



Apple Sphinx
Installation Guide

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Radio and television interference

The equipment described in this manual generates and uses radio-frequency energy. If it is not installed and used properly—that is, in strict accordance with the instructions in this manual—it may cause interference with radio and television reception.

This equipment has been tested and complies with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of Federal Communications Commission rules. These specifications are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that the interference will not occur in a particular installation.

You can determine whether your computer is causing interference by turning it off. If the interference stops, it was probably caused by the computer or one of the peripheral devices.

If your computer system does cause interference to radio or television reception, try to correct the interference by using one or more of the following measures:

- Turn the television or radio antenna until the interference stops.
- Move the computer to one side or the other of the television or radio.
- Move the computer farther away from the television or radio.
- Plug the computer into an outlet that is on a different circuit from the television or radio. (That is, make certain the computer and the television or radio are on circuits controlled by different circuit breakers or fuses.)
- Consider installing a rooftop television antenna with a coaxial cable lead-in between the antenna and the television.

If necessary, consult your authorized Apple dealer or an experienced radio/television technician for additional suggestions. You may find helpful the following booklet, prepared by the FCC: "How to Identify and Resolve Radio-TV Interference Problems" (stock number 004-000-00345-4). This booklet is available from the U.S. Government Printing Office, Washington, DC 20402.

△ **Important** 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 from your authorized Apple dealer. For non-Apple peripheral devices, contact the manufacturer or dealer for assistance. △

P R E F A C E

About This Guide

THIS INSTALLATION GUIDE INTRODUCES YOU TO THE LOCALTALK™ PC Card and tells you how to install it into your IBM PC or compatible computer. The card is your link to a LocalTalk network. After you install the card and your networking software, you can use your PC to gain access to services and resources on an AppleTalk network system.

What you need to know

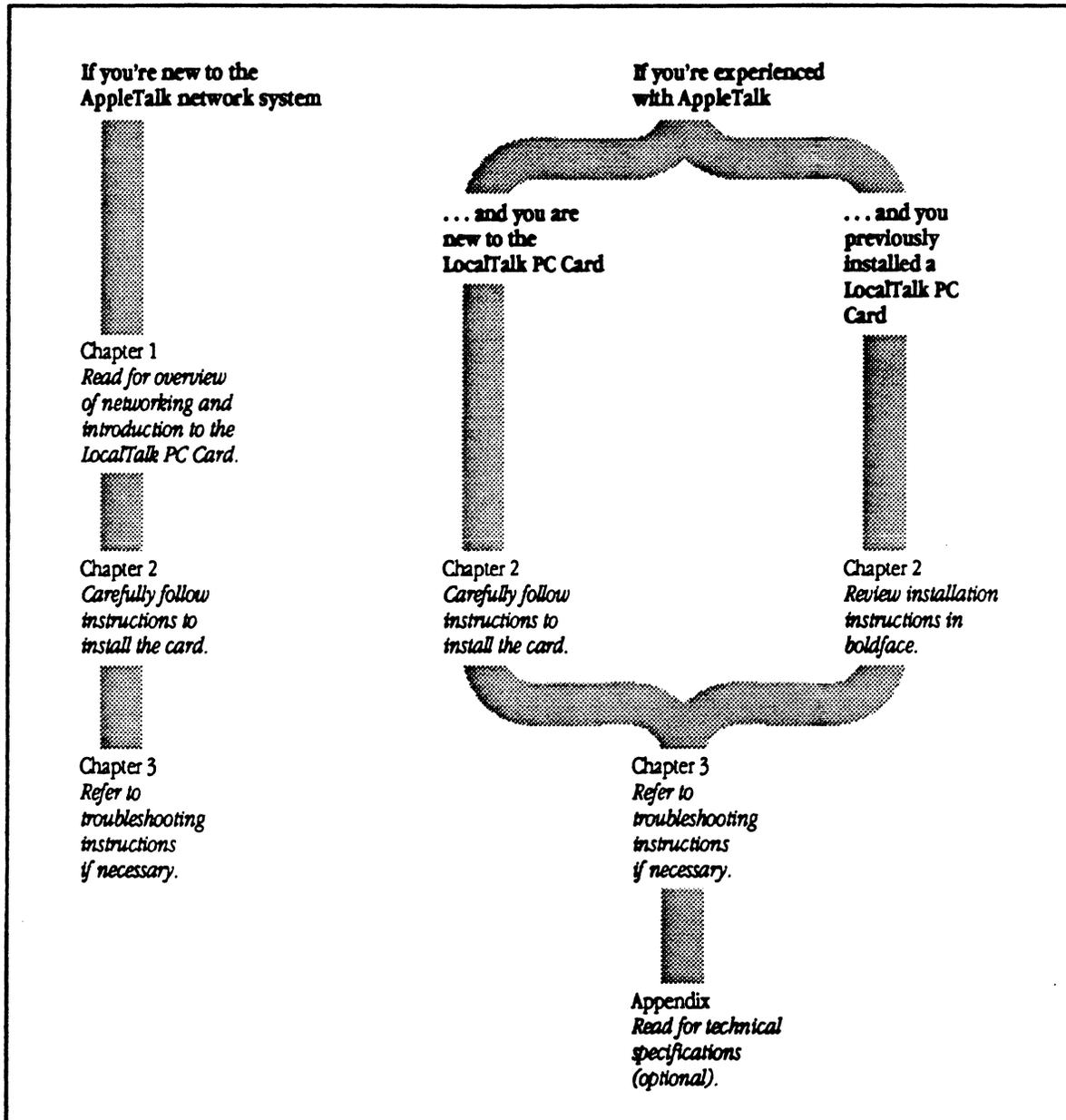
In order to use this manual, you should be familiar with using your PC and its MS-DOS or PC-DOS operating system. No other special knowledge or experience are required.

How to use this guide

You can use the guide according to your level of experience with the AppleTalk network system. The first chapter gives an overview of networking and introduces you to the LocalTalk PC Card. The second chapter discusses hardware requirements and gives step-by-step instructions for installing the card into your computer. The third chapter walks you through strategies to handle unexpected problems. The Appendix contains technical details about the LocalTalk PC Card.

Use the following chart to determine which chapters you need to read.

■ Figure P-1 Roadmap to the LocalTalk PC Installation Guide



Conventions

As you read this guide, you will notice certain words and phrases in the text that appear in **boldface** type. These are new terms and they are defined in the text.

Sections of the manual that provide step-by-step instructions also use boldface type. General instructions are numbered and written in boldface and explanations of the instructions are written below them in regular typeface. This allows you to quickly review the steps of a task by scanning through the instructions in boldface.

The following words mark special messages to you:

◆ *Note:* Text set off in this manner presents sidelights or interesting points of information.

△ **Important** Text set off in this manner—with the word **Important**—presents important information or instructions. △

▲ **Warning** Text set off in this manner—with the word **Warning**—indicates potential serious problems. ▲

Introduction to the LocalTalk PC Card

THE LOCALTALK™ PC CARD ALLOWS YOUR COMPUTER TO CONNECT TO OTHER computers on a LocalTalk network. When the card is used with AppleShare® PC software, you have access to network file services and print services, and you can share network resources with other PCs and Macintosh® computers on an AppleTalk® network system.

- ◆ *Note:* In this manual, PC refers to the IBM PC, PC XT, PC AT, Compaq, AT&T 6300, and other IBM PC-compatible computers.

Overview

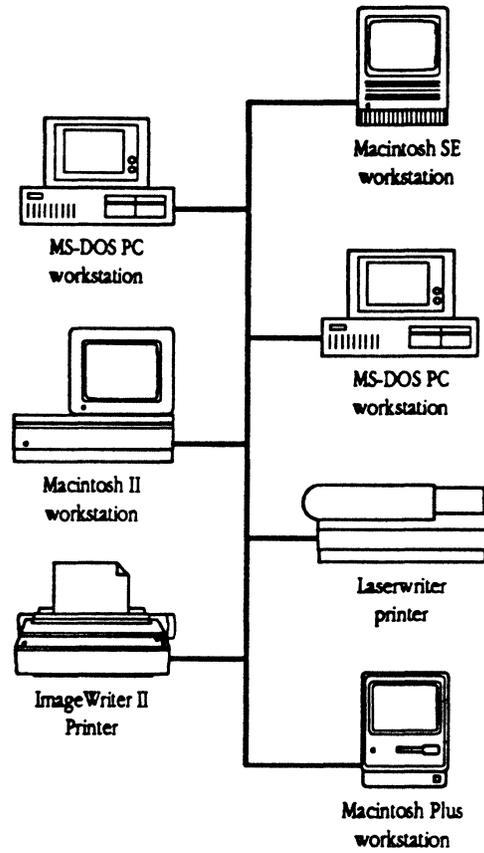
The LocalTalk PC Card is part of a system of products that you can use to build small or large networks serving a variety of computer systems.

Networking Concepts

A computer network is a combination of computers, software, and network media that allows users to share network services, application programs, and printers. Services provided by networks include file services, print services, and electronic mail. **File services** allow you to pool your files and hard disk space with others in your office or building. **Print services** manage the flow of documents to shared network printers. **Electronic mail** allows users to send messages and files to each other through the network.

The AppleTalk network system is specially designed to provide network services to many computer systems. It is based on a set of **protocols**, or rules for exchanging information, that are shared by the components of the network. The LocalTalk PC Card communicates on a LocalTalk network that is native to every Macintosh and Apple II GS[®] computer. Figure 1-1 illustrates how IBM PC-compatible computers and Macintosh computers can communicate and share printers on an AppleTalk network system using the LocalTalk network.

■ Figure 1-1 Example of an AppleTalk network system using the LocalTalk network



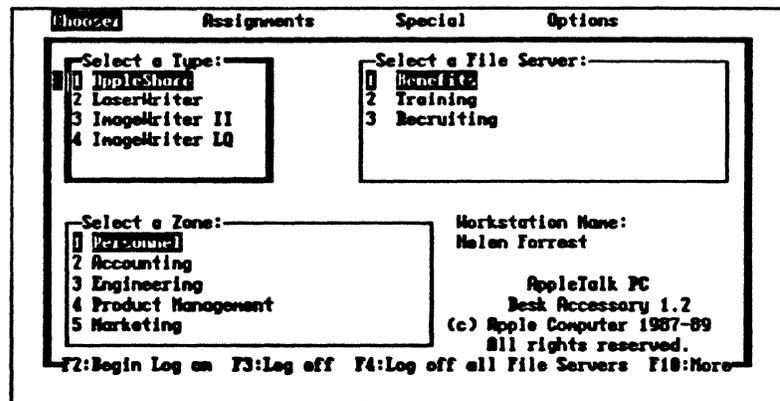
AppleShare PC

After the LocalTalk PC Card is installed and your computer is attached to a LocalTalk network, you need the AppleShare PC software to gain access to network resources. Once AppleShare PC is installed, you can use the services of Appleshare and AppleShare-compatible file servers, and AppleTalk network printers such as LaserWriters® and AppleTalk ImageWriters®.

AppleShare PC uses a pop-up menu system similar to the Macintosh Chooser. (See Figure 1-2.) The program allows you to view and manipulate local and network files and directories. You can copy, delete, move, rename, and create both files and directories, and you can change current directories on local disks and on network disks. You can also execute standard MS-DOS or PC-DOS commands on the network drives.

◆ *Note:* For a complete discussion of AppleShare PC services, refer to your *AppleShare PC User's Guide*.

■ Figure 1-2 The AppleShare PC Chooser menu



The LocalTalk PC Card

The LocalTalk PC Card is a half-sized board that fits into one of the slots in your PC. The DB-9 connector on the board attaches to a LocalTalk connector box, which links your PC to AppleTalk network resources through the LocalTalk network.

When in use, the card is an inconspicuous part of your equipment. Once it is installed, you gain access to the network with the AppleShare PC software program or other network programs compatible with the AppleTalk protocols.

- ◆ *Note:* The LocalTalk PC Card requires a LocalTalk Locking Connector Kit (Part No. M2065) to link it to the network. The kit is available from an authorized Apple sales representative.

Using the LocalTalk PC Card

To use the LocalTalk PC Card, follow the instructions in Chapter 2 to install it into your PC. Then refer to the *AppleShare PC User's Guide* to install your AppleShare PC software program if you haven't already done so.

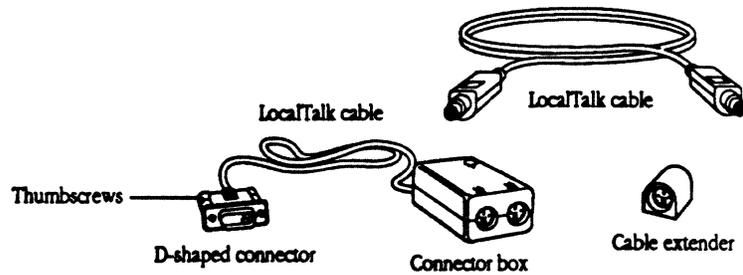
What you need to get started

You need the following equipment to install the LocalTalk PC Card:

- a PC-compatible computer with at least 256K of RAM
- a LocalTalk Locking Connector Kit DB-9 (Part No. M2065)

The LocalTalk Locking Connector Kit DB-9 contains the cables and connectors that will link your PC to a LocalTalk network. (See Figure 1-3.)

■ Figure 1-3 Contents of a connector kit



Your LocalTalk PC Card package

The package contains the following items:

- the LocalTalk PC Card in its antistatic bag
- a warranty card
- the LocalTalk PC Installation Guide

Installing the LocalTalk PC Card

THIS CHAPTER TELLS YOU HOW TO INSTALL THE LOCALTALK PC CARD IN YOUR PC. For information about designing the structure of your network and connecting a computer to a network already in use, refer to the *LocalTalk Cable System Owner's Guide*. You can also speak with your network administrator for further details.

About installation

The LocalTalk PC Card is designed to fit into an expansion slot in the PC, like the other plug-in boards in your computer. The installation process does not require any special tools or technical knowledge. If you are at all hesitant about installing the LocalTalk PC Card, ask an authorized Apple sales representative for assistance.

Safety precautions

Electrostatic discharge (ESD) can cause severe damage to sensitive microcircuits. You must take certain preventive measures to avoid ESD damage. When you handle the LocalTalk PC Card, follow these precautions:

- **Observe proper grounding procedures.**

Be sure the computer is plugged in to provide grounding for the electrical components.

Ground yourself by touching the power supply case inside the computer to discharge any static electricity that might be on your body or your clothing.

- **Leave the card in the antistatic bag until you are ready to install it.**

- **Handle the LocalTalk PC Card by the edges only.**

Do not touch the edge connectors, exposed circuitry, or printed circuits on either side of the controller card.

- **If possible, keep static-generating materials such as synthetic fabrics, plastic, vinyl, and foam cups and packing material out of the work environment.**

Installing the card

Follow these instructions to install the LocalTalk PC Card into your computer.

1. Turn off the computer.

2. Do not unplug the computer.

For your safety, do not unplug the computer from its electrical outlet. This ensures proper grounding for electrical components.

3. Remove the LocalTalk PC Card from its box.

Notice that the card is a half-sized board. It will not take up as much room in your computer as full-sized boards that may be installed.

4. Set the eight DIP switches on the card.

The DIP switches are located in the light blue casing on the card. You will see eight switches, numbered from 1 to 8. (See Figure 2-1.) Use a ballpoint pen or a small screwdriver to set the switches. Refer to Table 2-1 to determine the proper On/Off settings for your card.

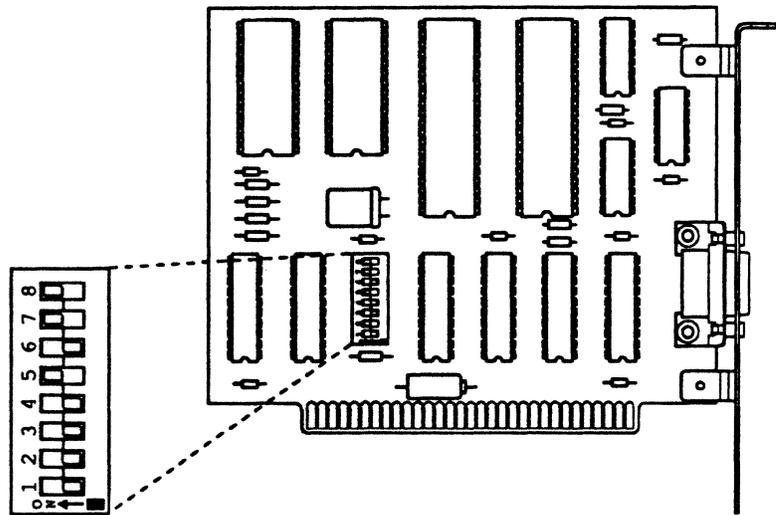
If you plan to use network software other than AppleShare PC and it is interrupt-driven, check the user guide for that software to determine the switch settings. In any other case, your settings should match Table 2-1.

△ Important The DIP switches configure your LocalTalk PC Card to your machine. Setting the switches properly is crucial to the smooth operation of the card. Carefully follow these instructions to avoid unnecessary problems. △

5. Write down the settings you are using.

Use the blank column provided in Table A-1 in the Appendix to keep a note of the DIP switch settings of your LocalTalk PC Card. You will need to know these when you install your network software.

■ Figure 2-1 The LocalTalk PC Card and DIP switches



■ Table 2-1 Recommended DIP switch settings

Switch	1	2	3	4	5	6	7	8
	Off	Off	Off	Off	On	Off	On	On

6. Open your computer.

If you are unsure how to do this, review your computer owner's manual.

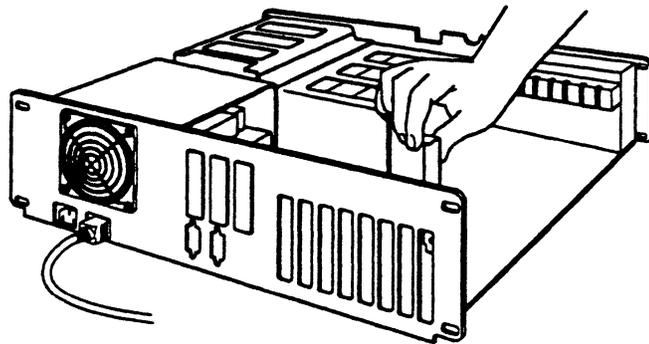
▲ Warning Pay strict attention to the danger messages inside your computer. Various electronic parts may hold high voltages even if the power is off. ▲

7. Select an empty slot for the card.

You can put the LocalTalk PC Card into any slot. On the IBM PC XT, however, do not use slot 8.

If the slot has a back panel cover (an L-shaped piece of metal that acts as a dust cover), remove it. You won't need this slot cover once the LocalTalk PC Card is installed. (See Figure 2-2.)

■ **Figure 2-2** Removing the back panel cover

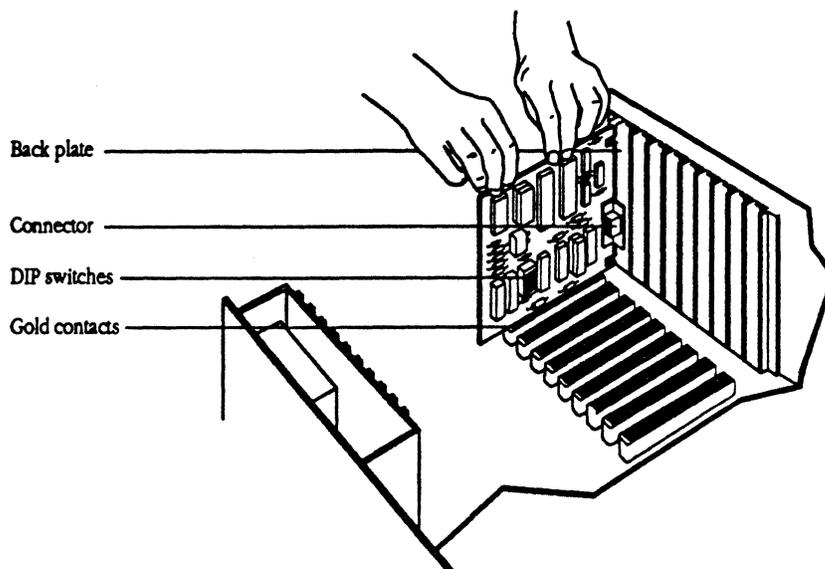


8. Insert the LocalTalk PC Card into the slot.

Hold the card so that the metal bracket with the Apple insignia faces to the back of the computer, and the gold contacts point downward towards the slot.

Slide the card straight down into the slot. (See Figure 2-3.)

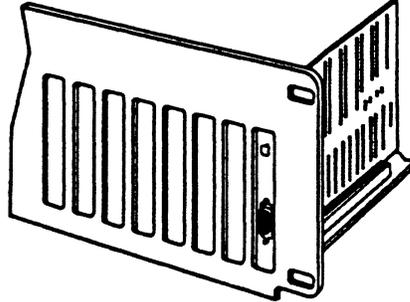
■ **Figure 2-3** Placing the card in a PC



You may have to push firmly to get the card fitted into its socket, but don't force the card or rock it back and forth to make it fit. The gold strips are electrical contacts; rocking will scratch them and may destroy the circuit. Usually the card will fit with only mild pressure.

After placing the card in its slot, align the screw hole on the card's mounting bracket with the screw hole on the computer frame. Make certain that the D-shaped connector on the card fits through the opening on the computer's back panel, as shown in Figure 2-4.

- **Figure 2-4** The DB-9 Connector showing through the back panel



9. Install the mounting screw and gently tighten it.

Do not overtighten the screw. Because IBM PCs have slightly different-sized slots and frames, overtightening the screw may tip the card and pull the contacts out of their socket. If that occurs, loosen the screw, straighten the card, and then tighten the screw a little.

10. Replace the computer's cover.

You have now finished installing the LocalTalk PC Card. Turn the computer back on, and check to see that it starts up correctly. If the computer does not start up as expected, see Chapter 3 for troubleshooting strategies.

Attaching the cables

You will need a LocalTalk Locking Connector Kit—DB-9 to connect your computer to the network.

Before attaching computers to the network, be sure to consult the *LocalTalk Cable System Owner's Guide* that is included in the box with the connector kit, or your network administrator to design the layout of your network. The Owner's guide lists important guidelines for connecting each computer to the network.

1. Make sure that the power to the computer is off.

2. Attach the cable connector to the card's connector.

Plug the D-shaped connector, which is attached to the connector box, into the card's corresponding connector at the back of the computer.

Tighten the thumbscrews. Be careful not to overtighten them.

3. Attach the LocalTalk cable.

Follow the guidelines in the *LocalTalk Cable System Owner's Guide* to add your computer to the network.

4. Turn on the power to your computer.

Troubleshooting

THIS CHAPTER TELLS YOU WHAT TO DO IF YOUR PC DOESN'T work correctly after the LocalTalk PC Card has been installed.

If your problem isn't described here, it may be specific to the software or the hardware device you are using. Refer to the troubleshooting section in the user's guide or owner's manual for that application program or device.

Problems and solutions

If your PC is not starting up properly, this may be due to the addition of the LocalTalk PC Card. First make sure that you have accurately followed the directions in Chapter 2 to install the card.

On occasion, the recommended DIP switch settings for the LocalTalk PC Card are in conflict with other communication cards that are installed in a PC. Altering the switch settings may address this problem. To do so, set your DIP switches according to Table 3-1 and reinstall your LocalTalk PC Card.

■ **Table 3-1** Secondary suggested DIP switch settings

Switch	1	2	3	4	5	6	7	8
	Off	Off	Off	On	Off	On	Off	On

If your PC still does not start up as expected, the following procedures will help you to identify and locate the conflict.

It will greatly reduce the time it takes to solve the conflict if you know the DIP switch settings for your other cards. If you have this information, follow the instructions in the next section under the title "With settings." If you do not know the DIP switch settings of your cards, follow the instructions in the section "Without settings."

With settings

To locate a problem of conflicting DIP switch settings, follow these steps:

1. Check manuals for switch setting conflicts.

A card will conflict with the LocalTalk PC Card if both cards select the same DMA channel or the same Interrupt Request level. Review the user guides of any other cards you have installed in your PC to check for a conflict. The switch setting specifications for the LocalTalk PC Card are shown in Table A-2 in the Appendix of this guide.

2. Turn off the power to the computer.

Do not unplug the computer from its outlet.

3. Remove the LocalTalk PC Card from your PC.

Remove the mounting screw and gently lift the card from its place in the slot in the computer.

4. Change the switch settings on the LocalTalk PC Card.

Use the specifications outlined in the Appendix to reset the switches on the LocalTalk PC Card. Notice that switches 5 and 7, and switches 4 and 6 act in pairs, so that one pair must be off while the other is on.

5. Note the new settings.

Write down the new switch configuration in Table A-1 in the Appendix for future reference. You will need this information when you install the AppleShare PC software program.

6. Install the card back into the PC.

If you are not sure how to do this, review Chapter 2.

7. Restart your PC.

Turn the computer on in the normal manner.

If your computer does not start up after you have followed this procedure, see your network administrator.

Without settings

If you do not know the settings of the other communication cards in your PC, follow these instructions to determine which cards are in conflict with the LocalTalk PC settings:

1. Turn off the computer.

Do not unplug the computer from its outlet.

2. Remove a card from the PC.

Gently lift one of the communication cards from its slot in the computer. Leave the LocalTalk PC Card in its slot in the computer.

3. Turn on the computer.

4. Determine if the computer starts up properly.

If the computer is still not starting properly, the card you just removed is not the source of the conflict. Replace the card in your PC. Repeat steps 1 through 4 for each of the remaining cards to find the conflicting card.

If the computer functions normally once you turn it on, the card that you just removed is the one that is conflicting with the LocalTalk PC Card. Continue with the instructions that follow to resolve the conflict.

5. Reset the LocalTalk PC Card switch settings so that they do not conflict with the other card's settings.

Use the specifications outlined in the Appendix to reset the switches on the LocalTalk PC Card. Notice that switches 5 and 7, and switches 4 and 6 act in pairs; one pair must be off while the other is on.

6. Note the new settings.

Write down the new switch configuration in Table A-1 in the Appendix for future reference.

7. Install the cards back into the PC.

Reinstall the LocalTalk PC Card and any other card that you have removed from the computer. If you are not sure how to do this, review Chapter 2.

8. Restart your PC.

Turn the computer on in the normal manner.

If your computer does not start up after you have followed this procedure, see your network administrator.

Technical Details

THIS CHAPTER TELLS YOU HOW TO CUSTOMIZE THE DIP SWITCH SETTINGS FOR your LocalTalk PC Card. Other technical details are included.

DIP switch settings

The configuration of the DIP switches as they are shipped is listed in Table A-1 under the heading Default Settings. The recommended configuration for use with AppleShare PC is listed under the heading Recommended Settings. If communication card conflicts occur, a secondary recommended configuration is also listed. The last column of the table is left blank for you to write your card's configuration.

■ Table A-1 DIP switch settings

Switch	Default Settings	Recommended Settings	Secondary Settings	Your Card
8	On	On	On	
7	On	On	Off	
6	Off	Off	On	
5	On	On	Off	
4	Off	Off	On	
3	Off	Off	Off	
2	On	Off	Off	
1	Off	Off	Off	

System requirements

The LocalTalk PC Card requires the following resources:

- The receiver uses DMA channel 1 or 3 to receive packets without processor intervention.
- Interrupt-driven drivers use Interrupt Request Level 2, 3, or 4.
- The I/O port requires addresses \$240 through \$247 or \$220 through \$227.

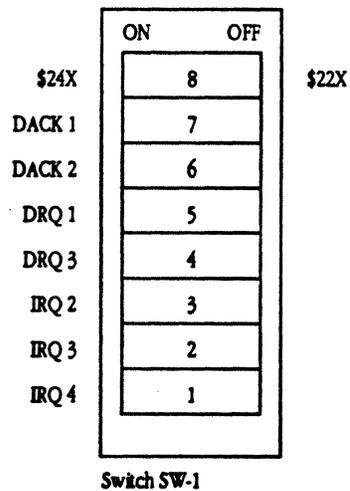
DIP switch description

The DIP switches allow the LocalTalk PC Card to respond to one of two card address ranges, interrupt the IBM PC on one of three priority levels, and use one of two DMA channels.

The default switch settings shown in this Appendix configure the card for DMA channel 1, Interrupt Request Level 3, and address range \$24X. The recommended settings as shown in Chapter 2, as well as in this Appendix, configure the card for DMA channel 1, all interrupts off, and address range \$24X.

Switch settings are partially determined by whether or not your software drivers are interrupt-driven or polled. If you are not sure which is the case, check your software user's guide. If you are using AppleShare PC, it is recommended that you use settings for a polled driver. Figure A-1 shows the switch assignments, and Table A-2 shows switch specifications.

■ Figure A-1 DIP switch assignments



■ Table A-2 DIP switch specifications

Switch	Description	Function
1	IRQ4	<p>Switches 1, 2, and 3 select the "Interrupt Request" (IRQ) priority level.</p> <p>With Polled Driver: Set switches 1, 2, and 3 Off.</p> <p>With Interrupt-Driven Drivers: One and only one switch must be On; the other two must be Off. To use Interrupt level 2 (IRQ2), set switch 3 On. To use IRQ3, set switch 2 On. To use IRQ4, set switch 1 On.</p>
2	IRQ3	See notes to switch 1.
3	IRQ2	See notes to switch 1.
4	DRQ3	<p>"DMA Request" on DMA Channel 3.</p> <p>To use DMA Channel 3, set switches 4 and 6 On, and switches 5 and 7 Off.</p>
5	DRQ1	<p>"DMA Request" on DMA Channel 1.</p> <p>To use DMA Channel 1, set switches 5 and 7 On, and switches 4 and 6 Off.</p>
6	DACK3	"DMA Acknowledge" on DMA Channel 3.
7	DACK1	"DMA Acknowledge" on DMA Channel 1.
8	\$24x/\$22x	<p>Selects the address range of the card.</p> <p>If this switch is On, the card will respond to control signals sent to addresses in the range \$240 to \$247. If this switch is Off, the card will respond to control signals sent to addresses in the range \$220 to \$227.</p> <p>Note that the IBM PC I/O addressing scheme allows each card to respond to 32 addresses, but the LocalTalk PC Card uses only 8 of them.</p>

Glossary

boot: Another way to say *start up a computer*.

cable: An insulated bundle of wires with connectors on the ends. Examples are serial cables, disk drive cables, and LocalTalk cables.

cable extender: A small plastic adapter with a LocalTalk socket on either end that allows you to connect two LocalTalk cables together.

Chooser: A window provided by Appleshare PC that allows you to log on to a file server or printer.

connector: An electronic plug or socket that connects to another connector and forms a link between network equipment.

desk accessory: A "mini-application" that is usually memory-resident.

DIP switch: A small switch that can be set manually for two different values (usually On or Off).

directory: A file that contains a list of the names and locations of other files stored on a disk. These other files may themselves be directories (called *subdirectories*).

driver: A program that controls the operations of a peripheral device.

LocalTalk: The 230.4K bps network hardware that is built in to all Macintosh computers and is available for IBM PC-compatible computers by adding the LocalTalk PC card.

LocalTalk cable system: A system of cables, cable extenders, and connector boxes that connect computers and network devices supporting the LocalTalk network type.

modem: Short for *modulator/demodulator*. A peripheral device that links your computer to other computers and information services using telephone lines.

mouse: A small device you move around on a flat surface next to your computer. The mouse controls a pointer on the screen whose movements correspond to those of the mouse. You use the pointer to select operations, to move data, and to draw in graphics programs.

network: A collection of interconnected computers together with the hardware and software used to connect them. A network allows users to share network resources such as mass storage space and printers, and any network services that have been installed.

network administrator: The person who is responsible for setting up and maintaining the network.

peripheral device: A piece of hardware such as a printer or modem that is used in conjunction with a computer and is under the computer's control. A peripheral device is often but not necessarily physically separate from the computer and is connected to it by wires, cables, or some other form of interface. Such a device often requires a peripheral card and driver.

protocol: A formal set of rules for sending and receiving data on a communication line.

slot: A narrow socket inside PCs and some models of Apple computers where you can install interface cards.

troubleshoot: To locate and correct an error or the cause of a problem or malfunction in hardware or software.

workstation: A Macintosh, Apple II, or IBM PC that you can use to do work and send or receive information over a network.

 **Tell Apple About Your**.....

Please contact your authorized Apple dealer when you have questions about your Apple products. Dealers are trained by Apple computer and are given the resources to handle service and support for all Apple products. If you need the name of an authorized Apple dealer in your area, call toll-free 800-538-9696.

Would you like to tell Apple what you think about this product? After you have had an opportunity to use this product, we want to hear from you. You can help us to improve our products by responding to the questionnaire below and marking the appropriate boxes on the card at the right with a #2 lead pencil. If you have more than one response to a question, mark all the boxes that apply. Please detach the card and mail it to Apple. Include additional pages of comments if you wish.

1. How would you rate your LocalTalk PC Card overall? (1=poor . . . 6=excellent)
2. How much experience have you had using computers? (1=poor . . . 6=extensive)
3. How easy was it to install the LocalTalk PC Card in your computer?
(1=difficult . . . 6=very easy)
4. How would you rate the *LocalTalk PC Card Installation Guide* overall?
(1=poor . . . 6=excellent)
5. How much of the guide have you read? (1=entire manual, 2=specific chapters, 3=use for a reference only, 4=none of it)
6. How easy was the guide to read and understand? (1=difficult . . . 6=very easy)
7. How easy was it to find the information you needed? (1=difficult . . . 6=very easy)
8. Please describe any errors or inconsistencies you found in the guide. (Page numbers would be helpful.)
9. What suggestions do you have for improving the LocalTalk PC Card?

THE APPLE PUBLISHING SYSTEM

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