System Commander 9

User's Guide

Avanquest®

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GETTING STARTED

Welcome to System Commander 9

Introduction

System Commander® 9 allows you easy access to multiple operating systems on a single computer. Before any operating system starts, a menu of selections appears.

Select the operating system you want, and System Commander takes care of the rest. This makes migrating 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, or even beta test versions of new operating systems that might not be stable.

Features and Highlights

- The OS Wizard™ determines the best configuration for new operating systems and prepares your system for the new operating system.

- You can manage of over 100 different operating systems in primary and logical partitions, as well as boot from CDs, floppy drives A and B, or through specific master boot records.

- You can manage of up to 32 different FAT/FAT32 compatible operating systems in a single primary partition, including different DOS versions, Windows® 95/98/Me/NT/2000/XP/2003, and OS/2.

- System Commander supports hard drives up to 2 TB (2000 GB).

- The OS Wizard and Partitioning components have USB support for external drives and most mouse and keyboard connections after booting up.

- System Commander supports booting from CDs and DVDs.

- Security protection against unauthorized system use can optionally prevent hard disk access and booting from floppy disks.

- You can automatically save and maintain system files and critical configuration files for each operating system, such as CONFIG.SYS, AUTOEXEC.BAT, BOOT.INI, and others.

- Boot sector virus protection checks for infections on every boot with instant replacement of the infected boot sector and system files.

- System Commander is fully compatible with all Windows operating systems including 95/98/Me/NT/2000/XP/2003 and Vista®, OS/2, Linux®, PC UNIXes, NetWare®, and most other 80x86 compatible operating systems.

- System Commander is compatible with all DOS types including MS-DOS, PC-DOS, DR-DOS, and Open DOS.

- Menu selections appear before any operating system runs.

- After an operating system selected, System Commander uses no resident memory.

- Installing and reinstalling operating systems is quick and easy.

- Operating systems always run at full speed without any performance degradation.

Uses for System Commander

Since System Commander allows you to boot from multiple operating systems, you can use it for any of the following purposes.

Games

System Commander allows you to keep using your older games that are incompatible with newer operating systems. For example, some older Windows based games will not run under Windows Vista.

Development

Rather than having multiple computers, each running a different operating system under which you are developing software, you can use System Commander to boot all of them on the same computer. This allows you to develop applications either across multiple platforms or for an individual platform while cutting costs for expensive hardware.

QA and Testing

After you have developed your applications, it's often necessary to run them through rigorous testing using multiple operating system installations or software scenarios. With System Commander you can either boot multiple operating systems or boot the same operating system with different startup configurations. This allows you to test your application on the same computer, reducing expensive hardware costs.

Operating System Migration

First came DOS, then Windows, Linux, and more. Today XP is the most common Windows operating system with Vista available and new versions such as Windows Vienna in the works. Operating systems are being developed and revamped at an ever-increasing rate. Unfortunately, it's often a difficult decision to migrate to these new and improved operating systems. System Commander allows you to continue running your preferred operating systems while testing out new operating systems.

Multi-Lingual Operating Systems

System Commander allows those who are multilingual to use the language variants of operating systems with which they are comfortable. If your work requires that you use English Windows, but you grew up programming Japanese, you can use System Commander to switch between what you need and what you want.

Training

System Commander 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 Vista while your support staff is using Windows XP, it can sometimes be difficult to arrange training. With System Commander, you can install the operating systems you need onto the same computer reducing costs and space in training facilities.

Sales Demonstrations

Field salespeople will love System Commander. It unburdens them from carrying two or even three laptops for demonstrating their products. If your firm develops applications across multiple platforms, you can use System Commander to install all of these operating systems 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 to boot different operating systems on the same computer. This enables the support engineer to easily replicate the circumstances a user is experiencing.

Password Security

System Commander provides advanced multi-user password security for a computer while using no resident memory and with zero degradation to application speed or performance. For more information, see "Managing User Accounts" on page 209.

Installing System Commander

Overview

The System Commander installation won't affect any operating systems you currently have installed. After completing the installation, your installed operating systems automatically appear on the System Commander OS Selection Menu (see "OS Selection Menu Tour" on page 49). You will also have direct access to Partition Commander (see "Partition Management" on page 81).

System Requirements

- CD-drive (not needed for electronic download).

- Either Windows 95/98/Me/NT/2000/XP/2003/Vista or DOS installed, or a boot diskette from one of these operating systems with access to the CD-drive.

- 20 MB of unused disk space for installation (less for Windows 9x/Me or DOS).

- Partitioning operations requires 32 MB RAM while running. For some operations, such as resize or conversion of very large partitions, significant additional RAM might be necessary.

- Windows or DOS installed (NTFS/FAT32 or FAT), or you must have a primary FAT partition on the first drive below 8 GB or a primary FAT32 partition anywhere on the drive.

- Acrobat Reader 4.0 or higher to access the online user's guide.

- Optional: Two 1.44 MB diskettes ready to make the optional utility and restart diskettes. For systems without diskette drives, the System Commander program CD is bootable and can be used for directly running Partition Commander and its restart feature, or you can create a bootable CD/DVD from the included ISO image.

Installing in Windows

The Windows installation covers all supported versions of Windows. Your installation procedures might vary slightly from the following instruction, depending on your version of windows and your preferences.

If you installed Vista when other Windows operating systems (NT/2000/XP/2003) exist, prior to having System Commander to protect them, Vista will automatically remove hidden system files and install it's rudimentary OS Loader into each Windows making these operating systems hidden from the System Commander OS Selection Menu. To isolate other operating systems from Vista's OS Loader, see "Removing Vista Boot Management" on page 167.

Running the Installation Wizard

Before installing System Commander, make sure that no other programs are running.

1. Insert the System Commander program CD into your CD-drive.

In most situations Windows automatically detects and runs the installation. If this doesn't happen, see "To Start the Installation Manually" on page 27.

If you downloaded the program, locate the file using Windows Explorer® and then double-click the file to start the Installation Wizard.

2. At the install menu, click **Install System Commander**.

3. Click **Next** to start the installation wizard.

4. Accept the license agreement and click **Next**.

5. Enter your user information and the System Commander serial number and then click **Next**.

6. When you reach the Create Diskettes screen, you can choose from the following options:

   • **I already have a bootable CD (from the retail purchase) and can skip this step** skips to the next step in the installation.

   • **Make a new bootable utilities/recovery CD** displays a dialog with information about how to make a Boot/Restart CD. Click **OK** to close this dialog and continue with the installation.

   • **Make the diskettes for utilities and recovery** opens a step to create the Boot Utility Disk, Restart Disk, or both. Click **Next** to start the diskette creation.

   > **TIP:** If you choose not to make the CD or diskettes, you can make them later (see "Using System Commander's Diskette Builder" on page 34 and "Using Your CD/DVD Burner" on page 34).

7. Click **Next** to view the security information.

   By default, the Administrator password is set as "password" and can be changed at the OS Selection Menu Settings (see "Changing the Administrator Password" on page 208).

8. Select your registration method and then click **Next**.

9. Select whether or not to read the readme file and then click **Next**.

10. If you want to check for updates, check the **Check for program updates** box and then click **Finish** to complete the installation wizard.

The System Commander installation will complete after you restart your computer.

To Start the Installation Manually

In the event the installation doesn't automatically start, you can start the wizard from the CD-drive.

1. Open the Windows **Start** menu and choose **Run**.

   If you are installing in Vista, open the **Start** menu and type run.

2. Click **Browse** to locate and select the setup.exe file in the install folder on the program CD.

   If you purchased your program electronically, browse to the location where you saved the EXE file.

3. Click **Open**.

4. Click **OK** and follow the on-screen instructions.

Installing in DOS

If you have DOS installed, you can install System Commander directly from the DOS prompt using our alternative DOS installer.

1. Insert the System Commander program CD into your CD-Drive.

2. At the prompt, enter the drive letter of the CD-drive, followed by `\install\scin install` and press ENTER.

3. Follow the on-screen instructions.

For more information, see Limitations of DOS (see page 129) and Configuring for DOS (see page 197).

Installing with a Boot Diskette

You will need a Windows or DOS boot diskette that has support for your CD-drive

1. Insert the boot diskette into drive A.

2. Restart the system and boot from the diskette.

   If your system doesn't boot to the diskette, you need to change the system BIOS to boot from the disk drive.

3. When prompted, select **Boot with CDROM support**.

4. Insert the System Commander program CD into your CD-drive.

5. At the prompt, enter the drive letter assigned to the CD-drive, followed by `\install\setup` and press ENTER.

6. Follow the on-screen instructions.

Notes for Disk Compression Users

System Commander must be installed on a non-compressed drive. It is fully compatible with disk compression on other partitions. We recommend that each new operating system be added in its own separate partition.

For installation under Windows NT/2000/XP/2003/Vista in an NTFS file system, System Commander installs the boot portion in a non-compressed area. No special actions are necessary.

You could have problems with versions of Windows, prior to Windows 2000, that use disk compression if you place more than one operating system in the same partition, because disk compression software operates differently depending on the operating-system version and manufacturer. Switching operating-system versions beneath it might cause problems and can 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.

At some point you will reboot after the System Commander installation is completed. If you get a "Boot #" message, it often indicates the drive was compressed (see. "System Commander Bootup Messages" on page 261).

Making a Boot Disk

Overview

It's always a good idea to have a boot CD/DVD or diskette for your operating system. This can often get you out of trouble, should the operating system crash or have other problems that prevent it from running normally. Some of the more recent operating system releases include a boot CD/DVD, which can often be used in place of a boot diskette. Typically, retail versions of Windows Me and later Windows (2000/XP/2003/Vista) include the ability to boot from the CD/DVD. However, most Windows OEM versions that come with a new computer only allow installation or come pre-installed and don't include installation software. Many Linux distributions also include the ability to boot from the CD/DVD.

If you are unsure what you have, it might be worth a quick test to see what happens when you boot from the CD/DVD. If it only provides an option to install, cancel the install, and it might leave you at a point where other utilities can be used at a command prompt. Remove the CD/DVD and reboot (press CTRL-ALT-DEL).

Windows Vista

Before you can create a Windows Vista boot diskette you must have a diskette drive and have already installed System Commander (see "Installing System Commander" on page 25).

There are two files required for the Vista boot diskette: bootmgr and BCD.

> **NOTE:** You can't copy the BCD file while in Vista because you will get a message the file is in use.
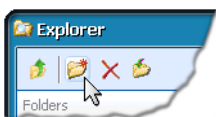
7. Start the computer to the OS Selection Menu.
8. Click **Partitioning** from the tool bar.
9. Click **Manual partitioning** from the Partition Wizard menu.
10. Open the **Tools** menu and choose **Partition Explorer**.
11. Click the **New Folder** button and create a folder named BootDisk in the root of the drive.
12. Copy the bootmgr file from the root directory to the \BootDisk folder.
13. Create a subfolder named boot in the \BootDisk folder
14. Open the \boot folder in the root of the drive.
15. Copy the BCD file from the \boot directory to the \BootDisk\boot folder.
16. Exit the Partition Explorer and restart the computer.
1. Open the Windows **Start** menu and type run.
2. Type cmd and press ENTER to open the command prompt window.
3. Place a diskette in drive A and type Format A: at the command prompt.

> **NOTE:** Do not skip this step. This is necessary even if the diskette is pre-formatted, as the Format in Vista installs a different boot record than the one used by older versions of Windows or DOS.

4. Type Exit to leave the command mode.
5. Open Windows Explorer and copy the contents of the \BootDisk directory to the diskette.

If you want to test your new boot diskette, leave the diskette in the drive and restart your computer. It should boot from the diskette and then open Windows Vista.

Windows NT/2000XP/2003

Microsoft Windows NT/2000/XP and 2003 don't give you the option to create a startup disk during installation, but it's relatively easy to do if you are somewhat familiar with using command prompts.

1. Open the Windows **Start** menu and choose **Run**.

    If you are using Vista, open the **Start** menu and type run.

2. Type cmd and press ENTER to open the command prompt window.

3. Place a diskette in drive A and type Format A: at the command prompt.

    NOTE: Do not skip this step. This is necessary even if the diskette is pre-formatted, as the Format in NT/2000/XP/2003 and Vista installs a different boot record than the one used by Windows 9x/Me or DOS.

4. Type Exit to leave the command mode.

5. Open Windows Explorer and copy the following hidden system files from the C:\ root onto the diskette:

    ntldr

    ntdetect.com

    boot.ini

    ntbootdd.sys (only if present, needed for SCSI disks only)

    TIP: If you can't see all the files. you can display hidden system files in explorer by opening the **Tools** menu and selecting **Folder Options**. Then, click the **View** tab and click the option in Advanced settings to **Show hidden files and folders**. Also uncheck the option to **Hide protected operating system files**.

    You might want to edit the copy of the BOOT.INI text file that you copied onto the diskette (don't edit the one on the hard disk). It controls which partition holds the operating system and will be booted, along with other options.

6. Boot from the diskette to confirm that is working as expected.

    It will be slow, but eventually you will be asked to log into Windows.

Windows 95/98/Me

There are three methods you can use to create the boot disk:

- Using System Commander's Diskette Builder (see page 34)
- Using Your CD/DVD Burner (see page 34)
- Using Windows 98/Me (see page 34)

Using System Commander's Diskette Builder

1. Open the Windows **Start** menu and choose **Programs > System Commander** to start System Commander.

2. Select **Make Boot/Restart Disk** from the Utility Wizard.

   If the Utility Wizard is not displayed, click the Wizard button or open the **Options** menu and select **Make Boot/Restart Diskette(s)**.

3. Choose to make the **Boot Utility Disk**, the **Restart Disk**, or both and then click **Next** to continue.

   At a minimum, make the utility diskette, which will be a bootable diskette with your operating system along with other useful system files.

4. Insert the diskette in the drive and click **Next**.

5. Following the instruction to create each diskette.

Using Your CD/DVD Burner

If you want to make a Boot/Restart CD/DVD, use your CD/DVD burning software to create the CD/DVD from the ISO file that installs with System Commander. You can find this file at the following location:

C:\SC\BootRestartCD.ISO

For more information, refer to the documentation supplied with your CD/DVD burning software.

Using Windows 98/Me

NOTE: This method is not available in Windows 95.

1. Open the Windows **Start** menu and select **Settings > Control Panel**.

2. Click **Add/Remove Programs**.

3. Click on the **Startup Disk Tab**.

4. Click **Create Disk** and follow the instructions.

Linux

Your Linux distribution should have specific instructions on making a set of boot diskettes and/or information indicating if the CD/DVD is a bootable type. Even more important than Windows, you should always maintain a means to boot into Linux from a diskette or CD/DVD. Linux tends to be sensitive to some system changes that will cause it to fail to boot up from the hard disk. Most of these issues can be solved, but only if there is a means to boot up from a CD/DVD or diskette set. Your Linux distribution will also have troubleshooting tips for correcting boot up problems, usually related to LILO or GRUB, which are the most common Linux boot loaders.

DOS

1. Switch to the C:\SC directory and run scin.exe.
2. Select **Special options > Make Utility diskettes**.
3. Select to make the **Utility** diskette.

In addition to making the diskette bootable, SCIN will copy a number of useful DOS command utilities.

Updating System Commander

Overview

Periodically, improvement are made to System Commander by adding features, making changes based on customer requests, and fixing problems.

We recommend that you check for updates as soon as you purchase and install System Commander to ensure that you have the latest version.

NOTE: It's important to check for updates on a regular basis to ensure you have the most recent version of System Commander.

Updating System Commander

Before update System Commander, make sure you're connected to the Internet. If you access the Internet using a dial-up modem, you should already be dialed in, or your browser should be set up to automatically dial in.

1. Start the System Commander Utilities Console.

2. Click the **Help** menu and choose **Check for Updates**.

    System Commander uses the internet to check for program updates. Make sure you are connected to the internet before proceeding.

3. Click **Next** to start checking for updates

4. If and update is available, check the option next to the update and then click **Next**.

5. After the update has downloaded, click **Next** to continue.

6. Click Install to install the update now.

    If you click **Cancel**, the next time you open the Utilities Console, you will be asked to instal the update.

7. After the update has installed, click **Finish** to close the Wizard.

The System Commander update will complete after you restart your computer.

Checking for Updates Automatically

You can configure LiveUpdate to check for program updates automatically and download the updates to your computer.

1. Open the **Help** menu and choose **LiveUpdate configuration** to view the Update Configuration dialog.

2. Check the Automatic option.

3. Open the **Check updates every** drop-down menu and choose a frequency.

4. If you want to use the Wizard for handling the downloads, check the **Use the Wizard for downloading updates** box.

    When this option is checked, each time the check for update frequency occurs, the Wizard appears. If this option is unchecked, System Commander will check for updates silently. If an update it available, the Wizard appears.

5. Click **OK** to apply the changes and close the dialog.

If you don't want System Commander to check for updates automatically, check the **Manual** option.

Getting Help

Overview

Help for System Commander is installed with the program. The System Commander Help offers many features to assist you in finding the information you need to help you prepare for multiple operating systems, change the program configuration, and manage user access.

There are two versions of help in System Commander—one for the Utilities Console in Windows and one for the OS Selection Menu that appears when you start your computer.

Viewing and Printing the Online User's Guide

To view or print the online user's guide, you must have Adobe® Acrobat® 4.0 or later installed on your computer. If you don't have Acrobat Reader installed, you can install it from the System Commander program CD or download a free copy from www.adobe.com.

To access the user's guide, open the **Help** menu and select **User's Guide**.

If there wasn't enough room on your computer to install the user's guide, you can open the SystemCommander.pdf file on the program CD.

After the user's guide opens in Acrobat Reader, you can view it on-screen, print the entire document, or print just the pages you need.

For complete information about using Acrobat Reader, see the Acrobat Reader online help or contact Adobe technical support.

To Print the Online User's Guide

Open the Acrobat Reader **File** menu and choose **Print** to open the Print dialog.

The name of the selected printer appears at the top of the Print dialog. If this isn't the printer you want to use, click the **Setup** button in the dialog and then choose another printer.

Choose the pages you want to print from the Print Range area and then click **OK** to begin printing the user's guide.

Accessing the Utilities Console Help

The Utilities Console Help opens when you open the **Help** menu and choose **Help** or when you click the **Help** button on the Tool Bar.
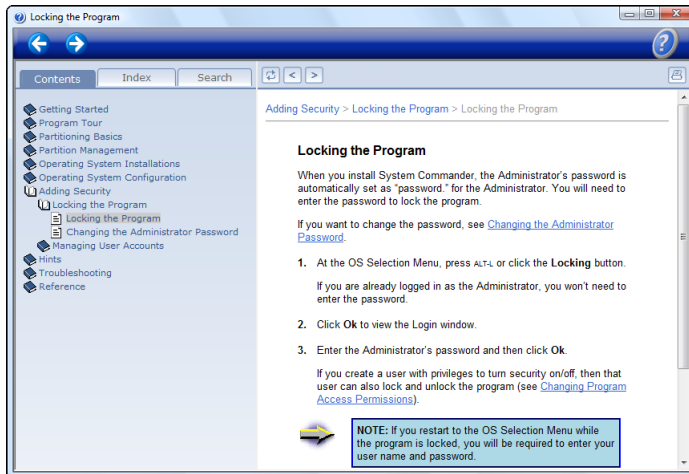
- To view a help topic, click a topic in the **Contents** tab on the left side of the help window.

- To view an alphabetical index, click the **Index** tab.

- To search for a topic, click the **Search** tab and type the text you want to find.

- To browse through the topics, click the **Browse** buttons located at the top of the screen.

- To navigate to recently viewed topics, click the **Navigation** buttons located above the tabs.

Accessing the OS Selection Menu Help

When you start your computer, the OS Selection Menu appears. To access the help, click the **Help** button in the top-right corner of the Tool Bar to view the list of help topics.
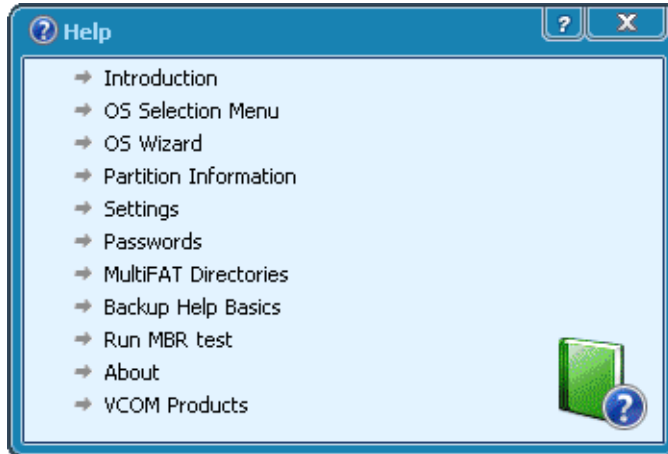
Select a topic from the menu to learn more about it.

Viewing Task-Related Help

When you are performing a task within the OS Selection Menu, some windows have a question mark (**?**) button in the upper-right corner of the window.

When you click this button, a help dialog specific to the task you are performing appears.

Clicking the **X** button or pressing ESC closes the help dialog.

Viewing the Help Index

To view the Help index of topics, click the **Index** button at the top of the help topic window.

Clicking the **X** button or pressing ESC closes the help dialog.

PROGRAM TOUR

Utilities Console Tour

Overview

The Utilities Console is the Windows interface of System Commander. Using the Utilities Console, you can set the program preference, enable and disable System Commander, create a Boot/Restart Disk, and check for updates.
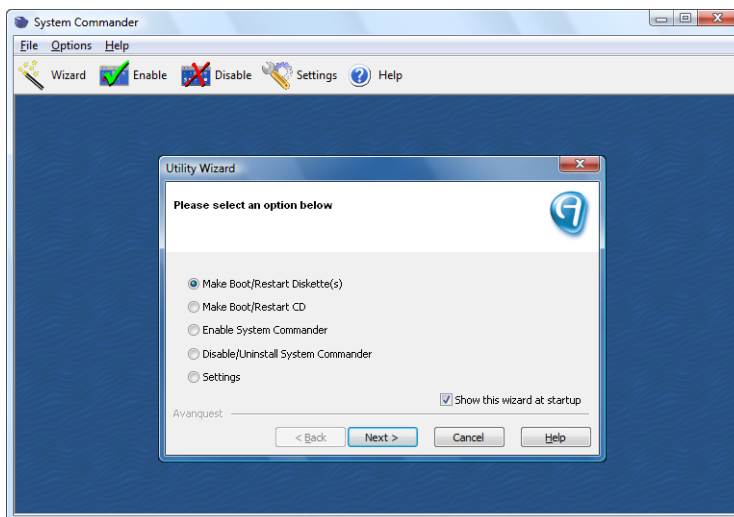
Utility Wizard

When you first start the Utilities Console, the Utility Wizard appears with choices for commonly accessed features.
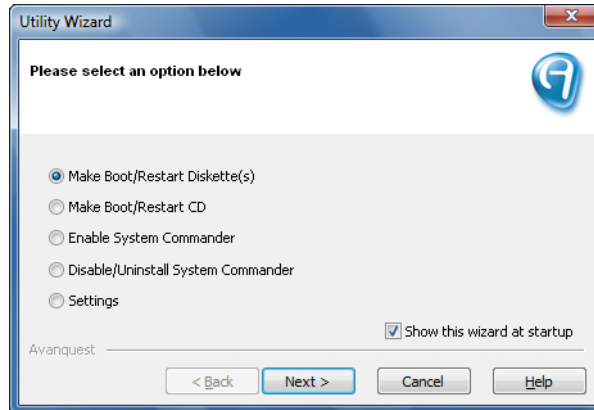
- **Make Boot/Restart Diskette(s)** allows you to create a Boot Utility Disk, a Restart Disk, or both (see "Making a Boot Disk" on page 31).

- **Make Boot/Restart CD** displays a message telling you how to create the CD from the ISO file using your CD burning software.

- **Enable System Commander** allows you to re-enable System Commander after you have temporarily disabled it (see "Enabling System Commander" on page 221).

- **Disable/Uninstall System Commander** allows you to temporarily disable to permanently remove System Commander (see "Disabling and Uninstalling" on page 217).

- **Settings** allows you to change program preferences from Windows. Not all settings can be changed from within Windows and are only available from the OS Selection Menu Settings (see "Changing the Program Settings" on page 241)

You can choose from these options and then click **Next**, or you can click **Cancel** to access the System Commander Utilities Console.

TIP: If you don't want the Utility Wizard to appear each time you start the Utilities Console, uncheck the **Show this wizard at startup** box.

To display the Utility Wizard again, click the **Wizard** button on the Tool Bar or open the **Options** menu and choose Utility Wizard.

Menu Bar

The Menu Bar is located at the top of the Utilities Console. It contains the following menus with additional options.
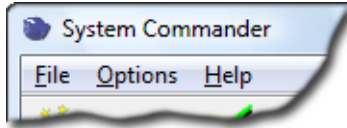
- The **File** menu has options that allow you to enable, disable, and uninstall System Commander (see "Enabling System Commander" on page 221 and "Disabling and Uninstalling" on page 217).

- The **Options** menu has options that allow you to create boot/restart disks, view the program settings, insert and extract virtual files, and gather information useful when diagnosing problems with technical support.

- The **Help** menu has options that allow you to view the online user's guide and open the online help.

> **NOTE:** The online user's guide is a PDF file. You must have a program capable of viewing PDF files installed to view the online user's guide.

Tool Bar

The Tool Bar is located below the Menu Bar on the Utilities Console. It contains several buttons that are shortcuts to commands also available from the Menu Bar.

- The **Wizard** button displays the Utility Wizard (see "Utility Wizard" on page 46).

- The **Enable** button allows you to enable System Commander if it has been disabled. If System Commander is currently enabled, the Enable button allows you to temporarily disable or permanently remove System Commander from your computer (see "Enabling System Commander" on page 221).

- The **Disable** button allows you to temporarily disable System Commander or remove it (see "Disabling and Uninstalling" on page 217).

- The **Settings** button allows you to view and change the general and hardware settings (see "Changing the Program Settings" on page 241).

- The **Help** button opens the System Commander Help (see "Getting Help" on page 39).

OS Selection Menu Tour

Overview

The OS Selection Menu appears when you boot your computer after installing System Commander. There are two parts to the OS Selection Menu—the Tool Bar and the List Pane. The image below shows the default appearance of the OS Selection Menu.
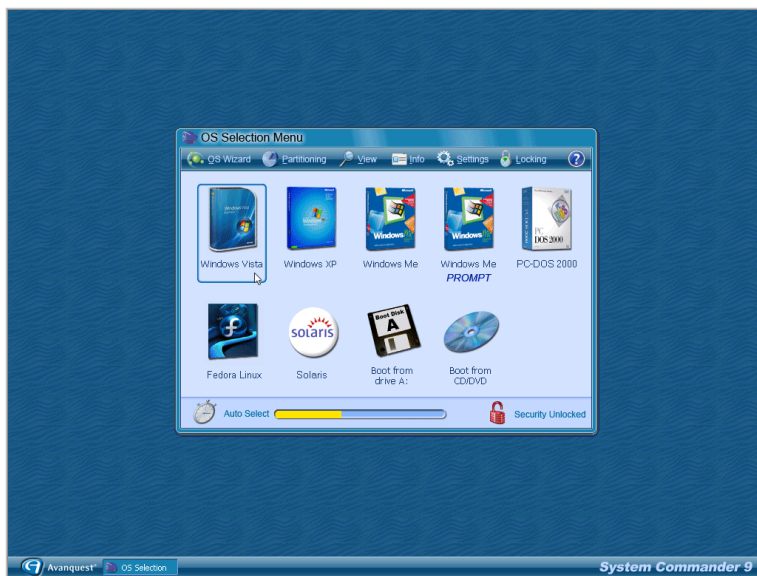
NOTE: The appearance of the OS Selection Menu might vary depending on your selected graphics style (see "Changing the OS Selection Menu Appearance" on page 248).

Tool Bar

By default, the Tool Bar is located at the top of the OS Selection Menu. The buttons on the Tool Bar can be accessed by either clicking them with your mouse or by using the keyboard shortcut to access the options. To activate the keyboard shortcut, press ALT and the first letter of the option.
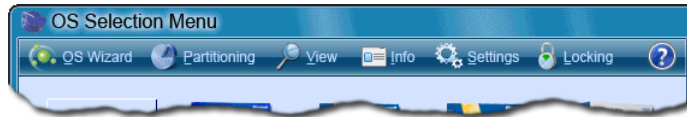
- The **OS Wizard** button starts the OS Wizard for setting up and installing new operating systems (see "Installing Operating Systems" on page 135).
- The **Partitioning** button starts the Partition Wizard™ (see "Using the Partition Wizard" on page 101).
- The **View** button change the display of the List Pane from large icons to a details view (see "List Pane" on page 51).
- The **Info** button displays the Partition Information dialog with detailed information about each partition (see "Viewing Partition Details" on page 50).
- The **Settings** button opens the Settings menu to make changes to program settings (see "Changing the Program Settings" on page 241).
- The **Locking** button locks or unlocks the security settings (see "Locking the Program" on page 207).
- The **Help** button (**?**) opens the OS Selection Menu help index (see "Accessing the OS Selection Menu Help" on page 41).

Viewing Partition Details

The Partition Information dialog allows you to view detailed information for the partitions on your hard drives. To view the Partition Information dialog, press ALT-I or click the **Information** button on the OS Selection Menu Tool Bar.

Select a partition from the list on the top to view detailed information for the partition at the bottom of the dialog.

- The **Detail** button toggles the display of more or less details for the selected partition.
- The **Empties** button toggles the display of empty partition on the partition list.

Press **OK** to close the dialog and return to the OS Selection Menu.

List Pane

By default, the List Pane appears below the Tool Bar and displays large icons that represent each of your booting options. If you want to view the List Pane with small icons and more details, you can select the **View** button from the Tool Bar to switch the display.

Thumbnail View   Details View

The order and appearance of the icons can be changed by clicking **Settings** from the Tool Bar and selecting options from the **Timeouts and default OS**, **Order Add and Remove**, and **Description and icons** menu options. For more information, see "Modifying the OS Selection Menu List Pane" on page 252.

NOTE: We recommend that you wait to attach any USB hard drives until after your computer reboots. Even if you disable the **Enable USB support** option (see "Changing the General Settings" on page 89), your system BIOS might still detect your USB hard drives. However, the BIOS emulation is extremely slow and can cause long delays when starting the OS Wizard or Partitioning.

Start Menu

When you boot your computer using the Rescue Disk or cancel the OS Wizard or Partition Wizard, you can open the **start** menu to re-run the Partition Wizard, undo operations with the BackStep Wizard™, perform manual and automatic partitioning, run Copy Commander™, change settings, view files, and get basic help.

- **Partitioning** opens the Partitioning window (see "Viewing Your Drives and Partitions" on page 85).
- **OS Wizard** opens the OS Wizard for creating and formatting partitions for new operating system installations (see "Installing Operating Systems" on page 135).
- **Partition Wizard** opens the Partition Wizard (see "Using the Partition Wizard" on page 101).
- **BackStep Wizard** opens the BackStep Wizard for undoing changes made by System Commander (see "Undoing Changes Using the BackStep Wizard" on page 116).
- **Settings** has two choices for changing the general and regional program settings (see "Changing the Manual Partitioning Settings" on page 89 and).
- **View** allows you to view the AUTOEXEC.BAT, CONFIG.SYS, MSDOS.SYS, and BOOT.INI files.
- **Help** allows you to view general help version information for the program.
- **Exit** quits System Commander and restarts your computer.

NOTE: If you want to return to the OS Selection Menu, you must restart your computer.

Booting from the Disk

Overview

When you boot your computer from either the Boot Utility Disk or from the System Commander program CD, a menu appears with a list of options that allow you to enable System Commander, modify your partitions, and perform advanced features.

NOTE: The Boot Utility Disk contains a limited number of tools.

Starting the Boot Disk

After your computer boots from the boot disk, select the desired option by typing the number of the option. The following assumes that you are booting from a CD.
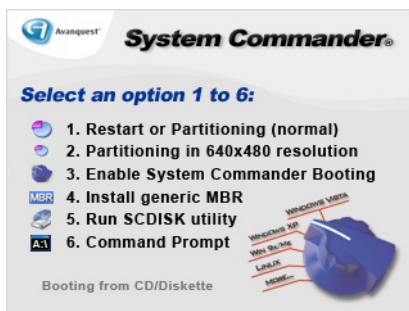
NOTE: To access the Partition Wizard from the diskette, boot from the Restart Disk. To access other utilities, boot from the Boot Utility Disk. For more information, see "Using System Commander's Diskette Builder" on page 34.

Restart or Partitioning (normal) runs the partition restart operation if interrupted (power failure) or runs the Partition Wizard to view and change partitions (see "Using the Partition Wizard" on page 101).

Partitioning in 640x480 resolution forces your computer to run in 640x480 video mode (CD/DVD boot only).

Enable System Commander Booting runs the CHECKMBR utility to automatically repair the MBR and/or boot record which prevents System Commander from running. This doesn't change the partition table.

Install generic MBR temporarily disables System Commander without affecting the partition table.

Run SCDISK utility allows you to view the drive partitions, manually set the active partition (not useful if System Commander is enabled), and select from other options.

Command Prompt exits to a DOS command prompt. Basic DOS commands are available for FAT partitions, but not FAT32/NTFS.

attrib	change a file's attributes
cd	change directory
cls	clear the screen
copy	copy file(s) from one location to another
date	view/change system date
dir	view directory
del	delete one or more files
mkdir	make a new directory
ren	rename a file
time	view/change system time

DOS Utilities

Overview

Several programs are available which run from a Windows command prompt or from a DOS prompt. These programs can also be accessed by booting to the System Commander program CD or the Boot Utility Disk (see "Booting from the Disk" on page 53).

> **NOTE:** If you are using Windows, we recommend using the previously described Windows Utilities instead.

Using SCIN for Installation & Configuration

To read the latest installation notes and change the configuration of System Commander, open a command prompt or DOS prompt, go to the \SC directory on the partition where System Commander is installed, and then type SCIN and press ENTER.
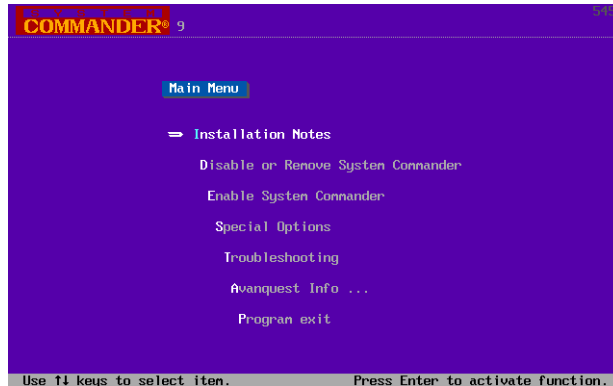
- **Installation Notes** displays important notes about System Commander and any new notes not in this guide.

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

  When System Commander disabled, it's no longer in the bootup loop, and the operating system 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 (see "FDISK" on page 230).

- **Enable System Commander** updates the master boot record. All prior System Commander user options and settings are unaffected.

- **Special Options** provide less frequently used options (see "Special Options" on page 57).

- **Troubleshooting** gives you detailed solutions to problems. It also contains details on common questions and answers.

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

- **Program Exit** returns you to a prompt.

Special Options

The following menu choices are available under Special options:

- Make Utility Diskettes (see page 57)
- Change MultiFAT option (see page 57)
- Specify non-compressed boot drive (see page 57)
- Alter the current boot record serial number (see page 58)
- Restore DOS boot record (see page 58)
- Diagnostic Checks (see page 58)
- Transfer System (Advanced SYS) (see page 59)

Make Utility Diskettes

Use this option to make the utility and restart diskettes. The utility diskette holds various System Commander 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. If you have the bootable System Commander program CD, it includes all the utility programs and partitioning restart programs, so additional diskettes are not normally necessary.

Change MultiFAT option

The MultiFAT feature allows having multiple operating systems in the FAT partition. This feature automatically defaults on when installed from Windows 95/98/Me or DOS, but can be overridden from this option. If you only need one FAT/FAT32 based operating system, and don't plan to add Windows, OS/2, or DOS in the MultiFAT partition, 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 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 or more System Commander menu choices for the identical operating system. This option changes the boot record serial number so that the boot record appears different to System Commander.

When the system reboots, System Commander detects the change and asks if you want to save the new operating system. Saving the new operating system adds a second entry for essentially the same operating system. In most cases, we recommend using the duplicate feature built into System Commander. At the OS Selection Menu, press ALT-S (Settings), and select the **Order Add and Remove** option. Highlight the desired selection, and press ALT-A (Add). Then, press D for Duplicate.

Restore DOS boot record

System Commander provides this disk recovery feature should a virus, system crash, or program defect destroy the current DOS boot record. Often this extremely serious fault can't 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 might be a defective DOS boot record. In this situation, even booting from a DOS diskette doesn't provide access to the C: drive.

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

Diagnostic Checks

Three diagnostics are available to validate the partition tables, check the DOS boot record information, and check for proper access to key System Commander 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 might prevent System Commander from operating properly. Warnings are less serious in nature, and won't usually affect System Commander 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 operating system 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.

`color`	standard colors
`mono`	monochrome colors
`lcd`	monochrome for LCD screens
`grey`	grey scale colors, for VGA greyscale monitors
`-v`	prevent VGA fonts and custom colors
`+v`	allow 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 operating system selections, preset some System Commander boot options, and preset the bootable partition for special operating system installations. To use SCDISK, at a prompt, enter:

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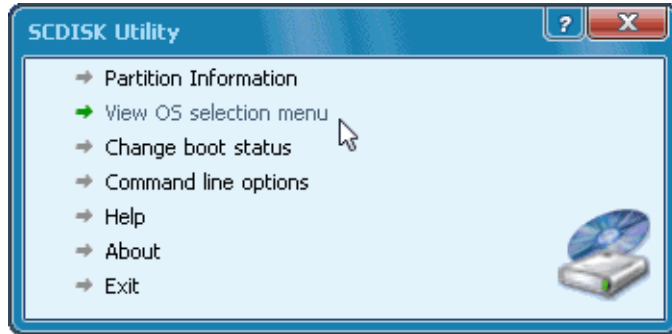

Use the Up and Down arrow keys to move to a choice, and press ENTER to select. Press ALT-H to see help information. Press ESC to exit back to DOS.

Partition Information

The Partition Information option displays 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 including the drive letter assignments for the selection. Subfunctions for partition information include:

- **Help** for detailed explanations about this screen (F1).
- **Empties** to switch inclusion of empty partitions (ALT-E).
- **Detail** to switch the type of detailed information. Switch between details about the highlighted partition and information about the highlighted drive (ALT-D).
- **View** to show the contents of the currently selected boot record or sectors on the drive. For the boot records, you can select content or hex views.

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

View OS Selection Menu

The OS Selection Menu shows available current operating system selections. Although you can scroll through the available choices, you can't make a choice from this menu. You can switch the displayed information by pressing ALT-V while at this screen.

Change Boot Status for Operating System Install

In some situations, it's necessary to define one specific 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 single partition on any disk as bootable, or specify all partitions on a disk as inactive (non-bootable) if required. The bootable status information isn't used by System Commander and has no effect on System Commander's operation or which operating systems are truly bootable.
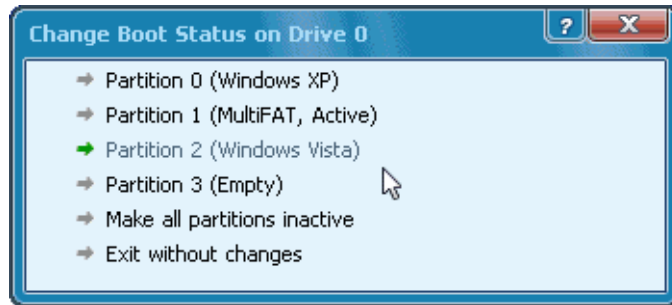
When changing the boot status for one of the primary partitions, all other primary partitions are hidden (except for extended and logical partitions). When booting from an operating system installation CD/DVD or diskette, only the selected bootable partition will be visible. This protects your other partitions from unwanted changes.

When booting from the hard disk through System Commander, the hidden status is ignored. System Commander will function normally, and clear the hidden partition information.

Command Line Options

This shows command line options available for SCDISK. All command line options are case insensitive. Some of the command line options you might find useful include:

`A to Z`	Set the next default operating system selection to the specified letter A to Z.
`Boot`	Issue a warm boot after all the command line options are examined. This is not intended for use inside Windows.
`Dlimit`*n*	Limit System Commander 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 operating system selections. The 2nd and 3rd drives are ignored.
`No_Font`	Turn off graphic option on the boot time portion of System Commander.
`Timeout`	Turn on the timeout at bootup feature, and set the timeout period to five seconds.
`Wait`	Turn off the timeout feature, so System Commander will wait for a user-entered selection.

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

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

About

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

PARTITIONING
BASICS

Hard Drive and Partitioning Basics

Overview

System Commander gives you several powerful tools for changing the partitioning of 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.

IMPORTANT NOTICE: Backup your system before using this product. Extensive changes will be made to your hard drive as you add a new operating system or use this product. **Remember to backup your system first.**

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 allows you to divide up a hard drive into several distinct partitions. Each partition occupies a physically separate area of the hard drive and operates 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 operate as an additional area for better organization of your files. In Windows, partitions are 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: 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. The example below shows a partitioning configuration using logical partitions to contain different operating systems.
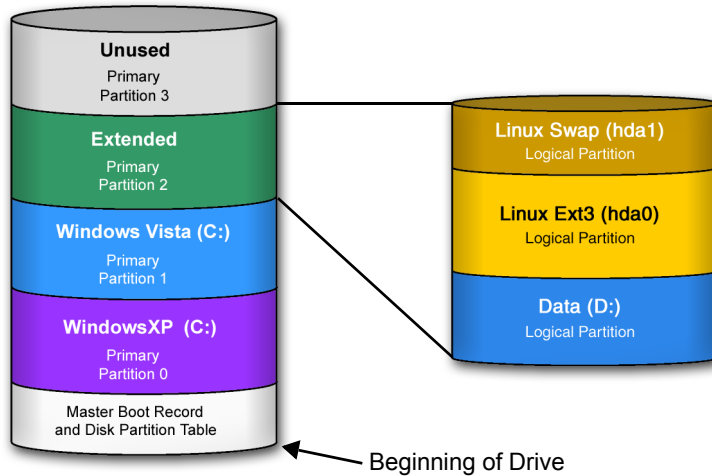
Bootable Partitions

Some partitions can be made bootable, which means that an operating system can be started from that partition. A bootable partition is also known as an active partition. A non-bootable partition can't initialize an operating system. The ability for a partition to be bootable is controlled by the operating system. For example, Windows only allows a primary partition to be bootable and won't allow a logical partition to be bootable.

In contrast, other operating systems, like Linux®, can be installed to allow a logical partition to be bootable.

To start up, every computer must contain at least one bootable partition. For example, a new Windows system normally uses the first active primary partition (Partition 0) of the first hard drive in the computer (Drive 0). It is assigned the drive letter C. To run more than one operating system on your computer, you typically want to configure a separate bootable partition for each operating system.

Disk Formats and Partitions

Overview

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

Hard Disk 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 (see page 68)

2.   Partitioning (see page 69)

3.   Logical Formatting (see page 69)

WARNING: Formatting can destroy all data on the drive.

Physical Formatting

The first stage of formatting is physical or low-level formatting. The hard drive manufacturer performs this operation in their factory. This process creates a magnetic structure on the hard drive platters that allows data to be accurately written and retrieved. The example below shows the elements resulting from the physical formatting procedure: sectors, tracks, and cylinders.
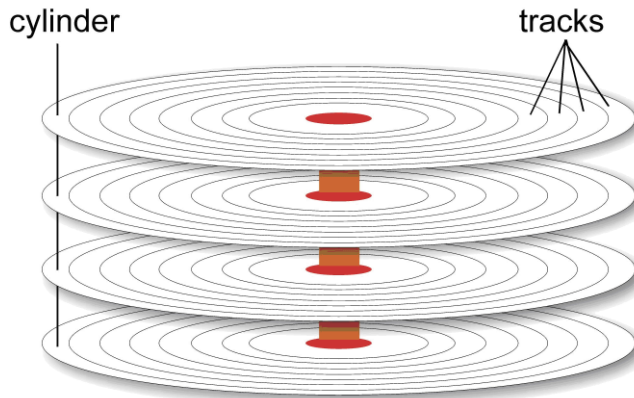
Sectors: A sector is the smallest part of the drive that can be addressed. Each sector can hold a defined amount of data, typically 512 bytes (1/2 KB).

Tracks: Tracks are concentric rings onto which data can be written. Each track has a number of sectors. Every disk surface on one drive has the same number of tracks, starting with track 0.

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 are 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 0s form a cylinder 0. Drives today have thousands of cylinders.

Partitioning

Following the low-level physical formatting by the drive manufacturer, 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. The following example is a simplified drawing of a drive with four partitions.
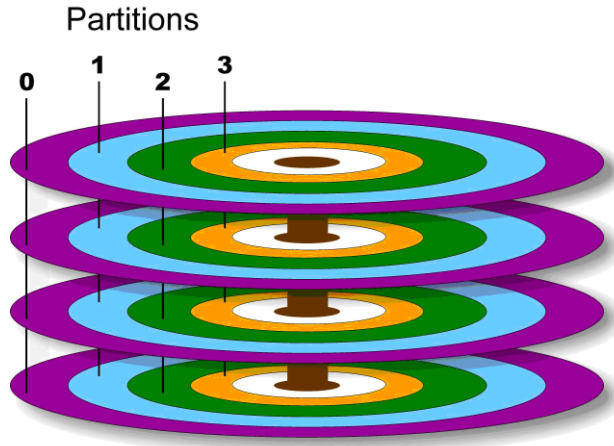
The partition process is typically done the first time by the operating system's limited partitioning utility, such as Disk Administrator in Windows XP. System Commander provides a more advanced, safer, and easier set of partitioning features for adding, deleting, and adjusting partitions on your hard 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 automatically formats Windows, Linux, and DOS partitions when you create a new partition. After this, the operating system can be installed loading the operating system's installation utility.

After a partition has been formatted, it's known as a *volume*. When using Windows or DOS 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.

Linux doesn't use drive letters, but assigns each volume a name, such as HDA0, HDA1, etc.

Characteristics of File Systems

Overview

When partitioning a hard drive, there are three important things you should know about file systems:

- Operating System and File System Compatibility (see page 71)
- Operating System and Partition Size Limitations (see page 73)
- Partition Size and Saving Space (see page 73)

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

Operating System and File System Compatibility

Each operating system is designed to work 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 Operating System system compatibility are summarized below.

- **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 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.

- **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.

  The FAT32 file system can only be seen by Windows 95 OSR2 and later. Other operating systems such as DOS, Windows NT, and the first version of Windows 95 won't see FAT32 partitions. You should also avoid a FAT conversion if your drive is using disk compression, since the compression software might not understand FAT32.

- **High Performance File System (HPFS):** OS/2 uses HPFS as its native file system and 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, 2000, XP, 2003, and Vista. Windows 95/98/Me, DOS, and most other operating systems can't see NTFS file systems. There are also several versions of NTFS, such that Windows NT can't understand the newer versions of NTFS.

- **Ext2, Ext3:** Linux file systems. The Ext3 is an enhancement of the older Ext2 file system. Ext3 is a journaling file system, which is much faster for consistency checks than Ext2.

- **Linux Swap2:** A Linux Swap file is an extension of the physical memory of the computer that are generally created during the initial Red Hat Linux 9 setup.

- **ReiserFS:** Another popular Linux journaling file system.

- **UFS:** This is the Unix® File System used by many Unix and Unix-like operating systems. A separate file system must be created on each separate partition of the disk.

Operating Systems an File System Compatibility

Operating System	File System
DOS and Windows 3.x	FAT
Windows 95	FAT
Windows 95 OSR2, 98, Me	FAT, FAT32
Windows NT v3 and older	FAT, HPFS, NTFS
Windows NT 4	FAT, NTFS
Windows 2000, XP, 2003, Vista	FAT, FAT32, NTFS
Linux (depends on version)	Ext2, Ext3, ReiserFS, Swap
OS/2	FAT, HPFS
Solaris	UFS, NFS, VxFS, QFS, FAT

Operating System 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.

Limitations

Operating System	File System	Maximum Partition Size
DOS 2.1 and older	FAT12	15 MB
DOS 3.x	FAT12 FAT16	15 MB 16 to 32 MB
DOS 4.0 and higher	FAT 16	2 GB
Windows (all)	FAT 16	2 GB
Windows 95 OSR2, 98, Me	FAT 32	1000+ GB*
Windows NT	HPFS NTFS	8 GB 1000+ GB*
Windows 2000, XP, 2003, Vista	FAT32 NTFS	1000+ GB 1000+ GB

Accessing partitions larger than 137 GB requires hardware and BIOS support. Support is not available for most operating systems prior to Windows 2000.

Without System Commander, existing disk partitions can't be changed without deleting the data within the partition. System Commander allows you to flexibly resize a partition within its minimum and maximum limits as well as move free space from one partition to another.

As drive sizes have grown, the operating system, the BIOS, and computer hardware have also required changes. For example, IDE drives over 137 GB in size require new computer hardware and BIOS to work past this limit. These only became available in 2002. System Commander supports large drives (beyond 137 GB) when the computer hardware also supports such drives. Without such support, the disk will be limited to the first 137 GB, and the remainder of the disk will be inaccessible to the system.

Partition Size and Saving Space

An unfortunate by-product of large partitions is the space they waste on your hard drive. System Commander offers you two solutions:

Solution 1: Optimize Partition Size

To better understand this remedy, let's focus on how FAT partitions waste space. FAT file systems divide partitions into groups of sectors called clusters. A cluster is the minimum unit that can be used for saving data and more than one file can't be associated with a cluster. This means that if you save even a very tiny file, it will be allocated an entire cluster, leaving a portion of the cluster unused. A similar situation often occurs when saving files that are larger than a cluster. The last part of the file will require an entire cluster, even if most of the cluster is left empty.

Wasted Space in Clusters

One Cluster

| readme.txt | wasted space |

Cluster 0 | **Cluster 1**

| manual.doc | | wasted space |
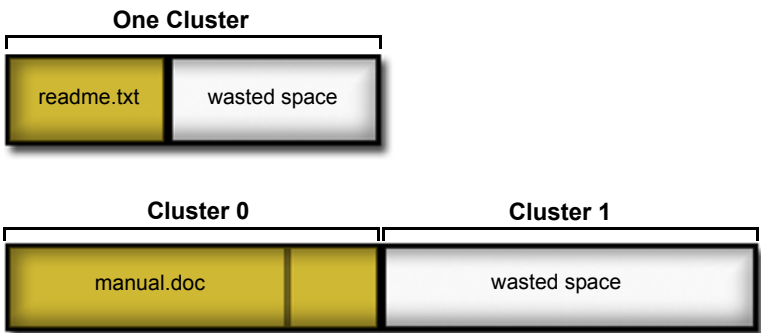
This problem gets worse as partition sizes get larger, as is typical with large hard drives. The reason is that FAT allows a maximum of only 65,536 clusters in a partition. Therefore, as the partition size increases, so does the necessary size of a cluster. For example, a 127 MB partition requires a cluster size of 2 KB, but in a 2 GB partition, the cluster size is 32 KB. This difference has a big effect on file storage efficiency. Saving a small file such as a 500 byte readme.txt file wastes about 1.5 KB in a 127 MB partition, and wastes 31.5 KB in a 2 GB partition. With a random distribution of file lengths in a FAT partition, every file saved will waste about 1/2 of a cluster. Simply reducing cluster size and partition size by dividing a hard drive into multiple partitions can help recover a lot of wasted space. As an overview, the table below shows possible waste as related to partition size.

Partition Size	Cluster Size	Average Waste per File	Number of Files	Average Waste
Up to 128 MB	2K	1K	2,000	2 MB
128 to 156 MB	4K	2K	4,000	8 MB
256 to 512 MB	8K	4K	8,000	32 MB
512 MB to 1 GB	16K	8K	16,000	128 MB
1 GB to 2 GB	32K	16K	32,000	512 MB

Cluster Optimization and Partitioning

The optimum situation occurs when the file sizes in a partition fit efficiently into clusters. For example, large graphic files can fit quite efficiently into a large partition having large clusters. System Commander analyzes your files and suggests the optimum partitioning scheme and cluster size for them.

NOTE: Optimizing to a very small cluster size might prevent some Windows utilities, such as Scandisk and Defrag, from running.

Solution 2: Convert from FAT16 to FAT32

If you are running any Windows after Windows NT or the first Windows 95, System Commander allows you the option of saving file space by converting your FAT partitions to FAT32 partitions. Because FAT32 uses 32 bits for recording file drive addresses, it can more efficiently locate the beginnings and endings of files, and allows a smaller cluster size than FAT allows. For example, in a 2 GB partition, FAT uses a 32 KB cluster size. In contrast, FAT32 specifies only a 4 KB cluster size for partitions up to 8 GB. As a result, the FAT32 file system is much more efficient than FAT16 and changing over immediately results in recovered usable disk space. System Commander automatically checks whether you are running a FAT32 compatible Windows that can take advantage of FAT32.

Selecting the Best Partition Type

This section can help guide you to the best choice for some of the major operating systems you might be using. There is no absolute right or wrong type, but you can save space and improve performance with the right choice. The table below outlines some of the considerations when selecting your partition type.

Windows	File System	Benefits	Disadvantages
95, 98, Me	FAT	• Compatible with DOS	• Limited to 2 GB max.
95B, 98, Me	FAT32	• No real size limits	• Not accessible by DOS
NT, 2000, XP, 2003	FAT	• Compatible with DOS	• Limited to 2 GB max.
2000, XP, 2003	FAT32	• No real size limits	• Not accessible by DOS

Windows	File System	Benefits	Disadvantages
NT, 2000, XP, 2003, Vista	NTFS	• No real size limits • Higher security • Improved stability	• 95/98/Me/DOS can't see it • More difficult to fix if problems occur • Only NT4 with SP2 can see newer NTFS

Dynamic Disk

Windows 2000, XP, 2003, and Vista have the ability to use a newer type of partition called a "Dynamic Disk." It is a physical disk that contains dynamic volumes created by using Windows "Disk Management." Dynamic disks don't use traditional partition tables like primary and logical drives and can't be accessed by Windows 95, 98, Me, NT, or DOS operating systems. Consult Microsoft's web site for more about Dynamic disks at www.microsoft.com.

Because a dynamic disk doesn't use a traditional partition table, System Commander can be installed into, but won't resize dynamic disks. System Commander can convert a single drive dynamic disk back to a basic disk that has partitions understood by other operating systems (a feature not available in Windows).

NTFS Volume Sets (Fault Tolerance)

Fault Tolerant or "spanning" partitions combine areas of unallocated space from multiple disks into one logical volume, allowing you to more efficiently use all the space and all drive letters on a multiple-disk system.

CAUTION: You don't want to delete one of the partitions that are spanned. If one of the disks containing a spanned volume fails, the entire volume fails.

You will need to restore the volume back to basic disk in Disk Manager before re-partitioning the drive. Always back up data in a volume set before changing it back to basic.

Linux

Different Linux distributions might offer more than one choice, or require one specific file system. The most common types are shown in the following table.

Linux File System	Benefits	Disadvantages
Ext2	• Optimized for small drives and small files	• Older file system, now falling out of favor • Very slow consistency checks
Ext3	• Journaling File System • Very fast consistency checks • Easy to move from Ext2	• Journaling is a layer on top of Ext2 (could be a benefit)
ReiserFS	• Journaling File System • Very fast consistency checks • Efficient for small files • Excellent choice for large partitions	• Not recommended for partitions under 100 MB

RAIDs

Hardware-based RAID uses an intelligent drive controller and a redundant array of disk drives to protect against data loss in the event of media failure and to improve the performance of read/write operations.

Hardware-based RAID levels 1 through 5 automate redundancy and fault tolerance at the hardware level. All levels (0 through 5) incur no overhead on the system processor. Individual data files are typically spread across more than one disk. It is possible to implement a hardware-based RAID solution that provides your system with seamless, non-stop recovery from media failure.

Depending on the configuration, hardware-based RAID generally provides good performance. It also makes it much easier to manage multiple disks, allowing you to treat an array of disks as one disk. You might even be able to replace a failed drive without shutting down the system.

NOTE: System Commander Installation and the control of multiple operating systems are compatible with Hardware RAIDs, but not software-emulated RAIDs.

Level 0

This level is also known as disk striping because of its use of a disk file system called a stripe set. Data is divided into blocks and spread in a fixed order among all disks in an array. RAID 0 improves read/write performance by spreading operations across multiple disks, so that operations can be performed independently and simultaneously.

Level 1

This level is also known as disk mirroring because of its use of a disk file system called a mirror set. Disk mirroring provides a redundant, identical copy of a selected disk. All data written to the primary disk is written to the mirror disk. RAID 1 provides fault tolerance and generally improves read performance (but might degrade write performance).

To repartition a Level 1 RAID, you first need to temporarily "break" the mirror. After the mirror has been "broken," you can re-partition the drives. Both drives should be partitioned identically. After partitioning of both drives is complete, you can re-enable the mirror.

Level 5

Also known as striping with parity, this level is the most popular strategy for new designs. RAID 5 stripes the data in large blocks across the disks in an array. It differs in that it writes the parity across all the disks. Data redundancy is provided by the parity information. The data and parity information are arranged on the disk array so that the two are always on different disks.

Partitioning and Booting Information

Overview

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

Master Boot Record and Partitioning Table
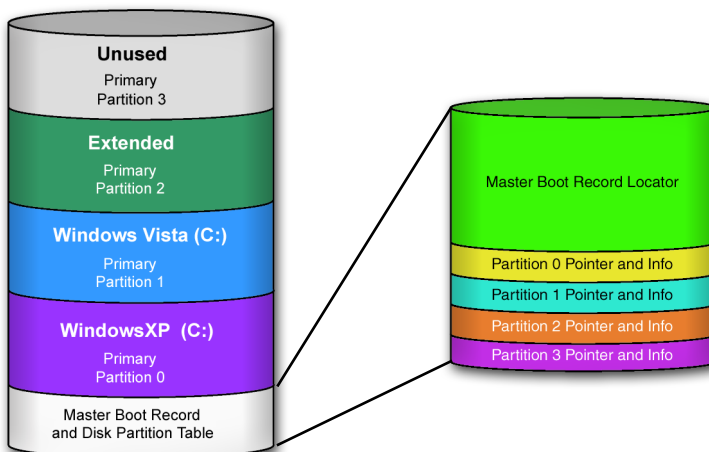
Master Boot Record

The Master Boot Record (MBR) is contained in the first sector of the hard disk (Cylinder 0, Head 0, Sector 1). It specifies which operating system starts up the system. When System Commander is used to install multiple operating systems, it replaces the original boot record with its own MBR to control the boot process and allows 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 that specifies how the hard drive is partitioned. Under Windows 95, 98, and Me, the FDISK utility can be used to view and change the partition information. Under Windows NT, 2000, XP, 2003, and Vista, the Disk Administrator can also perform limited partitioning.

System Commander provides a much more flexible and easy-to-use set of tools for working with partitions. Unlike FDISK and Disk Administrator, System Commander allows automatic or manual partitioning, including resize, copy, and move without the loss of data.

PARTITION MANAGEMENT

Manual Partitioning

Overview

There might be times when you will want to create, delete, resize, optimize, format, move, copy, or validate a partition manually. For example, you might want to add a new partition for data, to provide more room on a second partition, or delete a partition that is no longer useful to you.

The partition tools included with System Commander allow you to modify and manage your partitions.

CAUTION: It is important that you make a backup of all essential files prior to deleting or formatting partitions. Formatting a partition deletes any data on that partition.

Opening Manual Partitioning

1. Start the OS Selection Menu (see "OS Selection Menu Tour" on page 49).

2. Click the **Partitioning** button on the tool bar.

System Commander performs a quick analysis of your system then displays a dialog with some operational tips.

3. Click **Next** to continue.

4. Click the **Manual partitioning** button to open the Partitioning window.

Viewing Your Drives and Partitions

The Partitioning window always opens displaying the first physical drive, labeled as **Drive 0** in the graphical display. The legend in the lower-right uses colors to indicate the type of file system installed on the partition. Both FAT12 and FAT16 partitions are displayed as FAT.
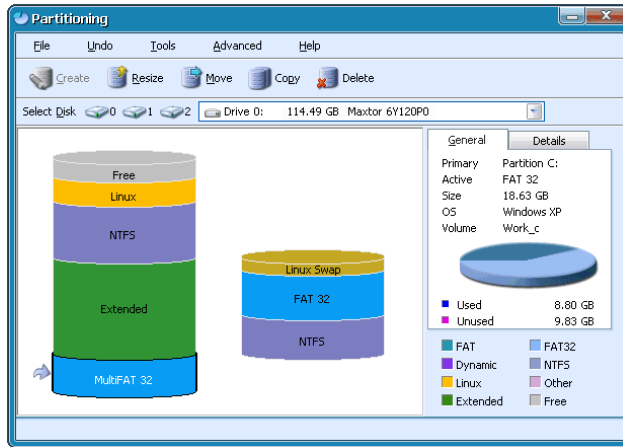
NOTE: If a USB drive doesn't appear on the list, open the **Tools** menu and choose **Refresh**. You can also check that you have the **Enable USB support** option checked (see "Changing the General Settings" on page 89).

To Select a Drive

Click one of the three drive buttons labeled **0**, **1**, and **2** in the **Select Disk** toolbar. If you have more than three hard drives, you can select one of the first three drives by clicking one of the drive buttons, or open the drop-down list to select from additional drives.

The **Main Window** shows the entire drive divided into partitions. The primary partitions are all on the left and logical partitions (partitions within a partition) if any, are shown on the right. The logical partitions are contained inside of the extended partition.

To View Partition Details

Click the desired partition in the graphical display to select it. An arrow appears to the left of the selected partition. Details about the selected partition appear on the right side of the window.

- The **General** tab shows the selected drive, partition information, and used disk space.

- The **Details** tab shows the same information, and shows cluster and sector information for the selected drive.

Learning About the Menu Bar

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

File   Undo   Tools   Advanced   Help
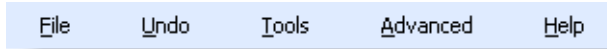
File contains the following options:

• **Close Window** closes the Partitioning window.

Undo reverses the Delete and Format commands.

• **Undo Delete** restores the last partition deleted.

• **Undo Format** restores the selected FAT/FAT32 partition that was previously formatted. After data is written into a formatted partition, you can't unformat it.

• **BackStep Wizard** allows you to undo OS Wizard or manual partitioning. See "Undoing Changes Using the BackStep Wizard" on page 116 for more information.

Tools provides various options for changing a partition as listed below.

• **Create** 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.

> **CAUTION:** After a partition is deleted, other later operations might 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** changes the cluster size on FAT/FAT32 or NTFS partitions.
- **Change Volume Label** alters the volume label for the selected partition.
- **Validate** checks boot sectors, directory structure, file allocation table, and checks file validity (FAT/FAT32/NTFS).
- **Partition Explorer** allows you to view and edit files in FAT/FAT32 or NTFS partitions.
- **Refresh** updates the view on screen.

Advanced contains options for viewing log files and for advanced file type conversions. These are described in "Using the Advanced Tools" on page 88.

Help has several options for viewing additional help information.

Learning About the Button Bar

Below the Menu Bar are five useful buttons that perform some of the same functions found in the Menu Bar. Some buttons might be dimmed when the function is not available for the selected partition.
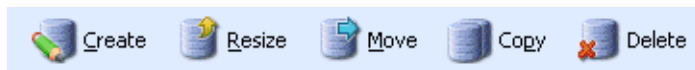
Create builds a new partition as described in "Creating Partitions" on page 93.

Resize changes the size of a partition as described in "Resizing Partitions" on page 94.

Move allows you to move a partition into free space on the same physical drive described in "Moving Partitions" on page 96.

Copy allows you to copy a partition into free space on either the same drive or a different drive as described in "Copy Partitions" on page 97.

Delete removes the selected partition from the drive as described in "Deleting Partitions" on page 98. There are two confirmations before anything is done to the drive.

Using the Advanced Tools

In the **Advanced** menu, there are several choices:

- **Set/Toggle active/bootable** assigns bootable active status to a single partition.

- **Hide** hides an unhidden partition.

- **Unhide** unhides a hidden partition.

- **Conversion** 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 want to convert, and then select this option.

  - If the selected partition is NTFS, it's converted to FAT32 or FAT. Only Windows 2000/XP/2003 can access FAT32. Don't convert an NTFS partition in older NT versions, if you want to continue to use NT, since NT doesn't understand FAT32.

  - If the selected partition is a Dynamic Disk, you can convert it back to a normal "basic" disk.

- **Restore boot code** allows you to restore the boot code for either the hard drive or a partition using a generic boot record.

- **BootFixer™** examines every Boot.ini file in FAT/FAT32 and NTFS partitions and fixes any problems with the drive numbering within this file. BootFixer automatically runs after any partitioning operation to ensure the Boot.ini files are constructed correctly for any changes that might have taken place.

- **Change SID** allows you to update the security identifier for the selected partition, all partitions on a drive, or all drives and partitions. A unique SID is required in every partition by Windows NT/2000/XP/2003 and Vista. If you perform a partition copy, the SID should be updated.

- **Settings** opens the Settings dialog (see "Changing the General Settings" on page 89).

- **View log** allows you to view the partition action log. This is included mostly to assist Technical Support.

Changing the Manual Partitioning Settings

When you boot your computer using the Rescue Disk or cancel the OS Wizard or Partition Wizard, you can open the **start** menu and select **General Settings** or **Regional Settings** to modify how partitioning operations are handled.

Changing the General Settings

When you select **Settings > General** from the **start** menu, the Settings dialog appears.
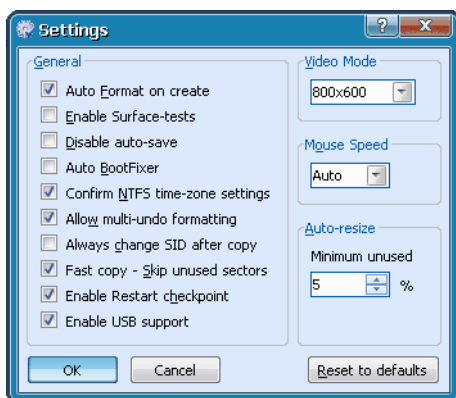
Below is a description for each setting:

General

- **Auto Format on create** automatically formats newly created partitions.

- **Enable Surface-tests** performs error checking on a partition. It is similar to the ScanDisk program in Windows.

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

- **Auto BootFixer** automatically corrects Boot.ini problems after any partitioning operation. As you move or copy partitions, BootFixer™ updates the Boot.ini to keep your Windows NT/2000/XP/2003 booting properly.

- **Confirm NTFS time-zone settings** asks you about the local settings each time this information is used, such as converting from NTFS to FAT or back. If the local settings don't match your operating system, file dates, times, and filenames might change during the conversion.

- **Allow multi-undo formatting** saves the information about undoing formatting for the BackStep Wizard. This adds a small amount to time to the formatting process, but also makes it reversible with the BackStep Wizard (see "Undoing Changes Using the BackStep Wizard" on page 116).

- **Always change SID after copy** will update the NT/2000/XP/2003 SID (Security Identifier) after a copy operation. This ensures the copy doesn't have the same SID as the original.

- **Fast copy - Skip unused sectors** will speed copy operations by skipping those sectors that are unused.

- **Enable Restart checkpoint** is the safest way for resize and conversion operations to recover in the event of a power failure or system reset in the middle of a critical partitioning operation. We strongly recommend keeping this option enabled. If you are working on a partition or system where the data is not important, disabling this feature will speed up these operations.

> **CAUTION:** If you disable this option, and a power failure or reset occurs during some partitioning operations, your data within that partition might be lost and unrecoverable.

- **Enable USB support** allows System Commander to access external hard drives, mice, and keyboards connected to a USB port. If you experience problems with your USB devices, you can disable this option.

> **NOTE:** We recommend that you wait to attach any USB hard drives until after your computer reboots. Even if you disable this option, your system BIOS might still detect your USB hard drives. However, the BIOS emulation is extremely slow and can cause long delays when starting the OS Wizard or Partitioning.

Video Mode

The **Video Mode** drop-down menu provides screen resolution options.

Mouse Speed

The **Mouse Speed** drop-down menu adjusts how mouse movement appears on-screen.

Auto-resize

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

TIP: If you want to return all the settings to the program's default values, click the **Reset to defaults** button.

Changing the Regional Settings

When you select **Settings > Regional** from the **start** menu, the Regional Settings dialog appears.
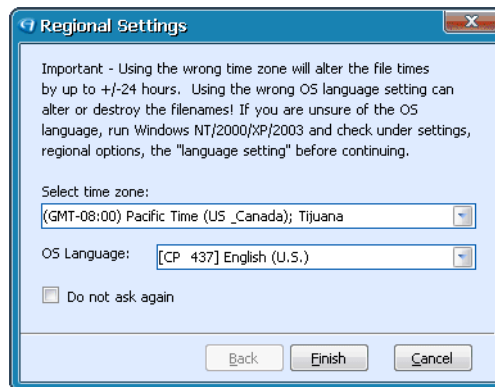
Open the **Select time zone** drop-down list and select the time zone that is closest to your location.

Open the **OS Language** drop-down list and select the language assigned to your operating system.

CAUTION: It is important that you assign the correct time zone and language. Using the wrong settings can alter file time or destroy the filenames. If you are not sure about your language settings, open the Windows **Control Panel** and double-click the **Regional and Language Options** icon.

Managing Your Partitions

Overview

This section covers the following topics to help you create, modify, copy, and delete partitions on your hard drive.

Creating Partitions

To create a partition on the drive, you must first have free space available. Free space for partitioning is space on the hard drive that hasn't been put into a partition. This isn't the same as unused space within an existing partition. Free space is identified by the word **Free** in the drive diagram (see "Viewing Your Drives and Partitions" on page 85).

To Create a Partition

1. Click the **Free** area on the diskmap.

   White bars appear on each side when it's selected.

2. Click the **Create** button and a dialog opens indicating the maximum size allowed.

3. Specify the size of the partition you want to create.

   System Commander automatically double-checks to make sure that you haven't entered an invalid value. The partition can't be made any larger than the maximum size indicated.

4. Enter a volume label for the partition.

5. Check the **Enable surface scan** option, if you want to check for errors in the partition area.

6. Check the **Custom Partition Type** option, if you want to select a specific file system for the partition.

   • **FAT** is usually automatically selected for Windows and DOS partitions.

   • **FAT32** is usually chosen for Windows partitions over 2 GB.

   • **NTFS** is usually chosen for Windows 2000/XP/2003 partitions.

7. After you have entered the necessary information, click **Next** to create and format the partition.

Resizing Partitions

The Resize partition feature will either shrink or expand the selected partition, based on your choice.

The Resize partition feature resizes your existing partition while safely preserving your data.

> **NOTE:** When you resize a partition, the partition can't be made smaller than the actual data contained in it, or larger than the size of the physical drive. For example, if you have a 20 GB partition that contains 10 GB of data, then the smallest that you can make that partition will be 10 GB. If the hard drive has 30 GB capacity, the 20 GB partition can't be expanded to more than 30 GB (the total size of the drive).

System Commander takes care of this verification for you.

To Resize a Partition

1. Select a partition to resize in the drive diagram.

2. Click the **Resize** button or open the **Tools** menu and select **Resize**.
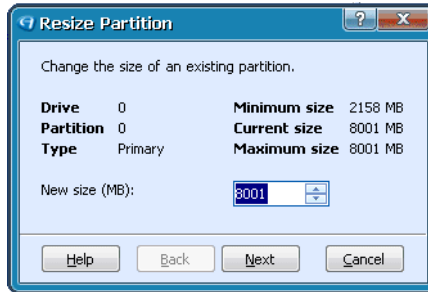
The Resize Partition dialog shows you the adjustment range, in megabytes, for the selected partition.

3. You can either enter a number between the minimum and maximum, or you can use the spin button (the up or down arrows to the right of the field) to have them shown for you.

4. After you have entered the necessary information, click **Next** to resize the partition.

NOTE: Resize is only available with the major file systems such as: FAT, FAT32, NTFS, Linux Ext2, Ext3, ReiserFS, and Linux Swap.

Windows Swap Files

After a resize of a partition that contains a Windows swap file, when Windows boots up, it will generate a minor warning about the swap file. You can safely ignore the warning and Windows will correct the problem automatically.

Moving Partitions

You can move any type of partition upward or downward into adjacent free space. This is useful to make room for another partition or in preparation to add space to a partition.

To Move a Partition

1. Select the partition you want to move in the drive diagram.

2. Click the **Move** button or open the **Tools** menu and select **Move** to view the Move Partition dialog.
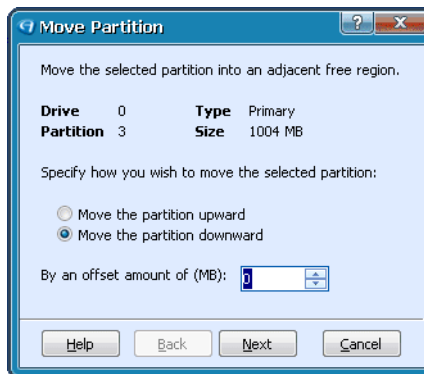
3. Specify the direction you want to move the partition.

4. Specify the offset amount to move the partition.

   The maximum amount of movement is automatically set in the offset amount. You can change this value to any amount less than the maximum. An offset amount of zero means that no move will take place.

5. After you have entered the necessary information, click **Next** to move the partition.

Copy Partitions

You can copy a partition to free space onto any drive where it fits. If you are copying a Windows operating system partition to a secondary partition, please note that due to the limitation of Windows, it won't boot from anywhere but the primary drive.

To Copy a Partition

1. Select the partition you want to copy in the drive diagram and then click the **Copy** button to view the Copy Partition dialog.
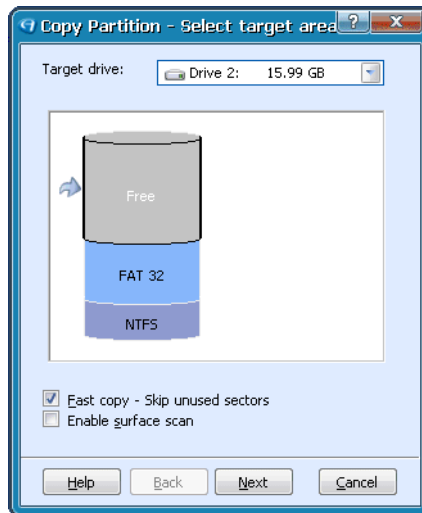
2. Select the target partition to copy the selected partition to.

3. Click **Next** to start copying the selected partition to the selected target.

After a partition copy has been preformed. The partition will be hidden to preserve drive letter assignments.

TIP: To unhide the partition, select it and then open the **Advanced** menu and choose **Unhide**.

Use Copy Commander if you want to copy an entire drive. Access Copy Commander from the System Commander **start** menu (see "Copying Hard Disks and Partitions" on page 119).

Deleting Partitions

If you have a partition on your hard drive that you no longer need, you can delete it and gain some extra storage space. Deleting a partition removes references to the partition from the Partition Table, causing the information from the deleted partition to become inaccessible. This results in disk space that can be used to create new partitions.

Contents of the deleted partition don't immediately disappear from the disk, but are merely unavailable for the operating system. This enables you to undo an accidentally deleted partition prior to reformatting the deleted partition.

To Delete a Partition

1. Select the partition to delete on the diskmap.

   White bars appear on each side when it's selected.

2. Click the **Delete** button.

   A message appears with bold warnings and other information about the partition, such as its size, type, and volume label.

> **CAUTION:** After a partition is deleted, all data in the partition is no longer accessible. Make sure important data is backed up in another location before deleting a partition.

3. Enter the current volume label exactly as it appears and then click **Next**.

   If the label names don't match, an error message appears and no changes are made to the partition.

4. If you are ready to delete the selected partition, click the **Proceed** button. Otherwise, click **Cancel** to abort the deletion.

> **TIP:** If you've accidentally deleted a partition, and haven't reformatted it, you can recover it by opening the **Undo** menu and selecting **Undo Delete**. This command doesn't work for partitions that have been deleted using SecurErase.

A deleted partition is converted to **Free** space on the diskmap and automatically combined with other free space. Free space can be used to create new partitions (see "Creating Partitions" on page 93).

Optimizing FAT Partitions

If you select a FAT or FAT32 partition, the Optimize feature analyzes the files in the partition to determine if a different compatible file system or a change in cluster size can save space. You can then have System Commander perform the optimization or look at the results of other choices available.

For NTFS partitions, you are presented with two options: **Defragment MFT** or **Optimize**.

- The **Defragment MFT** option checks if the Master File Table is fragmented or not. If it's fragmented, it offers to defragment it. This helps keep your system running at peak performance.

- The **Optimize** option allows you to select a cluster size from 512 to 4K.

> **TIP:** If Windows was used to convert a partition from FAT32 to NTFS, it normally uses a 512-byte cluster size. Many users have reported dramatic speed improvements by going to a higher cluster size such as 4K.

Using the Menu Bar and Buttons

The Partitioning window has two main methods of accessing the tools for partitioning: the Menu Bar (see page 99) and the Buttons (see page 99).

Menu Bar

There are several menu items across the top of the Partitioning window: **File**, **Undo**, **Tools**, **Advanced**, and **Help**. For more information, see "Learning About the Menu Bar" on page 86.

Buttons

There are five button at the top toolbar. Each button performs the same functions as the menu choices described in the "Menu Bar" on page 99 section. Some buttons might be dimmed when the function is not appropriate for the selected partition. For more information, see "Learning About the Button Bar" on page 87

Using the Partition Wizard

Overview

Partition Wizard automates much of the software configuration process to make it easy, safe, and quick. Graphical displays illustrate the status of your hard drive, your progress through the process, and the choices you can make. Partition Wizard analyzes your hard drive and makes suggestions about the best way to optimize your hard drive configuration. Partition Wizard options are organized around the most common practical reasons for partitioning a hard drive.

Starting the Partition Wizard

You can start the Partition Wizard using the following methods:

- Press ALT-P or click the **Partitioning** button on the OS Selection Menu.

- Boot from the System Commander program CD or the Boot Utility Disk (see "Making a Boot Disk" on page 31).

When Partition Commander is launched, it first analyzes your system. During this analysis, it determines how many hard drives you have, how each drive is set up, and what operating systems are installed.

After the analysis is completed, the Partition Wizard main menu appears.

If you cancel the Partition Wizard, you can open it again from the **start** menu (see "Start Menu" on page 52).

More Drive Space

Partition Wizard provides four options for creating more space on your hard drive. This applies to all operating systems, like Windows, DOS, Linux, and a few others. To access these options, click the **More Drive Space** option from the Partition Wizard.
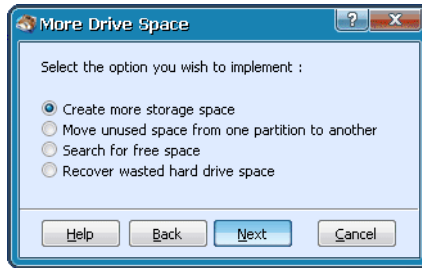
- Create More Storage Space (see page 104)

- Move Unused Space from One Partition to Another (see page 105)

- Search for Free Space (see page 106)

- Recover Wasted Hard Drive Space (see page 107)

For all of these options, Partition Wizard analyzes your hard drive, searching for two types of space: free space and unused space.

- **Free space** is space on the hard drive that has not been assigned to a partition, and is therefore inaccessible for data storage.

- **Unused space** refers to space within a partition that has not yet been used to store files.

Create More Storage Space

Partition Wizard analyzes your hard drive for both free and unused space and allows you to create a new partition for more storage space. Your operating system will see this partition as a new drive letter.

To Create More Storage Space

1. Select **More drive space** from the Partition Wizard menu.

2. Select **Create More Storage Space** and then click **Next**.

The **Size** box shows the recommended partition size, based on an analysis of your hard drive. Selecting the maximum size shrinks an existing partition until it's almost full, and is not usually recommended.

3. Select the desired partition size by clicking the up or down arrows in the **Size** box.

4. Click **Next** to create the partition.

    A progress window appears, displaying the process.

5. After the process completes, click **Finish**.

Move Unused Space from One Partition to Another

This strategy allows you to move unused space in one partition to another partition on the same physical drive. Partition Wizard automatically moves the unused space and resizes the partitions.

To Move Unused Space to Another Partition

1. Select **More drive space** from the Partition Wizard menu.

2. Select **Move Unused Space from One Partition to Another** and then click **Next**.
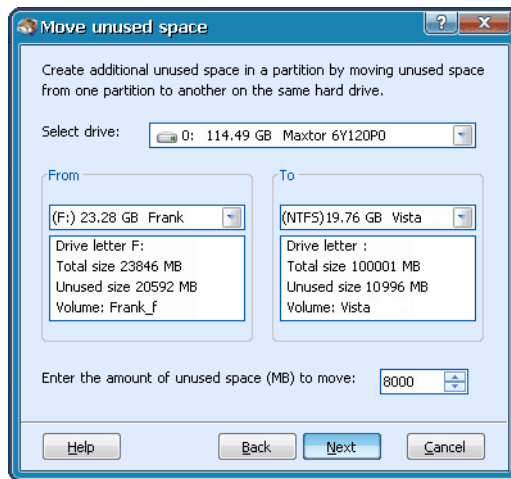
3. Select the drive within which you want to move unused space.

4. Select the partition containing the extra unused space in the **From** box.

5. Select the partition to which you want to add space in the **To** box.

6. Enter the amount of free space you want to move or click the up or down arrows to select an amount.

7. Click **Next** to implement your choices.

    A progress window appears, displaying the process.

8. After the process completes, click **Finish**.

Search for Free Space

Partition Wizard searches your hard drive to find space that has not been put into a partition. It then allows you to add it to an existing partition or create a new partition for it.

To Search for Free Space

1. Select **More drive space** from the Partition Wizard menu.

2. Select **Search for free space** and then click **Next** to view on which drive(s) the Partition Wizard found free space.

3. Select the drive to operate on, and choose an option to indicate whether you want to allocate the space to a new partition or to select a partition to add the free space to.

    If you choose to add a partition, you are notified that by proceeding you might change the drive letter assignments on your system.

4. Click **Next** to continue.

    A progress window appears, displaying the process.

5. After the process completes, click **Finish**.

To Add Space to an Existing Partition

If you choose to add the space to an existing partition, a dialog opens showing the existing partitions.
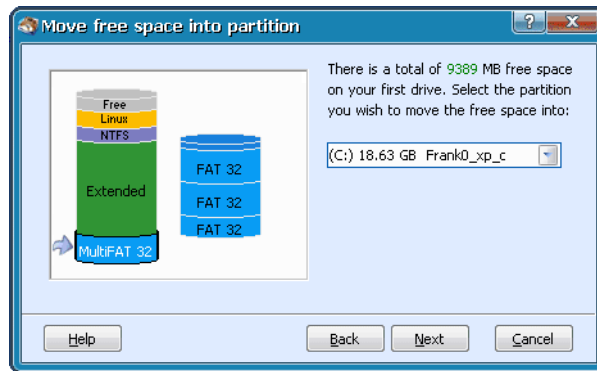
1. Use the UP or DOWN arrows in to select the partition to which you want to add free space, or click on a partition on the left.

2. Click **Next** to continue.

    A progress window appears, displaying the process.

3. After the process completes, click **Finish**.

Recover Wasted Hard Drive Space

If your system is using the FAT file system, converting to FAT32 can recover a significant amount of wasted drive space. This is because FAT32 is a more efficient file system. Partition Wizard determines if your system is using a FAT32 compatible operating system (Windows 95 OSR2/ 98/Me/2000/XP/2003/Vista) and if you can benefit from converting to the FAT32 file system. If you are already running FAT32, or are running Windows NT or the first release of Windows 95, this option is not available to you.

To Recover Wasted Space

1. Select **More drive space** from the Partition Wizard menu.

2. Select **Recover Wasted Hard Drive Space** and then click **Next**.
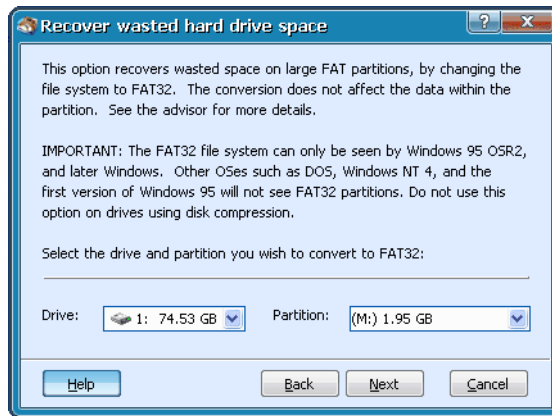
3. Select the drive and partition you want to convert to FAT32 by using the UP or DOWN arrows in the **Drive** box and the **Partition** box.

4. Click **Next** to continue.

    A progress window appears, displaying the process.

5. After the process completes, click **Finish**.

Faster Disk Access

Windows uses the swap file on the hard drive to hold data for which there is not enough room in RAM. When manipulating large files or using complex applications, reads and writes to the swap file can be numerous. Optimizing this function can significantly improve system performance on many systems.

Create a Partition for Swapfiles

One way to enhance the speed of your system while running Windows 95/98/Me is to place the swap file in a partition by itself. This forces Windows to use the swap file more efficiently than it currently does. In addition, placing it in its own partition makes it easier for Windows to find the file.

> **CAUTION:** We don't recommend creating a separate swapfile under Windows NT/2000/XP/2003 and Vista, since it's very easy for the operating system to become unstable in a number of situations.

After using Partition Wizard to create the partition, you need to start Windows and change the default location of the swap file to the new partition. Simple instructions for doing this are provided by Partition Wizard and in .

To Create a Partition for Swap Files

1. Select **Faster disk access** from the Partition Wizard menu.

A dialog opens with the recommended partition size.

2. Click **Next** to continue.

A progress window appears, followed by another dialog which shows the drive letter assigned to the new partition.

3. Choose an option to select the type of operating system you are using and click **Next** to continue.

Instructions appear describing how to reassign the swap file location in Windows.

A progress window appears, displaying the process.

4. After the process completes, click **Finish**.

Setting the Swap File in Windows 95/98/Me

1. Click the Windows **Start** menu and select **Settings > Control Panel > System**.

2. Select the **Performance** tab, then select **Virtual Memory**.

3. Click **Let me specify my own virtual memory settings**.

4. Enter the swap drive letter of the new partition (as was shown in the Finish dialog).

    If you are uncertain which drive letter matches your new partition, as each drive is selected, the available space is shown. The correct drive selection will have available space approximately the size of your new partition.

5. The minimum and maximum values can be left at the defaults.

6. Click **OK**.

7. In the Confirm Virtual Memory dialog click **YES**.

    It is safe to ignore the Windows warning message.

The change takes effect when you next reboot Windows.

Better Organization

Partition Wizard provides three options to help you better organize your data storage:

Organize Operating Systems, Applications, and Data

A popular way to organize your hard drive is to put your operating systems, application programs, and data in separate partitions. Organizing your drive in this way makes your backups easier. In addition, when you upgrade an application or operating system, the data files are kept safely out of the way.

Partition Wizard analyzes the selected hard drive and partitions. The size of these partitions is automatically adjusted based on free disk space (not already allocated to partitions) and the proportion of used space in existing partitions. Up to two new partitions can be made at a time.

To Organize your Operating Systems, Applications, and Data

1. Select **Better organization** from the Partition Wizard menu.

2. Select the **Organize your OS, Applications and Data** option, and then click **Next**.
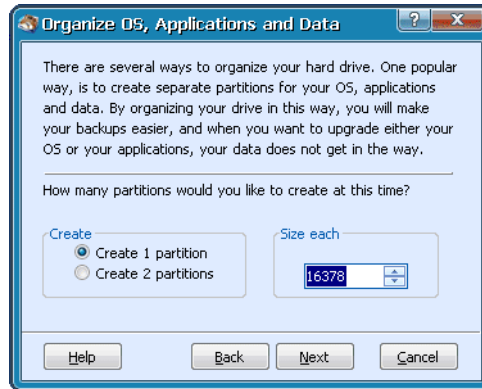
3. Choose how many partitions to create and the size of each.

4. Click **Next** to start creating the partition(s).

Optimize Disk Space

A large cluster size can cause wasted space on your hard drive because even small files are allocated an entire cluster. This Partition Wizard option analyzes your drive and operating system, and if possible, allows you to convert inefficient FAT partitions to FAT32 partitions. If you are already using the FAT32 file system, the Wizard determines if altering the cluster size can attain further space savings.

> **TIP:** Optimization was very important when small drives, such as those 20 GB and smaller, were common. With today's large drives and the use of NTFS, and to a lesser extent FAT32, the need and benefits of optimization are minimal, if even possible, and often not worth the bother.

To Optimize Disk Space

1. Select **Better organization** from the Partition Wizard menu.

2. Select the **Optimize disk space** option and then click **Next**.
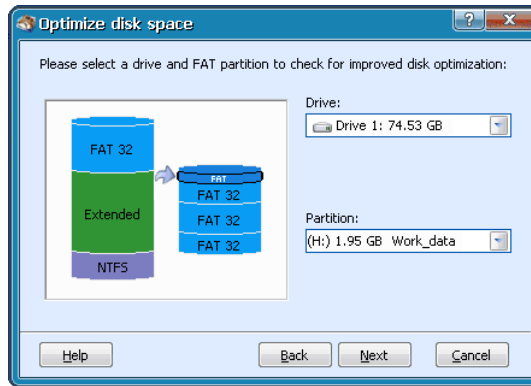
3. Select the drive to optimize in the **Drive** box.

4. Select the partition to optimize in the **Partition** box or by clicking on a
    FAT or FAT32 partition on the left.

5. Click **Next** to continue.

    Partition Wizard analyzes your hard drive, shows you the progress,
    and displays the Optimize Disk Space dialog if optimization is
    possible.
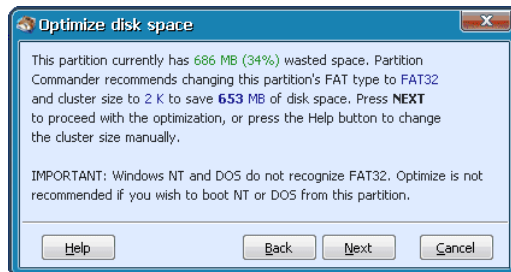
    This dialog shows the amount of wasted space and a recommendation
    of how to recapture it.

6. Click **Next** to proceed with the optimization.

    •   If no optimization is possible, you are advised of this and can
        click **Back** to select another partition to optimize, or select **Help**
        to do manual changes.

    •   If you want to change cluster size manually, click the **Help**
        button.

If you choose to do manual changes, The Optimize Clusters dialog opens. You can see what the results would be with different FAT types and cluster sizes.
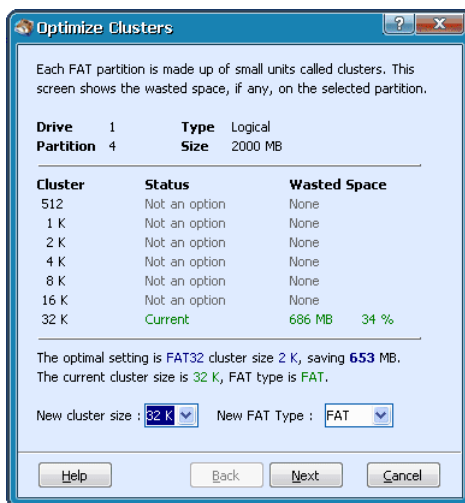
The center shows the amount of wasted disk space for each possible cluster size if this FAT partition were converted to FAT32.

In the lower section, the optimal settings appear in blue and the current configuration parameters for the selected partition are green.

7. Select the optimum parameters in the two list boxes at the bottom of the screen.

- The **New cluster size** box contains the minimum and maximum cluster size available. Select one using the up or down arrows or enter a value.

> **CAUTION:** Older Windows utilities such as Scandisk and Defrag might not be compatible with the smallest cluster sizes. No harm will occur, but these utilities won't run.

- The **New FAT Type** box contains possible file systems (FAT or FAT32). Use the down arrow on the drop-down list to select one.

8. Click **Next** to change the cluster size and FAT type.

A progress window appears, displaying the process.

9. After the process completes, click **Finish**.

> **NOTE:** If you want to optimize a NTFS partition (which is rarely needed), go to Manual Partitioning, select the desired NTFS partition, and click on **Tools > Optimize**.

Duplicate a Partition

Duplicating a partition is one way to create a backup of your system's operating system, applications, or data. This can be very useful in case a newly installed application or operating system doesn't work well. This strategy allows you to make a copy of a partition into available free space on the same physical disk or on a separate disk.

To Duplicate a Partition

1. Select **Better organization** from the Partition Wizard menu.

2. Select the **Duplicate a partition** option and then click **Next**.
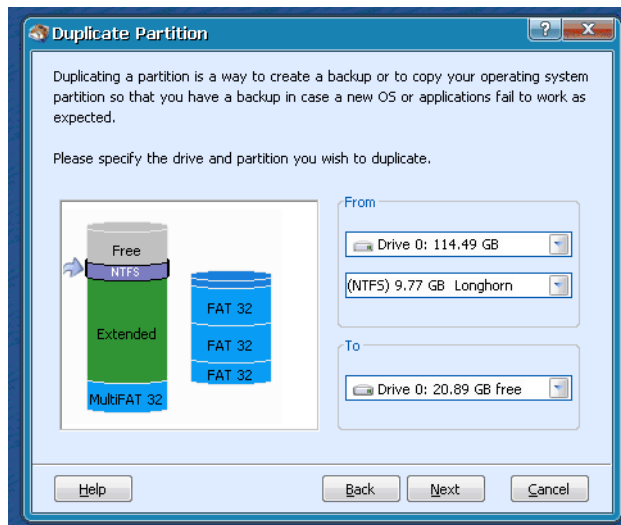
3. In the **From** box, select the drive location and the partition to copy.

    You can also select the partition to copy by clicking on a partition from the diagram on the left.

4. Select the drive in which the copy will be located in the **To** box.

5. Click **Next** to implement your choices.

    A progress window appears, displaying the process.

6. After the process completes, click **Finish**.

> **NOTE:** There must be an adjacent block of free (unallocated) space to contain the duplicate partition. If there is not enough room, you need to make space available by either reducing the size of a partition or deleting a partition you no longer need. Partition Wizard advises you if this is the case.

Add an OS

The **Add an OS** option starts the OS Wizard for installing new operating systems, reinstalling existing operating systems, and installing a new version of an existing operating system on top of the old one. For more information, see "Installing Operating Systems" on page 135.

To return to the Partition Wizard menu from OS Wizard, close the OS Wizard, then open the **start** menu and choose **Partition Wizard** (see "Start Menu" on page 52).

Copy Commander

Copy Commander gives you several methods used for copying one drive to another. They range from a fully automatic copy of the entire drive, to a manual copy of a drive or partition. Also available are options to create and delete partitions using manual partitioning.

This option is described in detail in "Copying Hard Disks and Partitions" on page 119. To return to the Partition Wizard menu from Copy Commander, close Copy Commander, then open the **start** menu and choose **Partition Wizard** (see "Start Menu" on page 52).

Manual Partitioning

This option is described in detail in "Manual Partitioning" on page 83. The Manual Partitioning option allows you to directly control various partitioning processes. It is also useful for seeing a graphical display of the partitions on your drive. To return to the Partition Wizard menu from the Partitioning window, close the Partitioning window, then open the **start** menu choose **Partition Wizard** (see "Start Menu" on page 52).

Undoing Changes

Overview

System Commander has the ability to undo many changes made with the Manual Partitioning and the OS Wizard. Some operations can be quickly undone using the Undo Delete or Undo Format options. Others require the use of the BackStep Wizard™.

Undoing Manual Partitioning Changes

The Partition window has three options under the **Undo** menu for reversing the changes made with System Commander.

- **Undo Delete** restores the last partition deleted.

- **Undo Format** restores the selected FAT/FAT32 partition that was previously formatted. After data is written into a formatted partition, you can't unformat it.

- **BackStep Wizard** reverses partitioning operations (see "Undoing Changes Using the BackStep Wizard" on page 116).

Undoing Changes Using the BackStep Wizard

The BackStep Wizard allows you to undo automatic and manual partitioning operations performed by the OS Wizard or by Manual Partitioning by performing the inverse functions necessary to return to a prior partitioning layout..

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

Starting the BackStep Wizard

Open the System Commander **Start** menu and select **BackStep Wizard**.

You can also start the BackStep Wizard by starting Manual Partitioning, opening the **Undo** menu, and then selecting **BackStep Wizard**.
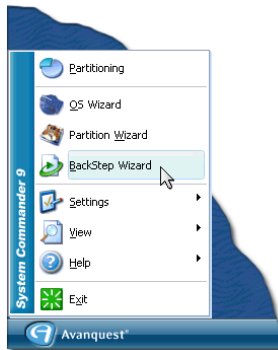
A list of prior automatic and manual operations appears, showing the date and time of each operation.
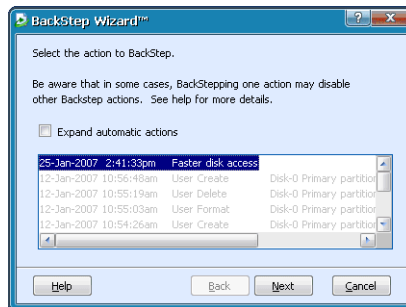
Dimmed lines are operations that can no longer be backstepped.

If you want to view all the individual steps of Partition Wizard operations, check the **Expand automatic actions** box.

Select the operations you want to undo, then click **Next** to continue.

Limitations of BackStep Wizard

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

- A deleted partition can't 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 can't 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 Partition Commander, such as the use of DOS FDISK, it can prevent some or all BackStep operations.

In general, if you use the Partition Wizard to prepare your system, you can usually BackStep to restore the partitioning to its prior state.

BackStep operations are not saved on the BackStep list of actions, so after you perform a BackStep, you can't undo that specific BackStep operation.

> **CAUTION:** You can only BackStep operations when Partition Commander is run from the installed drive. If you run Partition Commander via a boot CD/DVD or boot diskette, you can't save the BackStep information needed to later perform a BackStep. In some situations you might still be able to undo a format. To do so, go to the manual partitioning menu, then select **Undo**.

Copying Hard Disks and Partitions

Overview

Copy Commander gives you several methods used for copying one drive to another. They range from a fully automatic copy of the entire drive, to a manual copy of a drive or partition. Also available are options to create and delete partitions using manual partitioning.

To open the Copy Commander dialog, start the OS Selection Menu, click the **Partitioning** button on the tool bar, and then select **Copy Commander**.
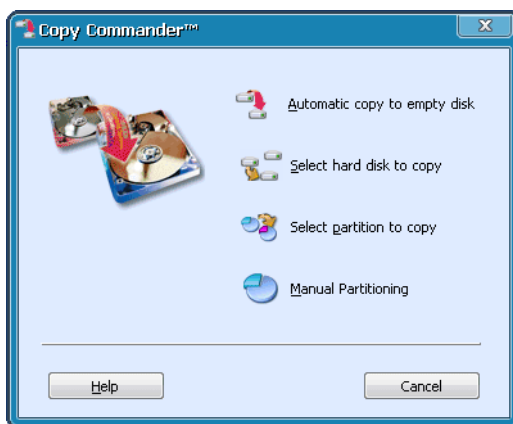
- **Automatic copy to empty disk** (see "Copying Hard Disks Automatically" on page 120)
- **Select hard disk to copy** (see "Copying Hard Disks Manually" on page 121)
- **Select partition to copy** (see "Copying Partitions" on page 122)
- **Manual Partitioning** (see "Manual Partitioning" on page 83)

Copying Hard Disks Automatically

Choose **Automatic copy to empty disk** and Copy Commander selects the first drive with data, and then copies it to the largest empty drive that is large enough to hold the copied drive. The copy process begins automatically—you don't have to make any other selections.
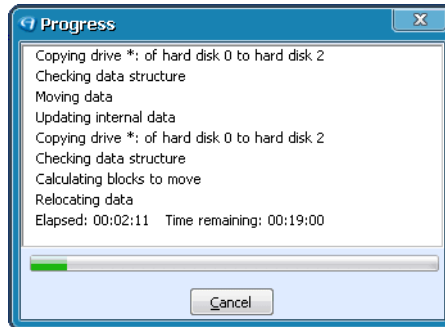
During the copy process, Copy Commander automatically expands the partition to the full size of the drive.

If there is no suitable space found, you will see one of three error messages:

- No empty drives found on this system. Please manually select the source and target drives.

- Empty drive is available but is not large enough to hold the data from the source drive. Please manually select the source and target drives.

- This is a single drive system. Please select Copy Partition to copy an existing partition to another location on the drive.

Copying Hard Disks Manually

1. Choose **Select hard disk to copy** to view the Source drive and Target drive.
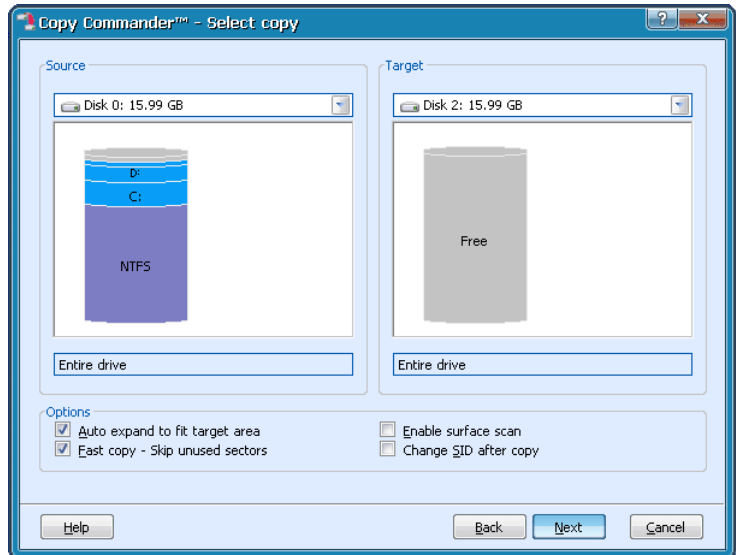
2. In the **Source** box, click the drop-down menu and choose the drive to copy from.

3. In the **Target** box, click the drop-down menu and choose the drive to copy to.

4. Check or uncheck the following option as desired:

    *   **Auto expand to fit target area**
    *   **Fast copy - Skip unused sectors**
    *   **Enable surface scan**
    *   **Change SID after copy**

5. Click **Next** to copy the source drive to the target drive.

Copying Partitions

1. Choose **Select partition to copy** to view a window showing the Source drive and Target drive.
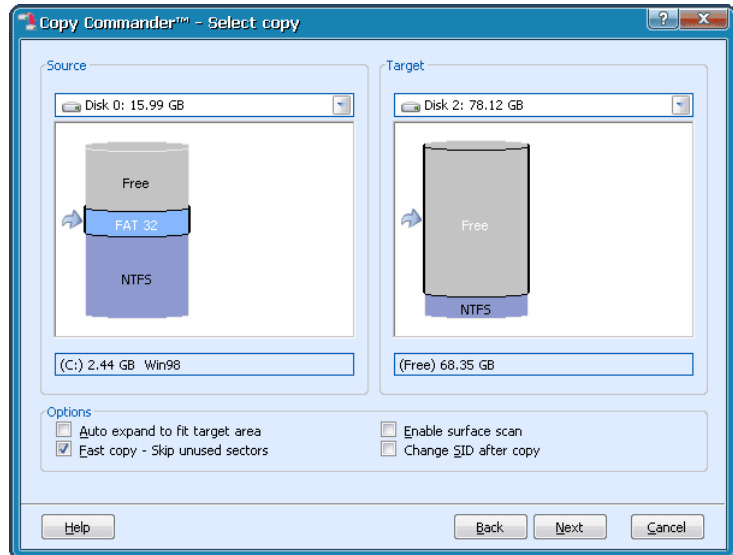
2. In the **Source** box, click the drop-down menu and choose the drive to copy from.

3. Select the partition on the drive you want to copy.

4. In the **Target** box, click the drop-down menu and choose the drive to copy to.

5. Select the free space on the drive where you want to copy the partition to.

6. Check or uncheck the following option as desired:

   - **Auto expand to fit target area**
   - **Fast copy - Skip unused sectors**
   - **Enable surface scan**
   - **Change SID after copy**

Click **Next** to copy the source drive to the target drive.

> **NOTE:** Before rebooting the system, depending upon what your goal is, make the new drive the Primary master and remove the old drive; or, remove the new drive. Otherwise you'll have additional drive letters (the partitions you have copied to the new drive will be visible, and might have drive letters assigned) which could make finding files difficult.

OPERATING SYSTEM INSTALLATIONS

Common Installations and Issues

Overview

This section covers specific common operating system installations, and some of the special steps we recommend when installing other operating systems, such as Windows 95/98/Me, Windows NT/2000/XP/2003, Vista, Linux, UNIX, or NetWare. The easiest way to prepare for these operating system installations is to use the OS Wizard (see "Installing Operating Systems" on page 135). This section also explains alternative ways to manually accomplish operating system installations, as well as special limitations.

IMPORTANT: Before attempting to install any operating system, please see "Operating System and Product Limitations" on page 127 to make sure that you are aware of any limitations imposed by your particular operating system. Specifically, be aware that Windows and DOS won't boot from any partition other than a primary on the first physical drive. You can't install the boot portion of Windows or DOS into an extended partition or to the second or third hard disk. If you attempt this and call for technical support when you encounter problems, our support technicians will tell you that it's impossible or unreliable. System Commander can't overcome limitations of the operating system.

Operating System and Product Limitations

Overview

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.

There are also certain products which are not compatible with System Commander. Those are detailed here including suggestions or work-arounds where available.

In all cases, the operating system or product vendor has the final word on what their product can and can't do. If there is information in this section that you have questions about, please contact the vendor for absolute verification.

Operating System Limitations

Below is a list of operating system limitation topics covered in this section.

- Limitations of Windows NT/2000/XP/2003 and Vista (see page 128)
- Limitations of Windows 95/98/Me (see page 128)
- Limitations of DOS (see page 129)
- Limitations of Other Operating Systems (see page 129)

Limitations of Windows NT/2000/XP/2003 and Vista

- NTFS file format can only be seen from Windows NT/2000/XP/2003 and Vista. Other operating systems, like Windows 95/98/Me, and DOS, can't see a partition with the NTFS file format.

- NT/2000/XP/2003 and Vista must boot from a primary partition on the first drive. Most of the non-boot portion can be located on any partition or drive.

- Only Windows 2000/XP/2003 and Vista can see FAT32 partitions.

- If using a dynamic disk (an option defaulted off in 2000/XP/2003 and Vista), some partitioning features won't be available for that drive. Windows 95/98/Me/NT can't see dynamic drives.

Additional Limitations of WIndows Vista

Windows Vista must be installed in an NTFS partition. The Vista installation will alter the contents in other bootable Windows partitions in unwanted ways if it isn't hidden from Vista. System Commander can help prevent this damage with it's automatic super-hiding feature.

Additional Limitations of Windows NT

Windows NT can't access the NTFS type used in Windows 2000/XP/2003 and Vista. The later operating systems use a newer version of NTFS.

Limitations of Windows 95/98/Me

- Windows 95/98/Me 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.

- Windows 95/98/Me can't access NTFS partitions.

- Windows 95/98/Me must be installed in the first 64 GB of a drive.

- Windows 95/98/Me is unstable if more than 512 MB of RAM is present.

Additional Limitations of Windows 95

- Windows 95A can't see a FAT32 partition. The later variant called Windows 95B added FAT32 support.

- Windows 95 won't normally install and/or is unstable in a system with a processor greater than 350 MHz.

Limitations of DOS

- DOS must be installed into a primary partition on the first physical drive (also called the master drive) within the first 2 GB. DOS installed into either a second hard drive or an extended/logical partition won't boot.

- When your system has more than one primary FAT partition, the inactive primary partitions might not be visible. This DOS bug will occur when either:

  - An extended partition exists without any logical drives defined.

  - The extended partition has no FAT logical partitions defined.

- 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 its own partition.

Limitations of Other Operating Systems

Linux, Solaris, SCO UNIX, NextStep, and other UNIX variants use their own unique file formats, which aren't typically visible to any other operating system.

NOTE: Older Unix operating systems need to be in the first 8 GB of the drive.

If you are installing both Solaris 9 or older and Linux on the same drive, Solaris must be hidden from Linux. Linux will see the Solaris partition as a Linux swap and corrupt it. You can use System Commander's Settings option **Specific OS options** for your Linux to hide the Solaris partition from Linux. Solaris version 10 uses a new partition ID that doesn't overlap Linux.

As of this writing, Linspire (formally Lindows) automatically erases the MBR on every boot cycle, preventing System Commander from working.

Product Limitations

Below is a list of product limitation topics covered in this section.

- Dynamic Disk (see page 130)
- Boot Drive (see page 131)
- System Commander File Location (see page 131)
- Disk Compression (see page 132)
- Norton Disk Lock (see page 132)
- GoBack (see page 132)
- Anti-Virus Software (see page 133)
- Special Partitioning Software (Disk Spanning) (see page 134)

Dynamic Disk

Windows 2000/XP/2003 and Vista have the ability to use "Dynamic Disk." Microsoft defines Dynamic disk as, "A physical disk that contains dynamic volumes created by using 'Disk Management.'" Dynamic disks don't use traditional partition tables like primary and extended partitions (logical drives); therefore, dynamic disks can't be accessed by Windows 95/98/Me, Windows NT, or DOS operating systems.

Because dynamic disk doesn't use a traditional partition table, Partition Commander and System Commander can't resize dynamic disks. Partition Commander, unlike Windows, can convert a dynamic disk back to a basic disk that has partitions understood by other operating systems (see "Using the Advanced Tools" on page 88). System Commander can install and boot from a Dynamic disk.

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 to as hard drive 0. System Commander can't overcome this limitation. However, if the operating system allows it, System Commander 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 and FreeBSD also allow booting from any drive's primary partition.

Be aware that Windows solves this problem by actually booting through files in a primary partition on drive 0, even if you tell it to install somewhere else. Therefore, System Commander treats Windows like another operating system in a partition.

System Commander File Location

System Commander can be installed in a primary FAT, FAT32, or NTFS partition on drive C, also referred to as hard drive 0. The partition doesn't need to be the first partition on the disk. System Commander 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, and must remain in the root directory. The active status of partitions as set by FDISK and the use of DEFRAG programs don't affect System Commander's operation.

Other files reside in the \SC directory on the root. If this directory is renamed or removed, a number of features such as the OS Wizard will no longer function.

Disk Compression

System Commander runs before any Windows/DOS or decompression software runs, therefore all System Commander files must be installed on the non-compressed boot drive. This includes hidden disk compression methods used by DriveSpace, DoubleSpace, Stacker, and DoubleDisk.

> **NOTE:** Due to the inability to correctly diagnose any problems you might encounter with compression, we can't provide assistance to users of System Commander with compressed drives.

If you are using multiple operating systems in the FAT partition, you should avoid disk compression altogether. Disk compression software doesn't understand FAT32 conversions, so users of disk compression software must not perform this conversion.

Although not an issue with System Commander itself, different versions of DOS, Windows 95/98/Me, NT/2000/XP/2003, and Vista might be incompatible with disk compression software. For more information about your version of disk compression and its compatibility with different operating systems, refer to the documentation that came with your disk compression software.

Norton Disk Lock

Disk Lock is a security package that runs from the MBR. If you are using Disk Lock, System Commander won't install. You can still run Partition Commander from the System Commander program CD.

GoBack

Our testing with GoBack has shown that it's not compatible with any partitioning or boot management products including both Partition Commander and System Commander. If GoBack is installed prior to System Commander, it won't let System Commander install. If System Commander is installed prior to GoBack, System Commander is disabled.

The reason for these problems is that GoBack partly resides in the MBR, where boot management products must reside. While System Commander has a special MBR boot feature that solves this obstacle, GoBack also alters the FAT and FAT32 partitions into custom non-FAT partitions. These partitioning alterations also prevent partitioning operations, such as resize.

If you would like to have boot management and the ability to partition your drives, you will need to remove GoBack.

Anti-Virus Software

System Commander must modify the Master Boot Record (MBR). In addition, it will swap out the MultiFAT boot record when different operating systems are selected that are installed in the same partition. 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 might see System Commander as a virus, and should you choose to repair the MBR, you will wipe out System Commander.

> **CAUTION:** In no case should you choose to repair the MBR if System Commander has been installed. System Commander 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.

If this should happen, you can Enable/Update System Commander to restore the System Commander MBR using the System Commander console utility in Windows (see "Enabling System Commander" on page 221).

Some older Anti-Virus packages 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 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 displays a warning about the boot sector, you should be concerned that a virus might have attached itself to the boot sector.

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

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

> **CAUTION:** If your system is set up with disk spanning, where multiple drives appear as one drive, don't use System Commander.

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

Installing Operating Systems

Overview

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 new operating systems or use this product.

- **Have a bootable CD/DVD or diskette for your current operating system**. The System Commander installation will offer to do this for you if you are running under Windows 95/98/Me or DOS (see "Making a Boot Disk" on page 31).

Installing System Commander takes only a few minutes. Installing a new operating system can take considerably longer, but that's controlled by the operating system. System Commander works with operating systems that are installed prior to System Commander as well as those installed after System Commander.

Starting the OS Wizard

You can use the OS Wizard to prepare Windows, Unix, Linux, DOS, and other operating system installations. To prepare for an operating system installation, reboot your computer to the System Commander OS Selection Menu, and then press ALT-O to start the OS Wizard.

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

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

This section covers starting the OS Wizard and sample installations for a Windows Vista upgrade (see "Preparing to Install Windows Vista" on page 136), a Windows XP upgrade (see "Preparing to Install Windows XP" on page 140), and a Linux installation (see "Preparing to Install Linux" on page 144).

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 (see "Start Menu" on page 52).

Preparing to Install Windows Vista

The following steps assume the installation of Windows Vista as a new installation.

1. Reboot your computer to the System Commander OS Selection Menu, and then press ALT-O or click the **OS Wizard** button to start the OS Wizard.

You can also start the OS Wizard from the System Commander **start** menu (see "Start Menu" on page 52).

2. Select the **New Installation** option and click **Next**.

3. Select the category of operating system you want to install.

For all Windows types, select the **Windows** option and then click **Next**.

4. Select **Windows Vista** and then click **Next**.

The OS Wizard informs you that there are two different editions of Windows Vista and needs to know which edition you are installing.

If you're not sure about a specific edition, click the **Help** button for a explanation of each edition.

5. Assuming you have an upgrade edition select **Upgrade install** and then click **Next**.

You are given the choice of installing Windows Vista together with your existing operating systems or isolated by itself. When installing Windows Vista on top of an existing Windows NT/2000/XP system, it will OVERWRITE the existing NT/2000/XP and you will no longer have it available as a choice on the OS Selection Menu.

Most users prefer to install each operating system isolated by itself so that all existing operating systems will still be available. This also makes it easy to remove the newly added operating system at a later time using System Commander's BackStep Wizard (see "Undoing Changes Using the BackStep Wizard" on page 116).

Select **Isolated by itself** and then click **Next**.

At this point, OS Wizard takes all your choices and determines the best location and space needed to make room for the new operating system. When a valid solution is found, the action plan is presented.

If you don't get an action plan to install the operating system, see "No Solutions" on page 139.

6. Click **Finish** to prepare the disk for the new Windows Vista installation.

This can take a few minutes or longer depending on the space available and if any areas of the disk need to be copied, moved, or resized.

After the OS Wizard completes, final instructions on how to begin the Windows Vista installation appear.
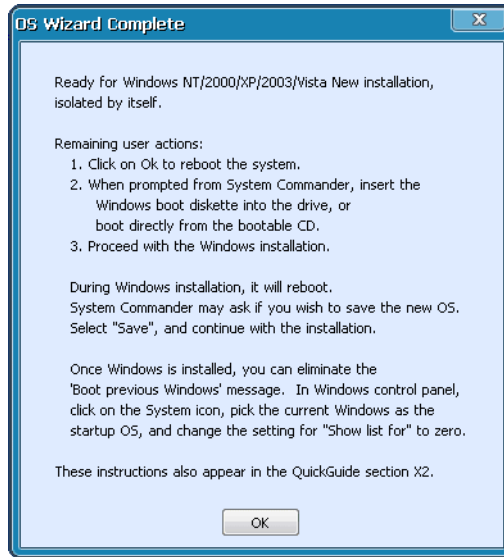
After you click **OK**, the OS Wizard restarts your computer so that you can start the Windows Vista installation.

Changing the Size and Drive Selection

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

No Solutions

On some systems, OS Wizard's analysis might show that the new operating system can't be installed. The most common reason is not enough disk space. For example, the Windows Vista requires over 15 GB of space to install. If OS Wizard is unable obtain enough space for this, you will be notified that there is no solution.

If you are loading a number of operating systems on the same system, the choices you selected and/or the operating system's own internal restrictions might also prevent a solution.

Preparing to Install Windows XP

The following steps assume the installation of Windows XP as a new installation.

1. Reboot your computer to the System Commander OS Selection Menu, and then press ALT-O or click the **OS Wizard** button to start the OS Wizard.

You can also start the OS Wizard from the System Commander **start** menu (see "Start Menu" on page 52).

2. Select the **New Installation** option and click **Next**.
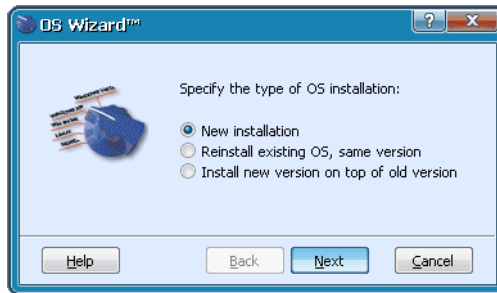
3. Select the category of operating system you want to install.

For all Windows types, select the **Windows** option and then click **Next**.

4. Select **Windows XP** and then click **Next**.

The OS Wizard informs you that there are two different editions of Windows XP and needs to know which edition you are installing.

If you're not sure about a specific edition, click the **Help** button for a explanation of each edition.

5. Assuming you have an upgrade edition select **Upgrade install** and then click **Next**.

   You are given the choice of installing Windows Vista together with your existing operating systems or isolated by itself. When installing Windows Vista on top of an existing Windows NT/2000/XP system, it will OVERWRITE the existing NT/2000/XP and you will no longer have it available as a choice on the OS Selection Menu.

   Most users prefer to install each operating system isolated by itself so that all existing operating systems will still be available. This also makes it easy to remove the newly added operating system at a later time using System Commander's BackStep Wizard (see "Undoing Changes Using the BackStep Wizard" on page 116).

   Select **Isolated by itself** and then click **Next**.

   At this point, OS Wizard takes all your choices and determines the best location and space needed to make room for the new operating system. When a valid solution is found, the action plan is presented.

   If you don't get an action plan to install the operating system, see "No Solutions" on page 139.

6. Click **Finish** to prepare the disk for the new Windows XP installation.

This can take a few minutes or longer depending on the space available and if any areas of the disk need to be copied, moved, or resized.

After the OS Wizard completes, final instructions on how to begin the Windows XP installation appear.
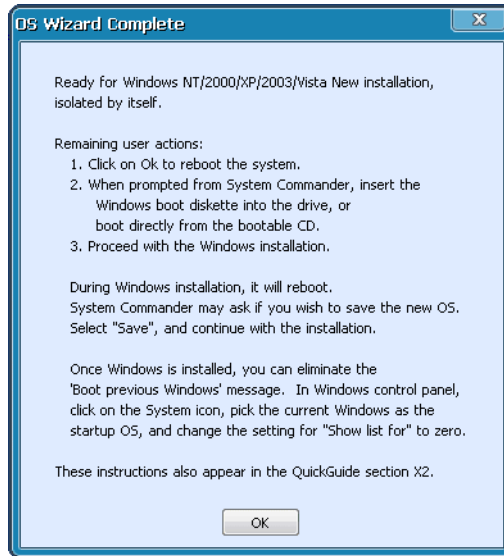
After you click **Ok**, the OS Wizard restarts your computer so that you can start the Windows XP installation.

Preparing to Install Linux

The following steps assume the installation of Linux as a new installation.

1. Reboot your computer to the System Commander OS Selection Menu, and then press ALT-O or click the **OS Wizard** button to start the OS Wizard.

You can also start the OS Wizard from the System Commander **start** menu (see "Start Menu" on page 52).

2. Select the **New Installation** option and then click **Next**.
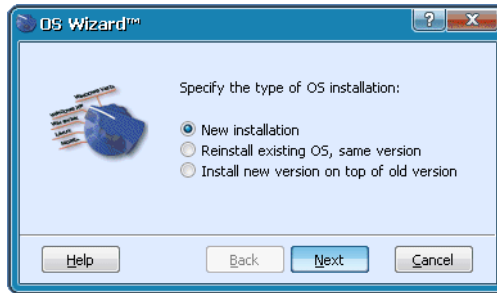
3. Select the category of operating system you want to install.

For all versions of Linux, select the **Linux/Unix** option and then click **Next**.

4. Select the **Linux** and then click **Next**.
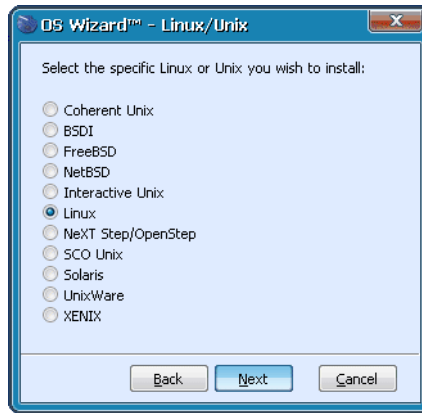
5. Select your specific Linux type and then click **Next**.

If your type of Linux doesn't appear on the list, select **Other**.

6. Choose where to place Linux and then click **Next**.
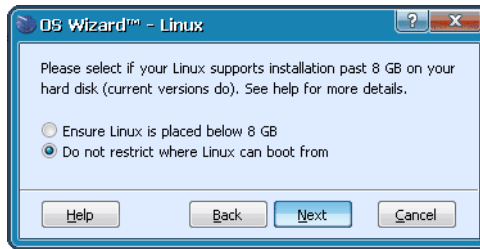
If you are using an older Linux version that was made before 2003, it might not work unless it's restricted to below 8 GB. All new versions support operation from anywhere on the disk.

7. Choose to install with or without boot CD.
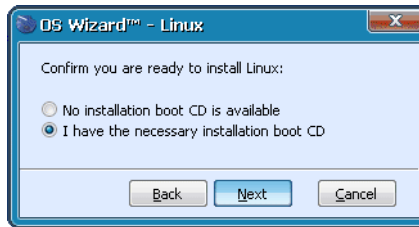
As a requirement to install many versions of Linux, you will need to have the Linux boot CD/DVD made from the Linux distribution before proceeding. If you don't have a boot CD/DVD, the OS Wizard will advise you to make it before continuing.

8. Assuming you have a bootable Linux CD/DVD, select the second option, and then click **Next**.

The OS Wizard takes your choices and determines the best location and space needed to make room for your new Linux.

> **TIP:** Linux and several other Unix operating systems 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.

When a valid solution is found, the action plan appears.

If you don't get an action plan to install the operating system, see "No Solutions" on page 147.

9. If this plan is what you would like, click **Next** to prepare the disk for the new Linux installation.

This might take a few minutes depending on the space available and if any areas of the disk need to be copied, moved or resized.

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

10. Press **Ok** to restart your computer so that you can begin your new Linux installation.

Changing the Size and Drive Selection

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, the OS Wizard's analysis might show that Linux (or another operating system) can't be installed. The most common reason is not enough disk space.

If you are loading a number of operating systems on the same system, the choices you selected and/or the operating system's own internal restrictions might also prevent a solution.

Multiple Operating Systems in a MultiFAT Partition

After loading four operating systems, the directory structure might appear as shown below.

TIP: You can use any directory names you want, but using the vendor and version as part of the name is helpful in keeping everything in order.

```
C:\SC ─┬─ PCDOS 7.0 ──┬── COMMAND.COM
       │               ├── CONFIG.SYS
       │               └── AUTOEXEC.BAT
       │
       ├─ MSDOS 6.22 ──┬── COMMAND.COM
       │               ├── CONFIG.SYS
       │               └── AUTOEXEC.BAT
       │
       ├─ OS2 ──────────── Unique system files
       │
       ├─ WINME ───────┬── COMMAND.COM
       │               ├── CONFIG.SYS
       │               ├── AUTOEXEC.BAT
       │               └── MSDOS.SYS (Win Me configuration file)
       │
       └─ WINXP ───────┬── BOOT.INI
                       ├── NTDETECT.COM
                       ├── NTBOOTDD.SYS (might not exist)
                       └── NTLDR.COM
```
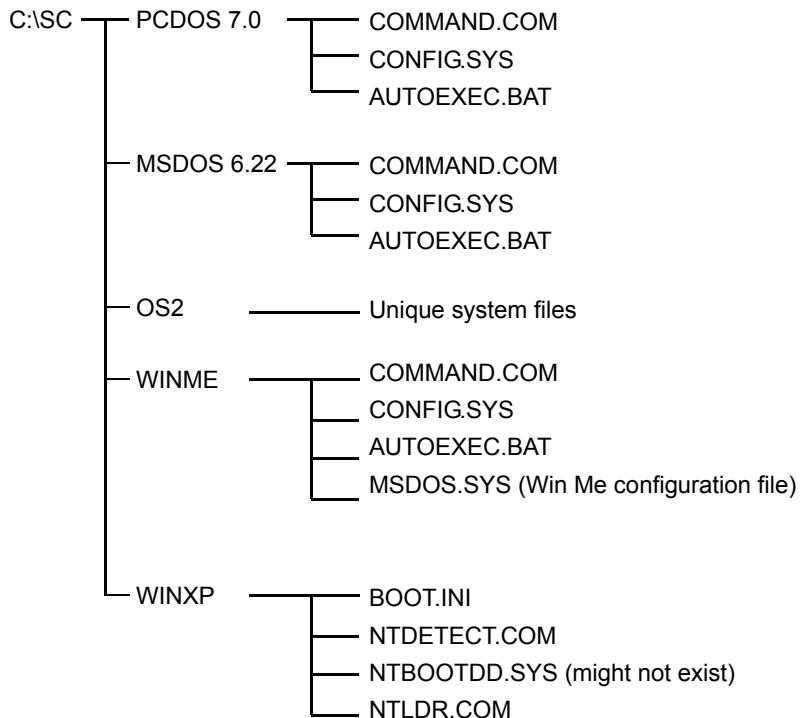
As the various files, like CONFIG.SYS and AUTOEXEC.BAT are changed in the root directory, System Commander automatically updates the saved images in the appropriate subdirectories.

Hidden system files, like IO.SYS and MSDOS.SYS, are saved and managed in the System Commander SCDOS.SYS file. Windows 95/98/Me's MSDOS.SYS is saved as a separate configuration file, to allow System Commander to automatically update this file if changed.

Operating System Installation Notes

Overview

This section provides basic operating system installation instructions after the OS Wizard runs (see "Installing Operating Systems" on page 135).

When the OS Wizard completes, instructions appear on screen that are duplicated here for your convenience.

- Windows NT/2000/XP/2003 and Vista Installations (see page 150)
- Windows Me Installations (see page 152)
- Windows 98 Installations (see page 153)
- Windows 95 Installations (see page 155)
- Linux Installations (see page 157)
- Unix Installations (see page 158)
- NetWare Installations (see page 158)
- OS/2 Installations (see page 159)
- DOS Installations (see page 161)

Windows NT/2000/XP/2003 and Vista Installations

Below are topics in this section for the variations of Windows NT/2000/XP/2003 and Vista installations.

- Windows NT/2000/XP/2003 and Vista Upgrade Installation Isolated (see page 150)
- Windows NT/2000/XP/2003 and Vista New Installation Isolated (see page 150)
- Windows NT/2000/XP/2003 and Vista Upgrade Installation with Other Operating Systems (see page 151)
- New Windows NT/2000/XP/2003 and Vista Installation with Other Operating Systems (see page 151)

Windows NT/2000/XP/2003 and Vista Upgrade Installation Isolated

1. Click **Ok** to reboot the system.
2. System Commander will automatically boot into the newly created duplicate partition. Run the old Windows from this partition.
3. Run setup from the Windows upgrade CD/DVD.

For more information, see "Notes for Windows NT/2000/XP/2003 and Vista Installations" on page 151.

Windows NT/2000/XP/2003 and Vista New Installation Isolated

1. Click **Ok** to reboot the system.
2. When prompted by System Commander, insert the Windows boot CD into the drive.
3. Proceed with the Windows installation.

For more information, see "Notes for Windows NT/2000/XP/2003 and Vista Installations" on page 151.

Windows NT/2000/XP/2003 and Vista Upgrade Installation with Other Operating Systems

1. Click **Ok** to reboot the system.

2. From the OS Selection Menu, boot into your existing Windows installation (in the MultiFAT where System Commander is installed).

3. Run setup from the Windows upgrade CD/DVD.

4. During the Windows installation, it might ask if you want to convert to NTFS. You must NOT switch to NTFS if you want to continue to use your existing non-NTFS compatible operating systems.

For more information, see "Notes for Windows NT/2000/XP/2003 and Vista Installations" on page 151.

New Windows NT/2000/XP/2003 and Vista Installation with Other Operating Systems

1. Click **Ok** to reboot the system.

2. From the OS Selection Menu, boot into your existing Windows installation (in the MultiFAT where System Commander is installed).

3. Run setup from the Windows CD/DVD.

4. During the Windows installation, it might ask if you want to convert to NTFS. You must NOT switch to NTFS if you want to continue to use your existing non-NTFS compatible operating systems.

For more information, see "Notes for Windows NT/2000/XP/2003 and Vista Installations" on page 151.

Notes for Windows NT/2000/XP/2003 and Vista Installations

During a Windows installation, it will reboot. System Commander might ask if you want to save the new operating system. Select **Save**, and continue with the installation.

After Windows is installed, you can hide the Windows OS Loader message. In the Windows XP/2003 control panel, Click the System icon, select the **Advanced** tab and click **Settings** under Setup and Recovery. Choose the desired default operating system (typically leave it as-is) and change the Time to display list of operating systems to zero.

Windows Me Installations

Below are topics in this section for the variations of Windows Me installations:

- Windows Me Regular Installation (see page 152)
- Windows Me Upgrade Installation Isolated (see page 152)
- Windows Me Upgrade installation over Windows 9x (see page 153)

Windows Me Regular Installation

1. Click **Ok** to reboot the system.
2. When prompted from System Commander, insert the Windows Me boot diskette into the drive.
3. Proceed with the Windows Me installation.

For more information, see "Notes for Windows Me Installations" on page 153.

Windows Me Upgrade Installation Isolated

1. Click **Ok** to reboot the system.
2. System Commander will automatically boot into the newly created duplicate partition. Run Windows 9x from this partition.
3. Run **setup /ir** from the Windows Me upgrade CD.
4. When asked for the directory of where to install Windows Me, use the default name.

For more information, see "Notes for Windows Me Installations" on page 153.

Windows Me Upgrade installation over Windows 9x

1. Click **Ok** to reboot the system.

2. From the OS Selection Menu, boot into your existing Windows 9x installation.

3. Run **setup /ir** from the Windows Me upgrade CD.

4. When asked for the directory of where to install Windows Me, use the default name.

For more information, see "Notes for Windows Me Installations" on page 153.

Notes for Windows Me Installations

If System Commander fails to appear on the next boot cycle: Boot from the System Commander program CD or Utility Diskette 1 to automatically update the MBR, or boot from a Windows 95/98/Me or DOS diskette and run CHECKMBR.EXE from the hard drive C.

Windows 98 Installations

Below are topics in this section for the variations of Windows 98 installations:

Windows 98 Regular Installation

1. Click **Ok** to reboot the system.

2. When prompted from System Commander, insert the Windows 98 boot diskette into the drive.

3. Proceed with the Windows 98 installation.

For more information, see "Notes for Windows 98 Installations" on page 154.

Windows 98 Upgrade Installation Isolated

1. Click **Ok** to reboot the system.

2. System Commander will automatically boot into the newly created duplicate partition. Run Windows 95 from this partition.

3. Run **setup /ir** from the Windows 98 upgrade CD/diskette.

4. When asked for the directory of where to install Windows 98, use the default name.

For more information, see "Notes for Windows 98 Installations" on page 154.

Windows 98 Upgrade Installation over Windows 3.x/95

1. Click **Ok** to reboot the system.

2. From the OS Selection Menu, boot into your existing Windows 3.x/95 installation.

3. Run **setup /ir** from the Windows 98 upgrade CD/diskette.

4. When asked for the directory of where to install Windows 98, use the default name.

For more information, see "Notes for Windows 98 Installations" on page 154.

Notes for Windows 98 Installations

If System Commander fails to appear on the next boot cycle: Boot from the System Commander program CD or Utility Diskette 1 to automatically update the MBR, or boot from a Windows 95/98/Me or DOS diskette and run CHECKMBR.EXE from the hard drive C.

Windows 95 Installations

Below are topics in this section for the variations of Windows 95 installations:

Windows 95 Upgrade installation with Other Operating Systems

1. Click **Ok** to reboot the system.
2. From the OS Selection Menu, boot into your existing Windows 3.x installation.
3. Run **setup /ir** from the Windows 95 upgrade CD/diskette.

> **CAUTION:** When asked for the directory of where to install Windows 95 DO NOT use the default name.

4. Change the name to a new directory (like WIN95).

Windows 95 Upgrade Installation Isolated

1. Click **Ok** to reboot the system.
2. System Commander will automatically boot into the newly created duplicate partition. Run Windows 3.x from this partition.
3. Run setup from the Windows 95 upgrade CD/diskette.
4. When asked for the directory of where to install Windows 95, use the default name (typically Windows).

Windows 95 Regular Installation

1. Click **Ok** to reboot the system.
2. When prompted from System Commander, insert the Windows 95 boot diskette into the drive.
3. Proceed with the Windows 95 installation.

For more information, see "Notes for Windows 95 Installations" on page 156.

Windows 95 OSR2 Installation

1. Click **Ok** to reboot the system.
2. When prompted from System Commander, insert the Windows 95 boot diskette into the drive.
3. Proceed with the Windows 95 installation.

For more information, see "Notes for Windows 95 Installations" on page 156.

Windows 95 Upgrade Installation of Windows 3.x.

1. Click **Ok** to reboot the system.
2. From the OS Selection Menu, boot into your existing Windows 3.x installation.
3. Run **setup /ir** from the Windows 95 upgrade diskette.
4. When asked for the directory of where to install Windows 95, use the default name.

For more information, see "Notes for Windows 95 Installations" on page 156.

Notes for Windows 95 Installations

If System Commander fails to appear on the next boot cycle: Boot from the System Commander program CD or Utility Diskette 1 to automatically update the MBR, or boot from a Windows 95/98/Me or DOS diskette and run CHECKMBR.EXE from the hard drive C.

Linux Installations

Below are topics in this section for the two variations of Linux installations. You can also find a sample installation at "Preparing to Install Linux" on page 144.

New Linux installation Below 8 GB

1. Click **Ok** to reboot the system.
2. When prompted from System Commander, insert the Linux boot CD into the drive.
3. Proceed with the Linux operating system installation.

During the Linux install, if asked, we recommend an "Expert" or "Custom" install. Later when asked, be sure to mount the root partition.

As part of the Linux installation, you will likely be asked to use LILO or GRUB. We recommend you select LILO. Be sure to select the **First sector of root partition** choice (also referred to as the superblock) and not the MBR choice.

If in LILO you choose the MBR method by accident, after System Commander is enabled, it will normally detect the LILO MBR. It will then be saved and will automatically add the new Linux as a choice. See "Preparing to Install Linux" on page 144 for more details.

New Linux Installation Above 8 GB

1. Click **Ok** to reboot the system.
2. When prompted from System Commander, insert the Linux boot CD into the drive.
3. Proceed with the Linux operating system installation.

During the Linux install, if asked, we recommend an "Expert" or "Custom" install. Later when asked, be sure to mount the root partition.

As part of the Linux installation, you will likely be asked to use LILO or GRUB. We strongly recommend you select GRUB. When you reboot, the GRUB menu will appear. Select **Windows** to boot the operating system where System Commander is installed. Boot to the desktop. Then shut down and reboot. System Commander should reappear with your new Linux choice.

Unix Installations

Below are topics in this section for the variations of Unix installations:

New Unix Operating System Installation

1. Click **Ok** to reboot the system.

2. When prompted from System Commander, insert the operating system boot CD or boot diskette into the drive.

3. Proceed with the new operating system installation.

4. System Commander has created a partition for the new operating system, but the installation program must prepare/format the partition.

New Unix Solaris Installation

1. Click **Ok** to reboot the system.

2. When prompted from System Commander, insert the Solaris boot CD or operating system boot diskette into the drive.

3. Proceed with the Solaris installation.

   System Commander has created a partition for Solaris, but the Solaris installation program must prepare and format the partition.

4. Select **Interactive Solaris installation**.

> **CAUTION:** Do not choose the **Automatic Solaris installation** option. It usually erases all partitions on the drive.

If the OS/2 installation asks to use the current format or reformat to HPFS, select **current** to avoid affecting other operating systems.

> **NOTE:** If System Commander fails to appear on the next boot cycle: Boot from the System Commander program CD or Utility Disk to automatically update the MBR, or boot from a Windows 95/98/Me or DOS diskette and run CHECKMBR.EXE from the hard drive.

NetWare Installations

1. Click **Ok** to reboot the system.

2. At the System Commander OS Selection Menu, select the desired DOS (NetWare installs from DOS).

3. Proceed with the NetWare installation.

OS/2 Installations

Below are topics in this section for the variations of OS/2 installations:

- OS/2 Upgrade Installation with Other Operating Systems (see page 160)

- OS/2 Regular Installation Isolated (see page 160)

- OS/2 Upgrade Installation Isolated (see page 161)

- OS/2 Regular Installation with Other Operating Systems (see page 161)

OS/2 Upgrade Installation with Other Operating Systems

1. Click **Ok** to reboot the system.

2. From the OS Selection Menu, boot into your existing OS/2 or Windows 3.x (DOS) installation.

3. Proceed with the OS/2 upgrade CD/diskette.

4. Select **Advanced install**.

> **CAUTION:** The **Easy install** option automatically destroys all data in the partition without any warning.

The OS/2 installation might ask if you want to use the current format or reformat to HPFS. Select **current** to avoid affecting other operating systems.

OS/2 Regular Installation Isolated

1. Click **Ok** to reboot the system.

2. When prompted from System Commander, insert the OS/2 boot diskette into the drive.

3. Proceed with the OS/2 installation.

4. Select **Advanced install**.

CAUTION: The **Easy install** option automatically destroys all data in the partition without any warning.

The OS/2 installation might ask if you want to use the current format or reformat to HPFS. Select **current** to avoid affecting other operating systems.

OS/2 Upgrade Installation Isolated

1. Click **Ok** to reboot the system.

2. System Commander will automatically boot into the newly created duplicate partition. Run Windows 3.x or OS/2 from this partition.

3. Proceed with the OS/2 upgrade CD/diskette.

4. Select **Advanced install**.

CAUTION: The **Easy install** option automatically destroys all data in the partition without any warning.

The OS/2 installation might ask if you want to use the current format or reformat to HPFS. Select **current** to avoid affecting other operating systems.

OS/2 Regular Installation with Other Operating Systems

1. Click **Ok** to reboot the system.

2. From the OS Selection Menu, boot into your existing OS/2 or Windows 3.x installation.

3. Proceed with the OS/2 installation.

4. Select **Advanced install**.

> **CAUTION:** The **Easy install** option automatically destroys all data in the partition without any warning.

The OS/2 installation might ask if you want to use the current format or reformat to HPFS. Select **current** to avoid affecting other operating systems.

DOS Installations

Below are topics in this section for the variations of DOS installations.

DOS Upgrade with Other Operating Systems

1. Click **Ok** to reboot the system.

2. In the OS Selection Menu, boot into an existing DOS installation.

3. Follow the DOS installation instructions.

4. When asked for the directory of where to install DOS, pick a new directory name that doesn't currently exist.

Complete DOS installation with Other Operating Systems

1. Click **Ok** to reboot the system.

2. When prompted from System Commander, insert the DOS boot diskette into the drive.

3. Proceed with the DOS installation.

Complete DOS Installation Isolated

1. Click **Ok** to reboot the system.

2. When prompted from System Commander, insert the DOS boot diskette into the drive.

3. Proceed with the DOS installation.

DOS installation Using the SYS command

1. Click **Ok** to reboot the system.

2. When prompted from System Commander, insert the DOS boot diskette into the drive.

3. Proceed with the DOS installation:

- SYS C: (at the DOS prompt)
- Create your AUTOEXEC.BAT and CONFIG.SYS files.

4. Copy any other desired files.

OPERATING SYSTEM CONFIGURATION

Configuring for Windows Vista

Overview

Windows Vista is always installed in its own NTFS partition by itself. During its install, if an existing pre-Vista Windows is already installed, the Vista installation might alter the file system and might insert the Vista OS Loader files into the old Windows altering the boot records. System Commander has special features to prevent Vista from modifying existing operating systems. If Vista has already caused damage prior to installing System Commander, you can use the tools provided by System Commander to correct it, as Vista provides no such tools to undo alterations to other operating systems.

Below are several options depending if you are installing Windows Vista after or before System Commander.

- Vista Installed Prior to System Commander
- Multiple Windows Vista Operating Systems
- Limitations From Operating System

For additional information about other Windows operating systems, see and .

Installing Vista After Installing System Commander

After System Commander is installed and the existing operating system information is saved by System Commander (by rebooting once). Reboot to the System Commander OS selection menu and click the **OS Wizard** button. Select the options to prepare for a Windows Vista installation. You can choose either to install by itself, or to have the OS Wizard make a copy of an existing Windows XP so that Vista will upgrade the copy, leaving your existing XP untouched.

> **NOTE:** If you have an upgrade version of Vista, you can still install Windows Vista by itself, but during installation Vista requires your stand-alone Windows XP CD for verification. Recovery CDs provided by some OEMs might not be acceptable.

After the OS Wizard finishes preparing the drive, reboot into System Commander and insert the bootable Vista DVD when prompted.

> **NOTE:** Do not insert your Vista DVD prior to being prompted to do so.

Proceed with the Vista installation following its instructions.

Enabling System Commander After Installing Vista

When the installation completes, Vista should be working, but you will see that System Commander has been disabled. To re-enable System Commander, follow the steps below.

1. Insert the System Commander installation CD into the CD-drive and restart your computer.

    You can also use the Recovery CD or diskette that you made during the System Commander installation.

2. Select the **Enable System Commander**.

3. Remove the CD/diskette and reboot.

    System Commander will detect the new operating system and ask you if you want to save it.

4. Select **Save** to add Windows Vista to the OS Selection Menu.

If you have problems with the Windows installation (such as system incompatibilities, disk problems, or others.) and you later attempt to reinstall Vista, after rebooting the computer, the OS Selection Menu will appear. Be sure to select the same Windows Vista selection so no files are changed and the Windows installation will continue normally.

Adding System Commander to Vista

When you install Vista completely self-contained in a single partition without any other Windows (NT/2000/XP/2003) the new Vista choice will usually appear on the System Commander menu without further action.

Adding a Previously Installed Windows Choice

If you are missing any Windows choices on the OS Selection Menu after installing Vista, follow the steps below.

1. Reboot the computer to the OS Selection Menu.
2. Click the **Settings** button (ALT-S) to view
3. Select the **Order Add and Remove** option.
4. Click the **Add** button (ALT-A) and then click **Partition**.
5. Select a partition from the list and then click the **Toggle-Bootable** button (ALT-T) to change the bootable status.

Removing Vista Boot Management

When Vista installs it looks for any existing Windows (NT through 2003) installations. Without System Commander's hiding technology, Vista will alter the old Windows. Some of the changes it makes includes replacing the boot record, removing the hidden files NTLDR and NTDETECT.COM, and adding several new files. In the end Vista's OS Loader boot management is placed in charge of what operating system to boot.

After you install System Commander, you will only have one operating system choice that runs the OS Loader.

To Restore Operating System Choices After Installing System Commander on Vista

1. Reboot the computer to the OS Selection Menu.
2. Click the **Partitioning** button from the tool bar.
3. Click the **Manual partitioning** button to open the Partitioning window.
4. Open the **Advanced** menu and select **Disable Vista boot management**.
5. Click **Yes** to continue.

System Commander scans you computer for other Windows installations, removes Vista's OS Loader control and places the individual operating systems already installed as separate choices on the OS Selection Menu after you reboot your computer. If you need to restore the Vista boot management, see .

Installing Multiple Versions of Vista

System Commander can manage multiple versions of Windows Vista in separate partitions. For example, you can create a system with Windows Vista Home, Business, and Ultimate on a single PC. You can use the OS Wizard to prepare for each new installation.

By default, System Commander will hide each NTFS partition from other operating system choices. You can change this by opening the OS Selection Menu **Settings** and selecting the **Specific OS Options** choice to make changes to how partitions are hidden.

Limitations From Operating System

- Vista can be installed in a primary or logical partition on any accessible drive. If installed into a logical partition, Vista's boot code must reside in a primary NTFS partition within the first 2 gigabytes on the first physical hard drive. (NTFS only)

- The partition must be NTFS. Windows Vista doesn't support booting from FAT32 or FAT partitions.

- Without System Commander, Vista will attempt to modify the NTFS type in NT so that it will no longer work. It will also modify the boot process in Windows 2000/XP/2003 without providing any backup. System Commander can protect older Windows from these issues and has options to correct the damage if it occurs.

Configuring for Windows NT through 2003

Overview

In this section only, we refer to any Windows NT/2000/XP/2003 as "Windows". Other Windows such as Windows 95/98/Me will be explicitly named.

Windows can be installed in three (3) different ways. The most common installation places each Windows you install into it's own separate primary partition. You can also put multiple Windows into a single partition FAT or FAT32 partition that is managed by System Commander's MultiFAT feature, or place multiple Windows into a single partition that is controlled by the Windows OS Loader, selected from System Commander.

If you want to use NT, it must be either a shared FAT partition (which limits you to 2 GB), or place NT in it's own FAT or NTFS partition. Windows 2000 and later have the nasty habit of updating the NTFS type to be incompatible with NT, so you must always hide an NT NTFS partition from other operating systems (and System Commander will do this for you).

Windows Installed Prior to System Commander with OS Loader

When Windows installs in the same partition with an older Windows, it installs the OS Loader to select between these Windows. In this situation, System Commander will bring up OS Loader like an operating system.

If your older operating system was Windows 95/98/Me or DOS, the following instructions will separate this into two System Commander menu selections. One to boot Windows 95/98/Me/DOS directly and another to boot the other Windows choice, if you don't have both selections on the System Commander selection menu. The current System Commander "OS Loader" choice will become a Windows only choice.

To Create a Separate Non-NT/2000/XP/2003 Choice on the System Commander OS Selection Menu

1. Boot from a Windows 95/98/Me/DOS diskette with the same version and vendor as your current operating system.

2. At the prompt run the SYS program to reload the hidden files:

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

3. After the program completes, remove the boot diskette and reboot again.

   This time System Commander will save the operating system hidden system files and other key files such as AUTOEXEC.BAT and CONFIG.SYS.

4. At the prompt, reboot again to verify you now have both the old and new Windows menu choices.

5. Make the newer Windows selection bring up the OS Loader with its choices.

6. Select **NT/2000/XP/2003**.

7. After Windows is running, open the Windows **Start** menu and choose **Program Settings > Control Panel**.

8. Click on the **System** icon within the Control Panel.

   For Windows XP/2003 click on the **Advanced** tab, and then and click on **Settings** under Setup and Recovery.

9. Choose the desired default operating system (typically leave it as-is) and change the **Time to display list of operating systems** to zero.

Adding System Commander to Windows

In the case of Windows completely self-contained in a single partition, such as no DOS or Windows 95/98/Me existed when the new Windows was installed, the new Windows choice will usually appear on the System Commander menu without further action. If you are missing any Windows choice, at the System Commander OS Selection Menu, press ALT-S or click the **Settings** button, and then select the **Order Add and Remove** option. Press ALT-A (Add), and then P for Partition. Toggle the desired Windows partition(s) to be bootable with ALT-T.

Adding DOS to Windows Installed Prior to System Commander

DOS must be installed into a FAT16 primary partition. If Windows is currently installed into the FAT16 primary, then DOS can be added into this partition, otherwise a new Primary FAT16 partition must be created. To add DOS into the Windows partition after System Commander 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 won't install because it detects another operating system already on your computer. Should this occur, exit the setup program. At the A:> prompt, type SYS C:. After you receive the message "System Transferred", type SETUP to start 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 can safely continue the installation at this point. After the installation of DOS has been completed, you will be prompted to reboot the computer. Upon reboot, System Commander 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's possible to create a primary FAT partition larger than 2047 MB. Other operating systems, such as DOS and Windows 95/98/Me, won't recognize standard FAT partitions greater than 2047MB.

Installing Windows After Installing System Commander

After System Commander is installed and the existing operating system information is saved by System Commander (by rebooting once), make sure your last boot was to either the DOS or Windows 95/98/Me that exists in the same partition in which System Commander has been installed (the MultiFAT partition). Do not proceed if the last choice was OS/2. Proceed to install your new Windows per its instructions.

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

If you have problems with the Windows installation (such as system incompatibilities, disk problems, etc.) and you later attempt to reinstall Windows, upon Windows requiring a reboot, the OS Selection Menu will appear. Be sure to select the same Windows selection so no files are changed and the Windows installation will continue normally.

After Windows has completed the installation, shutdown the system by pressing CTRL-ALT-DEL and selecting the **Shut Down** option. When you reboot the system, System Commander will now present your new Windows as another menu choice.

Removing OS Loader Messages

When you are using System Commander in a FAT/FAT32 primary partition along with multiple Windows, you might not need the OS Loader selection choice menu to appear. For example, the OS Loader provides a choice for Windows Me and Windows XP, but System Commander can already go directly to Windows Me. You can set Windows XP to be the default OS Loader choice for a faster boot.

To Hide the OS Loader

1. Select **Windows** from the OS Selection Menu to bring up the Windows OS Loader with both new and old Windows choices.

2. Select the new Windows. After Windows is running.

3. Click the Windows **Start** button and choose **Program Settings > Control Panel**.

4. Click on the System icon within the Control Panel.

5. Pick the new Windows as the startup operating system, and change the settings for **Show List for** to **zero**.

    This will skip Windows's extra questions at Boot time, since you will be selecting Windows directly from the System Commander Menu.

Removing a Non-Bootable Windows Selection

When Windows is installed with the Windows's OS Loader (such as a MultiFAT partition existing during the Windows installation), you might get an unnecessary Windows choice on the System Commander menu that fails to boot. This is a second partition where the non-booting portion of Windows resides. In this situation, Windows actually starts it's booting from some hidden files in the MultiFAT partition, and then continues on from another partition.

To Remove the Non-Bootable Selection from the OS Selection Menu

Press ALT-S (Settings) and then select the **Order Add and Remove** option. Highlight the unnecessary Windows choice, and press ALT-R (Remove). Be careful not to remove your real Windows selection, which resides on the same drive and partition as your other operating system choices.

Creating Multiple Windows Configurations

System Commander can manage different configuration selections for Windows and copy files between subdirectories. It is often useful to have 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 Windows boots through the MultiFAT partition, and Windows is using the FAT or FAT32 file system.

To Duplicate the Choice

1. Boot into System Commander and press ALT-S (Settings) at the OS Selection Menu.

2. Select **Order Add and Remove** option and highlight the Windows choice.

3. Press ALT-A (Add), and then select D for Duplicate to create a duplicate choice.

4. Press the ESC key to exit the menu.

5. Press ALT-S (Settings) again and then select the **File management** option to specify additional files to copy, such as a specific **.**INI file.

Operating Multiple Windows Versions

System Commander can manage multiple versions of Windows in separate partitions with a common boot partition. The Windows installer will ask which drive you want to install it. If you don't select drive C, it will use drive C as the boot partition and install the rest in the specified drive. As you add additional versions of Windows to the system, each installation will alter the BOOT.INI file on drive C to include the added Windows. This results in having a list of Windows choices in Windows OS Loader appearing after you select Widows from System Commander.

If you want to split this list of Windows into individual selections on the System Commander OS Selection Menu, follow the process described in "Creating Multiple Windows Configurations" on page 173. Each instance of BOOT.INI can be edited to default to the desired selection.

Special Protection for Windows

System Commander will automatically save and maintain the BOOT.INI, NTLDR and NTDETECT.COM files, critical to Windows operation. During the installation of some operating systems, these files are purposely destroyed to disable Windows. Later, when the Windows selection is made in System Commander, it detects the missing files and automatically restores them from System Commander's previously saved images.

Limitations From Operating System

- Windows can be installed in a primary or logical partition on any accessible drive. If installed into a logical partition, Windows's boot code must reside in a primary FAT/FAT32 or NTFS partition within the first 2 gigabytes on the first physical hard drive. (NT is FAT or NTFS only)

- The partition can be FAT, FAT32 or NTFS. Windows NT doesn't support FAT32, but NT versions 3 and older do support HPFS.

- Long filenames supported.

- Windows NT v4.0 can't be booted from it's own partition past 2 gigabytes unless its boot code resides in a primary FAT16 partition within the first 2 gigabytes on the first physical hard drive.

Configuring for Windows 95 through Me

Overview

System Commander is fully compatible with all Windows versions. Windows 95/98/Me is usually installed (at least the bootup portion) in the C drive, a primary partition. The Windows 95/98/Me installation provides an option to install the non-boot portion of Windows on any drive.

Installing Windows 95/98/Me after System Commander

Windows 95/98/Me installation has a few of quirks, which changes and deletes a number of important files if installed on top of an existing operating system, and erases System Commander's master boot record.

Often the easiest method is to install Windows by itself in it's own primary partition. You can also install Windows into the same partition where you installed System Commander (FAT/FAT32) and use the MultiFAT feature to manage the different operating systems.

When you install Windows 95/98/Me in the same partition with a previous version of Windows, the Windows installation forces you to make one of these, less than desirable, choices:

- You can leave all your applications working with the old Windows, but none will work with your new Windows 95/98/Me installation.

- Migrate all your applications to the new Windows 95/98/Me installation, which means they will no longer work under your old Windows.

- 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/Me in any drive other than C, Windows 95/98/Me will always add and remove many files on drive C, and the migration problems are still present.

To both keep your old Windows and also have your new Windows 95/98/Me migrate all the applications, we recommend you create a separate duplicate partition of your current Windows, and then install the new Windows 95/98/Me in this separate duplicate partition. You can then safely migrate the duplicate applications, since you still have your original applications on another primary partition.

One common drive layout appears in the example below.
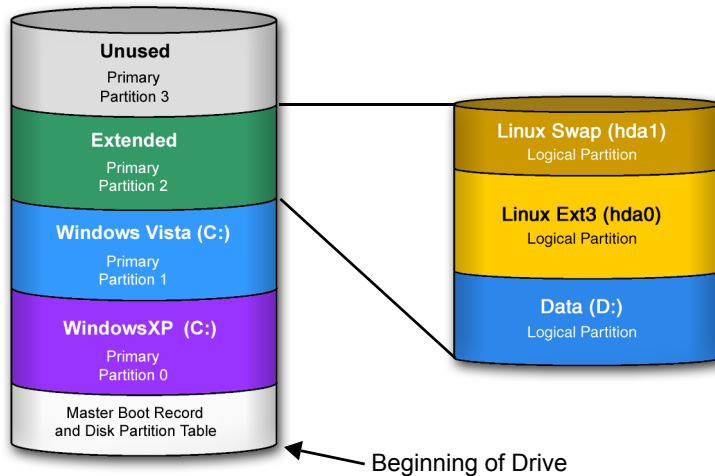
In this layout, when you boot into partition 0, you can run Windows 98 on drive C. Drive D is on the logical partition, which contains application data. Partition 1 can either be hidden or will appear as drive E at your option.

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

The following table assumes Windows 98 and Windows Me are in separate patitionsand summarizes the different 95/98/Me installations.

Old Windows	Actions to take
Does not exist	Install new Windows anywhere (no issues).
No longer wanted	Install new Windows on top of old Windows (applications are transferred to new Windows).
Want it to be available	Install new Windows in a new subdirectory (applications will need to be reinstalled under new Windows to use them).
Want it to be available	Install new Windows in a separate primary partition using the Risk Free Windows approach (applications will work under both new and old Windows.

Installing Windows 95/98/Me in Separate Partitions

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

Starting Assumptions and Requirements

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

What to do if all drive space is allocated?

For the risk free process, it's 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's 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 doesn't matter if you want to create extended (logical) partitions now or later for additional operating systems or for data and applications. Logical (FAT/FAT32) partitions will change your drive lettering, since they appear after the C: drive.

Risk Free Installation Steps

1. Create a partition copy of the old Windows partition on the first drive.

Use Partition Commander (see "Manual Partitioning" on page 83) to copy the partition. Remember that both partitions must reside on the first drive.

2. Make the new partition appear as an operating system selection and temporarily hide the old Windows partition from the new Windows 95/98/Me installer.

Normally it will appear automatically. If the new partition doesn't appear on the OS Selection Menu, press ALT-S (Settings), and select the **Order Add and Remove** option. 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 to return to the OS Selection Menu.

Press ALT-S (Settings), and select the **Specific OS options** option. Press PGUP and PGDN to switch to the new primary partition. Select the option **Partitions Visible** by pressing ENTER, and hide the other primary partition. Return to the OS Selection Menu, and select the new primary partition. It should boot up just like your original Windows.

3. Install Windows 95/98/Me.

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

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

4. Restore System Commander.

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

In most cases System Commander will automatically recover on the next boot cycle. During the next boot up, System Commander will appear and save the new Windows 95/98/Me information. All of your prior options and selections won't be affected. If System Commander fails to appear, run C:\CHECKMBR.EXE from Windows or boot from the System Commander program CD or Boot Utility Disk and select **Enable System Commander**.

Installing Multiple Windows Installations in the Same Partition

It is strongly discourage from installing multiple installations of Windows 95/98/Me in the same partition, as it can result in an unstable installation. Windows 95/98/Me 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/Me can't effectively share this subdirectory with other installations, multiple versions of 95/98/Me in the same partition can be very unstable. In addition, Windows 95/98/Me virtual memory will cause swapfile overlaps, which means that you won't be able to use virtual memory in one of the installs of Windows 95/98/Me. We encourage you to install multiple versions and languages of Windows 95/98/Me into separate primary partitions.

Other Windows 95/98/Me Issues

Windows Plus (Microsoft Plus) Can Destroy Other Operating Systems

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

If you get into this situation, boot from the System Commander program CD or Boot Utility Disk. Run SCIN from the prompt and select **Disable or Remove System Commander** (see "Using SCIN for Installation & Configuration" on page 56).

You might be able to run Windows 95/98/Me, but the other operating systems are not likely to be recoverable. A full installation of System Commander will get System Commander running again, but the other operating systems must be loaded again.

> **NOTE:** Remember that System Commander 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, Windows NT/2000/XP/2003 or Vista, you should not compress the C drive using DriveSpace.

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

If you are using Novell NetWare, the installation of Windows 95/98/Me into the FAT partition might alter the STARTNET.BAT file under the \NWCLIENT subdirectory. The network might no longer work under DOS in this case. If you encounter this problem, it can be corrected, since Windows 95/98/Me makes a backup copy of the DOS version as STARTNET.--- in the \NWCLIENT directory.

System Commander can be used to swap the appropriate STARTNET files between DOS and Windows 95/98/Me. To set this up, you will keep two separate copies of the STARTNET file. System Commander is then instructed to copy the appropriate STARTNET file when switching between operating systems. The following example assumes the Windows 98 files that System Commander copies (such as CONFIG.SYS) are in the directory \SC\WIN98, 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\win98\startnet.bat

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

Next, reboot the system, and highlight the Windows 98 menu choice, and press ALT-S (Settings), and select the **File management** option. Move down to an empty slot, and add the following entry (+ or - switches the settings):

Action	Update	Source	Target
COPY	PROMPT	C:\SC\WIN98\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\

NetWare should now work properly from both DOS and Windows 95/98/Me. Try out DOS and Windows 95/98/Me to be sure it works. If your first operating system selection causes System Commander to ask whether or not you want to update STARTNET.BAT, choose **Skip** to avoid overwriting the file this very first time. After that, it's acceptable to update the file.

Windows 95/98/Me MSDOS.SYS File

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

Creating Multiple Windows 95/98/Me Configurations

One handy feature of System Commander is the ability to provide multiple selections for the same operating system (such as Windows 95/98/Me) and copy files between subdirectories. It is often useful to have a different set 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/Me Choice

1. After booting into Windows 95/98/Me, reboot to view the OS Selection Menu.

2. Press ALT-S to view the Settings menu.

3. Select the **Order Add and Remove** option and highlight the **Windows 95/98/Me** choice.

4. Press ALT-A (Add), and then select **D** for Duplicate to create a duplicate choice.

5. Press ESC to leave from the menu.

6. Press ALT-S again and select the **File management** option.

    In this dialog you can specify additional files to copy, such as a specific .INI file.

7. After the duplicate is made, return to the OS Selection Menu and select the new duplicate choice.

8. When Windows 95/98/Me boots up, edit files to take your specific actions (such as MSDOS.SYS, CONFIG.SYS and/or AUTOEXEC.BAT).

Exiting Windows 95/98/Me

When shutting down Windows 95/98/Me, 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 menu, where you can select any operating system you want. Other shutdown options won't affect System Commander, but they won't bring up the System Commander OS Selection Menu.

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

Limitations from the Operating System

- The Windows 95/98/Me boot up portion (approximately 4 MB of Disk Data) must be installed in a primary FAT or FAT32 partition on the first drive, while the balance can go on any primary or logical 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/Me/NT/2000/XP/2003 and Vista. The first version of Windows 95 and DOS don't support long filenames.

- 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 doesn't understand long filenames.

- Use of the optional FAT32 partition type is fully compatible with System Commander, but DOS, Windows 95A and Windows NT can't access a FAT32 partition.

- Windows 95/98/Me becomes unstable with more than 512 MB of RAM. Search Microsoft's knowledgebase for instructions to limit Windows to using 512 MB when more memory is available.

Configuring for OS/2 and Others

Overview

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

If OS/2 Doesn't Appear as a Selection

1. Press ALT-S to view the Settings menu.
2. Select the **Order Add and Remove** option.
3. Press ALT-A (Add) and then select **Partition**.
4. Move the highlight bar to the OS/2 partition and press ALT-T (Toggle) to set the bootable status to **YES**.
5. Press the ESC key three (3) times to return to the selection menu.

After you verify the OS/2 partition boots properly from System Commander, you can remove any bogus entries and remove Boot Manager if desired.

To Remove a Menu Choice from the OS Selection Menu

1. Press ALT-S to view the Settings menu.

2. Select the **Order Add and Remove** option.

3. Select 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. After OS/2 is fully installed, Boot Manager is no longer needed, and the partition can be reused or deleted.

If you don't 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 the Operating System

*   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 FAT16 or HPFS for higher performance, but doesn't support FAT32 nor NTFS.

*   OS/2's long filenames can only be seen by OS/2

Displaying OS/2 Configuration Help

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

Configuring for LINUX

Overview

System Commander is fully compatible with Linux. The GRUB or LILO boot loader will be installed as part the Linux installation. For most new distributions, you will use GRUB, as it allows you to install to any place on the drive. For small drives and/or older distributions, LILO is the best choice.

If using LILO, 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 operating system.

Installing 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 (such as boot=/dev/hda5 instead of boot=/dev/hda). After editing the LILO.conf file, you must run the LILO program (typically / SBIN/LILO).

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

Removing the UNIX-82 Selection from the OS Selection Menu

If you use a Linux swap partition (partition id 82), in rare instances it might appear on the main menu as a potential operating system to boot. It is not bootable.

To Remove the Selection from the Menu

Press ALT-S (Settings), and select the **Order Add and Remove** option. Highlight the swap partition and press ALT-R (Remove). This removes the selection from the menu (but has no effect to the swap partition).

Configuring for UNIX

Overview

Although System Commander 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 can boot it. Linux, Solaris, and Free BSD all allow booting from any disk.

Some UNIX installations can overwrite System Commander'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 won't bring up System Commander, but will run SCO instead.

To correct the master boot record, boot from the System Commander program CD or Boot Utility Disk and select **Enable System Commander**. When you reboot, System Commander will appear. No loss of information occurs from this quirk in SCO UNIX. System Commander 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, open the **Setting** menu and select the **Specific OS options** option.

System Commander also makes any FAT partitions accessible to UNIX. Again, this feature can be overridden using the **Specific OS options** option.

The following topics 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.

> **CAUTION:** Avoid using the Solaris "Automatic" installation, as it usually erases all existing partitions on the drive.

System Commander will boot Solaris from any IDE disk without using the Solaris boot diskette. We recommend an Interactive installation. Please refer to the following link for installation instructions:

www.v-com.com/support/sup_osin.html

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. On some SCSI controllers, it might not be possible for System Commander to properly start Solaris from any drive other than the first drive.

Old Solaris and Drives Greater than 1 GB

Solaris 2.4 and older don't 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 later don't 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's necessary to prevent Solaris from accessing the Linux swap partition and Linux from accessing the Solaris partition.

System Commander normally handles this automatically. To perform these actions yourself, at the OS Selection Menu press ALT-S (Settings) then select **Specific OS options**. Set the primary partitions visible option for each operating system 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 require 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 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 was installed, you might need to set this option manually.

To Change the Handling of the Bootable/Active Status Across Partitions

1. Highlight the UNIX choice on the OS Selection Menu and press ALT-S to view the Settings menu.

2. Select the **Specific OS options** option.

3. Check the **Force bootable/active status across partitions** option.

    All other operating systems, including other UNIX variants, should use the default setting of AUTO.

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

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 the System Commander program CD or Boot Utility Disk and select **Enable System Commander**. Then reboot into the System Commander OS Selection Menu. System Commander will automatically detect the FreeBSD installation, and add it to the OS Selection Menu.

Configuring for NetWare

Overview

Novell's NetWare versions 3 and newer use DOS to start, and then takes over the system using its own partition. System Commander 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

1. Press ALT-S to view the Settings menu.
2. Select the **Order Add and Remove** option.
3. Highlight the current DOS choice, and press ALT-A to add a selection.
4. Press D to create a duplicate.
5. Enter the name and new subdirectory for the duplicate menu selection.
6. When complete, exit to the new "Duplicate" DOS choice.
7. Update the AUTOEXEC.BAT file to go directly to NetWare.

NetWare version 2.x doesn't boot through the DOS partition, but has its own bootable partition. System Commander will boot directly into a NetWare version 2.x partition.

Installing NetWare after System Commander

To install NetWare version 3.x, 4.x or version 5.x after System Commander is installed, follow these steps below.

> **NOTE:** 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.

1. Press ALT-S to view the Settings menu.

2. Select the **Order Add and Remove** option.

3. Highlight the current DOS choice, and press ALT-A to add a selection.

4. Press D to create a duplicate that will become the NetWare choice.

5. Enter an appropriate description.

6. Exit to the selection menu and select the NetWare choice.

   DOS will come up at this point.

7. Install NetWare.

   NetWare will grab the undefined area of the disk and make it a NetWare partition for its use.

Multiple NetWare Operating Systems on One System

System Commander 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's otherwise impossible to do this without System Commander.

Setting Up for Multiple Versions of NetWare

This example case uses an 800 MB drive. After 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. Create Partitions Using FDISK (see page 195)

2. Create a Selection for NetWare v3 (see page 195)

3. Install NetWare v3 (see page 195)

4. Create a Selection for NetWare v4 (see page 196)

5. Install NetWare v4 (see page 196)

Create Partitions Using FDISK

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.

2. Install DOS, without using the extended partition.

You don't need to format it, since it will be deleted later.

3. Install System Commander.

4. Reboot once to save the DOS files.

This first selection will always be used for DOS.

5. Select the DOS choice and verify that it boots up properly.

6. Reboot again to the System Commander OS Selection Menu.

Create a Selection for NetWare v3

1. Press ALT-S to view the Settings menu.

2. Select the **Order Add and Remove** option.

3. Highlight the current DOS choice, and press ALT-A to add a selection.

4. Press D to create a duplicate that will become the NetWare v3 choice.

5. Enter an appropriate description.

6. Exit to the OS Selection Menu and select the NetWare v3 choice.

DOS will come up at this point.

Install NetWare v3

1. Install NetWare v3.

NetWare will grab the 300 MB undefined area of the disk and make it a NetWare partition for its use.

2. Using FDISK, delete the extended DOS partition (400 MB).

3. Reboot and press ALT-S to view the Settings menu.

4. Select the **Specific OS options** option.

5. Select the NetWare v3 choice.

6. On the line Primary partition visible on drive 0, verify that one partition named (NET WARE) is set to **YES**.

Write down the partition number for later use, as you will need to remember this is the v3 NetWare partition.

7. Return to the OS Selection Menu and highlight (but don't select) the DOS choice.

Create a Selection for NetWare v4

1. Press ALT-S to view the Settings menu.

2. Select the **Order Add and Remove** option.

3. Highlight the current DOS choice, and press ALT-A to add a selection.

4. Press D to create a duplicate that will become the NetWare v4 choice.

5. Enter an appropriate description.

6. Close the Order Add and Remove dialog to return to the Settings menu and then choose the **Select Specific OS options** option.

7. On the line Primary partition visible on drive 0, change the one partition named NET WARE to "hidden" to prevent the NetWare v4 installation from seeing the NetWare v3 partition.

8. Exit to the OS Selection Menu, and select NetWare v4.

   DOS will come up at this point.

Install NetWare v4

1. Install NetWare v4.

   NetWare will grab the 400 MB undefined area of the disk and make it a NetWare partition for its use.

2. Reboot to the OS Selection Menu and highlight the NetWare v3 choice.

3. Press ALT-S to view the Settings window and select the **Specific OS options** option.

4. 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 when you .

At this point you are done. If you did not elect to have NetWare change your AUTOEXEC/CONFIG set of files you might want to do so now.

Limitations from the Operating System

- 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.

Configuring for DOS

Overview

The following topics deal with configuration issues for single and multiple installed versions of DOS.

Multiple DOS Versions and Vendors

System Commander 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 even different versions on the same system. 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 is installed, it creates a hidden file SCDOS.SYS. This file holds information about each operating system, including several hidden system files for each DOS loaded.

NOTE: If you delete this file, you won't be able to access any DOS operating system besides the currently active one.

Limitations from the Operating System

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

- Unable to access FAT32 and NTFS partitions.

Special DOS Issues

Most DOS utilities are version dependent and won't work if a different DOS version is operating. To overcome this issue, System Commander 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 might 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" don't follow the path, but expect COMMAND.COM to be in the root directory. For this reason, System Commander 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 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 might 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.

Supported in DOS Versions

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

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.

Supported in DOS Versions

CONFIF Command	DR 6.0	Caldera 7.0	MS-DOS			PC-DOS		
			3/4	5.0	6.x	3/4	5.0	6/7
choice	✓	✓			✓			✓
comstec	✓	✓	✓	✓	✓	✓	✓	✓
gosub	✓	✓						
path	✓	✓	✓	✓	✓	✓	✓	✓
return	✓	✓						
yes	✓	✓						
switch	✓	✓						
switches	✓	✓						

Multiple Primary DOS Partitions

Use the OS Wizard or use manual partitioning from the OS Wizard to 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 is designed to work on systems with multiple DOS partitions. One common configuration, made possible with System Commander, is DOS/Windows 3.1 in one primary partition and Windows XP in another primary partition.

> **CAUTION:** 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 can't see the other primary partition. This DOS bug doesn't occur when no extended partition exists, or if the last logical partition in the extended partition is FAT.

Multiple Selections for One DOS

In some situations, more than one OS Selection Menu 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 OS Selection Menu

1. From the OS Selection Menu, press ALT-S to view the Settings menu.
2. Select the **Order Add and Remove** option.
3. Highlight the selection you want to duplicate,

   The selection must be in the FAT partition where System Commander resides.
4. Press ALT-A to add a selection.
5. Press D to duplicate the choice.
6. Enter a description and new subdirectory to use.
7. Return to the OS Selection Menu and select this new choice.
8. At the DOS prompt, remember to update your CONFIG.SYS and AUTOEXEC.BAT files to reflect any changes you want on this duplicate set.

Windows 3.x and DOS as Separate Selections

We talk very little about Windows 3.1 because it's not an 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 to detect Windows 3.x as a separate selection automatically, but it's easy to set up two choices on the menu for DOS and Windows 3.x.

If you don't have DOS installed, you must install DOS before you can install Windows 3.x. After DOS is installed, boot into DOS from System Commander, and install Windows.

CAUTION: DO NOT use the same directory name (such as C:\WINDOWS) if you previously have Windows 95/98/Me installed in that directory.

CAUTION: DO NOT allow 3.x. to search for installed Windows Applications. If it sees Windows Applications it will destroy or corrupt them.

After you have DOS and Windows 3.x installed and working, you can duplicate your single DOS selection on System Commander's menu.

To Create Separate DOS and Win 3.x Selections

1. Boot into System Commander and highlight the DOS choice.
2. Press ALT-S to view the Settings window.
3. Select the **Order Add and Remove** option.
4. Press ALT-A to add a selection.
5. Press D to duplicate the choice.
6. Enter a description, such as "Windows 3.x," to use for the selection.
7. When complete, press ESC twice to return to the main selection menu
8. Select the new Windows 3.x choice.
9. Assuming this only goes to a DOS prompt, edit the AUTOEXEC.BAT file in the C: root directory.
10. Add the line WIN at the end of this file

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

If your Window 3.x selection from System Commander 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 start windows, typically just the word WIN. Remove this line so the DOS selection won't start Windows automatically.

Japanese version of DOS

Japanese versions of DOS (DOS/V) can be installed along with other versions of DOS in the same partition.

DOS/V's installation will erase System Commander's master boot record. However, this is not a serious problem. When the DOS/V installation completes, a reboot will skip System Commander and run DOS/V.

To Enable System Commander in DOS/V

1. At the DOS prompt, switch to the System Commander directory.

2. Run SCIN and select **Enable System Commander** from the main menu.

3. Reboot and System Commander will save DOS/V along with all prior saved operating systems.

    There is no loss of information caused by this.

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 might need to be copied by System Commander before a specific DOS/V is launched. Specify those files to be copied using ALT-S to view the Setting menu and selecting the **File management** option. On older versions of DOS/V there are usually many files to copy. Even though System Commander 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 the Operating System

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

ADDING SECURITY

Locking the Program

Overview

When System Commander is installed, the security settings are not enabled or "locked." You can lock the program, which forces each user to log in when they start the computer.

Locking and Unlocking System Commander

When you install System Commander, the Administrator's password is automatically set as "password" for the Administrator. You will need to enter the password to lock or unlock the program.

If you want to change the password, see "Changing the Administrator Password" on page 208.

1. At the OS Selection Menu, press ALT-L or click the **Locking** button.

    If you are already logged in as the Administrator, you won't need to enter the password.

2. Click **Ok** to view the Login window.

3. Enter the Administrator's password and then click **Ok**.

When security is enabled, an icon in the lower-right corner of the OS Selection Menu appears indicating the current security state of System Commander.

If you create a user with privileges to turn security on/off, then that user can also lock and unlock the program (see "Changing Program Access Permissions" on page 210).

NOTE: If you restart to the OS Selection Menu while the program is locked, you will be required to enter your user name and password.

Changing the Administrator Password

The Administrator's password is set to "password" by default when System Commander is installed. For security purposes, we recommend that you change the password as soon as you restart the computer to the OS Selection Menu.

To Change the Administrator Password

1. Open the OS Selection Menu.

2. Press ALT-S or click the **Settings** button to view the Settings menu.

3. Select **Password security** from the menu.

4. Click **OK** to switch to text mode and open the Password Security window.

5. Select the **Administrator** account and press ALT-C to open the Change Password window.

6. Enter the new password, and then enter it again for verification.

Managing User Accounts

Overview

By default, all new users have no extra privileges other than access to the installed operating system access from the OS Selection Menu. The Administrator has access to all user accounts and can make changes to the permissions of the users on an individual basis. These permissions relate to making changes to how the program behaves, as well as the ability to add, remove, and make changes to the hard drive, such as partitioning (see "Partition Management" on page 81).

All of these settings can be changed while setting up the user's account or anytime after.

Creating User Accounts

New user accounts can only be created by the Administrator or a user with full administrative privileges.

> **NOTE:** A user with full administrative privileges will have all program privileges enabled (see "Changing Program Access Permissions" on page 210).

To Create a New User Account

1. Start the computer to the OS Selection Menu.
2. Press ALT-S or click the **Settings** button to view the Settings menu.
3. Select **Password security** from the menu.
4. Click **OK** to switch to text mode.
5. Select an unused slot and press ENTER.
6. In the User Profile window, enter the user's login name.

    If you want to have the user create a new password the first time they login, set the **Force password change at next login** to **YES**.
7. Change the user's permissions as needed.
8. Press ESC to exit the User Profile window.

Changing Program Access Permissions

There are several options that allow users to change program options and set permissions to access certain features of the program.

*   **Password change allowed** allows the user to change their password assigned to them or one they created.
*   **Settings menu allowed** allows the user to access the Settings window and make changes to hardware and general settings.
*   **System administrator privileges** are those that would allow the user to make physical changes to the hard drive, such as partitioning and accessing the OS Wizard to install new operating systems.

To Make Changes to the User's Program Permissions

1. Start the computer to the OS Selection Menu.
2. Press ALT-S or click the **Settings** button to view the Settings menu.
3. Select **Password security** from the menu.
4. Click **OK** to switch to text mode.
5. Select the user from the list and press ENTER.

6. Press the UP and DOWN arrows to move the desired option.

```
User Profile
User login name                                       John
Last access                             13-Dec-06  4:45pm
User expires                                    -- --- --
Password does not expire                        -- --- --
Password change allowed                               NO ◄
Settings menu allowed                                 NO
System administrator privileges                       NO
Allowed to turn security on/off                       NO
Force password change at next login                  YES
Minimum password length                                5
O/S access menu
```

7. Press the SPACEBAR to change the status.

8. Press ESC to exit the User Profile window.

Changing Operating System Access

If you have multiple operating systems installed, but want to limit access to them, you can set the user's access to the operating systems in the OS Selection Menu.

To Set the OS Selection Menu Access

1. Start the computer to the OS Selection Menu.

2. Press ALT-S or click the **Settings** button to view the Settings menu.

3. Select **Password security** from the menu.

4. Click **OK** to switch to text mode.

5. Select the user from the list and press ENTER.

6. Select the **O/S access menu** option and press ENTER.

```
O/S Access for John
A     Windows Vista              Windows Vista 0-0 ◄
B     Windows XP                 Windows XP    0-0
C     Windows 98                 Windows 98    0-0
D     Boot from drive A:         Drive A:      A:
E     Boot from CD               CDROM         CD
```

7. Press the SPACEBAR to change the status.

   Item in white are available and items in grey are not available for the user in the OS Selection Menu.

8. Press ESC to exit the O/S Access window and return to the User Profile.

Changing the User's Password

The password for a user's account is assigned when you create the account. When you set the permissions for the user, you can force the user to create a new password the first time they log in or set their permission to allow password changes at any time.
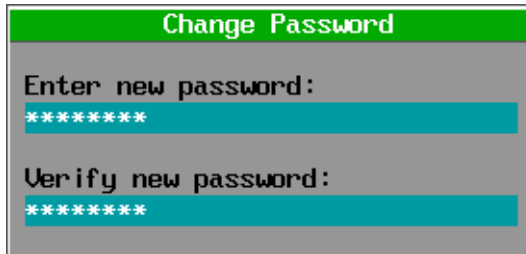
TIP: The Administrator's ability to change the password for a user account is also beneficial in the event that the user forgets their password.

To Changes the User's Password

1. Open the OS Selection Menu.

2. Press ALT-S or click the **Settings** button to view the Settings menu.

3. Select **Password security** from the menu.

4. Click **OK** to switch to text mode and open the Password Security window.

5. Select the user's account to update and press ALT-C to open the Change Password window.

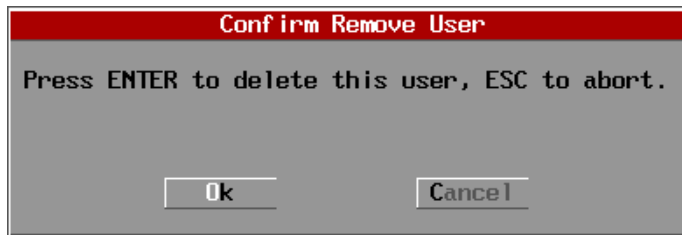6. Enter the new password, and then enter it again for verification.

Deleting User Accounts

If you no longer need a user account, you can delete the account from the list of users. Follow the steps below to delete a user from the list.

To Delete a User

1. Open the OS Selection Menu.

2. Press ALT-S or click the **Settings** button to view the Settings menu.

3. Select **Password security** from the menu.

4. Click **OK** to switch to text mode and open the Password Security window.

```
          Confirm Remove User

  Press ENTER to delete this user, ESC to abort.


           Ok              Cancel
```

5. Select the user from the list and press ALT-R to remove the user.

6. Click **Ok** to confirm deleting the user.

HINTS

Disabling and Uninstalling

Overview

The following sections includes information to help you disable and uninstall System Commander.

Disabling System Commander

You can disable System Commander from the boot up process. This is useful if you no longer want to boot multiple operating systems, or if you would like to confirm an operating system problem has nothing to do with System Commander. If, at a later time, you want to reactivate System Commander, use the same process, but select Enable instead of Disable. Selecting to enable System Commander restores all of your operating system selections and options.

To Disable System Commander from Windows

1. Open the Windows **Start** menu and select **Programs > System Commander 9 to start the Utility Wizard**.

2. Select **Disable/Uninstall System Commander** and then click **Next**.
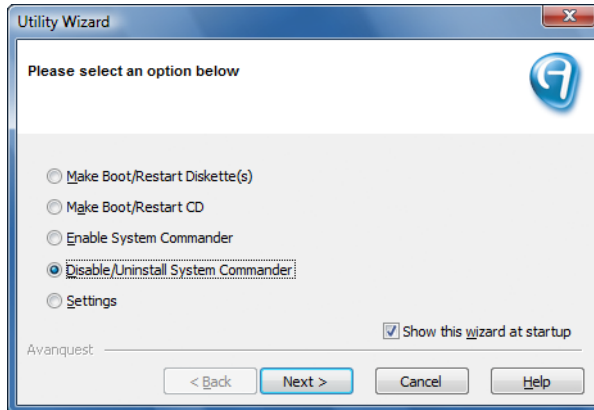
3. Select **Temporarily disable System Commander**.
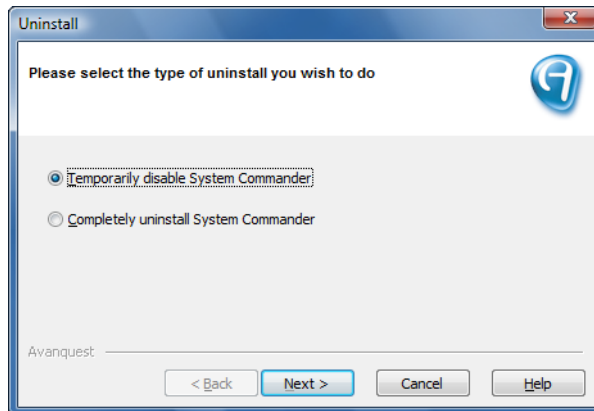
4. Click **Next** to temporarily disable System Commander.

To Disable System Commander from DOS or a Boot CD/ DVD or Diskette

1. At the prompt run SCIN using the drive and path of where it's located, such as C:\SC\SCIN.

2. At the main menu, select **Disable or Remove System Commander**.

3. Select **Disable** to restore the original MBR (without changing your current partitioning).

Uninstalling System Commander

System Commander includes a special uninstaller to remove itself from your system, without changing your current partitioning layout. If you want to only disable System Commander, see the next section. Disable will remove System Commander from the boot up process without affecting System Commander's settings.

You can only uninstall from the operating system you originally installed System Commander to.

To Uninstall From Windows

1. Make sure the program is closed and the System Commander tray icon isn't showing.

2. Open the Windows **Start** menu and choose
   Settings > Control Panel > Add/Remove Programs.

3. Choose **System Commander** from the list.

4. Click **Remove** and follow the instructions to uninstall System Commander.

To Uninstall from DOS or a Boot Diskette

 NOTE: This procedure is for non-Windows installations.

---

1. At the prompt, run SCIN using the drive and path of where it's located, such as: C:\SC\SCIN

2. At the SCIN main menu, select **Disable or Remove System Commander**.

3. Select **Remove System Commander** to restore the original MBR (without changing your current partitioning) and delete the System Commander files.

Enabling System Commander

Overview

If you have disabled System Commander (see "Disabling System Commander" on page 217), you can enable it again and restore all of your operating system selections and options. Installing Vista can also disable System Commander.

If you've uninstalled System Commander (see "Uninstalling System Commander" on page 219), then you must reinstall the program (see "Installing System Commander" on page 25).

Enabling System Commander

System Commander can be enabled from either the Windows Utilities Console, a command prompt, or from a bootable disk.Boot Disk.

Enabling System Commander from Windows

You can enable System Commander from within Windows from either the Utilities Console or from a command prompt.

To Enable System Commander from the Utilities Console

1. Open the Windows **Start** menu and select **Programs > System Commander 9** to start the Utilities Console.

2. Select **Enable System Commander** from the Utility Wizard or open the **File** menu and choose **Enable System Commander**.

3. Click **Next** to update the master boot record (MBR) and enable System Commander.

4. Click **Finish** to close the window.

To Enable System Commander from a Command Prompt

1. Open a Windows command prompt.

2. At the prompt run SCIN using the drive and path of where it's located, such as C:\SC\SCIN.

3. At the SCIN main menu, select **Enable System Commander** and press ENTER or press E to process the following tasks:

    -   Create or update the MultiFAT file

    -   Save disk information for uninstall

    -   Install a new MBR

4. After the program has completed, press any key to return to the Main Menu.

Enabling System Commander from a DOS Prompt

1. Reboot your computer to a DOS prompt.

2. At the prompt run SCIN using the drive and path of where it's located, such as C:\SC\SCIN.

3. At the SCIN main menu, select **Enable System Commander** and press ENTER or press E.

    The following tasks take place:

    -   Create or update the MultiFAT file

    -   Save disk information for uninstall

    -   Install a new MBR

4. After the program has completed, press any key to return to the Main Menu.

Enabling System Commander from a Bootable Disk

You can enable System Commander using the bootable program CD or Boot Utility Disk.

1. Insert the System Commander program CD or Boot Utility Disk into your drive and restart your computer.

    If your are booting from a CD/DVD and your computer doesn't boot, you need to change your system BIOS to boot from the CD/DVD-drive. For more information, see the documentation that came with your computer.

2. At the main menu, select **Enable System Commander** and press ENTER

3. After the program has completed, press any key to return to the Main Menu.

Speeding Up the Boot Process

Overview

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 OS Selection Menu appears.

Changing the 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, menus, and product documentation 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 computers sometimes use special key combinations, such as F1, CTRL-ALT-ESC, CTRL-ALT-INS, or CTRL-ALT-S. Some laptops access setup by holding down the ESC key during bootup.

Some computer vendors don't offer any setup options to help performance. At the other end of the spectrum, vendors like AMI and Phoenix often provide extensive options. Some vendors who license BIOSes might remove some or all performance options in an attempt to reduce confusion to non-technical users or help reduce potential customer support.

Skipping the Memory Test

Some BIOSes provide an option to skip the detailed test of all the memory in the system. This test can take a number of 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**.

Bypassing the 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 removes 1 to 5 seconds of time from the boot process. On most AMI BIOSes, this option appears under Advanced CMOS setup as Floppy Drive Seek At Boot.

Changing the System Boot Up Sequence

Typically, the BIOS attempts to boot from the CD-drive, then the diskette drive. If either of these attempts fail, it then boots from the hard disk. This wastes another few seconds in the boot up process. By selecting a boot sequence first using the hard drive, and only using the CD or diskette if the hard disk fails to boot, another 2 to 10 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 Allow Booting from Another Drive

If you still want to allow booting from a CD/DVD or diskette, we suggest adding the "Boot from A:" or "Boot from CD/DVD" option as one of the operating system selections if it doesn't already appear.

1. Press ALT-S to view the Settings menu.
2. Select the **Order Add and Remove** option.
3. Press ALT- A to add a selection.
4. Press R for removable, and then select either **diskette A** or **CD/DVD**.

The new selection should now appear in your OS Selection Choices list.

Changing Your 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 controllers require no significant initialization time.

The BIOS for some SCSI controllers allow you to skip the scanning of nonexistent devices. For more information, refer to the documentation that came with your SCSI controller.

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 will also appear faster if the SYSCMNDR.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 and operating system files.

Speeding Up DOS Boots

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

Removing Unnecessary Programs

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

Modifying the CONFIG.SYS File

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.

Booting Through the MBR

Overview

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 SOS operating system, and Linux's optional LILO and Grub MBR installations. When Linux is installed with a partition boot (called a superblock in Linux terminology), it won't need this MBR file feature. Many Linux installations don't provide a choice and automatically insert a LILO or Grub MBR.

Automatic MBR Booting

When System Commander is installed in a FAT or FAT32 partition (not NTFS), it's CHECKMBR program will detect a new MBR and save the Solaris LILO or Grub MBR in a special filename (MBR_SOLA.DAT or MBR_GRUB.DAT). When System Commander boots and sees one of these MBR files in the root, it will automatically add the new boot choice to the menu.

Manual MBR Booting

To setup the MBR boot selection manually, you will need a binary file image of the MBR. If the operating systems MBR was installed prior to System Commander, we will have saved the MBR in the file BOOT.DAT in the subdirectory where you installed System Commander (C:\SC is the default). Changes to the MBR after System Commander is installed are saved to MBR_BOOT.DAT. Copy the MBR 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 Operating System Selection that Loads the MBR File

1. Start your computer to the System Commander OS Selection Menu.

2. Click the **Settings** button or press ALT-S to open the Settings window.

3. Choose **Order Add and Remove** to view the Order Add and Remove window.

4. Click the **Add** button or press ALT-A.

5. Click the **Mbr** button or press ALT-M.

    The next three dialogs appear in sequence:

    *   **Master Boot Record Filename**: Enter the filename of the MBR file. The file doesn't 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 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.

After 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 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.

Common Operating System Commands

Overview

This section describes common commands available in Windows 95/98/Me and DOS that are often used in the installation, setup and maintenance of FAT operating systems. For more information about these commands, refer to your Windows 95/98/Me and DOS manuals.

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 has far more advanced partitioning control, through OS Wizard, DOS and Windows 95/98/Me 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 want to remove is the partition you installed System Commander in, be sure to disable System Commander before deleting the partition.

To run the FDISK utility, at the DOS/Windows 95/98/Me prompt:

```
C:\ > fdisk
```

FDISK provides the following options:

*   Create a DOS partition or Logical DOS drive.

*   Set active partition.

*   Delete partition or Logical DOS drive.

*   Display partition information.

*   Change drive.

Keep in mind that you can only create a partition when unused disk space is available. If no space is available, FDISK can't create a new partition. If you need to create more than one primary partition on a single drive, you must use Partition Commander. Chapter 14 explains manual partitioning using Partition Commander.

FDISK can only create FAT partitions. These are suitable for DOS, Windows 95/98/Me, OS/2, or NT. It can't 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 (such as DOS as well as non-DOS). Older FDISK versions can only delete DOS partitions.

A partition can't be booted unless it's active. If System Commander is already installed, you don't need to be concerned with the active status, since System Commander automatically handles this. If System Commander is not installed, be sure to make the partition you want to first boot to as active.

After the creation of a partition it's necessary to format the partition. See "FORMAT" on page 231.

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

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".

Technical Information: The SYS command loads the operating system startup files onto the specified drive. For MS-DOS and Windows 95/98/ Me, 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.

The SYS command has a number of annoying quirks that can prevent it from working. We would recommend you use System Commander's Transfer System option instead. This is run from SCIN, under the Special options menu (see).

If the SYS command detects a newer version of the operating system already installed, it might complain and do nothing. In this case, delete the files on the target disk root directory, IO.SYS, and MSDOS.SYS.

NOTE: If you are using 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.

Common Questions and Answers

Overview

The following topics cover some of the commonly asked questions when using System Commander.

How do I access my other Windows operating systems after installing Vista?

When Vista installs it looks for any existing Windows (NT through 2003) installations. Without System Commander's hiding technology, Vista will alter the old Windows. Some of the changes it makes includes replacing the boot record, removing the hidden files NTLDR and NTDETECT.COM, and adding several new files. In the end Vista's OS Loader is placed in charge of what operating system to boot.

After you install System Commander, you will only have one operating system choice that runs the OS Loader.

To Restore Operating System Choices After Installing System Commander on Vista, you need to remove Vista's OS Loader control. For more information, see "Removing Vista Boot Management" on page 167.

How should I partition my disk?

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 operating systems you want to install now, and a list of operating systems you might want to install in the near future. Include on the list the space you want to allocate for each operating system, the number of partitions you want to use for each operating system, and any limitations you might need to follow. Limitations might include items like the operating system must be on the first drive, or must be in a primary partition. See "Operating System and Product Limitations" on page 127 for more detailed information.

With the list of operating systems, you assign each operating system 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 operating systems into the single MultiFAT primary partition on the first drive. This might include different versions of Windows 95/98/ Me, OS/2 or DOS. Refer to "Common Installations and Issues" on page 125 for additional details on each of these operating systems.

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. After the OS/2 installation is complete, you can reuse the partition for another operating system.

You can use System Commander's built in partitioning with OS Wizard (recommended) or it's manual partitioning option. You can also use the utility program that comes with your operating system to handle the actual partitioning. For example, Windows 95/98/Me, 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.

For more on the basics of partitioning, see "Partitioning Basics" on page 63.

A new operating system installation failed, and I think System Commander is the cause.

We hope this is never the case, but there is an easy way to confirm the problem is not System Commander. In Windows, run the System Commander console (from Start, Programs, System Commander) and disable System Commander. For non-Windows situations, you can boot from the System Commander program CD or Boot Utility Disk and run the SCIN program and select Disable. This puts back the original master boot record, so System Commander will no longer be active. The partition table is not changed, so partition changes after you installed System Commander are preserved.

Now install the new operating system. In most cases we expect the same problem will occur, and you might need to contact the operating system manufacturer to resolve the problem. After the problem is resolved, and the operating system is working, run the System Commander Console (in Windows) and enable System Commander. You can also do this from the System Commander Boot CD or Boot Utility Disk, and run SCIN to select **Enable**. This restores System Commander with all your prior operating system selections.

A disable doesn't delete our configuration files, so a later enable brings back System Commander with all your prior operating system selections and options.

How do I change the product name at boot time?

Yes. Go to settings and select "Descriptions and Icons".

We would like to hear about any product names that appear wrong. It might indicate a new version of an operating system 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 identify the operating system.

How do I change the OEM name that appears on some windows?

In all cases, except for UNIX operating systems, the operating system vendor specifies the OEM name. It is typically the identification string in the partition boot record and can't be changed. For more about inaccurate OEM names, see .

How do I get rid of an operating system selection from the menu?

At boot time, press ALT-S to open the Settings window and select the **Order Add and Remove** option. Highlight the operating system you want to remove from the menu, click **Remove**, and then click **OK** to confirm the removal. This doesn't affect contents of the related partition.

What are the advantages of using System Commander over other products like OS/2's Boot Manager or OS Loader?

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

- Supports over 100 operating systems on a single system.
- Supports multiple FAT compatible operating systems in a single partition, including OS/2, Windows 95/98/Me and multiple DOS versions.
- Includes both automatic and manual partitioning tools.
- System Commander can manage multiple configurations of a single operating system in the FAT partition. This includes different configurations of OS/2, Windows 95/98/Me and DOS.

- All setup options, menu descriptions, and features are accessible at boot time. There is no need to boot into an operating system to make changes.
- System Commander doesn't require repartitioning to install, nor a separate partition for itself.
- You can view and edit configuration files before the operating system runs.

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

Why must some operating systems only be installed on the first drive?

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

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

Windows has the option to install most (but not all) of its files into any partition on any drive. When Windows (older versions) installs, it asks which drive and path Windows should be installed to. Regardless of what drive you specify, Windows will always place about 4 MB of boot up files on the first disk (in a primary partition).

How do I hide a partition from an operating system selection?

System Commander allows you to hide primary partitions from a selected operating system. System Commander 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, select **Settings**. Select the **Specific OS options** option. This window 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 that have a status that can't be changed are faded.

How can I create a second selection for the same Windows 95/98/Me/ DOS or any other operating system?

You can create a duplicate of an operating system selection at boot time, if the operating system is installed into the MultiFAT partition, by selecting ALT-S to view the Settings window and then select the **Order Add and Remove** option. Highlight the choice you want 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. When System Commander is installed from Windows NT/2000/XP/2003 or Vista, MultiFAT features are not available.

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

Currently GoBack, Drive-Pro and Disk Manager are not compatible with System Commander or most non-Windows operating systems. These products all change the partition to a non-standard format. This also means you can't use any partitioning tools (System Commander or other manufacturers) on a system that has these products installed.

The latest versions of EZ-Drive (v9 or later) are compatible with System Commander.

For more information, see "GoBack" on page 132.

How do I restore Vista's OS Loader boot management?

While we can't think of a reason for restoring the rudimentary Vista OS loader, the following instructions are used to do this (Windows XP is assumed):

1. Make sure the root of the XP partition contains the BOOTMGR file and the BOOT directory.

2. At the System Commander Manual Partitioning screen, select the Windows XP partition.

3. Open the **Advanced** menu and choose **Restore Partition Boot Record** to write a Vista boot sector into the XP partition.

4. Open the Tools menu and choose Partition Explorer.

5. Locate and delete BOOTMGR from the root of the Vista partition.

6. Open the Advanced menu and choose BootFixer.

7. Reboot to System Commander and confirm you can no longer get to Windows Vista other than selecting Windows XP which brings up the old Vista OS loader.

Changing the Program Settings

Overview

The program settings allow you to change how the OS Selection Menu functions. Some settings can only be access from the Utilities Console or the OS Selection Menu.

NOTE: For information about Password security, see "Managing User Accounts" on page 209.

Setting the Timeouts and Default Operating Systems

The Timeouts and Default OS window allows you to select from options to automatically start the default operating system, enable the screen saver, select how to assign the default operating system, and select a sound to play when System Commander starts.
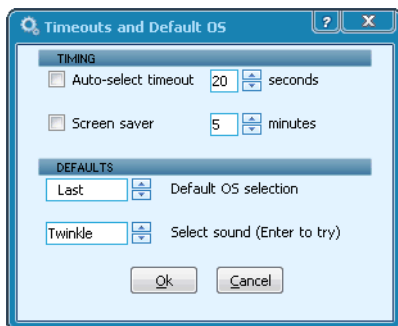
Automatically Selecting the Operating System

The Auto-select timeout option allows you to choose the default OS Selection Menu choice to automatically select after a preset time. For information on changing the default OS Selection Menu choice, see "Assigning the Default Operating System" on page 243.

> **NOTE:** You must have the program Unlocked in order to allow automatic selection (see Locking and Unlocking System Commander (see page 207).

1. Start your computer to the System Commander OS Selection Menu.
2. Click the **Settings** button or press ALT-S to open the Settings window.
3. Choose **Timeouts and default OS** to view the Timeouts and Default OS window.
4. Under the *TIMING* section, check the **Auto-select timeout** option.
5. Enter the timeout value or click the **up** and **down** arrows to change it.
6. Click **Ok** to apply the changes.

After you have enabled the Auto-select timeout option, an count-down icon appears in the lower-left corner of the OS Selection Menu.

Enabling the Screen Saver

The screen saver option allows System Commander to set the number seconds of to wait before activating the screen saver. In graphics, the screen will go blank when activated. Press any key or the mouse to restore the screen.

1. Start your computer to the System Commander OS Selection Menu.
2. Click the **Settings** button or press ALT-S to open the Settings window.
3. Choose **Timeouts and default OS** to view the Timeouts and Default OS window.
4. Under the *TIMING* section, check the **Screen saver** option.
5. Enter the start value or click the **up** and **down** arrows to change it.
6. Click **Ok** to apply the changes.

Assigning the Default Operating System

This option is used to specify the default operating system after a reboot. Select **Last** to remember the last selection made. Choices A to Z represent the operating system choices shown when you click the **View** button to show the details mode, such as **A** for the first choice, **B** for the second choice, etc.).

1. Start your computer to the System Commander OS Selection Menu.

2. Click the **Settings** button or press ALT-S to open the Settings window.

3. Choose **Timeouts and default OS** to view the Timeouts and Default OS window.

4. Under the *DEFAULTS* section, click the **up** and **down** arrows to change the boot selection.

   The default selection is the one that will boot automatically when you enable the **Auto-select timeout** option (see) or when you press the ENTER key at the OS Selection Menu.

5. Click **Ok** to apply the changes.

Selecting the Startup Sound

You can select from **Quiet** or any of fifteen different sounds. When System Commander boots up, it plays the selected sound.

1. Start your computer to the System Commander OS Selection Menu.

2. Click the **Settings** button or press ALT-S to open the Settings window.

3. Choose **Timeouts and default OS** to view the Timeouts and Default OS window.

4. Under the *DEFAULTS* section, click the **up** and **down** arrows to change the sound selection.

   If you want to hear a sample of the sound, you can make a selection and then press the ENTER key.

5. Click **Ok** to apply the changes.

Modifying the Hardware Settings

The Hardware settings allow you to change how the program interacts with your hardware devices and the visual appearance of the program.

Changing the Keyboard Settings

The *KEYBOARD* section of the OS Selection Menu Settings allows you to change how the keyboard behaves after you select an operating system from the OS Selection Menu.

1. Start your computer to the System Commander OS Selection Menu.

2. Click the **Settings** button or press ALT-S to open the Settings window.

3. Choose **Hardware** to view the Hardware Settings window.

4. Under the he *KEYBOARD* section, make changes to the follow options as desired:

    •   **Num lock state** specifies the num lock state after you make an operating system selection. This is useful to override the BIOS default choice.

    •   **Repeat speed** specifies how fast the keyboard repeats a held key. This is useful to speed the up keyboard operations.

5. Click **Ok** to apply the change.

Changing the Graphics Display Resolution

System Commander provides both graphics and text modes. Graphics are only available with video cards that correctly implement the VESA standard, as most do. Text mode is an alternative to graphics mode and is are available on all systems.

A Note About Text Mode

Text Mode is accessible from the OS Selection Menu. When in text mode only, the following options are available to improve the text mode visual appearance:

- **Text style options** allows you to select from various visual styles, from ordinary text, to several improved text mode styles (2D and 3D). These text styles also have an option to allow European characters (EURO).

- **Laptop style override** can often make System Commander's text look better on laptops that have a single fixed resolution. For 640x480 screens, we recommend using the option 8x16. For higher resolution screens, you might try the 9x19 selection. For non-laptops, select the **NO** option.

- **Stretched display** is used to turn off the stretching that many newer laptops use to stretch and distort lower resolutions to fit the fixed LCD display (not available on all laptops). While this will fill the entire display area, it results in very poorly formed characters and distorted graphics.

Unaltered	Makes no change
No	Turns off stretching
Yes	Activates stretching
Auto	Turns off stretching while in System Commander, but turns it back on at exit. This option only affects flat panel displays like LCDs.

To Change the Resolution from the Utilities Console

1. Click the **Start** menu and select **Programs > System Commander 9** from the menu to open the Utilities Console.

2. Open the **Options** menu and choose **Hardware Settings**.
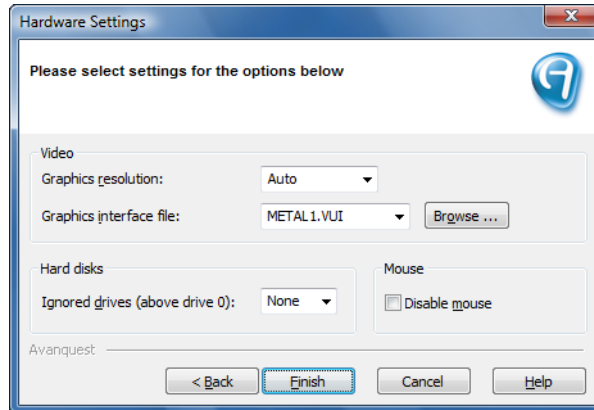
3. Open the **Graphics resolution** drop-down list and choose a resolution setting.

The default setting is **Auto**, which automatically sets the resolution to best fit your monitor. If you choose **Off**, the next time you restart your computer to System Commander it will use a text only interface.

> **NOTE:** You must choose a resolution setting that your video card is capable of displaying.

4. Click **Finish** to apply the change.

You won't see the change until you start the OS Selection Menu.

To Change the Resolution from the OS Selection Menu

1. Start your computer to the System Commander OS Selection Menu.

2. Click the **Settings** button or press ALT-S to open the Settings window.

3. Choose **Hardware** to view the Hardware Settings window.
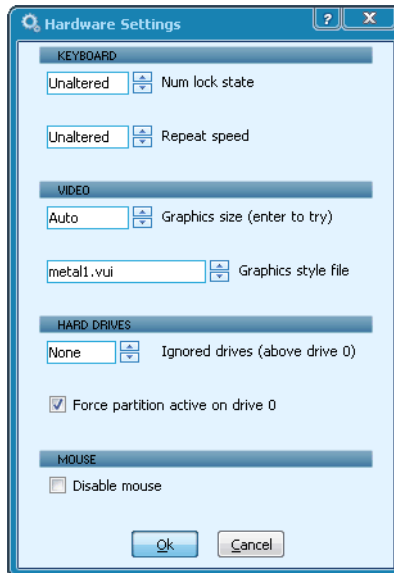
4. Under the *VIDEO* section, click the **up** and **down** arrows next to Graphics size to select a new resolution.

> **TIP:** You can press the ENTER key to try out the new resolution before applying any changes.

5. Click **Ok** to apply the changes and close the Hardware Settings window.

Changing the OS Selection Menu Appearance

You can select from the available graphic user interface file to control the visual look and feel. **Vistablu.vui** is the default choice, but you can choose from a number of different styles. Some styles require at least 800x600 resolution and are not available at 640x480 resolution.

1. Start your computer to the System Commander OS Selection Menu.

2. Click the **Settings** button or press ALT-S to open the Settings window.

3. Choose **Hardware** to view the Hardware Settings window.

4. Under the *VIDEO* section, click the up and down arrows next to Graphics style file to select a new display style.

   There are 6 different styles to choose from.

5. Click **Ok** to apply the style and close the Hardware settings.

Changing the Hard Drive Settings

There are two options used to make changes to how the system recognizes hard drives. You can choose to ignore drives and force a partition to be active on drive 0.

To Ignore Hard Drives

Specify drives to be completely ignored. This is useful for drives, which don't function properly without special device drivers. For example, some obsolete hard cards are read-only until a device driver is loaded.

1. Start your computer to the System Commander OS Selection Menu.

2. Click the **Settings** button or press ALT-S to open the Settings window.

3. Choose **Hardware** to view the Hardware Settings window.

4. Under the *HARD DRIVES* section, click the **up** and **down** arrows next to Ignored drives to select the drives to ignore.

5. Click **Ok** to apply the changes.

To Force an Active Partition

Depending on the operating system choice and the operating system drive location, it might 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 insure at least one partition is active on the first drive.

NOTE: If you don't get any BIOS error messages, don't set this option.

---

1. Start your computer to the System Commander OS Selection Menu.
2. Click the **Settings** button or press ALT-S to open the Settings window.
3. Choose **Hardware** to view the Hardware Settings window.
4. Under the *HARD DRIVES* section, check **Force partition active on drive 0**.
5. Click **Ok** to apply the changes.

Changing the Mouse Settings

By default, System Commander supports most mouse devices. This includes serial mice, bus mice, and those that use a PS/2 port (motherboard). If you don't use a mouse, you can save about 500 milliseconds during the boot process by turning off the mouse detector. USB mice are only supported when the BIOS offers legacy mouse support.

1. Start your computer to the System Commander OS Selection Menu.
2. Click the **Settings** button or press ALT-S to open the Settings window.
3. Choose **Hardware** to view the Hardware Settings window.
4. Under the *HARD DRIVES* section, check **Disable mouse**.
5. Click **Ok** to apply the changes.

Changing the General Option Settings

The General options settings affect overall operation.and provide options which are not specific to a selected operating system. If System Commander is installed into NTFS or FAT32 virtual mode, a number of options are not applicable and won't appear.
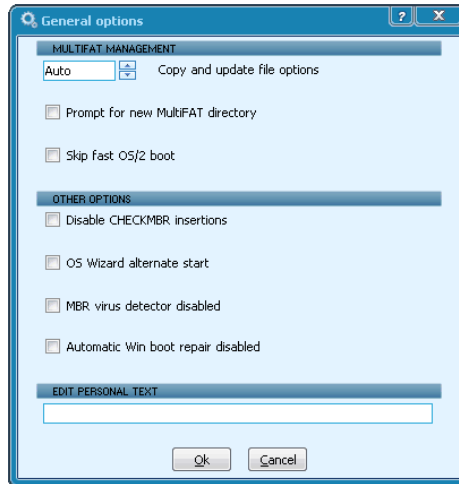
- • **Copy and update file options** - The file management system is set up to copy and maintain a number of files for each operating system in the MultiFAT partition. Some changes are prompted, while others happen automatically. Normal operation occurs when the **Auto** option is set.

    To help debug file management issues, this option can be set to **Prompt all**. This forces a prompt for every file copy. You can choose to proceed with the copy or bypass it. The prompt also shows the source and target of each file copy.

    Hidden system files (like IO.SYS) and any file deletions you include on the file management menu are handled normally and are never prompted.

    When a different operating system in the MultiFAT partition is selected, hidden files and configuration files are copied. The normal operation will skip a file if the name, date, time and file size are all identical. Select **Always copy** to force a copy, even if the files appear identical.

    > **TIP:** Use the option **Prompt&copy** if you want both the **Prompt All** option and the **Always copy** option active.

- **Prompt for new MultiFAT directory** - Not selected is the default. In this state, when a new operating system is detected at boot time, the system files like AUTOEXEC.BAT and CONFIG.SYS are stored in a subdirectory under the \SC subdirectory. Set this option to have System Commander prompt you for a directory name when a new operating system is saved rather than automatically doing so.

- **Skip fast OS/2 boot** - The default state is off. In this state, System Commander will emulate OS/2's dual boot operation when OS/2 is installed in the MultiFAT partition. This is a faster way to switch between Windows/ DOS and OS/2. With the option set, System Commander won't swap CONFIG and AUTOEXEC files with those in the \OS2 directory. This option might be used when multiple OS/2 configurations are desired in the MultiFAT partition and the files to be copied are explicitly specified in the file management menu.

- **Disable CHECKMBR insertions** - The CHECKMBR program is normally inserted into the AUTOEXEC.BAT file. CHECKMBR verifies that System Commander's MBR has not been destroyed by a new operating system installation and corrects the condition if necessary. CHECKMBR is not a TSR.

- **OS Wizard alternate start** - If the OS Wizard stops with the message "OS Wizard is analyzing your system...", try setting this option to use an alternate startup method. Typically, this option is automatically set as needed.

- **MBR virus detector disabled** - Normally, System Commander will perform a virus check during every boot. The detector doesn't look for any specific virus, but catches system changes that help hide a virus and allow it to multiply and infect files. If a possible virus is detected, a special warning screen appears. This screen has additional information and help to determine if a virus has infected the system, and allows you to remove the virus. This option can be used to disable this feature.

- **Automatic Win boot repair disabled** - Automatic Win boot repair is enabled by default. It automatically hides all primary partitions the next time you boot into NT/2000/XP/2003 for one cycle when a change is noticed on the primary partitions of drive 0. This feature corrects a problem where Windows gets confused about the C drive and fails to boot after a primary partition changes. These changes include resizes, moves, conversions, creation, and deletion of primary partitions on drive 0. This option can be used to disable this feature.

- **Edit personal text** - This text appears on the About screen. You might want to include your phone number and/or identifying information as identification. This can help in the recovery of your computer if it's lost or stolen. This information is even accessible when a password is required at bootup.

Modifying the OS Selection Menu List Pane

The OS Selection Menu List Pane contains icons and names for each of your boot options. You can display the list as either small or large icons by clicking the **View** button on the Tool Bar, or by making changes to the order and appearance of the actual icons.

You can also change the appearance of the OS Selection Menu by selecting and different video style (see "Changing the OS Selection Menu Appearance" on page 248).

Managing the List Pane Icons

Follow the steps below to open the Order Add and Remove window for managing the List Pane options.

1. Start your computer to the System Commander OS Selection Menu.

2. Click the **Settings** button or press ALT-S to open the Settings window.

3. Choose **Order Add and Remove** to view the Order Add and Remove window.
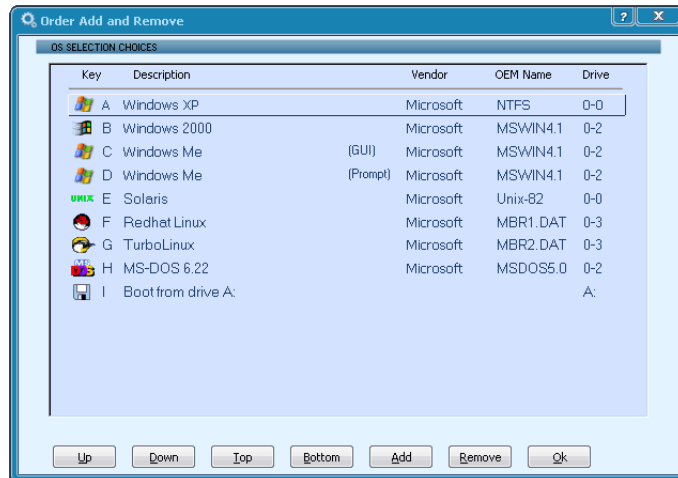
At the Order Add and Remove window, you can perform the following tasks:

- To Change to Order of the List (see page 253)
- To Add a New Selection to the List (see page 253)
- To Add a Boot from CD/DVD Option (see page 253)
- To Remove a Selection from the List (see page 253)

To Change to Order of the List

Select an item on the list and then click one of the following buttons at the bottom of the window:

- **Up** moves the selected item up the list one line at a time.

- **Down** moves the selected item down the list on line at a time.

- **Top** moves the selected item to the top of the list.

- **Bottom** moves the selected item to the bottom of the list.

To Add a New Selection to the List

Click **Add** or press ALT-A to open the Add Selection to OS menu window, and the choose from the following options:

- Add a duplicate of the current MultiFAT selection
  (if the highlighted selection is a MultiFAT)

- Add a primary or logical partition

- Add a master boot record (MBR)

- Add a selection to boot from removable media, such as a CD/DVD or diskette 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, click **Add** or press ALT-A at the Order Add and Remove window, and then select **MBR** (see "DOS Utilities" on page 55).

To Add a Boot from CD/DVD Option

Click **Add** or press ALT-A, select the choice **Removable**, the then choose **CD/DVD**.

If your system BIOS supports controlled CD/DVD booting, the option will be added. Some system BIOSes don't include this feature, and addition instructions will be provided on how you might be able to have a CD/DVD boot selection. We've found that a few systems incorrectly implemented CD/DVD boot support, and when a CD/DVD boot choice is selected, it might boot a different device than expected. You can check to see if the manufacture has an updated BIOS to correct this issue.

To Remove a Selection from the List

Click **Remove** or press ALT-R to remove the highlighted entry. At the removal confirmation question, select **OK**.

Changing the Appearance of the List Pane Icons

1. Start your computer to the System Commander OS Selection Menu.

2. Click the **Settings** button or press ALT-S to open the Settings window.

3. Choose **Description and icons** to view the Description and Icon window.
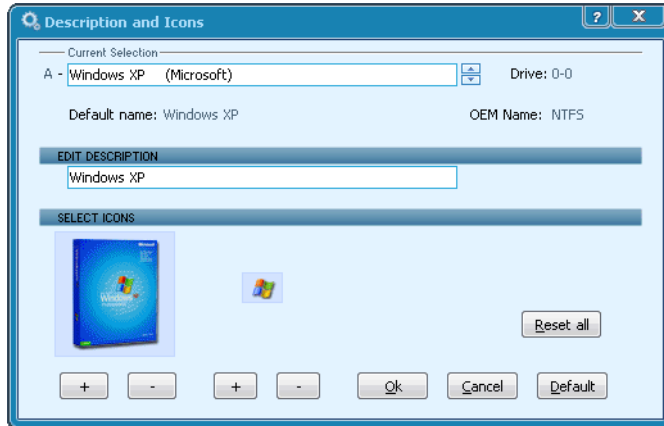
4. Click the **up** and **down** arrows to make a selection.

5. Type a new name in the Edit Description box.

6. Click the **plus** (**+**) and **minus** (**-**) buttons below each icon to change the display.

   The large icons appears in the default OS Selection Menu in the thumbnails display. When you click the **View** button on the Tool Bar, the smaller icons appears in the details display (see "List Pane" on page 51).

7. Click **Ok** to apply the changes and close the window.

   - If you want to return the icon and description to the first-time default settings, click the **Default** button.

   - If you want to return all the icons and description to their first-time default settings, click the **Reset all** button.

TROUBLESHOOTING

Problems Without Messages

Overview

The topics in the section deal with problems you might encounter that don't have an error message.

Installer Complains About a Bootable Operating System

In this case, the new operating system installer sees another operating system as bootable. To correct this, run the SCDISK program from the System Commander directory (typically C:\SC), select **Change boot status**, and select the option **Make all partitions inactive**.

System Commander 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 might not offer the choice to save the new DOS. In this case, don't make a new selection from the System Commander menu, but use the default choice to avoid System Commander overwriting the new DOS information. At the DOS prompt, run

SCIN from the System Commander directory, and select **Special options**. Then select **Alter Current Boot Record Serial Number**. Select **YES**, and then exit SCIN. Reboot, and System Commander should detect and save the new DOS.

System Commander Menu Doesn't Appear After Reboot

This might occur if a newly installed operating system overwrites System Commander's master boot record. Boot from the System Commander program CD or Boot Utility Disk, and select **Enable System Commander**.

When the process is completed, remove the boot disk and reboot the computer. System Commander will appear and save the new operating system information. All of your prior options and selections won't be affected.

System Commander Appears Twice to Open 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 might be options in QEMM to prevent this behavior.

Colors Have Problem or Screen Unreadable

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, select Settings, and select the Hardware settings menu. Change the option Graphics size to off. Refer to page 86 for more information. An alternative way to set this option is in Windows to run the System Commander console and select settings and change the graphic size option there. From DOS, use 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 might 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's 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 don't recommend that you use any disk compression if you plan to install multiple operating systems into a single partition (the MultiFAT). Non-DOS operating systems generally don't work with disk compression systems. Older versions of DOS might also have problems, and might cause data loss.

Getting a Master Password

If you lose or forget your password, Avanquest® can provide a one-time use master password that will let you gain access to your system. Before calling technical support, you should be at the password request box. We will need information presented in the About dialog (ALT-A).

In addition, please have your credit card ready. There is a nominal fee for this service. If you don't have a credit card, call for the current cost of this service. Avanquest requires prepayment for this service.

When you call technical support, 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.

This master password will only work on your single copy of System Commander and is valid only for one boot time. We strongly recommend you go directly to the Settings menu and set a new password (see "Changing the Administrator Password" on page 208).

After you select an operating system, the master password is changed. Should you lose your password again, a new master password will be required.

System Commander Bootup Messages

Overview

In the event that you receive a message from System Commander at bootup, the following topics can help determine the cause of the message and actions you can take to resolve the messages.

- Boot error: Y-ZZ Boot WX (see page 262)
- System Fails to Boot Up (see page 264)
- Possible Defective Boot Record (see page 265)

Boot error: Y-ZZ
Boot WX

Cause: Seeing one of these two error messages indicates a problem in starting up the system or reading the disk drive. The letters W, X, Y and Z represent an error character or number to identify the source of the problem. Note that there are two sets of codes and possible solutions depend on which error message appears.

Codes for the message Boot error: Y-ZZ are as follows:

Y code	Issue
0	MBR Checksum failure.
1	Read error, FAT32 cluster chain.
2	Read error, NTFS file system.
3	Read error, NTFS file system OR the SYSCMNDR.SYS file is too fragmented - a defrag of the NTFS partition is required.
4	Read error, NTFS file system root.
5	Read error, NTFS file system OR the SYSCMNDR.SYS file is too fragmented - a defrag of the NTFS partition is required.
9	Invalid boot record and/or corrupted.
@	No FAT32/NTFS primary partition found, so unable locate System Commander.
A	FAT32 found only, no System Commander.
B	NTFS found only, no System Commander.
C	FAT32/NTFS both found, but no System Commander.
E	SYSCMNDR.SYS found in FAT32 but not in virtual mode, no NTFS found.
G	SYSCMNDR.SYS found in FAT32 but not in virtual mode, NTFS found.
J	SYSCMNDR.SYS found in NTFS but not in virtual mode, no FAT32 found.
K	SYSCMNDR.SYS found in NTFS but not in virtual mode, FAT32 found.
O	SYSCMNDR.SYS found in both FAT32/NTFS, but not in virtual mode.

The ZZ portion is the disk error code and is generally not important.

Action: The codes given help identify the source of the problem. Generally, you're given the option to boot into one of the four primary partitions on the first drive. Several combinations we've seen are:

Boot C-zz (where **z** is any character).

Boot 3-zz (where **z** is any character).

The most likely cause is having the System Commander SYSCMNDR.SYS file become badly fragmented. Boot into the operating system where System Commander was installed, and perform a full defragmentation. After this is performed once, it's very unlikely to occur again. The file is static to Windows and doesn't shrink or grow.

For **Boot WX** style messages:

W code	Issue
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 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 (FAT-32 only).
G	Problem reading the SYSCMNDR.SYS file (FAT-32 only).
H	Contents of SYSCMNDR.SYS file are wrong (FAT-32 only).

The second "X" character indicates the error code returned from the hard disk BIOS. It can indicate the hard disk or controller has some type of problem, or might indicate bad partition information on the disk.

Action: The codes given help identify the source of the problem. In most cases you will be given the option to boot into one of the four primary partitions on the first drive. 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 SYSCMNDR.SYS could not be found in any primary partition on the first drive. To fix this, boot from a DOS or Windows 95/98/Me startup diskette and at the prompt, type FDISK /MBR. This will have no effect on partitions, but installs the generic MBR boot loader. After your operating system is running, you will need to perform a full installation of System Commander.

System Fails to Boot Up

Cause: If you have FAT partitions you have created on the first drive, but have not formatted them yet, this condition might occur. It can also occur if the product is installed into a compressed drive. For these cases or if for some unexplained reason the system fails to boot up properly, the following instructions will restore the original master boot record.

Action: First check if System Commander's safe mode is working. When you first see any BIOS messages on screen at the start of the bootup, press and hold the ALT key down. If System Commander is running, it will present the "Safe mode" screen. This turns off a few functions that in rare situations could be incompatible with your system. If this works, you are done!

If this fails, boot the system from the System Commander program CD or Boot Utility Disk. Run SCIN and select **Disable or Remove System Commander**. Then select **Temporarily Disable**. Exit and reboot normally. System Commander is now removed from the boot-up sequence.

NOTE: Disable only replaces the master boot record. It doesn't change the current partition information. There is no problem performing a Disable, even if you had changed the partition information after System Commander 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 utility diskette.

If this still doesn't correct the problem, boot from a Windows or DOS boot diskette and at the prompt, type FDISK /MBR to insert a generic MBR loader. It won't affect your partitions. If the Window FDISK program is not available, you can also run the System Commander utility CHECKMBR /MBR from the System Commander boot CD or Boot Utility Disk to do the same thing.

If you are still having problems getting into an operating system, check that the desired operating system partition is Active/Bootable. You can set this from System Commander by running System Commander directly from the CD and starting Manual Partitioning. Click on the desired partition, select **Advanced**, and then select the **Set Bootable** option.

Possible Defective Boot Record

Cause: When this message appears after a non-FAT boot selection is made, the selected operating system doesn't have a boot record, or uses a non-standard format. If you selected (B) to boot anyway and the operating system works, we would like to hear from you. It appears the operating system you are using doesn't follow any prior standard.

If the operating system fails to boot, it indicates the operating system has not properly built the boot record or other critical files are missing from the partition. It might also indicate the operating system doesn't allow booting from the selected partition, and it should be removed from the OS Selection Menu.

Action: To remove a selection, select **Settings** from the OS Selection Menu Tool Bar, and select the **Order Add and Remove** option. Select the operating system partition to remove and then click **Remove**.

Some operating systems can boot through the FAT partition, even though the operating system is in a separate partition. NT/2000/XP/2003 and Vista are prime examples of this, when they not installed to a single NTFS primary partition.

Messages from Windows

Overview

In the event that you receive a message from Windows at bootup, the following topics can help determine the cause of the message and actions you can take to resolve the messages.

Messages From NT/2000/XP/2003 and Vista

Fatal System Error
Missing File <winnt root> \system32\ntoskrnl.exe
Windows [XP] could not start because of….

Cause: If the operating system partition is not accessible, then one of these operating system error messages might appear: "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." Windows XP's messages are often more confusing talking about ARC firmware configuration problem or disk hardware configuration problem.

This can be caused by a new partition being created by another operating system or the deletion of a partition before Windows so that it displaces the Windows partition number up or down.

Action: This usually indicates the hidden file BOOT.INI has the wrong partition to find the operating system. This critical file resides in the root directory. System Commander's BootFixer™ can automatically repair the BOOT.INI file.

At the System Commander OS Selection Menu, select **Partitioning**. At the Partition Wizard screen, select **Manual Partitioning**. Then, open the **Advanced** menu and select **BootFixer**. It will automatically check and correct all BOOT.INI files it finds. Exit and try again to boot into the operating system.

> **NOTE:** You can also access the Manual Partition option by booting from the System Commander program CD.

For Windows XP and later, you might want to try and use its Recovery Console. It can often fix some operating system problems. To open the Recover Console, boot from the Windows XP CD, and then click the **Manual Repair** option.

If these prior solutions don't correct the problem, you might want to copy a new set of boot files from the Windows CD, usually under the \i386 folder. Copy ntldr, ntdetect.com, and ntbootdd.sys (if you use SCSI hard drives) onto the C:\ root. You might have to change the attributes of the files on the hard drive before a copy is allowed, since these files normally are in read-only, system, hidden. The prompt command to change attributes is: `attrib -r -s -h c:\filename`, where filename is the file you want to overwrite.

Messages From Windows 95/98/Me

Below are some examples of messages you might receive when errors occur in the booting of Windows 95/98/Me.

Warning SU-0012 (OS/2 or NT/2000/XP will no longer work)

Cause: If an OS/2 or NT/2000/XP/2003 partition is present, this message will appear during the Windows 95/98/Me installation.

Action: No action is necessary. System Commander protects both OS/2 and NT/2000/XP/2003 from Windows 95/98/Me.

Warning SU-0015 (NT/2000/XP/2003 will no longer work)

Cause: If NT/2000/XP/2003 was installed prior to Windows 95/98/Me, this message will appear during the Windows 95/98/Me installation.

Action: No action is necessary. System Commander protects NT/2000/ XP/2003 from Windows 95/98/Me.

Warning SU-0016 (OS/2 will no longer work)

Cause: If OS/2 was installed prior to Windows 95/98/Me, this message will appear during the Windows 95/98/Me installation.

Action: No action is necessary. System Commander protects OS/2 from Windows 95/98/Me.

Windows 95/98/Me 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. This appears in the root directory as a hidden system file. To see hidden files, at the Windows 95/98/Me DOS prompt, try:

```
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/Me won't start. 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/Me on the System Commander 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/Me (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/Me 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/Me from System Commander. This will issue a menu of options, such as safe mode, and a logging mode. The Windows 95/98/Me 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/Me, 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.

Other Operating System Messages

Overview

In the event that you receive a message from Linux or DOS at bootup, the following topics can help determine the cause of the message and actions you can take to resolve the messages.

Messages From a Linux Operating System

Linux fails to boot

Cause: Depending on the original installation method, the LILO or GRUB MBR might have been removed by another operating system installation/operation or the configuration information might need updating to the current drive configuration.

Unlike Windows, Linux distributions have a boot up process that is far less tolerant. Installation using the superblock (one option Linux provides) is the most stable and tolerant approach, but if an MBR method was used, it can be difficult to change now.

Action: First we strongly recommend checking the FAQs and/or support for your specific Linux distribution or Linux loader (Grub or LILO). They might have updated information and/or other options.

Many Linux vendors are recommending reinstalling the Linux from the CDs and being sure to select **Upgrade**. Unfortunately, this might not always save user data, accounts, or installed applications. To find out what can be saved in the upgrade process, check with your Linux vendor.

Messages From DOS

Below are some examples of messages you might receive when errors occur in the booting of Windows 95/98/Me.

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 generates the System Commander error message "Boot 1x". Proceed with this solution only if BOTH these conditions occur.

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

Users 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.

CAUTION: Do not alter the BIOS setup unless you are absolutely sure of what you are doing.

You might 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 has a built in feature to replace the DOS boot record. Boot from the System Commander utility disk. System Commander saved the DOS boot record here when you installed System Commander.

> ⚠️ **CAUTION:** Do not proceed if the System Commander utility disk was created in another system. The saved DOS boot record is rarely the same from system to system. Also don't 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 might even affect other non-DOS partitions.

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

After the operation is complete, remove the diskette and reboot. Assuming no other damage occurred, System Commander'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 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 operating system booted. This will occur under several situations, as explained below.

Action: It is usually necessary to use your operating system boot CD/DVD or diskette at this point so the problem can be resolved.

The CONFIG.SYS file for this version of Windows 95/98/Me or DOS 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 don't need COMSPEC if the CONFIG.SYS file has a SHELL statement.

Verify that System Commander 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 automatically copy COMMAND.COM into the root directory, select **Settings** from the OS Selection Menu, and select the **File management** option. Verify the files and subdirectories are correct. The files to copy won't be copied if the last boot was the same operating system. This means you might need to select another operating system in the FAT partition, and then reboot and select the desired operating system.

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 doesn't 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's occurring in the CONFIG.SYS file, check to see which drivers are loading before and after the message appears. Unfortunately, many device drivers don't 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 operating system 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. After 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 .

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 operating system. The update version of some older DOS versions doesn't correctly detect DOS or won't 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, type:

```
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 save the new operating system.

Inaccurate OEM Names

Overview

In several places, System Commander 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.

Operating System	OEM Name
DR-DOS 5.0 (Digital Research)	BM 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
Windows XP (FAT, FAT 32)	MSWIN4.1
Windows XP in NTFS partition	NTFS
Windows 2003 in NTFS partition	NTFS
Windows Vista in NTFS partition	NTFS

When Windows 95/98/Me installs, it changes all boot records on all FAT type primary and logical partitions. While this doesn't normally affect any operating system already installed, the partition can be seen incorrectly as Windows 95/98/Me, with an OEM boot name MSWIN4.0 or MSWIN 4.1.

Operating System Recovery Techniques

Overview

If a working operating system 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 operating systems. The operating system manufacturer might have additional suggestions and notes.

As a starting point, we suggest booting into the operating system selection that fails. This will ensure System Commander has loaded any files specific to the operating system, 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.

After the boot selection is made, then boot directly from a boot CD/DVD or diskette that matches the operating system (don't boot through System Commander's boot from A: option). If the operating system boot disk is not available, in some cases a Windows 95/98/Me or DOS boot disk can be used to examine potential problems and files.

For additional information about boot disks, see "Making a Boot Disk" on page 31.

Windows Vista Recovery

Boot the computer from the Vista installation CD/DVD to view the Preference screen. Click **Next** to view the Install screen. Choose the **Repair** option to view the System Recovery Options. you will be given the option of repairing the current Windows installation.

NOTE: You must use the correct installation CD/DVD for your version of Vista to access the System Recovery options.

For information about creating a boot diskette, see "Windows Vista" on page 32.

Windows NT/2000/XP/2003 Recovery

When you install Windows, the old boot record OEM name (such as MSDOS5.0) is copied into the Windows boot record.

These three additional files are critical to the boot process:

• NTLDR is the Loader file that actually launches Windows.

• NTDETECT.COM is a program run by NTLDR to detect Windows' presence.

• BOOT.INI is a text configuration file for NTLDR.

For information about creating a boot diskette, see "Windows NT/ 2000XP/2003" on page 33.

Windows XP and 2003

Boot the computer from the operating system installation CD. At the Setup screen you will be given the option of repairing the current Windows installation.

Windows NT v4.0, Windows 2000

Under Windows, to correct the problem, boot the computer into the NT/ 2000 Setup Program (usually by using the three or four boot disks you made during the initial installation of NT/2000). At the Setup screen you will be given the option of repairing the current NT/2000 installation. Choose this option and insert the NT/2000 Emergency Repair disk into the computer when prompted.

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 95/98/Me Recovery

In addition to the boot record, there are five (5) files that must be in place for Windows 95/98/Me to get to a DOS/Win95/98/Me prompt. These files reside in the C:\ root directory, and include the following:

- IO.SYS is a 200 KB+ file and is the first Win95/98/Me program to start after the boot record runs.

- MSDOS.SYS is a text configuration file can be edited, and is normally about 1500 bytes long, but never 10 KB or larger.

- COMMAND.COM process DOS commands and should have a file date of 1995 or later.

- CONFIG.SYS is similar to a DOS CONFIG.SYS file. Some device drivers and the shell statement will point to the Windows 95/98/Me subdirectory.

- AUTOEXEC.BAT is similar to a DOS AUTOEXEC.BAT file. One portion of the PATH statement should point to the Windows 95/98/Me 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/Me configurations have zero length CONFIG.SYS and AUTOEXEC.BAT files. They are not always necessary for Windows 95/98/Me.

If the wrong MSDOS.SYS file appears, first search the drive for another possible instance of the file. System Commander 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 program CD or Boot Utility Disk, as a starting point. Comments are included in the file. It might 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/Me boot diskette (IO.SYS is a hidden system file). Since System Commander saves the boot record in its own file, it's unlikely to be damaged unless the Windows 95/98/Me selection was removed from the System Commander selection menu.

To reload the boot record, it's necessary to first save the Windows 95/98/ Me 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/Me boot diskette that was created when you installed Windows 95/98/Me. Shutdown Windows 95/98/Me and restart the computer. After the diskette boots up, it should leave you at a 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 disk, and reboot through System Commander to save the new files and configurations.

For information about creating a boot diskette, see .

DOS Recovery

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 or IBMBIO.COM 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 or IBMDOS.COM 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 is a program used to process the DOS command line (it doesn't stay resident).

- CONFIG.SYS is the standard configuration file for DOS. For more information, see "CONFIG.SYS Issues" on page 198.

- AUTOEXEC.BAT run additional TSRs (terminate and stay resident) and commands. For more information, see "AUTOEXEC.BAT Issues" on page 200.

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.

> **CAUTION:** If you made your DOS boot diskette after NT/2000/XP was installed, the DOS boot disk will have an NT/2000/XP 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 to save the new files and configuration.

For information about creating a boot diskette, see "DOS" on page 35.

REFERENCES

Glossary of Terms

Active Partition

An Active Partition is a partition from which an x86-based computer starts up. The active partition must be a primary partition on a basic disk. If you use Windows exclusively, the active partition can be the same as the system volume. In the DOS partitioning scheme, only Primary Partitions can be active due to limitations of the standard bootstrap.

Bootstrap Code

The Bootstrap Code is a small program that loads the software required to start-up and run the computer.

Cluster

A Cluster is the smallest amount of disk space that can be allocated to hold a file. All file systems used by Windows organize hard disks based on clusters, which consist of one or more contiguous sectors. The smaller the cluster size, the more efficiently a disk stores information. If no cluster size is specified during formatting, Windows picks defaults based on the size of the volume. These defaults are selected to reduce the amount of space that is lost and the amount of fragmentation on the volume. A cluster is also called an allocation unit.

Extended Partition

An Extended Partition is a type of partition that you can create only on basic master boot record (MBR) disks. Extended partitions are useful if you want to create more than four volumes on a basic MBR disk. Unlike primary partitions, you don't format an extended partition with a file system and then assign a drive letter to it. Instead, you create one or more logical drives within the extended partition. After you create a logical drive, you format it and assign it a drive letter. An MBR disk can have up to four primary partitions, or three primary partitions, one extended partition, and multiple logical drives.

File System ID

File System Metadata

The servicing structures of a file system, which contain information about allocating files and directories, security information, etc., are named file system metadata. File system metadata are invisible for users and ordinary programs because accidental modifications of the metadata usually make a partition unusable.

Hard Disk Geometry

Traditionally, the usable space of a hard disk is logically divided into Cylinders. Cylinders are divided into Tracks (or Heads) and Tracks are divided into Sectors.

The triad of values {[Sectors-per-Track], [Tracks-per-Cylinder], [Amount-of-Cylinders]} is usually named Hard Disk Geometry or C/H/S geometry.

Tracks and Cylinders are numbered from **0**, while Sectors are numbered beginning with **1**.

These disk parameters play an essential role in the DOS Partitioning scheme. The alignment of partitions takes the parameters of the hard disk geometry into consideration.

Modern hardware uses an advanced scheme for the linear addressing of Sectors, which assumes that all on-disk sectors are continuously numbered from **0**. To allow backward compatibility with older standards, modern hard disks can additionally emulate C/H/S geometry.

Hidden Partitions

The concept of hidden partitions was introduced in the IBM OS/2 Boot Manager. Operating systems don't mount "hidden" partitions, preventing access to their contents.

Hot Copy

Hot Copy is a technology that enables you to run copy operations without having to reboot the Windows system, which might interrupt some other process on the computer.

Master File Table

Master File Table (MFT) is a relational database that consists of rows of file records and columns of file attributes. It contains at least one entry for every file on an NTFS volume, including the MFT itself. MFT is similar to a FAT table in a FAT file system.

MBR (Master Boot Record)

The MBR (Master Boot Record) is the first track of the hard disk on the 0 sector of the disk. It contains important information about the disk layout:

- The partitioning scheme.

- The starting records of the Partition Table.

- The standard bootstrap code (or the initial code of boot managers, disk overlay software, or boot viruses).

Generally, the 0 sector is used for similar purposes in all existing partitioning schemes.

The capacity of the MBR is not sufficient to place sophisticated boot programs. This means that the on-boot software uses the entire 0 track of the hard disk in addition to the 0 sector because it's not included in any partition. For example, boot managing utilities such as LILO, GRUB, and VCOM System Commander are located in the 0 track.

Metadata

Metadata is information that relates to other data. It is used to describe the information in a way that allows a computer or user to find certain items or list of items that match specific criteria.

Partition ID

Partition ID, also knows as *File system ID*, is the identifier of a file system that is placed in the partition. The partition ID is used to detect partitions of supported types. Some of the operating systems rely completely on the Partition ID when distinguishing supported partitions, while others don't. The partition ID is saved in appropriate entries of the Partition Table and uses only one byte of space.

Partition Label

Partition Label, also known as *Volume Label*, is a small text field (up to 11 characters) that is located in the partition's boot sector. This value is used for notification purposes only. It is detectable by any partitioning tool including DOS' FDISK utility.

Modern operating systems use other methods to save the Volume Label within the file system, such as a special hidden file. The Volume Label is able to contain a relatively large amount of text in multiple languages.

Partitioning Scheme

The Partitioning Scheme is a set of rules, constraints, and the format of on-disk structures that keep information of the partitions that are located on the hard drive. There are several partitioning schemes that can be used. The most popular is the DOS partitioning scheme. Introduced by IBM and Microsoft, it uses multiple partitions in the disk subsystems on IBM-compatible computers.

Another popular partitioning scheme is the LDM (Logical Disks Model) that originates from UNIX mainframe systems. The Veritas Executive accommodates the simplified version of LDM to the Windows 2000 operating system.

Windows 2000 and XP support two different partitioning schemes: the old DOS partitioning scheme and the new Dynamic Disk Management (DDM). Older versions of Windows don't support DDM and most hard drive utilities don't support it as well.

Root Directory

The Root Directory is the top-level directory of a formatted logical drive and includes other files and directories.

Modern file systems, such as. Ext2/Ext3, NTFS, and even FAT32, have a Root Directory that doesn't differ from other directories in properties. This is not the case for old FAT12 and FAT16 file systems.

Serial Number

In the DOS partitioning scheme, every hard drive and every partition has a Serial Number, which consists of 32 bits and is represented by an 8-figure hexadecimal value.

The hard drive's Serial Number is stored in the MBR. Its value is assigned when the MBR sector is initialized by standard disk managing tools from Microsoft, such as Windows Disk Administrator and FDISK utility.

The hard drive's Serial Number is not important for most operating systems and software. Windows NT, 2000, and XP store hard drive Serial Number values in the database of assigned drive letters.

A partition's Serial Number is stored in its Boot Sector (in FAT16, FAT32, and NFTS file systems). Its value is assigned when the partition is formatted. The partition's Serial Number doesn't play an important role for most operating systems and software.

TSR (Terminate and Stay Resident)

A TSR (Terminate and Stay Resident) file is one that returns control back to the system, but leaves the program in memory. This term used for programs that don't have an option for unloading themselves from memory.

Volume Label

See

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Complimentary Technical Support

Before contacting Avanquest technical support, please review the User's Guide or the Online Help from the **Help** menu within the program. We are also pleased to offer you 24/7 access to our complimentary web support at:

http://support.avanquestusa.com

Here you can access the latest product updates, extensive FAQs, and other information about your product. The FAQs might have information and helpful hints that are more current than the user's guide and Online Help.

If the FAQs don't help, you can submit a free email incident from the FAQ page.

When reporting a difficulty, please include any information that might help us diagnose the problem. The following details are often the most helpful:

- The version of the software you are using (check **Help > About**).

- The version of Windows that you are running.

- The circumstances and sequence of steps that led to the problem.

- The text of the exact error messages (if any appeared).

- A list of other Windows programs that you were running when the error occurred.

Avanquest is dedicated to quality and fast support. Most email incidents are handled within one business day.

NOTE: This technical support policy is subject to change without notice. Support services are provided according to the prices, terms, and conditions in place at the time the services are used.