# *MTCOPY*

USER
MANUAL

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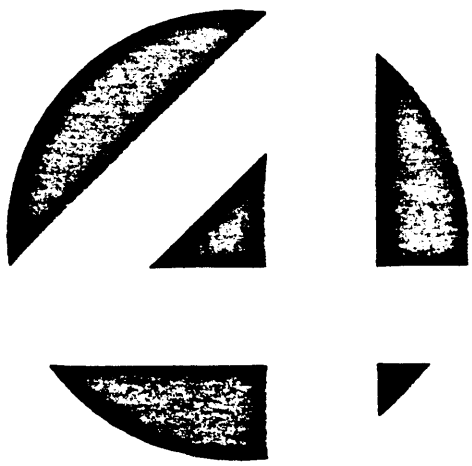
# USER MANUAL

MTCOPY
was developed by
DTR Business Systems, Inc.
POINT 4 is
an authorized distributor.

## Revision 2a



POINT 4
DATA CORPORATION

# MTCOPY
## User Manual

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was developed by
DTR Business Systems, Inc.
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an authorized distributor.

**Revision 2a**

DTR Business Systems, Inc.

# *MTCOPY*
# USER MANUAL

## Revision 2a

For MTCOPY Revisions 2.0, 2.1, & 5.1

# T A B L E  O F  C O N T E N T S

INTRODUCTION..... 1

OPERATOR INSTRUCTIONS -

Single Tape Backups..... 3
Tape Layout Graph..... 4
Multiple Tape Backups..... 4

MANAGER FUNCTIONS -

Copy..... 5
Restore..... 6
Restore All..... 6
Verify..... 6
Rewind..... 6
Install..... 7
Initial Program Load (IPL)..... 7
Configure Tape Drive Types..... 7
Auto..... 8
Retension..... 8

INSTALLATION INSTRUCTIONS -

Configuration of IRIS Config..... 9
Configuration of MTCOPY2..... 10
Fatal Error Messages..... 10
Password Restriction..... 11
End User Tables..... 11
The Shutdown Program..... 13
Unattended Time Restriction Shutdown Program..... 13

TAPE CAPACITY CHART..... 14

BLOCKING FACTORS..... 15

TROUBLESHOOTING -

Tape Errors..... 16
Disk Errors..... 16
General..... 17

SOFTWARE PROTECTION DEVICE..... 18

# MTCOPY TAPE UTILITY REV 2.0
# USER MANUAL

## INTRODUCTION

MTCOPY2.0 is an enhanced version of the previous MTCOPY system utility. It will backup any disk drive supported by the IRIS Operating System to 1/2-inch, 1/4-inch, and the new Megatape and Exabyte units. As before, all backups can be fully unattended with no operator intervention to shutdown or re-boot, and logical units from different disk drives may be mixed on one tape.

New improvements have been made to backup systems needing more than one tape. MTCOPY2.0 can recognize different hardware tape units allowing the user to backup to one 1/2-inch and one 1/4-inch unit...etc. The new Megatape and Exabyte units can hold up to 2.2 Gigabytes (2200 Megabytes) providing the answer for users with large systems. MTCOPY2.0 will allow copying of more than one disc partition per tape. It creates file markers between each unit to allow partial restores and verifications.

As before, MTCOPY has two modes of operation: the first is strictly for operators to backup their systems; the second gives the system manager expanded capabilities for transferring data to and from tape by manipulating blocking factors, selection of disk partitioning, access to changing manager passwords, and manipulating halt messages for operators running backups when MTCOPY has encountered a hard or tape error.

There are five features of MTCOPY which make it the best choice among many tape backup utilities. These features include:

1) MTCOPY correctly handles 'soft errors' on the disk drive with 22-bit ECC error correction. Any unrecoverable error on the disk drive will be reported to the operator, but the rest of the disk will be backed up, minimizing data loss.

2) MTCOPY will copy and verify with streamer and/or start/stop tape drives. No modifications are needed on a DG compatible tape drive controller. Because a verify pass is used instead of a checksum, backup time is reduced, usually 35%. A verify pass also points out the exact location of the error.

3) MTCOPY has the ability to change device codes to provide access of up to four hardware tape units per controller with multiple drive types per backup.

4) MTCOPY will number tapes in sequence for multi-volume backups allowing users to partially restore partitions.

5) MTCOPY provides password protection of manager functions for end-user installations and also allows managers to configure a hard disk or tape error message that discontinues the backup after the error has been encountered.

The following documentation is divided into three parts, each explaining in detail the two modes of operation and the installation procedures for this utility. Installation Instructions describe the setup procedures, Operator Instructions explain the backup procedures, and the Manager Functions describe the additional operations available.

## SINGLE TAPE BACKUPS

When you are ready to back the system up to tape, be sure to check that all users have logged off the system. At the pound sign (#) enter MTBACKUP and <CR>. (<CR> means hit the return key on your master terminal.)

The screen will clear, and the following display will appear:

```
                    M T C O P Y
          DTR Business Systems Backup Utility Rev 2.0

                    Mount Tape Number 1

     Tape Type:  Quarter Inch Tape Unit Number : 0
     Type in 'BACKUP' when tape is ready --->
```

Your system manager will instruct you as to what tapes to use, and how to mount them on your particular tape drive. When the tape is ready, type in BACKUP and <CR>. If you make a mistake in typing in backup, you may use the backspace key, or CONTROL-H to backspace and correct your typing.

After BACKUP has correctly been entered, the tape will start to move and the following display will appear:

```
                Rewinding Tape, Please Wait...
              Initializing Tape, Please Wait...

     Copying 0 0...  Streaming to Tape  xxxxxx  (block count)
     Copying 0 1...  Streaming to Tape  xxxxxx
```

After each partition is copied to tape the system will update the message to "Transferred xxxxxx". When the tape reaches the end, the following display appears:

```
     Rewinding Tape, Please Wait...
```

Providing the automatic verify flag is set, MTCOPY will start verifying the tape and the following display appears:

```
     Verifying 0 0...  Verifying Disk/Tape xxxxxx (block count)
     Verifying 0 1...  Verifying Disk/Tape xxxxxx
```

After each partition is verified the system will update the message to "Verified : xxxxxx". When the verify is finished the following display appears:

```
     Rewinding Tape, Please Wait...
```

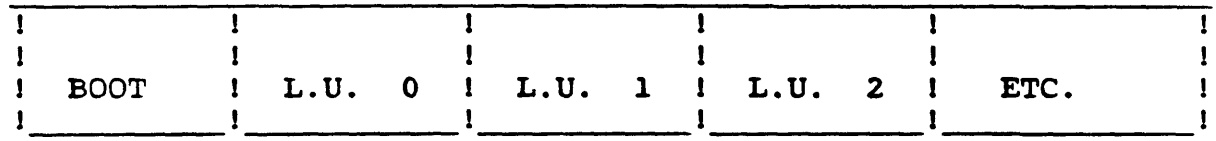
When the tape is finished rewinding and the complete system is backed up on one tape the following prompt displays:

```
Type in 'Y' to Boot IRIS, 'N' to Halt
```

At this point the system may be powered down for the night by typing in an 'N' to halt, or re-booted for further use by typing in a 'Y'.

The following layout will give you a better view of where MTCOPY places your information on tape. Each tape in your set of backups will contain the bootable portion followed by the individual logical units.

TAPE LAYOUT




MULTIPLE TAPE BACKUPS

If your disk drive needs more than one tape for backups, the system will automatically prompt for the next tape with the following display:

```
                    M T C O P Y
        DTR Business Systems Backup Utility Rev 2.0
              Completed Tape Number ---> 1

                    Mount Tape Number 2

      Tape Type:  Quarter Inch Tape Unit Number: 0
      Type in 'BACKUP' when tape is ready --->
```

This screen indicates that you have completed tape number one and that tape number two should now be placed in the tape drive. Take out the tape that is currently in the tape drive, label it with today's date and time, and place tape number two in the unit. When the second tape is ready, type in 'BACKUP' and enter <CR>. The screen will display what portion of the disk is being copied to tape, as described in the above procedures. Follow these same steps until the screen displays:

```
Type in 'Y' to Boot IRIS, or 'N' to Halt
```

At this point the system may be powered down for the night by typing in an 'N' to halt, or re-booted for further use by typing in a 'Y'.

## MANAGER FUNCTIONS

There is a second method of operating MTCOPY other than the automatic disk to tape copy. This mode must be used to restore from tape to disk, or to copy selected portions out to tape. To enter the manager portion of the utility, at the prompt:

Type in 'BACKUP' when tape is ready --->

Type in the default password of 'MANAGER' or the password set up by your system manager and <CR>. The following display will appear:

```
                    M T C O P Y
          DTR Business Systems Backup Utility Rev 2.0


     COPY       - Copy a Logical Unit to a Tape File
     RESTORE    - Restore a Tape File to a Logical Unit
     VERIFY     - Compare a Logical Unit to a Tape File
     REWIND     - Rewind the Tape Drive
     INSTALL    - Install the Utility to Tape File # 0
     IPL        - Ipl Disk Drive # 0
     CONFIG     - Change Current Tape Drive
     AUTO       - Return to Automatic Mode
     RETENSION - Retension the Tape

   Tape Type : Quarter Inch Tape Unit Number : 0
     Select Option :
```

The following documentation is a description of each of the choices.

### COPY

COPY is used to copy from disk to tape. When Copy is selected the system displays the following prompts one at a time.

```
System Driver Number       :   (disk drive # copying from)
Driver Partition Number    :   (partition number in config)
Tape File Position (0-31) :   (where on the tape to dump)
```

To further explain the above prompts we will select only logical unit 1 to backup. Assuming logical unit 1 is installed as 0.1, we know the System Driver Number is equal to 0 and the Driver Partition number is equal to 1. The Tape File Position Number is usually greater than 0 because position 0 is reserved for the bootable version of the program on tape. This allows us to boot the system with a STOP/APL and a P22 or P42 depending on the tape drive unit in use. Select the desired tape file number; when the copy is finished the program will display Transferred, and then will redisplay Driver Partition Number:. This is for the operator's convenience and assumes the operator wants to make

another copy from the same System Driver Number. If this is not the case, type in <ESC> and the main manager menu will redisplay allowing you to select COPY for a different drive or any other available option. If you do wish to copy from the same drive, type in the desired Partition Number, and the Tape File Postion Number for the program to continue.

**RESTORE**

RESTORE is used to copy a specific tape file to a selected spot on the disk. When the restore option is selected, the program prompts for the System Driver Number, Driver Partition Number, and Tape File Postion Number. These three responses are answered in the same way as if you were doing the COPY command. When the restore is complete the program will display Transferred and prompt you again for the Driver Partition Number, as in the COPY command.

**RESTORE ALL**

This option can be used when you need to restore the entire disk from tape. RESTORE ALL is not accessible from this menu but can be found at the end user prompt, "Type in 'BACKUP' When the Tape is Ready --->". Here you may type in 'RESTORE ALL' <CR> and the system will display what portion of the tape is being copied to the disk. When it has finished restoring, rewinding, verifying, and rewinding again, the program will prompt you to re-boot or shutdown the system.

**VERIFY**

VERIFY is used to compare a selected partition from the disk with a selected tape file. This option may be used with any disk drive/controller type supported by IRIS. The program will prompt for the System Driver Number, Disk Partition Number, and Tape Position Number the same as the Copy command. After the tape file number has been selected, the program will start reading from tape and disk, comparing the data word for word. If any portion of the data on tape does not match the disk, the program displays the following:

**Verify Error : Block # xxx**

Where xxx equals the octal block, relative to the start of the logical unit where the error occurred.

**REWIND**

REWIND is used to rewind the tape to the Beginning of Tape (BOT) point on the tape. If the tape is already at the BOT point, the program will reprint the nine menu options.

INSTALL

INSTALL writes the program itself out to the tape in bootable form at Tape Position Number 0. Once a tape has MTCOPY installed on it, it may be taken to another site and 'booted' with a P22, P42, or P62 command depending on the tape drive unit type. This allows the transfer of tape files from one system to another, or the recovery of data to a 'down' system disk.

NOTE: One enhancement to INSTALL is tape sequencing for multi-volume backups allowing a partial restore. For example, a user may backup tape number 1 and then want to restore tape number 2 of their backup sequence. When each individual tape is created, MTCOPY writes a sequence number on the tape and the area of the disk that was backed up. This allows the user to boot MTCOPY from tape number 2 and MTCOPY will know that it is to restore that tape to the original portion of the disk (unlike the first version, which would have put it at the beginning of disk).

IPL

The IPL option allows you to bring the system back up after performing a backup or a restore to or from tape. It will read block zero from the disk drive configured as drive 0 in the CNFG file, and reboot IRIS. After selecting this option, the screen will display a 'PRESS RETURN' message, just as if the reset or STOP/APL buttons on the computer had been depressed and a 'P27' <CR> entered at the CRT.

CONFIG

CONFIG is used when you need to change the default tape unit type or number that MTCOPY is pointing to for the current operations. This entry on the menu is part of the new enhancements to MTCOPY. When this option is selected, the program displays the following prompts:

```
                    Tape Drive Types

    1)  Half Inch Tape Drive  Device Code 22
    2)  Half Inch Streamer Tape Drive  Device Code 22
    3)  Half Inch Tape Drive  Device Code 62
    4)  Half Inch Streamer Tape Drive  Device Code 62
    5)  Quarter Inch Tape Drive  Device Code 42

    Select Tape Drive Type (1-5)  :
    Enter Tape Unit Number (0-3)  :
```

The tape unit number refers to the unit number on the controller. For example, you may have two half-inch device code 22's and one quarter-inch tape unit on your system. You would define the two half-inch units as type 2, units 0 and 1, and the quarter-inch as type 5, unit 0. When these two prompts have been answered correctly the program will return to the manager menu.

**AUTO**

AUTO can be used when the operator wants to go from the manager menu to the backup system screen. This new enhancement was entered to keep from having to re-boot MTCOPY to go from the manager menu to the automatic operator backup prompts.

**RETENSION**

The RETENSION option is used to retension the tape on its reel. Retensioning the tape means that the tape is put on forward motion until the end of the tape, then rewound until the tape is at BOT (Beginning of Tape). This tightens up the tape on the reel. This option should be used on questionable tapes. Once the tape is rewound to BOT point, the screen will redisplay the manager menu.

NOTE: At any time the backspace key or CONTROL H may be used to backspace if a typing error occurs. If you wish to go back to the previous menu, a CONTROL C or <ESC> may be entered. If an illegal System Driver Number or Partition Number is selected, the program will repeat the same question again. If a Tape File Number is selected that is not on the tape, i.e. selecting tape file # 5 when the tape is blank, the tape will space forward to the end of the tape and give a tape error on the screen. The tape should be rewound at this point, and the correct tape file number chosen.

## INSTALLATION INSTRUCTIONS

MTCOPY can be delivered to you on magnetic tape as an IRIS tape file, a cleaned up logical unit on 1/2-inch or 1/4-inch tape, or over the modem. If it is delivered on mag tape, the program MAGTAPE, which is supplied by POINT 4, may be used to restore the program to your disk. If it is sent to you as a CLEANUPXed logical unit, it can be downloaded to any disk drive type as long as you specify enough cylinders to cover the logical unit size.

MTCOPY uses a copy of the config file to determine where the logical units reside on your particular disk drive. This assures that each copy out to tape contains an exact duplicate of a particular logical unit. Follow the instructions below to customize MTCOPY for your system.

### CONFIGURATION OF CONFIG

Make a copy of your CONFIG file called CNFG by typing in at the sharp sign (#) COPY CNFG=CONFIG. Using the DSP processor, type in the following to change CNFG to a standalone program:

```
#DSP eXeCNFG<CR>   !where 'e' = Control E
H<CR>              !to get the header block
10:3<CR>           !changes type to standalone
X<CR>              !exits DSP
```

If your revision of IRIS is Rev 7.n, use DSP to enter the LUFIX and BZUP values at location 1401 and 1402 in the CNFG file. These values may already be there. Make sure they match the Peripheral Handbook entry for your drive type. Also enter the partitioning values for logical unit # 0 (the number of cylinders and the starting cylinder).

If your revision of IRIS is Rev 8.2C1 through 8.3F, the CNFG file has extraneous blocks in it that prevent the SHUTDOWN program from operating correctly. To correct this, perform the following steps:

1) Select CNFG (#DSP eXeCNFG<CR>)
2) Select the header block. (H<CR>)
3) Note the value at location 11 'NBLK' (D11<CR>,<ESC>)
4) Display cells 360 through 377 and note the number of non-zero blocks in these cells. (D360<CR>)
5) Zero out cells 360 through 377. (360:0<CR> 361:0...)
6) Subtract the number of cells zeroed out from the original value at 11, and enter this new value at 11; e.g., 6 locations (360 through 365) were zeroed, and the starting value at 11 was 133. The octal calculation is 133-6=125. Thus, 125 is entered at location 11. (11:125<CR>)

CONFIGURATION OF MTCOPY

Some new enhancements to MTCOPY allow the system manager to configure it with default values for start up procedures, such as tape drive types, flags to say whether processing mode is unattended or attended, etc. Using DSP, enter MTCOPY to modify the following locations. (#DSP eXeMTCOPY)

| Location | Default | Function |
|---|---|---|
| 250 | 177777 | start up in automatic mode instead of the manager menu (0=mgr menu) |
| 251 | 177777 | automatic verify if in automatic mode |
| 252 | 2 | Default Tape Type - Overridden by the automatic tables<br>1 = 1/2-inch tape (device code 22)<br>2 = 1/2 " Streamer tape (d.c. 22)<br>3 = 1/2 " tape (d.c. 62)<br>4 = 1/2 " Streamer tape (d.c. 62)<br>5 = 1/4-inch |
| 253 | 0 | Default tape unit # (0-3) |
| 254 | 1 | Revision of IRIS 0 = Rev 7<br>1 >= Rev 8 |
| 255 | 0 | Blocking factor - 0 = the block size is IRIS sectors or if non-zero then it reads that number as the blocking factor. Maximum size is 41.<br>(20=8K 40=16K) |
| 256 | 0 | Unattended flag - If non-zero then it starts copying when shutdown to. |
| 257 | 0 | Soft error limit - 0 = prints out all soft errors, non-zero will suppress up to this number. |

**Configure Fatal Error Messages**

Another new enhancement to MTCOPY allows you to configure the message that appears after a fatal error has occurred. For example, "Fatal backup error, call ABC Computers at 999-1234", or "The system had a fatal backup error! Call the system manager."

Using DSP, enter the desired message at location 24000:

I24000: Fatal Backup Error! Press <ESC> to return to manager menu.

## Manager Password Restriction

If you wish to restrict the usage of the manager functions of MTCOPY, you may change the manager's password with two locations. The first byte of the password is entered at 50141 and the rest of the password at 24061. For example, if you wanted your manager password to be OSMGR instead of MANAGER you would, using DSP:

```
I50141-:OO  (FIRST BYTE - must enter 2 bytes to get one -
                          dsp bug)
I24061:SMGR  (REST OF THE PASSWORD)
```

To check if you've typed in the correct password, you can do an O50141- <CR> and the system should display the password exactly the way you want it. If not, you can rekey it using the instructions above.

## The End User Tables

You may now create the 'end user' table. This table determines what logical units are copied out to tape when the user types in 'BACKUP'. The tables are located at location 10000 octal and each table is 400 octal words or one block.

The first word in the table represents the type of tape drive you wish to backup to. Select the number below that describes the tape drive on your system.

1) Half-Inch Tape Drive  Device code 22
2) Half-Inch Streamer Tape Drive  Device code 22
3) Half-Inch Tape Drive  Device Code 62
4) Half-Inch Streamer Tape Drive  Device code 62
5) Quarter-Inch Tape Drive  Device Code 42

The second word of the table indicates what tape unit number you want to back up to. If you do not have more than one unit the tape unit number will always be zero. MTCOPY can handle up to four units per controller during a backup. In DSP the units are numbered 0 through 3 instead of 1 through 4.

The partitions are indicated beginning at location 10 in the table and may go up to (and including) location 375. There are two words for each partition. For partition D.P (e.g., 0.0 or 0.1), the first word is D and second word is P. All partitions within a table must fit on one tape. (Check the table on page 13 for tape capacities.) Enter 177777 to terminate the table.

You may specify a maximum of 123 decimal partitions for any tape. The 177777 terminator must occur on or before offset 376 in the block. Tape 2 begins at location 10400, tape 3 at 11000, etc. You may have to use DSP's A command to append blocks at these addresses. A 177777 as the first word in the block indicates the end of the tables. This terminator must occur on or before location 13400, which allows a maximum of seven tapes for one backup operation.

To better explain the partition section let us assume we want to backup partitions 0 and 1 to 1/2-inch tape, device 22, unit #0, and partitions 2 and 3 to 1/4-inch tape, device 42, unit #0. The following would be entered:

| | Location | Definition |
|---|---|---|
| Tape #1 | 10000:2 | 1/2-inch streaming tape, device 22 |
| | 10001:0 | Tape unit #0 on this controller |
| | 10010:0 | |
| | 10011:0 | Partition 0.0 |
| | 10012:0 | |
| | 10013:1 | Partition 0.1 |
| | 10014:177777 | -1 Indicates the end of this tape |
| Tape #2 | 10400:5 | Indicates 1/4" tape drive |
| | 10401:0 | Tape unit #0 on this controller |
| | 10410:0 | |
| | 10411:2 | Partition 0.2 |
| | 10412:0 | |
| | 10413:3 | Partition 0.3 |
| | 10414:177777 | -1 Indicates the end of this tape |
| | 11000:177777 | Where the next table should be, -1 indicates the end of the backup |

If more than one tape is required, enter the partitions at 400-word increments. Using DSP's "A" command, allocate blocks as needed to MTCOPY.

## THE SHUTDOWN PROGRAM

The shutdown program for MTCOPY can be a very simple program to start backups immediately, or it can include timing statements to start unattended backups at a certain time of the day. The simple program looks like this:

```
10 DIM A$(100)
20 LET A$="SHUTDOWN eXeCNFG,MTCOPY2"    !e =Control E
30 CHAIN A$
<CONTROL C>
#SAVE <22> MTBACKUP
```

Providing all users have logged off the system this program would immediately start a backup. It would be unattended if the correct flag was set. If you wanted to do backups at a specific time each night you could use the following example that automatically evicts each port at the specified time, and then shuts down to MTCOPY.

## UNATTENDED TIME RESTRICTION SHUTDOWN PROGRAM

```
 10 DIM A$(25),I$(100)
 20 CALL 99,A$
 30 LET H=A$(15,16)
 40 IF H=23 GOTO 100     !If 11:00 (PM) perform backup
 50 SIGNAL 3,9000        !Wait 15 minutes and retry
 60 LET A$=""
 70 GOTO 20
100 LET I$="PORT eXe ALL EVICT\215\" !e =Control E
110 LET I$=I$,"SHUTDOWN eXeCNFG,MTCOPY2"
120 CHAIN A$
<CONTROL C>
#SAVE <22> MTBACKUP
```

## TAPE CAPACITY

To determine how many logical units will fit on a tape, take a look at the following chart and find the tape drive type you will be using. You can convert logical unit blocks to megabytes with this calculation:

```
#QUERY @1/    !To determine # of blocks on unit

BLOCKS / 2048 = MEGABYTES (mgb)
```

### TAPE DRIVE CHART

| Tape Drive Type | Capacity | Media Type | Transfers Per/Minute |
|---|---|---|---|
| 1/4 " Archive 9020 | 20mgb | 300XL/P | 5mgb |
| 1/4 " Archive 9020 | 27mgb | 600A or 600XTD | 5mgb |
| 1/4 " Archive 5945L-2 | 45mgb | 300XL/P | 5mgb |
| 1/4 " Archive 5945L-2 | 60mgb | 600A or 600XTD | 5mgb |
| 1/4 " Archive 2150L | 120mgb | 600A | 5mgb |
| 1/4 " Archive 2150L | 150mgb | 600XTD | 5mgb |
| 1/2 " Cipher F880 - | | | |
| 1600 bpi | 42mgb | 2400 Ft | 7.5mgb |
| 3200 bpi | 84mgb | 2400 Ft | 7.5mgb |
| 1600 bpi | 63mgb | 3600 Ft | 7.5mgb |
| 3200 bpi | 126mgb | 3600 Ft | 7.5mgb |
| 1/2 " Megatape 500C | 349mgb | 8K Blk Factor | 10mgb |
| 1/2 " Megatape 500C | 400mgb | 16K Blk Factor | 10mgb |
| 1/2 " Megatape 750 | 438mgb | 8K Blk Factor | 10mgb |
| 1/2 " Megatape 750 | 550mgb | 16K Blk Factor | 10mgb |
| GT-88/Exabyte | 1166mgb | 60 Minute | 11mgb |
| GT-88/Exabyte | 1750mgb | 90 Minute | 11mgb |
| GT-88/Exabyte | 2332mgb | 120 Minute | 11mgb |

## BLOCKING FACTOR
## (1/2 " TAPES ONLY)

MTCOPY 2.0, as delivered, is set to write data to the tape drive in 8K-byte blocks. The new version of MTCOPY allows you to manipulate this value to write out at 16K-byte blocks or change the value of how many sectors to read and write. Writing out at 16K-byte blocks is more efficient since it allows you to get 20% more data on a tape. To write at 16K, change location 255 to 40. When making this change be sure to do a verify after the first backup. If your magtape controller board does not support 16K-byte records, and cannot handle 64K words of memory, the copy is not good, and the verify operation will get an error at block number 20.

If you are using MTCOPY to transfer data from one drive type to another and they read and write in different sector sizes, you can specify to MTCOPY what sector size you want to read or write in. For example, if you are going to take data from a Micropolis 170MB drive and put it on a Fujitsu 335MB drive, the Micropolis reads and writes in 13 sectors and the Fujitsu 335 reads and writes in 20 sectors. If you have created your 1/2-inch tapes under the Micropolis at 13 sectors, you can change the value at 255 to 13, and MTCOPY will read and write properly to the Fujitsu at 13 sectors instead of 20. Also, you could have changed the value to a 20 when you created the tapes on the Micropolis and made no modifications at the time of downloading to the Fujitsu.

## TAPE ERRORS

Tape errors can occur for numerous reasons while copying or verifying during a backup. MTCOPY will halt and display a status indicator with the number of the block where the error was detected. MTCOPY will decode the status and display an error message. For example, an end of tape error will have a status of 105101 on the 1/2-inch tape drives. The following are possible problems you may encounter and what to do about them:

1) Irrecoverable Data Error - try retensioning the tape, check all hardware connections, or replace the tape.

2) End of Tape - when backing up, you are trying to copy too much onto one tape, subtract a partition from the end user tables; or the tape file position specified during a restore is not on this tape.

3) File Mark Detected - when restoring or verifying be sure the tape file position on tape is pointing to the correct disk partition.

4) Parity error - try retensioning the tape, check all hardware connections, or replace the tape.

## DISK ERRORS

Hard and soft disk errors can occur during backups. MTCOPY handles them by logging them in a table and reporting them after the copy to the tape is finished. The user can specify to MTCOPY whether he wishes to see all soft errors. Location 257 in MTCOPY allows the manager to set up a threshold number to suppress a number of errors before they must be reported. For example, if the manager is not concerned about ten soft errors on the disk, he may put a 10 in that location; unless the program encounters more than 10 errors the user will never see them. If a hard disk error or a large number of soft errors has occurred, the program will halt and display the status and block where the errors were encountered. The user can then write down the block numbers and press 'C' to continue to go on to the next process. To verify that the errors are true, the system manager can try to display the blocks in DSP and if a trap occurs he knows that he has a hardware problem to take care of.

## GENERAL TROUBLESHOOTING

1) System halts after the shutdown command -
   Make sure starting address is 300 with the CHANGE command.

2) System halts after Copying 0 0 -
   Check the revision of O/S specified to MTCOPY with what you are running under at location 254.

3) MTCOPY jumps to verifying when trying to backup -
   Check for the MTCOPY PICO on the backplane.

4) MTCOPY shuts down to the Manager Menu -
   Check location 250 and set to 177777 for automatic backup operation.

5) MTCOPY not starting when shutdown from Basic program -
   Check the unattended flag at 256 for a zero.

6) Tape error status : 104000 Block #: xxxxxx
   You have tried to copy too much information onto one tape. Subtract one partition and try again.

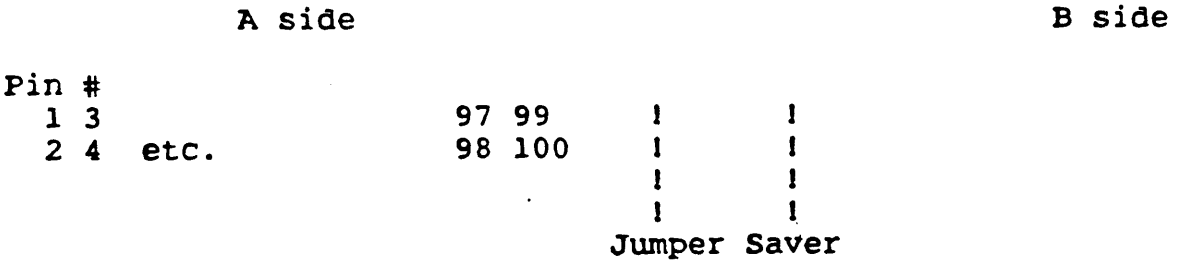
## INSTRUCTIONS FOR DTR BUSINESS SYSTEMS SOFTWARE PROTECTION DEVICE

A software protection device, commonly called a PICO-N, is used to protect against unauthorized duplication or use of DTR BUSINESS SYSTEMS' software. This device is designed to fit on the backplane of a POINT 4 or compatible CPU chassis. The device will have one or more chips on the board, which will indicate which DTR BUSINESS SYSTEMS software packages are authorized with this device.

The chip(s) lettering will be on the top side of the board. TURN THE POWER TO THE CHASSIS OFF BEFORE INSTALLING THE PICO-N!. The right hand side of the PICO-N goes on pin 99 on the A-side of the backplane. The left hand side goes on pin 5, leaving pins 1-4 unused. CAREFULLY push the device onto the pins; if you feel any undue resistance, make sure the two rows of pins are lined up with the two rows of holes on the PICO-N. Any slot of the chassis may be used, except for the CPU slot (usually the top slot).

After installing the protection device, turn the power on to the chassis and check the operation of your system. If the device is not on correctly, the carry light may not flash after doing a STOP APL on the front panel, or the master port may not be operational. If this is the case, take the device off the backplane and re-check your system.

POINT 4 CHASSIS
(Viewed from the back)



POINT
DATA CORPORATION

15442 Del Amo Avenue
Tustin, CA 92680
(714) 259-0777