. If you see an IRQ conflict, you must either disable the PCI slot's IRQ in the CMOS or change the IRQ for your adapter. Refer to the instructions that came with your computer or adapter. (If you don't do this before installing LANtastic for Windows 95/98, you'll get an error message when you try to make a network connection to another computer's disk drive.)

WARNING! Adjusting your computer's CMOS settings can result in serious CPU problems. If you decide to change the motherboard's IRQ settings, be sure to carefully follow the instructions in your computer's documentation.

Installing a Windows 95/98 adapter driver

Once you've installed and configured a network adapter on all of your Windows 95/98 computers, you must make sure that each adapter has driver software that's installed and recognized by Windows 95/98. (Windows 95/98 calls this "setting up your computer to use a network.")

Here's how to tell whether you need to install an adapter driver:

- If the Network Neighborhood icon **appears** on the Windows 95/98 desktop, **you don't have to install an adapter driver**. Instead go on to "Installing the Software" on page 29 of the *LANtastic 8.0 Installation and Setup Manual*. (This will usually be the case with a Plug and Play adapter.)
- If the Network Neighborhood icon **doesn't appear** on the Windows 95/98 desktop, **you must install an adapter driver** according to the instructions in this section. When you're finished, go to "Installing the Software" on page 29 of the *LANtastic 8.0 Installation and Setup Manual*.
- If you know that you must install a driver but decide not to at this time, you'll be asked to do so while you're installing the LANtastic for Windows 95/98 software. At the end of the installation, you'll have to go back and follow the steps under "Installing the Software" on page 29 of the *LANtastic 8.0 Installation and Setup Manual*.

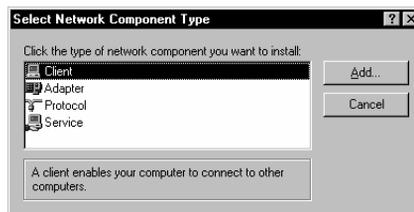
To install an adapter driver under Windows 95/98:

1. Click Start, Settings, Control Panel.
2. Double-click Network and check the list of installed components. If your adapter's name **appears**, follow the directions under step 3. If your adapter's name **doesn't appear**, follow the directions under step 4.

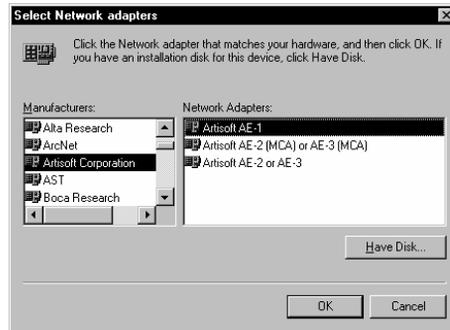
Note... If you see the name Artisoft LANtastic in the list of installed components, select it and click the Remove button, then continue with the steps below.

3. If your adapter's name **appears** in the list of installed components, continue with the procedures under this step. If your adapter's name **doesn't appear** on the list of installed network components, go to step 4 on the next page.

- Select your adapter's name from the list. (Because they're compatible with Intel adapters, Artisoft NodeRunner Pro adapters will appear on the list as "Intel EtherExpress Pro adapter." Any other type of NodeRunner adapter should appear as "NE2000 Compatible." An Artisoft AE-X adapter should appear as "Artisoft AE-X.")
 - Click the Properties button.
 - Click the Resources tab.
 - Make sure the Interrupt (IRQ) and I/O address ranges match the settings that are actually set on the adapter. If they do, click OK to close the Network folder, then go to "Installing the Software" on page 29 of the *LANTastic 8.0 Installation and Setup Manual*.
 - If the IRQ and I/O settings are incorrect:
 - Click Configuration Type.
 - Select Basic Configuration 0.
 - Scroll to select the correct settings and click OK.
 - Click OK to close the Network folder. Click Yes to restart your computer, then go to "Installing the Software" on page 29 of the *LANTastic 8.0 Installation and Setup Manual*.
4. If your adapter's name **doesn't appear** on the list of installed network components:
- Click Add. The Select Network Component Type window appears.



- Click Adapter, then click Add again. The Select Network adapters window appears.



- Select your adapter's name from the Manufacturers' list, then follow the procedures under step 3 on page 7. If you're using an Artisoft or Eagle brand adapter, see the chart below and on the next page to determine which driver to install.

5. If your adapter's name **doesn't appear** on either the Manufacturers' list **or** the chart below and on the next page, click Have disk and insert the diskette that came with your adapter. Verify that the "Copy manufacturer's files from" box displays the correct floppy drive letter (for example, A:).

If necessary, type in the correct drive letter. Click OK. From the Select Network Adapters window, select the adapter driver that goes with your card and click OK, then follow the procedures under step 3 on page 7.

If you have this adapter:	Select this manufacturer:	Then select this network adapter:
Artisoft NodeRunner or NodeRunner/SI: NodeRunner 2000/T NodeRunner 2000/C NodeRunner 2000/A NodeRunner 2000M/TC NodeRunner/SI 2000/T NodeRunner/SI 2000/C NodeRunner/SI 2000/A NodeRunner/SI 2000M/TC	Novell/Anthem (Same for all adapters)	NE2000 Compatible (Same for all adapters)

(Continued)

Artisoft AE-Series: AE-1T AE-2, AE-2/T or AE-3 AE-2 or AE-3 Micro Channel	Artisoft Corporation Novell/Anthem Novell/Anthem	Artisoft Corporation AE-1 NE2000 Compatible NE2000 Compatible
Artisoft NodeRunner Pro: (PnP enabled) (PnP not enabled)	Intel Corporation (Same for both adapters)	Intel EtherExpress PRO/10 PnP enabled Intel EtherExpress PRO/10 PnP disabled
Eagle: NE2000 Series Eagle EP32100 Series Eagle NE200T Series	Novell/Anthem Not available Eagle Technology	Novell/Anthem NE2000 Call Microdyne for driver availability Eagle Technology NE200T

Note... The following five network adapters weren't designed for and don't work with LANTastic for Windows 95/98: Simply LANTastic, LANTastic 2Mbps, A2Mbps, E2Mbps and NE-3. If you're installing LANTastic for Windows 95/98 on a computer that already has one of these network adapters, you must replace it with a NodeRunner Pro or other supported adapter. For information on compatible adapters, refer to the chart above, or contact the Artisoft Direct Team or your local Artisoft office according to the instructions on the Directory of Services that you received with this product.

Configuring an adapter for Windows 3.x and DOS

Important... If you're installing an adapter in computer that's running Windows 95/98, see the adapter configuration and device driver information in this manual in the sections called "Configuring your network adapters" on page 4 and "Installing a Windows 95/98 adapter driver" on page 7. Then, return to this chapter and continue reading, starting with the section called "Cable and related hardware".

Before or after you install each adapter, you may have to configure it by moving plastic jumpers or running a software program. If the adapter's settings turn out to be in conflict with the settings of other adapters in the computer, you'll have to change them, or the LANTastic software won't run. This means that you may need to know what other adapters are installed in each computer and what their settings are.

For example, one setting that often needs changing is called the IRQ (interrupt request), which the adapter uses to communicate with the computer's CPU. It may be in conflict with the IRQ setting

on a SCSI adapter that works with a CD-ROM drive. If this is the case, you'll have to change the IRQ setting on one of the adapters in order to give them each a clear channel to the CPU.

Device driver software

You'll do a final part of adapter installation while you're installing LANtastic. At that time you'll have to know the brand and model of adapter that you have so the LANtastic Setup program can determine which driver to install. In some cases you'll have to insert the diskette that came with the adapter. **If you don't feel comfortable with adapter configuration and driver selection, get an expert to help you. It's easier to install the adapter correctly in the first place than it is to troubleshoot problems afterwards.**

Cable and related hardware

Cable is the wire that connects to the end of the network adapter at the back of each computer. Two common types of cable are twisted pair (sometimes called 10BASE-T) and thin coaxial (10BASE2). Twisted pair is inexpensive and conveniently pre-wired in the walls and ceilings of many office buildings. But thin coax is a high-quality alternative.

WARNING! Make sure that every segment of cable on the network is of similar type and high quality. One bad piece of cable can cause problems on the whole network.

Before you buy your cable, you'll need to decide how long each segment needs to be. This depends on several factors besides the distance between computers. For example, if you put too many computers on a certain length of cable, you'll end up with communication problems. The length that you can use varies with the different types of cable. So if you're going to install your own cable, be sure you understand all this. Here are a few tips:

TIP...

The steps in this chapter cover only 10BASE-T and 10BASE-2 cable. If you have adapters that work with another category of cable, ask your dealer or call Artisoft Technical Support for instructions.

- Before you go to buy cable, measure and write down the distance between the computers in your network (or, in the case of twisted pair, the distance between each computer and an amplifier device called a hub). Remember to include enough length to reach around corners and furniture.
- If you already have your adapters, take one along when you go to buy your cable. This will make it easy to tell whether you need twisted pair (10BASE-T) or thin coaxial cable (10BASE2).

- Within each general category of cable, you can choose from several types. Recommended types appear in the table below.
- Buy cable with the end connectors already attached or have the end connectors installed by a qualified technician.
- If you're using twisted pair cable, you're going to have to buy a device called a hub (sometimes known as a repeater or a hub/repeater). The hub is an amplifier that lets you use conveniently long pieces of twisted pair cable. Each computer on the network connects to the hub with a cable. With the hub located in the center, your network will resemble a star.
- Don't use standard flat phone wire, often called "Silver Satin," in place of twisted pair cable. It doesn't work for computer networks.
- Don't use RG58/U coax cable. It doesn't meet the required specifications for Ethernet computer networks.
- If you're using thin coax cable, you'll need to buy a T-connector for each computer on the network, along with a few spares. You'll also have to purchase two 50-ohm terminators per network segment. Your dealer will know exactly what these items are.

Recommended cable types

Recommended types of twisted pair and thin coax cable are shown in the table below. These boxes also show the longest length of cable that you can run between two computers. In the table, a segment is the total cable length between either a hub and an adapter or two terminators.

Twisted Pair Cable		
Supported Cable Types	Maximum Segment Length	Maximum Computers per Segment
Artisoft UTP (Unshielded Twisted Pair)	100 meters (328 feet) for all supported twisted pair cable types	One for all supported twisted pair cable types
AT & T 1041 A		
Belden 1455 A		
Belden Plenum 1457 A		
Thin Coax Cable		
RG58A/U	185 Meters (607 feet) for all supported thin coax cable types	30 for all supported thin coax cable types
Belden 9907		
Belden Plenum 89907		

Installing the adapters

To install internal adapters – often called network interface cards or boards – you have to take off the cover of each computer. Below are a few adapter-installation tips:

- Before you start, turn off the computer, monitor and any attached printers or other devices.
- Before handling an adapter, get rid of any static electricity in your body by touching the computer's frame. Be careful not to touch the gold contacts on the lower edge of the adapter.
- To install an internal adapter card, remove the cover from the computer. The cover will typically slide forward or upward, depending on the model of your computer. Unscrew the metal bracket from an empty expansion slot, insert the adapter into the slot, then tighten the screw to secure the adapter's bracket to the computer. Replace the cover.
- Some internal adapters may require a few more installation steps. For example, you may have to move plastic jumpers, install driver software or run a configuration program. If you're uncomfortable about these jobs, get some expert help.

TIP...

Make sure that your adapter is **NOT** set to use IRQ 2 or IRQ 9.

Moving an adapter from one computer to another

If you have a NodeRunner adapter that you want to move from an existing 386 or 486 computer to a Pentium computer running Windows 95/98, it's very important to follow the steps in this section **BEFORE** you remove the adapter. Making these configuration changes after moving the adapter could result in EEPROM corruption on the adapter.

1. Reboot the computer that contains the adapter you want to move, and while it's booting, press **F5** (for DOS computers) or **F8** (for Windows 95/98 computers.)

Pressing **F5** on DOS computers causes the boot process to bypass the Config.sys and Autoexec.bat files. Pressing **F8** on Windows 95/98 machines will bring up the Windows 95/98 boot menu. Select Safe Mode Command Prompt Only.

2. Now you must run the NRSETUP program.

Note... If your copy of LANtastic 8.0 doesn't contain NRSETUP or the file NRU100.exe in the CD-ROM's Support directory, go to page 5 for instructions on finding the file.

At the DOS prompt, type **NRSETUP <Enter>**. The NodeRunner setup program starts. Select Manual NodeRunner Configuration from the main menu.

3. In NRSETUP, you must make the following three changes to make this adapter operate correctly with LANtastic for Windows 95/98:
 - **IRQ setting** – The default value is 15, which isn't available in Pentium computers. NodeRunner adapters can use IRQs 3,4,5,7,10, or 15. Select one of these that is not in use on the computer you will be installing this adapter card into.

Note... Typically, you can check which IRQ settings are in use on the Windows 95/98 computer from its Control Panel (click Start, Settings, Control Panel). Double-click the System icon, then in the System Properties window, select the Device Manager tab. Click any device type that might be using an IRQ, select a device then click the Properties button. Click the Resources tab. The Resource Settings box shows the IRQ it's using.

- **IOCS16 Timing setting** – The default value is NORMAL, which works for 386 or 486 computers. But for Pentiums, set it to EARLY. Press **Enter** to change the setting. Once this value has been changed, you can usually move the adapter into the Pentium computer without concern about EEPROM corruption on the adapter.
- **MODE setting** – The default setting is Artisoft, but this won't work for Windows 95/98, as there is no NodeRunner driver for Windows 95/98. Press **Enter** and change this value to NE2000. Later, when you're installing LANtastic 8.0 on the other computer, Windows 95/98 will ask which adapter to use. Be sure to select Novell/Anthem NE2000 compatible. Novell/Anthem is the manufacturer, and NE2000 compatible is the driver you need.

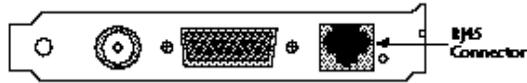
Installing the cable

If your adapters came with cabling instructions, follow them instead of the ones given here.

Connecting twisted pair cable

1. Install your hub as close to the center of your network as possible. Change any necessary settings to make it work with your network setup. Follow the instructions that came with the hub.

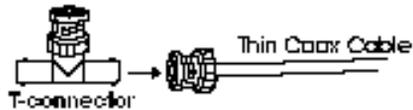
2. Attach one of the connectors on the twisted pair cable to the adapter's RJ45 connector, which will look like the one shown.



3. Attach the other connector on the cable to a port on the hub.
4. Repeat steps 2 and 3 for all the other computers you want to include in your network. In the end this arrangement will look something like a star, with all your computers radiating off the hub.

Connecting thin coax cable

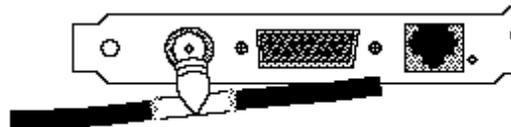
1. Attach one of the connectors on the thin coax cable to one end of the T-connector, as shown below.



2. Screw the T-connector onto the adapter's BNC connector, as shown below, twisting the T-connector until it locks into place.

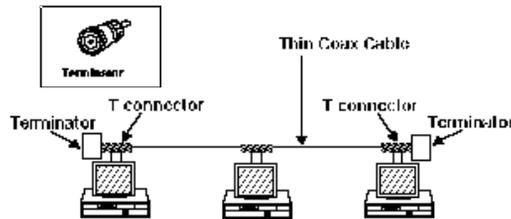


3. Attach one end of the thin coax cable from the next computer to the other end of the T-connector, as shown below.



4. Repeat steps 1 - 3 for each of the other computers you want to include in your network.

5. After all your computers are connected, attach 50-ohm terminators to the open end of the T-connector of the adapter on the first and last computer, as shown below.



A few cabling don'ts

- If you're using thin coax cable, don't connect your computers in a closed circle. Instead put a terminator on the adapter in the first and last computer in your network.
- Don't connect a piece of thin coax cable to a T-connector in the ceiling, then drop it down to a computer below. Each adapter needs its own T-connector attached directly to the card.
- Don't exceed the maximum segment lengths shown in the boxes on page 12. If you're using twisted pair cable, a segment is the distance between a computer and the hub.
- Don't run cables within a few feet of fluorescent lights, power lines, lightning rod cables, X-ray machines, radios, electric motors, air conditioners or TV antennas.
- Don't run cables through walls without passing them through their own conduit tubes. Never use the same conduit that contains power lines or phone lines.
- Don't run cables under carpets in heavily traveled areas or between two buildings, even if you plan to run them through a conduit or bury them in the ground.

Testing your network hardware

Many network adapter cards, including the adapters that come in LANtastic 8.0 starter kits, include diagnostic programs on their configuration diskettes. These programs check the integrity of adapter and cable connections without making any configuration changes. To make sure that your adapters are communicating with each other, run your adapter's diagnostic program after you've installed your hardware.

After you've installed the LANtastic software, you can perform another hardware check by running the LANCHECK or LCHECK32 program on every network computer at the same time. LANCHECK or LCHECK32 evaluates each adapter's performance and provides a series of statistical displays that will help you pinpoint hardware problems. Brief instructions for running LANCHECK and LCHECK32 appear in the *LANtastic Troubleshooting Manual* and more detailed instructions are in the file called Lncheck.pdf in the Online Library.

If you have computer lockup problems or receive a hardware-related error message, refer to your *LANtastic Troubleshooting Manual*, and the file called Lncheck.pdf in the Online Library.

