



## User Manual



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## Preface

To get all the information you need before installing a new operating system (OS) on your PC, we have included as much information in this manual as is feasibly possible. Some of the information is of a technical nature, and we recommend that you read it carefully before you proceed.

This manual is organized into distinct chapters. Chapter 1 gives you an introduction to System Commander 2000.

Chapter 2 covers the quick installation.

Chapter 3 reviews hard drive and partitioning basics. It explains common terminology you may be unfamiliar with.

In Chapters 4 through 7 we walk you through a typical OS installation using the OS Wizard. We will also show you how to use the custom partitioning option for those times when you may need to make minor adjustments to your partitions.

Chapter 8 is a detailed explanation of the inner workings of System Commander 2000, its internal options and the utilities that are included with it.

Chapters 9, 10, 11 and 12 cover some of the most frequently asked questions (Ch. 9), troubleshooting assistance (Ch. 10), recovery from various OS problems (Ch. 11), and the limitations of different operating systems (Ch. 12).

Five appendices detail more technical information on System Commander 2000 (Appendix A), typical System Commander 2000 applications and additional considerations (Appendices B and C), as well as products from other companies which work well with or require special handling when using

## System Commander 2000 User Manual

System Commander 2000 (Appendix D), and an in-depth explanation of some specific OS commands (Appendix E).

In each chapter there are technical highlights and tips. And, of course, some contain warnings and troubleshooting help that may get you out of any unforeseen bind. In addition, there is a detailed index to point you to the location of whatever topic you wish.

The organization of the chapters is intended to make finding information easier for you and hopefully the information contained within these pages will make it easier to accomplish your objective with System Commander 2000.

## Conventions and Icons used throughout this manual

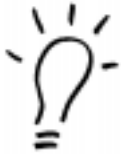
Step by step instructions follow almost every process or procedure. These steps are noted by their order numerically.

Keystroke commands are noted in **bold** letters. Command key combinations are separated by the “-”. This indicates that the noted keys are to be pressed simultaneously. For example, **Alt-S** signifies that you should hold down the **Alt** key while pressing the **S** key.

OS file names, for example, AUTOEXEC.BAT, are noted in ALL CAPS.

OS commands and command lines are indicated by **bold lower case letters**. As in, “**copy \*.\***”.

Besides icons noting specific operating systems throughout this manual, the following are used to indicate specific types of information. The applicable information follows each icon in indented paragraph format as shown below:



**Tip or Technical Information.** This shows helpful information and shortcuts, or an in-depth explanation of a process.



**Warning!** Information following this icon may help you avoid a problem!

## How to Contact Us

For Customer Service and Technical Support, please refer to the top of the Registration Card.

## Latest OS Information/System Commander Versions

Please check our website for the latest information on an OS you plan to install. Our website also provides free minor upgrades to System Commander 2000. The website address is: **[www.v-com.com](http://www.v-com.com)**.

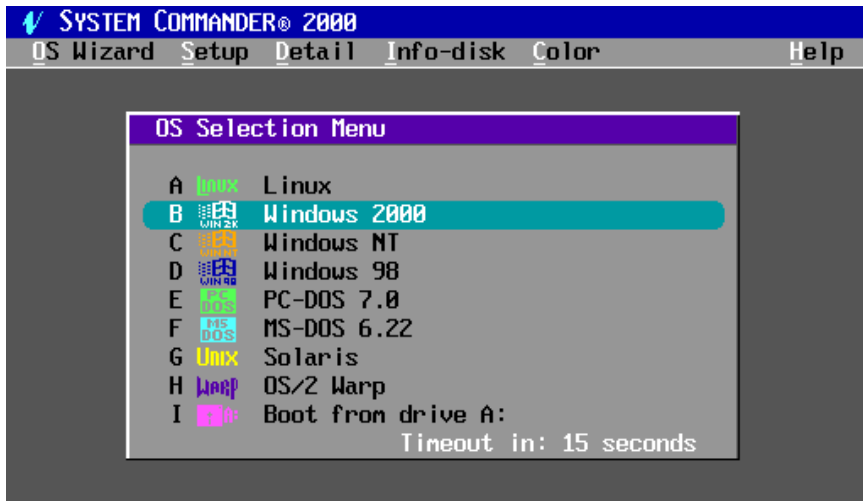
## A Note on *Beta* OSes

We make every effort to provide support under System Commander 2000 for each new release of every operating system, including *beta* releases. There is sometimes a difference in time to market for our product and a *beta* release of a new OS. It is for this reason that it is not always possible to have built-in support for some *betas* under System Commander 2000. If you encounter any problems using a *beta* release of any operating system, we will try our best to provide technical support. We do make every effort to incorporate new OSes and *betas* into our product as quickly as possible, and have yet to find an OS which we cannot successfully boot!

# Chapter 1

## Introduction

With System Commander 2000, you can now have multiple operating systems on a single PC. Before any operating system starts, a menu of selections will appear, like the menu shown below.



Simply select the operating system you want, and System Commander 2000 takes care of the rest! This makes the migration to a new operating system much easier and less risky, by allowing you to keep your current reliable operating system. It's also easier to evaluate new operating systems such as Windows 2000, Linux, or even beta test versions of new operating systems that may not be stable.

### Key Benefits

System Commander 2000 provides a number of unique capabilities.

- ❑ OS Wizard determines the best configuration for a new OS and prepares your system for the new OS.
- ❑ Management of over 100 different operating systems in primary and logical partitions, the ability to boot from floppy drives A and B, or through specific master boot records.
- ❑ Management of up to 32 different FAT compatible operating systems in a single primary DOS partition, including different DOS versions, Windows 95/98, Windows NT/2000, and OS/2.
- ❑ Optional security protection against unauthorized system use prevents hard disk access and booting from floppy disks.
- ❑ Automatically saves and maintains key hidden files and critical configuration files for each OS such as CONFIG.SYS, AUTOEXEC.BAT, BOOT.INI, and others.
- ❑ Boot sector virus protection checks for infections on every boot with instant replacement of infected boot sector and hidden system files.

### Technical Highlights

- ❑ Fully compatible with Windows 95/98, Windows NT, Windows 2000, OS/2, Linux, PC UNIXes, NetWare and most other 80x86 compatible OSes.
- ❑ Compatible with all DOS types including MS-DOS, PC-DOS, DR-DOS and Open DOS.
- ❑ Menu selections offered before any operating system runs.
- ❑ After an operating system is selected, System Commander 2000 uses no resident memory.
- ❑ Makes install and reinstall simple, quick and painless.

### What's New

System Commander 2000 adds a number of new features beyond System Commander Deluxe. A few of these new features include:

- ❑ OS Wizard will show you its recommendations of where to install your new OS as well as the disk space needed for the new OS. You can now override these choices if you prefer a different location or size.
- ❑ For Linux installations, System Commander 2000 supports both LILO installation methods. Superblock and MBR methods are handled automatically. Previous versions required extra manual steps for the MBR method.
- ❑ Move and Copy partitions.
- ❑ Safely resize Linux and Linux Swap type partitions.
- ❑ Safely resizes NTFS in both Windows NT and Windows 2000 type partitions.
- ❑ Backstep Wizard™ - Supporting multiple levels, it can undo individual and multiple partitioning operations and complete OS Wizard operations. Backstep Wizard works even if you exit the OS Wizard and return at a later time, allowing you to safely undo operations.
- ❑ New, easier to use, OS Wizard graphical user interface.

# Chapter 2

## Quick Installation

The System Commander 2000 installation will not affect any OSes you currently have installed. Upon the completion of the installation, your installed OSes will automatically appear on the System Commander 2000 OS selection menu. It's that simple!

## Basic Requirements

- CD-ROM drive
- Either Windows 95, Windows 98, or DOS installed or a boot diskette from one of these OSes with access to the CD drive.
- 3 MB of unused disk space for installation.
- If you do not have Windows 95, Windows 98, or DOS installed, then you must have, on the first drive, either a primary FAT partition below 8 GB, or a primary FAT-32 partition anywhere on the drive.
- Have two blank 1.44 MB diskettes ready to make the optional utility and restart diskettes.

You cannot use Windows 2000, windows NT, or OS/2 for installation, as these OSes do not allow necessary access to the hard disk. You may be able to use a Windows 95, 98 or DOS boot disk if the above requirements are met.



## Installing from Windows 95 or Windows 98

Insert the System Commander 2000 CD into your CD-ROM drive. In most situations Windows will automatically detect and run the installation.

In the event the installation does not automatically start, run setup from the CD-ROM root directory. To do this, Click on **Start**, then **Run**, and enter the drive letter of the CD drive, followed by **\install\setup**. Click on OK. The installation will begin.

## Installing from DOS

Insert the System Commander 2000 CD into your CD-ROM drive. At the prompt, enter the drive letter of the CD drive, followed by **\install\setup** and press Enter. For example, if drive D is the CD drive, enter (in bold):

```
C:\> d:\install\setup
```

## Installing from a boot diskette

You will need a Windows 95/98 or DOS boot diskette that has support for your CD-ROM device. Insert the boot diskette into drive A. Restart the system (Shutdown/Restart in Windows or **Ctrl-Alt-Del**) and boot from the diskette. Follow the previous instructions for "Installing from DOS" (even if it is a Windows boot diskette).

## After Your Installation Completes

Once System Commander 2000 is installed, you may reboot the system. It will save all of your existing system information. Then you will be presented with a menu of operating system choices. If you wish to change the descriptions, the order in which they appear or other functions, press **Alt-S** for the Setup menu. These options are explained in more detail in Chapter 8.

Keep the System Commander 2000 diskettes in a safe place. Disk 1 contains duplicate backup data that may be needed if you later wish to remove System Commander 2000 from your system. It also holds key disk information to recover from some disk corruption and/or viruses that other disk utilities may not handle.

## Disk Compression Users

System Commander 2000 is fully compatible with disk compression as long as System Commander is installed on the non-compressed drive. We recommend that each new OS be added in its own separate partition.



---

**Warning:** For multiple OSES in the same partition, it is possible to use disk compression software on drive C, but we strongly recommend against it. We cannot assist users, with disk compression, who place multiple OSES in the compressed partition.

---

You could have problems with disk compression if you place more than one OS in the same partition, because disk compression software operates differently depending on the OS version and manufacturer. Switching OS versions beneath it might cause problems and may even corrupt the disk. This should be thoroughly tested before assuming all is fine. Some products, like Microsoft's DoubleSpace/DoubleDisk will only work on a single version of DOS or Windows.

System Commander must be installed on the non-compressed portion of the disk. Normally System Commander will automatically detect this for you during installation. To verify the correct drive letter, consult your OS manual or disk compression manual for information about the non-compressed portion of the disk. For example, on two systems using Microsoft's DoubleSpace disk compression, one uses drive D, and another uses drive H as the non-compressed boot disk. It is never drive C. Perform a DIR command from each drive's root directory to help locate which drive is the non-compressed boot drive. Only a few files reside on the boot drive. One hidden file, used for disk compression, will be very large.

You will reboot after the System Commander installation. If you get a "Boot #" message, it indicates that either you selected the wrong drive to install System Commander to and/or the disk compression method prevents access to System Commander's files. See the section "System Fails to boot up," under Ch. 10: *Troubleshooting*, for solutions.

# Chapter 3

## Hard Drive and Partitioning Basics

### How It All Works!

System Commander 2000 gives you several powerful tools for preparing your system for a new OS installation and partitioning your hard drive. This section provides technical background information about hard drives and partitioning fundamentals that will help you fully understand the features offered by System Commander 2000.

### What is a partition?

A partition is a basic container for data on your hard drive. Although most hard drives have only one partition, System Commander 2000 allows you to divide up a hard drive into several distinct partitions. Each partition occupies a physically separate area of the hard drive and functions almost as if it were an independent hard drive. Because of this, a partition can be given its own name, or *label*, can contain its own operating system and file system, or can simply operate as an additional area for better organization of your files. In Windows and DOS, partitions are usually assigned drive letters such as C:, D:, E:, etc.

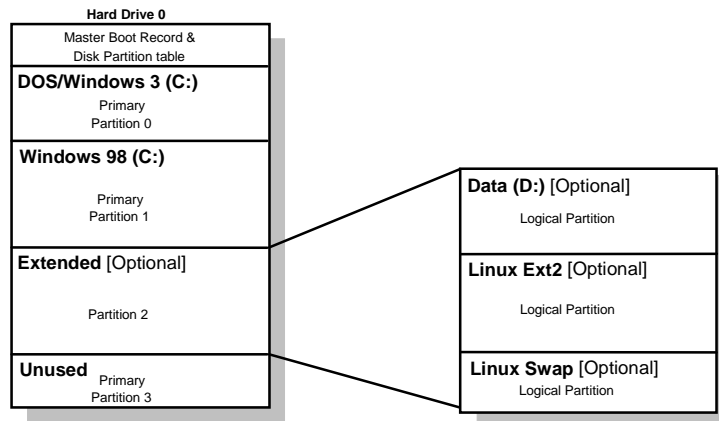
### Types of Partitions - Partition Terminology

**Primary partitions** - A hard drive can be divided up into a maximum of four *primary partitions*. The first partition on a hard drive is numbered Partition 0; subsequent primary partitions are Partitions 1, 2, and 3.

**Extended and Logical Partitions** - In order to provide more than four partitions, a primary partition can be designated as an extended partition. An extended partition can be subdivided into several more sections known as logical partitions.

Figure 3-1 shows a partitioning configuration using logical partitions to contain different operating systems.

Figure 3-1. Windows 98 in a separate Partition.



## Bootable Partitions

Some partitions can be made bootable, which means that an operating system can be started up from within that partition. A bootable partition is also known as an *active* partition. A non-bootable partition cannot initialize an operating system. The ability for a partition to be bootable is controlled by the operating system. For example, DOS, Windows 95, and Windows 98 allow only primary partitions to be bootable and will not allow a logical partition to be bootable. In contrast, other operating systems including OS/2 and Linux, can be installed to allow a logical partition to be bootable.

In order to start up, every PC must contain at least one bootable partition. Using Windows 95/98 or DOS, this partition is normally the first active primary partition (Partition 0) of the first hard drive in the computer (Drive 0), and is by default assigned the drive letter C:. To run more than one operating system on your PC you will typically want to configure a separate bootable partition for each OS. Partitioning and booting characteristics of several operating systems are discussed more fully in Appendix C: *Additional considerations*.

## Disk Formatting and Partitions

To understand partitioning and the benefits offered by System Commander 2000, it's important to comprehend the structure of a typical hard drive and the formatting process.

### Hard Drive Mechanics

A hard drive consists of stacked metallic disks, or platters, that rotate together on a spindle. Read/write heads (one for each side of a platter) are mounted on arms that allow them to move in and out quickly and accurately to reach any part of the surface of each disk. These heads record and read the magnetic charges that represent your data.

For a new hard drive mechanism to become usable it must go through three processes:

1. Physical formatting
2. Partitioning
3. Logical formatting



---

**Warning!** Formatting destroys all data on the drive!

---

### Physical Formatting

The first stage of formatting is physical, or *low-level formatting*. It is typically done by the hard drive manufacturer. This process creates a magnetic structure on the hard drive platters that allows data to be accurately written and retrieved. Figure 3-2 shows the elements resulting from the physical formatting procedure: tracks, sectors, and cylinders.

**Tracks** - Tracks are concentric rings onto which data can be written. Every disk surface has the same number of tracks, starting with track 0.

**Sectors** - Tracks are sectioned into arc-shaped sectors, each of which has its own number, or address. Each sector can hold a defined amount of data, typically 512 bytes (1/2 KB).

**Cylinders** - A cylinder consists of all the same-numbered tracks on all platters in the hard drive. For example, in a hard drive that has four platters, there will be eight tracks numbered track 0 (one track 0 on the top surface, and one on

the bottom surface of each platter). All of these track 0's form cylinder 0.

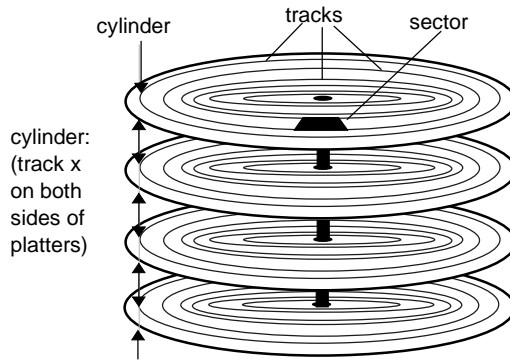


Figure 3-2: Physical Formatting

## Partitioning

Following physical formatting, the hard drive can be divided into one or more partitions. Each partition is assigned a set of contiguous cylinders, so that each partition corresponds to a separate physical area of the hard drive. Figure 3-3 is a simplified drawing of a drive with four partitions.

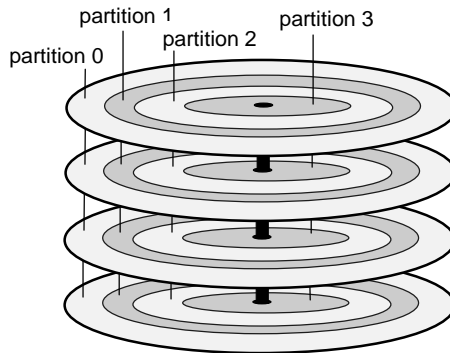


Figure 3-3: Drive With Four Partitions

The partition process is typically done the first time by the operating system's partitioning utility, such as the FDISK utility in Windows 98. Of course System Commander 2000 provides a more advanced, safer, and easier set of partitioning functions for adding, deleting, and adjusting partitions on your hard drive.

## Logical Formatting

Following partitioning, the disk is given a file structure that allows the disk and the operating system to exchange data. This process is part of logical formatting, and is performed by the operating system software's Format program. System Commander 2000 automatically formats Windows 95/98/NT/2000, DOS, and Linux partitions when you create a new partition. After this, the operating system can be loaded by means of the operating system's installation utility.

Once a partition has been formatted by operating system software, it is known as a *volume*. When using the DOS, Windows, or Windows NT operating systems, each partition can correspond to a drive letter, starting with drive C:. Each volume (partition) can also be given a name, or *label* that will help you remember what is in that partition.

## Characteristics of File Systems

When partitioning a hard drive, there are three important considerations regarding file systems:

1. Compatibility with operating systems
2. Maximum partition and cluster size
3. Saving space on the hard drive

**Note:** System Commander 2000 automatically takes these constraints into account, and provides graphical displays of these factors so that you don't have to worry about them.

## OS and File System Compatibility

Each operating system is designed to function with a particular file system, which is known as its *native file system*. Although some operating systems are compatible with multiple file systems, some are compatible with only one type of file system. Common file systems and OS system compatibility are summarized below and in Table 3-1.

**File Allocation Table (FAT)** - FAT is the native file system for DOS and Windows. For very small partitions under 32 MB, a version known as FAT12 is used, while larger sizes require FAT16. Although FAT12 uses 12 bits to

## Chapter 3: Hard Drive and Partitioning Basics

record drive address, and FAT16 uses a 16-bit drive address, they are very similar file systems and both are generically referred to as FAT.

**Virtual FAT (VFAT)** -VFAT is a type of FAT file system developed for Windows 95 and Windows 98 to support long filenames. From a partitioning point of view, VFAT and FAT are identical, and System Commander 2000 displays them all as FAT partitions.

**FAT32** -FAT32 is the native file system for Windows 98 and is also supported by Windows 95 OEM Service Release 2 (OSR2). OSR2 was provided only to system manufacturers for pre-installation purposes. Windows 2000 also supports FAT32. FAT32 supports 32-bit file records to allow a partition size beyond 2 GB. It can also help reduce wasted space on hard drives.

**Note:** The FAT32 file system can only be seen by Windows 95 OSR2, Windows 98 and Windows 2000. Other OSES such as DOS, Windows NT v.4, and the first version of Windows 95 will not see FAT32 partitions. You should also avoid a FAT conversion if your drive is using disk compression, since the compression software may not understand FAT32.

**High Performance File System (HPFS)** - OS/2 uses HPFS as its native file system. OS/2 also is compatible with FAT. Older versions of NT are also compatible with HPFS.

**NT File System (NTFS)** - NTFS is the native file system for Windows NT. Windows NT is also compatible with FAT. Windows 2000 also adds support for FAT32. Older NT versions do not support FAT32.

Table 3-1: Common OS and File System Compatibility

Operating System	File Systems
DOS and Windows 3.x	FAT
Windows 95	FAT (includes VFAT)
Windows 95 OSR2	FAT, FAT32
Windows 98	FAT, FAT32
Windows NT v3 and older	FAT, HPFS, NTFS
Windows NT v4	FAT, NTFS
Windows 2000	FAT, FAT32, NTFS
UNIX	UNIX specific, sometimes FAT
OS/2	FAT, HPFS



## OS and Partition Size Limitations

The operating system and related file system support different maximum partition sizes. The table below shows how each version of DOS and Windows has increased the maximum partition size.

Table 3-2: OS and Partition Size Limitations

Operating System	File System	Max. Partition Size
MS-DOS v2.1 and lower	FAT12	15 MB
MS-DOS v3.0 - v3.3	FAT12	Up to 15 MB
	FAT16	16 - 32 MB
MS-DOS v4.0 and higher	FAT16	2GB
Windows 95/98	FAT16	2GB
Windows 95 OSR2 Windows 98, Windows 2000	FAT32	Over 1000 GB

Without System Commander 2000, existing disk partitions cannot be changed without deleting the data within the partition. In contrast, System Commander 2000 allows you to flexibly resize a FAT, FAT32, NTFS, or Linux partition within its minimum and maximum limits.

## Partitioning and Booting Information

The hard drive keeps track of its partitioning structure and its booting information on hard drive 0, the first hard drive in your system. Figure 3-4 shows a basic hard drive organization, including the Master Boot Record (MBR) and Disk Partition Table.

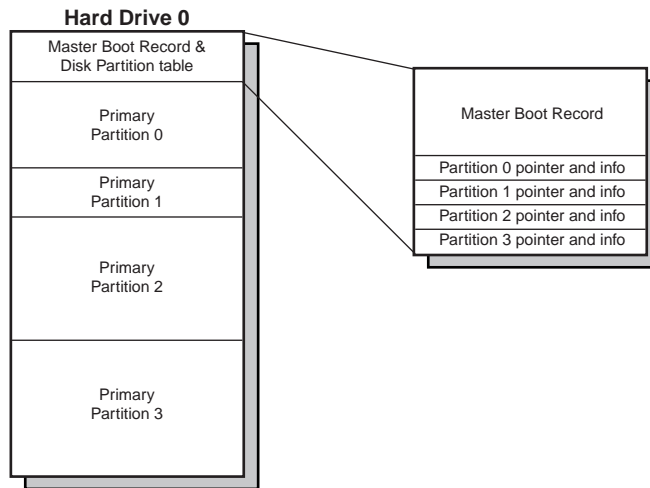


Figure 3-4: Master Boot Record and Partition Table

### Master Boot Record (MBR)

The MBR is contained in the first sector of the hard disk. (Cylinder 0, Head 0, Sector 1) It specifies which operating system will start up the system. System Commander replaces the original boot record with its own MBR to control the boot process and allow you the choice of how to boot the system. The old MBR is automatically saved to provide an uninstall option.

### Disk Partition Table

The Disk Partition Table is a hidden part of the hard drive which specifies how the hard drive is partitioned. Under Windows 95/98, the FDISK utility can be used to view and change the partition information. System Commander 2000 provides a much more flexible and easy-to-use set of tools for establishing partitions and resizing them. Unlike FDISK, which does not allow resizing of partitions without destroying data, System Commander 2000 allows automatic or manual partitioning without losing any data.

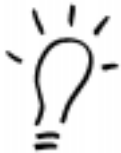
### What System Commander 2000 Does

When you install System Commander 2000, it saves the old Master Boot Record (for our uninstall option), and inserts its own Master Boot Record

(MBR). All of the current partition table information about existing operating systems is retained.

When you boot the system, the main system BIOS loads and executes the System Commander 2000 MBR. This in turn loads the balance of the System Commander 2000 program into memory. System Commander 2000 stores its program file on an available primary FAT partition on the first disk, in the root directory. It does not care if the FAT partition is really bootable or not, nor which OS is in the partition (DOS, OS/2, Windows NT, Windows 2000, Windows 95/98).

After System Commander 2000 has been loaded and started, System Commander 2000 looks at each disk's partition table, and collects information about each OS installed. This is presented on the System Commander 2000 OS selection menu.



---

**Tip:** In addition, System Commander Deluxe's MultiFAT feature supports up to 32 FAT compatible OSes in a single FAT partition. This includes common OSes, such as OS/2, Windows NT/2000, Windows 95/98, or even multiple versions of DOS.

---

As part of the System Commander 2000 start up process, it looks to see if the FAT boot record has changed or if new or changed hidden system files have appeared. Changes normally indicate a new OS installation, and trigger System Commander 2000 to save key information and files specifically for the new OS. This includes the boot record, hidden system files (like IO.SYS and MSDOS.SYS), as well as any configuration files (like CONFIG.SYS, AUTOEXEC.BAT or BOOT.INI). The additional OS choices from the MultiFAT partition are also included on the OS selection menu.

When an OS selection is made, System Commander 2000 moves any necessary startup files into place, and loads the selected OSes boot record. In addition, the associated partition(s) are marked active and System Commander 2000 hides any partitions that are configured to be hidden.

The new OS is launched, and System Commander 2000 completely removes itself from memory. This means the OS has no knowledge of System Commander Deluxe's activities, and is never affected by System Commander 2000.

### Using OS Wizard to Prepare for a New OS Installation

OS Wizard saves you from needing to know how partitions, boot records, etc., work. OS Wizard takes the guess work out of it and *automates* the entire process!

OS Wizard is a special option that is available only from the System Commander 2000 main menu. Once selected, the OS Wizard will ask you several questions about what operating system you are about to install. It will then analyze your system and tell you how *it* would like to proceed.

All you have to do is click the “OK” button with your mouse, and the OS Wizard does the rest. When the OS Wizard is finished, final instructions will appear. These are duplicated in the OS Wizard Quick Guide. Once the OS installation has been completed, simply restart your computer, and the new OS will appear on System Commander 2000's main menu! It's that easy! Chapter 4 covers the OS Wizard in detail.

### Drives greater than 8 GB

To access very large drives, your computer requires a current BIOS that supports EBIOS (Enhanced disk services). System commander is fully compatible with EBIOS. As of this writing, only Windows 95 OSR2, Windows 98, and Windows 2000 handle partitions beyond 8 GB using EBIOS. Check with your OS vendor to see if EBIOS is supported. EBIOS is available in most system BIOSes dated 1997 or later for IDE type drives. If your system comes with a drive larger than 8 GB, you are almost assured of getting EBIOS. For more information about EBIOS, see Appendix D.

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# Chapter 4

## OS Wizard - Preparing for a New OS Installation

Before installing other operating systems, we recommend that you:



**Back up your system!** Extensive changes will be made to your hard disk as you add a new operating systems or use this product.



**Make a bootable diskette for your current OS**

To make a bootable disk, from Windows 95/98, click on *Start, Settings, Control Panel*, and then the Add/Remove Program's icon. Click on the "Startup Disk" tab, and select *Create Disk*; otherwise use the manual method next.

To manually make a bootable diskette, insert a blank formatted diskette into drive A. At the C: prompt on the hard disk (for DOS) or from the Run menu (in Windows 95/98), type **sys a:** and press **Enter**. This makes the bootable system disk. After the **sys** command has been completed, you should copy these files from your hard disk to the diskette: SYS.COM, FDISK.EXE, FORMAT.COM and ATTRIB.EXE. For example, if you currently have DOS, the following commands (in bold) would be used:

```
C:\> sys a:  
C:\> copy \dos\sys.* a:  
C:\> copy \dos\fdisk.* a:  
C:\> copy \dos\format.* a:  
C:\> copy \dos\attrib.* a:
```

For Windows 95/98 users, these files are usually located in the \WINDOWS\COMMAND subdirectory.

Although the backup and boot diskette may never be necessary, they provide a safety net should you later install an operating system with serious bugs or problems that overwrite critical areas of the disk. Before System Commander 2000 installs, it will save the master boot record, the partition table, and the FAT boot record onto the System Commander 2000 diskette as a precaution against disk corruption and viruses. Keep your System Commander 2000 disk and boot disk in a safe place!

Installing System Commander 2000 is very easy, and takes only a few minutes. Installing a new operating system can take a little longer, but that's controlled by the operating system. System Commander 2000 works with OSes that are installed prior to System Commander 2000 as well as OSes installed after System Commander 2000.

## A Typical OS Wizard Session

It's time to actually use OS Wizard to prepare your computer for a new operating system!

Restart your computer and wait for the System Commander 2000 main menu to appear. Once it appears, do not select an OS, rather press **Alt-O** to launch the OS Wizard.

When OS Wizard launches, it first analyzes your system. During this analysis, it is determining how many hard drives you have, how each drive is set up and what OSes are installed.

Once this is complete, you will be presented with a series of dialog boxes that will ask you to make a selection and then press or click on the Next button to continue.

## Chapter 4: OS Wizard - Preparing for a New OS Installation



In a moment, we will walk you through the OS Wizard for both a Windows 2000 upgrade and a Linux installation.

You will notice a start button on the bottom of the menu. If you cancel the OS Wizard dialog, you can select other options from the start menu.

These appear as:





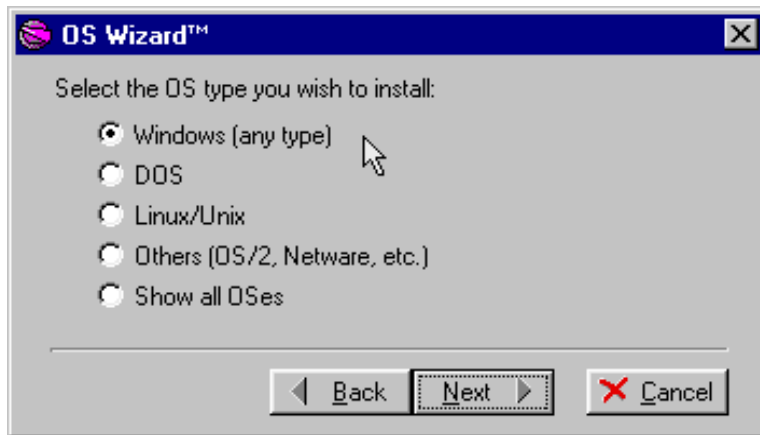
The start menu allows you to re-run the OS Wizard, undo operations with the Backstep Wizard, perform manual partitioning, change settings, view files, and get basic help. Other than the OS Wizard, each selection is described in detail in the following two chapters.

### Using the OS Wizard to add Windows 2000

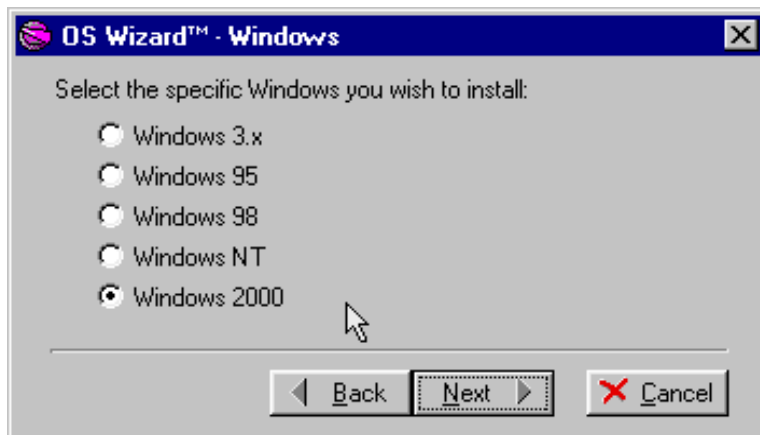
With the first OS Wizard screen, you are asked three questions.



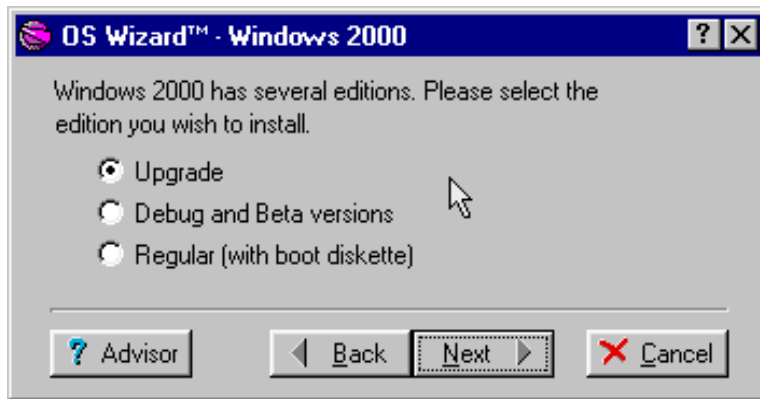
We will assume you are installing a new OS. Select the default option, *New Installation*, and press **Next**. You can then select the category of the OS you wish to install:



For all Windows types, select the first default option *Windows* and press **Next**. On the next dialog, you are asked to select the specific Windows type you wish to install.



Select *Windows 2000* and press **Next**.



OS Wizard informs you that Windows 2000 is shipped in three different editions and it needs to know which edition you are installing. If you are not sure about a specific edition, click on the Advisor button for a complete explanation of each edition.

Let's assume you have an upgrade edition. Select *Upgrade* and press **Next**

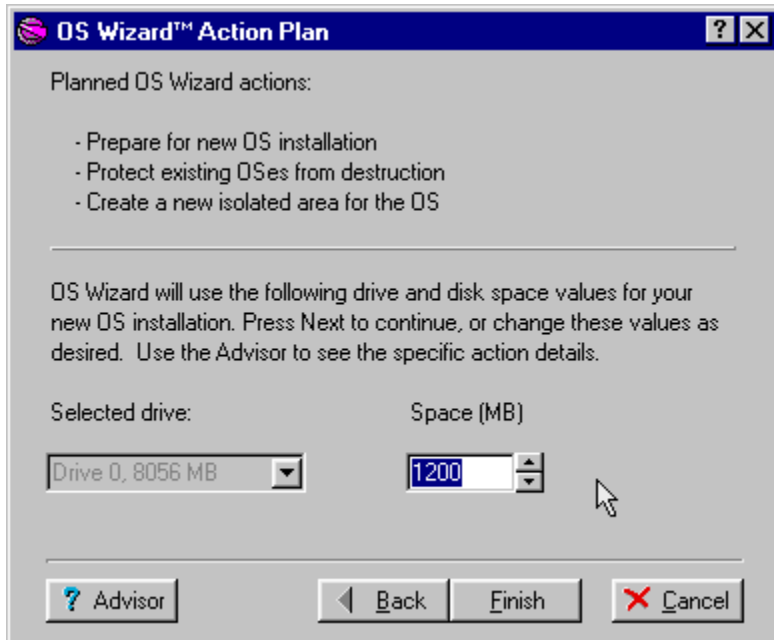


You are given the choice of installing Windows 2000 together with your existing OSes or isolated by itself. When installing Windows 2000 on top of an existing Windows NT system, it will **OVERWRITE** the existing NT and you will no longer have it available as an OS choice.

Most users prefer to install each OS isolated by itself so all existing OSes will still be available. This also makes it very easy to remove the newly added OS at a later time using SC2000's Backstep Wizard.

## Chapter 4: OS Wizard - Preparing for a New OS Installation

Select *Isolated by itself* and press **Next**. At this point, OS Wizard takes all your choices and determines the best location and space needed to make room for the new OS. When a valid solution is found, the action plan is presented:



### Typical Wrap up

If this plan is what you would like, press **Next** and the disk will be prepared for the new Windows 2000 installation. This may take a few minutes depending on the space available and if any areas of the disk need to be copied, moved or resized.

Once OS Wizard is finished, you will be presented with final instructions on how to begin the Windows 2000 installation.

Once you press **Ok**, OS Wizard will restart your computer so that you may start the Windows 2000 installation.

That's all there is to it! All the steps to prepare your system are performed for you automatically.

### Size and Drive Overrides

On the Action plan screen, you have the option of changing the space, and depending on the OS you are installing and other factors, you may be able to change the drive used for the new OS. If you make any changes, OS Wizard will re-check that there is enough space on the selected drive for the OS.

### No Solutions

On some systems, OS Wizard's analysis may show that the new OS cannot be installed. The most common reason is not enough disk space. For example, the Windows 2000 debug and beta versions require over 900 MB of space to install. If OS Wizard is unable to obtain enough space for this, you will be notified that there is no solution.

If you are loading a number of OSes on the same system, the choices you selected and/or the OSes own internal restrictions may also prevent a solution.

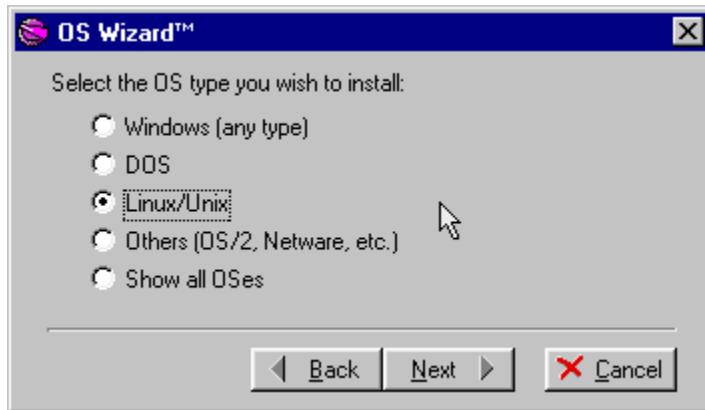
### Using the OS Wizard to add Linux

Like our prior example, with the first OS Wizard screen, you are asked three questions.

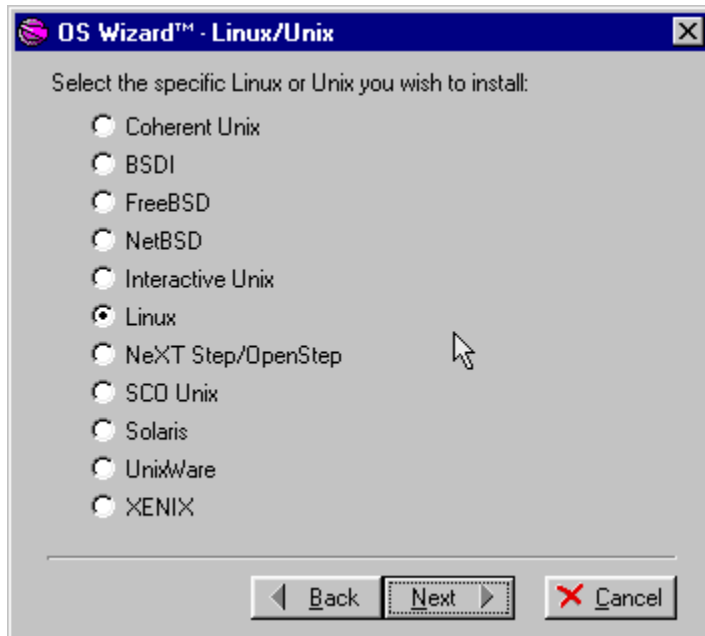


Select the default, *New Installation* option, and press **Next**. You can then select the category of the OS you wish to install:

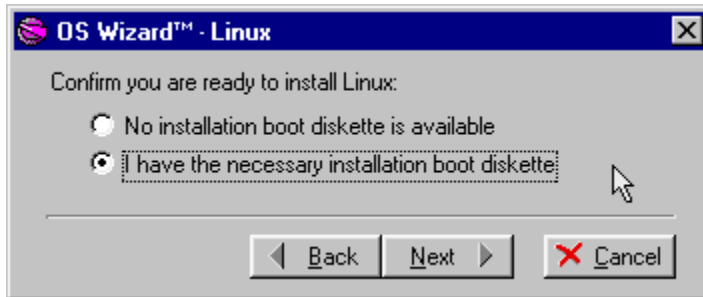
## Chapter 4: OS Wizard - Preparing for a New OS Installation



Select the *Linux/Unix* category and press **Next**. On the next dialog, you are asked to select the specific OS type you wish to install.

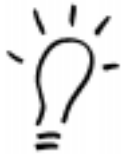


Select *Linux* and press **Next**.



As a requirement to install many Linuxes, you will need to have the Linux boot diskettes made from the Linux CD before proceeding. If you do not have the diskettes, the OS Wizard will advise you to make these before continuing. Assuming these diskettes have already been made, select the second option, and press **Next**.

At this point, OS Wizard takes your choices and determines the best location and space needed to make room for your new Linux.

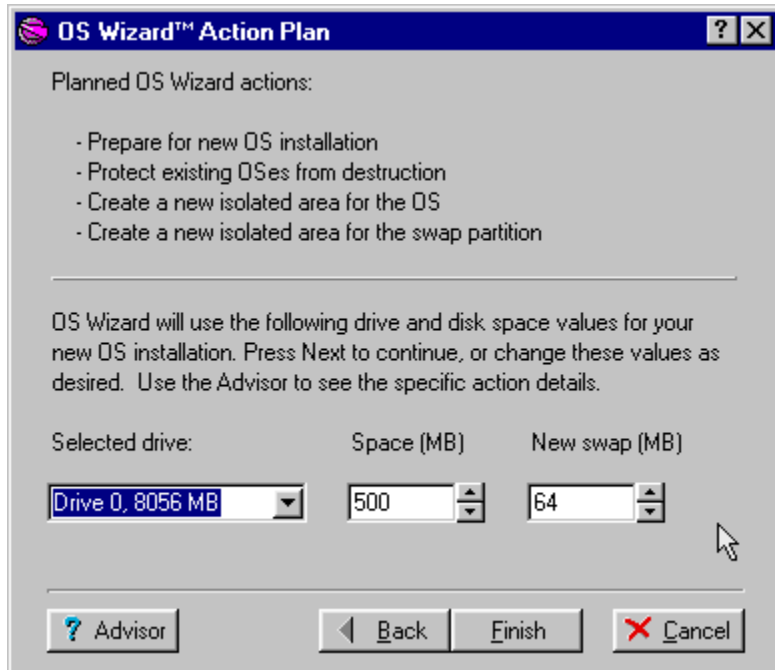


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**Note:** Linux and several other Unix OSes require a separate swap partition that is used for temporary data. OS Wizard will automatically create this area for you as part of the total space required.

---

At this point, when a valid solution is found, the action plan is presented:



### Typical Wrap up

If this plan is what you would like, press **Next** and the disk will be prepared for the new Linux installation. This may take a few minutes depending on the space available and if any areas of the disk need to be copied, moved or resized.

Once OS Wizard is finished, you will be presented with final instructions on how to begin your Linux installation.

Once you press **Ok**, OS Wizard will restart your computer so that you may begin your new Linux installation.

That's all there is to it! All the steps to prepare your system are performed for you automatically.



### **Size and Drive Overrides**

On the Action plan screen, you have the option of changing the drive, space and Swap partition sizes for Linux. In most situations, a swap partition size of 64 MB will be the best choice. If you make any changes to the default values, OS Wizard will re-check that there is enough space on the selected drive to install Linux.

### **No Solutions**

On some systems, OS Wizard's analysis may show that Linux (or another OS) cannot be installed. The most common reason is not enough disk space.

If you are loading a number of OSes on the same system, the choices you selected and/or the OSes own internal restrictions may also prevent a solution.

# Chapter 5

## OS Wizard - Start Menu

In addition to using the OS Wizard to automatically prepare your system for a new OS, you can manually change your partitions, undo partitioning operations, and other choices.

See the prior chapter for starting the OS Wizard, after which you can access these features from the start menu. If you are in the OS Wizard dialog, first press **Cancel**. When you click on **Start**, the following menu appears:



You can then select your desired action:

**OS Wizard** – Prepare your system for a new OS installation. See the prior chapter for complete details.

**BackStep Wizard** – Undo previous OS Wizard and manual partitioning operations. This is described in the next section.

**Partitioning** – Manually perform partition create, resize, delete, move, copy and other operations. See the next chapter for more details.

**Settings** – Change the way the OS Wizard operates, defaults, and video resolution. These are described in the next chapter.

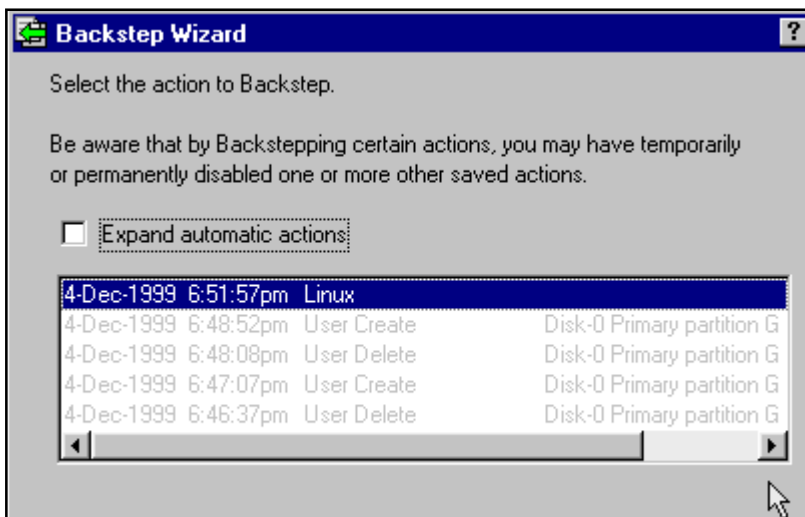
**View** – View various configuration files such as AUTOEXEC.BAT and CONFIG.SYS

**Help** – On-line help about using the OS Wizard.

**Exit** – Close and reboot the system.

## BackStep™ Wizard

The BackStep Wizard allows you to undo previous automatic and manual partitioning operations. When selected, you will see the BackStep Wizard dialog.



A list of prior automatic and manual operations appears, showing the date and time of each operation. The first line shows an OS Wizard operation for Linux. Grayed out lines are operations that can no longer be Backstepped.

Select the operations you wish to undo and the BackStep Wizard will perform the inverse functions necessary to return to a prior partitioning layout. If you wish to view all the individual steps of OS Wizard operations, check the "Expand automatic actions" box.



---

**Important:** If automatic or manual create partition steps were performed, the undo action will **DELETE** the partition and any data within the partition.

---

Depending upon the number of prior operations and other factors, it may not be possible to perform a BackStep or some portions of the BackStep may be unavailable. Some of the situations for unavailable BackStep operations include:

- A deleted partition cannot be recovered if a new partition is created in the same area, or if another partition is moved or copied into any area of the deleted partition.
- A partition resized larger cannot be "un-resized" if new data was added to the partition such that the minimum resize is now larger than the original partition size.
- If partitioning was performed by something other than SC2000, such as the use of DOS FDISK, it may prevent some or all BackStep operations.

In general, if you use the OS Wizard to prepare your system for a new isolated OS, you can usually BackStep to remove the OS and restore the partitioning to its prior state.

BackStep operations are not saved on the BackStep list of actions, so once you perform a BackStep, you cannot undo that specific BackStep operation.

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There may be times when you will want to create, delete, resize, format, copy, or move a partition manually. For example, you may wish to add a new partition for shared data, to expand or shrink the size of an existing partition, or delete a partition that is no longer useful to you.

This dialog box always opens showing the first physical drive, labeled as Drive 0, in the graphical display in the center of the screen. In the lower left is the legend for the colors used to indicate the type of file system installed in the partition. On the right, an information panel has two sections. The top section shows the selected drive information and the lower panel shows the selected partition information. In the graphic area, you will see the entire drive divided into partitions, with primary partitions all on the left, and logical partitions, if any, shown on the right. The logical partitions are contained inside of the Extended partition.

**To select a partition**, click it once in the graphical display. A black bar appears on both sides of the partition that you have selected.

**To change drives**, click on File, then Select Drive. A list of available hard drives is shown. Select the drive that you wish to work with and the display automatically updates to show the information for that drive. For systems with 3 or less drives there are instant drive select buttons labeled, "0," "1," and "2."

## Menu Bar Items

Across the top of the dialog box, there are six menu items: File, Undo, View, Tools, Advanced, and Help.

<b>File</b>	Contains the submenus, Select drive, and Close.  <b>Select drive</b> allows you to choose the drive to view.  <b>Close</b> clears the window.
<b>Undo</b>	Reverses the Delete and Format commands.  <b>Undo Delete</b> restores the last partition deleted.  <b>Undo Format</b> restores the selected FAT/FAT32 partition that was previously formatted. Once data is written into a formatted partition, you cannot unformat it.  <b>BackStep Wizard</b> will undo OS Wizard or manual partitioning. See prior chapter for complete details.
<b>View</b>	Allows you to view files such as AUTOEXEC.BAT.
<b>Tools</b>	Provides various submenu commands for altering a partition as listed below.  <b>Create</b> builds a new partition and is described below.

**Resize** changes the size of an existing partition and is described below.

**Delete** allows you to delete the selected partition. This function is described below.



---

**Warning:** Once a partition is deleted, other later operations may make the data unrecoverable. Be sure to backup important data in a safe location.

---

**Format** prepares the partition for data.

**Move** allows you to move a partition on the same drive.

**Copy** allows you to copy a partition to free space on the same drive or a different drive.

**Optimize** analyses your drive and suggests the best file system (FAT or FAT32) and cluster size.

**Validate** checks boot sectors, directory structure, file allocation table, and checks file validity (FAT/FAT32).

### Advanced

This menu contains menus for viewing log files and for advanced file type conversions. These are described later in this chapter.

### Help

Shows help information.

## Buttons

On the left of the dialog box are five useful buttons that perform the same functions as the menu choices described in the previous section. Some buttons may be grayed out when the function is not appropriate for the selected partition.

### 0, 1, 2

Allows you to select the physical drive. If you have more than 3 drives, select the drive using File, then Select Drive.

### Create

Builds a new partition as described below.

### Resize

Changes the size of a partition as described below.

### Move

Allows you to move a partition into free space on the same physical drive.



### Copy

Allows you to copy a partition into free space on either the same drive or a different drive.

## Create Partition

To create a partition on the drive, you must first have free space available. Free space, in this instance, is space on the hard drive that has not been put into a partition. This is not the same thing as unused space within an existing partition!

Free space is identified by the word Free in the drive diagram. Click on this area, and black bars appear on each side when it is selected. Click on the Create button and a dialog box opens indicating the maximum size allowed. Specify the size of the partition you wish to create. The application automatically double checks to make sure that you have not entered an invalid value.

**Note:** The partition cannot be made any larger than the maximum size indicated!

You may also enable a surface scan which will check for errors in the partition area. You can create a label for the partition. In addition, the Custom Partition Type checkbox allows you to select a specific file system for the partition.

**Note:** Normally, FAT is automatically selected for DOS or Windows partitions, and FAT32 is chosen for partitions over 2 GB.

Once you have entered the information necessary, press Next and the partition will be created and formatted.

## Resize Partition

The Resize partition function does exactly what its name implies. It will either shrink or expand the selected partition, based on your choice.

The Resize partition function uses a revolutionary, new technology to resize your existing partition while safely preserving your data.



---

**Technical Information:** When you are resizing a partition, the partition may not be made smaller than the actual data contained in it, nor larger than the size of the physical drive. For example, if you have an 800 MB partition that contains 400 MB of data, then the smallest that you can make that partition will be 400 megabytes. If the hard drive has 1 GB capacity, the 800 MB partition cannot be expanded to more than 1 GB - the total size of the drive.

---

Don't worry about double checking yourself; System Commander 2000 takes care of verification for you. It is mentioned here for information only.

To start the resize process, select a partition to resize. Next press the Resize button or select the Tools menu, then Resize.

The Resize Partition dialog box shows you the range, in megabytes, that the selected partition may be. You may either enter a number between the minimum and maximum, or you can use the spin button (the up/down arrow control to the right of the field) to have them shown for you.

**Note:** Partition resize is only available with major file formats such as FAT and FAT 32 used by DOS, Windows 3.x, Windows 95/98, and other OSes, NTFS used by Windows NT and Windows 2000, Linux Ext2 and Linux Swap.

## Delete Partition

There is no button provided for the delete partition command. To use this, select the partition that you wish to delete, and then go to the menu bar and select Tools and then Delete.

At this point, a dialog box appears with bold warnings and other information about the partition, such as its size and volume label.



---

**Warning:** Once a partition is deleted, all data in the partition is no longer accessible. Make sure important data is backed up in another location!

---

To actually perform the delete, you must enter the volume label exactly as it is displayed and then press Next.

If the label names do not match, you will receive an error message and no change will be made to the partition.

## Using the Advanced Tools

Under the Advanced menu, there are several choices:

**Set active/bootable** Assigns bootable active status to a single partition.

**Hide** Hides the partition.

**Unhide** Unhides the partition.

**Conversions** This option allows you to convert a partition from one file type to another, for example, from FAT16 to FAT32 and vice versa. Select the partition that you wish to convert, and then select this option. If the selected partition is NTFS, it is converted to FAT32/FAT. Only Windows 2000 can access FAT32. Do not convert an NTFS partition in older NT versions, if you wish to continue to use NT.

**Settings** Provides the following settings:

**Enable auto-format** automatically formats newly-created partitions.

**Enable surface tests** performs error checking on a partition. It is similar to the ScanDisk program in DOS and Windows.

**Custom partition Type** allows you to select a specific file system for the partition.

**Disable auto-save** makes these option settings apply only to the current session - they are not saved.

**Video Mode** provides screen resolution options which take effect the next time you exit and run the application.

**Auto-resize** specifies the minimum percentage of unused space to be retained in a partition when resizing using Partition Wizard.

**Reset to defaults** returns the settings to default values.

**View Log** As the name implies, this allows you to view the partition action log. This is included mostly to assist Technical Support.

# Chapter 7

## Common OS Installations and Issues

This chapter covers specific common installations, and some of the special steps we recommend when installing other operating systems like Windows 95/98, Windows NT/2000, Linux, UNIX or NetWare. Also, the chapter covers the special case of installing multiple DOS versions in a single partition and information about multiple primary DOS partitions. The chapter wraps up with special limitations, and methods for speeding up the boot process.

The following list is a quick page index for different OSes:

<b>DOS</b>	<b>44</b>
<b>Windows 95/98</b>	<b>51</b>
<b>Windows NT/Windows 2000</b>	<b>62</b>
<b>Linux</b>	<b>72</b>
<b>UNIX</b>	<b>73</b>
<b>NetWare</b>	<b>76</b>



**Important :** Before attempting to install *any* operating system, please consult chapter 12, ***OS and Product Limitations*** to make sure that you are aware of any limitations imposed by your particular OS. Specifically, be aware that DOS and Windows 95/98/NT/2000 **will not boot** from any partition other than a primary on the first physical drive. You **cannot** install DOS or Windows 95/98/NT/2000 into an extended partition or onto the second or third hard disk. If you attempt this and call for technical support when you encounter problems, our support technicians will simply tell you that it is not possible. System Commander 2000 **cannot** overcome any limitations imposed by the operating system.

## DOS/V (Japanese version of DOS)

DOS/V versions can be easily installed along with other versions of DOS in the same partition. The next section provides more details about multiple DOSes.

Recent versions of DOS/V will destroy System Commander 2000's master boot record. This is not a serious problem. When the DOS/V installation completes, a reboot will skip System Commander 2000 and simply run DOS/V. To correct this, at the DOS prompt, switch to the System Commander 2000 directory. Next run SCIN, and select *Enable/Update* from the main menu. Now when you reboot, System Commander 2000 will save DOS/V along with all prior saved OSes. No loss of information occurs by DOS/V's quirk.

If you plan to install multiple versions or vendors of DOS/V, you will need to address other DOS/V files in the root directory. For example, DOS/V usually places several font files in the root. These are usually version specific, and must be handled to avoid overlap with the next installed DOS/V. Those files referenced from CONFIG.SYS can be moved to a unique directory and the CONFIG.SYS updated to point to the new location. Other files may need to be copied by System Commander 2000 before a specific DOS/V is launched. Specify those files to be copied using the Setup option (Alt-S), under the selection *File management menu*. On older versions of DOS/V there are usually many files to copy. Even though System Commander 2000 has only eight (8) file copy slots, you can use wildcards to copy many more files. For example, the file name \*.FNT would copy every file with the extension .FNT.

### Limitations from OS

- DOS/V must be installed in a primary FAT partition on the first drive.

## Multiple DOS Versions and Vendors

System Commander 2000 provides the ability to have multiple versions and vendors of DOS on the same system. This means you can have DOS from Microsoft, IBM, or Caldera, and retain old, new and even beta versions of DOS. The different DOSes all reside in the same disk partition, so all your programs and data files are accessible regardless of the currently active DOS.

When System Commander 2000 is installed, it creates a hidden file SCDOS.SYS. This file holds information about each OS, including several hidden system files for each DOS loaded. If you delete this file, you will be

unable to access any DOS operating system other than the one currently active.

### Limitations from OS

- The bootable DOS portion must reside in a primary FAT partition on the first drive.

### Special DOS Issues

Most DOS utilities are version dependent and will not work if a different DOS version is operating. To overcome this issue, System Commander 2000 will automatically copy key files from a subdirectory to the root directory. In most cases this will include COMMAND.COM, CONFIG.SYS, and AUTOEXEC.BAT. The CONFIG.SYS and AUTOEXEC.BAT files should be customized for the specific DOS version. For example, the path statement in the AUTOEXEC.BAT file must point to the system directory for the related version of DOS. If the system files were loaded into a directory \PCDOS7, then a portion of the AUTOEXEC.BAT path statement would appear as:

```
PATH = C:\PCDOS7;
```

You may already use a SHELL statement in CONFIG.SYS or a COMSPEC variable in AUTOEXEC.BAT to point to the directory where COMMAND.COM resides. Be aware that many programs that “shell-out” do not follow the path, but expect COMMAND.COM to be in the root directory. For this reason, System Commander 2000 copies the file COMMAND.COM into the root directory when a new DOS is selected.

### CONFIG.SYS Issues

Some commands in CONFIG.SYS are unique to specific DOS versions and will generate an error message if they are run from a different DOS version. In addition, some device drivers are specific to a version of DOS and may not function with older or newer DOS versions. Make sure the SHELL points to the correct COMMAND.COM and is in the proper form for the specific DOS version. Some of the more recent command differences are shown below. A blank indicates the command is not supported.

## System Commander 2000 User Manual

Supported in DOS Versions

CONFIG Command	DR 6.0	Novell 7.0	MS-DOS			PC-DOS		
			3/4	5.0	6.x	3/4	5.0	6/7
chain		yes	yes					
cls	yes	yes						
cpos		yes	yes					
devicehigh				yes	yes		yes	yes
devicehi		yes						
dos		yes		yes	yes		yes	yes
echo		yes	yes					
exit	yes	yes						
gosub		yes	yes					
goto		yes	yes					
hibuffers	yes							
hidevice	yes	yes						
hidos		yes						
hiinstall		yes						
history		yes						
include					yes			yes
menucolor					yes			yes
menudefault						yes		
yes								
menuitem					yes			yes
numloc					yes			yes
rem	yes	yes		yes	yes		yes	yes
return		yes	yes					
set	yes	yes						
shell		yes	yes	yes	yes	yes	yes	yes
yes								
submenu					yes			yes
switch		yes	yes					
switches				yes	yes		yes	yes
timeout	yes	yes						

## AUTOEXEC.BAT Issues

Some commands in AUTOEXEC.BAT are unique to specific DOS versions and will generate an error message if they run from a different DOS version. Specifically check your path statement carefully, as it usually will point to the system subdirectory, which will be different for each version. If you use a COMSPEC statement, also check that it points to COMMAND.COM for this operating system. Recent differences are shown below. A blank indicates the command is not supported.

## Chapter 7: Common OS Installations and Issues

Supported in DOS Versions

AUTOEXEC Command	DR 6.0	Novell 7.0	3/4	MS-DOS 5.0		6.x	3/4	PC-DOS 5.0		6/7
choice		yes	yes				yes		yes	
comspec	yes	yes	yes	yes	yes	yes	yes	yes	yes	
gosub		yes	yes							
path		yes	yes	yes	yes	yes	yes	yes	yes	
yes										
return		yes	yes							
switch		yes	yes							

### Multiple Primary DOS Partitions

Should you choose not to use the OS Wizard to create the partitions automatically, the following procedure allows you to manually create multiple primary partitions. DOS by itself (and DOS's FDISK) will NEVER create such a configuration. If additional drives are necessary, FDISK will only allow one primary DOS partition, but makes no restrictions on the number of DOS logical partitions given enough disk space.

System Commander 2000 is designed to work on systems with multiple DOS partitions. One common configuration, made possible with System Commander 2000, is DOS/Windows 3.1 in one primary partition and Windows 95/98 in another primary partition.

### Making multiple Primary DOS Partitions

The easiest way to accomplish this is to use the OS Wizard to create a new DOS or Windows partition, isolated by itself. You can also use the manual partitioning option from the OS Wizard.

An Alternate way, without the OS Wizard, uses our SCDISK utility and the FDISK from DOS or Windows 95/98.

#### Requirements

- One primary FAT partition already exists.
- System Commander 2000 is installed and working.
- You are **not** using On Track's Disk Manager for large IDE drives (See page 49 for using Disk Manager).



- The first disk has unallocated disk space (space unallocated to an existing partition) for the new partition.
- You will not exceed the PC's limit of four primary partitions or three primaries and one extended partition.
- DOS will reside below 8 GB.

### What to do if all the disk space is allocated

To free up allocated disk space, it is necessary to delete one or more partitions, and then re-create smaller partition(s) to make available disk space. Remember to back up your data before deleting the partition, since all of the data will be destroyed. You might also consider changing the size of a partition without deleting the data within the partition by using the OS Wizard's manual partitioning.

### Steps for making another primary partition

#### **1** Hide the existing primary FAT partition(s).

Run our SCDISK utility, and select *Change boot status for OS install*. Press **9** to make no partitions bootable. The SCDISK utility will hide the partitions temporarily. Hidden partitions are never hidden from System Commander 2000. Now reboot directly from a DOS or Windows 95/98 boot diskette.



---

**Important:** Do *not* boot through System Commander 2000 (even from the "Boot from Drive A:" option) since this will expose the hidden partitions.

---

#### **2** Create the new primary partition.

Run FDISK and create another primary partition. Ignore any partitions labeled as Non-DOS, as these are other temporarily hidden partitions.

FDISK will not let you create another primary partition if you do not have unallocated disk space. If this is a problem, see our prior note above on *What to do if all drive space is allocated*.

Once the new primary partition is created, exit FDISK. It will force a reboot.

Use the DOS boot diskette for this reboot.

### 3 Format the partition and make it bootable.

Before formatting, issue a DIR on the C: drive. It should return an error, since the drive is not formatted yet. If you do not get an error, DO NOT FORMAT, since something is wrong. The following command formats and transfers the system to the new partition:

```
A:\> format c: /s
```

Remember, you can only make DOS bootable from the first drive. DOS and Windows 95/98 are hard coded internally to always assume they boot from the first drive. They do allow booting from any of the four (4) primary partitions on the first drive. If your second primary partition is past the first 2 GBs of your hard drive, please refer to “Transfer System,” on page 109 for information on placing your system files properly into this partition.



---

**Warning:** DOS BUG: We have seen a minor bug in all versions of DOS that can affect some configurations. With two primary FAT partitions, and an extended partition (on any drive) that has the last logical drive as non-FAT, DOS cannot see the other primary partition. This DOS bug does not occur when no extended partition exists, or if the last logical partition in the extended partition is FAT.

---

## Creating Multiple Primaries with Disk Manager v7.0 and greater

This procedure will step you through creating a second primary partition using OnTrack's Disk Manager software.

This procedure will only work with Disk Manager version 7.0 or greater. Should you encounter any problems with this procedure, or have a version prior to 7.0, please contact OnTrack directly for assistance.

1. While booting your computer, wait for a message from Disk Manager saying “Press spacebar to boot from floppy.” Press the spacebar and, when prompted, insert your bootable floppy.
2. At the A:> prompt, type **DM** to run Disk Manager.

3. Continue on to the Disk Manager main menu.
4. At the main menu, press **Alt-M** to enter Maintenance mode (this is not intended to enter the Maintenance menu, which is different). This should change the "(A)dd/Remove" partitions menu option to "(E)dit/View partitions."
5. Press **E** to *Edit/View Partitions*.
6. Select a physical drive, and press **ENTER** to continue.
7. On this menu, use the arrow keys to highlight an empty area of the disk, and use the **Ins** key to create a new primary partition.
8. Select the *Other* choice and press **ENTER**.
9. Enter **06** when prompted for the partition type. This specifies a primary FAT partition.
10. Enter the size of the new partition.
11. Save the configuration.
12. Return to the previous menu. Exit Disk Manager.

## Multiple Selections for One DOS

In some situations, more than one OS selection choice is desired for a single version of DOS. In these cases, a different CONFIG.SYS and AUTOEXEC.BAT file are desired for each DOS selection.

To create an additional entry on the System Commander 2000 OS selection menu, from the OS selection menu, press **Alt-S** (Setup), and select the *Order, add and removal menu*. Highlight the selection you wish to duplicate (which must be in the FAT partition where System Commander 2000 resides), and press **Alt-A** (Add). Press **D** to duplicate the choice. You will be prompted for a description and new subdirectory to use.

Return to the OS selection menu and select this new choice. At the DOS prompt, remember to update your CONFIG.SYS and AUTOEXEC.BAT files to reflect any changes you wish on this duplicate set.

### Windows 3.x and DOS as separate selections

Throughout this manual, we talk very little about Windows 3.1 because it is not a operating system by itself. It always requires DOS to be running first, and operates like an application program from DOS (a real complex application). It is not possible for System Commander 2000 to detect Windows 3.x as a separate selection automatically, but it is easy to set up two choices on the menu for DOS and Windows 3.x.

If you do not have DOS installed, you must install DOS before you can install Windows 3.x. Once DOS is installed, boot into DOS from System Commander 2000, and install Windows. DO NOT use the same directory name (i.e. C:\WINDOWS) if you previously have Windows 95/98 installed in that directory. Also, DO NOT allow 3.x. to search for installed Windows Applications: if it sees Windows Applications it will destroy or corrupt them.

Once you have DOS and Windows 3.x installed and working, you can duplicate your single DOS selection on System Commander 2000's menu. Boot into System Commander 2000 and highlight the DOS choice (but do not select it). Press **Alt-S** (Setup), and select the choice *Order, add and removal menu*. Press **Alt-A** (Add), then press **D** to duplicate the choice. You will be prompted for a description to use. You might use a description like "Windows 3.x". When complete, return to the main selection menu (press Escape twice), and go into the new Windows 3.x choice.

Assuming this only goes to a DOS prompt, edit the AUTOEXEC.BAT file in the C: root directory. Add the line at the end of this file:

**WIN**

This will automatically launch Windows at the completion of DOS processing the AUTOEXEC.BAT file.

If your Window 3.x selection from System Commander 2000 already boots directly into Windows, reboot and try the DOS selection. If the DOS selection also goes into Windows 3.x, edit the AUTOEXEC.BAT file in the C root directory. One line in the file will launch windows, typically just the word "WIN". Remove this line so the DOS selection will not launch Windows automatically

## Windows 95/98 Configurations

System Commander 2000 is fully compatible with Windows 95/98. Normally Windows 95/98 is installed (at least the bootup portion) in the primary C:

partition. The Windows 95/98 installation provides an option to install the Windows portion on any DOS drive and directory.

### Installing Windows 95/98 after System Commander 2000

Windows 95/98 installation has a number of quirks, which will change and delete a number of important files, and will destroy System Commander 2000's master boot record. The following tips will guide you through a successful Windows 95/98 installation.

While the easiest install is to place Windows 95/98 in the DOS partition, the Windows 95/98 installation forces you to make one of these, less than desirable, choices when you already have Windows 3.x:

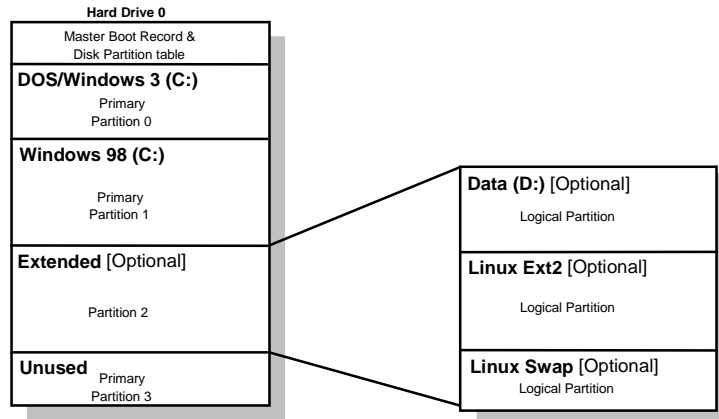
1. You can leave all your applications working with Windows 3.x, but none will work with Windows 95/98.
2. Migrate all your applications to Windows 95/98, which means they will no longer work under Windows 3.x.
3. Leave or migrate applications, and then reinstall every application in unique directories for the other Windows.

Keep in mind that even if you attempt to install Windows 95/98 in any drive other than C, Windows 95/98 will always add and remove many files on drive C, and the migration problems are still present.

Although System Commander 2000 can let you switch between Windows 95/98 and DOS/Windows 3.x in the same partition, you can also create a separate duplicate partition of your current DOS/Windows programs, and then install Windows 95/98 in this separate partition. You can then safely migrate the duplicate applications, since you still have your original applications on another primary partition.

One common drive layout, which many users like, appears in figure 7-1.

Figure 7-1. Windows 98 in a separate Partition.



In this layout, when you boot into partition 0, you can run Windows 3.1 on drive C. Drive D is on the logical partition, which contains application data. Partition 1 can either be hidden or will appear as drive E at your option.

When you boot partition 1, Windows 98 will appear as drive C, and drive D is the same logical partition as appears when booting DOS/Windows 3.1. Partition 0 is either hidden or you can elect to have it appear as drive E.

This table summarizes the different 95/98 installations:

Windows 3.1	Action
Does not exist	Install Windows 95/98 anywhere (no issues).
No longer wanted	Install Windows 95/98 on top of Windows 3.1 (applications are transferred to Win95).
Need to keep 3.1	Install Windows 95/98 in a new subdirectory (applications will need to be reinstalled under Windows 95/98 to use).
Need to keep 3.1	Install Windows 95/98 in a separate primary partition using the Risk Free Windows approach (applications will work under both Windows 3.1 and Windows 95/98).

If you prefer to install Windows 95/98 in the DOS partition, skip over the next section.

### ***Risk Free Windows 95/98 Installation (Separate Partitions)***

This is the safest approach to installing Windows 95/98. It keeps Windows 95/98 completely isolated from your existing OSes, and avoids having to load all your applications again. On some systems, this approach may require repartitioning, so one of the other alternative installations may be preferred.

#### Starting Assumptions and Requirements

- You have an **upgrade** release of Windows 95/98.
- DOS and Windows 3.x are installed and working on drive C: (this approach requires Windows 3.x on drive C:).
- System Commander 2000 has been installed and booted at least once (this saves the DOS/Windows 3.x configuration).
- Your first drive has unallocated disk space approximately the size of your current DOS/Windows partition or larger.

#### What to do if all drive space is allocated

For the risk free process, it is necessary to create another partition on your first drive. This can only be done when unallocated disk space is available. Often systems are pre-configured with all of the disk space already allocated.

To free up allocated disk space, it is necessary to delete one or more partitions, and then re-create smaller partition(s) to make available disk space. Remember to back up your data before deleting the partition, since all of the data will be destroyed. You might also consider changing the size of a partition, without deleting the data within the partition using the OS Wizard.

#### Optional Extended Partition(s)

It does not matter if you wish to create extended (logical) partitions now or later for additional OSes or for data and applications. Logical FAT (DOS) partitions will change your drive lettering, since they appear after the C: drive.



**Warning:** DOS BUG: We have seen a minor bug in all versions of DOS that can affect some configurations. With two primary FAT partitions, and an extended partition (on any drive) that has the last logical drive as non-FAT, DOS cannot see the other primary partition. This DOS bug does not occur when no extended partition exists, or if the last logical partition in the extended partition is FAT.

### Risk Free Installation Steps

**1** Create a second FAT (DOS) primary partition, which will become the Windows 95/98 Partition.

Since the DOS FDISK cannot normally create a second primary partition, follow the instructions under “Making multiple Primary DOS Partitions” on page 47. This shows how to use System Commander 2000’s SCDISK utility in conjunction with FDISK from DOS or Windows 95/98 to create the second primary DOS partition.

Format the new primary partition and load the system files (i.e., use **format /s**, or after formatting, use **sys c:**). Now reboot from the hard drive. System Commander 2000 will appear. Select the first DOS partition to boot (not the new one).

**2** Now copy the DOS and Windows 3.1 files and applications to the newly created partition.

At the DOS prompt, run DIR on various drive letters to find out what drive letter DOS has assigned the new partition. It could be D, E or higher, depending on the number of logical drives and if any other physical drives exist in the system. The new partition will only have two (2) or three (3) hidden files and the file COMMAND.COM.

Now use the XCOPY command to copy all the files to the new partition. For example, if the new partition appears as drive E, then use the DOS command:

```
C:\> xcopy c: e: /e /v /h
```

(if **/e** or **/h** are not supported by your version of DOS/  
Win95, use **/s** instead)



Once the copy is complete (which may take a few minutes), reboot the PC to the System Commander 2000 OS selection menu.

**3** Make the new DOS partition appear as an OS selection and hide the old DOS partition from Windows 95/98.

If the new DOS partition does not appear on the OS selection menu, press **Alt-S** (Setup), and select the *Order, add and removal menu*. Press **Alt-A** (Add), and then press **P** for partition. Highlight the new partition, and press **Alt-T** to toggle the boot status to YES. Press Esc three (3) times to return to the OS selection menu.

Press **Alt-S** (Setup), and select the *Local special options menu*. Use **PgUp** and **PgDn** to switch to the new DOS primary partition. Select the option *Primary partitions visible on drive 0*, and hide the other primary DOS partition (set to **NONE**). Return to the OS selection menu, and select the new primary partition. It should boot up just like your original DOS primary partition.

**4** Install Windows 95/98!

Now run the Windows 95/98 installation program. At some point it will ask if you wish to install Windows 95/98 on top of Windows 3.x (i.e., typically to the **C:\WINDOWS** directory). Keep this directory name. By installing Windows 95/98 on top of the duplicate copy of Windows 3.x, all of the applications are automatically transferred to Windows 95/98. This avoids having to load every application again! Remember that you still have your original set of Windows 3.x files and applications in the other partition hidden from Windows 95/98.

During the Windows 95/98 installation, you may get several messages about OS/2 and/or NT indicating that they will no longer will work. You can safely ignore these warnings.

**5** Restore System Commander 2000.

When Windows 95/98 installation is complete and working, you will find that after a reboot, System Commander 2000 fails to appear. Windows 95/98 destroys the System Commander 2000 master boot record.

In most cases System Commander 2000 will automatically recover on the

next boot cycle. During the next boot up, System Commander 2000 will appear and save the new Windows 95/98 information. All of your prior options and selections will not be affected. If SC2000 fails to appear, run C:\CHECKMBR.EXE from Windows.

### ***Installing Windows 95/98 into the DOS partition***

This is the best choice when Windows 3.x does not exist, or you no longer want Windows 3.x. This option is also useful when you need to keep Windows 3.x, but prefer not to use the prior “Risk-Free” approach, and you do not mind reinstalling your applications into Windows 95/98 or if you are going to install new Windows 95/98 exclusive applications.

#### Installation Steps

#### **1** Save DOS from destruction!

Copy all the files in your current DOS directory to a temporary directory. The current DOS directory has all your DOS programs and files. A pointer to this directory appears in your path statement (in AUTOEXEC.BAT). **In some installations, Windows 95/98 will delete these files without first warning you and without backing the files up!**

#### **2** Install Windows 95/98.

Now run the Windows 95/98 installation program. At some point it will ask if you wish to install Windows 95/98 on top of Windows 3.x if it exists (i.e., typically to the **C:\WINDOWS** directory). You have two key options at this point.

Should you install Windows 95/98 on top of Windows 3.x (i.e., on the same drive and directory), all of your applications are migrated to Windows 95/98 and Windows 3.x will no longer work.

If you choose a new directory and/or drive, Windows 95/98 will leave Windows 3.x alone. In this case, applications in Windows 3.x are **not** migrated to Windows 95/98. Those applications you need under Windows 95/98 must be installed again.

During the Windows 95/98 installation, you may get several messages about OS/2 and/or NT indicating that they will no longer work. These warnings can be safely ignored, since System Commander 2000 has already saved away the key files that Windows 95/98 will destroy.

### **3** Restore System Commander 2000.

When Windows 95/98 installation is complete and working, you will find that after a reboot, SC 2000 may fail to appear. Windows 95/98 destroys the System Commander 2000 master boot record.

To recover from this annoying quirk, in Windows 95/98, click on the START box, then click on RUN. Enter C:\CHECKMBR.EXE, and press OK. Shutdown Windows using the option Restart computer. During the boot up, System Commander 2000 will appear and save the new Windows 95/98 information. All of your prior options and selections will not be affected.

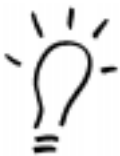
### **4** Restore any deleted DOS files (optional).

Windows 95/98 may delete some or all of the DOS files. With programs like DEFRAG and SCANDISK, the programs are replaced with batch files that simply recommend to run the Windows 95/98 versions (which only run under Windows 95/98). Windows 95/98 no longer provides DOS equivalent programs.

---

**Tip:** Be aware that the DOS system programs do not handle long file names. We suggest not using the older DOS programs which Alter directory entries (like DEFRAG or SCANDISK). Should you use programs which are unaware of long file names, the file contents are never at risk, only the long file name.

---



Restore any or all of the DOS files you want from previously saved temporary directory.

### ***Multiple Windows 95/98 Installations***

In some cases, it is important to have multiple Windows 95/98 installations. This occurs if you need two or more language variations of Windows 95/98, or you wish to have both Windows 95 and Windows 98. There are two (2) ways to achieve this.

#### Installation in Separate Partitions

The installation of Windows 95/98 in separate partitions is the safest and

## Chapter 7: Common OS Installations and Issues

most reliable way to install multiple Windows 95/98s in a system. Since Windows 95/98 must be installed in a primary partition on the first drive, you are limited to a maximum of four (4) Windows 95/98 installations with this method. The simplest method is to use the OS Wizard and when prompted, select “Isolated.”

To manually install multiple versions of Windows' 95/98, refer back to the “Risk-Free Windows 95/98 Installation,” instructions on page 56 for the creation of another primary partition for Windows 95/98. If you are not installing an upgrade version of Windows 95/98, you can skip step 2, since it is not necessary to have a copy of Windows (3.1 or 95) in the new partition.

### Multiple Windows 95/98 installations in the same partition

This type of installation for Windows 95/98 is strongly discouraged as it may result in an unstable installation. Windows 95/98 installation writes additional subdirectories outside of the Windows subdirectory without prompting and without giving you the option to rename (for example, the Program Files subdirectory). Since Windows 95/98 cannot effectively share this subdirectory with other installations, multiple versions of 95/98 in the same partition can be very unstable. As well, Windows 95/98 virtual memory will cause swapfile overlaps, which means that you will not be able to use virtual memory in one of the installs of Windows 95/98. We encourage you to install multiple versions and languages of Windows 95/98 into separate primary partitions.

## Other Windows 95/98 Issues

### **Windows Plus (Microsoft Plus) can Destroy other OSes!**

Microsoft offers a separate package of utilities, icons, and wallpaper for Windows 95/98. One of these utilities is the compression software called DriveSpace. This utility can compress your FAT partition and all OSes installed on that partition. In most cases, these OSes will no longer work. A reboot may present a “Boot” error message and hang the system.

If you get into this weird situation, boot from a DOS or Windows 95/98 boot diskette. Change to the System Commander 2000 diskette and run SCIN. Select Disable.

You may be able to run Windows 95/98, but the other OSes are not likely to be recoverable. A full installation of SC 2000 will get SC 2000 running again, but the other OSes must be loaded again. Remember that System Commander 2000 MUST be installed on the non-compressed drive, which

will no longer be drive C:.

In general, with Windows Plus, NEVER select the option to install everything. If you want other DOS versions, NT, Windows 2000 or OS/2, you should not compress the C: drive using DriveSpace.

## Windows 95/98 and Novell NetWare 4.x/5.x

If you are using Novell NetWare, the installation of Windows 95/98 into the DOS partition may Alter the STARTNET.BAT file under the \NWCLIENT subdirectory. The network may no longer work under DOS in this case. If you encounter this problem, it is fairly easy to correct, since Windows 95/98 is nice enough to make a backup copy of the DOS version as STARTNET.--- in the \NWCLIENT directory.

System Commander 2000 can be used to swap the appropriate STARTNET files between DOS and Windows 95/98. To set this up, you will keep two separate copies of the STARTNET file. System Commander 2000 is then instructed to copy the appropriate STARTNET file when switching between OSes. The following example assumes the Windows 95 files that System Commander 2000 copies (like CONFIG.SYS) are in the directory \SC\WIN95, and the DOS files are in the directory \SC\MSDOS6.22 (use the directories that match your system).

Perform the following copies:

```
C:\> copy \nwclient\startnet.bat \sc\win95\startnet.bat
C:\> copy \nwclient\startnet.--- \sc\msdos6.22\startnet.bat
```

Next, reboot the system, and highlight the Windows 95/98 menu choice, and press **Alt-S** (Setup), and select the *File management menu*. Move down to an empty slot, and add the following entry (+ or - toggles the settings):

Action	Update	Source	Target
COPY	PROMPT	C:\SC\WIN95\STARTNET.BAT	C:\NWCLIENT\

Press **PgUp** or **PgDn** to change to your DOS choice. Add the following entry:

Action	Update	Source	Target
COPY	PROMPT	C:\SC\MSDOS6.22\STARTNET.BAT	C:\NWCLIENT\

Now NetWare should work properly from both DOS and Windows 95/98. Try

out DOS and Windows 95/98 to be sure it works. If your first OS selection causes System Commander 2000 to prompt whether or not you wish to update STARTNET.BAT, specify **Skip** to avoid overwriting the file this very first time. After that, it is acceptable to update the file.

### Windows 95/98 MSDOS.SYS File

Unlike old DOS, Windows 95/98 stores textual configuration information in the MSDOS.SYS file. This file may be updated by users, Windows 95/98 itself, and installation programs. With DOS installations, System Commander 2000 detects any changes to MSDOS.SYS as a possible new operating system. With Windows 95/98, System Commander 2000 saves and maintains MSDOS.SYS file in the Windows 95/98 save directory. As changes are made, the saved MSDOS.SYS file is automatically updated on the next reboot.

### Creating Multiple Windows 95/98 Configurations

One handy feature of System Commander 2000 is the ability to provide multiple selections for the same OS (i.e., Windows 95/98) and copy files between subdirectories. It is often useful to have a different sets of .INI files and/or MSDOS.SYS. You might have one set for a network, another for a laptop's docking station, and yet another while on the road with a laptop.

To duplicate a Windows 95/98 choice, after booting into Windows 95/98, reboot, and press **Alt-S** (Setup) at the OS selection menu. Select *Order, add and remove menu* and highlight the Windows 95/98 choice. Next select **Alt-A** (Add), and then select **D** for Duplicate. A duplicate choice is created. Escape from the menu, and then select the *File management menu*. In this menu you can specify additional files to copy, such as a specific .INI file.

Once the duplicate is made, return to the OS selection menu and select the new duplicate choice. When Windows 95/98 boots up, edit files to take your specific actions (like MSDOS.SYS, CONFIG.SYS and/or AUTOEXEC.BAT).

## Exiting Windows 95/98

When shutting down Windows 95/98, the shutdown menu provides a number of alternatives. We suggest you select the option *Restart the computer*. This will always go to the System Commander 2000 menu, where you can select any OS you want. Other shutdown options will not affect System Commander 2000, but they will not bring up the System Commander 2000 OS selection menu.



---

**Warning:** In most cases, it is better not to use the Windows 95/98 *Restart the computer in MS-DOS mode* option. Using this option may load an old set of configuration files. It is better to reboot and select a true DOS from the System Commander 2000 menu.

---

## Limitations from OS

- The Windows 95/98 boot up portion (approximately 4 MB of Disk Data) must be installed in a primary FAT partition on the first drive, while the balance can go on any primary or logical FAT partition on any drive. The minimum size of this boot partition should be 20 MB or larger.
- Long filenames can only be seen by Windows 95 OSR2, Windows 98, Windows NT and Windows 2000.
- Long filenames can be lost if a DOS file utility such as DEFRAG, SCANDISK, or an old version of Norton Disk Doctor is run which does not understand long filenames.
- Use of the optional FAT-32 partition type is fully compatible with System Commander 2000, but only Windows 95 OSR2, Windows 98 and Windows 2000 can see FAT 32 partitions.

## Windows NT/Windows 2000 Configurations

For the balance of this section, Windows NT/2000 will be referred to as NT. Only Windows 2000 and Windows NT 4.0, SR4 or later, support FAT-32. NT can be installed in three (3) different ways. The most common installation places NT in a primary or logical partition, and a small amount of start up code in MultiFAT partition. If installing NT, v3 or v4, the MultiFAT must be FAT. As an alternative, NT can be completely installed in a primary FAT partition. In rare cases, NT is completely self contained in a single primary NTFS partition on the first drive. This occurs when NT is the first OS installed on the system.

System Commander 2000 supports all three (3) types of NT installations.

### NT Installed prior to System Commander 2000 with OS Loader

NT is typically installed so that NT's OS Loader menu is used to select between DOS/Windows and NT. In this situation, System Commander 2000 will bring up OS Loader like an operating system and show any previous DOS or Windows 95/98 installations as separate choices.

The following instructions will separate this into two (2) System Commander 2000 menu selections, to boot Windows 95/98/DOS directly and NT directly if you do not have both selections on the System Commander 2000 selection menu. The current SC 2000 "OS Loader" choice will become an NT only choice.

To create a separate non-NT choice on the System Commander 2000 selection menu, boot from a Win 95/98/DOS diskette (with the same version and vendor as your current OS). At the prompt run the SYS program to reload the hidden files:

```
A:\> SYS C:
```

Once complete, remove the boot diskette and reboot again. This time System Commander 2000 will save the OS hidden system files and other key files such as AUTOEXEC.BAT and CONFIG.SYS. Once at the prompt, reboot again to verify you now have both the non-NT and NT menu choices.

Next, make the NT selection, to bring up OS Loader with both NT and non-NT choices. Select NT. Once NT is running, click on Start, Program Settings and then select the Control Panel. Next, click on the System icon within the Control Panel. Pick NT as the startup operating system, and change the settings for "Show List for" to zero. This will skip NT's extra questions at Boot time, since you will be selecting NT directly from System Commander 2000.

### NT Installed prior to System Commander 2000 - Stand Alone

In the rare case of NT completely self contained in a single partition (i.e., no DOS or Windows existed when NT was installed), the NT choice will usually appear on the System Commander 2000 menu without further action. If no NT choice appears when NT is installed this way, select **Alt-S** Setup, and



then select the *Order, add, and remove menu*. Select **Alt-A** (Add), and then **P** for Partition. Toggle the NT partition to be bootable with **Alt-T**.

### NT Installed prior to System Commander 2000 -Adding DOS

DOS must be installed into a FAT 16 primary partition. If NT is currently installed into the FAT 16 primary, then DOS can be added into this partition, otherwise a new Primary FAT 16 partition must be created. To add DOS into the NT partition after System Commander 2000 has been installed, boot from the first DOS installation disk. This will take you into the DOS setup program. In some cases you will receive a message indicating that DOS will not install because it detects another OS already on your machine. Should this occur, exit the setup program. At the A:> prompt, type **SYS C:**. After you receive the message "System Transferred", type **SETUP** to launch the DOS installation again. This time it will be *recommended* that you exit the setup, but you will be given the option to continue. You may safely continue the installation at this point. After the installation of DOS has been completed, you will be prompted to reboot the machine. Upon reboot, System Commander 2000 will prompt you that a possible new operating system has been detected. Save this choice as it will be your new DOS installation.

Note: With NT v4, it is possible to create a primary FAT partition larger than 2047 MB. Other OSes, such as DOS and Windows 95/98, will not recognize standard FAT partitions greater than 2047MB.

### Installing NT after System Commander 2000

After System Commander 2000 is installed and the existing OS information has been saved by System Commander 2000 (i.e., reboot once), make sure your last boot was to either the DOS or Windows 95/98 that exist in the same partition in which System Commander 2000 has been installed (the MultiFAT partition). Do not proceed if the last choice was OS/2. Proceed to install NT per the NT instructions.

As part of the NT installation the system will be rebooted. At this point the NT installation is not complete. System Commander 2000 will detect the new OS and ask you if you wish to save it. Select **Save**, and if you desire, change the description. At this point the NT installation will proceed as if System Commander 2000 was never present.

## Chapter 7: Common OS Installations and Issues

If you have problems with the NT installation (i.e., system incompatibilities, disk problems, etc.) and you later attempt to reinstall NT, upon NT requiring a reboot, the OS selection menu will appear. Be sure to select the NT selection so no files are changed and the NT installation will continue normally.

Once NT has completed the installation, issue a system shutdown (**Ctrl-Alt-Del** will display the shutdown option). Upon reboot, System Commander 2000 will now present NT as another menu choice.

### Getting Rid of OS Loader Messages

Select NT from the OS selection menu to bring up the NT OS loader with both NT and Windows/DOS choices. Select NT. Once NT is running, click on Start, Program Settings and then select the Control Panel. Next, click on the System icon within the Control Panel. Pick NT as the startup operating system, and change the settings for "Show List for" to zero. This will skip NT's extra questions at Boot time, since you will be selecting NT directly from the System Commander 2000 Menu.

### Non-bootable NT selection on the Selection Menu

When NT is installed with NT's OS Loader (i.e., a MultiFAT partition exists during NT's installation), you might get an extra NT choice on the System Commander 2000 menu that fails to boot. This is the real NT partition, which is not directly bootable. NT goes through several of its own hidden files on the MultiFAT partition to start up the other partition.

To remove the selection from the menu, press **Alt-S** (Setup), and select the *Order, add, or removal menu*. Highlight the NT choice to remove, and press **Alt-R** (Remove). Be careful not to remove your real NT selection, which resides on the same drive and partition as your other OS choices.

### Creating Multiple NT Configurations (same version of NT)

System Commander 2000 can manage different configuration selections for NT and copy files between subdirectories. This is often useful to have a different sets of .INI files. You might have one set for a network, another for a laptop's docking station, and yet another while on the road with a laptop. Multiple configurations are only supported when NT boots through the MultiFAT partition, and NT is using the FAT file system.

To duplicate the NT choice, boot into System Commander 2000 and press **Alt-S** (Setup) at the OS selection menu. Select *Order, add and removal menu* and highlight the NT choice. Next select **Alt-A** (Add), and then select **D** for Duplicate. A duplicate choice is created. Escape from the menu, and then select the *File management menu*. In this menu you can specify additional files to copy, such as a specific .INI file.

### Multiple NT OSes

System Commander 2000 can also manage multiple versions of NT in separate partitions. This is handy when you need multiple different versions of NT on one system. NT does not normally boot directly into the partition where it is installed. As you add additional versions of NT to the system, each installation will alter the BOOT.INI file in the FAT partition to include the added NT. This results in having a list of NTs (from NT's OS loader) appearing after you select NT from System Commander 2000.

If you wish to split this list of NTs into individual selections on the System Commander 2000 OS selection menu, simply follow the process described in the prior section "Creating Multiple NT Configurations". Each instance of BOOT.INI can be edited to default to the desired selection.

### Special Protection for NT

System Commander 2000 will automatically save and maintain the BOOT.INI, NTLDR and NTDETECT.COM files, critical to NT's operation. During the installation of some OSes, these files are purposely destroyed to disable NT. When the NT selection is made, System Commander 2000 will detect the missing files and automatically restore them from System Commander 2000's previously saved image.

### Limitations from OS

- NT can be installed in a primary or logical partition on any accessible drive. If installed into a logical partition, NT's boot code must reside in a primary FAT 16 or NTFS partition within the first 2 gigabytes on the first physical hard drive.
- The partition can be FAT or for higher performance, HPFS (v3 only) or NTFS.
- Long filenames can only be seen by NT and Windows 95/98.

- NT cannot be booted from its own partition past 2 gigabytes unless its boot code resides in a primary FAT 16 partition within the first 2 gigabytes on the first physical hard drive.
- Only NT 4.0, SR4 or later, and Windows 2000 support FAT-32.

## OS/2 and Other OSes in Separate Partitions

If OS/2 is already installed, System Commander 2000 should already show OS/2 as a boot selection after a reboot. In addition, a selection for OS/2's Boot Manager may appear. In some installations, OS/2's installation incorrectly marks other non-bootable partitions as being bootable, so you may see other choices on the menu that should be removed.

If OS/2 does not appear as a selection, press **Alt-S** (Setup), and select the *Order, add and remove menu*. Press **Alt-A** (Add), and then select **Partition**. Move the highlight bar to the OS/2 partition and press **Alt-T** (Toggle) to set the bootable status to **YES**. Press Escape three (3) times to return to the selection menu.

Once you verify the OS/2 partition boots properly from System Commander 2000, you can remove any bogus entries and remove Boot Manager if desired. To remove a menu choice, from the OS selection menu, press **Alt-S** (Setup). Select the *Order, add and removal menu*. Highlight the choice to remove, and press **Alt-R**.

If you are installing OS/2 now, OS/2 requires Boot Manager to install OS/2 in a separate primary or logical partition. The OS/2 installation will handle this for you. Once OS/2 is fully installed, Boot Manager is no longer needed, and the partition can be reused or deleted.

If you do not have any free space to install Boot Manager (it requires a primary partition on your first drive), OS Wizard can be used to change the size of an existing partition, on the first drive, without deleting data.

## Limitations from OS

- OS/2 can be installed in primary or logical partitions on any accessible drive.
- Boot Manager must be installed in a primary partition on the first drive to install OS/2 (It can be discarded after OS/2 is installed).

- Only one (1) OS/2 configuration is allowed for the one installation (see next section for multiple configurations).
- The partition can be FAT or HPFS for higher performance.
- OS/2's long filenames can only be seen by OS/2

## OS/2 in the FAT Partition

OS/2 can be installed in your current FAT partition. No special partitioning is required, providing you have enough disk space free. System Commander 2000 is automatically used instead of Dual Boot, to switch between OS/2 and Windows/DOS. During the booting process, OS/2 requires its own unique CONFIG.SYS and AUTOEXEC.BAT files transferred from the C:\OS2\SYSTEM directory. System Commander 2000 automatically takes care of this.

If OS/2 was installed prior to System Commander 2000, the following steps are taken to provide an OS/2 boot selection.

1. If you have not yet rebooted once after System Commander 2000 was installed, do so now (Ctrl-Alt-Del) to save the current OS.

2. From the Windows/DOS prompt (not inside OS/2) run:

```
C:\> \OS2\BOOT /OS2
```

3. When the OS/2 boot program asks, enter "y" to reboot.
4. After rebooting, System Commander 2000 will provide the choice to save the new OS. Press **S** (Save) to save the OS/2 selection.

## Understanding OS/2 and Windows/DOS file swapping

System Commander 2000 by default emulates OS/2 dual boot operation for the quickest switch between Windows/DOS and OS/2. This also protects against accidentally exiting OS/2 through the dual boot option (which will not affect System Commander 2000). It is useful to understand how the CONFIG and AUTOEXEC files are handled by System Commander 2000

## Chapter 7: Common OS Installations and Issues

with OS/2.

While in Windows/DOS, two files appear in the C:\OS2\SYSTEM\ directory, CONFIG.OS2 and AUTOEXEC.OS2. Just after OS/2 is selected from the system menu, these files are swapped with the Windows/DOS CONFIG.SYS and AUTOEXEC.BAT files in the root directory, and the old root directory names are changed. These actions appear as:

<u>Prior OS is Windows/DOS</u>	<u>After selecting OS/2, file is:</u>
C:\CONFIG.SYS	C:\OS2\SYSTEM\CONFIG.DOS
C:\AUTOEXEC.BAT	C:\OS2\SYSTEM\AUTOEXEC.DOS
C:\OS2\SYSTEM\CONFIG.OS2	C:\CONFIG.SYS
C:\OS2\SYSTEM\AUTOEXEC.OS2	C:\AUTOEXEC.BAT

When rebooting and selecting another operating system other than OS/2, the files are returned to normal, as illustrated in the next table.

<u>Prior OS is OS/2</u>	<u>After selecting Windows/DOS, file is:</u>
C:\OS2\SYSTEM\CONFIG.DOS	C:\CONFIG.SYS
C:\OS2\SYSTEM\AUTOEXEC.DOS	C:\AUTOEXEC.BAT
C:\CONFIG.SYS	C:\OS2\SYSTEM\CONFIG.OS2
C:\AUTOEXEC.BAT	C:\OS2\SYSTEM\AUTOEXEC.OS2

### Alternate method for OS/2 in the Windows/DOS Partition

If for some reason you would like to bypass the dual boot emulation of System Commander 2000, a special option turns off System Commander 2000's file swapping for OS/2. Instead of file swapping, individual files are copied into the root directory as desired. This is controlled from the Setup menu, under Global special options menu. Set the selection *For OS/2 in DOS partition, skip fast boot* to **YES**.

If an OS/2 menu choice was already created, be sure to specify the subdirectory and files to copy from the setup menu by selecting the File management menu. OS/2 , at a minimum requires a set of unique CONFIG.SYS and AUTOEXEC.BAT files.

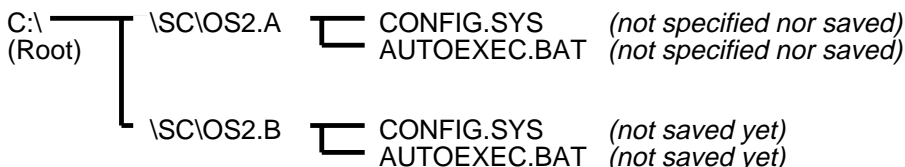
## Multiple OS/2 Configurations

With a single OS/2 configuration in the Windows/DOS partition, System Commander 2000 fully emulates the OS/2 dual boot operation, where the CONFIG and AUTOEXEC files reside in the \OS2\SYSTEM directory.

To have multiple OS/2 configurations, the *Order, add and remove menu* is selected, and the OS/2 selection is highlighted. Press **Alt-A** (Add) and then Select **D** (Duplicate.)

This will force the global option *For OS/2 in DOS partition, skip fast boot* to **YES**, which turns off the dual boot emulation. Instead of dual boot, individual sets of the CONFIG and AUTOEXEC files are used from each selection's file save subdirectory.

Since dual boot is no longer active, and the proper files have not been setup yet, avoid OS/2 choices since they will not boot up properly. Once set up, the file structure on the C: drive will look something like:



### The Basic Steps

To setup two configurations, take the following steps:

1. Upon exiting the Order menu duplicate function, select the *File management menu*, which shows the OS/2 duplicate (if not, use **PgUp** and **PgDn** to switch to it). Jot down the subdirectory for CONFIG.SYS.
2. Use **PgUp** and **PgDn** to select the original OS/2 entry from which the duplicate was made from. Add two (2) entries for AUTOEXEC.BAT and CONFIG.SYS with a different subdirectory from step 1. Use the Default option to do this for you (press **Alt-D**). The action will be **COPY**, and the update type will be **AUTO**. Jot the subdirectory name down for later use.
3. Exit System Commander 2000 setup and select a Windows/DOS choice. Assuming the two (2) directories are \SC\OS2.A and \SC\OS2.B, perform the following copies, changing the filenames at the same time:

```
C:\> copy \os2\system\config.os2    \sc\os2.a\config.sys
```

```
C:\> copy \os2\system\autoexec.os2 \sc\os2.a\autoexec.bat
C:\> mkdir os2.b
C:\> copy \os2\system\config.os2 \sc\os2.b\config.sys
C:\> copy \os2\system\autoexec.os2 \sc\os2.b\autoexec.bat
```

4. Edit one or both sets of CONFIG and AUTOEXEC files in the subdirectories to make the two different configurations as desired. For example, the files in directory \SC\OS2.A are used to connect to a network, while the configuration files in \SC\OS2.B do not.

### ***Additional Configurations***

As you add a third or more configurations using the Duplicate function under the Order menu, most of this work will be done automatically by System Commander 2000. You simply need to exit to DOS or OS/2 and update the new set of configuration files that System Commander 2000 copies into the subdirectory you specified for the duplicate.

### ***Displaying OS/2 Configuration Help***

You can view this help information from the File management menu or from the Order menu by pressing **Alt-O** for OS/2 multiple configurations.

### **Limitations from OS**

- OS/2 installed in a FAT primary partition on the first drive.
- OS/2's long filenames can only be seen by OS/2.

## **OS/2 and Windows NT (Same Partition)**

If you already have Windows NT installed and functioning on your machine, and you would like to add OS/2 into the same (MultiFAT) partition, there are additional steps you must take prior to the OS/2 installation. OS/2 typically will not install into a partition that already has Windows NT installed.

Before the OS/2 installation, you must remove certain Windows NT files which OS/2 looks for during its installation process. These files are **boot.ini**, **ntdetect.com** and **ntldr**. These are hidden files residing in the root of your file system. The easiest method to remove these files is to boot from the system disk you made prior to the System Commander 2000 installation

(see Chapter 3). From the A:> prompt, use the attrib.exe program to change



the attributes of the NT system files on the hard drive to non-hidden, non-system, and non-read-only. An example of these command lines, if your NT partition was C:, would be:

```
attrib c:\boot.ini -r -h -s
```

```
attrib c:\ntdetect.com -r -h -s
```

```
attrib c:\ntldr -r -h -s
```

At this point, these files should be visible in the root of the NT partition and can be renamed with a **.tmp** extension. Since NT is in the same partition in which System Commander 2000 is installed (the MultiFAT partition), System Commander 2000 has a backup of these files and NT will still function properly.

It is also necessary to rename the "WINNT" directory to something else:

```
rename WINNT WINTEMP
```

You may now install OS/2 following the instructions provided with the operating system. Remember, in this scenario, you must use FAT file format when prompted. You may not choose HPFS since NT and System Commander 2000 are installed into this partition.



---

**Warning:** If NT exists prior to OS/2 Warp installation, OS/2's installation may offer to delete the NT partition. Do not do this! If you tell it to delete the NT data, OS/2 does not ask for confirmation, and will immediately begin erasing the partition data, including System Commander 2000 and other MultiFAT OSes.

---

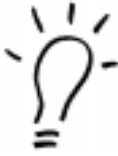
## LINUX Installations



System Commander 2000 is fully compatible with Linux. To boot properly into Linux, we recommend having LILO's target location set to the root superblock. This option is typically selected from within Linux while installing Linux. For the fastest and easiest boot, we suggest only making LILO boot Linux and no other OS.

To install LILO into the root superblock on an existing partition, modify the LILO configuration file (typically **/etc/lilo.conf**) so that the **boot=** line refers to your Linux root partition, and not your first hard disk (i.e. **boot=/dev/hda5** instead of **boot=/dev/hda**).

After editing the LILO.Conf. file, you must run the LILO program (typically / SBIN/LILO).



---

**Technical Information:** If you are having problems with installing LILO into the root superblock, we recommend an alternate approach that has System Commander 2000 launch the Linux MBR. In this case, install LILO into the MBR. SC 2000 will automatically detect this and handle it. To have SC 2000 manually load an MBR is explained in detail in Appendix C.

---

If you use a Linux swap partition (partition id 82), it may appear on the main menu as a potential OS to boot. It is not bootable. To remove the UNIX-82 selection from the OS selection menu, press **Alt-S** (Setup), and select the *Order, add, and remove menu*. Highlight the swap partition and press **Alt-R** (Remove). This removes the selection from the menu (but has no effect to the swap partition).

## UNIX Configurations

Although System Commander 2000 can boot from any partition on any drive, most UNIX variants require installation on drive 0. If your UNIX allows installation on other drives, System Commander 2000 can boot it. Linux, Solaris and Free BSD all allow booting from any disk.

Some UNIX installations may overwrite System Commander 2000's master boot record. For example, running SCO UNIX's FDISK will cause this minor problem. When the master boot record is changed, a reboot will not bring up System Commander 2000, but will run SCO instead. To correct this, boot from the System Commander 2000 utility disk. This runs the CHECKMBR.EXE program automatically. Now when you reboot, System Commander 2000 will appear. No loss of information occurs from this quirk in SCO.

System Commander 2000 also supports selection from multiple UNIX operating systems installed on one system. When a specific UNIX is selected, the other UNIX partitions on the same drive are automatically hidden to avoid conflicts. To override this feature, use the *Setup* menu, selecting *Local special options menu*.

System Commander 2000 also makes any FAT partitions accessible to UNIX. Again, this feature can be overridden using the *Local special options menu*.

The following subsections cover issues related to specific UNIX implementations.



## Solaris

Solaris can be installed on any drive. The Solaris installation instructions indicate that you must use a special Solaris boot diskette if you elect to install on any drive other than the first.



---

**Warning:** Avoid using the Solaris “Automatic” installation, as it usually erases all existing partitions on the drive!

---

System Commander 2000 will boot Solaris from any IDE disk without using the Solaris boot diskette. Just install Solaris as if a boot diskette was going to be used. When the installation is complete, you can boot directly to Solaris from System Commander 2000. On some SCSI controllers, it may not be possible for System Commander 2000 to properly launch Solaris from any drive other than the first drive.

## Old Solaris and Drives greater than 1 GB

Solaris 2.4 and older do not allow drive translation (or often referred to as an option for drives greater than 1 GB). This means older Solaris versions must be installed on the disk below cylinder 1024 (1 GB). Solaris v7 and v8 do not have this limitation.

## Solaris and Linux on the same System

The Linux swap partition and Solaris both use the same partition id, 82. When using a Linux swap partition and Solaris partitions in the same system, it is necessary to prevent Solaris from accessing the Linux swap partition and Linux from accessing the Solaris partition.

System Commander 2000 normally handles this automatically. To perform these actions yourself, at the OS Selection Menu press **Alt-S** (Setup) then select *Local special options*, and set the *primary partitions visible* option for each OS selection. With Solaris selected, make the Linux swap partition hidden. With Linux selected (id 81 or 83), make Solaris partition hidden.

### SCO OpenServer and SCO UnixWare

Most operating systems expect to see a single partition bootable, with all other primary partitions marked as non-bootable. SCO OpenServer and UnixWare requires all of its partitions be marked as bootable, even if the partition is not truly bootable. Bootable status is often referred to as the "active partition" by partitioning software like FDISK.

When System Commander 2000 is first installed, it will automatically set an option for UNIX partitions to make all identical partitions active. If you install SCO OpenServer or UnixWare *after* System Commander 2000 was installed, you may need to set this option manually.

To change the handling of the bootable/active status across partitions, first highlight the UNIX choice on the OS selection menu and press **Alt-S** (Setup). Select *Local special options menu*. Set the option *Bootable/active status across partitions* to OVERRIDE ON. All other operating systems, including other UNIX variants, should use the default setting of AUTO.

SCO UNIX System V, v5.03 and older, must be installed within the first 500 MB of the first physical hard drive.

Although rare, if you get a boot error message from UNIX, see the troubleshooting section for UNIX.

### FreeBSD

FreeBSD normally installs its own boot loader program into the MBR. When installing FreeBSD, use its boot loader to verify that the FreeBSD installation is working properly, then boot from a DOS or Windows floppy disk, run the program C:\CHECKMBR.EXE. Then reboot into the System Commander 2000 menu. System Commander 2000 will automatically detect the FreeBSD installation, and add it to the OS Selection menu.

### Coherent UNIX (Mark Williams Company)

Coherent is one of the few OSes that can be installed and booted from any primary partition on any drive. System Commander 2000 fully supports booting Coherent from any drive. When installing Coherent after System Commander 2000 is installed, Coherent will ask if you want to install Coherent's master boot record. Select NO so System Commander 2000 will remain active.

The Coherent documentation and partition handler software during installation refer, incorrectly, to primary partitions as logical partitions. Coherent only works on primary partitions.

A few users have reported a problem when attempting to go into Coherent UNIX after DOS was active. It does not matter if a warm reboot (Ctrl-Alt-Del) or a hardware reset was issued while in DOS. Coherent either hangs or reboots. The second attempt at selecting Coherent will always work. Powering the system down also allows immediate access to Coherent if the prior selection was DOS.

We have verified this problem with Coherent version 4.02.05, and it is a bug in Coherent initialization. It can be easily duplicated using the Coherent master boot record without System Commander 2000 installed. Using version 4.02.10 or a later release of Coherent fixes the problem. Unfortunately, it is our understanding that Mark Williams Company is no longer in business, so obtaining the last release may be difficult.

## NetWare Installations

Novell's NetWare versions 3, 4 and 5 use DOS to start, and then takes over the system using its own partition. System Commander 2000 can create separate boot choices for each NetWare you install. In essence, a duplicate DOS choice is made so NetWare starts with its unique CONFIG and AUTOEXEC files and a separate set of files for DOS. To split a single DOS/NetWare selection into two separate selections, press **Alt-S** (Setup) and select the *Order, add and removal menu*. Highlight the current DOS choice, and press **Alt-A** (Add), followed by **D** (Duplicate). You can now enter the name and new subdirectory for the duplicate menu selection. When complete, exit to the new "Duplicate" DOS choice. Update the AUTOEXEC.BAT file to go directly to NetWare.

NetWare version 2.x does not boot through the DOS partition, but has its own bootable partition. System Commander 2000 will boot directly into a NetWare version 2.x partition.

## Installing NetWare after System Commander 2000

To install NetWare version 3.x, 4.x or version 5.x after System Commander 2000 is installed, you must follow these steps:

1. Your hard disk must be partitioned such that the space you want to allocate to NetWare is unpartitioned. The NetWare installation procedure

will create the NetWare partition in this space.

2. From the System Commander 2000 OS Selection menu, press **Alt-S** (Setup) and duplicate the current DOS choice from the *Order, Add and Remove menu* (see the start of the NetWare Installations for complete duplicate instructions). This new duplicate will become the NetWare choice, so enter an appropriate description. Exit to the selection menu, and select the NetWare choice. DOS will come up at this point.
3. Install NetWare. NetWare will grab the undefined area of the disk and make it a NetWare partition for its use.

### Multiple NetWare OSes on one system

System Commander 2000 lets you manage multiple versions of NetWare on the same system. Because the NetWare installation makes many automatic assumptions, the following is a 'real world' example of how to have Multiple versions of NetWare on one system. To our knowledge it is otherwise impossible to do this without System Commander.

This example case uses a 800 MB drive. Upon completion, DOS will have a 100 MB partition, NetWare v3 will get a 300 MB partition, and NetWare v4 will get a 400 MB partition. These sizes are completely arbitrary, and you should select sizes appropriate for your needs. The steps to accomplish this are:

1. Using DOS FDISK, partition the disk for one DOS 100 MB partition, and one Extended partition of 400 MB. Leave the last 300 MB undefined, as NetWare v3 will use this. Install DOS, without using the extended partition (don't bother to format it, since it will be deleted later). Then install System Commander 2000.
2. Reboot once to save the DOS files. This first selection will always be used for DOS. Select the DOS choice and verify that it boots up properly.
3. Reboot again to the System Commander 2000 OS selection menu. Press **Alt-S** (Setup) and duplicate the current DOS choice from the *Order, Add and Remove menu* (see the start of the NetWare Installations for complete duplicate instructions). This new duplicate will become the NetWare v3 choice, so enter an appropriate description. Exit to the selection menu, and select the NetWare v3 choice. DOS will come up at this point.
4. Install NetWare v3. NetWare will grab the 300 MB undefined area of the disk and make it a NetWare partition for its use.

5. Using FDISK again, delete the extended DOS partition (400 MB). Reboot and press **Alt-S** to go into Setup for the NetWare v3 choice. Select *Local special options menu*. On the line *Primary partition visible on drive 0*, verify that one partition named (NET WARE) is set to YES. Also jot the partition number down for later use, as you will need to remember this is the v3 NetWare partition.
6. Return to the OS selection menu and highlight (but don't select) the DOS choice. Press **Alt-S** (Setup) and duplicate the current DOS choice from the *Order, Add and Remove menu* (see the start of the NetWare Installations for complete duplicate instructions). This new duplicate will become the NetWare v4 choice, so enter an appropriate description.

Next, return to the Setup menu, and select *Local special options menu*. On the line *Primary partition visible on drive 0*, change the one partition named NET WARE to "hidden". This will prevent the NetWare v4 installation from seeing the NetWare v3 partition.

Exit to the selection menu, and select NetWare v4. DOS will again come up at this point.

7. Install NetWare v4. NetWare will grab the 400 MB undefined area of the disk and make it a NetWare partition for its use.
8. Reboot to the selection menu, and highlight the NetWare v3 choice. Press **Alt-S** (Setup) and select the *Local special options menu*. On the line *Primary partitions visible on drive 0*, set the v4 NetWare partition to "hidden". This is not the same NetWare partition you had in step 5 earlier.
9. At this point you are done! If you did not elect to have NetWare change your AUTOEXEC/CONFIG set of files you may wish to do so now.

### Limitations from OS

- NetWare versions 3 and later must be installed in a primary partition on any accessible drive.
- Older versions of NetWare will automatically take all free (unallocated) disk space on the selected drive. Some of the latest versions now allow you to specify how much space to use.

# Limitations

## Boot Drive

Most PC based operating systems are written in a manner that assumes they will be installed and booted from drive C: (also referred as hard drive 0). This limitation can not be overcome by System Commander 2000. However, if the operating system allows it, System Commander 2000 can boot it from another drive. OS/2 versions 2.x, Warp and Linux allow installation and booting from any drive and even allow booting from a logical drive in an extended partition. Solaris, FreeBSD, and Coherent also allow booting from any drive's primary partition.

Be aware that NT solves this problem by actually booting through files in the MultiFAT partition on drive 0. Therefore, System Commander 2000 simply treats NT like another OS in the MultiFAT partition.

## System Commander 2000 File Location

System Commander 2000 must be installed in a primary FAT or FAT32 partition on drive C: (also referred to as hard drive 0). The partition does not need to be the first partition on the disk. System Commander 2000 will install SYSCMDR.SYS, SCDOS.SYS, CHECKMBR.EXE and a few other files into the root directory as hidden system files. These files control the operation of System Commander 2000, and must remain in the root directory. The active status of partitions as set by FDISK or the use of DEFRAG programs do not affect System Commander 2000's operation.

## Disk Compression

All System Commander 2000 files must be installed on the non-compressed boot drive. Remember that System Commander 2000 runs before any Windows/DOS or decompression software runs. This includes hidden disk compression methods used by DriveSpace, DoubleSpace, Stacker and DoubleDisk. If you are using multiple operating systems in the FAT partition, you would be wise to avoid disk compression altogether. Although not an issue with System Commander 2000 itself, different versions of DOS, Windows 95/98, NT, and OS/2 may be incompatible with disk compression software. Be aware, you are on your own if you attempt to use disk compression software! See page 9 for additional notes.



### Anti-Virus Software

System Commander 2000 must modify the Master Boot Record. In addition, it will swap out the MultiFAT boot record when different OSES are selected that are installed in the same partition. Some Anti-Virus software will complain about both of these changes with a possible note about a possible boot sector virus or operating system change.

This is normal if you just installed System Commander 2000 or just changed operating systems. Instruct the virus-detection software that the operating system has changed, and it will save the new information without altering the boot sector.

If you have not changed the selected operating system and the virus-detect software all of a sudden pops up with a warning about the boot sector, you should be concerned that a virus may have attached itself to the boot sector.

One way to correct this is to simply reboot the system. System Commander 2000 will detect the change and ask if a new operating system was installed. If no OS was just installed, select **B** for Bypass. This forces System Commander 2000 to overwrite the boot sector AND hidden system files with new noninfected copies.

This should remove the virus from the system files, but other executables may be affected. Run your virus checking software to clean up other files that may be infected.

### Special Partitioning Software (Disk Spanning)

In very rare situations, special software can make multiple disk drives appear as one very large drive. This is called disk spanning. The ability to span disks is not supported with the operating system's utilities, but requires special software and drivers.

If your system is set up with disk spanning, where multiple drives appear as one drive, do not use System Commander 2000.

Some large drives can divide themselves into two smaller drives. This hardware approach is not related to disk spanning and works fine with System Commander 2000.

### Speeding Up the Boot Process

There are a number of ways to dramatically speed up the booting process. The following tips can help speed the time it takes from when you press **Ctrl-Alt-Del** to when the System Commander 2000 OS selection menu appears.

#### System Selection

Surprisingly all systems are not alike! Unfortunately, if you have a slow booting system, it can be costly to get rid of it. Some of the slowest systems rely on the EISA or early Plug n' Play designs. These systems slowly check through each card in the system, every time you boot. Although the features these systems offer is nice, the excessive boot up delays are not.

#### BIOS Options

Some system BIOSes have options to speed up the booting process. Since there is no standard between vendors you will have to examine your specific setup program and menus to see if any provided options are similar to those described below. Setup is typically activated immediately after a reboot. Often a short description is presented, such as "Press Del for Setup". Older machines sometimes use special key combinations, such as **Ctrl-Alt-Esc**, **Ctrl-Alt-Ins**, or **Ctrl-Alt-S**. Some laptops access setup by holding down the Escape key during bootup.

Some PC vendors do not allow any setup options which will help performance. At the other end of the spectrum, vendors like AMI often provide extensive options. Some OEMs who license BIOSes may remove some or all performance options in an attempt to reduce confusion to nontechnical users or help reduce potential customer support.

#### Memory Test

Some BIOSes provide an option to skip the detailed test of all the memory in the system. This test can easily take 10 to 30 seconds depending on the system speed and amount of memory to be tested. Disabling this option will eliminate most of this delay. On most AMI BIOSes, this option appears under Advanced CMOS setup as *Above 1 MB Memory Test*.

### Floppy Drive Seek

This option bypasses a seek operation during boot up. It is rarely necessary, since the first diskette drive access will perform the seek anyway. When disabled, it shaves 1 to 5 seconds off the boot process. On most AMI BIOSes, this option appears under Advanced CMOS setup as *Floppy Drive Seek At Boot*.

### System Boot Up Sequence

Normally the BIOS attempts to boot from the A: drive. Upon failure, it then boots from the hard disk. This wastes another few seconds in the boot up process. By selecting a boot sequence first using C:, and only using A: if C: fails, another 2 to 8 seconds are eliminated out of the boot up process. On most AMI BIOSes, this option appears under Advanced CMOS setup as *System Boot Up Sequence*.

To still allow booting from a diskette, we suggest adding the "Boot from A:" option as one of the OS selections if it does not already appear. To do this, press **Alt-S** (Setup), and select *Order, add and removal menu*. Press **Alt-A** (Add) and press **(F)** for Floppy.

### Hard Disk Selection

Although difficult to change at this point, the hard disk and controller often have the biggest effect on the time required to boot.

### Hard Disk Controllers

Older SCSI controllers often waste 20 to 60 seconds during the boot up process for initialization and checking for nonexistent SCSI devices. IDE and ESDI controllers require no significant initialization time.

### Disk Drives

A less significant factor is the performance of the disk drive. The faster the access time, the faster the boot process can proceed. System Commander 2000 will also appear faster if the SYSCMND.R.SYS and SCDOS.SYS files appear near the start of the disk and are not fragmented. Use a disk defragmentation program to minimize the load times for System Commander 2000 and operating system files.

### Speeding Up DOS boots

In addition to using the tips from the prior section, the following suggestions can help speed up the DOS boot process.

In general, each item in your CONFIG.SYS and AUTOEXEC.BAT file, such as device drivers and TSRs slow the boot process. You might want to review these files to see if any unnecessary programs can be removed.

You can also add the line inside the CONFIG.SYS file for MS or PC-DOS version 6 or later:

```
SWITCHES=/F
```

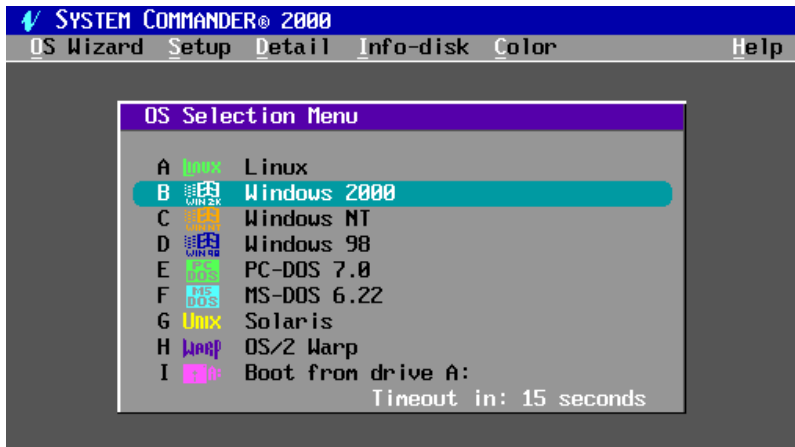
This eliminates a 2 second wait for detection of several bypass keys, such as F5, or F8.

# Chapter 8

## System Commander 2000 Options

### Menu Options

When the System Commander 2000 option screen appears after a re-boot, it shows all of the operating system choices. The menu might appear as:



You can make a selection by using the up/down arrow keys and then pressing Enter. Press an indicated letter to instantly make a selection or move your mouse up and down and then left click once. To select a System Commander 2000 option from menu bar, hold the Alt key down and press the desired

underlined letter. For example, press **Alt-S** for Setup.

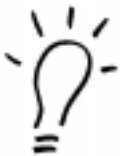
Functions available include:

**Setup** Use this menu for setting timeout options, adding and removing OS selections, passwords, descriptions, icons and many other features. See Setup, later in this chapter for complete details (for Setup, press **Alt-S** or **F2**).

**Detail** Toggle additional details about each operating system (press **Alt-D** or **F3**).

This option toggles between showing the product information that System Commander 2000 identifies, showing the OEM name from the OS vendor, and showing no extra information.

When extra information is shown, the drive and partition numbers are also shown. An “e” appears after the partition number if the partition is an extended partition handling one or more logical partitions. An “m” appears after the partition number if the selection is an MBR file load. Other letters may appear after the number; consult the online help (press **Alt-H** or **F1**) for more information.



---

**Tip:** With some operating systems, the OEM name is cryptic or misleading. Do not rely on it. See Inaccurate OEM names in Chapter 10 for more information.

---

**Info-Disk** Shows primary and logical partition information for the drives on your system (press **Alt-I** or **F4**). While viewing disk information, use the up and down arrow keys to move the highlighted selection bar and see detailed information about each partition and see the drive letter assignments for the selection. Subfunctions of the Info-Disk screen include:

**Help** for help about this screen (press **Alt-H**).

**Empties** to see empty partitions (press **Alt-E**)

**Detail** to toggle the type of information (press **Alt-D**)

**Password** Toggle the global password option on or off (press **Alt-P** or **F6**).

## System Commander 2000 User Manual

This option will only appear when a global password is set, and the option, *Allow global password toggle on/off?*, is set to YES.

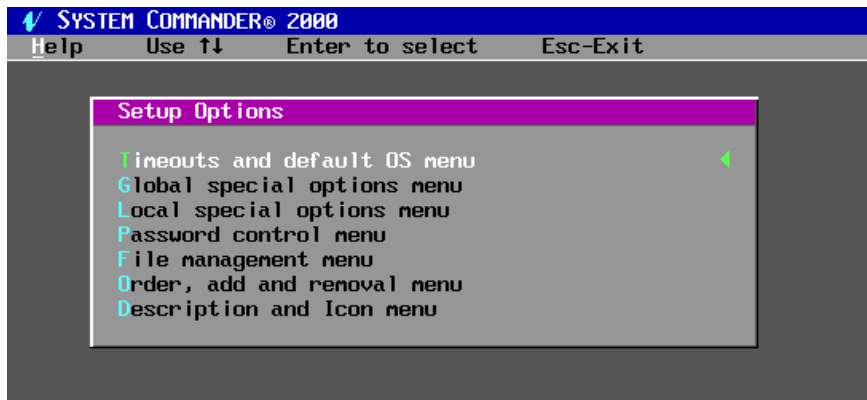
This option is handy when you would like the global password active in some situations and inactive in other situations. For example, a laptop used in the office might not need passwords, yet when traveling, the laptop could have passwords active.

<b>Help</b>	Display help about System Commander 2000 or turn off Tips. (press <b>Alt-H</b> or <b>F1</b> ).
<b>Back</b>	This minor option does not appear on the menu. It allows you to view the background screen prior to System Commander 2000 appearing (press <b>Alt-B</b> ).
<b>OS-Wizard</b>	Automatically prepares your system for a new operating system installation. Manual options are available to create and resize partitions (press <b>Alt-O</b> ).
<b>Color</b>	This option lets you change the OS selection color style (press <b>Alt-C</b> ). Color options are only available when 3D graphics style is selected under Setup, Global special options, Graphics style options .

## Setup Menu

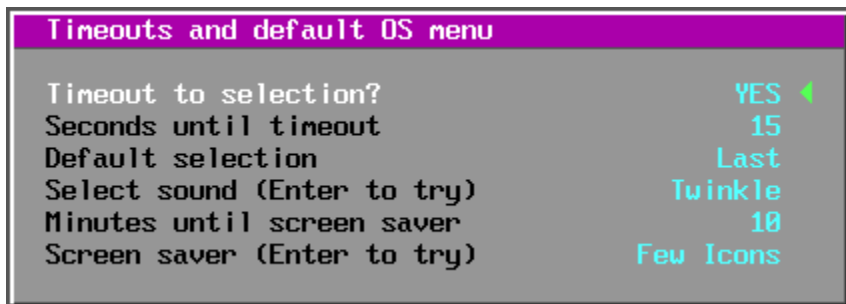
The setup menu is accessed from the OS selection menu by pressing **Alt-S** or **F2**. Use Setup to select from a number of System Commander 2000 options and features. The setup menu appears below.

Use the Up and Down arrow keys to move between options, and Enter to select the desired menu option. Press Escape to return to the OS selection menu.



## Timeout and Default OS Menu

This menu provides options to set the timeout delay, default OS, and screen saver options. The Timeout and Default OS menu appears as



**Timeout to selection (Bar-Yes/Yes/No)** - When the System Commander 2000 selection screen appears, a timeout can be set for the length of time System Commander 2000 will stay on screen before it automatically makes the default selection. Select YES if you want this option, otherwise use NO to have System Commander 2000 wait for a manual selection.



Use BAR-YES to have the last 20 seconds of timeout run up a graphical bar on the side of the screen.

**Seconds until timeout (1-99)** - If the Timeout to selection option is set to YES, you can set the number of seconds to wait before using the default selection from 1 second to 99 seconds.

**Default selection (A-Z, Last)** - After a reboot, System Commander 2000 will highlight the default menu selection. You can choose any of the first 26 possible operating systems A to Z as the default, or have System Commander 2000 remember the last OS you selected.

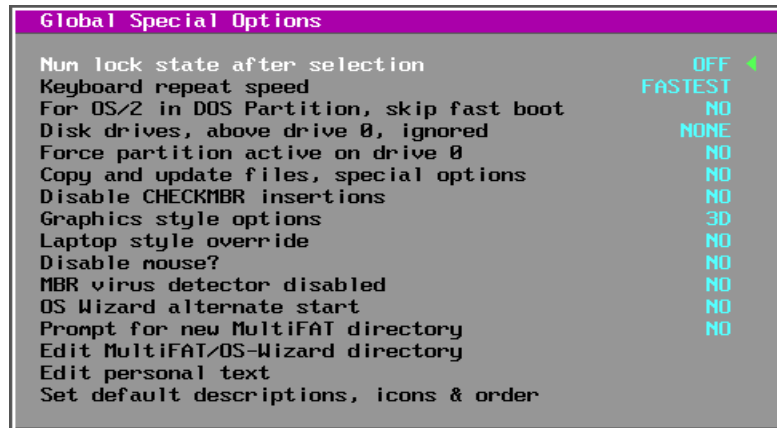
**Select sound** - This lets you choose from any of 15 different alert sounds, which will occur at boot time. You can choose no sound with the QUIET option, or have System Commander 2000 select a different sound every time with the RANDOM option. Pressing **ENTER** while in the sound selection field lets you hear the current sound choice.

**Minutes until screen saver (1-99)** - If the Screen Saver option is not off, this option specifies the number of minutes to wait before activating the screen saver selection.

**Screen Saver** - This option allows you to choose from different screen savers included with System Commander 2000. Pressing **ENTER** while this option is selected will preview the screen saver. Use the *Off* setting to disable the screen saver.

## Global Special Options Menu

This menu provides global options not specific to the selected OS. The global options menu appears as:



**Num lock state after selection** - Specify the num lock state as UNALTERED, ON or OFF.

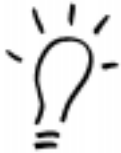
**Keyboard repeat speed** - Specify how fast the keyboard repeats a held key as UNALTERED, FAST or FASTEST.

**For OS/2 in DOS Partition, skip fast boot** - Normally this option is left at NO to have System Commander 2000 emulate OS/2's dual boot operation when OS/2 is installed in a DOS partition. This is the fastest way to switch between a DOS and OS/2.

With the option set to YES, System Commander 2000 will not swap CONFIG and AUTOEXEC files with those in the \OS2 directory. You will then need to specify these files in the file management menu to be copied to the root directory.

**Disk drives, above drive 0, ignored** - Specify drives to be completely ignored. This is useful for drives that do not function properly without special device drivers. For example, some older hardcards are read-only until a device driver is loaded.

**Force partition active on drive 0** - Depending on the OS choice and the OS drive location, it may be normal to have no partitions marked active on the first drive. In very rare cases, the system BIOS detects this as a fault and prevents normal bootup. This option can be set to YES to ensure at least one (1) partition is active on the first drive. If you do not get any BIOS error messages, leave this option set to NO.



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**Tip:** If you are using Disk Manager from OnTrack Systems, this option should be set to YES when booting any operating system (such as some UNIXes or OS/2) which boot from a drive other than the first drive in the system. If this option is not set to YES, Disk Manager will not allow you to reboot from your hard disk because no partitions will be marked active on drive zero.

---

**Copy and update files, special options** - This selection has four options often used to identify file copy problems. These options include:

- NO** – This is the default, and instructs System Commander 2000 to automatically update any changed configuration files.
- ALWAYS COPY** – When a new OS selection is made, any configuration and hidden files for the selection are copied, even if the date, time and size are the same.
- PROMPT ALL** – When switching to a different OS selection, configuration files which are updated will force a prompt to confirm the update, even if the File management menu update option is set to AUTO (i.e., no prompt would normally appear). The prompt that appears displays the source and target files with file date and time. This option is useful if you are confused as to when and where file updates occur.

When the prompt appears, additional information is shown at the bottom of the screen for the type of copy (normal or update). An update copy indicates the file was changed, and needs to be saved back to the unique directory for the OS, before the new OS selection files are loaded. A normal copy would never be prompted with this global option set to NO. For normal copies, the file date and time do not matter, as the files must be copied for the OS to work.

**PROMPT & COPY** – Activates both the ALWAYS COPY and PROMPT ALL options.

**Disable CHECKMBR insertions** - The CHECKMBR program is normally inserted into the AUTOEXEC.BAT file. CHECKMBR verifies that System Commander 2000's MBR has not been destroyed by a new OS installation and corrects this condition, if necessary. CHECKMBR is not a TSR. Setting this option to YES disables this feature.

**Graphics style options** - Select from various visual styles from ordinary text to several graphics styles (2D and 3D). Graphics styles also have an option to allow for European characters (EURO).

**Laptop style override** - Most laptops have a single fixed resolution. Laptop styles overrides can often make System Commander 2000's graphics look better. For 640 x 480 screens, we recommend using the option 8x16. For higher resolution screens, you might try the 9x19 selection. For non-laptops, the "NO" option is the best.

**Disable mouse?** - By default, System Commander 2000 supports most mouse devices. This includes serial mice, bus mice and those that use a PS/2 port (motherboard). If you do not use a mouse, you can save about 500 milliseconds (1/2 second) during the boot process by turning off the mouse detector. USB mice are not supported.

**MBR virus detector disabled** - Set to YES to disable the built in Master boot record virus checks. The default NO provides virus detection and repair.

**OS Wizard alternate start** - Normal operation occurs when this option is set to NO. In rare cases, if the OS Wizard stops with the message "OS Wizard is analyzing your system....," try setting this option to YES to use as an alternate startup method.

**Prompt for new MultiFAT directory** - Set to YES if you want to be prompted for a unique directory for each new OS installed in the MultiFAT partition. If this is set to NO, System Commander 2000 automatically creates a unique directory under the C:\SC directory on the hard disk or directory as specified in the next option.

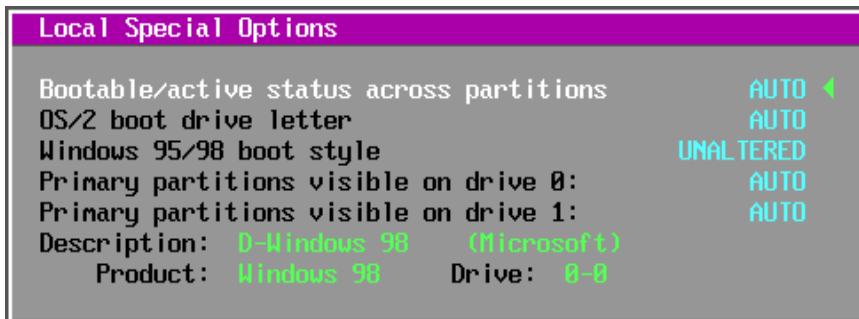
**Edit MultiFAT/OS-Wizard directory** - Specify the directory where key System Commander 2000 files reside for OS Wizard. In addition, when saving files for a new OS, this is the parent directory where the files are stored. C:\SC\ is the installation default. The directory must reside on the C:\ drive.

**Edit personal text** - Press Enter to edit the personal text string that appears when the About option is selected from the OS selection menu. You may wish to include your phone number and/or driver's license as identification. This can help in the recovery of your computer if it is lost or stolen. This information is even accessible when the global password is required at bootup.

**Set default descriptions, icons & order** - Pressing Enter on this option will allow you to reset all the descriptions and icons to the System Commander 2000 defaults. This option is **NOT** reversible once invoked. It will ask for confirmation before setting the defaults. After the defaults are loaded, you can edit the descriptions and icons as desired.

## Local Special Options Menu

This secondary menu provides options specific to the currently selected OS. The local special option menu will appear similar to:



**Bootable/active status across partitions** - This option makes all similar partitions appear bootable when a selection is made. The only operating systems we've found that require this unusual state are SCO UNIX System V and UnixWare. See page 63 for more information about these OSes.

**OS/2 boot drive letter** - The boot drive letter is normally selected by System Commander 2000 when set to AUTO. It is based on the placement of the bootable OS/2 partition relative to other partitions. In very rare situations, it

may be necessary to override System Commander 2000's default, and force a different drive letter, C to P. This would be used if OS/2 fails to boot with an error message about not finding COUNTRY.SYS or AUTOEXEC.BAT.

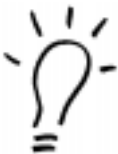
**Windows 95/98 boot style** - Windows can boot either to a normal graphics interface, or as an option, to a DOS like prompt. With this option you can choose to use the default as set by the MSDOS.SYS file with the selection UNALTERED. Two overrides, GRAPHICS and PROMPT let you specify how Windows will boot up. This option is only available for Windows 95/98 boot selections.

You can easily have two (2) menu choices for the same Windows, one that goes to graphics and one that goes to a prompt. If this is not already set, go to Setup, Order, Add or Remove menu and press **Alt-A** (Add). Select **(D)** (Duplicate) and then select Same directory. This will make a new OS selection, but uses all of the same files as the source duplicate. The result is a savings in disk space. Any future changes to configuration files are reflected in both selections, since they share the same files.

**Primary partitions visible on drive *n*** - For each drive on the system, a submenu overrides System Commander 2000's defaults and can either hide or expose different primary partitions from the selected OS. The default AUTO mode will select the correct partitions to be active in all but the most unusual cases. Use help for additional information and an example (**Alt-H**).

## Password Security Menu

The password security menu allows you to set a wide variety of security features to limit access and protect your system. The use of security features is completely optional.



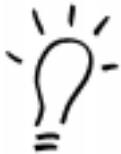
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**Tip:** Although System Commander 2000 provides a high level of security, someone with sufficient technical knowledge, access, time and equipment can break through any computer security system. The best possible system security prevents physical access to your system in the first place!

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### Security Basics

When access is required through the password security system, the user enters the appropriate user name and password. The passwords are case sensitive, but the user names are not. This means the password ABC123 is not the same password as AbC123.



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**Tip:** A special user in every system is Administrator. The administrator always has access to all features and OS selections. The administrator can also set up other users and rights for each user. The initial password for the administrator is *password*. We strongly recommend you change this to your own private password and record the new password in case you later forget it. Should you lose or forget your password, V Communications can provide an emergency master password unique to your copy of System Commander 2000. **This service is not free, so DO NOT LOSE your password!** See Appendix F for more details on getting a master password.

---

### Password Prompting

The default operation asks for a user name and related password before the OS selection menu appears. A valid user name and password must be entered to proceed. Once validated, the user is granted all privileges that were defined by the administrator.

To allow anyone limited access to your system, where no password is required, the AutoLogin feature is used. A special user name called **AutoLogin** is created. If desired, the AutoLogin user profile can assign specific OS choices and prevent setup access. When the system boots up, no password is requested, but the user is limited to the choices you granted.

This feature is useful for test systems where controlled access to some features is desired. It can also be used where a system reboot (such as caused by a power failure) will allow the system to boot to the desired choice automatically without requiring a password.

When using the AutoLogin feature, you might want to set a fixed timeout and/or a default OS choice that is not changeable by any user. These are made under the Setup menu, under *Timeouts and Default OS* menu. The timeout value and default OS value is saved for each user.

To make changes to these values, you must

1. Login as an administrator.

2. Go to the AutoLogin user profile.
3. Set the option *Setup Menu Allowed* to YES.
4. Exit and make an OS selection.
5. Reboot the machine.
6. Enter the *Setup* Menu.
7. Set the desired settings under *Timeouts and default OS* Menu.

To prevent the user from making changes or accessing setup, exit to the main OS selection menu and press **Alt-P** to specify a new user. Log in as the administrator. Go to the AutoLogin user profile and set the option *Setup menu allowed* to NO.

### Access Protection

The Access Protection feature prevents any kind of access to your system. When activated, it prevents both diskette drives from operating, and locks out all hard disks from use (other than System Commander 2000). The password must be correctly entered to turn off access protection during any login.

To activate access protection, have a password set within the password security menu. From any OS, reboot to System Commander 2000. When you are prompted for the login, select Shutdown (**Alt-S**). Access protection will be set and you will be prompted to turn off the system.

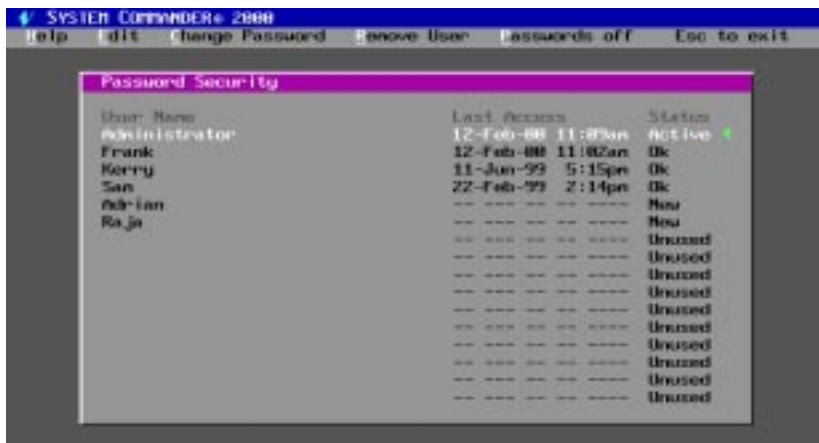
If access protection is not active, it is automatically activated after four (4) failed attempts to login.

### System Administration

When selecting the password security menu, the following selections appear when you are the administrator, or if passwords are disabled. This screen shows you all the current users and the last time the user accessed the system.



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The status column shows one of the following states:

Active	The user currently logged in
OK	The user is a valid user
New	A user who has never logged in
Expired	The user is no longer allowed access
Unused	An available slot for a new user

From this menu, you can issue the following commands:

Help	Get additional help ( <b>Alt-H</b> )
Edit	Edit the user profile information on the highlighted line ( <b>Alt-E</b> or <b>Enter</b> )
Change Password	Specify a new password for the highlighted user ( <b>Alt-C</b> )
Remove User	The user information is deleted ( <b>Alt-R</b> )
Password On/Off	Activate or deactivate the password security system ( <b>Alt-P</b> )

When editing the user profile, a new screen appears:

User Profile	
User login name	Frank
Last access	12-Feb-00 11:02am
User expires	-- -- --
Password does not expire	-- -- --
Password change allowed	YES
Setup menu allowed	YES
System administrator privileges	YES
Allowed to turn security on/off	YES
Force password change at next login	NO
Minimum password length	5
O/S access menu	

From this screen the following options are available:

**User login name** - Enter the user name. Each user has a unique password. This allows different layers of control for different users of this computer.

Names can be up to 32 characters long and can include spaces and most symbols. User names are not case sensitive.

Two special user names are available. The user name Administrator is reserved for administrative functions and cannot be changed. The user name AutoLogin is reserved for the AutoLogin feature.

**Last Access** - This is an information only line. It shows the date and time the system was last accessed by this user.

**User expires** - Set the optional date and time when this specific user can no longer access the system. If this field is left blank, no user expiration date is set. For year 2000 enter a two digit year 00.

**Password expires** - Set the optional number of days that the user can use a single password. After the number of days go by with the same password, upon the next access of this user, the user is prompted to change the password.

**Password change allowed** - When set to YES the user is allowed to change the related password. When set to NO, the user is prevented from changing the password.

**Password change allowed** - When set to YES, the user is allowed to change the related password. When set to NO, the user is prevented from changing the password.

**Setup menu allowed** - When set to YES, the user is allowed to enter the setup menu.

**System administrator privileges** - The user can access these screens to add, remove and change user security information. When this option is set to NO, the user cannot access the password security menus, but may be allowed to change the one password associated with the user.

**Allowed to turn security on/off?** - This option, when set to YES and a password is used, allows you to instantly toggle the password on and off from the main OS selection menu. This is handy for a single laptop user, who may not want to bother with a password while at work or at home, but needs password protection when out on the road.

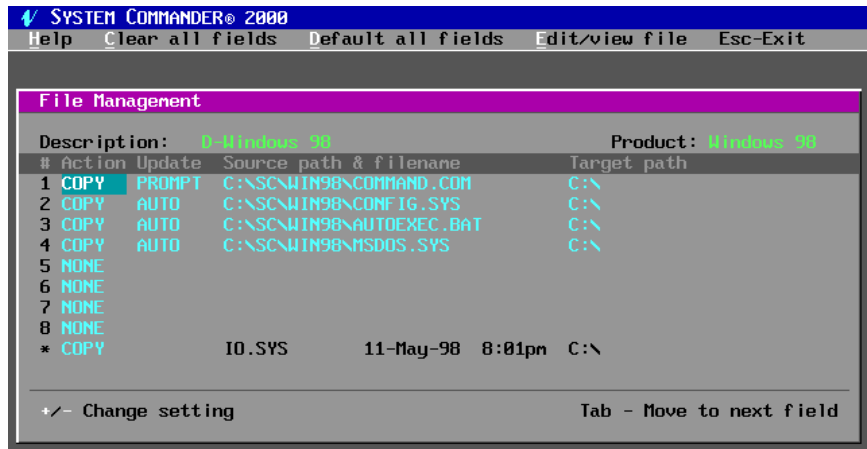
**Force password change at next login** - Once this user logs in, the user will be prompted to enter a new password.

**Minimum Password Length** - This is the minimum number of characters required in a new password for this user.

**Operating System access menu** - select which operating systems are accessible by the user. Any user that has System Administrator privileges will always have access to all OSes. When a user logs on that does not have access to a specific OS selection, the selection is shown in black.

## File Management Menu

This secondary menu provides options specific to the currently selected MultiFAT. If the current selection is not a MultiFAT choice (i.e., not an OS in the DOS partition), the next MultiFAT entry is selected. The file management menu will appear similar to:



When a new OS is installed, System Commander 2000 will automatically manage files, such as CONFIG.SYS, AUTOEXEC.BAT, COMMAND.COM as well as hidden files. These files are shown on the file management menu.

You can add, remove or change entries. For example, under Windows 95/98, some users do not have an AUTOEXEC.BAT file, and may wish to delete CONFIG.SYS, since it is only used to process AUTOEXEC.BAT. In this case, AUTOEXEC.BAT and CONFIG.SYS could be set to none.

To move to different entries, use the following keys:

- TAB** - Move to the next field
- Shift-Tab** - Move to the prior field
- Up or Down** - Move up or down

To select a different MultiFAT entry, use **PgUp or PgDn**.

For the first eight entries, you can specify the following actions (while in the action or update columns, use **+** or **-** to change).

- |        |   |
|--------|---|
| NONE   | Take no action for this entry   |
| DELETE | Delete the target file  |
| RENAME | Change the file name in the directory specified. When the OS is selected, the file is renamed from the source filename to the target filename (the paths must be the same). When a different OS selection is made, the target filename is renamed to the source filename. |

## System Commander 2000 User Manual

RESTOR	Restore the filename or directory to the specified name. This is similar to RENAME, but it only renames from the source to the target. It will proceed without an error if the specified file or directory does not exist or cannot be renamed.
COPY	Copy the specified file from one directory to another. Wildcards (the * character) are allowed in the source filename to copy up to 128 files in one entry. If the target subdirectory does not exist, it is created.

When COPY is selected, you can specify 3 update options, using + or -, which have the following effects:

NO	No updates, just perform a copy.
PROMPT	Normal copy, but when switching between OS selections, if the target file is newer than the source file, you are prompted to update the older file.
AUTO	Normal copy, but no prompting occurs if the target file is newer than the source file. The older file is updated.
IGNORE	Same as "Prompt" except if the file does not exist, no warnings or errors occur. This is used when a file might exist, such as the NTBOOTDD.SYS file under NT.

Other File management options:

**Clear-All** - Set all actions to NONE, except for the hidden file entries, which remain unaffected (**Alt-C**).

**Defaults** - Reset all entries to the System Commander 2000 defaults. You will be asked for a source subdirectory to use, but it does not need to exist at this time (**Alt-D**).

Normally spaces are not allowed in a filename. OS/2 in the DOS partition uses two file names with spaces for extended attributes. These filenames are "EA DATA. SF" and "WP ROOT. SF". If you need to enter a space in a filename, while holding the Alt key down, press 127 on the numeric keypad.

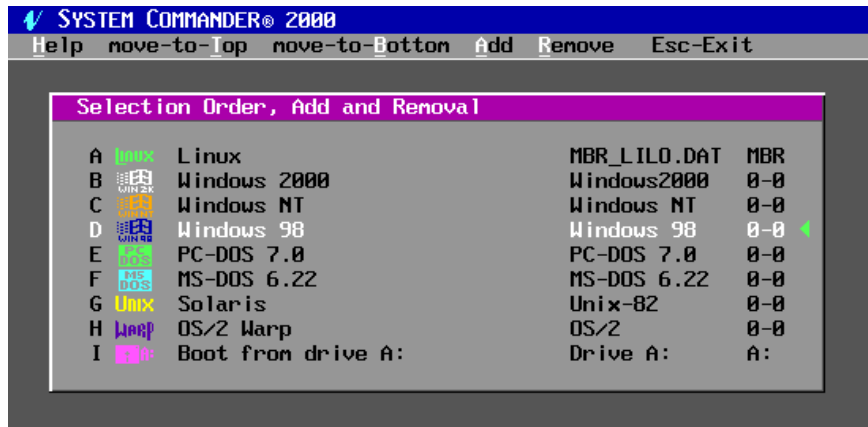


**Tip:** To help troubleshoot file copy problems, see the option *Copy and update files, special options* in the Global Options Special Menu, earlier in this section.

**Alt-O** - Display detailed help on setting up multiple configurations for OS/2.

## Order, Add, and Removal Menu

This menu is used to change the order of selections, add and remove selections, and to duplicate an OS selection in the MultiFAT partition. The Order menu is similar to the OS selection menu:



## Changing the order of OS selections

Using the Up and Down arrow keys, move to the selection you wish to move. Press **Alt-T** to move that selection to the top, or press **Alt-B** to move the selection to the bottom.

### Adding a new selection to the menu

Press **Alt-A** to add a new selection to the menu. You can choose between adding a duplicate of the current MultiFAT selection (if the highlighted selection is a MultiFAT), a primary or logical partition, a master boot record (MBR), or add a selection to boot from a floppy drive A or B.

When adding a primary or logical partition, you will be presented with a list of all partitions. Move to the desired partition, and press **Alt-T** to toggle the bootable status to Yes.

For the rare case of MBR boots, press **Alt-A** at the Order, add and remove menu, and select MBR (see page 145 for more information).

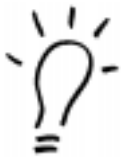
### Removing a selection from the menu

Press **Alt-R** to remove the highlighted entry. At the removal confirmation question, select **OK**.

### Notes on the Boot from A: or B: feature

System Commander 2000 allows up to four (4) OS selection entries to be added which can boot from either the A or B drives. Use the Add and Remove functions to insert or delete a boot from floppy selection.

Each floppy OS selection can have specific partitions made accessible or hidden. Use the local special options menu to set this up.



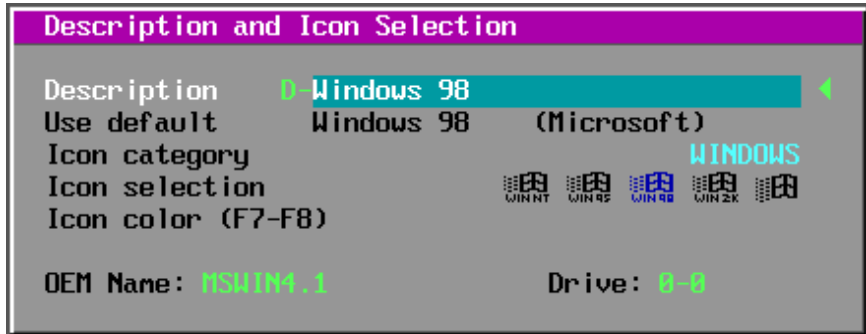
---

**Tip:** When booting from drive B:, System Commander 2000 swaps drives A: and B:. Some operating systems which bypass the system BIOS and communicate directly with the floppy controller may not boot properly. This includes OS/2 and NT. The IDE BIOS on the GSI controller card does not follow the IBM standard for floppy operation, and will also prevent System Commander 2000's "Boot from B:" feature from working. The "Boot from A:" feature will always work.

---

## Description and Icon Menu

Use this menu to set your own OS menu descriptions and to select or change icons. The description and icon menu appears similar to:



### Changing the Description

Highlight the description line and edit the current description for the indicated selection. To make a different selection, use **PgUp** or **PgDn**. To use the System Commander 2000 default description, move to *Use default* and press **Enter**.

### Icon Control

For systems equipped with an IBM compatible color VGA adapter or better, icons can be selected for each OS selection. Use the following options:

**Icon Category** - Select the type of icons from DOS, OS/2, Windows, UNIX, Diskette, Other, or None.

**Icon Selection** - Use the left and right arrow keys to select from the available icons for the current category.

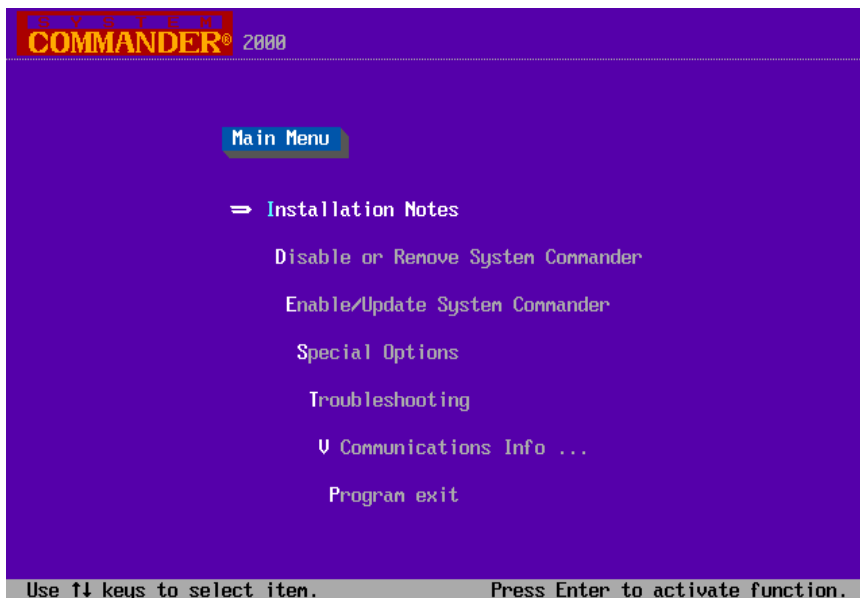
**Icon Color** - To change the color of the current icon, press **Enter**, **+** or **-**. Use **F7** or **F8** at any time to also change the color of the current icon.

Icons are not available on monochrome systems and some laptops that use a nonstandard font size.



## Using SCIN - Installation & Configuration

To read the latest installation notes and change the configuration of System Commander 2000, run **SCIN** from the System Commander 2000 directory.



It provides seven options:

**Installation Notes** - View important notes about System Commander 2000 and any new notes not in this manual.

**Disable or Remove System Commander** - To temporarily disable or uninstall System Commander 2000, select this option. From the submenu, select disable or remove. Disable will restore the original master boot record, which was saved when System Commander 2000 was installed. You can later use the Enable option in SCIN to restore full System Commander 2000 operation. Remove performs a disable and removes the System Commander 2000 files.

At this point, System Commander 2000 is no longer in the bootup loop, and the OS you last booted from will boot directly. After a disable or remove you can run Windows FDISK to specify a different active primary partition to boot from.

**Enable/Update System Commander** - Select the sub-menu Enable option to update the master boot record. All prior System Commander 2000 user options and settings are unaffected. Use the Update option when downloading a new version.

**Special Options** - These provide less frequently used options. The next section details these options.

**Troubleshooting** - Use this section to get detailed solutions to problems. It also contains details on common questions and answers.

**V Communications Info** - See more about V Communications products. This option also presents System Commander 2000 information such as the version and serial number.

**Program Exit** - Return to DOS.

## Special Options

The following menu choices are available under Special options:

### Make Utility Diskettes

Use this option to make the utility and restart diskettes. The utility diskette holds various SC2000 utilities such as SCIN.EXE, SCOUT.EXE, CHECKMBR.EXE and SCDISK.EXE. It also holds duplicates of important data files for the uninstall option, such as the saved MBR.

The restart diskette allows continuation of an interrupted partitioning operation, such as the OS Wizard or partition resize operations, should a power failure or reset occur during these critical operations. The retail SC2000 package includes a restart diskette, so a duplicate is not necessary if you already have it.

### Change MultiFAT option

The MultiFAT feature allows having multiple OSES in the FAT partition. This feature automatically defaults on, but can be overridden from this option. If you only need one FAT OS, and do not plan to add Windows NT, Windows 95/98, Windows 2000, or OS/2 in the MultiFAT partition, or DOS versions, you can safely turn this option off. There

is no real benefit to having the MultiFAT option set off.

### Specify non-compressed boot drive

If you are using disk compression, including DoubleDisk, DoubleSpace, Stacker, or SuperStor, the **non-compressed disk must be identified** so System Commander 2000 can properly install its files. The non-compressed drive is rarely C. Often the drive has only a few files and holds one very large hidden file representing the compressed disk.

### Alter the current boot record serial number

This option is used if you need to create two (2) or more System Commander 2000 menu choices for the identical operating system. This option simply changes the boot record serial number so that the boot record appears different to System Commander 2000.

When the system reboots, System Commander 2000 detects the change and asks if you wish to save the new OS. Saving the new OS adds a second entry for essentially the same OS. In most cases, we recommend using the duplicate feature built into System Commander 2000. At the OS selection menu, press **Alt-S** (Setup), and select the *Order, add and removal menu*. Highlight the desired selection, and press **Alt-A** (Add). Then press **D** for Duplicate.

### Restore DOS boot record

System Commander 2000 provides this disk recovery feature should a virus, system crash, or program defect destroy the current DOS boot record. Often this extremely serious fault cannot be corrected with most hard disk tools available today.

This option is only used when a "Boot" error number 2, 3, 4, or 5 occurs, indicating there may be a defective DOS boot record. In this situation, even booting from a DOS diskette does not provide access to the C: drive. See the troubleshooting section, under *Invalid Drive* for details on how to properly use this option (page 115).

This option only functions when run from the utility diskette you made during the System Commander 2000 installation.

### Diagnostic Checks

Three (3) diagnostics are available to validate the partition tables, check the DOS boot record information, and check for proper access to key System Commander 2000 files from the BIOS. Each check will indicate if the test passed (validated), show any warnings, or show if the test failed.

Any failures indicate potential problems that may prevent System Commander 2000 from properly operating. Warnings are less serious in nature, and will not usually affect System Commander 2000 operation. Press **Alt-H** or **F1** for additional help and explanations of error messages.

### Transfer System (Advanced SYS)

This option replaces the limited DOS and Windows 95/98 SYS command. It transfers the bootable OS from a diskette in drive A to hard drive C. It supports all DOS versions 4.0 to 7.0 from Microsoft, IBM, Caldera and Novell, as well as Windows 95/98.

Unlike the SYS Command, the Transfer System option has the following features:

- Fixes a bug in all DOS versions that prevent DOS from booting past the 2 GB boundary on the hard drive.
- Corrects a number of limitations in the SYS command, including dealing with non-system files in the first two directory entries.
- Provides an option to perform selective portions of the system transfer.
- Extensive progress reports and error detection with explanations.
- Detects a damaged MSDOS.SYS file on a Windows 95/98 boot diskette and creates a new valid MSDOS.SYS file (Windows 95/98 boot disks created by Windows 95/98 usually have a bad MSDOS.SYS file).
- If no AUTOEXEC.BAT or CONFIG.SYS exists, an option is provided to create generic ones.

- It works when SYS fails!

## SCIN Command Line Options

The installation and information program SCIN has a number of options to control the screen colors and display. Options are normally set automatically, but in unusual cases, can be overridden. These options are memorized the first time used, and are not required again.

<b>color</b>	standard colors
<b>mono</b>	monochrome colors
<b>lcd</b>	monochrome for LCD screens
<b>grey</b>	grey scale colors, for VGA greyscale monitors
<b>-v</b>	prevent EGA/VGA fonts and custom colors
<b>+v</b>	allow EGA/VGA fonts and custom colors (default)

For example, to change to mono, without VGA fonts, enter:

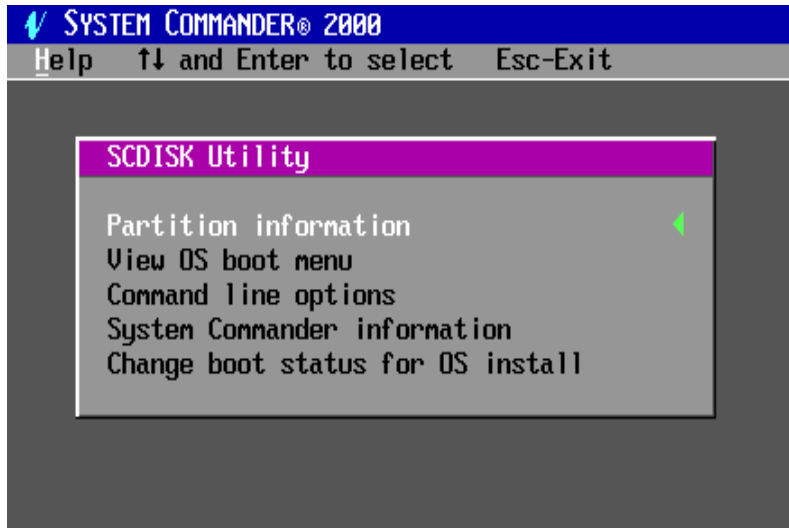
```
C:\SC > scin mono -v
```

## Using SCDISK

The SCDISK utility allows you to examine disk information, view the current OS selections, preset some System Commander 2000 boot options, and preset the bootable partition for special OS installations. To use SCDISK, at a DOS prompt, run:

```
C:\SC\ > scdisk
```

A menu of choices appears:



Use the Up and Down arrow keys to move to a choice, and press Enter to select. Press **Alt-H** to see help information. Press Escape to exit back to DOS.

### Partition Information

Shows primary and logical partition information for the drives in your system. While viewing disk information, use the up and down arrow keys to move the highlighted selection bar and see detailed information about each partition and see the drive letter assignments for the selection.

Subfunctions for partition information include:

**Help** for detailed explanations about this screen (**Alt-H**).

**Empties** to toggle inclusion of empty partitions (**Alt-E**).

**Details** to toggle the type of detailed information. Toggle between details about the highlighted partition and information about the highlighted drive (**Alt-D**).

**Boot Record** to show the contents of the currently selected boot record (**Alt-B**). Press any key to toggle between a descriptive view and a hex byte view.

In most cases, the primary partition's boot status is the internal System Commander 2000 boot status. This is shown with an asterisk following the boot status. If the SYSCMNDR.SYS file does not exist or is not readable, the boot status from the partition is shown.

### View OS Boot Menu

The OS boot menu shows available current OS selections. Although you can scroll through the available choices, you cannot make a choice from this menu. You can toggle the detail information using **Alt-D** while at this screen.

### Command Line Options

This shows command line options available for SCDISK. All command line options are case insensitive. Command line options include:

<b>A to Z</b>	Set the next default OS selection to the specified letter A to Z.
<b>Boot</b>	Issue a warm boot after all the command line options are examined.
<b>Dlimit<i>n</i></b>	Limit System Commander 2000 to the drive number specified and all drives with a lower number. For example, on a 3 drive system, the option "Dlimit1" will only look at the first drive for possible OS selections. The 2nd and 3rd drives are ignored.
<b>Font8</b>	Use this option to force System Commander 2000 to use an 8-bit wide font, even if a 9-bit wide font would be clearer. This option is useful for taking a screen shot of the OS selection menu with a screen capture program that is 9-bit font unaware.
<b>No_Font</b>	Turn off graphic option on the boot time portion of System Commander 2000.
<b>Timeout</b>	Turn on the timeout at bootup feature, and set the timeout period to five seconds.
<b>Wait</b>	Turn off the timeout feature, so System Commander 2000 will wait for a user entered selection.
<b>-V</b>	Do not use custom fonts on the display.

As an example of using command line options, the following line will set the default OS to selection “E”, turn the timeout feature on with a 5 second wait, and initiate a warm reboot.

```
C:\SC > scdisk e timeout boot
```

### System Commander 2000 Information

This shows information about System Commander 2000, including the version and serial number.

### Change Boot Status for OS Install

In some situations it is necessary to define one (1) partition as bootable for the installation of certain operating systems, and hide all other partitions on that drive. With this option you can specify a specific partition on any disk as bootable, or specify all partitions on a disk as non-bootable if required. The bootable status information is not used by System Commander 2000 and has no effect on System Commander 2000's operation or which operating systems are truly bootable.

Press a number 0 to 3 to mark a partition as bootable. Enter 9 to make all partitions non-bootable.

In addition to changing the boot status, all partitions that are marked as non-bootable are marked hidden (except for extended partitions). When booting from a diskette, only the bootable partition is visible. When booting from the hard disk through System Commander 2000, the hidden status is ignored. System Commander 2000 will function normally, and clear the hidden partition information.



# Chapter 9

## Common Questions and Answers

- 1** How can I create a second selection for the same Windows 95/98/DOS (or any other OS)?

You can create a duplicate of an OS selection at boot time, if the OS is installed into the MultiFAT partition, by selecting **Alt-S** (Setup) and then the *Order add and removal menu*. Highlight the choice you wish to duplicate, and press **Alt-A** (Add). Press **D** for (Duplicate), to create a second choice. This will automatically copy the necessary startup files from the highlighted selection to the new selection's subdirectory. You can then edit the new startup files as desired.

- 2** Will I have any problems with EZ-Drive, Drive-Pro, or Disk Manager with System Commander 2000?

Currently Drive-Pro is not compatible with System Commander 2000 or most non-DOS operating systems. The latest versions of EZ-Drive (v9 or later) and Disk Manager (v7 or later) are compatible with System Commander 2000, but Disk Manager is not compatible with many non-DOS operating systems. You might consider purchasing a low cost EIDE controller as an alternative. See Appendix D for more about Disk Manager and EIDE controllers.

- 3** How should I partition my disk?

Wow, this is a complex question, but we'll try to give you a few guidelines! First we assume you know that removing a partition will erase all the data in the partition. You should always have a complete backup of important data.

Make a list of the OSes you want to install now, and a list of OSes you may

## Chapter 9: Common Questions and Answers

want to install in the near future. Include on the list the space you want to allocate for each OS, the number of partitions you wish to use for each OS, and any limitations you may need to follow. Limitations might include items like the OS must be on the first drive, or must be in a primary partition. See Chapter 12, “OS Limitations” for more detailed information.

With the list of OSes, you assign each OS to a partition and drive, based on the space you have available and the limitations. Keep in mind each drive has a limit of four (4) primary partitions. The use of any logical partitions (one or more) on a drive takes away one (and only one) primary partition on that drive.

Your plan, at your option, can also place up to 32 different FAT compatible OSes into the single MultiFAT primary partition on the first drive. This might include different versions of DOS, NT, OS/2, or Windows 95/98. Refer to Chapter 4 on each of these OSes for additional details on each OS.

If you plan to install OS/2 anywhere other than the primary partition on the first drive, you must leave one (1) partition free for OS/2's Boot Manager (it must be 1 MB or larger). It is required by OS/2 during its installation. Once the OS/2 installation is complete, you can reuse the partition for another OS.

The actual partitioning is handled by a utility program that comes with your OS. For example, Windows 95/98, DOS, OS/2, and others have a utility called FDISK. The FDISK program allows you to create and delete partitions. Refer to your operating system manual for detailed instructions on using the partitioning utility that comes with it. See page 32 if you need to create multiple FAT primary partitions on one drive using the DOS FDISK utility. You can use System Commander 2000's built in partitioning with OS Wizard.

**4** A new OS installation failed, and I think System Commander 2000 is the cause!

We hope this is never the case, but there is an easy way to confirm the problem is not System Commander 2000. Run the SCIN program (from DOS or Windows 95/98) and select *Disable*. This puts back the original master boot record, so System Commander 2000 will no longer be active. The partition table is not changed, so partition changes after you installed System Commander 2000 are preserved.

Now install the new OS. In most cases we expect the same problem will occur, and you may need to contact the OS manufacturer to resolve the problem. Once the problem is resolved, and the OS is working, simply reboot from a DOS or Windows 95/98 diskette and run the SCIN

program again (from the hard disk or the System Commander 2000 diskette). Select *Enable*. This restores System Commander 2000 with all your prior OS selections.

A disable does not delete our configuration files, so a later enable from the SCIN program brings back System Commander 2000 with all your prior OS selections and options.

- 5** At boot time, the product name is wrong (Details, Alt-D). Can this be corrected?

While the description field can be changed, you cannot override the product name information. The product name is created every time the system is booted to accommodate any system changes. It is based on the boot record, and in some cases, other files in the partition.

We would like to hear about any product names that appear wrong. It might indicate a new version of an OS we have not seen before, or is caused by some other issue. While we can't promise an immediate correction, we will try to ensure future versions correctly identifies the OS.

- 6** At boot time, the OEM name is wrong (Details, Alt-D). Can this be corrected?

In all cases, except for UNIX OSes, the OEM name is specified by the OS vendor. It is typically the identification string in the partition boot record. For more about inaccurate OEM names, see Chapter 10.

- 7** How do I get rid of an OS selection from the menu?

At boot time, press **Alt-S** (Setup), and select the *Order, add and removal menu*. Highlight the OS you wish to remove from the menu and press **Alt-R** (Remove). Next select **OK** to confirm the removal. This does not affect contents of the related partition.

- 8** What are the advantages of using System Commander 2000 over other products like OS/2's Boot Manager?

The key benefit is the ability of System Commander 2000 to boot many OSes that are impossible to boot through other boot managers. In addition System Commander 2000 provides the following unique advantages:

## Chapter 9: Common Questions and Answers

- Supports over 100 OSES on a single system.
- Supports multiple FAT compatible OSES in a single partition, including OS/2, Windows 95/98, NT and multiple DOS versions.
- Includes both automatic and manual partitioning tools.
- System Commander 2000 can manage multiple configurations of a single OS in the FAT partition. This includes different configurations of OS/2, Windows 95/98, NT and DOS.
- All setup options, menu descriptions and features are all accessible at boot time. There is no need to boot into an OS just to make changes.
- System Commander 2000 does not require repartitioning to install, nor a separate partition for itself.
- You can view and edit configuration files before the OS runs.

Some of the other significant built in features include a partition viewer, ability to hide partitions from an OS selection, passwords, automatic file management, automatic OS detection, boot from floppy drives A or B, and complete help at boot time.

### **9** Why must some OSES only be installed on the first drive?

This is a limitation of the OS initialization process. The early initialization code begins by booting from the first drive, regardless of where the OS actually resides. In these cases, even if you were to somehow be able to get the OS on a second or third drive, System Commander 2000 could attempt to boot the OS, but the OS will quickly hang. The OS erroneously attempts to read data from the first drive rather than the drive where it actually resides.

The OSES that we've seen so far that allow installation on any drive include OS/2, Free BSD, Linux, Solaris, and Coherent. In rare cases, an OS could be installed on the first drive, and then moved to another drive position (i.e., drive jumper changes). QNX is one such OS, when the QNX configuration file is updated to point to the new disk position. Other OSES like DOS, Windows 95/98, and most UNIX variants not already mentioned, must be installed on the first drive.

Windows 95/98, and NT/2000 provide the option to install most (but not all) of its files into any FAT partition on any drive. When Windows 95/98 installs, it asks which drive and path Windows 95/98 should be installed to. Regardless

of what drive you specify, Windows 95/98 will always place about 4 MB of boot up files on the first disk (in a primary partition).

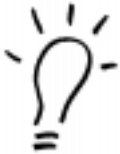
### **10** How do I hide a partition from an OS selection?

System Commander 2000 allows you to hide primary partitions from a selected OS. System Commander 2000 will never let you hide the partition you are booting into, or extended partitions.

To specify which partitions are accessible and which are hidden, at the OS selection menu, press **Alt-S** (Setup). Select *Local special options menu*. This menu allows you to indicate which primary partitions should be accessible for each drive. Move down to the desired line *Primary partitions visible on drive n* and press **Enter**. A new menu will show the partition status for each of the four primary partitions. Partitions are marked as visible, hidden or no access. Partitions which have a status that cannot be changed are grayed out.

# Chapter 10

## Troubleshooting



---

**Tip:** This chapter is intended to give you answers to the most common problems that might arise. If you do not see your problem detailed in this chapter, check the online documentation included with System Commander 2000. To access this online help, run the SCIN utility. Choose Troubleshooting from the Main Menu. Follow the appropriate menu selection to technical assistance for your specific problem. Always check this documentation if you encounter a problem; it may save you a call to technical support! Also remember, context sensitive help is available for most functions by pressing the F1 key.

---

Depending on the nature of the problem, one of the following sections should help guide you to a solution. Start with the section that seems most appropriate. Also use the SCIN program for the latest up-to-date troubleshooting information.

- Problems without messages.
- Messages from System Commander 2000 at bootup.
- Messages from SCIN diagnostics.
- Messages from DOS.
- Messages from OS/2.
- Messages from NT/Windows 2000.
- Messages from Windows 95/98.
- Messages from a UNIX OS.
- Inaccurate OEM names.

## Problems Without Messages

### New OS installer complains about seeing a bootable OS

In this case, the operating system sees another operating system as bootable. To correct this, just run the SCDISK program from the System Commander 2000 directory, select *Change boot status for OS install*, and mark all partitions as non-bootable (press **9**).

### System Commander 2000 Fails to detect new DOS installation

Although rare, if the newly installed DOS has a boot record identical to a prior installed DOS and the hidden system files have the same date and time, System Commander 2000 may not offer the choice to save the new DOS. In this case, do not make a new selection from the System Commander 2000 menu, but use the default choice to avoid System Commander 2000 overwriting the new DOS information. At the DOS prompt, run SCIN from the System Commander 2000 directory, and select *Special options*. Then select *Alter Current Boot Record Serial Number*. Select YES, and then exit SCIN. Reboot, and System Commander 2000 should detect and save the new DOS.

### System Commander 2000 Menu does not appear after reboot

This might occur if a newly installed OS overwrites System Commander 2000's master boot record. If this is the case, you need to first boot DOS or Windows 95/98 from a diskette or the hard disk. If you just installed OS/2 or NT in the DOS partition, then boot from a DOS floppy. Do not use the DOS box from these OSes. The DOS prompt of Windows 95/98 is acceptable.

To recover, insert the System Commander 2000 utility diskette, click on the START box, then click on RUN, and type, A:\CHECKMBR, and <Enter>. When the process is completed, remove the diskette and shutdown Windows, using the option, Restart computer. During the boot up, System Commander 2000 will appear and save the new Windows 95/98 information. All of your prior options and selections will not be affected.

If no new operating system was installed, it might mean that the hidden system file SCDOS.SYS was deleted or destroyed. This important file in the C: root directory holds other hidden system files for each FAT operating system. If it is destroyed, you must restore it from a backup or must reinstall

each operating system. Assuming all other OS files are intact, as an alternative, you can take these steps rather than reinstalling each OS.

1. Boot from a floppy of the desired OS.
2. From the floppy, type `SYS C:` to transfer the hidden files onto the hard disk.
3. From the hard disk directory where the same OS has all of the system files, copy `COMMAND.COM`, `CONFIG.SYS` and `AUTOEXEC.BAT` to the `C:\root` directory.
4. Reboot from the hard disk to make System Commander 2000 save the new OS. It will prompt for the name.

### System Commander 2000 appears twice to get into a selection

Some versions of QEMM will force the system to reboot twice, or multiple times when performing optimization. Select the same choice until QEMM is satisfied. There may be options in QEMM to prevent this behavior.

### Colors have problem or screen unreadable

If the installation program has difficulties displaying, or the color combinations are hard to read, there are a number of options to control this. Refer to Chapter 8 under *SCIN Command Line Options* (page 95).

If this occurs with the SCDISK utility, use the command line option **-V** (for example, `C:\>scdisk -V`).

If this occurs at boot time with System Commander 2000, press **Alt-S** (Setup), and select the *Global special options menu*. Then toggle the option *Prevent use of graphics* to YES. An Alternative way to set this option is to run the SCDISK utility with the following switch:

```
C:\SC\>scdisk no_font
```

### Disk Compression Software

Disk compression software such as DoubleSpace, Stacker and SuperStor compress the disk and may change the drive lettering. System Commander is fully compatible, but it **must** be installed in the non-compressed portion of the disk. This is necessary, since it is impossible to read any files from the



compressed portion until the compression software driver is running. Consult your compression software manual to find where the non-compressed software resides.

In general, we do not recommend that you use any disk compression if you plan to install multiple OSes into a single partition (the MultiFAT). Non-DOS operating systems generally do not work with disk compression systems. Older versions of DOS may also have problems, and might cause data loss. See page 9 for additional information.

## Messages from System Commander 2000 at Bootup

### Boot ##.

**Cause:** This indicates a problem in starting up the system or reading the disk drive. The first character of the error code number indicates the basic type of problem that occurred. These problems include:

0	Disk error reading the master boot record
1	No FAT partition found on drive 0
2/3/4/5	FAT partition found, but unable to locate SYSCMNDR.SYS file in root directory, or a disk error occurred reading the file, or the partition is not 512 bytes per sector (the DOS/Windows 95/98 standard).
A	Disk error reading FAT
B	Disk error reading SYSCMNDR.SYS
C	Defective cluster encountered
F	Could not find SYSCMNDR.SYS file in the root directory, or a bad cluster area was encountered (Windows 95/98 FAT-32 only).
G	Problem reading the SYSCMNDR.SYS file (Windows 95/98 FAT-32 only)
H	Contents of SYSCMNDR.SYS file are wrong

(Windows 95/98 FAT-32 only)

The second character indicates the error code returned from the hard disk BIOS. It may indicate the hard disk or controller has some type of problem, or could indicate bad partition information on the disk. The second character errors "0" and ">" are not BIOS errors, but indicate our files were not found on the disk.

BIOS error codes include:

0	invalid or missing data (not a BIOS error)
1	invalid drive or command
2	missing address mark
3	write protected
4	sector not found
8	DMA overrun (timeout)
:	bad sector detected
;	bad track detected
>	invalid or missing data (not from BIOS)
@	ECC error during read
A	ECC error during read
P	disk controller/drive problem
p	seek operation failed

Other characters indicate undocumented BIOS errors.

**Action:** The codes given help identify the source of the problem. Several combinations we've seen on occasion include:

**Boot 0x.** (where **x** is any character) This could indicate a bug in the BIOS of the hard drive controller or main system BIOS.

**Boot 2> or Boot 3>.** This error indicates that the file SYSCMND.RSYS could not be found in any primary partition on the first drive. To fix this, boot

from a DOS or Windows 95/98 startup diskette and perform a full installation.

**Boot A@.** This indicates that System Commander 2000 was attempting to read the FAT, but the controller found an ECC error (which indicates a defective sector in the FAT data area.) At a minimum, run DOS's SCANDISK on the drive, making sure to perform the optional surface scan, and have it correct any errors.

Assuming no physical drive problems, see the next entry about "System Fails to boot up". If the C: drive is inaccessible even from a DOS boot diskette, see the message "Can't access drive C:" under Messages from DOS (page 130).

Disk compression often makes files inaccessible and can also cause some of these conditions.

The SYSCMNDR.SYS file must reside in the root directory on the real (non-compressed) hard drive 0. SYSCMNDR.SYS is installed as a hidden system file. The SCIN disable option can switch these attributes to non-hidden, non-system so the file appears when viewing the directory contents. The attributes of SYSCMNDR.SYS do not affect the operation of System Commander 2000.

System Commander 2000 does not care which partition on drive 0 is FAT, as it checks all four partitions, looking for a valid FAT or FAT 32 partition that has SYSCMNDR.SYS. In some cases, the SCIN diagnostic can help locate the source of the problem. Select *Diagnostic checks*, under *Special options*.

### System Fails to boot up

**Cause:** If you have some DOS partitions you have created on the first drive, but have not formatted them yet, this condition may occur. If you failed to take our advice about not using disk compression or for some unexplained reason the system fails to boot up properly, the following instructions will restore the original master boot record.

**Action:** First boot the system from a DOS or Windows 95/98 startup diskette. If possible, switch to the directory on the hard disk where you installed System Commander 2000. Run SCIN and select *Disable or Remove System Commander*. Then select *Temporarily Disable*. Exit System Commander 2000 and reboot normally (without System Commander 2000).

If you could not locate the System Commander 2000 directory on the hard disk, Run SCIN from the System Commander 2000 utility diskette and select *Disable or Remove System Commander*. Then select *Temporarily Disable*. System Commander 2000 restores the master boot record which was previously saved on the diskette during the original installation.

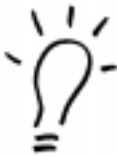
If this still does not correct the problem and you were using disk compression,

it is likely the DOS bootable disk also has the disk compression software hidden on it, and the boot drive is being masked. To fix the DOS boot diskette, you need to rename the hidden file DBLSPACE.BIN on the diskette. To do this, you must first change the attributes. Use the commands:

```
A:\> attrib -r -s -h a:dblspace.bin
```

```
A:\> ren a:dblspace.bin dblspace.tmp
```

Now reboot from this diskette, and uninstall again. This will work for Stacker 3.1/4.0 and for DOS 6. DoubleSpace/DoubleDisk. Other disk compression products may use other hidden files that need to be temporarily changed.



---

**Tip:** Disable/Remove only replaces the master boot record. It does not change the current partition information. There is no problem performing a Disable/Remove, even if you had changed the partition information after System Commander 2000 was installed. The original master boot record information is saved in a hidden read-only file BOOT.DAT on both the hard disk and the System Commander 2000 diskette.

---

### Possible Defective Boot Record

**Cause:** When this message appears after a non-DOS boot selection is made, the selected OS does not have a boot record, or uses a nonstandard format. If you selected (B) to boot anyway and the OS works, we would like to hear from you. It appears the OS you are using does not follow any prior standard.

If the OS fails to boot, it indicates the OS has not properly built the boot record or other critical files are missing from the partition. It may also indicate the OS does not allow booting from the selected partition, and it should be removed from the OS selection menu.

**Action:** To remove a selection, select Setup (**Alt-S**) from the OS selection menu, and move to the *Order, add and removal menu*. Highlight the OS partition you wish to remove, and press **Alt-R** (Remove).

Some operating systems may boot through the FAT partition, even though the OS is in a separate partition. NT is a prime example of this. NT does not normally boot directly into the NTFS partition until the NT bootup files in the FAT partition are run. See Chapter 4 for more about NT operation.

## Disk Error Message after OS Selection

**Cause:** If you have nonstandard hard drives which cannot be properly accessed without a special device driver, System Commander 2000 may not be able to update partition information on that drive. IDE, EIDE, ESDI, MFM, and SCSI drives do not usually fall into this category.

For example, some hardcards remain in a read-only mode until their device driver runs. These types of drives are usually limited to DOS, since device drivers are rarely available for other operating systems.

**Action:** It is safe to select *Ignore* instead of the recommended *Reboot* from the disk error warning message. To eliminate the problem (without replacing the drive), from the OS selection menu, press **Alt-S** (Setup), and select the *Global special options menu*.

Select the choice *Disk drives, above drive 0, ignored*. If the problem drive is the third drive, select 2. If the drive is the second drive, select 1. This option forces System Commander 2000 to ignore the specified drives. Drive 0 must always be accessible.

## Messages from SCIN's diagnostics



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**Tip:** For information on the messages, warnings and errors from SCIN, consult the online help for SCIN by pressing **Alt-H** or **F1** when the message, warning or error is displayed.

---

## Partition Table Checks

### Partition Table Analysis Failed

**Cause:** Values in the partition table are not valid, such as a partition size of 64 GB or larger, a starting address larger than the drive parameters reported by the BIOS, or a starting or ending sector value of zero (invalid).

**Action:** The values in error are shown in magenta or red. It may be the partition does not exist and has bad values. Use FDISK if you are sure this is the case to delete the invalid partition.

## **Partition Table Analysis Warning - First sector size mismatch**

**Cause:** Each partition table entry points to the start of a partition by the start head, sector and cylinder, and through an alternate way, the starting sector count. The two methods should point to the same place on the disk, but they do not in this case.

**Action:** Many OSes only use the starting head, sector and cylinder values. If these values are wrong, you will not be able to boot the partition. If on the other hand, the first sector value is wrong, everything is likely to work fine. There is no easy fix, other than deleting the partition and re-creating it (which of course, loses all the data in that partition).

## **Partition Table Analysis Warning - Ending address too large**

**Cause:** The ending head, sector, or cylinder numbers exceed the disk limits as specified by the BIOS.

**Action:** System Commander 2000 and many OSes ignore the ending values. If your system is working fine, you might ignore the problem. The only fix is to delete the partition, and re-create it (which will cause the loss of all data in the partition).

## **Partition Table Analysis Warning - Sector mismatch & Ending address**

The prior two warning conditions occurred on the drive. See the prior warnings for complete details.

## **Unable to read drive parameters.**

**Cause:** The BIOS returned an error while attempting to read the drive parameters.

**Action:** The BIOS is not working properly - try another disk controller card or the CMOS has values for a drive that does not exist.

## Unable to read partition table on drive x.

**Cause:** The BIOS returned an error when attempting to read the master boot record.

**Action:** There may be a serious problem with the drive or disk controller. If this one sector is truly bad, the disk drive is unusable.

## DOS Boot Record Checks

Serious errors are highlighted in red, which indicate source of problem. Minor warnings are highlighted in orange.

Serious errors will likely make OSes fail, and may make System Commander 2000 unusable. The specific values and limits are shown on each line of the display. A new DOS or Windows 95/98 boot record can be created using the SYS command from a bootable diskette.

## File Access Verification

For information regarding messages returned from the *File Access Verification*, about any of these errors consult the online help by pressing **Alt-H** or **F1**. The online help contains the most up-to-date information available about these messages.



---

**Tip:** For information regarding messages returned from the *File Access Verification*, about any of these errors consult the online help by pressing **Alt-H** or **F1**. The online help contains the most up-to-date information available about these messages.

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## Messages From DOS

### Can't Access drive C: Invalid Drive/Media Type

**Cause:** When booting from a diskette, the C: drive has “disappeared” and/or is invalid with either of these messages. Attempting to boot from the hard disk just generates the System Commander 2000 error message “**Boot 1x**”. Proceed with this solution only if BOTH these conditions occur.

The problem may be caused by CMOS memory loss or an incorrect drive type specified in setup. This problem can also be caused by the DOS boot record being altered or erased, possibly due to a virus or application program defect.

User's of Novell DOS 7 and OpenDOS are limited to one primary FAT partition. You must hide any other primary partitions.

**Action:** If you suspect CMOS loss or the wrong drive type was set in the BIOS setup program, attempt to correct this first and try rebooting from the hard disk.



---

**WARNING!** Do not alter the BIOS setup unless you are absolutely sure of what you are doing!

---

You may need to contact service personnel for your computer if you are unfamiliar with using setup and/or the proper disk types for your system.

If you conclude that the DOS boot sector has been damaged, System Commander 2000 has a built in feature to replace the DOS boot record. First boot the system from a DOS diskette. Now insert the System Commander 2000 utility disk. As part of the installation, System Commander 2000 saved the DOS boot record.



---

**WARNING:** Do not proceed if the System Commander 2000 installation disk was used in another system! The saved DOS boot record is rarely the same from system to system. Also do not replace the old DOS boot record if you have resized this partition, since it will no longer be valid. Replacement of the wrong DOS boot record will likely cause strange unrecoverable problems, and may even affect other non-DOS partitions.

---



From the diskette, run SCIN, select *Special options*, and then select *Restore DOS Boot record*.

Once the operation is complete, remove the diskette and reboot. Assuming no other damage occurred, System Commander 2000's OS selection menu should appear. In this special case, we recommend not selecting the default choice, but another DOS choice if available. This will force System Commander 2000 to replace the boot record and hidden files in case these were also damaged.

### **Can't Find COMMAND.COM Invalid COMMAND.COM Wrong COMMAND.COM version**

**Cause:** Most likely the COMMAND.COM file is the wrong version for the current OS booted. This will occur under several situations, as explained below.

**Action:** It is usually necessary to use your boot diskette at this point so the problem can be resolved.

First, the CONFIG.SYS file for this version of DOS/Windows 95/98 should have a SHELL statement that points to the COMMAND.COM for this version. If you are unfamiliar with the SHELL statement, this critical line in CONFIG.SYS instructs where COMMAND.COM resides. For example, in DOS 6, the default SHELL statement might appear as:

```
SHELL=C:\DOS\COMMAND.COM C:\DOS /P
```

Normally you would have created a unique subdirectory for each operating system, such as "MSDOS6.2". In this case, the SHELL statement must be changed when booting MS-DOS 6.2 to point to the directory where COMMAND.COM resides for MS-DOS version 6.2. This new SHELL line might appear as:

```
SHELL=C:\SC\MSDOS6.2\COMMAND.COM C:\MSDOS6.2 /P
```

You might have other options or use a different subdirectory instead of "MSDOS6.2" shown. In any case, the drive and path should always point to the subdirectory for COMMAND.COM related to the DOS version selected.

Also check if the AUTOEXEC.BAT file has a COMSPEC statement, which must also point to the COMMAND.COM for this version. You do not need

COMSPEC if the CONFIG.SYS file has a SHELL statement.

Verify that System Commander 2000 was properly set up to copy the unique version of COMMAND.COM into the root directory. Some programs ignore the path and assume COMMAND.COM is in the root directory.

To have System Commander 2000 automatically copy COMMAND.COM into the root directory, press **Alt-S** (Setup) from the OS selection menu, and select the *File management menu*. Verify the files and subdirectories are correct.

The files to copy will not be copied if the last boot was the same OS. This means you may need to select another OS in the DOS partition, and then reboot and select the desired OS.

These error messages will also appear if the wrong version of COMMAND.COM resides in the unique subdirectory you made for the DOS having the problem. To correct this, copy the correct COMMAND.COM version for the selected DOS from the diskette into the unique subdirectory.

### Incorrect DOS Version

**Cause:** A device driver or TSR was run that does not match the current DOS version. This is usually due to an incorrect directory specification or path statement.

**Action:** First you must determine which driver or TSR causes this message. If it is occurring in the CONFIG.SYS file, check to see which drivers are loading before and after the message appears. Unfortunately, many device drivers do not display anything when they run. Newer DOS versions allow a step by step confirmation of each CONFIG statement by pressing F8 when the phrase "Starting MS/PC-DOS..." appears on screen.

You might also look in the CONFIG.SYS file for each DEVICE= line, verify the path for the device driver is correct, and it points to the subdirectory where the current OS files reside. If the problem is occurring in AUTOEXEC.BAT, you can remove the statement ECHO OFF, and reboot to see which is the offending line. Once the problem line is found, change the subdirectory to point to the current DOS directory.

Additional notes about getting the CONFIG.SYS and AUTOEXEC.BAT files setup properly are reviewed in the section on *Special DOS Issues* starting at page 47.

## Your Current Operating System on drive C is not DOS

**Cause:** This message might appear while attempting to load a new operating system from a special update version of the DOS OS. The update version of some older DOS versions does not correctly detect DOS or will not accept a system with a newer version of DOS than the one attempting to be loaded.

**Action:** There is no way around this limitation of the update version. You will need to load DOS from a non-update version of DOS. If you have a bootable system diskette (which is not provided with the update version) you boot from it, create a unique directory, and copy all the desired files from the diskette to this directory. In addition, you need to run the SYS program from the diskette. At the DOS prompt, run:

```
A:> sys c:
```

This will transfer the system to the C: drive. Remember to update CONFIG.SYS and AUTOEXEC.BAT files. Reboot to have System Commander 2000 save the new OS.

## Messages From OS/2

### Can't find x:\COUNTRY.SYS Drive Invalid

**Cause:** If the operating system properly boots up using Boot Manager, but not directly from System Commander 2000, this message usually indicates a nonstandard drive lettering arrangement. In rare cases, it might also mean the OS/2 CONFIG.SYS file is missing or built incorrectly.

**Action:** If your system is configured with more than one (1) primary FAT/HPFS partition, and OS/2 is in a primary partition, it may be necessary to hide all but the one OS/2 primary partition. To do this, reboot to System Commander 2000's OS selection menu. Highlight, but do not select the OS/2. Press **Alt-S** (Setup) and select the *Local special options menu*. The option *Primary partitions visible on drive 0* should be set to **NONE** (this will always keep the booted partition accessible, but hides all other primaries).

If OS/2 is installed in a logical drive, in some configurations the drive letter may be set wrong by System Commander 2000. To correct this, reboot into System Commander 2000. Press **Alt-S** (Setup) and select the *Local special options menu*. Change the option *OS/2 boot drive letter* from **AUTO** to the

drive letter that matches what OS/2 normally boots to. If you are not sure which drive letter this is, you can experiment by starting at C:, and trying the OS/2 selection. If it fails, try the next drive letter.

If you suspect the OS/2 CONFIG.SYS file, check the file to verify its existence and the "COUNTRY=" line is correct. With OS/2 in the DOS partition, the config file will appear in the system directory as, C:\OS2\SYSTEM\CONFIG.OS2.

## Messages From Windows NT/2000

### Fatal System Error

#### Missing File <winnt root> \system32\ntoskrnl.exe

**Cause:** If the NT partition is not accessible, the undocumented NT error message appears indicating "The Session Manager Initialization system process terminated" or with NT 3.5 "Windows NT could not start because of the following file is missing or corrupt".

This can be caused by a new partition being created by another OS, such that it displaces the NT partition.

**Action:** This usually indicates the hidden file BOOT.INI has the wrong partition to find NT on. This critical file resides in the DOS root directory. To change or examine this file, first update the attrib

```
C:\> attrib -r -h -s c:\boot.ini
```

One or more lines appear in BOOT.INI that have \winnt on them. If only one NT is in the system, then all lines with \winnt should point to the same disk, rdisk, and partition. For example, the following line indicates where the WINNT program will be found on one system.

```
default=multi(0)disk(0)rdisk(0)partition(2)\winnt
```

It may be the wrong disk number or partition is specified such that the NT loader can't find WINNT. (It would be nice if NT simply explained this in English). Make the corrections, and reboot.

If you are at a complete loss, try changing the partition number by adding one or subtracting one. In the above example, you might first try partition(3), and if that fails, try partition(1).

## Messages From Windows 95/98

### Warning SU-0012 (OS/2 or NT will no longer work)

**Cause:** If an OS/2 or NT partition is present, this message will appear during the Windows 95/98 installation.

**Action:** No action is necessary. System Commander 2000 protects both OS/2 and NT from Windows 95/98.

### Warning SU-0015 (NT will no longer work)

**Cause:** If NT was installed prior to Windows 95/98, this message will appear during the Windows 95/98 installation.

**Action:** No action is necessary. System Commander 2000 protects NT from Windows 95/98.

### Warning SU-0016 (OS/2 will no longer work)

**Cause:** If OS/2 was installed prior to Windows 95/98, this message will appear during the Windows 95/98 installation.

**Action:** No action is necessary. System Commander 2000 protects OS/2 from Windows 95/98.

### Windows 95/98 fails to appear, and drops into a Windows DOS prompt.

**Cause:** This occurs when Windows has some problem during the boot up process.

**Action:** Check the contents of the MSDOS.SYS text file. When Windows DOS is active, this appears in the root directory as a hidden system file. To list hidden files, at the Windows 95/98 DOS prompt, ty

```
C:\> dir /ah
```

To access the file, change the attributes:

```
C:\> attrib -h -r -s msdos.sys
```

The MSDOS.SYS file is typically about 1500 bytes. If the file is missing, set to zero length, or has been replaced with the older DOS MSDOS.SYS executable (10 KB or larger), Windows 95/98 will not come up. Correct the file if damaged or missing. If the file is completely lost, we have included a generic MSDOS.SYS file for Windows 95/98 on the System Commander 2000 installation disk. It is under the filename MSDOS.BAK and is a hidden file. Be sure to edit the entries in this file for the drives and path as appropriate for your system.

If the MSDOS.SYS file is Windows 95/98 (i.e., about 1500 bytes), check that a line appears "BootGUI=1" under "[options]". Without this line, or if the value is set to zero, Windows 95/98 will go directly to a Windows prompt without going into the graphical portion of Windows.

You also might try pressing F8 immediately after you select Windows 95/98 from System Commander 2000. This will issue a menu of options, such as safe mode, and a logging mode. The Windows 95/98 manuals and online readme files should have other suggestions and recommendations, and explain the use of these options.

### Incorrect version of DBLSPACE.BIN

**Cause:** If DOS 6.x was installed on top of Windows 95/98, DOS will install an old version of DBLSPACE.BIN.

**Action:** If you are not using disk compression, we recommend renaming or removing DBLSPACE.BIN. It is not needed nor used if disk compression is off. The file appears in the C:\ root directory as a hidden system file.

## Messages From a UNIX OS

### Boot Error Message from UNIX

**Cause:** If using SCO UNIX System V or UnixWare, depending on other partitions and how UNIX was installed, it may be necessary to make the selected UNIX partition the only accessible partition on drive 0. System Commander 2000 defaults to making both the DOS and UNIX partitions accessible.

**Action:** To make only the UNIX partition accessible, on the System Commander 2000 OS selection menu, highlight UNIX and press **Alt-S** (Setup). Select the *Local special options menu*, and move down to the selection

*Primary partitions visible on drive 0:.* Select *hidden* for all partitions except the UNIX partition. You can also select *NONE*, as System Commander 2000 will never allow the selected boot partition (UNIX in this case) to be set to *hidden*. Press Escape three (3) times to return to the OS selection menu and try the UNIX selection again.

### Two Boots are required to get into the OS

**Cause:** Some UNIX OSes, like old versions of Coherent and UnixWare 1.x have a bug.

**Action:** Use a cold boot, or update to a more recent version.

### Linux Fails to Boot

**Cause:** The Linux LILO target location is not superblock, but used the MBR method.

**Action:** To install LILO into the root superblock on existing partition, modify the LILO configuration file (typically `/etc/lilo.conf`) so that the `boot=` line refers to your Linux root partition, and not your first hard disk (i.e. `boot=/dev/hda5` instead of `boot=/dev/hda`).

After Editing the LILO.Conf. file, you must run the LILO program (typically `/sbin/lilo`).

## Inaccurate OEM Names

In several places, System Commander Deluxe will display the OEM vendor name from the boot record. Often the vendor has left a misleading name in a newer version of the product. For example the OEM name for Microsoft Windows 2000 (FAT and FAT-32) is MSDOS5.0. The following table shows some of the more common names for different operating systems.

<u>Operating System</u>	<u>OEM Name</u>
DR-DOS 5.0 (Digital Research)	IBM 3.3
DR-DOS 6.0 (Digital Research)	IBM 3.3
DR-DOS 7.0 (Caldera)	DRDOS 7
MS-DOS 3.3 (Microsoft)	MSDOS3.3
MS-DOS 5.0 (Microsoft)	MSDOS5.0
MS-DOS 6.0 (Microsoft)	MSDOS5.0
MS-DOS 6.2 (Microsoft)	MSDOS5.0
MS-DOS 6.22 (Microsoft)	MSDOS5.0
Novell DOS 7.0 (Novell)	NWDOS7.0
OS/2 Boot Manager (IBM)	BOOT MGR
OS/2 v1.x in DOS partition (IBM)	IBM 10.0
OS/2 v2 to 4 in DOS partition (IBM)	IBM 20.0
OS/2 v2 to 4 in HPFS partition (IBM)	OS2 20.0
Open DOS (Caldera)	NWDOS 7.0
PC-DOS 3.3 (IBM)	IBM 3.3
PC-DOS 4.0 (IBM)	IBM 4.0
PC-DOS 5.0 (IBM)	IBM 5.0
PC-DOS 6.1 (IBM)	IBM 6.0
PC-DOS 6.3 (IBM)	IBM 6.0
PC-DOS 7.0 (IBM)	IBM 7.0
PTS-DOS	PARAGON
ROM DOS 5.0 (Datalight)	DLDOS5.0
ROM DOS 6.0 (Datalight)	DLDOS6.0
UNIX (most vendors)	UNIX-xx
Windows NT Dual Boot (Microsoft)	MSDOS5.0
Windows NT in NTFS partition	NTFS
Windows 95	MSWIN4.0
Windows 95 (1996 SR2, SR2.5 )	MSWIN4.1
Windows 98	MSWIN4.1
Windows 2000 (FAT, FAT 32)	MSDOS5.0
Windows 2000 in NTFS partition	NTFS

When Windows 95/98 installs, it changes all boot records on all FAT type primary and logical partitions to Windows 95/98. While this does not normally affect any OS already installed, the partition may be seen incorrectly as Windows 95/98, with an OEM boot name MSWIN4.0 or MSWIN 4.1.



# Chapter 11

## OS Recovery Techniques

If a working OS no longer boots due to a virus, disk crash, or other errors that corrupted or destroyed key system files, the following suggestions can help in the recovery of some OSes. The OS manufacturer may have additional suggestions and notes.

As a starting point, we suggest booting into the OS selection that fails. This will ensure System Commander 2000 has loaded any files specific to the OS, and made the selected partition active (bootable). In addition, if changes are made to correct the problem, the changes are automatically updated to the related choice after the next reboot through System Commander 2000.

Once the boot selection is made, then boot directly from a boot diskette that matches the OS (do **not** boot through System Commander Deluxe's boot from A: option). If the OS boot disk is not available, in some cases a DOS boot disk can be used to examine potential problems and files.

### Windows 95/98

In addition to the boot record, there are five (5) files that must be in place for Windows 95/98 to get to a DOS/Win95/98 prompt. These files reside in the C:\ root directory, and include:

IO.SYS	This 200 KB+ file is the first Win95/98 program to start after the boot record runs.
MSDOS.SYS	This is a text editable configuration file, normally about 1500 bytes long, but never 10 KB or larger.
COMMAND.COM	DOS commands are processed

## Chapter 11: OS Recovery Techniques

through COMMAND.COM and should have a file date of 1995 or later.

### CONFIG.SYS

This is similar to a DOS CONFIG.SYS file. Some device drivers and the shell statement will point to the Windows 95/98 subdirectory.

### AUTOEXEC.BAT

This is similar to a DOS AUTOEXEC.BAT file. One portion of the PATH statement should point to the Windows 95/98 COMMAND subdirectory and **not** to the old DOS directory.

Each of these files should be examined to determine which file(s) are damaged or incorrect. The text files, CONFIG.SYS and AUTOEXEC.BAT can be corrected by editing in desired changes. Some valid Windows 95/98 configurations have zero length CONFIG.SYS and AUTOEXEC.BAT files. They are not always necessary for Windows 95/98.

If the wrong MSDOS.SYS file appears, first search the drive for another possible instance of the file. System Commander 2000 usually saves a copy in the Windows directory (\SC\WIN95 or \SC\WIN95.A). If no valid copy can be found, you can use the hidden MSDOS.BAK file from the System Commander 2000 diskette #1, as a starting point. Comments are included in the file. It may be necessary to edit some lines to match your configuration.

If the IO.SYS or COMMAND.COM files are suspect, you can get a copy from the Windows 95/98 boot diskette (IO.SYS is a hidden system file).

Since System Commander 2000 saves the boot record in its own file, it is unlikely to be damaged unless the Windows 95/98 selection was removed from the System Commander 2000 selection menu.

To reload the boot record, it is necessary to first save the Windows 95/98 MSDOS.SYS file in the hard disk root directory. The SYS command that will be used in a moment to load the boot record will overwrite the real MSDOS.SYS file with a useless 6 byte file. To do this:

```
C:\> attrib -h -s -r msdos.sys  
C:\> copy msdos.sys msdos.tmp
```

Insert the Windows 95/98 boot diskette that was created when you installed Windows 95/98. Shutdown Windows 95/98 (i.e., Restart the computer).

## System Commander 2000 User Manual

Once the diskette boots up, it should leave you at a DOS/Win95/98 prompt on drive A, where you can run the SYS program. After the system is transferred, restore the correct MSDOS.SYS file by issuing the following commands:

```
A:\> sys c:  
A:\> c:  
C:\> attrib -h -s -r msdos.sys  
C:\> copy msdos.tmp msdos.sys
```

After all the files are properly restored, remove the boot diskette, and reboot through System Commander 2000 to save the new files and configurations.

## Windows NT/Windows 2000

Most NT /2000 installations place a custom boot record that will load the file NTLDR. A weird quirk of the NT installation is that the old boot record OEM name (like MSDOS5.0) will copy into the NT boot record.

These three (3) additional files are critical to the NT boot process:

NTLDR	This is the NT OS Loader file that actually launches NT.
NTDETECT.COM	This program is run by NTLDR to detect NT's presence.
BOOT.INI	A text configuration file for NTLDR.

## Windows NT v3.5 or v3.51

Basic Windows NT boot problems are very easy to correct. Reboot directly from the NT emergency repair diskette, and follow the instructions. In most cases no other diskettes or CDs are necessary.

If you did not make an NT emergency repair diskette, the NT installation diskette can be used as an Alternative. In this case, reboot from the diskette. You will be prompted to either perform an NT installation or an emergency repair.

## Windows NT v4.0, Windows 2000

Under Windows, to correct the problem, boot the machine into the NT Setup Program (usually by using the three boot disks you made during the initial installation of NT). At the Setup screen you will be given the option of repairing the current NT installation. Choose this option and insert the NT Emergency Repair disk into the machine when prompted.

## DOS

DOS has five (5) files critical to its operation and a boot record. These files reside in the C:\ root directory, and include:

IO.SYS <i>or</i> IBMBIO.COM	This is the file first run by the DOS record. It contains the DOS initialization code and key parts of DOS. It is a hidden system file, and often (but not always) has a file creation time that matches the version.
MSDOS.SYS <i>or</i> IBMDOS.COM	This contains the balance of the resident parts of DOS. It is a hidden system file, and often (but not always) has a file creation time that matches the version.
COMMAND.COM	This program is used to process the DOS command line (it does not stay resident).
CONFIG.SYS	This is the standard configuration file for DOS. See page 26 for specific issues about this file.
AUTOEXEC.BAT	Additional TSRs and commands run from AUTOEXEC.BAT. See page 28 for specific issues about this file.

To load a new copy of the two hidden files and the boot record, boot from a diskette that has the identical version of DOS. At the DOS prompt run:

```
A:\> sys c:
```

The SYS program, with DOS 5 and later, will also insert a new copy of

COMMAND.COM. For older DOS versions, the COMMAND.COM file must be copied from the diskette manually.



---

**Warning:** If you made your DOS boot diskette after NT was installed, the DOS boot disk will have an NT boot record and not the standard DOS boot record! Use a real DOS boot diskette in this case. After all the files are properly restored, reboot through System Commander 2000 to save the new files and configuration.

---

# Chapter 12

## OS and Product Limitations

Each operating system has its own quirks and limitations. We have included a few of the major limitations we have seen. To our knowledge at the time of this writing, there is no way to overcome these limitations.

As well, there are certain products with which we are not compatible. Those are detailed here including suggestions or workarounds where available.

In all cases, the OS or product vendor has the final word on what their product can and cannot do. If you see anything in this chapter that you question please contact the vendor for absolute verification.

## OS Limitations

### Limitations of DOS

1. DOS must be installed into a primary partition on the first physical drive (also called the master drive). DOS installed into either a second hard drive or an extended/logical partition will not boot.
2. When your system has more than one primary FAT partition, the inactive primary partitions may not be visible. This DOS bug will occur when either:
  - a. an extended partition exists without any logical drives defined.
  - b. the extended partition has no FAT logical partitions defined.
3. Novell DOS 7 and OpenDOS have a bug that will stop DOS from

running if more than one primary FAT partition is visible. To correct this bug, hide all primary partitions except the Novell DOS partition.

### **Limitations of Windows 95/98**

Like DOS, Windows 95/98 must be installed onto the first physical hard drive in a primary partition. It is possible to install the start up files into a primary partition with the remainder of the program files in an extended partition or even on the second physical hard drive.

### **Limitations of Windows NT and Windows 2000**

1. NTFS file format can only be seen from Windows NT/2000. Windows 95/98, DOS and others cannot see a partition with the NTFS file format.
2. NT/2000 must boot from a primary partition on the first drive. Most of the non-boot portion of NT/2000 can be located on any partition or drive.

### **Limitations of OS/2**

1. Only one primary partition can be visible to OS/2 at one time. Usually, this is the OS/2 Boot Manager partition, unless OS/2 has been installed in a primary partition on the first hard drive.
2. Like NT, OS/2 has a high performance file system (HPFS). Windows NT, v3 only, can access HPFS partitions, other operating systems cannot.

### **Limitations of other OSes**

Linux, Solaris, SCO UNIX, NextStep, and other UNIX variants use their own unique file formats which are typically not visible to any other OS.

## **Product Limitations**

### **Memory Optimizers (QEMM, MemMaker, etc)**

Memory optimizers attempt to look at your system's startup files and optimize them to free up conventional memory or provide smoother booting. While

we are not incompatible with these types programs, they force multiple reboots of your machine during the optimization process while rewriting start up files during each reboot.

We strongly recommend disabling System Commander 2000 before beginning the optimization process. To do this, simply boot into DOS or Windows 95/98 and run our SCIN program. From the Main Menu, choose *Disable System Commander 2000*, then choose *Temporarily Disable*. Exit SCIN and begin the optimization process. After the optimization, go back into the SCIN program and choose *Enable/Update System Commander 2000*. Reboot the machine and choose the OS you just optimized to save the new start up files.

### **EIDE Disk controller emulation (in software)**

Older systems that fail to support IDE drives greater than 504MB require an EIDE controller card, or, in some cases can use an EIDE emulation in software to access large drives. EIDE emulation is not compatible with all OSes, and may not allow System Commander 2000 to complete its installation.

The nature of these software EIDE emulation products is such that they must install themselves into the hard disk's master boot record, so that they can load before anything else, and boot the operating system on the hard disk. Because System Commander 2000 must also load in the master boot record, software EIDE emulation typically conflicts with the installation and usage of System Commander 2000.

We recommend switching to a true EIDE controller. This will make your system compatible with all OSes and will significantly boost your hard disk performance. Alternatively, one software EIDE product, Disk Manager, is compatible with System Commander 2000 when the first drive in the system is larger than 504MB and managed by Disk Manager. (If the first drive is smaller than 504MB, Disk Manager will not allow System Commander 2000 to install). See Appendix D for more information on Disk Manager and the limitations it has.



### **Anti-Virus Software (Norton, McAfee, etc.)**

Virus detection programs scan the MBR for viruses. If they see anything out of the ordinary, they try to repair it. In rare cases, these programs may see System Commander 2000 as a virus, and should you choose to repair the MBR, you will wipe out System Commander 2000. If this should happen, run SCIN and select *Enable/Update System Commander* to restore the System Commander 2000 MBR.

In no case should you choose to repair the MBR if System Commander 2000 has been installed. System Commander 2000 monitors the boot record, and will tell you if we detect any changes which could indicate a virus. Most of these virus detection programs will allow you to manually disable MBR virus detection.

### **Disk Compression Software (DriveSpace, Stacker, DoubleSpace)**

Because of the inability to correctly diagnose any problems you could encounter with compression, we cannot provide assistance to users of System Commander 2000 with compressed drives.

Compression is a fairly outdated necessity. The purchase price of extremely large hard drives has fallen sharply. In terms of man hours spent getting compression set up and stable (even without System Commander 2000), simply purchasing a larger drive is worth considering.

### **Norton Disk Lock**

Disk Lock is a security package that runs from the MBR. If you are using Disk Lock, System Commander 2000 will not install. You may not need Disk Lock with System Commander 2000 because of System Commander 2000's built-in security system.

# Appendix A

## About System Commander 2000

### Interrupts and Memory

System Commander 2000 is non-resident and uses no memory once a menu selection is made. System Commander 2000 does not intercept any interrupts nor is any part of System Commander 2000 active while an operating system is running. System Commander 2000 is only active for the brief time the operating system selection menu appears on screen. This means that, once selected, System Commander 2000 cannot affect the way an operating system is working.

### Specifications

Handles over 100 x86 compatible operating systems, split as 32 OSES in the MultiFAT partition, up to 16 OSES in logical partitions, and up to 56 OSES in primary partitions across fourteen (14) drives (additional drives are ignored, but usable by operating systems).

Ability to boot other Master Boot Records.

Works with all standard display adapters.

Requires 640KB RAM minimum, but 0 bytes remain resident after a selection is made. OS Wizard requires 4 MB while it is running. Resize operations may require additional RAM for large partitions.

Works with all drive types, IDE, EIDE, SCSI, ESDI and others.

### Summary of System Commander 2000 files

File name	Description
CHECKMBR.EXE	Determines if the System Commander MBR has been erased, and if so, restores it . This program is not a TSR and displays nothing in normal operation.
DOS4GW.EXE	Required for some OS Wizard operations
MSDOS.BAK	Generic MSDOS.SYS file for Windows 95/98.
SCBOOT.DAT	System Commander 2000's data file
SCDISK.EXE	Program to view partition information and to temporally mark partitions bootable or non-bootable. Also used to preset some System Commander 2000 options.
SCEDIT.SYS	The System Commander 2000 file viewer/ editor.
SCHELP.HLP	Installation help file
SCIN.EXE	System Commander 2000 uninstall/enable/ update and configuration program
SCNOTES.DAT	Installation notes file used by SCIN
SCNOTES.TXT	Text only version of installation notes.
SCOSW_x.x	Files for the OS Wizard
SCOUT.EXE	Writes diagnostic information to a file SCOUT.TXT
SCSCREEN.ZIP	This ZIP file holds several screen captures in the PCX file format. This file is not copied to the hard disk.
SYSCMNDR.HLP	Help file for System Commander 2000
SYSCMNDR.SYS	Boot executable - This is NOT a device driver and is only used during the operating system selection process. It is installed in the root directory as a hidden system file.
SETUP.EXE	Installs System Commander 2000 from the

	diskette
VCOM.MSG	Information file for SCIN.

## Files Created by System Commander 2000

File name	Description
BOOT.DAT	The original master boot sector saved during the first time installation, both on the hard disk and on the utility diskette. It is used when uninstalling System Commander 2000 and should not be deleted.
DOSBOOT.DAT	The DOS boot sector before System Commander 2000 is installed. It is only saved on the utility diskette as part of System Commander 2000's special recovery feature. The file should not be deleted.
SCDOS.SYS	This file is created by System Commander 2000 to hold FAT OS hidden system files like IO.SYS and MSDOS.SYS for DOS. SCDOS is also marked as a hidden system file. It may change in size as new operating systems are added to the FAT partition.
SCOSW.LOG	Log of various operations
SCTEMP.BAT	Temporary file (not important to operation)
VDATA.SAV	Option information is saved in this file for the OS Wizard.

## Screen Captures

System Commander 2000 poses two complexities to making a screen capture. For this reason, we include several screen captures in the file SCSCREEN.ZIP. If you wish to capture your own OS selection screen, use the following steps.

First, since System Commander 2000 appears before any other OS, it is not possible to have a screen capture program running. To get around this

## System Commander 2000 User Manual

limitation, you can load a DOS or Windows screen capture program and run the SCDISK utility. Select the option *View OS Boot Menu*. This will bring up the OS selection menu under DOS, so a screen capture can be made.

System Commander 2000 uses a sophisticated graphics on text technology that provides a graphics appearance without the normal reductions in display performance. To properly capture the screen, you will need a screen capture program that understands custom fonts. As an Alternative, use the **-V** command line option on SCDISK to turn off custom fonts. Be aware that icons cannot be shown when -v is used.

We recommend using the screen capture program Collage Plus from Inner Media, Inc. at 603-465-3216. To correctly load the Collage screen saver, at the DOS prompt run:

```
save /cg /h
```

Then run SCDISK with the FONT8 option, since the Collage program does not understand the VGA's 9-bit wide font:

```
scdisk font8
```

Now select *View OS Boot Menu*, and capture your OS selection screen by pressing **Print Scrn**. From the Save screen menu of Collage Plus, select Color PCX (or other file format). Highlight the filename and press **Enter** to capture the screen.

## Upgrading from a previous version of System Commander

To upgrade from a prior version of System Commander, install the new System Commander 2000 as though it were a first time install. You should install System Commander 2000 in the same partition and subdirectory as the original installation. After the files are copied, you will be presented with an option to transfer all menu names and other options to the new installation. Select "Use Prior Settings" to do this.

If you have OS selections that boot from a logical partition, in a few rare cases the new installation may not transfer the OS selection description. In these cases, System Commander 2000 will automatically assign a name based on the operating system name.

System Commander 2000 (and the manual) assume the MultiFAT feature is always on. If you had the option off before, it is automatically set on during the new installation.

## System Commander 2000 New features to Explore

### OS Wizard Improvements

- Supports OS installations on different drives (when allowed by the OS)
- You can see its recommendations and override those values
- The OS Wizard has a new expanded internal database of new OS requirements and needs to ensure excellent automatic disk preparation for your new OS
- New easier to use graphical look and feel

### New Partitioning Operations

- Move and Copy
- Safe resize for FAT, FAT32, NTFS, Linux, and Linux Swap
- Convert NTFS and compressed NTFS to FAT/FAT32

### General improvements

- Automatic handling of all Linux installations (MBR and Superblock)
- Simplified installation
- Auto-identification and support for Windows 2000
- Automatically makes DOS work in partitions past 2 GB (up to 8 GB)

# Appendix

# B

## System Commander 2000 Applications

As a result of booting multiple operating systems, System Commander 2000 also serves the following applications:

### Games

System Commander 2000 will allow you to keep your DOS games while still migrating up to Windows 95/98. Conversely, if you already have Windows 95/98, you can keep your 95/98 games and add games that run under your DOS installation.

Another feature of System Commander 2000 will allow you to create different DOS configurations for games designed to run under DOS. Rather than create the dreaded boot disk for every game you have, you can use the System Commander 2000 boot menu to manage DOS boots designed specifically for the game you wish to run. See the section "Multiple Selections for One DOS" on page 50.

### Development

Rather than having multiple machines, each running a different OS under which you are developing, you can use System Commander 2000 to boot all of them on the same machine. This allows you to develop applications either across multiple platforms or for an individual platform while cutting costs for expensive hardware.

## **QA/Testing**

After you have developed your applications, it is often necessary to run them through rigorous testing using multiple OS installations or software scenarios. With System Commander 2000 you can either boot multiple OSes or boot the same OS with different startup configurations. This will allow you to test your application on the same machine, again cutting expensive hardware costs.

## **OS Migration**

First came DOS, then Windows 95, and now Windows 98, Windows 2000 and Linux. Operating systems are being developed and revamped at an ever increasing rate. Unfortunately, it is often a difficult decision to migrate to these new and improved OSes. System Commander 2000 will allow you to continue to run your preferred operating systems while testing out new OSes.

## **Multi-Lingual OSes**

System Commander 2000 allows those who are multilingual to use the language variants of operating systems with which they are comfortable. Work requires that you use English Windows 95/98, but you grew up programming Japanese? Use System Commander 2000 to get back and forth between what you need and what you want!

## **Training**

System Commander 2000 can be used to cut hardware costs for training facilities by allowing you to boot the operating system you need. If your developers are using Windows 2000 while your support staff is using Windows 95/98, it can sometimes be difficult to arrange training. With System Commander 2000, you can install the OSes you need onto the same machine reducing costs and space in training facilities.



## **Sales Demonstrations**

Field salespeople will love System Commander 2000. It unburdens them from carrying two or even three laptops to demonstrate their products on. If your firm develops applications across multiple platforms, you can use System Commander 2000 to install all of these OSes on a single laptop that your field salespeople can use for demonstrations.

## **Help Desks and Technical Support groups**

Does your support organization support a product that runs under multiple operating systems? If so, you can use System Commander 2000 to boot different OSes on the same machine. This will enable the support engineer to easily replicate the circumstances the user is experiencing.

## **Password Security**

System Commander 2000 provides advanced multi-user password security for a PC while using no resident memory and with zero degradation to application speed or performance.

# Appendix

# C

## Additional Considerations

### Making a partition Bootable or Active

In rare situations, an OS might require an *active* or *bootable* partition before installation. Most FDISKs provide some option to do this. For example, the DOS FDISK allows you to mark any partition as active (including non-DOS partitions).

As an Alternative, you could use the SCDISK utility provided with System Commander 2000. To do this, at the DOS prompt, run SCDISK. Select the option *Change boot status for OS install*. This allows you to set the partition for the new operating system to be bootable. Be aware the SCDISK utility will also hide all other non-bootable partitions when you boot directly from a boot diskette (without going through System Commander 2000). The hiding process is automatically cleared when System Commander 2000 boots up.

### Never Delete other OSes

If during the installation of your OS, the installation program asks if you wish to delete an older OS, select NO unless you truly wish to delete the old OS. In addition, when installing an OS into the MultiFAT partition, do not install the OS on top of (in the same directory as) the old operating system! Instruct the new OS to use a new directory.

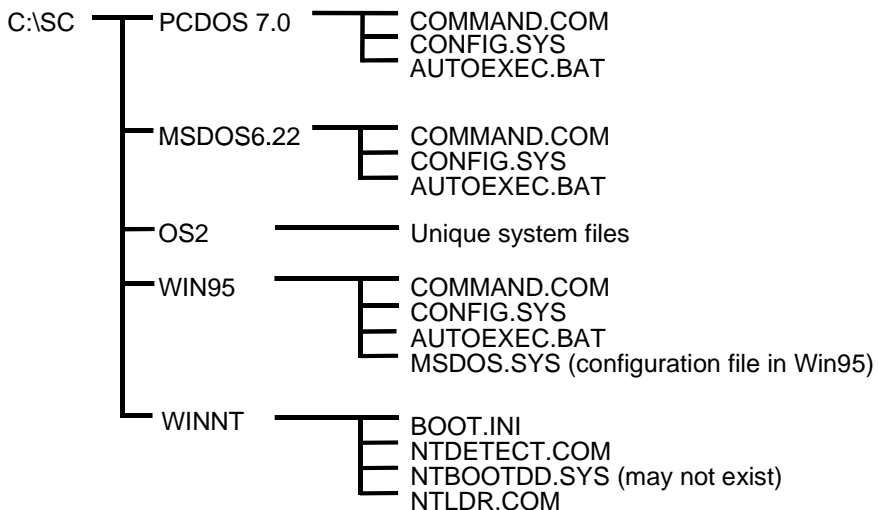
### Making a new OS selection appear

Once the OS is installed, simply reboot, and the new choice should appear on the System Commander 2000 OS selection menu. In some cases, the OS selection might not appear. To add an OS selection to the menu, press **Alt-S** (Setup), and select the *Order, add and removal menu*. Press **Alt-A** (Add), and then select **(P)** for Partition. You can then toggle the bootable status for the OS you just added to Yes.

Although rare, some new OS installations destroy System Commander 2000's master boot record during installation. For example, Windows 95/98 and Japanese DOS/V version 6 do this. In these cases, System Commander 2000 will not run after rebooting the system. This is not a critical problem, and is easily solved. At a DOS/Windows prompt, switch to the System Commander 2000 directory and run SCIN and select *Enable/Update*. You can also perform this action directly from Windows 95/98 Run command. SCIN will reinstall the master boot record without changing any options you have set. Exit SCIN and reboot. Now System Commander 2000 will come up normally.

### Multiple OSes In MultiFAT partition Summary

After loading four OSes, the directory structure might appear as shown below. You can use any directory names you wish, but using the vendor and version as part of the name is helpful in keeping everything straight.



As the various files, like CONFIG.SYS and AUTOEXEC.BAT are changed in the root directory, System Commander 2000 will automatically update the saved images in the appropriate subdirectories.

Hidden system files, like IO.SYS and MSDOS.SYS, are saved and managed in the System Commander 2000 SCDOS.SYS file. Windows 95/98's MSDOS.SYS is saved as a separate configuration file, to allow System Commander 2000 to automatically update this file if changed.

### Special Case - Booting through the MBR

In very rare cases, an operating system fails to follow the PC architecture standard and requires its own Master Boot Record (MBR) to boot properly. The only two cases we've encountered are the pSOS operating system, and Linux's optional LILO MBR installation. Linux is normally installed with a partition boot (called a superbloc in Linux terminology), and should not need this MBR file feature.

To setup the MBR boot selection, you will need a binary file image of the MBR. If the OSes MBR was installed prior to System Commander 2000, we will have saved the MBR in the file BOOT.DAT in the subdirectory where you installed System Commander 2000 (C:\SC is the default). Copy this file into the root directory. It is wise to rename the file so you are aware what it is. For example the Linux MBR could be renamed **LINUX.MBR**.

To add a new OS selection that loads the MBR file, reboot into System Commander 2000. Press **Alt-S**(Setup), and select the *Order, add and removal menu*. Press **Alt-A**(Add), and then press **M**(MBR). The next three dialog boxes will appear in sequence:

**MBR Filename** - Enter the filename of the MBR file. The file does not need to exist yet, as it only needs to exist when you select it from the OS selection menu. A subdirectory is not allowed, as the file you supply will be on the root directory of the C drive (non-compressed).

**MBR Partition Option** - A portion of the MBR normally holds the partition table. When System Commander 2000 loads the MBR into memory, it can transfer the current partition information to the MBR in memory, so that the data is current with the drive layout. Select **OK** to allow the transfer. Select **Bypass** if you want to leave the MBR in memory untouched. If you are unsure which option to use, try OK first. If this fails to boot up properly, you can remove the MBR choice and then add it back, changing this option to **Bypass**.

**MBR Active Partition Option** - This specifies which partition should be

associated with the MBR. For example, if you use the Linux MBR, then you must enter the drive and partition where Linux resides (not the swap partition). You can also elect to make no partition bootable by making the field blank. Press **Alt-I** to see the location of every partition.

Once these three questions are answered, the new MBR choice will appear on the menu. You can have up to four different MBR boot choices on the menu. If needed, you can control access to different partitions for each MBR choice from the Local special options menu.

If a drive and partition were specified, these will appear on all System Commander 2000 menus that show the drive and partition. A small “m” will appear after the partition number. For example, **0-2m**, indicates that partition 2 on the first drive (0) will be made active/bootable when the MBR choice is made.

### Adding Partition Commander

**Did you know that you can combine System commander 2000 and Partition commander?** Installation tips: (choose “A” or “B”, whichever fits your situation):

**A: If you’re installing System Commander 2000 and Partition Commander at the same time, or, if you already have System Commander 2000 installed and you are now adding Partition Commander:** We recommend that you have System Commander 2000 in your computer **before** you install Partition Commander. This allows the Partition Commander installation program to automatically recognize that a more advanced version of System Commander is present. When you install Partition Commander, the following window will appear: “A different System Commander edition was detected...selected menu.” Accept the default option: “Do not replace the existing copy (recommended)”.

**B: If you have Partition Commander installed in your computer, and are now installing System Commander 2000:** Simply install System Commander 2000. (If you have previously installed Partition Commander’s System Commander Personal Edition, do not worry; simply answer “YES” when asked to “Keep previous settings?” This will ensure that all current settings migrate properly). **Note to Partition Commander Version 1.01 users only:** After you have installed System Commander 2000, you should reinstall Partition Commander to ensure the proper integration of the two programs. When you reinstall Partition Commander, the following window will appear: “A different System Commander Edition was detected ...selected menu.” Accept the default option, “Do not replace the existing copy”.

# Appendix

# D

## Other Products

This section lists products that may be useful to you, which are available from other vendors.

## Software

### Disk Manager

This provides LBA support in software for IDE drives larger than 504 MB. Disk Manager must be installed prior to partitioning the disk. It normally installs in the master boot record, in a way that does not conflict with System Commander 2000 as long as the first physical disk is greater than 504 MB in size. If your first disk is smaller than 504 MB, Disk Manager will not allow System Commander 2000 to complete its installation.

Disk Manager version 6 is not compatible with UNIX, NT or OS/2. Special drivers make it compatible with Windows 32-bit file access and Windows 95/98. Version 7 adds support for NT and OS/2 in certain situations.

If Disk Manager is used with an OS that boots from any drive other than the first, a bug in Disk Manager will force the next reboot to occur from a floppy disk. System Commander 2000 will not come up. To fix this, run FDISK and make any partition active on the first drive. Reboot from the hard disk, and in System Commander 2000, press **Alt-S** (Setup). Select the *Global special options menu*. Toggle the option *Force partition active on drive 0* to **YES**. This gets around the bug in Disk Manager.

Contact Ontrack Data Recovery for more information at 1-800-872-2599,

or in the UK, 44 81 974 5522.

### **EZ- Drive (also called MaxBlast and EZ-BIOS)**

This provides LBA support in software for IDE drives larger than 504 MB. EZ-Drive must be installed prior to partitioning the disk. It normally installs in the master boot record, in a way that does not conflict with System Commander. You should always install System Commander after EZ-Drive is installed. System Commander is compatible with EZ-Drive v9 and later. Old versions of EZ-Drive will prevent System Commander from installing (preventing our MBR from being written). You can upgrade to the current EZ-Drive by contracting MicroHouse.

MicroHouse can be reached at 303-443-3388. Their web site is at [WWW.MICROHOUSE.COM](http://WWW.MICROHOUSE.COM)

### **EIDE Drive Controllers**

EIDE controllers have taken over market from the older IDE controllers. EIDE indicates the controller supports LBA, or logical block addressing, to access drive space above 504 MB on large drives. This works very well for DOS, Windows 95/98 and other OSes.

EIDE controllers almost always provide a much smoother way to access drives larger than 504MB than software solutions. Some operating systems, however, may not operate properly with LBA. OSes that are fully LBA compatible include all DOS versions, Windows 95/98, Windows NT, Windows 2000, OS/2 Warp, and more. We recommend you contact the OS vendor and/or EIDE controller manufacturer for a definitive answer.

To support LBA, EIDE vendors must replace the main BIOS hard disk routines. All approaches we've seen to date have a few minor annoyances.



---

**Warning: Never change the state of LBA (on or off) unless you are prepared to repartition and reformat the entire drive.**

---

The most common method uses a ROM on the disk controller card. This is not as nice as the standard IDE designs, since the user needs to ensure the

ROM address does not conflict with other ROMs. The space that the ROM takes will also reduce the amount of high loading space available.

A second method relies only on a device driver. We do not recommend using this type of EIDE controller, since LBA access is not active until the device driver runs. Early OS initialization code will fail if any portion resides beyond the 1024 cylinder boundary (i.e., 504 MB).

Many of the EIDE cards we've seen also steal memory from the top of the main memory area. For example, a DOS **mem** command may show less than the standard 640KB.

## SCSI Drive Controllers

Some SCSI controllers limit access to SCSI drives during the boot up process. In these cases, the SCSI controller will only allow booting from the first two drives. In addition, these controllers usually limit the number of SCSI boot drives by any IDE drives that are in the system. For example, if a system has one IDE drive, and three SCSI drives, only the IDE drive and the first SCSI drive can be used for booting.

For SCSI drives greater than 1 GB, you need to set the translate option on (sometimes referred to as the "greater than 1 GB" option). This allows access to the entire drive by most OSes. Some UNIXes (SCO UNIX) are incompatible with translate mode, and the option must be left off. In this case, all OSes you wish to boot from must be installed within the first 1 GB of the drive.

For example, if you are using the Adaptec 2940 series SCSI controllers, these options are available from the SCSISelect! Utility provided by Adaptec. To enter the SCSISelect! Utility, press **CTRL-A** when prompted during your system startup. From the main menu, choose the *Configure/View Host Adapter Settings* option, and then the *Advanced Configuration Options* selection. In this menu, the option that controls how many hard disks the controller will support through its BIOS is labeled as "BIOS Support for More Than 2 Drives (MS-DOS 5.0 and above)". The option that controls drive translation is labeled "Drive translation for drives > 1 GB".

For other options and other controllers, refer to the documentation supplied with the SCSI controller.



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# Appendix

# E

## Common OS Commands

This section describes common commands available in DOS and Windows 95/98 that are often used in the installation and setup of FAT compatible operating systems. Your DOS and/or Windows 95/98 manuals should provide greater detail about these commands.

### ATTRIB

The attribute command changes the file attributes. In most cases one of the following two commands are used:

To make the MSDOS.SYS hidden file visible, non read-only, and non-system (which allows you to delete or copy the file):

```
C:\> attrib -h -r -s msdos.sys
```

To make the IO.SYS file hidden, read-only, and system:

```
C:\> attrib +h +r +s io.sys
```

### FDISK

Although System Commander 2000 has far more advanced partitioning control, through OS Wizard, DOS and Windows 95/98 provide limited partitioning control with FDISK. The FDISK utility allows you to display current partitions and add or remove partitions on multiple hard disks. Keep in mind that when you delete a partition all of the data within the partition is lost and is not recoverable. Make a backup of important data and programs

before deleting a partition.

If the partition you wish to remove is the partition you installed System Commander 2000 in, be sure to disable System Commander 2000 before deleting the partition.

To run the FDISK utility, at the DOS/Windows 95/98 prompt:

```
C:\> fdisk
```

FDISK provides the following options:

- 1 - Create a DOS partition or Logical DOS drive.
- 2 - Set active partition.
- 3 - Delete partition or Logical DOS drive.
- 4 - Display partition information.
- 5 - Change drive.

Keep in mind that you can only create a partition when unused disk space is available. If no space is available, FDISK cannot create a new partition. If you need to create more than one primary partition on a single drive, you must follow the steps on page 34.

FDISK can only create FAT partitions. These are suitable for DOS, Windows 95/98, OS/2 or NT. It cannot create special partition types for UNIXes, NetWare, OS/2's HPFS type, nor NT's NTFS type. Version 6 and later FDISK can delete any type partition (i.e. DOS as well as non-DOS). Older FDISK versions can only delete DOS partitions.

A partition cannot be booted unless it is active. If System Commander 2000 is already installed, you do not need to be concerned with the active status, since System Commander 2000 automatically handles this. If System Commander 2000 is not installed, be sure to make the partition you wish to first boot to as *active*.

After the creation of a partition it is necessary to format the partition. See the next section for instructions using the format command.

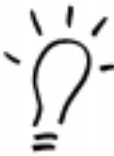
## FORMAT

This prepares a new disk partition for use and creates a boot record for the partition. A format will erase the data in the partition and makes the partition ready to accept files. When accessing a new partition from DOS that has not been formatted, the error message appears *Invalid media type*.

To format a partition, the format command is issued with the drive letter. The **/S** option will also load a set of minimal start up files from the boot diskette so the partition (if active) will boot. To format drive E and load the system into drive E, the following command is issued:

```
A:\> format e: /s
```

## SYS




---

**Technical Information:** The SYS command loads the operating system startup files onto the specified drive. For MS-DOS and Windows 95/98, this includes IO.SYS and MSDOS.SYS. Versions 5 or later of the SYS command will also copy the COMMAND.COM file to the target disk. With PC-DOS, OpenDOS, Novell DOS, and DR-DOS, the SYS command loads the files IBMIO.COM and IBMDOS.COM.

---

To issue the SYS command from a boot diskette to place the system onto the C: drive, the command is issued:

```
A:\> sys c:
```

It is not necessary to boot from the diskette drive before issuing the SYS command. After the SYS command completes, it returns the notice "System Transferred".

The SYS command has a number of annoying quirks that may prevent it from working. We would recommend you use System Commander 2000's *Transfer System* option instead. This is run from **SCIN**, under the *Special options* menu (see page 107).

If the SYS command detects a newer version of the OS already installed, it may complain and do nothing. In this case, delete the files on the target disk root directory, IO.SYS and MSDOS.SYS (or if PC-DOS or Novell DOS, delete the files IBMIO.COM and IBMDOS.COM). Remember that the files

are usually hidden read-only files, and the attributes must be changed before deletion.

If the SYS command returns the confusing message "Write failure, diskette unusable", it means the target partition has not been formatted.

A third Alternative to the SYS command or System Commander 2000's *Transfer System* option is provided with the Norton Utilities. If you have this useful tool, run the DISKTOOL program, and select the option "Make a disk bootable". DISKTOOL, like System Commander 2000, avoids a number of annoying limitations of the SYS command.

# Appendix

# F

## Contacting Technical Support

We hope that you will never encounter problems with System Commander 2000. However, the reality is that things may come up that are not covered in this manual and you may need technical assistance.

We strongly encourage you check the table of contents or index of this manual to see if you can save yourself a phone call. Also remember, there is very detailed troubleshooting assistance provided with the SCIN program and you can press F1 in most places to get context sensitive help with System Commander 2000.

Should you find yourself at a loss and need to contact us directly, we will do our best to assist you with using System Commander 2000 in every way we can.

### When You Call

Before you call technical support, please have your version and serial number ready. We can only provide technical support if you have your serial number and version number available when you call. This information will be verified. In addition, we will need to know the exact nature of your problem and what you have done to attempt to remedy it.

Our technical support hours are **Monday through Friday, 9 a.m. to 5 p.m.** Pacific Standard Time (except holidays). *Technical support is on a first come, first serve basis.*

In order to maximize the troubleshooting effort, we strongly recommend that when you call, you have your System Commander 2000 installation disk and a bootable floppy for at least one of your installed OSes.

Please refer to the top front of the registration card for our technical support and fax numbers and our e-mail address. When sending a fax or e-mail, please run the System Commander 2000 diagnostic utility SCOUT.EXE and include the output it creates (SCOUT.TXT).

## Getting a Master Password

If you lose or forget your password, V Communications can provide a onetime use master password that will let you gain access to your system. Before calling V Communications, you should be at the password request box. We will need information presented in the About box (**Alt-A**).

In addition, please have your credit card ready. There is a nominal fee for this service. If you do not have a credit card, call for the current cost of this service. V Communications requires prepayment for this service.

When you call V Communications, we will collect key information from you. After the call we will verify your ownership. Upon verification, we will call you back and provide the master password for your copy of System Commander 2000.

This master password will only work on your single copy of System Commander 2000 and is valid only for one boot time. We strongly recommend you go directly to the password menu and set a new password.

After you select an OS, the master password is changed. Should you lose your password again, a new master password will be required.

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