

1

Installing the Card in a Power Macintosh 4400 or 7220



This chapter describes how to install the PC Compatibility Card hardware in a Power Macintosh 4400 computer—or a Power Macintosh 7220, available in some countries.

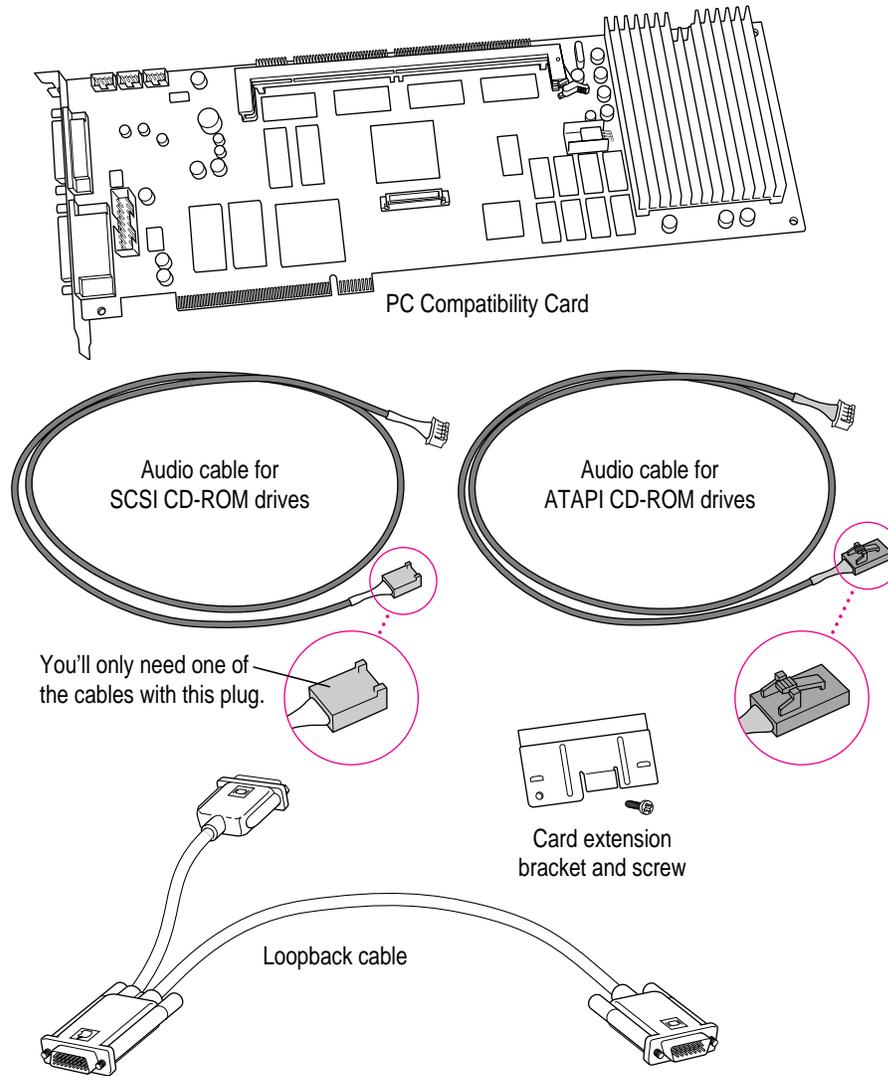
IMPORTANT If you will be installing a PC Serial and Parallel Card with your PC Compatibility Card, it's easiest to install both cards at the same time. The PC Serial and Parallel Card has standard PC ports that allow you to use several kinds of PC-compatible peripherals from the Windows or DOS environment (not from the Mac OS environment). Instructions in this chapter indicate when to see your PC Serial and Parallel Card manual for installation information.

After you install the PC Compatibility hardware, go to Chapter 5, “Connecting Monitors and Other Equipment.” If you want to install additional memory in your card, go to Appendix B, “Adding Memory to Your PC Compatibility Card.” Then turn to Chapters 6 through 9 to learn more about installing and using PC software.

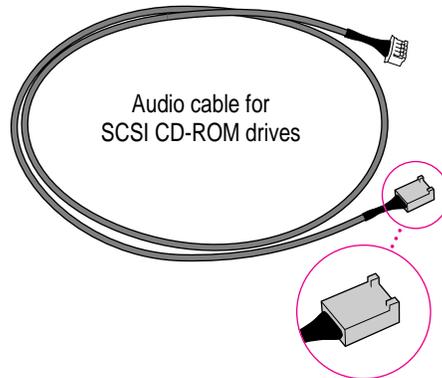
WARNING Shipping your computer with a PC Compatibility Card installed may cause damage to the card. Your PC Compatibility Card should be shipped separately. (See Appendix A for instructions on how to remove the card.)

What you need

Before beginning the installation process, make sure you have all the necessary parts: the PC Compatibility Card, the audio cables, the card extension bracket and screw, and the loopback cable. You'll also need a Phillips screwdriver.



You won't need the other audio cable with the thick plug shown below.



Installing the PC Compatibility Card hardware

WARNING The installation of the PC Compatibility Card is technically complex. Unless you are comfortable installing components inside computers, Apple recommends that you have the PC Compatibility Card installed by your Apple-authorized dealer (who may charge a fee). If you attempt to install the card yourself, any damage you may cause to your equipment will not be covered by the limited warranty on your computer.

Do not attempt to install the card, install memory, or connect the cables without first reading this manual.

There are several steps to installing your PC Compatibility Card hardware:

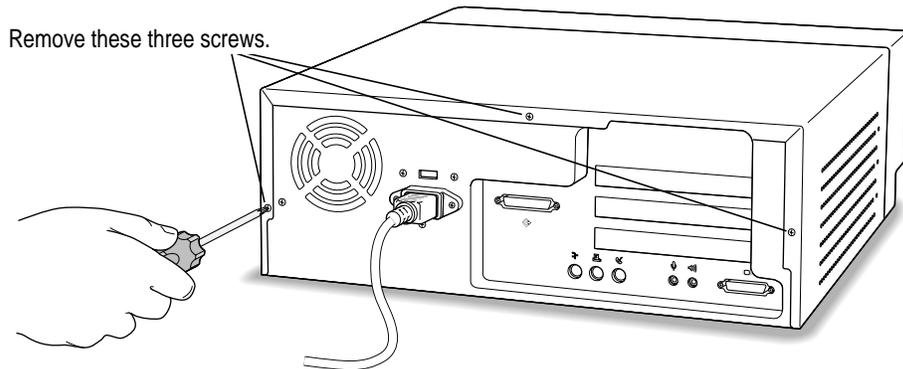
- opening the computer
- inserting the PC Compatibility Card
- connecting the CD In cable
- connecting the Sound Out cable
- replacing the computer cover

Opening the computer

- 1 Shut down the computer and disconnect all cables from the computer, except for the power cord.**

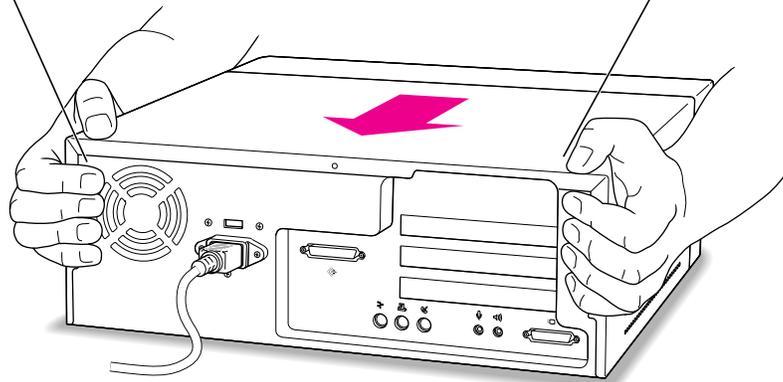
Leave the computer plugged in for now, to ground it and protect its components from static electricity damage.

- 2 Remove the three screws as shown from the back of the cover.**

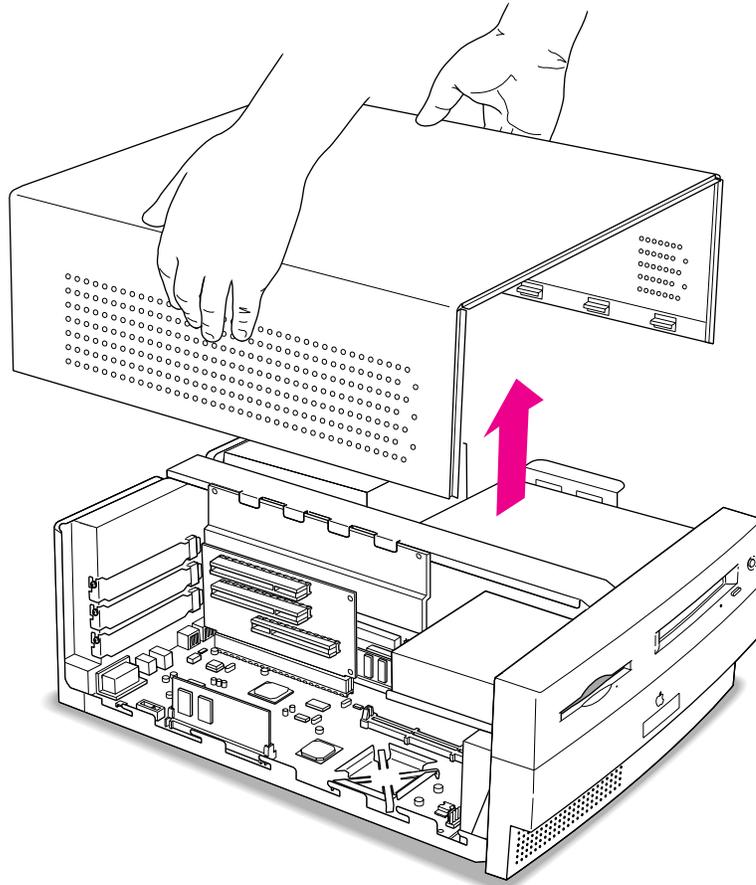


- 3 Position your hands on the unit as shown, and slide the cover back.**

Firmly grasp the back of the computer and push in on the rear panel with your fingertips while sliding the top cover back about a quarter of an inch with your thumbs.



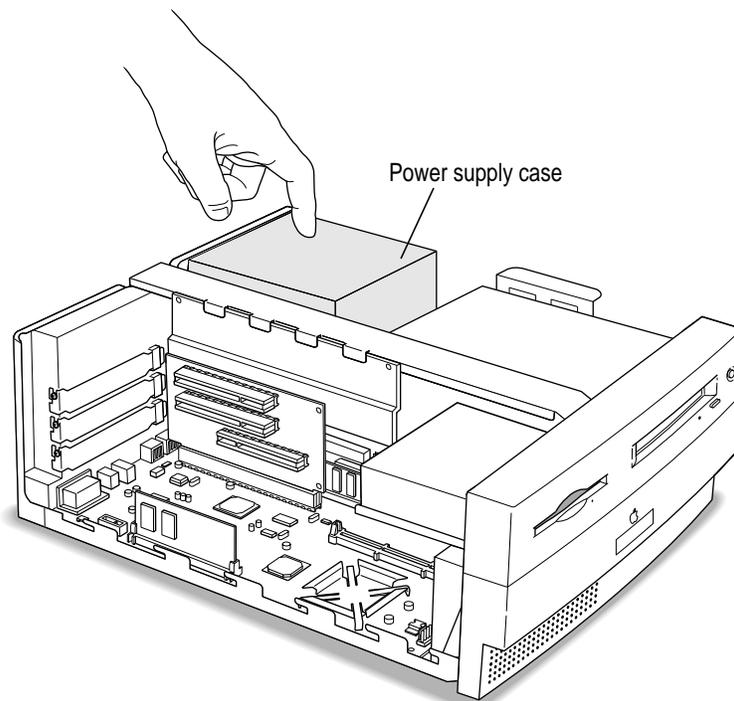
4 Lift the cover up and off of the computer.



5 Touch the metal part of the power supply case inside the computer.

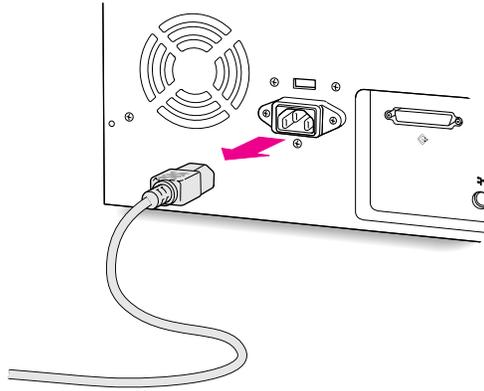
Always do this before you touch any parts, or install any components, inside the computer. Touching the power supply case helps release static electricity from your body and prevent possible damage to internal components.

IMPORTANT You can collect static electricity just by walking away from and then back to your computer. If you need to move away from your computer during installation, remember to touch the metal part of the power supply case again before you continue installing.



6 Disconnect the power cord.

Remove the power cord from the back of the computer.

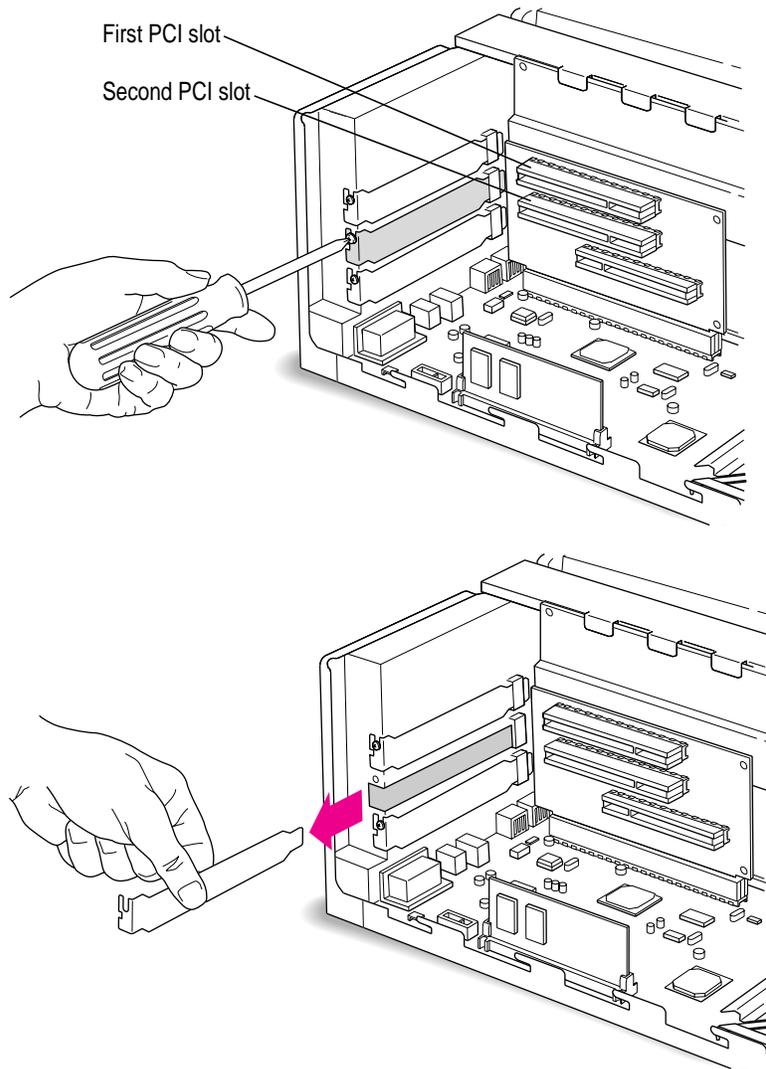


Inserting the PC Compatibility Card

- 7 Unscrew and remove the metal port access covers for the slots you need.

You need to install the PC Compatibility Card in the second PCI slot, just under the top (first) slot. If you are installing a PC Serial and Parallel Port Card, you'll need to install it in the top (first) slot later.

Keep the screws; you will need to reinsert them again later on.

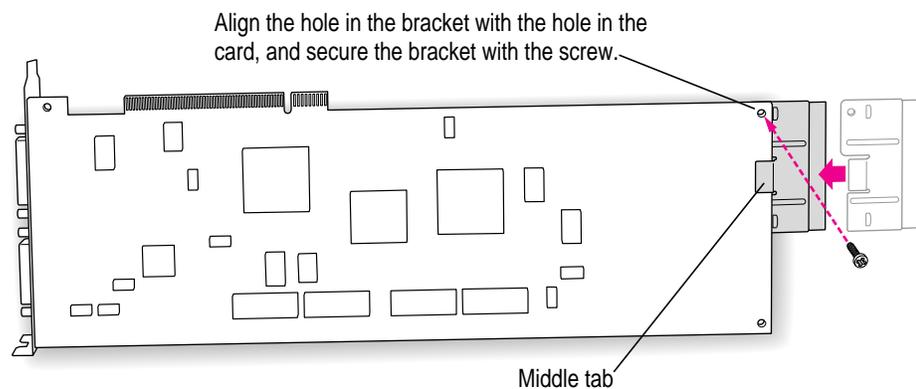


- 8 With the PC Compatibility Card turned over, position the support bracket on the end of the card (opposite the ports).

IMPORTANT Always hold the card by its edges. Don't touch any of the components on the card.

The bracket's middle tab should engage the card on the side facing you, and the hole in the bracket should align with the hole in the card.

- 9 Insert the screw (packaged with the support bracket) and tighten.



What you do next depends on whether you are adding a DIMM (dual inline memory module) to increase the memory available to your PC Compatibility Card, and whether you are installing a PC Serial and Parallel Card.

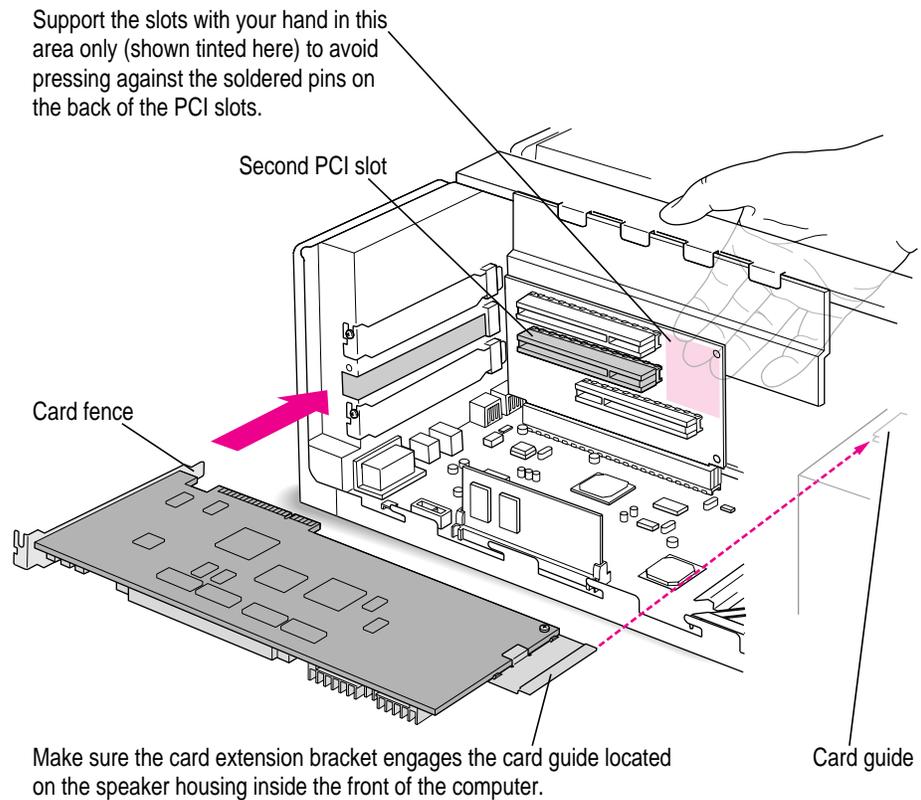
- If you want to add memory to your card, turn now to Appendix B, “Adding Memory to Your PC Compatibility Card.” After you’ve completed the instructions in Appendix B, go on to step 10 in this section.
- If you want to install the PC Serial and Parallel Card, you need to connect the peripheral flex cable to your PC Compatibility Card now. See the PC Serial and Parallel Card manual for complete instructions. Then return to this manual, and go on to the next section, “Connecting the CD In Cable.”

If you don't want to add memory or install the PC Serial and Parallel Card, continue with step 10 of this section.

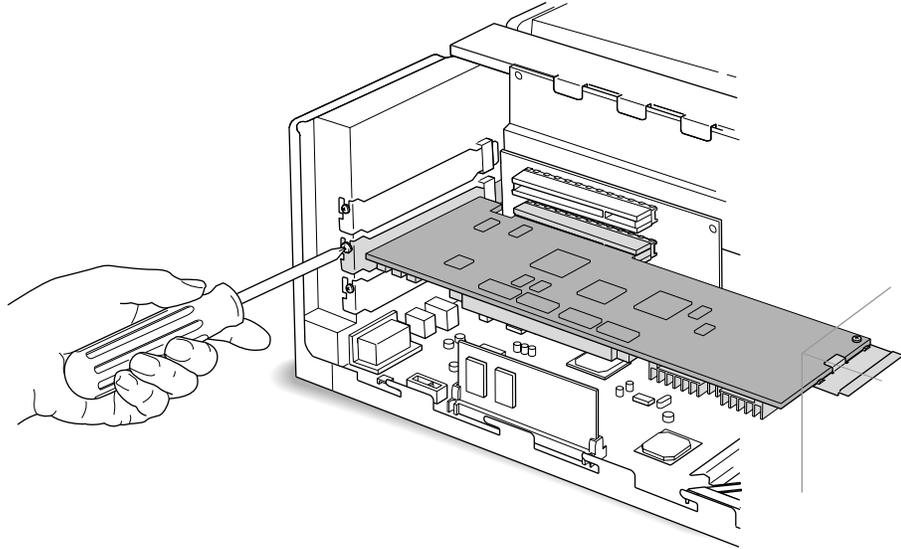
10 Insert the PC Compatibility Card into the second slot.

Place one hand behind the PCI slots in the area indicated below. With your other hand, align the card's connector end (gold in color) with the second PCI expansion slot. The ports on the card should face the port access opening on the computer's back panel. The other end of the card (where the card extension bracket is) should engage the card guide. Press in on the card. When the card is fully inserted, you won't be able to see the gold-colored connector any more.

- Don't rock the card from side to side; press it straight into the slot. Rocking the card can damage the PCI slot.
- Don't force the card. If you meet a lot of resistance, pull the card out and try again.
- To see if the card is connected, pull it gently. If it resists, it is connected.



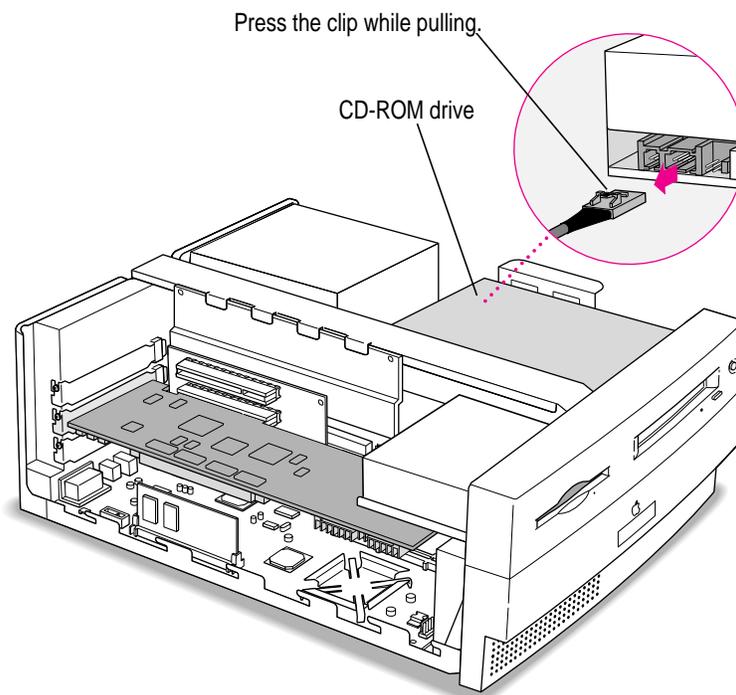
- 11 Reinsert the screw you removed earlier to secure the card.



Connecting the CD In cable

- 12 Disconnect the audio cable from the back of the CD-ROM drive.

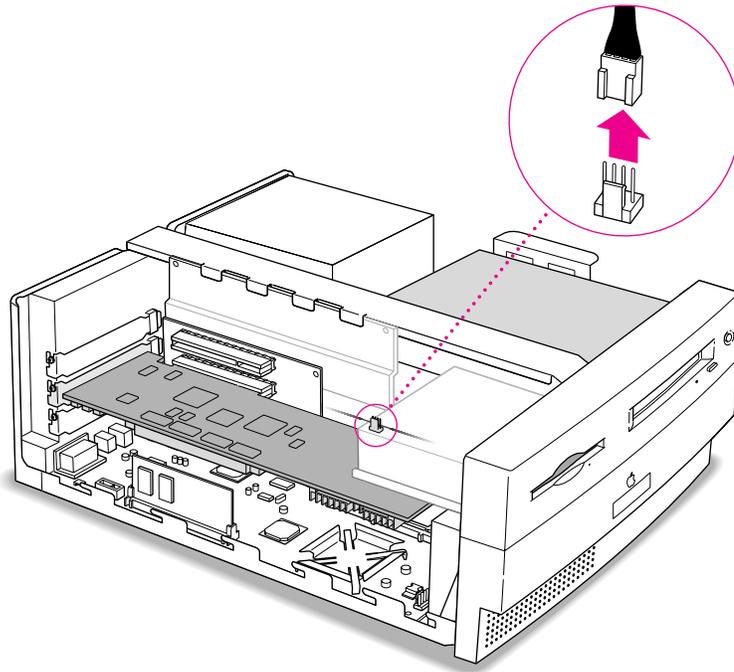
Be sure to pull on the plug, not the cable.



- 13 Disconnect the other end of the audio cable from the Macintosh logic board, and remove it from the computer.**

This cable is connected near the DRAM DIMM slots. The connector has four pins and may be labeled “CD AUDIO” on the board.

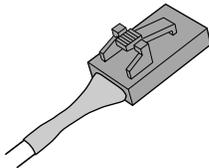
Be sure to pull on the plug, not the cable. After you have disconnected the cable, carefully remove it from the computer. (Keep this cable; you will need to reinstall it if you ever remove your PC Compatibility Card.)



- 14 **Plug the ATAPI audio cable (with the plug shown below) into the back of the CD-ROM drive.**

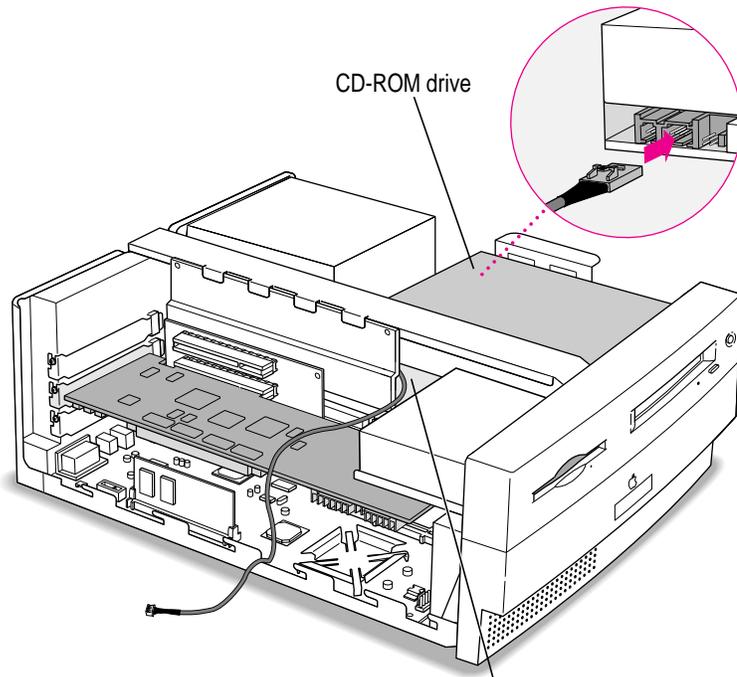
IMPORTANT Use only the cables that came with this PC Compatibility Card. Do not use cables from other models of the card.

Your PC Compatibility Card came with three audio cables. They may have different colors of tubing near the ends to help you tell them apart. You'll only be using two of these cables (the third one is for a different kind of CD-ROM drive). Two of the cables have identical plugs on the ends, and work the same way. The third cable, which is for ATAPI CD-ROM drives, has a different plug on one end, as shown below.



Audio cable plug for
ATAPI CD-ROM drives

Insert this plug into the connector on the CD-ROM drive, where you unplugged the previous audio cable. Then route the cable through the opening, under the support bar in the center of the computer, and over the top of the PC Compatibility Card.

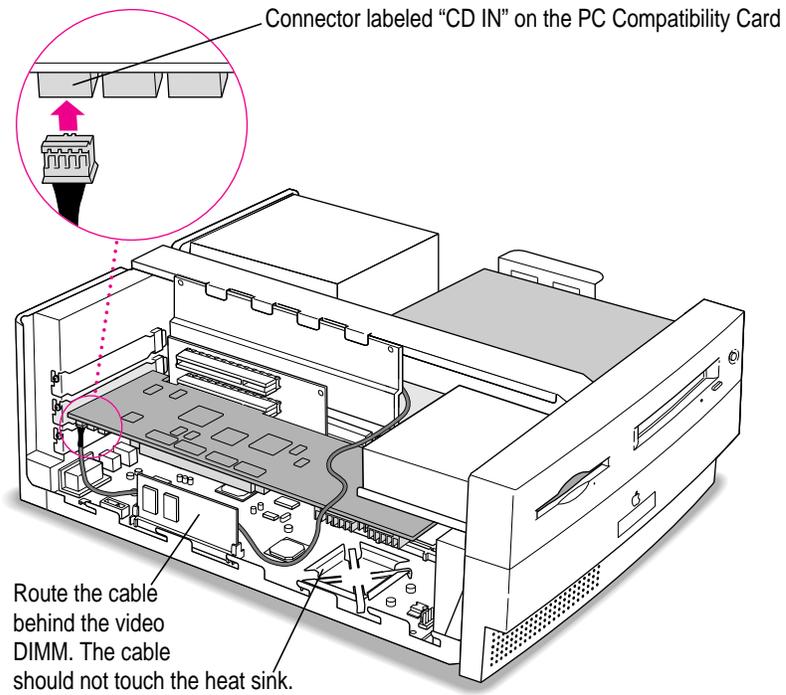


Route the cable so that it passes under the support bar and through the opening.

- 15 Plug the other end of the ATAPI audio cable into the CD In connector in the far upper-left corner of the PC Compatibility card.**

The CD In connector is labeled “CD IN” on the underside of the card.

Route the cable so it lies behind the video DIMM and away from the heat sink.

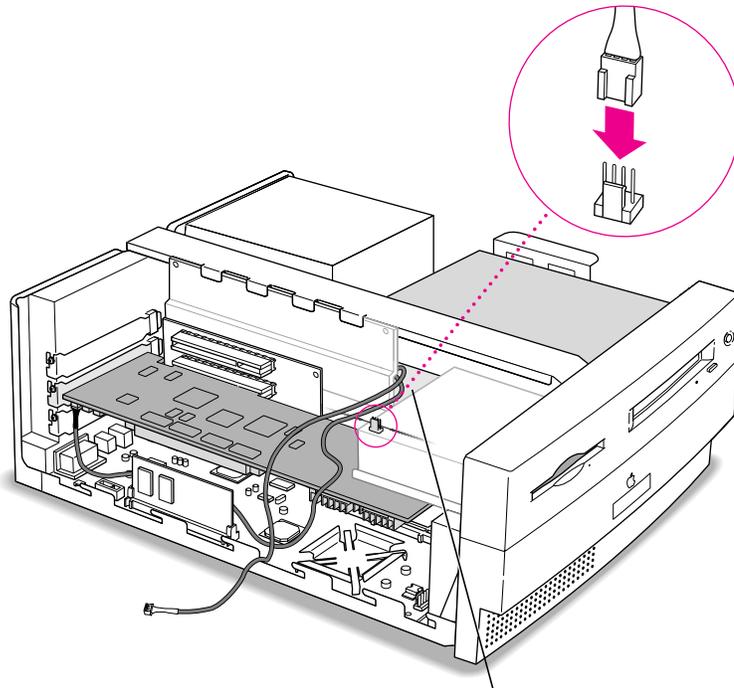


Connecting the Sound Out cable

- 16 Plug one of the other audio cables into the connector near the DRAM DIMM slots on the Macintosh logic board.

You unplugged the original audio cable from this connector in step 13 (the connector may be labeled “CD AUDIO” on the logic board).

You can use either remaining audio cable. Insert the cable’s larger plug into the connector, and route the cable through the opening, under the support bar, and over the top of the PC Compatibility Card.

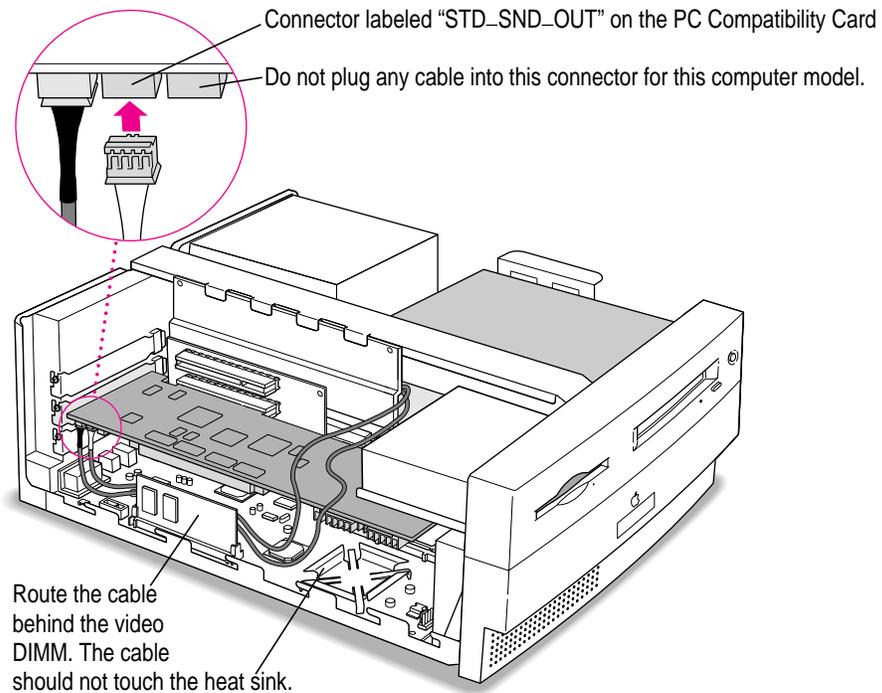


Route the cable so that it passes under the support bar and through the opening.

- 17 **Plug the other end of the audio cable into the connector next to the CD In connector on the PC Compatibility Card.**

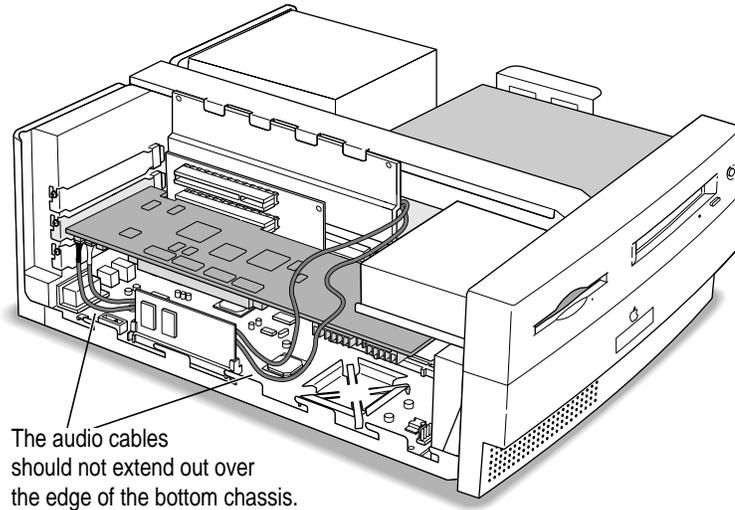
The Standard Sound Out connector, labeled “STD_SND_OUT,” is right next to the CD In connector, in the upper-left corner of the card.

Route the cable so it lies behind the video DIMM and away from the heat sink.



18 Arrange the audio cables as shown below.

The cables should lie in front of the video DRAM DIMM card, and away from the edge of the computer and the heat sink.



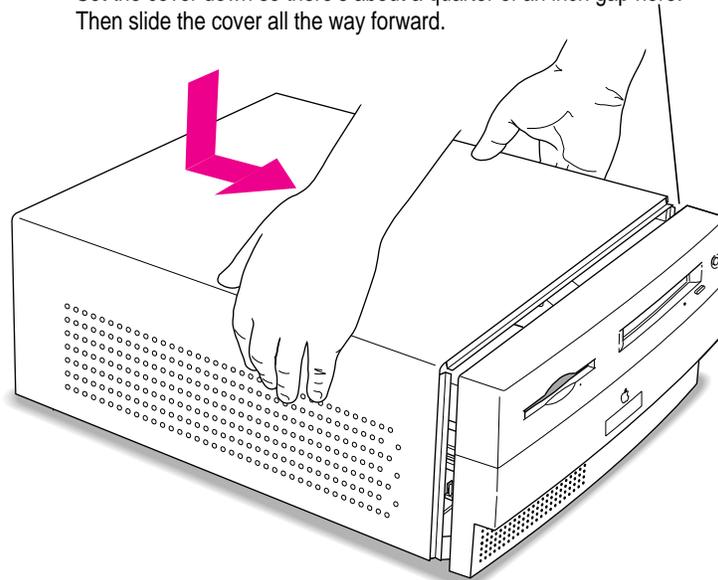
IMPORTANT If you are installing the PC Serial and Parallel Card, you should insert it now. See the PC Serial and Parallel Card manual for instructions.

Replacing the computer cover

- 19 Make sure all cables and cards are firmly connected.
- 20 Replace the computer cover.

Lower the cover onto the computer vertically as shown. Then slide the cover forward until it snaps into place.

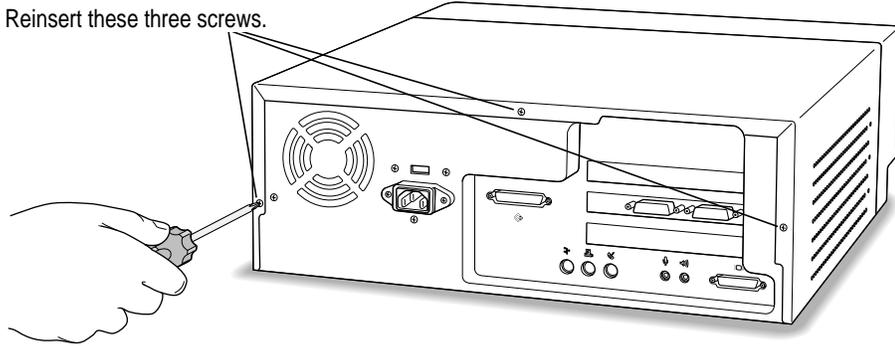
Set the cover down so there's about a quarter of an inch gap here.
Then slide the cover all the way forward.



21 Replace the screws and reconnect all equipment.

Reinsert the three screws you removed earlier into the back of the computer. Then reinsert the power cable and all other equipment cables.

Reinsert these three screws.



You are now finished installing your PC Compatibility Card.

What's next?

Next, go to Chapter 5, “Connecting Monitors and Other Equipment.”

Then go to Chapters 6 through 9 for instructions on installing and using your software.

2

Installing the Card in a Power Macintosh 7200, 7300, 7500, or 7600



Except where noted, the illustrations in this chapter show the 7200 model. If you have a 7300, 7500, or 7600 model, some of the illustrations may look slightly different from your computer.

IMPORTANT If you will be installing a PC Serial and Parallel Card with your PC Compatibility Card, it's easiest to install both cards at the same time. The PC Serial and Parallel Card has standard PC ports that allow you to use several kinds of PC-compatible peripherals from the Windows or DOS environment (not from the Mac OS environment). Instructions in this chapter indicate when to see your PC Serial and Parallel Card manual for installation information.

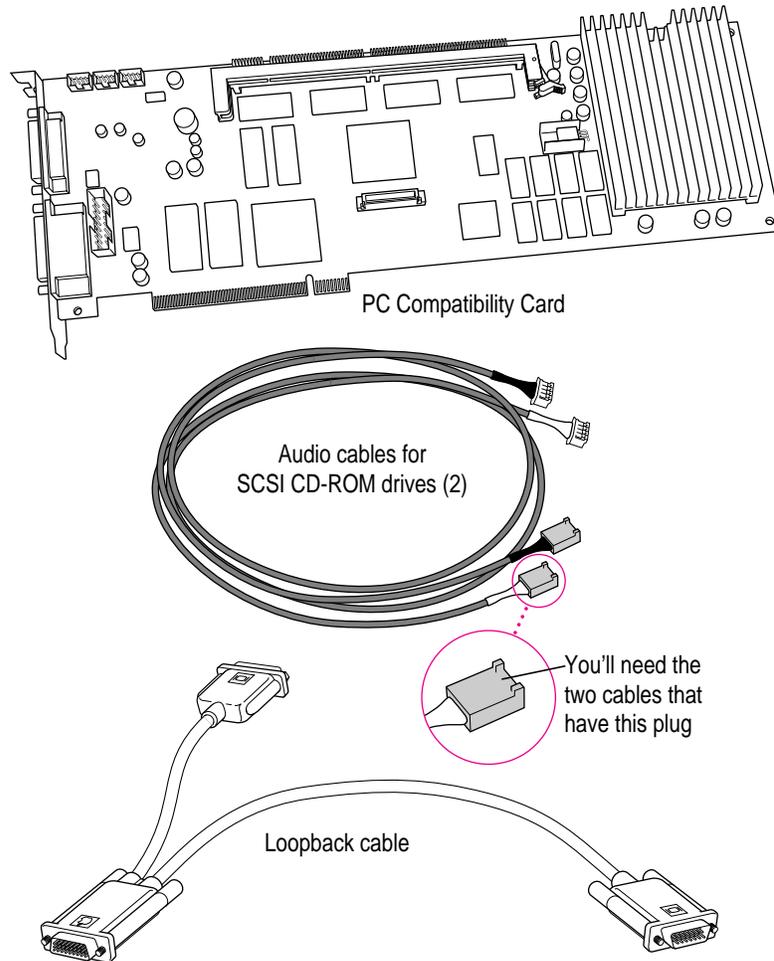
After you install the PC Compatibility hardware, go to Chapter 5, “Connecting Monitors and Other Equipment.” If you want to install additional memory in your card, go to Appendix B, “Adding Memory to Your PC Compatibility Card.” Then turn to Chapters 6 through 9 to learn more about installing and using PC software.

WARNING Shipping your computer with a PC Compatibility Card installed may cause damage to the card. Your PC Compatibility Card should be shipped separately. (See Appendix A for instructions on how to remove the card.)



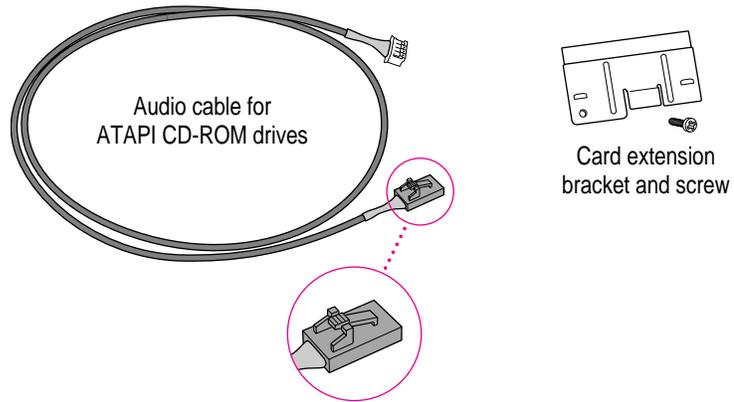
What you need

Before beginning the installation process, make sure you have all the necessary parts: the PC Compatibility Card, the audio cables, and the loopback cable.



You won't need the card extension bracket and screw.

Also, you won't need the audio cable that has a different plug from the other two cables (shown below).



Installing the PC Compatibility Card hardware

WARNING The installation of the PC Compatibility Card is technically complex. Unless you are comfortable installing components inside computers, Apple recommends that you have the PC Compatibility Card installed by your Apple-authorized dealer (who may charge a fee). If you attempt to install the card yourself, any damage you may cause to your equipment will not be covered by the limited warranty on your computer.

Do not attempt to install the card, install memory, or connect the cables without first reading this manual.

There are several steps to installing your PC Compatibility Card hardware:

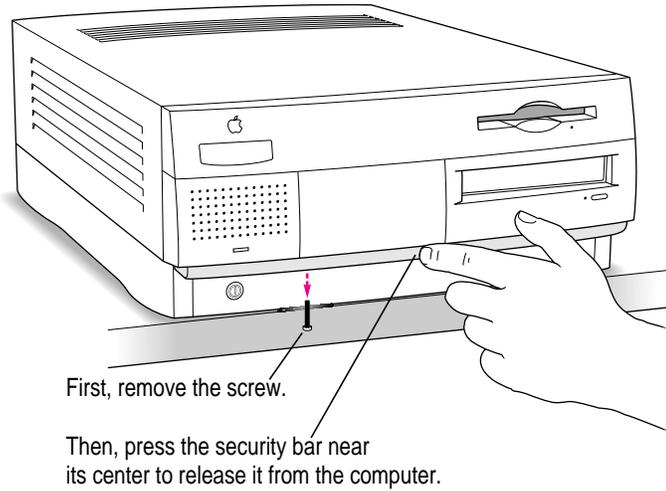
- opening the computer
- disconnecting the CD-ROM audio cable
- opening the expansion card cover and chassis
- inserting the PC Compatibility Card
- connecting the Sound Out cable
- connecting the CD In cable to the card
- replacing the chassis and expansion card cover
- connecting the CD In cable to the CD-ROM drive
- replacing the computer cover

Opening the computer

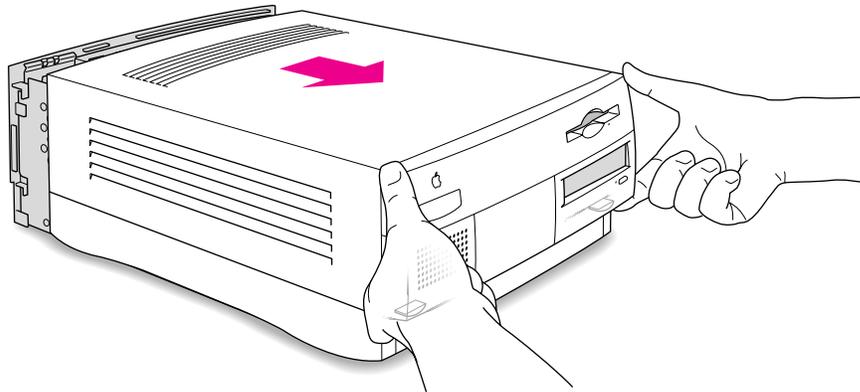
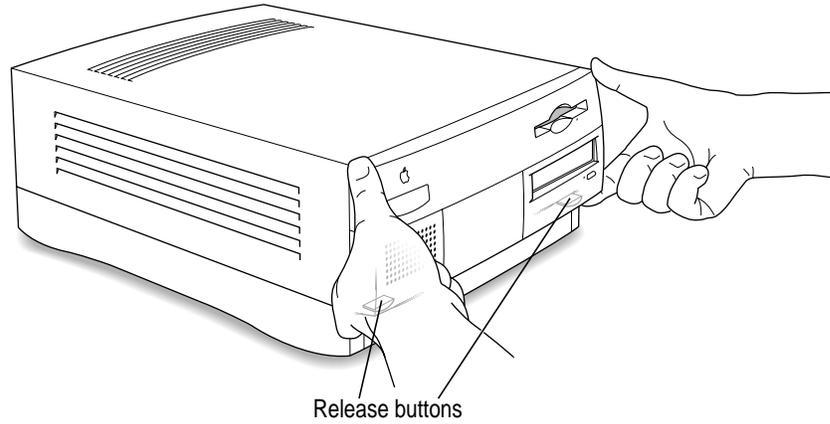
- 1 Shut down the computer and disconnect all cables from the computer, except for the power cord.

Leave the computer plugged in for now, to ground it and protect its components from static electricity damage.

- 2 If the security bar is installed, remove it by removing the screw under the front panel and pressing the center of the bar.

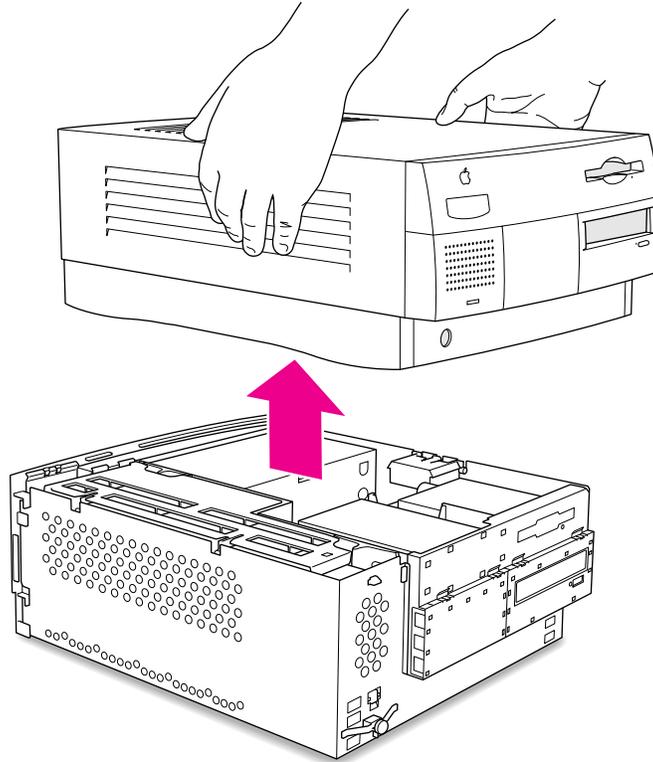


- 3 Press the two release buttons under the front panel and slide the cover toward you approximately two inches.



4 Remove the cover from the computer.

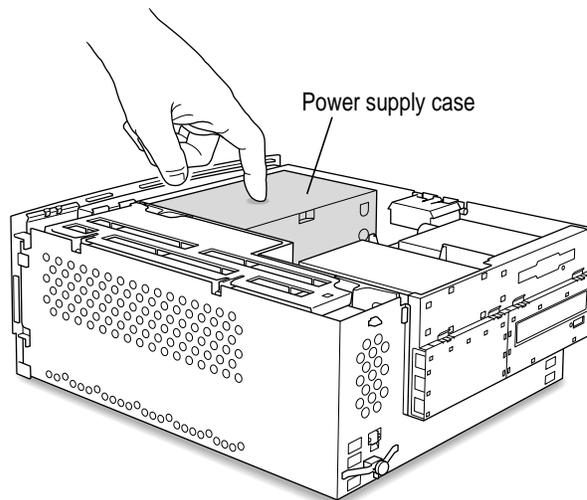
After you've slid the cover forward about two inches, lift it straight up and off the computer.



5 Touch the metal part of the power supply case inside the computer.

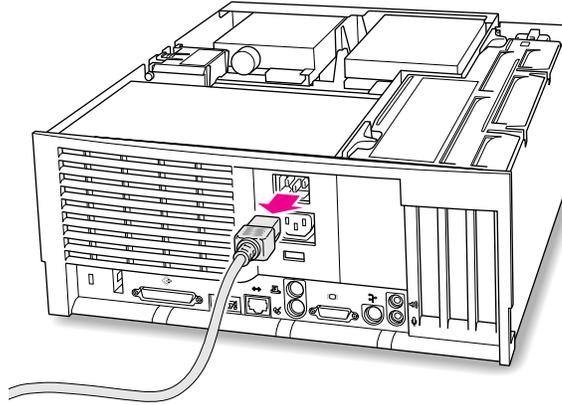
Always do this before you touch any parts, or install any components, inside the computer. Touching the power supply case helps release static electricity from your body and prevent possible damage to internal components.

IMPORTANT You can collect static electricity just by walking away from and then back to your computer. If you need to move away from your computer during installation, remember to touch the metal part of the power supply case again before you continue installing.



6 Disconnect the power cord.

Remove the power cord from the back of your computer.

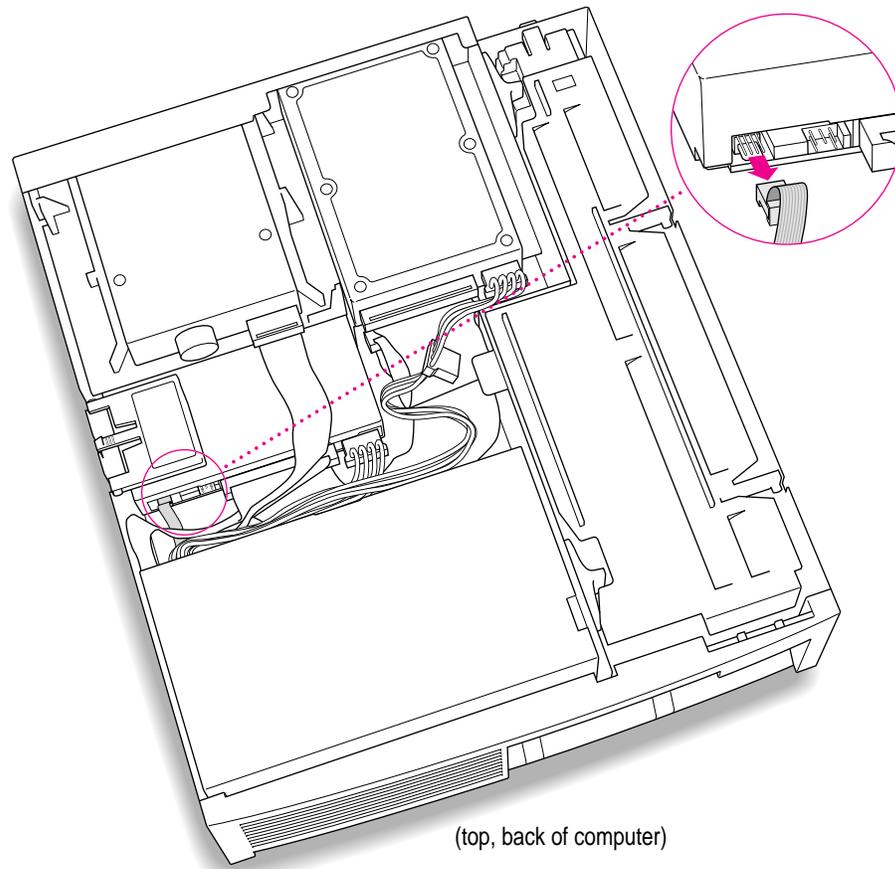


Disconnecting the CD-ROM audio cable

- 7 Disconnect the audio ribbon cable from the CD-ROM drive.

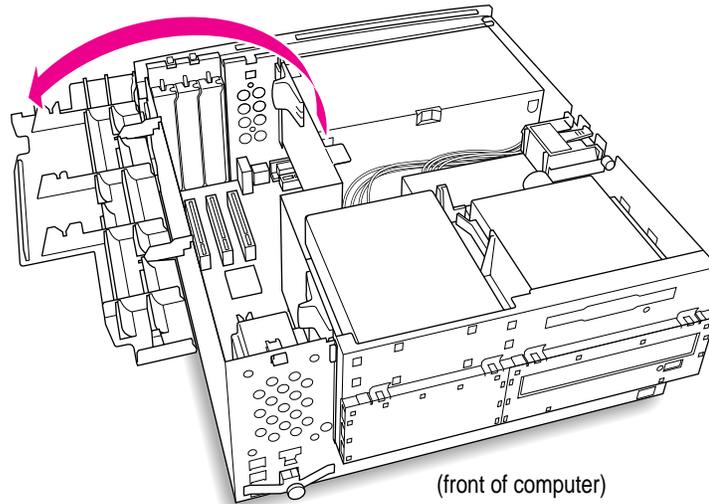
Be sure to pull the plug, not the cable.

Just disconnect this end of the cable for right now. Later you will replace this cable with the new cables that came with your PC Compatibility Card.

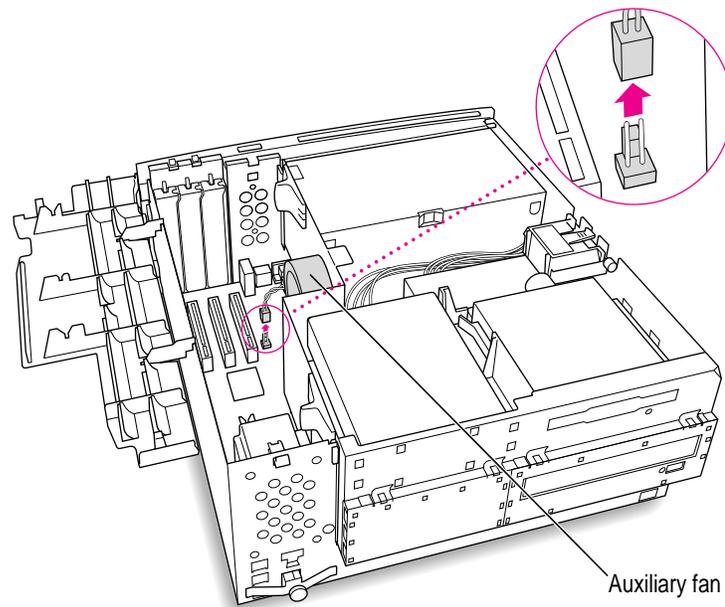


Opening the expansion card cover and chassis

- 8 Flip open the expansion card cover.



- 9 If there is an auxiliary fan, disconnect the fan cable from the Macintosh logic board.
Some computer models do not have a fan.

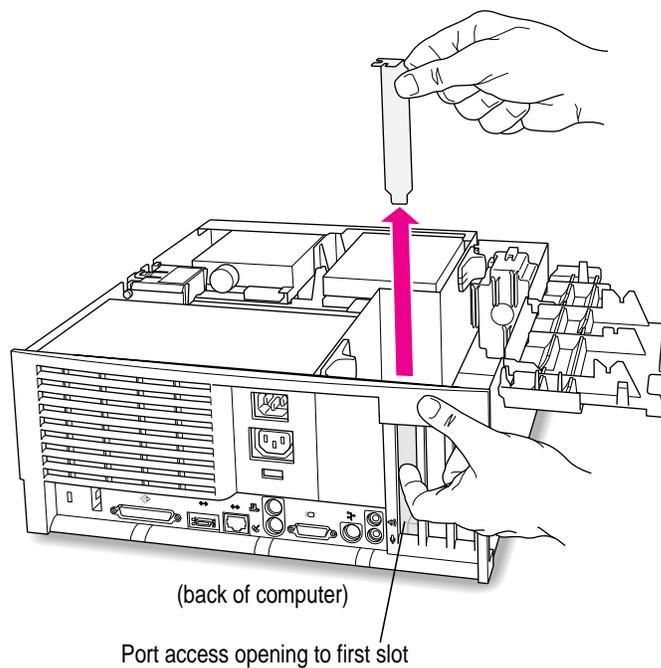


10 Prepare the first PCI expansion slot.

You need to install your PC Compatibility Card in the first PCI expansion slot, the slot closest to the center of the computer. If there is already a card in the first slot, move it to a different slot.

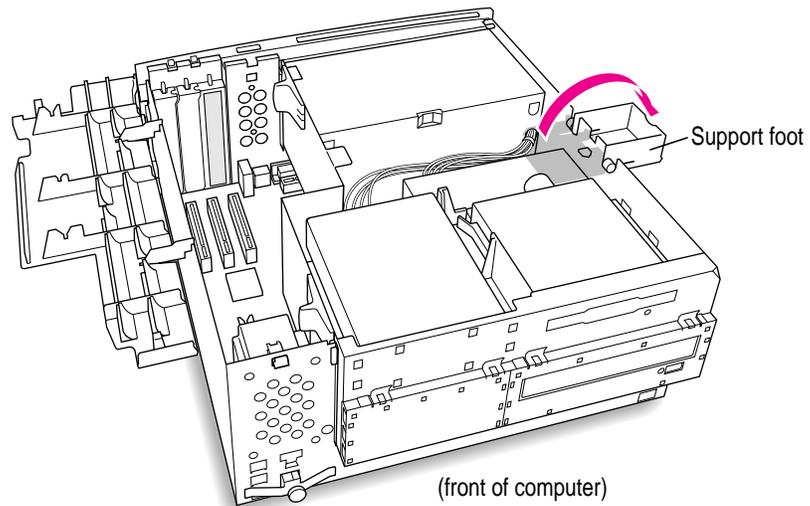
IMPORTANT If you will be installing a PC Serial and Parallel Card, you should also remove any card in the second slot (next to the first slot).

11 Remove the port access cover behind the first expansion slot.



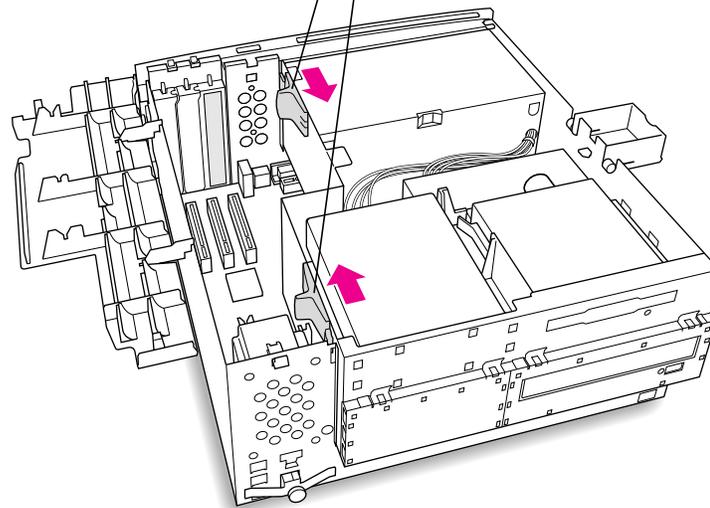
12 Position the support foot.

The support foot holds the computer's chassis when you open it.



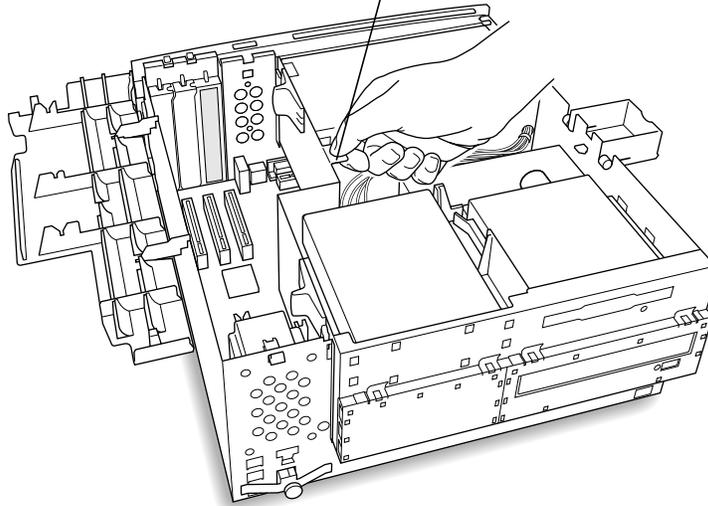
13 Unlock the chassis release switches.

Move the release switches toward the inside of the computer to unlock the top chassis.

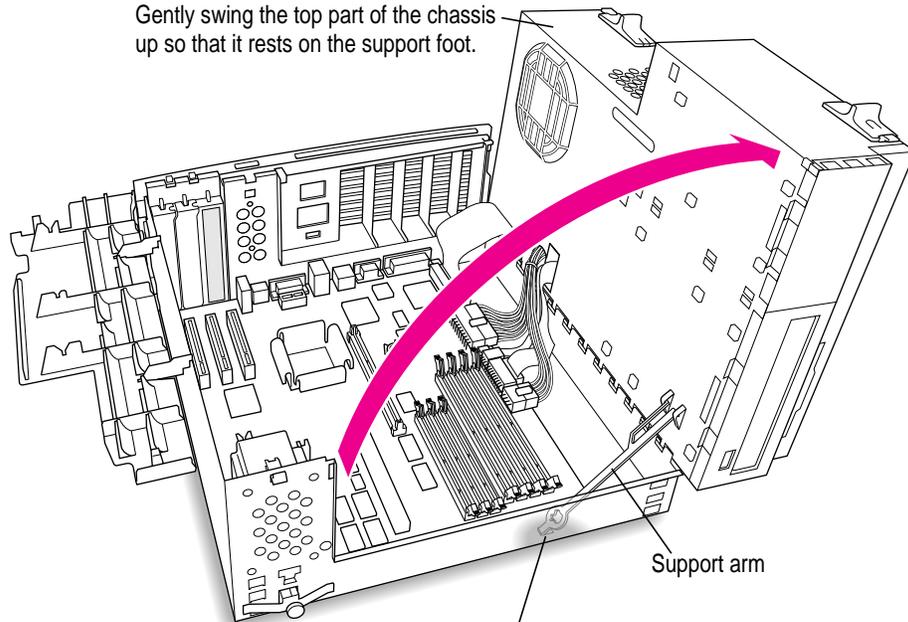


14 Lift the chassis and rest it on the support foot. Make sure the support arm is engaged.

You can use this tab to lift the top chassis.



Gently swing the top part of the chassis up so that it rests on the support foot.



Be sure that the support arm engages this hole on the floor of the bottom chassis so that the top chassis is locked in place.

What you do next depends on whether you are adding a DIMM (dual inline memory module) to increase the memory available to your PC Compatibility Card, and whether you are installing a PC Serial and Parallel Card.

- If you want to add memory to your card, turn now to Appendix B, “Adding Memory to Your PC Compatibility Card.” After you’ve completed the instructions in Appendix B, go on to the next section, “Inserting the PC Compatibility Card.”
- If you want to install the PC Serial and Parallel Card, you’ll need to connect the peripheral flex cable to your PC Compatibility Card now. See the PC Serial and Parallel Card manual for instructions. Then return to this manual, and go on to the next section, “Inserting the PC Compatibility Card.”

If you don’t want to add memory or install the PC Serial and Parallel Card, go on to the next section.

Inserting the PC Compatibility Card

15 Align the card with the first expansion slot.

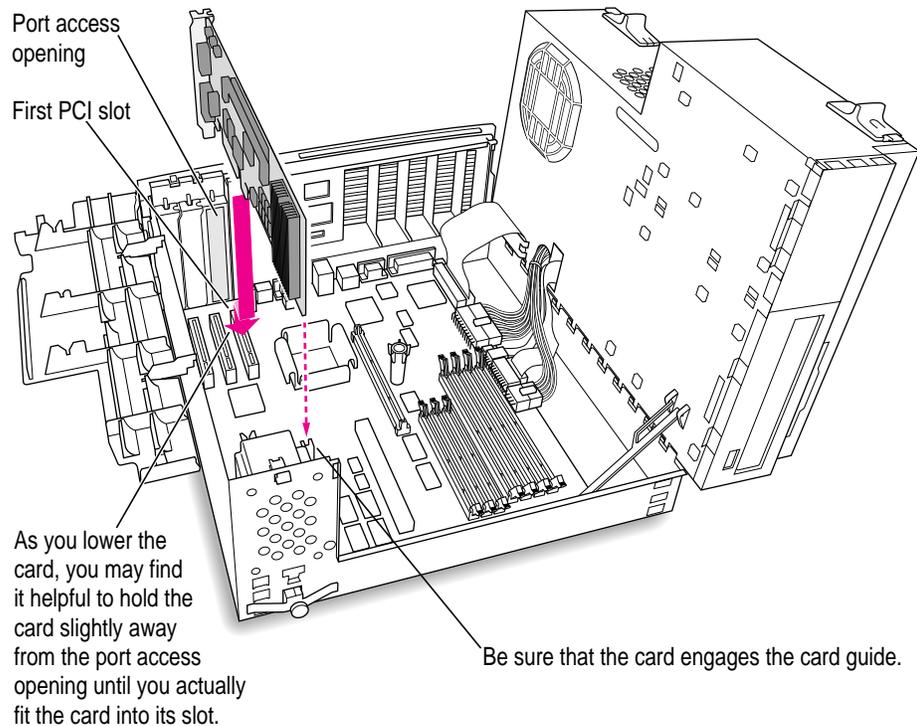
IMPORTANT Always hold the card by its edges. Don’t touch any of the components on the card.

Align the card’s connector end (gold in color) with the first PCI expansion slot. The ports on the card should face the port access opening on the computer’s back panel.

16 Insert the card.

The end of the card should engage the card guide at the front of the computer. Press down on the card. When the card is fully inserted, you won't be able to see the gold-colored connector any more.

- Don't rock the card from side to side; press it straight into the slot. Rocking the card can damage the PCI slot.
- Don't force the card. If you meet a lot of resistance, pull the card out and try again.
- To see if the card is connected, pull it gently. If it resists, it is connected.

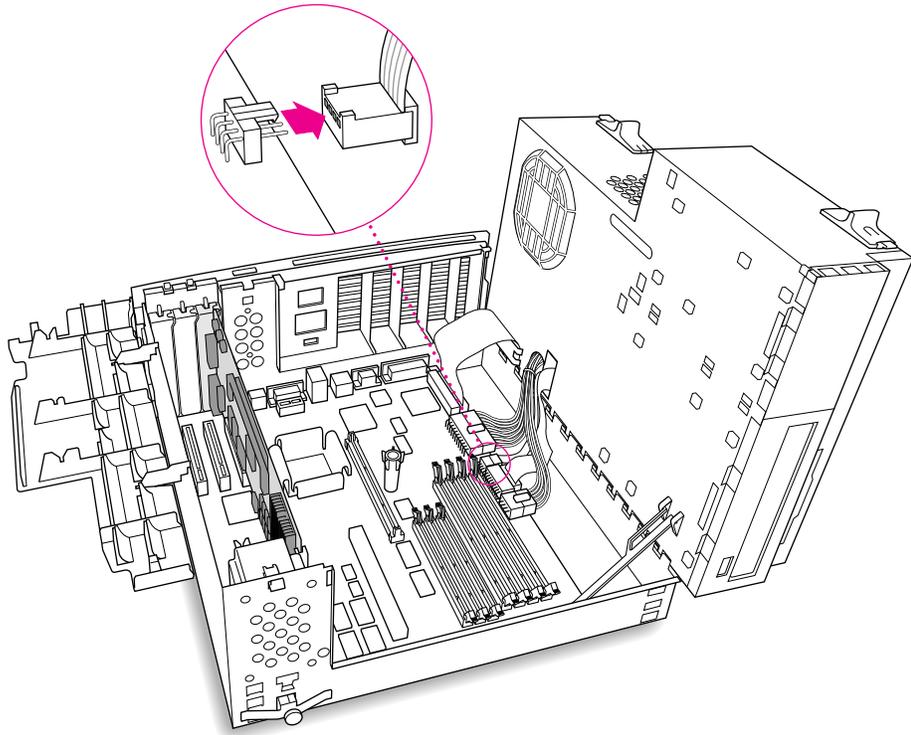


Connecting the Sound Out cable

- 17 **Disconnect the audio ribbon cable from the Macintosh logic board.**

This cable is connected near the DRAM DIMM slots. The connector has four pins and may be labeled “CD AUDIO” on the board.

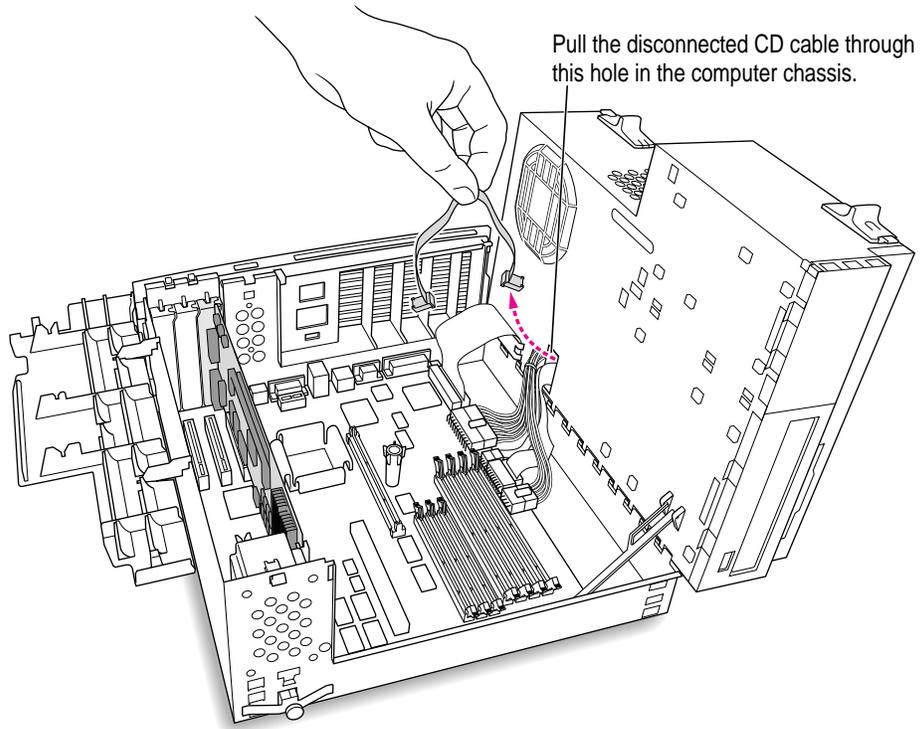
This is the same cable you disconnected from the CD-ROM drive in step 7. You will be replacing it with the cables that came with your PC Compatibility Card.



18 Pull the cable through the hole in the chassis and set it aside.

Don't force the cable. If it resists, jiggle it or feed it back through the hole and try pulling it loose again.

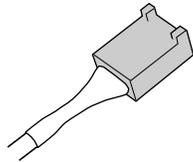
Keep this cable; you will need to reinstall it if you ever remove your PC Compatibility Card.



- 19 **Plug one of the two identical SCSI audio cables into the connector labeled “REV_SND_OUT” (Reversed Sound Out) on the PC Compatibility Card.**

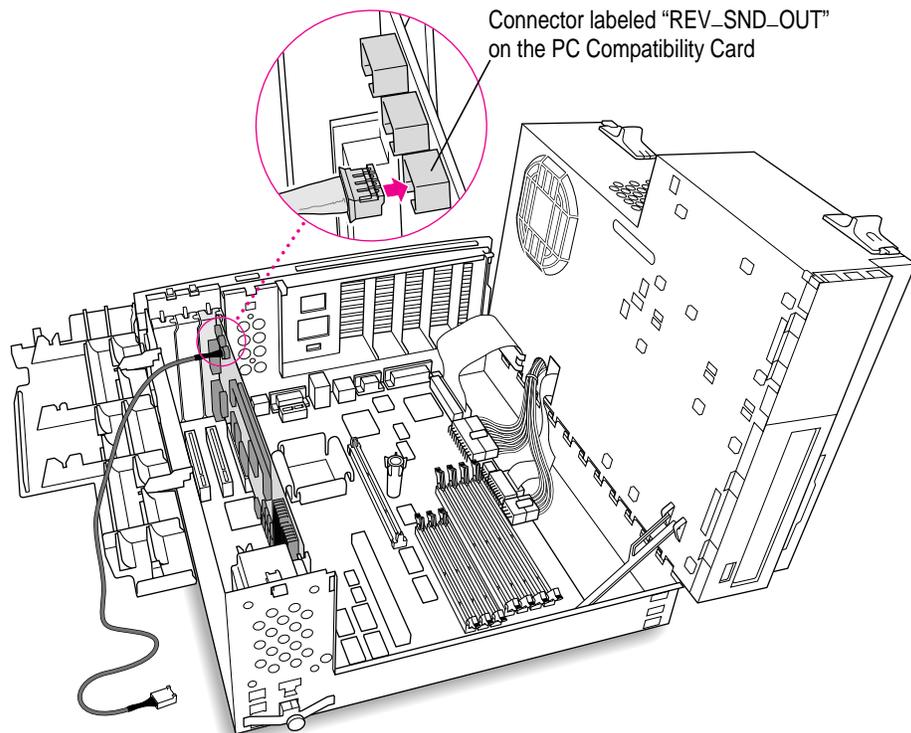
IMPORTANT Use only the cables that came with this PC Compatibility Card. Do not use cables from other models of the card.

Your PC Compatibility Card came with three audio cables. They may have different colors of tubing near the ends to help you tell them apart. You'll only be using two of these cables (the third one is for a different kind of CD-ROM drive). Two of the cables have identical plugs on the end, as shown below. Use one of these two identical cables for this step.



Audio cable plug for
SCSI CD-ROM drives

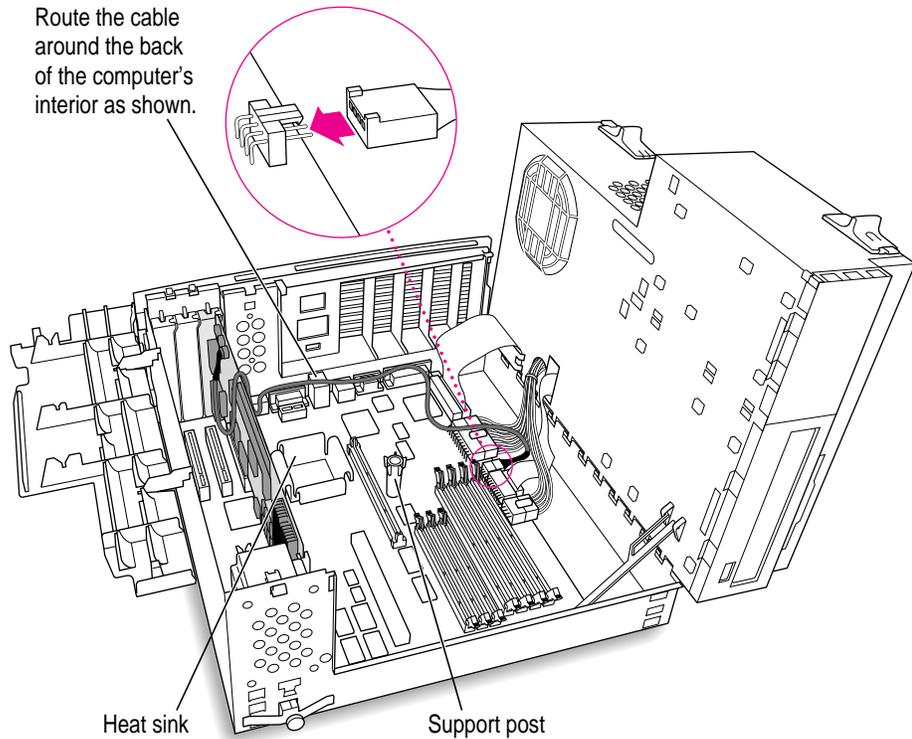
Insert the cable's smaller plug into the Reversed Sound Out connector. This connector is in the upper-left corner of the card, the third connector from the end.



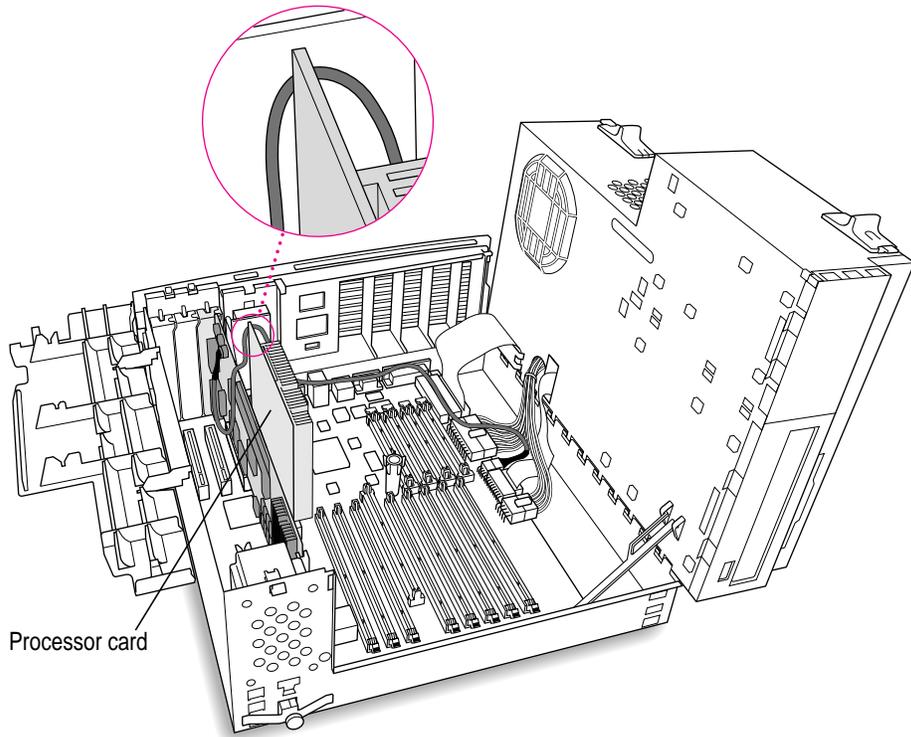
- 20** Route the cable over the top of the card and around the back of the Macintosh logic board. Then plug the cable into the audio connector on the logic board.

Keep the cable away from the heat sink and center support post.

Insert the cable's larger plug into the CD audio connector on the logic board, where you unplugged the ribbon cable in step 17.



If there is a processor card in your computer, route the cable between the processor card and the back panel (not over the top of the processor card).

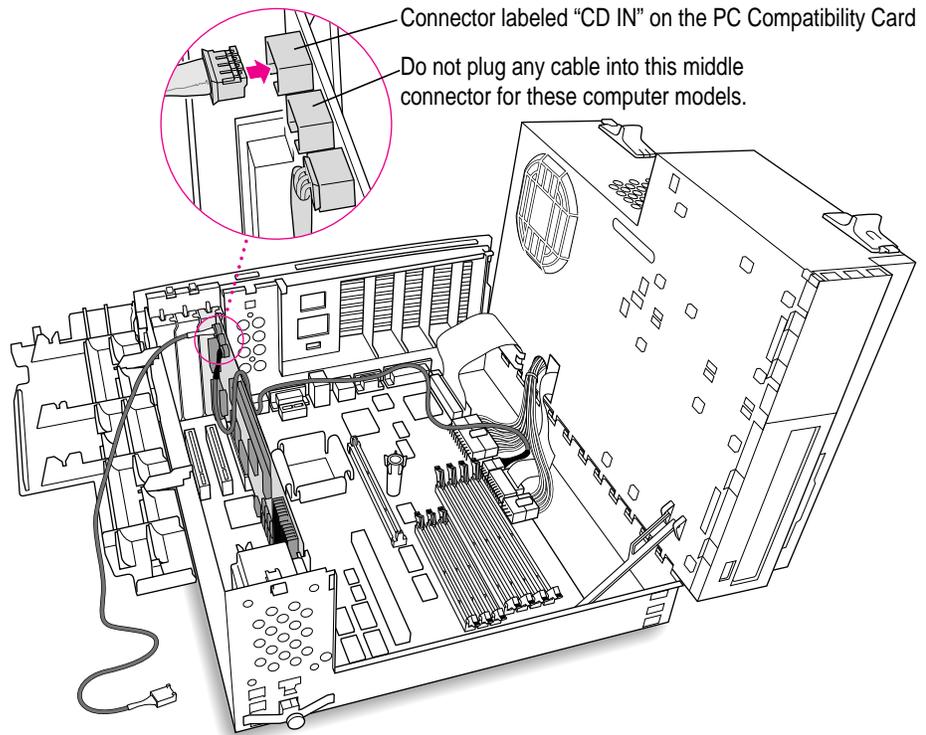


Connecting the CD In cable to the card

- 21 Plug the other SCSI audio cable into the connector labeled “CD IN” on the far upper-left corner of the PC Compatibility Card.

Use the cable with the thick plug that looks identical to the cable you connected to the logic board.

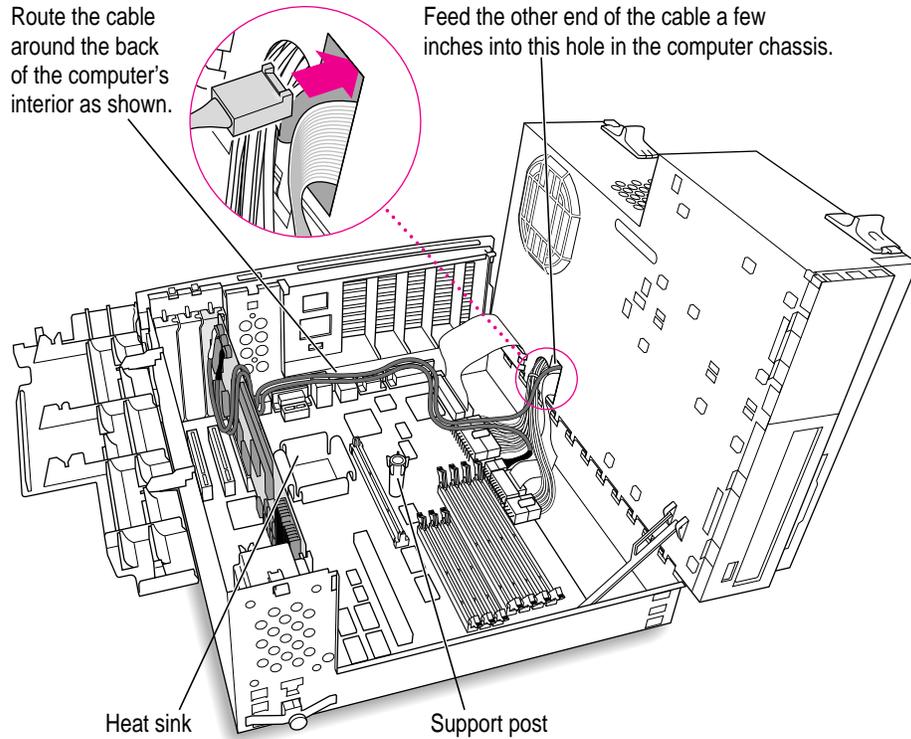
Insert the cable’s smaller plug into the connector labeled “CD IN” on the PC Compatibility Card.



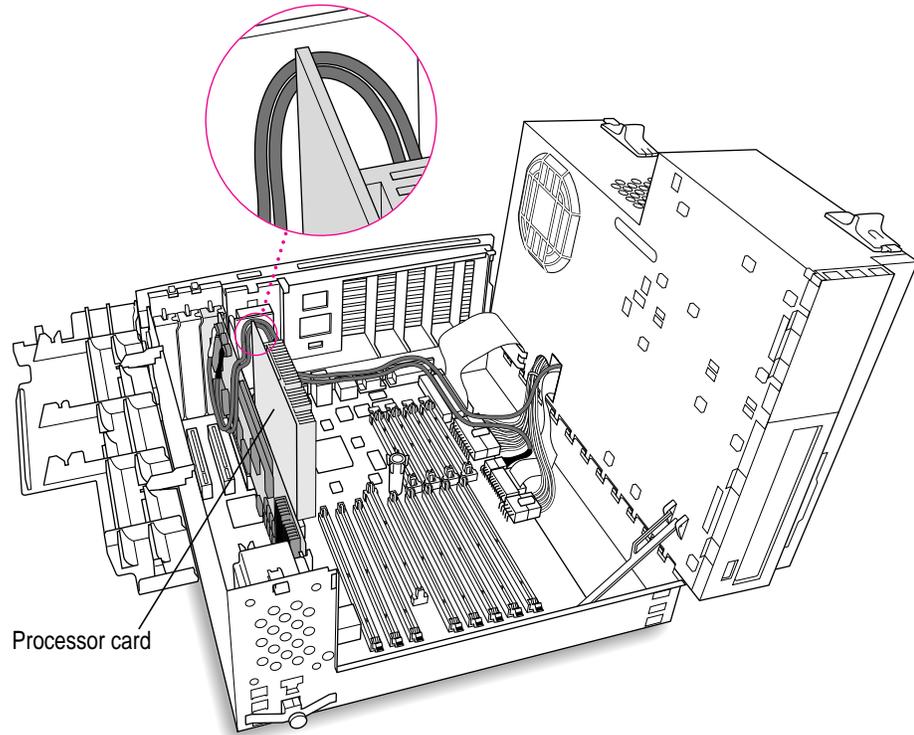
- 22** Route the second cable over the top of the card, around the back of the logic board, and through the hole in the computer's chassis.

Keep the cable away from the heat sink and the center support post.

You'll connect this cable to the CD-ROM drive in step 29.



If there is a processor card in your computer, route the cable between the processor card and the back panel (not over the top of the processor card).

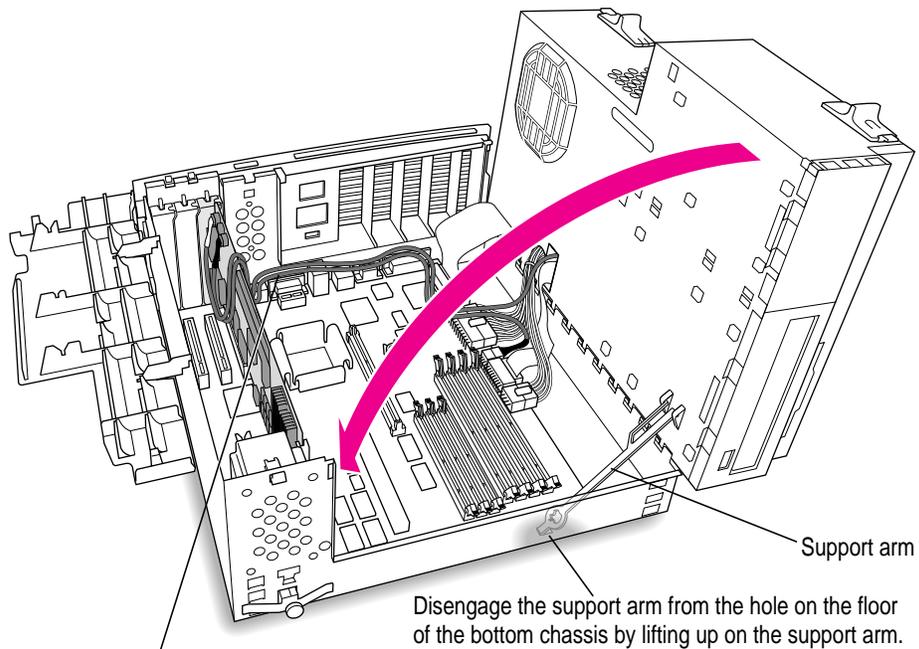


IMPORTANT If you are installing the PC Serial and Parallel Card, you should insert it now. See the PC Serial and Parallel Card manual for instructions.

Replacing the chassis and expansion card cover

- 23 Make sure all cards and cables are firmly connected.
- 24 Disengage the support arm and swing the chassis down, without pinching any cables.

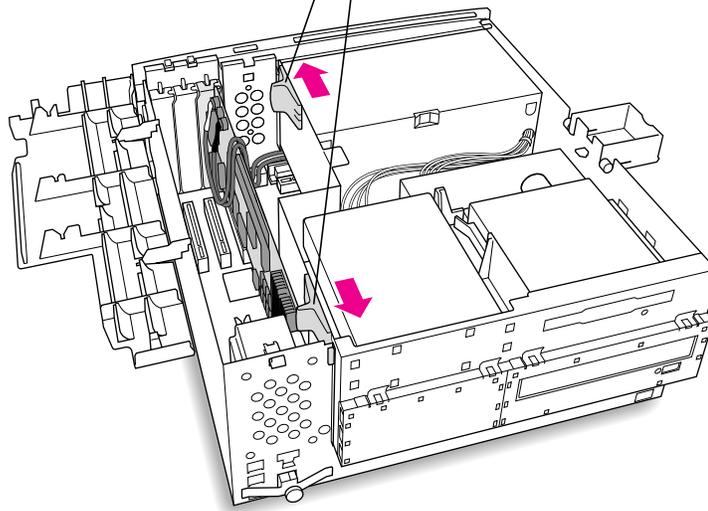
Make sure the cables you connected are away from the heat sink and center support post.



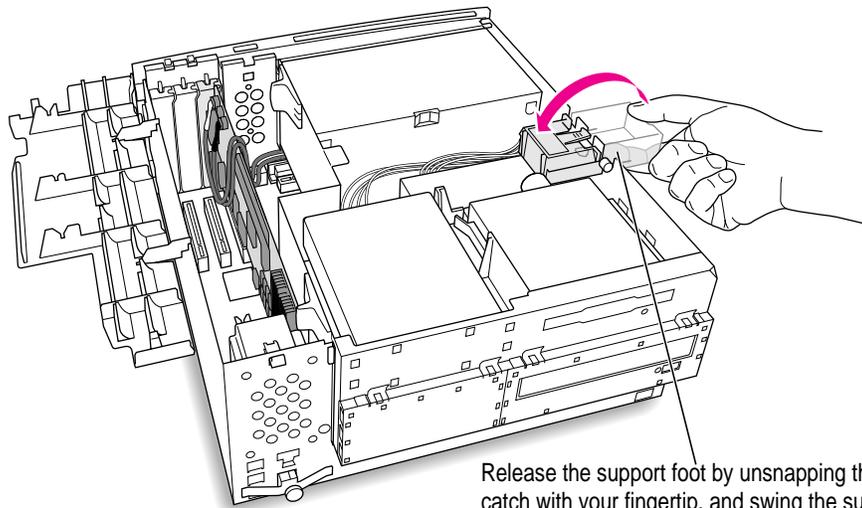
Gently swing the top part of the chassis down until it rests securely on the bottom chassis. Be sure that you don't pinch any of the cables between the top and bottom parts of the chassis.

25 Lock the release switches.

Move the release switches toward the outside of the computer to lock the top chassis.



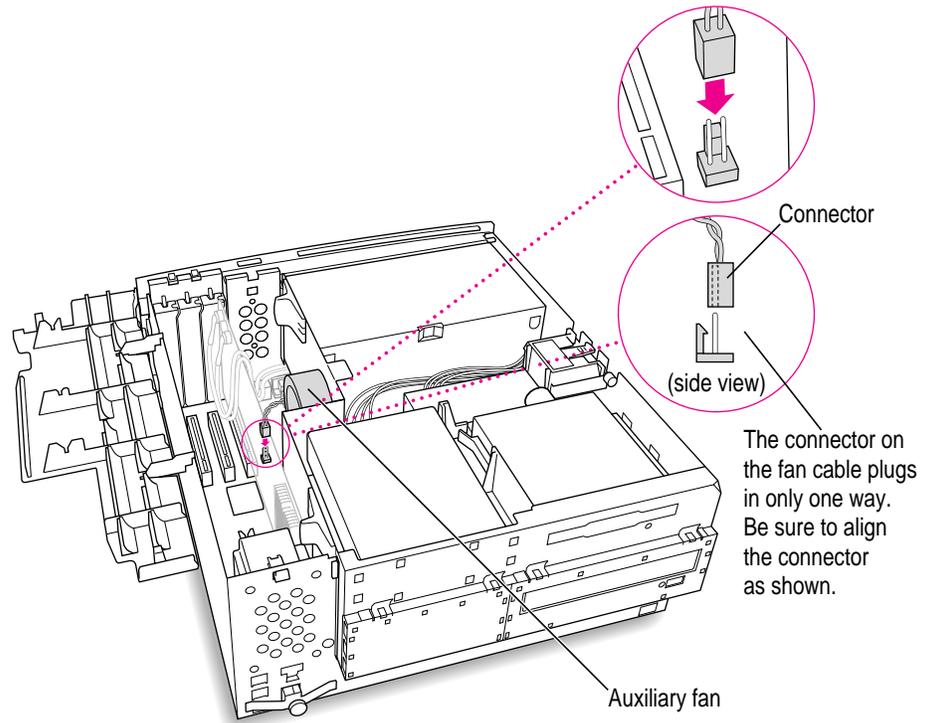
26 Replace the support foot.



Release the support foot by unsnapping the catch with your fingertip, and swing the support foot back inside the chassis.

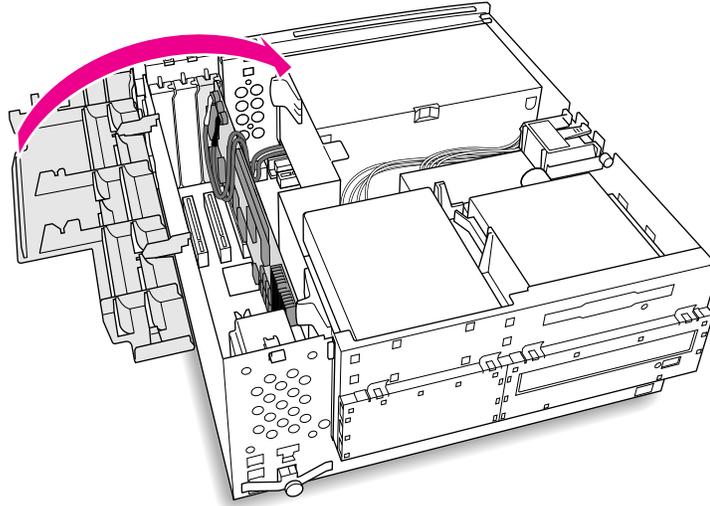
27 If you unplugged the auxiliary fan cable, reconnect it to the Macintosh logic board.

Not all computer models have an auxiliary fan.



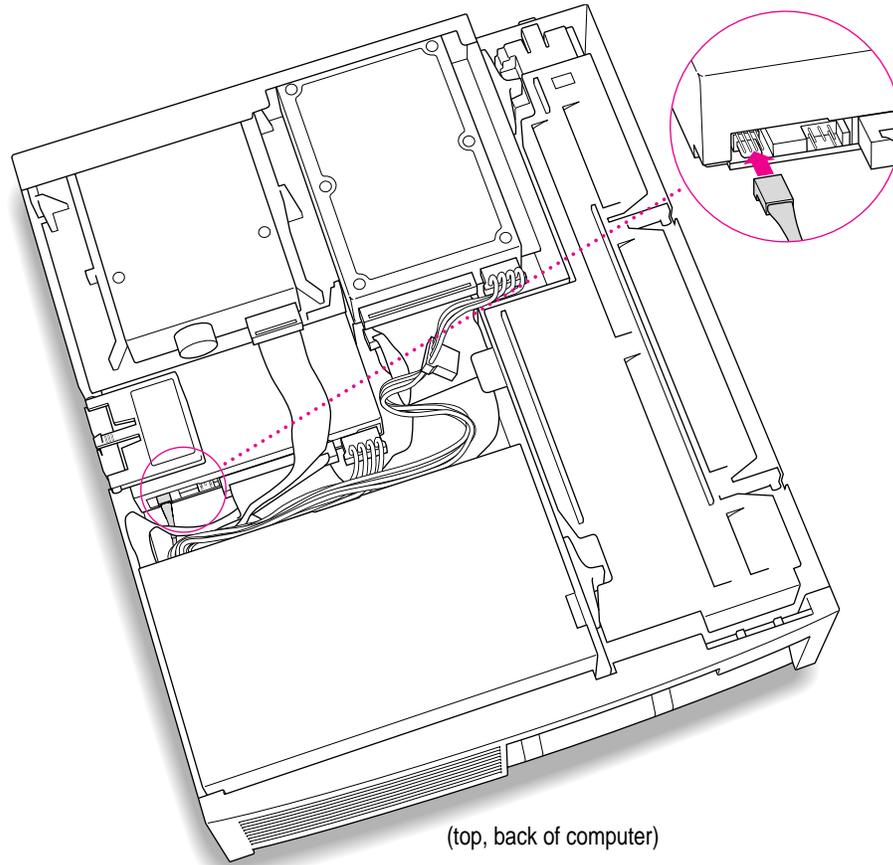
- 28** Flip the expansion card cover up and snap it back into place. (Be sure to snap the cover back down on both ends.)

If the cover doesn't snap into place easily, make sure no cables are in the way.



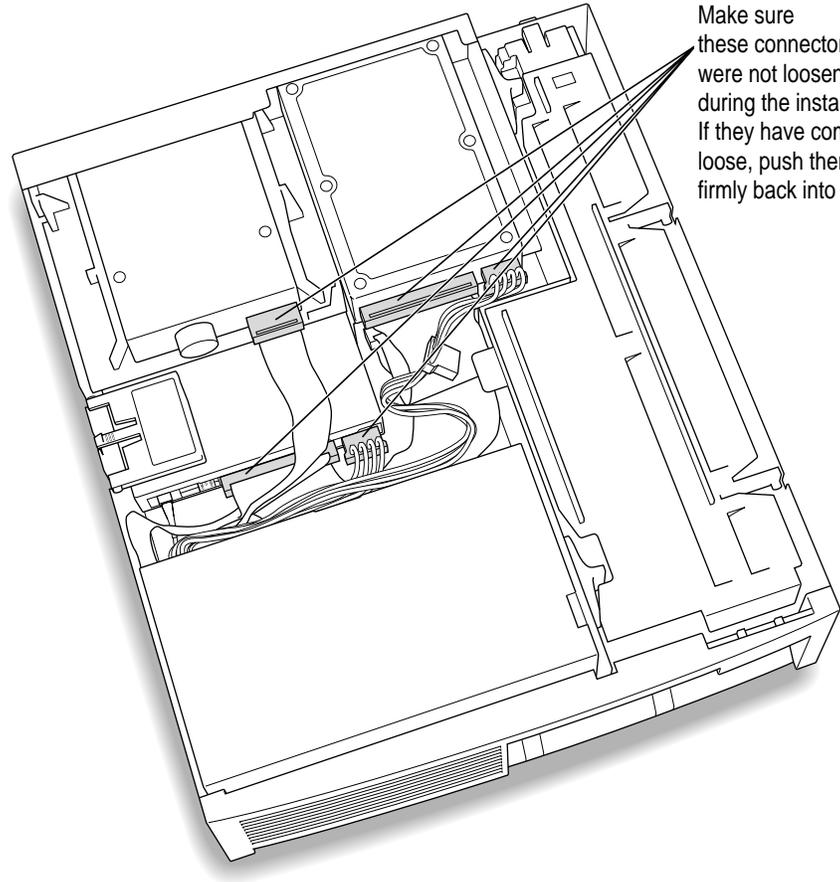
Connecting the CD In cable to the CD-ROM drive

- 29 Plug the audio cable you threaded through the computer's chassis (in step 22) into the back of the CD-ROM drive.



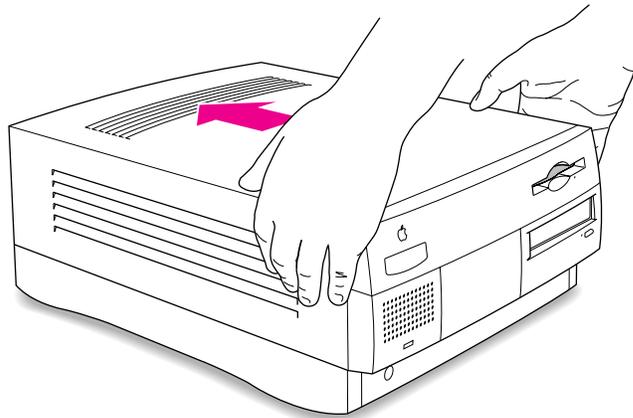
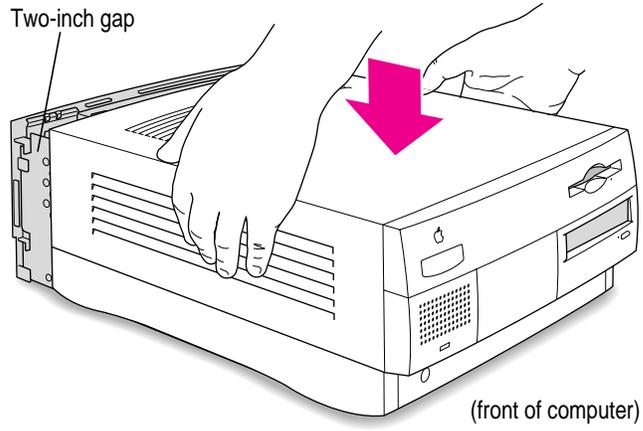
Replacing the computer cover

- 30 Make sure all connectors are firmly attached.



Make sure these connectors were not loosened during the installation. If they have come loose, push them firmly back into place.

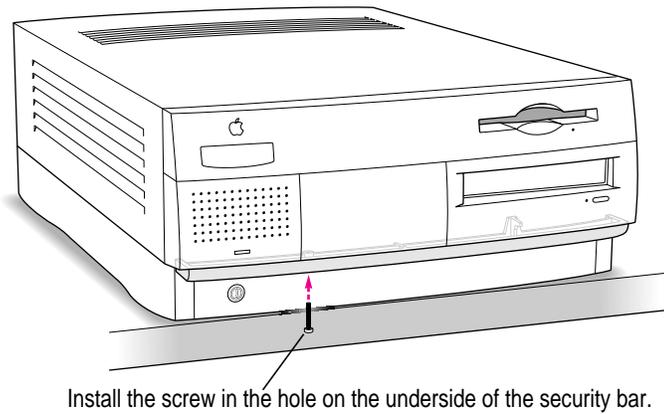
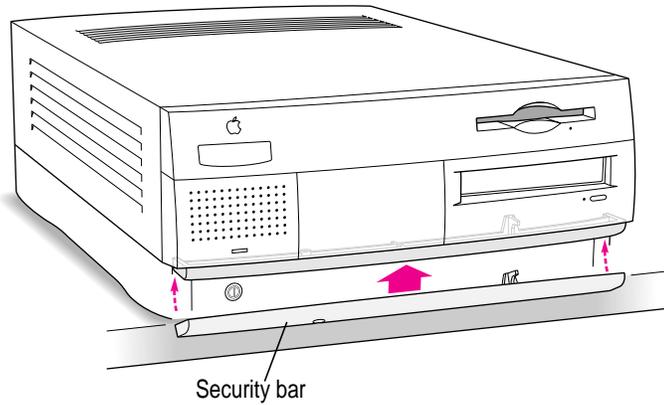
- 31 Lower the cover onto the case, leaving a two-inch gap, and then push the cover back.



32 If you removed the security bar earlier, replace it now.

Place the security bar under the front panel and tilt the bar so that the hook slides into the slot. Then reinsert the screw and tighten it into place.

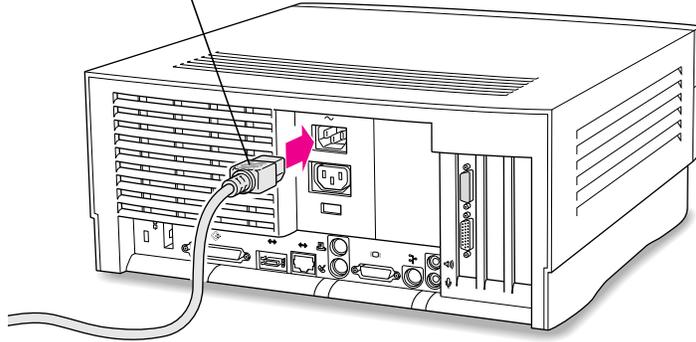
IMPORTANT Do not overtighten the screw.



33 Reconnect all equipment.

Reinsert the power cable and all other equipment cables.

Plug the power cord into the back of the computer.



You are now finished installing the card.

What's next?

Next, go to Chapter 5, “Connecting Monitors and Other Equipment.”

Then go to Chapters 6 through 9 for instructions on installing and using your software.

3

Installing the Card in a Power Macintosh 8500 or 9500



Except where noted, the illustrations in this chapter show the 8500 model. If you have a 9500 model, some of the illustrations may look slightly different from your computer.

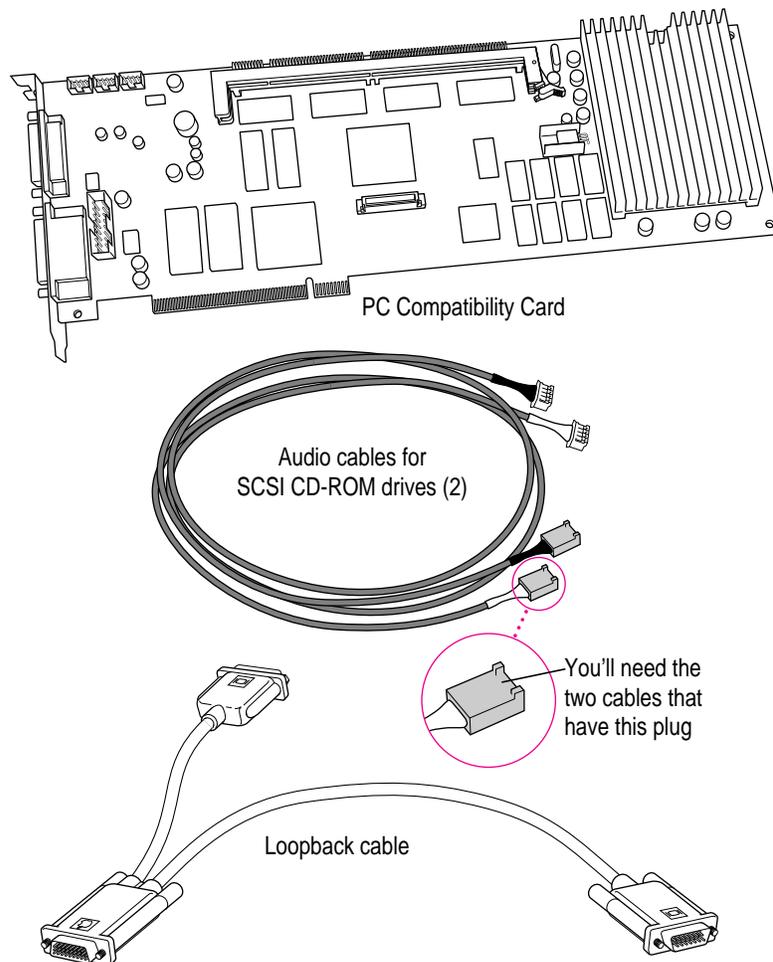
IMPORTANT If you will be installing a PC Serial and Parallel Card with your PC Compatibility Card, it's easiest to install both cards at the same time. The PC Serial and Parallel Card has standard PC ports that allow you to use several kinds of PC-compatible peripherals from the Windows or DOS environment (not from the Mac OS environment). Instructions in this chapter indicate when to see your PC Serial and Parallel Card manual for installation information.

After you install the PC Compatibility hardware, go to Chapter 5, “Connecting Monitors and Other Equipment.” If you want to install additional memory in your card, go to Appendix B, “Adding Memory to Your PC Compatibility Card.” Then turn to Chapters 6 through 9 to learn more about installing and using PC software.

WARNING Shipping your computer with a PC Compatibility Card installed may cause damage to the card. Your PC Compatibility Card should be shipped separately. (See Appendix A for instructions on how to remove the card.)

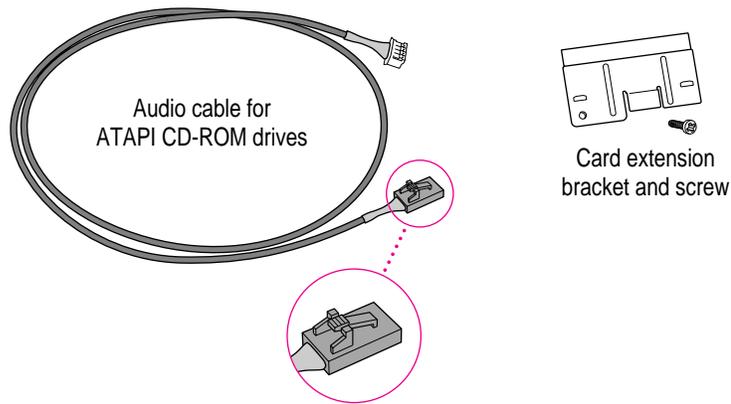
What you need

Before beginning the installation process, make sure you have all the necessary parts: the PC Compatibility Card, the audio cables, and the loopback cable. You'll also need a flathead screwdriver.



You won't need the card extension bracket and screw.

Also, you won't need the audio cable that has a different plug from the other two cables (shown below).



Installing the PC Compatibility Card hardware

WARNING The installation of the PC Compatibility Card is technically complex. Unless you are comfortable installing components inside computers, Apple recommends that you have the PC Compatibility Card installed by your Apple-authorized dealer (who may charge a fee). If you attempt to install the card yourself, any damage you may cause to your equipment will not be covered by the limited warranty on your computer.

Do not attempt to install the card, install memory, or connect the cables without first reading this manual.

There are several steps to installing your PC Compatibility Card hardware:

- opening the computer
- inserting the PC Compatibility Card
- connecting the audio cables
- replacing the computer cover

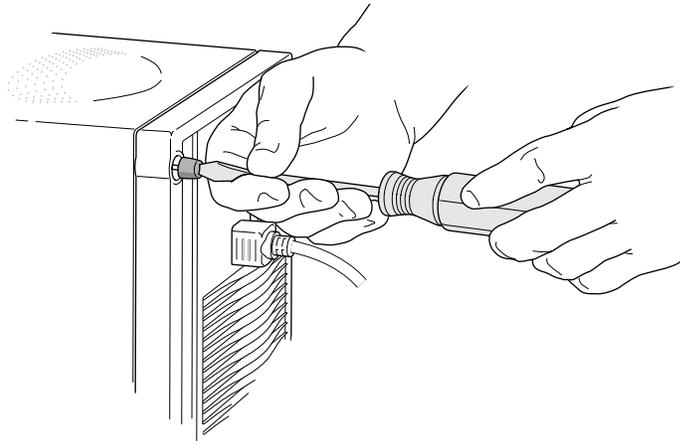
Opening the computer

- 1 Disconnect all the cables from the computer, except for the power cord.**

Leave the computer plugged in for now, to ground it and protect its components from static electricity damage.

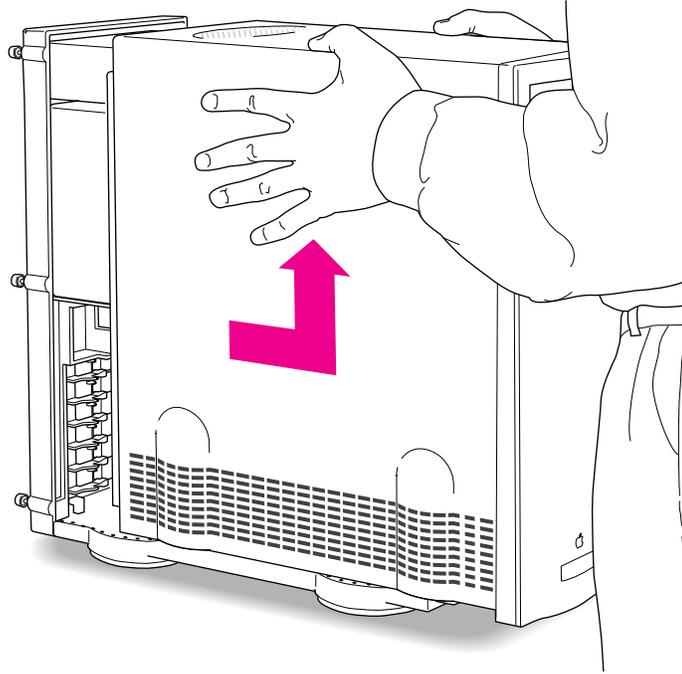
- 2 Loosen the large screws on the back panel.**

If you have a Power Macintosh 8500, there are four screws, one at each corner of the back panel. If you have a Power Macintosh 9500, there are six screws (one at each corner and two on the sides of the back panel). Do not completely remove the screws or the back panel.



3 Remove the cover from the computer.

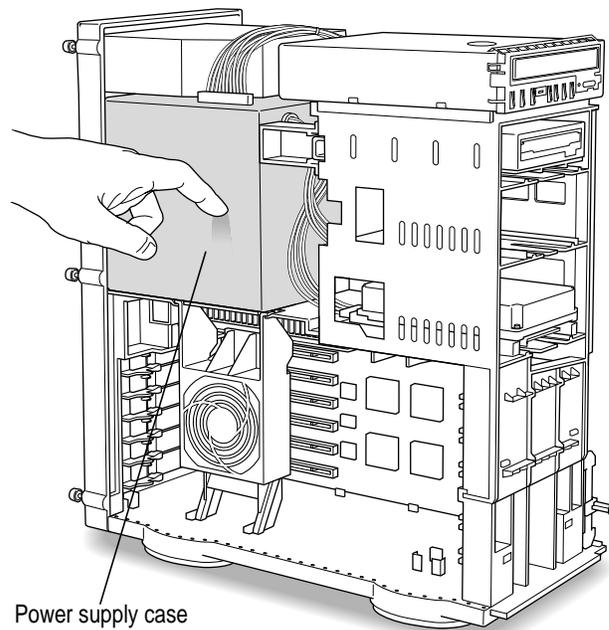
Slide the cover away from the back panel about two inches. Then raise the cover straight up and off the computer.



4 Touch the metal part of the power supply case inside the computer.

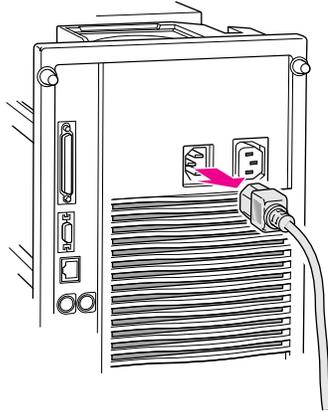
Always do this before you touch any parts, or install any components, inside the computer. Touching the power supply case helps release static electricity from your body and prevent possible damage to internal components.

IMPORTANT You can collect static electricity just by walking away from and then back to your computer. If you need to move away from your computer during installation, remember to touch the metal part of the power supply case again before you continue installing.



5 Disconnect the power cord.

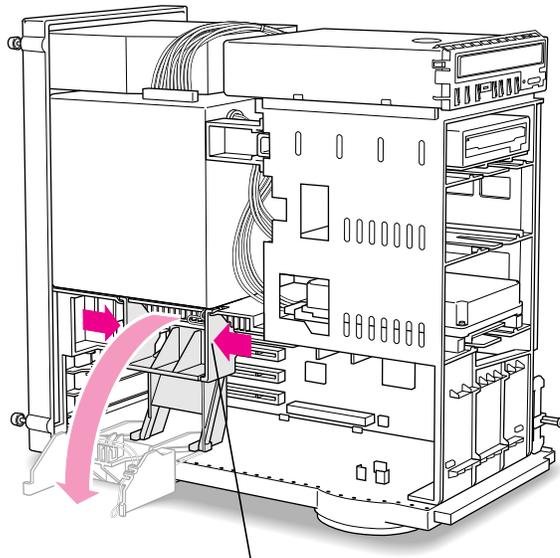
Remove the power cord from the back of the computer.



6 Lower the retainer or auxiliary fan.

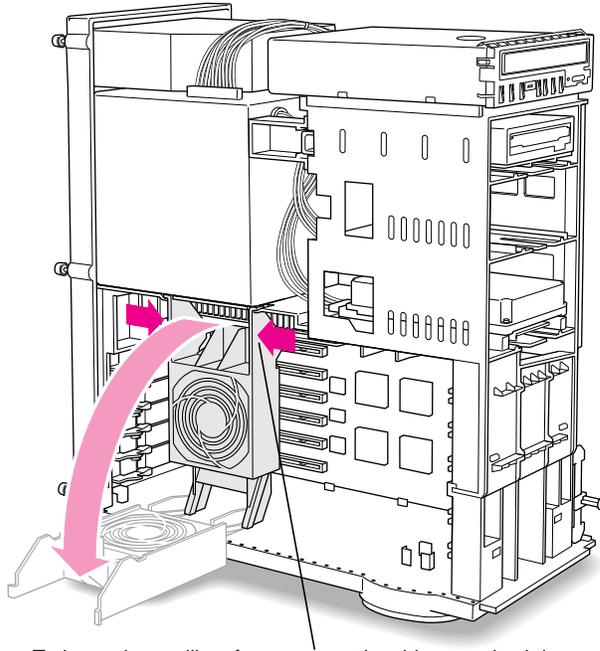
Squeeze the sides of the retainer or fan and pull down.

If you have a Power Macintosh 8500, follow this illustration:



To lower the retainer, squeeze the sides to unlatch it.

If you have a Power Macintosh 9500, follow this illustration:

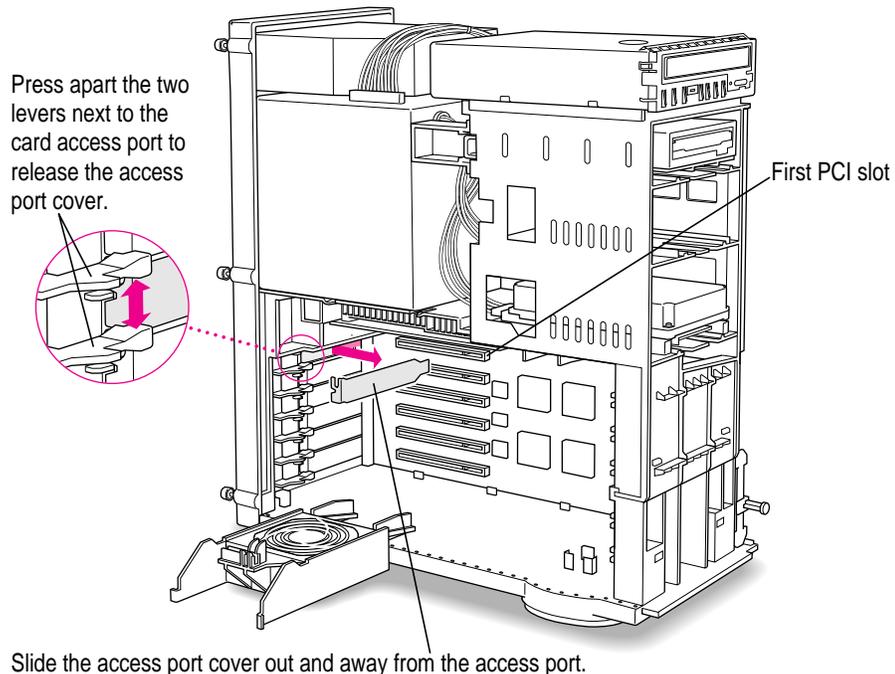


To lower the auxiliary fan, squeeze the sides to unlatch it.

- 7 Pull out the metal access port cover behind the expansion slot closest to the center of the computer.**

You need to install your PC Compatibility Card in the first (top) PCI expansion slot, which is the slot closest to the processor card. If there is already a card in the first slot, move it to a different slot.

IMPORTANT If you will be installing a PC Serial and Parallel Card, you should also remove any card in the second slot (below the first slot).



What you do next depends on whether you are adding a DIMM (dual inline memory module) to increase the memory available to your PC Compatibility Card, and whether you are installing a PC Serial and Parallel Card.

- If you want to add memory to your card, turn now to Appendix B, “Adding Memory to Your PC Compatibility Card.” After you’ve completed the instructions in Appendix B, go on to the next section, “Inserting the PC Compatibility Card.”
- If you want to install the PC Serial and Parallel Card, you’ll need to connect the peripheral flex cable to your PC Compatibility Card now. See the PC Serial and Parallel Card manual for instructions. Then return to this manual, and go on to the next section, “Inserting the PC Compatibility Card.”

If you don’t want to add memory or install the PC Serial and Parallel Card, go on to the next section.

Inserting the PC Compatibility Card

8 Align the card with the expansion slot.

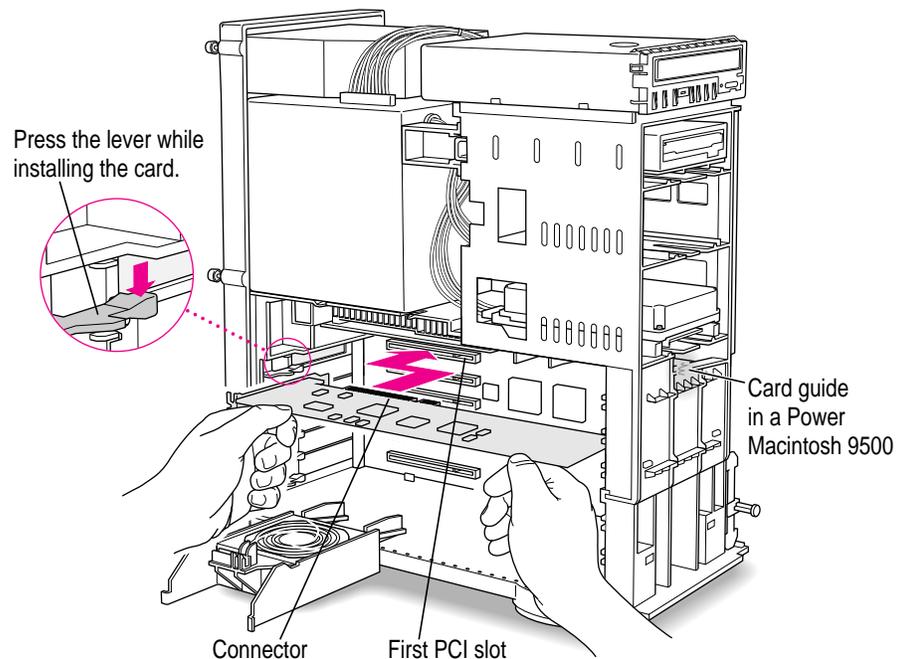
IMPORTANT Always hold the card by its edges. Don't touch any of the components on the card.

Align the card's connector end (gold in color) with the first PCI expansion slot. The ports on the card should face the port access opening on the computer's back panel.

9 Insert the card.

Press the lever near the port access opening and press down on the card. When the card is fully inserted, you won't be able to see the gold-colored connector any more. If you are installing the card in a 9500, the end of the card should engage the card guide at the front of the computer.

- Don't rock the card from side to side; instead, press the card straight into the slot. Rocking the card can damage the PCI slot.
- Don't force the card. If you meet a lot of resistance, pull the card out and try again.
- To see if the card is connected, pull it gently. If it resists, it is connected.

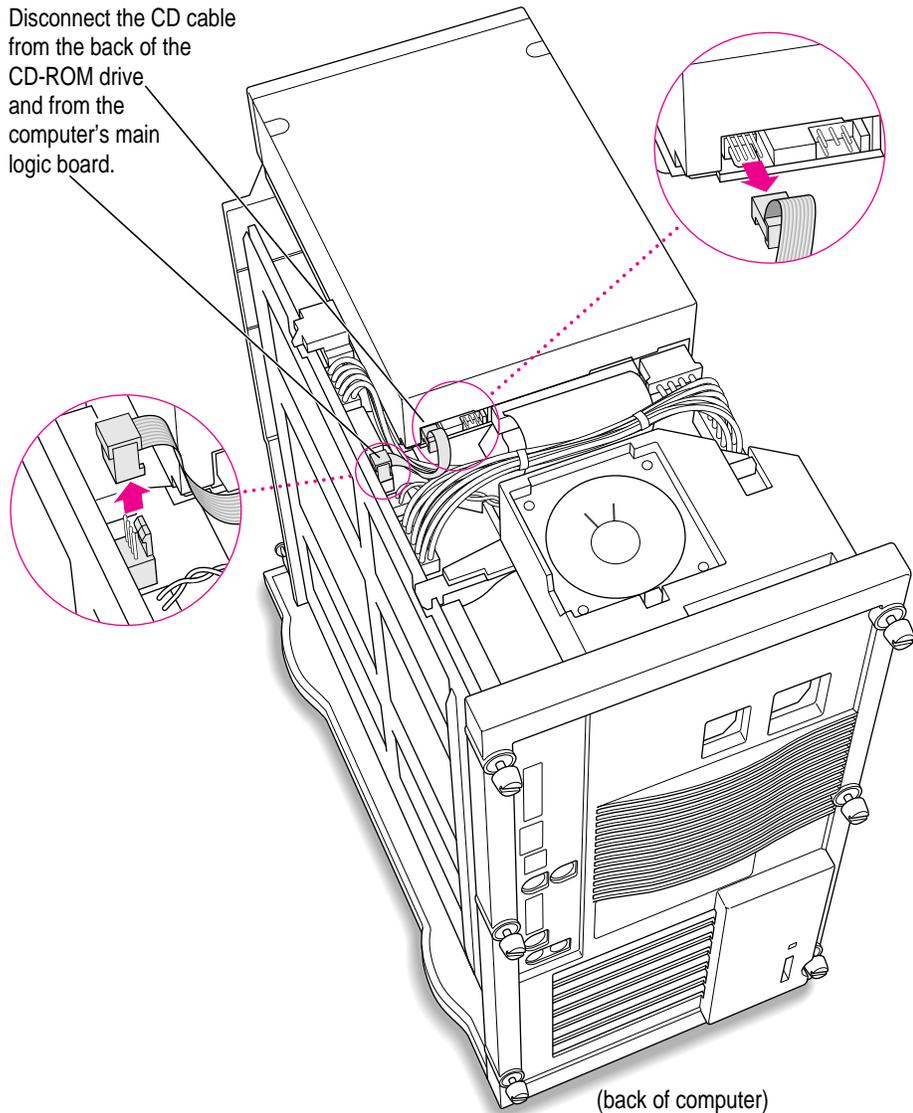


Connecting the audio cables

- 10 Unplug the audio ribbon cable from the computer's CD-ROM drive and the Macintosh logic board.

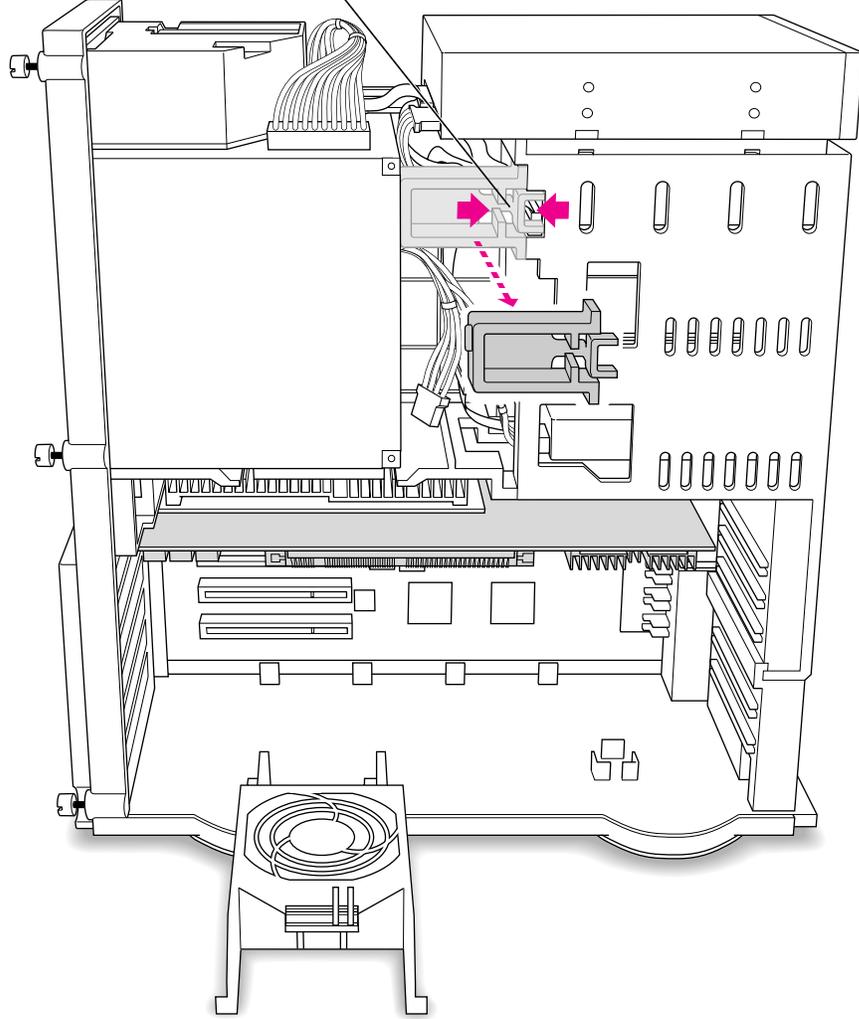
After unplugging this cable, carefully remove it from your computer (keep the cable; you will need to reinstall it if you ever remove your PC Compatibility Card). You will be replacing the ribbon cable with the audio cables that came with your PC Compatibility Card.

Disconnect the CD cable from the back of the CD-ROM drive and from the computer's main logic board.



11 Remove the chassis brace by squeezing and pulling.

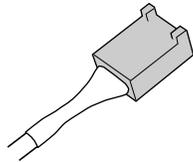
Squeeze here and remove the chassis brace. You will replace it later.



- 12 **Plug one of the two identical SCSI audio cables into the connector on the Macintosh logic board.**

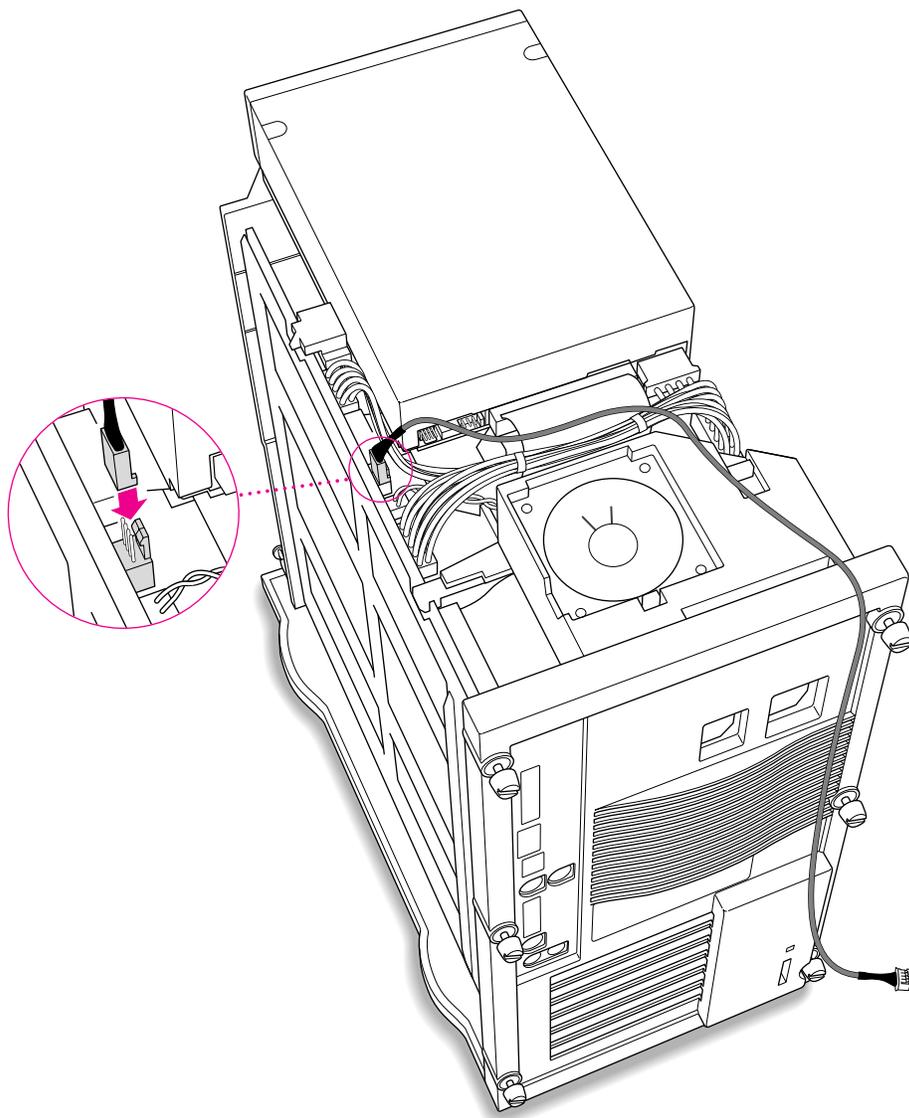
IMPORTANT Use only the cables that came with this PC Compatibility Card. Do not use cables from other models of the card.

Your PC Compatibility Card came with three audio cables. They may have different colors of tubing near the ends to help you tell them apart. You'll only be using two of these cables (the third one is for a different kind of CD-ROM drive). Two of the cables have identical plugs on the end that look like the one shown below. Use one of these two identical cables for this step.



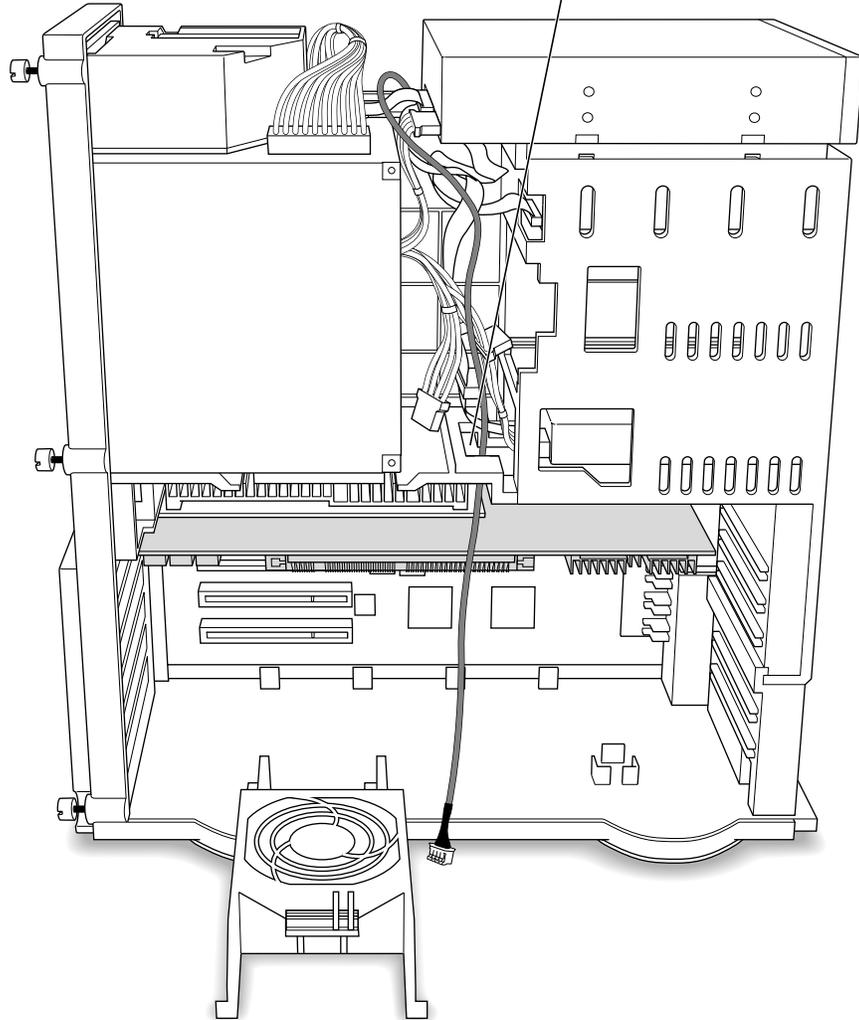
Audio cable plug for
SCSI CD-ROM drives

Insert the cable's larger plug into the connector on the Macintosh logic board, where you just unplugged the ribbon cable (the connector may be labeled "CD AUDIO").



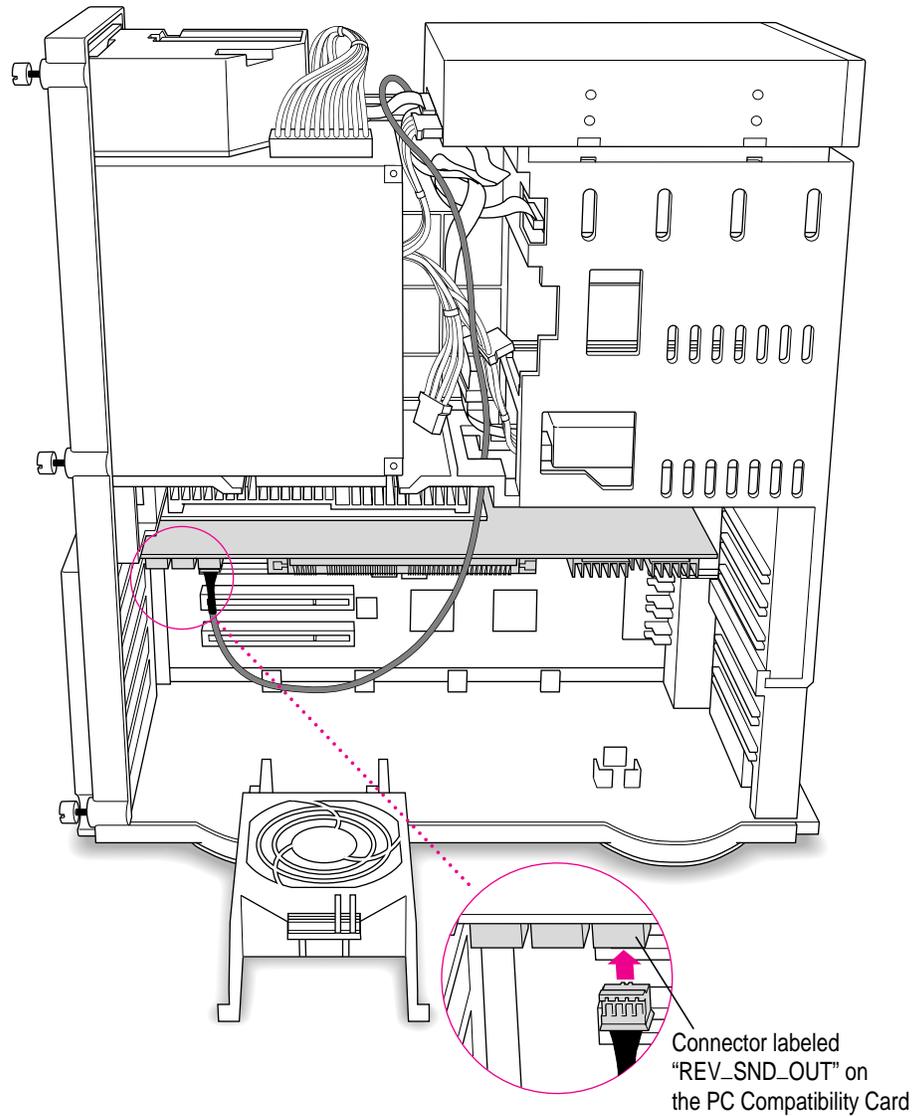
13 Route the cable through the interior of the computer.

Route the cable through this hole in the chassis.



- 14 Plug the other end of the cable into the Reversed Sound Out connector in the upper-left corner of the PC Compatibility Card.

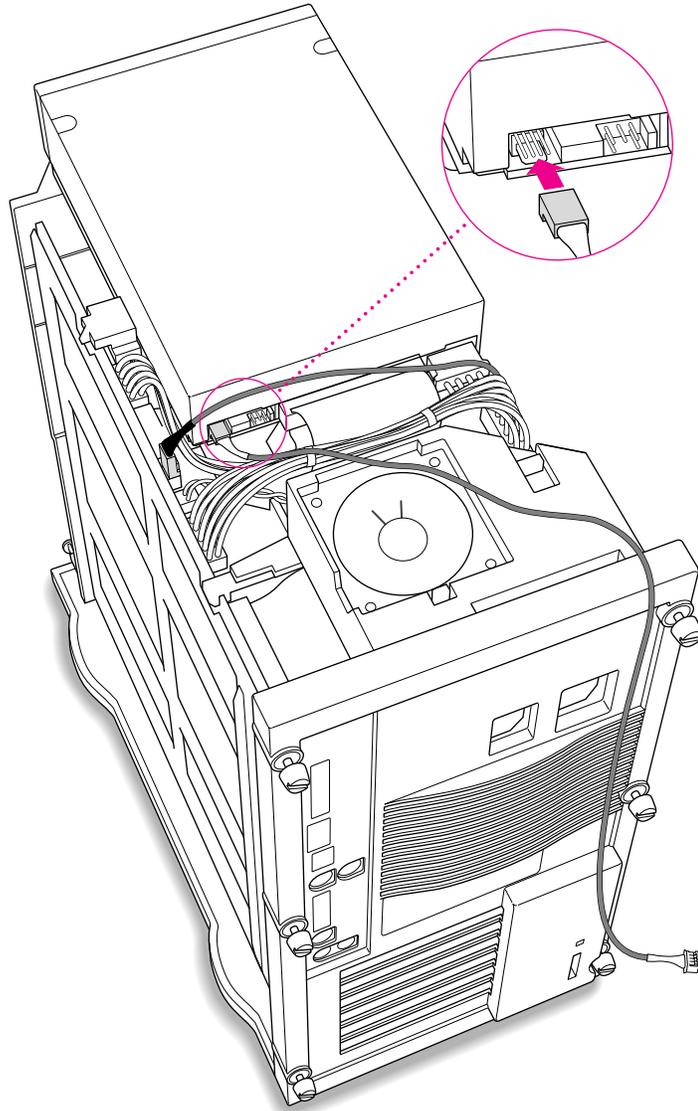
The Reversed Sound Out connector is the third connector from the end, labeled “REV_SND_OUT” on the underside of the card.



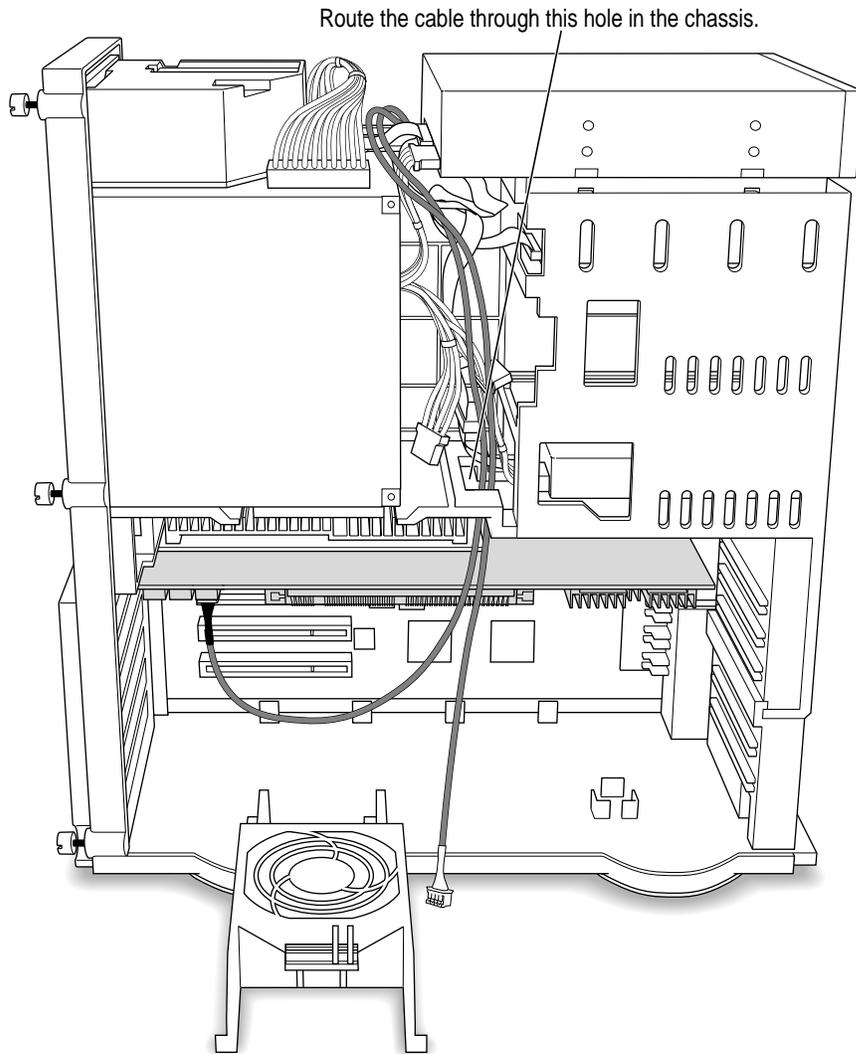
15 Plug the other SCSI audio cable into the back of the CD-ROM drive.

Use the cable with the thick plug that looks identical to the cable you connected to the logic board.

Insert the cable's larger plug into the back of the CD-ROM drive, where you unplugged the ribbon cable in step 10.

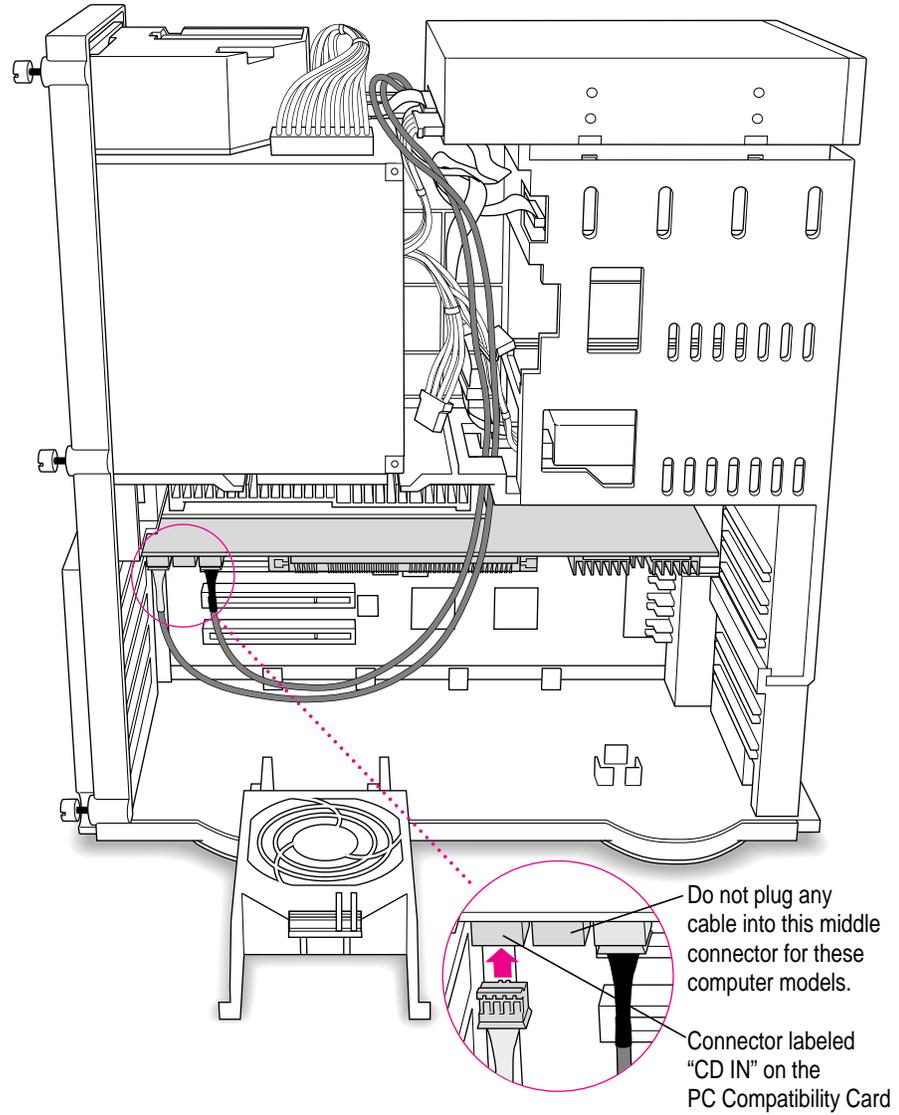


16 Route the cable through the interior of the computer.



- 17 Plug the other end of the audio cable into the CD In connector in the far upper-left corner of the PC Compatibility card.

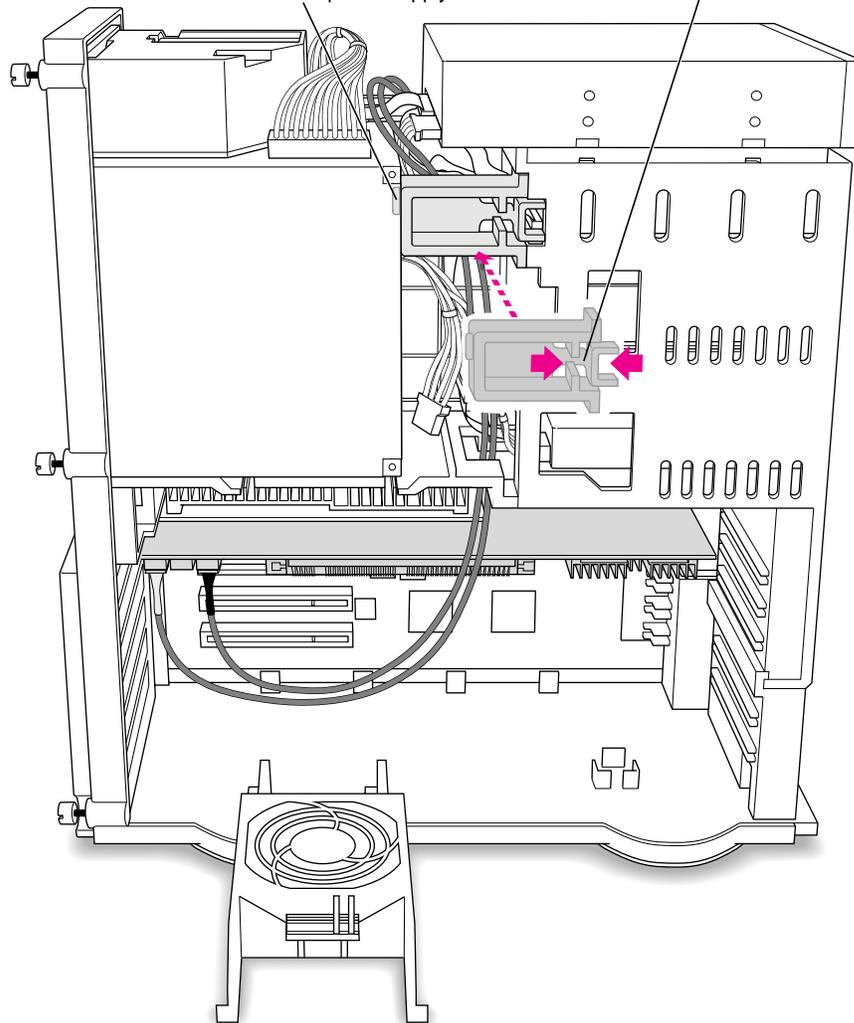
The CD In connector is labeled “CD IN” on the underside of the card.



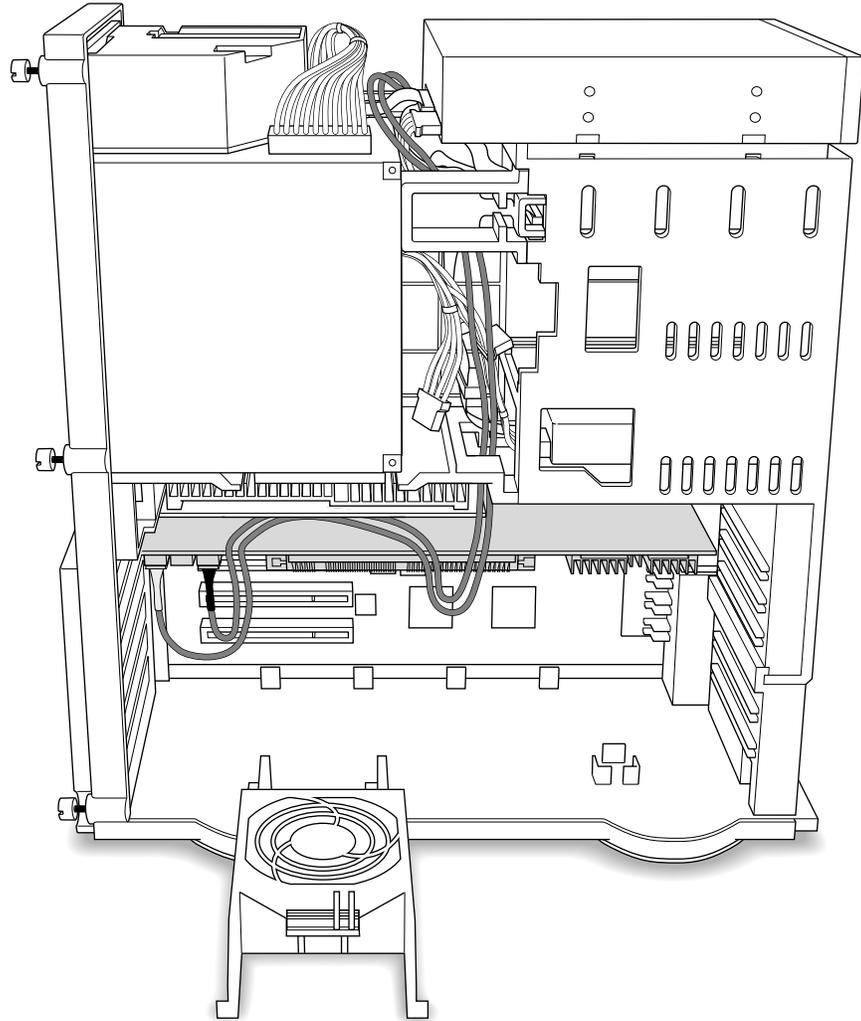
18 Replace the chassis brace.

Squeeze here and reinstall the chassis brace. Be sure not to pinch any of the cables between the chassis brace and the power supply case.

The tab on the chassis brace fits into a slot in the power supply case.



- 19 Tuck the audio cables in on top of the PC Compatibility Card, so that they're out of the way of the retainer or auxiliary fan.

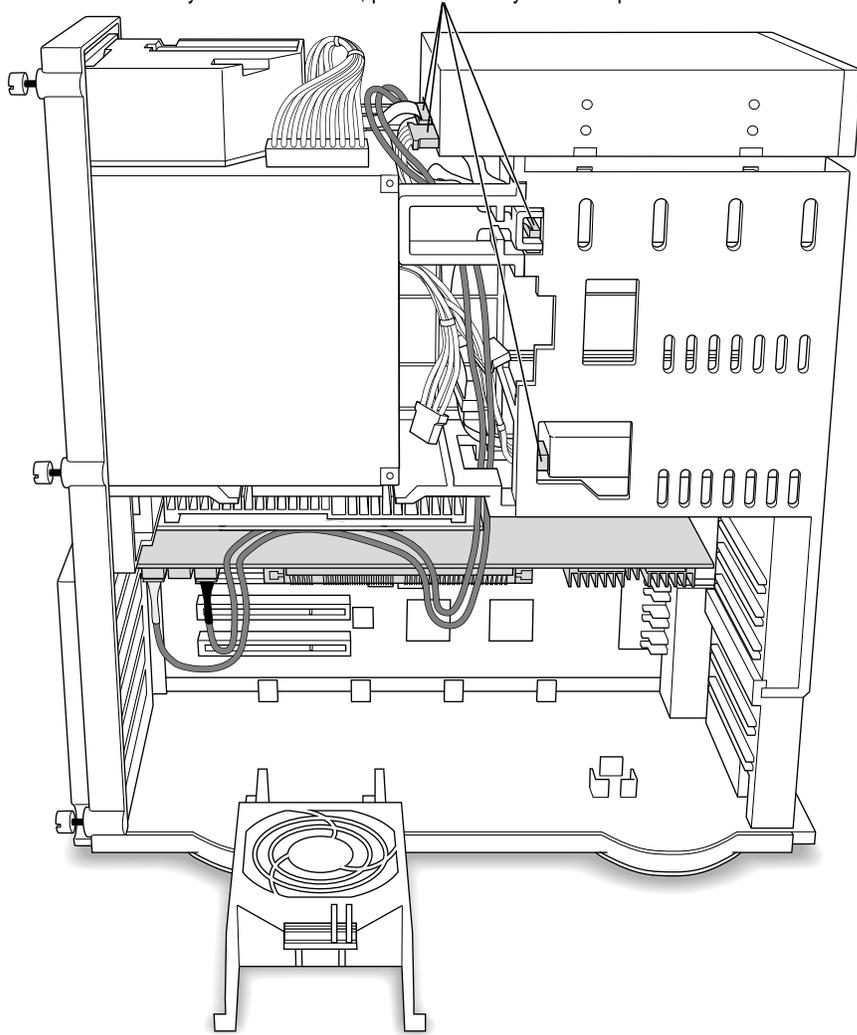


IMPORTANT If you are installing the PC Serial and Parallel Card, you should insert it now. See the PC Serial and Parallel Card manual for instructions.

Replacing the computer cover

- 20 Make sure all cables and cards are firmly connected.

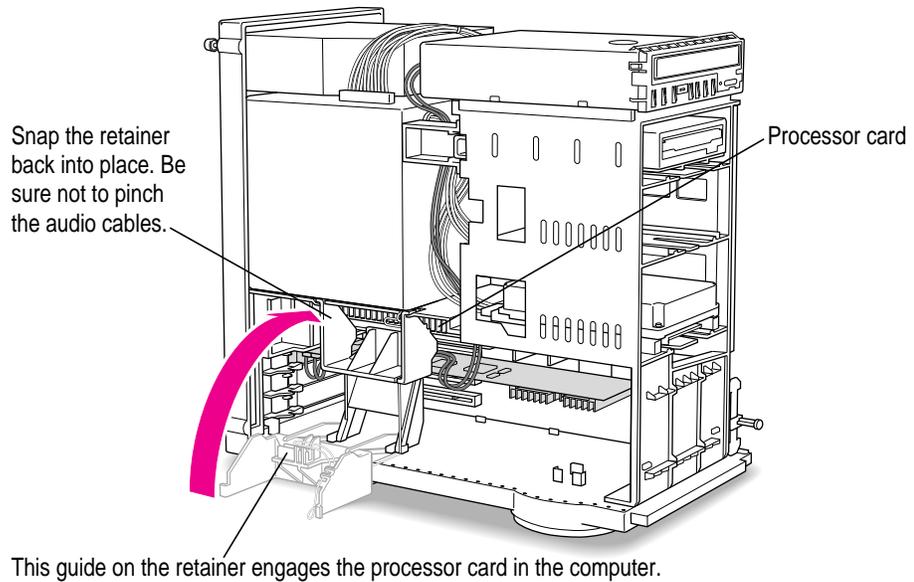
Make sure these connectors were not loosened during the installation. If they have come loose, push them firmly back into place.



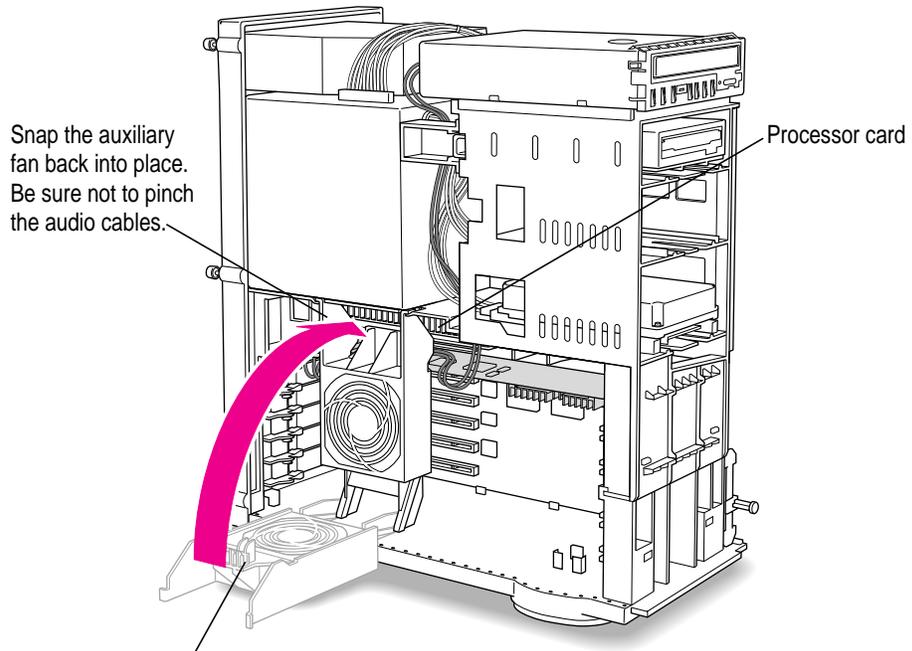
21 Replace the retainer or fan.

Make sure no cables are squeezed between the retainer or fan and the top of the card.

If you have a Power Macintosh 8500, follow this illustration:



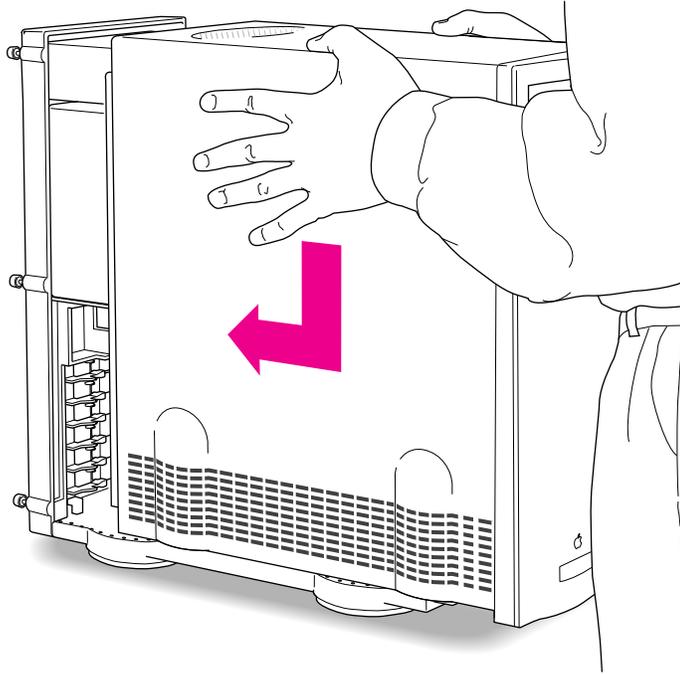
If you have a Power Macintosh 9500, follow this illustration:



This guide on the auxiliary fan housing engages the processor card in the computer.

22 Replace the cover on the computer.

Lower the cover all the way down onto the case. Push the cover back until it touches the back panel.



23 Tighten the screws on the back panel and reconnect the power cord and other equipment cables.

You are now finished installing the card.

What's next?

Next, go to Chapter 5, “Connecting Monitors and Other Equipment.”

Then go to Chapters 6 through 9 for instructions on installing and using your software.

4

Installing the Card in a Power Macintosh 8600 or 9600



The illustrations in this chapter show the 8600 model. If you have a 9600, some of the illustrations may look slightly different from your computer.

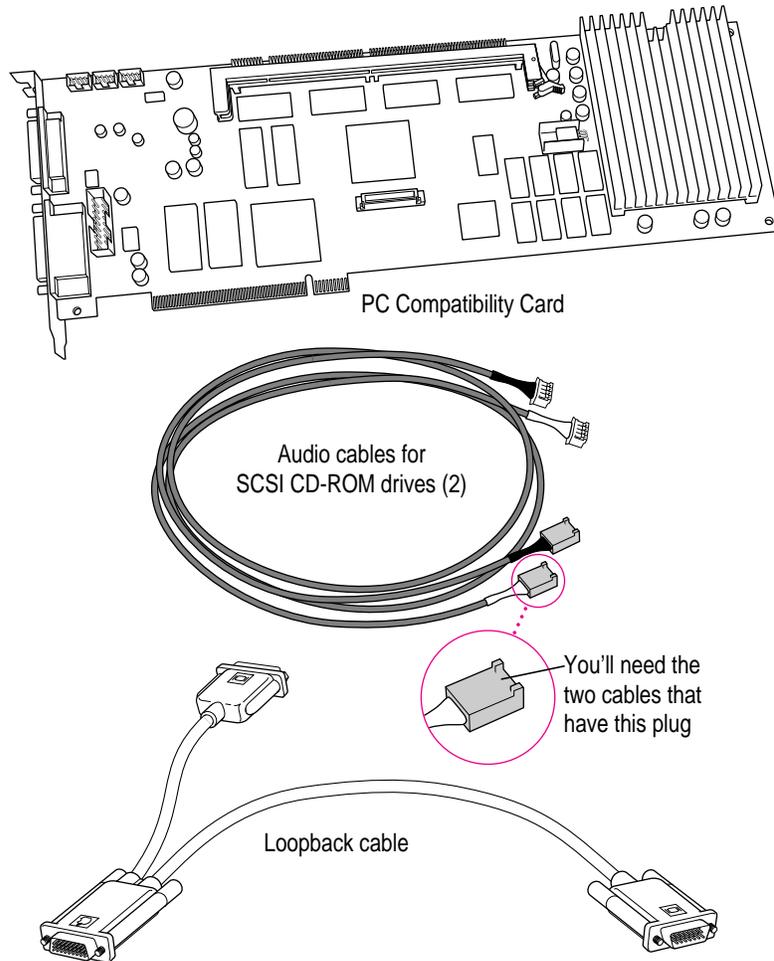
IMPORTANT If you will be installing a PC Serial and Parallel Card with your PC Compatibility Card, it's easiest to install both cards at the same time. The PC Serial and Parallel Card has standard PC ports that allow you to use several kinds of PC-compatible peripherals from the Windows or DOS environment (not from the Mac OS environment). Instructions in this chapter indicate when to see your PC Serial and Parallel Card manual for installation information.

After you install the PC Compatibility hardware, go to Chapter 5, “Connecting Monitors and Other Equipment.” If you want to install additional memory in your card, go to Appendix B, “Adding Memory to Your PC Compatibility Card.” Then turn to Chapters 6 through 9 to learn more about installing and using PC software.

WARNING Shipping your computer with a PC Compatibility Card installed may cause damage to the card. Your PC Compatibility Card should be shipped separately. (See Appendix A for instructions on how to remove the card.)

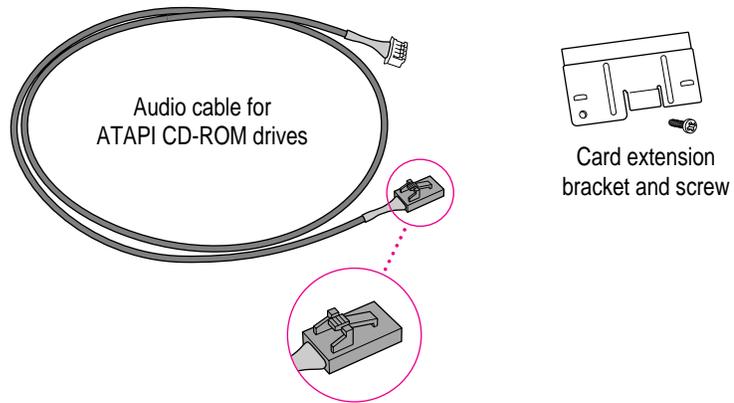
What you need

Before beginning the installation process, make sure you have all the necessary parts: the PC Compatibility Card, the audio cables, and the loopback cable. You'll also need a Phillips screwdriver.



You won't need the card extension bracket and screw.

Depending on what kind of CD-ROM drive your computer has, you may need the audio cable that has a different plug from the other two cables (shown below). Keep it nearby.



Installing the PC Compatibility Card hardware

WARNING The installation of the PC Compatibility Card is technically complex. Unless you are comfortable installing components inside computers, Apple recommends that you have the PC Compatibility Card installed by your Apple-authorized dealer (who may charge a fee). If you attempt to install the card yourself, any damage you may cause to your equipment will not be covered by the limited warranty on your computer.

Do not attempt to install the card, install memory, or connect the cables without first reading this manual.

There are several steps to installing your PC Compatibility Card hardware:

- opening the computer
- inserting the PC Compatibility Card
- opening the chassis
- connecting the Sound Out cable
- replacing the chassis
- adjusting the position of the CD-ROM drive
- connecting the CD In cable
- replacing the CD-ROM drive
- replacing the computer cover

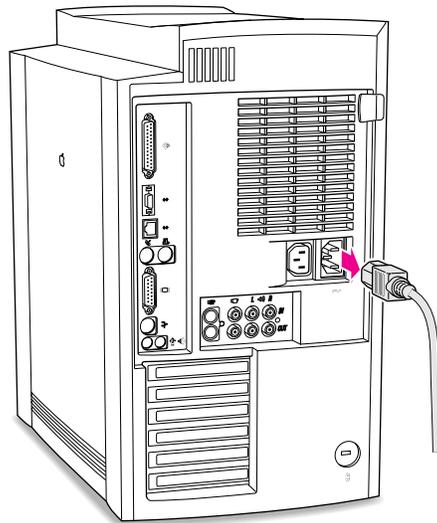
Opening the computer

- 1 If your computer is turned on, shut it down and wait 20 minutes.

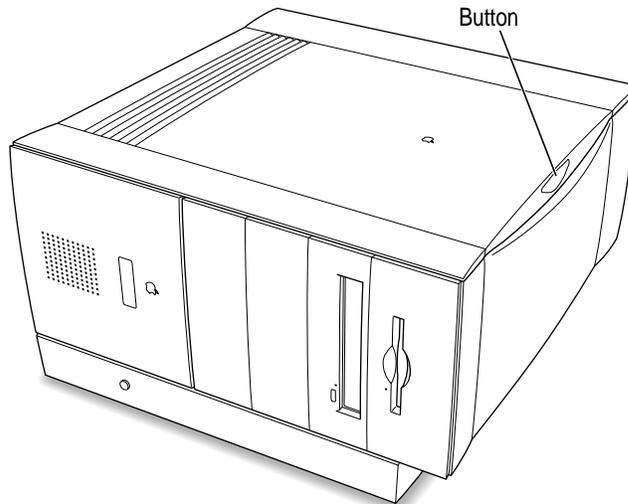
Before proceeding with these instructions, you need to allow the computer's internal components to cool.

- 2 Disconnect all the cables from the computer, including the power cord.

Remove the power cord now so you don't pull it by accident as you turn the computer on its side in the next step. You'll reconnect the power cord in step 4.

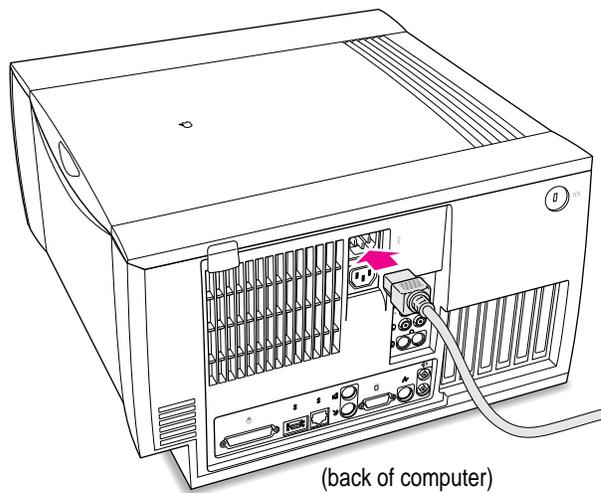


- 3 Carefully lay the computer on its side with the cover and release button facing up.



- 4 Reconnect the power cord.

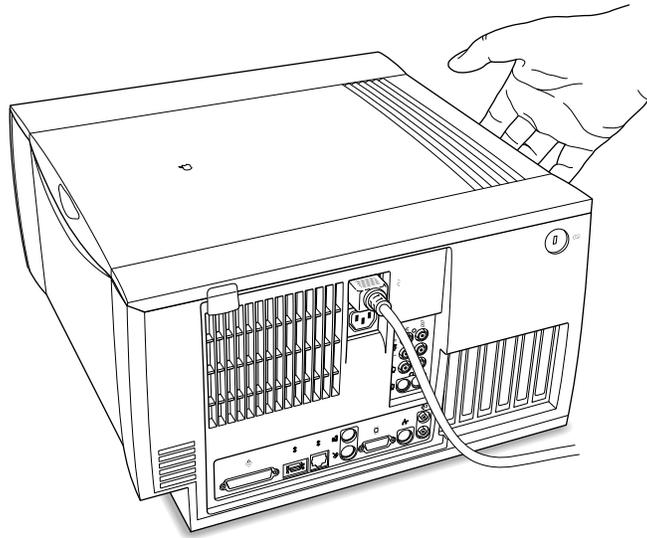
Connect the power cord to your computer and to an AC outlet. This helps protect the computer from damage caused by static electricity.



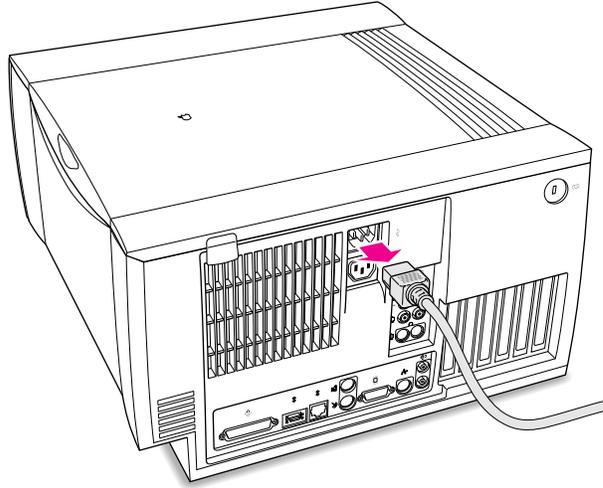
5 Touch the metal on the bottom of the computer.

Always do this before you touch any parts, or install any components, inside the computer. Touching the metal helps release static electricity from your body and prevent possible damage to internal components.

IMPORTANT You can collect static electricity just by walking away from and then back to your computer. If you need to move away from your computer during installation, remember to touch the metal bottom again before you continue installing.

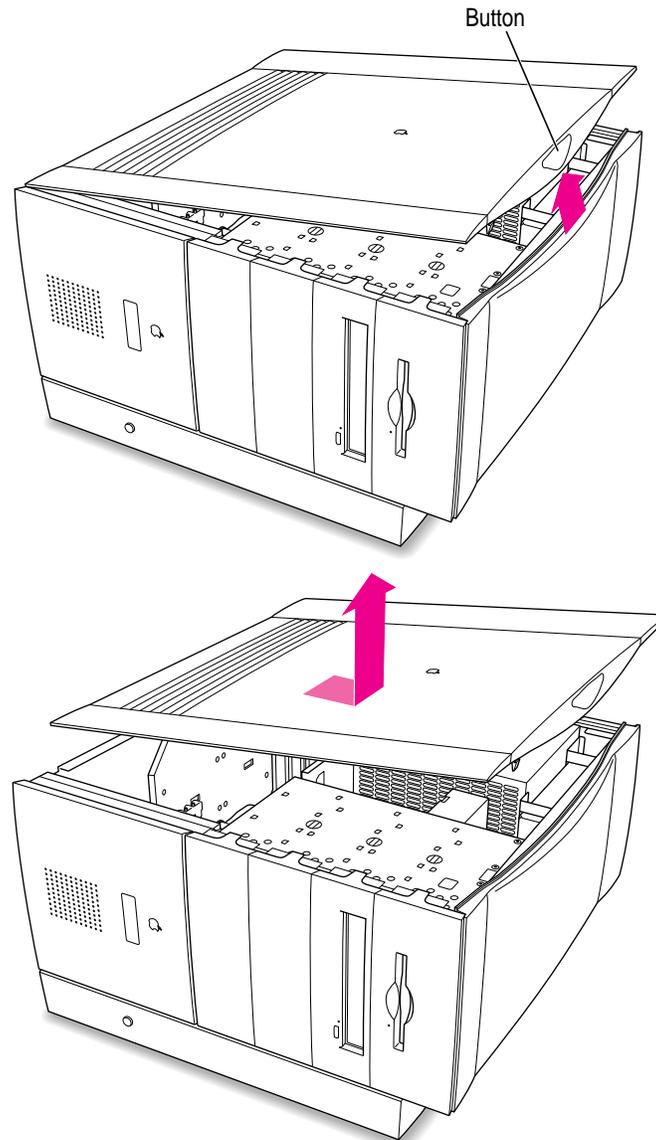


- 6 Disconnect the power cord again.



7 Remove the computer cover.

Press the release button and lift the cover a few inches. Then slide the cover to the right and lift it off.



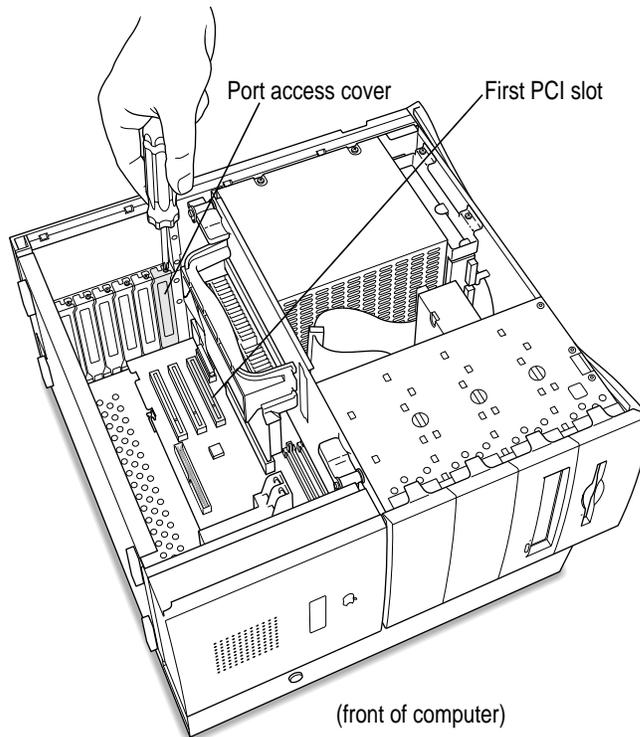
Inserting the PC Compatibility Card

8 Unscrew the metal port access cover on the first slot.

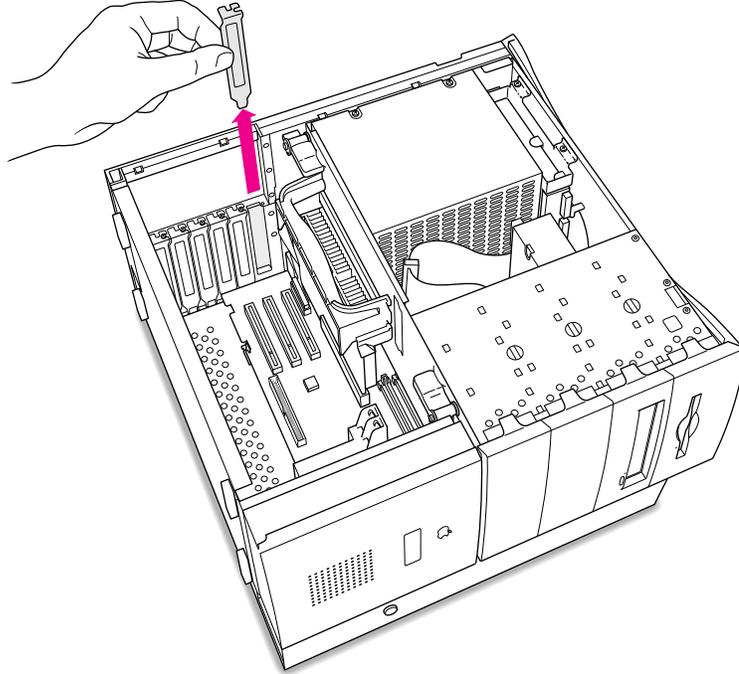
You need to install your PC Compatibility Card in the first PCI expansion slot, the slot closest to the processor card. If there is already a card in the first slot, move it to a different slot. (To remove a card, first remove the screw near the port access opening.)

IMPORTANT If you will be installing a PC Serial and Parallel Card, you should also remove any card in the second slot (next to the first slot).

Keep the screw; you'll reinsert it later.



9 Remove the port access cover.



What you do next depends on whether you are adding a DIMM (dual inline memory module) to increase the memory available to your PC Compatibility Card, and whether you are installing a PC Serial and Parallel Card.

- If you want to add memory to your card, turn now to Appendix B, “Adding Memory to Your PC Compatibility Card.” After you’ve completed the instructions in Appendix B, go on to step 10 in this section.
- If you want to install the PC Serial and Parallel Card, you’ll need to connect the peripheral flex cable to your PC Compatibility Card now. See the PC Serial and Parallel Card manual for instructions. Then return to this manual, and go on to step 10 in this section.

If you don’t want to add memory or install the PC Serial and Parallel Card, go on to step 10.

10 Align the card with the expansion slot.

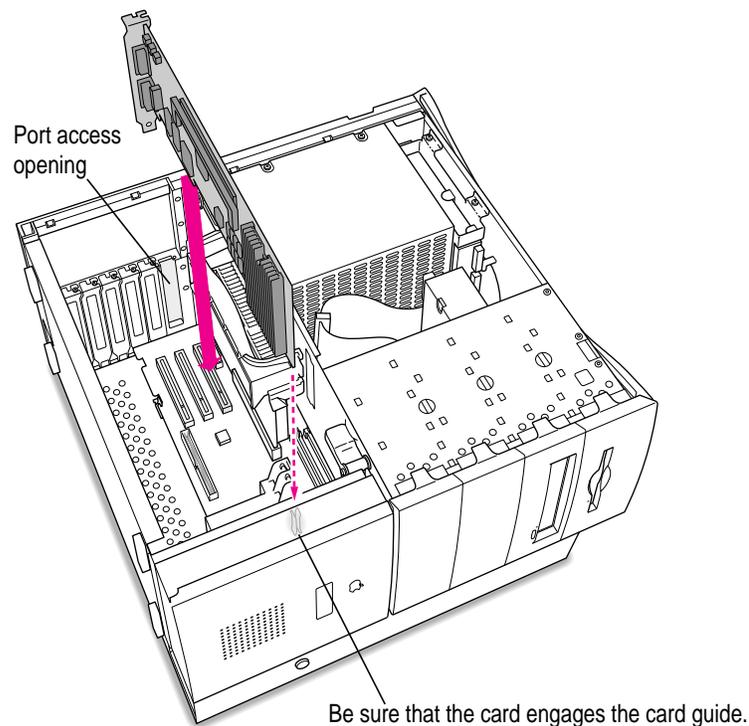
IMPORTANT Always hold the card by its edges. Don't touch any of the components on the card.

Align the card's connector end (gold in color) with the first PCI expansion slot. The ports on the card should face the port access opening on the computer's back panel.

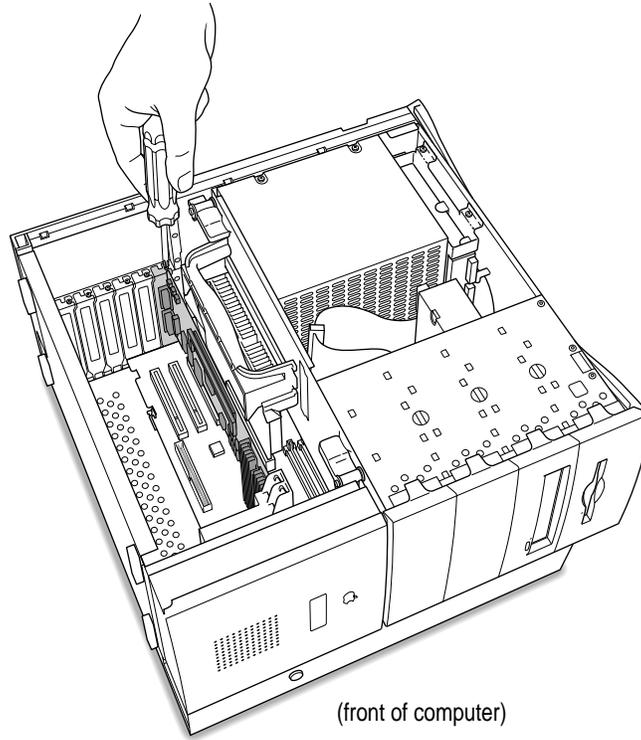
11 Insert the card.

The end of the card should engage the card guide at the front of the computer. Press down on the card. When the card is fully inserted, you won't be able to see the gold-colored connector any more.

- Don't rock the card from side to side; press it straight into the slot. Rocking the card can damage the PCI slot.
- Don't force the card. If you meet a lot of resistance, pull the card out and try again.
- To see if the card is connected, pull it gently. If it resists, it is connected.



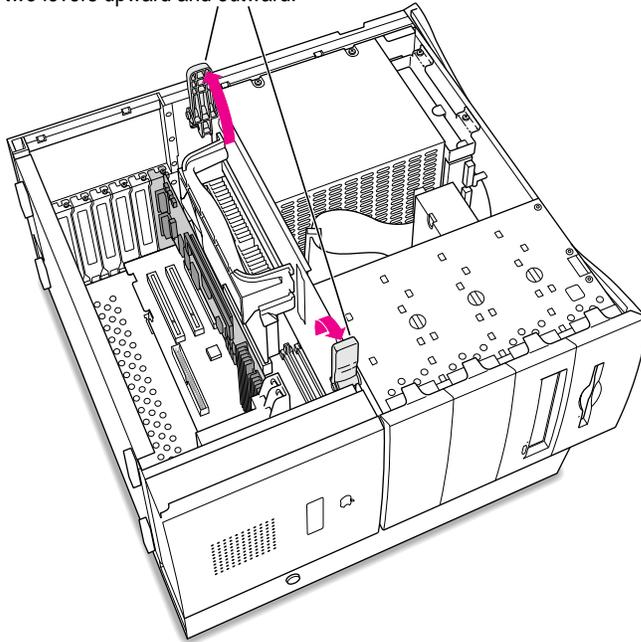
- 12 Reinsert the screw you removed from the port access cover earlier, and tighten it.



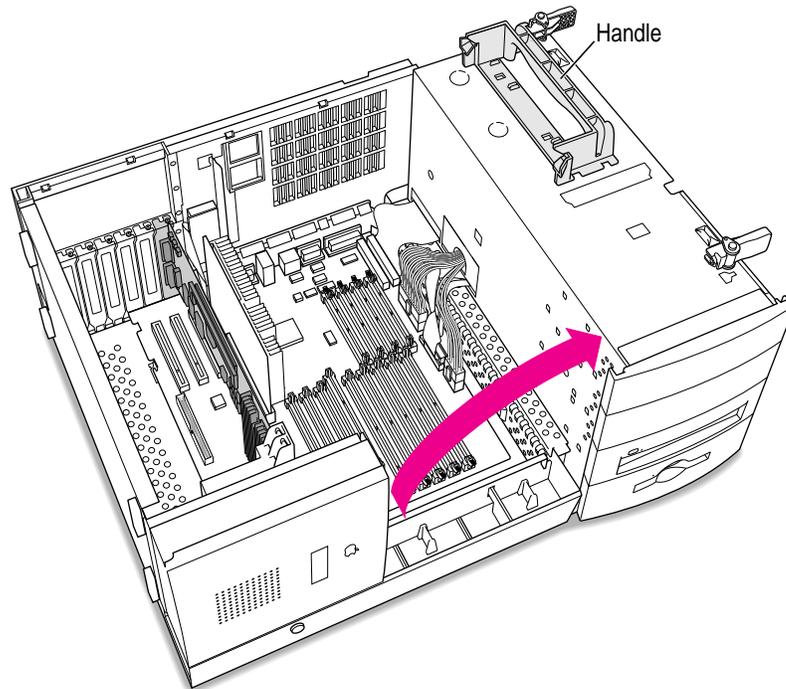
Opening the chassis

- 13 **Unlock the top chassis by moving the levers as indicated below.**

Unlock the top chassis by moving the two levers upward and outward.



- 14** Using the plastic handle, lift the top chassis up and to the side until it rests on your work surface.

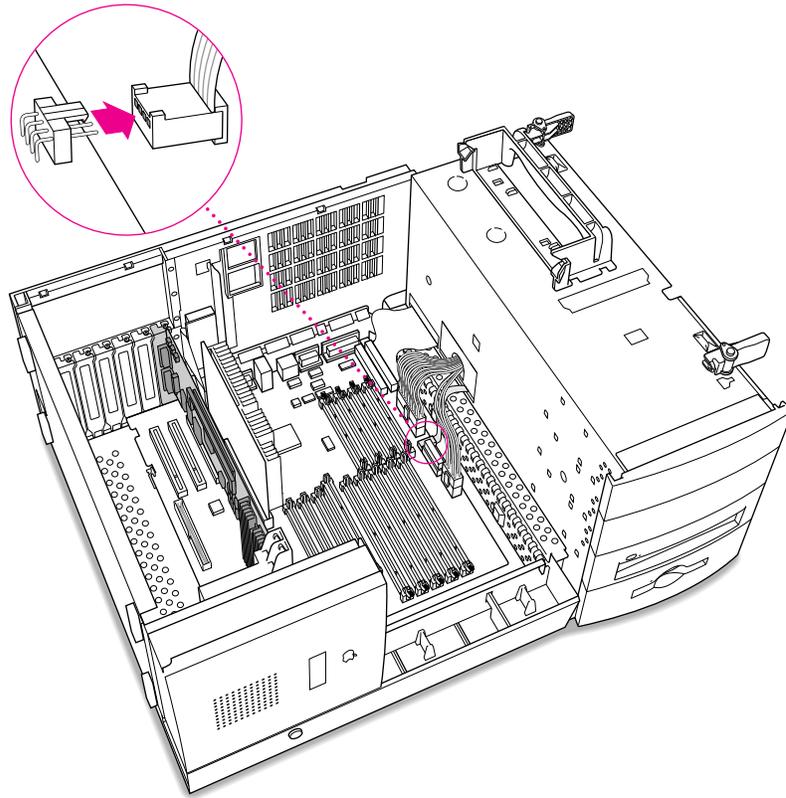


Connecting the Sound Out cable

- 15 **Disconnect the audio ribbon cable from the Macintosh logic board.**

This cable is connected near the DRAM DIMM slots. The connector has four pins, and may be labeled “CD AUDIO” on the logic board.

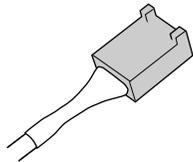
Be sure to pull on the plug, not the cable. After you have disconnected the cable, leave it in place for now.



- 16** Plug one of the two identical SCSI audio cables (with the plug shown below) into the connector on the logic board.

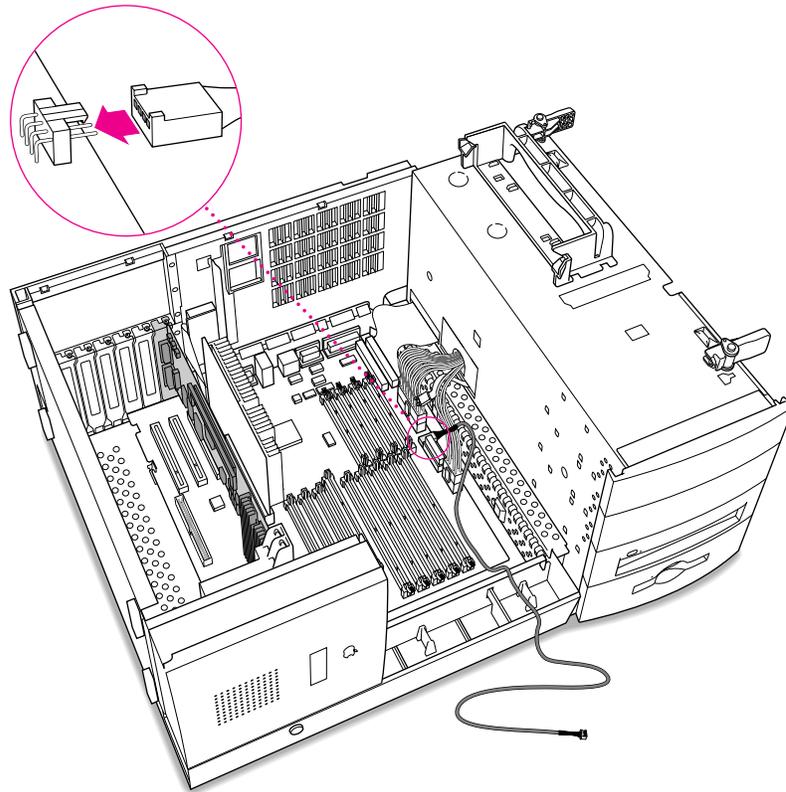
IMPORTANT Use only the cables that came with this PC Compatibility Card. Do not use cables from other models of the card.

Your PC Compatibility Card came with three audio cables. They may have different colors of tubing near the ends to help you tell them apart. You'll only be using two of these cables (the third one is for a different kind of CD-ROM drive). Two of the cables have identical plugs on the end, as shown below. Use one of these two identical cables for this step.



Audio cable plug for
SCSI CD-ROM drives

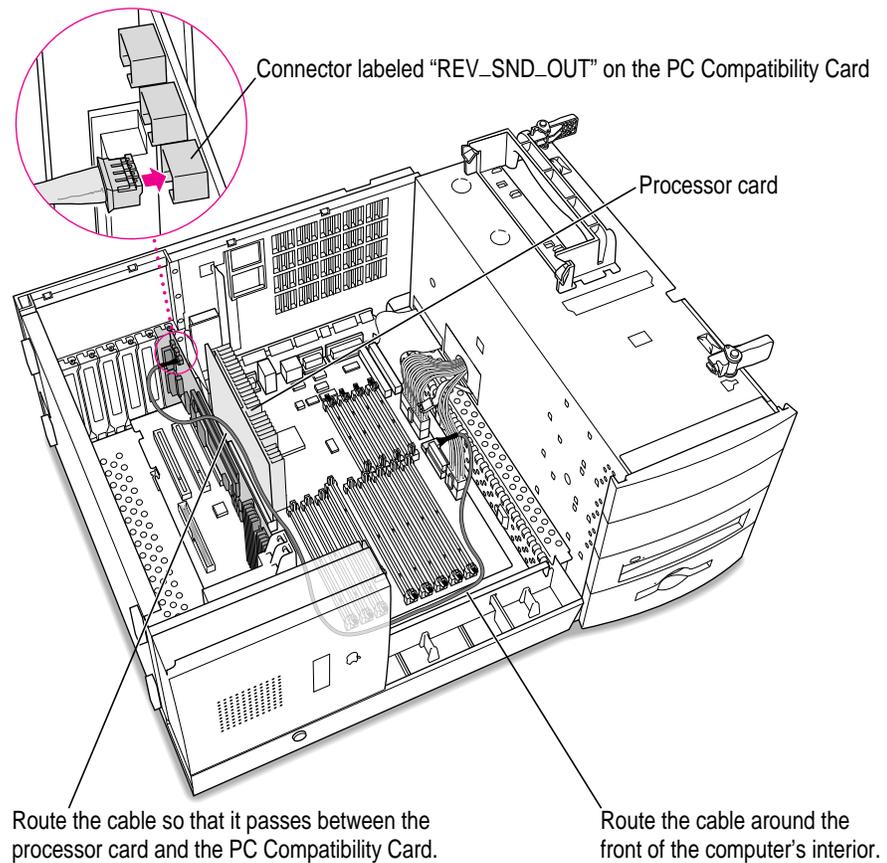
Insert the cable's larger plug into the CD audio connector on the logic board, where you just unplugged the ribbon cable.



- 17 Plug the other end of the SCSI audio cable into the connector labeled “REV_SND_OUT” (Reversed Sound Out) on the PC Compatibility Card.**

The Reversed Sound Out connector is in the upper-left corner of the card, the third connector from the end.

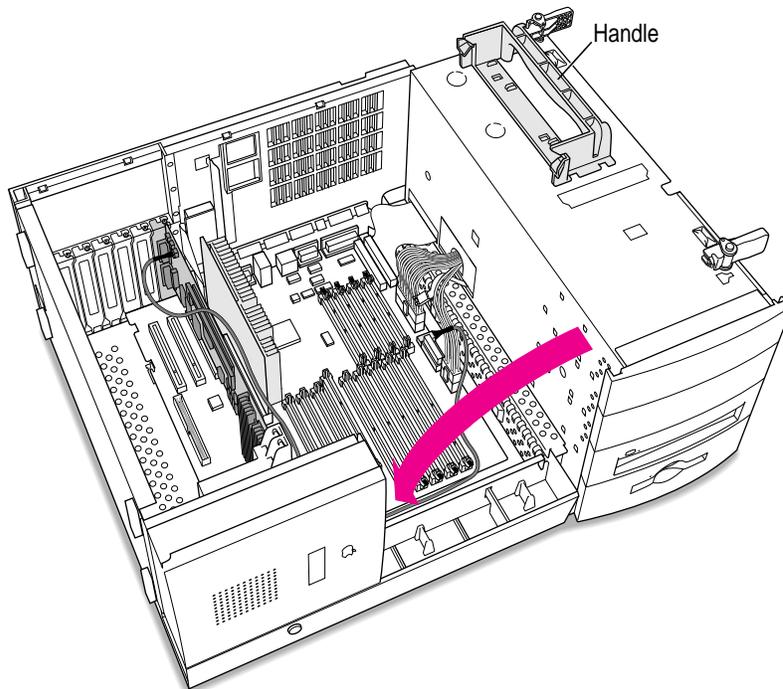
Route the cable between the PC Compatibility Card and the processor card, and toward the front of the interior as shown.



Replacing the chassis

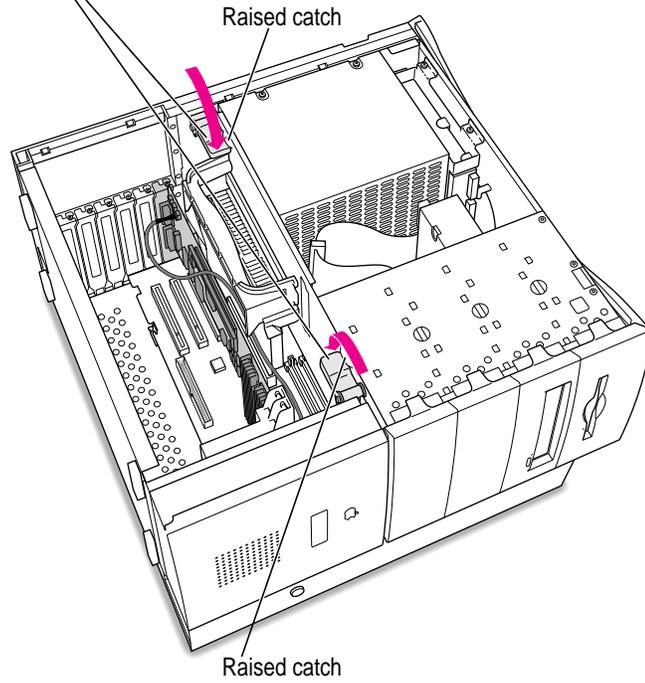
- 18 Grasping the handle, gently swing the chassis back into place.

Make sure the cable you just positioned stays in place and doesn't get pinched by the chassis.



19 Lock the chassis by rotating the levers.

Lock the top chassis in place by moving the two levers inward and downward. Be sure that they snap underneath the raised catches on the chassis.

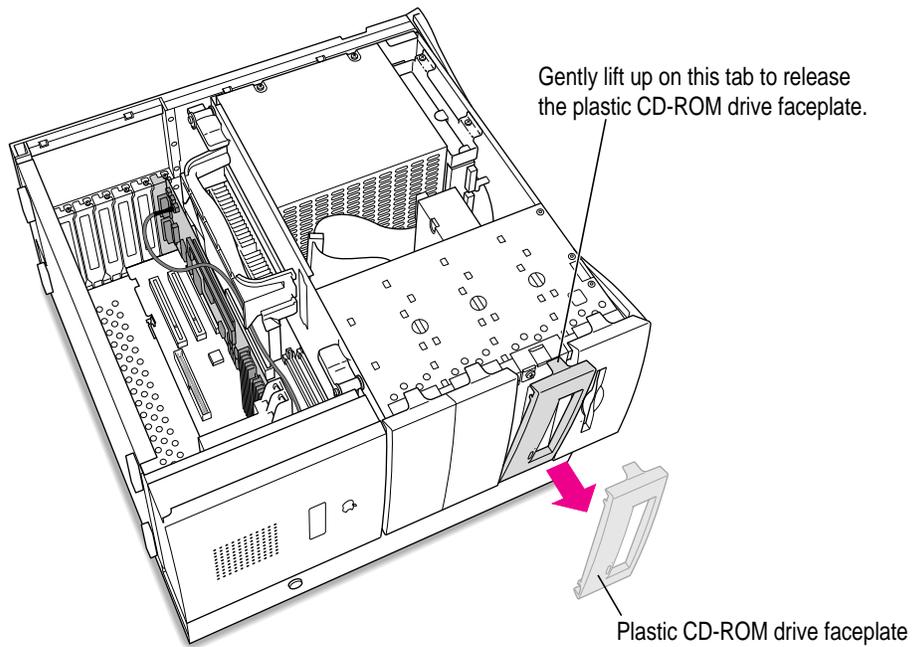


Adjusting the position of the CD-ROM drive

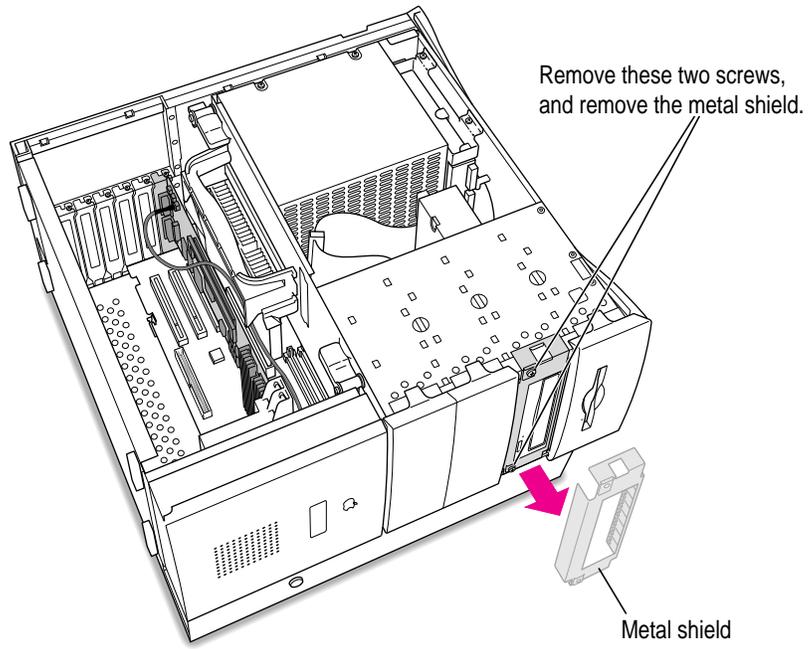
You need to adjust the position of the CD-ROM drive so you'll have room to insert the other audio cable into the back of the drive.

20 Remove the plastic faceplate in front of the CD-ROM drive.

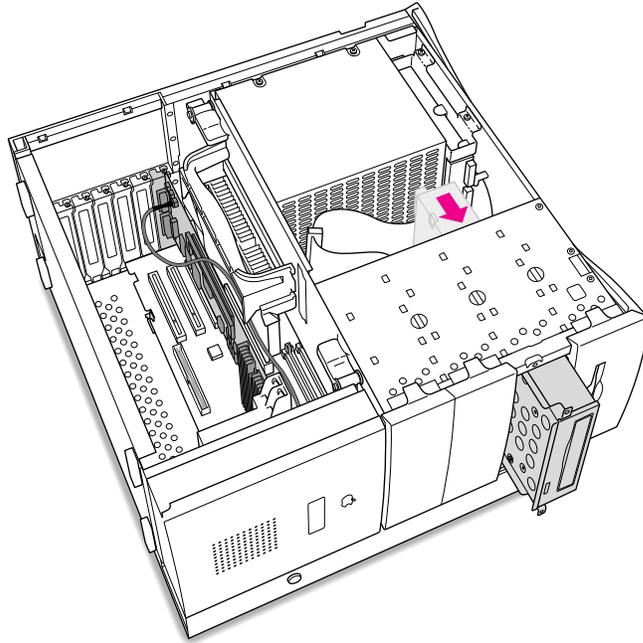
Release the faceplate by lifting up on the tab in front of the CD-ROM drive at the front of the computer.



21 Remove the screws and metal shield in front of the CD-ROM drive.



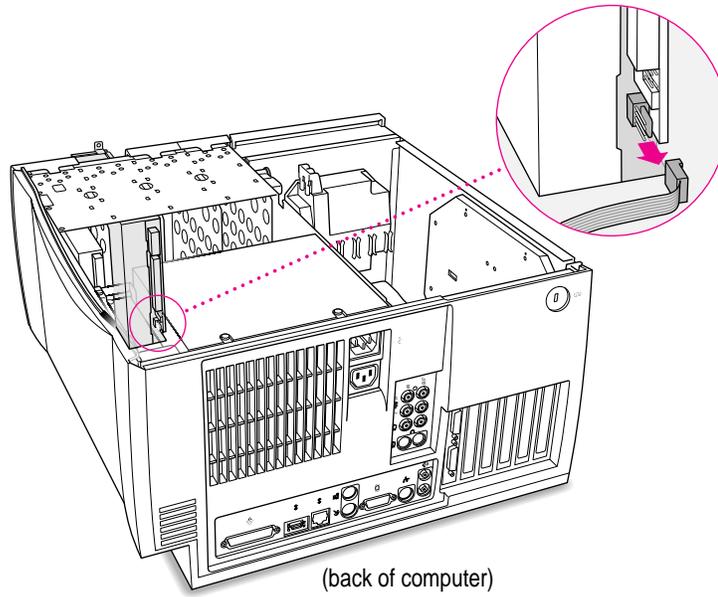
- 22** Push the CD-ROM drive forward until its back end is flush with the edge of the metal plate above the drive.



Connecting the CD In cable

- 23** Disconnect the audio ribbon cable from the back of the CD-ROM drive.

Be sure to pull on the plug, not the cable. Just leave the disconnected cable in the computer; you will need to reinstall it if you ever remove your PC Compatibility Card.

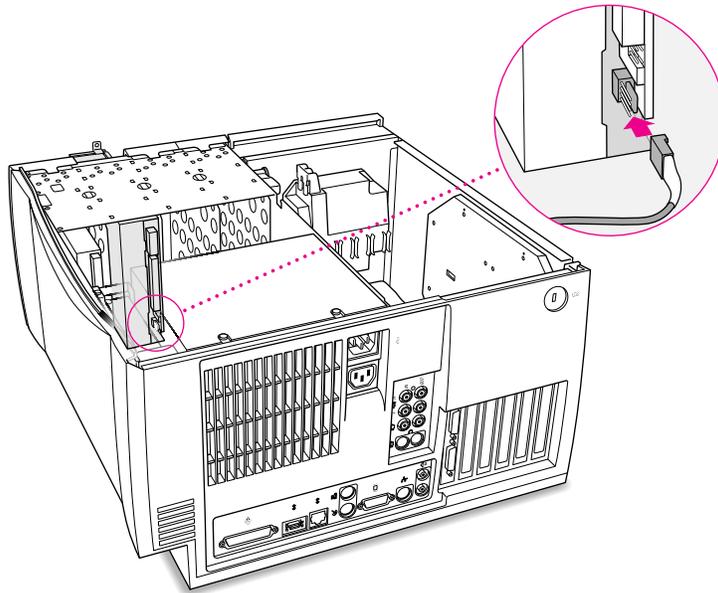


24 Insert the larger plug on the other SCSI audio cable into the back of the CD-ROM drive.

For most models of the 8600 and 9600, you can use the SCSI audio cable, which has a thick plug and looks identical to the cable you connected to the logic board.

Try inserting this plug into the back of the CD-ROM drive, where you just unplugged the ribbon cable.

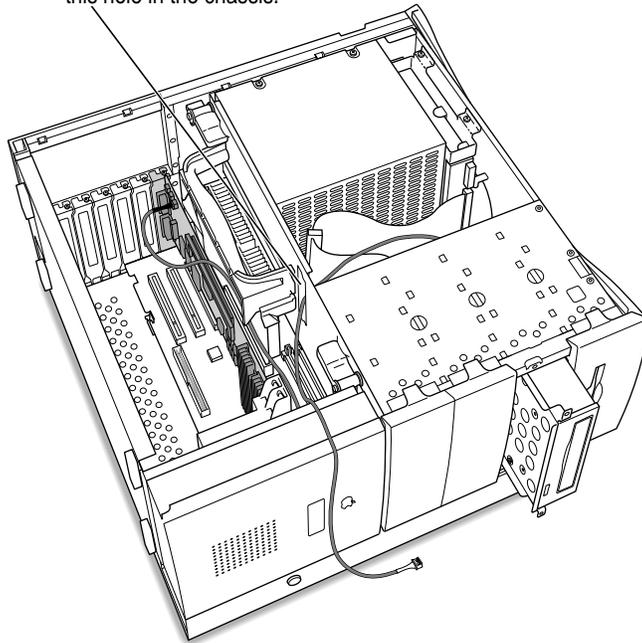
If the plug looks too thick and does not easily fit into the back of the CD-ROM drive, your computer may have a different kind of drive. Try using the ATAPI CD audio cable, with the thinner, slightly smaller plug.



25 Route the cable through the interior of the computer.

Route the audio cable through the metal slot in the chassis.

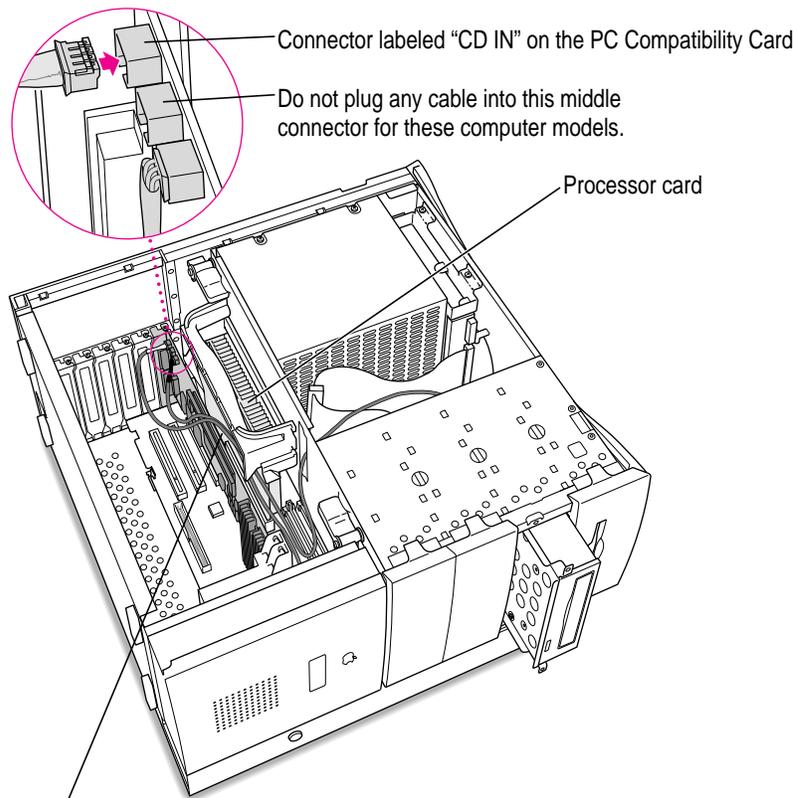
Route the cable through
this hole in the chassis.



- 26** Plug the other end of the audio cable into the connector labeled “CD IN” on the PC Compatibility Card.

The CD In connector is in the far upper-left corner of the card, next to the Sound Out Connectors.

Position the CD In cable so that it lies next to the Sound Out cable, between the PC Compatibility Card and the processor card.

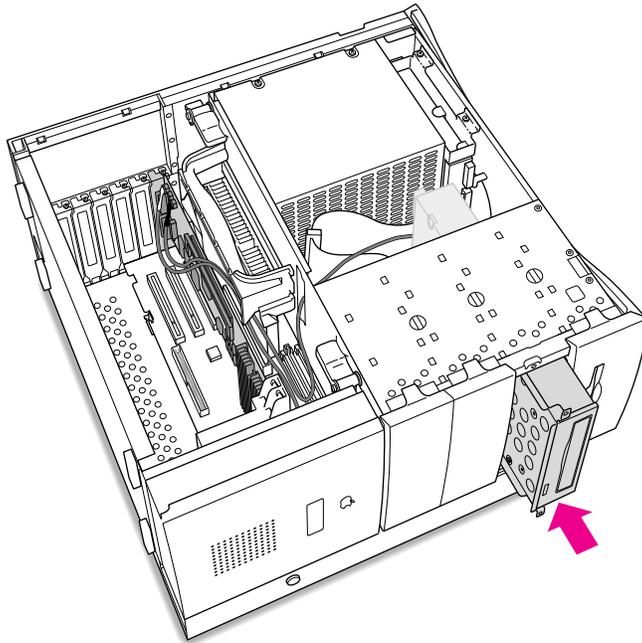


Route the cable so that it passes between the processor card and the PC Compatibility Card.

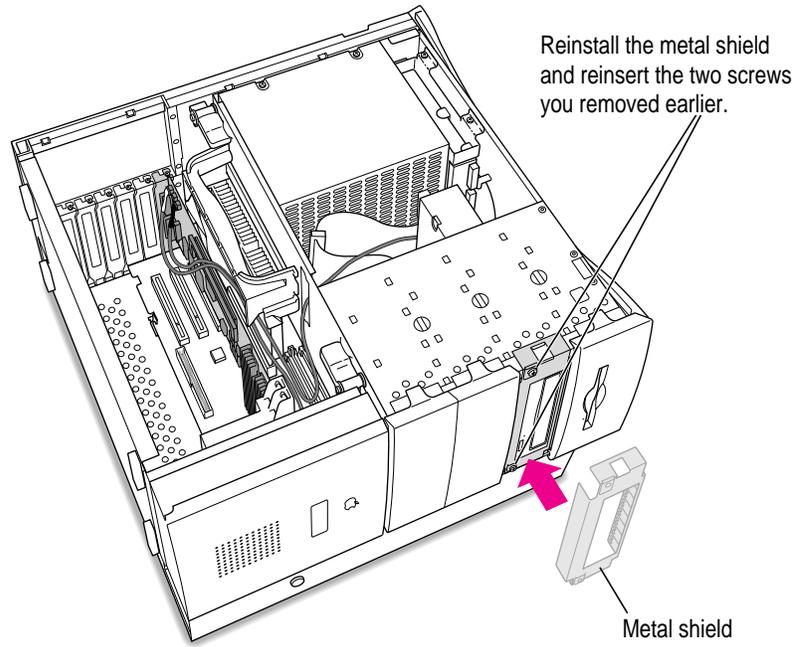
IMPORTANT If you are installing the PC Serial and Parallel Card, you should insert it now. See the PC Serial and Parallel Card manual for instructions.

Replacing the CD-ROM drive

- 27 Slide the CD-ROM drive back into its original position.

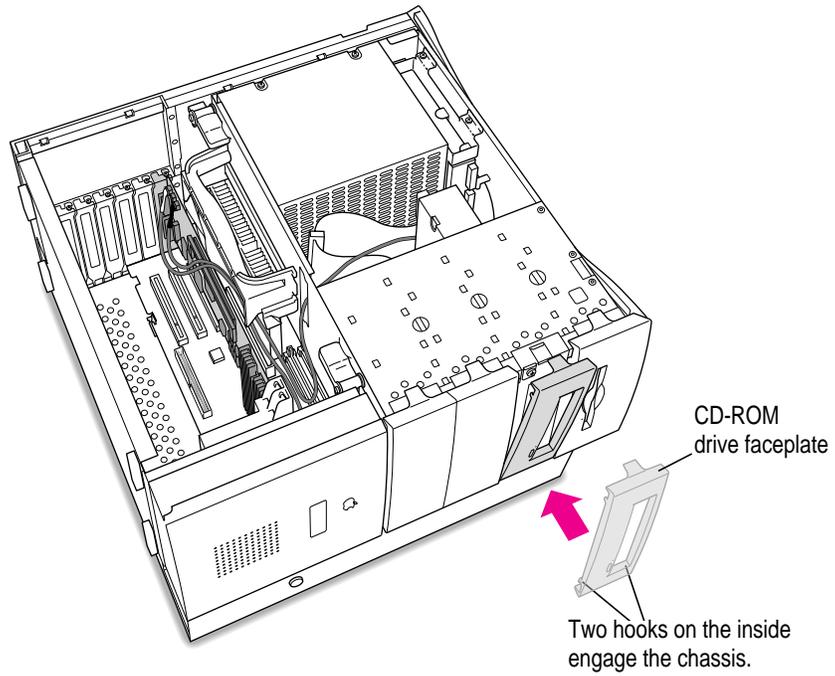


28 Replace the metal shield in front of the CD-ROM drive, and reinsert the screws.



29 Replace the faceplate in front of the metal shield.

Position the faceplate by hooking the tabs into the open slots, and snap the faceplate into place.

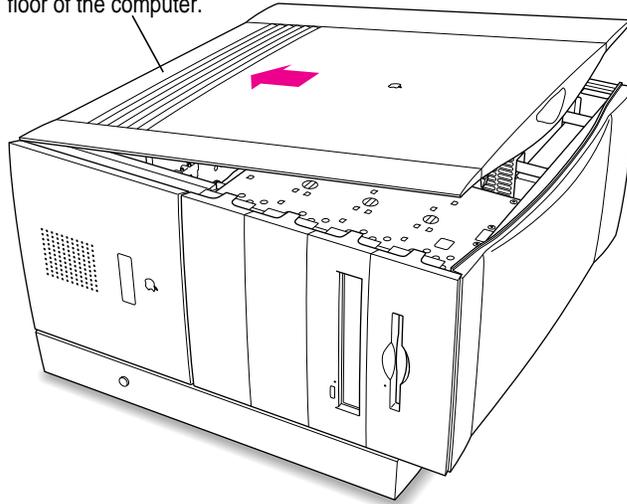


Replacing the computer cover

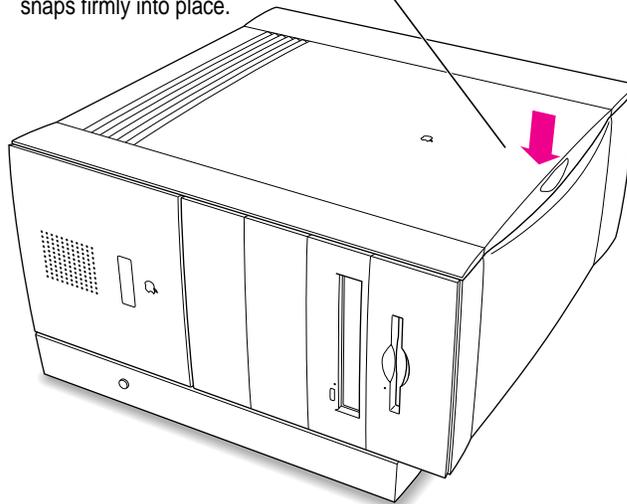
- 30 Make sure all cables and cards are firmly connected.
- 31 Replace the computer cover.

Align the bottom edge of the cover panel with the computer as shown below. Then press down on the cover panel until it snaps into place.

Fit the bottom edge of the cover panel into the floor of the computer.



Press down on the top edge of the cover panel until it snaps firmly into place.



32 Lift up the computer so that it sits upright.

33 Reconnect the power cord and any other equipment cables.

You are now finished installing your PC Compatibility Card.

What's next?

Next, go to Chapter 5, “Connecting Monitors and Other Equipment.”

Then go to Chapters 6 through 9 for instructions on installing and using your software.

5

Connecting Monitors and Other Equipment



You can use a single monitor to switch between the PC environment and the Mac OS environment. Or you can simultaneously display both environments on two monitors.

To learn how to connect your monitors, first read about using the loopback cable on the next page. Then turn to the section on connecting a single monitor or the section on connecting two monitors. Follow the instructions for your model of Macintosh computer. If you have an AudioVision or AppleVision monitor, turn to the section with additional instructions for these monitors.

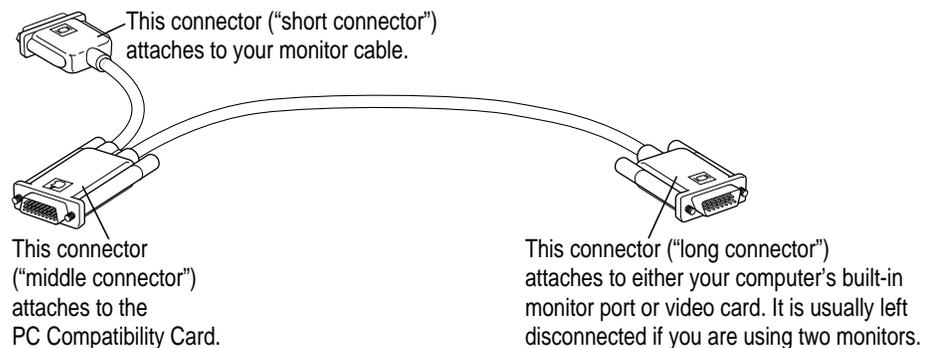
After you've connected your monitor, read the end of this chapter to find out how to connect other equipment.



Using the loopback cable

Your PC Compatibility Card came with a loopback cable. It has three connectors: middle, long, and short. No matter how you connect your monitor(s), these connectors always attach to the same ports:

- The middle connector attaches to the port on your PC Compatibility Card; this is the port that lets you see the PC environment.
- The long connector attaches to either your computer's built-in monitor port, or to a video card (you may leave this end disconnected if you are using two monitors).
- The short connector attaches to your monitor cable.



IMPORTANT A previous product, the DOS Compatibility Card, came with a different loopback cable that has four connectors on it instead of three. That cable does not work with your PC Compatibility Card.

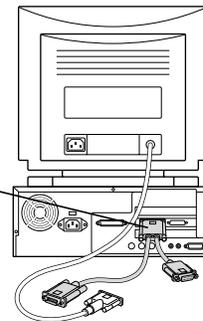
Connecting a single monitor

Connecting a monitor to your Power Macintosh 4400 or 7220

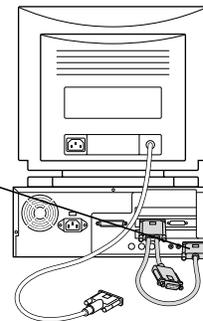
Before you begin, shut down your computer, turn off your monitor, and unplug all equipment. Then follow these steps using the loopback cable:

WARNING Do not plug a monitor into the joystick port (marked with the icon ) and do not plug a joystick into a monitor port (marked with the icon ). Serious damage can result to your equipment.

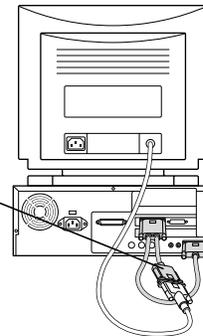
- 1 Plug the middle connector on the loopback cable into the left port on your PC Compatibility Card. This connector has a triple row of pins and an Apple () icon on either side.



- 2 Plug the long connector on the loopback cable into the built-in monitor port (or video card if one is installed).



- 3 Plug the short connector on the loopback cable into your monitor's cable. This connector has an Apple () icon on one side and a monitor () icon on the other.

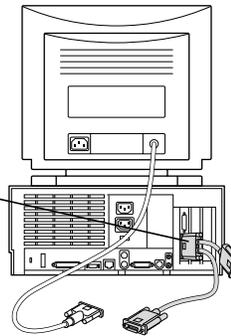


Connecting a monitor to your Power Macintosh 7200, 7300, 7500, or 7600

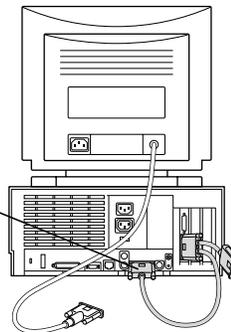
Before you begin, shut down your computer, turn off your monitor, and unplug all equipment. Then follow these steps using the loopback cable:

WARNING Do not plug a monitor into the joystick port (marked with the icon ) and do not plug a joystick into a monitor port (marked with the icon ) . Serious damage can result to your equipment.

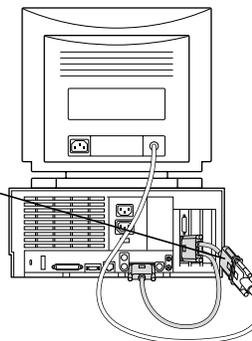
- 1** Plug the middle connector on the loopback cable into the bottom port on your PC Compatibility Card. This connector has a triple row of pins and an Apple () icon on either side.



- 2** Plug the long connector on the loopback cable into the built-in monitor port (or video card if one is installed).



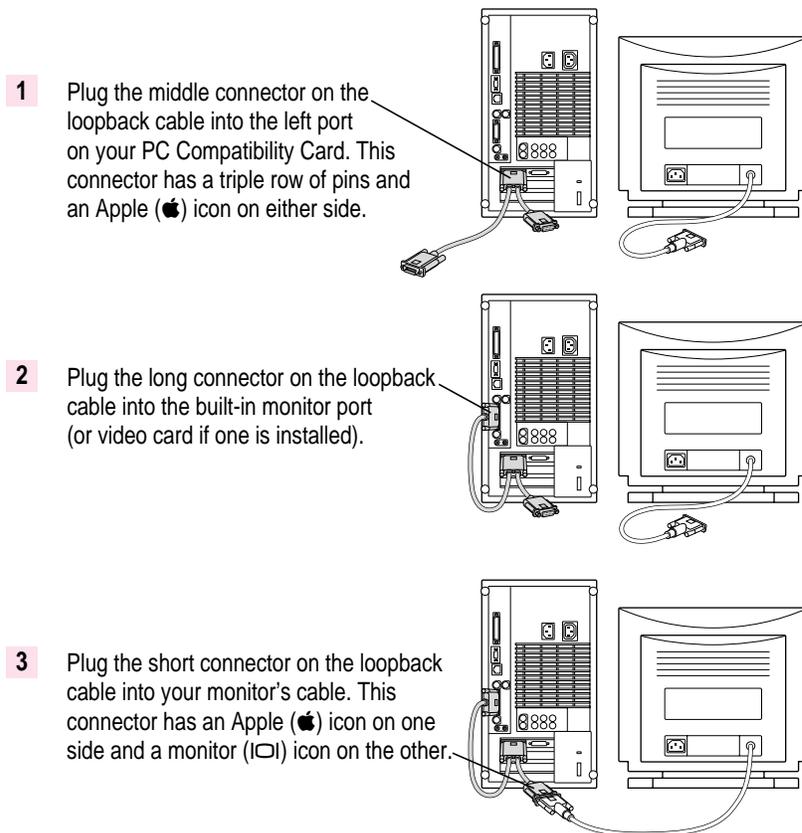
- 3** Plug the short connector on the loopback cable into your monitor's cable. This connector has an Apple () icon on one side and a monitor () icon on the other.



Connecting a monitor to your Power Macintosh 8500

Before you begin, shut down your computer, turn off your monitor, and unplug all equipment. Then follow these steps using the loopback cable:

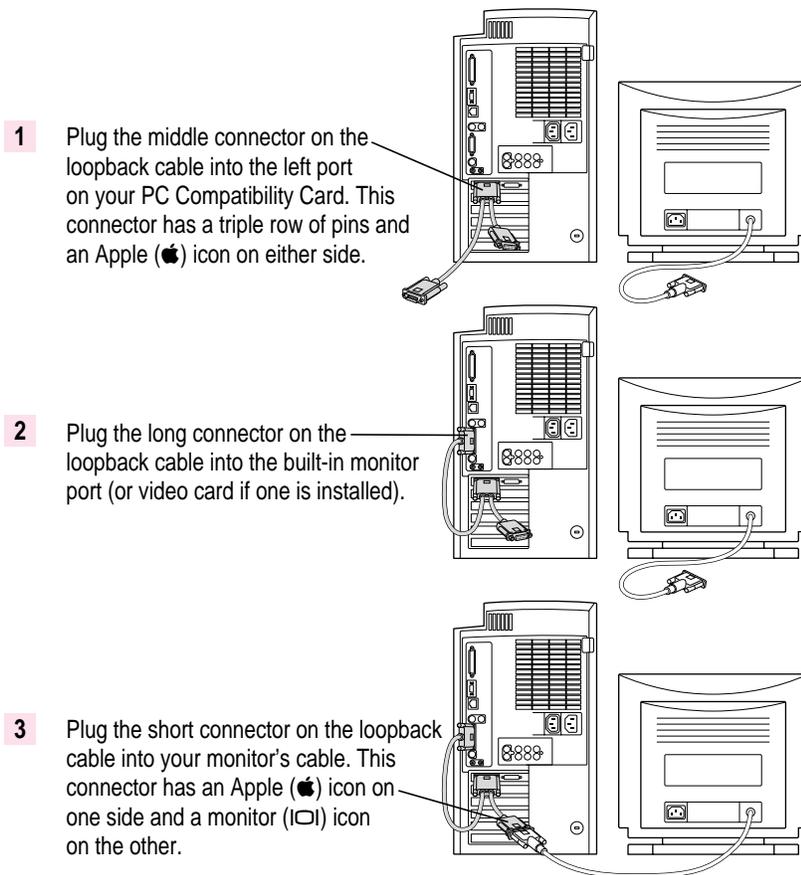
WARNING Do not plug a monitor into the joystick port (marked with the icon ) , and do not plug a joystick into a monitor port (marked with the icon ). Serious damage can result to your equipment.



Connecting a monitor to your Power Macintosh 8600

Before you begin, shut down your computer, turn off your monitor, and unplug all equipment. Then follow these steps using the loopback cable:

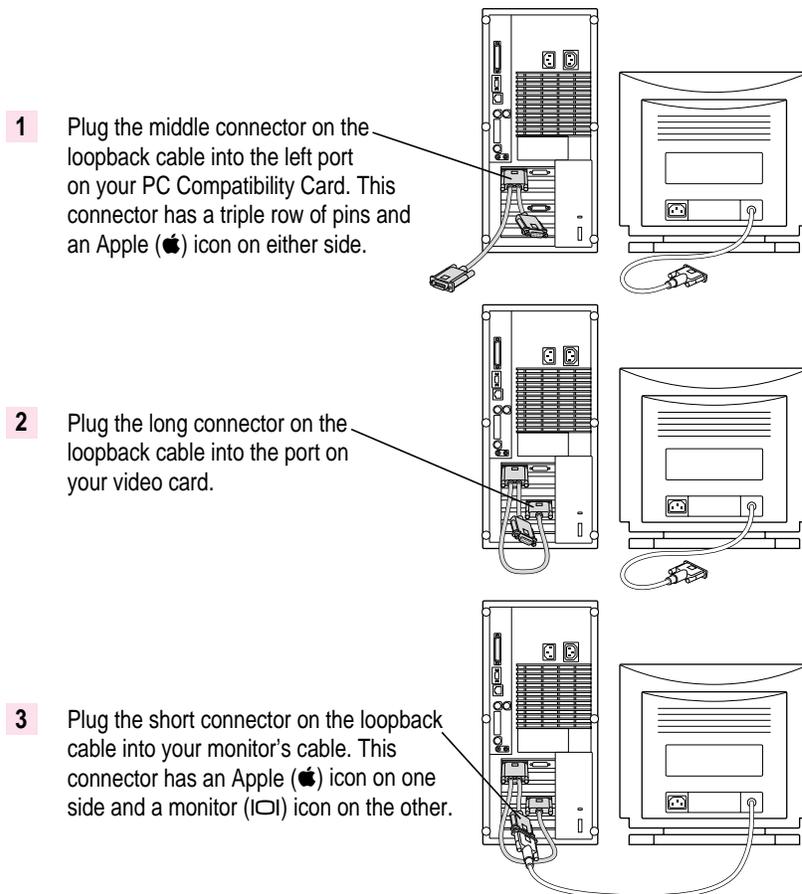
WARNING Do not plug a monitor into the joystick port (marked with the icon ) and do not plug a joystick into a monitor port (marked with the icon ). Serious damage can result to your equipment.



Connecting a monitor to your Power Macintosh 9500

Before you begin, shut down your computer, turn off your monitor, and unplug all equipment. Then follow these steps using the loopback cable:

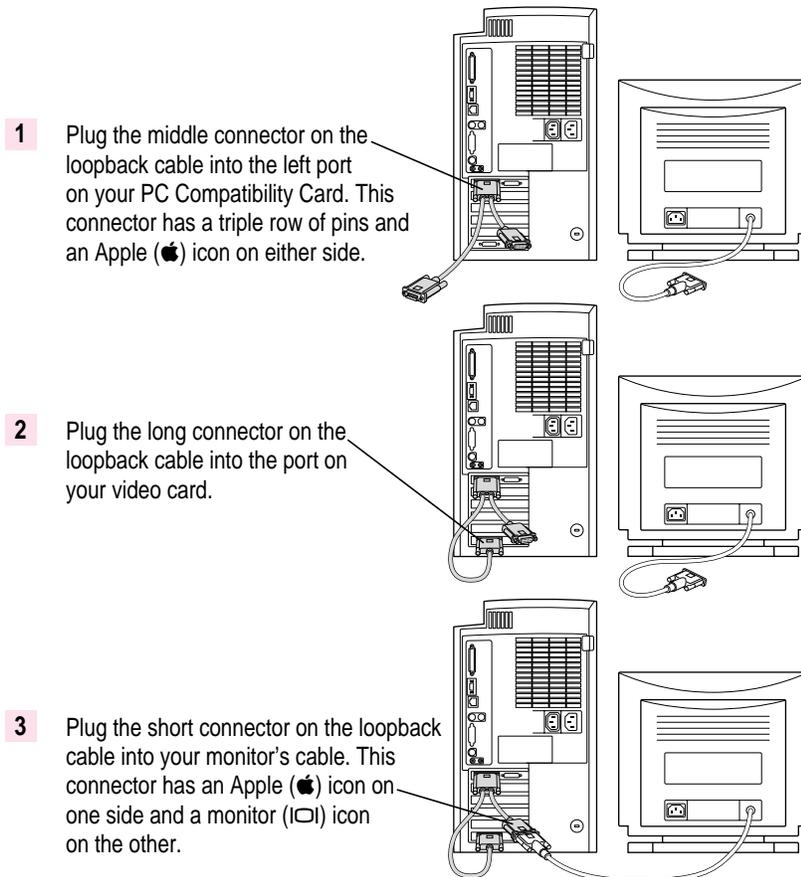
WARNING Do not plug a monitor into the joystick port (marked with the icon ) , and do not plug a joystick into a monitor port (marked with the icon ) . Serious damage can result to your equipment.



Connecting a monitor to your Power Macintosh 9600

Before you begin, shut down your computer, turn off your monitor, and unplug all equipment. Then follow these steps using the loopback cable:

WARNING Do not plug a monitor into the joystick port (marked with the icon ) and do not plug a joystick into a monitor port (marked with the icon ). Serious damage can result to your equipment.



Connecting two monitors

If you connect two monitors, you see the Mac OS environment on one and the PC environment on the other. The monitor connected to the PC Compatibility Card shows the PC environment. You can also switch between Mac OS and PC environments on this monitor if you have a video card.

You can use any combination of Mac OS-compatible and PC-compatible monitors (with the proper cable adapters, available from your monitor vendor or Apple-authorized dealer).

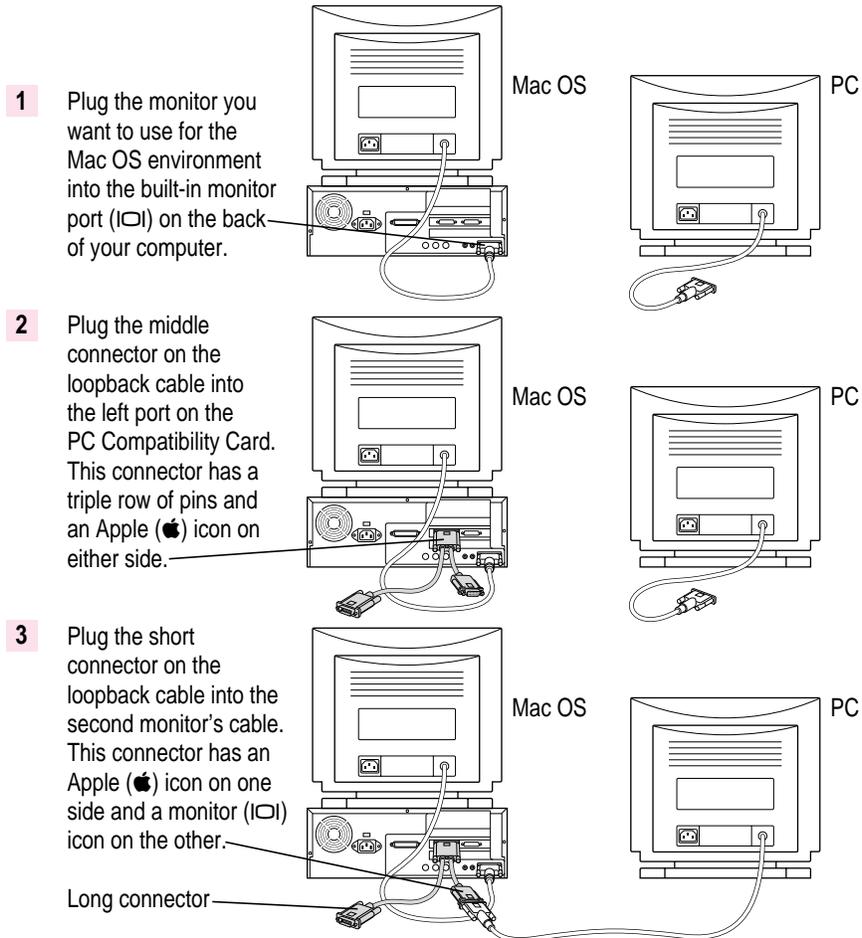
Multiple-scan monitor: If you want to use a multiple-scan monitor from a manufacturer other than Apple to display the PC environment, you also need to use a VGA-to-Macintosh adapter (available from your computer vendor). You connect this adapter between the monitor's cable and the loopback cable.

IMPORTANT Before you begin, shut down your computer, turn off your monitor, and unplug all equipment. Then follow the steps in the section for your Macintosh computer.

WARNING Do not plug a monitor into the joystick port (marked with the icon ) , and do not plug a joystick into a monitor port (marked with the icon ). Serious damage can result to your equipment.

Connecting two monitors to your Power Macintosh 4400 or 7220

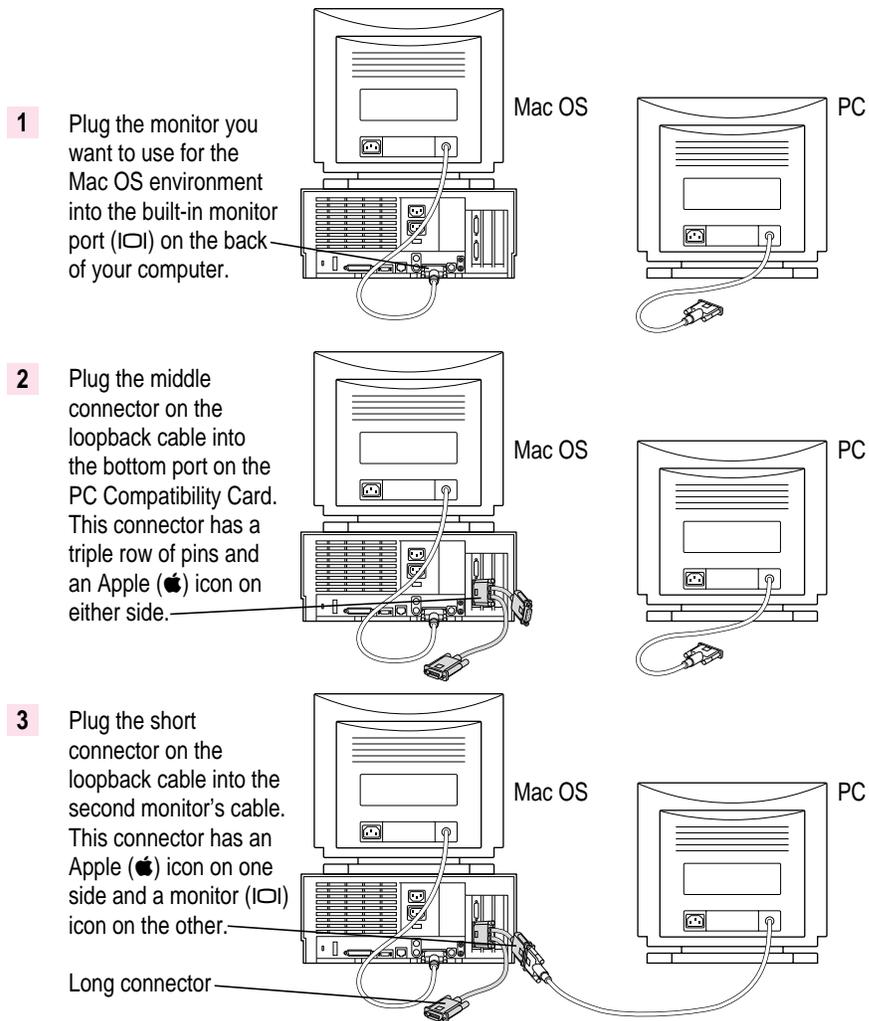
To connect two monitors to your Power Macintosh 4400 or 7220, follow these steps using your loopback cable:



You can leave the long connector unplugged. Or, if you have a video card and want one monitor to switch between the Mac OS and PC environments, you can plug the long connector into the video card port.

Connecting two monitors to your Power Macintosh 7200, 7300, 7500, or 7600

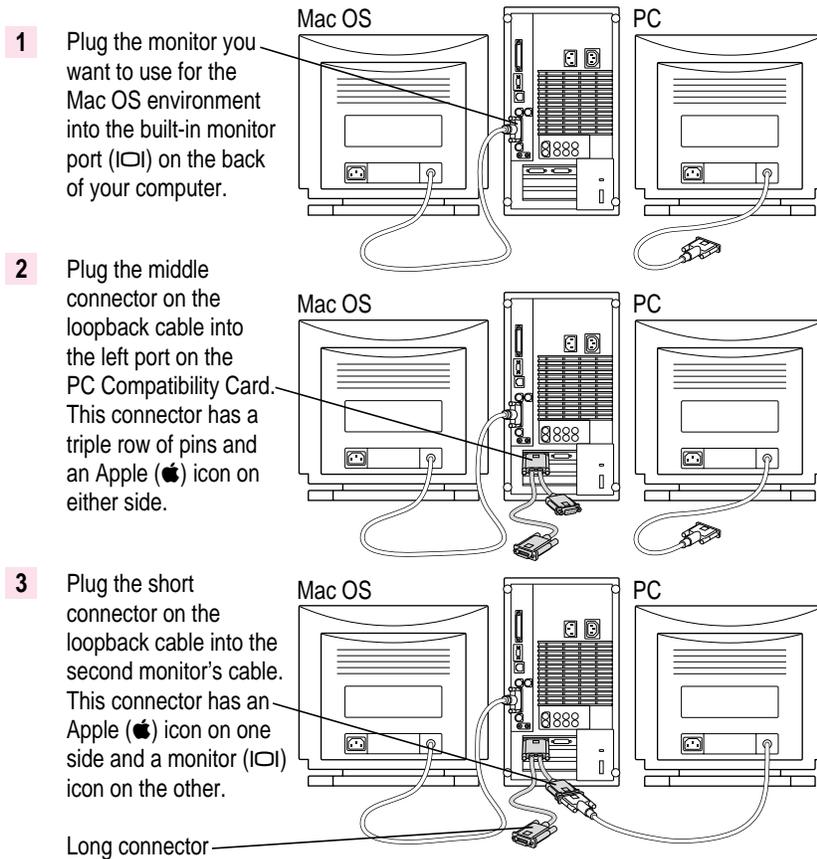
To connect two monitors to your Power Macintosh 7200, 7300, 7500, or 7600, follow these steps using your loopback cable:



You can leave the long connector unplugged. Or, if you have a video card and want one monitor to switch between the Mac OS and PC environments, you can plug the long connector into the video card port.

Connecting two monitors to your Power Macintosh 8500

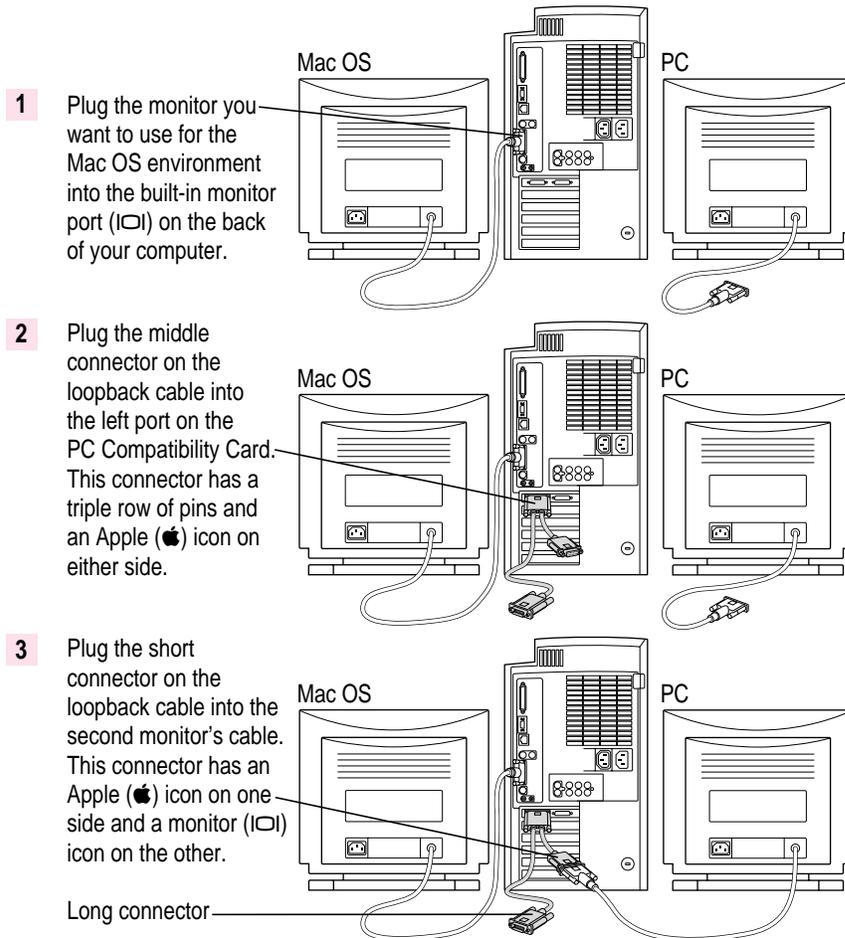
To connect two monitors to your Power Macintosh 8500, follow these steps using your loopback cable:



You can leave the long connector unplugged. Or, if you have a video card and want one monitor to switch between the Mac OS and PC environments, you can plug the long connector into the video card port.

Connecting two monitors to your Power Macintosh 8600

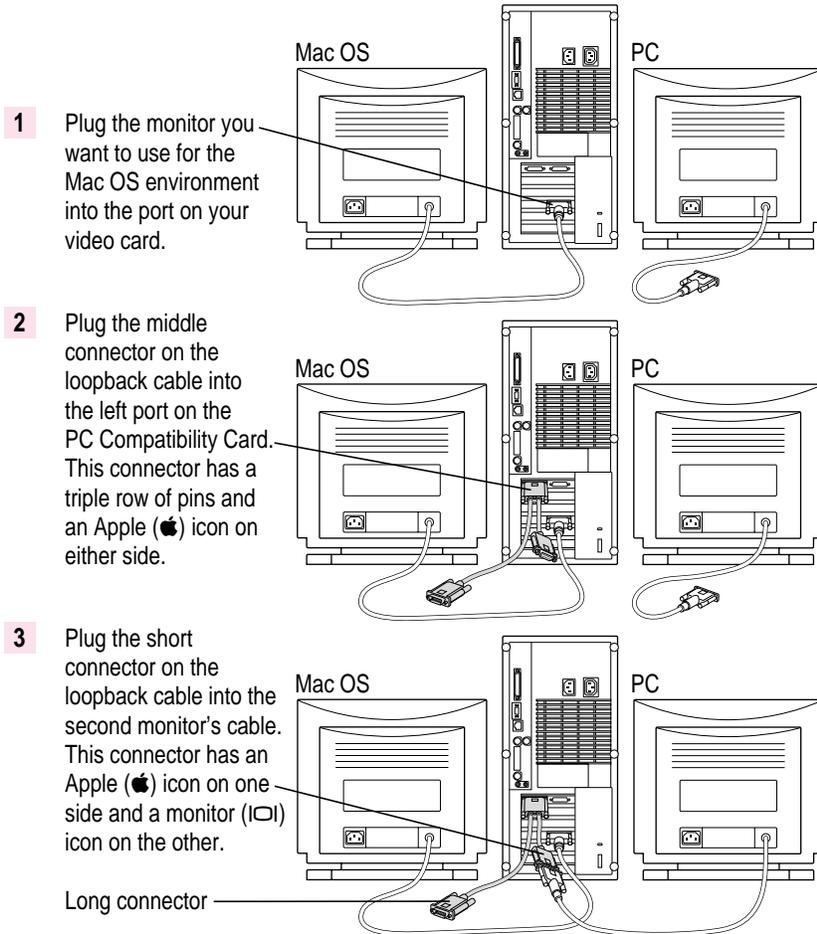
To connect two monitors to your Power Macintosh 8600, follow these steps using your loopback cable:



You can leave the long connector unplugged. Or, if you have a video card and want one monitor to switch between the Mac OS and PC environments, you can plug the long connector into the video card port.

Connecting two monitors to your Power Macintosh 9500

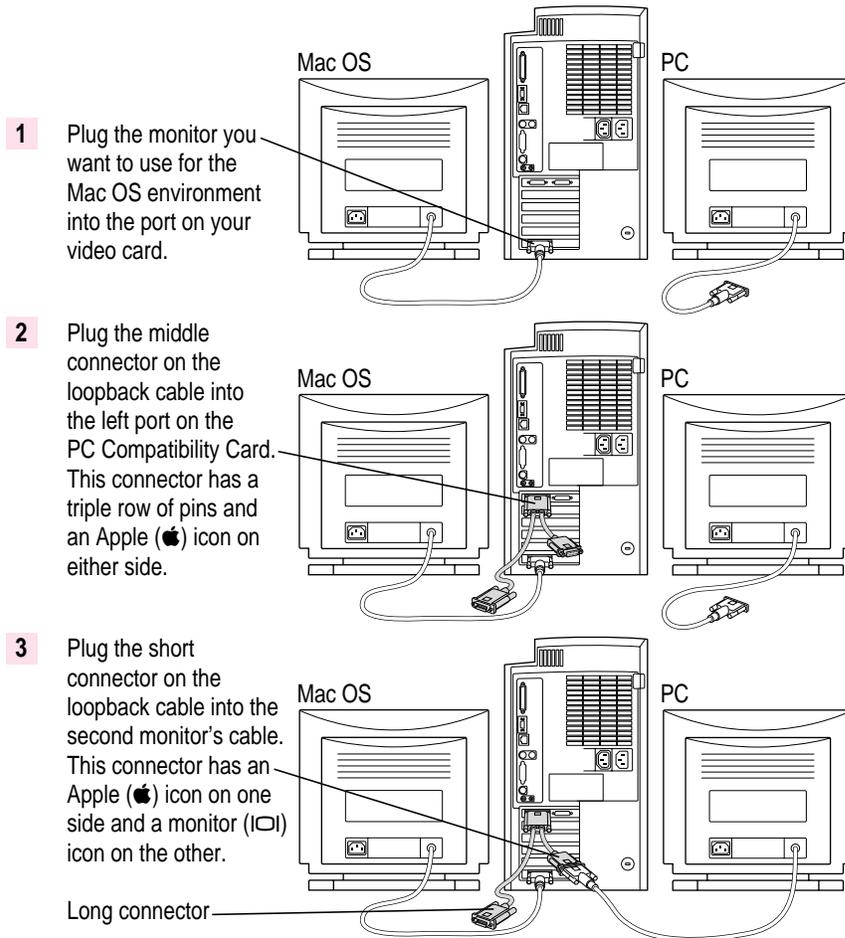
To connect two monitors to your Power Macintosh 9500, follow these steps using your loopback cable:



You can leave the long connector unplugged. Or, if you have an extra video card and want one monitor to switch between the Mac OS and PC environments, you can plug the long connector into the video card port.

Connecting two monitors to your Power Macintosh 9600

To connect two monitors to your Power Macintosh 9600, follow these steps using your loopback cable:



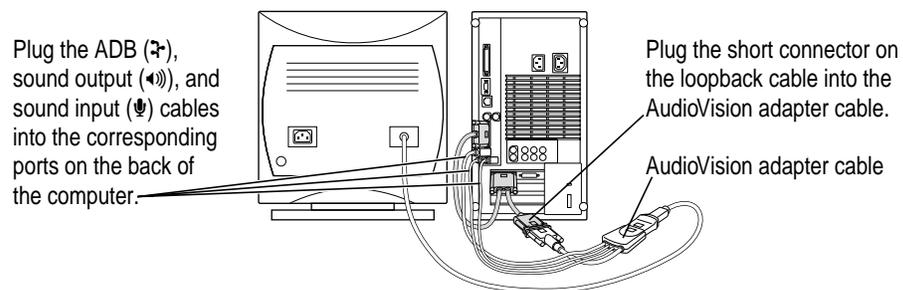
You can leave the long connector unplugged. Or, if you have an extra video card and want one monitor to switch between the Mac OS and PC environments, you can plug the long connector into the video card port.

Connecting an AudioVision monitor

To connect an AudioVision monitor to your Macintosh computer, first connect the loopback cable to the appropriate ports on your computer as you would with any other monitor:

- Plug the middle connector on the loopback cable into the PC Compatibility Card port with the triple row of pins and Apple (🍏) icon on either side.
- Plug the long connector on the loopback cable into the computer's built-in monitor port or video card.

Then plug the short end of the loopback cable into the AudioVision adapter cable. Plug the remaining cables into the corresponding ADB, sound input, and sound output ports on the back of your computer. (For more information, see the manual that came with your AudioVision monitor.)



Connecting an AppleVision monitor

You connect your AppleVision monitor like any other monitor, except you also have to connect an extra cable—the ADB cable, which is thinner than the others. Plug this cable into the ADB port (marked with ⌘) on the back of your computer. (For more information, see the manual that came with your AppleVision monitor.)

If you are using an AppleVision monitor to display the PC environment only, you will need to adjust the video manually, by pressing the buttons on the monitor.

Connecting a pointing device

If you have a standard ADB (Apple Desktop Bus) one-button mouse or other pointing device, you can simulate the behavior of a two-button PC mouse using keys on your keyboard. For more information, see the section “Using a Pointing Device” in Chapter 8.

You can also use an ADB multi-button mouse or other pointing device and configure it to work as a PC mouse. To use a multi-button pointing device in the PC environment, you will need to install the appropriate software. See the manual that came with your computer and pointing device for more information.

You can connect a pointing device to any available ADB port (marked with ) on your Macintosh computer.

Pointing devices designed specifically for a PC are not recommended for use with your Macintosh computer.

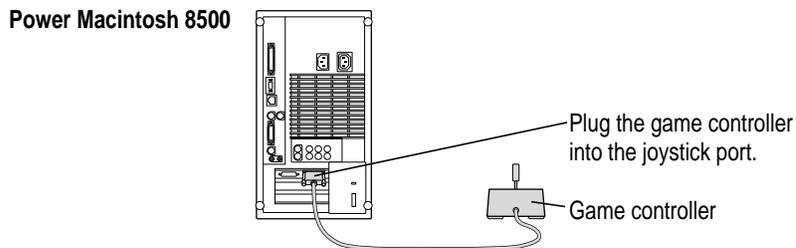
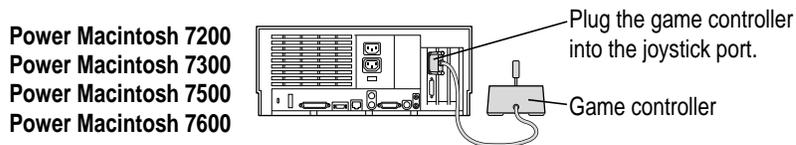
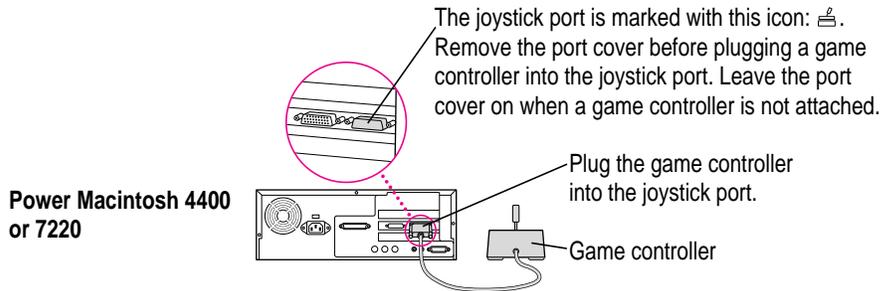
Connecting a MIDI device

You can connect a MIDI (musical instrument digital interface) device to the game controller port that comes on some models of the PC Compatibility Card. To connect a MIDI device, you need a Sound Blaster-compatible MIDI-to-joystick adapter (available from your computer dealer). For instructions on connecting devices to the joystick port, see the next section, “Connecting a PC Game Controller.”

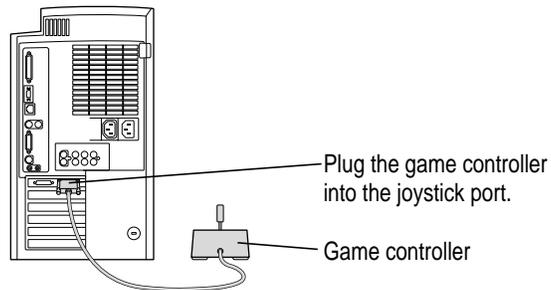
Connecting a PC game controller

Your PC Compatibility Card comes with a game controller port. To connect a PC game controller, such as a joystick, remove the plastic cover on the game controller port, then plug your game controller into the port.

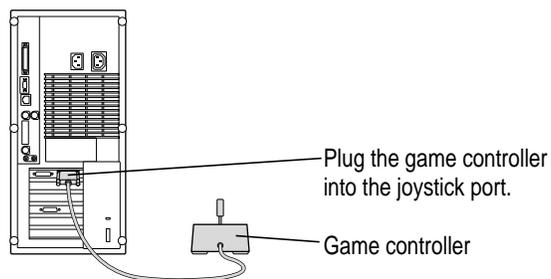
WARNING Do not plug a monitor into the joystick port (marked with the icon ) and do not plug a joystick into a monitor port (marked with the icon ). Serious damage can result to your equipment.



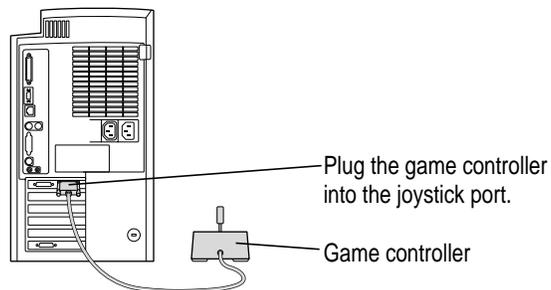
Power Macintosh 8600



Power Macintosh 9500



Power Macintosh 9600



Connecting a printer

You can print from the PC environment to any printer connected to your Macintosh computer.

You can also purchase a PC Serial and Parallel Card (available from your Apple-authorized dealer), which allows you to connect a PC-compatible printer. A printer connected to this card can print only from the PC environment. You can also purchase a package such as GDT's PowerPrint.

For more information, see "Setting Printer Options" in Chapter 7.

Connecting to a network

You can connect to shared disks on an AppleTalk or other Mac OS–compatible network, using the Mac OS file-sharing feature.

By installing the appropriate networking software, you can also connect your computer to a PC-compatible network, such as a Novell NetWare network.

For more information, see the section “Setting Up Your PC on a Network” in Chapter 7, and also Appendix C, “Installing Network Client Software.”

Connecting a modem or other serial device

Even in the PC environment, you can use a modem or other serial device connected to the Macintosh serial port. Macintosh computers do not have the same serial interface that PCs have, so your modem or communications software may require adjustment when connected to this port.

You can also connect your modem to a PC Serial and Parallel Card (available from your Apple-authorized dealer), which has a true RS-232 PC serial interface. A modem or other serial device connected to this card can only be accessed from the PC environment.

For more information, see Chapter 7, “Setting Up the PC Environment.”

Connecting a security dongle

If your PC software requires a security dongle, you can connect it by purchasing a PC Serial and Parallel Card (available from your Apple-authorized dealer).

6

Installing the PC Compatibility Card Software



This chapter describes how to install software for your PC Compatibility Card.

The PC floppy disk and CDs that came with your PC Compatibility Card contain the necessary software for using the card in both the Macintosh and PC environments. In addition, DOS installation disks are provided so that you can install a basic operating system for the PC environment. Additional operating systems described in this manual, such as Windows 3.1 and Windows 95, must be purchased separately.

In preparation for installation, you will need the following items that came with your PC Compatibility Card:

- *PC Compatibility Card–Mac OS Software* CD
- *DOS Installation* floppy disks
- *PC Compatibility Card–PC Software* floppy disk
- *PC Compatibility Card–PC Utilities* CD

If you are planning on installing Windows or Windows 95, you will also need one of the following items (not included):

- Windows installation floppy disks
- Windows 95 installation CD or floppy disks

IMPORTANT The Windows 95 upgrade CD will not install Windows 95 on your drive container unless you have a previous version of Windows available (either on the drive container or on a Microsoft installation disk). If you have not previously installed a version of Windows on your drive container, or you don't have a Microsoft Windows installation disk, then you will need the "full install" version of Windows 95 (not the upgrade CD).

There are several steps to installing your PC Compatibility Card software:

- installing the Mac OS software
- creating a storage area (called a *drive container*) for your PC software
- installing DOS
- installing support software for DOS
- installing Microsoft Windows and support software for Windows (optional)
- installing PC utilities (optional)
- installing your own PC software

To learn how to set up and use the software once you have installed it, refer to Chapter 7, "Setting Up the PC Environment" and Chapter 8, "Working in the PC Environment."

Installing Mac OS software

The Mac OS software for operating your PC Compatibility Card is on the *PC Compatibility Card–Mac OS Software* CD that came with your card.

Installing System 7.5.3

If your computer does not have system software version 7.5.3 or greater, you must install System 7.5.3 from the *PC Compatibility Card–Mac OS Software* CD.

To install System 7.5.3, follow these steps:

- 1** Insert the *PC Compatibility Card–Mac OS Software* CD into the CD-ROM drive.

If necessary, double-click the CD icon to open it.

- 2** Double-click the **System Software Installs** folder to open it.
- 3** Double-click the **System 7.5 Version 7.5.3** folder to open it.
- 4** Double-click the **System Software** folder to open it.
- 5** Double-click the **Installer** icon.

A message may appear describing the Installer software. Click OK.

The Installer window appears.

- 6** Make sure the disk named in the box is the one on which you want to install software.

If not, click Switch Disk until the correct disk name appears.

Note: If you want to install only specific components, choose Custom Install from the Easy Install menu. In the Custom Install window, click to place an X in the boxes next to the components you want to install. Click the information symbol for more information about a component.

- 7** Click **Install**.

Installing Open Transport

If your computer does not have Open Transport 1.1.1 or greater, you must install it from the *PC Compatibility Card–Mac OS Software* CD.

- 1** Insert the *PC Compatibility Card–Mac OS Software* CD into the CD-ROM drive.

If necessary, double-click the CD icon to open it.

- 2** Double-click the **System Software Installs** folder to open it.

- 3** Double-click the **Open Transport 1.1.1** folder to open it.

- 4** Double-click the **Install 1** folder to open it.

- 5** Double-click the **Installer** icon.

A message may appear describing the Installer software. Click OK.

The Installer window appears.

- 6** Make sure the disk named in the box is the one on which you want to install software.

If not, click **Switch Disk** until the correct disk name appears.

- 7** Click **Install**.

Installing the Mac OS PC Compatibility software

To install the Mac OS software for operating your PC Compatibility Card, follow these steps:

- 1** Insert the *PC Compatibility Card–Mac OS Software* CD into the CD-ROM drive.

If necessary, double-click the CD icon to open it.

- 2** Double-click the **PC Compatibility Software** folder to open it.

- 3** Double-click the **Installer** icon in the **PC Compatibility** folder.

A message may appear describing the Installer software. Click OK.

The Installer window appears.

4 Make sure the disk named in the box is the one on which you want to install software.

If not, click Switch Disk until the correct disk name appears.

Note: If you want to install only specific components, choose Custom Install from the Easy Install menu. In the Custom Install window, click to place an X in the boxes next to the components you want to install. Click the information symbol for more information about a component.

5 Click Install.

The software is automatically installed on your hard disk.

6 When the installation is complete, follow the instructions on the screen to quit the Installer and restart your computer.

The following Mac OS software is now installed for use with your PC Compatibility Card:

Name	Location
PC Setup	Control Panels folder
Ethernet (built-in)	Extensions folder
PC Compatibility Guide	Extensions folder
PC Clipboard	Extensions folder
PC Net Exchange	Extensions folder
PC Network Extension	Extensions folder
PC Print Spooler	Extensions folder
PC Setup Switch	Control Strip Modules

Installing mouse software

If you have a multibutton Mac OS-compatible mouse you may be able to use the right mouse button in the PC environment. Refer to the instructions that came with your mouse. For more information about using your mouse in the PC environment, see “Using a Pointing Device” in Chapter 8, “Working in the PC Environment.”

Creating a drive container

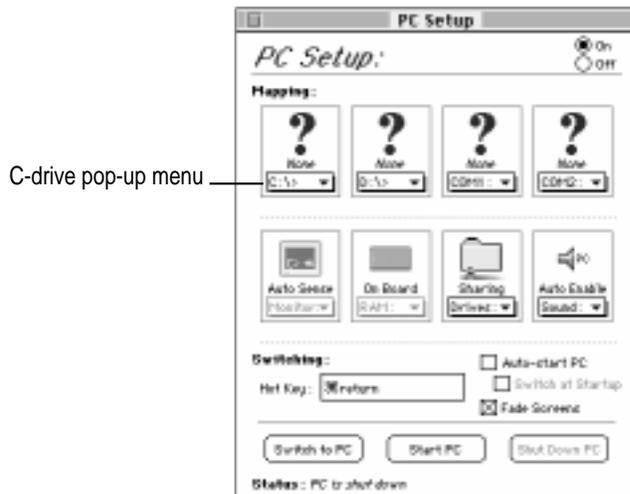
A drive container is a file on your computer's hard disk that acts as a hard drive for the PC. You create a drive container using the PC Setup control panel.

- 1 Choose Control Panels from the Apple () menu.
- 2 Double-click the PC Setup icon to open the PC Setup control panel.



PC Setup

- 3 Click Start PC.



Note: If you want the PC to start automatically when the Mac OS starts up, click the box labeled “Auto-start PC” to place an X in it.

- 4 Choose New Drive File from the C drive pop-up menu.

A dialog box appears.



- 5 Choose a location for the drive container.

The drive container can be on any hard disk attached to the computer that has sufficient free space.

- 6 Type a name for the drive container, then press the Tab key.

You can type up to 31 characters.

- 7 Type a size (in MB) for the drive container.

You can make the container as small as 2 MB or as large as 1023 MB. The amount of space you need depends on the software you want to install. If you are installing DOS and a few small applications, you'll need about 100 MB. If you are installing Microsoft Windows, you'll need at least 150 MB. If you are installing Microsoft Windows 95, you'll need at least 200 MB.

IMPORTANT Once a drive container is created, its size cannot be changed. Before choosing a size for your drive container, decide which PC operating system and applications you want to run. Check the documentation that came with the software to estimate how much space you'll need; then allow some extra room for applications. If you still run out of space on the drive container, you can create another drive container and assign it to drive D.

8 Make sure Initialize Drive File is checked.

The Initialize Drive File option is used to create a drive container with a single partition. A single partition drive container is recommended for most standard installations. However, you can create a drive container with multiple partitions. See “Creating a Multiple Partition/Bootable Drive Container” in Chapter 7, “Setting Up the PC Environment,” if you need a drive container with multiple partitions.

9 Click Create.

Installing DOS

Once the drive container is created, the next step is to install DOS software in it. You can think of a new drive container as a formatted hard drive that needs an operating system in order to make it a startup disk. You need to install DOS before you can install any applications (including Windows). Find the DOS installation disks that came with your PC Compatibility Card and follow these steps:

1 Open the PC Setup control panel and click “Switch to PC.”

The Mac OS desktop disappears. (If you set up a dedicated monitor for the PC environment, the image on the Mac OS monitor dims.) In the PC environment you’ll see a message about a missing operating system or disk error. This message indicates that the PC has started up and not found any operating system.

2 Insert the first DOS installation floppy disk and press the Space bar to continue.

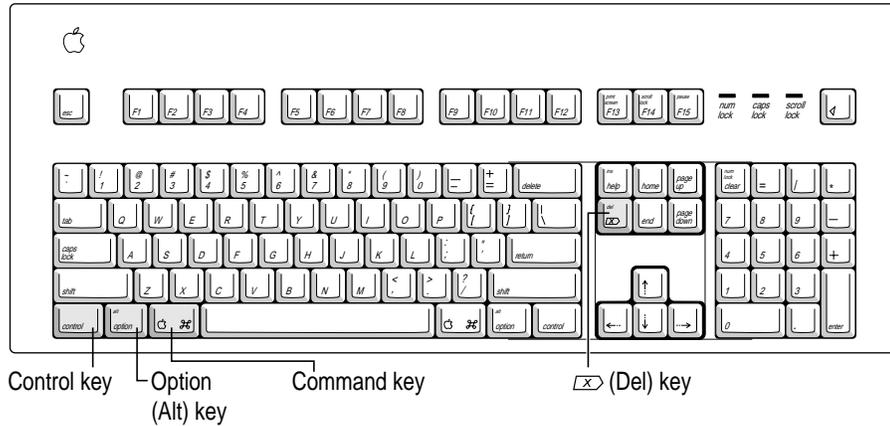
3 Follow the instructions that appear on the screen.

Press ⌘-E to eject a disk when necessary.

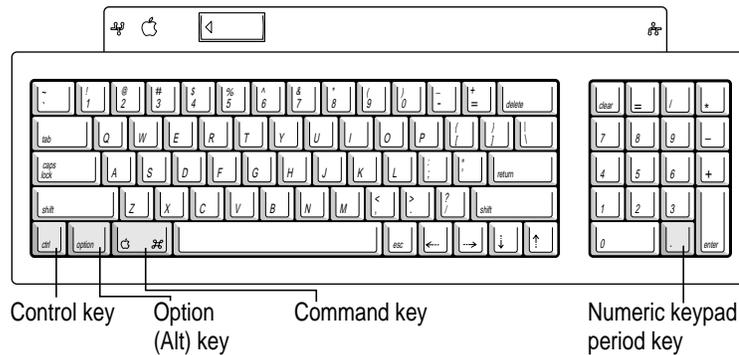
4 When installation is complete, restart the PC environment.

Restart the PC environment by simultaneously pressing Control-Alt-⌘.

Note: The instructions in this manual often tell you to restart the PC by pressing the Control-Alt- \boxtimes keys at the same time. The \boxtimes key is sometimes called the Delete key. However, on a Mac OS-compatible keyboard there is an additional Delete key. Make sure you press the \boxtimes (Del) key (not the Delete key) when you restart the PC.



If you are using a keyboard that does not have the \boxtimes (Del) key, you can restart the PC by pressing Control-Alt-. (the period on the numeric keypad). On some keyboards the Option key is not labeled Alt, but it still works as an Alt key in the PC environment.



You should now see the DOS prompt.

Installing support software for DOS

The software on the *PC Compatibility Card–PC Software* floppy disk that came with your PC Compatibility Card allows the card to work with the Mac OS and Mac OS–compatible CD-ROM drives, networks, and other equipment.

To install the software, follow these steps:

- 1 In the PC environment, insert the *PC Compatibility Card–PC Software* floppy disk.**

To switch to the PC environment from the Mac OS, press ⌘-Return, or open the PC Setup control panel and click “Switch to PC.”

- 2 Type the following:**

```
A:\SETUP <return>
```

Note: DOS and Windows commands documented in this manual are formatted showing the command followed by <return>. When you see this format type the text and then press Return to execute the command.

- 3 When you are asked to select an option, choose “I” for Install.**

To choose an option, use the arrow keys to highlight it, then press Return.

- 4 When you are asked to choose a target drive for installation, choose “C” to install on the C:\ drive. (This is the drive set up as the default for installation in the PC Setup control panel.)**

- 5 When you are asked to select a target directory for installation, type the following:**

```
\APPLE <return>
```

- 6 When you are asked to select the DOS directory, type the following:**

```
\DOS <return>
```

- 7 Choose Yes to continue installation.**

- 8 Choose groups for installation.**

By default all groups are selected. Follow the instructions that appear on the screen for selecting or deselecting groups.

The installation groups are

- Mac/PC Folder Sharing (which allows you to use a Mac OS folder as a shared drive with the PC)
- CD-ROM support (which allows you to use CD-ROM discs in the PC environment)

9 Press F10 to continue.

If your keyboard does not have function keys press ⌘-0. For a list of function key equivalents, see Chapter 8, “Working in the PC Environment.”

10 If you're asked whether you want to overwrite files, choose either “Yes” or “Always.”

Choosing “Yes” will overwrite only the specified file and will prompt you again to overwrite the next file. Choosing “Always” will overwrite the specified file and all subsequent files without prompting you again.

11 You are asked whether you want the program to modify your system files. Choose “Apply changes directly to system files.”

If you choose to apply the changes to copies of the system files, the copies have the same name as the originals followed by a number. The higher the number, the more recent the copy.

12 When installation is complete, press Return to continue. The PC environment will restart automatically.

Installing mouse software for DOS

If you wish to use your Mac OS-compatible mouse in the DOS environment, you need to install the mouse driver provided on the *PC Compatibility Card-PC Utilities* CD. To install the mouse drivers, run SETUP.EXE in the MOUSE directory. This step is not required if you only plan on using the mouse in the Windows environment.

Note: When you install the DOS mouse driver, the Installer may display an error message indicating that it could not find a mouse attached to the computer. You can ignore the message if your mouse is properly connected to an ADB port on your computer or keyboard.

Installing Microsoft Windows

The PC Compatibility Card works with Microsoft Windows 3.1, Windows 3.11, Windows for Workgroups 3.11, and Windows 95.

You must install DOS and the support software on the *PC Compatibility Card-PC Software* floppy disk before installing Windows.

- 1** In the PC environment, insert the Windows CD-ROM disc or first installation floppy disk.
- 2** Start the Windows setup program.

If you are installing from floppy disks, type the following:

```
A:\SETUP <return>
```

Note: DOS and Windows commands documented in this manual are formatted showing the command followed by <return>. When you see this format type the text and then press Return to execute the command.

If you are installing from a CD-ROM disc, type the following:

```
E:\SETUP <return>
```

Note: In this case E represents the letter assigned to your CD-ROM drive.

IMPORTANT If you are installing Windows 95, note the following guidelines for the installation process:

- If you are installing from floppy disks, make sure to lock your installation disks.
- Select Continue instead of Retry at the end of disk 2.
- If you choose to make a startup disk, make sure the disk is already formatted for the PC environment. An unformatted or Macintosh formatted disk will not be recognized.
- Do not print the test page when you are prompted to do so.
- Do not install any networking software during the Windows 95 installation process. To install networking software, see Appendix C, “Installing Network Client Software,” after you have completed the Windows 95 installation process.

3 Follow the instructions that appear on the screen.

Press ⌘-E to eject a floppy disk or ⌘-Y to eject a CD when necessary.

4 When installation is complete, restart the PC environment.

To restart the PC environment, switch to the Mac OS (by pressing ⌘-Return), open the PC Setup control panel, and click Restart PC. You can also restart the PC by pressing Control-Alt-⌘.

Installing support software for Windows

Next, you need to install the Windows support software. Follow these steps:

1 If necessary, switch to the PC environment.

To switch to the PC environment from the Mac OS, press ⌘-Return, or open the PC Setup control panel and click “Switch to PC.”

2 Insert the *PC Compatibility Card–PC Software* floppy disk.

3 In Windows, choose Run from the File menu. In Windows 95, click the Start button; then choose Run from the menu that appears.

4 In the dialog box that appears, type the following:

```
A:\SETUP <return>
```

5 Follow the instructions that appear on the screen.

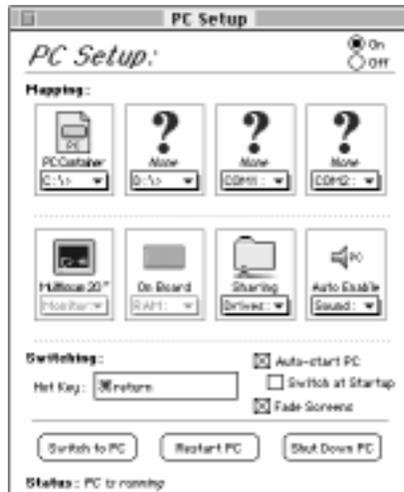
The recommended directory to install files is C:\APPLE.

By default all options will be installed. However, you may choose not to install specific options. These are the installation options:

- *Install Macintosh/Windows Copy and Paste:* allows you to transfer Clipboard information between the Mac OS and PC environments
- *Install Macintosh/PC Folder Sharing:* allows you to use a Mac OS folder with the PC as a shared PC drive
- *Install CD-ROM Support:* allows you to use CD-ROM discs in the PC environment
- *Install PC Compatibility Help:* helps you set up your Windows or Windows 95 environment to properly work with the PC Compatibility Card

6 When installation is complete, restart the PC.

In Windows, restart the PC by first exiting Windows and then pressing Control-Alt- Δ at the DOS prompt. You can also restart the PC by exiting Windows, switching to the Mac OS environment by pressing \mathbb{A} -Return, and then clicking Restart PC in the PC Setup control panel.



In Windows 95 restart the PC by clicking the Start button and selecting Shutdown. In the Shutdown dialog box, choose one of the restart options.



Configuring network support in Windows

To configure network support in Windows, see Appendix C, "Installing Network Client Software."

Installing PC utilities

Your PC Compatibility Card comes with a CD-ROM disc labeled *PC Compatibility Card–PC Utilities*, which contains the following programs and utilities:

- Keyboard files let you use keyboard layouts for a variety of languages.
- QuickTime for Windows lets you view and manipulate video on the PC.
- Sound Blaster software lets you play music and manipulate sound files.
- Video drivers let you configure and use a variety of monitors.

You should install Sound Blaster and the video drivers. QuickTime and the keyboard files are optional.

Installing keyboard files

Keyboard files allow you to use keyboard layouts for other languages and keyboards.

IMPORTANT If you are using an international keyboard, be sure to install and use the keyboard files on the *PC Compatibility Card–PC Utilities* CD. (The supported languages vary from country to country.) The keyboard files that come with Windows and Windows 95 may not work with your keyboard.

Installing keyboard files in Windows 3.1

- 1 Start Windows.
- 2 Insert the *PC Compatibility Card–PC Utilities* CD into the CD-ROM drive.
- 3 Open the International control panel.
- 4 Select the language you want in the Keyboard Layout area, then click OK.
- 5 In the Install Driver dialog box, click Browse.
- 6 Select the E drive, then locate the folder for the language you want.
For example `E:\KEYBOARD\WIN31\GERMAN\`
- 7 Select the file you want, then close the control panel and restart Windows.

Installing keyboard files in Windows 95

- 1 Start Windows 95.
- 2 Insert the *PC Compatibility Card–PC Utilities* CD into the CD-ROM drive.
- 3 Click the Start button. Choose Settings from the menu that appears, then choose Control Panel.
- 4 Double-click the Keyboard icon.



- 5 Click the Language tab.
- 6 Click Add.
- 7 In the list that appears, select the language you want, then click OK.
- 8 Select the name of the language whose keyboard layout you want to use. Click “Set as Default,” then click OK.
- 9 When requested to insert the Windows 95 CD, leave the *PC Compatibility Card–PC Utilities* CD in the CD-ROM drive and click OK.

You can only use the keyboard drivers provided on the *PC Compatibility Card–PC Utilities* CD.

- 10 If an error message appears, click OK.
- 11 Click Browse, then select the E drive in the Drives window.
- 12 In the Folders window, locate the folder and file you want, then click OK.

For example `E:\KEYBOARD\WIN95\GERMAN`

Installing QuickTime for Windows

Follow these steps to install the QuickTime for Windows software:

- 1 In the PC environment, insert the *PC Compatibility Card–PC Utilities* CD into the CD-ROM drive.
- 2 In Windows, choose Run from the File menu.
- 3 In the dialog box that appears, type the following:
`E:\QUICKTME\QTINSTAL <return>`
- 4 Follow the instructions that appear on your screen to complete the installation.

Installing QuickTime for Windows 95

Follow these steps to install the QuickTime for Windows 95 software:

- 1 In the PC environment, insert the *PC Compatibility Card–PC Utilities* CD into the CD-ROM drive.
- 2 In Windows 95, click the Start button, then choose Run from the menu that appears.
- 3 In the dialog box that appears, type the following:
`E:\QUICKTME\QT32INST <return>`
- 4 Follow the instructions that appear on your screen to complete the installation.

Installing Sound Blaster software for DOS or Windows

- 1 In the DOS environment, insert the *PC Compatibility Card–PC Utilities* CD into the CD-ROM drive.

If you are in Windows, exit Windows to return to DOS. Do not attempt this installation from a DOS window in Windows.

- 2 Type the following to start the install program:
`E: <return>`
`CD \SOUND <return>`
`W31SETUP <return>`
- 3 A message appears. Press F2 to view the Read Me file. When you're finished viewing the file, press ESC to return to the main install screen.

4 Follow the onscreen instructions.

When asked for the Creative Configuration Manager Installation disk, leave the *PC Compatibility Card–PC Utilities* CD in the CD-ROM drive, and enter the following path:

```
E:\SOUND\CMG
```

5 Press Return to allow the Install program to modify your files.

6 Press Return to select full installation.

7 Press Return to select the recommended paths.

8 Press Return to select the recommended settings.

If you are asked to insert your Audio software installation disk, leave the *PC Compatibility Card–PC Utilities* CD in the CD-ROM drive, and enter the following path:

```
E:\SOUND\WIN31
```

9 Press Return to allow the Install program to modify your files.

10 Choose to back up your existing file.

11 Press Return to return to a DOS prompt.

12 Manually restart the PC by pressing Control-Alt-~~E~~.

Installing Sound Blaster software for Windows 95

1 In the PC environment, insert the *PC Compatibility Card–PC Utilities* CD into the CD-ROM drive.

2 In Windows 95, click the Start button. Choose Run from the menu that appears.

3 In the dialog box that appears, type the following:

```
E:\SOUND\W95SETUP.BAT <return>
```

If a message asks you to insert a disk, click OK.

Let the setup program modify your .INI file.

4 When the Installer asks if you want to reboot the PC, choose No.

5 When the installation is complete, quit and restart Windows 95.

To use the Sound Blaster programs in Windows 95, click Start, choose Programs, and select the Sound Blaster 16 directory.

Installing and configuring video software for Windows 3.1

This section describes basic installation and configuration. For more information about the video software, including installing and configuring video for DOS, see Appendix D, “Configuring Video Software.”

1 In the PC environment, insert the *PC Compatibility Card–PC Utilities* CD into the CD-ROM drive.

If you are in Windows, exit Windows to return to the DOS prompt. Do not attempt this installation from a DOS window in Windows.

2 Type the following:

```
E:<return>  
CD \VIDEO\UTILITY\ <return>  
INSTALL <return>
```

The main menu of the Installer program appears.

3 Choose Drivers Installation from the menu.

4 Select Microsoft Windows.

5 Select Install Windows driver.

6 Select to install Display Drivers Only.

7 Verify the path for the drivers and press Return.

8 When installation is finished, press ESC as many times as necessary to get back to the main menu.

9 Choose Utilities Installation from the menu.

10 Verify the path for the utilities and press Return.

11 You see a message asking whether the program can modify your AUTOEXEC.BAT file. Choose Yes.

12 Exit the INSTALL program and start Windows.

- 13 **Open the ATI DeskTop program.**

To learn more about the program, use the help feature or turn to Appendix D, “Configuring Video Software.”

- 14 **Click Screen Adjustment.**
- 15 **Select a monitor type and resolution.**
- 16 **If you have a multiple-scan monitor, customize the display using the Screen Adjustment program.**
- 17 **Restart Windows.**
- 18 **Open the Flex Desk+ program (if not already open).**
- 19 **Select a resolution and color depth.**

Installing video software for Windows 95

The Windows 95 display driver that comes with the PC Compatibility Card offers better performance than the standard driver. To install the driver, follow these steps:

- 1 **Insert the *PC Compatibility Card–PC Utilities* CD into the CD-ROM drive.**
- 2 **In Windows 95, click the Start button, then choose Run from the menu that appears.**
- 3 **In the dialog box that appears, type the following:**

```
E: \VIDEO\ATISSETUP <return>
```
- 4 **Select a Display Driver.**
- 5 **Follow the onscreen instructions to complete the installation.**

IMPORTANT The ATI setup program will ask you to type `E: \WIN95` to specify the video driver location. Because you will be using the *PC Compatibility Card–PC Utilities* CD instead of the Windows 95 CD, the correct directory will be `E: \VIDEO\WIN95`.

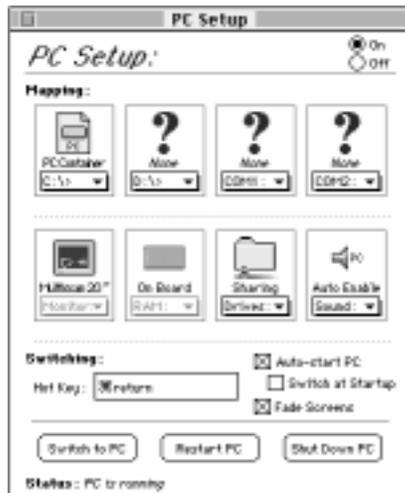
You may need to move windows to see the information presented. To move a window, drag the window’s top bar.

Selecting and configuring monitors in Windows 95

Before performing this procedure, you need to install the video software as described in the previous section.

- 1 **Switch to the Mac OS, open the PC Setup control panel, and make a note of the monitor type that appears in the Monitor section of the control panel.**

You can switch to the Mac OS by typing ⌘-Return.



- 2 **Switch to the PC environment and make sure Windows 95 is running.**

You can switch to the PC environment by clicking “Switch to PC” in the PC Setup control panel, or by pressing ⌘-Return.

- 3 **In Windows 95 click the Start button. Choose Settings from the menu that appears, then choose Control Panel.**
- 4 **Double-click the Display icon to open the Display control panel.**



- 5 Click the Settings tab in the Display control panel.**

Note: If you have a DDC-compliant monitor (such as an AppleVision display) connected directly to the video port on the PC Compatibility Card, you do not need to select a monitor type. Windows 95 will make the appropriate settings for you. In addition, Windows 95 will configure the Display control panel so that only the settings that work with your monitor appear.

- 6 Click Change Display Type.**

- 7 In the Monitor Type area, click Change.**

- 8 If your monitor is listed in the dialog box that appears, click its name, click OK, and restart Windows. If not, click “Have Disk” and go on to steps 9–11.**

- 9 Insert the *PC Compatibility Card–PC Utilities* CD. Make sure the path in the text box is E:\APPLE, then click OK.**

- 10 Click Show All Devices.**

- 11 In the Models box, choose a model corresponding to the monitor type listed in the PC Setup control panel, then click OK.**

If this type is listed in PC Setup...	...choose this type in the Models box
Apple 14" (this type appears if you've connected a 12-, 13-, or 14-inch fixed-frequency monitor)	"(all other Apple monitors)"
Apple 16"	"(all other Apple monitors)"
Multiscan (this type appears if you've connected an AppleVision or other DDC-compliant monitor)	Plug and Play Monitor (VESA DDC) if this type is automatically selected in the list. Otherwise, AppleVision 1710av, AppleVision 1710, AppleVision 1705, Multiple Scan 1705, or Multiple Scan 20.
Multiscan 14"	Apple Multiple Scan 14" or Apple Multiple Scan 15"
Multiscan 17"	Apple Multiple Scan 17"
Multiscan 20"	Apple Multiple Scan 20"
19" Color	Your monitor model (if listed), or SuperVGA 1024 x 768
Portrait	"(all other Apple monitors)"
21" Color	"(all other Apple monitors)"
21" Monochrome	"(all other Apple monitors)"
VGA	Standard VGA 640 x 480

To customize a multiple-scan monitor, click the Adjustments tab in the Display control panel.

12 Restart Windows.

A help window will appear with information on the video software. When you're finished with the help window, click to remove the X from the box at the bottom of the window, so it won't appear each time you start up.

Installing your own PC software

You can now install your own PC programs in the drive container you've created. Follow the instructions that came with the programs.

You may need to eject disks during installation. Press ⌘-E to eject a floppy disk. Press ⌘-Y to eject a CD. For more information on working with disks, see “Using Floppy Disk Drives and Floppy Disks” and “Using CD-ROM Discs and Drives” in Chapter 8, “Working in the PC Environment.”

For further information on installing network client software, see Appendix C, “Installing Network Client Software.”

What's next?

You've finished installing your PC software. Now turn to Chapter 7, “Setting Up the PC Environment,” to learn how to configure your PC software.

7

Setting Up the PC Environment



This chapter contains information on the following aspects of your PC environment:

- the PC Setup control panel and Control Strip module
- monitors and video software
- RAM
- printer settings
- sound options
- PC drives
- shared volumes
- network settings
- serial port settings
- modem settings
- joystick and MIDI devices
- DOS configuration files

About the PC Setup control panel

You can control the following PC options in the PC Setup control panel:

- turning the PC Compatibility Card on and off
- assigning PC drives to drive containers or volumes
- assigning PC COM1 and COM2 ports to Mac serial ports or text files
- setting up shared folders and volumes
- turning PC sound on and off
- changing the command (hot key) that switches between environments
- setting the PC to start automatically when you start up your computer
- switching to the PC automatically when you start up your computer
- setting the fade screen option when switching environments
- switching to, starting, and shutting down the PC

These options are described in this chapter and in Chapter 8, “Working in the PC Environment.”

To use the PC Setup control panel, follow these steps:

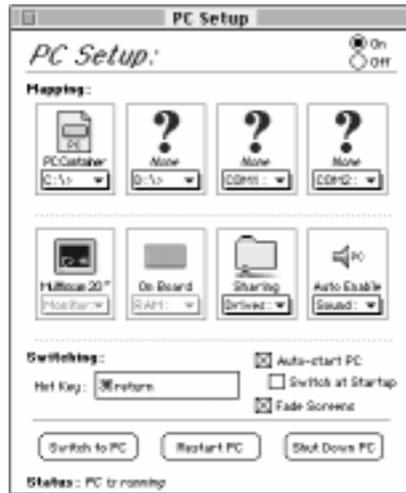
- 1 Choose Control Panels from the Apple () menu.**
- 2 Double-click the PC Setup icon to open the PC Setup control panel.**



PC Setup

- 3 When you have specified the settings you want, close the control panel.**

Onscreen help: To see brief explanations of items in the control panel, choose Show Balloons from the Guide (⌘?) menu. For detailed step-by-step help, see the PC Compatibility Guide, available in the Guide (⌘?) menu.



Using the PC Setup Control Strip module

As part of the installation process, a PC Setup module is added to your Control Strip. From this Control Strip module you can do the following:

- start up the PC or restart the PC
- shut down the PC
- switch to the PC
- open the PC Setup control panel
- set up the PC Print Spooler

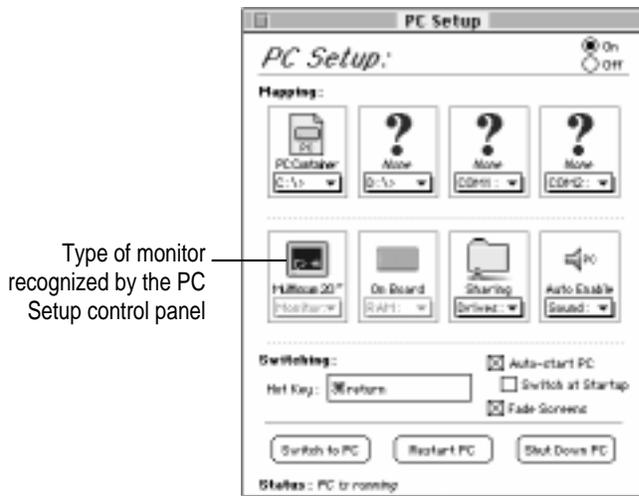


For more information on using the Control Strip, see “How do I use the Control Strip?” in the “Customizing Your Computer” topic area of Macintosh Guide (Mac OS Guide), available in the Guide (⌘) menu.

Configuring monitors

To connect a monitor, see Chapter 5, “Connecting Monitors and Other Equipment.”

In most cases, the Mac OS recognizes the monitor you’re using to display the PC environment. The monitor type appears in the Monitor section of the PC Setup control panel. If you want special video features such as multiple colors and resolutions, you need to install and configure the video software that came with your card, as described in Chapter 6, “Installing the PC Compatibility Card Software.”



If the monitor you’re using to display the PC environment is not working correctly, make sure you have connected the monitor according to the instructions in Chapter 5, “Connecting Monitors and Other Equipment,” and make sure you have installed and configured the video software as described in Chapter 6, “Installing the PC Compatibility Card Software.” For further information on configuring video, see Appendix D, “Configuring Video Software,” and Chapter 9, “Troubleshooting.”

If a VGA monitor is not working correctly, also check whether your VGA-to-Macintosh adapter is configurable and verify the correct settings.

Configuring monitors in the DOS environment

To configure monitors in the DOS environment, you use the ATI Install program. For more information, see Appendix D, “Configuring Video Software.”

Configuring monitors in the Windows environment

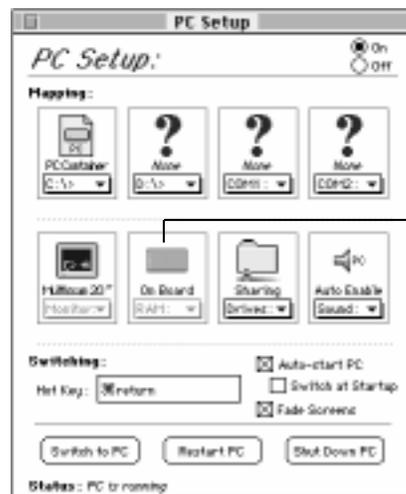
To configure monitors in the Windows environment, use the ATI DeskTop program. For more information, see ATI DeskTop’s onscreen help feature and Appendix D, “Configuring Video Software.”

Configuring monitors in Windows 95

To configure monitors in Windows 95, you use the Display control panel. For more information, see Chapter 6, “Installing the PC Compatibility Card Software,” and Appendix D, “Configuring Video Software.”

RAM information

The RAM portion of the PC Setup control panel shows where RAM is installed on your PC Compatibility Card. If a DIMM (dual inline memory module) is installed, the word “DIMM” appears in the box. If no DIMM is installed, the words “On Board” appear in the box.



PC RAM status displayed by the PC Setup control panel

For more information on adding memory to your PC Compatibility Card, see Appendix B, “Adding Memory to Your PC Compatibility Card.”

Setting printer options

From the PC environment, you can print to most printers connected to the Mac OS–compatible serial port or network connection, using the PC Print Spooler software.

Note: The PowerPrint package by GDT Softworks lets you use a PC-compatible parallel-port printer with your computer. For more information, you can phone GDT at (800) 663-6222 or (604) 473-3600, or visit their World Wide Web site at <http://www.gdt.com>.

Setting up printing in the Mac OS

To print from the PC environment to a printer connected to the computer’s printer port or other network connection, you need to select a printer in the Mac OS Chooser and set up the PC Print Spooler software. Follow these steps, then go to “Setting Up Printing in the PC Environment,” later in this section.

Note: If you are printing from the PC environment using the optional PC Serial and Parallel Card, see the manual that came with that card for instructions on how to print from the PC environment.

- 1 In the Mac OS environment, open the Chooser in the Apple () menu and make sure a printer is selected.**

If you are using a PostScript™ printer, be sure to select the LaserWriter 8 driver. For more information on selecting a printer, see the documentation or onscreen help that came with your computer.

- 2 Open the Extensions folder inside the System Folder.**

Note: You can also open the PC Print Spooler from the PC Setup Control Strip module, then skip ahead to step 5.



- 3 Open the PC Print Spooler icon.

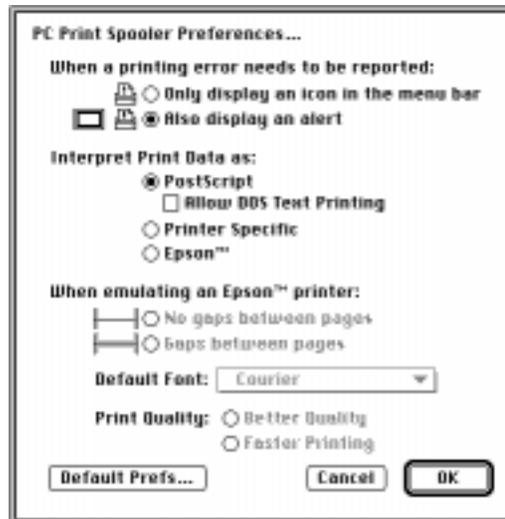


PC Print Spooler

- 4 Choose Preferences from the File menu.



- 5 Select how you want to be notified of printing errors.



- 6 Choose an option under “Interpret Print Data as.”

Printing data sent from the PC environment has to be interpreted by the Mac OS before it can be sent to the printer. The PC Print Spooler provides three possible ways to interpret printing information from the PC environment.

Note: If you are unsure what printing option to use, select Epson. Epson emulation is a generic option that works with most printers.

- Select PostScript if your printer supports PostScript. If you plan to print non-PostScript files on a PostScript printer (such as printing files from the DOS prompt), make sure the checkbox labeled “Allow DOS Text Printing” has an X in it.
- If you have a PC parallel port printer and you are using the PowerPrint package by GDT Softworks, then select Printer Specific. You will only be allowed to select this option if you have selected a PowerPrint printer in the Chooser.
- Choose Epson if you are using a non-PostScript printer (such as the Apple StyleWriter, Apple LaserWriter 300, and certain HP DeskJet models).
For more information about the Epson options, see the next section, “Epson Emulation and Page Setup Options.”

7 Click OK.

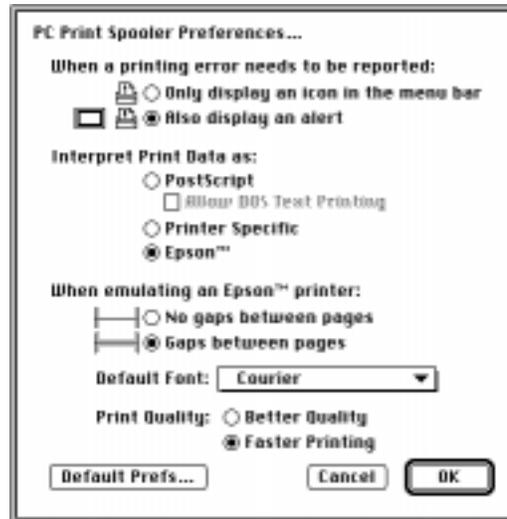
8 Choose Quit from the File menu to exit the Print Spooler application.

Epson emulation and page setup options

If you chose Epson in the Print Spooler Preferences dialog box, you can make the following settings:

- Select “Gaps between pages” if the application you are printing from does not allow a 1/2-inch margin at the top and bottom of the page (such as the DOS prompt or Windows 95 Notepad). Selecting “Gaps between pages” will add a 1/2-inch margin to the top and bottom of the document. This extra margin will be in addition to whatever margin is currently set. Choose “No gaps between pages” if the application you are printing from can format the page to have at least a 1/2-inch margin at the top and bottom of the page.
- The font in the Default Font box is used when you’re printing ASCII text from DOS and when the Faster Printing option is selected. For best results, use a fixed-space font such as Courier or Monaco. Using a proportional font such as Times® may change your document’s formatting.
- Select Faster Printing when you want to quickly print text from a DOS application. When this option is selected, printers that use less than 300-dpi resolution (such as ImageWriter dot-matrix printers) will print in 72-dpi resolution.

- Select Better Quality if you want Epson printer fonts in your document to be translated to corresponding Macintosh TrueType fonts. Because Epson printer fonts are fixed-space fonts, the TrueType font will be scaled to behave like a fixed-space font. Printers that use less than 300-dpi resolution will print in 144-dpi resolution.



For best results, use Epson printer fonts that map to a fixed-space TrueType font, or use graphical fonts supplied by your DOS application. The following table lists some Epson printer fonts and the TrueType fonts they are translated to if Better Quality is selected:

Epson font	TrueType font
Roman	Times (proportional)
SanSerif	Helvetica® (proportional)
Prestige	Palatino® (proportional)
Courier	Courier (fixed)
OCR-A, OCR-B	Monaco (fixed)
Script, Script C,	Monaco (fixed)
Orator, Orator S	Monaco (fixed)

To print legal (and other sized) paper from the PC with Epson emulation, follow these steps:

- 1 **Open the PC Print Spooler.**
- 2 **Choose Page Setup from the File menu.**



The Page Setup dialog box for the printer currently selected appears.

- 3 **Select the desired page size and click OK.**

Any attributes you set in the Page Setup dialog box within the PC Print Spooler will remain in effect until you reset them or select the Default Prefs button in the Preferences dialog box.

IMPORTANT You must set the page size in the DOS or Windows application you are printing from to the same size you selected in the Page Setup dialog box in PC Print Spooler. If you do not do this, your documents may not print properly.

Note: This feature is only available for Epson emulation printing. For PostScript and printer-specific printing, set the page attributes within the DOS or Windows application you are printing from. If “Allow DOS Text Printing” is selected for PostScript printers, you can adjust the page attributes for a PostScript printer, but these settings will only take effect when you are printing from the DOS prompt or a DOS application that does not send PostScript to the printer.

Resetting the default printing preferences

- 1 Open the PC Print Spooler.
- 2 Choose Preferences from the File menu.
- 3 Click Default Prefs to restore the default settings in the Preferences dialog box.

This will set the printing option to PostScript, set the default font to Courier, and reset the page setup attributes to their default state (as defined by the printer driver selected in the Chooser).

Printing problems

If there is a printing problem, the file you're trying to print will be moved to the Spooler Rejected folder (in the Preferences folder inside the System Folder). This might happen if, for example, you try to print a PostScript file with Epson selected in the PC Print Spooler Preferences.

After setting your preferences correctly, you can print the file automatically by moving the PC Spooler file from the Spooler Rejected folder to the Spooler folder. Or you can try switching to the PC environment and printing again.

Setting up printing in the PC environment

This section includes basic information you'll need to know to set up your printer drivers in the PC environment. For more detailed information, refer to the documentation that came with your software and printer.

Note: If you are printing from the PC environment using the optional PC Serial and Parallel Card, see the manual that came with that card for instructions on how to print from the PC environment.

IMPORTANT Some printer models support more than one printer language and may provide separate printer drivers for each language. If you are using the PostScript printing option, be sure to choose the printer driver that supports PostScript; otherwise, printing may not work properly.

Setting up printing in the DOS environment

To print from DOS using a printer connected to the computer printer port or network connection, you need to select a printer driver for each application from which you want to print. The driver you select must correspond to the option you selected in the PC Print Spooler Preferences dialog box. If you have not set up the PC Print Spooler, see “Setting Up Printing in the Mac OS,” earlier in the chapter.

- If you have a PostScript printer (and have selected the PostScript option in the PC Print Spooler Preferences dialog box), choose the PostScript version of the printer driver for the printer connected to the Mac OS. If a driver is not available for that printer, you can use any PostScript Level 1 printer driver, such as Apple LaserWriter II NTX.
- If you have a PC parallel port printer and you are using the PowerPrint package by GDT Softworks (and have selected the Printer Specific option in the PC Print Spooler Preferences dialog box), choose the driver for the printer connected to the computer using the PowerPrint cable.
- If you are using a non-PostScript printer (and have selected the Epson option in the PC Print Spooler Preferences dialog box), select one of the following drivers in each application from which you want to print:
 - Epson AP-3260 for 360-dpi color printing (preferred driver)
 - Epson AP-3250 for 360-dpi black-and-white printing
 - Epson Color Stylus for 360-dpi color printing
 - Epson LQ-2500 for 180-dpi color printing

If none of the drivers listed above is available, try one of the following:

- Epson LQ-2550/LQ-1050/LQ-1010
- Epson Action Printer 4500/ActionPrinter 4000

Note: The Epson Color Stylus printer is capable of 720 x 360-dpi printing. However, the PC Compatibility Card software currently supports a maximum resolution of 360 x 360 dpi. Please verify the maximum resolution in the application you are printing from, or improper printing may occur.

When printing from DOS or DOS applications, use a fixed-space font such as Courier or use your application’s graphical fonts in your documents. See “Epson Emulation and Page Setup Options,” earlier in this chapter.

Setting up printing in Windows 3.1 or Windows for Workgroups

To print from Windows using a printer connected to the computer printer port or network connection, you need to select a printer driver in Windows that corresponds to the option you selected in the PC Print Spooler Preferences dialog box. If you have not set up the PC Print Spooler, see “Setting Up Printing in the Mac OS,” earlier in this chapter.

- If you have a PostScript printer (and have selected the PostScript option in the PC Print Spooler Preferences dialog box), install and select the PostScript version of the Windows driver that came with your printer. If you don't have a Windows driver specifically for your printer, you can select another PostScript printer driver, such as one of the following:

- LaserWriter Pro 630, if you have a PostScript Level 2 printer (preferred)
- Apple LaserWriter II NTX, if you have a PostScript Level 1 printer

If you are not sure whether you have a PostScript Level 1 or Level 2 printer, choose a PostScript Level 1 printer driver. If you select a driver for a PostScript Level 1 printer, you can print to any PostScript printer. If you select a driver for a PostScript Level 2 printer, you can print only to printers that support PostScript Level 2.

- If you have a PC parallel port printer and you are using the PowerPrint package by GDT Softworks (and have selected the Printer Specific option in the PC Print Spooler Preferences dialog box), select the driver for the printer connected to the computer using the PowerPrint cable.
- If you are using a non-PostScript printer (and have selected the Epson option in the PC Print Spooler Preferences dialog box), select one of the following drivers:

- Epson AP-3260 for 360-dpi color printing (preferred driver)
- Epson AP-3250 for 360-dpi black-and-white printing
- Epson Color Stylus for 360-dpi color printing
- Epson LQ-2500 for 180-dpi color printing

If none of the drivers listed above is available, try one of the following:

- Epson LQ-2550/LQ-1050/LQ-1010
- Epson Action Printer 4500/ActionPrinter 4000

Note: The Epson Color Stylus printer is capable of 720 x 360-dpi printing. However, the PC Compatibility Card software currently supports a maximum resolution of 360 x 360 dpi. Please verify the maximum resolution in the application you are printing from, or improper printing may occur.

Note: The Epson AP-3260 may not be available with Windows 3.11 or Windows for Workgroups. You can get the Windows 3.11 version of the driver from Epson's World Wide Web site located at the following address:
<http://www.epson.com>.

Setting up printing in Windows 95

Before you print from Windows 95 for the first time (and any time you change printer drivers), follow these steps:

- 1 In Windows 95, click the Start button. Choose Settings from the menu that appears, and then choose Printers.**

If no printers are installed, see your Windows 95 documentation for instructions on how to add a printer.

- 2 Select the printer that you are printing to.**

- 3 Choose Properties from the File menu.**

The properties window for the printer you have selected appears.

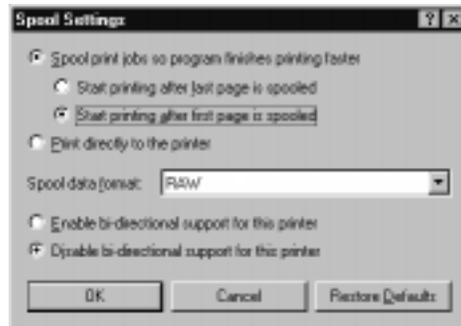
- 4 Click the Details tab.**

The Details page appears.

- 5 Click the Spool Settings button.**

The Spool Settings dialog box appears.

- 6 Click the button labeled “Disable bi-directional support for this printer.” Then click OK.



If this button is not available, click OK; then go on to the next step.

- 7 In the Properties window, click Port Settings.

The Configure LPT Port dialog box appears.

- 8 Make sure the checkbox labeled “Check port state before printing” is unchecked. Then click OK.



If you are using a PostScript printer, you must also follow these steps:

- 9 In the Properties window, click PostScript.

- 10 Click Advanced.

The Advanced PostScript Options dialog box appears.

- 11 Make sure the checkboxes labeled “Send CTRL+D before Job” and “Send CTRL+D after Job” are unchecked. Then click OK.

12 Close the Properties window.

IMPORTANT When printing to a PostScript printer from the PC environment, be sure to print one file at a time. Printing multiple files may cause a PostScript error. To verify that the file has finished printing, check the Windows 95 Printer queue.

Printing from Windows 95

To print from Windows 95 using a printer connected to the computer printer port or network connection, you need to select a printer driver in Windows 95 that corresponds to the option you selected in the PC Print Spooler Preferences dialog box. If you have not set up the PC Print Spooler, see “Setting Up Printing in the Mac OS,” earlier in this chapter.

- If you have a PostScript printer (and have selected the PostScript option in the PC Print Spooler Preferences dialog box), install and select the PostScript version of the Windows 95 driver that came with your printer. If you don't have a Windows driver specifically for your printer, you can select another PostScript printer driver, such as one of the following:
 - LaserWriter Pro 630, if you have a PostScript Level 2 printer (preferred)
 - Apple LaserWriter II NTX, if you have a PostScript Level 1 printer
- If you are not sure whether you have a PostScript Level 1 or Level 2 printer, choose a PostScript Level 1 printer driver. If you select a driver for a PostScript Level 1 printer, you can print to any PostScript printer. If you select a driver for a PostScript Level 2 printer, you can print only to printers that support PostScript Level 2.
- If you have a PC parallel port printer and you are using the PowerPrint package by GDT Softworks (and have selected the Printer Specific option in the PC Print Spooler Preferences dialog box), select the driver for the printer connected to the computer using the PowerPrint cable.
 - If you are using a non-PostScript printer (and have selected the Epson option in the PC Print Spooler Preferences dialog box), select one of the following drivers:
 - Epson AP-3260 for 360-dpi color printing (preferred driver)
 - Epson AP-3250 for 360-dpi, black-and-white printing

- Epson Color Stylus for 360-dpi color printing
- Epson LQ-2500 for 180-dpi color printing

If none of the drivers listed above is available, try one of the following:

- Epson LQ-2550/LQ-1050/LQ-1010
- Epson Action Printer 4500/ActionPrinter 4000

Note: The Epson Color Stylus printer is capable of 720 x 360-dpi printing. However, the PC Compatibility Card software currently supports a maximum resolution of 360 x 360 dpi. Please verify the maximum resolution in the application you are printing from, or improper printing may occur.

Note: The Epson AP-3260 may not be available with Windows 3.11 or Windows for Workgroups. You can get the Windows 3.11 version of the driver from Epson's World Wide Web site located at the following address:
<http://www.epson.com>.

Saving a printer file

To save a printer file such as a PostScript file in the PC environment, use the option in your Windows printer driver to print to a file. Do not assign a PC COM port to a text file in the PC Setup control panel, then print to that port in the PC environment.

Configuring PC sound

You can use three kinds of sound in the PC environment:

- **PC beep sounds**
- **CD sound** You can play and control audio CDs in the PC environment.
- **Sound Blaster sound** You can hear Sound Blaster sound in games and other programs, and you can use Sound Blaster-compatible utilities to manipulate sound files. You can also record sound from audio CDs in the PC environment. For more information about Sound Blaster capabilities, see the PC Sound manual that came with your PC Compatibility Card.

You can hear sound from the PC environment through the computer speaker, headphones, or through speakers built into your monitor.

The Mac OS treats all PC sound as if it were coming from the internal CD-ROM drive. You can still use the internal CD-ROM drive to play CDs and CD-ROM discs in the Mac OS.

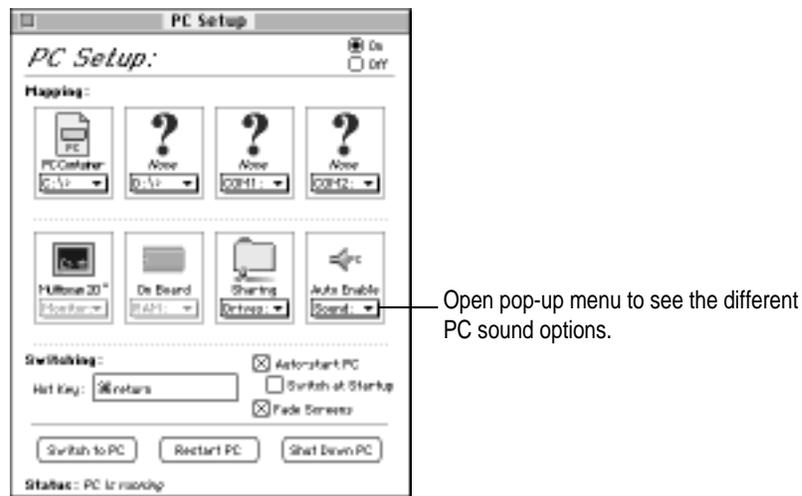
Note: Microphone and line-in are not supported by the PC Compatibility Card.

Turning PC sound on and off

To hear PC sound, you need to turn on sound for the PC by following these steps.

Note: Before you begin, make sure that sound is turned on (not muted) in the Mac OS.

- 1 Open the PC Setup control panel.
- 2 Choose an option from the Sound pop-up menu.



You can choose the following options:

- To hear PC sounds in both environments, choose Enabled.
- To hear PC sounds only in the PC environment, choose Auto Enable.
- To shut off PC sounds, choose Disabled.

- 3 Close the PC Setup control panel.

Configuring PC drives

To work in the PC environment, you need to tell the PC where PC software and files are stored. You do this by assigning PC drive letters to storage areas using the PC Setup control panel. You can assign drive C or D to a PC-formatted SCSI hard drive attached to your Macintosh, or to a drive container—a file you create on a Macintosh hard drive that acts as a virtual PC drive. You can also use a drive container created by SoftPC or SoftWindows™; however, that drive container cannot be bootable.

Note: A hard drive or drive container only boots when assigned to drive C in the PC Setup control panel.

Creating a single partition/bootable drive container

To create a single partition/bootable drive container for drive C or D, follow these steps:

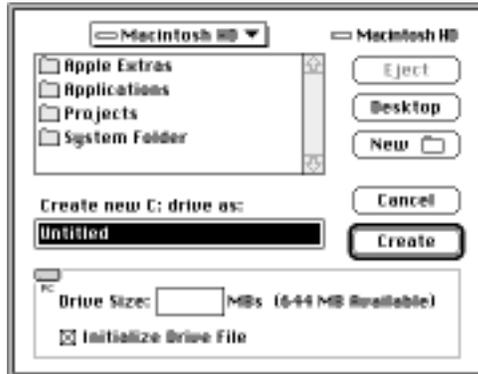
- 1 **Open the PC Setup control panel.**
- 2 **Choose New Drive File from the C: or D: pop-up menu.**
- 3 **In the dialog box that appears, choose a location for the drive container.**
- 4 **Type a name and a size for the container.**

You can make the container as small as 2 MB or as large as 1023 MB. The amount of space you need depends on the software you want to install. If you are installing DOS and a few small applications, you'll need about 100 MB. If you are installing Microsoft Windows, you'll need at least 150 MB. If you are installing Microsoft Windows 95, you'll need at least 200 MB.

IMPORTANT Once a drive container is created, its size cannot be changed. Before choosing a size for your drive container, decide which PC operating system and applications you want to run. Check the documentation that came with the software to estimate how much space you'll need; then allow some extra room for applications. If you still run out of space on the drive container, you can create another drive container and assign it to drive D.

- 5 To format the drive container with a single partition, make sure the Initialize Drive File box is checked.

When this box is checked, PC Setup will initialize the container for you.



- 6 Click Create.

The time that it takes to create a drive container depends on the size of the container.

Creating a multiple partition/bootable drive container

IMPORTANT Apple does not recommend the use of multiple partition/non-bootable drive containers with the PC Compatibility Card.

To create a multiple partition/bootable drive container for drive C or D, follow these steps:

- 1 Open the PC Setup control panel.
- 2 Choose New Drive File from the C: or D: pop-up menu.
- 3 In the dialog box that appears, choose a location for the drive container.

4 Type a name and a size for the container.

You can make the container as small as 2 MB or as large as 1023 MB. The amount of space you need depends on the software you want to install. If you are installing DOS and a few small applications, you'll need about 100 MB. If you are installing Microsoft Windows, you'll need at least 150 MB. If you are installing Microsoft Windows 95, you'll need at least 200 MB.

IMPORTANT Once a drive container is created, its size cannot be changed. Before choosing a size for your drive container, decide which PC operating system and applications you want to run. Check the documentation that came with the software to estimate how much space you'll need; then allow some extra room for additional applications. If you still run out of space on the drive container, you can create another drive container and assign it to drive D.

5 To format the drive container with multiple partitions, make sure the Initialize Drive File box is not checked.

When this box is unchecked, PC Setup does not initialize the container for you. You have to do it manually in DOS, as described in step 7.



6 Click Create.

The time that it takes to create a drive container depends on the size of the container.

- 7 **To format the container with multiple partitions, switch to DOS and prepare the drive using the FDISK and FORMAT commands.**

To make the container bootable, use the /S parameter of the FORMAT command. For example, if you want to format the D drive as a bootable container type:

```
FORMAT D: /S <return>
```

Use the DOS HELP command for more information.

Assigning a drive to a PC-formatted hard disk

To assign a drive to a PC-formatted hard disk connected to your Macintosh SCSI port or SCSI chain, first assign the drive letter to the hard disk, then make sure the hard disk driver is not being loaded by PC Exchange. To do so, follow the steps below.

IMPORTANT If you use a dedicated PC-formatted partition or SCSI device instead of a drive container, you may experience some disk read/write errors. Apple recommends using drive containers on Macintosh-formatted partitions or SCSI devices as your primary method of data storage.

- 1 **Open the PC Setup control panel.**
- 2 **Choose Drive Partition from the C: or D: pop-up menu.**
- 3 **In the dialog box that appears, select the hard disk drive you want to assign.**
- 4 **Open the PC Exchange control panel.**
- 5 **Click the Options button.**
- 6 **Make sure the SCSI driver for the PC drive is not checked. Then click OK.**

To make the drive bootable, switch to DOS and use the FORMAT command with the /S parameter. See the DOS HELP command for more information.

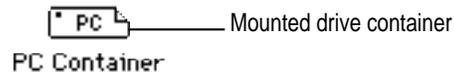
IMPORTANT You cannot boot from a locked PC container, a PC container that is open on your desktop, or a PC container that is on a write-protected file server. Also, you may not be able to mount a locked PC container if file sharing is turned on. You can correct the problem by either unlocking the PC container or turning off file sharing.

Changing a drive assignment

To change the container or partition assigned to the C or D drive, follow these steps:

- 1 Open the PC Setup control panel.
- 2 To assign a new drive container, choose **Other Drive File** from the **C:** or **D:** pop-up menu. To assign a PC-formatted hard disk (or partition), choose **Drive Partition**.
- 3 In the dialog box that appears, locate the container or partition you want to assign.
- 4 Make sure the item is not being used as a disk drive in the Mac OS environment.

If a mounted PC drive container icon appears on the desktop, drag it to the Trash to unmount it.



- 5 Click **Restart PC**.

IMPORTANT If you want to make your PC drive available to the Mac OS, do not use a PC compression program. The Mac OS cannot mount compressed drives.

Using shared volumes

You can set up a Mac OS folder, hard disk, or network volume to act as a PC drive.

Sharing a folder is a convenient way to transfer files between the Mac OS and the PC environment. Sharing is also useful for network volumes and other volumes that otherwise would not be readily available to the PC environment.

Note: Do not set up a floppy disk as a shared folder. This can cause unpredictable results.

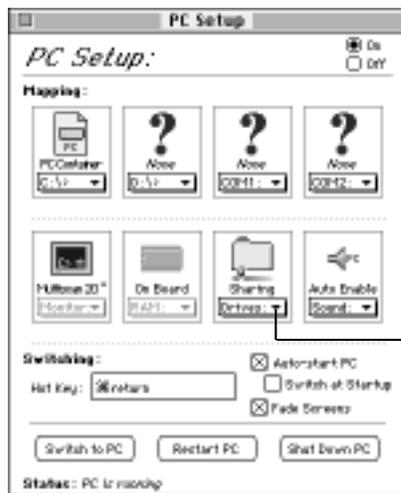
Note: DOS treats all shared volumes as if they were on a network. Some DOS commands, such as **FORMAT**, **CHKDSK**, **UNDELETE**, and **SUBST**, do not work on these shared volumes.

Sharing files between the Mac OS and the PC

To set up a shared volume, follow these steps:

- 1 If the PC is not already running, open the PC Setup control panel and click Start PC.
- 2 In the PC Setup control panel, open the Sharing pop-up menu and choose an available drive letter.

If no drive letters appear, switch to the PC, open the CONFIG.SYS file, and make sure that both a LASTDRIVE statement appears and sufficient available drive letters are assigned. See “Setting Up Your DOS Configuration Files,” later in this chapter.



Open this pop-up menu to see the available drive letters.

- 3 In the dialog box that appears, select a folder or disk you want to share.

You can share a Mac OS folder, hard disk, CD-ROM discs, or shared disk. You cannot share floppy disks.



Note: When you name a folder in the Mac OS environment that you intend to share with the PC environment, you may want the name to be compatible with DOS 8.3 filename guidelines. Otherwise, the sharing software will truncate and translate the name to fit the guidelines. For more information about naming files, see your DOS manual.

- 4 To automatically share this item whenever you start up the PC, click the box labeled "Share every time PC is started."

Automatically shared items are underlined in the Sharing pop-up menu.

For more information on transferring files between the PC environment and the Mac OS, see "Using Floppy Disk Drives and Floppy Disks," "Copying and Pasting Information Between the Mac OS and Windows Environments," and "Using Shared Folders and Volumes" in Chapter 8. Also see the PC Compatibility Guide, available in the Guide (G) menu.

Note: When you add or remove a shared folder in Windows 95, the view in the "My Computer" section does not immediately change. You need to refresh the view once to correctly update the Shared Folder status.

Turning off volume sharing

If you no longer want to share a volume, follow these steps:

- 1 In the Mac OS environment, open the PC Setup control panel.
- 2 Open the Sharing pop-up menu and choose the name of the volume you want to stop sharing.

A warning message appears telling you that the item will no longer be available. Click OK.

Turning off automatic sharing

- 1 In the Mac OS environment, open the PC Setup control panel.
- 2 Open the Sharing pop-up menu and choose the name of the volume you no longer want to share automatically.

Automatically shared items are underlined in the Sharing pop-up menu.

Setting up your PC on a network

Your PC Compatibility Card supports most networking protocols, operating systems, and application programs that are compatible with the following network drivers: Novell's Open Data-Link Interface specification (ODI) or Microsoft's Network Driver Interface Specification (NDIS) version 2.0.

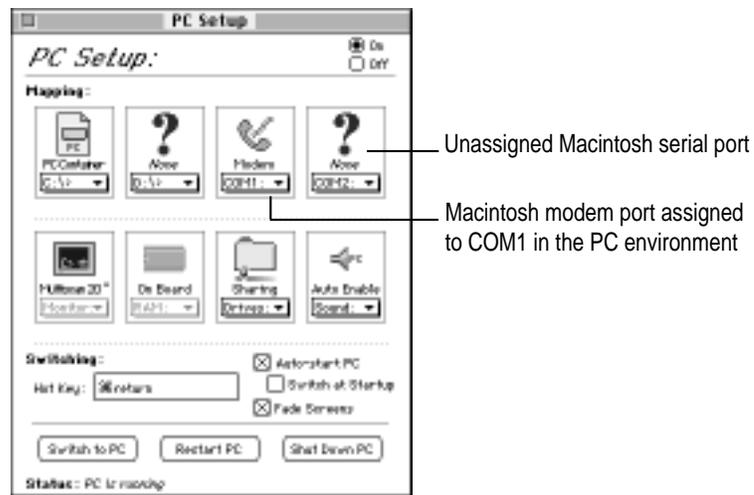
WARNING You must run SETNET every time you add or remove a network protocol, install or upgrade network software, or change anything in the network control panel. If you do not run SETNET, you will experience network problems.

To set up networking, you need to acquire and install networking client software in the PC environment. For more information, see Appendix C, "Installing Network Client Software."

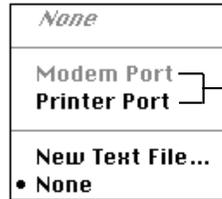
Configuring the PC serial ports

Your PC Compatibility Card supports two serial ports, COM1 and COM2. You can assign these ports to Macintosh serial ports (such as the printer or modem port) or to a text file for later processing. Or you can leave the ports unassigned.

Note: If you are using the optional PC Serial and Parallel Card to connect a printer, modem, or other device to the PC environment, you do not need to configure the Macintosh serial ports. See the manual that came with the PC Serial and Parallel Port card for additional information.



To assign a PC COM port, open the PC Setup control panel and choose a setting in the COM1 or COM2 pop-up menu.



These are the Macintosh serial ports that can be assigned to COM1 or COM2 in the PC environment. Serial ports already in use (either by the Macintosh or PC) appear dimmed in the menu.

IMPORTANT Mac OS programs cannot access a port that you've assigned to the PC environment. If you're trying to print, fax, or use your modem in the Mac OS environment, and you get a warning message that the port requested is busy or in use, then you need to unassign a PC COM port in the PC Setup control panel.

Setting up a modem or other serial device

From the PC environment, you can use a modem or other serial device connected to the Macintosh serial port.

Because the Macintosh uses the RS-422 protocol, the RS-232 Ring Indicator (RI), Request to Send (RTS), and Data Set Ready (DSR) signals are not available through a Macintosh serial port. You can attempt to configure your application to use the carrier string or ignore carrier detect.

Note: The serial port on the optional PC Serial and Parallel Port card (not included) supports the RS-232 interface directly without having to use a special cable or configure your software.

Note: For more information on setting up a modem in Windows 95 to use TCP/IP for PPP (point-to-point protocol) connections, see Appendix C, "Installing Network Client Software."

Building a custom cable

The following chart lists the signals present on the Macintosh Mini DIN-8 serial connector, and the pins that carry these signals on PC-style DB-9 and DB-25 connectors. You may be able to use this information to build a custom cable to connect your PC-compatible serial device to a Macintosh serial port. Refer to the manual for the serial device you want to connect for more information.

Macintosh signal	Macintosh Mini DIN-8	DB-9	DB-25	RS-232 name
HSKo	1	4	20	DTR
HSKi	2	8	5	CTS
TXD-	3	3	2	TXD
GND	4	5	7	GND
RXD-	5	2	3	RXD
TXD+	6	N/C	N/C	
GPI	7	1	8	DCD
RXD+	8	5	7	GND

Connecting a joystick

You can connect a game controller to the joystick port on your PC Compatibility Card. For more information, see Chapter 5, “Connecting Monitors and Other Equipment,” and the documentation that came with your joystick.

Connecting a MIDI device

With an optional adapter, you can connect a MIDI device to the joystick port on your PC Compatibility Card. For more information, see Chapter 5, “Connecting Monitors and Other Equipment,” and see the documentation that came with your MIDI device and MIDI adapter.

Setting up your DOS configuration files

When you install the PC Compatibility Card software, it makes all the necessary modifications to your DOS CONFIG.SYS and AUTOEXEC.BAT files. However, there may be times when you want to modify these files. Follow these guidelines:

Editing the CONFIG.SYS file

Your CONFIG.SYS files should include the following statements:

```
DOS=HIGH,UMB
STACKS=9,256
DEVICE=C:\DOS\HIMEM.SYS /TESTMEM:OFF
DEVICE=C:\DOS\EMM386.EXE NOEMS
LASTDRIVE=M
DEVICEHIGH=C:\APPLE\CDROM.SYS /D:CDDRVR
INSTALLHIGH=C:\APPLE\MACSHARE.COM
```

The first line loads DOS into high memory.

If you're using the DOS utility EMM386 and you don't require expanded memory, use all the statements shown above. If you are using EMM386 and you do require expanded memory, remove the following line:

```
DEVICE=C:\DOS\EMM386.EXE NOEMS
```

And replace it with this line:

```
DEVICE=C:\DOS\EMM386.EXE
```

For more information on making the best use of memory, see the information on memory management in the documentation for DOS or for your memory manager.

The last two lines load the CD-ROM drive software and file-sharing software into high memory.

Setting the number of drive letters

You can share folders and volumes with the PC by assigning them to PC drive letters. When you install your PC software, the statement `LASTDRIVE=M` is included in the `CONFIG.SYS` file. This allows you to view up to nine folders or volumes at once.

To change the number of drive letters, change your `CONFIG.SYS` file to include the following statement:

```
LASTDRIVE=x
```

where *x* is a letter between F and Z. (The PC reserves drive letters A through E.)

Each drive letter uses 100 bytes of PC memory.

Editing the `AUTOEXEC.BAT` file

Your `AUTOEXEC.BAT` file should include the following statements:

```
SET TEMP=C:\TMP
SET TMP=C:\TMP
PATH=C:\DOS
LOADHIGH C:\DOS\MSCDEX.EXE /D:CDDRV /L:E
LOADHIGH C:\APPLE\APPLEPC
C:\DOS\SMARTDRV.EXE /X
```

The first two lines determine the location for temporary files used by DOS applications.

The `LOADHIGH` lines load Windows support and CD-ROM software into high memory. The letter “E” at the end of the `MSCDEX.EXE` line assigns the letter “E” to the CD-ROM drive. You can change it to any unused letter up to the limit specified in the `LASTDRIVE` line in your `CONFIG.SYS` file.

The `SMARTDRV` line creates a disk cache to speed up DOS disk operations. The `/X` option disables the write cache, which is the slower but safer option. For best CD-ROM performance, the line containing `MSCDEX.EXE` must come before the line containing `SMARTDRV.EXE`.

8

Working in the PC Environment



This chapter describes the software that you use to work in the PC environment, to switch between the Mac OS and PC environments, and to share information between both environments.

This chapter describes the following:

- switching between the Mac OS and PC environments
- turning the PC on and off
- using floppy disk drives and floppy disks
- using CD-ROM discs and drives
- using a pointing device
- using keyboards
- copying and pasting information between Mac OS and Windows environments
- using onscreen help in the PC environment
- using shared folders and volumes
- using PC files in the Mac OS environment

Switching between the Mac OS and PC environments

Even though the Mac OS and PC environments are running simultaneously, you can only use one environment at a time. There are three different methods you can use to switch between the Mac OS and the PC.

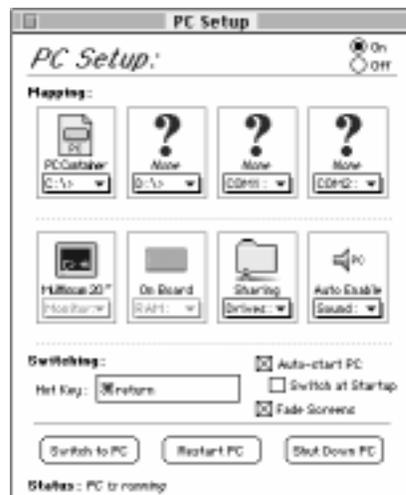
Switching with the PC Setup control panel

- 1 Choose Control Panels from the Apple () menu.
- 2 Double-click the PC Setup icon to open the control panel.



PC Setup

- 3 Click “Switch to PC” to switch to the PC environment.



If you are using a single monitor to display both environments, you can set the screen to fade briefly before switching environments by making sure Fade Screens is checked.

- 4 To switch back to the Mac OS, press ⌘-Return.

Switching with the Control Strip

If you have the Control Strip open in the Mac OS, you can use the PC Setup module to switch to the PC.

With the Control Strip visible, follow these steps:

- 1 Open the pop-up menu in the PC Setup module of the Control Strip, and choose “Switch to PC.”



- 2 To switch back to the Mac OS, press ⌘-Return.

Switching with a keyboard command

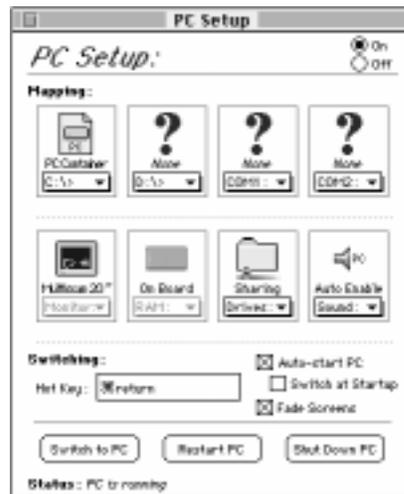
You can set a keyboard command, or hot key, to switch between the Mac OS and PC environments. The default hot key is ⌘-Return.

WARNING If you are rebuilding the desktop in the Mac OS environment, make sure rebuilding is complete before you attempt to switch to the PC environment. If you switch during the rebuilding of the desktop, your system could “freeze.”

Note: If you set a new hot key, it will work in both environments, and ⌘-Return will still work to switch from the PC to the Mac OS. But ⌘-Return will *not* work to switch from the Mac OS to the PC.

To set a new hot key, follow these steps:

- 1 In the Mac OS environment, open the PC Setup control panel.
- 2 Click the Hot Key text box.



- 3 Type the command you want to use to switch environments.

The ⌘ key is automatically included; you type the additional characters you want. For example, you might type Option-Tab, setting the switch command to ⌘-Option-Tab.

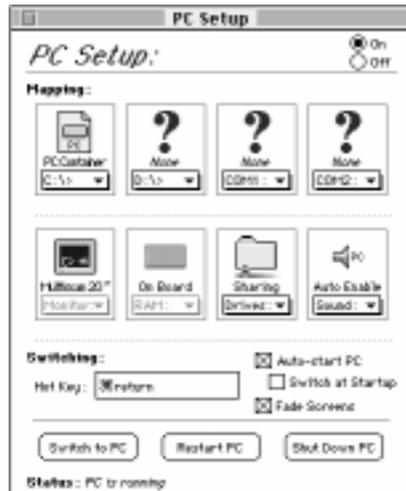
Some character combinations cannot be used. The PC Setup control panel will alert you if you select a reserved key combination.

Turning the PC on and off in the Mac OS environment

WARNING Be sure to properly exit Windows (shut down Windows 95) before shutting down the PC or Mac OS using either the PC Setup control panel or the Control Strip. If you shut down the PC without exiting Windows, you could lose information or damage your drive container.

Turning the PC on and off with the PC Setup control panel

With the PC Setup control panel open, do one of the following:



- To start the PC if it's shut down, click Start PC in the PC Setup control panel.
If the PC is already running, the button is labeled Restart PC.
- To restart the PC, click Restart PC in the PC Setup control panel.
- To shut down the PC, click Shut Down PC in the PC Setup control panel.
This option turns off the PC until you click Start PC.

- To turn off the PC Compatibility Card entirely, click Off at the top of the PC Setup control panel; then restart the Mac OS.

If you turn off the PC Compatibility Card, you will not be able to switch to the PC environment.

- To turn the PC Compatibility Card on, click On in the PC Setup control panel and restart the Mac OS.

Turning the PC on and off with the Control Strip

With the Control Strip visible, do one of the following:

- To start the PC if it's shut down, choose Start PC from the pop-up menu in the PC Setup module of the Control Strip.

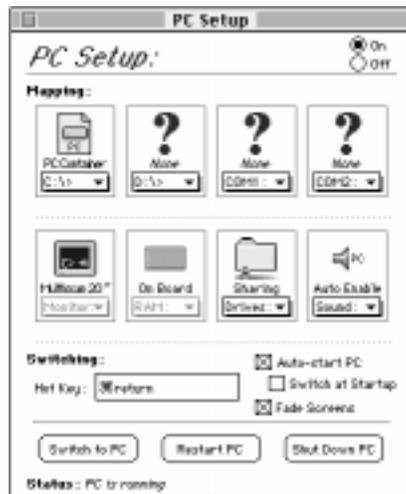
If the PC is already running, the menu will display Restart PC.

- To restart the PC, choose Restart PC from the pop-up menu in the PC Setup module of the Control Strip.
- To shut down the PC, make sure you have exited Windows, then choose Shutdown PC from the pop-up menu in the PC Setup module of the Control Strip.



Starting the PC automatically

You can set the PC to start automatically when you start your computer, and you can set your computer to switch to the PC environment automatically after startup. To do this, you use the PC Setup control panel.



- To start the PC automatically whenever you start up the Mac OS environment, click the box next to “Auto-start PC” to place an X in it.
- To automatically switch to the PC environment whenever you start up the Mac OS environment, click the box next to “Switch at Startup” to place an X in it.

WARNING If you want to switch to the PC whenever you start up, make sure that the Shut Down Warning option is turned off in the Mac OS General Controls panel. If the warning is on, you may not be able to switch back to the Mac OS environment for a few minutes after switching to the PC.

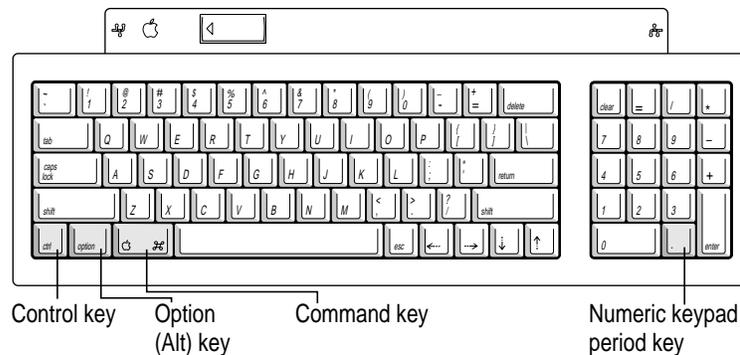
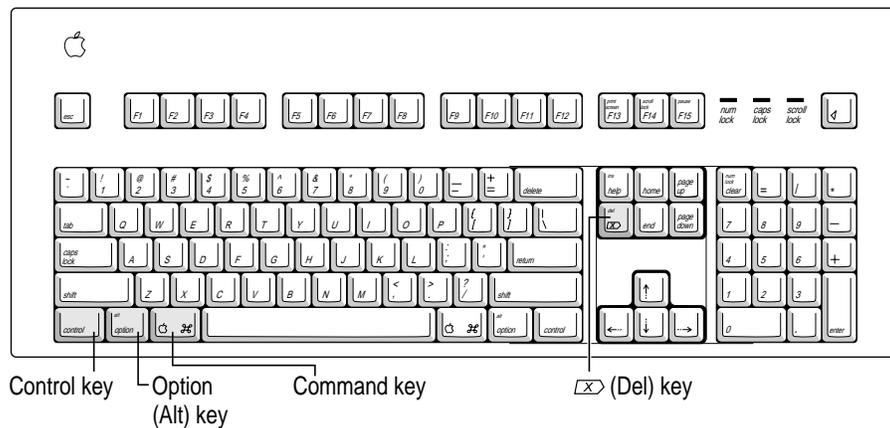
Restarting the PC in the PC environment

To restart (“warm boot”) the PC in the PC environment, use one of the following keyboard combinations:

- Control-Alt- \square (using the Del key, not the Delete key)
- Control-Alt-. (using the period key on the numeric keypad)

To reset (“cold boot”) the PC in the PC environment, use one of the following keyboard combinations:

- \mathbb{A} -Control-Alt- \square (using the Del key, not the Delete key)
- \mathbb{A} -Control-Alt-. (using the period key on the numeric keypad)



Using floppy disk drives and floppy disks

Keep the following in mind when you use floppy disks:

- To eject a floppy disk in the PC environment, press ⌘-E.
- In the PC environment, the floppy disk drives are A and B.
- In the PC environment, you cannot use a Mac OS–formatted floppy disk. If you insert one, it will be ejected.
- You can use a locked PC disk in both the PC and Mac OS environments.
- You can access an unlocked floppy disk in the environment that was active when you inserted the floppy disk, but not in the other environment.
- In the PC environment, blank disks are formatted for the PC. In the Mac OS, you can format disks for either environment.
- Some blank disks are preformatted. If you insert a new, blank disk in the PC environment and it is ejected, it may have been preformatted in Mac OS format. To use the disk in the PC environment, you can switch to the Mac OS and format the disk for the PC. For instructions, see the documentation that came with your computer or Mac OS software upgrade kit.

Note: Removable media drives such as Zip or Syquest are not directly accessible from the PC environment in the same way that your CD-ROM and floppy disk drives are. However, you can set up a shared folder in the Mac OS environment and then transfer information to and from the removable media. For more information see “Using Shared Volumes” in Chapter 7, “Setting Up the PC Environment.”

Restarting the PC from a floppy disk

To restart (reboot) the PC using a floppy disk, insert a floppy disk containing operating system software into the disk drive. Press Control-Alt-⌘ to restart the PC.

Using CD-ROM discs and drives

Keep the following in mind when using CD audio discs and CD-ROM discs and drives:

- In the PC environment, press ⌘-Y to eject a CD. If the disc cannot be ejected (because a file is in use or the disc is being shared), you will hear a beep.
- You can start an audio CD in either environment and continue to listen when you switch environments. (If you start up and switch to the PC while listening to an audio CD, the CD sound may pause for several seconds while the PC starts up.)
- If you have more than one CD-ROM drive, the PC environment can use only the one with the lowest SCSI ID number.
- You can record sound from an audio CD in the PC environment. For more information, see the PC Sound manual that came with your PC Compatibility Card.

Using a pointing device

The standard mouse or other pointing device for Macintosh computers has one button; most PC devices have two buttons that perform different functions. If you do not have a two-button pointing device, you can purchase one from your Apple-authorized dealer. Be sure to ask for an ADB (Apple Desktop Bus) device—input devices designed for a PC will not work with the Macintosh ADB port.

If you have a multibutton Mac OS-compatible pointing device, you may be able to configure it to use the right button in the PC environment. Refer to the instructions that came with your device.

You can use keyboard commands to simulate the actions of the second button. If you are using a one-button device, you can control it as follows:

- The button behaves like the left button on a two-button device.
- There are two ways to simulate pressing the right button:
 - Select an item and then press the = (equal) key on the numeric keypad.
 - Hold down the Command key (⌘) while you click the button.
- To simulate pressing the left and right buttons at the same time, press the button and the = (equal) key simultaneously.

Note: If the software for your two-button device does not automatically configure your device for the PC or does not include a “Windows Right Mouse Button” option, you may be able to assign the = (equal) key to the right button.

Using keyboards

You can use all Apple keyboards with your PC Compatibility Card.

The Option key on an Apple keyboard is the same as the Alt key in the PC environment.

On the Apple Extended Keyboard II, use the following equivalents for keys on a PC keyboard. (These equivalents also apply to the Apple Adjustable Keyboard if the function keyboard isn't plugged in.)

PC key	Macintosh keyboard equivalent
Alt	Option
F1 through F9	⌘-1 through 9
F10	⌘-0
F11	⌘-(minus)
F12	⌘-(equal)
F13	⌘-[
F14	⌘-]
F15	⌘-\
Home	⌘-[keypad] 7
PageUp	⌘-[keypad] 9
End	⌘-[keypad] 1
PageDown	⌘-[keypad] 3
Insert	⌘-[keypad] 0
Del	⌘-[keypad] (period)
Backspace	Delete
Eject a floppy disk	⌘-E
Eject a CD	⌘-Y

Copying and pasting information between the Mac OS and Windows environments

You can exchange certain kinds of information between the Mac OS and Windows environments using the Copy and Paste commands in the Edit menu in both environments. To do this, the PC Clipboard extension and Macintosh Easy Open (Mac OS Easy Open) control panel must be installed in the Mac OS and the WINCLIP utility must be installed in Windows.

The PC Clipboard translates the following information formats:

- Windows CF_TEXT to/from Mac OS TEXT
- Windows RTF to/from Mac OS RTF
- Windows DIB to/from Mac OS PICT

To determine the format of information in the Mac OS, you can paste the material into the Scrapbook. In Windows, the View menu in Clipbook Viewer lists the formats that information may be converted to.

Note: Copying and pasting between DOS and Mac OS is not supported. However, you can paste information into the MS-DOS prompt in Windows 95 by using the paste button. If you want to translate information between the DOS and Mac OS environments, you can exchange files via a file translation program.

When transferring information between the Mac OS and Windows, keep the following in mind:

- If you have the PC Clipboard extension installed, the Mac OS and Windows share a clipboard. That means if you copy an item to the Mac OS Clipboard, switch to Windows, and then copy an item to the Windows Clipboard, the original Mac OS Clipboard contents will be deleted.

To prevent this, you can turn off Automatic Document Translation in the Macintosh Easy Open (Mac OS Easy Open) control panel, or you can remove the PC Clipboard extension from the Extensions folder (inside the System Folder in the Mac OS). Removing the extension turns off clipboard translation between Mac OS and Windows.

Note: If you remove the PC Clipboard extension, you will see an alert message every time you switch from the PC to the Mac OS.

- If you want to transfer information from the Mac OS Clipboard to Windows, make sure that Windows is running before you switch environments.
- Sounds cannot be transferred on the Clipboard between the Mac OS and Windows. You must use a sound translation program to transfer sound files.
- When you're in the PC environment, all Mac OS programs are put in the background and the PC Clipboard runs in the foreground. You can prevent this by removing the PC Clipboard extension from the Extensions folder (inside the System Folder in the Mac OS). Removing the extension turns off clipboard translation between the Mac OS and Windows.

Note: If you remove the extension, you will see an alert message every time you switch from the PC to the Mac OS.

If you are having trouble pasting information between Windows and the Mac OS, try the following:

- Assign more memory to the PC Clipboard utility and to the Mac OS application into which you are pasting information.
- Make sure that Macintosh Easy Open (Mac OS Easy Open) is installed.
- In the Macintosh Easy Open (Mac OS Easy Open) control panel, make sure the Automatic Document Translation option is turned on.
- Save the document you're copying from in a different format. Then reopen the document and copy the material you want to move.
- Use the Paste Special command that is available in some Windows applications. This command lets you specify the format of material you're pasting.
- If you're pasting an image to the Win95 WordPad, try using the command Insert Object as Paintbrush Picture.
- Images that are compressed in the Mac OS (such as Kodak Photo CD thumbnails) may display only in gray when you paste them into Windows. If this happens, try expanding the image before copying it.
- If you are using the Windows PaintBrush in Windows 3.1 or Windows for Workgroups, prior to switching to the Mac OS environment, make sure that a menu is not pulled down. When you switch back to the PC environment, the portion of a menu that overlaps your painting may be incorporated into the painting.

Transferring large bitmap images

If you are transferring large bitmap images from the PC to the Mac OS environment, you may have to increase the memory allocated to the PC Clipboard application. To increase the memory allocation, follow these steps:

- 1 Open the System Folder, then open the Extensions folder.
- 2 Select the PC Clipboard icon, open the File menu, and choose Get Info.



- 3 In the Preferred Size text box, enter a larger memory allocation, such as 1000K.
- 4 Close the PC Clipboard Info window.

Using onscreen help in the PC environment

You can install onscreen help for the PC environment when you install the support software. If you install help, it will be available in the PC environment in the HELP directory, in the directory where the Apple software is installed.

To start help in Windows 95, follow these steps:

- 1 Open "My Computer."
- 2 Open the C drive.
- 3 Open the Apple software folder. (The default folder name is "Apple.")
- 4 Open the Help folder.
- 5 Double-click the SETUPHELP application.

To start Help in Windows 3.1, follow these steps:

- 1 In the Program Manager, choose Run from the File menu.
- 2 Type `C:\APPLE\HELP\SETUPHELP.EXE` and then click OK.

Using shared folders and volumes

You can share Mac OS folders and volumes with the PC by assigning them drive letters. The MACSHARE utility (installed with the PC support software) makes this possible.

Note: When you name a folder in the Macintosh environment that you intend to share with the PC environment, use a name that conforms to DOS 8.3 filename guidelines. Otherwise, the sharing software will truncate and translate the name to fit the guidelines. For more information about naming files, see your DOS manual.

Note: PC applications and their files work more quickly in a drive container or on a hard disk than in a shared folder. The performance of Mac OS programs is not affected by placing them in shared folders.

IMPORTANT Information in the “resource fork” of a Mac OS file (such as an original icon) is lost when the file is copied in the PC environment. This may damage some files. To copy a QuickTime file, for example, you must open it in the Mac OS using the MoviePlayer program and save it in “non-Apple computer format” before copying or using it in the PC environment.

Using PC files in the Mac OS environment

There are three ways to access PC files in the Mac OS:

- You can access PC files on a floppy disk. For more information, see “Using Floppy Disk Drives and Floppy Disks,” earlier in this chapter.
- You can access PC files in a shared folder or volume. For information on setting up a shared area, see “Using Shared Volumes” in Chapter 7.
- You can access PC files in a PC drive container or a PC-formatted SCSI hard drive attached to your Macintosh.

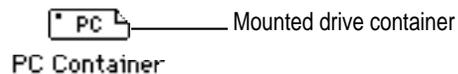
With Macintosh PC Exchange, you can see, move, and copy PC documents as icons in the Mac OS. However, you may not be able to open every kind of PC file in the Mac OS. If you can't open a file or if the file is not displayed properly, try one of the following:

- Try opening the file using a different application program.
- Translate the document into a different file format using a file translation utility.
- If your PC program has an Export feature, use it to save the document in a different file format.
- Use a PC–Mac OS translation utility.

To gain access to files in a PC drive container from the Mac OS, follow these steps:

1 In the Finder, double-click the drive container to open it.

The drive container appears on the Mac OS desktop as one of the following disk icons:



2 Double-click the container's disk icon.

The icon opens and you have access to the files inside it.

Note: If the PC is running, you can copy files from the drive container to the Mac OS, but you can't add anything to the drive container or change any files in it. If you want to add or change files from the Mac OS environment, you must shut down the PC.

9

Troubleshooting



Consult this chapter when you have questions about using the PC environment on your Macintosh.

If you have questions about using DOS, Windows, or PC application programs, see the manuals that came with your operating system software or programs.

Apple will provide technical support for Apple-branded software and for DOS because it is included with the PC Compatibility Card. If you are having a problem with Windows, Windows for Workgroups, or Windows 95, contact Microsoft Product Support. See the support information that came with your Windows package for more information.

WARNING If you have a problem with your PC compatibility hardware or software and nothing presented in this guide solves it, consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for assistance. If you attempt to repair the PC compatibility hardware yourself, any damage you may cause will not be covered by the limited warranty. Contact an Apple-authorized dealer or service provider for additional information about this or any other warranty question.



Starting up

The Macintosh “freezes” during startup.

Restart the computer while holding down the Shift key. This turns off extensions. After the computer starts up, restart the computer again. If the computer still doesn't start up, consult the troubleshooting information that came in its user manual.

The PC Setup icon has a red slash through it at startup.

The PC setup extension did not load.

You may have started up the computer holding down the Shift key, which turns off extensions. Restart the computer without holding down the Shift key.

A RAM disk or RAM cache in the Mac OS may be using too much memory. Reduce the size of the RAM disk or RAM cache, and restart the computer.

There may be a problem with the PC Setup Prefs file (in the Preferences folder within the System Folder). Remove the file and restart the Macintosh. Then use the PC Setup control panel to recreate your settings. If this doesn't work, try reinstalling the PC software (see Chapter 6, “Installing the PC Compatibility Card Software”).

The Mac OS software for the PC Compatibility Card doesn't seem to be installed.

See Chapter 6, “Installing the PC Compatibility Card Software,” for a list of the Mac OS software that is required for the PC Compatibility Card. If any of these items is missing, and you are having trouble using the PC Compatibility Card, try reinstalling the software, following the instructions in Chapter 6.

The PC didn't start up.

Open the PC Setup control panel. If drive C is not assigned to a drive container or hard disk drive, you will see a question mark icon in the C drive box. In this case, either assign drive C to an existing drive container or create a new drive container (see “Creating a Drive Container” in Chapter 6).

In the PC Setup control panel, make sure the On button is selected. If it is, click Start PC at the bottom of the control panel. If it's not selected, click it; then restart your Macintosh. Open the PC Setup control panel again and click Start PC.

If the On button is selected and you have restarted the Macintosh, but the “Switch to PC,” Start PC, and Shut Down PC buttons are not available, there may be a problem with your PC Compatibility Card. Consult your Apple-authorized service provider.

There may be a problem with an additional DIMM installed on your PC Compatibility Card. Open the PC Setup control panel and check the RAM portion of the control panel. If no DIMM is indicated and you have installed an additional DIMM, remove it and restart the computer. If a DIMM is detected by the PC Setup control panel, you can still remove it and restart the computer. For more information on adding and removing DIMMs, see Appendix B, “Adding Memory to Your PC Compatibility Card.”

When I start up the computer it goes directly into the PC environment.

If you don't want the PC environment to start automatically, return to the Mac OS environment by pressing ⌘-Return. Open the PC Setup control panel and make sure the “Switch at Startup” box is not checked.

DOS begins to start up but then the screen freezes. The cursor blinks, but I cannot type anything.

Press ⌘-Control-Alt-⌘ to restart the PC. (If you do not have the ⌘ key on your keyboard you can substitute the period key on the numeric keypad.) When you see the message “Starting MS-DOS” or “Starting Windows 95,” follow this step to bypass your CONFIG.SYS and AUTOEXEC.BAT files:

DOS or Windows: Press and hold the Shift key.

Windows 95: Press and hold the F5 key.

After the PC has started up, check the CONFIG.SYS and AUTOEXEC.BAT files, change any incorrect lines, and then restart the PC.

Switching to and from the PC

I can't remember the command I set to switch back from the PC environment to the Mac OS.

In the PC environment, you can always use ⌘-Return to switch back to the Mac OS environment. To change the switch command, see “Switching Between the Mac OS and PC Environments” in Chapter 8.

There is a delay when switching between environments.

There is a delay when you switch to the PC immediately after starting it or when you use the ⌘-Control-Alt-⌘ command to perform a hard restart. The PC is performing some system configuration tasks.

When switching would interfere with a Mac OS system task, there is a slight delay until the task is completed.

There also may be a delay while a large amount of Clipboard information is transferred.

If you are switching to the PC immediately after starting up the computer, make sure the Shut Down Warning is turned off in the General Controls panel in the Mac OS. If it is on, you may not be able to switch back to the Mac OS for several minutes after switching to the PC.

When I switch to the Mac OS from the PC environment, a message appears: “PC Clipboard requires additional system services in order to function. Please ensure that the PC Compatibility Card is successfully installed.”

Macintosh Easy Open (Mac OS Easy Open) software may be turned off or may not be installed. Restart the computer, open the Macintosh Easy Open (Mac OS Easy Open) control panel, and make sure the software is turned on. If you can't find the control panel, you need to reinstall it.

In the PC environment, I see the message “Non-system disk or disk error. Replace and strike any key when ready.”

The PC Compatibility Card can't find operating system software such as DOS or Windows.

A nonbootable floppy disk may be in the floppy disk drive. Press ⌘-E to eject the disk; then press any key to continue or try restarting the PC again.

Also, make sure drive C is assigned to a drive container or hard disk drive that contains DOS or Windows software.

If you can't find a drive container, it may have been installed on an external drive that is not turned on, or on removable media that is not available. Or, the drive may have been thrown away or never created. (See Chapter 6, "Installing the PC Compatibility Card Software," for more information on drive containers.)

My monitor flashes oddly when I switch environments.

When you are using a single monitor for both environments, there is a flash when you switch from one environment to the other. If you prefer not to see the flash, select the Fade Screens option in the PC Setup control panel.

Monitor problems

See also the troubleshooting section in Appendix D, "Configuring Video Software."

When I try to switch to the PC environment, my screen is blank or garbled.

Open the PC Setup control panel and check the Monitor portion of the control panel.

If you see the message "Not Supported," your monitor may not be compatible with the PC Compatibility Card. Refer to Appendix D, "Configuring Video Software," for monitor specifications and video modes, and check with your monitor vendor to see if your monitor conforms to these specifications.

If you see the message "No Monitor," your monitor may not be connected properly. Make sure your monitor is connected according to the instructions in the chapter for installing the card in your computer model and Chapter 5, "Connecting Monitors and Other Equipment."

If you're using a VGA monitor connected to a VGA-to-Macintosh adapter, you may be able to reconfigure the adapter to identify itself to the PC Compatibility Card and Macintosh. Check the documentation that came with your monitor and adapter.

Make sure that you've configured your video software correctly. The PC Compatibility Card does not support resolutions greater than 1280 x 1024. For more information, see Chapter 6, "Installing the PC Compatibility Card Software," and Appendix D, "Configuring Video Software."

The PC Setup Prefs file may be damaged. Locate the file (in the Preferences folder inside the System Folder) and drag it to the Trash; then restart the Macintosh. When the Mac OS starts up, open the PC Setup control panel and reconfigure your settings.

I tried configuring my display and now it won't work properly.

In Windows 95, if you choose a configuration that doesn't display properly, follow these steps to correct the problem:

1. Switch to the Mac OS by typing ⌘ -Return.
2. In the PC Setup control panel, click Restart PC.
3. Switch to the PC.
4. When you see the message "Starting Windows 95," press F8 to enter Safe Mode.
5. When Windows 95 starts up, click Start, choose the Settings menu item, and click Control Panel.
6. Double-click the Display icon.
7. Click the Settings tab, and select a correct monitor setting in the list that appears (such as 640 x 480). Then restart Windows.

My monitor flashes oddly when I switch environments.

When you are using a single monitor for both environments, there is a flash when you switch from one environment to the other. If you prefer not to see the flash, select the Fade Screens option in the PC Setup control panel.

When I start up certain software in the PC environment, my monitor shows a jumbled or rolling image.

You may have selected the wrong monitor type when configuring your video software. For more information, see Chapter 6, "Installing the PC Compatibility Card Software."

Some application programs that write directly to the hardware (especially games) may not work with some monitors. Contact the software company and ask if the software has a switch to force it to make BIOS calls.

The PC Setup control panel does not report the correct monitor type.

Hold down the Option key and open the Monitor pop-up menu. Choose “Sense Display Type.” If that does not solve the problem, hold down the Option key and open the Monitor pop-up menu. Choose the monitor that most closely matches your monitor.

You may have a VGA-to-Macintosh adapter that is set incorrectly.

If you are using the AppleVision 1710 or 1710AV display, make sure that the AppleVision software is installed in the Mac OS environment and that the monitor’s ADB cable is connected to the Macintosh ADB port. For more information, see Chapter 5, “Connecting Monitors and Other Equipment.”

If you are using a non-Apple monitor, it may report the incorrect monitor type. If you are using a multiscan monitor you may want to turn off autosensing in the PC Setup control panel. Hold down the Option key, open the Display pop-up menu, and choose the monitor that most closely matches your monitor.

PC Setup seems to detect my monitor correctly, but when I switch to the PC environment the image is jumbled or rolling.

If you are using a VGA-to-Macintosh adapter, check whether you can control the “sync” pulse on one or more signals going to the display. If so, try changing the “sync” pulse and see if this solves the problem.

My non-Apple display does not seem to work correctly in the PC environment.

- Use the Windows 95 Display control panel to select your monitor name. If your monitor name is not available, select the SuperVGA monitor option that matches the maximum resolution supported by your monitor.
- Use the ATI FlexDesk or the Windows 95 control panel to set the refresh rate to 60 Hz. For more information, see Appendix D, “Configuring Video Software.”
- If the monitor still does not display properly, reduce the resolution.

Problems using a modem

My modem is not working correctly in Windows 95.

Try disabling the “Use flow control” or “Use error control” options for the modem. To do so, follow these steps:

1. In Windows 95, click the Start button, choose the Settings menu item, and then choose Control Panel.
2. Double-click the Modem icon.
3. Click the Properties button.
4. Click the Connection tab in the dialog box that appears.
5. Click the Advanced button.
6. Deselect the “Use flow control” or “Use error control” options, and click OK.

If you are having trouble connecting at higher baud rates, try setting the modem speed to 19200 baud or less.

When I try to use my Mac OS communications software, I get an error that says the selected port is in use.

Your Mac OS communications software may be trying to use a port that is assigned to the PC Compatibility Card. Open the PC Setup control panel and unassign the selected port by setting it to none.

After I assigned a PC COM port to a Macintosh serial port, my computer did not start up properly.

This problem can occur if you are using Apple Remote Access (ARA) 2.0 or 2.0.1. To correct the problem, restart while holding down the Shift key to temporarily turn off all system extensions. Then remove the Serial Port Arbitrator from the Extensions folder inside your System Folder, and restart your computer. (Prior to using ARA, unassign the PC COM port and restart the Mac OS environment.) You can also correct this problem by upgrading to ARA 2.1.

Problems with files and disks

I can't eject my floppy disk or CD when I am in the PC environment.

To eject a floppy disk in the PC environment, press ⌘-E. To eject a CD in the PC environment, press ⌘-Y.

If you are unable to eject the disk using the keyboard combination, the disk may be in use. Close all open applications in both environments and then try to eject the disk from the Mac OS environment.

I want to assign a drive container to the C or D drive, but I can't find the drive container in the dialog box.

The drive container may be assigned to another drive letter. Check the C: and D: pop-up menus.

The drive container may be on an external hard drive. Make sure that the drive is connected correctly and the power is on. If it is not connected, shut down the computer, reconnect it, and then restart.

I want my drive container to have more than one partition.

Create a new drive container following the instructions in “Creating a Multiple Partition/Bootable Drive Container” in Chapter 7. Initialize the drive container in DOS using the FDISK and FORMAT commands.

I can't share all the folders I want.

Make sure that you have sufficient drive letters assigned in your CONFIG.SYS file's LASTDRIVE statement. The PC reserves the letters A–E; other letters are available to be assigned to shared folders or volumes.

Novell NetWare may reassign drive letters even if you have assigned them to shared folders. Try reserving additional drive letters and reassigning your shared folders.

I inserted a floppy disk in the PC environment and it was ejected.

The disk may have been formatted for the Mac OS. Switch to the Mac OS and try inserting the disk again.

I want to change the size of my drive container.

Once a drive container is created, its size cannot be changed. If you need to increase the size of your drive container in order to install more applications or files, you can create another drive container and assign it to drive D.

I inserted a PC-formatted disk in the Mac OS and an initialization message appeared.

PC Exchange may not be installed in the Control Panels folder. If you don't find it, you can reinstall it using your system software CD-ROM disc.

The disk may be damaged. Try inserting another disk. If that works, test the original disk in the PC environment using a disk repair utility.

I can access a floppy disk from one environment but not the other.

Only a locked floppy disk can be accessed in both environments simultaneously. Eject, lock, and reinsert the disk, or eject the disk, switch to the environment you want to use it in, and reinsert the disk. The disk must be formatted for the PC if you want to use it in the PC environment.

I switched to the Mac OS, and I don't see the floppy disk I was using.

The floppy disk may not have been locked. To use an unlocked PC-formatted floppy disk in the Mac OS, you must switch to the Mac OS before inserting the disk. To use a disk in both environments, lock the disk.

Shared folders don't get updated in Windows 95.

Sometimes you need to refresh shared folders manually in Windows 95. Click "My Computer," click View, then click Refresh.

In some Microsoft applications, a shared drive icon looks like a floppy disk or CD icon.

The shared drive is still usable.

I can't access my Zip or Syquest drive while in the PC environment.

While in the PC environment, you can't access removable media directly the same way you access the floppy disk drive. However, you can set up a shared folder in the Mac OS environment and then transfer information to and from the removable media. For more information see "Using Shared Volumes" in Chapter 7, "Setting Up the PC Environment."

I am unable to use Microsoft Backup.

In Windows 95, you cannot use Microsoft Backup because it needs a PC floppy drive controller that does not exist in your Macintosh. You can use a Mac OS backup program to back up your PC container file.

You can use Microsoft Backup in Windows 3.1 or Windows for Workgroups. To do so, configure the backup manually by following these steps:

1. Add the following line to the [386enh] section of your SYSTEM.INI file:

```
device=vfintd.386
```

Your SYSTEM.INI file is in the WINDOWS directory.

2. Start the Microsoft Backup program.
3. Click No in the Auto-configure dialog box.
4. In the Configuration window, select “1.44 Mb 3.5” in the Drive A list box.
You may also click Configure from the standard toolbar at the top. Do not click the Compatibility Test button because it may cause a system “freeze.”
5. Click Backup on the standard toolbar.
6. If you are backing up to floppy disks, choose MS-DOS Path from the Backup To list box. Type “A:\” in the second list box that appears.
You can type a different path to back up to a network device.
7. Continue with your backup.

When you use the Compare or Restore options, you must choose MS-DOS Path in the Compare From and Restore From list boxes.

I can't start up the PC from a drive container created in Insignia SoftWindows or SoftPC.

You can use drive containers created with SoftWindows or SoftPC, but you will not be able to start up from them. When you select a container created with SoftWindows or SoftPC, be sure to choose a drive letter other than C.

If SoftWindows or SoftPC is running, you cannot access the drive containers.

In the PC environment, the CD-ROM drive doesn't recognize some CDs.

The PC Compatibility Card only recognizes the following types of CDs: PC format (ISO 9660), dual format (disks formatted for both the Macintosh and PCs), and audio. Some specialized formats are not supported.

Problems with information transfer

Copying and pasting between environments isn't working.

Only certain kinds of information can be copied and pasted. See “Copying and Pasting Information Between the Mac OS and Windows Environments” in Chapter 8 for more information.

Copying and pasting between Mac OS and Windows works only if the PC Clipboard extension is installed in the Extensions folder inside the System Folder (in the Mac OS) and WINCLIP is installed in the Windows environment.

Check the Control Panels folder in your System Folder to make sure that the Macintosh Easy Open (Mac OS Easy Open) control panel is installed. Make sure the Automatic Document Translation option is turned on.

If Macintosh Easy Open (Mac OS Easy Open) is not available, you can install it from your system software CD.

Windows must be running before you begin to copy and paste.

You cannot copy and paste between the Mac OS and DOS.

The PC Setup Prefs file may be damaged. Locate the file (in the Preferences folder inside the System Folder) and throw it away; then restart the Macintosh. When the computer starts up, open the PC Setup control panel and reconfigure your settings.

Tips for copying and pasting images

If you are having trouble copying and pasting text or images between the Mac OS and PC environments, try the following tips:

- Instead of using the Paste command, use the Paste Special command if it is available in the application you are pasting into.
- If you cannot paste an image into a word-processing program in the PC environment, try pasting the image into a graphics program, such as PaintBrush. Then, copy the image to the Clipboard from the graphics program and try pasting it into your word-processing program.

- Instead of copying and pasting, use a shared folder to transfer an entire file from one environment to another. Some Macintosh and Windows programs can open files created on other platforms. For example, ClarisWorks® for Windows can open ClarisWorks files created in the Mac OS environment, and vice versa. Even if you are using two different programs, you may be able to save a file in a file format that both programs understand, such as RTF for text, and EPS or TIFF for graphics. (Check the manuals that came with your programs to see if they support common file formats.)
- If you must use the Clipboard to transfer a lot of data or a large graphic, try transferring the data in smaller pieces or making more memory available to the application. For more information on increasing a program's memory, see the "Memory" topic area of Macintosh Guide (Mac OS Guide), available in the Guide (🔍) menu.
- If you are copying and pasting a PhotoCD image, make sure you are copying an expanded version of the image.

I can't copy graphics from a Microsoft Word 6.0 document in the Mac OS environment.

Try this method instead:

1. Select the graphic in Word 6.0 and choose Cut from the Edit menu.
2. Open the Edit menu and choose Paste Special.
3. In the Paste Special dialog box, select Picture format and click OK.
4. Select the graphic you just pasted, and choose either Cut or Copy from the Edit menu.
5. Switch to the PC environment, and try pasting the graphic.

I can't copy files from the Mac OS environment to a drive container.

To copy files to a drive container, the drive container file has to be mounted on the desktop and the PC must be shut down.

I cannot open or save my files in a shared folder.

With some Windows 95 programs, you may not be able to open or save files in a shared folder. You may have to move a file out of the shared folder before you can open it, or save a file to a different location and then move it into the shared folder.

Communication and network problems

I can't connect to a network in the PC environment.

Make sure that your networking software is properly installed and configured (see the section on installing network support for Windows or Windows 95 in Chapter 6, “Installing the PC Compatibility Card Software,” and see Appendix C, “Installing Network Client Software”).

Make sure the network is up and running (check the Chooser and check with your network administrator).

My PC communications software doesn't work.

The Macintosh serial port does not have the same interface as the PC does and some commands do not work. See “Setting Up a Modem or Other Serial Device” in Chapter 7.

I get an error message associated with my Windows 95 PROTOCOL.INI file.

If an error message appears stating that there are illegal decimal characters in the PROTOCOL.INI file, the Windows 95 Network control panel may have modified some of the lines. To correct this problem, run the SETNET utility. For more information, see Appendix C, “Installing Network Client Software.”

My system “freezes” when I am using ODI with Windows 95.

You may experience system “freezes” if you are using NetBEUI or TCP/IP with ODI in Windows 95. To correct this problem, delete the following line from the STARTNET.BAT file in the NWCLIENT directory:

```
C:\WINDOWS\ODIHELP.EXE
```

After deleting the line, you should then add it to the end of your AUTOEXEC.BAT file.

When I start up in the PC environment I get a message that a shared volume no longer exists.

Reassign the drive letter to a new drive. If you cannot remember the drive letter, drag the PC Setup Preferences file to the Trash, open the PC Setup control panel, and reconfigure your settings.

Configuration problems

I can't assign a COM port to a Macintosh serial port.

COM ports cannot be assigned to Macintosh serial ports that are in use by an application or network software.

If you assign a COM port to a Macintosh serial port, the serial port cannot be used by the Mac OS until you unassign the COM port.

When I try to use my Mac OS communications software, I get an error that says the selected port is in use.

Your Mac OS communications software may be trying to use a port that is assigned to the PC Compatibility Card. Open the PC Setup control panel and unassign the selected port by setting it to none.

Sound problems

I can't hear PC sounds.

PC sound may be turned off in the PC Setup control panel.

If you can't hear sound from a CD, make sure that the internal audio cables are installed according to the instructions in the chapter on installing the PC Compatibility Card in your computer model.

The PC Compatibility Card can play sound only from the CD-ROM drive with the lowest SCSI ID number. If you're using another CD-ROM drive, you won't hear sound when you switch to the PC environment.

If you are using DOS or Windows, increase the speaker volume with the Sound Blaster Mixerset application. To run the Mixerset application from DOS, change to the VIBRA16 directory, type `mixerset`, and press Return.

Check that the AUTOEXEC.BAT and CONFIG.SYS files contain the following lines:

AUTOEXEC.BAT (for Windows 95)

```
SET SOUND=C:\PROGRA~1\CREATIVE\CTSND
SET BLASTER=A220 I5 D1 H5 P330 T6
SET MIDI=SYNTH:1 MAP:E
```

AUTOEXEC.BAT (for Windows)

```
SET SOUND=C:\VIBRA16
SET BLASTER=A220 I5 D1 H5 P330 T6
SET MIDI=SYNTH:1 MAP:E
C:\VIBRA16\DIAGNOSE /S
C:\VIBRA16\MIXERSET.EXE /P /Q
```

CONFIG.SYS (for Windows 95 or Windows)

```
DEVICE=C:\VIBRA16\DRV\VIBRA16.SYS /UNIT=0 /BLASTER=A:220
I:5 D:1 H:5
DEVICE=C:\VIBRA16\DRV\CTMMSYS.SYS
```

CD sound went away when I switched environments.

If you are playing an audio CD when you start the PC and switch environments, there is a delay in the sound while the PC completes some system configuration tasks.

Check that the CONFIG.SYS file contains this line:

```
DEVICEHIGH=C:\APPLE\CDDROM.SYS/D:CDDRVR
```

Check that the AUTOEXEC.BAT file contains this line:

For Windows 95:

```
LOADHIGH C:\WINDOWS\COMMAND\MSCDEX.EXE /D:CDDRVR /L:E
```

For Windows:

```
LOADHIGH C:\DOS\MSCDEX.EXE /D:CDDRVR /L:E
```

I'm using Windows or Windows for Workgroups, and I can't play audio CDs with the Media Player or CD utilities.

Reinstall the MCI CD Audio driver from your original Windows installation disks. To install this driver, open the Control Panel icon in the Main program group. Double-click the Drivers icon, select [MCI] sound driver and click the Add button in the window that appears. Select [MCI CD Audio] from the scroll list and click OK. Insert the specific Windows installation disk if necessary.

Printing problems

Printing doesn't work.

Make sure that you've selected the correct preferences in PC Print Spooler (in the Extensions folder inside the System Folder). If your printer does not support PostScript, choose Epson.

Make sure that you have chosen appropriate printer drivers in your DOS applications and your Windows environment. If you have a PostScript Level 1 printer, you must choose a PostScript Level 1 printer driver in Windows—a driver for a Level 2 printer will not work.

Make sure a printer is selected in the Macintosh Chooser.

If you're using Windows, make sure that bidirectional printing and the "Check port before printing" options are turned off. If you're printing to a PostScript printer, make sure that the "Send Ctrl+D" feature is turned off.

For more information, see "Setting Printer Options" in Chapter 7.

When I try to print from the DOS prompt, I get an error message.

If you're using a PostScript printer driver, open PC Print Spooler in the Extensions folder (inside the System Folder). Choose Preferences from the File menu. Make sure the checkbox labeled "Allow DOS Text Printing" has an X in it. Switch to DOS and try printing again (or move the spool file from the Spooler Rejected folder to the Spooler folder).

When I print a document in the PC environment, the top and bottom get clipped.

If you're using Epson emulation, open PC Print Spooler in the Extensions folder, choose Preferences from the File menu, and select "Gaps between pages." In the PC environment, configure your applications to print to a 60-line page.

When I print a document from a DOS application, the fonts don't look right.

Try choosing different fonts. If you're using Epson fonts instead of bitmap fonts, use monospace fonts for best formatting results.

If you're using Epson emulation, you may have chosen Faster Printing in the Preferences dialog box of the PC Print Spooler, which prints the whole document using a single font. Choose Better Quality and try printing again.

You may have selected a proportional space font as your default font in the PC Print Spooler. If you select a proportional space font, the formatting of your files may change. Try selecting a monospace font such as Courier or Monaco or using the graphical fonts available in your DOS application.

When I print a document in the PC environment, text doesn't print or is cut off, or text that should print at the bottom of one page prints on the next page.

Try selecting "No gaps between pages" in the PC Print Spooler Preferences dialog box, and try printing again. (When you print after choosing this option, the PC Print Spooler software will print 66 lines per page instead of 60 lines per page.) For more information, see "Setting Printer Options" in Chapter 7, "Setting Up the PC Environment."

I selected "No gaps between pages" in the PC Print Spooler Preferences dialog box, but text near the top and bottom of each page still doesn't print or is cut off.

Most laser and ink jet printers cannot print close to the edges of a page. Find out the minimum margins for your printer in the specifications section of the manual that came with your printer. Then reset the top and bottom margins in the application from which you are printing.

When printing multiple files in Windows 95, I keep getting PostScript errors.

Print one file at a time. Printing multiple files may cause a PostScript error. To verify that the file has finished printing, check the Windows 95 printer queue.

I can't print a test page in Windows 95.

When you use Add Printer Wizard to set up a printer, do not print a test page until the printer is configured according to the instructions in “Setting Up Printing in Windows 95” in Chapter 7, “Setting Up the PC Environment.” Then you can print a test sheet by doing the following:

1. In the Printers window, click the icon of the printer you just added.
2. Choose Properties from the Printer menu.
3. In the dialog box that appears, click Print Test Page.

When I print from Windows 95 to my Hewlett Packard PostScript printer, I get several pages of strange text.

This occurs with some Hewlett Packard printers that support both PCL and PostScript, including the following printers:

- LaserJet 6 Series w/ PostScript
- LaserJet 5 Series w/ PostScript
- LaserJet 4 Series w/ PostScript
- DeskJet 1600C/CM
- DeskJet 1200C/PS

The Windows 95 printer drivers for these printers include non-PostScript information called a PJI (Printer Job Language) header that causes the PC Compatibility Card to incorrectly print the PostScript code.

If the first line of every print job contains the letters PJI, you are experiencing this problem. Configure the printer driver not to send a PJI header by setting the printer driver to “archive format.” To do so, follow these steps:

1. Open the Properties window for the HP printer driver.
2. Select the PostScript tab.
3. Change the “PostScript output format” option to “Archive format.”
4. Click OK.

Other problems

I'm running applications in both environments and they seem sluggish.

Significant drive access in one environment (including file sharing) can cause a slowdown in the other.

The PC environment is frozen, and pressing Control-Alt- doesn't reset the system.

Try restarting by pressing -Control-Alt-period (the decimal point on the numeric keypad) or -Control-Alt-. If you can, switch to the Mac OS and click Restart PC in the PC Setup control panel. If these options don't work, restart the Macintosh using the Reset key or keyboard command.

I can't configure my pointing device.

You don't need to configure some pointing devices.

If you have a two-button ADB pointing device, you may be able to use its software to map the = (equal) key on the numeric keypad to the right button. This lets the device behave like a standard PC device.



Appendix A Removing Your PC Compatibility Card



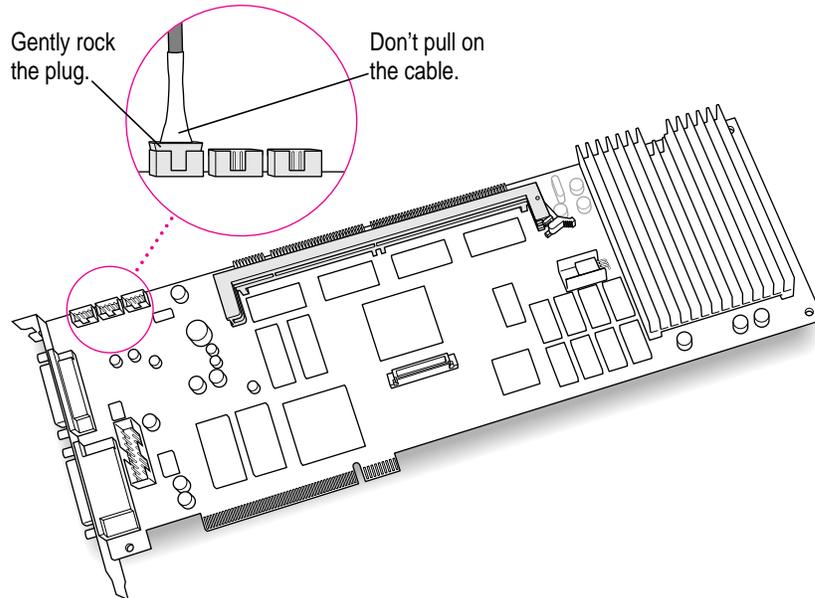
IMPORTANT For detailed instructions on opening your computer, including important precautions, see the chapter earlier in this manual on installing the PC Compatibility Card in your computer model.

Disconnecting the cables

- 1 Unplug the audio cables from the PC Compatibility Card, the logic board, and the CD-ROM drive.

Be sure to pull the plugs, not the cables.

To remove a small plug attached to the card, grasp the sides of the plug and pull firmly. It may help to gently rock the plug from side to side as you pull.



Do not attempt to use pliers to remove any plugs; you may damage the plugs, the card, or your computer.

2 Remove any other cables from the PC Compatibility Card.

If you have not already done so, remove the loopback cable and the PC game controller cable (if one is attached) from the ports on the back of the PC Compatibility Card.

You may also need to remove the cables described below:

- If you are removing a previous PC Compability Card from a Power Macintosh 7200, you may see a ribbon cable, called the internal audio/video assembly, not described in this book. This cable was installed on cards in previous models of the 7200, and is described in the manual that came with your computer or previous PC Compatibility Card. You'll need to detach and remove this cable (you won't use it with your new PC Compatibility Card).
- If you are removing your PC Serial and Parallel Card also, detach the peripheral flex cable from the PC Compatibility Card.

Removing the card

- 1 Check to see if there is a screw installed on the port fence (where the port access cover used to be). If there is, remove it.
- 2 Check to see if there are levers near the port fence. If there are, press them away from the port access opening.
- 3 Grasp the card by its sides and pull it straight out of the slot.

IMPORTANT Do not rock the card side to side as you remove it. Doing so may break the card or damage the slot.



Appendix B

Adding Memory to Your PC Compatibility Card



Your PC Compatibility Card comes with RAM (random-access memory) already installed. You can increase the memory available to the card by installing a DIMM (dual inline memory module) in the DIMM socket. Memory you add to the card is for the exclusive use of your PC operating system and may improve the performance of your PC software.

The DIMM socket accepts an 8, 16, 32, or 64 MB 60 ns, 5-volt DIMM. You may use either EDO or Fast Page Mode memory.

If your PC Compatibility Card is already installed, installing memory on the card involves the following steps:

- removing the card
- removing the existing DIMM, if one is installed
- installing the new DIMM
- replacing the card

If the card is not installed yet, you only need to install the new DIMM, install the card, and close the computer.

WARNING Your PC Compatibility Card may contain sockets for additional video RAM. To avoid damage to your computer, Apple recommends that you have your Apple-authorized dealer install additional video RAM (for a fee). If you attempt to install additional video RAM yourself, any damage you may cause to your equipment will not be covered by the limited warranty on your computer. See an Apple-authorized dealer or service provider for additional information about this or any other warranty question.

Removing the card

1 Open the computer.

IMPORTANT For detailed instructions on opening your computer, including safety precautions, see the chapter earlier in this manual on installing the PC Compatibility Card in your model of computer.

2 Remove any cables from the PC Compatibility Card ports.

If you have not already done so, remove the loopback cable, and the PC game controller cable (if one is attached), from the ports on the back of the PC Compatibility Card.

3 If there is an internal audio/video assembly installed, detach it from the PC Compatibility Card.

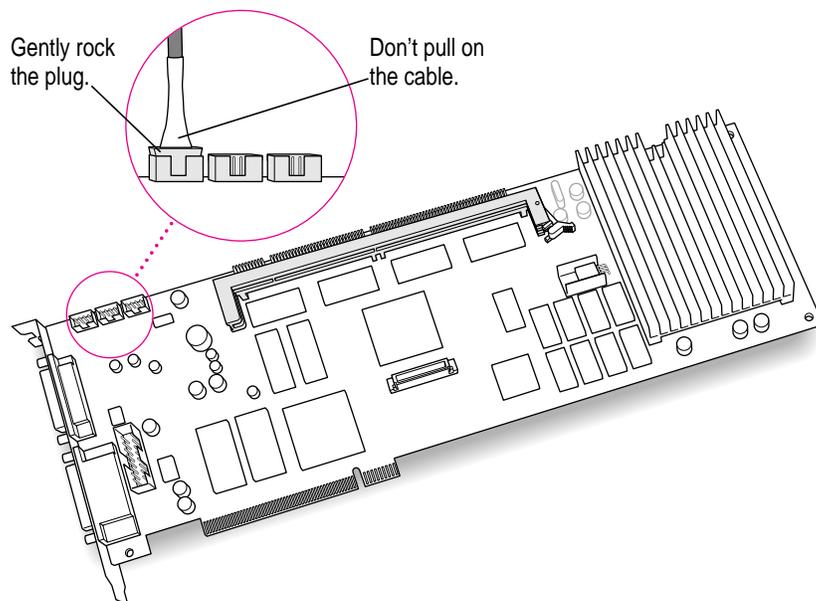
If you are removing a previous PC Compatibility Card from a Power Macintosh 7200, you may see a ribbon cable, called the internal audio/video assembly, not described in this book. This cable was installed on cards in previous models of the 7200, and is described in the manual that came with your computer or previous PC Compatibility Card. You'll need to detach this cable also (you won't use it with your new PC Compatibility Card).



4 If necessary, disconnect the audio cables from the PC Compatibility Card.

Because the audio cables can be difficult to remove, it's best to leave them connected if possible. If you feel you can pull the card out and access the DIMM slot without disconnecting the audio cables, leave the cables in place.

Otherwise, make a note of where the audio cables are connected so you'll know where to reconnect them later. Then grasp the side of each plug and pull firmly. Be sure to pull the plug, not the cable. It may help to gently rock the plug from side to side as you pull.



Do not attempt to use pliers to remove these plugs; you may damage the plugs or your card.

5 Check to see if there is a screw installed on the port fence. If there is, remove it.

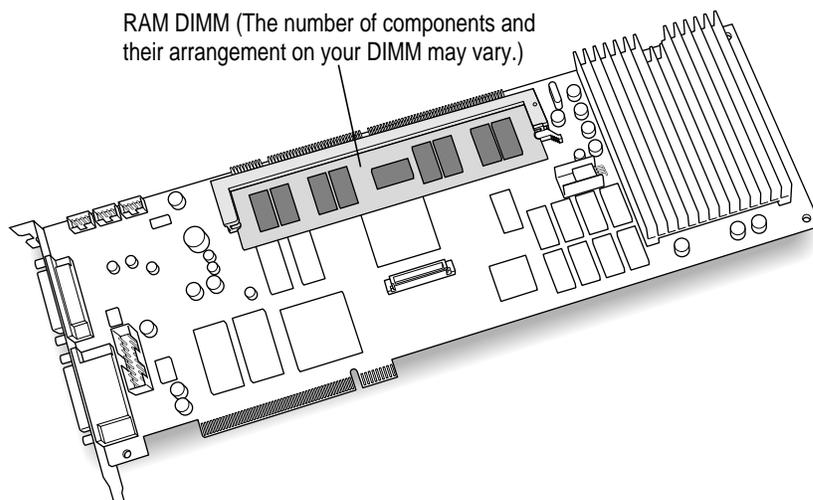
6 Check to see if there are levers near the port fence. If there are, press them away from the port access opening.

7 Grasp the card by its sides and pull it straight out of the slot.

IMPORTANT Do not rock the card side to side as you remove it. Doing so may break the card or damage the slot.

Removing the old DIMM

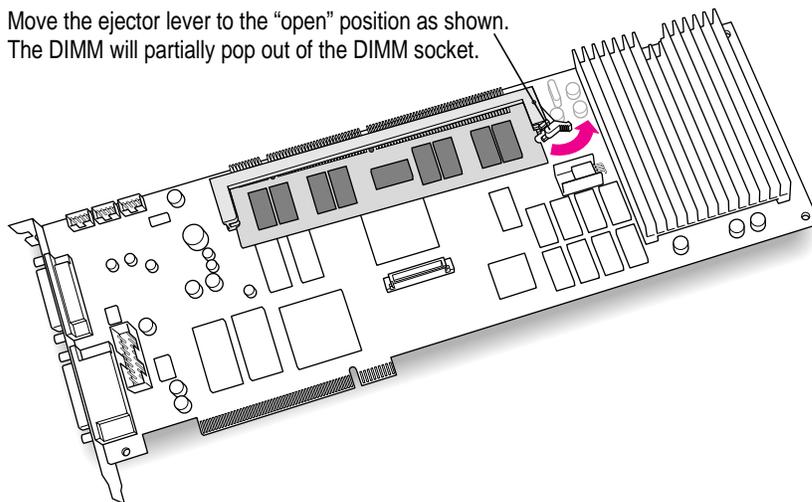
- 1 Determine if there is a DIMM in the DIMM slot.



If there is no DIMM in the slot, skip the next step and go to the next section, “Installing the New DIMM.”

- 2 Gently push the DIMM lever until it snaps open.

Move the ejector lever to the “open” position as shown. The DIMM will partially pop out of the DIMM socket.



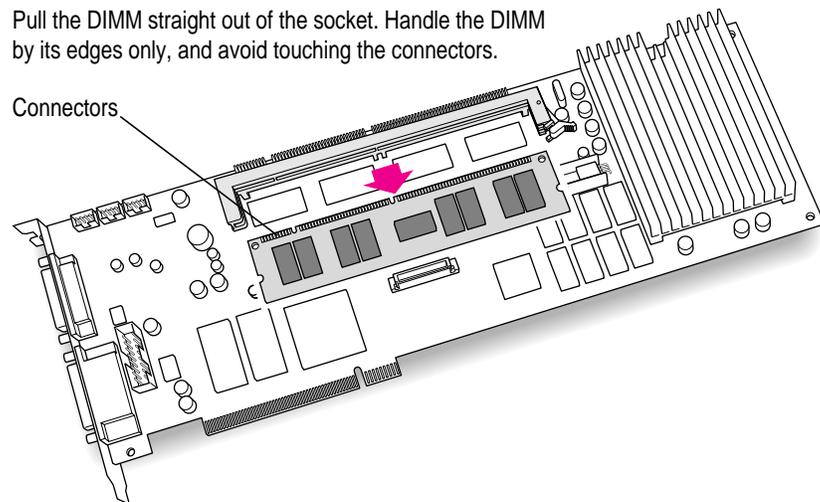
3 Pull the DIMM straight out of the socket to remove it.

If the DIMM sticks, pull gently, but don't force it.

Be careful not to touch the connectors.

Set the DIMM aside. (If you wish, you may be able to install it in your computer later. It's compatible with most Macintosh models.)

Pull the DIMM straight out of the socket. Handle the DIMM by its edges only, and avoid touching the connectors.



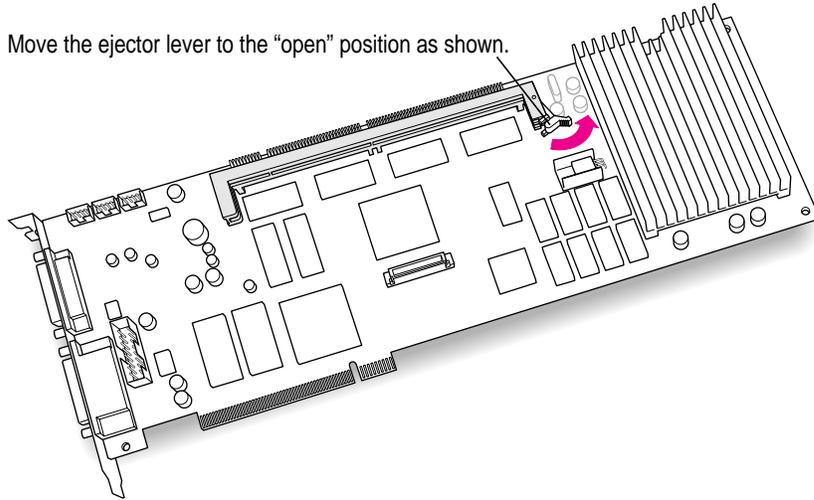
Installing the new DIMM

1 Remove the DIMM from its static-proof bag.

Handle the DIMM by its edges. Avoid touching the connectors.

2 Make sure the DIMM lever is in the open position.

Move the ejector lever to the "open" position as shown.



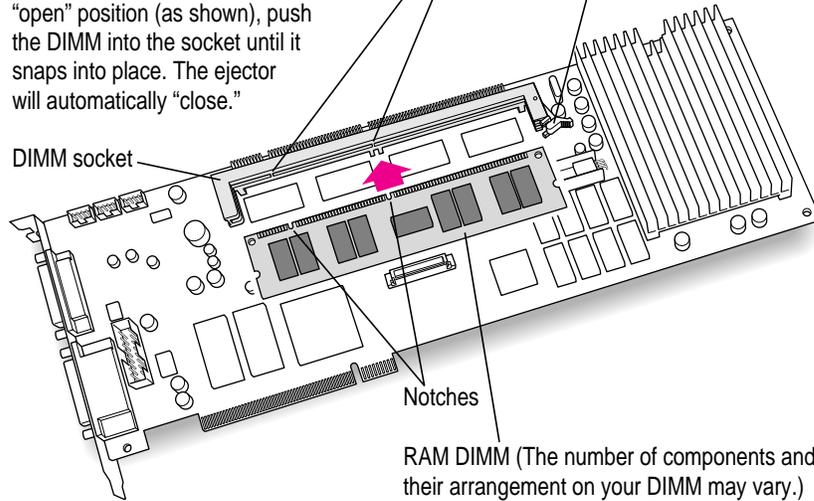
3 Push the DIMM into the DIMM slot until the lever snaps into the closed position.

The RAM DIMM is designed to fit into the socket only one way. Be sure to align the notches in the DIMM with the small ribs inside the socket. With the ejector in the "open" position (as shown), push the DIMM into the socket until it snaps into place. The ejector will automatically "close."

Ribs (inside socket)

Ejector (The ejector should be pushed outward to be in the "open" position, as shown.)

DIMM socket

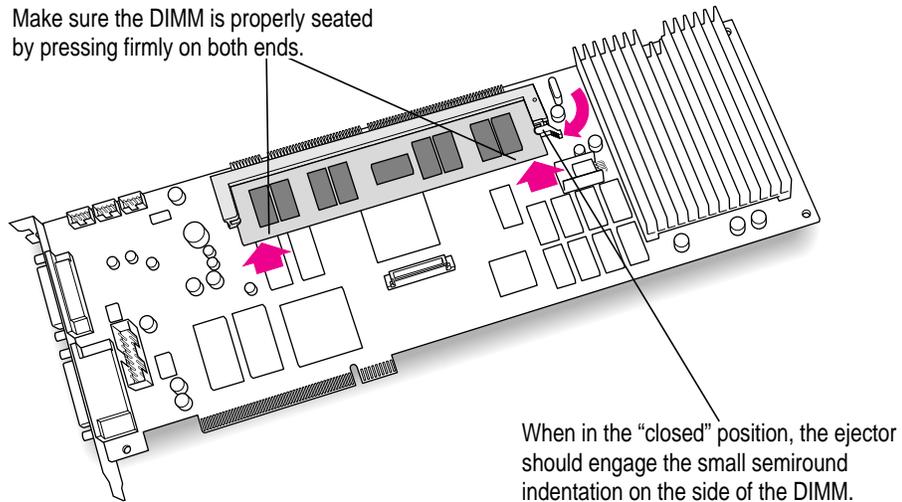


Notches

RAM DIMM (The number of components and their arrangement on your DIMM may vary.)

4 Make sure the DIMM is snapped into place on both ends.

Make sure the DIMM is properly seated by pressing firmly on both ends.



Reinstalling the card

For more detailed instructions, see the section earlier in this manual that describes installing the card in your model of computer.

- 1 Insert the card into the slot you removed it from.**
- 2 Reconnect the cables to the card as they were before you began this process.**
- 3 Make sure the cables are routed as shown in the chapter for your computer model earlier in this manual.**
- 4 Replace the computer cover.**
- 5 Reconnect the equipment cables.**

IMPORTANT Make sure you connect your monitor and PC game controller to the correct ports on the PC Compatibility Card. See Chapter 5 for more information.

Your PC Compatibility Card is now fully installed with extra memory, and is ready to use.



Appendix C

Installing Network Client Software

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The PC Compatibility Card supports network drivers that conform to Novell's Open Data-Link Interface (ODI) and Microsoft's Network Driver Interface Specification (NDIS) version 2.0. This appendix describes how to install and configure a variety of network protocol software and client software.

Use this chapter as a supplement to the documentation that came with your network software. If your configuration still doesn't work after following the instructions in this appendix, contact the manufacturer of your network software.

Throughout the process of installing network software it is important to remember the four following items:

- You must run SETNET every time you add or remove a network protocol, install or upgrade network software, or change anything in the network control panel. If you do not run SETNET, you will experience network problems.
- When you install a NetWare Client, make sure to install it under the NWCLIENT directory. Otherwise, the SETNET program will not work with ODI and your networking software will not work correctly.
- Make sure to use the MACODI.COM and MACNDIS.DOS driver found on the *PC Compatibility Card-PC Utilities* CD when installing network protocols for the PC Compatibility Card. Do not use any of the drivers that ship with Windows 95 or Windows for Workgroups.
- When using the MACODI.COM driver use the latest LSL driver (2.21 or later), available from the Novell Web site at <http://www.novell.com>.

This chapter contains instructions for installing and setting up the following network software combinations:

ODI driver with the following protocols

- NetBEUI and IPX/SPX in Windows 95
- TCP/IP in Windows 95
- NetBEUI in Windows for Workgroups
- IPX/SPX in Windows for Workgroups
- Microsoft's TCP/IP-32 IP in Windows for Workgroups
- Trumpet WinSock in Windows for Workgroups (packet driver)
- Spry's Air Series TCP/IP in Windows for Workgroups
- AppleShare for Windows in Windows for Workgroups
- Novell's LAN WorkPlace for DOS TCP/IP software

NDIS 2.0 driver with the following protocols

- NetBEUI and IPX/SPX in Windows 95
- Microsoft's TCP/IP and IPX/SPX in Windows 95
- NetBEUI and IPX/SPX in Windows for Workgroups
- Microsoft's TCP/IP in Windows for Workgroups
- Client software for an OS/2 LAN Server in DOS, Windows, or Windows for Workgroups
- Banyan Vines in DOS

Either the ODI or NDIS 2.0 driver with the following protocol

- NetManage's Chameleon TCP/IP in Windows for Workgroups

Configuring the built-in TCP/IP Stack for PPP (modem) in Windows 95

If you are installing a protocol for use with an ODI driver, see "Installing Protocols for Use With Open Data-Link Interface (ODI)," next. If you are installing a protocol for use with an NDIS 2.0 driver, see "Installing Protocols for Use With Network Driver Interface Specification (NDIS) 2.0," later in this appendix.



Installing protocols for use with Open Data-Link Interface (ODI)

Before you install a protocol for use with ODI, follow the instructions in this section to install the appropriate NetWare client software. Then refer to the instructions later in this section that describe installing and setting up the network protocol you want to use.

Note: If you are installing Windows for Workgroups, the Novell NetWare client, and TCP/IP support, it is easiest if you install the NetWare client first, Windows for Workgroups second, and TCP/IP support third.

You need to know the Ethernet frame type in use on your network segment. Your network administrator can give you this information.

Installing NetWare client software version 1.02 for DOS/Windows for Workgroups

Note: These examples use NetWare client version 1.02 for DOS. If you intend to use other NetWare client versions, then certain changes need to be made for proper installation. LSL version 2.21 or later must be used with the latest MACODI driver supplied with the PC Compatibility Card software.

1 In the PC environment, start from a DOS prompt.

If you are in Windows, close all windows and exit to a DOS prompt.

2 Insert the NetWare disk into the disk drive.

3 Run the NetWare Client Install program.

```
A: \INSTALL <return>
```

4 Follow the instructions on screen for steps 1–3. Then select step 4 and press Return.

A list of network interface controller (NIC) drivers appears.

5 Eject the NetWare floppy disk by pressing ⌘-E.

6 Insert the *PC Compatibility Card–PC Software* floppy disk and press Return.

The *PC Compatibility Card–PC Software* floppy disk has the MACODI.COM driver.

7 From the list of choices, select “PC Compatibility Ethernet Adapter” and press Return.

8 Follow the instructions to select the proper frame type and to finish the installation.

Make sure your configuration files include the following:

CONFIG.SYS

```
FILES=40
STACKS=9,256
LASTDRIVE=Z
DEVICE=C:\Apple\CDROM.SYS /D:CDDRVR
```

AUTOEXEC.BAT

```
@CALL C:\NWCLIENT\STARTNET
PROMPT $P$G
PATH C:\WINDOWS;C:\DOS
PATH=C:\NWCLIENT\;%PATH%
```

STARTNET.BAT

```
@ECHO OFF
C:
CD \NWCLIENT
SET NWLANGUAGE=ENGLISH
LSL
MACODI.COM
IPXODI
VLM
CD \
```

NET.CFG

```
Link Driver MACODI
FRAME Ethernet_802.2
```

Conserving memory

The line `CALL C:\NWCLIENT\STARTNET.BAT` in the `AUTOEXEC.BAT` file loads four programs into DOS memory—`LSL.COM`, `MACODI.COM`, `IPXODI.COM`, and `VLM.EXE` (in this order). To conserve memory in the lower DOS region, you may wish to edit the `STARTNET.BAT` file to load these four programs with the `LOADHIGH (LH)` command. See your DOS documentation for more details on manually optimizing DOS memory.

Installing NetWare client software version 1.02 for Windows 95

The NetWare client software that's installed under Windows 95 can use either the NDIS or ODI driver (unlike Windows for Workgroups and DOS, where only the ODI driver can be used). The following steps describe how to install a NetWare client under Windows 95 using the ODI driver.

- 1 **Switch to the PC environment and start Windows 95.**
- 2 **In Windows 95, click Start and then select Shutdown from the menu that appears.**
- 3 **In the window that appears, select "Restart the computer in MS-DOS mode."**
- 4 **Insert the NetWare Client Kit Disk 1 into the disk drive.**
- 5 **To switch to the disk, type the following:**

```
A: <return>
```
- 6 **To start the installation process, type the following:**

```
INSTALL <return>
```
- 7 **Follow steps 4–7 in the section "Installing NetWare Client Software Version 1.02 for DOS/Windows for Workgroups," earlier in this appendix.**
- 8 **When installation is complete, return to Windows 95 by typing the following:**

```
EXIT <return>
```
- 9 **When Windows 95 restarts, you see an error message. Press Return.**

The error message is

```
C:\windows\system\mmm32\vnetbios.VXD does not exist
```
- 10 **Click Start, choose Settings from the menu that appears, and then select Control Panel.**
- 11 **Double-click the Network icon to open it.**
- 12 **Select Add in the Network control panel.**
- 13 **Select the Adapter Component in the Network Component list, then click Add.**
- 14 **Under Manufacturers, select (detected net drivers).**

- 15 Under Network Adapters, select Existing ODI Driver, and then click OK.**

Configuration takes about 30 seconds. When it's finished, the Network Configuration will list the following:

```
Client for Microsoft Networks
Client for Novell Networks
Existing ODI Driver
IPX/SPX-Compatible Protocol
NetBEUI
```

- 16 To share your printers or files with other users on the network, select "File and Print Sharing."**

Click the checkboxes to turn on file or printer sharing, then click OK.

- 17 If file or printer sharing has been selected, the following line is added to the Network Configuration Box:**

```
File and printer sharing for Microsoft Networks
```

- 18 Select the Identification tab.**

The computer must have a unique identity to access the network.

- 19 In the window that appears, type the following information, then click OK.**

- a unique name for the computer
- a workgroup for the computer (typically WORKGROUPS)
- a description to identify the computer (optional)

- 20 Click the OK button at the bottom of the configuration box when finished.**

- 21 When prompted, insert the Windows 95 CD or floppy disk into the appropriate drive.**

- 22 You are asked if you want to restart your computer. Select No.**

- 23 Insert the *PC Compatibility Card-PC Software* floppy disk into the disk drive.**

- 24 Click Start, and choose Run from the menu that appears.**

- 25** In the dialog box that appears, type
- ```
A: \SETNET <return>
```
- 26** Select the following items, then click OK.
- ODI radio button
  - IPX/SPX checkbox
  - Ethernet\_802.2 radio button
  - NETBEUI checkbox
- 27** Close the control panel and remove the *PC Compatibility Card–PC Software* floppy disk from the disk drive.
- 28** Click Start, then choose Shutdown from the menu that appears.
- 29** Restart the PC.
- 30** You see a message warning of an invalid NetWare command. Select Yes.
- 31** In the Login dialog box, enter your user ID.
- 32** Press Tab, enter your password, then click OK.
- A dialog box appears asking to save your password. To save the password, reenter the password and then click OK. If you don't want to save the password, select Cancel.
- 33** To view other servers on the network, double-click the Neighborhood Network icon on the Windows 95 desktop.
- Your computer will scan for other machines on the network.

## Installing NetWare Client 32 for DOS and Windows for Workgroups

To install NetWare client software version 2.01, follow these steps.

**IMPORTANT** For SETNET to work, the Client 32 software must be installed under the NWCLIENT directory, not under the NOVELL\Clients32 directory.

- 1 In the PC environment, start from a DOS prompt.**

If you are in Windows, close all windows and exit to a DOS prompt.

- 2 Insert the NetWare disk into the disk drive.**

- 3 To run the NetWare Client Install program, type**

```
A: \install <return>
```

Follow the instructions that appear on the screen.

- 4 When prompted, press F10 to continue.**

- 5 When prompted to select a LAN driver type, select the 16-bit LAN drivers, and press Return.**

A list of available 16-bit drivers will be displayed. Scroll down to the end of the list and select “User Specified 16 Bit Driver.”

- 6 Insert the *PC Compatibility Card–PC Software* floppy disk.**

The MacODI and MacNDIS drivers are located in the root directory on the *PC Compatibility Card–PC Software* floppy disk.

- 7 Select “PC Compatibility Ethernet Adapter,” and press F10 .**

- 8 Press Return, select the frame, then press Return.**

- 9 Press F10 to continue.**

- 10 Confirm the Installation Configuration Summary, then press F10.**

- 11 Follow the instructions on the screen to complete the installation process.**

*Note:* Installing the NetWare client software for the PC Compatibility Card is similar to installing it on a PC. The only major difference is that the PC Compatibility Card provides its own ODI drivers.

## Installing NetBEUI and IPX/SPX in Windows 95

NetBEUI and IPX/SPX are automatically installed as part of the standard NetWare client software version 1.02 installation. Refer to the section “Installing NetWare Client Software Version 1.02 for Windows 95,” earlier in this appendix.

## Installing Client 32 for Windows 95

This section describes how to install Client 32 for Windows 95. Client 32 is installed on top of the existing NetWare version 1.02.

- 1 Install NetWare Client version 1.02 for Windows 95.**

To install NetWare version 1.02 for Windows 95, follow the steps in the section “Installing NetWare Client Software Version 1.02 for Windows 95,” earlier in this appendix.

- 2 Follow the onscreen instructions.**

- 3 When prompted for a driver, select “Existing ODI Driver.”**

- 4 When installation is complete, restart Windows 95.**

## Installing TCP/IP in Windows 95

This section describes how to install the TCP/IP protocol for use with an ODI driver in Windows 95. If you are using NDIS 2.0, refer to this topic in “Installing Protocols for Use With Network Driver Interface Specification (NDIS) 2.0,” later in this appendix.

- 1 Install the NetWare client software.**

For more information, see the appropriate section on installing NetWare client software earlier in this appendix.

- 2 In Windows 95, click the Start button, choose Settings, and then choose Control Panel.**

- 3 Double-click the Network icon in the Control Panel.**

- 4 Click Add in the Network Configuration dialog box.**

- 5 Select Adapter Component from the Network Component list, and then click Add.**

- 6 In the Manufacturers list, select Detected Net Drivers.
- 7 In the Network Adapters list, select Existing ODI Driver, and then click OK.  
The Network Configuration dialog box appears.
- 8 Click Add.
- 9 Double-click the Protocol icon.
- 10 In the Manufacturers area, select Microsoft. In the Network Protocols area, select TCP/IP.
- 11 To share files or your printer with other users on the network, click the “File and Print Sharing” button.
- 12 Select the checkboxes in the dialog box to enable file or printer sharing, and then click OK.  
If file or printer sharing has been selected, “File and printer sharing for Microsoft Networks” appears in the Network Configuration dialog box.
- 13 Select the Identification tab at the top of the Network Configuration dialog box.
- 14 Type a unique name, workgroup name, and any description you would like for the computer.  
The computer must have a unique name to access the network. The workgroup name is usually “WORKGROUPS.”
- 15 Click OK.
- 16 Insert the Windows 95 installation CD or disk when prompted to do so.
- 17 When the System Settings Change dialog box prompts you to restart your computer, click No.
- 18 Refer to “Running the Network Protocol Setup (SETNET) Utility,” near the end of this appendix, and follow the instructions there.

**WARNING** You must run SETNET every time you add or remove a network protocol, install or upgrade network software, or change anything in the network control panel. If you do not run SETNET, you will experience network problems.

## Installing NetBEUI in Windows for Workgroups

This section describes the settings necessary to install the NetBEUI protocol for use with an ODI driver in Windows for Workgroups. If you are using NDIS 2.0, refer to this topic in “Installing Protocols for Use With Network Driver Interface Specification (NDIS) 2.0,” later in this appendix.

**1 Install the NetWare client software.**

For more information, see the appropriate section on installing NetWare client software earlier in this appendix.

**2 In Windows, open the Network Setup control panel, click Drivers, and click Add Adapter.**

**3 Select “IPX ODI support driver (Ethernet)” and click OK.**

Both NetBEUI and IPX/SPX protocols are installed. You can remove IPX/SPX if it is not needed.

**4 Refer to “Running the Network Protocol Setup (SETNET) Utility” near the end of this appendix and follow the instructions there.**

**WARNING** You must run SETNET every time you add or remove a network protocol, install or upgrade network software, or change anything in the network control panel. If you do not run SETNET, you will experience network problems.

**5 Make sure your configuration files contain the following:**

**NET.CFG**

```
LINK DRIVER MACODI
 FRAME ETHERNET_802.3
 FRAME ETHERNET_II
 FRAME ETHERNET_802.2
 FRAME ETHERNET_SNAP
 PROTOCOL NETBEUI F0 ETHERNET_802.2
NETWARE DOS REQUESTER
 FIRST NETWORK DRIVER = F
```

### **AUTOEXEC.BAT (must begin with the following lines in this order)**

```
C:\WINDOWS\NET START
@CALL C:\NWCLIENT\STARTNET
C:\WINDOWS\ODIHLP.EXE
```

### **PROTOCOL.INI**

```
[NETWORK.SETUP]
 VERSION=0X3110
 NETCARD=MS$ODIMAC,1,MS$ODIMAC,4
 TRANSPORT=MS$NETBEUI,NETBEUI
 LANA0=MS$ODIMAC,1,MS$NETBEUI
[LINK DRIVER MACODI]
 DATA=FRAME ETHERNET_SNAP
 DATA=FRAME ETHERNET_802.2
 DATA=FRAME ETHERNET_II
 DATA=FRAME ETHERNET_802.3
[NET.CFG]
 PATH=C:\NWCLIENT\NET.CFG
[MS$ODIMAC]
 PROTOCOLDOT2=F0
[NETBEUI]
 BINDINGS=MACODI
 LANABASE=0
 SESSIONS=10
 NCBS=12
```

## **Installing IPX/SPX in Windows for Workgroups**

This section describes the settings necessary to install the IPX/SPX protocol for use with an ODI driver in Windows for Workgroups.

Installing ODI drivers in Windows for Workgroups adds two commands to the AUTOEXEC.BAT file:

- NET START initializes the Windows network functions
- ODIHLP.EXE calls Microsoft's ODI to NDIS translation file

**IMPORTANT** The Windows for Workgroups Network Browser requires more than 540K of conventional memory. You should maximize conventional memory by removing unnecessary device drivers and TSRs and by loading the remaining device drivers and TSRs into high memory, if possible.

**1 Install the NetWare client software.**

For more information, see the appropriate section on installing NetWare client software earlier in this appendix.

**2 In the Network Setup control panel, select Drivers, select Add Adapter, and select “IPXODI Support Driver (Ethernet).”**

**3 Select “IPX/SPX Compatible Transport With NetBIOS.”**

**4 Select your frame type.**

**5 Set the default protocol.**

**6 If you installed NetWare, you’re asked you if you want to replace the Novell NetWare drivers. Select No.**

**7 Refer to “Running the Network Protocol Setup (SETNET) Utility” near the end of this appendix and follow the instructions there.**

**WARNING** You must run SETNET every time you add or remove a network protocol, install or upgrade network software, or change anything in the network control panel. If you do not run SETNET, you will experience network problems.

**8 Verify that your configuration files contain the following information.**

After following the above instructions, your configuration files should contain the information shown here, assuming a frame type of ETHERNET\_802.2 and assuming that NetBEUI is not installed.

## NET.CFG

```
LINK DRIVER MACODI
 FRAME ETHERNET_802.2
 FRAME ETHERNET_802.3
 FRAME ETHERNET_SNAP
 FRAME ETHERNET_II
 PROTOCOL IPX EO ETHERNET_802.2
```

## AUTOEXEC.BAT

```
C:\WINDOWS\NET START
@CALL C:\NWCLIENT\STARTNET
C:\WINDOWS\ODIHLP.EXE
@ECHO OFF
LH C:\DOS\SMARTDRV.EXE /X
PROMPT PG
PATH C:\WINDOWS;C:\DOS
PATH=C:\NWCLIENT\;%PATH%
LH C:\APPLE\APPLEPC
LH C:\APPLE\MACSHARE
LH C:\DOS\MSCDEX /D:CDDRVR /L:E
SET TMP=C:\TEMP
```

## PROTOCOL.INI

```
[NETWORK.SETUP]
 VERSION=0X3110
 NETCARD=MS$ODIMAC,1,MS$ODIMAC,4
 TRANSPORT=MS$NWLINKNB,NWLINK
 LANA0=MS$ODIMAC,1,MS$NWLINKNB

[NET.CFG]
 PATH=C:\NWCLIENT\NET.CFG

[MS$ODIMAC]
 [LINK DRIVER MACODI]
 DATA=FRAME ETHERNET_SNAP
 DATA=FRAME ETHERNET_802.2
 DATA=FRAME ETHERNET_II
 DATA=FRAME ETHERNET_802.3
 DATA=LINK DRIVER MACODI
```



```
[NWLINK]
 BINDINGS=MACODI
 FRAME=ETHERNET_802.2
```

## Installing Microsoft's TCP/IP-32 IP protocol stack in Windows for Workgroups

Follow these steps to set up Microsoft's TCP/IP-32 IP protocol stack for use with an ODI driver in Windows for Workgroups.

- 1 Install the NetWare client software.**  
For more information, see the appropriate section on installing NetWare client software earlier in this appendix.
- 2 Install the protocol stack following the instructions that came with it.**
- 3 Refer to "Running the Network Protocol Setup (SETNET) Utility" near the end of this appendix and follow the instructions there.**

**WARNING** You must run SETNET every time you add or remove a network protocol, install or upgrade network software, or change anything in the network control panel. If you do not run SETNET, you will experience network problems.

- 4 After running SETNET, make sure the NET.CFG and PROTOCOL.INI files contain the sections shown below.**

The following entries assume that IPX/SPX support is loaded.

### NET.CFG

```
LINK DRIVER MACODI
 FRAME ETHERNET_802.2
 FRAME ETHERNET_802.3
 FRAME ETHERNET_II
 FRAME ETHERNET_SNAP
 PROTOCOL IPX E0 ETHERNET_802.2
 PROTOCOL IP 800 ETHERNET_II
 PROTOCOL ARP 806 ETHERNET_II
 PROTOCOL RARP 8035 ETHERNET_II
```

*continued* ►

```
LINK SUPPORT
 Max Boards 4
 Buffers 4 1500
 MemPool 4095
```

### **PROTOCOL.INI**

```
[NETWORK.SETUP]
VERSION=0X3110
NETCARD=MS$ODIMAC,1,MS$ODIMAC,4
TRANSPORT=MS$NWLINKNB,NWLINK
TRANSPORT=TCPIP-32N,MSTCP32
LANA0=MS$ODIMAC,1,MS$NWLINKNB
LANA1=MS$ODIMAC,1,TCPIP-32N

[NET.CFG]
PATH=C:\NWCLIENT\NET.CFG

[MS$ODIMAC]
[LINK DRIVER MACODI]
DATA=FRAME ETHERNET_SNAP
DATA=FRAME ETHERNET_802.2
DATA=FRAME ETHERNET_II
DATA=FRAME ETHERNET_802.3
DATA=LINK DRIVER MACODI

[NWLINK]
BINDINGS=MACODI
FRAME=ETHERNET_802.2

[MSTCP32]
BINDINGS=MACODI
LANABASE=1
```



## Installing Trumpet WinSock in Windows for Workgroups

This section describes how to set up the Trumpet WinSock protocol for use with an ODI driver in Windows for Workgroups.

**1 Install the NetWare client software.**

For more information, see the appropriate section on installing NetWare client software earlier in this appendix.

**2 Gather all the files necessary for installing Trumpet WinSock, including**

- TCPMAN.EXE
- TRUMPWSK.INI
- WINSOCK.DLL
- WINPKT.COM
- ODIPKT.COM

**3 Make sure that all the Trumpet WinSock files are in the directory C:\TRUMPET.**

**4 Refer to “Running the Network Protocol Setup (SETNET) Utility” near the end of this appendix and follow the instructions there.**

**WARNING** You must run SETNET every time you add or remove a network protocol, install or upgrade network software, or change anything in the network control panel. If you do not run SETNET, you will experience network problems.

- 5 After running SETNET, make sure your NET.CFG file and the batch file you use to call the networking software contain the following entries:

#### NET.CFG

```
LINK DRIVER MACODI
 FRAME ETHERNET_802.2
 FRAME ETHERNET_802.3
 FRAME ETHERNET_SNAP
 FRAME ETHERNET_II
 PROTOCOL IPX E0 ETHERNET_802.2
 PROTOCOL IP 800 ETHERNET_II
 PROTOCOL ARP 806 ETHERNET_II
 PROTOCOL RARP 8035 ETHERNET_II

LINK SUPPORT
 BUFFERS 8 1600
 MEMPOOL 4095
```

#### AUTOEXEC.BAT

```
C:\NWCLIENT\LSL.COM
C:\NWCLIENT\MACODI.COM
C:\NWCLIENT\IPXODI.COM
C:\TRUMPET\ODIPKT.COM 3 107
C:\TRUMPET\WINPKT.COM 107
```

You may also include the AUTOEXEC.BAT lines in STARTNET.BAT. If you do so, be sure to include the following pointer to STARTNET.BAT from your AUTOEXEC.BAT file:

```
@CALL [PATH]\STARTNET
```

*Note:* LSL.COM is the link support layer driver supplied by Novell client software. MACODI.COM is the network interface driver supplied by Apple. IPXODI.COM is the IPX/SPX protocol stack layer supplied by Novell client software. ODIPKT.COM is the ODI packet driver supplied by InterCon software. The first number represents the frame type, as listed in the NET.CFG file. Ethernet\_II is the last of four frame types (the first is number 0). The second number is the “line number” and should always be set to 107 for Ethernet. WINPKT.COM is the Windows virtual packet driver. It takes as an argument the line number for the packet driver.

## Installing Spry Air Series TCP/IP in Windows for Workgroups

This section describes how to install the Spry Air Series TCP/IP protocol for use with an ODI driver in Windows for Workgroups.

**IMPORTANT** If you have not already installed TCP/IP client software such as Microsoft TCP/IP-32 or Trumpet Winsock, install it before you install the Air Series software.

If you are using a VGA driver and Air Series software version 2.0, you need to make the following change:

- 1 **Make sure the Air Series Setup disk is not locked.**
- 2 **Place the disk in drive A.**
- 3 **Type the following at the DOS prompt:**

```
A: <return>
MOVE SETUP.BMP SETUP.OLD <return>
COPY C:\WINDOWS\RIVETS.BMP A:SETUP.BMP <return>
```

To install Air Series from Windows, follow these steps:

- 1 **Install the NetWare client software.**

For more information, see the appropriate section on installing NetWare client software earlier in this appendix.

- 2 **Run the Air Series installation program.**

During installation, select the option to install “Air Series applications (using existing TCP/IP transport).” If you are not using this option, make sure that MACODI.COM is in your \AIR\BIN directory and that your AUTOEXEC.BAT file contains the following:

```
C:\AIR\BIN\MACODI
```

- 3 Refer to “Running the Network Protocol Setup (SETNET) Utility” near the end of this appendix and follow the instructions there.

**WARNING** You must run SETNET every time you add or remove a network protocol, install or upgrade network software, or change anything in the network control panel. If you do not run SETNET, you will experience network problems.

- If you are on a NetWare local area network and you’re using the Novell VLM redirector, these lines should appear in this order:

```
REM CALL C:\NWCLIENT\STARTNET.BAT
C:\AIR\BIN\TCPIP
C:\NWCLIENT\VLM
```

- If you are using NETx, these lines should appear in this order:

```
C:\NWCLIENT\VLM
C:\AIR\BIN\TCPIP
```

## Installing AppleShare for Windows in Windows for Workgroups

This section describes how to install and set up the AppleShare for Windows protocol for use with an ODI driver in Windows for Workgroups.

- 1 Install the NetWare client software.  
For more information, see the appropriate section on installing NetWare client software earlier in this appendix.
- 2 Install AppleShare for Windows according to the instructions that came with it.
- 3 Refer to “Running the Network Protocol Setup (SETNET) Utility” near the end of this appendix and follow the instructions there.

**WARNING** You must run SETNET every time you add or remove a network protocol, install or upgrade network software, or change anything in the network control panel. If you do not run SETNET, you will experience network problems.

**4 After running SETNET, make sure your configuration files contain the following sections.**

These sections assume no other network software is installed.

**NET.CFG (with ODI support installed)**

```
LINK SUPPORT
 BUFFERS 10 628
 MEMPOOL 16K

PROTOCOL APPLETALK
 DEFAULT MACODI #1
 AARP MACODI #1 H(0001) L(6) B(090007FFFFFFF)

LINK DRIVER MACODI
 INT #1 10
 PORT #1 300 0
 FRAME ETHERNET_SNAP
 FRAME ETHERNET_802.3
 PROTOCOL IPX 0 ETHERNET_802.3
 PROTOCOL APPLETALK 80007809B ETHERNET_SNAP
 PROTOCOL AARP 80F3 ETHERNET_SNAP
```

**ATDRIVER.BAT (with ODI support installed)**

```
C:\APPLE\A_SHARE\LSL.COM
C:\APPLE\A_SHARE\MACODI.COM
C:\APPLE\A_SHARE\ODI.EXE
```

If you install a NetWare client after the AppleShare client, make sure that IPXODI and VLM are loaded after ATDRIVER.BAT in the NET.CFG file.

## Installing Novell's LAN WorkPlace for DOS TCP/IP software

This section describes how to set up the LAN WorkPlace for DOS TCP/IP protocol for use with an ODI driver.

Follow these steps to install LAN WorkPlace for DOS:

**1 Install the NetWare client software.**

For more information, see the appropriate section on installing NetWare client software earlier in this appendix.

**2 Run the installer for LAN WorkPlace for DOS and follow the instructions on the screen.**

Let it modify your files.

**3 Make sure your NET.CFG file contains the following.**

Enter the appropriate addresses for your network configuration. Here are samples for both DOS/Windows and Windows for Workgroups.

### NET.CFG (for DOS/Windows)

```
LINK DRIVER MACODI
 FRAME ETHERNET_802.2
 FRAME ETHERNET_II
 PROTOCOL IPX E0 ETHERNET_802.2
 PROTOCOL IP 800 ETHERNET_II
 PROTOCOL ARP 806 ETHERNET_II

LINK SUPPORT
 BUFFERS 8 1500
 MEMPOOL 4096

PROTOCOL TCPIP
 PATH SCRIPT C:\NET\SCRIPT
 PATH PROFILE C:\NET\PROFILE
 PATH LWP_CFG C:\NET\HSTACC
 PATH TCP_CFG C:\NET\TCP
 IP_ROUTER X.X.X.X
 IP_NETMASK X.X.X.X
 IP_ADDRESS X.X.X.X
```

Your network administrator can provide the correct numbers to enter for IP\_ROUTER, IP\_NETMASK, and IP\_ADDRESS.

## NET.CFG (Windows for Workgroups)

```
LINK DRIVER MACODI
 FRAME ETHERNET_II
 FRAME ETHERNET_802.2
 FRAME ETHERNET_802.3
 FRAME ETHERNET_SNAP

 PROTOCOL IPX E0 ETHERNET_802.2
 PROTOCOL IP 800 ETHERNET_II
 PROTOCOL ARP 806 ETHERNET_II

LINK SUPPORT
 BUFFERS 8 1500
 MEMPOOL 4096

PROTOCOL TCPIP
 PATH SCRIPT C:\NET\SCRIPT
 PATH PROFILE C:\NET\PROFILE
 PATH LWP_CFG C:\NET\HSTACC
 PATH TCP_CFG C:\NET\TCP
 IP_ROUTER X.X.X.X
 IP_NETMASK X.X.X.X
 IP_ADDRESS X.X.X.X
```

Your network administrator can provide the correct numbers to enter for IP\_ROUTER, IP\_NETMASK, and IP\_ADDRESS.

LAN WorkPlace for DOS adds the following line to the AUTOEXEC.BAT file:

```
CALL C:\LANWP.BAT
```

This command asks if you want to load the TCP/IP transport file, then loads it if you answer yes. The transport file is called TCPIPEXE and is located in the directory C:\NET\BIN.

Edit the \NET\BIN\LANWP.BAT file so that the following line appears after LSL.COM and before TCPIP.EXE:

```
C:\APPLE\MACODI.COM
```

## Installing protocols for use with Network Driver Interface Specification (NDIS) 2.0

### Installing NetBEUI and IPX/SPX in Windows 95

This section describes how to set up the NetBEUI and IPX/SPX protocols for use with an NDIS driver in Windows 95. If you are using ODI, refer to this topic in “Installing Protocols for Use With Open Data-Link Interface (ODI)” earlier in this appendix.

- 1** In Windows 95, click **Start**, choose **Settings**, and then choose **Control Panel**.
- 2** Double-click the **Network** icon to open it.
- 3** Select **Add**; then select **Adapter**.
- 4** Select **Have Disk**.
- 5** Insert the floppy disk containing the NDIS 2.0 driver. Verify the drive; then click **OK**.
- 6** You see the message “**PC Card Network Driver (NDIS2)**.” Click **OK**.

The following network items will be automatically installed:

- Client for Microsoft Networks
- Client for NetWare Networks
- PC Card Network Driver (NDIS2)
- IPX/SPX-compatible Protocol
- NetBEUI

- 7** Perform any custom setting that you need (for example, enable file sharing).
- 8** Select **Identification**. Fill in the boxes labeled “**Computer Name**,” “**Workgroups**,” and “**Computer Description**.” Then click **OK**.
- 9** Insert the Windows 95 CD or floppy disks as instructed.

Windows 95 will install all the necessary network components.

- 10** Refer to “**Running the Network Protocol Setup (SETNET) Utility**” near the end of this appendix and follow the instructions there.

**WARNING** You must run SETNET every time you add or remove a network protocol, install or upgrade network software, or change anything in the network control panel. If you do not run SETNET, you will experience network problems.

- 11** After running SETNET, make sure your PROTOCOL.INI file contains the following:

#### PROTOCOL.INI

```
[NDISHLP$]
 DRIVERVERNAME=NDISHLP$
 BINDINGS=MACNDIS$

[PROTMAN$]
 DRIVERVERNAME=PROTMAN$
 PRIORITY=NDISHLP$

[DATA]
 VERSION=V4.00.950
 NETCARDS=MACNDIS$,MACNDIS

[NETBEUI$]
 DRIVERVERNAME=NETBEUI$
 LANABASE=0
 SESSIONS=10
 NCBS=12
 BINDINGS=MACNDIS$

[NWLINK$]
 DRIVERVERNAME=NWLINK$
 FRAME_TYPE=4
 CACHESIZE=0
 BINDINGS=MACNDIS$

[MACNDIS$]
 DRIVERVERNAME=MACNDIS$
 PROTOCOLDOT2="F0,E0,FF"
```

- 12** Shut down Windows 95.
- 13** Switch to the Mac OS by typing ⌘-Return.
- 14** Click Restart PC in the PC Setup control panel.

## Installing Microsoft TCP/IP-32 IP protocol stack in Windows 95

This section describes how to set up the Microsoft TCP/IP-32 IP protocol for use with an NDIS driver in Windows 95.

This section assumes that you are installing only the Microsoft TCP/IP protocol. If you want to install additional protocols, you must modify the PROTOCOL.INI file accordingly. The SETNET utility can add this information for you.

- 1 Start Windows 95.**
- 2 In Windows 95, click Start, choose Settings, and then choose Control Panel.**
- 3 Double-click the Network icon to open it.**
- 4 Select Add; then select Adapter.**
- 5 Select Have Disk.**
- 6 Insert the floppy disk containing the NDIS 2.0 driver. Verify the drive; then click OK.**
- 7 You will see the message “PC Card Network Driver (NDIS2).” Click OK.**

The following network items will be automatically installed:

- Client for Microsoft Networks
- Client for NetWare Networks
- PC Card Network Driver (NDIS 2.0)
- IPX/SPX-compatible Protocol
- NetBEUI

- 8 Perform any custom setting that you need (for example, enable file sharing).**

If you want to install the TCP/IP protocol only, then remove the other protocols after you have installed the TCP/IP protocol stack first.

- 9 Click Add, then click Protocol, then click Add. Under Manufacturers, select Microsoft. Under the Network Protocols, double-click TCP/IP.**
- 10 Enter all the necessary information to configure the TCP/IP stack. Double-click the TCP/IP protocol under the “PC Card Network Driver (NDIS2)” and enter the necessary information.**

- 11 Refer to “Running the Network Protocol Setup (SETNET) Utility” near the end of this appendix and follow the instructions there.

**WARNING** You must run SETNET every time you add or remove a network protocol, install or upgrade network software, or change anything in the network control panel. If you do not run SETNET, you will experience network problems.

- 12 After running SETNET, make sure your PROTOCOL.INI file contains the following (assuming TCP/IP is the only loaded protocol):

**PROTOCOL.INI**

```
[ndishlp$]
 DriverName=ndishlp$
 Bindings=MacNDIS$

[protman$]
 DriverName=protman$
 priority=ndishlp$

[data]
 version=v4.00.950
 netcards=MacNDIS$,MacNDIS

[MacNDIS$]
 DriverName=MacNDIS$
 ProtocolDIX="800,806,8035"
```

- 13 Shut down Windows 95.
- 14 Switch to the Mac OS by typing ⌘-Return.
- 15 Click Restart PC in the PC Setup control panel.

## Installing NetBEUI and IPX/SPX in Windows for Workgroups

This section describes how to set up the NetBEUI and IPX/SPX protocols for use with an NDIS driver in Windows for Workgroups. If you are using ODI, refer to this topic in “Installing Protocols for Use With Open Data-Link Interface (ODI)” earlier in this appendix.

If you want to install additional protocols, you must modify the PROTOCOL.INI file accordingly. The SETNET utility can add this information for you.

- 1 In Windows, open the Network group and select Network Setup.
- 2 Select Networks, then select “Install Microsoft Windows Network,” then click OK.
- 3 Click Drivers, then click Add Adapters.
- 4 Select “Unlisted or Updated Network Adapter.”
- 5 Insert the floppy disk containing the NDIS 2.0 driver. Verify the drive, then click OK.
- 6 You’ll see the message “PC Card Network Driver (NDIS2).” Click OK.
- 7 Click Close; then click OK.
- 8 Fill in the boxes labeled “User Name,” “Workgroups,” and “Computer Name.” Then click OK.
- 9 Refer to “Running the Network Protocol Setup (SETNET) Utility” near the end of this appendix and follow the instructions there.

**WARNING** You must run SETNET every time you add or remove a network protocol, install or upgrade network software, or change anything in the network control panel. If you do not run SETNET, you will experience network problems.

- 10 **After running SETNET, make sure your PROTOCOL.INI file contains the following lines:**

```
[NETWORK . SETUP]
 VERSION=0X3110
 NETCARD=MACNDIS , 1 , MACNDIS , 1
 TRANSPORT=MS$NDISHLP , MS$NDISHLP
 TRANSPORT=MS$NETBEUI , NETBEUI
 LANA0=MACNDIS , 1 , MS$NETBEUI
 LANA1=MACNDIS , 1 , MS$NDISHLP

[PROTMAN]
 DRIVERVERNAME=PROTMAN$
 PRIORITY=MS$NDISHLP

[MACNDIS]
 DRIVERVERNAME=MACNDIS$

[MS$NDISHLP]
 DRIVERVERNAME=NDISHLP$
 BINDINGS=MACNDIS
```

- 11 **Exit Windows.**
- 12 **Switch to the Mac OS by typing ⌘-Return.**
- 13 **Click Restart PC in the PC Setup control panel.**

*Note:* If you are having problems with file transfer using NetBEUI with NDIS in Windows for Workgroups, increase the Stack Size in the CONFIG.SYS file to 64,512.

```
STACKS = 64,512
```

## Installing Microsoft's TCP/IP in Windows for Workgroups

This section describes how to set up the Microsoft TCP/IP protocol for use with an NDIS driver in Windows for Workgroups. If you are using ODI, refer to this topic in “Installing Protocols for Use With Open Data-Link Interface (ODI)” earlier in this appendix.

- 1 In Windows, open the Network group and double-click the Network Setup icon.
- 2 Select Networks, select Install Microsoft Windows Network, and then click OK.
- 3 Click Drivers; then click Add Adapters.
- 4 Select Unlisted or Updated Network Adapter, then click OK.
- 5 Insert the floppy disk containing the NDIS 2.0 driver. Verify the drive, then click OK.  
You see the message “PC Card Network Driver (NDIS2).”
- 6 Click OK.
- 7 Click Add Protocol.
- 8 Double-click Unlisted or Updated Protocol.
- 9 Enter the path of the MS TCP/IP stack, then click OK.
- 10 Click Close, then click OK.
- 11 Fill in the boxes labeled “User Name,” “Workgroups,” and “Computer Name.” Then click OK.
- 12 Follow the onscreen instructions to complete the installation.
- 13 Refer to “Running the Network Protocol Setup (SETNET) Utility” near the end of this appendix and follow the instructions there.

**WARNING** You must run SETNET every time you add or remove a network protocol, install or upgrade network software, or change anything in the network control panel. If you do not run SETNET, you will experience network problems.

- 14 After running SETNET, make sure the PROTOCOL.INI file contains the following lines:

**PROTOCOL.INI**

```
[network.setup]
version=0x3110
netcard=MacNDIS,1,MACNDIS,1
transport=ms$ndishlp,MS$NDISHLP
transport=tcpip-32r,MSTCP32
lana0=MacNDIS,1,ms$ndishlp
lana1=MacNDIS,1,tcpip-32r

[protman]
DriverName=PROTMAN$
PRIORITY=MS$NDISHLP

[MACNDIS]
DriverName=MacNDIS$
ProtocolDot2="FF,F0,E0"
ProtocolDIX="800,806,8035"

[MS$NDISHLP]
DriverName=ndishlp$
BINDINGS=MACNDIS

[MSTCP32]
BINDINGS=MACNDIS
LANABASE=0
```

## Using an OS/2 LAN Server with Windows for Workgroups

To set up Windows for Workgroups on an OS/2 LAN Server, follow these steps:

- 1 Make sure you have an account on the OS/2 LAN server. Make sure that NETBEUI is loaded and functioning.**

If you are not sure, ask your system administrator.

- 2 Open the Main group, double-click the Control Panel icon, and then double-click the Network icon.**

- 3 In the box labeled Workgroups, assign your computer to the same workgroup that contains the OS/2 LAN Server.**

If you wish, add your user name on the LAN Server in the box labeled Default Logon.

- 4 Restart the PC.**

Next time you start Windows, you can log on using the user name assigned to you in the OS/2 LAN Server group.

## Installing client software for an OS/2 LAN server in DOS or Windows

Follow these steps to install the OS/2 LAN Server protocol for use with an NDIS driver in DOS or Windows.

**IMPORTANT** Do not use these instructions for installing the OS/2 client in Windows for Workgroups. Doing so may create problems with your network. For more information, see the previous section, “Using an OS/2 LAN Server With Windows for Workgroups.”

- 1 Create three installation floppies from the OS/2 LAN Server CD.**

- 2 Insert the first floppy disk in the disk drive. Type the following:**

```
A:\INSTALL <return>
```

- 3 Verify the path name for the installation and press Return.**

The default path is C:\NET.

- 4 In the list of network cards that appears, select “Network card not shown in list below,” then press Return.
- 5 Eject the disk and insert the floppy disk containing the NDIS2 driver. Press Return twice.
- 6 Insert the first disk again; then press Return.
- 7 Enter a machine name, user name, and domain name.
- 8 Follow the onscreen instructions to finish the installation.
- 9 Restart the PC.
- 10 Make sure your files contain the following lines:

#### **PROTOCOL.INI**

```
[network.setup]
version=0x3100
netcard=MacNDIS,1,MACNDIS
transport=ibm$netbeui,IBM$NETBEUI
lana0=MacNDIS,1,ibm$netbeui

[protman]
DriverName=PROTMAN$
PRIORITY=ibm$NETBEUI

[MACNDIS]
DriverName=MacNDIS$
ProtocolDot2=F0

[IBM$NETBEUI]
DriverName=netbeui$
SESSIONS=20
NCBS=20
BINDINGS=MACNDIS
LANABASE=0
```

#### **CONFIG.SYS (the lines must be in this order)**

```
DEVICE=C:\NET\PROTMAN.DOS /I:C:\NET
DEVICE=C:\NET\MACNDIS.DOS
DEVICE=C:\NET\DLShelp.SYS
```

### **AUTOEXEC.BAT (the lines must be at the end of the file)**

```
SHARE
C:\NET\NET START
```

### **NETWORK.INI**

```
[NETWORK]
COMPUTERNAME=<name you specified>
LANROOT=C:\NET
AUTOSTART=FULL
GUICONFIG=0,0,1
USERNAME=<name you specified>
DOMAIN=<name you specified>
LSLOGON=YES
RECONNECT=YES
PASSWORDCACHING=YES
```

```
[PASSWORD LISTS]
username=C:\NET\username.PWL
```

*Note:* You can use the NETGUI command for Graphical DOS Network management work. You can also use Windows if you have installed the necessary Windows files.

If you have problems with OS/2 networking, please contact IBM.

## **Installing Banyan Vines in DOS**

This section describes the settings you must make when using Banyan Vines with an NDIS driver in DOS. Refer to the documentation that came with Windows for Workgroups for other installation instructions.

- 1 Install the Banyan Vines client software.**
- 2 Make sure your configuration files contain the following:**

### **CONFIG.SYS**

```
REM *** BANYAN ***
DEVICE=C:\BANYAN\PROTMAN.DOS /I:C:\BANYAN
DEVICE=C:\BANYAN\MACNDIS.DOS
```

**PROTOCOL.INI (in the directory where the Banyan software is installed)**

```
[VINES_NIF]
DRIVERNAME=NDISBAN$
BINDINGS=MACNDIS

[MACNDIS]
DRIVERNAME=MACNDIS$
PROTOCOLDIX=BAD
```

## Installing NetManage Chameleon TCP/IP software in Windows for Workgroups

This section describes the steps necessary to install the NetManage Chameleon TCP/IP protocol for use with either an ODI or NDIS driver in Windows for Workgroups.

If you are using an ODI-compatible protocol, be sure to install the Novell NetWare client software first. See the appropriate section on installing NetWare client software earlier in this appendix.

- 1 **Run the Chameleon/NFS Installer and follow the instructions in the NetManage manual and on screen.**
- 2 **Refer to “Running the Network Protocol Setup (SETNET) Utility” near the end of this appendix and follow the instructions there.**

**WARNING** You must run SETNET every time you add or remove a network protocol, install or upgrade network software, or change anything in the network control panel. If you do not run SETNET, you will experience network problems.

- 3 **After running SETNET, make sure your files include the following entries:**

**AUTOEXEC.BAT**

C:\NETMANAG\NMODI

## NET.CFG

```
LINK DRIVER MACODI
 FRAME ETHERNET_802.2
 FRAME ETHERNET_II

 PROTOCOL IP 800 ETHERNET_II
 PROTOCOL ARP 806 ETHERNET_II
 PROTOCOL RARP 8035 ETHERNET_II
```

### Using a dial-up service

If you are using a dial-up service, you may need to edit the configuration file to include your service's setup options. Click the Custom icon in Windows, open the appropriate .CFG file, and edit the file.

## Running the Network Protocol Setup (SETNET) utility

A PC-compatible Macintosh allows you to connect to more than one network at a time, one in the PC environment and one in the Mac OS environment. The Network Protocol Setup (SETNET) utility helps configure your PC networking setup files (such as NET.CFG and PROTOCOL.INI) to distinguish between information sent to the network selected in the Mac OS environment and information sent to the network in the PC environment.

Before running SETNET, you must have installed network driver and protocol software according to the instructions earlier in this appendix.

**WARNING** You must run SETNET every time you add or remove a network protocol, install or upgrade network software, or change anything in the network control panel. If you do not run SETNET, you will experience network problems.

- 1** In Windows 95, click Start, and choose Run from the menu that appears. In Windows, choose Run from the File menu.

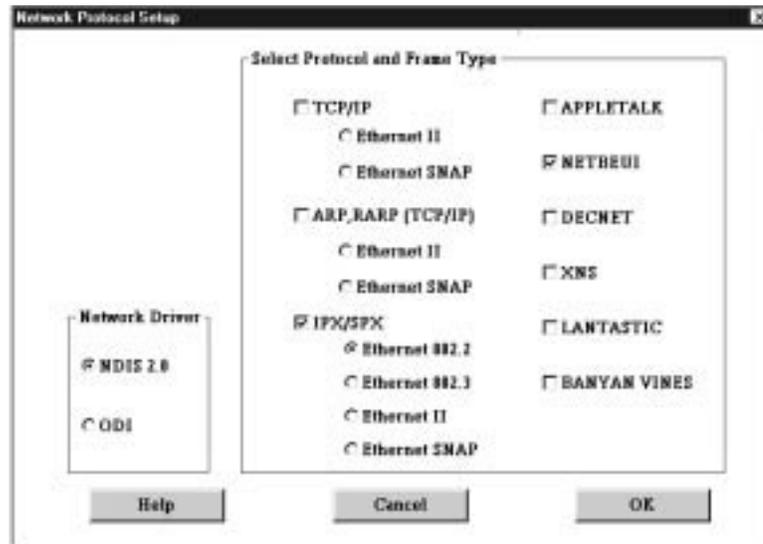
A dialog box appears.

- 2** Insert the *PC Compatibility-PC Software* floppy disk.

**3 Type the following:**

A:\SETNET.EXE <return>

The Network Protocol Setup dialog box appears.



You should not need to select an option in the Network Driver area. The SETNET utility automatically detects the network driver you installed.

**4 Select one or more network protocols that you installed by clicking checkboxes in the “Select Protocol and Frame Type” area.**

You can select more than one protocol if you have installed more than one. If you are only using one protocol, be sure to select its checkbox and leave the other checkboxes unselected.

**5 If you are using TCP/IP, ARP, RARP (TCP/IP), or IPX/SPX, select the appropriate frame type for each selected protocol by clicking radio buttons in the Select Protocol and Frame Type area.**

**6 Click OK.**

**7 Shut down or exit Windows.**

**8 Switch to the Mac OS by typing ⌘-Return.**

- 9 Shut down the PC by clicking Shut Down PC in the PC Setup control panel.
- 10 Shut down the Macintosh, wait ten seconds, and start up the Macintosh again.

You need to shut down the Macintosh and start it up again to make sure that the network software is installed properly.

**IMPORTANT** If you are using ODI with Windows 95, you may need to manually add the following two lines to your PROTOCOL.INI file before running the SETNET utility.

```
[NET.CFG]
PATH=C:\NWCLIENT\NET.CFG
```

## Configuring the built-in TCP/IP stack for PPP (modem) in Windows 95

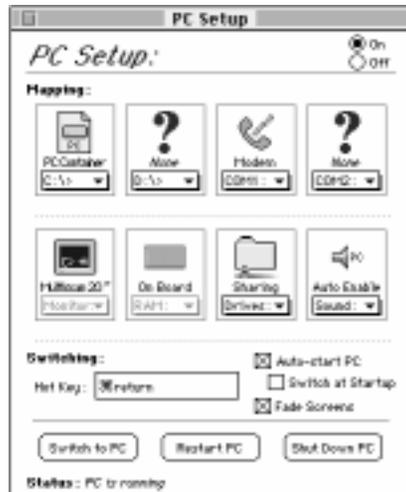
The following instructions assume that this is the first time you are installing the Point-to-Point (PPP) software and no previous networking software has been installed.

### Using a modem connected to the Macintosh serial port

*Note:* The following example describes connecting a Macintosh modem to the Macintosh modem port and then configuring it to be COM1 in the PC environment. A modem can be connected to either the Macintosh modem or printer port and can be configured to COM1 or COM2 in the PC environment.

- 1 With your computer turned off, connect a modem to the modem port on the back of your computer.
- 2 Start up the Mac OS.
- 3 Open the PC Setup control panel.

- 4 Open the COM1 menu and choose Modem Port.



- 5 Switch to the PC environment.

## Installing a modem in Windows 95

- 1 In Windows 95, click Start, choose Settings, and then choose Control Panel.
- 2 Double-click the Modem icon.
- 3 Click Next to allow Windows 95 to autodetect the modem. If you are not using a PC modem, click “Don’t detect my modem; I will select it from a list”; then click Next. In the next window, choose the modem that is similar to your own.

If Windows 95 does not autodetect your PC modem, check with your modem's manufacturer for driver information.

- 4 From the list of available ports, choose Communications Port (COM1), then click Next.

This step is needed only if Windows 95 did not autodetect your modem.

- 5 Enter modem information and then click Next.

At this point Windows 95 will install the appropriate modem driver. The Modem Properties window appears.

- 6 Click Finish.

- 7 Click **Diagnostics**, then select the **COM** port that the modem is attached to. In this case it should be **COM1**.
- 8 Click **More Info** to show the characteristics of your modem, then click **OK**.
- 9 Click **General**, then click **Properties** to display the properties for your modem.
- 10 Click **Connection**, then click **Advanced**.
- 11 Make sure that the **flow control** and **hardware handshaking** options are checked. Click **OK** until you get back to the **Modem Properties** window.
- 12 Click **Close** to complete the setup process.

### Dial-up networking installation

- 1 In **Windows 95**, click **Start**, choose **Settings**, and then choose **Control Panel**.
- 2 Double-click the **Add/Remove Programs** icon.
- 3 Click the **Windows Setup** tab.
- 4 Double-click **Communications**.
- 5 In the window that appears, place a check next to **Dial-Up Networking** and then click **OK**.
- 6 Click **OK** again to start the installation process.

If the **Windows 95** disc is not in the **CD-ROM** drive you will be asked to insert it at this time.

- 7 After the installation process is complete, restart **Windows 95**.
- 8 In **Windows 95**, click **Start**, choose **Settings**, and then choose **Control Panel** from the menu that appears.
- 9 Double-click the **Network** icon.

At this point the **TCP/IP** protocol needs to be installed in order to access the **Internet** and other **TCP/IP** networks.

- 10 In the **Network** window, click **Add**.
- 11 From the list of available components, select **Protocol**, then click **Add**.

- 12 In the window that appears, choose Microsoft from the list of manufacturers, then choose TCP/IP from the list of network protocols.
- 13 Click OK to return to the Network window.
- 14 Double-click TCP/IP in the list of installed network components.
- 15 In the window that appears, configure the TCP/IP stack by filling in the appropriate information. When you are finished, click OK.
- 16 Follow the instructions on the screen to finish the installation, and then restart Windows 95.

### **Making a PPP connection**

- 1 In Windows 95, click Start, choose Programs, choose Accessories, and then choose Dial-Up Networking from the menu that appears.
- 2 Double-click Make New Connection.
- 3 Follow the instructions on screen to finish the procedure.

Consult your Windows 95 manual for more information about establishing a PPP connection.





## Appendix D Configuring Video Software



This appendix describes special configuration options for the ATI video circuitry and ATI video drivers that came with your PC Compatibility Card.

### About video capabilities

The PC Compatibility Card comes with ATI video circuitry and ATI mach64 graphics accelerator, providing high performance 64-bit graphics, accelerating up to 16.7 million colors (at a resolution of 800 x 600) and up to 1280 x 1024 resolution (with 256 colors). Availability of colors and resolutions depends on the monitor connected, the type of chip, and the amount of video memory installed. This appendix also describes the use of WINBOOST, which provides 64-bit graphics acceleration in multiple environments.

The video circuitry is initially configured to display basic VGA at a resolution of 640 x 480. If you have a multiple-scan monitor, you can configure the circuitry to provide the full range of resolutions and refresh rates that your monitor can support.

Your operating system may also provide utilities for installing and configuring enhanced drivers. Please refer to the documentation that came with your operating system for information.

## Installing and configuring video software for DOS and Windows

For instructions on installing basic video software and selecting monitor types in Windows and Windows 95, see Chapter 6, “Installing the PC Compatibility Card Software.” This section provides information about ATI DeskTop (the configuration program for Windows), configuring video in DOS, installing special display drivers and utilities for DOS, and installing MPEG video software in Windows and Windows 95.

*Note:* Not all of the features described in the ATI onscreen instructions are supported by the PC Compatibility Card.

### Configuring video software in DOS

To install and configure DOS video software for a multiscan monitor, follow these steps:

- 1 In the DOS environment, insert the *PC Compatibility Card–PC Utilities* CD into the CD-ROM drive.**

*Note:* If you have already installed the MACH64 directory on your C drive, you can skip ahead to step 5.

- 2 Type the following:**

```
E: <return>
CD\VIDEO\UTILITY <return>
INSTALL <return>
```

The Installer program’s main menu appears.

- 3 Choose Utilities Installation from the menu.**

Follow the onscreen instructions to install the MACH64 directory on your C drive.

- 4 When the installation is complete, press Esc until you exit the program.**

- 5 Type the following:**

```
C: <return>
CD\MACH64 <return>
INSTALL <return>
```

The Installer program’s main menu appears.

**6 Choose Quick Setup from the menu.**

The Quick Setup option appears only if you have a multiscan monitor.

**7 Select your monitor in the list that appears.**

When you select a monitor in the list, specifications for that monitor are displayed in the info box. If your monitor is not listed, you have several options:

- Select VGA 640 x 480. This setting works for all monitors, but you will not be able to use multiple resolutions or refresh rates.
- If you have a VDIF file for your monitor, insert the disk containing the file, select READ VDIF in the menu, and type the pathname of the file.
- If your monitor's specifications are the same as those of a listed monitor, choose that monitor in the list.
- If no listed monitor is similar to your monitor, select Custom to configure the circuitry manually. (Custom configuration works only with multiple-scan monitors.) For more information, see the next section, "Making Custom Monitor Settings in DOS."

**8 Exit and save your settings.**

### Making custom monitor settings in DOS

If you have a multiscan monitor, you can follow these steps to select custom monitor settings for DOS.

**1 In the DOS environment, insert the *PC Compatibility Card-PC Utilities* CD into the CD-ROM drive.**

*Note:* If you have already installed the MACH64 directory on your C drive, you can skip ahead to step 5.

**2 Type the following:**

```
E: <return>
CD\VIDEO\UTILITY <return>
INSTALL <return>
```

The Installer program's main menu appears.

**3 Choose Utilities Installation from the menu.**

Follow the onscreen instructions to install the MACH64 directory on your C drive.

**4 When the installation is complete, press Esc until you exit the program.**

**5 Type the following:**

```
C: <return>
CD\MACH64 <return>
INSTALL <return>
```

The Installer program's main menu appears.

**6 Choose Quick Setup from the menu.**

The Quick Setup option only appears if you have a multiscan monitor.

**7 Select Custom in the list that appears.**

**8 Choose a resolution, then a refresh rate.**

A box appears.

If the monitor produces a scrambled display, press the Esc key to exit and choose a lower refresh rate. If there is no lower rate to choose, set that resolution to "Not Supported."

**9 Repeat step 8 for other resolutions your monitor supports.**

**WARNING** Do not choose a refresh rate that is higher than your monitor supports. You might damage your monitor. Consult your monitor manual for specifications.

**10 To adjust screen centering for the selected resolution, change the size and position of the box; then press Return.**



- 11 Repeat step 10 until you are satisfied with the screen centering for all the resolutions supported by your monitor.
- 12 Exit and save your settings.

If you want to cancel your settings, press the Esc key and confirm as prompted.

## Installing MPEG video support in Windows

Your video software includes the ATI Video Player—an MPEG player for Windows and Windows 95 that provides full-motion, full-screen color MPEG video playback. You must install the enhanced video drivers before installing the ATI Video Player.

### Installing MPEG video support in Windows 95

To install the MPEG player, follow these steps:

- 1 Insert the *PC Compatibility Card–PC Utilities* CD into the CD-ROM drive.
- 2 Click Start, then choose Run from the menu that appears.
- 3 Type the following:  
`E: \VIDEO\ATISSETUP <return>`  
The ATI Setup Window appears.
- 4 Click ATI Video Player.
- 5 Follow the setup instructions to complete the installation.

*Note:* The ATI Installer will look for MPEG support software during the installation process. If the necessary software is not found it will install it and then restart Windows 95. You will then need to repeat steps 1–5 in order to install the MPEG video support.

## Installing MPEG video support in Windows

The ATI Video Player uses Microsoft's Video for Windows. If Video for Windows is not installed on your system, refer to the README in the VIDEO\ATI\CD directory for more information.

- 1** In the DOS environment, insert the *PC Compatibility Card-PC Utilities CD* into the CD-ROM drive.

*Note:* If you have already installed the MACH64 directory on your C drive you can skip ahead to step 5.

- 2** Type the following:

```
E: <return>
CD\VIDEO\UTILITY <return>
INSTALL <return>
```

The Installer program's main menu appears.

- 3** Choose Utilities Installation from the menu.

Follow the onscreen instructions to install the MACH64 directory on your C drive.

- 4** When the installation is complete, press Esc until you exit the program.

- 5** Type the following:

```
C: <return>
CD\MACH64 <return>
INSTALL <return>
```

The Installer program's main menu appears.

- 6** Choose Drivers Installation from the menu.

- 7** Select Microsoft Windows.

- 8** Select Display Drivers + Software MPEG.

- 9** Follow the onscreen instructions.

## Optimizing MPEG playback in Windows 95

You have three ways to optimize MPEG file playback performance in Windows 95: you can adjust virtual memory, CD-ROM caching, and ATI MPEG Player settings. There is no single best way to configure the system. The instructions here show you where to find the configuration files you can use to optimize playback for your system.

To adjust virtual memory settings, follow these steps:

- 1 Click Start, choose Settings, and choose Control Panel.**
- 2 Double-click the System icon to open it.**
- 3 Click the Performance tab, and click the Virtual Memory button.**

There are a variety of options in the Virtual Memory window. These options allow you to let Windows automatically manage your virtual memory, or allow you to set up virtual memory yourself.

- 4 Click OK when done and close all the open windows.**
- 5 Shut down Windows and restart the PC for your changes to take effect.**

To adjust CD-ROM caching settings, follow these steps:

- 1 Click Start, choose Settings, and choose Control Panel.**
- 2 Double-click the System icon to open it.**
- 3 Click the Performance tab, and click the File System button.**
- 4 Click the CD-ROM tab.**
- 5 Decrease or increase the size of the Supplemental Cache to optimize performance. Choose the speed of your CD-ROM drive from the “Optimize access pattern for” pop-up menu.**
- 6 Click OK.**

To set ATI MPEG Player properties, follow these steps:

- 1** Click Start, choose Programs, and then choose ATI Multimedia.
- 2** Double-click ATI Player.
- 3** Follow the onscreen instructions.

## ATI DeskTop video configuration software for Windows

ATI DeskTop is installed automatically with the enhanced driver for Windows. The ATI DeskTop provides the following features:

- The Flexdesk+ control panel allows you to change color depth, screen size, and desktop size within Windows. (Some features are available for multiscan monitors only)
- DeskScape lets you scroll across an offscreen work space of up to 1600 x 1200 (depending on how much video DRAM is installed) and allows zooming.
- WinSwitch switches display modes instantly.
- Screen Adjustment lets you adjust the screen size, centering, and monitor configuration (multiscan monitors only).
- Context-sensitive help explains how to customize your accelerator card configurations.

*Note:* The PC Compatibility Card does not support the DPMS energy-saving feature.

## Using DOS video utilities

For instructions on installing utilities, see “Configuring Video Software in DOS,” earlier in this appendix.

### VESA BIOS Extension

The VESA BIOS Extension (VBE) utility is a DOS TSR program called M64VBE.COM. This program supports software running on VESA modes using mach64 features. If your software and/or games conform to the VBE standard, you should load M64VBE.COM before using your software.

**To change to the MACH64 directory and load the utility, type the following:**

```
C: \ <return>
CD \MACH64
M64VBE <return>
```

*Note:* You may want to add the M64VBE line to your AUTOEXEC.BAT file.

**To display help, type:**

```
M64VBE ? <return>
```

**To unload the utility, type:**

```
M64VBE U <return>
```

Refer to your DOS documentation for more information about TSR programs.

### DPMS for DOS

DPMS—the Display Power Management Signaling system—is not supported by the PC Compatibility Card.

## Troubleshooting

### Using the diagnostics utility

You can view and test any installed graphics mode at any supported resolution and color depth by running the Installer program from the DOS prompt or by running a diagnostics program called M64DIAG.EXE.

*Note:* Do not run M64DIAG.EXE in a windowed or full-screen DOS box.

Any time you suspect there is a problem, especially during installation, you should run the above tests. The information provided in the next section, “Solutions and Explanations for Problems,” will enable you to solve most problems.

To run the diagnostics utility, follow these steps:

- 1** In the DOS environment, insert the *PC Compatibility Card–PC Utilities CD* into the CD-ROM drive.

*Note:* If you have already installed the MACH64 directory on your C drive you can skip ahead to step 5.

- 2** Type the following:

```
E: <return>
CD\VIDEO\UTILITY <return>
INSTALL <return>
```

The Installer program’s main menu appears.

- 3** Choose Utilities Installation from the menu.

Follow the onscreen instructions to install the MACH64 directory on your C drive.

- 4** When the installation is complete, press Esc until you exit the program.

- 5** Type the following:

```
C: <return>
CD\MACH64 <return>
INSTALL <return>
```

The Installer program’s main menu appears.

**6 Choose Diagnostics from the menu.**

**7 Select Test Graphics Adapter.**

**8 Select the test you wish to run.**

You can select either VGA Tests or Accelerator Tests. Problems and solutions for some common errors found by the test program are provided in the next section, “Solutions and Explanations for Problems.”

## **Solutions and explanations for problems**

This section describes several checks and tests you can perform to help diagnose problems with your video circuitry. In some cases you can fix the problem yourself; in other cases you may need to consult a specialist.

### **System is locked up.**

If your system is not responding, try the following:

- Make sure the software is installed properly.
- Reset the video configuration to factory defaults using the Install program. If this works, the problem is likely due to incorrect configuration.

### **Test patterns are OK but applications do not sync.**

You may have selected the wrong monitor type. Change the settings in the Install program.

### **Windows driver is not installing properly.**

Make sure Windows is running in 386 Enhanced Mode. Incompatible memory managers may prevent Windows from starting in enhanced mode. If this occurs, remove the memory manager.

### **AutoCAD driver is not installing properly.**

If using a 386 processor, ensure that AutoCAD has been configured for the appropriate ADI driver. The protected mode driver requires extended memory.

**Memory aperture test fails, diagnostics program locks, or the computer restarts during aperture test.**

If you see a message that the memory aperture location is conflicting with your system memory, restart the Installer program as follows:

```
C: <return>
CD\MACH64 <return>
INSTALL <return>
```

Enable Memory Aperture, selecting a location above but not overlapping System Memory (S), BIOS (B), or Reserved (R) locations.

**The resolution I want is not available (dimmed).**

The BIOS has been instructed that the mode is not available. If you're sure your monitor supports the resolution, run the Installer program again and use the custom configuration option.

**A menu item is not available (dimmed).**

The mode or test is not available for the current configuration. For example, aperture tests are not available if the aperture is turned off. CRT mode and pixel depth are determined by the current installation, DAC type, memory size, and memory type.

**A FIFO test error occurred.**

The effects of a bad command FIFO should be visible (for example, the display may be blank or there may be "garbage" on the screen).

**A quick memory test error occurred.**

Run the Detailed RAM Test to confirm the error and identify the address of the error.

**A detailed memory test error occurred.**

Run the Detailed RAM Test several times to confirm the error. Take note of any messages and error codes that are displayed.



**The DAC LUT test failed.**

An error occurred while testing the DAC LookUp Table. The problem should be visible on the top color bar of any 8 bpp mode.

**A ROM checksum error occurred.**

An error was detected in the ROM.

**The draw sequence failed.**

An error occurred in the draw engine. If the error is intermittent, there may be a marginal RAM failure. The effects of this failure may not be immediately apparent.

## Video mode tables

This section describes the video mode specifications for ATI video drivers using DRAM.

When discussing color depth, 8 bits per pixel (8 bpp) is the same as 256 colors. Therefore, the relation between bpp and colors is as follows:

| Bits per pixel | Number of colors |
|----------------|------------------|
| 8              | 256              |
| 16             | 65,000           |
| 24             | 16,700,000       |
| 32*            | 16,700,000       |

\*32 is 24 bpp color data processed using a 32 bpp data format.

The ATI video drivers also support 15 bpp (32,000 colors). Any resolution and refresh settings that support 16 bpp will support 15 bpp.

## DRAM accelerator mode (WINBOOST)

The following table lists color depths and other features supported at various monitor resolutions in graphics mode. The settings listed in this table can be applied to multiscan monitors only.

| Resolution       | Refresh rate (Hz) | Horizontal frequency (kHz) | Pixel clock (MHz) | Maximum color depth (bpp)* |
|------------------|-------------------|----------------------------|-------------------|----------------------------|
| <b>640 x 480</b> | 60                | 31.4                       | 25.2              | 24, 32 <sup>†</sup>        |
|                  | 72                | 37.7                       | 31.2              | 24, 32                     |
|                  | 75                | 37.5                       | 31.5              | 24, 32                     |
|                  | 90                | 47.9                       | 39.9              | 16, 32                     |
|                  | 100               | 52.9                       | 44.9              | 16, 16                     |
|                  | 120               | 63.7                       | 55.0              | —, 16                      |
| <b>800 x 600</b> | 48 interlaced     | 33.8                       | 36.0              | 16, 24                     |
|                  | 56                | 35.1                       | 36.0              | 16, 24                     |
|                  | 60                | 37.8                       | 40.0              | 16, 24                     |
|                  | 70                | 44.5                       | 44.9              | 16, 32                     |
|                  | 72                | 48.0                       | 50.0              | 16, 16                     |
|                  | 75                | 46.8                       | 49.5              | 16, 16                     |
|                  | 90                | 57.0                       | 56.6              | 8, 8                       |
|                  | 100               | 62.5                       | 67.5              | 8, 8                       |
|                  | 120               | 76                         | 81                | —, 8                       |

\*In the "Maximum color depth" column, the first number is the bits per pixel supported at 1 MB DRAM, the second number is the bits per pixel supported at 2 MB DRAM. A dash (—) means the color depth is not supported in that DRAM configuration.

<sup>†</sup>32 is 24 bpp color data processed using a 32 bpp data format.

*continued* ►

| Resolution        | Refresh rate (Hz)  | Horizontal frequency (kHz) | Pixel clock (MHz) | Maximum color depth (bpp)* |
|-------------------|--------------------|----------------------------|-------------------|----------------------------|
| <b>1024 x 768</b> | 43 interlaced      | 35.5                       | 44.9              | 8, 16                      |
|                   | 60                 | 48.3                       | 65.0              | 8, 16                      |
|                   | 70                 | 56.4                       | 75.0              | 8, 16                      |
|                   | 72                 | 58.2                       | 75.0              | 8, 16                      |
|                   | 75                 | 60.0                       | 78.8              | 8, 16                      |
|                   | 90                 | 76.2                       | 100               | —, 8                       |
|                   | 100                | 79.0                       | 110               | —, 8                       |
|                   | 120                | 96.7                       | 130               | —, 8                       |
| <b>1152 x 864</b> | 43 interlaced      | 45.9                       | 65.0              | 8, 16                      |
|                   | 47 interlaced      | 44.8                       | 65.0              | 8, 8                       |
|                   | 60                 | 54.9                       | 80.0              | 8, 8                       |
|                   | 70                 | 66.1                       | 100               | —, 8                       |
|                   | 75                 | 75.1                       | 110               | —, 8                       |
|                   | 80                 | 75.1                       | 110               | —, 8                       |
|                   | 85                 | 77.1                       | 121.5             | —, 8                       |
|                   | <b>1280 x 1024</b> | 43 interlaced              | 50.0              | 80.0                       |
| 47 interlaced     |                    | 50.0                       | 80.0              | 4, 8                       |
| 60                |                    | 63.9                       | 110               | —, 8                       |
| 70                |                    | 74.6                       | 126               | —, 8                       |
| 74                |                    | 78.8                       | 135               | —, 8                       |
| 75                |                    | 79.9                       | 135               | —, 8                       |

\*In the “Maximum color depth” column, the first number is the bits per pixel supported at 1 MB DRAM, the second number is the bits per pixel supported at 2 MB DRAM. A dash (—) means the color depth is not supported in that DRAM configuration.

## VESA BIOS Extension modes

The VESA BIOS Extension supports the following modes in multiscan monitors. To determine which modes you can use with your monitor, run the VESATEST utility.

| Resolution        | Maximum color depth (bpp) | Graphics mode | Minimum DRAM |
|-------------------|---------------------------|---------------|--------------|
| <b>640 x 480</b>  | 8                         | 110h, 101h    | 1 MB         |
|                   | 15 (5:5:5)                | 110h          | 1 MB         |
|                   | 16 (5:6:5)                | 111h          | 1 MB         |
|                   | 24 (8:8:8)                | 112h          | 1 MB         |
| <b>800 x 600</b>  | 4                         | 102h, 6Ah     | 1 MB         |
|                   | 8                         | 103h          | 1 MB         |
|                   | 15 (5:5:5)                | 113h          | 1 MB         |
|                   | 16 (5:6:5)                | 114h          | 1 MB         |
| <b>1024 x 768</b> | 4                         | 104h          | 1 MB         |
|                   | 8                         | 105h          | 1 MB         |
|                   | 15 (5:5:5)                | 116h          | 2 MB         |
|                   | 16 (5:6:5)                | 117h          | 2 MB         |

## Fixed-frequency monitors

The following tables list the resolutions supported on fixed-frequency (non-multiscan) monitors. The color depths for 1 MB and 2 MB of DRAM are also listed. You cannot change refresh rate and other timing items for fixed-frequency monitors.

### Macintosh 21-Inch Color Display

*Refresh rate:* 68.7 kHz (horizontal), 75.08 Hz (vertical)

| Resolution | Color depth   |        |
|------------|---------------|--------|
|            | 1 MB          | 2 MB   |
| 640 x 400  | 16 bpp        | 16 bpp |
| 640 x 480  | 16 bpp        | 16 bpp |
| 800 x 600  | 8 bpp         | 8 bpp  |
| 1024 x 768 | not supported | 8 bpp  |

### Macintosh 21-Inch Monochrome Display

*Refresh rate:* 68.7 kHz (horizontal), 75.08 Hz (vertical)

| Resolution | Color depth   |        |
|------------|---------------|--------|
|            | 1 MB          | 2 MB   |
| 640 x 400  | 16 bpp        | 16 bpp |
| 640 x 480  | 16 bpp        | 16 bpp |
| 800 x 600  | 8 bpp         | 8 bpp  |
| 1024 x 768 | not supported | 8 bpp  |

### 19-Inch Color Display

*Refresh rate:* 60.2 kHz (horizontal), 74.9 Hz (vertical)

| Resolution | Color depth |        |
|------------|-------------|--------|
|            | 1 MB        | 2 MB   |
| 640 x 400  | 16 bpp      | 16 bpp |
| 640 x 480  | 16 bpp      | 16 bpp |
| 800 x 600  | 8 bpp       | 8 bpp  |
| 1024 x 768 | 8 bpp       | 16 bpp |

### Macintosh 16-Inch Color Display

*Refresh rate:* 49.7 kHz (horizontal), 74.55 Hz (vertical)

| Resolution | Color depth |        |
|------------|-------------|--------|
|            | 1 MB        | 2 MB   |
| 640 x 400  | 16 bpp      | 16 bpp |
| 640 x 480  | 16 bpp      | 16 bpp |
| 800 x 600  | 8 bpp       | 8 bpp  |

### Macintosh Portrait Display (monochrome)

*Refresh rate:* 68.7 kHz (horizontal), 75.08 Hz (vertical)

| Resolution | Color depth |        |
|------------|-------------|--------|
|            | 1 MB        | 2 MB   |
| 640 x 400  | 16 bpp      | 16 bpp |
| 640 x 480  | 16 bpp      | 16 bpp |

## Macintosh 12-Inch Monochrome Display, 13-Inch Color Display, 14-Inch Color Display, and AudioVision Display

*Refresh rate:* 35 kHz (horizontal), 66.67 Hz (vertical)

| Resolution | Color depth |                     |
|------------|-------------|---------------------|
|            | 1 MB        | 2 MB                |
| 640 x 400  | 16 bpp      | 16 bpp              |
| 640 x 400  | 24 bpp      | 32 bpp <sup>†</sup> |
| 640 x 480  | 24 bpp      | 32 bpp <sup>†</sup> |

<sup>†</sup>32 is 24 bpp color data processed using a 32 bpp data format.

### User-adjustable monitors

The following monitor types accept additional modes and display customization. You can customize monitors using the Install program, the ATI DeskTop program, or the Windows 95 Display control panel. You can add modes either by selecting a predefined monitor type or by manually selecting a set of modes. Consult the specifications for your monitor to ensure that it supports the mode you want.

- VGA/SVGA
- Apple Multiple Scan 15 Display
- Apple Multiple Scan 17 Display
- Apple Multiple Scan 1705 Display
- Apple Multiple Scan 20 Display
- AppleVision 1710 Display
- AppleVision 1710AV Display
- DDC 1 /2B monitor





## Appendix E Technical Information

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### General specifications

#### Description

12-inch PC-compatible PCI card.

#### System

- Pentium or Pentium-compatible microprocessor
- 256K L2 cache
- Plug-n-Play BIOS

#### Power

- +5 volts (V), ±12 V and +3.3 V
- 25 watts maximum

#### Memory

- 16 MB non-removable random-access memory (RAM)
- one empty socket available for an additional 168-pin DIMM 70 ns or less, up to 64 MB; use 64-bit wide DIMM

#### Networking

- supports ODI and NDIS v. 2.0 network drivers
- supports IPX/SPX, NetBEUI, Novell LAN Workplace, AppleShare, TCP/IP, Trumpet WinSock, and OS/2 LAN Server client protocols in the PC environment

## **Sound**

16-bit Sound Blaster sound system allows

- PC sound played through Macintosh speaker or headphones
- CD-ROM sound recording capability
- enhanced FM-synthesized sound-out capabilities
- 8- and 16-bit digital sound

Sound Blaster microphone and line input are not supported.

## **Keyboard**

Macintosh ADB keyboard and mouse emulate PC AT-compatible keyboard and PS/2-compatible mouse.

## **Joystick**

Standard PC-style joysticks supported through DB-15 connector included on the card (PC applications only).

## **MIDI**

MIDI devices supported through a Sound Blaster-compatible joystick-to-MIDI adapter cable (available separately).

## **Serial ports**

Two PC compatible serial interfaces that can be routed, under software control, either to a text file or through the two Macintosh RS-422 serial ports (RS-422 ports do not support all RS-232 signals).

## **Parallel port**

Macintosh printer port can emulate PC XT/AT-compatible parallel port (LPT1).

## Video specifications

### Video modes

- VGA modes 0-7 and D-13h
- SVGA modes for 640 x 480, 800 x 600, 1024 x 768, and 1280 x 1024 (79h, 6Ah, 70h)
- VESA 2.0 support in BIOS
- supports 13-, 14-, 16-, and 20-inch Macintosh-compatible monitors; Macintosh Portrait Display monitors; Macintosh Two-Page Display monitors; and 15-, 17-, and 20-inch Macintosh multiple scan monitors
- supports all VGA monitors
- EGA, CGA, MDA also supported

### Video DRAM expansion

May have two sockets to accommodate 5 V, 256K x 16, 60 ns, standard fast-page mode SOJ package DRAM devices (40 pin), such as Micron #MT4C16257DJ-6, NEC #UPD424260LE60R, Samsung #KM416C256BJ-6, or Hyundai #HY514260BJ-60.

### Sync signals

Separate horizontal, vertical, and composite sync at TTL levels.

### Power

- +5 V  $\pm$  5%, @ 3A typical
- +3.3 V  $\pm$  5%, @ 4A typical

## Environment

### Temperature

- *Operating:* 10° C to 35° C (50° F to 95° F)
- *Non-operating:* -40° C to 65° C (-40° F to 149° F) for 72 hours

### Relative humidity

- *Operating:* 10% RH to 90% non-condensing
- *Non-operating:* 5% RH to 95% non-condensing

### Altitude

- *Operating:* -1,000 to 10,000 feet (-304.8 m to 3,048 m)
- *Non-operating:* -1,000 to 40,000 feet (-304.8 m to 12,192 m)





## Index

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### A

- ADB (Apple Desktop Bus) port
  - connecting AppleVision monitor to 132
  - connecting AudioVision monitor to 132
  - connecting pointing devices to 133
- ADB mouse 133
- adding memory to PC Compatibility Card 233–239
- Alt key (PC keyboard), Macintosh equivalent 145, 200, 203
- Apple-authorized service provider. *See also* troubleshooting
  - contacting for assistance 209
  - installing PC Compatibility Card xvi, 3, 26, 59, 86
  - installing video RAM 234
- Apple Guide. *See* Guide menu
- Apple keyboards supported 203
- Apple Remote Access (ARA), startup problems and 216
- AppleShare for Windows protocol 260–261
- AppleTalk network, connecting to shared disks on 136
- AppleVision monitor 132
- application programs. *See also* installing software; *names of specific programs*
  - on PC Compatibility Card–PC Utilities CD 151–159
  - PC software, installing 160
  - performance of 207
- ATI DeskTop software 290, 301
- audio cables, removing from PC Compatibility Card 235
- audio CDs
  - ejecting 202, 203, 217
  - playing in PC environment 177–178, 202
  - troubleshooting 219, 223–225
- AudioVision monitor 132
- AUTOEXEC.BAT file (DOS) 191
- Automatic Document Translation, turning off 204
- automatic sharing
  - turning off 186
  - turning on 185
- Auto-start PC button 199

## B

- Backspace key (PC keyboard), Macintosh equivalent 203
- Balloon Help (Mac OS) 162
- Banyan Vines, installing for NDIS 2.0 driver 274–275
- bitmap images, transferring 206
- blank screen problem 213–214
- bootable drive container, creating 179–182
- booting the computer. *See* starting the computer

## C

- cables. *See also* CD audio cables; CD In cable; CD Out cable; Sound Out cable
  - custom 189
  - disconnecting from card assembly 234, 235
  - loopback cable 118
  - ribbon cable (Power Macintosh 7200 computer) 234
- CD audio cables
  - Power Macintosh 4400 computer 12–19
  - Power Macintosh 7200, 7300, 7500, or 7600 computer 32, 39–47, 52
  - Power Macintosh 8500 or 9500 computer 67–77
  - Power Macintosh 8600 or 9600 computer 98–101, 107–110
- CD In cable, connecting
  - Power Macintosh 4400 computer 12–16
  - Power Macintosh 7200, 7300, 7500, or 7600 computer 45–47, 52
  - Power Macintosh 8600 or 9600 computer 107–110
- CD Out cable, connecting
  - Power Macintosh 4400 computer 17–19
  - Power Macintosh 7200, 7300, 7500, or 7600 computer 39–44
- CD-ROM discs. *See also* audio CDs
  - ejecting 202, 203, 217
  - troubleshooting 219, 223–225
  - using in PC environment 202
- CD-ROM drives
  - adjusting position of (Power Macintosh 8600 or 9600 computer) 104–106
  - performance of 191
  - replacing (Power Macintosh 8600 or 9600 computer) 111–113
  - sharing and unsharing 183–186
  - troubleshooting 219, 223–225
  - using in PC environment 202
- CD-ROM Support software 149
- CDs. *See* audio CDs; CD-ROM discs
- CF\_TEXT files (Windows) 204
- CHKDSK command (DOS) 183
- Client 32 for Windows 95, installing 249
- Clipboards 204–205, 212
- Clipboard Viewer (Windows) 204
- closing the computer
  - Power Macintosh 4400 computer 20–21
  - Power Macintosh 7200, 7300, 7500, or 7600 computer 53–55
  - Power Macintosh 8500 or 9500 computer 78–81
  - Power Macintosh 8600 or 9600 computer 114–115
- cold boot. *See* resetting the computer in the PC environment
- Command key (Macintosh keyboard) 145, 200, 203
- commands. *See also* keyboard commands
  - CHKDSK command (DOS) 183
  - FDISK command (DOS) 182
  - FORMAT command (DOS) 182, 183
  - Insert Object as Paintbrush Picture command 205
  - SUBST command (DOS) 183
  - UNDELETE command (DOS) 183

- computer. *See also names of specific Power Macintosh computers*
  - avoiding damage to xvi, 3, 26, 59, 86
  - closing
    - Power Macintosh 4400 computer 20–21
    - Power Macintosh 7200, 7300, 7500, or 7600 computer 53–55
    - Power Macintosh 8500 or 9500 computer 78–81
    - Power Macintosh 8600 or 9600 computer 114–115
  - connecting a game controller to 134–135, 189
  - connecting a MIDI device to 133, 189
  - connecting a modem to 136
  - connecting a monitor to 119–132
  - connecting a mouse to 133
  - connecting a pointing device to 133
  - connecting a printer to 135
  - connecting a security dongle to 136
  - connecting a serial device to 136
  - opening
    - Power Macintosh 4400 computer 4–7
    - Power Macintosh 7200, 7300, 7500, or 7600 computer 27–37
    - Power Macintosh 8500 or 9500 computer 60–65
    - Power Macintosh 8600 or 9600 computer 87–91
  - resetting (PC environment) 200, 228
  - restarting 145, 197, 198, 200
  - restarting from a floppy disk 201
  - turning on and off (Mac OS environment) 197–200
- CONFIG.SYS file (DOS) 184, 190–191
- configuration problems 223
- configuring
  - built-in TCP/IP stack for PPP (Windows 95) 278–281
  - monitors 155–159, 164, 283–301
  - PC drives 179–183
  - PC serial ports 187–188
  - sounds 177–178
  - video software 155–159, 283–301
- connecting
  - game controller 134–135, 189
  - MIDI device 133, 189
  - modem 136
  - monitor 119–132
  - mouse 133
  - to a network 136
  - pointing device 133
  - printer 135
  - security dongle 136
  - serial device 136
- containers. *See* drive containers
- Control key (Macintosh keyboard) 145, 200
- Control Panels folder (System Folder) 141
- Control Strip 163, 195, 198
- copying
  - between DOS and Mac OS not supported 204
  - between environments 204–206, 220–221
  - QuickTime files 207
- cover, removing
  - Power Macintosh 4400 computer 4–5
  - Power Macintosh 7200, 7300, 7500, or 7600 computer 27–29
  - Power Macintosh 8500 or 9500 computer 60–61
  - Power Macintosh 8600 or 9600 computer 91
- cover, replacing
  - Power Macintosh 4400 computer 20–21
  - Power Macintosh 7200, 7300, 7500, or 7600 computer 53–55
  - Power Macintosh 8500 or 9500 computer 78–81
  - Power Macintosh 8600 or 9600 computer 114–115

custom cables, pins for 189  
customizing monitors 301  
custom monitor settings (DOS) 285–287

## D

delete key (Macintosh keyboard), PC equivalent 145, 200, 203  
Del key (PC keyboard), Macintosh equivalent 145, 200, 203  
desktop, rebuilding (Mac OS) 195  
diagnostics utility 292–293  
dial-up networking installation 280–281  
DIB files 204  
DIMM (Dual Inline Memory Module).  
    *See also* memory  
    adding to PC Compatibility Card 233–239  
    information in PC Setup control panel 165  
    specifications for 303  
disk drives. *See* floppy disk drives; hard disk drives; SCSI hard drives  
display. *See* monitors; video  
DOS. *See also* environments; PC environment; Windows; Windows 95  
    configuration files, setting up 190–191  
    configuring monitors in 165  
    configuring video software in 284–287  
    copying to and from Mac OS not supported 204  
    DPMS for DOS not supported 291  
    drive container, recommended size of 143  
    FDISK command 182  
    FORMAT command 182, 183  
    freezes 211  
    installing in new driver container 144–147  
    keyboard command for switching to Mac OS 195–196

    pasting to and from Mac OS not supported 204  
    PC software, installing 144–147  
    printing in 172  
    problems finding 212  
    Sound Blaster software, installing 153–154  
    starting 194–196  
    video utilities for 291  
DOS Compatibility Card, cable for 118  
*DOS installation* floppy disk 144  
DOS TSR program 291  
DPMS for DOS not supported 291  
DRAM accelerator mode 296–297  
drive assignment, changing 183  
drive containers  
    accessing files in 207–208  
    application performance and 207  
    assigning drives 182  
    changing drive assignments 183  
    creating a drive container 142–144  
    creating a multiple partition/bootable drive container 180–182  
    creating a single partition/bootable drive container 179–180  
    installing DOS in 144–147  
    installing Windows and Windows 95 in 148–150  
    mounting 182–183  
    multiple partitions 180–182  
    partitioning 179–182  
    size of 143, 179, 218  
    SoftPC drive container 179  
    SoftWindows drive container 179  
    troubleshooting 213, 217–219, 221  
    unmounting 182–183  
    using hard disk as 142–144  
drive letters. *See* PC drives  
drivers  
    audio driver 225  
    MACNDIS.DOS driver 241  
    MACODI.COM driver 241  
    mouse driver 147  
    NDIS driver 186, 264–276

- ODI driver 186, 243–263
- printer driver 172, 173, 225
- troubleshooting 293
- video driver 155–156

## E

- ejecting
  - CD-ROM discs 202, 203, 217
  - floppy disks 201, 203, 217
- EMM386 utility 190
- End key (PC keyboard), Macintosh equivalent 203
- environmental specifications 305
- environments. *See also* Mac OS
  - environment; PC environment
    - Clipboards, using between 204–205
    - continuing to listen to audio CD when switching 202
    - copying and pasting between 204–206
    - delay when switching 212
    - hearing sounds in both 178
    - keyboard command for switching between 195–196
    - networking in 186
    - problems switching to Mac OS 212–213
    - problems with information transfer 220–221
    - switching between 194–196
    - transferring files between 183–186
    - transferring sound between 205
- Epson fonts 169
- Epson printer drivers 172
- Epson printers 167, 168–171
- equipment supplied
  - Power Macintosh 4400 computer 2–3
  - Power Macintosh 7200, 7300, 7500, or 7600 computer 24–25
  - Power Macintosh 8500 or 9500 computer 58–59
  - Power Macintosh 8600 or 9600 computer 84–85

- error messages. *See also* messages; troubleshooting
  - associated with PROTOCOL.INI file 222
  - No Monitor 213
  - Non-system disk or disk error 212
  - Not Supported 213
  - PC Clipboard requires additional system services 212
  - selected port in use 223
  - shared volume no longer exists 222
- Ethernet software, installing 141
- expansion card cover, opening (Power Macintosh 7200, 7300, 7500, or 7600 computer) 33–37
- expansion RAM specifications 303
- Extensions folder (System Folder) 141

## F

- FDISK command (DOS) 182, 217
- files
  - AUTOEXEC.BAT file (DOS) 191
  - CF\_TEXT files (Windows) 204
  - CONFIG.SYS file (DOS) 184, 190–191
  - copying and pasting in 204–205
  - DIB files 204
  - in drive containers 207–208
  - opening with PC Exchange software 208
  - PICT files 204
  - PROTOCOL.INI file (Windows 95) 222
  - QuickTime files 207
  - RTF files 204
  - sharing between Mac OS and PC environment 184–185
  - transferring between environments 207–208
  - troubleshooting 208, 217–219, 221
  - VDIF files 285
- fixed-frequency monitors 299–301

floppy disk drives, PC environment and 201  
floppy disks  
  ejecting 201, 203, 217  
  formatting 201  
  inserting 201  
  problems with 217–218  
  restarting computer from 201  
  shared folders and 183  
folders  
  naming conventions for 207  
  sharing with PC 183–186, 191, 207  
fonts, printing and 169  
FORMAT command (DOS) 182, 183, 217  
formatting floppy disks 201  
frozen system 211, 222, 228  
function keys (Macintosh keyboard), PC equivalent 203

## G

game controller (joystick)  
  connecting 134–135, 189  
  specifications for 304  
Guide menu (Mac OS) 162

## H

hard disk drives  
  PC-formatted SCSI 207–208  
  sharing 183–186, 191, 207  
  sharing folders on 183–186, 207  
  troubleshooting 217–219  
  using as drive container for PC 142–144  
headphones 177–178  
help, onscreen  
  Mac OS environment 162  
  PC environment 206–207  
Home key (PC keyboard), Macintosh equivalent 203  
hot key 195

images, bitmap 206  
Insert key (PC keyboard), Macintosh equivalent 203  
Insert Object as Paintbrush Picture command 205  
Installer icon 139, 140  
installing PC Compatibility Card  
  Apple-authorized service provider and xvi, 3, 26, 59, 86  
  in Power Macintosh 4400 computer 1–21  
  in Power Macintosh 7200, 7300, 7500, or 7600 computer 23–56  
  in Power Macintosh 8500 or 9500 computer 57–81  
  in Power Macintosh 8600 or 9600 computer 83–115  
  software for 137–160  
  warning about cards in Power Macintosh 4400 and 7300 models 1, 23, 57, 83  
  warranty and xvi, 3, 26, 59, 86  
installing software. *See also* application programs; *names of specific programs*  
  ATI DeskTop 290  
  DOS 144–147  
  keyboard files 151–152  
  Mac OS 139  
  for mouse 141, 147  
  MPEG video support 288  
  network 241–281  
  Open Transport 140  
  PC application programs 160  
  for PC Compatibility Card 137–160  
  PC Net Exchange extension 141  
  PC Setup control panel 141  
  PC utilities 151–159  
  QuickTime for Windows 95 software 153

- QuickTime for Windows software 153
- Sound Blaster software 153–154
- System 7.5.3 software 139
- video software 155–156
- video software for DOS 284–287
- Windows 148–150

IPX/SPX protocol

- installing for NDIS 2.0 driver 264–265, 268–269
- installing for ODI driver 249, 252–255

## J

joystick. *See* game controller

joystick port, warning about 119, 125, 134

## K

keyboard commands

- ejecting a CD 203
- ejecting a floppy disk 203
- resetting computer in PC environment 200
- restarting computer in PC environment 145, 200
- simulating second mouse button 202–203
- switching environments 195–196

keyboard files 151–152

keyboards

- equivalent keys 145, 203
- specifications for 304
- using in PC environment 203

keys, Macintosh/PC equivalents 145, 203

Kodak Photo CD thumbnails 205

## L

LAN Workplace for DOS TCP/IP 262–263

LASTDRIVE statement 184

legal-size paper, printing 170

loopback cable, using 118

## M

Macintosh Easy Open (Mac OS Easy Open) control panel

- copying and pasting information between environments 204, 205, 220
- problems switching to and from the PC 212

Macintosh Mini DIN-8 connector 189

Macintosh monitors supported 305

Macintosh/PC Folder Sharing software 149

Macintosh/Windows Copy and Paste software 149

MACNDIS.DOS driver 241

MACODI.COM driver 241

Mac OS environment. *See also* environments; PC environment

- accessing PC files 207–208
- configuring to play PC sounds 178
- copying to and from DOS not supported 204
- copying to and from Windows 204–205
- file formats 204
- installing included software in 139
- keyboard command for switching to PC environment 195–196
- pasting to and from DOS not supported 204
- pasting to and from Windows 204–205
- PC Clipboard extension 141, 204–205, 220

- Mac OS environment (*continued*)
  - PC compression programs, not compatible with 183
  - PC Print Spooler software 141, 166–171
  - printing in 166–171
  - rebuilding desktop in, warning about 195
  - Scrapbook 204
  - sharing folders and volumes with PC 183–186, 191, 207
  - switching to PC environment 194–196
  - System Folder, software in 141
  - transferring sound files to and from Windows 205
  - updating system software 139
- MACSHARE utility 207
- memory. *See also* DIMM
  - adding to PC Compatibility Card 233–239
  - expanded memory 190
  - expansion specifications 303
  - increasing for PC Clipboard application 206
  - information in PC Setup control panel 165–166
  - troubleshooting 210, 211, 294
- messages. *See also* troubleshooting associated with PROTOCOL.INI file 222
- No Monitor 213
- Non-system disk or disk error 212
- Not Supported 213
- PC Clipboard requires additional system services 212
- selected port in use 223
- shared volume no longer exists 222
- Starting MS-DOS 211
- Starting Windows 211
- Microsoft Backup program 219
- MIDI device
  - connecting 133, 189
  - specifications for 304
- modem
  - connecting 136, 278–279
  - installing (Windows 95) 279–280
  - setting up 188–189
  - troubleshooting 216
- monitors. *See also* video
  - avoiding damage to 286
  - configuring 155–159, 164, 283–301
  - connecting an AppleVision monitor to your computer 132
  - connecting an AudioVision monitor to your computer 132
  - connecting a single monitor to your computer 119–124
  - connecting two monitors to your computer 125–131
  - customizing 285–287, 301
  - displaying type in PC Setup control panel 164
  - fixed-frequency monitors 299–301
  - multiple-scan monitors 125, 156, 159, 296–297
  - non-multiple-scan monitors 299–301
  - refresh rate, setting too high 286
  - selecting and configuring (Windows 95) 156, 157–159
  - specifications for 296–301, 305
  - supported by Macintosh 305
  - troubleshooting 164, 213–215, 292–295
  - user-adjustable monitors 301
  - VGA monitors 164
  - video modes 296–301
  - video software, installing 155–156
- mounting drives or containers 182–183
- mouse
  - connecting to ADB port 133
  - installing software for 141, 147
  - troubleshooting 228
  - using in PC environment 202–203
- MoviePlayer program, opening QuickTime files with 207

MPEG video support  
installing (Windows) 288  
installing (Windows 95) 287  
optimizing playback (Windows 95)  
289–290  
MS-DOS. *See* DOS  
M64DIAG.EXE program 292–293  
M64VBE.COM program 291  
multiple partition/bootable drive  
container, creating 180–182  
multiple-scan monitors 125, 156, 159,  
296–297

## N

NDIS 2.0 driver 186, 264–276  
NetBEUI protocol  
installing for NDIS 2.0 driver  
264–265, 268–269  
installing for ODI driver 249,  
251–252  
NetManage Chameleon TCP/IP software,  
installing 275–276  
NetWare client software 243–248  
Network Driver Interface Specification  
v.2.0. *See* NDIS 2.0 driver  
Network Protocol Setup utility. *See*  
SETNET utility  
networks  
connecting to 136  
dial-up networking installation  
280–281  
installing software for 241–281  
problems connecting 222  
protocols for 186, 303  
SETNET utility and 186, 241,  
276–278  
non-multiple-scan monitors,  
specifications for 299–301  
non-PostScript printers 168  
non-system disk or disk error 212

## O

ODI driver 186, 243–263  
onscreen help  
Mac OS environment 162  
PC environment 206–207  
Open Data-Link Interface. *See* ODI  
driver  
opening the computer  
Power Macintosh 4400 computer 4–7  
Power Macintosh 7200, 7300, 7500,  
or 7600 computer 27–37  
Power Macintosh 8500 or 9500  
computer 60–65  
Power Macintosh 8600 or 9600  
computer 87–91  
Open Transport, installing 140  
Option key (Macintosh keyboard), PC  
equivalent 145, 203  
OS/2 LAN Server, using with Windows  
for Workgroups 272  
OS/2 LAN Server protocol, installing for  
NDIS 2.0 driver 272–274

## P

PageDown key (PC keyboard),  
Macintosh equivalent 203  
PageUp key (PC keyboard), Macintosh  
equivalent 203  
parallel port specifications 304  
partitioning a drive container 179–182  
pasting  
between DOS and Mac OS not  
supported 204  
between environments 204–206  
problems with 220–221  
PC. *See also* computer; *names of specific  
Power Macintosh computers*  
resetting 200, 228  
restarting 145, 197, 198, 200  
restarting from a floppy disk 201  
turning on and off 197–200

- PC Clipboard extension (Mac OS)
  - copying and pasting information
    - between environments 204–205
  - increasing memory for 206
  - installing 141
- PC Compatibility Card
  - adding memory to 233–239
  - installing, warranty and xvi, 3, 26, 59, 86
  - installing in Power Macintosh 4400 computer 1–21
  - installing in Power Macintosh 7200, 7300, 7500, or 7600 computer 23–56
  - installing in Power Macintosh 8500 or 9500 computer 57–81
  - installing in Power Macintosh 8600 or 9600 computer 83–115
  - installing software for 137–160
  - removing 229–231, 234–235
  - uses for xv–xvi
  - warning about, Power Macintosh 4400 and 7300 models 1, 23, 57, 83
- PC Compatibility Card–Mac OS Software CD* 139, 140
- PC Compatibility Card–PC Software floppy disk* 146, 148, 149
- PC Compatibility Card–PC Utilities CD* 151–159
- PC Compatibility Guide software 141
- PC compression programs, not compatible with Mac OS 183
- PC drives
  - configuring 179–183
  - drive letters for 179, 184, 191
  - SCSI 207–208
  - sharing folders and volumes 183–186, 191
  - using CD-ROM disc on network as 183–186
  - using Macintosh hard disk as 183–186, 207
  - using Mac OS folder as 183–186, 207
  - virtual PC drive 179
- PC environment. *See also* DOS; environments; Windows; Windows 95
  - Apple keyboards, using 203
  - audio CDs, playing in 177–178, 202
  - CD-ROM discs and drives, using 202
  - Clipboard, using 204–205
  - configuring monitors in 164–165
  - configuring sound in 177–178
  - floppy disk drives and disks, using 201
  - keyboard command for switching to Mac OS 195–196
  - keyboards, using 203
  - mouse, using 202–203
  - network software for 136, 241–281
  - onscreen help in 206–207
  - pointing device, using 202–203
  - printing in 135, 166–177, 225–227
  - problems starting 210–211
  - restarting computer in 200, 228
  - setting preferences in PC Print Spooler 166–168
  - setting up environment 161–191
  - setting up modem 188–189
  - setting up printing in 171–177
  - setting up serial device 188–189
  - sharing CD-ROM disc on network 183–186
  - sharing files with Mac OS 184–185
  - sharing folders and volumes with Mac OS 183–186, 191, 207
  - starting automatically 199
  - switching to Mac OS 194–196
  - transferring files between environments 207–208
  - troubleshooting 209–228, 293
  - turning PC on and off 197–198
  - turning sound on and off 178
  - working in 193–208
- PC Exchange software (Mac OS) 141, 208, 218
- PC files, accessing in Mac OS 207–208

- PC-formatted disks
  - assigning a drive to 182
  - problems with 217–218
  - SCSI 207–208
- PC Net Exchange software, installing 141
- PC Network extension 141
- PC Print Spooler icon 167
- PC Print Spooler Mac OS software 141, 163, 166–171
- PC Serial and Parallel Card 1, 23, 57, 135, 136
- PC serial ports, configuring 187–188
- PC Setup control panel
  - assigning drives 182
  - assigning PC serial ports 187–188
  - changing drive assignments 183
  - configuring PC sounds 178
  - creating a drive container with 142–144, 179–181
  - DIMM information in 165
  - displaying monitor type in 164
  - installing 141
  - keyboard command for switching environments 195–196
  - monitor problems and 214, 215
  - not loaded 210
  - opening 162–163
  - overview of 162
  - problems starting up and 210–211
  - RAM information in 165
  - restarting computer with 197
  - sharing and unsharing volumes with 184–186
  - switching environments with 194
  - turning computer on and off with 197–198
  - turning sound on and off with 178
  - using the Control Strip module 163, 195
- PC Setup Control Strip module 163, 195, 198
- PC Setup icon 210
- PC Setup Switch 141
- PC utilities, installing 151–159
- performance
  - applications in drive containers 207
  - applications in shared folders 207
  - CD-ROM drives 191
  - DOS disk operations 191
  - MPEG file playback 289
- PICT files 204
- pointing devices
  - connecting to ADB port 133
  - troubleshooting 228
  - using in PC environment 202–203
- Point-to-Point (PPP) software
  - built-in TCP/IP stack for 278–281
  - making a PPP connection 281
- PostScript errors 226
- PostScript printer drivers 166, 172, 173
- Power Macintosh 4400 computer
  - connecting a single monitor to 119
  - connecting two monitors to 126
  - installing PC Compatibility Card in 1–21
  - warning about PC Compatibility Card installed in 1, 23, 57, 83
- Power Macintosh 7200, 7300, 7500, or 7600 computer
  - connecting a single monitor to 120
  - connecting two monitors to 127
  - installing PC Compatibility Card in 23–56
  - warning about installing wrong PC Compatibility Card in 23
- Power Macintosh 7200 computer, removing ribbon cable from 234
- Power Macintosh 7300 computer
  - removing security bar on 27
  - replacing security bar on 55
  - warning about PC Compatibility Card installed in 1, 23, 57, 83

- Power Macintosh 8500 or 9500 computer
  - connecting a single monitor to 121, 123
  - connecting two monitors to 128, 130
  - installing PC Compatibility Card in 57–81
  - warning about installing wrong PC Compatibility Card in 57
- Power Macintosh 8600 or 9600 computer
  - connecting a single monitor to 122, 124
  - connecting two monitors to 129, 131
  - installing PC Compatibility Card in 83–115
  - warning about installing wrong PC Compatibility Card in 83
- PowerPrint package 135, 166, 176
- power specifications 303
- PPP (Point-to-Point) software
  - built-in TCP/IP stack for 278–281
  - making a PPP connection 281
- printer fonts, Epson 169
- printers
  - connecting 135
  - drivers 166, 172, 173, 225
  - non-PostScript 168
  - PostScript 166, 168, 171, 172, 173
  - setting up 166–177
  - using legal-size paper in 170
- Printer Specific feature 172
- printing
  - in DOS environment 172
  - troubleshooting 171, 225–227
  - in Windows environment 173–174
  - in Windows 95 environment 174–177
- problems. *See* troubleshooting
- programs. *See* application programs; installing software; *names of specific programs*
- PROTOCOL.INI file, error message associated with 222
- protocols, network 136, 241–281, 303. *See also* networks

## Q

- QuickTime files, copying 207
- QuickTime for Windows 95 software 153
- QuickTime for Windows software 153

## R

- RAM (random-access memory). *See also* DIMM
  - adding to PC Compatibility Card 233–239
  - expanded memory 190
  - expansion specifications 303
  - increasing for PC Clipboard application 206
  - information in PC Setup control panel 165–166
  - troubleshooting 210, 211, 294
- rebooting the computer. *See* restarting the computer
- rebuilding desktop, warning about 195
- refresh rate, monitor damage from 286
- removable media drives 201, 218
- resetting the computer in the PC environment 200, 228
- resource forks, file damage and 207
- restarting the computer
  - with Control Strip 163, 198
  - from a floppy disk 201
  - with a keyboard command 145, 200
  - in PC environment 200
  - with PC Setup control panel 197
  - troubleshooting 228
- Restart/Start PC button 197, 198
- RS-232 signals not available 188
- RTF files 204

## S

- Scrapbook (Mac OS) 204
- SCSI hard drives, PC-formatted 207–208
- security bar (Power Macintosh 7300 computer only)
  - removing 27
  - replacing 55
- security dongle, connecting 136
- serial device
  - connecting 136
  - setting up 187–188
- serial ports
  - assigning 187–188
  - connecting modem to 188, 278–279
  - connecting serial device to 188
  - specifications for 304
  - troubleshooting 223
- SETNET utility 186, 241, 276–278
- setting up
  - DOS configuration files 190–191
  - modem 188–189
  - network 186, 241–281
  - PC environment 161–191
  - printing in Mac OS 166–171
  - printing in PC environment 135, 171–177
  - serial device 187–188
  - shared volume 184–185
- shared folders
  - CONFIG.SYS file and 191
  - floppy disk as 183
  - MACSHARE utility and 207
  - problems opening and saving files to 221
  - using 183–186
- shared volumes 183–186
- sharing files between Mac OS and PC environment 184–185
- Shut Down PC button 199
- Shut Down Warning option 199
- shutting down the computer
  - with the Control Strip 198
  - with the PC Setup control panel 197
- single partition/bootable drive container, creating 179–180
- SoftPC drive container 179, 219
- software. *See* application programs; installing software; *names of specific programs*
- SoftWindows drive container 179, 219
- sound
  - configuring in PC environment 177–178
  - specifications for 304
  - transferring between Mac OS and Windows 205
  - troubleshooting 223–225
  - turning on and off 178
- Sound Blaster MixerSet software 223
- Sound Blaster software 153–154, 177
- Sound Out cable
  - Power Macintosh 7200, 7300, 7500, or 7600 computer 39–44
  - Power Macintosh 8600 or 9600 computer 98–101
- sound translation programs 205
- speakers 177, 178, 223
- specifications
  - environment 305
  - general 303–305
  - video 296–301, 305
- Spry Air Series TCP/IP protocol 259–260
- starting PC environment automatically 199
- starting the computer
  - with the Control Strip 198
  - with the PC Setup control panel 197
  - troubleshooting 210–211, 216, 219
- Start/Restart PC button 197, 198
- static electricity 6, 30, 62, 89
- SUBST command (DOS) 183
- support software for DOS, installing 146–147
- support software for Windows, installing 149–150
- Switch at Startup button 199

- switching environments
  - audio CDs and 202
  - with Control Strip 163, 195
  - with keyboard command 195–196
  - with PC Setup control panel 194
  - troubleshooting 212–213
- Switch to PC button 194
- Syquest drives 201, 218
- System Folder, Mac OS software in 141
- System 7.5.3 software, installing 139
- system specifications 303

## T

- TCP/IP protocol 249–250
- TCP/IP stack for PPP (Windows 95) 278–281
- TCP/IP-32 IP protocol
  - installing for NDIS 2.0 driver 266–267, 270–271
  - installing for ODI driver 255–256
- technical information
  - environment 305
  - specifications 296–301, 303–305
- technical support. *See* Apple-authorized service provider
- test page, problems printing (Windows 95) 227
- troubleshooting. *See also* Apple-authorized service provider; error messages; onscreen help
  - applications are sluggish 228
  - audio CD problems 219, 223–225
  - blank screen 213–214
  - can't find DOS or Windows 212
  - CD-ROM disc problems 219, 223–225
  - configuration problems 223
  - disk problems 201, 217–219
  - display problems 164, 213–215, 293–295
  - DOS freezes 211
  - drive container problems 213, 217–219, 221
  - driver problems 293
  - ejecting disks 217
  - file problems 208, 217–219, 221
  - frozen system 211, 222, 228
  - information transfer problems 220–221
  - modem problems 216
  - monitor problems 164, 213–215, 292–295
  - mouse problems 228
  - Non-system disk or disk error 212
  - pasting between Mac OS and Windows 205
  - PC Clipboard requires additional system services 212
  - PC didn't start up 210–211
  - PC environment 209–228, 293
  - PC Setup icon has a red slash 210
  - pointing device problems 228
  - PostScript errors 226
  - printing problems 171, 225–227
  - RAM problems 210, 211, 294
  - rebuilding desktop, warning about 195
  - software might not be installed 210
  - sound problems 223–225
  - startup problems 210–211, 216, 219
  - switching problems 212–213
  - system freezes at startup 210
  - video problems 164, 213–215, 292–295
- TrueType fonts 169
- Trumpet WinSock protocol 257–258
- turning off volume sharing (Mac OS environment) 186
- turning on and off automatic sharing (Mac OS environment) 185, 186
- turning on and off computer (Mac OS environment) 197–200

## U

- UNDELETE command (DOS) 183
- unmounting drives or containers 182–183
- updating system software (Mac OS) 139

## V

- VDIF file 285
- VESA BIOS Extension 291, 298
- VESATEST utility 298
- VGA monitors 164
- video. *See also* monitors
  - drivers for 155–156
  - modes for 296–301
  - MPEG support for 288
  - software for 155–156, 164, 283–301
  - specifications for 296–301, 305
  - troubleshooting 164, 213–215, 292–295
  - utilities for (DOS) 291
- video RAM, installing 234
- View menu (Windows) 204
- virtual PC drive 179
- volumes
  - naming conventions for 207
  - sharing with PC 183–186, 207

## W, X, Y

- warm boot. *See* restarting the computer
- warranty xvi, 3, 26, 59, 86
- WINBOOST 283, 296–297
- Windows. *See also* DOS; environments; PC environment; Windows 95
  - ATI DeskTop, installing 290
  - configuring monitors in 165
  - copying to and from Mac OS 204–205
  - file formats 204
  - installing in new drive container 148–150

- keyboard command for switching to Mac OS 195–196
  - keyboard files, installing 151–152
  - MPEG video support in 288
  - onscreen help in 206–207
  - pasting to and from Mac OS 204–205
  - PC software, installing 148–150
  - PC utilities, installing 151–159
  - printing in 173–174
  - problems finding 212
  - Sound Blaster software, installing 153–154
  - starting 194–196
  - video software, installing and configuring 155–156, 284
- Windows 95. *See also* DOS; environments; PC environment; Windows
- ATI DeskTop, installing 290
  - configuring monitors in 165
  - configuring TCP/IP stack for PPP in 278–281
  - copying to and from Mac OS 204–205
  - drive container, recommended size for 143
  - installing a modem in 279–280
  - installing in new drive container 148–150
  - keyboard command for switching to Mac OS 195–196
  - keyboard files, installing 152
  - modem problems in 216
  - MPEG video support in 287, 289–290
  - onscreen help in 206
  - pasting to and from Mac OS 204–205
  - PC software, installing 148–150
  - PC utilities, installing 151–159
  - printing in 174–177
  - problems finding 212
  - selecting and configuring monitors in 157–159
  - Sound Blaster software, installing 154

Windows 95 (*continued*)  
starting 194–196  
video software, installing and  
configuring 156, 284  
Windows PaintBrush 205  
Win95 WordPad 205

## Z

Zip drives 201, 218



# PC Compatibility Card

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*User's Manual*

 Apple Computer, Inc.

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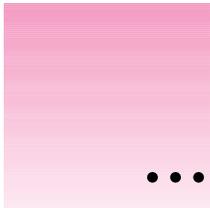
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# Contents



Communications regulation information   xii

**Preface   xv**

**1 Installing the Card in a Power Macintosh 4400 or 7220   1**

What you need   2

Installing the PC Compatibility Card hardware   3

    Opening the computer   4

    Inserting the PC Compatibility Card   8

    Connecting the CD In cable   12

    Connecting the Sound Out cable   17

    Replacing the computer cover   20

What's next?   21

## **2 Installing the Card in a Power Macintosh 7200, 7300, 7500, or 7600 23**

|                                                |    |
|------------------------------------------------|----|
| What you need                                  | 24 |
| Installing the PC Compatibility Card hardware  | 26 |
| Opening the computer                           | 27 |
| Disconnecting the CD-ROM audio cable           | 32 |
| Opening the expansion card cover and chassis   | 33 |
| Inserting the PC Compatibility Card            | 37 |
| Connecting the Sound Out cable                 | 39 |
| Connecting the CD In cable to the card         | 45 |
| Replacing the chassis and expansion card cover | 48 |
| Connecting the CD In cable to the CD-ROM drive | 52 |
| Replacing the computer cover                   | 53 |
| What's next?                                   | 56 |

## **3 Installing the Card in a Power Macintosh 8500 or 9500 57**

|                                               |    |
|-----------------------------------------------|----|
| What you need                                 | 58 |
| Installing the PC Compatibility Card hardware | 59 |
| Opening the computer                          | 60 |
| Inserting the PC Compatibility Card           | 66 |
| Connecting the audio cables                   | 67 |
| Replacing the computer cover                  | 78 |
| What's next?                                  | 81 |

## **4 Installing the Card in a Power Macintosh 8600 or 9600 83**

|                                               |    |
|-----------------------------------------------|----|
| What you need                                 | 84 |
| Installing the PC Compatibility Card hardware | 86 |
| Opening the computer                          | 87 |
| Inserting the PC Compatibility Card           | 92 |
| Opening the chassis                           | 96 |
| Connecting the Sound Out cable                | 98 |

|                                            |     |
|--------------------------------------------|-----|
| Replacing the chassis                      | 102 |
| Adjusting the position of the CD-ROM drive | 104 |
| Connecting the CD In cable                 | 107 |
| Replacing the CD-ROM drive                 | 111 |
| Replacing the computer cover               | 114 |
| What's next?                               | 115 |

## **5 Connecting Monitors and Other Equipment 117**

|                                                                              |     |
|------------------------------------------------------------------------------|-----|
| Using the loopback cable                                                     | 118 |
| Connecting a single monitor                                                  | 119 |
| Connecting a monitor to your Power Macintosh 4400                            | 119 |
| Connecting a monitor to your Power Macintosh 7200,<br>7300, 7500, or 7600    | 120 |
| Connecting a monitor to your Power Macintosh 8500                            | 121 |
| Connecting a monitor to your Power Macintosh 8600                            | 122 |
| Connecting a monitor to your Power Macintosh 9500                            | 123 |
| Connecting a monitor to your Power Macintosh 9600                            | 124 |
| Connecting two monitors                                                      | 125 |
| Connecting two monitors to your Power Macintosh 4400                         | 126 |
| Connecting two monitors to your Power Macintosh 7200,<br>7300, 7500, or 7600 | 127 |
| Connecting two monitors to your Power Macintosh 8500                         | 128 |
| Connecting two monitors to your Power Macintosh 8600                         | 129 |
| Connecting two monitors to your Power Macintosh 9500                         | 130 |
| Connecting two monitors to your Power Macintosh 9600                         | 131 |
| Connecting an AudioVision monitor                                            | 132 |
| Connecting an AppleVision monitor                                            | 132 |
| Connecting a pointing device                                                 | 133 |
| Connecting a MIDI device                                                     | 133 |
| Connecting a PC game controller                                              | 134 |

|                                                           |            |
|-----------------------------------------------------------|------------|
| Connecting a printer                                      | 135        |
| Connecting to a network                                   | 136        |
| Connecting a modem or other serial device                 | 136        |
| Connecting a security dongle                              | 136        |
| <b>6 Installing the PC Compatibility Card Software</b>    | <b>137</b> |
| Installing Mac OS software                                | 139        |
| Installing System 7.5.3                                   | 139        |
| Installing Open Transport                                 | 140        |
| Installing the Mac OS PC Compatibility software           | 140        |
| Installing mouse software                                 | 141        |
| Creating a drive container                                | 142        |
| Installing DOS                                            | 144        |
| Installing support software for DOS                       | 146        |
| Installing mouse software for DOS                         | 147        |
| Installing Microsoft Windows                              | 148        |
| Installing support software for Windows                   | 149        |
| Configuring network support in Windows                    | 150        |
| Installing PC utilities                                   | 151        |
| Installing keyboard files                                 | 151        |
| Installing QuickTime for Windows                          | 153        |
| Installing QuickTime for Windows 95                       | 153        |
| Installing Sound Blaster software for DOS or Windows      | 153        |
| Installing Sound Blaster software for Windows 95          | 154        |
| Installing and configuring video software for Windows 3.1 | 155        |
| Installing video software for Windows 95                  | 156        |
| Selecting and configuring monitors in Windows 95          | 157        |
| Installing your own PC software                           | 160        |
| What's next?                                              | 160        |

|          |                                                        |            |
|----------|--------------------------------------------------------|------------|
| <b>7</b> | <b>Setting Up the PC Environment</b>                   | <b>161</b> |
|          | About the PC Setup control panel                       | 162        |
|          | Using the PC Setup Control Strip module                | 163        |
|          | Configuring monitors                                   | 164        |
|          | Configuring monitors in the DOS environment            | 165        |
|          | Configuring monitors in the Windows environment        | 165        |
|          | Configuring monitors in Windows 95                     | 165        |
|          | RAM information                                        | 165        |
|          | Setting printer options                                | 166        |
|          | Setting up printing in the Mac OS                      | 166        |
|          | Setting up printing in the PC environment              | 171        |
|          | Saving a printer file                                  | 177        |
|          | Configuring PC sound                                   | 177        |
|          | Turning PC sound on and off                            | 178        |
|          | Configuring PC drives                                  | 179        |
|          | Creating a single partition/bootable drive container   | 179        |
|          | Creating a multiple partition/bootable drive container | 180        |
|          | Assigning a drive to a PC-formatted hard disk          | 182        |
|          | Changing a drive assignment                            | 183        |
|          | Using shared volumes                                   | 183        |
|          | Sharing files between the Mac OS and the PC            | 184        |
|          | Turning off volume sharing                             | 186        |
|          | Turning off automatic sharing                          | 186        |
|          | Setting up your PC on a network                        | 186        |
|          | Configuring the PC serial ports                        | 187        |
|          | Setting up a modem or other serial device              | 188        |
|          | Building a custom cable                                | 189        |
|          | Connecting a joystick                                  | 189        |
|          | Connecting a MIDI device                               | 189        |

Setting up your DOS configuration files 190

Editing the CONFIG.SYS file 190

Editing the AUTOEXEC.BAT file 191

## **8 Working in the PC Environment 193**

Switching between the Mac OS and PC environments 194

Switching with the PC Setup control panel 194

Switching with the Control Strip 195

Switching with a keyboard command 195

Turning the PC on and off in the Mac OS environment 197

Turning the PC on and off with the PC Setup control panel 197

Turning the PC on and off with the Control Strip 198

Starting the PC automatically 199

Restarting the PC in the PC environment 200

Using floppy disk drives and floppy disks 201

Restarting the PC from a floppy disk 201

Using CD-ROM discs and drives 202

Using a pointing device 202

Using keyboards 203

Copying and pasting information between the Mac OS and Windows environments 204

Transferring large bitmap images 206

Using onscreen help in the PC environment 206

Using shared folders and volumes 207

Using PC files in the Mac OS environment 207

|                   |                                                                                |            |
|-------------------|--------------------------------------------------------------------------------|------------|
| <b>9</b>          | <b>Troubleshooting</b>                                                         | <b>209</b> |
|                   | Starting up                                                                    | 210        |
|                   | Switching to and from the PC                                                   | 212        |
|                   | Monitor problems                                                               | 213        |
|                   | Problems using a modem                                                         | 216        |
|                   | Problems with files and disks                                                  | 217        |
|                   | Problems with information transfer                                             | 220        |
|                   | Communication and network problems                                             | 222        |
|                   | Configuration problems                                                         | 223        |
|                   | Sound problems                                                                 | 223        |
|                   | Printing problems                                                              | 225        |
|                   | Other problems                                                                 | 228        |
| <b>Appendix A</b> | <b>Removing Your PC Compatibility Card</b>                                     | <b>229</b> |
|                   | Disconnecting the cables                                                       | 229        |
|                   | Removing the card                                                              | 231        |
| <b>Appendix B</b> | <b>Adding Memory to Your PC Compatibility Card</b>                             | <b>233</b> |
|                   | Removing the card                                                              | 234        |
|                   | Removing the old DIMM                                                          | 236        |
|                   | Installing the new DIMM                                                        | 237        |
|                   | Reinstalling the card                                                          | 239        |
| <b>Appendix C</b> | <b>Installing Network Client Software</b>                                      | <b>241</b> |
|                   | Installing protocols for use with Open Data-Link Interface (ODI)               | 243        |
|                   | Installing NetWare client software version 1.02 for DOS/Windows for Workgroups | 243        |
|                   | Installing NetWare client software version 1.02 for Windows 95                 | 245        |
|                   | Installing NetWare Client 32 for DOS and Windows for Workgroups                | 248        |
|                   | Installing NetBEUI and IPX/SPX in Windows 95                                   | 249        |

|                                                                                     |     |
|-------------------------------------------------------------------------------------|-----|
| Installing Client 32 for Windows 95                                                 | 249 |
| Installing TCP/IP in Windows 95                                                     | 249 |
| Installing NetBEUI in Windows for Workgroups                                        | 251 |
| Installing IPX/SPX in Windows for Workgroups                                        | 252 |
| Installing Microsoft's TCP/IP-32 IP protocol stack in Windows for Workgroups        | 255 |
| Installing Trumpet WinSock in Windows for Workgroups                                | 257 |
| Installing Spry Air Series TCP/IP in Windows for Workgroups                         | 259 |
| Installing AppleShare for Windows in Windows for Workgroups                         | 260 |
| Installing Novell's LAN WorkPlace for DOS TCP/IP software                           | 262 |
| Installing protocols for use with Network Driver Interface Specification (NDIS) 2.0 | 264 |
| Installing NetBEUI and IPX/SPX in Windows 95                                        | 264 |
| Installing Microsoft TCP/IP-32 IP protocol stack in Windows 95                      | 266 |
| Installing NetBEUI and IPX/SPX in Windows for Workgroups                            | 268 |
| Installing Microsoft's TCP/IP in Windows for Workgroups                             | 270 |
| Using an OS/2 LAN Server with Windows for Workgroups                                | 272 |
| Installing client software for an OS/2 LAN server in DOS or Windows                 | 272 |
| Installing Banyan Vines in DOS                                                      | 274 |
| Installing NetManage Chameleon TCP/IP software in Windows for Workgroups            | 275 |
| Using a dial-up service                                                             | 276 |
| Running the Network Protocol Setup (SETNET) utility                                 | 276 |
| Configuring the built-in TCP/IP stack for PPP (modem) in Windows 95                 | 278 |
| Using a modem connected to the Macintosh serial port                                | 278 |
| Installing a modem in Windows 95                                                    | 279 |
| Dial-up networking installation                                                     | 280 |
| Making a PPP connection                                                             | 281 |

|                   |                                                               |            |
|-------------------|---------------------------------------------------------------|------------|
| <b>Appendix D</b> | <b>Configuring Video Software</b>                             | <b>283</b> |
|                   | About video capabilities                                      | 283        |
|                   | Installing and configuring video software for DOS and Windows | 284        |
|                   | Configuring video software in DOS                             | 284        |
|                   | Making custom monitor settings in DOS                         | 285        |
|                   | Installing MPEG video support in Windows                      | 287        |
|                   | Installing MPEG video support in Windows 95                   | 287        |
|                   | Installing MPEG video support in Windows                      | 288        |
|                   | Optimizing MPEG playback in Windows 95                        | 289        |
|                   | ATI DeskTop video configuration software for Windows          | 290        |
|                   | Using DOS video utilities                                     | 291        |
|                   | VESA BIOS Extension                                           | 291        |
|                   | DPMS for DOS                                                  | 291        |
|                   | Troubleshooting                                               | 292        |
|                   | Using the diagnostics utility                                 | 292        |
|                   | Solutions and explanations for problems                       | 293        |
|                   | Video mode tables                                             | 295        |
|                   | DRAM accelerator mode (WINBOOST)                              | 296        |
|                   | VESA BIOS Extension modes                                     | 298        |
|                   | Fixed-frequency monitors                                      | 299        |
|                   | User-adjustable monitors                                      | 301        |
| <b>Appendix E</b> | <b>Technical Information</b>                                  | <b>303</b> |
|                   | General specifications                                        | 303        |
|                   | Video specifications                                          | 304        |
|                   | Environment                                                   | 306        |
|                   | <b>Index</b>                                                  | <b>307</b> |

## Communications regulation information

### FCC declaration of conformity

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. See instructions if interference to radio or television reception is suspected.

### Radio and television interference

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

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

You can determine whether your computer system 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.)

If necessary, consult an Apple-authorized service provider or Apple. See the service and support information that came with your Apple product. Or, consult an experienced radio/television technician for additional suggestions.

**IMPORTANT** Changes or modifications to this product not authorized by Apple Computer, Inc., could void the FCC Certification and negate your authority to operate the product.

This product was tested for FCC compliance under conditions that included the use of Apple peripheral devices and Apple shielded cables and connectors between system components. It is important that you use Apple peripheral devices and shielded cables and connectors between system components to reduce the possibility of causing interference to radios, television sets, and other electronic devices. You can obtain Apple peripheral devices and the proper shielded cables and connectors through an Apple-authorized dealer. For non-Apple peripheral devices, contact the manufacturer or dealer for assistance.

*Responsible party:* Robert Steinfeld, Apple Computer, Inc., 1 Infinite Loop, Cupertino, CA 95014-2084, 408-974-2618.

### **Industry Canada statement**

This Class B device meets all requirements of the Canadian interference-causing equipment regulations.

Cet appareil numérique de la Class B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

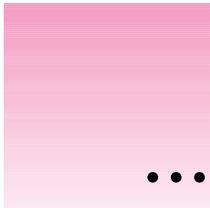
### **VCCI Class 2 statement**

#### **情報処理装置等電波障害自主規制について**

この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の基準に基づく第二種情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。

取扱説明書に従って正しい取り扱いをしてください。





## Preface



The PC Compatibility Card lets you use DOS, Windows 3.1, Windows 3.11, Windows for Workgroups, and Windows 95 applications directly on your Macintosh computer.

Also available for use with this card is a PC Serial and Parallel Card, with a standard PC RS-232 serial interface and PC-enhanced parallel interface, that allows you to use PC-compatible printers, modems, and security dongles from the PC environment. (This card is available from your Apple-authorized dealer.)

With a PC Compatibility Card, you can

- simultaneously run Mac OS and PC applications
- switch between the Mac OS and PC environments at any time without quitting the applications you're using
- view both environments simultaneously on two monitors
- use the same hard disk for both Mac OS and PC software and files
- use your Macintosh-compatible keyboard and one-button or multibutton Apple Desktop Bus (ADB) mouse with PC software
- use your Macintosh-compatible modem, monitor, and printer with PC software, or connect some kinds of PC-compatible equipment
- use a joystick or other game controller with PC applications
- connect MIDI equipment (with an appropriate adapter)
- add random-access memory (RAM) to the PC Compatibility Card

- add 1 MB video DRAM (on some models)
- use the built-in serial ports with PC software
- play and record from PC-compatible CD-ROM discs
- copy and paste information between Mac OS and PC documents
- play Sound Blaster-compatible sounds and use Sound Blaster sound processing utilities (Sound Blaster microphone and line input are not supported.)
- communicate with network servers and other computers running PC software

### About this manual

This manual describes how to install your PC Compatibility Card, how to connect additional equipment, how to install the software that came with your PC Compatibility Card, and how to work with the PC and Mac OS environments.

**IMPORTANT** To avoid damage to your computer, Apple recommends that you have your card installed by an Apple-authorized dealer. If you attempt to install the card yourself, any damage you may cause to your equipment will not be covered by the limited warranty on your computer.

If you want to install the card yourself, follow these steps:

- To install your card, turn to the chapter for the kind of computer you have.
- To connect additional equipment, turn to Chapter 5, “Connecting Monitors and Other Equipment.”

To install and begin using your software, follow these steps:

- To install your software, turn to Chapter 6, “Installing the PC Compatibility Card Software.”
- To learn how to configure your software, turn to Chapter 7, “Setting Up the PC Environment.”
- To learn how to work with the PC and Mac OS environments, turn to Chapter 8, “Working in the PC Environment.”
- To solve problems that may occur while you’re using your PC-compatible Macintosh computer, turn to Chapter 9, “Troubleshooting.”