



Apple® TokenTalk™ NB
User's Guide

🍏 APPLE COMPUTER, INC.

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Simultaneously published in the United States and Canada.

Contents

Figures and tables
Radio and television interference

About This Guide

What you need to know
How to use this guide
 Terminology and conventions
Related books and manuals

1 Introduction to TokenTalk

Overview

 Token ring network components
 Running software on TokenTalk
What you need to get started
 System requirements
 Your TokenTalk NB package

2 Installing the Hardware

Getting started

 What you need to install the card
 Unpacking the card

- Installing your card
- Testing the card
 - Running the test
- Connecting to the network cable
- Moving your computer

3 Installing the Software

- Before you begin
- Making a TokenTalk startup disk
 - Updating an existing startup disk
 - Creating a new TokenTalk startup disk
- Selecting TokenTalk
- Using a TokenTalk startup disk

4 Using TokenTalk

- Network configuration
 - Internets
 - Multiple networks
- Switching the network connection
- Changing your AppleTalk zone
 - Moving your Macintosh II
- Removing TokenTalk

5 Troubleshooting

- Problems and solutions
 - Can't switch network connection
 - Network service missing
 - Network icon missing
 - TokenTalk icon missing
 - Can't select Network icon
 - Can't select TokenTalk icon
 - TokenTalk missing at startup time
 - Control Panel missing
 - Macintosh II hangs
 - Can't select devices on the printer port
- Messages

Checking the network

Glossary

Index

Tell Apple card

Figures and tables

PREFACE About This Guide

Figure P-1 Road map of the *Apple TokenTalk NB User's Guide*

CHAPTER 1 Introduction to TokenTalk

Figure 1-1 TokenTalk network

Figure 1-2 Token ring network components

Figure 1-3 Contents of the product package

CHAPTER 2 Installing the Hardware

Figure 2-1 Removing the lid

Figure 2-2 Touching the power supply case

Figure 2-3 The expansion slots and expansion cover shield

Figure 2-4 Removing the hole cover

Figure 2-5 Aligning the card

Figure 2-6 Replacing the lid

Figure 2-7 Connecting the card to the cable

CHAPTER 3 Installing the Software

Figure 3-1 Updating a startup disk with TokenTalk

Figure 3-2 Selecting a network connection

Figure 3-3 Choosing an AppleTalk zone

CHAPTER 4 **Using TokenTalk**

- Figure 4-1 Multiple AppleTalk networks
- Figure 4-2 Token Talk NB Card icons
- Figure 4-3 Choosing an AppleTalk zone

Radio and television interference

The equipment described in this manual generates, uses, and radiates 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 communication.

This equipment has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart J of Part 15 of Federal Communications Commission (FCC) rules. These specifications are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment.

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 take whatever measures necessary to correct the interference.

- △ **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. △

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- Chapter 1, "Introduction to TokenTalk," introduces the product and describes the product package. It also provides a list of system requirements for installing and using the product.
- Chapter 2, "Installing the Hardware," tells you how to install the Apple TokenTalk NB Card that connects your Macintosh II to a token ring environment.
- Chapter 3, "Installing the Software," tells you how to install the TokenTalk software that provides AppleTalk communications in a token ring environment. The chapter also provides instructions for selecting a network connection and choosing a zone.
- Chapter 4, "Using TokenTalk," tells you how to use TokenTalk to bring the benefits of AppleTalk network services to a token ring environment. The chapter also discusses internets, provides instruction for changing zones, and tells you how to remove TokenTalk from your startup disk.
- Chapter 5, "Troubleshooting," provides guidelines for solving common network problems. It also provides descriptions of network messages that may appear on your Macintosh II.

What you need to know

To use this guide successfully, you should be familiar with the operation of your Macintosh II computer. Your *Macintosh II Owner's Guide* (published by Apple Computer, Inc.) tells you how to set up and use your Macintosh II. It also gives NuBus™ power requirements that you'll find useful if you plan to install several cards in the Macintosh II. You will need this information to make sure that the total power requirements of your system do not exceed the recommended limits.

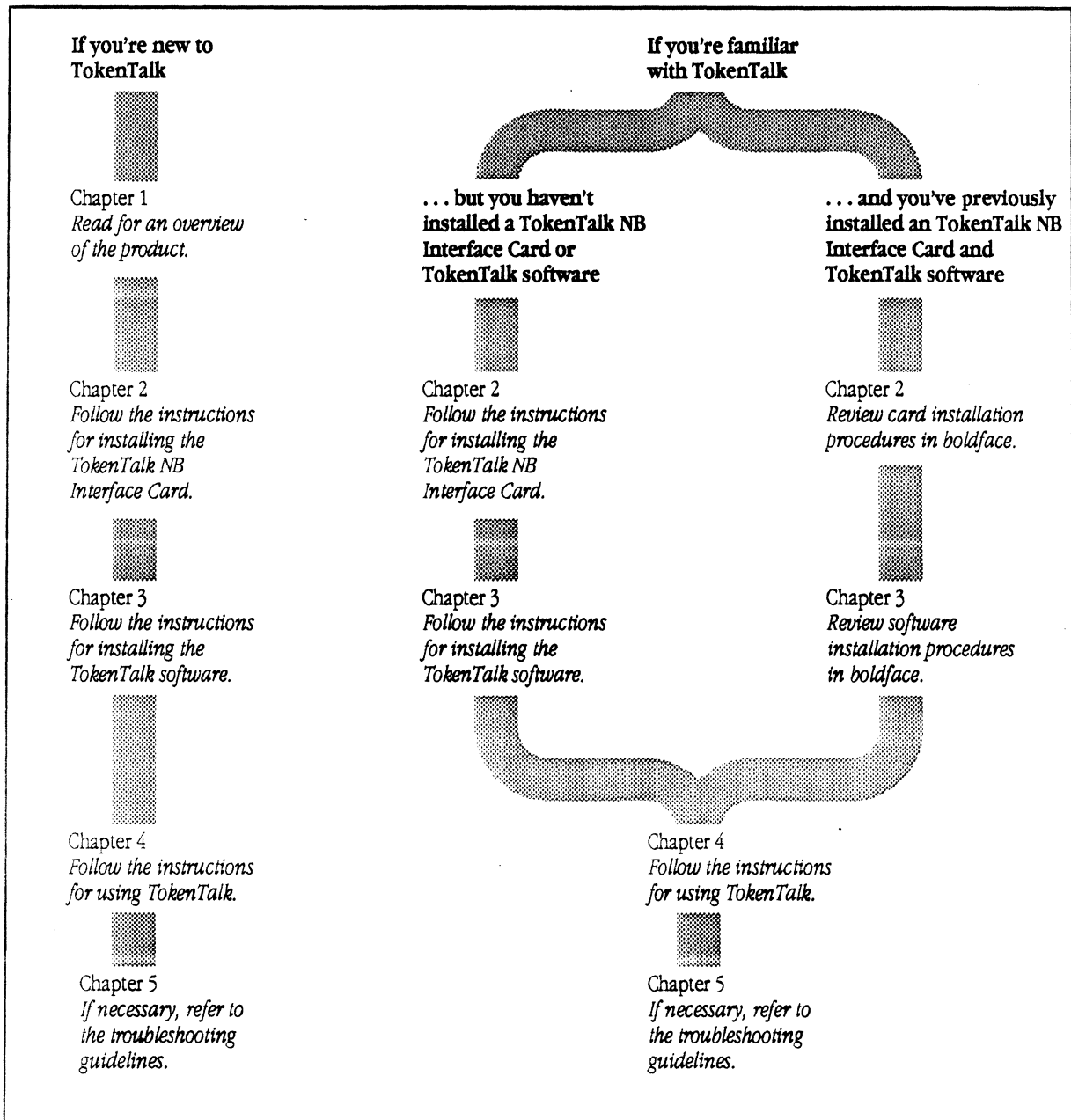
How to use this guide

Figure P-1 provides a road map to this guide, based on your experience and your system configuration.

About This Guide

THIS USER'S GUIDE TELLS YOU HOW TO INSTALL THE HARDWARE AND software required to connect your Macintosh® II computer to a TokenTalk™ network, a high-performance AppleTalk® network that permits your computer to operate in a token ring environment. The guide also provides information on using the network connection to access AppleTalk services and devices across a TokenTalk network.

■ **Figure P-1** Road map of the *Apple TokenTalk NB User's Guide*



Terminology and conventions

To use this guide more effectively, you should recognize the following terminology and conventions used in the text.

Boldface type

New terms are presented in **boldface** and are usually defined in the text. All boldfaced terms are defined in the glossary.

The Macintosh II computer

The term *Macintosh II* is used to refer to all Macintosh II computers that use the NuBus expansion slot architecture, including the Macintosh IIx and the Macintosh IIfx.

Special Messages

Look for these special cues throughout the manual:

❖ *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 potentially serious problems. ▲

Related books and manuals

The following manuals from Apple Computer, Inc. provide additional information about AppleTalk networks:

- The *AppleTalk Internet Router Administrator's Guide* provides information about installing and operating the AppleTalk Internet Router that connects two or more AppleTalk networks.
- The *AppleTalk Phase 2 Introduction and Upgrade Guide* describes the extension of the AppleTalk network system that provides enhancements for the support of larger networks.
- The *Inter•Poll Administrator's Guide* describes how to use the Inter•Poll™ network administrator's utility to perform maintenance and troubleshooting on an AppleTalk network system.
- The *LocalTalk Cable System Guide* provides reference information about LocalTalk™ cable, hardware, and installation.
- The *Apple EtherTalk User's Guide* provides information about installing and operating EtherTalk™ on an AppleTalk network system.
- *Inside AppleTalk* is a technical reference manual that provides detailed descriptions of AppleTalk® network protocols.
- The *AppleTalk Network System Overview* provides an introduction to AppleTalk network system architecture and AppleTalk protocols.

You may also want to refer to the manuals that came with your wiring concentrators, network servers, and other network equipment.

Introduction to TokenTalk

THE APPLETALK® NETWORK SYSTEM IS A COMMUNICATION ENVIRONMENT in which network devices, applications, and services observe a common set of rules, or protocols. These protocols govern the interaction between devices. TokenTalk™ is one of several network types that are currently available in the AppleTalk network system (together with LocalTalk™ and EtherTalk™). With a TokenTalk network connection, your Macintosh® II computer can become part of a token ring environment while retaining AppleTalk services and ease-of-use.

Overview

A **network** is a collection of interconnected computers and other devices, together with the hardware and software used to connect them.

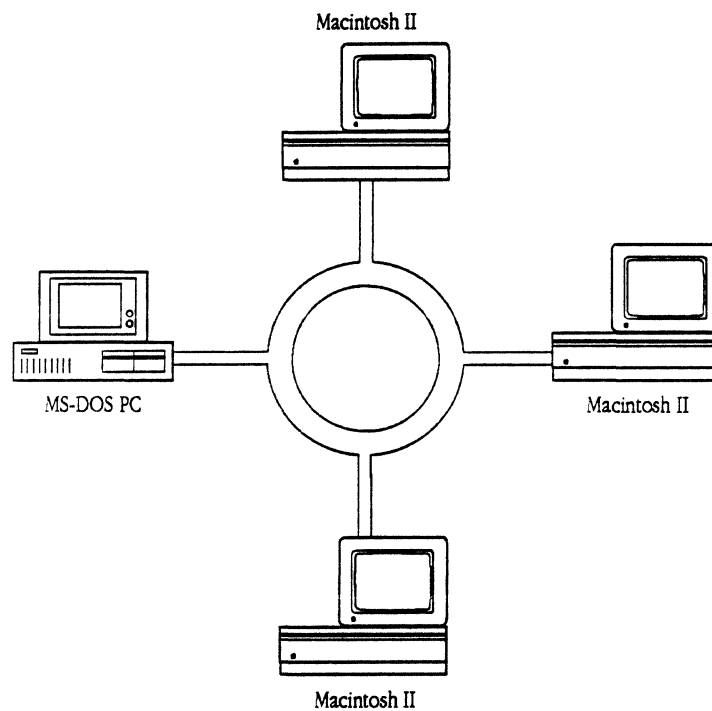
Although all AppleTalk networks use the same AppleTalk protocols, they do not all use the same **network connections**; in fact, the configuration of network connections—the cables, ports, and communications cards—can be different for each type of network. For example, the LocalTalk network uses its own unique cables and connects to any Macintosh printer port, whereas TokenTalk uses shielded twisted pair cables and connects to the TokenTalk NB Card, a NuBus™ communications card installed in a Macintosh II computer.

An AppleTalk network system can include other **devices** besides Macintosh II computers, such as printers, spoolers, and other types of computers. It can also provide services such as file service from an **AppleShare® file server**. See Figure 1-1 for an illustration of a TokenTalk network.

With an **internet router**, such as the AppleTalk Internet Router, a TokenTalk network can connect to other AppleTalk networks of Macintosh computers, printers, spoolers, file servers, or other types of computers.

In an AppleTalk internet, each user (and service) belongs to a **zone**. A zone is a conceptual, rather than a physical, grouping of users and services. For example, network users residing in the same zone can be in separate buildings, or even in different cities. Network services, such as printing and file service, are available to users in listings grouped by zone names.

■ **Figure 1-1** TokenTalk network



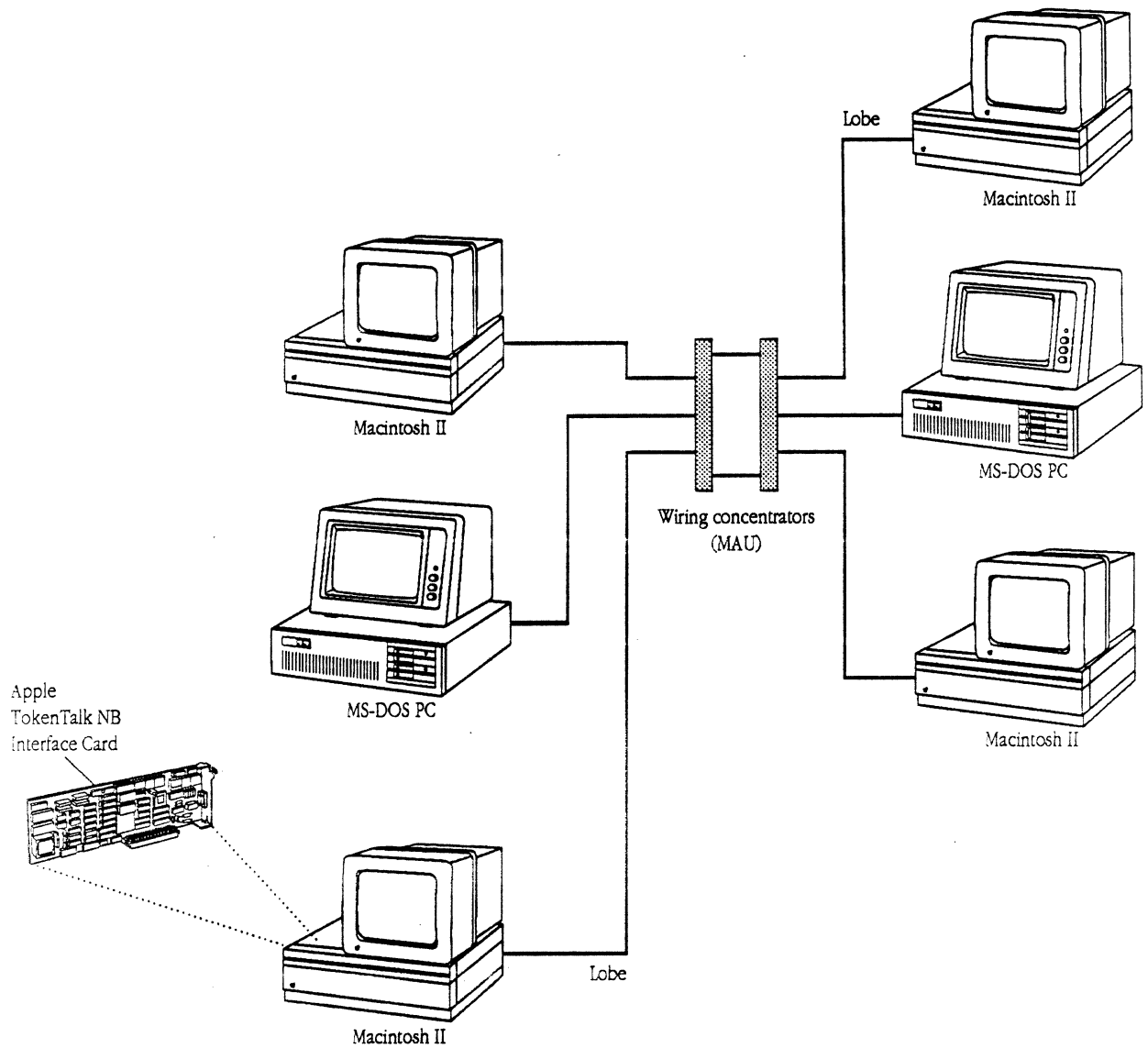
Token ring network components

A basic token ring network includes the following hardware (see Figure 1-2):

- Wiring concentrators, sometimes called multistation access units (MAU). **Wiring concentrators** serve as the electrical interfaces to the ring circuit. In addition to the eight device connectors, a number of MAUs can be interconnected to form the main ring of a network.
- Lobes. A **lobe** is the physical wiring between the node and the wiring concentrator. One end of the lobe is connected to the interface card installed in the Macintosh II. The other end of the lobe is connected to a wiring concentrator. Transmission on the cable is at 4 megabits per second (Mbps)
- Computers and other devices.

- Apple® TokenTalk NB Card. This interface card, a token ring connection for NuBus, makes it possible for Macintosh II computers to communicate on the token ring network. You will need to install an Apple TokenTalk NB Card in one of the slots inside your Macintosh II.
- Source routing bridges. These devices can extend your TokenTalk network to many other token rings and let you view the connected rings as one composite token ring.

■ Figure 1-2 Token ring network components



Running software on TokenTalk

With the proper network communications package, a Macintosh II with an installed Apple TokenTalk NB Card can run the following software:

- TokenTalk software, which provides access to AppleTalk services and devices in a token ring environment. TokenTalk software comes with your Apple TokenTalk NB card. TokenTalk is completely transparent to the Macintosh user and is fully compatible with AppleTalk Phase 2, the extension of the AppleTalk network system that provides enhancements for the support of larger networks.
- SMB file transfer software (provided in this product package), which allows you to transfer MS-DOS files to your Macintosh II.
- MacAPPC™, Apple's implementation of IBM's LU6.2 and PU2.1 protocols. MacAPPC allows you to develop your own applications and can also be used with commercially available software. MacAPPC must be purchased separately from Apple Computer Software Licensing.
- MacDFT™, Apple's 3270 terminal emulator software, which must be purchased separately from Apple Computer.

The software you need to test your Apple TokenTalk NB card is on a floppy disk included in the box with your card. This software is explained in more detail in Chapter 3.

What you need to get started

To install and use TokenTalk, you need some basic system components and the TokenTalk NB product package.

System requirements

You need the following equipment to install and run TokenTalk:

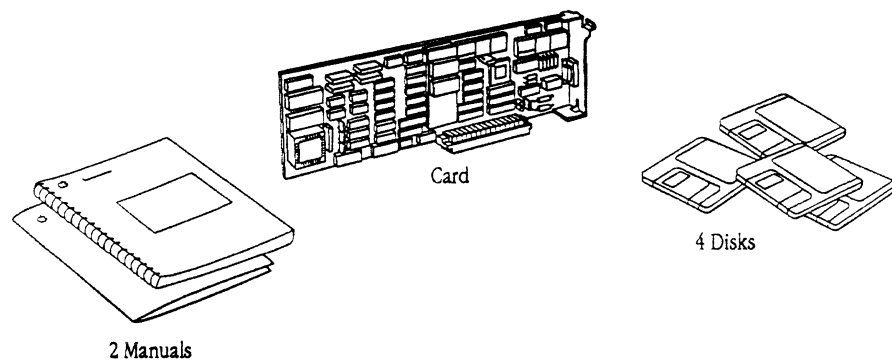
- a Macintosh II computer or another member of the NuBus (NB) family of Macintosh II computers
- the TokenTalk NB Card
- TokenTalk software
- an installed network of token ring cables

Your TokenTalk NB package

Your TokenTalk NB package contains the following items (See Figure 1-3):

- The Apple TokenTalk NB Card, a printed circuit board that serves as the communications controller between your Macintosh computer and other devices in a token ring environment. You must install the Apple TokenTalk NB Card in one of the slots inside your Macintosh II.
- The *TokenTalk Installer* disk that contains the software you need to connect to a TokenTalk network.
- The *User Confidence Test* disk that contains the software you need to test your TokenTalk NB Card.
- The two *SMB File Transfer Utility* disks that contain software for transferring MS-DOS files to your Macintosh II.
- This book, the *Apple TokenTalk NB User's Guide*.
- The *Apple SMB File Transfer User's Guide*.

■ **Figure 1-3** Contents of the product package



Installing the Hardware

THIS CHAPTER TELLS YOU HOW TO INSTALL THE TOKENTALK NB CARD, which lets you physically connect your Macintosh II computer to a token ring environment.

When the TokenTalk NB Card is installed and connected to the token ring environment, you can install the TokenTalk software that allows you to communicate with other devices and share resources across a TokenTalk network.

Getting started

Read this chapter to learn how to install and connect the TokenTalk NB Card. See Chapter 3 for information on installing the TokenTalk software that you will need to communicate across a TokenTalk network.

What you need to install the card

You need the following equipment to install your TokenTalk NB Card:

- a Macintosh II computer or another Macintosh computer with NuBus architecture.
- the TokenTalk NB Card
- a small Phillips screwdriver

Unpacking the card

Keep the card in its protective, antistatic bag until you're ready to install it. When you take the card out of its bag, hold it by the edges, not by the components. Be sure not to touch the gold pins on the bottom edge of the card.

Installing your card

Follow these steps to install the card. You'll need the Phillips screwdriver. This section gives the general procedure for all Macintosh II computers that use the NuBus expansion slot architecture; installation on your computer may differ slightly. See your owner's guide for detailed information on installing cards.

- 1. Make sure the power is off.**

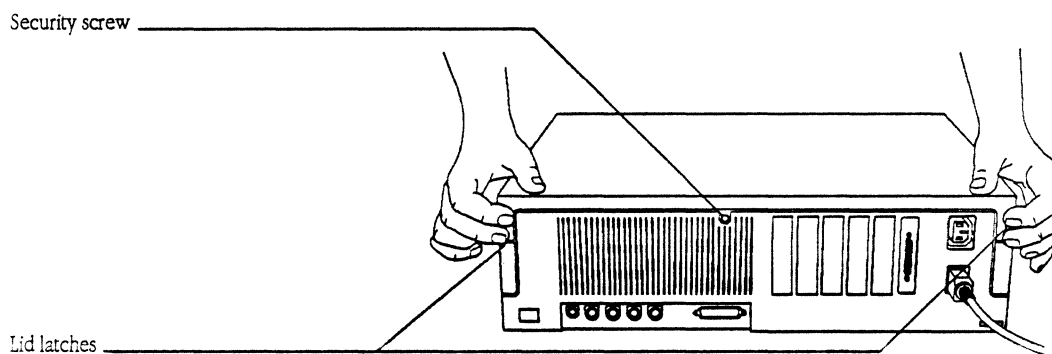
▲ Warning Make sure that the power to all of your computer equipment is turned off, but leave the power cords plugged into a grounded outlet. This keeps your computer system safely grounded.

Check the power indicator light on the front of the computer to make sure that the power is off. If the power has been on, wait at least five minutes before continuing, to allow the power supply case inside the computer to cool down. ▲

2. Remove the computer's lid.

- a. Using a Phillips screwdriver, remove the security screw at the top center of the computer's rear panel.
- b. Grasp the rear corners of the case, as shown in Figure 2-1.
- c. Press on the lid latches with your index fingers while you lift up the back of the lid.
- d. When you feel it release, lift the lid off the case and put it aside.

■ **Figure 2-1** Removing the lid

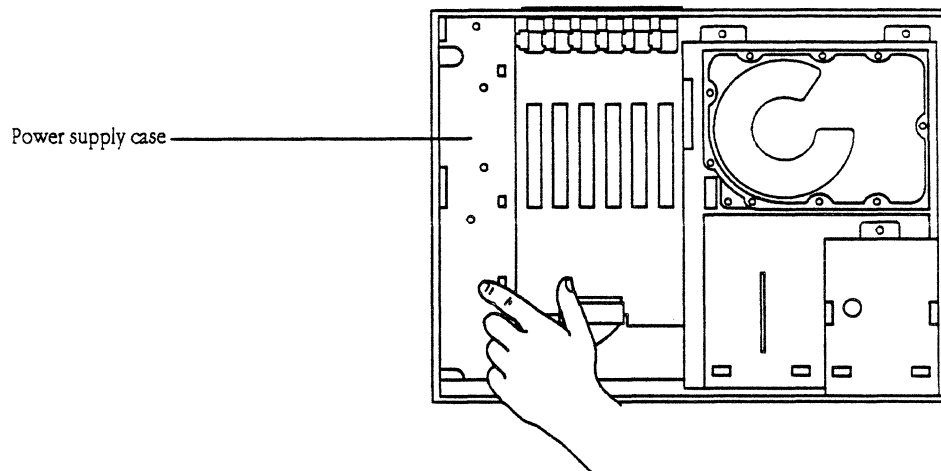


3. When the power supply case has cooled down, touch the metal part of it. (See Figure 2-2.)

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

- ▲ **Warning** Remember, the power supply can get very hot in normal use. If the computer has been on, be sure you wait at least five minutes for the case to cool down before you touch it. ▲

■ **Figure 2-2** Touching the power supply case



4. Decide which expansion slot you are going to use and locate the expansion cover shield that's directly behind it.

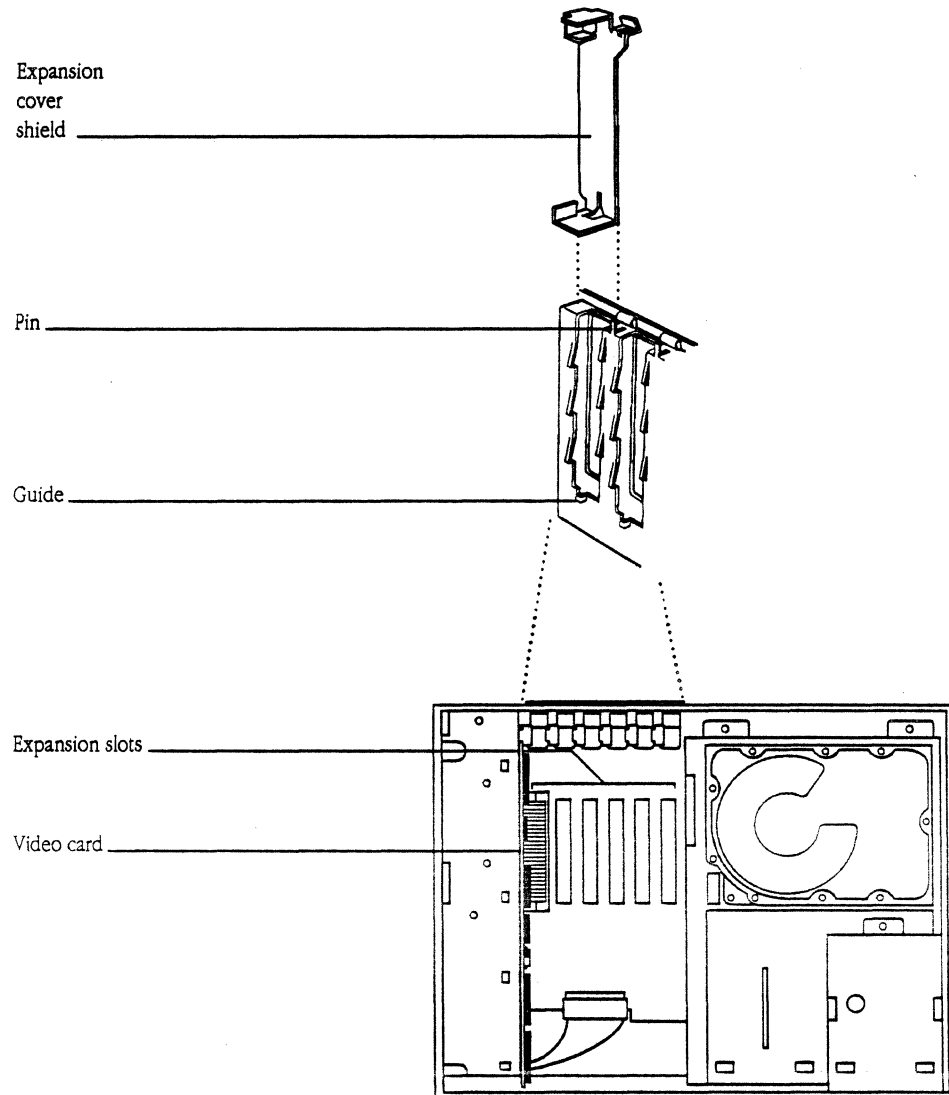
The expansion slots are the narrow plastic strips near the back of the computer. (See Figure 2-3.) You can install the TokenTalk NB Card in any slot.

- ❖ *Tip:* Install the card in a slot where the outside cables are least likely to interfere with other cables.
5. Remove the metal expansion cover shield that's behind the expansion slot you intend to use.

Lift up the shield until it's free of the guide and pin. Save the shield; it protects the interior of your computer and you will have to put it back if you take the card out of the slot.

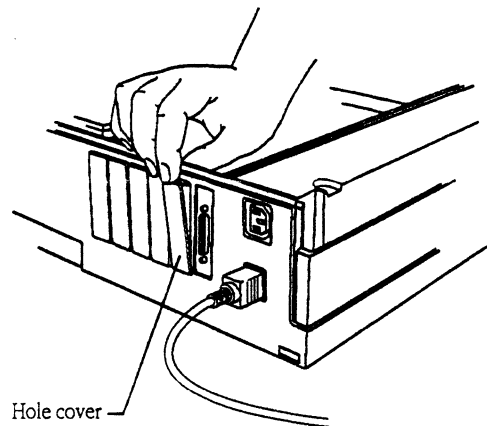
- ❖ *Note:* The card has an attached shield that replaces the shield you just removed. It fits into the guide in the same way that the expansion cover shield fits.

■ **Figure 2-3** The expansion slots and expansion cover shield



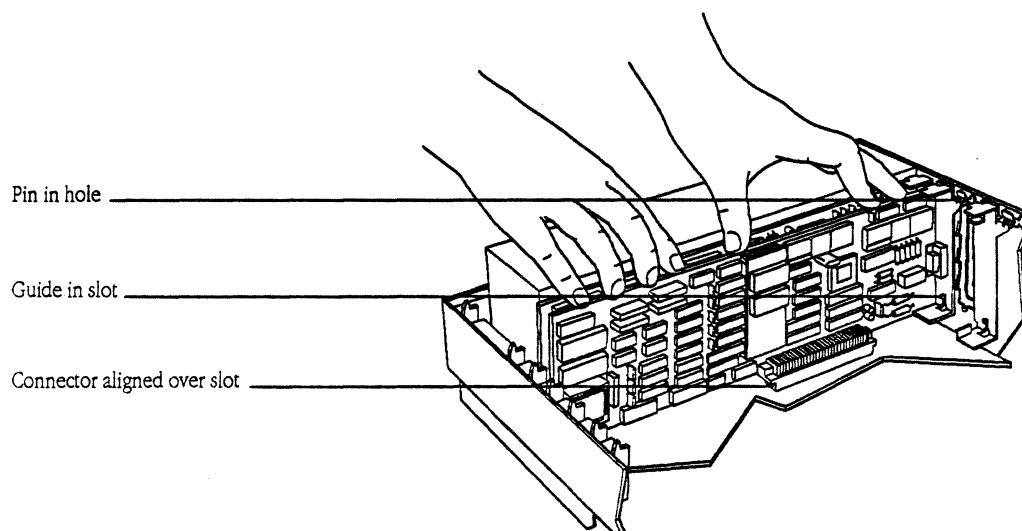
6. **Push out the plastic hole cover that lines up with the slot you plan to use.**
 - a. Grasp the cover with your thumb inside the computer and your fingers outside.
 - b. Push the cover out with your thumb and set the cover aside. (See Figure 2-4.)
- ❖ *Tip:* If the hole cover is difficult to push out with your thumb, use the eraser end of a pencil or another blunt object.

■ **Figure 2-4** Removing the hole cover



7. **Insert the card into the expansion slot.**
 - a. Pick up the card by the top of the metal bracket and the top of the card's other end. (Be careful not to touch the pins on the bottom of the card.)
 - b. The shield on the back of the card attaches to the inside of the back panel in the same way that the shield you removed in step 5 attaches. Align the card so that the guide is through the lower slot in the shield on the back of the card, and the pin sticks up slightly through the hole at the top of the shield. (See Figure 2-5.)

■ **Figure 2-5** Aligning the card



- c. Align the connector on the bottom of the card directly over the slot.
- d. Place one hand on the top of the card, directly over the connector area, and then push down firmly until the connector is fully seated. You can test to see if the card is properly connected by lifting the card gently. If it resists and stays in place, it's connected.

▲ **Warning**

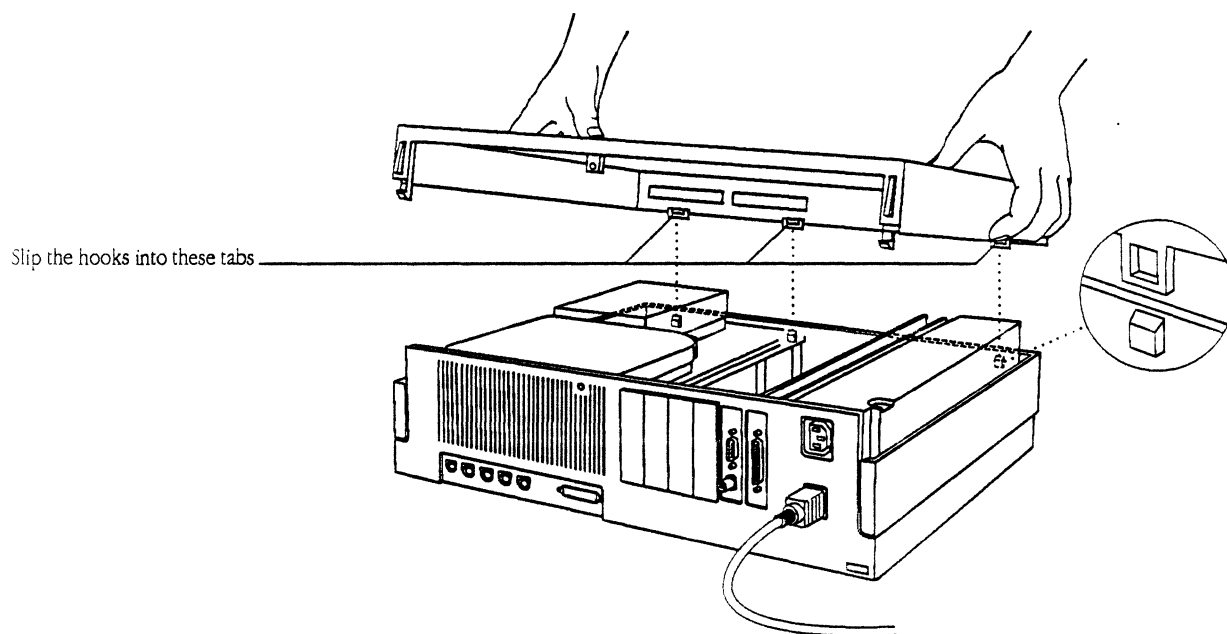
Don't force the card into the slot. If you meet a lot of resistance, pull the card out and try again. Don't wiggle the card from side to side when you insert it. Wiggling the card puts unnecessary stress on the card and slot. ▲

8. Replace the computer's lid.

- a. Tip the front of the lid down so that it catches the three hooks under the lid in the front of the computer's case. (See Figure 2-6.)

- b. Lower the back of the lid onto the case until the rear latches snap into place. Press firmly on the front of the lid to seat the three hooks completely, and on the back corners to make sure the latches are secure.
- c. Replace and tighten the security screw.

■ **Figure 2-6** Replacing the lid



Testing the card

Your product package also provides a *User Confidence Test* disk that contains diagnostic software for checking the TokenTalk NB Card. The confidence test checks the internal operations of the interface card and whether or not the card is properly installed. The software evaluates only the board and does not test the connector, cable, or token ring network.

If you do not encounter any errors when you run the test, your Macintosh II should be ready to connect to the network.

Running the test

To test an installed TokenTalk NB Card, restart the Macintosh II with the *User Confidence Test* disk.

1. After you restart the Macintosh II, open the *User Confidence Test* disk icon.

Either select the icon and choose Open from the File menu, or double-click the icon.

2. Start the Confidence Test.

Either select the Confidence Test icon and choose Open from the File menu, or double-click the Confidence Test icon.

The diagnostic software warns you that performing the confidence test will disrupt any network services currently provided by the card.

3. Click OK to continue.

The software displays a graphic of Macintosh II NuBus slots and asks you to select the card you want to test. Not all slots may be valid for your model of Macintosh II. If there is only one TokenTalk NB Card in your Macintosh II, that card is selected.

The graphic only shows TokenTalk NB Cards. Dimmed cards represent untested cards.

4. Select a card and click Start.

The confidence test takes several minutes. Click Cancel to quit the test.

If everything is in order, the software will tell you that the card is in proper working condition. Cards that pass the test are no longer dimmed in the graphic.

If the card fails the test, a message directs you to return the card to your Apple dealer or authorized service representative. A failed card is marked with an "X" in the graphic.

5. Click Continue.

If you have multiple TokenTalk NB cards installed, you can select another card and perform the confidence test again.

6. Click Quit.

Connecting to the network cable

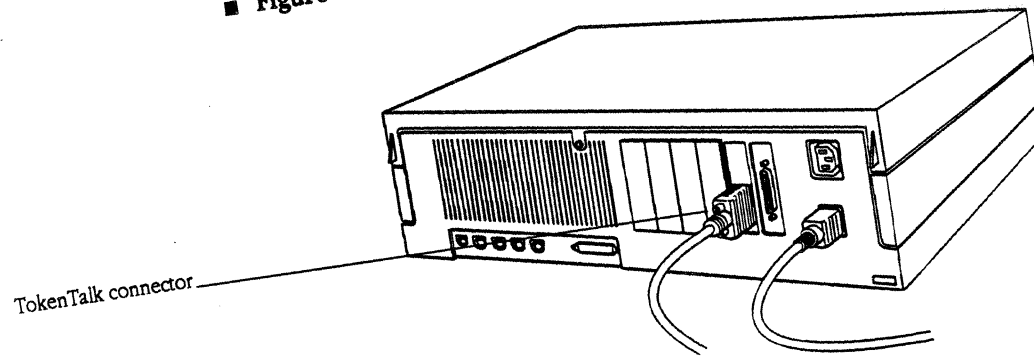
After you have tested the interface card with the confidence test, you can connect to the network **cable**. (See Figure 2-7.) Before you connect to the wiring concentrator, contact your network administrator.

The TokenTalk NB Card is designed for use with any standard type 1 token ring cabling scheme.

If you use type 1 cabling, a maximum of 260 nodes can be connected on the network in a single ring. You can increase the total number of workstations by bridging two or more rings with source routing bridges.

Tighten the cable screws until they are snug. Do not overtighten the screws.

■ **Figure 2-7** Connecting the card to the cable



Moving your computer

From time to time, you may need to move your computer and disconnect it from the network. All you have to do is turn off and unplug the computer and then unplug the connector cable from the card.

- ❖ *Note:* Leaving the network cable unconnected will not affect the network operations.

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Installing the Software

THIS CHAPTER TELLS YOU HOW TO INSTALL THE TOKEN TALK SOFTWARE THAT provides your Macintosh II computer with AppleTalk communications in a token ring environment.

Each section of this chapter explains one of the four steps involved in installing the TokenTalk software:

1. To verify that you have the necessary hardware and software, see "Before you begin."
2. To install TokenTalk software on a startup disk, see "Making a TokenTalk startup disk."
3. To select TokenTalk for network communications and choose an AppleTalk zone for your Macintosh II, see "Selecting TokenTalk."
4. To restart your Macintosh II, using a startup disk that contains the TokenTalk software, see "Using a TokenTalk startup disk."

Before you begin

To use TokenTalk for network communications on your Macintosh II, you need the following hardware and software:

- a Macintosh II computer with an installed TokenTalk NB Card
- the *TokenTalk Installer* disk
- an installed token ring environment of cables and wiring concentrators

For instructions on installing the card and connecting cabling to it, see Chapter 2 of this guide.

Making a TokenTalk startup disk

To use TokenTalk with the standard Macintosh operating system, you need a **startup disk** with the latest system files and TokenTalk software installed. The latest system files are on the *TokenTalk Installer* disk, including the latest versions of the **System file** and the **Finder™**. The TokenTalk software and the Installer are also on that disk.

△ **Important** You must use TokenTalk with System file version 6.0.3 or later. △

You make a TokenTalk startup disk by updating your **current startup disk** or by creating a new startup disk. Usually, the startup disk will be a **hard disk**, but you can also create a TokenTalk startup disk with a floppy disk.

To update a disk you currently use to start your Macintosh II, follow the instructions in the next section, "Updating an Existing Startup Disk."

To create a new TokenTalk startup disk using a blank disk, follow the instructions in the section "Creating a New TokenTalk Startup Disk" later in this chapter.

- △ **Important** As a safety precaution, make a copy of the *TokenTalk Installer* disk before you use it. Lock the copy and put it aside for use in the event the original disk becomes damaged. △

Updating an existing startup disk

You must use the Installer application on the *TokenTalk Installer* disk to update an existing startup disk with the TokenTalk software.

- △ **Important** Do not try to update a startup disk by dragging file icons from the *TokenTalk Installer* disk to your startup disk. To guarantee a successful update, you must use the Installer or copy the entire System Folder to the startup disk. △

1. **Restart your Macintosh II, using the *TokenTalk Installer* disk.**

Shut down your Macintosh, insert the TokenTalk Installer disk, and switch on your Macintosh. If an alert message appears, click OK and continue.

- ❖ **Updating AppleShare servers:** Before you can update an AppleShare file server, you must shut down the file server as described in the *AppleShare Administrator's Guide*. Then restart the Macintosh that the server is on, using the *TokenTalk Installer* disk.

2. **Open the *TokenTalk Installer* disk icon.**

Either select the icon and choose Open from the File menu, or just double-click the icon. Several icons appear in the disk window, including the Installer.

3. Open the Installer.

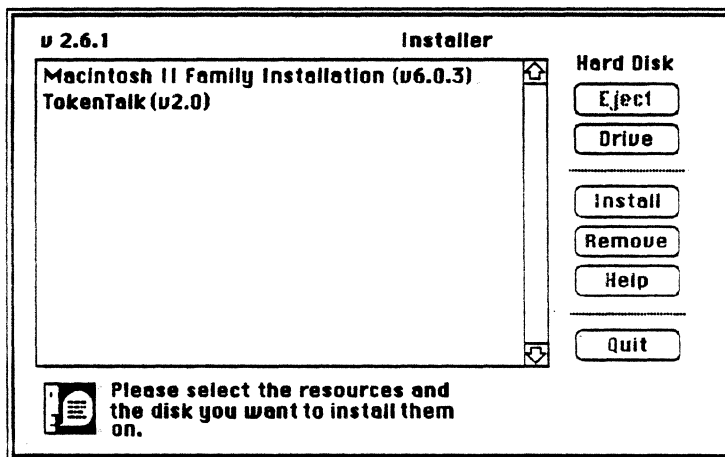
Either select the Installer icon and choose Open from the File menu, or double-click the Installer icon.

A dialog box appears, like the one in Figure 3.1.

4. Select the disk you want to update.

The Installer updates the disk named in the upper-right corner of the dialog box. Click the Drive button until you see the name of the disk that you want to update. If you're updating a floppy disk and you haven't already inserted it, do so now. If the hard disk that you want to update does not show up, try restarting your Macintosh II.

■ **Figure 3-1** Updating a startup disk with TokenTalk



5. Click Macintosh II Family Installation if you want to upgrade the System file on your startup disk.

If the startup disk that you're updating has never been updated to be a startup disk for your computer, **shift-click** the installation script for your computer to select it also.

6. Click TokenTalk to select it.

If you are updating the System file on your startup disk, shift-click the installation script for TokenTalk to select it also.

As you select each item, the Installer checks the available disk space and informs you how much free space will be left on the disk after the update is complete. (This check takes a few seconds for each selection.)

The Install button stays dimmed unless adequate space is available. If you're short of space, refer to your Macintosh II owner's guide for help with claiming space on a startup disk. If you have a LaserWriter® printer, your printer user's guide also provides suggestions for claiming space.

7. Click the Install button.

Installation will take a minute or two.

8. When the installation is complete, use Drive or Eject to switch to another startup disk and repeat the installation, or click Quit.

9. Restart your Macintosh II.

To continue setting up your Macintosh II so it uses TokenTalk for network communications, skip ahead to the section "Selecting TokenTalk."

△ **Important** If you reinstall System file 6.0.3, be sure to reinstall TokenTalk also. △

**Creating a new TokenTalk
startup disk**

You create a new TokenTalk startup disk by copying the System Folder from the *TokenTalk Installer* disk to a blank disk. That System Folder contains the TokenTalk software and the Macintosh system software that a TokenTalk startup disk requires.

1. Insert the *TokenTalk Installer* disk in your Macintosh II.

2. Open the icon that represents the *TokenTalk Installer* disk.

Either select the icon and choose Open from the File menu, or double-click the icon. The disk opens and several icons appear, including the System Folder.

If you are creating a floppy startup disk and your Macintosh II has only one floppy disk drive, eject the *TokenTalk Installer* disk before going on to the next step, by choosing Eject from the File menu.

3. Use a new disk or erase a used disk.

If you wish to create a new TokenTalk startup disk with a disk you have used before, erase that disk now. See your Macintosh II owner's guide for information on erasing disks.

You may need to **initialize** a new hard disk before you can make it a startup disk. Follow the instructions in your hard disk owner's guide for initializing a hard disk for the first time, but do not copy a System Folder or any files from a System Folder to the new hard disk yet.

If you insert a floppy disk that isn't initialized for the Macintosh II, you'll be asked if you want to initialize it at this time. See your Macintosh II owner's guide for information on initializing disks.

4. Drag the entire System Folder (not individual files from the folder) from the TokenTalk Installer window to the new disk icon to copy it there.

If you are creating a floppy startup disk and your Macintosh II has only one disk drive, you may need to swap disks a few times to complete the copying of the System Folder.

Selecting TokenTalk

After you install the TokenTalk software and restart your Macintosh II with the new startup disk, you need to select the TokenTalk connection before you can begin using TokenTalk network services. You can use only one network connection at a time, and until you select a new network connection, the Macintosh II assumes it should use the built-in LocalTalk connection at its printer port.

You select the TokenTalk network connection through the **Control Panel**, a **desk accessory**.

1. **Choose Control Panel from the Apple menu.**

2. **Click the Network icon.**

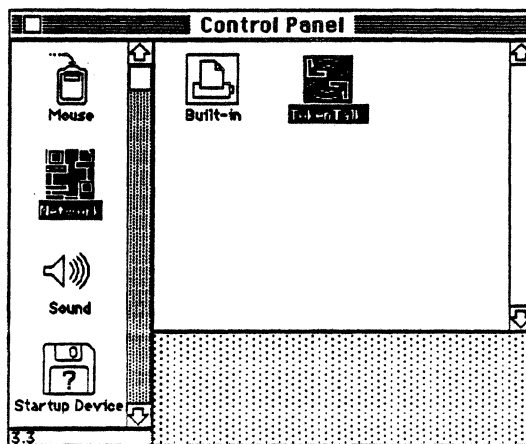
If necessary, use the scroll bar to bring the Network icon into view in the left column of the Control Panel. If the Network icon is missing, see "Network Icon Missing" in Chapter 5 for a list of reasons and remedies.

When you click the Network icon, more icons appear on the right side of the Control Panel. (See Figure 3-2.) They represent the available choices for your AppleTalk network connection, including Built-in and TokenTalk. The Built-in icon represents the LocalTalk network connection.

If your Macintosh II has more than one TokenTalk NB Card installed, you will see a separate TokenTalk icon for each card. See "Multiple Networks" in Chapter 4 for more information.

- ❖ *Note:* If your Macintosh II has other network connection options besides built-in and TokenTalk, other icons will show up in the Control Panel when you click the Network icon.

■ **Figure 3-2** Selecting a network connection



3. Click the TokenTalk icon.

With few exceptions, TokenTalk remains your network connection until you change it. A few exceptions to this rule, such as removing the TokenTalk NB Card, are described in "Switching the Network Connection" in Chapter 4.

- ❖ **Alert messages:** An alert message may appear if your Macintosh II has been used to access network services or to provide network services (printer, file server, electronic mail, and so on) since it was last started up. For explanations of specific messages, see "Messages" in Chapter 5.

If internet routers are present on your network and you have not previously selected a zone in which your Macintosh II can reside, you will be asked to choose an AppleTalk zone at this time (if your network has been set up to allow you to choose one). A dialog box similar to the one in Figure 3-3 appears, listing all the zones that your network administrator has made available to your network.

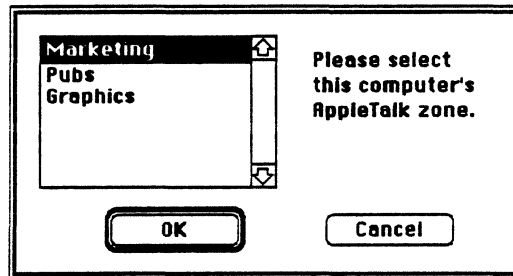
Your choice of a zone does not affect your access to other network services, but it does determine the zone where any network services provided by your computer will appear.

See your network administrator if you are uncertain about which zone to choose.

4. Click the name of a zone.

Click a zone if you want your Macintosh II to reside in that zone instead of the zone currently selected in the dialog box.

■ **Figure 3-3** Choosing an AppleTalk zone



5. Click OK.

Your computer will remain in this zone until you choose a different AppleTalk connection, or until you choose another zone. See "Changing your AppleTalk Zone" in Chapter 4 for more information.

Using a TokenTalk startup disk

From now on, always start your Macintosh II with a TokenTalk startup disk. Otherwise your Macintosh will revert to its built-in network connection, LocalTalk. (To use TokenTalk again, restart with a TokenTalk startup disk and reselect TokenTalk by using the Control Panel. See "Selecting TokenTalk" earlier in this chapter for details.)

Like most startup disks, TokenTalk startup disks can be set up so that certain network services are automatically available upon startup. For example, you can set up a TokenTalk startup disk so that it automatically mounts one or more volumes from an AppleShare file server at startup time. For specific instructions on setting up a particular network service, consult its user's guide.

Using TokenTalk

TOKENTALK PROVIDES A HIGH-PERFORMANCE APPLE TALK NETWORK.

With TokenTalk, you can access network services such as electronic mail or an AppleShare file server in exactly the same way that you would on any other AppleTalk network.

This chapter first discusses network organization. Then it describes how to switch among different networks, change your computer's zone, and remove TokenTalk.

Network configuration

A TokenTalk network can consist of a few computers connected by token ring cable, or it can be part of an organization-wide token ring network with thousands of nodes. It may also be connected to other AppleTalk networks, with which it can share services.

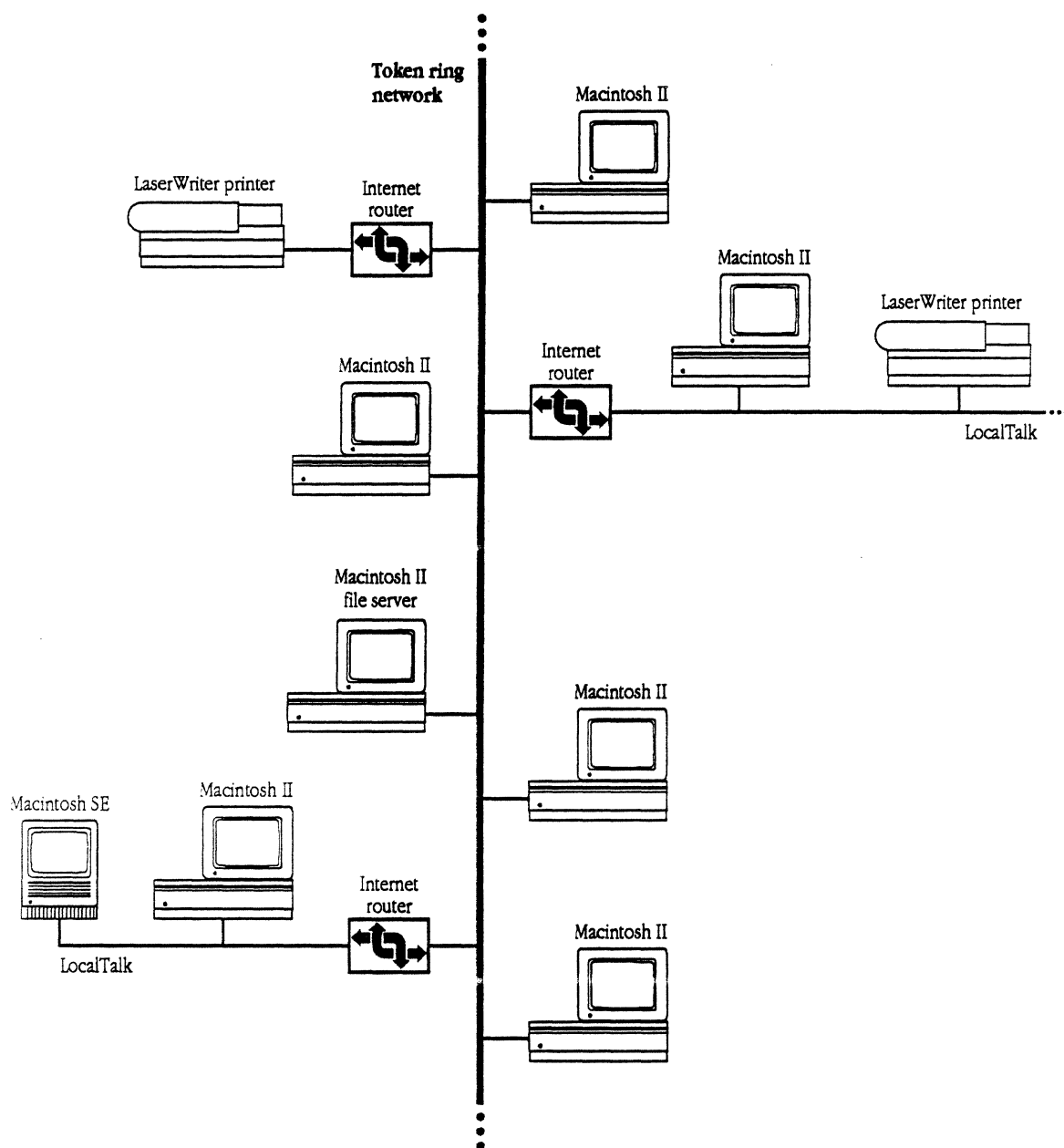
Internets

Different AppleTalk networks can be connected to each other with an internet router such as the AppleTalk Internet Router. A router allows information to cross between networks, so that users on one network can use services on another. Two or more networks connected by routers are collectively called an **internet**.

A TokenTalk network can be part of an internet that includes two or more AppleTalk networks. (See Figure 4-1). With a router, users can select devices and services on the internet in the same way that they do on a single network—through the **Chooser**.

Under normal conditions, you can access services and devices on an internet as you would on your TokenTalk network. However, if you start your machine for the first time on a network that is not part of an internet and access to that internet becomes available at a later time, an alert message may appear asking you to take an action such as choosing a zone name for your Macintosh II. See Chapter 5 for more information on alert messages and **troubleshooting**.

■ Figure 4-1 Multiple AppleTalk networks



Multiple networks

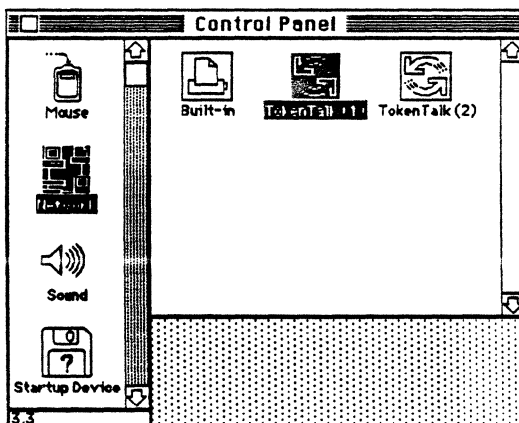
Your Macintosh II can be physically connected to more than one AppleTalk network or internet. For instance, it can be connected to a TokenTalk network and to the built-in LocalTalk connection. However, you can use only one network connection at a time.

You can also install more than one TokenTalk NB Card in your Macintosh II, and connect each card to a different TokenTalk network. You can even install a card that provides a different network connection—for example, an EtherTalk NB Card.

If you have multiple TokenTalk cards installed, each card will have its own TokenTalk icon in the Control Panel. (See Figure 4-2). A number in the icon name specifies the slot number of the TokenTalk NB Card that the icon represents. Looking down on the slots from the front of the Macintosh II, slots are numbered from left to right, beginning with slot 1.

You must switch off your Macintosh II before you can remove a TokenTalk NB Card. If you remove the card that was selected for the network connection, TokenTalk automatically picks another card when you restart your Macintosh II. It uses the remaining TokenTalk NB Card in the lowest numbered slot. (If there are no cards left, it switches to the built-in LocalTalk connection.)

■ **Figure 4-2** Token Talk NB Card icons



Switching the network connection

Although your Macintosh II computer can be connected to more than one network or internet, it can use only one AppleTalk network connection at a time. To use another connection, change network connections through the Control Panel.

- ❖ *Note:* If the Chooser is open when you switch the network connection in the Control Panel, the network services shown in the Chooser may not be updated. You must close the Chooser and reopen it to see the services of the newly selected network.

- 1. Choose Control Panel from the Apple menu.**

- 2. Click the Network icon.**

Use the scroll bar if necessary to bring the Network icon into view.

When you click the Network icon, the Control Panel displays network connection icons. The current network connection is highlighted.

- 3. Click the connection that you want your Macintosh II to use.**

Each available network connection is represented by a separate icon. The Built-in icon represents the LocalTalk printer port connection. Each TokenTalk NB Card installed in your Macintosh II has its own icon. (See the section, "Multiple Networks" earlier in this chapter.) If your computer has other AppleTalk network connection options, such as EtherTalk, their icons should appear too.

If a connection other than the built-in LocalTalk connection is selected, you can still select an ImageWriter® or other device connected to your computer's printer port.

△ **Important**

When you select a new network connection, you are disconnected from any current network services. Before this happens, a warning message appears or you may be prevented from switching network connections. See Chapter 5 for information on troubleshooting this condition. You may also be asked to choose a new zone at this time. △

The network connection you select remains in effect until you change it—even if you restart your Macintosh II. However, your Macintosh II automatically changes the network connection under the following conditions:

- You start up with a disk that does not have TokenTalk installed on it. In this case, your computer reverts to its built-in LocalTalk connection.
- You remove all TokenTalk NB Cards. If you do, your computer reverts to its built-in LocalTalk connection.

Disconnecting the token ring cable does not affect the network selection.

- You have more than one TokenTalk NB Card installed and you remove the one you had selected in the Control Panel. In this case, your Macintosh II uses the TokenTalk NB Card installed in its lowest numbered slot.
- Your TokenTalk software is missing or damaged.

Changing your AppleTalk zone

When you select a TokenTalk connection, you can also choose a zone in the network from a list provided in the Control Panel. The zone that you choose becomes the AppleTalk zone where your Macintosh II resides, and you can change it at any time.

1. Choose Control Panel from the Apple menu.

2. Click the Network icon.

When you click the Network icon, more icons appear. They represent the available choices for the AppleTalk network connection, including Built-in and TokenTalk. Your current network connection is highlighted.

3. Click the highlighted TokenTalk icon that represents the selected TokenTalk connection.

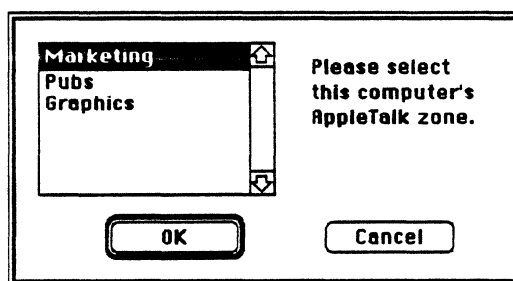
A dialog box similar to the one in Figure 4-3 appears, listing the available AppleTalk zones.

4. Click the name of a zone.

5. Click OK.

Your computer remains in this zone until you change the network connection or choose another zone.

■ **Figure 4-3** Choosing an AppleTalk zone



▲ **Warning**

Changing your AppleTalk zone also changes the zone where other network users will find any network services provided by your computer. If your computer provides any services, be sure to notify other users of the zone change.

Also, check that there is no other computer with the same name as yours in the new zone that is providing any of the same services as your computer. If this duplication does occur, restart your Macintosh II so that a new name will be assigned to the service your computer provides.▲

Moving your Macintosh II

If you move your Macintosh II to another TokenTalk network on an AppleTalk internet, make sure that any internet routers on that network are active before you start your Macintosh II. Otherwise, you may have problems communicating with other users when these routers become active. Also, if you move your Macintosh II and restart, you may be assigned another AppleTalk zone if your previous zone is not available. See your network administrator if you have questions about the status of routers on the internet.

Removing TokenTalk

If you disconnect your Macintosh II computer from TokenTalk for a long period of time, you may wish to remove TokenTalk from your startup disks. Doing so makes more space available on the startup disk. (If you only want to switch temporarily to a different network connection, follow the instructions in "Switching the Network Connection" earlier in this chapter.)

You can remove TokenTalk software from a startup disk by using the Installer on the *TokenTalk Installer* disk. If you're updating a floppy disk, use a Macintosh with two floppy disk drives. (You can use any Macintosh, including a Macintosh SE, to remove TokenTalk software from a floppy disk.)

1. Start up or restart your Macintosh with the *TokenTalk Installer* disk.

2. Open the Installer.

A dialog box appears, displaying your installation options.

- ❖ *AppleShare servers:* Before you can remove TokenTalk from an AppleShare file server, you must shut down the server as described in the *AppleShare Administrator's Guide*. Then restart the server Macintosh, using the *TokenTalk Installer* disk.

3. Select the disk from which you want to remove TokenTalk.

The Installer removes the TokenTalk software from the disk named in the upper-right corner of the dialog box. Click the Drive button until you see the name of the disk you want to update. If you're removing TokenTalk from a floppy disk and haven't already inserted it, do so now.

4. Click TokenTalk to select it.

When you select TokenTalk, the Installer tells you how much space you'll gain with its removal.

The Remove button stays dimmed if the selected disk does not have TokenTalk installed on it.

5. Click Remove.

The Installer removes the network connection file from the selected disk.

6. Click Quit when you're finished.

When you use this disk to start up your computer, you will no longer be able to use TokenTalk for your network connection. You will, however, be able to select other network connections through the Control Panel.

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Troubleshooting

THIS CHAPTER LISTS COMMON PROBLEMS THAT YOU MAY ENCOUNTER AND messages that you may see when you use or try to use TokenTalk. It provides solutions for many of these problems and also tells you how to check your network for cable problems that can disrupt service to one or more network users.

If your problem isn't described here, it may be related to a device or service that you're trying to access on the network. Check the troubleshooting section or chapter in the owner's or user's guide for the device or service.

Problems and solutions

Most problems you may encounter will have to do with your startup disks—the result of the wrong version of the System file, improperly installed TokenTalk software, or a current startup disk that doesn't have TokenTalk software installed on it. You can usually solve these problems by restarting your computer with a startup disk that has TokenTalk correctly installed, or by reinstalling TokenTalk on the problem disk.

The following sections describe these types of problems in detail.

Can't switch network connection

When you change the network connection, a message may alert you that the connection cannot be changed now, or that doing so will disrupt critical network services. This means that making the change would disrupt either a service that your computer provides (such as an AppleShare file server or a router) or an essential network service that your computer is using.

To resolve the situation, quit all applications, and try switching the network connection again. If that doesn't work and you wish to disrupt service, you may need to shut down the Macintosh II. Be sure to use the Shut Down command or, if the Macintosh II is a server, to follow the shutdown instructions in the server administrator's guide. Then restart the computer, using a TokenTalk startup disk that permits network connection changes. (The *TokenTalk Installer* disk is such a startup disk.) Finally, select a different network connection in the Control Panel.

Network service missing

If you cannot access any network services, the network cable may not be correctly connected to the TokenTalk NB Card in your Macintosh II. If this is the case, plug the cable back in and restart the Macintosh II.

If you cannot access one particular service, the service may be in a different zone, malfunctioning, switched off, or disconnected from the network. There may also be trouble in the network cables between your Macintosh and the missing service. For help inspecting the network, see the section "Checking the Network" later in this chapter. You can also contact your network administrator to see if there are known problems with the network.

If you switch the network connection in the Control Panel while the Chooser is also open, the network services shown in the Chooser may not be updated. You must close the Chooser and reopen it to see the services of the newly selected network.

Network icon missing

If the Network icon isn't present in the Control Panel, then one of the following problems exists:

- You don't have TokenTalk software installed on the current startup disk. See "Making a TokenTalk Startup Disk" in Chapter 3.
- The Network icon has been moved from your System Folder. You must reinstall the TokenTalk software. See "Making a TokenTalk Startup Disk" in Chapter 3.
- Your startup disk has the wrong version of the Control Panel. You must use version 3.1 or a later version. (The version number appears in the lower-left corner of the Control Panel.) Go through the steps in "Making a TokenTalk Startup Disk" in Chapter 3, to ensure that your startup disk has the latest version of the Control Panel.

TokenTalk icon missing

If the TokenTalk icon isn't present after you click the Network icon in the Control Panel, then one of the following problems exists:

- You don't have TokenTalk software installed correctly on the current startup disk. See the section "Making a TokenTalk Startup Disk" in Chapter 3.
- The TokenTalk icon has been moved from your System Folder. You need to reinstall the TokenTalk software. See the section "Making a TokenTalk Startup Disk" in Chapter 3.
- There is no TokenTalk NB Card in your Macintosh II, or the card is not working properly. Follow the installation instructions in Chapter 2.

Can't select Network icon

When you click the Network icon in the Control Panel, you may get a message advising you that the network package has not been installed correctly. This means that the TokenTalk software has not been installed properly on the startup disk last used to start your Macintosh II. You must install TokenTalk software by using the Installer program on the *TokenTalk Installer* disk. You cannot simply drag the Network icon from the *TokenTalk Installer* disk to the System Folder on your startup disk. See "Making a TokenTalk Startup Disk" in Chapter 3.

Can't select TokenTalk icon

When you click a TokenTalk icon in the Control Panel, you may get a message advising you that an error occurred while trying to install TokenTalk. This situation is unlikely, but can occur if you did not start your Macintosh II with a TokenTalk startup disk, or the disk you used has become damaged. Try reinstalling TokenTalk (as described in the section "Making a TokenTalk Startup Disk" in Chapter 3) or restarting with another TokenTalk startup disk. If the problem persists, contact your dealer.

TokenTalk missing at startup time

If your Macintosh II has trouble loading the TokenTalk software in its memory at startup time, a message advises you that "the selected AppleTalk connection" (in this case, TokenTalk) could not be installed. The Macintosh automatically reverts to its built-in network connection, LocalTalk. Several events can cause this condition to occur:

- The TokenTalk icon has been moved from your System Folder. Find the TokenTalk icon, drag it back into the System Folder, and restart your Macintosh II. If you can't find the TokenTalk icon, reinstall it by following the steps in "Making a TokenTalk Startup Disk" in Chapter 3.
- There is no TokenTalk NB Card in your Macintosh II, or the card is not working properly. Install one according to the instructions in Chapter 2. Use the confidence test to verify that the card is working properly.
- The System file is damaged, or the installation of TokenTalk software on the startup disk was unsuccessful. Try installing your System file again, then reinstall TokenTalk. See "Making a TokenTalk Startup Disk" in Chapter 3.

Because your Macintosh II has reverted to its Built-in network connection, you must reselect TokenTalk in the Control Panel (after correcting the problem). See "Selecting TokenTalk" in Chapter 3.

Control Panel missing

The Control Panel is present on all startup disks unless it has been intentionally removed with the Font/DA Mover. If you're using more than one startup disk, your Macintosh II may switch to a disk without the Control Panel installed. To determine which is the current startup disk, look at the icon in the upper-right corner of the desktop. That icon always represents the current startup disk.

When you use the Installer to install the system update from the *TokenTalk Installer* disk, the Control Panel is automatically installed correctly. See "Making a TokenTalk Startup Disk" in Chapter 3 for instructions.

Do not use the Font/DA Mover to remove the Control Panel from a TokenTalk startup disk.

Macintosh II hangs

Your Macintosh II may hang for about a half minute when you first try to access the network (this usually occurs upon startup). This usually means that you selected the TokenTalk network connection, and you are the first user on the token ring network. If this is the case, the Macintosh II will resume normal operation after about 30 seconds.

Can't select devices on the printer port

If the Chooser will not let you select an ImageWriter or other device connected to the printer port while the TokenTalk network connection is selected, you probably have an old version of the Chooser on your Macintosh II. You must have Chooser version 3.4 (or later) to select a device on the printer port. Reinstall the TokenTalk software to update the Chooser.

Also, some software applications may require an upgrade before being able to select a device connected to the printer port. Contact the software vendor for more information on application upgrades.

Messages

This section lists messages that you may see when you switch the network connection, when you start up with a TokenTalk startup disk, or while you are using a TokenTalk network. It explains each message and suggests remedial action.

- **Access to current network services will have to be reestablished. Are you sure you want to change the AppleTalk connection?**

When you select a different network connection in the Control Panel, current network services (printer, file server, electronic mail, and so on) are automatically disconnected. You may have to restart your Macintosh II before you can reestablish some services, since many applications establish network services at startup time.

- **AppleTalk must be active to choose a zone. Please use the Chooser to activate AppleTalk.**

This message occurs if you try to choose a zone after AppleTalk has been purposely deactivated. Use the Chooser to reactivate AppleTalk and then choose a zone.

- **AppleTalk is currently in use. It cannot be changed at this time.**

You may not be able to change the network connection in the Control Panel if doing so would disrupt either a service your computer provides (such as AppleShare file service) or an essential service your computer uses.

First, quit all applications, and try switching the network connection again. If that doesn't work and you wish to disrupt service, you must shut down the Macintosh II. Be sure to use the Shut Down command or, if the Macintosh is a server, to follow the shutdown instructions in the server administrator's guide. Then restart your computer, using a TokenTalk startup disk that doesn't automatically access services that prohibit network connection changes. (The *TokenTalk Installer* disk is such a startup disk.) Finally, select a different network connection in the Control Panel.

- **AppleTalk is in use. Changing connections at this time will disconnect network services. You must restart your machine after switching connections. Are you sure?**

If you change the network connection in the Control Panel, you will disrupt either a service that your computer provides (such as AppleShare file service) or an essential service that your computer uses.

If you want to continue, you must shut down the Macintosh II after switching the network connection. Be sure to use the Shut Down command or, if the Macintosh is a server, to follow the shutdown instructions in the server administrator's guide. The new network connection takes effect after you restart your computer.

- **An error occurred while trying to start up your AppleTalk connection. The built-in LocalTalk port will be used instead.**

Your Macintosh II had trouble retrieving TokenTalk software from the TokenTalk startup disk. It reverted to its built-in network connection, LocalTalk. This reversion can happen when you switch the network connection or at startup time, for two reasons:

- The Macintosh II could not find a TokenTalk NB Card. Make sure you have a card installed. (See Chapter 2.)
- Perhaps you did not start your Macintosh II with a TokenTalk startup disk, or the disk you used has become damaged. Try another TokenTalk startup disk or reinstall the TokenTalk software. See "Making a TokenTalk Startup Disk" in Chapter 3.

- **A driver for the selected AppleTalk connection could not be found. The built-in LocalTalk port will be used instead.**

The Macintosh II could not find the TokenTalk connection file in the System Folder of the startup disk at startup time. It uses the built-in LocalTalk network connection instead.

Find the TokenTalk icon and drag it back into the System Folder. Then restart your Macintosh. If you can't find the TokenTalk icon, reinstall it by following the steps in "Making a TokenTalk Startup Disk" in Chapter 3.

After you replace the TokenTalk icon in the System Folder and restart your computer, select TokenTalk for network communications by using the Control Panel. See "Selecting TokenTalk" in Chapter 3.

- **The Network software has not been installed correctly. Be sure to use the Installer and then restart.**

At startup time, the Macintosh II found the Network icon in the System Folder but did not find the rest of the TokenTalk software. As a result, the Control Panel could not handle network connection options correctly. You must install TokenTalk software by using the Installer program on the *TokenTalk Installer* disk. You cannot simply drag the Network icon from the *TokenTalk Installer* disk to the System Folder on your startup disk. Follow the instructions in "Making a TokenTalk Startup Disk" in Chapter 3.

- **An error occurred while reading a resource... Please reinstall the Network software.**

Part of the TokenTalk software is unreadable on the current startup disk. The System file may be damaged. Try removing and then reinstalling the TokenTalk software. (See the sections "Removing TokenTalk" in Chapter 4 and "Making a TokenTalk Startup Disk" in Chapter 3.) If this doesn't work, try reinstalling the System file, and then reinstall the TokenTalk software. You can also restart your Macintosh II with a different TokenTalk startup disk.

- **Access to your AppleTalk internet has now become available. To use the internet, please click the Network icon in the Control Panel, then click the selected AppleTalk connection icon.**

This message usually appears when the first router becomes active on your network after you've installed and selected TokenTalk. It will only appear if no routers were available when you first selected TokenTalk in the Control Panel. If you want access to the internet, select the Network icon in the Control Panel and click the network connection icon again.

- **An unexpected change in your AppleTalk internet has interrupted network access. To resume network use, please click the Network icon in the Control Panel, then click the selected AppleTalk connection icon.**

This message usually appears when the first router becomes active on your network after you've moved your computer from another TokenTalk network. It will only appear if no routers were available when you started your computer on the TokenTalk network. To reestablish the connection, select the Network icon in the Control Panel and click the network connection icon again.

- **You cannot choose a zone at this time because no internet router is available.**

This message means that you cannot choose a zone because there are no active internet routers to provide access to other networks.

- **Your system has been placed in the AppleTalk zone “ZZZZ”. To select a different zone, please click the Network icon in the Control Panel, then click the selected AppleTalk connection icon.**

This message usually appears when the first router becomes active on your network, and you have not previously selected a zone name. Your computer will be placed in the zone specified by your network administrator. If you wish to change the zone, follow the instructions in “Changing Your AppleTalk Zone” in Chapter 4.

- **Your system’s connection to AppleTalk must be reestablished. Doing so will disconnect current network services.**

This message usually appears in the Control Panel after the first router becomes active on your network, after you’ve moved your computer from another TokenTalk network. It will only appear if no routers were available when you started your computer on the TokenTalk network. To reestablish the connection, select the Network icon in the Control Panel and click the network connection icon again.

- **Your system’s connection to AppleTalk must be reestablished, but AppleTalk is currently in use. Please quit current network applications and restart.**

This message usually appears in the Control Panel after the first router becomes active on your network after you’ve moved your computer from another TokenTalk network and while AppleTalk is being used by another application. It will only appear if no routers were available when you started your computer on the TokenTalk network. To reestablish the connection, quit any current network applications, then restart your Macintosh II.

Checking the network

Problems often occur in a network after you’ve changed it in some way. Here’s a checklist to consult whenever you’re having trouble with the network:

- **Cables secure?** Make sure that the network cable to your Macintosh II is secure at both ends. Also check the network cable to the service that you're trying to use. Contact your network administrator if you are uncertain about cable configuration.
- **Device on and ready?** Someone may have inadvertently disconnected or switched off a device. Or the problem may be related directly to the device. For example, a LaserWriter takes about two minutes to warm up, and the green Select light of an ImageWriter must be on for AppleTalk access.
- **Trouble specific to application or device?** Sometimes what seems to be a network problem is actually trouble with the device or application program you're using. The manual for the device or application may be helpful.
- **Device on your network?** You may have more than one network in your area. Follow the cable from your computer to the device you're trying to use to see if they're on the same network. Be sure to use the Control Panel to select the proper network connection. (See "Switching the Network Connection" in Chapter 4.)
- **TokenTalk Card OK?** Shut down your Macintosh II and make sure that the TokenTalk NB Card is firmly seated in its socket. Run the confidence test to see if the card is in working order.
- **Device ID conflict?** If a device is switched on and isn't connected to the network, it can't know which AppleTalk identification numbers other devices have chosen. If you later connect the device to the network, it may choose a number that's being used by another device (a rare occurrence). Neither device can use the network until one of them is restarted. To ensure proper network operation, always turn off a device before you connect the network cable to it.

Glossary

AppleShare file server: A file server that consists of a Macintosh computer, AppleShare software, and one or more hard disks.

application: A computer program designed for a specific purpose, such as word processing, database management, graphics, or telecommunication.

cable: An insulated bundle of wires with connectors on the ends. Examples are LocalTalk cables, Ethernet cables and token ring cables.

card: A removable printed-circuit board that plugs into one of a computer's **slots**, allowing the computer to use a peripheral device or to perform some subsidiary or peripheral function. A TokenTalk NB Card allows a Macintosh II to connect to a TokenTalk network.

Chooser: A desk accessory that lets you activate and deactivate AppleTalk and lets you choose network services.

connector: A plug, socket, jack, or port.

Control Panel: A desk accessory that lets you change the network connection and other Macintosh features.

current startup disk: The disk that contains the system files the computer is currently using. The current startup disk icon always appears in the upper-right corner of the desktop.

desk accessories: Special applications that are available from the Apple menu while you're using another application.

device: A piece of equipment such as a Macintosh, LaserWriter, ImageWriter, or file server.

EtherTalk network: A type of AppleTalk network that uses AppleTalk protocols in an Ethernet environment. Compare **LocalTalk network** and **TokenTalk network**.

file: Any named, ordered collection of information stored on a disk. Documents, applications, and system files are all files.

file server: A device that allows users to store and share documents, folders, and applications over a network. See also **AppleShare file server**.

Finder: The standard application that you use to open applications and documents, and to manage disks, folders, and files.

floppy disk: A plastic disk with a thin flexible jacket or a hard-shell plastic jacket. Compare **hard disk**.

hang: To cease operation because an unexpected condition occurs.

hard disk: A disk permanently sealed into a drive or cartridge. A hard disk can store very large amounts of information compared to a **floppy-disk**.

initialize: To organize a disk into tracks and sectors so that it is ready to store information.

installation: The process of adding or changing information in the System Folder or System file of a disk. For example, the Installer on the *TokenTalk Installer* disk installs TokenTalk software and updates the System file.

internet: Two or more networks interconnected by **internet routers**. Networks in an internet can share information and services.

internet router: A device that allows data to cross between two AppleTalk networks, such as a LocalTalk and an EtherTalk network.

lobe: The physical wiring between the node and the wiring concentrator in a token ring configuration.

LocalTalk network: The type of AppleTalk network that uses the connection software and hardware built into Macintosh computers. LocalTalk attaches to the Macintosh printer port. Compare **EtherTalk network** and **TokenTalk network**.

MAU: (multistation access unit): See wiring concentrator.

network: A collection of interconnected, individually controlled computers and peripheral devices, together with the hardware and software used to connect them. A network allows users to share peripheral devices such as printers and file servers, to exchange electronic mail, and so on.

network connection: A combination of hardware and software that lets you set up a particular implementation of an AppleTalk network, such as LocalTalk or TokenTalk.

NuBus: An address bus and data bus incorporated into the system architecture of the Macintosh II. The NuBus architecture lets you add a variety of components to the system, by means of expansion cards installed in **NuBus expansion slots** inside the Macintosh II. NuBus is a trademark of Texas Instruments.

NuBus expansion slots: The slots on the main circuit board of the Macintosh II family of computers, to which you add cards for video monitors and peripheral devices, coprocessors, and network interfaces.

printer port: The socket on the back of the Macintosh marked by a printer icon. In addition to being a connection for a printer, it also serves as a connection point for LocalTalk.

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

ring: A network topology in which nodes are connected to one another in a closed circle.

router: See **internet router**.

server: A computer that provides a particular service across a network. The service may be file access, log-in access, file transfer, printing, and so on. See also **file server**.

Shift-click: To select multiple items by holding down the Shift key while clicking each item.

slot: A narrow socket inside the computer where you can install **cards**.

startup disk: A disk with all the system files you need to get your Macintosh started. Compare **current startup disk**.

System file: A file that the computer uses to start up and to provide system-wide information.

token ring network: A local area network (LAN) wherein access to the network is controlled by a unique signaling sequence called a token.

TokenTalk network: A type of AppleTalk network that uses AppleTalk protocols in a token ring environment. Compare **LocalTalk network** and **EtherTalk network**.

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

wiring concentrator: In a token ring network, a lobe concentrator that physically connects Macintosh II computers and other attaching devices to the ring; a MAU. Relays in the wiring concentrator provide for physical insertion to, and detachment from, the ring. See also **lobe**.

zone: A conceptual grouping of devices in an AppleTalk internet that makes it easier to locate and access network services. The network administrator defines zones during the router setup process. A device chooses the zone in which it should reside. To access a device, a network user chooses the zone where the device resides.

THE APPLE PUBLISHING SYSTEM

This Apple® manual was written, edited, and composed on a desktop publishing system using Apple Macintosh® computers and Microsoft® Word. Proof pages were created on the Apple LaserWriter® printers; final pages were printed on a Varityper® VT600™. Line art was created using Adobe Illustrator™ and typeset on a Linotronic® 300. The chapter openers were drawn using a combination of Illustrator and traditional drawing techniques. POSTSCRIPT®, the LaserWriter page-description language, was developed by Adobe Systems Incorporated.

Text type and display type are Apple's corporate font, a condensed version of Garamond. Bullets are ITC Zapf Dingbats®.

1/27/89

