

NOTES ON MS-DOS 6.22

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This file provides important information not included in the
MICROSOFT MS-DOS USER'S GUIDE or in MS-DOS Help.

This file is divided into the following major sections:

1. Setup
2. MemMaker, EMM386, and Memory Management
3. Windows
4. Hardware Compatibility with MS-DOS 6.22
5. Microsoft Backup, Defrag and Anti-Virus
6. Third-Party Programs
7. DriveSpace

If the subject you need information about doesn't appear in this file, you might find it in one of the following text files included with MS-DOS:

- * OS2.TXT, which describes how to remove and save data on your computer when you replace OS/2 with MS-DOS 6.22.
- * NETWORKS.TXT, which describes how to update your network software for use with MS-DOS 6.22.
- * COUNTRY.TXT, which provides details about enhancements to the international keyboard and codepage (character set) support included with MS-DOS 6.22.

For information about new features, type HELP WHATSNEW at the command prompt.

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 - 1.1 You deleted files from the directory that Setup needs to install the optional Windows programs.
 - 1.2 Changes to International Keyboard and Character Set Support
2. MemMaker, EMM386, and Memory Management
 - 2.1 Intel Expanded-Memory Driver (EMM.SYS)
 - 2.2 Running MemMaker on a Computer with PC-NFS
 - 2.3 You have a Super VGA display and want to conserve memory.
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1. SETUP

1.1 You deleted files from the directory that Setup needs to install the optional Windows programs.

If you typed BUSETUP /E at the command prompt, the "Setup did not find the files it needs in the directory specified" message appeared, and you think you deleted the files from your hard disk, insert Setup Disk 1 in drive A or B, and start Setup by typing A:SETUP /E or B:SETUP /E at the command prompt.

1.2 Changes to International Keyboard and Character Set Support

MS-DOS 6.22 includes new codepage information files EGA2.CPI, EGA3.CPI and ISO.CPI, as well as the new KEYBRD2.SYS file, which offers additional keyboards. MS-DOS also includes new country settings in COUNTRY.SYS.

For details about enhancements to the international keyboard and codepage (character set) support, see the COUNTRY.TXT file, which is located in the directory that contains your MS-DOS files.

2. MEMMAKER AND MEMORY MANAGEMENT

2.1 Intel Expanded-Memory Driver (EMM.SYS)

If you use Intel's EMM.SYS driver with Aboveboard, use EMM.SYS version 4.0 revision E if you have an ISA system, or EMM.SYS version 4.0 revision D if you have an MCA or other system. Contact Intel for a free upgrade.

2.2 Running MemMaker on a Computer with PC-NFS

If you use PC-NFS network software, carry out the following procedure before you run MemMaker:

1. Open your MEMMAKER.INF file by using any text editor. This file is in the directory that contains your MS-DOS files.

2. Add the following line to the file:

```
*NET
```

3. Save the file, and then run MemMaker.

2.3 You have a Super VGA display and want to conserve memory.

If you use Microsoft Windows on an 80386 computer with extended memory and a Super VGA display, you can use the MONOUMB.386 file, in conjunction with MemMaker, to conserve conventional memory for running programs.

To conserve memory if you have a Super VGA display:

1. Open your Windows SYSTEM.INI file, and find the [386Enh] section.

2. Add a DEVICE command for the MONOUMB.386 file, which is located in your MS-DOS directory. For example, if your MS-DOS files are in C:\DOS, add the following line to this section:

```
DEVICE=C:\DOS\MONOUMB.386
```

3. Save the file, and restart your computer.

4. After your computer starts, run MemMaker by typing MEMMAKER at the command prompt.

5. Choose Custom Setup. On the Advanced Options screen, answer Yes to the question "Use monochrome region (B000-B7FF) for running programs?"

Follow the instructions on your screen.

2.4 Using MemMaker with IBM LAN

Before you run MemMaker, you might need to make adjustments to the parameters specified for your IBM LAN support driver, DXMC0MOD.SYS. In your CONFIG.SYS file, make sure that the DEVICE command that loads DXMC0MOD.SYS includes one of the following before you run MemMaker:

- o The first three parameters, as in the following example:

```
DEVICE=C:\DXMC0MOD.SYS 40000000001,D800,1
```

- o No parameters, as in the following example:

```
DEVICE=C:\DXMC0MOD.SYS
```

parameters, as in the following example:

```
DEVICE=C:\DXMC0MOD.SYS 400000000001,,
```

2.5 MemMaker and Adaptec SCSI devices

MemMaker is compatible with Adaptec SCSI devices. However, if you use the ASPI4DOS.SYS driver to support your SCSI device, MemMaker by default will exclude this driver from the optimization process. If you don't use the SCSI device as your startup or boot drive, you can include the ASPI4DOS.SYS driver in the optimization process. To do so, remove the ^ASPI4DOS entry in the MEMMAKER.INF file, and then run MemMaker.

2.6 Using MemMaker on a computer with PC Tools or PC-DOS RAMBoost

You can use MemMaker or RAMBoost with MS-DOS, but not both at the same time. MemMaker will prevent RAMBoost from loading, but not remove its DEVICE= command from your CONFIG.SYS.

2.7 EMM386 detects an error in an application

If EMM386 displays a message such as "EMM386 has detected error #12 in an application," this indicates that the processor has reported an exception error to EMM386. An exception error typically occurs when an application gives the processor an instruction under invalid or unexpected conditions. In most cases, these errors are related to a specific program. If you are receiving an error that does not occur with any particular application, the error might be caused by a device driver or a memory-resident (terminate-and-stay-resident) program.

To avoid these errors:

- o Try to identify the program involved. One way to do this is to see if the error occurs when the program is not running. If you suspect a memory-resident program or device driver, try bypassing it when your computer starts.
- o Try disabling EMM386. If a particular application is to blame, disabling EMM386 might allow that application to generate an error message. Disabling EMM386 might also change your memory configuration so that the error no longer occurs.
- o Try changing the order in which you load device drivers and memory-resident programs. This might help because some errors occur only under specific memory conditions.
- o If error 12 is occurring, this indicates that a stack is being used incorrectly. Try adding the following command to your CONFIG.SYS file:

STACKS=18,512

- o If error 13 is occurring, the program may be trying to use protected mode without cooperating with EMM386. You may need to obtain a VCPI-compliant version of the program, or not load EMM386 when using this application.

2.8 MemMaker no longer aggressively scans upper memory by default

By default, the MS-DOS 6.22 version of MemMaker does not scan upper memory aggressively. Instead, the MemMaker option "Scan the upper memory area aggressively?" is set to No, and MemMaker limits its search for available UMBs to memory addresses C600 through EFFF. In contrast, the MS-DOS 6 version of MemMaker did scan upper memory aggressively by default: in addition to scanning memory in the C600-EFFF range,

To make more memory available for running programs, run MemMaker in Custom mode and change the "Scan the upper memory area aggressively?" option to Yes. (Note that, on some computers, putting UMBs in this range prevents the computer from starting properly.)

Note: If you last ran MemMaker with the "Scan the upper memory area aggressively" option set to Yes, then the next time you run MemMaker, it leaves that option set to Yes.

3. WINDOWS

3.1 Your computer uses a Windows 3.0 permanent swap file.

If your computer uses a Windows 3.0 permanent swap file, run the SPATCH.BAT program to make the swap file compatible with MS-DOS 6. To do so, carry out the following procedure:

1. Copy the SPATCH.BAT file to your hard disk. To determine the location of the file on the Setup disks, view the PACKING.LST file on Setup Disk 1.
2. Type the following at the command prompt:

```
SPATCH [DRIVE] :[PATH] SWAPFILE.EXE
```

For the DRIVE and PATH parameters, specify the location of your SWAPFILE.EXE file.

3. Follow the instructions on your screen.

The program modifies the SWAPFILE.EXE for use with MS-DOS 6 and saves a backup copy as SWAPFILE.SAV. After you have confirmed the file works correctly, you can delete the SWAPFILE.SAV file.

3.2 Using compressed floppy disks with Windows File Manager

If you are using compressed floppy disks with automounting enabled, you might encounter error messages or other problems while using File Manager. To work around these problems, press the F5 key twice.

For example, if you change from a compressed to an uncompressed floppy disk, the drive button for the compressed floppy disk's host drive remains until you press the F5 key twice.

4. HARDWARE COMPATIBILITY WITH MS-DOS

4.1 Hardcard

If you upgraded your system from MS-DOS 6 or 6.2, your system uses its Hardcard drive as its startup drive, and you want to use DoubleSpace on that drive, see section 7.18. For additional Hardcard information, see the following:

a) Hardcard II

If you can't use Plus Development Hardcard II or Hardcard II XL when running EMM386.EXE, specify the exclude (x=) switch to prevent EMM386 from conflicting with the card's BIOS address.

To configure EMM386, run MemMaker.

b) Hardcard 40 or Passport

If you are using Hardcard 40 or a Passport removable disk, and you have a DEVICE command in your CONFIG.SYS file for PLUSDRV.SYS, disable or remove the DEVICE command. Then run MS-DOS 6.22 Setup. After Setup is complete, reenable or restore the DEVICE command for PLUSDRV.SYS. Make it the last line in the file.

c) If you upgraded your system from MS-DOS 6 or 6.2, installed DoubleSpace on your Hardcard, and are now unable to access your newly compressed drive, try the following:

- 1) Add a DRVSPACE /MOUNT command to your AUTOEXEC.BAT file to mount the compressed volume file on the Hardcard every time you start your computer.
- 2) Or, ensure that there is at least one device driver (for example, ANSI.SYS) loaded in your CONFIG.SYS file AFTER the ATDOSXL.SYS driver but BEFORE the DRVSPACE.SYS driver.

5. MICROSOFT BACKUP, DEFrag AND ANTI-VIRUS

5.1 Microsoft Anti-Virus

Before cleaning a program file, make sure you have a backup copy of it. If you clean a program file, and the program is corrupted, reinstall the program. If Anti-Virus again detects a virus, there is a chance the detection is in error; contact your software vendor to determine if an updated version of the program is available.

5.2 Running Microsoft Backup for MS-DOS under Windows

You should not run Backup for MS-DOS while Windows is running. Use Backup for Windows instead (Backups created using Backup for Windows can be restored using Backup for MS-DOS). If you do not have Backup for Windows installed, see "Installing Anti-Virus, Backup, and Undelete after Setup" in the "Getting Started" chapter of the Microsoft MS-DOS USER'S GUIDE.

5.3 Backup for Windows stops running at the end of the compatibility test

If Backup for Windows stops running at the end of the Compatibility Test, you might be loading an incompatible third-party backup driver in your SYSTEM.INI file. Carry out the following procedure.

NOTE This procedure disables your third-party backup program.

1. Open your SYSTEM.INI file, and locate the [386Enh] section.
2. Determine whether any of the following lines are included in this section:

```
DEVICE=FASTBACK.386  
DEVICE=VFD.386  
DEVICE=CPBVXD.386  
DEVICE=VIRWT.386
```

3. If you find any of these lines, add a semicolon (;) to the front of the line.

4. Save the file, restart Windows, and run Backup for Windows again.

5.4 Running Microsoft Backup with TI4000 and Gateway NOMAD computers

To avoid a conflict between the Turbo feature and Microsoft Backup for Windows or MS-DOS, add a /L0 switch to the DEVICE command in your CONFIG.SYS that loads the BATTERY.PRO file. Or, before you run Microsoft Backup, type SETPOWER /L0 at the command prompt.

5.5 Using MS-DOS 6.22 Backup to Restore MS-DOS 6 or 6.2 Backups

Like earlier versions of MS-DOS Backup, the Backup programs included with MS-DOS version 6.22 support data compression during backup. However, the MS-DOS 6.22 Backup programs use a different compression format from earlier versions of Backup.

Because of this, MS-DOS 6.22 Backup for Windows (MWBACKUP.EXE) cannot restore compressed backups created by MS-DOS 6 or 6.2 Backup. To restore such backups, use the version of Backup that created them, or use MS-DOS 6.22 Backup for MS-DOS (MSBACKUP.EXE).

MS-DOS 6.22 Backup for MS-DOS (MSBACKUP.EXE) can restore earlier compressed backups only if your system is running DoubleSpace (that is, if DBLSPACE.BIN is loaded in memory). Otherwise, MSBACKUP.EXE cannot restore older backups; to restore such backups, use the version of Backup that created them.

Both MSBACKUP.EXE and MWBACKUP.EXE can successfully restore 6 and 6.2 backups made without data compression. If you unchecked the Compress Backup Data box in the Backup Options dialog before you backed up, you should have no problems restoring your data using the MS-DOS version 6.22 Backup programs.

Restoring a Previous Version of Microsoft Backup

When you run MS-DOS 6.22 Setup, it installs the 6.22 version of the Backup program(s). The following procedures explain how to re-install the MS-DOS 6 or 6.2 version of Backup for MS-DOS. The procedure you use differs depending on the size of your MS-DOS 6 or 6.2 disks. (The commands in these procedures assume that your Setup disks are in drive A and your MS-DOS files are located in the C:\DOS directory; if the disks or MS-DOS files are in a different drive or location, adjust the commands accordingly.)

If you have MS-DOS 6.2 disks (either 1.2 MB or 1.44 MB disks) or MS-DOS 6 disks (1.2 MB disks only):

1. Insert Setup Disk 1 in drive A.
2. Type the following commands:

```
COPY A:*.OVL C:\DOS  
EXPAND A:MSBACKUP.EXE C:\DOS  
EXPAND A:MSBACKUP.HLP C:\DOS  
EXPAND A:MSBCONFIG.HLP C:\DOS
```

If you are using MS-DOS 6 disks (1.44 MB disks only):

1. Insert Setup Disk 2 in drive A.
2. Type the following commands:

```
EXPAND A:MSBACKUP.EXE C:\DOS  
COPY A:*.OVL C:\DOS
```

3. Insert Setup Disk 3 in drive A.
4. Type the following commands:

```
COPY A:*.OVL C:\DOS  
EXPAND A:MSBACKUP.HLP C:\DOS
```

These commands copy Backup's files from drive A to the C:\DOS directory. If Setup Disk 1 is in drive B, or if your MS-DOS files are located in a directory other than C:\DOS, you should adjust the commands accordingly.

5.6 Microsoft Defragmenter

If you received the "Insufficient Memory" message from Microsoft Defragmenter, use the MEM command to determine how much conventional, upper, and extended (XMS) memory is available. In addition to using all available conventional memory, Defragmenter can make use of up to 384K of extended memory and 12K of upper memory.

To increase available memory, carry out the procedures in "An MS-DOS program displays an out-of-memory message" in the chapter "Diagnosing and Solving Problems" in the MICROSOFT MS-DOS USER'S GUIDE.

If less than 384K of extended memory is available, carry out the procedures in "Freeing Extended Memory" in the "Making More Memory Available" chapter in the MICROSOFT MS-DOS USER'S GUIDE.

6. THIRD-PARTY PROGRAMS

6.1 4DOS and NDOS

4DOS and NDOS are compatible with MS-DOS 6. However, to use some of the new features in MS-DOS 6.22 (such as MemMaker, the LOADHIGH /L switch, DIR compression switches, and the ability to bypass startup commands), contact JP Software to obtain 4DOS 4.02 or later, or Symantec to obtain Norton Utilities 7.0 or later.

If you use multiple configurations, 4DOS or NDOS will not automatically run your AUTOEXEC.BAT file unless you include a /P on the SHELL line in your CONFIG.SYS file.

To use MS-DOS 6.22 Help instead of 4DOS or NDOS Help, start it by using COMMAND /C HELP, or define a 4DOS or NDOS alias to run HELP.COM from your MS-DOS 6.2 directory.

6.2 Above Board 286 and Above Board Plus Installation Programs

Do not use an Above Board installation program dated May 1989 or earlier until you disable programs that use extended memory, such as SMARTDrive or RAMDrive. You might lose data if you leave these programs enabled. After you have installed Above Board, you can reenable these programs.

6.3 CodeView

CAUTION Using versions 3.0 to 3.13 of the CodeView CV.EXE file may cause data loss if your system has an 80386 memory manager (such as EMM386.EXE) and device drivers or programs that use extended memory. To determine which version you have, type CV.EXE at the command prompt.

6.4 Colorado Tape Backup

If you receive a message that you have two versions of the VFINTD.386 file loaded, you probably need to edit your SYSTEM.INI file. To do so, carry out the following procedure:

1. Open your SYSTEM.INI file and locate the [386Enh] section.

DEVICE=C:\TAPE\CMSDTAPE.386
DEVICE=C:\DOS\VFINTD.386

2. If you plan to use your Colorado Tape Backup program, add a semi-colon (;) before the DEVICE command for the VFINTD.386 file. If you plan to use Microsoft Backup, add a semi-colon before the DEVICE command for the CMSDTAPE.386 file.

3. Save the file, and restart Windows.

6.5 Fastback Plus

If you have a version of Fifth Generation Systems Fastback Plus earlier than 3.0, use the LOADFIX command before running Fastback Plus or the Fastback Plus installation program to ensure that you don't lose data. To do so, type the following at the command prompt:

LOADFIX FB.EXE

or

LOADFIX FBINSTAL.EXE

6.6 Norton Desktop for Windows 2.0

Setup adds a second Tools menu which contains Microsoft Backup and Antivirus commands (if you installed these Windows programs), as well as a Compression Info command (if DoubleSpace or DriveSpace is installed).

If you use compress the drive that contains SmartCan, you might experience system problems afterward. To correct this, reinstall Norton Desktop for Windows.

For information about using Norton AntiVirus in conjunction with DoubleSpace or DriveSpace, see the following section.

6.7 Norton Utilities

Norton Speed Disk and Norton Disk Doctor versions 8.0 and earlier will not run on DriveSpace drives. For an updated version of these Norton utilities, contact your software vendor.

The "Clear Space" option of Norton Speed Disk (prior to version 7.0) is incompatible with DoubleSpace drives and DriveSpace drives. For an updated version of Norton Speed Disk, contact your software vendor.

Do not use the WipeInfo utility (prior to version 8.0) on compressed drives. It can cause lost clusters. If you have already used this option, use the SCANDISK command to fix the lost clusters.

If Norton AntiVirus is running when you compress the drive that contains the NAV_.SYS file, a copy of the NAV_.SYS file remains on the host drive. This prevents Norton AntiVirus from reporting a virus infection during the compression process. After the compression process is complete, you can safely delete the copy of NAV_.SYS on the host drive.

If you use the Norton Cache or Speeddrive utilities, load the utility after the DEVICE command that loads DRVSPACE.SYS. For more information, see section 7.24.

6.8 PC Tools

If PC Shell does not show all of the files or directories on your drive,

CAUTION: Do not attempt to use PC Shell on that drive; severe data loss might occur. This problem affects both compressed and non-compressed drives.

The DISKFIX /SCAN option in PC Tools can cause lost clusters on DriveSpace and DoubleSpace drives. Avoid using this option. (If you have already used this option, use ScanDisk to fix the lost clusters.)

The COMPRESS command of PC Tools versions 6.0 and 5.5 is incompatible with DoubleSpace and DriveSpace.

6.9 QEMM's Stealth DoubleSpace Feature

The Stealth DoubleSpace feature of QEMM versions 7.03 and 7.04 are fully compatible with MS-DOS 6.22; these versions are available to all QEMM 7 users through online services such as CompuServe, BIX, and the QuarterDeck BBS, as well as directly from QuarterDeck Office Systems.

The Stealth DoubleSpace driver (ST-DBL.SYS) included with version 7.02 is compatible with DoubleSpace, but not with DriveSpace, DEFrag.EXE or automounting compressed floppies. If you use QEMM version 7.02, obtain an update from one of the online services listed above or from QuarterDeck Office Systems.

The Stealth DoubleSpace driver (ST-DBL.SYS) included with version 7.01 is incompatible with MS-DOS 6.22 (both DriveSpace and DoubleSpace). If you use QEMM version 7.01 and your system does not start, see the following section.

If you use the Stealth DoubleSpace feature of QEMM version 7.01

The Stealth DoubleSpace feature of QEMM 7.01 is incompatible with MS-DOS 6.22. If you are running DoubleSpace and use the Stealth DoubleSpace feature of QEMM version 7.01, your computer will not start properly.

To work around this problem, press F8 when your computer starts. Answer Y to all prompts except the following:

```
DEVICE=C:\QEMM\ST-DBL.SYS [Y/N]?
```

When MS-DOS displays this prompt, answer N. (The pathname for ST-DBL.SYS may be different on your computer.) After your computer starts, edit your CONFIG.SYS file and make the following changes:

- * Disable the DEVICE command for ST-DBL.SYS by using the REM command.
- * If you use DoubleSpace, add a DEVICE command for DBLSPACE.SYS. For example:

```
DEVICE=C:\DOS\DBLSPACE.SYS /MOVE
```

(If you use DriveSpace, add a DEVICE command for DRVSPACE instead.)

6.10 Johnson Computer Systems PC-Vault and PC-Vault Plus

If you use version 4.6 or earlier of the PC-Vault or PC-Vault Plus hard disk protection system, do not use the Maximum Floppy Boot Protection option if you use DoubleSpace or DriveSpace.

In these versions of PC-Vault and PC-Vault plus, the Maximum Floppy Boot Protection option is incompatible with DoubleSpace and DriveSpace, and may cause data loss. If your version of PC-Vault or PC-Vault Plus is earlier than 4.6, contact Johnson Computer Systems for an upgrade.

6.11 AddStor Double Tools

AddStor's Double Tools version 1.0 and 1.2 work only with DoubleSpace; they do not work with DriveSpace.

AddStor's Double Tools version 1.0 works with MS-DOS 6.22 DoubleSpace as long as you do not install AddStor's enhanced DoubleSpace drivers. When you install Double Tools version 1.0, do not check the "Install enhanced DoubleSpace drivers" box. If you do, Double Tools will replace the MS-DOS 6.22 DBLSPACE.BIN file with the Double Tools version of DBLSPACE.BIN, which is compatible only with MS-DOS 6.0. The next time you start your computer, it will display the message "Wrong DBLSPACE.BIN version" and none of your compressed drives will be mounted.

If you are using Double Tools version 1.0 or 1.2 with the enhanced DoubleSpace driver installed, you will not be able to run MS-DOS 6.22 Setup. To solve this problem, run Double Tools' DTCONFIG.EXE program and choose the "Microsoft" (version 1.0) or "Standard" (version 1.2) option. Then save your changes, exit from DTCONFIG, and run MS-DOS 6.22 Setup again.

7. DRIVESPACE

MS-DOS 6.22 includes DriveSpace compression software. DriveSpace appears similar to DoubleSpace, which was included with MS-DOS 6 and 6.2. The main difference is that DriveSpace stores compressed data in a different format from DoubleSpace.

Note: If you upgraded from MS-DOS 6 or MS-DOS 6.2, you can still use DoubleSpace with MS-DOS 6.22. (If you upgraded from MS-DOS 5 or earlier, you do not have DoubleSpace on your system.)

7.1 Converting DoubleSpace Drives to DriveSpace

If you currently use DoubleSpace, you can continue using it with MS-DOS 6.22. Or, you can convert your system and all your DoubleSpace drives to DriveSpace.

NOTE The uncompression process can take a long time, especially if your DoubleSpace drives contain a lot of data. You might want to plan to carry out the process overnight.

To convert your system from DoubleSpace to DriveSpace:

1. Back up the data on each DoubleSpace drive, if you have not already done so.
2. Run DoubleSpace, and choose the Uncompress command from the Tools menu. When DoubleSpace prompts you to uninstall DoubleSpace, type Y.

DoubleSpace uncompresses all mounted DoubleSpace drives, and then removes DBLSPACE.BIN (the part of MS-DOS that provides access to DoubleSpace drives) from memory.

3. Install DriveSpace by typing DRVSPACE at the command prompt.

7.2 Converting Your XtraDrive Disk-Compression Software to DriveSpace

If your computer uses XtraDrive disk compression, use its uninstallation program to remove the compression, and then install DriveSpace.

7.3 Converting Stacker 3.1 Software to DriveSpace

If your drive has been compressed using Stacker version 3.1, carry out the following procedure to remove Stacker 3.1 and install

the procedure in section 7.4 instead.)

1. Use Stacker's UNSTACK command to unstack all your Stacker drives. (If you have floppy disks compressed by using Stacker, either unstack them now or make sure they were configured using Stacker's StackerAnywhere feature.)
2. Change to the root directory of your startup hard disk drive, and then type the following commands:

```
ATTRIB -R -H -S STACKER.INI  
ATTRIB -R -H -S DRVSPACE.BIN  
DEL STACKER.INI  
DEL DRVSPACE.BIN
```

3. Restart your computer.
4. Run DriveSpace Setup by typing DRVSPACE at the command prompt.

7.4 Converting Other Disk-Compression Software to DriveSpace

If you are not using Stacker 3.1 disk compression or XtraDrive disk compression, carry out the following procedure to convert your disk-compression software to DriveSpace.

1. Install MS-DOS 6.22 if you haven't already done so.
2. Use Microsoft Backup for MS-DOS to back up the files on your hard disk. If you didn't install Backup for MS-DOS during Setup, see the chapter "Getting Started" in the MICROSOFT MS-DOS USER'S GUIDE for instructions on installing it.
3. If your Setup disks are compatible with drive A, insert Setup Disk 1 in drive A, and restart your computer. After Setup displays the first screen, quit Setup by pressing F3 twice.

If your Setup disks are not compatible with drive A, create a startup floppy disk for drive A. To do this, insert Setup Disk 1 in drive B, and a blank floppy disk in drive A. Then type B:SETUP /F at the command prompt.

When prompted, choose to install MS-DOS on the floppy disk in drive A. After Setup is finished, leave the disk in drive A, and restart your computer.

4. Use the FORMAT command to format the drive that contains the file that contains all of your compressed files. If you don't know where this file is located, see your disk-compression documentation.

If you are reformatting drive C, include the /S switch to transfer system files to it.

5. If you formatted drive C, make sure Setup Disk 1 is in drive A or B, and type A:SETUP or B:SETUP at the command prompt.

Follow the instructions on your screen.

6. After Setup is complete, install DriveSpace by typing DRVSPACE at the command prompt. Follow the instructions on your screen.

7. Use Backup for MS-DOS to restore the files you backed up.

NOTE When you run Microsoft Backup, you will have to configure it again. Also, you will need to retrieve the catalog file from your backup floppy disks. To do so, choose the Catalog button in the Restore dialog box.

7.5 DriveSpace Setup indicates that your computer is running an incompatible disk-caching program.

If DriveSpace Setup displays a message indicating your computer is running an incompatible disk-caching program, open your CONFIG.SYS or AUTOEXEC.BAT file, and delete the command that loads your disk-caching program. If you want to use a disk cache, add a line for the MS-DOS 6.22 SMARTDRV program in your AUTOEXEC.BAT file. For example, if your MS-DOS files are in a directory named DOS, add the following line:

C:\DOS\SMARTDRV.EXE

Quit your text editor, and restart your computer. Run DriveSpace again.

7.6 Your compressed drive runs out of disk space.

If your compressed drive runs out of free disk space, you can use the following techniques to free some space on the drive:

- o Enlarge that drive.
- o Carry out the DRVSPACE /DEFrag /F and DRVSPACE /DEFrag commands on that drive.

The rest of this section explains each technique.

Enlarging a Compressed Drive

You can enlarge a compressed drive to make more space available on it. Enlarging a compressed drive uses free space on the uncompressed (host) drive.

To enlarge the compressed drive:

1. Start the DriveSpace program by typing DRVSPACE at the command prompt.
2. Select the compressed drive you want to enlarge, and then choose the Change Size command from the Drive menu.

The Change Size dialog box appears. The New Free Space line shows how much free space the compressed and uncompressed drives will have if you choose OK.

3. Specify a smaller number for New Free Space on the uncompressed drive. Notice that as you change this number, DriveSpace adjusts the New Free Space amount for the compressed drive. When the New Free Space amount for both drives is what you want, choose OK.

DriveSpace enlarges the compressed drive.

Carrying Out the DRVSPACE /DEFrag /F and DRVSPACE /DEFrag Commands on your Compressed Drive

You can sometimes free additional space on a compressed drive by more fully defragmenting the drive.

NOTE You might want to carry out the following procedure overnight, since defragmenting a large or badly fragmented drive can take a long time. (To carry out the entire procedure overnight, create a batch file that contains both the commands in the procedure.)

To free space by defragmenting the drive twice:

1. Make the compressed drive the current drive.

Where drive: is the compressed drive. For example, DEFrag C: /F. DEFrag will fully defragment the drive's file allocation table, then start DRVSPACE /DEFrag to consolidate the free space in the CVF.

- When DEFrag finishes, type DRVSPACE /DEFrag /F at the command prompt.

DriveSpace re-consolidates the free space on the drive so there is as much free space as possible.

7.7 Your uncompressed (host) drive runs out of disk space

If your uncompressed (host) drive runs out of free disk space, you can enlarge it by reducing the size of any compressed drives that are stored on that uncompressed drive. Of course, this will reduce the amount of free space on the compressed drive(s).

To enlarge the uncompressed (host) drive:

- Start the DriveSpace program by typing DRVSPACE at the command prompt.
- Select the compressed drive whose size you want to reduce, and then choose the Change Size command from the Drive menu. (Select a compressed drive that is stored on the uncompressed drive that's out of space. To find out which compressed drives are stored on that uncompressed drive, type DRVSPACE /LIST at the command prompt.)

The Change Size dialog box appears. The New Free Space line shows how much free space the compressed and uncompressed drives will have if you choose OK.

- Specify a larger number for the New Free Space on the uncompressed drive. Notice that as you change this number, DriveSpace adjusts the New Free Space amount for the compressed drive. When the New Free Space amount for both drives is what you want, choose OK.

DriveSpace reduces the size of the compressed drive, which makes more free space available on the corresponding uncompressed drive.

7.8 DriveSpace did not compress all of your files because the drive ran out of disk space.

If DriveSpace indicates that it could not compress some of your files because there was not enough disk space, carry out the following procedure.

- To determine which drive is your uncompressed drive, type DRVSPACE /LIST at the command prompt.
- Using Microsoft Backup, back up to floppy disks the files on the uncompressed drive that were not compressed.
- Delete the files on the uncompressed drive that were not compressed.
- Type DRVSPACE at the command prompt.
- From the Drive menu, choose Change Size.
- To increase the size of your compressed drive, decrease the size of your uncompressed drive, and choose OK.
- From the Drive menu, choose Exit, and use Backup to restore the files you backed up to your compressed drive. If you run out of space again, repeat steps 5 through 7 until the compressed drive is large enough.

7.9 Windows displays the message "The permanent swap file is corrupt."

If you use a Windows permanent swap file, it must be located on an uncompressed drive. If your permanent swap file is on a compressed drive, Windows displays the message "The permanent swap file is corrupt" when it starts.

When you install DriveSpace, the DriveSpace Setup program checks for the existence of a Windows permanent swap file. If it finds one, DriveSpace Setup moves the swap file to your uncompressed drive. However, if you install Windows after installing DriveSpace, or if you use Control Panel to change the location of your permanent swap file, your swap file might end up on a compressed drive. (When you specify a drive for your permanent swap file, Windows allows you to choose a compressed drive.)

To move your permanent swap file to an uncompressed drive:

1. Start Windows.
2. At the "Permanent swap file is corrupt" screen, type Y in response to the question "Do you want to delete this swap file?", and then press ENTER.
3. Open Control Panel, and then Drive-click the 386 Enhanced icon.
4. Choose the Virtual Memory button. Windows displays a dialog box stating that a corrupt swap file was found and asks if you want to set the file's length to zero.
5. Choose the Yes button. Windows displays another Virtual Memory dialog box.
6. Choose the Change button. Windows displays swap-file settings.
7. In the Drive list box, select a drive that is not compressed. In the Type list box, select "Permanent."

If your uncompressed drive does not have enough free space to create a permanent swap file, create a temporary swap file on either your compressed or uncompressed drives. (For information about freeing space on your uncompressed drive, see section 7.7.)

When you have finished specifying swap-file settings, choose OK twice, and follow the instructions on your screen.

7.10 EXTDISK.SYS displays a warning about drive letters.

If you are using DriveSpace on a Compaq computer, and your CONFIG.SYS file loads the EXTDISK.SYS device driver, EXTDISK.SYS displays the following message when it loads:

WARNING: EXTDISK.SYS is not the first device driver to assign drive letters. Physical hard drive letters will not be contiguous.

The EXTDISK.SYS driver still works properly. It displays this message because it expects to be the first module to assign drive letters, but because DRVSPACE.BIN loads before the CONFIG.SYS file and assigns some drive letters, EXTDISK.SYS is no longer first. (EXTDISK.SYS displays the message regardless of when the DRVSPACE.SYS device driver is loaded in the CONFIG.SYS file.)

7.11 You need a special device driver to use your startup drive

If your startup hard disk drive requires a device driver in your CONFIG.SYS file, do not compress that drive. If you do, your computer will not start properly, since DriveSpace will be unable to access your startup

that accesses compressed drives, before starting any of the device drivers in your CONFIG.SYS file.)

To install DriveSpace on a computer with a startup drive that requires a special device driver, use DriveSpace Setup to compress a drive other than your startup drive, or use DriveSpace Setup to create a new compressed drive using free space on any existing drive.

7.12 Defragmenting uncompressed drives after changing file attributes

You can safely defragment both your compressed or uncompressed drives, using the Microsoft Defragmenter or another defragmentation program, as long as you do not change the attributes of your compressed volume files.

CAUTION If you change the attributes of a compressed volume file, and then defragment that uncompressed drive without first unmounting the compressed drives, you might lose data.

If you want to fully defragment your uncompressed drive, you must first unmount all compressed drives located on the uncompressed drive, remove all their attributes, and then use DEFrag or another defragmenter.

7.13 Files DriveSpace cannot compress

Some files (such as .ZIP files) are already compressed. DriveSpace might not be able to compress such files any further.

Encrypted data files, such as the Microsoft Mail 3.0 .MMF file, are not compressible and will be stored in uncompressed form, even if you store such files on a compressed drive.

You might want to store uncompressible files on an uncompressed drive rather than on a compressed drive. Doing so can sometimes improve your system's speed.

7.14 Microsoft Defragmenter runs out of memory while you are compressing a drive

If the Defragmenter runs out of memory while you are compressing a drive, quit DriveSpace, and then carry out the procedure in section 5.4 of this file.

If the Defragmenter still runs out of memory after you have tried these procedures, there might be too many files on your hard disk for the Defragmenter to organize. For the program to work correctly, you might need to delete some files or move them to a floppy disk or a network drive.

7.15 DriveSpace and PC-Vault

See section 6.10.

7.16 Maximum size of a compressed drive

The maximum size for a DriveSpace compressed drive is 512 megabytes (MB). For example, if you compress a disk drive that is 600 MB, the resulting DriveSpace drive will be no larger than 512 MB. To compress the rest of the disk drive, run DriveSpace, and choose Create New Drive from the Compress menu. Make the new compressed drive as large as possible. (If your drive is very large, you might need to create several new compressed drives in order to compress the entire drive.)

7.17 DriveSpace could not mount a drive due to problems with the drive

with the drive" (in which X is the drive letter) appears when you start your computer, then the internal organization of the drive has problems that prevent the drive from being used. DriveSpace stores each compressed drive in a special file called a compressed volume file (CVF). The CVF is a file with the hidden, system, and read-only attributes; it is stored on an uncompressed drive.

To use the compressed drive again, you need to run ScanDisk on that drive's compressed volume file, and then restart your system. The error message includes the name of the compressed volume file on which you need to run ScanDisk (for example, C:\DRVSPACE.000).

To fix this problem for a compressed drive other than drive C:

- o Type the SCANDISK command specified by the DriveSpace error message. For example, SCANDISK D:\DRVSPACE.001. (If MS-DOS cannot find the SCANDISK program, see the following procedure.)

To fix this problem for compressed drive C, or if MS-DOS cannot find the SCANDISK program:

1. Insert Setup Disk 1 in drive A (or B) of your computer.
2. Change to the drive that contains Setup Disk 1.
3. To start ScanDisk, type the SCANDISK command as specified by the DriveSpace error message. For example, SCANDISK C:\DRVSPACE.000. When ScanDisk displays dialogs describing any problems, choose the Fix It button.
4. After ScanDisk has finished, remove the floppy disk and restart your computer.

7.18 DriveSpace finishes installation, but you cannot access your Hardcard

See section 4.2, part C.

7.19 You receive a DoubleGuard Alarm message

If a DoubleGuard Alarm message appears, DoubleGuard has detected that an application has damaged memory that DriveSpace was using. DoubleGuard halts your computer to prevent any further damage to your data.

Normally, each program "owns" a separate area of memory, and does not use memory that another program is already using. However, a few programs contain programming errors that cause them to inadvertently use memory belonging to another program. If such a program inadvertently uses memory belonging to DriveSpace, that program could write its own data over the data DriveSpace was storing there. Since the data that DriveSpace stores in memory usually includes files you are currently using, this could cause damage to your data.

DriveSpace's DoubleGuard safety-checking feature detects when another program has violated DriveSpace's memory, and immediately shuts down your computer to minimize the chance of data loss. (If further disk activity were to occur instead, you could lose some or all of the data on your drive, since the data DriveSpace has in memory is probably invalid due to damage by the other program.)

If you receive a DoubleGuard Alarm message, do the following:

1. Restart your computer by turning the power switch off and then on again.
2. Type the following at the command prompt:

This runs ScanDisk on all your drives to detect and correct any problems that might have been caused by the program that violated DriveSpace's memory.

3. Make a note of which program, if any, you were running when the DoubleGuard Alarm occurred. That program is probably (but not necessarily) the program that caused the DoubleGuard Alarm. If you receive additional DoubleGuard Alarms, take notes about what you were doing and see if you can detect a pattern.

7.20 A compressed drive is currently too fragmented to mount

If you receive the message "Compressed drive X is currently too fragmented to mount" (in which X is the drive letter) when your computer starts, or if DriveSpace displays the message "The X:\DRVSPACE.nnn file is too fragmented to mount," then DriveSpace cannot mount the drive because its compressed volume file is stored in too many fragments on your hard disk. (DriveSpace stores each compressed drive in a special file called a compressed volume file (CVF). The CVF is a file with the hidden, system, and read-only attributes, and is stored on an uncompressed drive.)

To correct this problem, increase the MaxFileFragments setting in your DRVSPACE.INI file. DriveSpace displays the "too fragmented to mount" error messages because the number of CVF file fragments exceeds this setting. Follow these steps:

1. Change to the root directory of your startup drive. (If your startup drive is compressed, change to that drive's host drive.)
2. Type the following command:

```
TYPE DRVSPACE.INI
```

3. Note the current value for the MaxFileFragments setting.
4. Use the DRVSPACE /MAXFILEFRAGMENTS command to specify a higher value. For example, if MaxFileFragments is currently set to 128, you might type the following command:

```
DRVSPACE /MAXFILEFRAGMENTS=200
```

5. Restart your computer. DriveSpace should now be able to mount the drive.

If DriveSpace still cannot mount the drive, follow these steps:

1. Run ScanDisk to check the reliability of your hard disk by typing the following at the command prompt:

```
SCANDISK /ALL /SURFACE
```

2. Restart your computer. If DriveSpace still cannot mount the drive, proceed to step 3.
3. Remove the Read-Only, System, and Hidden file attributes on the DRVSPACE.<XXXX> file. For example, if the file is H:\DRVSPACE.000, type the following at the command prompt:

```
ATTRIB H:\DRVSPACE.000 -R -S -H
```

4. Run Microsoft Defragmenter (Defrag) by typing DEFrag at the command prompt.
5. Use the ATTRIB command to reset the file attributes on DRVSPACE.<XXX>.

the command prompt:

```
ATTRIB H:\DRVSPACE.000 +R +S +H
```

6. Restart your computer again. DriveSpace should now be able to mount the compressed drive.

7.21 You receive the message "Your computer is running with an incompatible version of DBLSPACE.BIN"

If you try to run the MS-DOS 6 version of DBLSPACE.EXE with MS-DOS 6.2, it displays the following message:

```
Your computer is running with an incompatible version of DBLSPACE.BIN.  
You must update DBLSPACE.BIN on the root directory of drive @.
```

DBLSPACE.EXE has detected that its version number does not match that of your MS-DOS 6.2 DBLSPACE.BIN. To correct this problem, you need to update this copy of the DBLSPACE.EXE file.

When you run MS-DOS 6.22 Setup, it updates the DBLSPACE.EXE file in the directory that contains your MS-DOS files. If there are other copies of DBLSPACE.EXE elsewhere on your disk -- for example, in the root directory of your host drive -- Setup does not update those additional copies. To update them yourself, use the COPY /Y command to copy the MS-DOS 6.22 version of DBLSPACE.EXE over the older versions. (The MS-DOS 6.22 version of DBLSPACE.EXE is located in the directory that contains your MS-DOS files.)

7.22 Using the DRVSPACE command after bypassing DRVSPACE.BIN

If you bypass DRVSPACE.BIN when you start your computer (by pressing CTRL+F5 or CTRL+F8), then the DRVSPACE command may not work as expected:

- * Usually, if DriveSpace is installed, typing DRVSPACE runs the DriveSpace program. However, if you type DRVSPACE when DRVSPACE.BIN is not loaded, DriveSpace Setup starts instead. If this happens, quit DriveSpace Setup.
- * If you type the DRVSPACE /MOUNT command, it reports that there are no more drive letters for DriveSpace to use. (DriveSpace cannot mount a compressed drive unless DRVSPACE.BIN is loaded.)

To use DriveSpace or your compressed drives, restart your computer without bypassing DRVSPACE.BIN.

7.23 Removing the write-protection from a compressed floppy disk

If you are using a compressed floppy disk that is write-protected and Automounting is enabled, the disk will remain write-protected until it is unmounted -- even if you remove the write-protect tab from it.

To remove the write protection, use either of the following methods:

- * Unmount the floppy disk by using the DRVSPACE /UNMOUNT command, and then try using the disk again (this will automatically remount it). For example, if the disk is in drive B, you would type DRVSPACE /UNMOUNT B: and then try using the disk again. (If Windows is running, you can't use the DRVSPACE /UNMOUNT command. In that case, use the following method.)
- * Insert a different floppy disk in the drive and access it (for example, carry out the DIR command on it). This automatically unmounts the compressed floppy disk that was previously in the

it again (this will automatically remount it).

NOTE If you are using DriveSpace and mount an unconverted DoubleSpace floppy disk, the disk will be mounted with write-protected. The only way to remove the write protection on such a disk is to convert it to DriveSpace format; for information on converting it, see section 7.1.

7.24 Automounting and Norton disk-caching utilities

If you use a Norton disk-caching utility such as Norton Cache (NCACHE2.EXE) or Norton Speedrive (SPEEDDRV.EXE) make sure the utility is loaded after the DEVICE command for DRVSPACE.SYS. If you load one of these utilities before DRVSPACE.SYS, DriveSpace's automounting feature will not work.

7.25 Undelete utilities and DriveSpace

DriveSpace cannot compress or uncompress drives while an undelete utility (for example, Microsoft Undelete's Delete Sentry or Norton's SmartCan) is running. To compress or uncompress a drive, you will need to temporarily disable the undelete utility. Follow these steps:

1. Purge any previously deleted files to conserve disk space. If you are using Microsoft Delete Sentry, type the following at the command prompt:

```
UNDELETE /PURGE
```

Carry out this command on each drive you plan to compress or uncompress. If you will be uncompressing a drive, you should also purge deleted files from that drive's host drive. To purge deleted files from a drive other than the current drive, specify the drive letter after the UNDELETE /PURGE command (for example, UNDELETE /PURGE E:).

If you use a different undelete utility, see that utility's documentation for information about purging deleted files.

2. Edit your AUTOEXEC.BAT file and use the REM command to disable the command that starts the undelete utility. (For example, if you use Delete Sentry, disable the UNDELETE /S command.)
3. Restart your computer.
4. Try again to compress or uncompress the drive.
5. When you have finished compressing or uncompressing, edit your AUTOEXEC.BAT file, reenable the command that starts the undelete utility, and then restart your computer again.

7.26 Creating an Emergency Startup Disk for DriveSpace Systems

To create an MS-DOS 6.22 startup disk if you use DriveSpace:

1. If you are upgrading from MS-DOS 6.0, install MS-DOS 6.22 in the directory that contains your previous version of MS-DOS.
2. To create a startup floppy disk, run Setup again by typing the following command:

```
SETUP /F
```

Setup installs MS-DOS 6.22 on the floppy disk. The resulting startup disk does not include DRVSPACE.BIN, since MS-DOS 6.22 does not include DriveSpace.

directory that contains your MS-DOS files. For example, if your MS-DOS directory is C:\DOS and the floppy disk is in drive A, you would type:

```
COPY C:\DOS\DRVSPACE.BIN A:
```

Note: If you are upgrading from MS-DOS 6 but need to install to the floppy disk without first installing MS-DOS 6.22 on your hard disk, you can skip Step 1. However, the resulting startup disk will include MS-DOS 6 DoubleSpace rather than MS-DOS 6.2 DoubleSpace. When you start your computer using such a startup disk, you will receive a message from DoubleSpace; to continue, just press ENTER.

7.27 If ScanDisk Cannot Check or Repair a DoubleSpace Volume File

MS-DOS 6.22 ScanDisk can check DoubleSpace drive or volume files only if DoubleSpace is installed. If you try to check or repair a DoubleSpace volume file and DBLSPACE.BIN is not loaded into memory, ScanDisk displays an error message like the following:

```
ScanDisk cannot check or repair DoubleSpace volume file C:\DBLSPACE.001.
```

The cause of the problem might be one of the following:

- * You upgraded to MS-DOS 6.22 from MS-DOS version 5 or earlier. In this case, you cannot use ScanDisk to check DoubleSpace drives.
- * DoubleSpace is installed on your system, but you started your computer from a floppy disk or by pressing CTRL+F5 or CTRL+F8. If this is the case, remove any floppy disks from your drives, restart your computer, and try running ScanDisk again.

If DoubleSpace is not installed, you will need to load DBLSPACE.BIN in order to check and repair the DoubleSpace drive.

To load DoubleSpace:

1. Type the following at the command prompt, and then press ENTER:

```
REM >> C:\DBLSPACE.INI
```

This command creates a new DBLSPACE.INI file, if one does not already exist.

2. Restart your computer, and then try running ScanDisk again.
3. If DoubleSpace still did not load, copy the DBLSPACE.BIN file from your MS-DOS directory to the root directory of drive C. For example, if your MS-DOS files are in the C:\DOS directory, you would type the following:

```
COPY C:\DOS\DBLSPACE.BIN C:\
```

4. Restart your computer, and then try running ScanDisk again.
5. If DoubleSpace still did not load, try copying the DBLSPACE.BIN file from MS-DOS 6.2 Setup Disk 1 or from the Uninstall disk you created when upgrading from MS-DOS 6 or 6.2. For example, if the disk is in drive A, you would type:

```
COPY A:\DBLSPACE.BIN C:\
```

6. Restart your computer, and then try running ScanDisk again.