2 Hardware Installation

This chapter describes how to install the LFE-8139ATX NIC into your computer and after you connect the LFE-8139ATX NIC to the network, you connect the Remote Wake-Up cable to the motherboard, and install the optional remote boot ROM. The NIC installation involves the following steps, and they are described in detail in subsequent sections:

Step 1. Insert the LFE- 8139ATX NIC into the computer.
Step 2. Connecting to the Network.
Step 3. Connecting the Remote Wake-Up cable.
Step 4. Network Cable Connection Examples.

Since the LFE-8139ATX NIC is a PCI-bus device, you will no longer need to configure this device after installation, because the system automatically allocates resources such as I/O base address and IRQ at bootup time. Just simply follow the aforementioned steps and leave the system to automatically configure. If you want to verify the operation of the adapter basic functions, run the diagnostic program RSET8139.EXE in the LFE-8139TX V.R driver diskette.

Step 1. Insert card into computer

To install the LFE-8139ATX NIC to an appropriate computer or server by the following these steps as below :

1. **Turn OFF the computer and unplug it from the power outlet.**
2. **Remove the computer cover. For information, please refer to your computer manual.**
3. **Insert the NIC to an available PCI expansion slot.**
   A sample PCI slot is shown in Figure: 2-1 If you do not know how to identify a PCI slot, check your PC documentation or ask your system administrator. And make sure the NIC is insert in the bus mastering slot.
4. **Secure the NIC on the slot with a bracket screw.**
5. **Replace the computer cover.**
6. **If you want to insert another NIC into your system, repeat steps 1 5.**
7. **Turn on the power to the PC.**

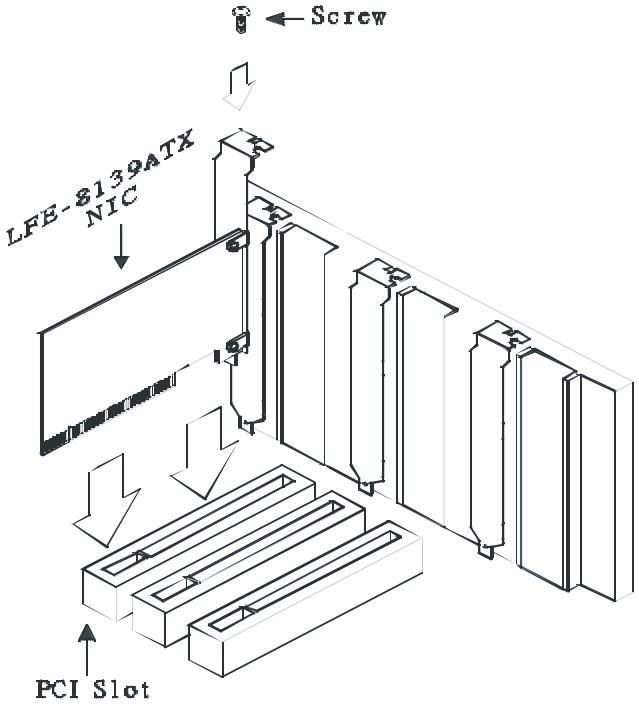

Figure 2-1: Insert the NIC into PC

Icons

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Notes:
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= Ensure that the PCI machine does support master slots, INT multiple sharing and timing compatibility. Do not install LFE-8139ATX in PCI slave slots. Please refer to your PCI system manual and select the appropriate configuration settings.

= When installing multiple LFE-8139ATX boards at the server site station, you should configure the PCI slot INT settings correctly. Up to four LFE-8139ATX adapters can be installed in a PCI file server which is running NetWare system. These four adapters share the same interrupt line with the driver supporting multiple INT services at same time. Each LFE-8139ATX's IRQ should not conflict with other installed adapter.

= In this LAN driver, motherboard PCI slots are numbered from 16, So the first PCI board is in slot 16 and the next one will be in slot 17. Slot number in some PC BIOS may be assigned to a initial number other than 16.

= You must use EMM386 version 4.49 or higher, and install both DOS & EMM386 that came from the same DOS package to avoid possible software problems.

Step 2. Connecting to the Network

You must connect the NIC to the network before installing the network driver. To connect the LFE-8139ATX NIC to the network cable, follow these steps:

1. **Connect the network cable to the RJ-45 port on the LFE-8139ATX NIC, as shown in Figure : 2-2**
2. **Connect the other end of the network cable to a 10BASE-T or a 100BASE-TX network port.**
3. **Check the LEDs, shown in Figure : 3-1**
   After installation, and before you install the network driver, the LEDs indicate the following:
   - 10/100(M) LED – ON (green) – A good connection to a 10BASE-T or 100BASE-TX port.
   - TX/RX(Activity) LED – Blinking (green) – The NIC is transmitting or reception data from the network.
   - FUDUP(Full Duplex) LED – ON (yellow) – Run in Full Duplex mode.
   - PWR(Power) LED – ON (green) – The power of the NIC is receiving.

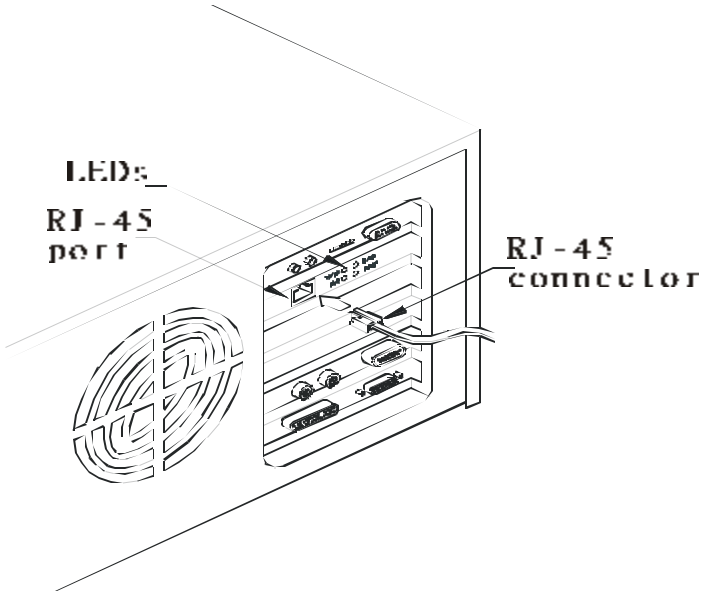


Figure 2-2: Connecting the Network Cable to the RJ-45 Port

See **Chapter 3** for more LED information. To connect the Remote Wake-Up cable, follow the next section " Connecting the Remote Wake-Up" to complete installation.

Step 3. Connecting the Remote Wake-Up cable

When you install the NIC in slot in the PC, you can use the Remote Wake-Up feature that resides in the LFE-8139ATX NIC and on the system motherboard. It signals the system to wake up by using a three-pin Remote Wake-Up cable that connects them to the wake-up circuitry on the system motherboard. While plugging in the three-pin connector, follow these steps below :

1. **Insert the three-pin Remote Wake-Up cable into the NIC, shown in Figure : 2-3**
   Each LFE-8139ATX NIC is equipped with one three-pin Remote Wake-Up cable in the package.

2. **Attach the cable to the connector on the PC motherboard, as shown in Figure : 2-3**
   The connector is located in different locations depending on the PC.

3. **Reconnect all cables and replace the PC cover.**
   The LFE-8139ATX Remote Wake-Up NIC is installed. Now you can install a network driver to work with your network operating system.

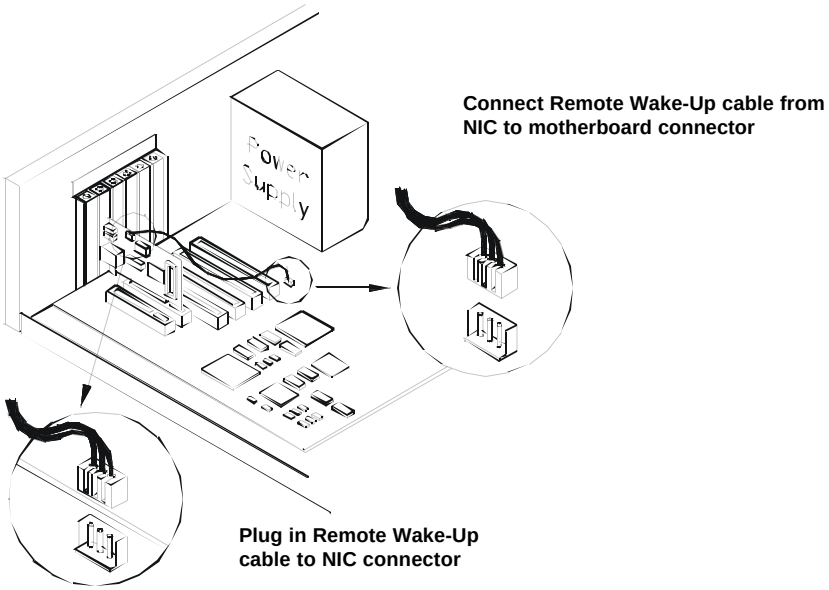


Figure 2-3: Connecting the NIC to the 3-pin connector

Step 4. Network Cable Connection Examples

The NIC provides single RJ-45 port for connecting to 100BASE-TX Fast Ethernet or 10BASE-T Ethernet network. The NIC sensing the connection automatically. For a detailed description of this connection, please refer to the appropriate section as below.

Connecting to 100BASE-TX Fast Ethernet Network

To connect the NIC to a 100BASE-TX Fast Ethernet network, you need a twisted-pair Category 5 or better cable with RJ-45 phone jacks at both ends. This cable can have a maximum length of 100 meters. Follow steps as below :

1. **Plug one end of the cable into the RJ-45 port of the NIC.**
2. **Plug the other end of the cable into a Ethernet to Fast Ethernet Switching hub (such as Ether-FSH8TX) or a Fast Ethernet Standard Hub(such as Ether-FH16T / FH8T)**

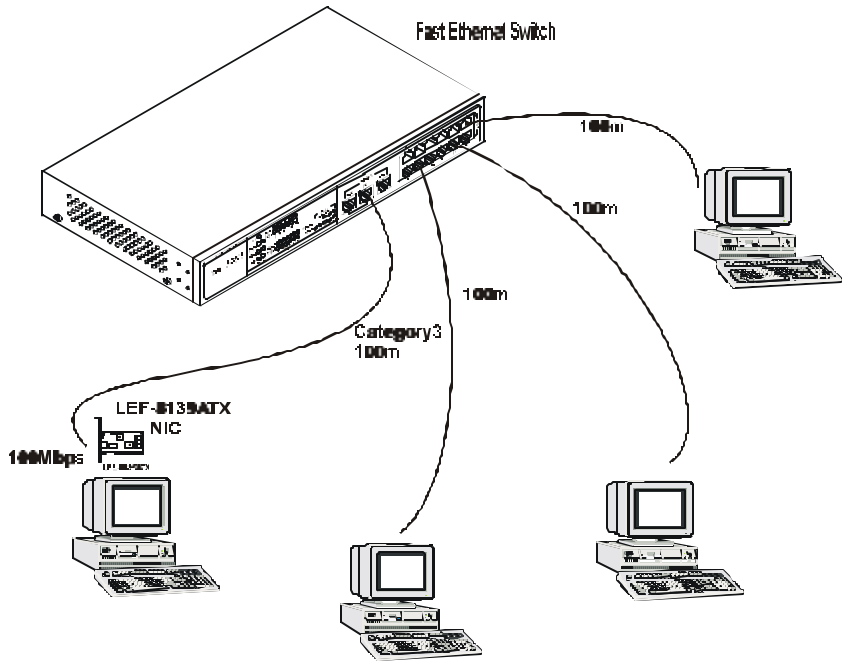


Figure 2- 4: Connecting the NIC to the Switch

Connecting to 10BASE-T Ethernet Network

To connect the NIC to a 10BASE-T Ethernet network, you need a twisted-pair Category 3, 4 or 5 cable with RJ-45 phone jacks at both ends. This cable can have a maximum length of 100 meters. Follow these steps:

1. **Plug one end of the cable into the RJ-45 port of the NIC.**

2. **Plug the other end of the cable into a 10BASE-T Ethernet hub.(such as Ether-H16+)**

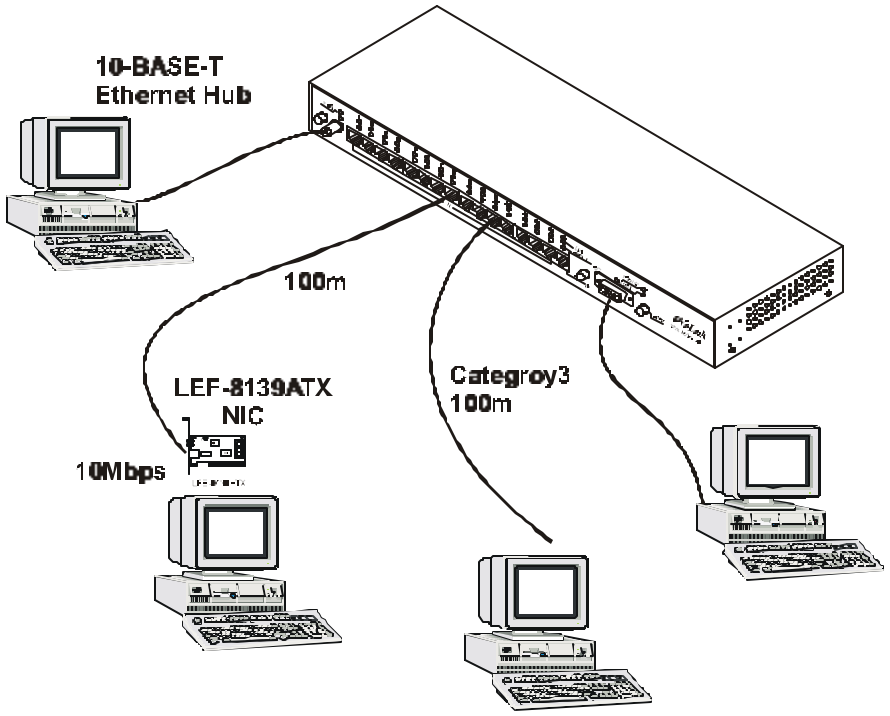


Figure 2- 5: Connecting the NIC to the 10BASE-T Ethernet hub

Correct Network Cable(STP/UTP) Requirements

. 100 Mbps network must be shielded twisted-pair (STP) or Category 5 unshielded twisted-pair cable. Do not use Category 3,4 cable for 100 Mbps network operation, it could cause data loss. Category 3 or 4 cable is good for 10Mbps network only.

. Category 5 cable is also good for 10Mbps operation. If all network uses UTP Category 5 cable, that you may have the versatility to operate the network at either 100Mbps or 10Mbps speed without recabling due to cable category grade.

. Two pairs of wiring are required

. Depending on building codes, different insulation materials may be required. Plenum-rated or TEFLON-coated wiring may be required in some areas.

. The wire gauge should be between 18 and 26 AWG.(Most telephone installations use 24-gauge wiring.)

. UTP wire should meet the following requirements :

Solid copper
Nominal capacitance : less than 16 pF/ft
Nominal impedance : 100 Ohms
Nominal attenuation : less than 11.5db

Automatic Selection of the Media Type

While the driver installs, it automatically selects the media type based on the type of cable connected. If you change the cable type, you must reinstall the driver for it to auto-detect the cable type.

If the driver cannot detect which cable is connected or whether a cable is connected, look at cabling, network driver (Ex. modify net.cfg file parameters -- force line speed = 10 Mbps or 100 Mbps).

10/100 Auto- Negotiation (NWay)

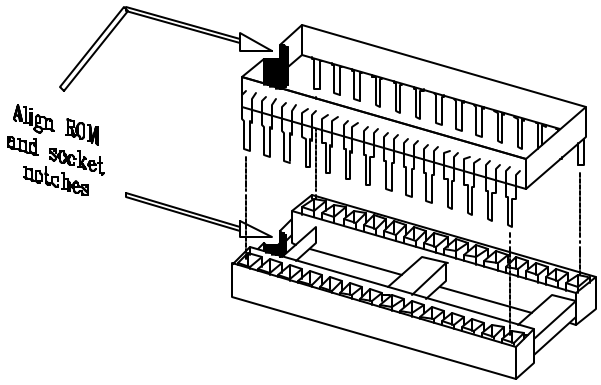
The LFE-8139ATX NIC automatically runs at the appropriate speed, depending on the hub or device to which it is connected. It does this using NWay, a feature that complies with the IEEE802.3 standard. It also works with any of other IEEE-compliant products (including 10BASE-T and 100BASE-TX equipment such as the LE-8029R NIC or 100BASE-TX hubs).

Remote Boot ROM Installation

A boot ROM allows your computer to load its operating system over the network, instead of the computer local hard disk. This enables installation of the NIC in diskless workstations.

The LFE-8139ATX NIC comes with a boot ROM socket for installation of a remote boot ROM. To install, follow below steps:

1. **Discharge any static electricity from your body by touching a grounded metal object.**
2. **Orient the boot ROM so that its notch coincides with the notch on the socket. Make sure that the boot ROM is properly oriented. A wrong orientation might damage the chip.**
3. **Align the pins on the boot ROM with the socket on the NIC and press the chip straight down until it is firmly seated on the socket. Be careful not to bend any pins on the chip.**
4. **Reboot the system to use the boot ROM function.**



Boot ROM type

You do not need to configure the adapter to specify the boot ROM settings (default setting is enable). Once the PCI system detects the presence of a boot ROM chip on the adapter during bootup, it will automatically set a working configuration.

The LFE-8129ATX NIC supports 8K,16K,32K,64K, and 128K EPROMs for an upgradable boot ROM.