Apple Ethernet LC Twisted-Pair Card User's Guide

FCC statement

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the Federal Communications Commission (FCC) rules. These limits are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with the instructions in this manual, may cause interference to radio communications. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at the user's own expense, will be required to correct the interference.

IMPORTANT Changes or modifications to this product are not authorized by Apple Computer, Inc., and could void the FCC certification and negate your authority to operate the product. This product was tested for FCC compliance under conditions that included the use of shielded cables and connectors between system components. It is important that you use shielded cables and connectors to reduce the possibility of causing interference to radios, television sets, and other electronic devices. For Apple peripheral devices, you can obtain the proper shielded cables through an Apple-authorized dealer. For non-Apple peripheral devices, contact the manufacturer or dealer for assistance.

DOC statement

DOC Class A Compliance
This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the radio interference regulations of the Canadian Department of Communications.

Observation des normes—Classe A
Le présent appareil numérique n'émet pas de bruits radio-électriques dépassant les limites applicables aux appareils numériques de la Classe A prescrites dans les règlements sur le brouillage radioélectrique édictés par le Ministère des Communications du Canada.

VCCI statement

情報処理装置等電波障害自主規制について

この装置は、第一情報装置（商工業地域において使用されるべき情報装置）で商工業地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（VCCI）基準に適合しております。

従って、住宅地域又はその隣接した地域で使用すると、ラジオ、テレビジョン受信機等に受信障害を与えることがあります。

取扱説明書に従って正しい取り扱いをして下さい。

Contents

About this expansion card

The Apple Ethernet LC Twisted-Pair Card expands the capabilities of your Macintosh computer so that you can connect to an Ethernet network that uses IEEE 10BASE-T standard twisted-pair cable. To connect to an Ethernet network, you must also install EtherTalk software, which is included with the Twisted-Pair Card. Once you've installed the card and network software, you connect to the network by attaching a network cable to the card's RJ-45 port and to a network controller unit (hub).

What's in the box

- One Apple Ethernet LC Twisted-Pair Card
  Note: Keep the card inside its antistatic bag in the protective cardboard box until you're ready to begin installation.
- One floppy disk containing EtherTalk software
- Warranty card
- User's guide
  Note: You'll need to obtain twisted-pair network cable separately.

Installing and connecting your card

You can install and set up your Apple Ethernet LC Twisted-Pair Card and network software on computers that have a "Macintosh LC–style" processor-direct slot (PDS). The following list shows those models with the appropriate PDS at the time this guide was printed; other compatible models may have been introduced since.

- Macintosh Color Classic
- Macintosh Performa 405, 410, 430, 450, 460, 466, 467, 475, and 476
- Macintosh LC, LC II, LC III, LC 475, and LC 520
- Macintosh Quadra 605

For best performance, your system should have at least 4 megabytes (MB) of random-access memory (RAM) if you use Macintosh System 7 and 1 MB if you use System 6.

Expansion card installation procedures vary depending on the model of Macintosh you have, so it's best to consult the setup information that came with your computer. Following is the general procedure for installing the card in most Macintosh LC models.

1. **Shut down your computer.**

> **WARNING** To avoid damage to the card and to your other computer equipment, be sure to turn off power to your computer.

2. **Remove the computer's lid and when the metal has cooled down, touch the top part of the power supply.**

   If the monitor has been placed on top of the computer, you'll need to move the monitor. Also, if the safety screw at the back of the computer's lid is in place, you will need a Phillips screwdriver to remove it.

Security screw opening   Tab
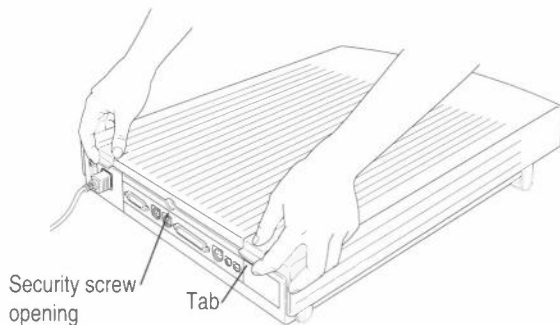
While facing the front of the computer, lift the tabs on the rear of the lid until you hear a pop. Lift the back of the lid toward you, clear of the computer, and set the lid aside.

Power supply

Although Macintosh LC models may have different circuit board designs, many of the other parts are in a similar position as that shown here.

PDS connector slot

Expansion connector opening
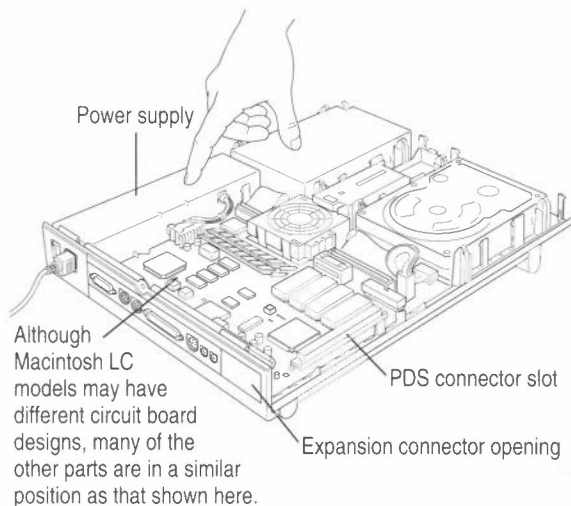
Touching the power supply case discharges any static electricity that may have built up on your clothes or body.

3. Unplug the power cord from the back of your computer.

This ensures that you won't accidentally turn on the computer during installation.

4. Remove the cover from the expansion connector opening.

Pinch together the cover's tabs on the inside of the computer; the cover will pop free of the computer.

Remove the plastic cover and the metal piece that is attached to the cover on the inside of the computer.

Save the cover pieces; you may wish to replace them if you take the card out of the slot.

5. Remove the card from its antistatic bag.

Pick up the card by its edges so that the pin connector is facing down. Be careful not to touch the pins on the card.

Pin connector

RJ-45 port

These posts prevent the card from touching the computer's main circuit board.
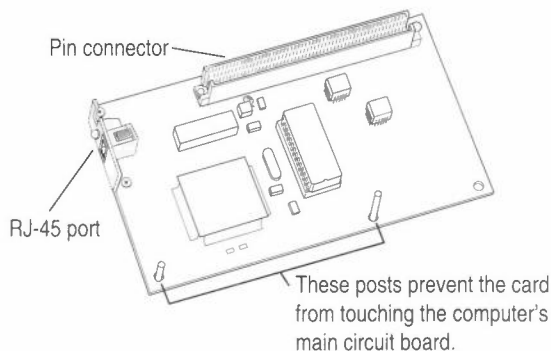
6. Insert the card into the expansion slot.

Position the card so that the RJ-45 port on the back of the card extends through the expansion connector opening, then pivot the card over the expansion slot and gently set the card in place.

Holding the card by its edges, press down firmly until the pin connector is fully seated. You can test to see if the card is properly connected by lifting the card slightly. If it resists and stays in place, it's connected.

> **WARNING** Don't force the card into the slot. If you meet a lot of resistance, pull the card out and try again.

Expansion connector opening

Line up card's pin connector with the matching slot on your computer.
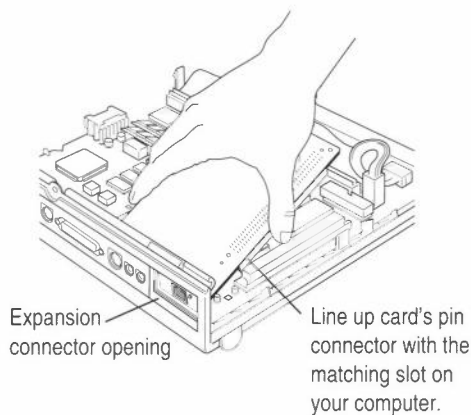
7. **Replace the computer's lid.**

   Line up the lid and drop it into place on the computer. Press down firmly so that the lid's back tabs snap into position. Replace the security screw.

8. **Attach the twisted-pair network cable to the RJ-45 port on your card.**

   Just as with a telephone wire connector, you'll hear a "click" when you plug in the cable.

RJ-45 port

Cable also connects to the network controller unit (hub).

Green LED is on when you have a good network connection.
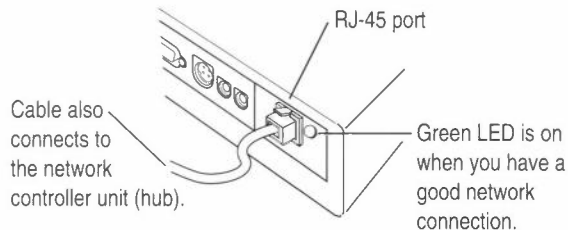
9. **Plug the power cord back in, turn on the computer, and check that the card's green light-emitting diode (LED) is on.**

   The card's green LED lights up to indicate that there's a good connection to the network.

Installing EtherTalk software

To install the correct version of EtherTalk software you need to use the Installer program on the *Network Software Installer* disk, version 1.4.2 or later, included with your card.

For safety, make sure that the Installer disk is locked before you use it. To lock a disk, slide the tab on the back side so that the square hole is open.

Save the Installer disk after installation in case your startup disk gets damaged and you need to reinstall EtherTalk software.

To install EtherTalk software:

1. **Insert the *Network Software Installer* disk in your Macintosh and double-click the disk's icon to open it.**

   The Apple Ethernet LC Twisted-Pair Card requires the versions of software supplied on the *Network Software Installer* disk, version 1.4.2 or later.

Open the disk to find the Installer.
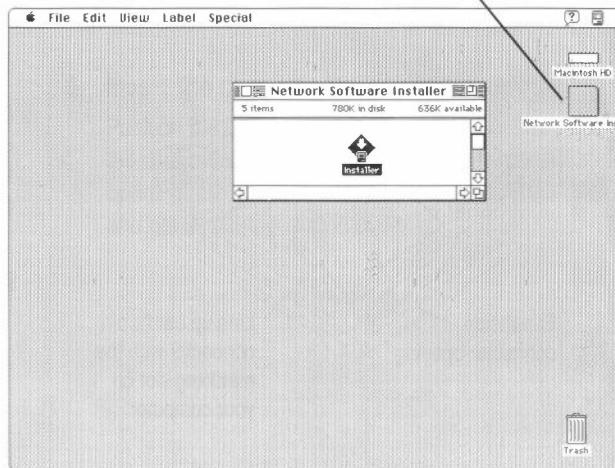
2. Open the Installer program, review the Welcome screen, and click OK.

3. Make sure that the disk indicated on the Installer's dialog box is your current startup disk, and click Install.

   If you see a message indicating that the software cannot be installed while other programs are running, click Continue.

4. When you see a message reporting that the installation was successful, click Restart.

   Before you can use services on an Ethernet network, you need to select the EtherTalk network connection for your startup disk. The next section shows how.

Easy Install

Click Install to place
• AppleTalk version 58.1.2
• EtherTalk for Ethernet LC Twisted-Pair Card
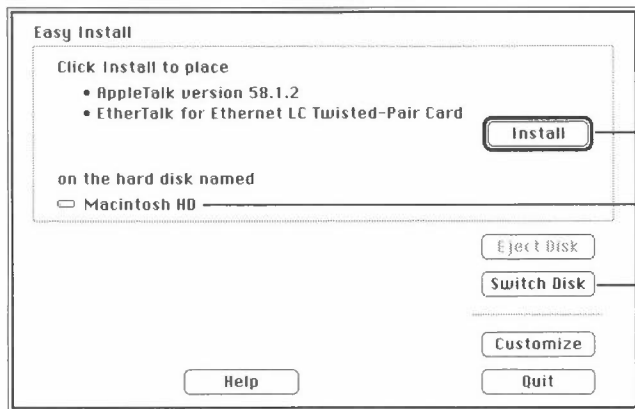
[Install] — If the correct startup disk is indicated, click to begin the installation.

on the hard disk named
⌐ Macintosh HD — Name of the disk on which the software will be installed

[Eject Disk]

[Switch Disk] — If another disk is currently selected, click this button until the name of your current startup disk appears.

[Customize]

[Help]   [Quit]

Setting the Network control panel for EtherTalk

A Macintosh computer's network connection is preset for LocalTalk. To connect to an Ethernet network instead, you need to change the setting in the Network control panel. Follow these steps:

1. **Choose Control Panels from the Apple () menu.**

2. **Open the Network control panel.**

	Control Panels	
26 items	67.3 MB in disk	9.5 MB available

General Controls   Network   Sharing Setup
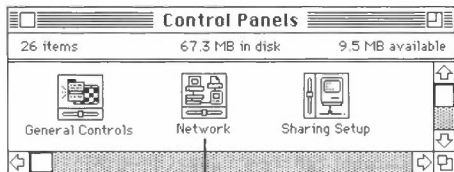
You set your network connection in the Network control panel.

3. **Click to select your card's EtherTalk icon.**

A message asks you to confirm the change of network connections. You may have more network connection choices than those shown in the following figure.

Network

AppleTalk Connection:

LocalTalk Built In   EtherTalk   ———— Click EtherTalk.

Current Zone: Accounts Payable ▼ ———— Shows available zones

AppleTalk Version: 58.1.2
EtherTalk Version: 2.5.5 ———— You need these versions or later.
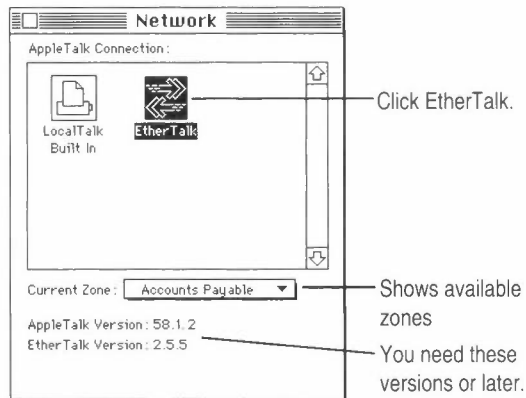
4. **Click OK to confirm the change of networks.**

5. If you see the following dialog box, click OK.

If you don't see a dialog box, skip to step 6.

```
┌──────────────────────────────────────┐
│ ┌───────────────────┐                │
│ │ Marketing      ⬆  │  Please select │
│ │ Pubs              │  this computer's│
│ │ Graphics          │  AppleTalk zone.│
│ │                   │                │
│ │                ⬇  │                │
│ └───────────────────┘                │
│   ┌──────────────┐   ┌──────────┐    │
│   │      OK      │   │  Cancel  │    │
│   └──────────────┘   └──────────┘    │
└──────────────────────────────────────┘
```
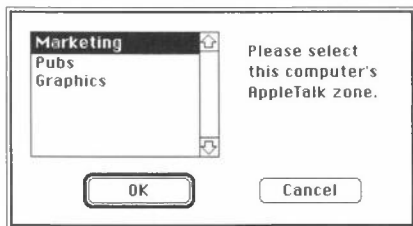
If your network has been set up to allow you to choose a zone but you have not yet done so, the dialog box lists choices, with your designated zone selected. The zone you select determines the default location for any network services provided by your computer and listed in the Chooser (such as file sharing). Before you select a zone different than the one already highlighted, consult your network administrator.

6. Close the Network control panel.

You are now ready to use services available on your Ethernet network.

IMPORTANT You may notice that the green LED on your card flashes occasionally. This is normal. It indicates that the computer is sending information over the network.

Changing your AppleTalk zone

If you need to change zones in the future, just follow the steps described in the previous section. Remember, when you click the EtherTalk icon in the Network control panel, you see the list of available zones from which to choose.

Disconnecting and moving your computer

To disconnect your computer from the network, shut down your system and unplug the cable from the RJ-45 port on the card.

If you plan to move your computer and reconnect to the network at a new location, notify your network administrator before you move.

Troubleshooting

Following are guidelines for handling common problems. If these suggestions don't help you fix the problem, contact your network administrator. If your card is defective or you have a problem with the installation and your network administrator cannot help, in the United States, contact the Apple Assistance Center at 800-SOS-APPL. In Canada call 1-800-263-3394. Outside the United States and Canada, contact your local Apple-authorized reseller.

IMPORTANT The first step in troubleshooting any problem with your network connection is to check that the card's green LED light is on. (When the computer sends information over the network, the LED flashes.)

If the card's green LED light isn't on:
Check each of the following items.
- The computer's power is on.
- The network cable is attached to the RJ-45 port (and the controller unit) correctly.
- The card is installed correctly.
- The network cable is in good condition.
- The controller unit (hub) that the cable is attached to is working.
- Your Ethernet network is working properly.

If the Network control panel icon is missing:
The Network control panel may have been moved from the Control Panels folder. Look for it on your hard disk, drag it to the Control Panels folder, then restart your Macintosh.

Your EtherTalk software may not have been installed properly. If you can't find the Network control panel, you'll need to reinstall the network software according to the instructions in this guide.

If the EtherTalk icon doesn't appear in the Network control panel:
There may have been a problem with the network software installation. Reinstall your network software according to the instructions in this guide.

If you can't select EtherTalk in the Network control panel:
Be sure that the network cable is properly attached and that the card's green LED is on. If you are still unable to select EtherTalk, there may have been a problem with the network software installation. Reinstall your network software according to the instructions in this guide.

If you don't see network services listed in the Chooser:

Make sure your network connection is okay. Open the Network control panel and click EtherTalk. (If the Chooser is open, close and reopen it.)

If you can access some services but can't access a particular service (printing, for example), the device providing that service might be located in a different AppleTalk zone, or it might be malfunctioning, switched off, or disconnected from the network. There may also be a break somewhere in the network cables between your Macintosh and the missing service.

If your system can't load EtherTalk at startup and reverts to LocalTalk:

Your System file may be damaged or your EtherTalk installation was unsuccessful. Try reinstalling the network software.

If the system won't let you change the network connection:

You may be using essential services (such as file sharing) or applications that might prohibit the change. Quit the service named in the system's alert message and try switching the network connection again. You can also try quitting all application programs. If this doesn't work, and it's OK to disrupt services, shut down your Macintosh, using the Shut Down command. Restart the computer, change the network connection, and start the service or application again.

Specifications

Connector	Ethernet 10BASE-T– compliant RJ-45 port
Ethernet transmit/receive data rate	10 megabits-per-second maximum
Power dissipation	Less than 1.5 watts, with an average of 1 watt
Environmental requirements	
Operating temperature:	50° to 104° F (10° to 40° C)
Humidity:	20% to 95% noncondensing at a temperature range of 25° to 40° C
Ethernet controller	National Semiconductor DP83934 (SONIC-T)

For more information

The following books from Apple Computer, published by Addison-Wesley, are available at computer bookstores.

Understanding Computer Networks gives an overview of networking basics.

Planning and Managing AppleTalk Networks provides comprehensive information on setting up, maintaining, and troubleshooting small- to medium-sized AppleTalk networks.

Inside AppleTalk, second edition, is the definitive technical guide to the protocol architecture of the AppleTalk network system.

030-4966-A