

CardWorks™

Quick Reference Guide

The Complete PCMCIA Software Solution for Windows® 95

**Revision A
Part# 84070**

**September
1995**

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Document Revision: A

September 1995

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Preface

This document is written for software developers who need detailed information on SystemSoft's *CardSoft* software suite. The information contained within this document is intended for a technical audience. For information on using the Flash File System, refer to the *Flash File System User's Guide*.

Reference Documentation

The following documents are available from PCMCIA:

- PC Card Standard Overview and Glossary
- PC Card Standard Electrical Specification
- PC Card Standard Physical Specification
- PC Card Standard Metaformat Specification
- PC Card Standard Card Services Specification
- PC Card Standard Socket Services Specification
- PC Card Standard PC Card ATA Specification
- PC Card Standard Media Storage Formats Specification
- PC Card Standard XIP Specification
- PC Card Standard Guidelines
- PC Card Standard PCMCIA Specific Extensions
- PC Card Standard JEIDA Specific Extensions

Chapter 1 Introduction

This chapter introduces *CardWorks* and summarizes many of the features *CardWorks* provides. In addition, *CardWorks* comes with extensive on-line help as well as frequent on-screen messages to guide you.

What Is CardWorks?

CardWorks is the complete PC Card solution for Microsoft® Windows® 95. It is a companion product to Windows 95. *CardWorks* allows for the simultaneous use of both Plug and Play (PnP) device drivers and existing PCMCIA drivers.

All the capabilities of SystemSoft's popular CardSoft and CardWizard applications are present in *CardWorks*—plus much more. *CardWorks* consists of the CardWizard application, CardSoft drivers, and the DuoDriver™ (patent pending) software that is the bridge between CardSoft and Windows 95 drivers. *CardWorks* aids the configuration of PC Cards by automatically diagnosing and resolving most common PC Card problems. It also provides complete multi-function card compliance as defined by the PC Card Standard.

The CardWizard application features a PC Card expert system that addresses advanced configuration issues. Insert a new PC card in a PCMCIA slot and CardWizard pops up with a graphical representation of the slots and information it gathers about the new card. If a problem occurs, click on AutoCorrect and CardWizard fixes the problem. Problems like incorrect or missing PCMCIA drivers, system resource conflicts (IRQ, Memory, or I/O ports), unconfigured Network (LAN) and ATA cards, as well as memory conflicts are resolved.

What CardWorks Can Do for You

The *CardWorks* package extends PC Card support for Windows 95 in many ways:

- Configures PC cards automatically
- Minimizes user intervention in configuring many PC Cards
- Provides support for PC Cards using existing PCMCIA drivers
- Enables multi-function PC Cards to be supported as defined by the PC Card standard.

CardWorks is easy to use. It lets you view information about PC Cards and your computer's PC Card slot(s) with the Graphical User Interface (GUI) and features such as automatic program launch, drive letters, .WAV file launch, and COM port displays.

CardWizard Application Features

The CardWizard application of *CardWorks* acts as a computer-based technical advisor to help you diagnose and correct problems such as:

- Incorrect or missing PC Card drivers
- Resource conflicts (I/O address, IRQ, and memory address)
- Improperly installed (CardSoft) software
- Conflicts between PC Card programs and extended memory managers (EMM386)

After *CardWorks* has diagnosed a conflict, the application's powerful "one-button" autocorrect feature resolves the difficulty immediately at your command.

Chapter 2 Installation

This chapter explains how to install *CardWorks* on your computer.

Installation Features

The *CardWorks* installation program provides the following installation features:

- De-installs any PC Card software present on your machine.
- Decompresses the files contained on the *CardWorks* diskette and installs them on your computer's hard disk.
- Automatically backs up any files to be modified, including system files, before altering them.
- Modifies the configuration files—you can either let *CardWorks* do this automatically or edit the files yourself using the examples provided.
- Creates or updates the *CardWorks* group in Windows 95.

Quick Install

This section is for experienced computer users who have worked with peripheral devices before. If you are new to computers or are unsure about how PC Cards work, start with the detailed steps that begin on page 2-2.

To install *CardWorks*, perform the following procedure:

1. If you have any PC Cards currently installed in PC Card slots, remove them.
2. Insert the *CardWorks* diskette into a diskette drive.
3. From Windows 95, select Run from the Start button and type **a:setup** (or **b:setup**) depending on which drive contains the diskette.
4. Follow the instructions on the screen.

Start the Program

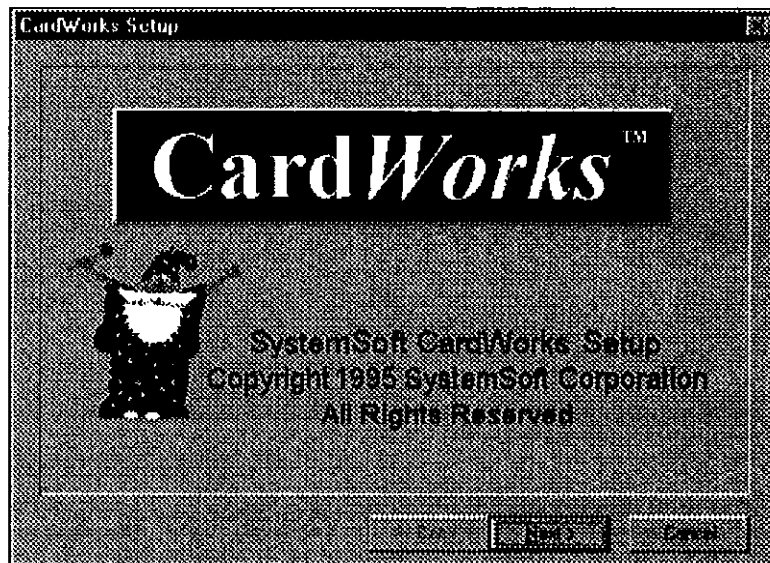
To start the installation program, follow these steps:

1. If your system is connected to a network, log off before starting installation.
2. Remove any PC Cards that are in the slot(s).
3. Insert the *CardWorks* diskette into an available drive.
4. Select Run from the Windows 95 Start button.

Windows displays the Run dialog box with **a:setup** on the Command Line. Choose OK (or change **a:setup** to **b:setup** then choose OK).

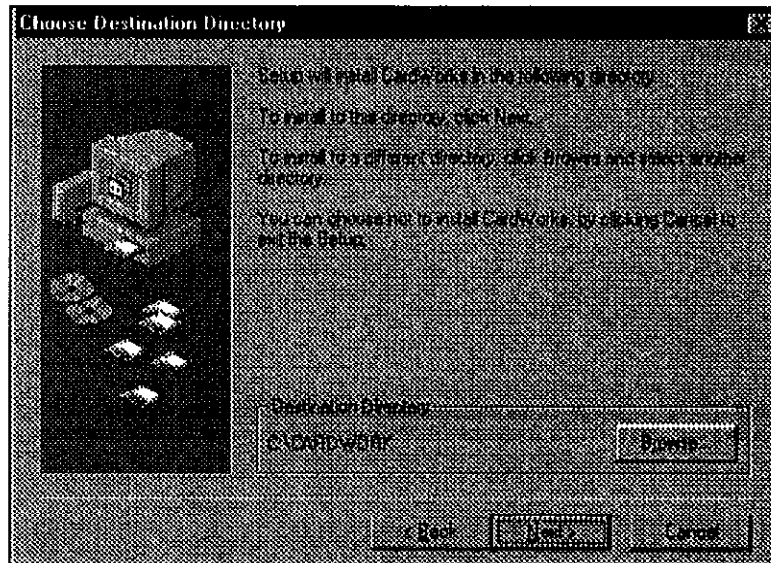
The installation program starts and quickly displays the initial setup indicating that Setup is preparing for the installation will guide through the installation process.

After a brief period the **CardWorks Setup** screen appears:

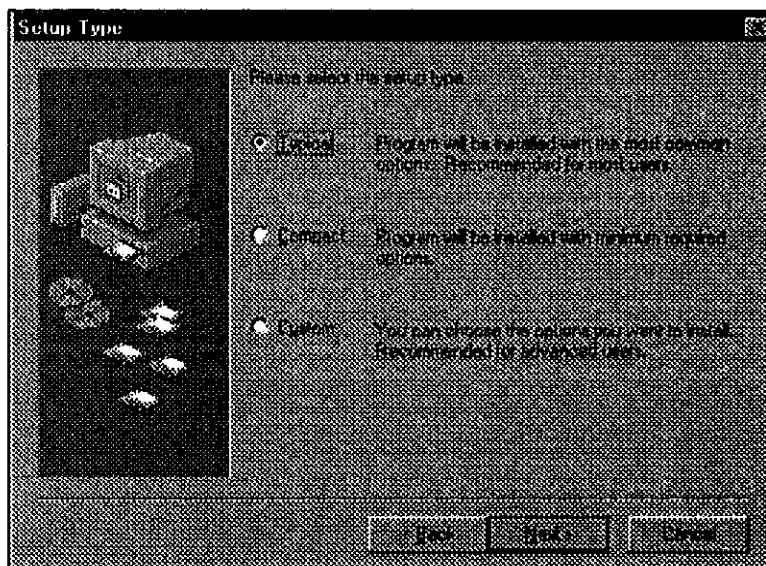


Selecting the **Next** button displays the *CardWorks Welcome* screen. Follow the recommendations to exit all Windows programs before continuing with the installation.

Selecting the **Next** button displays the following **Choose Destination Directory** screen:



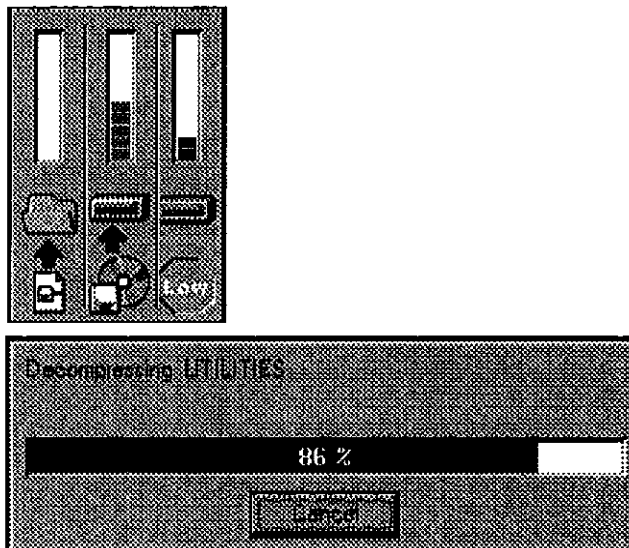
Select **Next** to install software in the default destination directory, C:\CARDWORK. If you want to install the software into another directory, select **Browse** and then select the desired directory. Once you have selected the destination directory, select **Next** to view the **Setup Type** screen:



Select from **Typical**, **Compact**, or **Custom** installation (see descriptions on screen) to define your **Setup type**.

Select the number of PC Card slots present on your machine: 1 to 4.

Your system begins to decompress and copy files.

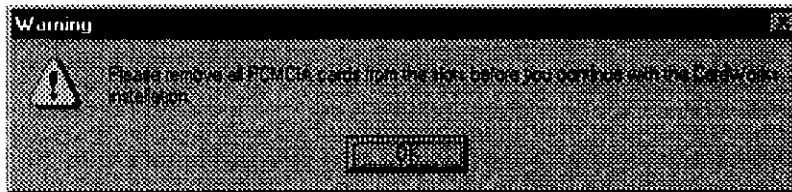


Three information gauges (upper section of graphic) provide important feedback during installation:

Location	Description
Left	The left gauge shows what percent of each individual file the installer has copied from the diskette to the hard disk.
Center	The center gauge shows how much of the diskette has been transferred to the hard disk.
Right	The right gauge shows how much space is available on your hard disk. The low sign lights when your hard disk has only 5% or less space available.

The lower section of the graphic is a progress indicator of how much of the currently compressed file has been decompressed and copied to the hard disk.

The following warning appears (if PCMCIA support was previously installed):



CardWorks then checks your system setup.

Note:

If you selected **Custom** installation earlier, the following dialog boxes appear at this point:

UPDATE CONFIG.SYS screen

If you want CONFIG.SYS to be modified automatically, select YES. This selection is recommended.

If you want a sample CONFIG.SYS file (placed in your installation directory) to use as a reference when you manually modify your CONFIG.SYS file, select NO.

UPDATE SYSTEM.INI AND WIN.INI screen

If you want SYSTEM.INI and WIN.INI to be modified automatically, select YES. This selection is recommended.

If you want sample SYSTEM.INI and WIN.INI files (placed in your installation directory) to use as a reference when you manually modify your SYSTEM.INI and WIN.INI files, select NO.

If CardWizard was previously installed on your system, the DELETE WIZ.INI screen appears.

If you want to preserve all previous CardWizard parameter settings, select YES. This selection is recommended.

If you want to delete all previous CardWizard settings, select NO.

CARDWORKS IN WINDOWS START UP SCREEN

To have *CardWorks* appear in the Windows Startup Group, and consequently, start automatically when WINDOWS 95 is started, select YES.

To decline the option of having the *CardWorks* icon appear in the Windows Startup Group, select NO.

Note:

If you selected **Custom** installation earlier and your CONFIG.SYS file has **multiple configuration blocks**, the configuration program asks you which menu block(s) you want *CardWorks* installed to. You can have as many block(s) as desired include *CardWorks* support.

To add *CardWorks* to any specific block:

1. Click on the SELECT box (or tab to the block name and press the spacebar) associated with the block you want *CardWorks* installed to.

The SETUP button associated with this block is enabled.

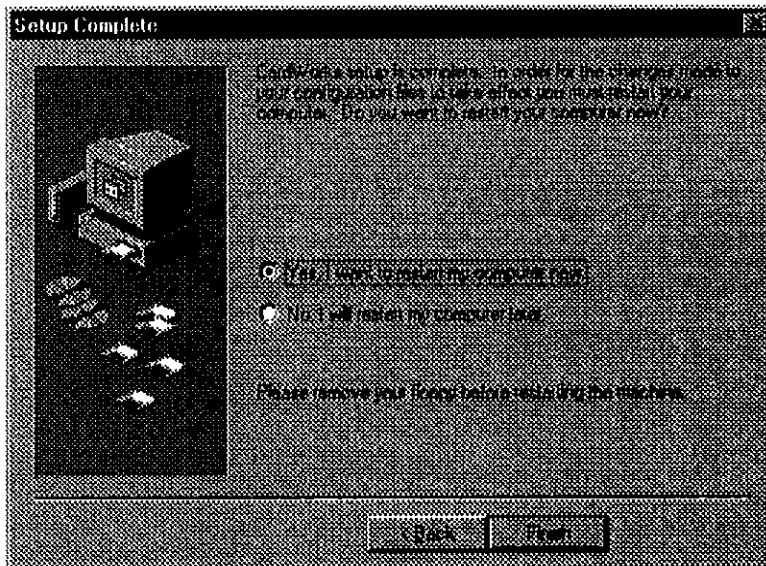
2. Click on the SETUP button to add *CardWorks* to the block.
3. Decide which parts of the *CardWorks* product to install by clicking in the desired checkbox. If checked, the item is included in the installation for the selected block.
4. Repeat Steps 1 to 3 for any other block you want *CardWorks* installed to.

Then Select **OK** for additional file decompression and copying.

Once all files have been transferred, you are asked if you want to read the README file.

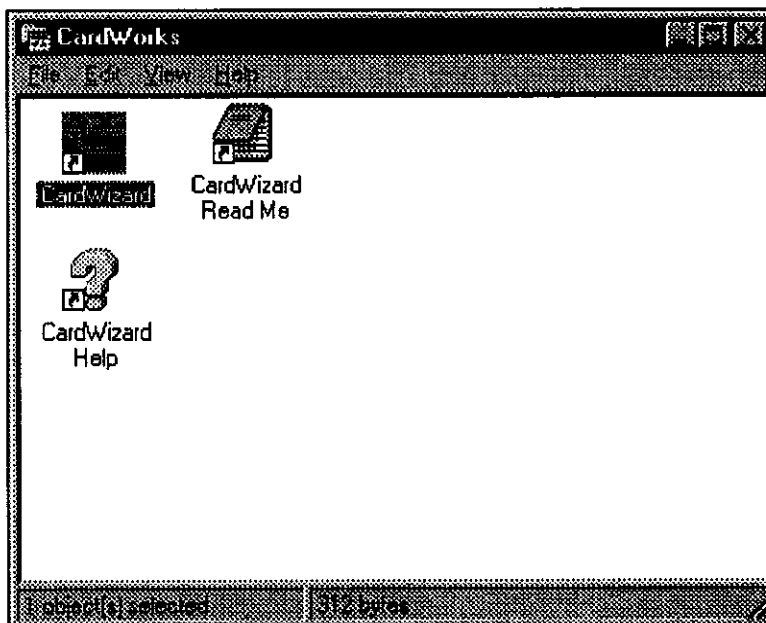
Select either **Yes** or **No** as desired.

Before you can run the application, the computer must be rebooted.



Select whether to reboot now or later.

Once the installation is complete, the *CardWorks* group is created (unless you previously opted to have *CardWorks* start from the Windows Startup Group).



Chapter 3 CardWorks Features and Hints

Once installation is complete, you can begin using your PC Cards in Windows 95. While your *CardWorks* application includes a comprehensive HELP system, this section describes several practical *CardWorks* features and provides additional hints for using *CardWorks*.

Wizard Button

If you are experiencing a problem configuring your PC Card, select the Wizard button in the Card Information window (from the Action menu or by using the right Mouse button).

Each time it is selected, the Wizard performs a series of self-checks to ensure that all necessary components are installed and working properly. *CardWizard* then analyzes the computer to verify that resources are available for PC Card configuration.

Click on the Wizard button to fix most PC Card problems. Even if it cannot automatically resolve a problem, the Wizard can pinpoint the problem so that you or a technical support engineer can fix the problem more easily.

Properties Screen

The *Properties* dialog boxes display information about the attributes, resources, and drivers that are loaded for PCMCIA card support. *CardWizard* extracts important information from the PCMCIA software drivers and lists it here in easy-to-read displays.

You can reach the Properties dialog box from any of the following actions:

- Select **Properties** from the **View** menu.
- From the Card Information Screen - Press the right mouse button while the cursor is on the icon representing an inserted card.

You can select from Attribute, Resource, and Driver Properties.

Attribute

When PCMCIA modules are written in accordance with the PCMCIA specification, it is easy for *CardWizard* to extract important information from the software. *CardWizard* attempts to extract all of the following:

Slot: refers to the slot number being used by this PC Card.

Card: refers to the unique identification number of the module.

Manufacturer: refers to the manufacturer of this PC Card.

Resource

When PCMCIA modules are written in accordance with the PCMCIA specification, it is easy for *CardWizard* to extract important information from the software. *CardWizard* attempts to extract all of the following:

IRQ: refers to the interrupt being used.

I/O: refers to the starting and ending addresses of the input/output range for this PC Card.

Memory Range: refers to the starting and ending addresses of the memory range for this PC Card.

Driver

CardWizard determines the kind of driver being used. It also displays whether the card is configured by Windows 95 or by CardSoft.

Card Driver: indicates whether Plug and Play mode or CardSoft mode is used in configuring this PC Card. This section is enabled only if the Change Card Driver box is checked. It is recommended that you not change drivers if your card has been identified and configured successfully.

Change Card Driver: When this is enabled (checked), you can opt to use either Plug and Play (if available) or CardSoft Drivers.

Remove From Plug and Play Hardware List: When this is enabled (checked), you can delete the Plug and Play driver assigned to a card. This only applies when a card is handled by Windows 95 (Plug and Play mode). Later, when you reinsert this same PC Card, *CardWorks* configures the card as if it were a first time insertion.

Multi-Function Cards

The new PC Card standard provides support for multiple function PCMCIA cards. These cards provide users with multiple functions on the same card. For example, a single PC Card can include network support as well as fax/modem support. Multiple function cards can also provide support for many other combinations of related technologies.

The advantage of this capability is that the need to replace or eject cards to change or enhance functionality is eliminated. In addition, the need for multiple slots in the system may be eliminated and, since Multi-Function cards share the same resources, memory is freed up.

Auto Launch

The *Launch...* screen allows you to associate applications with PCMCIA cards so that an application launches automatically when the associated PC Card is inserted.

NOTE: *CardWizard* only launches an application when the associated PC Card is configured.

To associate an application with a PC Card for auto-launch, perform the following procedure:

1. Highlight a card in the "Card Name" box by clicking on it.
2. Click on the "Card" button. The card's name and manufacturer information is displayed below the "Card Name, Manufacturer" heading.
3. Click on the "Browse" button and select an application to launch for the card you selected. The application name and location appears below the "Application File Name" heading.
4. Click on the "Test" button to verify that you have chosen the correct application and that it launches properly.
5. Click inside the "Enable" box to activate auto launch the next time the card is inserted. You should also click the "Enable Confirmation" box if you want *CardWizard* to ask you whether the associated application should be launched or not.
6. Click on the "OK" button to accept the settings and exit.

Once configured, this application launches automatically when the PC Card is inserted.

Stop

"Stop" stops a card configured in PnP (Windows 95) only. Stop is used by Windows 95 to flush all buffers and make sure no application is using or accessing the card. For example, assume you are using a PC LAN card. Pulling the card from its adapter could bring the entire network down. By using Stop first, you could remove the PC Card without affecting the network.

CardWizard lets you stop the card by clicking on the card with the right mouse button and choosing Stop. Note that Stop is grayed when CardSoft mode is in effect or when the card has already been stopped. You will get confirmation if the Stop is successful. If the card fails to stop, close out of any active application before removing this PC Card from its adapter. A failure to stop occurs if an application using the card refuses to let go of the card. The message timing varies depending on the application and, therefore, is not predictable.

When the Wizard Button is selected, the message indicates that the card has stopped.

HELP System

The *CardWorks* Help System provides assistance from most dialog boxes that appear by pressing the F1 key or selecting the HELP button. In addition, a glossary of terms and an Index of HELP items are available from the Help menu item.

Additional Hints for CardWorks Use

This section contains addition hints to be aware of when using *CardWorks*.

Cards Recognized but not Configured

An unconfigured card displays a special icon that contains a yellow question mark or a red "X" (depending on whether Configuration was attempted in PnP mode or CardSoft mode). Also, a message is displayed that tells you that the card is not configured.

If the "X" appears, indicating that the PnP installation was not completed, do one or more of the following things:

- Select the Wizard Button and let the Wizard guide you.
- Try removing and then reinserting the PC Card.
- Use Remove from the Drivers List on the Properties Screen (Drivers are described earlier in this chapter) to remove this driver from the list, then remove and reinsert the PC Card.

If the "?" appears, indicating that the card hasn't been configured, select the Wizard Button and let the Wizard guide you.

Cards Recognized and Configured but Don't Work

If the card is installed and configured yet does not work, the following courses of action may be helpful:

For Modem Cards

Be sure that all settings in *CardWorks* and in your communications application correspond and are correct.

For Network Cards

Use the Windows 95 Control panel network icon and make sure that all network components have been installed correctly.

For Sound Cards

Be sure that sound is enabled both on the Sound card and in the software settings.

For Cards other than Modem or ATA Cards

Check with your PC Card vendor to make sure that all cards have current drivers.

Chapter 4 Formatting PC Cards

This chapter describes how to prepare and use removable storage cards, such as ATA Hard Disk/ATA Flash Disk cards, Flash cards (non-ATA type), and SRAM cards.

Before preparing removable storage cards for use, you must exit Windows and enter DOS.

Formatting ATA Hard Disk or ATA Flash Disk Cards

An ATA card has to be formatted before it can be used. To format the card, you must run the ATAINIT command from the DOS prompt, then use the standard DOS FORMAT command to format the ATA card. This section describes how to do this.

CAUTION: Make sure you are using the correct drive letter when preparing your ATA card, since all information on the specified drive is erased.

To format a disk managed by ATADRV, perform the following procedure:

1. From Windows 95, select the Start button, select Programs, then select the MS-DOS prompt.
2. From the DOS prompt (C:\), type `cd cardwiz` and press <Enter>.
3. Type

```
ATAINIT <drive letter>
```

and press <Enter>.

If you omit a drive letter at the DOS prompt, you are asked to enter a drive designation later.

A screen similar to the following appears:

```
Fixed Cylinders: 160          <F1> - Help
Heads: 2                    <ESC> - Quit
Physical Sectors/Track: 32

Here are the parameters that were returned, examine them
carefully to ensure they match what was expected.
Hit ENTER to accept and continue or <P> to prompt.
```

4. Press ENTER to accept the displayed values and continue. If, however, you are an experienced user and you want to enter specific drive parameters, type P to display a screen that enables you to do so (then follow the screen prompts).

ATAINIT now prepares the card. When the following message appears, continue to Step 5:

```
Partition table successfully written.  
BPB Boot sector successfully wiped.  
Proceed with a DOS "FORMAT /U" command.
```

5. Type

```
format <drive letter> /u
```

and press Enter, where <drive letter> is the drive letter assigned to the card. For example, if the card is Drive D, type

```
format D: /u
```

The next messages that appears asks you to confirm that the format should proceed, and to give the volume a label. A message then displays the drive capacity and other drive statistics. This means that your ATA card is now ready for use.

Formatting Flash File Cards

This section describes how to use the MCFORMAT utility to configure and manage (non-ATA) Flash Memory and SRAM cards. The MCFORMAT utility is a DOS application so you must exit Windows before using it.

You can use the MCFORMAT interface to configure and manage your memory cards or you can use switches with the MCFORMAT command on the DOS command line. The advantage of MCFORMAT is that it supports both FTL (block device partitioning similar to DOS FDISK) and FFS2 (Flash File System 2) formatted partition types.

Creating and Formatting Memory Card Partitions

MCFORMAT can be used to create and format MS-FLASH (FFS2) or FTL partitions on a Flash Memory card or MS-DOS partitions on an SRAM card.

Memory Card Partitions and Drive Letters

MTDDRV assigns drive letters to each partition on a memory card to allow the partitions to be accessed as if they were another hard disk drive. Be aware that when the system boots, the Flash File System reserves the maximum number of drive letters that *may* be required for partitions on your memory cards, beginning with the first available drive letter. The number of drive letters that is reserved by the Flash File System is determined by the number of PCMCIA slots on the system and the number of partitions specified in MTDDRV (by default 1 partition per slot).

For example, if you have a system with two PCMCIA slots, MTDDRV reserves two drive letters (one for each PCMCIA slot) for use by your memory card partitions. The drive letters it reserves are displayed on the screen at system boot, or by typing MTDDRV /? at the DOS prompt from within the directory containing the CardSoft files. If the first available letter is F, MTDDRV reserves drive letter F for your first PCMCIA slot and letter G for your second PCMCIA slot. These drive letters are reserved whether or not you are actually using them for memory card partitions.

The situation described in this example could create a problem if you are connected to a network, especially if you are mapped to numerous network drives. The system may run out of drive letters to assign before all your network drives have been properly mapped.

In any case, the drive letters that MTDDRV reserves may cause all other drive letters to be re-assigned (excluding drive letters for local hard disks or ATA cards). For example, if you have a network drive that is normally Drive F, and you install MTDDRV, the network drive will no longer be assigned to drive letter F on your system. As a result, you may have to modify the drive letters in any network batch files that you use. For example, if you have a network batch file that loads your network login files from Drive F, and MTDDRV has reserved drive letters F and G for memory card partitions, you would have to change the drive letter in your network batch file to H (the next available letter).

Using the MCFORMAT Interface

The MCFORMAT interface enables you to easily perform the following actions:

- Create and format a new partition
- Format an existing partition
- Erase a partition
- Display partition information

The following sections describe these actions in more detail.

Create and Format a New Partition

This section describes how to create and format partitions on a Flash Memory or SRAM card.

To create and format partitions, perform the following steps:

1. Enter MCFORMAT and press <Enter> (from the CardWiz directory).
2. Select 1 to Create and format a new partition.

A screen similar to the following is displayed.

```

Create and format a new partition.

Drive      Beg address      End address      Type      Status      Size
F          0          2097151         Free      Unformatted  2048K
G          0          8388607         FTL       Formatted    8192K

Which drive would you like to select?
Drive =

```

Note that if the drive has already been formatted, the following message is displayed:

```

You must erase n: before creating a new partition.

```

Once you select an unformatted drive, the following line appears at the bottom of the screen:

```

Would you like to format entire card with FLASH(1) or FTL(2) (1/2)? [1]

```

Once you select either FLASH or FTL, the following message appears:

```

Are you ready to format drive n: with FTL format (Y/N) [N]

```

The drive is then formatted and the following message appears:

```

Please input a volume label: (11 Characters, Press enter for no label)
Label =

```

Specify a volume label for the partition (this is the same as a drive label), then press Enter. You can leave the label field blank if you do not want to assign a drive label.

The newly created partition then appears:

```

Create and format a new partition.

Drive      Beg address      End address      Type      Status      Size
F          0          2097151         FTL       Formatted    2048K
G          0          8388607         FTL       Formatted    8192K

Press return for main menu.

```

Formatting SRAM Cards

Before you can use them, you have to format your SRAM cards using the DOS FORMAT command. For example, if the SRAM card is Drive F:, type

```
format F:
```

and press Enter.

For more instructions on using FORMAT, see your DOS user's guide.

Creating a Bootable SRAM Card

SystemSoft provides its CardBoot product to enable you to boot your system from an SRAM card. To do so, you must use the following command to format the card:

```
format <drive letter:> /s /u
```

For example, if the drive letter for the card is E:, type

```
format E: /s /u
```

and press Enter.

For more information on FORMAT, refer to your DOS user's guide.

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