

THE BLACK BOX ENHANCEMENT

(C) 1991 Computer Software Services
P.O. Box 17660
Rochester, NY 14617

Congratulations on the purchase of the Black Box Enhancement! Yet another amazing new product from Computer Software Services to keep the Atari 8-bits alive! The Black Box Enhancement enhances one feature of the Black box, and adds two more functions.

The BB's built-in graphics screen printer dump has been enhanced to render a truer representation on paper of your screen. It does this by using a technique called dithering to represent different intensities by certain dot patterns on your printer. In this method, all 16 shades of grey can be represented. Although obviously color cannot be duplicated, the printer dump will use a slightly different pattern for each color.

When you press the right button on the Black Box, you will be prompted for Inverse, Normal, or ESC. Pressing RETURN will cause the standard printer dump to commence. Pressing [I] will cause the dump to take place with the intensity reversed: dark areas will be white on the dump. Pressing [ESC] will cancel the dump.

The second new feature, pertaining to the printer function, is the new graphics driver. By directing output to P9:, each character (including inverse and control characters) will be printed just as they appear on your screen, in whatever character font is being used. This is very similar to the G: driver that was published in A.N.A.L.O.G. magazine years ago, except that it takes up no user memory! It will allow 120 characters per line on Epsoncompatible printers, and 80 characters per line on Prowriter printers.

This feature is perfect for generating listings for BASIC and other programs. Just do a LIST "P9:", and all of the program including special characters will be printed.

The last and biggest feature of the enhancement is the built-in Task Master program. This is a powerful sector editor with a built-in sector copier that uses all available memory, allowing single-pass disk copying on upgraded systems. The remainder of this document is the Task Master reference manual.

CSS would like to thank Don Davis for his printer dump and printer graphics drivers, and Dan Knauf for the Task Master.

The Task Master

by Dan Knauf 01/91

Introduction

The Task Master is a powerful sector editor/copier that allows you to edit/copy sectors on any disk drive or hard drive partition. Some available features include the ability to:

- 1) Edit sectors
- 2) Read/write sectors from/to any disk drive (1-9)
- 3) Disassemble sectors
- 4) Link through disk files, including SpartaDOS and MyDOS files on hard drives
- 5) Search a disk for either a Hexadecimal string or an ATASCII string
- 6) Read the directory of any Atari/MyDOS or SpartaDOS disk including subdirectories.

For purposes of clarity, the following documentation indicates many keypresses by a character enclosed in single quotes.

Task Master is input smart. Any time numerical input is required, the information may be entered in either decimal or hexadecimal. Hexadecimal input should be preceded by a '\$'; however if an alphabetical character (A-F) is included in the input, hexadecimal will be assumed whether a '\$' is entered or not. The ESCape key can be used to abort any function.

Task Master will NOT read on-board ramdisks other than the ramdisk created by the Ultraspeed+ OS.

Entry

To use the Task Master, press the left button on the Black Box. At the menu, press 'D'. You should now see the Task Master's main edit screen. If nothing happens, you need to unplug your cartridge. The BB attempts to disable all 'smart' cartridges, so OSS SuperCarts and ICD carts such as SDX may be left in place; but cartridges like Atari Basic and AtariWriter must be unplugged.

Note that unlike the other functions of the Black Box menu, the Task Master does require all of the computer's primary memory, and will overwrite any program currently in memory.

The Main Screen

To use Task Master, press the menu button on the Black Box and choose item 'D'. You will then see the main Task Master screen. The top three status lines reveal the following information:

- 1) The current source drive number.
- 2) The current destination drive number.
- 3) The density of the drives.
They are always kept at same density.
- 4) The visible page of the sector in memory.
Task Master shows either a whole single density sector or 1/2 of a double density sector on the screen. The page will always be '1' when editing a single density disk or when sector 1-3 is in memory. When working with a double density disk, page one indicates the first half of the sector, and page two the second half.
- 5) Linkage type.
There are four different linkages available: No Links, 11-bit links, 16-bit links, and Sparta sector map linkage. Some boot disks use no linkage. Atari DOS 2 type DOSs use 11-bit linkage while MyDOS uses 16-bit links for large capacity disks/hard drive partitions. The linkage mode is indicated by 'OFF' for no linkage, '11' for 11-bit linkage, '16' for 16-bit linkage and 'Spa' for SpartaDOS sector map linkage.

The second screen line shows the number of the current sector and, if linkage is enabled, the sector number of the next and previous sectors in the linkage chain. A 'n/a' in the NEXT field means you have reached the end of the file, if linkage is active. In the PREV field a 'n/a' means you have reached the beginning of the sector trail. 'R'eading a sector with linkage active or selecting a different linkage mode restarts the link trail. Task Master can keep track of a file up to 512 sectors long using 11- or 16-bit linkage modes. This should allow for linking through most files. Files longer than 512 sectors will require stepping through in segments in these linkage modes. SpartaDOS linkage does not have this limitation, as Sparta files can be traced through from beginning to end regardless of the size of the file.

The third inverse and the bottom inverse lines of the main screen shows the byte count of each column of the hexadecimal display. Above the ATASCII display

on the right side is the mode of the ATASCII data. This can be either ASCII or ICODE. ASCII means that the display is shown using the standard ATASCII character values. ICODE shows the data as internal code; as it appears when POKEd to screen memory.

The left column of the screen indicates the byte offset of the data in steps of 8. At the bottom of the screen is the menu command list. Most of the commands available appear here. For a complete command list, press the '?' key.

The Main Commands

1-9 Set Source/Destination drive

Pressing any number key from 1-9 selects that drive number as both the source and destination drives. This requires that the destination drive be reselected as described below if it is not to be the same as the source drive. The configuration of the selected drive is now checked. This information is used to set the configuration of destination drive if/when a different destination drive is selected, unless the 'C' onfiguration command has been used after the source drive was selected.

The US Doubler does not reliably return the proper configuration for enhanced density disks; they appear as single density. XF551 drives converted with the Bob Woolley 3.5" upgrade do not return the proper number of tracks count. When using a 1050 in enhanced density or a XF-35, the '^C' Change Config command should be used prior to using the sector copier.

SHIFT 1-9 Set Destination Drive

Select the destination drive by holding the SHIFT key and pressing a number key from 1-9. This was purposely made a little difficult to help prevent writing an edited sector to the wrong drive. When a destination drive is selected, a setconfiguration command is issued to the newly selected drive. This is to insure that it is configured the same as the source drive. For most drives this only affects density but is important to doublesided drives for the headcount as well.

+, * (left and right arrows) Read preceding/next sector

The left and right arrow keys ('+' and '*') are used to read the previous or next physical sector; not necessarily the next one in the link.

^C (control C) Set configuration

Hold down CONTROL and press 'C' to change the drive configuration. You will be asked for the number of sides on the disk. Always enter a '1' for hard drive partitions. The only other valid choice is '2' for doublesided floppy drives. Next, you will be asked for the number of tracks. Press '4' for hard drive partitions and standard floppies. Other valid choices are '7' for 77 tracks and '8' for 80 tracks. Finally, you will be asked to enter the density the drive is to be configured at. Enter 'S' for single, 'D' for double, or 'E' for enhanced density.

If you are using a double sided floppy drive (such as an Atari XF551), it's a good idea to set the number of heads in the configuration to two, in case you desire to edit a sector on side 2. Remember also to use this command prior to using the sector copier if you are using a US Doubled 1050 drive in enhanced density, or a XF-35 upgrade.

The source drive must be selected before using this command. The destination drive can be changed either before or after the configuration is set. When a destination drive is selected, it is automatically configured to match the source drive.

C Sector Copier

Press 'C' to copy sectors from one drive to another. You will be asked to enter the sectors to be copied. If you want to copy a whole disk, just press RETURN at this point. To copy a set of sectors, enter the first and last sectors to be copied separated by a comma or a hyphen. You may also copy from a given sector to the end of the disk by entering the number of the first sector followed immediately (NO SPACES) by a comma or a hyphen (''). The sector numbers may be entered in either hexadecimal (preceded by a '\$') or decimal. Entering only 1 number will cause the specified sector to be copied.

Once the sector numbers have been entered, you will be asked how many copies you want to make. Enter the number of copies desired or press RETURN for one copy. The next prompt asks whether you want to format the destination disk. Any key other than 'Y' or 'y' means no. Next, if you are using a computer that has 128k or more of memory, you will be asked whether you want to use the XE memory. This refers to the normal extended banks in a 130XE. Once you answer 'Y'es to this question a flag is set and you don't have to answer it again the XE banks will be used on all subsequent copies during the session. Finally, if your computer has more than 128k of memory and you answered 'Y'es to the previous question, you will be asked whether you want to use ALL your XE RAM. This question refers to all extended memory other than the XE banks. As with the normal XE banks, this question is not asked again once you select to use this extra memory. These questions are provided so that any data you may have in the extra memory (RAMdisks) will not be overwritten unless you give permission.

Once you have entered this information, Task Master will read the configuration of the source drive UNLESS you have set the configuration manually since selecting a source drive from either the main or directory screens, and start the copying process.

All sectors specified will be copied until an error 139 is encountered, or the drive times out (error 138). All other read errors are ignored, so that any data in a bad sector is copied. An error counter keeps track of the number of errors encountered. Press 'ESC' to return to the main Task Master screen.

D Sector Disassembly

Press 'D' to disassemble the sector in memory. This option clears the sector window and displays a disassembly window. The sector addresses are displayed on the left side of the screen. Moving up and down the disassembly is accomplished by pressing the " and '=' (up and down arrow) keys. The following keys are also active: Left arrow, Right Arrow, N, P, and R. Press ESCAPE to exit. These keys work the same way as they do from the main screen.

All branch instruction target addresses are treated as sector offset addresses. Following the branch targets on the screen will be an arrow key indicating the direction of the branch. If the arrow is inverse then the branch target is in the next or previous sector as indicated by the arrow.

E Edit sector

The 'E' key selects the sector editor mode. A flashing cursor will appear on the screen within the sector window. You may edit both the hex window and the ASCII/ICODE window; simply move the cursor to the desired byte by holding CONTROL while pressing the arrow keys. When editing within the hexadecimal window, only hexadecimal entries are allowed. The arrow keys and ESCape key cannot be entered when you are in the ASCII window. These few keys must be entered as hex values in the hex window. Press ESCape to exit the edit mode.

F Edit page toggle

Use the 'F' key to flip between pages 1 and 2 when editing/examining double density sectors.

H Hex mode toggle

The 'H' key turns on the hexadecimal display on/off. This affects the sector data at the top of the main screen as well as all numbers displayed in the directory window (see below).

I ASCII/Internal screen code display toggle

The 'I' key switches between ASCII and ICODE modes in the ATASCII window.

K Disk Directory (Catalog)

This will show a directory of Atari DOS (and its derivatives), MyDOS, and SpartaDOS disks. The directory is shown as a page of 16 files at a time. Each directory entry shows the file number (except for SpartaDOS), status, filename, start sector, and length of that file. The status shows whether the file is locked (*), deleted (D), or open (O). For MyDOS disks, an 'a' next to the status means the file has been archived, and subdirectories are displayed with a ':' immediately preceding the filename. If nothing shows up in the status column then the file is a normal unlocked file. For SpartaDOS disks, an 'a' means the file has been archived, an 'h' means the file is hidden (for SDX users) and subdirectories are indicated by a '>' immediately preceding the filename.

At the bottom of each page is the sector number of the first sector of directory information used for this page. For Atari DOS and MyDOS disks, each page is two sectors worth of data. The type of linkage is also displayed for these two types of DOS's (11-bit or 16-bit). For SpartaDOS, the number of sectors used varies. This is because each directory entry is 23 bytes long and SpartaDOS uses the whole sector for data. Therefore, the directory on single density disks takes twice as many sectors for the same number of files compared to a double density disk. Since directories can be scattered all over a disk, it does not necessarily follow that the directory sectors are right next to each other.

When each page is displayed, a cursor bar appears. You may move up and down the page by pressing the uparrow and downarrow keys (without holding down the CONTROL key). Pressing RETURN when the cursor is over a standard filename causes the directory to be exited, and the editor to be entered with the first sector of the file the cursor bar was on to be displayed, with the appropriate linkage mode activated. This is the best way to trace through a file from the beginning, and can be very handy in quickly identifying file types. Pressing RETURN when the cursor is over a subdirectory name will cause Task Master to go inside that directory, and display its contents. You may go as deep as you wish, but the only way to back out of a subdirectory is to press the 'K' key and start the directory over.

You may move the cursor forward and backwards through the complete directory in Atari/MyDOS directories using the arrow keys. SpartaDOS directories do not allow you to move backwards past the beginning of the displayed page; to accomplish this, you must press 'K' and start over. Regretfully, we just didn't have the memory available to allow code for stepping back through SpartaDOS pages.

You may exit the directory any time by pressing the ESCape key.

L Link type toggle

Use the 'L' key to select the desired linkage type. This flips between 'OFF' (no linkage), '11' bit (Atari DOS style), '16' bit (MyDOS), and 'Spa' (SpartaDOS) linkage.

M Mark as sector map (Sparta only)

The 'M' key marks a sector as a SpartaDOS sector-map sector when the Sparta linkage mode is active. Pressing 'M' will mark the sector, set the linkage to 'Spa', and read the first sector of the file from the sector-map information contained in the Marked sector. Pressing this key when the current sector is NOT a sector-map will cause unpredictable results.

N Read next linked sector

The 'N' key is used to read the next linked sector. If linkage is not active, the next sequential sector is read. If linkage is active but there is not a valid link in the current sector, this key is ignored.

P Read previous linked sector

The 'P' key is used to read the previous sector in the sector link. Otherwise it works the same as the 'N' key.

R Read sector

Read a sector. You will be prompted for the number of the sector to be read. You may enter either a hex (preceded by a '\$') or decimal value. Pressing RETURN will re-read the current sector. This command clears the sector link table and restarts the linkage trail.

S Search for a Hex string

Search the disk for a hexadecimal string. You will be prompted for a search string of up to 10 hexadecimal characters to be search for. The disk will then be searched for this string. If linkage is active, the search will stop at the end of the current file. If linkage is OFF, the search continues until an error 139 is encountered (which should mean the end of the disk has been reached). If the search string is found, the match will be indicated by a flashing cursor in the hex window of the sector display, and you will be asked whether you want to continue searching or not. Any key other than 'Y' means no. The search routine can be aborted at any time by pressing the ESCape key. Once you have done a search, you do not need to reenter the search string to search for the same data again. Just press 'S' and RETURN when asked for the search string.

^S (control S) Search for an ASCII string

Search for an ATASCII string. This command works the same as the hex search, except that the search string is up to 10 ATASCII characters, and any matches found are highlighted by a flashing cursor in the ASCII window. The ATASCII search can also be restarted without having to reenter the search string by using the method described above.

NOTE: The search commands will not find matches that are spread across sectors. Example: if you do an ASCII search for the string 'BLACKBOX', and 'BLAC' is at the end of one sector and 'KBOX' is at the beginning of the next sector, the match will NOT be found.

W Write sector

Write a sector. You will be asked what sector you want to write. To write the to the current sector just press RETURN. You will be asked for confirmation before the sector is written. The confirmation is meant to help avoid mistakes.

ESC Exit the Task Master

Pressing the ESCape will exit the Task Master, reenabling any 'smart' cartridges, and rebooting. If you wish to reboot without reenabling the cartridges, simply press RESET.

? Help menu

Pressing the question mark key (while holding the shift key) while at the main screen will show a menu of all available commands.