AIMDEX – The AIM File Generator

Purpose

AIMDEX reads a standard text file, together with key fields specified on the command line, and generates the AIM index file required by programs that use AIM access.

AIMDEX can run standalone or under ARC®on any processor with the 5500 instruction set and at least 48K of memory. Any additional memory is used by AIMDEX to provide faster execution. On small memory configurations, AIMDEX creates a temporary scratch file for use in generating the index.

Use

Enter the command line for AIMDEX in the following format:

AIMDEX <txtfile>[,<aimfile>];[<options>,]<key fields>

<txtfile>   is the text file used to generate the
             AIM index file.
             - The filename is required.
             - The extension defaults to /TXT.

<aimfile>   is the AIM output file.
             - The filename defaults to the name of
               the text file.
             - The extension defaults to /AID.
             - The drive defaults to the drive used
               for the text file.

<options>
    ? or H   To print a short help message.
    D=<c>   To change the don't care character from
             ?.
    F   To direct the information output to a
             print file.

I	To display the header sector information.
L	To direct the information output to a local printer.
O	To overwrite an existing invalid /AID file.
P<nnn><=|#><cccccccc>	To select primary records.
R	To re-AIM using the information from the header sector.
S	To direct the information output to a servo printer.
U	To process all lower case characters as upper case.
U=<lll>-<uuu>	To process all lower case characters as upper case, but to change the upper case range.

Options may run together or may be separated by a comma and/or space(s).

Key Fields

<key fields> refers to a list of fields to key on.
The format of each key field is n-m or Xn-m, where:

● The letter X preceding a key field specification indicates that the field is an excluded field.

● The letter n is the position of the first character of the key field.

● The letter m is the position of the last character of the field.

A single character field can be specified by omitting the -m.

Multiple key fields must be separated by a comma and/or a space(s).

Options and key fields can be intermixed. They can be continued onto the next line by replacing one of the separating commas with a colon (:). Any characters on the command line following the colon

are ignored, and command line processing continues with the first character of the next line entered. (The command continuation line is prompted for by displaying a colon (:).)

Text Input File

The input file required by AIMDEX must be in the standard text file format. The only data characters accepted are 00 through 0176 (~). Characters in the range 0200 through 0377 are converted to 0174 (|) prior to processing. (Note: The data file is not modified; the conversion is internal to AIMDEX only. The conversion is done to conform to DATASHARE® text file processing format.) The control bytes accepted are 003 (end of sector), 011 and the following byte (space compression), 015 (end of record), and 032 (deleted). If invalid text is encountered, AIMDEX terminates.

Records are internally padded with blanks, if necessary. If a line ends before the last key field, the remaining characters in the line are assumed to be blanks. There is no maximum limit on the line length, but characters beyond column 255 are ignored by AIMDEX.

AIM Output File

The AIM index file (/AID) is the only output file produced by the AIMDEX utility.

Command Line Options

The following sections discuss the options that may be entered on the AIMDEX command line.

Help

The ? or H option displays a short help message that includes a brief summary of the command line format and available options.

Wild Card Character

The D=<c> option changes the default wild card
character used by the applications program reading
the AIMed file. If an AIM access has keys using this
character, the positions in the record corresponding
to the wild card characters in the key can contain
any character. The wild card character can be any
character from 041 (!) through 0176 (^), including
all alphanumeric and special characters that can be
entered from the keyboard, except space and delete.
A space or delete character defaults to 077 (?).

The following command line results in a default wild
card character of @.

    AIMDEX DATA;1-40,D=@

The wild card character selected has no effect on
either AIM index generation speed or the AIM access
time. This character should not be changed from the
default unless it could appear in a key; if it could
be a character in a key, it should be changed. The
wild card character selected should be one that does
not occur (or occurs infrequently) in the data file.

Information Display

The I option can be used to display the information
contained in the header sector of the /AID file.
This display provides a means of examining the key
fields and options selected when AIM wrote the file.

The following command line causes the key field
specifications and the options used to create the
DATA/AID file to be displayed on the processor
screen.

    AIMDEX DATA;I

This information can also be directed to either a
print file, local printer, or servo printer with the
F, L, or S options, respectively. These options are
mutually exclusive. Use of either the F, L, or S
option implies the I option.

Overwrite Invalid AIM File

When AIMDEX detects that the /AID file to be
generated already exists, it verifies the content and
format of the /AID file to ensure that it was created
by AIMDEX and is valid. If the header sector is
invalid, AIMDEX terminates. You can specify the O
option to override this termination and force AIMDEX
to overwrite an existing invalid /AID file. AIMDEX
creates an /AID file with an invalid header sector if
any fatal errors occur during execution.

The following command line causes AIMDEX to ignore an
invalid header sector and overwrite an existing
DATA/AID file.

    AIMDEX DATA;1-40,0

Primary Record Select

The P option is used to select primary records. If
you specify the P option, only those records that
meet the specified conditions are used to generate
the AIM index file; all other records are ignored.

Specify the P option in the following format.

    P<nnn><=|#>"<cccccccc>"

    <nnn> specifies the starting column of a primary
    record selection string.

    <=|#> specifies that either an equal sign (=) or
    a pound sign (#) may be entered.

    <cccccccc> specifies the primary record selection
    string.

All records are read and compared to the string
beginning in the specified column (nnn). If an equal
sign (=) is specified in the P option, a record is
selected if the field specified by nnn matches the
primary record selection string (cccccccc). If a
pound sign (#) is specified, a record is selected if
the string does not match.

The following command line causes AIMDEX to select only those records which contain the "AbC" string starting in column 60 of the record.

AIMDEX DATA;1-40,P60="AbC"

Any printable character can be included in the P option selection string, including blanks, commas, and quotes ("). To include a quote in the string, precede it with another quote (two quotes in a row are treated like a single quote instead of string delimiters). For example, the P32="""" option selects only those records that have a quote in column 32. The primary record selection string is limited to 8 characters and must end at or before column 255.

RE-AIM

The R option causes AIMDEX to re-AIM an existing AIM index file using the key specifications and options from the header sector. This allows you to re-AIM the file using the same key specifications and options as given on the previous successful AIMDEX command line. If this option is used, the header sector must be valid.

The following command line causes AIMDEX to use the information from the header sector of DATA/AID. The D, U, and P options can be used in conjunction with the R option if you want to override selected parts of the information from the header sector.

AIMDEX DATA;R

The following command line causes AIMDEX to re-AIM DATA/AID using the information from the header sector. The don't care character from the header sector is overridden by the don't care character specified on the command line (that is, the don't care character is a 0 character in the following command line).

AIMDEX DATA;R,D=0

If key specifications are given on the command line in conjunction with the R option, the key

specifications from the header sector is overridden
by the key specifications on the command line.

The following command line causes AIMDEX to re-AIM
DATA/AID using a single key specification of 1-10.
The setting of the D, P, and U options is taken from
the header sector of DATA/AID.

> AIMDEX DATA;R,1-10

Upper Case

The U option causes all lower case characters to be
interpreted as upper case characters. The normal
upper case range is 0101 through 0132 (A through Z).
If this option is given, all characters in the range
0141 through 0172 (a through z) are treated as upper
case characters. This option causes the character
case to be ignored when using AIMDEX and when looking
up information through the AIM file.

The following command line causes AIMDEX to interpret
the letters a through z as if they were A through Z.

> AIMDEX DATA;1-40,U

The upper case range can be changed by giving
arguments to the U option. For example,
U=<lll>-<uuu>, where <lll> is the lower limit and
<uuu> is the upper limit, are both interpreted as
octal numbers. (This option is intended primarily
for foreign character sets.) The normal range is
U=0101-0132 (A-Z). The minimum value for <lll> is
0100, and the maximum value for <uuu> is 0136.

The following command line causes AIMDEX to interpret
all characters in the range x through z as upper case
characters. (For example, x, y, and z are
interpreted as X, Y, and Z.) A leading zero is not
required when specifying the upper case range
numbers; arguments to the U option are always
automatically interpreted as octal numbers.

> AIMDEX DATA;1-40,U=0130-0132

The U option should be used when keys in the text
file could be either lower or upper case characters.
For example, a name could be entered as Sam McDonald
or SAM MCDONALD. If the U option is given, both
names are equivalent; if the U option is not given,
the names are not equivalent.

The range specified in the U option must be the same
as the shift inversion limits specified when the
DATASHARE VI interpreter is configured. Use of
limits which are different from the DATASHARE VI
shift inversion limits will cause an OPEN error.
Consult the *DATASHARE VI User's Guide*, Document
#50536 for details on how to change the shift
inversion limits using the DATASHARE VI Configurator.

Key Fields

A key field is a field that provides data for the AIM
index. For each line of text processed, text within
the specified key fields is extracted and processed
by AIMDEX. The resulting information is stored in
the AIM file.

If an X is placed before a field specification, the
field is marked as an excluded field. Excluded
fields are still counted as key fields and can be
used in searches like any other key, but the
information they contain is not indexed and,
therefore, does not affect the contents of the AIM
file.

An excluded field can be used to access the file if
at least one included field is also specified for the
search. Since excluded fields are not indexed, a
search cannot consist entirely of excluded fields.

Modifying the contents of a key field normally
requires a DELETE/WRITE sequence to retain AIM access
capability to that record. Excessive DELETE/WRITEs
tend to degrade the performance of AIM. This
condition can be avoided by defining the key field as
an excluded field. This definition allows
modification of the contents of a field by an UPDATE,
thereby reducing the degradation of access speed to
the AIM file. Since an excluded field is not

indexed, changing the contents of the key field does
not prevent accessing a record.

Up to 64 key fields can be specified. If multiple
key fields are specified, they must be listed in
ascending order (key field 2 cannot occur in the data
record before key field 1, and so on). Each field
can be from 1 to 124 characters in length, with the
limitation that the last key field must not extend
beyond column 255 of the record.

The order in which the key fields are specified is
important. The first field specified is field 1, the
second is field 2, and so on. The field number must
be known in order to access any keys indexed in that
field (the field number is the same as the key number
that is used when accessing the AIM file).

Key fields are not allowed to overlap; however, one
key field can be a subfield (completely contained
within) of another. Subfields must always be
specified after the master field. A legal key field
specification could be:

```
key fields     1-5,6-10,15-40,15-30,16-20,26-30,36-40
field number   1   2    3     4     5     6     7
```

```
text data    12345678901234567890123456789012345670890
key fields   |-1-||-2-|      |------------3-----------|
                             |-------4------|     |-7-|
                             |-5-|      |-6-|
```

Note the 4, 5, 6, and 7 subfields in this example.
Subfield 4 is specified after its master field 3.
Field 4 in turn is the master field to subfields 5
and 6. All fields, including subfields, are
specified in ascending order.

The following key field specification is invalid
because the two key fields are not listed in
ascending order:

```
key fields     30-40,10-20
field number   1     2
```

```
text data    12345678901234567890123456789012345670890
key fields              |----2----|         |----1----|
```

The following key field specification is invalid
because the two key fields overlap:

```
key fields     10-30,15-35
field number    1     2

text data      12345678901234567890123456789012345 67890
key fields               |---------1---------|
                             |---------2---------|
```

The following key field specification is invalid
because the subfield is given before the master
field:

```
key fields     10-20,10-30
field number    1     2

text data      12345678901234567890123456789012345 67890
key fields               |----1----|
                         |---------2---------|
```

The following key field specification is valid, but
field 2 serves no purpose because it redefines field
1 with the same value:

```
key fields     10-20,10-20
field number    1     2

text data      12345678901234567890123456789012345 67890
key fields               |----1----|
                         |----2----|
```

Key Field Selection

It is important to distinguish between a key field
and a key. A key field is a range of columns; a key
defines the characters within those columns, or the
string compared to those characters. Consider this
example:

```
        key field       1-5      10-14
        field number   |-1-|     |-2-|
        text line 1    123456789ABCDE
```

```
text line 2    HARRY TOLD JOE
```

Key field 1 is the range of columns from 1 through 5,
and key field 2 is the range of columns from 10
through 14. Key 1 from text line 1 is 12345 (the
characters from columns 1 through 5 in line 1). Key
2 from text line 1 is ABCDE. Key 1 from text line 2
is HARRY. Key 2 from text line 2 is D JOE.

When selecting key fields, there are three points to
remember:

1. All key fields must end on or before column 255.

2. A key field cannot be longer than 124 columns.

3. Key fields cannot overlap.

AIMDEX Runtime Display

One or two lines are displayed if a fatal error is
detected while scanning the command line. The first
line, if displayed, consists only of an up arrow (^)
under the position in the command line where the
error was detected. The second line of the display
may be one of the messages shown in the following
list.

Command Line Scanning

ILLEGAL "DON'T CARE" CHARACTER

This error occurs if the character argument to the D
option is less than 041 (!) or greater than 0176 (~).

ILLEGAL KEY FIELD SPECIFICATION

This error occurs if: one of the columns of a key
field is not in a valid numeric format, the second
column of a key field is less than the first, or a
key field width is greater than 124 columns.

ILLEGAL OPTION

This error occurs if an invalid option character is detected. A valid option includes a digit or the X character as the first character of a key field with the ?, H, D, F, I, L, O, P, R, S, or U option. Any other character on the command line after the semicolon (;) produces this error.

ILLEGAL OPTION SYNTAX

This error occurs if a syntax error is encountered when scanning an option (for example, a missing = after the D option or a missing closing quote on the P option).

ILLEGAL UPPER CASE RANGE

Illegal arguments were given to the U option (U=<lll>-<uuu>). <lll> or <uuu> was less than 0100 or greater then 0137, or <uuu> was less than <lll>.

KEY FIELDS OVERLAP

This error occurs when key fields overlap. Note, however, that subfields are allowed.

KEY FIELDS NOT IN ASCENDING ORDER

Key fields must be specified in ascending order. This error occurs if a key field starts in a column less than the starting column of the preceding key field.

NO NON-EXCLUDED KEY FIELDS GIVEN

The purpose of AIMDEX is to create an associative index for the specified key fields for rapid lookup of records containing those keys in those fields. This informational message is displayed when you specify the entire record as the key field(s).

NUMBER EXPECTED

This error occurs if a number is not found where expected.

NUMBER TOO LARGE

This error occurs if a key field column is greater than 255.

NUMBER TOO SMALL

This error occurs if a key field column is 0.

OPTION ALREADY SPECIFIED

This error occurs if the same option is given more than once.

PRIMARY RECORD SELECTION STRING TOO LONG

This error occurs if the primary record selection string (specified with the P option) ends after column 255.

TOO MANY KEY FIELDS

This error occurs if more than 64 key fields are given.

TOO MANY OR ILLEGAL FILE SPECS

This error occurs if more than two file specification are given or if the portion of the command line before the semicolon (;) is not recognizable.

INVALID HEADER SECTOR IN AIM FILE; FILE NOT MODIFIED

This error occurs if the header sector of an existing AIM file is invalid and the 0 option was not given on the command line. An invalid header sector can be caused by aborting AIMDEX prior to completion.

THE L, S, AND F OPTIONS ARE MUTUALLY EXCLUSIVE

This error occurs if the L, S, and F options are specified on the same command line.

THE 0 AND R OPTIONS ARE MUTUALLY EXCLUSIVE

This error occurs if the 0 and R options are specified on the same command line.

AIM FILE NOT FOUND; CAN'T RE-AIM

This error occurs when the R option is used and the
AIM file specified on the command line cannot be
located.

FILE WAS AIMED WITH WRONG VERSION OF AIMDEX; CAN'T RE-AIM

This error occurs when the R option is used and the
AIM file specified on the command line was created by
an incompatible version of AIMDEX.

File Opening

After the command line is scanned and verified, the
text input file is opened. The following message is
displayed when the file is opened.

TEXT FILE name/ext:drive <message>

The name/ext:drive is the text filename from the
command line.

The <message> contains one of the following messages.

NO SUCH DRIVE

An invalid volume identification was given, or the
specified drive is offline. When this error
condition occurs, AIMDEX terminates.

NOT FOUND

The file could not be found on the specified drive or
on any drive if no drive was specified. When this
error condition occurs, AIMDEX terminates.

NAME REQUIRED

No filename was given on the command line. When this
error condition occurs, AIMDEX terminates.

OPENED

The specified file was found and successfully opened.

After the text input file is opened, the AIM output file is opened. The following message is displayed.

AIM FILE name/ext:drive <message>

The name/ext:drive is the AIM filename entered on the command line.

The <message> contains one of the following messages.

NO SUCH DRIVE

An invalid volume identification was given, or the specified drive is offline. When this error condition occurs, AIMDEX terminates.

SAME AS TEXT FILE

The AIM output file is the same as the text input file. When this error condition occurs, AIMDEX terminates.

PROTECTED

The specified file is write protected. When this error condition occurs, AIMDEX terminates.

OVERWRITTEN

The specified file already exists and is overwritten by the new AIM file.

CREATED

The specified file did not already exist and is created.

Text File Processing

When text file processing is performed, the following progress message is displayed.

CURRENT TEXT SECTOR: sssss

The sssss is the number of the current sector of the text file.

When enough information is compiled to write an AIM block, the message

WRITING BLOCK

is appended to the normal progress message display. While this message is displayed, the index data is converted to the correct format and written to the AIM file. When this process is finished, the message is erased and processing continues.

AIMED nnnnnn LINES IN sssss SECTORS

This message is displayed when AIMDEX terminates normally. (The nnnnnn is the total number of lines in the text file, and the sssss is the total number of sectors in the text file.)

The following error is detected while AIMDEXing the input file. AIMDEX aborts if this error occurs. This message gives the line number in which the error was detected.

ILLEGAL TEXT FILE FORMAT: LINE nnnnnn

This error message is displayed when AIMDEX detects an invalid condition in the text file, (for example, at the specified line number (nnnnnn), no 003 before the end of a sector; a missing end of file mark; or a binary 0 character in the file that is not part of the end of file mark). When this type of condition is detected, AIMDEX terminates.

Purpose

The BACKUP utility is used to make copies of DOS disk volumes. You may copy a logical volume to or from another logical volume or to or from a cartridge tape. Special options allow you to copy all the logical volumes on a 9390 disk pack to or from another 9390 disk pack, copy both the volumes of a 9301 disk to a 9301 cartridge tape, or copy from one to five 9334 logical volumes to or from a 9334 cartridge tape.

BACKUP can produce a copy of a disk volume in one of two formats: a mirror image format or a reorganized format. A mirror image BACKUP is an exact copy of a logical volume. A reorganized BACKUP is a file by file copy. Reorganization allows you to select which files are copied and to group files by extension and filename and remove unecessary segmentation. A reorganized BACKUP also allows copying DOS volumes to volumes which have locked-out cylinders that differ from those on the input volume.

BACKUP can produce copies of disk volumes only on similar disk volumes (for example, one 9324 volume to another, or one 9390 volume to another), or on cartridge tapes. The program does not support copying between disk and diskette, although that is a feasible backup method. On 1800 and 8600 processors that include a diskette drive, the LOAD18 or LOAD86 utility gives you the capability of using the diskette as a backup medium for the hard disk.

Each function of BACKUP and any associated options or considerations are discussed in the following sections.

Use of BACKUP

This chapter is organized so that general information about BACKUP is in this section with subsequent sections handling mirror-image backups, reorganized backups, and finally the error messages associated with this utility.

Use of the KEYBOARD and DISPLAY Keys During BACKUP

The KEYBOARD and DISPLAY keys are recognized by BACKUP anytime a message is being displayed on the screen. Pressing the DISPLAY key causes the current display to freeze until the key is released. Pressing the KEYBOARD key causes BACKUP to terminate immediately and return to DOS. The KEYBOARD key is not active during 9334 Mirror Image Tape backup.

Using BACKUP with CHAIN

You should not run the BACKUP utility from a chain file because BACKUP does not terminate if parity errors occur. You should monitor the entire backup procedure since the backup operation is so critical to the protection of important files.

CAUTION: If you do choose to use BACKUP from a chain file using the CHAIN logging feature, make sure that the log file does **not** reside on either logical volume involved in the backup.

If parity errors are encountered during BACKUP, the program does not allow the chain file to continue until you have manually pressed the KEYBOARD or DISPLAY key (as determined by the message displayed by BACKUP) to acknowledge the occurrence of the errors. If fatal errors occur during BACKUP, either the chain terminates or the ABTIF bit of DOSFLAG is set.

Special Considerations for BACKUP

On the 9301, 931x/9320, 9324, 9334, 9370, or 9390
disk drives, each physical disk may contain multiple
logical drives.

BACKUP usually deals with logical drives; therefore,
you must BACKUP each of the logical drives to backup
the entire physical disk pack.

BACKUP is capable of multiple logical drive backup
when you use the 9 option - 9390 five volume backup
or the 0 (zero) option - mirror image tape backup.

When you use BACKUP on the 9374 or 9350 disks, the
drive contains a fixed disk that is a separate
logical drive from the removable disk.

You may run BACKUP between fixed and removable
drives.

Members of the BACKUP Command

The BACKUP command is itself composed of several
overlays, which must exist as members in the library
in which BACKUP resides. BACKUP and all its members
are released in and normally reside in UTILITY/SYS.
You may make a standalone BACKUP/CMD resident outside
of UTILITY/SYS with the LIBSYS utility; however, you
must include in this standalone library all of the
required BACKUP members using the same member names
as they have in UTILITY/SYS. The members of the
BACKUP/CMD are:

    BACKUP   BACKUP main module
    BCKTP301   9301 tape module, reorganization BACKUP
    BCKTP334   9334 tape module, reorganization BACKUP
    BCKTPPHY   9334 tape module, mirror image BACKUP
    BCKTPLG0   9334 tape module, mirror image BACKUP,
               LGO control program
    BCKTPINT   9334 tape module, mirror image BACKUP,
               INITDISK overlay

NOTE: Other files are required for the 9334 mirror
       image tape backup. These files are listed in
       that section.

Command Format

To initiate a disk backup, enter the command line in the following format:

BACKUP <input volume>,<output volume>[;<options>]

The input and output volume specifications are dependent upon the type of backup that is requested by the <options>.

This basic command line expands as each type of backup is explained in the following sections in this chapter. As each type of backup is described, the available options for each type are also described.

Mirror Image BACKUP Overview

This section details the operation of mirror image backup. A mirror image backup is an exact image copy of one logical volume to another. It is generally the fastest type of disk BACKUP.

A mirror image backup may take place only between logical volumes that are logically identical. This means that the two volumes must have no differences in their Lockout Cluster Allocation Tables (CATs). If there are differences between the two volumes' Lockout CATs, a reorganized copy is forced by BACKUP. You may bypass the check of the volumes' Lockout CATs by specifying the O (the letter O) option on the BACKUP command line.

Mirror image tape backups are possible only between 9301 logical volumes and a 9301 tape drive or between 9330 logical volumes and a 9330 tape drive. Mirror image tape backups of other disk types are not possible. You may, however, produce reorganized tape backups between any disk type supported on an 8600 or 8400 and a 9330 tape.

On mirror image backup tapes, the entire contents of the logical disk drive are copied to tape. This volume image is a complete entity; individual files are not accessible on the tape. When restoring such mirror images, you must restore the entire logical drive. You may not select single files.

Backup with reorganization to tape works in a file by file mode and allows restoration of single files.

This section covers mirror image backups for the following:

● Any two logical disk drives

● 9390 -- To back up all logical volumes simultaneously

● 9301 -- To backup to or from the integral tape drive

- 9334 -- To backup to or from the integral tape drive

Mirror Image Backup of Two Logical
Disk Drives

Use this section when you are backing up between two
logical drives of the same kind. This section is
pertinent for use with all disk drives. For your
convenience, BACKUP has special cases that allow you
to backup all the volumes simultaneously on a 9390
and to use the integral tape drives on the 9301 and
9334. These cases are described in subsequent
sections.

The two logical volumes involved in the BACKUP must
be of the same physical type and must have the same
logical characteristics.

To initiate a mirror image backup of a logical
volume, enter the command line in the following
format:

BACKUP <input volume>,<output volume>[;options]

The input and output volume specifications are in the
standard DOS format of :Dnn, :DRn, or :<volid>. Both
specifications are required on the command line. The
available options for this type of backup are as
follows:

A   Copy only the allocated areas from the
       input volume to the output volume.

C   Copy the input volume's VOLID to the output
       volume (this option is the default for a
       mirror image backup).

D   Do not copy the input volume's VOLID to the
       output volume.

M   Initiate a mirror image backup.

N   Do not verify the output copy.

O   Do not check the two volume's Lockout CATs
       for differences. Specification of this
       option forces verification of the output

copy, regardless of the specification of the N
option.

U   Copy all areas from the input volume to the
     output volume.

V   Verify the output copy.

Once invoked, BACKUP loads and checks the physical
disk types involved in the backup. If you are using
the 9390, 9320/931x, 9350, 9370, or 9374 disk
systems, and your input disk is not physically write
protected (or READ ONLY on some disks), BACKUP
displays the following warning prompt:

*** PLEASE PROTECT YOUR INPUT DISK ***
*** OR, TAP "DISPLAY" KEY TO CONTINUE ***

This prompt is not displayed if 9301, 9324, or 9334
disks are in use, or if you are running BACKUP from a
chain file. If this prompt is displayed, you must
either protect your input disk or hold down the
DISPLAY key to continue.

BACKUP prompts you to verify that the selected output
volume is indeed scratch since the backup operation
destroys any data that is on the output disk.

DRIVE nn SCRATCH?
ARE YOU SURE?

If you are sure that there is no needed data on drive
nn (where nn is replaced by the drive number of the
output disk), you should respond Y to both of these
prompts. Any response other than Y causes an
immediate return to DOS.

If you did not specify the M (mirror image) option on
the BACKUP command line, you are asked if a
reorganized BACKUP is to take place.

FILE REORGANIZATION?

You should respond N to this prompt if you desire a
mirror image backup; responding Y selects a
reorganized backup, which is explained in the section
titled BACKUP with Reorganization in this chapter.

If you did not select a verification mode with either
the V (verify the output copy) or N (do not verify
the output copy), you are asked if verification is to
occur.

DO YOU WANT THE OUTPUT COPY VERIFIED?

You should respond Y if you want the output copy
verified as the backup takes place, or N if you do
not desire verification. While it takes some time to
verify the output copy, such verification can detect
a significant number of errors.

If you did not select a copy mode with either the U
(copy all areas of the input disk to the output disk)
or A (copy only allocated areas of the input disk to
the output disk) options, you are asked to select
such a mode.

DO YOU WANT TO COPY UNALLOCATED CLUSTERS?

You should respond Y to this prompt if you want to
copy all areas of the input disk to the output disk,
or N if you want to copy only allocated areas of the
input disk to the output disk. Copying only
allocated areas means that only parts of the input
disk which are allocated to files are copied to the
output disk. Copying unallocated areas results in
all areas on the input disk being copied to the
output disk, even if these areas are not part of any
files.

A mirror image backup normally copies the input
volume's VOLID to the output volume. If this is not
desired, you must specify the D option on the BACKUP
command line. Specification of the D option results
in the preservation of the output volume's VOLID, if
any.

When BACKUP has obtained all the information it
needs, either interactively from you or from the
command line, the actual disk to disk copy is
started. If you selected verification of the output
copy, the message

COPY WITH INTERLEAVED VERIFICATION PHASE

is displayed to inform you that a verified backup is
being produced.

If you did not select verification of the output
copy, the message

COPY PHASE

is displayed to inform you that a non-verified backup
is being produced. Regardless of the verification
phase, the progress of the backup is signalled in the
message

COPYING CYLINDER: nnn

where nnn is the decimal number of the current disk
cylinder being copied.

9390 Mirror Image Backup of All Disk Pack Volumes

The 9390 BACKUP is a special BACKUP process that copies all five DOS logical volumes from one 9390 disk pack to another 9390 disk pack in mirror image format.

To initiate the 9390 mirror image backup of all disk volumes, enter the command line in the following format:

BACKUP x,y[;<options>]

Where:

x   is the physical drive number of the input drive
y   is the physical drive number of the output drive

The options available with this type of BACKUP are:

9   Initiate a 9390 five volume mirror image backup.

0   Do not check the two volumes' Lockout CATs for differences.

To perform this type of BACKUP, the following conditions must be met:

1. Your system must be running the 9390 disks.

2. All of the Lockout CATs on all of the input volumes must match the Lockout CATs of their corresponding output volumes. (You may specify the 0 option (the letter O) to inhibit BACKUP from performing a check on the Lockout CATs.)

3. You **must** specify the 9 option on the BACKUP command line to run this type of backup.

4. The 9390 controller IPU board must be revision M or later with firmware G or later. Check with your service representative if you are unsure about your hardware revision levels.

Since this is a backup of all five volumes on the
disk pack, no logical drive specifications are
required. You need only supply the physical drive
numbers for the backup to take place. The physical
drive numbers are located on the front panel of the
9390 drive and are in the range of 0-2.

A 9390 mirror image backup may take place only
between logical volumes that are logically identical.
This means that the Lockout CATs on all logical
volumes on the input drive must match the Lockout
CATs of all corresponding volumes on the output
drive. You may bypass the check of the volumes'
Lockout CATs by specifying the O option (the letter
O) on the BACKUP command line.

When a 9390 backup is requested, you are asked if the
output drive is scratch.

IS DRIVE NUMBER n SCRATCH?
ARE YOU SURE?

If you respond Y to both of these questions, the
mirror image 9390 begins immediately. The backup
copies unallocated space and verifies the output;
these functions are not optional. The progress of
the backup is indicated in the message:

BACKING UP CYLINDER nnn

where nnn is replaced by the current physical
cylinder number.

9301 Mirror Image Disk/Tape Backup

The 9301 disk BACKUP may be used to backup both
logical volumes of a 9301 disk to or from a 9301 tape
cartridge. Individual files are not accessible on
the resulting backup tape.

To run the 9301 mirror image backup, enter one of the
command lines in the following format:

BACKUP n,TAPE[;<options>] for disk to tape backup
BACKUP TAPE,n[;<options>] for tape to disk backup

Where:

n is the physical drive number. The physical drive
number must be a single numeric digit from 0
to 4.

The available options for this type of backup are:

    0 (zero)   Initiate a 9301 disk backup.

    T   Adjust the tension of the tape
                    before reading or writing to it.

To perform this type of backup:

● Run the BACKUP on a 9301 disk system.

● Specify the 0 (zero) option on the command line.

9301 Mirror Image Disk to Tape Backup

If backup is from disk to tape and if a tape
cartridge is not in place, BACKUP displays the
following message:

    **INSERT TAPE CARTRIDGE (WRITE ENABLED) AND PRESS
    'ENTER' KEY TO CONTINUE**

BACKUP then reads the first record of the tape to
determine if the tape has been previously used for
the backup process. If the tape has not been

previously used, BACKUP displays the following
message:

FORMAT: UNKNOWN

If the tape has been used for this purpose before,
BACKUP displays the following messages:

FORMAT: SPOOL
DESCRIPTION: <descriptive text>

THIS TAPE HAS VALID SPOOL DATA!
BACKUP DISK TO TAPE DESTROYS ANY PREVIOUS
    INFORMATION ON TAPE.
IS THIS WHAT YOU WANT TO DO? (Y or N)

A response of N returns to DOS. A response of Y
causes BACKUP to display the following messages:

ENTER TAPE INFORMATION:
NAME (max 32 characters)?:

You may enter any name desired to identify the tape.
BACKUP then prompts for the date to be entered in the
following format:

DATE (DD MMM YYYY) WHERE DD = 01-31 (DAY OF MONTH)
MMM = JAN-DEC (MONTH OF YEAR)
YYYY = YEAR (for example, 1985)
DATE ?: (for example, 04 SEP 1985)

Then BACKUP prompts for the time to be entered in the
following format:

TIME (HH:MM) WHERE HH = 00-23 (HOUR)
= 00-59 (MINUTE)
TIME ? (for example, 12:45)

BACKUP then prompts for the entry of a tape description.

TAPE DESCRIPTION

A description of the disk that is being backed up should be entered. BACKUP then displays the following messages:

THIS OPERATION WILL DESTROY EVERY BYTE ON THIS TAPE!
IS THAT WHAT YOU WANT TO DO ? (Y or N):
ARE YOU SURE ? (Y or N):

A response of N to either prompt causes BACKUP to return to DOS.

A response of Y to both prompts causes the BACKUP to be started after displaying the following message:

BACKUP DISK TO TAPE OPERATION IN PROGRESS

The system cannot be used for any other process until this process completes. The operation completes in approximately 20 minutes.

9301 Mirror Image Tape to Disk Restore

If backup is from tape to disk, BACKUP reads the first record from the tape. If the tape is not a valid BACKUP tape, BACKUP displays the following message and returns to DOS:

FORMAT: UNKNOWN

If the tape is a valid BACKUP tape, BACKUP displays the following messages:

FORMAT: SPOOL
DESCRIPTION: (descriptive text)

THIS OPERATION WILL DESTROY EVERY BYTE ON THIS DISK!
IS THAT WHAT YOU WANT TO DO ? (Y or N):
ARE YOU SURE ? (Y or N):

A response of N to either prompt causes BACKUP to return to DOS.

A response of Y to both prompts causes the BACKUP to be started after displaying the following message.

BACKUP TAPE TO DISK OPERATION IN PROGRESS ·

The system cannot be used until this process completes.
This process completes in approximately 20 minutes.

CHAPTER 15.
BKUP9334 COMMAND

Contents

BKUP9334 Command

Purpose

The BKUP9334 utility copies files from up to five:

● Local DOS.D volumes,

● Remote DOS.D (ARC) volumes, or

● Remote DOS.H (ARC) volumes

onto a local 65-megabyte cartridge tape. The utility also restores these files back onto disk either totally or selectively.

The BKUP9334 utility runs only on a DATAPOINT 8600 processor running DOS.D version 2.9.3 or later, with one of the following units attached locally:

● Model 9334 Disk/Tape Unit (27-megabyte disk with 65-megabyte tape)

● Model 9336 Disk/Tape Unit (65-megabyte disk with 65-megabyte tape)

● Model 9339 Tape Unit (65-megabyte tape)

The BKUP9334 utility cannot run if a Partition Supervisor (PS) is running.

All necessary keyins for the BKUP9334 utility may be supplied by a CHAIN file, although the selective BACKUP and RESTORE modes may not be convenient to use under CHAIN. Any errors that cause the BKUP9334 utility to abort also cause an active chain to abort.

Tapes produced by the BKUP9334 utility are not compatible with tapes produced by any other program and vice versa.

Use

To use the BKUP9334 utility, enter a command line in the following format:

BKUP9334 [<print file>];[<mode>][,<options>]

The fields in the command line are:

<print file>   Specifies an optional print
                file to be used with the INFO
                mode. (Refer to "The INFO Mode"
                section.)

<mode>   Specifies the mode of operation:
                HELP (H), BACKUP (B),
                RESTORE (R), or INFO (I)

<options>   Specifies one or more of the
                options that are available for
                the designated mode

The mode is preceded by a semicolon. If no mode is
specified, the default is HELP. Options follow the
mode and are separated from it by a comma. If more
than one option is specified, they are separated by
commas.

The HELP (H) mode displays a help screen that shows
the command line syntax and lists the available
options. The other modes of operation are described
on the following pages.

The BACKUP Mode

The BACKUP (B) mode copies files from DOS volumes to
a 65-megabyte cartridge tape and performs a
reorganized backup. A reorganized backup is a
selective copy of files from the input volume to the
output volume (refer to the "BACKUP with
Reorganization" section in the description of the
BACKUP utility).

The BACKUP mode supports the following option:

   C   Causes a clicking sound for every 32
        sectors copied to tape and for each sector
        copied that contains a DOS format error

Once you have selected the BACKUP mode, the utility
displays the following prompts:

   Is This a Scratch Tape?
   Are you sure?

If your tape is a scratch tape, enter a Y to both prompts to continue; otherwise, enter an N to end the program.

The system displays the following prompt:

Enter Drive Specification Number n:

Enter a drive specification in the form :Dn, :DRn, or :<volid>. If you have entered all the required drive specifications, enter an asterisk (*); the system skips to the tape date prompt. If you enter a drive specification, the system displays the following prompt:

Do you want to eliminate any files during reorganization?

If you enter an N, all visible files from the selected volume are copied to tape. (If running under CHAIN, you should always answer N.)

NOTE: All files are considered visible if the current subdirectory for a volume is SYSTEM. If the current subdirectory is not SYSTEM, then only files in the current subdirectory and the SYSTEM subdirectory are visible.

If you enter Y to the prompt, the names of all visible files on the selected volume are displayed in groups of 64. The file names are numbered for reference. After each group is displayed, the following prompt appears:

Exclude Number(s) (1-64, Range (i.e. 2-10), ALL, or * When Done):

You may enter:

● A single number or a range of numbers specifying the files to be excluded

● The word ALL to exclude all files on the current screen

● An asterisk to indicate that file exclusions on the current screen are complete

The system repeats the preceding prompt until the names of all visible files for the selected volume have been displayed. At this point, if you have not

specified five drives, the system returns to the
drive specification prompt; otherwise, processing
continues.

If one or more files have been selected for copy, the
following prompt appears:

Enter the tape date (ddmmmyy):

Enter two digits for the day of the month (01 through
31); enter three alphabetic characters for the month;
and enter the last two digits of the year (for
example, 02AUG86)

The selected files are then copied to tape. The
display indicates which file is currently being
copied and the number of disk sectors copied.

The RESTORE Mode

The RESTORE (R) mode copies files from tape to disk,
either totally or selectively. The write protection
bits and file subdirectory number are saved on tape.
During restoration of files from tape to disk, this
information is used to restore files to their proper
subdirectory (when possible) and to establish file
protection.

The RESTORE mode operates in a manner similar to the
MIN utility and supports the following options:

     A   Copies all files from all volumes from tape
           to disk

     C   Causes a clicking sound for every 32
           sectors copied to disk

     O   Overwrites existing disk files that are
           write or delete protected

The RESTORE mode attempts to restore onto the disk
from which the backup was originally performed. The
system initially verifies that all disk drive
specifications are valid, then performs the actual
copy from tape to disk.

If the current subdirectory for the drive being
restored is SYSTEM, the restored files are placed
into their original subdirectory. If the current

subdirectory is not SYSTEM, the restored files are placed into the current subdirectory.

RESTORE Using CHAIN: If you are restoring files under control of the CHAIN utility, you should always use the A (ALL) and O (OVERWRIT) options.

The restore operation proceeds automatically unless the disk drive to be written is invalid, off line, or not initialized (by the DOSGEN utility). If one of these problems is encountered, the utility displays an error message and terminates.

RESTORE All Files: If you specify the A (ALL) option, the restore operation proceeds without operator intervention unless the disk drive to be written is invalid, off line, or not initialized (by the DOSGEN utility). If one of these problems is encountered, the utility displays the following prompt:

Enter Drive Specification Number n:

Enter a correct specification for the disk drive. If you enter an asterisk (*), the utility proceeds to the next volume. After a volume specification has been entered, the following prompts appear:

Restore files from volume n (<vol/drive spec>) on tape to <drivespec>?

Are You Sure?

If you enter Y to each prompt, the next volume on tape is selected and verified; if you enter N, the utility requests a drive specification number.

After all disk volume specifications are verified, the actual copying from tape to disk begins. If a file is already visible on disk, it is overwritten unless protected. Duplicate file names are possible if the file is already on the disk but is not visible because it is in another subdirectory.

If a file is already visible but is write or delete protected and the O (OVERWRIT) option was specified, the file is overwritten. If the O option was not specified, the following prompt appears:

File Protected - Overwrite it?

If you enter Y, the file is overwritten; if you enter
N, the file on tape is skipped.

RESTORE Selected Files: If you do not specify the ALL
option, the utility verifies each disk specification.
If a disk drive to be written is invalid, off line,
or not initialized (by the DOSGEN utility), the
utility displays the following prompt:

Enter Drive Specification Number n:

If you enter an asterisk (*), the utility proceeds to
the next volume. If you enter a drive specification,
the following prompts appear:

**Restore files from volume n (<vol/drive spec>) on
tape to <drivespec>?**

Are You Sure?

If you enter Y to each prompt, the next volume on
tape is selected and verified; if you enter N, the
utility requests a drive specification number.

After all disk volume specifications are verified,
the actual copying from tape to disk begins. For
each file, the utility displays the following prompt:

Restore This File?

To restore the file, enter a Y; to bypass the file,
enter an N. If a file is already visible on disk,
the utility displays the following prompt:

File Already Exists - Overwrite it?

To overwrite the file, enter a Y; to bypass the file,
enter an N. Duplicate file names are possible if the
file is already on the disk but is not visible
because it is in another subdirectory.

If a file is already visible but is write or delete
protected and the O (OVERWRIT) option was specified,
the file is overwritten. If the O option was not
specified, the following prompt appears:

File Protected - Overwrite it?

If you enter Y, the file is overwritten; if you enter
N, the file on tape is skipped.

NOTE: The protection that was on the file when it
was backed up to tape is placed on the
restored file.

The INFO Mode

The INFO (I) mode determines what volumes and files
are on a particular tape. This information is
displayed on the processor screen and may also be
output to a printer or to a print file on disk. The
following information is displayed:

● The name and version of the program that created
the tape

● The date the tape was created

● The volume names or drive numbers of the volumes
backed up

● The number of files on each tape volume

The INFO mode supports the following options:

F   Displays the names of the files for each
tape volume

L   Displays and also directs output to a local
printer

P   Displays and also directs output to a print
file on disk

Q   Appends a print file to an existing print
file on disk. The Q option can only be
used with the P option.

S   Displays and also directs output to a servo
printer

If a disk print file is selected (P option), the file
name can be specified on the command line. If a name
is not specified, the default file specification is
BKUP9334/PRT on the booted drive.

Error Messages

The following error messages can occur when you are running the BKUP9334 utility.

Drive Not DOSGENed!

During the RESTORE mode, the system attempted to write on a disk volume that had not been initialized by the DOSGEN utility.

Drive Not On-Line

During the RESTORE mode, the specified disk drive was off line.

Drive Not Valid

During the RESTORE mode, an invalid disk drive specification was encountered.

File not found or opened

During the BACKUP mode, the specified file could not be opened. The file is skipped, and the copy proceeds to the next file.

I can't write a blank tape!

During the BACKUP mode, no files were selected to be copied to tape.

No Tape Unit Found!

Either no tape unit is available or no tape cartridge is mounted. The utility terminates.

That Volume is Not DOSGENed!

During the RESTORE mode, the utility attempted to write on a disk volume that had not been initialized by the DOSGEN utility.