

Stacker Data Compression

Datalight has licensed Stacker for the benefit of our customers. The inclusion of Stacker requires a supplement to the standard license agreement and an additional license fee. Please contact your Datalight representative for additional information.

The Stac Electronics Stacker Data Compression utilities allow you to safely double your disk capacity. Data compression makes a file use less space by eliminating repetitive bits of information. After a disk is compressed, you can access the disk as always, but with one difference. You will have up to twice as much available disk space.

Datalight provides a subset of the full Stacker 3.0 utilities, the essential programs for compressing floppy disks, RAM disks, and ROM disks. If you need a copy of the complete Stacker disks and documentation, contact Datalight.

The Stacker files on your disk are listed below, along with a brief description of their function. A complete description of these utilities is included later in this chapter.

File Name	Description
CREATE.EXE	Creates an empty compressed drive from the available free space on a disk. Create can be used in an AUTOEXEC.BAT file or directly on the command line.
SCREATE.SYS	The device driver used to compress RAM disks. This device driver is loaded along with your Ram disk device driver in CONFIG.SYS.
SCREXEC.EXE, SCREXEC2.EXE	Used by the CREATE.EXE program. Neither of these two programs should be run alone.
STACKER.COM	The standard Stacker device driver. When loaded from the CONFIG.SYS file, it sets automatic recognition of Stacker drives on your system. After drives are recognized, STACKER.COM can be used on the command line to unmount or remount compressed drives or obtain system information on available compressed drives.
STACKER.EXE	The Stacker Anywhere program. This program allows you to access a compressed disk even on systems that are not running Stacker data compression. Only a single Stacker Anywhere drive can be installed at one time.

Compressing a Non-Bootable Floppy Disk

Compressing a floppy disk is an easy process. You can compress a freshly formatted (empty) floppy disk or one that has information on it. To achieve maximum space availability, it is best to compress an empty disk since the Stacker utilities only maximize the available free space, not the portions already used for file storage.

To compress a floppy disk, insert the disk into the disk drive (drive A: is used in following example) and enter the following on the command line.

```
CREATE A:
```

When the CREATE utility is finished, several new files are on the floppy disk. The file STACVOL.DSK is the compressed portion of this disk. The disk is now divided into two portions. What you are looking at is the uncompressed portion. When the compressed disk is recognized, you will see only the files that have been placed by you on the compressed disk. The

uncompressed portion will not be accessible until the compressed disk is unmounted. The CREATE program also places a file named README.STC which contains instructions for manually installing the compressed disk. The third new file is the program STACKER.EXE. This is the Stacker Anywhere program which allows you to load your compressed disk on a system that is not running Stacker already.

To use the new compressed disk, you must mount it. This can be done two ways. The first is to have the device driver STACKER.COM in your CONFIG.SYS file. For complete instructions of the STACKER.COM device driver, refer to the complete command descriptions later in this chapter. If you add this statement to CONFIG.SYS after compressing your floppy, you will have to reboot your system so the compressed drive will be recognized. If the Stacker device is already running when you created the compressed floppy, the compressed disk is automatically recognized. You cannot see the files listed in the previous paragraph since they reside on the uncompressed portion of your disk. To temporarily unmount this disk, the STACKER.COM program can be used from the command line. To unmount, type:

```
STACKER -A:
```

To remount, enter:

```
STACKER A:
```

The second way to recognize your compressed disk is to use the program STACKER.EXE. If you are already using STACKER.COM, you will not need STACKER.EXE. STACKER.EXE lets you mount your compressed disk on any system that is not already running compressed drives. You can run STACKER.EXE directly from the floppy disk or from another location on your system.

```
STACKER A:
```

Note: .COM files take precedence over .EXE files. If you are running STACKER.EXE from a directory where both STACKER.COM and STACKER.EXE are present, you will have to specify the .EXE extension to run the program.

To unmount your Stacker Anywhere drive, enter EXIT. To remount, run STACKER.EXE again.

Compressing a Bootable Floppy Disk

Compressing a bootable floppy disk requires a few more steps than a non-booting disk. Start with a SYS formatted disk that contains the operating system files. Remove the file COMMAND.COM from the formatted disk.

```
DEL A: COMMAND.COM
```

Next, create a CONFIG.SYS file for your disk. The following lines are an example of a CONFIG.SYS file. Only the STACKER.COM device statement is required, all other lines are optional.

```
BREAK=ON  
FILES=30  
BUFFERS=30  
DEVICE=A:\STACKER.COM A:
```

Copy STACKER.COM to drive A:. Note that any other device drivers that will be installed via CONFIG.SYS need to be copied to the A: drive before the disk is compressed. The DEVICE= statement for the device driver should be placed in CONFIG.SYS prior to the STACKER.COM device statement.

Run CREATE.EXE to compress the remaining free space on the disk.

```
CREATE A:
```

CREATE places the files STACKER.EXE and the STACVOL.DSK file on the disk. If you already have Stacker running on your system and have allowed for replaceable drives, the newly compressed disk is automatically mounted. If Stacker is not running, mount the drive using Stacker Anywhere. (See previous section on Compressing a Non-Bootable Floppy Disk for more on using Stacker Anywhere).

Once the drive is mounted, copy the file COMMAND.COM to the compressed A: drive. An AUTOEXEC.BAT file can also be added. If you need to unmount the compressed disk after booting and the file STACKER.COM will not be available from another drive on your system, copy STACKER.COM to the compressed disk as well. When all of the files are copied, unmount the disk using Stacker Anywhere or STACKER.COM (depending on how the disk was mounted).

You now have a bootable compressed disk. When you boot this disk, the compressed A: drive will be mounted and can be used just like a standard disk.

Compressing a RAM Disk

A pre-existing RAM drive can be compressed by following the instructions in either your CONFIG.SYS file or your AUTOEXEC.BAT file. If your RAM drive can be installed from AUTOEXEC.BAT, the drive can be compressed using the CREATE.EXE utility as described for floppy disks. Place the instructions listed below in your AUTOEXEC.BAT file immediately following the device statement for your RAM drive:

```
CREATE drive: /B
STACKER drive:
```

The CREATE command creates the Stacker drive and the STACKER command recognizes the drive as a Stacker drive and allows access to it. The STACKER.COM device statement in your CONFIG.SYS file should also be changed. The @ symbol should be added to the end of the device statement to reserve a Stacker drive to mount for the RAM disk. For example:

```
DEVICE=STACKER.COM C:\STACKVOL.DSK D: @
```

After restarting your system, the compressed RAM drive will be accessible.

To create a compressed RAM drive from CONFIG.SYS, use the SCREATE.SYS device driver along with your RAM disk device driver. The RAM disk device must be first in the CONFIG.SYS file, followed by the SCREATE device statement. The last statement needed is the STACKER.COM device which makes the compressed RAM disk accessible. Using Datalight's RAM disk driver VDISK.SYS, add these three lines to CONFIG.SYS in the order shown:

```
DEVICE=C:\ROMDOS\VDISK.SYS 1028 /E
DEVICE=SCREATE.SYS D:
DEVICE=STACKER.COM C:\STACKVOL.DSK D:
```

The VDISK.SYS statement creates a 1024KB RAM disk. SCREATE.SYS compresses the disk to make available 2048KB of compressed space. The STACKER.COM device makes the compressed RAM disk, drive D: in this example, available for use as a compressed disk. After system restart, the Stacker RAM disk is available for immediate use.

Compressing a ROM disk

For compressing a ROM disk, refer to '**Error! Reference source not found.**' for complete details.

Stacker Utilities

The following sections contain descriptions of the provided Stacker utilities, including syntax and options.

CREATE.EXE

CREATE creates an empty Stacker drive from the available free space on a disk. CREATE.EXE can be run from the DOS prompt or from within your AUTOEXEC.BAT file.

Syntax

```
CREATE drive:[\STACVOL.xxx][/options]
```

Remarks

The *drive:* argument specifies the drive to compress. If no other options are provided on the command line, the default filename for the compressed disk is STACVOL.DSK and all available free disk space is used.

The optional STACVOL.xxx argument sets the file extension for the Stacker drive file. The default extension is .DSK. The STACVOL file must reside in the root directory of the uncompressed drive.

Options

The /S=sss.s[K|M] option sets the amount of unused disk space to be used for the STACVOL file. The optional specifiers K and M indicate a size entered in thousands of bytes (KB) or millions of bytes (MB). Using /S=0 or not using the /S switch will cause all available space to be dedicated to the Stacked drive. The resulting Stacker drive will have twice as much disk space as the amount you specify when the compressed disk is mounted. Refer also to the /R option.

The /R=*n.n* option specifies the maximum size of the Stacker drive by providing an expected compression ratio. The argument *n.n* indicates the ratio. The values can range from 1.0 to 8.0. If you were to use the options /S=20 /R=2.5 the maximum space available on the compressed drive would be 50MB, 2.5 times the size of the available uncompressed space of 20MB. The default ratio is 2:1 or /R=2.0. Some data, such as dictionaries and .ZIP files, will not compress well. For this type of data the recommended selection is /R=1.5.

The /C=*n* option sets the cluster size for the disk. The *n* argument can be set to 4,8,16, or 32; this represents 4KB, 8KB, 16KB or 32KB clusters. The default is 8KB clusters. 16KB or 32KB clusters are recommended for large disks up to 2GB. 4KB clusters should be used when you will be storing a large number of small files which could cause more files on the disk than clusters.

The /B option runs the CREATE program in batch mode. In batch mode, no prompts are displayed to the display. Use this option when running CREATE from within your AUTOEXEC.BAT file.

The /M option changes the display for monochrome monitors. This switch should also be used for Laptops with LCD displays.

Examples

To compress a disk in drive A: using the default filename for the STACVOL file, and a compression ratio of 1 to 1.5, use the following CREATE command:

```
CREATE A: /R=1.5
```

When compressing a RAM drive from your AUTOEXEC.BAT file, the /B option is used so that CREATE.EXE will run in batch mode. This example also changes the extension on the file STACVOL:

```
CREATE D:\STACKVOL.RD1 /B
```

SCREATE.SYS

Purpose

SCREATE.SYS device driver is used to compress a RAM drive which is installed via CONFIG.SYS. The device statement for SCREATE.SYS must be placed after the device statement for the RAM drive. The STACKER.COM device statement will be placed after SCREATE in the CONFIG.SYS file. If your RAM drive is installed from your AUTOEXEC.BAT file, use the CREATE.EXE program for compressing the drive. SCREATE.SYS does not use any resident conventional memory, so it does not need to be loaded high.

Syntax

```
DEVICE=[path]SCREATE.SYS drive: [/options]
```

Remarks

The optional *path* argument specifies the exact drive and directory path to find the file SCREATE.SYS.

The *drive:* argument specifies the letter identifier for the installed RAM drive.

Options

The /S=sss.s[K|M] option sets the amount of unused disk space to be used for the STACVOL file. The optional specifiers K and M indicate a size entered in thousands of bytes (KB) or millions of bytes (MB). Using /S=0 or not using the /S switch will cause all available space to be dedicated to the Stacked drive. The resulting Stacker drive will have twice as much disk space as the amount you specify when the compressed disk is mounted. Refer also to the /R option.

The /R=*n.n* option specifies the maximum size of the Stacker drive by providing an expected compression ratio. The argument *n.n* indicates the ratio. The values can range from 1.0 to 8.0. If you were to use the options /S=20 /R=2.5 the maximum space available on the compressed drive would be 50MB, 2.5 times the size of the available uncompressed space of 20. The default ration is 2:1 or /R=2.0. Some data, such as dictionaries and .ZIP files, will not compress well. For this type of data the recommended selection is /R=1.5.

The /C=*n* option sets the cluster size for the disk. The *n* argument can be set to 4,8,16, or 32 represent 4KB, 8KB, 16KB or 32KB clusters. The default is 8KB clusters. 16KB or 32KB clusters are recommended for large disks up to 2GB. 4KB clusters should be used when you will be storing a large number of small files which could cause more files on the disk than clusters.

Examples

To install a compressed RAM disk from CONFIG.SYS you will need to add three device statements to the CONFIG.SYS file. The devices should be entered in the same order as this example, first the RAM disk driver, then the SCREATE.SYS driver, then the STACKER.COM driver.

```
DEVICE=C:\ROMDOS\VDISK.SYS 64 /E
```

```
DEVICE=C:\STACKER\SCREATE.SYS D:
```

```
DEVICE=C:\STACKER\STACKER.COM D:
```

This example sets up a 64KB RAM disk using Datalight's VDISK.SYS RAM disk driver. The RAM disk will be installed as drive D:. SCREATE.SYS will then compress the RAM disk, doubling the available disk space. The final device, STACKER.COM will make available the compressed drive D: at boot time so that it is immediately available for use.

STACKER.COM

Purpose

STACKER.COM is a dual purpose device driver. It can be loaded from the CONFIG.SYS file to allow access to compressed drives immediately at boot time. STACKER.COM can also be used on the command line to obtain information or to mount and unmount compressed drives.

Syntax

```
STACKER
```

or

```
STACKER [-] DRIVE:
```

or

```
STACKER drive1:=drive2:\STACVOL.xxx
```

or

```
STACKER @drive:\STACVOL.xxx
```

or

```
DEVICE=[drive:path]STACKER.COM[options] [drive:[\STACVOL.xxx]]...
```

Remarks

The first four syntax options are for use on the command line. There are no additional options other than those defined in the following paragraphs. The fifth syntax option is used in the CONFIG.SYS file. The options listed in the next section apply only to using STACKER.COM as a device driver.

If you type STACKER by itself, a report on the status of each system drive at startup time will be displayed. The complete STACVOL filename associated with each Stacker drive will also be displayed.

The [-]*drive:* argument can be used when running STACKER.COM from the command line. Specifying only the *drive:* name argument instructs Stacker to look on the indicated *drive:* for the STACVOL.DSK file and mount that file as Stacker drive *drive:*. The optional minus sign tells the Stacker device driver to unmount the Stacker drive *drive:*. Unmounting a compressed drive makes the uncompressed portion accessible and can be accessed as a standard disk for procedures such as disk formatting.

The third argument syntax, *drive1:=drive2:\STACVOL.xxx*, will mount the *drive2:\STACVOL.xxx* file as drive *drive1:*. In order for this option to work, you must have specified a reserve drive letter in your Stacker device statement in CONFIG.SYS. To specify a reserve drive letter, place an asterisk (*) at the end of the DEVICE= statement for STACKER.COM.

The syntax option, *@drive:\STACVOL.xxx*, mounts the specified *drive:\STACVOL.xxx* file using the same drive letter. In other words, the compressed drive will replace the uncompressed drive that is referenced by the same drive letter. The uncompressed drive will be inaccessible until the Stacker drive using the drive letter is unmounted. The at sign (@) must be placed on the *DEVICE=* statement for STACKER.COM in CONFIG.SYS. The at sign allocates a single replaceable drive.

The final syntax option is used only in the CONFIG.SYS file. The optional *drive:path* designates the complete path for locating the file STACKER.COM if it is not in the root directory. The *drive:[\STACVOL.xxx]* argument specifies the drive letter of the uncompressed drive. The optional STACVOL file name should always be included when the default filename STACVOL.DSK has not been used. The STACVOL file must be in the root directory. If the STACVOL filename is not included in the argument a new drive letter will not be assigned. The same drive letter as the uncompressed portion of the drive will be used. The entire *drive:[\STACVOL.xxx]* argument will be repeated for each Stacker drive on the system.

Options

The asterisk (*) option reserves a drive letter. The reserved drive letter will hold the drive letter associated with its position in the STACKER.COM *Device=* statement.

The */-AUTO* option turns off auto-mounting for all replaceable drives. This saves about 2.7 KB in the driver.

The */B* option sets hardware information. */B=1* indicates that the MC/16 coprocessor card is installed in the system. */B=nnn* sets the base address of the AT/16 coprocessor card (valid values are 200, 220, 240, 260, 280, 2A0, and 2E0). */B=nnnn* indicates the address for the XT/8 coprocessor card (valid values are C400, C800, CC00, D000, D400, D800, and DC00).

The */EMS* option specifies that Stacker's disk cache (up to 64KB) should be stored in expanded memory if it is available. Datalight does not provide an expanded memory driver with the ROM-DOS utilities..

The */M=nn* switch sets the cache memory size to *nn* KB. Any value between 1 and 64 can be entered. The driver memory requirements increase by the amount specified up to the maximum of 64KB for the cache. The */M* switch has no effect if used with the */EMS* switch.

The */P=n* option sets the compression tuning. Values between 0 and 9 can be entered. The value 0 sets compression tuning off which decreased memory requirements by 4.4KB. The default is *P=1*. When *P* is set to 0 or 1, Stacker runs as fast as it can but achieves only standard compression. When *P* is set to 9, Stacker achieves the best compression it can, using all of the time it needs. The best way to find the optimal setting for your system is to experiment.

The */UM* option places the Stacker cache in upper memory, in the first space large enough to hold it. You must have Upper Memory Block support available to use this option. The */EMS* option takes precedence over the */UM* option. If both are used, the cache will be placed in extended memory. Datalight provides support for Upper Memory Block support with HIMEM.SYS (included in the ROM-DOS SDK).

Examples

To obtain information on each system drive, use the STACKER command without any options:

```
STACKER
```

To unmount a compressed floppy disk on your B: drive so that you can access the uncompressed portion of the disk, type:

```
STACKER -B:
```

To install the STACKER.COM device driver via the CONFIG.SYS file so that it will recognize and make available a compressed C:, A:, and D: drive, and with the maximum amount of data compression (but slower access time), use the STACKER command as follows:

```
DEVICE=STACKER.COM /P=9 C:\STACVOL.DSK A: D:
```

STACKER.EXE

Purpose

STACKER.EXE is the Stacker Anywhere utility. This utility allows the use of a compressed removable disk anywhere. It can be used on another computer that has Stacker installed or on systems that do not use Stacker data compression.

Syntax

```
STACKER[.EXE][drive:]
```

Remarks

The optional .EXE extension is only necessary when you run the STACKER.EXE program from a directory where both STACKER.COM and STACKER.EXE are present. This is necessary since the .COM file extension takes precedence over the .EXE extension.

When you have used the CREATE.EXE utility to compress a disk, the STACKER.EXE program is placed on the uncompressed portion of the disk. The Stacker Anywhere program can be run directly from the compressed disk or from any other drive on the system. If you are running Stacker Anywhere from the compressed disk, the *drive:* argument is not needed. Stacker Anywhere assumes the current drive.

To unmount a Stacker Anywhere disk, type EXIT and press enter. To re-mount the disk, run the Stacker Anywhere program again.

Examples

To mount a compressed floppy disk in drive B:, using the Stacker Anywhere utility, enter:

B:STACKER	to run STACKER.EXE located on the B: drive.
STACKER	to run STACKER.EXE from the B: drive.
STACKER B:	to run STACKER.EXE from a location other than the B: drive.

To unmount the Stacker Anywhere disk mounted as drive B:, enter EXIT.
