BACK UP Exec™

For SCSI Tape Drives

CONNER

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Preface

About This Manual

This comprehensive user manual provides detailed information as well as procedures for using Backup Exec™ for DOS (Backup Exec). The manual is organized into chapters, beginning with the basics and moving on to more advanced topics.

Before using this software, you should have a working knowledge of the computer and its operating conventions. If you need to review these techniques, refer to your computer's documentation.

Conventions

Numbered lists (1., 2., ...) indicate steps, which imply an explicit sequential order.

If the steps continue on the next page, a *Continues...* icon appears in the lower right corner.

▷ *Continues...*

Text you're required to type is preceded by the word *Type* and follows on the next line in a lowercase font similar to what you'd see on your screen:

Example: Type:

    a:install

and press <Enter>.

Note If you're using a mouse, the following terms are used:

Click	Press the mouse button once.
Double-Click	Press the mouse button twice (quickly).
Check/Uncheck	Click on the check box (□) or press <Spacebar>.

Keys appear in angle brackets (< >).

Example: <Enter>

Key combinations appear in one set of angle brackets and are joined by a plus sign (+).

Example: <Shift + F1>

Registering Your Software

To register your copy of this software, complete and mail the Product Registration card. Registering your software allows us to continue providing the highest quality technical support while keeping you informed about product developments.

Please send us any change of address so you can continue to receive notices about your Conner product.

You may enter the information here for ready reference.

Date of Purchase: _____

Backing Up Your Master Disks

Before installing or upgrading this software, write-protect your original disks, make a backup copy, and store the originals in a safe place. Write-protecting the original disks prevents them from being accidentally erased.

Software Installation

Pre-Installation

Before you install your Backup Exec software, there are a few things you can do to make the installation easier:

◻ Make sure the tape drive and controller card are correctly installed.

◻ Make sure you have at least 2 MB of available storage space on your hard drive.

◻ Make a copy of your original Backup Exec diskette. Store the original and use the copy to install the software.

◻ Refer to the *README* document *(README.DOC)* found on your Backup Exec Installation Diskette. You can use your word processor or an *ASCII text editor* to view the file. This file contains the latest information regarding system compatibility, installation notes, etc. that may be necessary for successfully installing your Backup Exec system.

Installation

To install the Backup Exec software:

1. Insert the Backup Exec Installation Diskette in drive *A:* or *B:*. Type *[drive letter]:install* (e.g., *A:install*) and then press *<Enter>*.

Note If a previous version of Conner Backup Exec exists on your computer in a directory other than the default (C:\CONNER\DOS), and a SET= statement exists in your AUTOEXEC.BAT file, the software will perform a default installation to the SET= statement's directory. If this is not desired, you must either:

- Specify the disk and directory after the install command.

   Example: A:\>install C:\TAPE

- or remove the SET= statement from the AUTOEXEC.BAT file and reboot the computer.

The Backup Exec installation program defaults to installing the software in the *\CONNER\DOS* directory. To install the software in a different directory type:

```
[drive letter]:install [drive]:[directory\path]
(e.g., B:install C:\tape)
```

You will see:

```
┤ Conner Backup Exec Installation ├

Welcome to the Conner Backup Exec installation program.  Refer to the
manual for additional instructions if you are installing the Conner
Backup Exec software on a Novell network.

Refer to the README.DOC file on this diskette for important information.

        The following options are available:

            1.   Continue the installation
            2.   Quit the installation

        Enter your selection → 1
```

2. Type <1> to continue the installation or <2> to return to your DOS prompt. If you are installing the software on a Novell network, see Appendix A. You will see:

```
┤ Conner Backup Exec Installation ├

The software will be copied from the distribution diskettes to your
C:\CONNER\DOS directory.

If this directory does not exist it will be created for you.

┌──────────┐  ■
 ▀▀▀▀▀▀▀▀▀▀▀        Please be sure Diskette 1 is in Drive B:
└──────────┘

Do you want to continue? (Y/N) Y
```
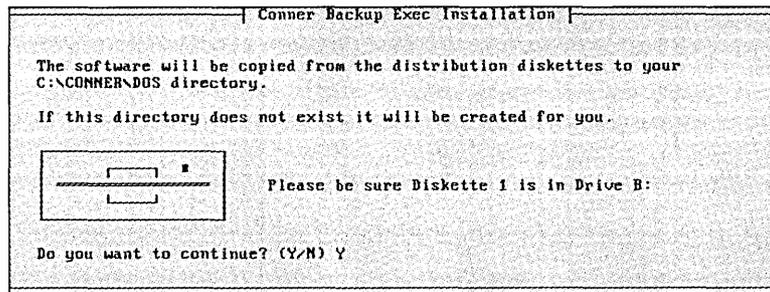
3. Press <Y> to continue. The installation program will proceed with installing the files on your hard disk. When Backup Exec's files have been installed, you will see:

```
┤ Conner Backup Exec Installation ├
Proper performance of the Conner Backup Exec software requires the
CONFIG.SYS file to specify at least BUFFERS=15 and FILES=20. Your
CONFIG.SYS file will be checked.  It will be updated only if these
mimimum values are not found.

        The following options are available:

            1.  Update CONFIG.SYS only if deemed necessary
            2.  Skip this step in the installation
            3.  Quit the installation

        Enter your selection → 1

──────────────────────────── Status ────────────────────────────
Installing file C:\CONNER\DOS\README.DOC
Installing file C:\CONNER\DOS\_AUTO.EXE
Installing file C:\CONNER\DOS\_MAIN.EXE
Deleting temporary file C:\CONNER\DOS\BEDOS.ZIP
Deleting temporary file C:\CONNER\DOS\PKUNZIP.EXE
```

4. If you want the installation software to automatically update your *CONFIG.SYS* file (if necessary) for Backup Exec's minimum requirements, press <1>. If you want to move on to the next step of the installation process, press <2>. To exit the installation, press <3>.

   After you press <1> or <2> you will see:

   ```
   ┤ Conner Backup Exec Installation ├

   A batch file BEDOS.BAT will be created in the root directory of the
   target drive.  You may use this batch file to invoke the Conner Backup
   Exec software.

        The following options are available:

             1.  Create BEDOS.BAT
             2.  Skip this step in the installation
             3.  Quit the installation

        Enter your selection → 1


   ─────────────────────────── Status ────────────────────────────
   Installing file C:\CONNER\DOS\README.DOC
   Installing file C:\CONNER\DOS\_AUTO.EXE
   Installing file C:\CONNER\DOS\_MAIN.EXE
   Deleting temporary file C:\CONNER\DOS\BEDOS.ZIP
   Deleting temporary file C:\CONNER\DOS\PKUNZIP.EXE
   ```

5. If you want the installation software to create a batch file that will allow you to invoke Backup Exec from your *root* (i.e., C:\) directory, press <1>. If you want to move on to the next step of the installation process, press <2>. To exit the installation, press <3>.

6. You will be notified that your Backup Exec software has been successfully installed. Press any key to return to your DOS prompt.

7. If you did not choose to have the *BEDOS.BAT* file created (Step 5), you should add the Backup Exec *PATH* and *SET* commands to your *AUTOEXEC.BAT* file. This will allow you to start the software from any directory. Your *PATH* and *SET* lines should look similar to this example (make sure they are in the following order):

   ```
   PATH C:\;C:\DOS;C:\CONNER\DOS
   SET BEDOS=C:\CONNER\DOS
   ```

For information on modifying your *AUTOEXEC.BAT* file refer to your DOS manual.

Software Compatibility Chart

If you are upgrading from *QICstream, FasTape,* or *Sytos* products, refer to the following chart for issues concerning compatibility.

I currently have:	Existing hardware supported?	Can Backup Exec read my tapes?
QICstream v 3.0*	Yes	Yes
QICstream v2.01	Yes[3]	Yes[1]
QICstream v1.92B	Yes[2, 3]	Yes
FasTape v5.0	Yes[4]	Yes[1]
FasTape v4.0	Yes[4]	No
Sytos v3.11	Yes	Yes[5, 6]

* = International

[1] = Data backed up with this product in file-by-file mode can be read by Backup Exec. Backup Exec will *not* read image backups.

[2] = Some *QICstream version 1.92B* users may get a *Drive not supported* message when starting the software.

[3] = Backup Exec only supports nine I/O addresses for the *Archive VP402 controller.* Refer to you controller's documentation for address settings.

[4] = The *FasTape 150i* can be converted in order to work with Backup Exec. Contact Conner Sales for conversion information. The *FasTape 60 i/e* drives are not supported in this version of Backup Exec.

[5] = All files (including network files) are treated as DOS files. No Novell extended attributes, or trustee information can be restored. Bindery files that have been backed up in file-by-file mode can be restored.

[6] = Only file-by-file backup sets are supported. Neither type of *Sytos image backup sets* are supported.

Note Some older Archive tape drives may not support extended length (1000 ft.) 6250 tapes.

Configuration

Backup Exec allows you to change its configuration to meet your system's requirements. To facilitate hardware configuration, type: *bedos /c* at the \CONNER\DOS prompt.

The Settings Menu

The *Settings* menu lists the options available to customize Backup Exec's configuration file (BEDOS.CFG) through the software. To select an option, use the arrow keys to move the highlight bar over the option and press <Enter>.
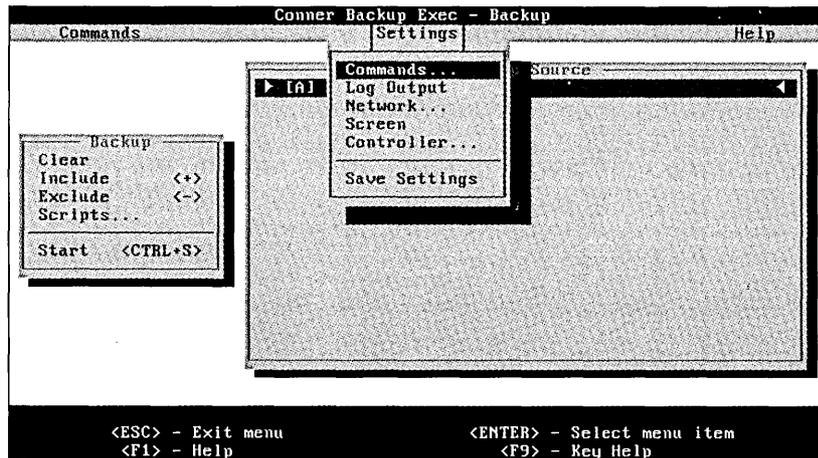
Each option is described in this chapter; illustrations show Backup Exec's default settings. If you change any of the options and want to save them permanently, select *Save Settings* and press <Enter> before exiting the *Settings* menu. Otherwise, the changes that you made will only be in effect during the current Backup Exec session.

Commands

Below are descriptions for items in the *Commands* configuration window:

```
Commands
General

Backup
Restore

Catalog
```

General

```
                              General
[X]  Display file names during backup, compare and restore

[X]  Back up, compare and restore special files
[X]  Back up, compare and restore hidden files
[X]  Compare and restore empty directories
```
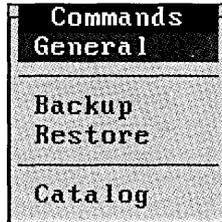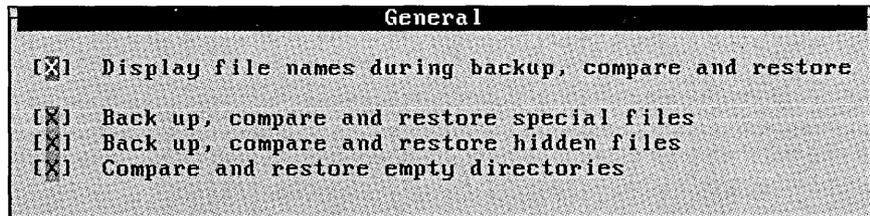
Display filenames during backup, compare, and restore

The filename display option allows you to display every filename on the monitor as it is processed, or to just display the names of subdirectories. If you do not want any of the files to be displayed on the monitor, press the <Spacebar> in the check box to unmark the option.

Back up, compare and restore special files

Special files include files that are marked with any combination of *system* <S> or *read-only* <R> attributes. Special files should normally be backed up.

Some copy-protected applications may mark files as special. If this is the case, the copy-protected files should not be backed up or restored.

If you choose to unmark this option, special files can still be backed up by going through the directory listing and specifically marking the files.

Back up, compare and restore hidden files

These files are used by DOS and some applications. Hidden files do not appear in a normal DOS directory of the disk. However, when you access the disk through Backup Exec, these files appear and are identified with an <H>. In most cases hidden files should be backed up; however, there is one exception. Some copy-protected applications may mark files as hidden. If this is the case, you should exercise caution when backing up or restoring these files to ensure they are not overwritten.

If you choose to unmark this option, hidden files can still be backed up by going through the directory listing and specifically marking the files.

Back up, compare and restore empty directories

Empty directories contain no files or subdirectories. If you do not want to back up and restore empty directories, you must unmark this option.

Many applications create directories that store temporary files. Be careful when performing restore operations. If outdated information is restored to it, the application may be harmed.

Backup

```
┌─────────────────────────────────────────────────────────────┐
│                          Backup                              │
│                                                              │
│  [X]   Prompt for tape name                                  │
│  [ ]   Prompt for tape password                              │
│  [X]   Prompt for backup set name                            │
│  [X]   Prompt for backup set description                     │
│                                                              │
│  [X]   Skip open files                                       │
│  [X]   Create the SKIPPED script                             │
│                                                              │
│  [X]   Compare after backup                                  │
│  [ ]   Prompt before comparing backup                        │
│                                                              │
│  [X]   Reset each file's modified bit after backup           │
│                                                              │
│  [X]   Back up drives in alphabetical order                  │
│                                                              │
└─────────────────────────────────────────────────────────────┘
```
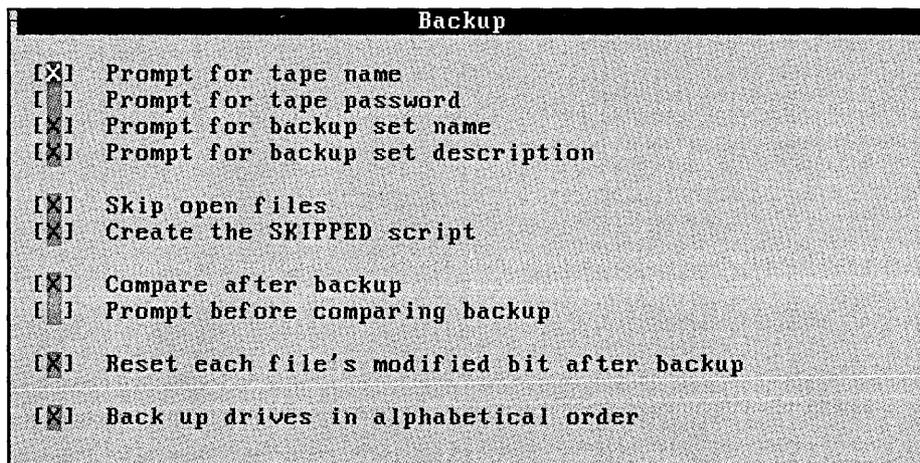
Prompt for tape name

By default, you are prompted to enter the name of the tape when you use a
new tape, a blank tape, or you are overwriting a tape. The prompt will
appear after you have entered the backup set name and backup description.
The tape name uniquely identifies the tape (e.g., *Monday's backup*, *Backup
from 7/1*, etc.) and may be up to 32 characters long.

If you do not want to be prompted to enter a tape name, unmark this option
with the <Spacebar>. If you unmark the *Tape Name* prompt option, the
tape name will default to *Tape created on [today's date]*.

Setting the catalog level to *full* will also mark the *Tape Name* prompt
option.

Prompt for tape password

Passwords may be used to protect the data on a tape by preventing
unauthorized access. If you want to be prompted to define a password for a
tape, mark this option with the <Spacebar>.

Once a tape has a password, you must enter the password as it was saved to retrieve the data on the tape. A tape that is password protected will retain the password until the tape is overwritten, or until the tape is erased.

If you marked the password prompt option, but you do not wish to assign a password to a particular tape, press <Enter> at the password prompt when you start a backup. You will see:

```
This tape will have no password.
```

You will not be required to supply a password to access this particular tape, since no password was supplied for it.

⚠️ **Important**   If you back up a tape with a password and forget the password, *the data cannot be* recovered. Conner Technical Support will not be able to assist you in this matter.

The purpose of the password is to stop unauthorized access to the information on the tape. A password cannot stop anyone from destroying the information on the tape. Therefore a password protected tape may be erased without entering the password.

Prompt for backup set name

To help you identify the contents of your tapes, Backup Exec defaults to prompting you to enter a name for each backup set. The backup set name may be up to 32 characters long (including spaces). Ideally you want this name to distinguish this backup set from other sets on the same tape (e.g., *Backup of Accounting Files*).

If you are backing up multiple drives, each drive is treated as a separate backup set. Therefore, you will be prompted to enter a backup set name for each marked drive.

If you do not wish to be prompted to enter a backup set name, unmark the option with the <Spacebar>. If you unmark this option, the default is the drive letter (e.g., C:).

Setting the catalog level to *Full* will also mark this option (see *Catalog* on page 2–10).

Prompt for backup set description

The backup set description may be used to identify the contents of a backup set. This description may be up to 60 characters long (including spaces) and will be displayed when you view the contents of a tape.

In the case of backing up multiple drives, each drive is treated as a separate backup set. Therefore, if you mark more than one drive for backup, you will be prompted to enter a backup set description for each marked drive.

If you do not wish to be prompted to enter a backup set description, unmark this option with the <Spacebar>.

Skip open files

When this option is marked, Backup Exec will skip files that are in use during the backup. If you unmark this option, the backup will wait for open files to close before continuing.

When the *Skip open files* option is unmarked and the software tries to back up an open file, a message is displayed stating the file is in use and the software is waiting. You can wait until the file closes or press any key to have Backup Exec skip the file.

Note Make sure this option is left marked if you are performing unattended backups.

Create the SKIPPED script

This option creates a script that includes all of the files skipped during the backup. The script name is SKIPPED and it will appear when you select *Scripts/Load* in the *Backup* operation window following a backup that skipped over files that were in use.

Files skipped during a backup will be appended to an existing skipped script. A backup description will be written to the script file describing the backup. Once you run the SKIPPED script to back up the files that were in use, it will automatically be removed from the *Load* window.

You may wish to set up the SKIPPED script as a regularly scheduled job in the AUTOBACK software.

Compare after backup

Backup Exec will do an automatic file-by-file comparison of the contents of a backup against the files on disk upon the completion of each backup operation. If you do not wish for Backup Exec to automatically compare backed up data, move the cursor to this check box and press the <Spacebar> to unmark the option.

✍️ **Note** Comparing all backup operations is highly recommended.

Prompt before comparing backup

This option is used in conjunction with the *Compare after backup* option. Backup Exec does not default to having both options marked, so you will not be prompted before the compare operation takes place. If you wish to be prompted before the compare operation begins, mark this option with the <Spacebar>.

If *Compare after backup* is not marked, this option is grayed out.

Reset each file's modified bit after backup

When you create a new file or change an existing file, a file attribute called the *modified bit* is turned on. *Modified files* (files with the modified bit turned on), are marked by <M>. When Backup Exec backs up a file, the modified bit will be turned off (if you have this option marked) to signify that the file has been backed up.

If you are backing up a device that is write-protected, do not mark this option, otherwise the software will try to clear the modified bit by writing to the device and an *Abort, Retry, Fail* error message will be generated.

Back up drives in alphabetical order

This option allows you to have Backup Exec back up the drives you have selected in alphabetical order. For example, if you selected drives F:, D: and C: (in that order), and you want them to be included in the backup set in alphabetical order (C:, D:, and F:) select this option.

Restore

```
┌──────────────────────────────────────────────────────────────┐
│                           Restore                              │
│ [X]  Restore over files that exist on the disk                 │
│ [ ]  Prompt before restoring over "read-only" or "modified" files │
│                                                                │
│ [X]  Compare after restore                                     │
│ [ ]  Prompt before comparing restore                           │
│                                                                │
└──────────────────────────────────────────────────────────────┘
```
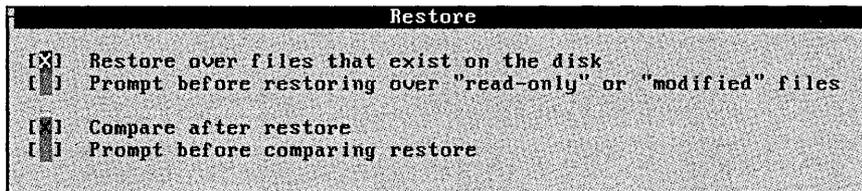
Restore over files that exist on the disk

Be careful of restoring older versions of files over existing files.

For example, after you have upgraded your operating system or a software package, you do not want to restore old versions of the software. In a case similar to this, you would need to unmark this option.

When the *Restore over files that exist on the disk* option is unmarked, only files that appear on the tape, and not on the disk, will be restored.

Unmarking this option causes the software to check for existing files, which slows down the restore operation. If you are only restoring a few files and/or you are certain that the files are the versions you want, leave this option marked.

Prompt before restoring over "Read-Only" or "Modified" files

Mark this option if you want to be prompted prior to restoring *Read-only* or *Modified* files. Since *read-only* files typically never change, there is usually no benefit in restoring them. Modified files are files that have been changed since they were backed up. You may choose to mark this option if you want to be prompted before restoring older versions of files over newer revisions. To receive the prompt, the following conditions must exist:

□ this option is marked

□ you are restoring a file and the file exists on disk in the directory where you are restoring the file

□ the file has changed or is marked *read-only*

This option allows you to skip these files if you do not want them restored.

Prompting for files slows down the software and requires user intervention. If you want a faster restore and you are not concerned about *read-only* or *modified files*, do not mark this option.

Compare after restore

Backup Exec will do an automatic, file-by-file comparison of the files restored to a drive against the contents of the tape upon the completion of the restore operation. If you do not wish for Backup Exec to automatically compare restore operations, unmark this option with the <Spacebar>. Comparing all restore operations is highly recommended.

Prompt before comparing restore

This option is used in conjunction with the *Compare after restore* option. Backup Exec does not default to having both options marked, so you will not be prompted before the compare operation takes place. If you wish to be prompted before the compare operation begins, mark this option with the <Spacebar>. If *Compare after restore* is not marked, this option is unavailable.

Catalog

```
┌──────────────────────────── Catalog ─────────────────────────────┐
│ Select catalog level:                                             │
│ (●)  Full                                                         │
│ ( )  Partial                                                      │
│ ( )  None                                                         │
│                                                                   │
│ [X]  Clean up catalog after backup                                │
│                                                                   │
│ Path:  C:\CONNER\DOS                                              │
│                                                                   │
└───────────────────────────────────────────────────────────────────┘
```
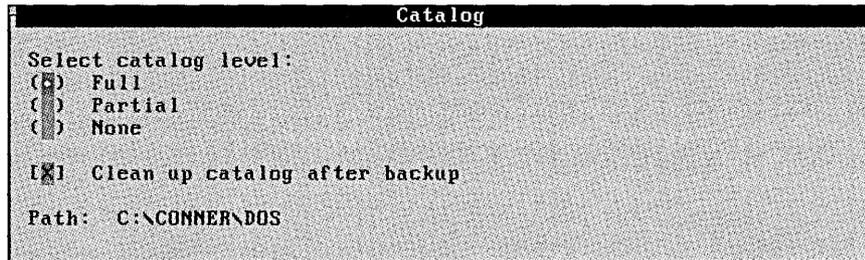
Select catalog level

The catalog level is the amount of information stored in the catalog database for tapes and their backup sets. If you select *Full*, the catalog will include the tape name and date, all backup set names and dates, all subdirectories, and all file names and file detail information (file sizes, etc.).

If you select *Partial*, the catalog will include tape and backup set information only. File information is not included at this level.

Tapes will be cataloged automatically after a backup completes if the catalog level is *Full* or *Partial*.

If you select *None* or if there is insufficient disk space for the catalog, no catalog will be created. If, at a later time, you decide you would like to catalog the information for a tape, select full or partial cataloging and then use the *Catalog a Tape* option found under the *Commands* menu.

When you change from *None*, to *Partial* or *Full*, you will be prompted for tape names and backup set names before performing backup operations. This is done so you will have a more accurate description of the contents of your catalog.

Clean up catalog after backups

Clean up catalog after backups keeps track of catalog information that is no longer current, because a tape has been overwritten or erased. This option helps keep your catalog in order by automatically tagging catalog information as it is deleted. This information is removed when you run the *Compact the Catalog* function under the *Commands* menu. It is recommended that this option be left on.

If you unmark this option, the catalog will continually increase in size because outdated tape information is not being removed. You may manually remove deleted file information from the catalog by using the *Compact Catalog* option found under the *Commands* menu.

Deleting the Catalog

There may be instances when it is necessary to delete the catalog files on your hard disk. The catalog is made up of five files which are located in either in your Backup Exec directory or in a directory specified in the BEDOS.CFG configuration file (see **Path_for_catalog_files* = on page B–10).

The names of the five catalog files are:

> bedname.dat
> bedname.idx
> bedbset.dat
> bedbset.idx
> beditem.dat

Deleting these catalog files will not affect the performance of Backup Exec's *Backup* operations. However, to maintain Backup Exec' s performance during *Restore* operations, recatalog your tapes prior to beginning a restore session.

Log Output

```
┌─────────────────────────────────────────┐
│               Log Output                 │
│                                          │
│ Select level:                            │
│ ( )   0. None                            │
│ (•)   1. Backup set information          │
│ ( )   2. Directory names and level 1     │
│ ( )   3. File names and level 2          │
│ ( )   4. File details and level 3        │
│                                          │
│ Select destination:                      │
│ ( )   Printer                            │
│ (•)   File:      BEDOS.LOG               │
│                                          │
│ [X]   Overwrite existing log file        │
│                                          │
└─────────────────────────────────────────┘
```
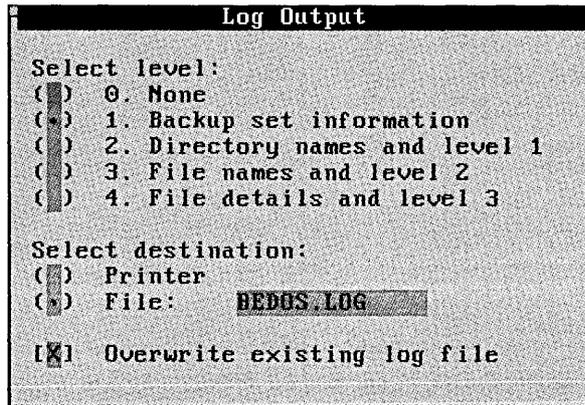
Select Level:

Each successive log level includes the previous level's output in addition to output of the selected level.

Level 1 includes a volume specification, the drive letter, the backup set number on the tape, the tape number, the tape label, the starting date and time, any errors encountered, ending date and time, and completion statistics. For example,

```
Tape 1  Tape: "Daily"
Set 1  Set Name: "Name of my backup set"
Set Description: "description of my backup"
Backup of C: - Created on 05/20/92

Backup operation started: 05/20/92 at 10:00a

Total directories: 2
Total files: 11
Total bytes 122,912
Total time: 00:00:12 (10242 bytes/second)

Backup operation ended: 05/20/92  10:00a
```

Level 2 includes all of the information contained in Level 1, plus all of the processed subdirectories.

```
Tape 1 Tape: "Daily"
Set 1  Set Name: "Name of my backup set"
Set Description: "description of my backup"
Backup of C: - Created on 05/20/92

Backup operation started: 05/20/92 at 10:00a

Directory \

Directory \DOS

Total directories: 2
Total files: 11
Total bytes 122,912
Total time: 00:00:12 (10242 bytes/second)
Backup operation ended: 05/20/92  10:00a
```

Level 3 includes levels 1 and 2 plus a wide (80 characters across) listing of all the files processed.

```
Tape 1  Tape: "Daily"
Set 1  Set Name: "Name of my backup set"
Set Description: "description of my backup"
Backup of C: - Created on 05/20/92

Backup operation started: 05/20/92 at 10:00a

Directory \
IBMBIOS.COM IBMDOS.COM CONFIG.SYS  AUTOEXEC.BAT

Directory \DOS

APPEND.EXE ASSIGN.COM ATTRIB.EXE BACKUP.COM BASIC.COM
BASICA.COM XCOPY.COM

Total directories: 2
Total files: 11
Total bytes 122,912
Total time: 00:00:12 (10242 bytes/second)

Backup operation ended: 05/20/92  10:00a
```

Level 4 includes level 3 plus file sizes, file date/time and file attributes.

```
Tape 1  Tape: "Daily"
Set 1  Set Name: "Name of my backup set"
Set Description: "description of my backup"
Backup of C: - Created on 05/20/92

Backup operation started: 05/20/92 at 10:00a

Directory \
IBMBIOS.COM                              23740  01/07/92 08:12a
IBMDOS.COM                               30650  01/07/92 08:12a
CONFIG.SYS                                 154  01/07/92 08:12a
AUTOEXEC.BAT                               790  01/07/92 08:12a

Directory \DOS
APPEND.EXE                                5810  01/07/92 08:12a
ASSIGN.COM                                1530  01/07/92 08:12a
ATTRIB.EXE                               10656  01/07/92 08:12a
BACKUP.COM                               30738  01/07/92 08:12a
BASIC.COM                                35340  01/07/92 08:12a
BASICA.COM                               35340  01/07/92 08:12a
XCOPY.COM                                11776  01/07/92 08:12a

Total directories: 2
Total files: 11
Total bytes 122,912
Total time: 00:00:12 (10242 bytes/second)

Backup operation ended: 05/20/92  10:00a
```

Select destination:

The software automatically keeps an output file for log information in the directory where your Backup Exec software files are stored. The default log name is BEDOS.LOG, but if you want this file to have another name, enter the new file name (maximum 8 characters and a 3 character extension). Do not enter a complete path name. The file is automatically put in the directory where you installed the Backup Exec software.

If you wish to print out the log information, select *Printer.*

Overwriting existing log file

Backup Exec is configured to overwrite the existing log file after each operation. If you unmark this option, operation results will be appended to the log file, rather than overwriting the information from the previous operation.

If you unmark this option, the log file may grow rapidly depending on the amount of information you are logging and the number of operations you perform. If you choose to keep a running log file, you can edit it with an ASCII editor or a word processor to delete old information.

Network

When you select *Network* under the *Settings* menu you will see:

```
  Network
  Type
  Settings
```
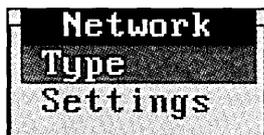
Type

Under *Type*, choose which type of network you are using.

```
              Type
  Select network software:
  (o)  None
  ( )  Novell NetWare
  ( )  3Com 3+
  ( )  IBM PC Network
  ( )  Other
```
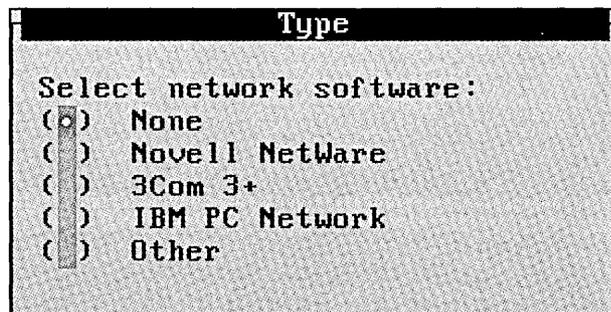
If your network is not listed, select *Other.* The default for this option is *None* (no network).

Settings

```
┌────────────────────────────Settings────────────────────────────┐
│                                                                 │
│  [X]   Back up/restore Macintosh resource information           │
│  [X]   Preserve last accessed date for NetWare files            │
│                                                                 │
└─────────────────────────────────────────────────────────────────┘
```
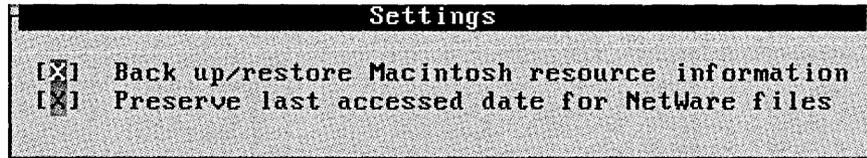
Backup/Restore Macintosh resource information

Backup Exec is configured to back up and restore Macintosh resource
information if it is present. If you unmark this option, the Macintosh
resource information will not be backed up or restored. If you are on a
network and you are not backing up these files, unmarking this option will
give you better Backup Exec performance.

Preserve last accessed date for NetWare files

When a file is accessed through NetWare, the *last accessed date* field is
modified to indicate the last time someone accessed that file. If you unmark
this option Backup Exec will change this date when it backs up the file.
Backup Exec is configured to leave NetWare's *last accessed date* field
unchanged.

Screen

```
┌─────────────────────────────Screen──────────────────────────────┐
│                                                                  │
│  Select monitor type:                                            │
│  (o)   Color                                                     │
│  ( )   Monochrome                                                │
│  ( )   Auto-determine                                            │
│                                                                  │
│  [ ]   Highlight active window                                   │
│                                                                  │
│  [ ]   Slow down monitor output to avoid flicker                 │
│                                                                  │
└──────────────────────────────────────────────────────────────────┘
```
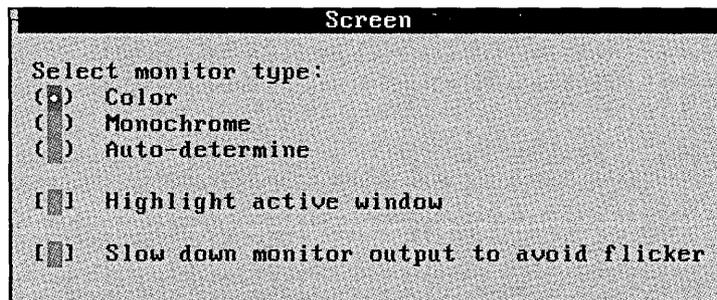
The *Screen* window allows you to configure the Backup Exec software for
your monitor.

Select monitor type?

Select which type of monitor you are using with your system. If you want Backup Exec to automatically determine your monitor type, select *Auto-determine*.

If you are using a Micro Channel system with a monochrome monitor, select the *Monochrome* setting. The *Auto-determine* feature automatically defaults to color with Micro Channel systems.

Highlight active window

Select this option if you want a border to appear around the active window. The border will be *blue* (color) or *black* (monochrome). If you have trouble recognizing the active window while you are in the Backup Exec software, you may wish to select this option.

Slow down monitor output to avoid flicker

Backup Exec writes directly to video memory. With some video cards you may get *flicker* on the screen when the software begins screen writes. Flicker is a harmless effect that appears when the screen is being updated. It does not remain on the screen all of the time. If you have a problem with monitor flicker, mark this option.

Controller
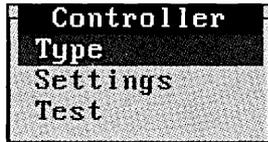
These options are used to match the software to the settings on the controller card.

Type
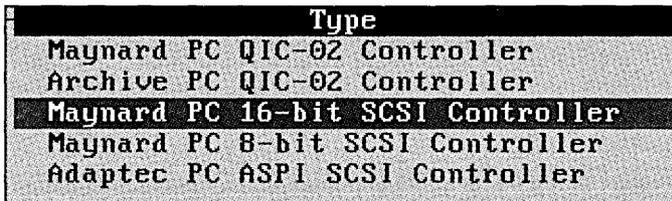
This window lists the available controller options for Backup Exec. Your controller type is determined automatically when you run Backup Exec after installation. If you receive a *Controller not found* error, check here to make sure the correct controller card is indicated.

Settings

When you select this option you will see a configuration window that matches the currently defined driver.

Example:

```
┌───────────────────────────────────────────────┐
│        Maynard SCSI Controller Options         │
│                                                │
│                            Controller          │
│                                                │
│          Status:            AUTO               │
│          I/O Address:       AUTO               │
│          IRQ Channel:       AUTO               │
│          DMA Channel:       AUTO               │
│                                                │
└───────────────────────────────────────────────┘
```
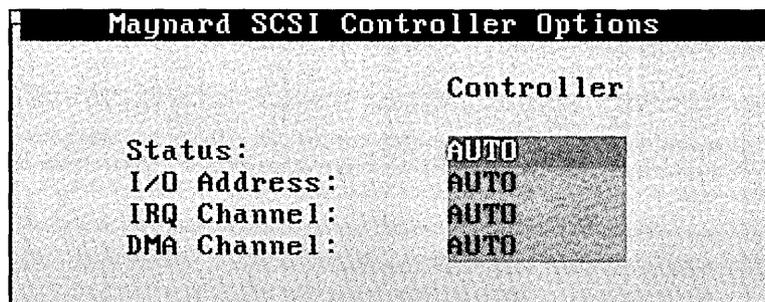
To get a list of the options for each setting, highlight the setting and press <Enter>.

Note   If you have a Micro Channel system, you will not be able to change the adapter settings through this menu. Use the reference disk to change the settings for your particular adapter.

Status

Auto, Disabled, Enabled. Auto indicates that if a controller is found by the system, it is to be used. *Disabled* tells the system to not use that particular controller even if located. *Enabled* requires the system to locate that controller.

I/O Address

The default is AUTO. Move the highlight bar over the option and press <Enter> to see a list of values for your particular controller.

IRQ Number

The default is AUTO. Move the highlight bar over the option and press <Enter> to see a list of values for your particular controller.

DMA Channel

The default is AUTO. Move the highlight bar over the option and press <Enter> to see a list of values for your particular controller.

Changing the hardware settings under *Controller/Settings* does not override the jumper settings on the controller card. The jumpers on the controller card must match the settings in the software.

Test

Select *Test* to make sure there are no conflicts within your system.

Save

Changes made in the Backup Exec software menu can be saved permanently in the BEDOS.CFG configuration file by moving the highlight bar over *Save Settings* and pressing <Enter>.

If you wish to change options for this Backup Exec session only, make any changes while in the *Settings* menus, but do not select *Save Settings*. The changes go into effect immediately and last for as long as you continue the current Backup Exec session.

Using Backup Exec

This chapter familiarizes you with Backup Exec's basic functions.

Starting Backup Exec

To start the Backup Exec software from your DOS prompt, type *bedos* then press <Enter>.

Note   Before using Backup Exec, it must be configured through the *Settings* menu. To directly access the *Settings* menu from the DOS prompt, start Backup Exec by typing *bedos /c*.

Example: c:\conner\dos>*bedos /c*
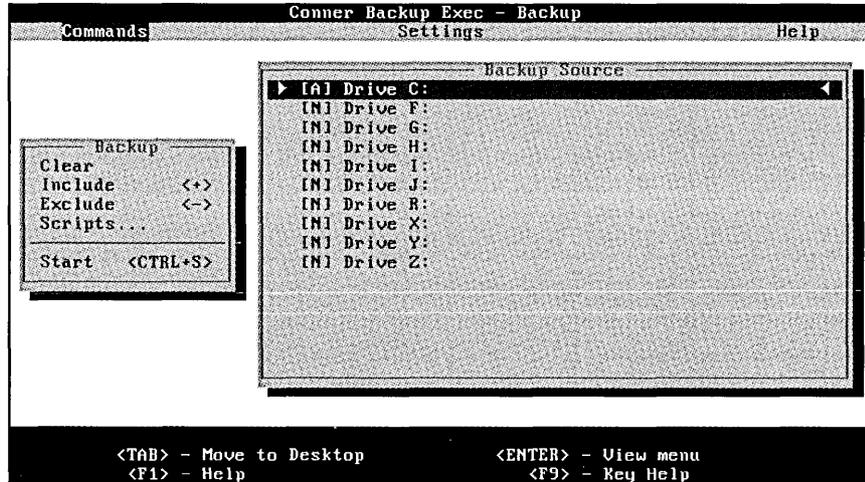
Note   If you did not have the *BEDOS.BAT* file installed in your root directory during the installation, it may be necessary to enter the directory containing the Backup Exec software before typing *BEDOS*. (Entering the *\CONNER\DOS* directory is not necessary to start the software if you have the directory specified in the *PATH* statement in your *AUTOEXEC.BAT* file.)

The Backup Exec Menu

When the Backup Exec software is loaded, you will see a menu similar to this:

```
                        Conner Backup Exec - Backup
      Commands                      Settings                        Help

                                          Backup Source
                        ▶ [A] Drive C:                               ◀
                          [N] Drive F:
                          [N] Drive G:
                          [N] Drive H:
              Backup      [N] Drive I:
        Clear             [N] Drive J:
        Include    <+>    [N] Drive R:
        Exclude    <->    [N] Drive X:
        Scripts...        [N] Drive Y:
                          [N] Drive Z:
        Start   <CTRL+S>


          <TAB> - Move to Desktop         <ENTER> - View menu
          <F1>  - Help                     <F9>   - Key Help
```

Navigating the Backup Exec Menu

While in the Backup Exec menu, there are several keys you can use to navigate through the software.

\<Tab\>	moves you from window to window on the desktop, or from the menu bar to the desktop
\<Esc\>	toggles you between the pull-down menus and the menu action bar
\<Enter\>	begins the highlighted menu action
\<Spacebar\>	selects or deselects subdirectories and files, and marks options
\<Ctrl + S\>	starts the operation currently selected in the *Commands* menu
\<F9\>	activates the key help (quick keys) menu

<F1>	activates on-line help
<Alt + C>	activates the *Commands* menu
<Alt + S>	activates the *Settings* menu
<Alt + H>	activates the *Help* menu
<F2> or <Ctrl + Enter>	accepts your selections

The arrow keys <↑> <↓> < →> <←> can also be used to navigate through menus.

Most of the functions in Backup Exec have shortcut key commands that allow you to perform operations quicker than by using the menus. For example, pressing <Ctrl + B> accomplishes the same thing as activating the *Commands* window, highlighting *Backup*, and pressing <Enter>. To get a list of these key commands, press <F9>. Shortcut key commands are also listed next to the options in the *Commands* menu.

You can also execute commands from the menus by pressing a command's highlighted letter. For example, pressing *w* while in the *Commands* menu activates the *Rewind* command, just as selecting *Rewind* and pressing <Enter> does.

Available key options appear at the bottom of your screen in the key help window.

Help

On-line help is activated whenever you press the <F1> key. The help window that appears is *context-sensitive*, which means the information in the window relates directly to the part of the Backup Exec menu software you are using.

For example, if you want help on the *Backup* command, move the cursor over *Backup* in the *Commands* menu and press <F1>.

If the help text is larger than the window, use the up and down arrow keys, <Page Up>, <Page Down>, <Home>, and <End> keys to scroll through the help screen. To exit from a help window press <Esc>.

Press <F9> to display a comprehensive list of available operations and keystrokes.

The Commands Menu

```
*Backup              <CTRL+B>
 Restore             <CTRL+R>
 Compare             <CTRL+P>

 Directory           <CTRL+D>
 Rewind              <CTRL+W>
 Retension           <CTRL+N>
 Quick Erase         <CTRL+Q>
 Full Erase          <CTRL+F>

 Catalog a Tape      <CTRL+L>
 View/Delete Catalog <CTRL+U>
 Compact Catalog     <CTRL+O>

 Exit                <CTRL+X>
```

The *Commands* menu includes data operations, tape drive functions, and options for Backup Exec's catalog. You can also exit Backup Exec from this menu. Descriptions for all of the items under the *Commands* menu can be found in this chapter.

BackUp

The first operation you will probably want to perform with Backup Exec is a full backup of your hard drive.

1. Backup Exec automatically selects your default hard drive (i.e., C:\) upon start-up for backup. Simply move to the *Backup* operation window by pressing the <Tab> key (see *Default_backup_drives* = on page B–4).

```
┌──────────────────────┐
│       Backup         │
│ Clear                │
│ Include       <+>    │
│ Exclude       <->    │
│ Scripts...           │
│                      │
│ Start     <CTRL+S>   │
└──────────────────────┘
```
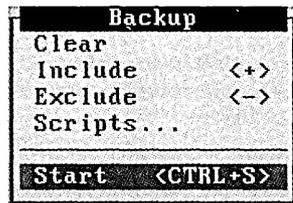
Options for the *Backup* operation window include:

Clear	clears any existing selections marked for backup.
Include	allows you to choose specific *files/directories* to backup.
Exclude	allows you to exclude specific *files/directories* for backup operations.
Scripts	activates the *Scripts* menu
Start	begins the backup operation

2. When you enter the *Backup* operation window, the highlight bar will automatically move to *Start*. Press <Enter> to begin the backup operation. You will see:

```
┌─────────────────────── Backup Set Name ───────────────────────┐
│                                                               │
│  C:                                                           │
│                                                               │
│  Backup Set Name                                              │
│  ███████████████████████████████████████████                 │
│                                                               │
└───────────────────────────────────────────────────────────────┘
```
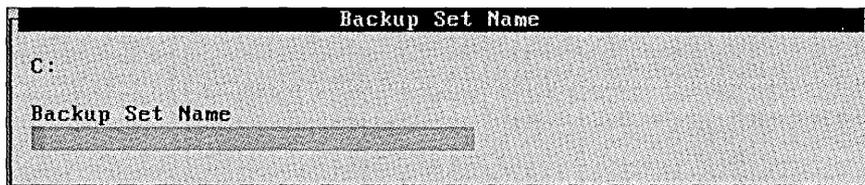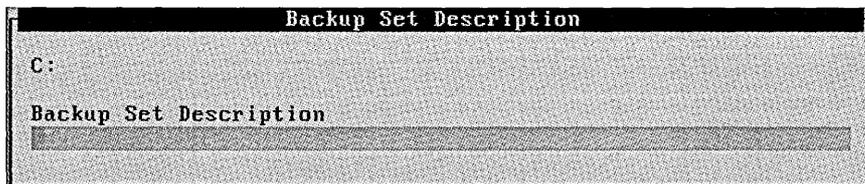
3. Type in a name that will be used to identify this backup on the tape and press <Enter>.

    If you press <Enter> without providing a name for the backup set, Backup Exec will automatically assign the name of your hard drive as the backup set name. You will see:

```
┌─────────────────────── Backup Set Description ─────────────────┐
│                                                               │
│  C:                                                           │
│                                                               │
│  Backup Set Description                                       │
│  ███████████████████████████████████████████████████████     │
│                                                               │
└───────────────────────────────────────────────────────────────┘
```

4. Type in a brief note describing the contents of the backup and press <Enter>.

    Example: *full backup of drive C:, end of third quarter 1992*

    If you press <Enter> without providing a description for the backup set, Backup Exec will not include a description for the backup.

▷ *Continues...*

Tip When deciding on names and descriptions for the information you are backing up, keep in mind that you may not need to access the tape for a long time. Therefore, use names and descriptions that will allow you to easily recognize the contents of the backup.

5. If data exists on the tape you are using, you will be asked if you want to overwrite the tape. Press <Y> to overwrite the tape or <N> to append (add) this backup to the end of the tape.

Note *Do not append to tapes that contain backups from QICstream versions earlier than v4.0 or any version of FasTape.* Don't mix high and low density tapes when your backup requires more than one tape.

If you chose to overwrite an existing tape, or the tape in the drive is blank, you will see:

```
╔═══════════════════ Tape Name ═══════════════════╗
║                                                 ║
║  Tape Name                                      ║
║  ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓   ║
║                                                 ║
╚═════════════════════════════════════════════════╝
```

The *tape name* will default to the name originally assigned to the tape. If the tape is blank, no name will appear. If you want to re-name the tape, use the <Backspace> key to delete the text in the field and enter a new name. Press <Enter> to accept the tape name you assigned and start the backup. If you do not enter a name for the tape, Backup Exec names the tape *Tape created on [date]*.

☞ **Tip** Avoid using tape names like *Tape 1*, or *Tape A*. This can be confusing when you need to restore information from a backup that spans more than one tape, as Backup Exec asks for the tape by number. For example, if you are restoring information from a backup that spanned three tapes, Backup Exec may ask for *Tape 2 of 5/22/92*.

Depending on your tape rotation strategy, you may choose to assign tape names that correspond with the day a tape is to be used. For example, *Monday - Modified Backup* or *Friday - Full Backup* (see *Tape Rotation Methods* on page 7–9).

Be sure to physically label the tape with the same name you supplied in the software.

The software is configured to perform an automatic compare operation after each backup. The compare operation verifies that the data you just backed up on the tape is the same as the data on your hard drive. This operation ensures that your backup is good. If you do not want to have an automatic compare operation performed after each backup; or you want Backup Exec to prompt you before a compare operation, you can configure these options (see *Backup* on page 2–4).

When the compare operation has been completed, you will see an example similar to this:

```
                          Compare Status
 Directory \
 Directory \NET


 Total directories: 2
 Total files: 11
 Total bytes: 337171
 Total time: 00:00:04  (84292 bytes/second)
 Files identical on disk and tape: 11
 Files different on disk and tape: 0

 Compare operation ended: 04/05/93 at 11:35a


 Press any key to return to menu...
```
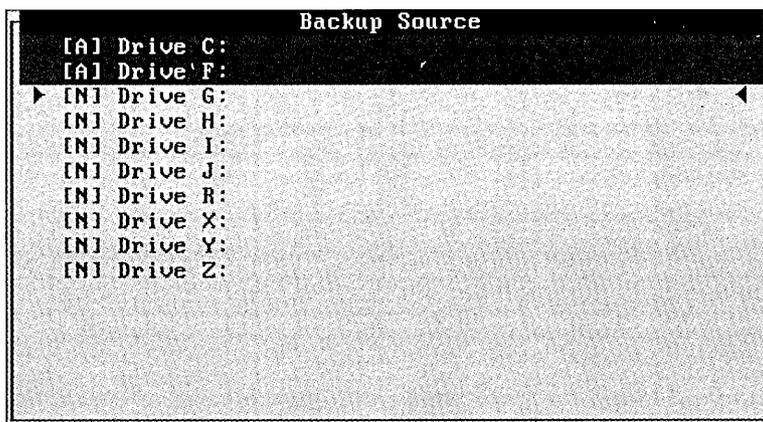
The above example represents a successful compare operation in which no errors were found (see *Catalog* on page 2–10).

Selecting Multiple Drives for Backup

The procedures for backing up more than one drive are virtually the same as they are for backing up only your hard drive.

1. Select the drives you want to back up in the *Backup Source* window with the <Spacebar>.

```
                         Backup Source
        [A] Drive C:
        [A] Drive F:
   ▶    [N] Drive G:                                    ◀
        [N] Drive H:
        [N] Drive I:
        [N] Drive J:
        [N] Drive R:
        [N] Drive X:
        [N] Drive Y:
        [N] Drive Z:
```

2. Press <Ctrl + S> to start the backup, or select *Start* in the Backup operation window.

3. You will be prompted to enter a backup set name and description for each drive being backed up (i.e., C: and D:).

4. If data exists on the tape you are using for the backup, you will be asked if you want to overwrite the tape. Press <Y> to overwrite the tape or <N> to append this backup to the end of the tape.

5. If you chose to overwrite an existing tape, or the tape in the drive is blank, you will be prompted to enter a tape name.

6. The software comes configured to perform an automatic *Compare* operation after each backup. The drives will be compared separately, and they will also be listed as separate entries in Backup Exec's catalog (see *The Disk-Based Catalog* on page 3–28).

Backing Up Files and Directories

Backing up an entire drive as illustrated earlier is the easiest and most comprehensive backup method. However, there may be times when you want to back up only certain important files and/or directories.

Note Backup Exec contains a powerful selection feature, that can also be used to select specific files or directories for backup (see *Quick Keys* on page 4–1).

To back up specific files or directories, follow these steps:

1. Select *Backup* in the *Commands*menu by pressing *b*, or by highlighting *Backup* and pressing <Enter>. You can also make *Backup* the active command (without opening the *Commands* menu) by pressing <Ctrl + B>. The active command has an asterisk " * " preceding it in the *Commands* menu.

2. If there are selections already highlighted in the *Backup Source* window and you wish to clear them, use the <Tab> key to move to the Backup operation window. Press <C> or highlight *Clear* and press <Enter>.

```
            Backup
  Clear
  Include       <+>
  Exclude       <->
  Scripts...
  ─────────────────
  Start     <CTRL+S>
```
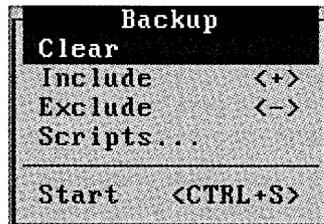
3. Your *Backup Source* window will look similar to this:

```
┌─────────────────────── Backup Source ──────────────────────────┐
│ ► [N] Drive C:                                                ◄ │
│                                                                 │
│                                                                 │
│                                                                 │
│                                                                 │
│                                                                 │
│                                                                 │
│                                                                 │
│                                                                 │
│                                                                 │
│                                                                 │
│                                                                 │
└─────────────────────────────────────────────────────────────────┘
```
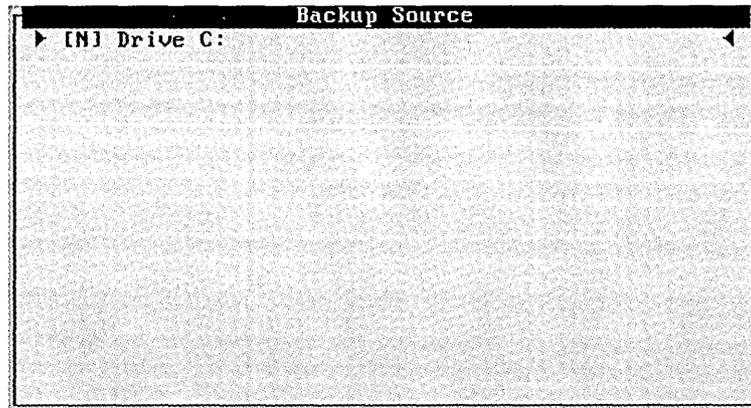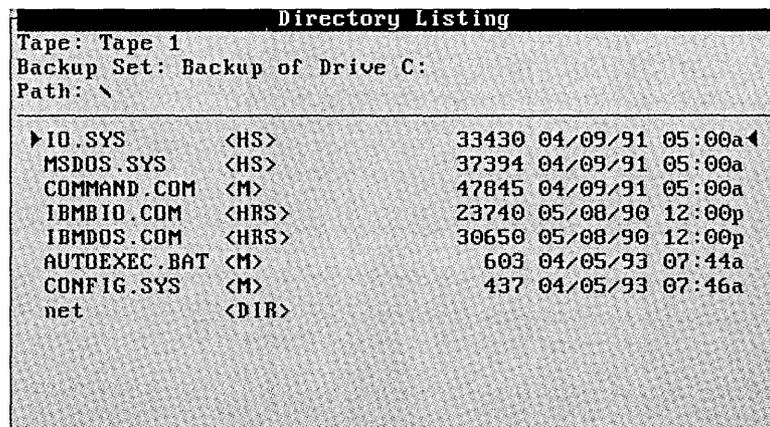
Status for drives listed in the *Backup Source* window are indicated as follows:

[N] no data is selected for backup
[S] some data is selected for backup
[A] all of the data is selected for backup

4. Move the selection arrows (> <) to the drive that contains the data you want to back up and press <Enter>. A *Directory Listing* window similar to this will appear:

```
┌─────────────────────── Directory Listing ──────────────────────┐
│ Tape: Tape 1                                                    │
│ Backup Set: Backup of Drive C:                                  │
│ Path: \                                                         │
│                                                                 │
│ ► IO.SYS        <HS>            33430 04/09/91  05:00a ◄         │
│   MSDOS.SYS     <HS>            37394 04/09/91  05:00a           │
│   COMMAND.COM   <M>             47845 04/09/91  05:00a           │
│   IBMBIO.COM    <HRS>           23740 05/08/90  12:00p           │
│   IBMDOS.COM    <HRS>           30650 05/08/90  12:00p           │
│   AUTOEXEC.BAT  <M>               603 04/05/93  07:44a           │
│   CONFIG.SYS    <M>               437 04/05/93  07:46a           │
│   net           <DIR>                                           │
│                                                                 │
└─────────────────────────────────────────────────────────────────┘
```

▷ *Continues...*

Use the arrow keys (<↑> <↓>), <Pg Up>, <Pg Dn>, <Home>, and <End> keys to scroll through the selections. The <Enter> and <→> keys allow you to enter directories and the <Esc> and <←> keys allow you to exit out of directories.

☞ **Tip** You can move quickly among directories and file names by pressing the first letter of a file name (e.g., pressing <C> moves the cursor over the first file that begins with the letter C, etc.).

5. Mark directories or files by moving the selection arrows over an item you want to back up and press the <Spacebar>. You can select as many items as you want.

Marked selections are shown in red (color display) or reverse video (monochrome display). If you change your mind about a selection you can unmark it with the <Spacebar>.

If there are subdirectories under the directory(s) you chose to back up, you will be asked if you want to include them. Type <Y> to include the subdirectories or <N> to back up only the directory(s) you specified.

Type <Ctrl + S> from the directory listing to start the backup operation.

When prompted, enter the appropriate data for the backup set name/description, tape name, etc. (see *Backup* on page 2–4).
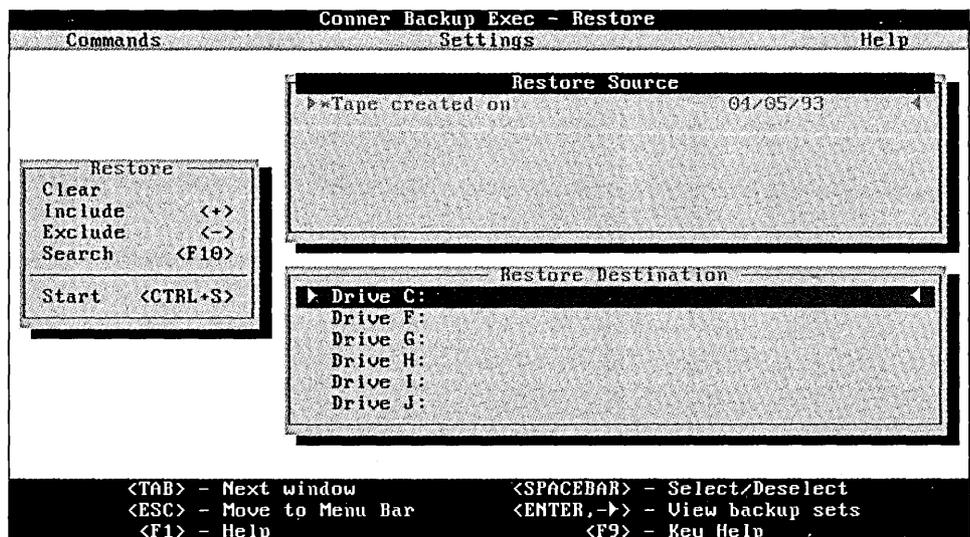
Restoring Data

This section outlines how to restore files and directories and how to use Backup Exec's catalog to find files you want to restore.

Restore

The *Restore* command allows you to retrieve information from a tape.

1. Make *Restore* the active command by accessing the *Commands* menu and pressing <R>, or by highlighting *Restore* and pressing <Enter>. You can also make *Restore* the active command (without opening the *Commands* menu) by pressing <Ctrl + R>. Your screen will look similar to this:

```
                    Conner Backup Exec - Restore
   Commands                       Settings                      Help
                              Restore Source
                          ▶*Tape created on            04/05/93      ◀

     Restore
  Clear
  Include      <+>
  Exclude      <->
  Search       <F10>
                              Restore Destination
  Start  <CTRL+S>         ▶ Drive C:                               ◀
                           Drive F:
                           Drive G:
                           Drive H:
                           Drive I:
                           Drive J:


       <TAB> - Next window          <SPACEBAR> - Select/Deselect
       <ESC> - Move to Menu Bar     <ENTER,-▶> - View backup sets
        <F1> - Help                       <F9> - Key Help
```

▷ *Continues...*

2. The *Restore Source* window will become active. Since Backup Exec comes with the disk-based tape catalog feature enabled, you will see all of the tapes you have backed up in this window.
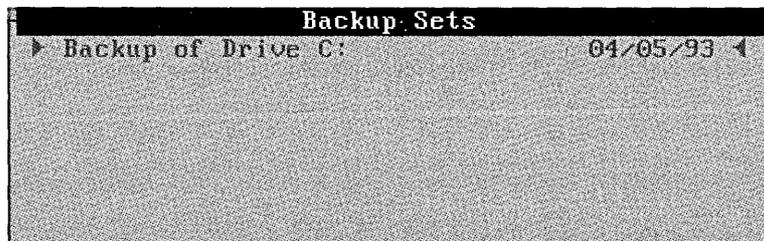
    Descriptions for tapes in the *Restore Source* window are as follows:

The tape in the drive	*
Fully cataloged tapes	dark blue (color) or bold white (monochrome)
Partially cataloged tapes	light blue (color) or white (monochrome)
Blank tapes	[blank tape]
Unreadable tape	[unrecognizable tape]

    The list is presented with the most recently cataloged tape appearing first. If you have a backup that spans more than one tape, it will appear as a single tape in this list.

3. Move the cursor to a tape you want to view. Press <Enter> to view all of the backup sets contained on the tape. Backup sets can be identified by the following:

    ◆ Backup sets that are *fully* cataloged list file detail information and are represented in dark *blue* (color) or bold *white* (monochrome).

    ◆ Backup sets that are *partially cataloged* (Backup Exec' s default) contain backup set information only and are represented in *light blue* (color) or *white* (monochrome) (see *The Disk-Based Catalog* on page 3–28).

    Your *Backup Sets* window will look similar to this:

```
┌───────────────────── Backup Sets ─────────────────────┐
│ ▶ Backup of Drive C:                     04/05/93 ◀    │
│                                                        │
│                                                        │
│                                                        │
│                                                        │
│                                                        │
└────────────────────────────────────────────────────────┘
```

To access other backup sets on an uncataloged tape, press <Shift + F7> to scan the tape for the next backup set. This process can be repeated until all of the backup sets contained on the tape are found.

4. Move the selection arrows over the backup set containing the data you want to restore and press <Enter>.

If the backup set you want to select from is not fully cataloged, Backup Exec will read the tape to create a directory listing. This may take a few minutes.

If the backup set you choose from the catalog is not on the tape in the drive, you will be prompted to insert the appropriate tape. Once the tape is inserted, the tape drive will position the tape to the backup set and the contents will be displayed.

You will see a directory listing of the backup set:

```
┌─────────────────────── Directory Listing ───────────────────────┐
│ Tape: Tape 1                                                     │
│ Backup Set: Backup of Drive C:                                  │
│ Path: \                                                          │
├─────────────────────────────────────────────────────────────────┤
│ ▶ IO.SYS        <HS>            33430 04/09/91 05:00a ◀          │
│   MSDOS.SYS     <HS>            37394 04/09/91 05:00a            │
│   COMMAND.COM   <M>             47845 04/09/91 05:00a            │
│   IBMBIO.COM    <HRS>           23740 05/08/90 12:00p            │
│   IBMDOS.COM    <HRS>           30650 05/08/90 12:00p            │
│   AUTOEXEC.BAT  <M>               603 04/05/93 07:44a            │
│   CONFIG.SYS    <M>               437 04/05/93 07:46a            │
│   net           <DIR>                                           │
│                                                                 │
│                                                                 │
│                                                                 │
│                                                                 │
└─────────────────────────────────────────────────────────────────┘
```

Use the up and down arrow keys, <Pg Up>, <Pg Dn>, <Home>, and <End> keys to scroll through the selections. The <Enter> and < →> keys allow you to enter directories; the <Esc> and<← > keys allow you to exit directories.

▷ *Continues...*

If you want to restore the data to the drive it was backed up from, proceed to step 6. To restore the data to a different drive, you will need to specify where the files will be restored. To change the restore destination, use the <Tab> key to activate the *Restore Destination* window.

```
                          Restore Destination
 ▶ Drive C:                                              ◀
   Drive F:
   Drive G:
   Drive H:
   Drive I:
   Drive J:
```

5. Select the drive where the data will be restored with the <Spacebar>.

   Files can be restored to a different path on the same drive (see *Target Path* on page 4–9).

6. Press <Ctrl + S> to start the restore operation, or activate the *Restore Operation* window, select *Start,* and press <Enter>. You will see an example similar to this:

```
                          Restore Status

 Tape 1   Tape Name: "Tape 1"
 Set 1   Set Name: "Backup of Drive C:"
 Backup of C: <<NO NAME>> - Created: 04/05/93 at 11:35a

 WARNING: Restoring to drive C: may overwrite existing information on
 drive C:

 Do you want to restore this information to drive C:? (Y/N)
```
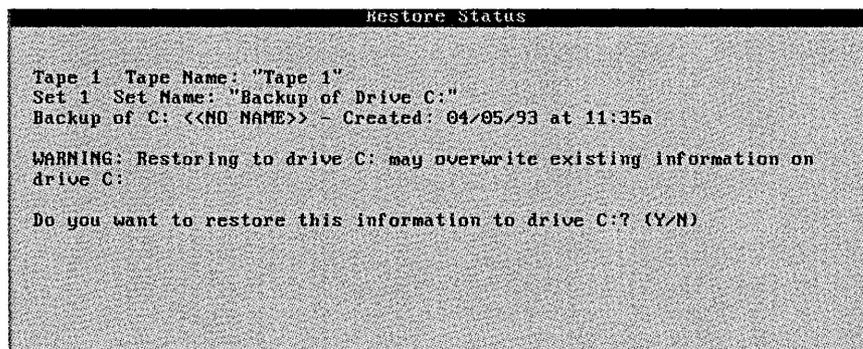
Once the information has been restored, Backup Exec will automatically perform a compare operation to ensure the integrity of the data. If you do not want this compare feature to execute immediately after a backup finishes, change the settings in *Settings/Commands/Restore.*

Searching for Files to Restore

If you have been performing backups with Backup Exec's disk-based catalog configured to *Full,* you can display a list of the contents of each tape you have backed up. To make finding files on fully cataloged tapes even quicker, Backup Exec has a *Search* feature that allows you to specify a file, or a group of files by their attributes to restore or compare.

When *Restore* or *Compare* is the active command, you can press <F10> to display a search window. This window allows you to search fully cataloged tapes and backup sets for whatever file(s) you may want to restore or compare.

The *Search* feature only works for fully cataloged backup sets. If you try to search a tape that is not fully cataloged, you will see the following message:

```
An alphabetic search may only be performed on fully cataloged
backup sets.
```

For more information on fully cataloging a tape, see *Catalog a Tape* later in this chapter.

Options for the items in the *Search* window are as follows:

Tape

This option allows you to choose from any cataloged tape(s), or the tape currently in the tape drive. If you want to select a different tape, move the cursor to the *Tape* field and press <F4>. A list of available tapes similar to this will appear:

```
                          Search Tapes
  ▶*Tape 1                                    04/05/93 ◀
```
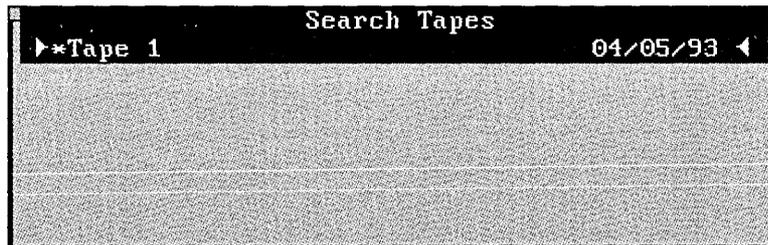
Using the <Spacebar>, select the tape(s) you want to search.

Set

This option allows you to choose from fully cataloged backup set(s). The default for this option is to select all of the backup sets on the tape(s) you selected. If you want to mark a particular backup set, move the cursor to this option and press <F4>. A list of available backup sets similar to this will appear.

```
                    Search Backup Sets
  ▶ Backup of Drive C:                        04/05/93 ◀
```
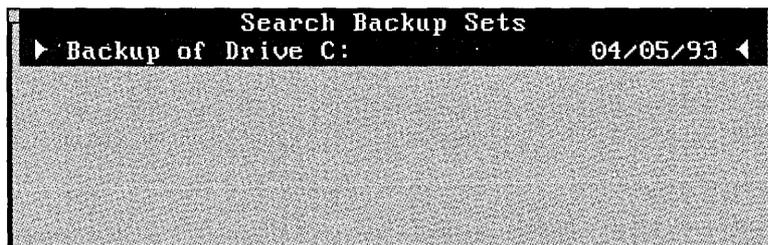
Path

By specifying *Path:* you can search for a particular directory, or subdirectory. For example, to locate the \MISC\GAMES subdirectory in the selected tape's backup sets, follow these steps:

1. move the cursor to *Path:*

2. type: \MISC\GAMES\

3. press: <F2>

If the \MISC\GAMES subdirectory exists in a backup set on the tape, the Directory Listing window will appear and the cursor will be located at the \MISC\GAMES directory.

File

This option is used to search for a specific file or files. For example, to search for all files with the .BAK extension, follow these steps:

4. move the cursor over *File:*

5. change *.* to *.bak*

6. press: <F2>

Specifying at least the first character of the filename(s) will speed up the search process.

Date

This option allows you to search for files created or modified during a specific time period. For example, if you wanted to search for all files that were created between *01/01/92* and *05/01/92* follow these steps:

1. move the cursor to *Date:*

2. type: 01/01/92 <Enter> 05/01/92

3. press: <F2>

Conducting the Search

Once you have entered the criteria for the search press <F2> to begin. A directory listing will appear with the cursor on the first file that matches the criteria you specified. The exact location of the file is given at the top of the directory listing window. To search for additional files that meet the criteria, press the <F8> key. If you want to search for the previous matched file, press the <F7> key. As you search, you can mark the files for restore or compare by pressing the <Spacebar>.

Compare

Backup Exec defaults to automatically comparing all backup and restore operations; however, the Backup Exec catalog files are excluded from compare operations.

Although comparing every operation is highly recommended, Backup Exec's automatic compare feature can be disabled or configured to prompt you before continuing with the operation (see *Configuration* on page 2–1). If you disabled this feature, you can initiate compare operations through the *Commands* menu.

1. Make *Compare* the active command by highlighting the *Commands* menu, pressing C or highlighting *Compare* and pressing <Enter>. You can also make *Compare* the active command without opening the *Commands* menu by pressing <Ctrl + P>.

```
                    Conner Backup Exec - Compare
      Commands                    Settings                      Help
                              Compare Source
                    ▶*Tape 1                        04/05/93      ◀

          Compare
      Clear
      Include       <+>
      Exclude       <->
      Search      <F10>
                              Compare Destination
      Start     <CTRL+S>  ▶ Drive C:                            ◀
                            Drive F:
                            Drive G:
                            Drive H:
                            Drive I:
                            Drive J:

          <TAB>  - Next window         <SPACEBAR> - Select/Deselect
          <ESC>  - Move to Menu Bar    <ENTER,-▶> - View backup sets
          <F1>   - Help                    <F9>   - Key Help
```
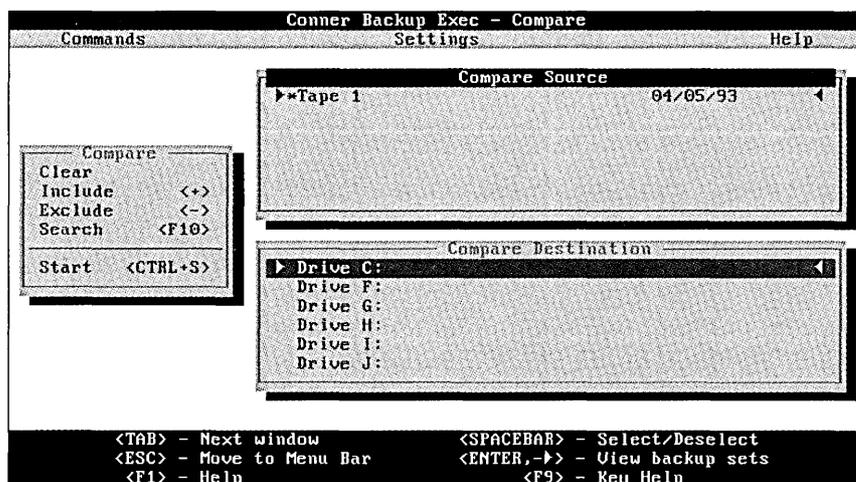
▷ *Continues...*

2. The *Compare Source* window will become active. You will see all of the cataloged tapes you have backed up in this window. Descriptions for tapes in the *Compare Source* window are as follows:

The tape in the drive	*
Fully cataloged tapes	dark blue (color) or bold white (monochrome)
Partially cataloged tapes	light blue (color) or white (monochrome)
Blank tapes	[blank tape]
Unreadable tape	[unrecognizable tape]

The list is presented with the most recently cataloged tape appearing first. If you have a backup that spans more than one tape, it will appear as a single tape in this list.

3. Move the cursor to a tape you want to view. Press <Enter> to view all of the cataloged backup sets contained on the tape. *Backup sets* can be identified by the following:

   ◆ Backup sets that are *fully cataloged* list file detail information and are represented in *dark blue* (color) or *bold white* (monochrome).

   ◆ Backup sets that are *partially cataloged* (i.e., contain backup set information only) are represented in *light blue* (color) or *white* (monochrome). More information on Backup Exec's disk-based catalog can be found later in this chapter.

Your *Backup Sets* window will look similar to this:

```
┌─────────────────── Backup Sets ───────────────────┐
│ ▶ Backup of Drive C:              04/05/93 ◀      │
│                                                    │
│                                                    │
│                                                    │
│                                                    │
│                                                    │
└────────────────────────────────────────────────────┘
```
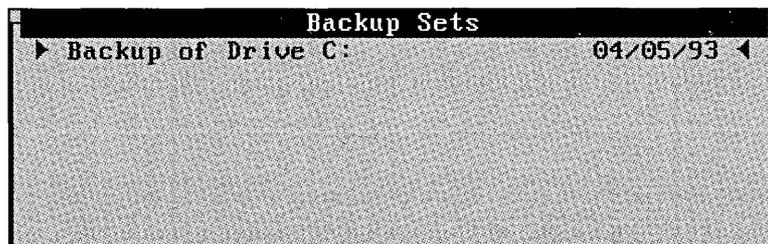
▷ *Continues...*

To access backup sets on an uncataloged tape, press <Shift + F7> to scan the tape for other backup set(s). This process can be repeated until all of the backup sets contained on the tape are found.

4. Select the backup set you want to compare by pressing the <Spacebar>. If you want to compare only a directory or file, press <Enter> over the backup set that contains the data and select it with the <Spacebar>. Press <F2> after you have made your selection(s).

5. If you want to compare the data to the default drive in the *Compare Destination* window, proceed to step 6. To compare the data to a drive other than from which it originated, you will need to specify another compare destination. To change the compare destination, use the <Tab> key to activate the *Compare Destination* window.

```
                    Compare Destination
▶ Drive C:                                                    ◀
   Drive F:[SBD1/SYS2:HOME\MARKH\SCREENS]
   Drive G:[SBD1/SYS:]
   Drive H:[SBD1/SYS:]
   Drive I:[ENG1/SYS:APPS\CCMAIL\DATA]
   Drive J:[SBD1/SYS2:PUB]
```
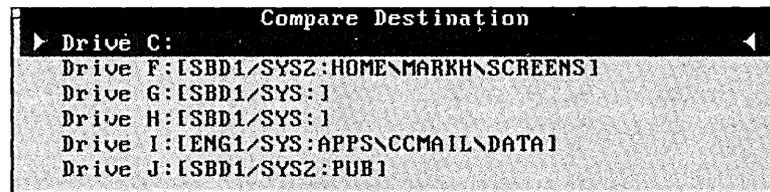
Select the drive to compare the data on the tape against with the <Spacebar>.

6. Press <Ctrl + S> to start the compare operation, or activate the Compare operation window, select *Start*, and press <Enter>. You will see a window similar to this:

```
                      Compare Status

Tape 1  Tape Name: "Tape 1"
Set 1  Set Name: "Backup of Drive C:"
Backup of C: <<NO NAME>> - Created: 04/05/93 at 11:35a

Do you want to compare this information with the data on drive C:? (Y/N)
```
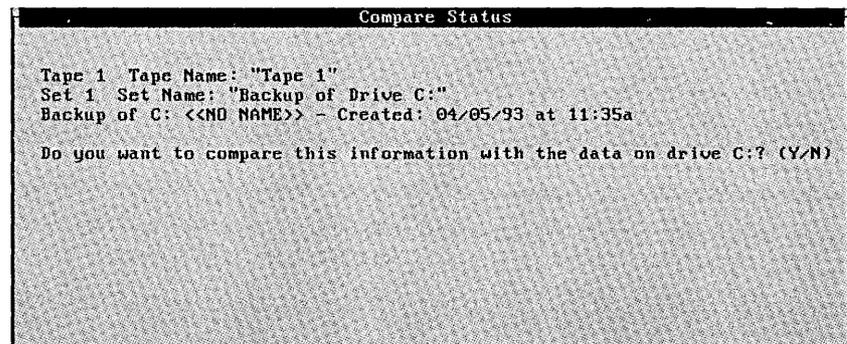
7. Press <Y> to compare the operation.

Following a successful compare operation, you will see results similar to this:

```
Total time: 00:04:19 (177087) bytes/second
Files identical on disk and tape: 1075
Files different on disk and tape: 0
Files not found on disk: 0
Directories not found on disk:

Compare operation ended: 04/29/92
```

You will be notified if your backup does not compare correctly. A message similar to this will appear:

```
Error(s) were found during the operation.
See C:\CONNER\DOS\BEDOS.LOG for a log of the error
information.

Press any key to return to menu...
```

You can read the BEDOS.LOG file by using the DOS *TYPE* command, or with your word processor or ASCII text editor. This file will list the file(s) that did not compare correctly.

Tip In addition to checking the integrity of your data, you can use the *Compare* command to determine which files have changed since your last backup.

Tape

Backup Exec allows you to control your tape drive through the software. While running Backup Exec you can: (1) list the files contained on a tape, (2) rewind and retension tapes, and (3) erase tapes.

Directory

The *Directory* command (in the *Commands* menu) allows you to list the files contained on an uncataloged tape by accessing the tape and reading its contents.

If you want to view the files and directories contained on the tape, start the Backup Exec software with the /P parameter (e.g., at your DOS prompt, type: *bedos /p* then press <Enter>). This will allow you to view the information contained on the tape one page at a time while you are in the *Directory* window.

You can also print a list of the data on the tape through the *Settings/Log Output* menu (see *Configuration* on page 2–1).

To display a directory of a tape, insert the tape into the tape drive, move the cursor over *Directory* and press <Enter>. You will see:

```
                        Directory Status
    Rewinding the tape.


    Tape 1   Tape Name: "Tape 1"
    Set 1    Set Name: "Backup of Drive C:"
    Set Description: "Everything on C:"
    Backup of C: <<No Name>> - Created: 04/05/93 at 11:35a

    Do you want a directory of this information? (Y/N)
```

To see a directory of this backup set, press <Y>. If you do not want a directory press <N>. You will see:

```
Do you want to search for another backup set on this tape?
(Y/N)
```

If you press <Y>, Backup Exec will advance the tape searching for another backup set. Repeat the procedure above until you find the backup set you want to list.

If you do not want to search for another backup set, press <N>. You will see:

```
Do you want to continue? (Y/N)
```

If you answer <N>, you will return to the main menu. To continue, insert another tape and press <Y>.

Rewind

The *Rewind* command signals the tape drive to rewind the tape back to the beginning. It is recommended that you rewind cartridge tapes before ejecting them from the drive. Since Backup Exec rewinds the tape when you exit, you won't need to use this command if you do not change tapes within a Backup Exec session.

To rewind a tape, select *Rewind* from the *Commands* menu by pressing *w* or highlighting *Rewind* and pressing <Enter>. You can also select *Rewind* without opening the *Commands* menu by pressing <Ctrl + W>.

Retension

The *Retension* command signals the tape drive to run the tape from beginning to end, and then back to the beginning. This procedure evenly tensions the tape so it will run more smoothly past the heads. This should be done after every twenty backups (approximately).

To retension a tape, select *Retension* from the *Commands* menu by pressing <N> or highlighting *Retension* and pressing <Enter>. You can also select *Retension* without opening the *Commands* menu by pressing <Ctrl + N>.

Retensioning is not necessary for *DAT* tapes.

Quick Erase

The *Quick Erase* command causes Backup Exec to write an indicator at the beginning of the tape, which makes data contained on the tape inaccessible.

To perform a Quick Erase on a tape, select *Quick Erase* from the *Commands* menu by pressing <Q> or highlighting *Quick Erase* and pressing <Enter>. You can also select *Quick Erase* without opening the *Commands* menu by pressing <Ctrl + Q>.

When you select this option, the tape name and any other additional tape information available for the tape will be displayed. You will see:

```
Do you want to erase the information on this tape? (Y/N)
```

Press <Y> if you want to erase the information, or <N> to leave the data intact.

When performing a quick erase operation, you will not be required to enter a password for password-protected tapes. This command can be used when you want to re-use a tape that is protected by an unknown or forgotten password.

Note When a cataloged tape is erased with either *Quick Erase* or *Full Erase*, its information is automatically removed from the disk-based catalog.

Full Erase

While *Quick Erase* effectively makes the data on the tape invisible to Backup Exec, it does not physically erase the entire tape as does *Full Erase*. For most users, a quick erase is sufficient. If you have sensitive information on a tape and you want to dispose of it, use the *Full Erase* option.

To erase a tape, select *Full Erase* from the *Commands* menu by pressing <F> or highlighting *Full Erase* and pressing <Enter>. You can also select *Full Erase* without opening the *Commands* menu by pressing <Ctrl + F>.

Depending on the tape drive and the type of tape being used, this operation may take several hours to complete.

The Disk-Based Catalog

Backup Exec's catalog feature provides a much quicker method of displaying tape information than using the *Directory* command.

The *Catalog* is a group of files on disk that contain information about the contents of your tapes. The catalog is useful when you need to restore information, because it saves you from having to access several tapes to find the data you want to restore.

You can configure the level of information contained in the catalog from the *Settings/Commands/Catalog* menu (see *Configuration* on page 2–1). For example, if you have configured the catalog level setting to *Full*, all backup set and file information (names, sizes, dates, etc.) will be recorded in the catalog whenever a backup operation is completed. Backup Exec's default setting for the catalog is *Partial*, which includes backup set information only.

Here are some guidelines you can follow when deciding on how to configure your catalog level.

You may want to set the catalog level to *Full* if you:

- ◆ restore certain files on a regular basis
- ◆ schedule backups when you are not using your system so time is not an issue (cataloging can take several minutes)
- ◆ want to use *Fast File Access*

You may want to leave the catalog level at *Partial* if you:

- ◆ have limited disk space
- ◆ do not need to restore individual files regularly
- ◆ have limited time for backup operations

You may want to set the catalog level at *None* if you:

- ◆ have limited disk space
- ◆ hardly ever restore files
- ◆ have limited time for backup operations

The *Catalog a Tape* command in the *Commands* menu allows you to add catalog information for an uncataloged tape. Other catalog-related functions in this menu include *View/Delete Catalog, and Compact Catalog. View/Delete Catalog* allows you to view catalog entries and delete catalog information for tapes that no longer exist. *Compact Catalog* removes the deleted catalog information from your hard drive to free up space.

Catalog a Tape

This utility adds a *partial* or *full* list of information for an uncataloged tape. The level of detail is dependent upon how you have configured the *Catalog* level option (see *The Disk-Based Catalog* on page 3–28).

If one or more of your backups spans more than one tape, each tape is listed in the catalog as a separate entry. You will be prompted to insert each tape in the tape family (the tapes that contain the backup) to complete the cataloging of the backup.

If the current tape contains cataloged backup sets, those cataloged backup sets will be skipped, unless the software has been set to a different catalog level since the tape was backed up.

1. To add information about a tape to the catalog, insert the tape into the tape drive. Select *Catalog a Tape* and press <Enter>. You will see:

    ```
    Do you want to catalog any backup sets not yet cataloged on
    tape "[Tape Name}"? (Y/N)
    ```

2. To create a catalog of this tape press <Y>. If you do not want the tape cataloged press <N>.

If there is insufficient disk space for the catalog, you will need to make more disk space available and then repeat this process. To view the size of the catalog, select *Compact Catalog*. You will see a window similar to this:

```
                         Compact Catalog Status

 Total Cataloged Sets: 1
 Total Cataloged Directory/File Details: 0
 Total Size of Catalogs on Disk: 27538 bytes

 Do you want to compact the catalog? (Y/N)
```
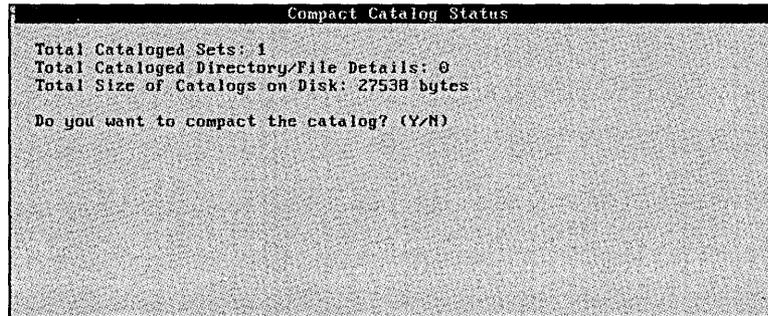
Press <N> to exit from the window without compacting the catalog.

View/Delete Catalog

Since catalog information consumes disk space and may become outdated, the *View/Delete Catalog* command allows you to view or delete cataloged entries and reduce fully cataloged backup sets to partially cataloged.

Example: If one of your tapes was accidentally misplaced or destroyed, you would no longer need to keep catalog information for it. You would use the *View/Delete Catalog* command to remove the tape from the catalog.

If you are keeping full catalog information on a tape that you know you won't need to access, but don't want to remove from the catalog, you can use the *View/Delete Catalog* command to save disk space by changing the catalog level to *partial*.

When you select *View/Delete Catalog,* you will see a list of cataloged tapes. This list is presented chronologically with the most recently cataloged tape appearing first.
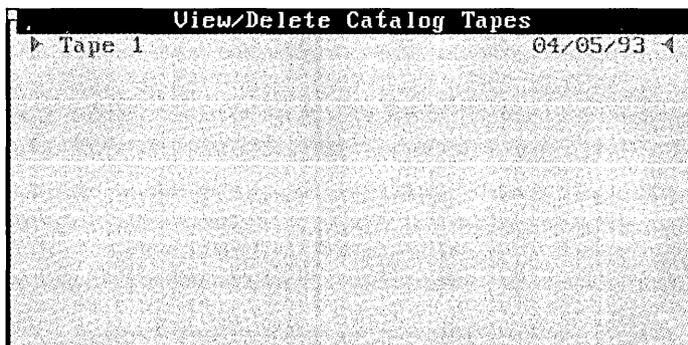
The creation date of each tape appears to the far right in the *View/Delete Catalog Tapes* window, so you can differentiate tapes with the same name. *Creation dates* will also differentiate backup sets.

To view the contents of a tape, move the selection arrows next to the tape and press <Enter>. You will get a list of the backup sets included on the tape. To view the files and directories within a backup set, move the selection arrows next to any *fully cataloged backup set* (dark *blue* = color, or bold *white* = monochrome) and press <Enter>.

Deleting Catalog Entries

To delete a catalog entry, use the following steps:

1. Select the tape you want to remove from the catalog by moving the selection arrows next to it.

2. After you have made your selection, press the <Del> key. If there are fully cataloged backup sets on the tape or if the backup set is fully cataloged, you will see:

3. Press <Y> to delete the tape information. You will see:

> **Catalog Deletion**
>
> Do you want to keep a partial catalog of all backup sets on tape "Tape 1"? (Y/N)
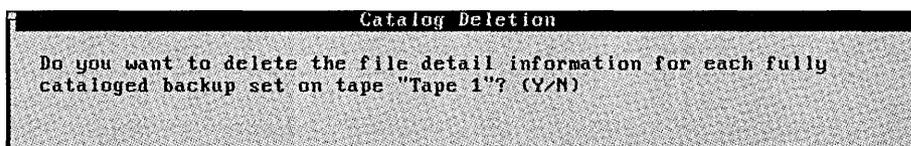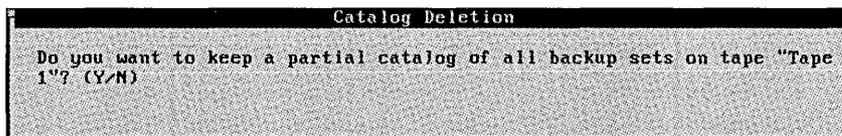
4. Press <N> to remove the tape listing from the catalog.

When you delete the catalog entry in the *View/Delete Catalog* option, the entry is *tagged* for deletion. Disk space is not actually freed up until you run *Compact the Catalog*.

Reducing the Catalog Level from Full to Partial

Should you want to partially catalog a fully cataloged tape or backup set to save disk space, perform the following steps:

1. Select the fully cataloged tape that you want to partially catalog by moving the selection arrows next to it, or press <Enter> to view the backup sets on the tape.

2. When the selection arrows are next to the tape or backup set you want to change, press the <Del> key.

    If there are fully cataloged backup sets on the tape, you will see:

> **Catalog Deletion**
>
> Do you want to delete the file detail information for each fully cataloged backup set on tape "Tape 1"? (Y/N)

3. Press <Y> to delete the tape information. You will see:

```
┌──────────────────────── Catalog Deletion ────────────────────────┐
│                                                                   │
│ Do you want to keep a partial catalog of all backup sets on tape "Tape │
│ 1"? (Y/N)                                                         │
│                                                                   │
│                                                                   │
└───────────────────────────────────────────────────────────────────┘
```
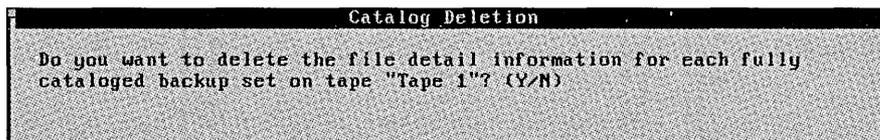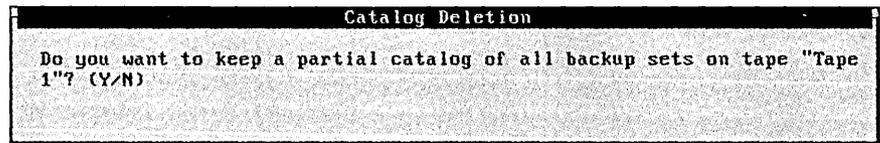
4. Press <Y> to partially catalog all backup sets on the tape. When you change the catalog level from full to partial in the *View/Delete Catalog* option, disk space is not actually freed up until you run *Compact Catalog*.

Compact Catalog

When you replace or erase the contents of a tape, the catalog is updated to reflect these changes. In the catalog, this file information is marked as deleted, but it is not actually removed from the catalog until you use the *Compact Catalog* option.

Since the catalog consumes space on your system's hard drive, selecting *Compact Catalog* frees up disk space by actually removing the deleted records.

If you have *Clean up catalog after backup* (found under the *Settings/Commands/Catalog* menu) configuration option enabled, compacting the catalog every month or so is recommended. If the *Clean up catalog after backup* option is not marked, you may need to compact the catalog more frequently (e.g., once a week) (see *Catalog* on page 2–10).

Exiting Backup Exec

There are two ways you can exit Backup Exec: (1) by selecting *Exit* in the *Commands* menu, and (2) by pressing <Ctrl + X> from the menu. Backup Exec will automatically rewind the tape in the drive when you exit the software.

Quick Keys

Using the <+> and <-> Keys

The *Include Files* <+> and *Exclude Files* <-> options provide a quick way to mark groups of files for Backup, Restore, and Compare operations. After you have selected a drive in the *Source* window, pressing <+> or <-> will bring up a window that allows you to enter specific directories or files, rather than having to scroll through the directory listing to find files to select. The *Include Files* window is activated by pressing <+> and the *Exclude Files* window is activated by pressing <->.

In Backup mode, the selections you make with the *Include Files* and *Exclude Files* options can be saved as scripts (see *Creating Scripts* on page 5–1).

Once inside the *Include Files* or *Exclude Files* window, you can move from one field to another by using the up and down arrow keys <↑> <↓>. Use the left and right arrow keys <←> < →>, or the <Home> and <End> keys to move horizontally in a field. Use the <Del> key to delete text you wish to change in the fields.

When you have entered your selections for an *Include* or *Exclude* window, press <F2> to save your selections. The drive or tape from which you marked the files will be highlighted in the *Source* window. To exit from an *Include Files* or *Exclude Files* window without making any selections, press <Esc>.

Including Files <+> for Backup

To include files in a backup operation, press <Ctrl + B> and position the selection arrows on the drive from which you are including files. Press <+> to view the *Include Files* window.

You will see a window similar to the following:

```
                    Include Files
  Drive: C:

  Path:

  File: *.*

  Include all subdirectories? (Y/N) [Y]

  Only include modified files? (Y/N) [N]

             Begin        End
  Date:                              (MM/DD/YY)
```

Options for the *Include Files* window for backup operations are as follows:

Drive

When you enter the *Include Files* window, the *Drive* field automatically defaults to the drive that the selection arrows were on in the *Backup Source* window. If you wish to change the drive, press <Esc> to return to the *Backup Source* window and move the cursor to another drive.

Note Before choosing the *Include Files* function, you must clear all defaults.

1. Highlight *Clear* in the *Backup* operation menu and press *<Enter>*. This will clear all existing selections marked in the *Source* window.

2. Select the drive(s), file and directory information you want to back up in the *Backup Source* window or with the *Include <+>* keys.

Path

In *Path:* you can enter any available directory or subdirectory. For example, to select the entire GAMES subdirectory found in the directory called MISC on your hard drive you would:

1. Move the selection arrows in the *Backup Source* window next to the drive that contains the data you wish to back up

2. Press <+>

3. Move the cursor over *Path:*

4. Type \MISC\GAMES

5. Press <F2>

Every file in the GAMES subdirectory will be marked for backup.

File

This option can be used to include any specific file or files. For example, to select all files with the .BAK extension in the currently selected drive you would:

1. Press <+>

2. Move the cursor over *File:*

3. Change *.* to *.BAK

4. Press <F2>

The asterisk "*" in a file name or extension is a wildcard character that represents all characters occupying any remaining position in the file name or extension. The default for this option is *.* meaning every file name with every extension will be marked.

Include all subdirectories?

This option relates directly to the path and files you have entered. For example, to back up all files in all subdirectories on drive C: that have the .EXE extension you would:

1. Move the selection arrows in the *Backup Source* window to drive C:

2. Press: <+>

3. Change *.* to *.EXE

4. Be sure *Include all Subdirectories* is set to Y

5. Press <F2>

If you do not wish to include all subdirectories you would:

1. Move the selection arrows in the *Backup Source* window to drive C:

2. Press: <+>

3. Change *.* to *.EXE

4. Change *Include all subdirectories?* to N

5. Press <F2>

Only include modified files?

To back up only the files that have been modified on drive C: since the last time you did a backup you would:

1. Move the selection arrows in the *Backup Source* window to drive C:

2. Press: <+>

3. Move the cursor to *Only include modified files?*

4. Press: <Y>

5. Press: <F2>

Date

The date option allows you to mark files created or modified during a specific time period. The default for this option is not to specify a date. To back up all files that were created on drive C: between 1/1/92 and 5/1/92, you would:

1. Move the selection arrows in the *Backup Source* window to drive C:

2. Press: <+>

3. Move the cursor over *Date:*

4. Type: 01/1/92 <Enter> 05/01/92

5. Press: <F2>

Including Files <+> for Restore and Compare

To include files in a restore or compare operation, first position the selection arrows next to the tape from which you are including files. Then press <+> to view the *Include Files* window. You will see a window similar to this:

Options for the *Include Files* window for restore and compare operations are as follows:

Tape

This option allows you to restore or compare files from any cataloged tape or the tape currently in the drive. If you wish to mark a different tape (or multiple tapes), move the cursor over the *Tape:* option and press <F4>. You will be given a list of available tapes from which to choose.

```
╔══════════════════════ Include Tapes ══════════════════════╗
║ ▶*General                                   04/13/93 ◀    ║
║                                                           ║
║                                                           ║
║                                                           ║
║                                                           ║
║                                                           ║
╚═══════════════════════════════════════════════════════════╝
```

Tapes that are fully cataloged are represented in *dark blue* (color) or *bold white* (monochrome). Tapes that are partially cataloged are represented in *light blue* (color) or *white* (monochrome). The tape currently in the drive will have a "*" next to it.

Move the cursor over the tape(s) you would like to include in the restore or compare operation. Press the <Spacebar> to mark the tape(s) for restore or compare, then press <F2> to return to the *Include Tapes* window.

Set

This option allows you to select the backup set(s) on the tape to restore to, or compare against a drive. If you wish to mark a different backup set (or multiple backup sets) other than what is displayed in the *Set:* field, move the cursor over this option and press <F4>. This will display *all* fully cataloged backup sets and *all* partially cataloged backup sets on the tape currently in the drive.

If <+> was selected from the tape list window, all fully cataloged backup sets for the selected tape are marked by default. If <+> was selected from the backup set list, only the selected backup set is marked by default.

Path

Next to *Path:* you can enter any available directory, or subdirectory. If you wanted to restore or compare the GAMES subdirectory found in the directory called MISC on tape *x* you would:.

1. Move the selection arrows in the *Source* window to tape *x*

2. Press: <+>

3. Move the cursor over *Path:*

4. Type: \MISC\GAMES

5. Press: <F2>

Every file in the GAMES subdirectory will be marked for the restore or compare.

File

This option can be used to mark any specific file or files. To mark all files with the .BAK extension for a restore or compare operation you would:

1. Press: <+>

2. Move the cursor over *File:*

3. Change *.* to *.bak

4. Press: <F2>

Include ALL subdirectories?

This option relates directly to the path and files you have entered. If you wish to restore or compare all of the files on the tape *x* that have the .EXE extension you would:

1. Move the selection arrows in the *Source* window to tape *x*

2. Press: <+>

3. Change *.* to *.exe

4. Be sure *Include ALL subdirectories* is set to Y

5. Press <F2>

This option automatically defaults to Y. This means all of the files in the subdirectories found in your path will be selected.

Date

When a file is created or modified it is given a date. This option allows you to mark files created or modified during a specific time period. The default for this option is not to specify a date, which causes Backup Exec to include all dates. If you wish to restore or compare all files on tape *x* that were created between *1/1/92* and *5/1/92*, you would:

1. Move the selection arrows in the *Source* window to tape *x*

2. Press: <+>

3. Move the cursor over *Date:*

4. Type: 01/01/92 <Enter> 05/01/92

5. Press: <F2>

Target Path

When you restore files from tape to disk, the *Include Files* window gives you the ability to restore the files to a directory different from where they were originally backed up. Likewise, files backed up from one directory can be compared against files in a different directory.

If you backed up all the files in the \WORK subdirectory and they are on tape *x* and now you want to restore them to the \HOME subdirectory you would:

1. Move the selection arrows in the *Source* window on tape *x*

2. Press: <+>

3. Change your path to: \WORK

4. Be sure *Files:* marks everything: *.* and *Include ALL subdirectories* is set to Y

5. Move the cursor over *Target Path:* and type: \HOME

6. Press <F2>

Excluding Files <-> for Backup

To exclude files from a backup operation, first position the selection arrows on the drive you are backing up, then press <-> to activate the *Exclude Files* window. You will see:

```
                  Exclude Files
   Drive: C:

   Path:

   File: *.*

   Exclude all subdirectories? (Y/N) [Y]
```
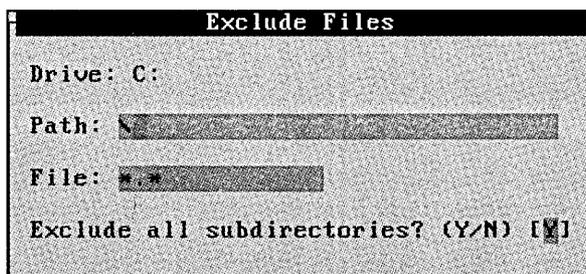
Options for the *Exclude Files* window for backup operations are as follows:

Drive

The drive automatically defaults to the drive that the selection arrows were on before you entered the *Exclude Files* window. If you wish to change the drive, press <Esc> to return to the *Backup Source* window and move the selection arrows to another drive.

Before choosing the *Exclude Files* function, you must clear all defaults

▫ Highlight *Clear* in the *Backup* operation menu and press <Enter>. This will clear all existing selections marked in the *Source* window.

▫ Select the drive(s), file and directory information you want to back up in the *Backup Source* window or with the *Exclude* <-> keys (see *Excluding Files* <-> *for Backup* on page 4–9).

Path

Next to *Path:* you can enter any available directory, or subdirectory. To exclude the GAMES subdirectory found in the directory called MISC on drive C: you would:

1. Move the selection arrows in the *Backup Source* window next to drive C:

2. Press: <->

3. Move the cursor over *Path:*

4. Type: \MISC\GAMES

5. Press: <F2>

Every file in the \MISC\GAMES subdirectory would be excluded from the backup.

File

This option can be used to exclude any specific file or files. To exclude all files with the .BAK extension in a backup you would:

1. Press: <->

2. Move the cursor over *File:*

3. Change *.* to *.BAK

4. Press: <F2>

Exclude ALL subdirectories?

This option relates directly to the path and files you have entered. If your path is the root directory (e.g., C:\) and you press <Y> for this option and *Files:* is set to *.*, nothing will happen when you start the backup because all files are excluded.

If you wanted to back up all files on drive C: except for the .EXE files in the \APPS directory and its subdirectories, you would:

1. Select drive C: in the *Backup Source* and press the <Spacebar> to mark all of the drive for backup

2. With the selection arrows next to drive C:, press: <->

3. Change your path to: \APPS

4. Change *.* to *.EXE

5. Be sure *Exclude ALL subdirectories* is set to Y

6. Press <F2>

Excluding Files <-> for Restore and Compare

To exclude files from a restore or compare operation, first position the selection arrows on the tape from which you are excluding files. Then press <-> to view the *Exclude Files* window. You will see:
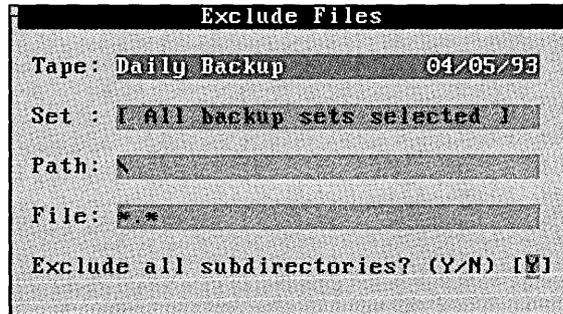
```
╔══════════════ Exclude Files ══════════════╗
║                                            ║
║  Tape: Daily Backup            04/05/93    ║
║                                            ║
║  Set : [ All backup sets selected ]        ║
║                                            ║
║  Path: \                                   ║
║                                            ║
║  File: *.*                                 ║
║                                            ║
║  Exclude all subdirectories? (Y/N) [Y]     ║
║                                            ║
╚════════════════════════════════════════════╝
```

Options for the *Exclude Files* window for restore and compare operations are as follows:

Tape

This option allows you to exclude directories and files from a restore or compare of any cataloged tape or the tape currently in the drive. If you wish to mark a different tape (or multiple tapes) move the cursor over the *Tape:* option and press <F4>. You will be given a list of available tapes from which to choose.

```
╔══════════════ Exclude Tapes ══════════════╗
║ ►*Daily Backup                04/05/93 ◄  ║
║                                            ║
║                                            ║
║                                            ║
║                                            ║
║                                            ║
╚════════════════════════════════════════════╝
```

Move the selection arrows next to the tape(s) you would like to exclude in the restore or compare. Press the <Spacebar> to exclude the entire tape from the restore or compare.

Set

This option allows you to exclude directories and files from a restore or compare of any cataloged backup set(s). If you wish to mark a different backup set (or multiple backup sets), move the cursor to the *Set:* option and press <F4>. You will be given a list of available backup sets from which to choose.

Path

Next to *Path:* you can enter any available directory, or subdirectory. To exclude the GAMES subdirectory found in the directory called MISC on drive C: you would:

1. Move the cursor in the *Source* window to tape_*x*

2. Press: <->

3. Move the cursor over *Path:*

4. Type: MISC\GAMES

5. Press: <F2>

Every file in the GAMES subdirectory would be excluded in the restore or compare operation.

File

This option can be used to exclude any specific file or files. To exclude all files with the .BAK extension in a restore or compare you would:

1. Press: <->

2. Move the cursor over *File:*

3. Change *.* to *.BAK

4. Press: <F2>

Exclude all subdirectories?

This option relates directly to the path and files you have entered. If your path is the root directory (\); you press <Y> for this option and *Files:* is set to *.*, nothing will happen when you start the restore or compare because all files are excluded.

If you wanted to restore or compare all files from tape x except for the .EXE files in the \APPS directory and its subdirectories, you would:

1. Select drive C: in the *Backup Source* window and press the <Spacebar> to mark all of the drive for backup

2. With the selection arrows next to drive C:, press: <->

3. Change your path to: \APPS

4. Change *.* to *.EXE

5. Be sure *Exclude all subdirectories* is set to Y

6. Press <F2>

Automating Backups

Backup Exec makes performing backups simple and convenient. This is
done in two easy steps: (1) by selecting data in the Backup Exec software
and saving it as a *script*, and (2) by scheduling the script to run
automatically with the Backup Exec automatic backup software
(AUTOBACK).

Scripts

Scripts provide a quick and easy method of selecting files that you
frequently back up. A script is simply a set of file selections you save, that
when loaded, highlights the data you selected for a backup.

Creating Scripts

Below are step-by-step instructions for creating a new script:

1. Highlight *Clear* in the *Backup* operation menu and press <Enter>.
    This will clear all existing selections marked in the *Source* window.

2. Select the drive(s), file and directory information you want to back up
    in the *Backup Source* window or with the *Include* <+> or *Exclude* <->
    keys (see *Using the* <+> *and* <-> *Keys* on page 4–1).

Note Individually selecting all of the files in a directory is different from selecting the directory itself. If you select individual files in a directory and save these files as a script, each time you use the script only the marked files will be backed up. Files that are added to the directory after the script was created will *not* be backed up. However, when a directory is marked, *all* files within that directory will be backed up; including files that are added later.

3. Once you have selected your data, return to the *Backup* operation window, highlight *Scripts*, and press <Enter>. You will see:

```
┌─Scripts──────────┐
│ Load...           │
│ Save              │
│ Save As...        │
├──────────────────┤
│ Delete...         │
└──────────────────┘
```
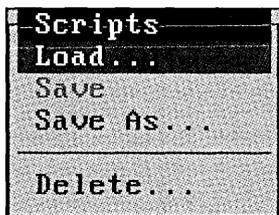
4. Select *Save As* and press <Enter>.

5. Enter a name (up to eight characters long) for your script. (Choose a name that describes the information you are backing up.) Press <Enter> when you are done.

Your script is now complete. Whenever you load this script, Backup Exec will automatically select the data you chose. Select *Start* to begin the event. You can also schedule the event through the Backup Exec automatic backup software (see *Setting Up an Event* on page 5–7).

Loading a Script

To load a script:

1. Select Scripts in the *Backup* operation window, highlight *Load*, and press <Enter>.

2. From the *Load* menu, highlight the script you wish to run and press <Enter>. This will mark all of the files you designated for this script.

Note   If there are any selections marked in the *Backup Source* window that are not part of the script file you selected, you will be prompted to discard the current selections first.

3. Select *Start* in the *Backup* operation menu or type <Ctrl + S> to begin the backup.

You will notice that Backup Exec comes with two scripts already created for you. They are:

MODIFIED   Selects all data on your default drives that has been modified since the last full backup of your system (see *Modified Backups* on page 7–5).

FULL   Selects all of the data on your default hard drive(s) for backup (see **Default_backup_drives =* on page B–4).

Note   If you performed a compare operation on a backup and you had files that failed to compare, a script titled COMPARE will appear in the *Load* window. The COMPARE script includes all of the files that failed to compare.

Changing an Existing Script

To change a script you have previously created:

1. Load the script you wish to change.

2. Alter the selections in the *Backup Source* window by adding or eliminating additional drives, directories or files.

3. Return to the *Backup* operation menu, highlight *Save* and press <Enter>.

The changes you made are incorporated into the script. If you want to keep the original script, select *Save as* in the *Backup* operation menu and enter a different name for the changed script.

Deleting a Script

To delete a script that you no longer need, follow these steps:

1. Select *Scripts* in the *Backup* operation menu and press <Enter>.

2. Move the cursor over *Delete* and press *<Enter>*. Your list of scripts will appear.

3. Move the selection arrows next to the script you wish to delete and press <Enter>. You will see:

```
             Delete Script

   Do you really want to DELETE the
   script file FULL? (Y/N)
```
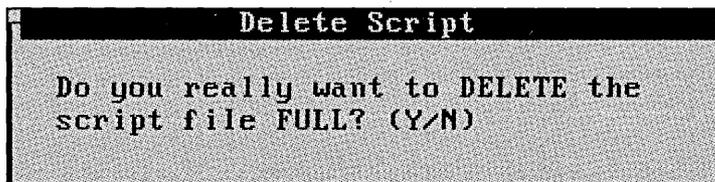
4. Press <Y> to delete the script, or <N> to return to the script list.

Creating a *Modified Files Only* Script

To create a *Modified Files Only* script, use the following steps.

1. Go to the *Backup* window and choose the *Clear* option.

2. Go to the *Backup Source* window.

   For each drive you want to back up:

   1. Locate the drive using the <+> and <-> keys.

   2. Press <+> to activate the *Include Files*window.

      Maintain the defaults for *Path:*, *File:*, and *Include all Subdirectories? (Y/N) [Y]*.

   3. Select *Modified Files Only* and choose *Only include modified files ? (Y/N) [Y]*. Leave the *Begin* and *End Date* fields empty.

   4. Press <F2> to accept your selections.

   5. Go to the *Backup* window and choose the *Scripts* option.

   6. From the *Scripts* window, choose the *Save As* option.

      Provide a meaningful name for you *Modified Files Only* script.

   7. Create a *Full Backup* companion script for each *Modified File Only* script.

Creating a *Full Backup* Script

1. Go to the *Backup* window and choose the *Clear* option.

2. Move to the *Backup Source* window.

   For each drive you want to back up:

   1. Locate the drive with the <+> and <-> keys.

   2. Press the <Spacebar> to select all files.

   3. Press <F2> to accept your selections.

   4. Move to the *Backup* window and choose the *Scripts* option.

   5. From the *Scripts* window, choose the *Save As* option.

      Provide a meaningful name to your *Full Backup* script.

The EXCLUDE.RSS Script

The EXCLUDE.RSS file is a special file that may contain any files you want automatically excluded from a restore operation. Files may be added to EXCLUDE.RSS using an ASCII text editor, as long as they are used in the same syntax as the files already included in the script. This script file can also be used in network situations where you do not want to restore bindery and trustee information.

Important So you do not copy older versions of your operating system software from a tape onto your drive, the EXCLUDE.RSS file must contain the following files:

- ◆IBMBIO.COM
- ◆IBMDOS.COM
- ◆COMMAND.COM
- ◆IO.SYS
- ◆MSDOS.SYS

Note Backup Exec's program files are included in the EXCLUDE.RSS script.

Using AUTOBACK

Once you've created your scripts in the Backup Exec software, you can schedule them as *events* to run at a designated time in the Backup Exec automatic backup software (AUTOBACK). AUTOBACK lets you schedule up to eight events to run whenever you wish. For example, if you want Backup Exec to automatically back up your entire hard drive every Friday night, and back up only files that have been created or changed Monday through Thursday nights, you can schedule these operations as events through AUTOBACK.

Setting Up an Event

Below are step-by-step instructions for scheduling a one-time backup event through AUTOBACK.

1. Start the software from the directory that contains your Backup Exec program files by typing *autoback* and pressing <Enter>. You will see:

```
┌─────────────────────────── Automatic Backup ───────────────────────────┐
│                                                                          │
│       ┌──────────────── Automatic Event Schedule ────────────────┐       │
│       │                                                           │       │
│       │              Overwrite  Compare   Event                   │       │
│       │      Script  Tape       After     Cycle      Time         │       │
│       │      ────────────────────────────────────────────        │       │
│       │                                                           │       │
│       │      FULL     No         Yes       Sunday     12 00 am     │       │
│       │                                                           │       │
│       │                                                           │       │
│       │                                                           │       │
│       │                                                           │       │
│       │                                                           │       │
│       │                              04/06/93   12:43p            │       │
│       └───────────────────────────────────────────────────────────┘      │
│                                                                          │
│   <TAB>  - Next field              <ENTER> - View scripts                │
│   <ESC>  - Exit                      <F2> - Accept selections            │
│   <F1>  - Help                      <DEL> - Delete event                 │
└──────────────────────────────────────────────────────────────────────────┘
```
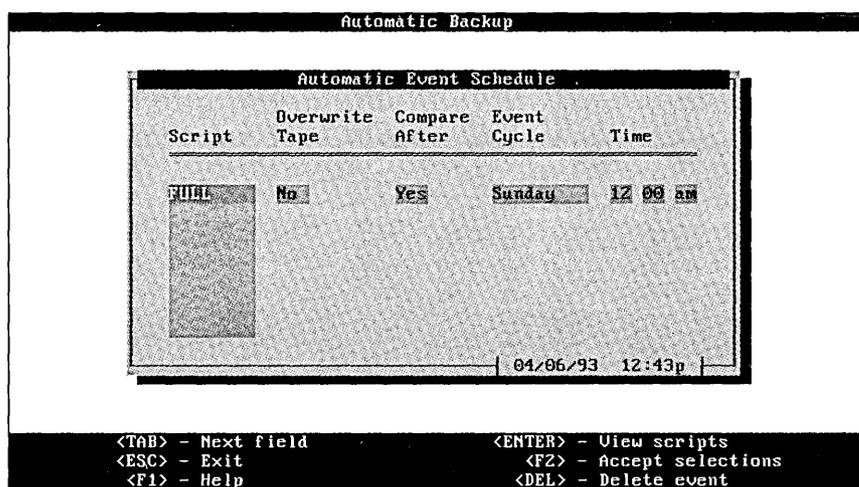
Press <Enter> to see a list of your scripts.

▷ *Continues...*

2. Move the selection arrows next to the script you want to schedule and press <Enter>. Your *Automatic Event Schedule* screen will look similar to this:

```
┌──────────────── Automatic Event Schedule ─────────────────┐
│                                                            │
│              Overwrite  Compare  Event                     │
│      Script  Tape       After    Cycle        Time         │
│    ──────────────────────────────────────────────────     │
│                                                            │
│     FULL      No         Yes      Monday      12 00 am     │
│                                                            │
│                                                            │
│                                                            │
│                                                            │
│                                                            │
│                                                            │
│                                        04/06/93  11:45a    │
└────────────────────────────────────────────────────────────┘
```
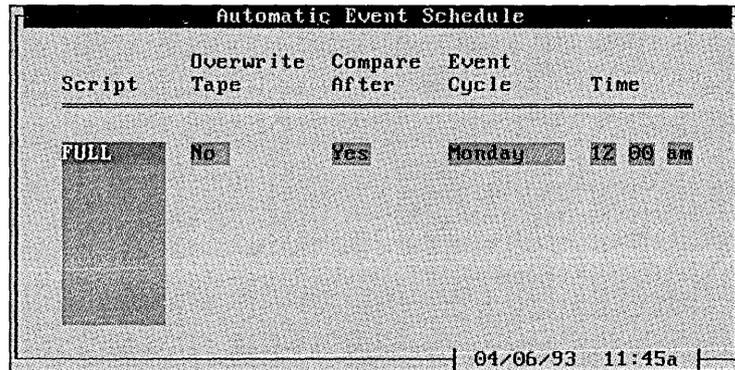
You can navigate through the options in this screen with your <Tab> key.

3. The *Overwrite Tape* option allows you to specify whether the backup will be appended to the tape. This option defaults to appending backups to the tape in the drive. If you want the tape to be overwritten when the event takes place, press <Y>.

Note If you want this event to overwrite the tape in the drive, make sure there is either a blank tape or a tape with nonessential data in the drive when the event is scheduled to run. Otherwise, any data on the tape will be overwritten.

4. Backup Exec will automatically run a compare operation after the event is executed. If you don't want to compare the event, press <N> in the *Compare After* field.

Note Comparing each backup operation is strongly recommended.

5. To indicate the day of the week for the event to run, move the highlight bar to the *Event Cycle* field and press <Enter>. You will see:

```
      Cycle
   Sunday
   Monday
   Tuesday
   Wednesday
   Thursday
   Friday
   Saturday
   Every Day
   Weekdays
```

6. Select the day for the event to be executed. If you want to run the event on a regular basis, you have the option of running the event every day, or on weekdays only. Press <Enter> after you have made your selection.

7. Select the time for the event to be executed. The time must be entered as HH:MM (e.g., 3:15) in five minute intervals. Choose whether you want the event to be executed in the morning or the evening by selecting am or pm.

Note   Scheduling backups for 12:00 midnight should be avoided, if possible. Adjusting the time to 11:55 p.m. or 12:05 a.m. will guarantee the backup occurring on the day requested. For example, if backups are scheduled for early mornings on weekdays, a backup of Monday's business day is performed on Tuesday morning. In this scenario, Friday's business day is not being backed up until the following Monday.

If the computer containing the Backup Exec backup system is powered off when a scheduled backup was to occur, you will be prompted to perform the backup when the system is restarted. If you choose to perform the backup, the Backup Exec software will return to the DOS prompt for approximately 30 seconds before executing the backup.

8. After all of your options are complete, press <F2> to enter the event in the automatic backup event queue.

▷ *Continues...*

If this is your first time running AUTOBACK, you will see a window similar to this:

```
╔════════════════════ Automatic Backup ════════════════════╗
║                                                           ║
║   For the Automatic Backup software to work properly, the following
║   statements need to be added to your AUTOEXEC.BAT file:  ║
║                                                           ║
║       DATE                                                ║
║       TIME                                                ║
║       C:\CONNER\DOS\AUTORES.COM                           ║
║       C:\CONNER\DOS\AUTOBACK /CHECK                       ║
║                                                           ║
║   The installation will allow you to manually add these statements
║   to the AUTOEXEC.BAT file, or they may be automatically added to
║   the end of the file.                                    ║
║                                                           ║
║   Do you want to continue? (Y/N)                          ║
║                                                           ║
╚═══════════════════════════════════════════════════════════╝
```

In order for the AUTOBACK software to run your event(s) some modifications must be made to your AUTOEXEC.BAT file. Press <Y> to continue with the installation or <N> to exit.

If you press <Y>, you will see:

```
╔════════════════════ Automatic Backup ════════════════════╗
║                                                           ║
║   Do you need to execute DATE and TIME to set the         ║
║   system's current date and time whenever you reboot      ║
║   your computer? (Y/N)                                    ║
║                                                           ║
╚═══════════════════════════════════════════════════════════╝
```

If you have to type in the date and time when you restart your computer, press <Y>. If your computer has an automatic clock/calendar, press <N>. You will see:

```
╔════════════════════ Automatic Backup ════════════════════╗
║                                                           ║
║   Do you want the statements to be automatically added    ║
║   to the end of your AUTOEXEC.BAT file? (Y/N)             ║
║                                                           ║
╚═══════════════════════════════════════════════════════════╝
```

📛 **Note** If you are loading MS-DOS v5.0 DOSKEY in your AUTOEXEC.BAT file, select <N> at this prompt and insert the AUTOBACK statements before the DOSKEY statement. If, after following these instructions, the scheduler fails to begin at the desired time, remove DOSKEY from the AUTOEXEC.BAT file and reboot your computer.

If you press <Y>, your AUTOEXEC.BAT file will be updated and your installation will be complete. If you press <N>, you will see a window similar to this:

```
                         AUTOEXEC.BAT
 ↑   @ECHO OFF
     CLS
     PROMPT $p$g
     SET COMSPEC=C:\DOS\COMMAND.COM
```

Position the arrows on the left side of the window to the location where the AUTOBACK statements are to be placed in the AUTOEXEC.BAT file. The AUTOBACK statements should be placed at the very end of the AUTOEXEC.BAT file except in special cases (DOSKEY, network configurations, etc.). Press <F2> to update the file once you have chosen the location for the AUTOBACK statements.

After pressing <F2>, you will see:

```
                    Automatic Backup Status

   The Conner Backup Exec Automatic Backup software installation is
   complete.  Automatic Backup will be activated the next time
   the system is rebooted.

   Press any key to exit.
```

After your software has been successfully installed, you will need to restart your system for the changes to take effect and enable the automatic backup feature.

Automatic Backup Notes

◻ If your computer is turned off when the backup is scheduled to take place, you will see a message similar to this:

```
Your "Tuesday" backup with the "MODIFIED" script did not take
place as scheduled.  Would you like to do it now? (Y/N)
```

If you want to execute the backup, press <Y>. To skip this backup, press <N>. Your backup will run at the next scheduled time, providing your system is powered on.

◻ Make sure the tape(s) you use for automatic backups is(are) not password protected. Password protected tapes cannot be appended to, or overwritten when an automatic backup takes place.

The Command Line

BEDBACK

The BEDBACK program allows you to run the backup scripts you have created in the Backup Exec software from your DOS prompt (see *Creating Scripts* on page 5–1).

This program is found in your \CONNER\DOS directory. It is recommended that you include a *SET BEDOS* = statement in your AUTOEXEC.BAT file so the BEDBACK software will know where to look for the Backup Exec configuration file and any scripts you may have created and want to use.

Example: SET BEDOS = C:\CONNER\DOS

To perform Backup Exec 3.11 command line backups, use the following steps:

1. Select the directories and files to be backed up using the Backup Exec menu program and save the disired selections as a backup script. The .BKS extension is automatically added to the script name you choose (see *Creating Scripts* on page 5–1).

    Example:

    WEEKLY.BKS   files to be backed up every week
    DAILY.BKS   files to be backed up every day

---

2. At the Backup Exec directory, type one of the following at the DOS prompt:

    ♦ To backup the files specified in the backup script file, WEEKLY.BKS, and *append* to any backup sets already on the tape, use:

    C:\CONNER\DOS>bedback /am /a /au /yy @weekly.bks

or

    ♦ To backup the files specified in the backup script file, WEEKLY.BKS, and *erase* any backup sets already on the tape, use:

    C:\CONNER\DOS>bedback /am /au /yy @weekly.bks

Command Line Parameters

Command Line Parameters	
Parameter	**Definition**
/A	Appends files to the end of a tape without overwriting files presently on the tape.
/AU	Automatically compares the data on tape with the data on disk after the backup completes.
/YY	Automatically answers YES to all BEDBACK questions and ignores all prompts for labels. To answer YES to all backup questions, type: BEDBACK /yy @[SCRIPT NAME].

Table 1–1 *Command Line Parameters*

Command Line Considerations

Before making backups using the command line feature, make sure the following conditions have been met:

1. Using the Backup Exec menu software, choose *Settings/Commands/Backup*.

   Make sure that:

   ♦ *Prompt for tape password* is NOT selected

   ♦ *Compare after backup* IS selected

   ♦ *Skip Open Files* is selected (For network users only)

2. Syntax and spacing must be followed exactly as in step 2 on page 4-13.

3. Batch files can be created which invoke BEDBACK.

Limitations

When using the command line, the following limitations are present:

❑ Tape and backup sets cannot be named.

❑ The command line only works for the backup operation. Other commands are available only from the Backup Exec menu software.

Command Line Structure

The commands described here allow you to do all of the basic functions of BEDOS as well as some more advanced, specific commands. The commands are used from the DOS prompt. These programs are found in the Backup Exec directory on your hard drive. It is recommended you include a SET BEDOS= statement in your AUTOEXEC.BAT file. The SET BEDOS= statement is recommended so the Backup Exec software knows where to look for the Backup Exec configuration file and any scripts you may create and use.

The commands are:

BEDBACK

This command allows you to back up any or all files on a drive(s), and place them on tape. Backups are made in file-by-file mode.

BEDDIR

This command gives you a listing of files on a backup tape.

BEDTENS

This command re-tensions the tape for better performance and longer tape life. BEDTENS can optionally erase tapes.

BEDREST

This command allows you to restore files from the tape to a disk. Files can be restored individually file-by-file.

BEDCOMP

This command compares the data on the tape and compares it to the data on the drive.

The Command Line

The command line consists of three basic components: the command, one or more paths, and parameters.

The commands are BEDBACK, BEDDIR, BEDTENS, BEDREST, and BEDCOMP.

The path can consist of a drive letter (C:, D:, etc.), a subdirectory (\, \dos\, \apps\, etc.), and a filename (a.b, *.*, *.doc, abc*.*, etc.).

The Backup Exec command line allows paths to be specified in the same syntax that DOS allows for the DIR command with one exception; to differentiate a directory from a command parameter in a Backup Exec command line, you must place a backslash (\) after a directory.

> *abc*   is the file abc in the current directory on the current drive.
>
> *abc*   is the file abc in the root directory of the current drive.
>
> *abc*\   is the subdirectory abc in the root directory of the current drive.

Each of the commands can be followed by one or more parameters. Parameters are completely optional. Each parameter controls a specific option. If a parameter is not included, it defaults to the value specified in the BEDOS.CFG file. If a parameter is specified on the command line, it overrides the default value. Parameters within commands are always preceded by a forward slash (/).

If you wanted to back up drive C: starting at the root directory (\) and including all subdirectories (/s) your command line would look like this:

Example: bedback c:\/s

BEDBACK is the command that backs up a disk.

C:\ signifies the root directory of drive C:

/S is a parameter. This particular parameter tells the software to back up all subdirectories under the specified directory. Since the specified directory in this example is the root directory of drive C:, you are backing up everything on drive C. If you omitted /s, only the files in the root directory of drive C: would be backed up.

The file specification "*.*" is implied where it is omitted. So *bedback c:\ /s* is the same as *bedback c:*.* /s*.

Dependent and Independent Parameters

There are two kinds of parameters: *dependent* and *independent*. *Independent* parameters must be placed at the end of the command line, but apply to the entire command. *Dependent* parameters are placed after a file specification.

Of the 31 acceptable command parameters only *seven* are dependent parameters. Here is a complete list of the available parameters for the commands:

Parameter	Independent or Dependent	Applicable Commands	Description
/ad:n	D	B	access dates
/ap	I	B	append to the end of a tape
/au:n	I	B, R	automatically verify
/-a	I	B	do not set the modified bit
/ba	D	B	prompt for backup set name
/d	D	B, D, R, C	include files from after date to before date
/em	I	B, R, C	include all empty directories
/en	I	B	backup all default drives
/er	I	T	erase the tape
/f	I	B, R, C	list files
/-f	I	B, R, C	do not list files
/-h	I	B, R	exclude hidden files
/in	I	B	back up files in-use
/la	D	B	prompt for backup set description
/le	I	B, D, R, C	select logfile output level
/li	I	B, D, R, C	logfile output to another file
/lo	I	T	"long" erase

Parameter	Independent or Dependent	Applicable Commands	Description
/m	D	B	include modified files
/page	I	D	stop whe the secreen is full of filenames
/pas	I	B	assign password
/pr	I	R	prompt before restoring *read-only* or *modified* files
/q	I	R	do not restore existing files
/s	D	B, D, R, C	include subdirectories
/-s	I	B	exclude special files
/ta	I	B	prompt for tape name
/tr	I	B	transfer operation
/v:n	I	D, R, C	start command at the specified backup set
/w	I	D	display files in columns (wide)
/x	D	B, D, R, C	exclude files
/y	I	B, D, R, C	automatically answers YES to all Y/N prompts, waits at empty prompts
/yy	I	B, D, R, C, T	answere YES to all Y/N prompts and <Enter> to all field prompts

B - BEDBACK   D - BEDDIR   T - BEDTENS   R - BEDREST   C - BEDCOMP

Here is an example of an independent parameter:

Example: bedback c:\ /s d:\ /s/pas

This command line would back up drives C: and D:. /pas (prompt for a password), is an independent parameter that does not directly relate to the d:\ file specification. Because /pas is an independent parameter you could just as easily change this command to: *bedback c:\ /s/pas d:\ /s* and you would get the same results.

Here is an example of a dependent parameter:

Example: bedback c:\ d:\ /s e:\

This command line would back up all of drive D: and the root directories of drives C: and E:. /S (include subdirectories), is a dependent parameter which only applies to the file specification that directly precedes the parameter.

Multiple File Specifications on the Command Line

An example of a typical command to back up your entire drive C: would look like this:

Example: bedback c:\ /s

c:\ is a single file specification with a single dependent parameter (/s).

The command line allows you to enter more than one file specification. Multiple file specifications could include two or more subdirectories, two or more drives, or a single subdirectory and an exclusion of files (/X parameter).

For two subdirectories on the same drive, use:

Example: bedback c:\apps\ /s c:\word\ /s

For two different drives, use:

Example: bedback c:\ /s d:\ /s

To exclude all *.bak files from one subdirectory, use:

Example: bedback c:\dos*.* c:\dos*.bak /x

The Command Line Limit

When entering a command line, DOS limits you to 127 characters. The name of the command and blank spaces are included in this count. Spaces are required between file specifications and between commands and the file specifications.

Scripts

Scripts that you create for the command line can also be used in BEDOS as long as you give the scripts the .BKS extension, and place the scripts in the Backup Exec directory (usually \conner\dos).

To create a script you can use BEDOS. To create a script outside of BEDOS use the DOS system editor or a word processing program (e.g., Microsoft Word) and save the script as an ASCII file.

The same rules apply to scripts as apply to the command line. Although the command itself is not included in the script, you must put spaces between file specifications, or place each file specification on a separate line. Scripts have no limit to the number of characters or the number of lines.

The @ Symbol

In the command line the @ symbol <Shift + 2> has a special function. This symbol tells the command you have selected to look for file specifications and parameters in a script file. The @ symbol follows the command and precedes the file where you are keeping the script:

> *Example:*   bedback @c:\path\filename

For example, if you wanted to back up a series of files you might type a command line that looks like this:

> *Example:*   bedback @c:\conner\dos\execute.bks

This command line will tell the backup command to expect input from a file in the \conner\dos subdirectory called EXECUTE.BKS. EXECUTE.BKS might look like this:

> c:*.exe
> c:\dos*.exe
> c:\dos\ver\dossup*.exe
> c:\apps*.exe/s
> c:\prog*.exe

This file may have been created by BEDOS or you may have created it yourself with an editor. In either case, the files specified here are backed up by this command. A command line may use more than one script. For example:

> *Example:*   bedback @c:\prog\execute.bks @c:\apps\myscript.bks

Scripts invoked with the @ symbol can be freely intermixed with file specifications and parameters on the command line.

Scripts Comments

Comments can be added to scripts by using braces { and } to enclose the comments.

> *Example:*   c:*.exe
> c:\dos*.exe {these are all of my executable files in DOS}
> c:\dos\ver\dossup*.exe
> c:\apps*.exe/s
> c:\prog*.exe

Everything between the braces is ignored by the command. The comments placed in the script are for your own benefit.

Note   When using braces to insert comments you must have a space between the file specification and the bracket.

The braces can also be useful if you decide you want to exclude a particular line (or lines) from the command. Using the example above you can prevent the execution of a single line by placing the braces around the file specification:

> *Example:*   c:*.exe
> c:\dos*.exe {these are all of my executable files in DOS}
> {c:\dos\ver\dossup*.exe}
> c:\apps*.exe/s
> c:\prog*.exe

The file specification in braces will not be executed by the command, but it remains in the script. If you want to add this file specification later, just remove the braces.

Command Line Parameters

All of the available command line parameters are listed alphabetically and are described on the following pages. Next to each parameter are the commands with which the parameter may be used.

[/AP]   BEDBACK

The append option adds files to the end of a tape without writing over files already stored on the tape.

[/AU:x]   BEDBACK
                                                         BEDREST

The automatic compare option allows you to do a compare operation immediately after a backup or restore. The value of n can be any of the following:

> 0 = do not automatically compare the backup/restore
> 1 = automatically compare the backup/restore
> 2 = prompt whether the backup/restore should be compared

If n is not specified, automatic compare will be enabled.

> *Example:*   *bedback c:\ /s/au* will automatically compare the backup
>   as will *bedback c:\ /s/au:1*

If this option is set to 2 (prompt for compare) and the /YY switch is also specified, then an automatic compare will take place without prompting the user. If an error occurs during the backup or restore, the automatic verify option will be ignored.

Note   A script file called COMPARE.BKS contains a list of files that failed to verify. When you do a backup it may be a good idea to turn on auto-compare after backup. If a COMPARE.BKS file is created when you use this parameter, you have a problem. You can view the contents of the COMPARE.BKS file to see what files failed to verify and what kind of problem was encountered.

[/-A]   BEDBACK

If the /-A option is specified the backup command will not clear the modified (backup) bit when backing up files.

The modified bit is used by DOS to keep track of which files have been backed up since they were last modified.

Be sure to specify the minus "-" in the command or this option will be confused with the append (/A) option.

> *Example:*   bedback c:\ /-a

This option should also be included in your command line if you are backing up a write-protected device.

Note If you back up with the /-A option, a subsequent backup with the /M option will back up all files modified after *and before* the backup which specified /-A. The /-A option prevents the backup from clearing the modified bit on modified files. These files then appear as if they have not been backed up since they were last modified. Therefore, the second backup with the /M option will back up these same modified files again.

[/BA]   BEDBACK

To add a user-defined name to the backup set.

This parameter has two options: [/BA:?] and [/BA: "____"]. The backup set name parameter followed by a question mark will prompt you to enter a backup set name before the backup begins.

> *Example:*   bedback c:\ /b:?

The backup set description parameter will allow you to enter a backup set description on the command line by putting the description between quotes.

> *Example:*   bedback c:\ /s/b: "All doc files"

[/D[:mm/dd/yy][:mm/dd/yy]]	BEDBACK
	BEDDIR
	BEDREST
	BEDTENS

To specify backing up, listing, restoring, or comparing files after a given date, before a given date, or between two dates. If no date is specified the default date (today's date), will be used. The first date is the AFTER date, the second date is the BEFORE date.

Example: To back up all the files created in July 1990 (ON or AFTER July 1st and ON or BEFORE July 31st) you would type:

bedback c:\ /s/d:07/01/90:07/31/90

To back up files created or last modified before a given date, but not after a given date enter two colons after this parameter. *bedback c:\ /s/d::10/01/90* (All files on drive C: created or last modified on or before October 1st, 1990.)

[/EM]	BEDBACK
	BEDREST
	BEDCOMP

To include empty directories during the backup, restore, or compare.

[/EN]	BEDBACK

To automatically back up all of the default devices (see *Default_backup_drives* = on page B–4).

[/ER]	BEDTENS

To erase the information on the tape while the tape is re-tensioned. This parameter erases *all* data stored on the tape. Use it with caution.

You will *not* be prompted before overwriting data when this option is used.

[/F]   BEDBACK
                                                             BEDREST
                                                             BEDCOMP

To list the files as they are backed up/restored/verified. Use this parameter
to override the tape configuration file

[/-F]   BEDBACK
                                                             BEDREST
                                                             BEDCOMP

If you do not want files to be listed, use this parameter to override the tape
configuration file.

[/-H]   BEDBACK

If the /-H option is specified, files that are marked as hidden will not be
backed up. This option will prevent files like IBMBIO.COM or
IBMDOS.COM (among others), from being backed up.

> *Example:*   bedback c:\ /-h

[/IN]   BEDBACK

To back up files in use.

Files on networks that are open for write access by other workstations
should not normally be backed up. However, Backup Exec can be
configured to back up files that are in-use by another DOS session or
another network station. If a file was opened for *exclusive use* or *deny read*,
Backup Exec will still be unable to open these files and they will be handled
based upon your *skip open files* options.

Backup_files_inuse is only definable through a configuration file option.
The way to *enable/disable* this option is through editing the BEDOS.CFG
file (typically found in the \CONNER\DOS directory) setting the
configuration option *backup_files_inuse = 1* enables backing up open files,
whereas *backup_files_inuse = 0* disables the option (default value).

Backup Exec *locks* open files to prevent other sessions or network workstations from modifying the file while it is being backed up. The file remains locked by Backup Exec during backup, therefore large files will be locked for a longer period of time. If the other application program attempts to write to this locked file, typically a *write error* will be produced; however, the handling of this condition is strictly dependent upon the other application program. Once Backup Exec backs up the file, it will be *unlocked* and a WARNING message will be displayed indicating that an open file was backed up while it was in use.

If you are backing up files while they are in use, it is highly likely that files will fail to verify because their contents are possibly being changed by other applications.

Backup Exec will *mark* files that were backed up while in-use. When restoring, comparing or listing files, in-use files will be marked with an <I> attribute.

[/LA]   BEDBACK

To add a user-defined description to the backup set.

This parameter has two options: [/LA:?] and [/LA:"____"]. The label parameter followed by a question mark will prompt you to enter a backup set description before the backup begins.

> *Example:*   bedback c:\ /la:?

The backup set description parameter will allow you to enter a backup set description on the command line by putting the description between quotes.

> *Example:*   bedback c:\ /s/la:"monday's backup"

[/LE:n]   BEDBACK
BEDREST
BEDCOMP

To select the logfile output level.

If the output is sent to a file or a printer, you can select from four output levels (the default is *Level 1*). Each successive level includes the previous level's output in addition to more directory or file detail. *Level 1* includes the drive letter, the backup set number on the tape, the tape number, the tape label, the starting date and time, any errors encountered, ending date and time and completion statistics. *Level 2* includes level 1 plus a list of all processed subdirectories. *Level 3* includes levels 1 and 2 plus a "wide" listing of all the files processed. *Level 4* includes levels 1, 2 and 3 plus file sizes, file date/time and file attributes.

Example: Level 1:

```
Backup of C: <<Root and DOS Directories>>
Backup set 1 on tape 1
LABEL: "Log level 1"

Backup started on 12/24/90 at 10:00a

Backup completed on 12/24/90 at 10:00a
Backed up 11 files in 2 directories.
Processed 122,912 bytes in 3 second(s).
```

Example: Level 2:

```
Backup of C: <<Root and DOS Directories>>
Backup set 1 on tape 1
LABEL: "Log level 2"

Backup started on 12/24/90 at 10:00a

Directory \

Directory \DOS

Backup completed on 12/24/90 at 10:00a
Backed up 11 files in 2 directories.
Processed 122,912 bytes in 3 second(s).
```

Example: Level 3:

```
Backup of C: <<Root and DOS Directories>>
Backup set 1 on tape 1
LABEL: "Log level 3"

Backup started on 12/24/90 at 10:00a

Directory \
IBMBIO.COM IBMDOS.COM CONFIG.SYS AUTOEXEC.BAT

Directory \DOS
APPEND.EXE ASSIGN.COM ATTRIB.EXE BACKUP.COM
BASIC.COM BASICA.COM XCOPY.COM

Backup completed on 12/24/90 at 10:00a
Backed up 11 files in 2 directories.
Processed 122,912 bytes in 3 second(s).
```

Example: Level 4:

```
Backup of C: <<Root and DOS Directories>>
Backup set 1 on tape 1
LABEL: "Log level 4"

Backup started on 12/24/90 at 10:00a

Directory \

IBMBIO.COM        23740    05-08-90    12:00p
IBMDOS.COM        30650    05-08-90    12:00p
CONFIG.SYS          154    12-24-90     9:10a
AUTOEXEC.BAT        790    12-24-90     8:12a

Directory \
DOS APPEND.EXE     5810    05-08-90    12:00p
ASSIGN.COM         1530    05-08-90    12:00p
ATTRIB.EXE        10656    05-08-90    12:00P
BACKUP.COM        30738    05-08-90    12:00p
BASIC.COM          3534    05-08-90    12:00p
BASICA.COM         3534    05-08-90    12:00p
XCOPY.COM         11776    05-08-90    12:00p

Backup completed on 12/24/90 at 10:00a
Backed up 11 files in 2 directories.
Processed 122,912 bytes in 3 second(s).
```

[/LI]   BEDBACK
                                                                                           BEDDIR
                                                                                           BEDREST
                                                                                           BEDTENS

This parameter creates an output log file. The parameter has three options:
[/LI:"path"], [/LI:"path":A], and [/LI::A].

To copy the output to a file of your choice /LI is followed by a colon and the
path in quotes.

> *Example:*   bedback c:\ /s/li:"\wp\tbackup.doc"

To append the output to a file instead of writing over the file, /LI is followed
by a colon, the path in quotes, a second colon, and the letter A:

> *Example:*   bedback c:\ /s/li:"\conner\dos\output.doc":a

To append the output to the log file you defined within *Settings/Log Output*,
the parameter is followed by two colons and the letter A.

> *Example:*   bedback c:\ /s/li::a

If the path is omitted but the file name is given, the output file will be
created in the default directory (the current directory on the default device.)
If the filename is omitted but the path is given, the file will be created in the
specified directory with the name specified in *Settings/Log Output*.

[/LO]   BEDTENS

To do a *long* security erase of the data on a Maynard 2200HS\+ 8mm or
5000 data cassette. Like the /er parameter, this parameter erases *all* data
stored on the tape. Use it with caution. This erase could take up to two
hours to perform.

[/M]   BEDBACK

To specify backing up only files that have been modified since the last back up.

/M and /EN are position sensitive. To back up only modified files on all default drives, type: *bedback /en/m* If you type: *bedback /m/en* all files would be backed up instead of only modified files.

[/NA:n]   BEDBACK
BEDREST
BEDCOMP

To back up/restore/compare Macintosh Appletalk File Protocol (AFP) information on Novell NetWare 2.15 or greater. "n" can be 0 or 1. If you specify /NA:0 Macintosh AFP information will not be backed up/restored/verified. If you specify /NA:1 (the default of this option), Macintosh AFP information will be backed up/restored/compared, if present.

[/ND:n]   BEDBACK

This option resets the Novell NetWare file's date and time for each restored file. Normally after a file is backed up Novell sets the accessed date, but if you specify /ND:1 Backup Exec resets the accessed date to its original value. Configured in this fashion, Backup Exec will also set Novell's *last archive date* if changing the modified bit is enabled. If you specify /ND:0 then a backed up file will be treated as an accessed file and the file's *last accessed date* will not be reset by Backup Exec.

[/PAGE]   BEDDIR

To have BEDDIR pause and prompt when the screen is full of listed files.

[/PAS]   BEDBACK

> To prompt you to assign a password to the tape before beginning the backup. There can only be one password per tape, regardless of the number of backup sets the tape contains. You cannot specify a new password for a tape if you are appending to the tape.
>
> If the tape already has a password, you will always be prompted to enter that password first. Only after you have correctly entered the old password for the tape, will you be prompted to assign a new password if you are overwriting the data on a tape.

[/PR]   BEDREST

> To have BEDREST prompt you before restoring files that have changed. These changes might be new versions of the same file that have occurred since the last backup, or they could be marked *read-only* by DOS.

[/Q]   BEDREST

> When /Q is used, a file that already exists on the disk will not be restored. Only files that are on the tape, and not on the disk, will be restored. This option can be useful when upgrading the operating system on a new disk, and you want to restore all files, except the old version of the operating system.

[/S]   BEDBACK
                                                                          BEDDIR
                                                                          BEDREST
                                                                          BEDTENS
                                                                          BEDCOMP

> To back up, list, restore, or compare all subdirectories under the specified directories.

[/-S] BEDBACK
BEDREST

The /-S option excludes *special* files from the backup/restore. Special files are marked with any combination of the *system* or *read-only* attributes. This option is helpful when used with copy protection and networks. This option will prevent files like IBMBIO.COM and IBMDOS.COM (among others), from being backed up/restored. Be sure to specify the minus "-" in the command or this option could be confused with the subdirectories (/S) option.

> *Example:* bedback c:\ /-s

[/TA] BEDBACK

To add a user-defined name to the tape.

This parameter has two options: [/TA:?] and [/TA:"____"]. The tape name parameter followed by a question mark will prompt you to enter a tape name before the backup begins.

> *Example:* bedback c:\ /t:?

The tape name parameter will allow you to enter a tape name on the command line by putting the description between quotes.

> *Example:* bedback c:\ /s/t:"Monday's backup"

[/V:n]   **BEDDIR**
                                                                          BEDREST
                                                                          BEDCOMP

To direct the command to the correct backup set on the tape before
beginning the directory/restore/*compare*. Including this parameter is an
alternative to the dialogue you will have with the command. For example,
if you use the /V:n parameter with BEDDIR, and you mark you do not want
a directory of the first backup set, you are asked, *Do you want to search for
another backup set?*. Replace the *n* with the number of the backup set.
That is, if the second backup set on the tape contains the files you want to
list you would type:

>   *Example:*   beddir c:\ /s /v:2.

The default is to the first backup set on the tape. The /V:n parameter may
be useful in batch files.

[/W]   **BEDDIR**

To display file names on the entire width of the screen.

[/X]   **BEDBACK**
                                                                          BEDDIR
                                                                          BEDREST
                                                                          BEDCOMP

This parameter is used to exclude files that match the file specification in the
advanced command.

>   *Example:*   To back up the entire drive C: but exclude all of the files in
>   the root directory you would type: *bedback c:\ /s c:\ /x*

In the advanced commands, included and excluded files are processed in the
order they are specified for each device.

>   *Example:*   bedback c:*.* c:*.bak /x c:\fred.bak

This includes all files in the root directory of drive C: (*.*). It then excludes all files in the root directory that end with the extension .BAK (*.bak/x). Finally, it includes the file called fred.bak.

The order of included and excluded files is very important. If you were to take the above example and rearrange it the outcome would be different. For example: bedback c:*.* c:\fred.bak c:*.bak/x

This would include all files in the root directory of drive C: (including fred.bak whether the file is mentioned or not), then all files in the root directory that end with .BAK would be excluded. Fred.bak would not be backed up, because *.bak /x comes after fred.bak in the command line.

[/Y]

BEDBACK
BEDDIR
BEDREST
BEDCOMP

This option automatically answers *Yes* to the first *Yes/No* question.

> *Example:*   If you want to skip all *Yes/No* questions and begin a backup you would type: *bedback c:\ /s/y*

Important   Be careful using /Y with BEDREST. You could inadvertently restore the contents of the wrong tape.

Note   If labels (tape name, etc.) are set to *Yes*, you will be prompted for them.

[/YY]

BEDBACK
BEDDIR
BEDTENS
BEDREST
BEDCOMP

This option automatically answers *YES* to all of the *bedback, beddir, bedtens, bedrest,* and *bedcomp* questions. It also ignores all prompts for labels when used with backup.

Example: To answer *YES* to all backup questions you would type:

bedback c:\ /s/yy

This option is useful in batch files.

BEDBACK Notes

Purpose:

To back up one or more files from disk to tape.

Format:

[d:]BEDBACK [d:][\path\][filename.ext][/parameter]

Parameters:

[/AP]	[/AD:x]	[/AU:n]	[/-A]	[/BA]	[/D]	[/EM]
[/EN]	[/F]	[/-F]	[/-H]	[/IN]	[/LA]	[/LE:n]
[/LI]	[/M]	[/PAS]	[/S]	[/-S]	[/TA]	[/X]
[/Y]	[/YY]					

[d:] before BEDBACK

To specify the device that contains the BEDBACK command.

[d:]

To specify the device that contains the files you want to back up. If no device is given the default device will be used.

[\path\][filename.ext]

To specify the directory and file(s) that you want to back up. If no file name is given *.* in the current directory will be used.

♦ Wildcards are allowed in the file names and extensions.

♦ The BEDBACK command will display the directories and optionally the filenames, as it backs up. You will be prompted to change tapes if the tape becomes full.

- Backup Exec XENIX and UNIX hardware device drivers may be available for use with your tape drive. This will enable you to back up these systems in file-by-file mode. Contact Conner Technical Support at (800) 227-6296 to determine if your hardware is supported.

- During backup corrupt files may be encountered. These files are logged in the CORRUPT.LST file in the \CONNER\DOS directory.

BEDBACK Examples

To back up your entire hard drive C: type:

Example: bedback c:\ /s

To back up all files in the current directory of the default device, type:

Example: bedback

BEDDIR Notes

Purpose

To list files on the tape.

Format

[d:]BEDDIR [\path\][filename.ext][/parameter]

Parameters

[/D]	[/LE:n]	[/LI]	[/PAGE]	[/S]	[/V:n]	[/W]
[/X]	[/Y]	[/YY]				

[d:] (before BEDDIR)

To specify the drive containing the BEDDIR command.

[\path\][filename.ext]

To specify the directory and files on the tape that you want to display. If no file name is given *.* in the current directory will be used.

- ◆ A space is required after the BEDDIR command.
- ◆ Wildcards are allowed by the BEDDIR command.
- ◆ If you do not specify a directory, the default device's current directory will be used when displaying files from the tape. If you do not specify a file name, all file names will be displayed in the current directory. For this reason we recommend you always specify a path when using this command.
- ◆ The BEDDIR command is similar to the DOS DIR command, except itlists files on tapes instead of files on devices.

BEDTENS Notes

Purpose

To re-tension the tape BEDTENS should be performed after every 20 backups.

Format

[d:]BEDTENS [/parameter]

Parameters

    [/ER] [/LO]   [/YY]

[d:] (before BEDTENS)

To specify the drive containing the BEDTENS command.

BEDREST Notes

Purpose

To restore one or more files from tape to disk.

Format

[d:]BEDREST [d:][\path\][filename.ext][/parameter]

Parameters

[/AU:n]	[/D]	[/EM]	[/F]	[/-F]	[/LE:n]
[/LI]	[/PR]	[/Q]	[/S]	[/-S]	[/V:n]
[/X]	[/Y]	[/YY]			

[d:] (before BEDREST)

To specify the drive containing the BEDREST command.

[d:]

To specify the device you want the files to be restored on. If no letter is given the default device will be used.

[\path\][filename.ext]

To specify the files you want to be restored. If no file name is given, *.* in the current directory will be used.

- ◆ A space is required after the BEDREST command.
- ◆ Wildcards are allowed in the BEDREST command.
- ◆ You will be warned if the tapes are inserted out of order.
- ◆ To restore all files to hard disk C type: *bedrest* c:\ /s

Restoring Files to Another Subdirectory

You cannot change the name of a file when it is restored to a disk, but files can be restored to different subdirectories.

For example, if you have a backup that contains files ending with the .DOC extension in a directory called WP, but you want these files restored on your disk in a subdirectory called DOC, you would type:
bedrest c:\wp*.doc = c:\doc\

The source drive and the target drive must be the same.

Example: C:*.* = C:\doc*.* not C:*.* = D:\doc*.*

The equals sign <=> is used to redirect the restored files to the new subdirectory. The file specification (source) comes first in this command line and the path name (target directory) follows the equals sign. Dependent parameters should be placed after the source. Target directories cannot have dependent parameters. Don't specify the same files more than once. Files can only be restored to one target at a time.

Restoring Corrupted Files

Corrupted files which are backed up are listed in a file called CORRUPT.LST in your Backup Exec directory. You should take a look at this list and check the status of the files before you proceed to restore them (see *Handling Corrupt Files* on page 8–3).

Along the same lines, the script file called COMPARE.BKS contains a list of files that failed to verify. When you do a restore, it is highly recommended that you turn on auto-compare after a restore. This option is found in *Settings/Commands/Restore* options or you can use the */au* parameter in your BEDREST command line. If a COMPARE.BKS file is created, it means you have a problem. You can view the contents of the COMPARE.BKS file to see what files failed to verify and what kind of problem was encountered.

BEDCOMP Notes

Purpose

To verify that the data written on the tape or disk has been recorded correctly.

Format

[d:]BEDCOMP [d:][\path\][filename.ext][/parameter]

Parameters

[/D]   [/EM]   [/F]   [/-F]   [/LE:n]   [/LI]

[/S]   [/V:n]   [/X]   [/Y]   [/YY]

[d:] (before BEDCOMP)

To specify the drive containing the BEDCOMP command.

[d:]

To specify the device you want the tape files to be compared to. If no letter is given the default device will be used.

[\path\filename.ext]

To specify the files you want to be compared. If no file name is given, *.* in the current directory will be used.

   ◆ It is highly recommended that you compare after every backup and restore.

   ◆ A space is required after the BEDCOMP command.

   ◆ Wildcard characters are allowed by the BEDCOMP command.

   ◆ You will be warned if the tapes are inserted out of order.

   ◆ To compare all files on tape to hard disk C: type: *bedcomp* c:\ /s

Comparing Files in Another Subdirectory

Files can be compared against files in different subdirectories.

If you had a backup on tape that contained all files in a subdirectory called HOME, and you wanted to compare these files to a subdirectory on your disk called WORK, you would type: *bedcomp* c:\home*.* = c:\work*.*

The source drive and the target drive must be the same.

Example: C:*.* = C:\doc*.* not C:*.* = D:\doc*.*

The equals sign <=> is used to compare the files on the tape to the files in a different directory on the disk. The file specification (source) comes first in this command line and the path name (target directory) follows the equals sign. *Dependent* parameters should be placed after the source. Target directories cannot have dependent parameters.

Backup Strategies

Choosing a Backup Strategy

In order to get the most benefit from your backup system, you must incorporate a strategy that includes the following: how often you will back up; how many tapes you will use; and when you will use those tapes. This is called a *tape rotation* strategy.

This chapter provides tips on different backup/tape rotation strategies and some guidelines you can follow to formulate a method that is best for your data. You can implement a tape rotation schedule just as it appears in this chapter, or you can customize it to create the most convenient schedule for you.

Your tape rotation schedule should be organized. Affix labels to your tapes and keep a backup log that includes information (dates, times, tape contents, etc.) about your backups. This allows you to locate tapes quickly when you need to restore data.

Prior to choosing a tape rotation strategy to use with your Backup Exec system, you should examine these commonly asked questions:

How often should I back up?

While there is no set rule on how often to back up your data, there is one consideration that can help you decide for yourself:

What is the cost of re-creating data that was added or modified since the last backup?

Calculate the manpower, lost time and/or sales, and other costs that would be incurred if the file server crashed right before the next backup was to take place (always assume the worst scenario). If the cost is excessive, the strategy needs to be adjusted accordingly.

Example: The cost to re-create information would probably be quite substantial for a company with a sales staff of 200 taking orders over the phone. The cost to re-create the data for the same company's two-person word processing department would be considerably less.

Ideally, you want to do at least a full backup every day. Because of time and media constraints, this is not always possible, so modified backups must suffice. Modified backups include only files that have changed since the last time a backup was performed.

Important files and directories that constantly change may need to be backed up several times a day. For safety reasons, always perform a full backup before adding new applications or changing your computer's configuration.

How much data must be backed up?

This is an important factor in determining your tape rotation strategy. If you are backing up large amounts of data that needs to be retained on tape for long periods of time, select a strategy that is suitable for these requirements.

How long does the data need to be stored?

The amount of time the data needs to be stored is directly related to the tape rotation strategy you use.

Example: If you use one tape and back up every day, your backups will never be more than a day old.

Since tape media is relatively inexpensive when compared to the value of your data, it is a good idea to perform a backup on a tape that is not used in the tape rotation schedule and store it permanently. Some companies may choose to do this every few months, while others may choose to make one permanent backup per year.

The threat of viruses is an issue here also. Some viruses take effect immediately, while others may take days, or weeks to cause noticeable damage. Because of this, you should have at least the following backups available to restore at any time:

□ three daily modified backups (e.g., Monday, Tuesday, Wednesday)

□ a one-week-old full backup

□ a one-month-old full backup

Having these backups available should allow you to restore your system to its pre-infected state. After your system is restored, run a utility to destroy the virus.

Full, Modified, and Differential Backups

With Backup Exec, you have three methods to choose from to back up your files: *Full*, *Modified*, and *Differential*.

Before you can develop a tape rotation strategy, you need to decide whether to do full, modified or differential backups, or a combination.

Full Backups

Full backups include all of the contents of a drive.

Example: Selecting all of drive C:\ for backup would be considered a full backup. Following are advantages and disadvantages of performing only *Full* backups:

Advantages

Files are easy to find	Since full backups include all of the data contained on a drive, you don't have to search through several tapes to find a file you need to restore.
Easy system restoration	There is always a current backup of your entire system on a single tape or tape set. If you should need to restore your entire system, all of the most current information is located on the last backup.

Disadvantages

Backups are redundant	Since most of the files on your system rarely change, each backup following the first is merely a copy of what has already been backed up.
Time consuming	Full backups can be time-consuming.

Modified Backups

Modified backups include only files that have been created or changed since the last backup (see *Table 7–1*).

	Modified Backup Example				
	Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
Files backed up	1,2, & 3 (Full)	1	2	1,2	3
Files that changed after the backup	1	2	1,2	3	3

Table 7–1   *Modified Backup Example*

Advantages

Better use of media   Only files that were created or changed since the last backup are included, so there is much less data storage space required.

Less time required   Modified backups take less time to complete than full and differential backups.

Disadvantages

Files are difficult to find   Modified files will be spread across all tapes used since the last full backup. You may be required to search several tapes to find the file you wish to restore (this is typically not a problem if you use full cataloging).

Differential Backups

Differential backups include backing up all files modified since the last *Full* backup.

Example: A differential backup is performed on Monday following Friday's full backup. When performing a differential backup again on Tuesday, the backup will include the data backed up Monday, as well as any files that have changed on Tuesday. The difference between a differential and modified backup is that with modified, you back up only the files that have changed since the last full or modified backup.

For instance, a full backup consisting of three files was performed on Monday. *File #1* was changed on Tuesday and backed up Wednesday. Notice that on Thursday, *File #1* was backed up again, along with *File #2* that was modified Wednesday.

Differential Backup Example					
	Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
Files backed up	1,2, & 3 (Full)		1	1, 2	1, 2, 3
Files that changed after the backup		1	2	3	

Table 7–2 *Differential Backup Example*

Advantages

Files are easy to find   Restoring a system backed up under a differential strategy requires a maximum of two tapes--the latest full backup tape and the latest differential backup tape. This potentially represents a considerable time savings over backup strategies which require the latest full backup tape and all modified backup tapes created since the full backup.

Less time required   Differential backups take less time to complete than full backups.

Disadvantages

Redundant backups   The amount of data backed up each day following a full backup gets greater and greater. For example,

Example: A full backup is performed on Friday, and differential backups Monday through Thursday. Redundancy occurs because the same information backed up on Monday will be backed up again 3 more times (Tuesday - Thursday).

Creating a Differential Backup Script

Below are steps for creating a differential backup script:

1. Load a *Modified Files Only* script that includes all of the data on your drive(s) you want to back up (see *Creating a Modified Files Only Script* on page 5–5).

2. Go to the *Settings\Commands\Backup* menu and unmark the *Reset each file's modified bit* after backup option.

3. Press <F2>.

4. Select *Save As* under the *Scripts* menu in the *Backup* operation window to save the differential backup script.

   You may wish to use a naming convention that will allow you to distinguish the script as a differential backup

   Example: DAILYDIF

5. Return to the *Settings/Commands/Backup* window and mark the *Reset each file's modified bit after backup* option.

Differential Script Example

The following represents a tape rotation strategy using differential backups:

1. Load the original backup script on the day(s) you choose to perform your full backup(s) (i.e., Friday).

2. Load the differential backup script on the days you choose to perform your differential backups (i.e., Monday through Thursday)

☞ **Tip** You can set up the differential backup script to run automatically through AUTOBACK

Tape Rotation Methods

There are many different tape rotation strategies. They differ mainly by the number of tapes they require and how long the tapes are kept before they are rotated back into the schedule.

General Guidelines

Some general guidelines apply to all tape rotation schedules:

Be consistent in backing up tapes

If the schedule is not followed regularly, mistakes could take place that would make it more difficult to restore the system completely. Make sure that backups are performed on schedule.

Keep a backup log

Although Backup Exec's disk-based catalog is extremely useful for keeping track of tapes, it is a good idea to keep a written log that includes the date, time, and contents of each tape. This way, if you need to restore data in a disaster situation, you will have a reference to start from.

Included in this chapter are some generic tape rotation schedules. Depending on the value and quantity of your data, you may want to adjust a schedule to better suit your needs.

You may wish to perform an extra full backup on the last Saturday of the month to rotate off-site for permanent storage.

Backup Strategy: Son

Number of tapes required: *1*
Maximum Storage life: *last backup*

This method of backup simply involves doing a full backup every day. Although the *Son* strategy is simple to administrate, backing up with a single tape is not an effective method of backup, due to the fact that magnetic media eventually wears out after many uses and the data you can restore only spans back to your last backup (see *Figure 7–1*).

	Mon	Tue	Wed	Thu	Fri
	Tape 1	Tape 1	Tape 1	Tape 1	Tape 1
Week 1					

= Full Backup
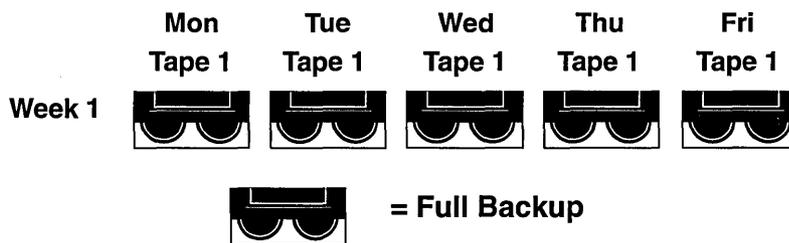
Figure 7–1   *Son Backup Strategy*

Backup Strategy: Father/Son

Number of tapes required: 6
Maximum Storage life: *Two weeks*

The *Father/Son* tape rotation scheme uses a combination of full and modified backups for a two week schedule.

In the *Father/Son* scenario, four tapes are used Monday through Thursday for modified backups. The other two tapes containing full backups are rotated out and stored off-site every Friday (see *Figure 7–2*).
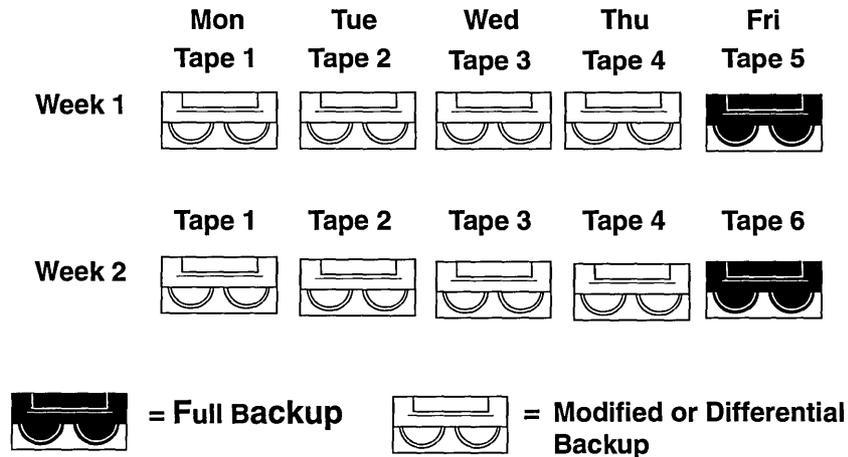
Figure 7–2   *Father/Son Rotation Scheme*

When this backup strategy is first implemented, you must start with a Full backup (i.e., Friday).

The *Father/Son* strategy is easy to administrate and allows you to keep data longer than the *Son*, but it is not suitable for the stringent data needs of most network environments.

Backup Strategy: Grandfather (recommended)

Number of tapes required: *19*
Maximum Storage life: *One Year*

The *Grandfather* method is one of the most common tape rotation schemes. It is simple to administrate and comprehensive enough to find files easily when they need to be restored.

In the *Grandfather* scenario, four tapes are used Monday through Thursday for modified backups; another three tapes are used every Friday for full backups. The remaining 12 tapes are used for monthly full backups and are kept off-site (see *Figure 7–3*).

	Mon	Tue	Wed	Thu	Fri
	Mon 1	Tue 2	Wed 3	Thu 4	Fri 5
Week 1					

	Mon 1	Tue 2	Wed 3	Thu 4	Fri 6
Week 2					

	Mon 1	Tue 2	Wed 3	Thu 4	Fri 7
Week 3					

	Mon 1	Tue 2	Wed 3	Thu 4	Monthly
Week 4					

= Full Backup   = Modified or Differential Backup
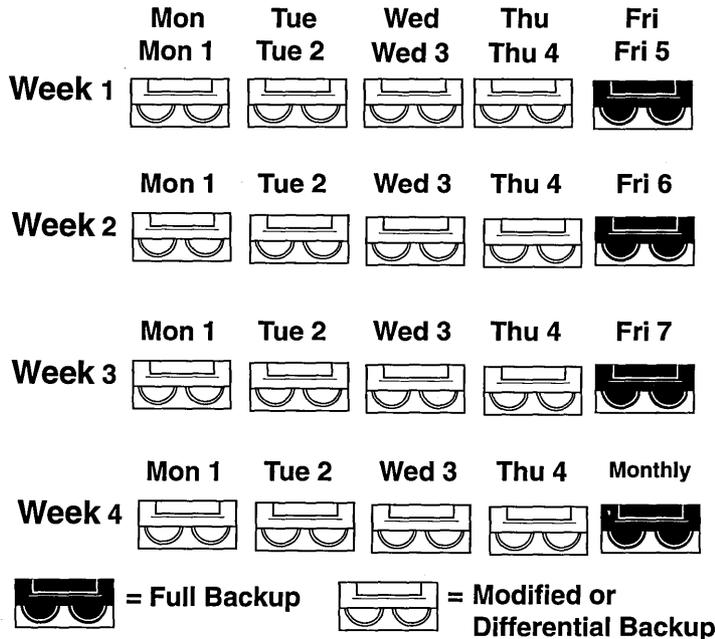
Figure 7–3   *Grandfather Rotation Scheme*

The *Grandfather* strategy is recommended because it offers a good tape number to storage life ratio (19 tapes/1 year). It is also easy to modify should you wish to incorporate more tapes. For example, you could perform a full backup on the last Saturday of the month to archive permanently.

Backup Strategy: Grandfather/Father/Son (Ten Tape Rotation)

of tapes required: *10*
Maximum Storage life: *12 weeks*

Some backup strategies result in excessive wear on the tapes that are used most often in the schedule. For example, a strategy may require that the same four tapes are used to do modified backups on Monday through Thursday, every week. The *Grandfather/ Father/Son* strategy eliminates this by rotating tapes in a way that allows each tape to be used the same number of times over a 40 week period. The cycle begins with a full backup on each Friday, and modified backups Monday through Thursday. On the fourth Friday of each month, a full back up is performed and rotated off-site.

The strategy is divided into ten, four week intervals. The same four tapes are used Monday through Thursday in a given month, but change the next month. A different tape is used each Friday of the month.

When you first implement the *Grandfather/Father/Son* strategy, you will need to perform a full backup on Tape 10 before backing up to Tape one on Monday. This will ensure that you have a four-week-old copy of your data at the end of the first four week cycle.

The main benefit of the *Grandfather/Father/Son* strategy is that all tapes are used equally during the cycle. This strategy is more difficult to administrate than others listed in this chapter, and although less tapes are required than the *Grandfather* strategy, storage life is reduced to 12 weeks (see *Figure 7–4*).

	Mon	Tue	Wed	Thu	Fri
	1	2	3	4	5, 6, 7, 8
Month 1					
	2	3	4	5	6, 7, 8, 9
Month 2					
	3	4	5	6	7, 8, 9, 10
Month 3					
	4	5	6	7	8, 9, 10, 1
Month 4					
	5	6	7	8	9, 10, 1, 2
Month 5					
	6	7	8	9	10, 1, 2, 3
Month 6					
	7	8	9	10	1, 2, 3, 4
Month 7					
	8	9	10	1	2, 3, 4, 5
Month 8					
	9	10	1	2	3, 4, 5, 6
Month 9					
	10	1	2	3	4, 5, 6, 7
Month 10					

■ = Full Backup   ▢ = Modified or
                              Differential Backup
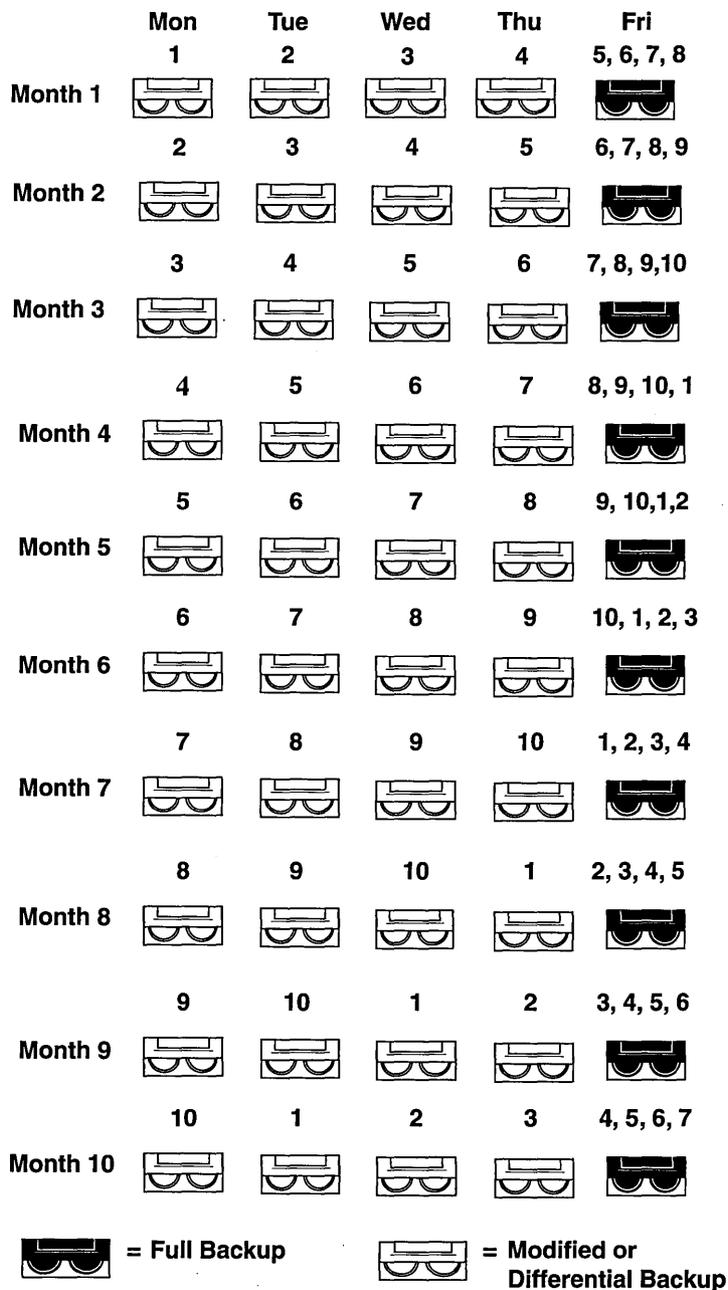
Figure 7–4   *Grandfather/Father/Son Rotation Scheme*

Special Case:

I have files that are always in use on my server. How do I back them up?

Backup Exec has the capability to back up files that are in use. Although performing backups on files that are in-use is not normally recommended, the feature is provided if there is no alternative to the situation.

Changes that are made to open files while the backup is running may be missed. For example, let's say that you back up a database file while users are entering information. Chances are, changes will be made to a section of the database file that has already been backed up, so in essence, the backup is already out of date.

If you have files that are always in use, make sure adequate documentation is kept so you will have an idea of what information may have been changed during or since the backup. Also, back up these types of files often to reduce the amount of time it would take to re-create the data.

Troubleshooting

This chapter is designed to assist you with problems you may encounter while using Backup Exec. If you do not find the help you need in this chapter, please contact Conner Technical Support.

Using CHKDSK

If the tape drive or software has never worked properly, follow these steps to find the possible cause of the problem:

1. Boot your computer with a bootable floppy diskette so your AUTOEXEC.BAT and CONFIG.SYS files are not loaded from the hard drive. The floppy should contain a CONFIG.SYS file with FILES=20 and BUFFERS=15.

2. Go to the directory on your hard drive that contains your DOS files.

▷ *Continues...*

3. Type: CHKDSK C: <Enter>

    This will run a non-destructive test of your first hard drive. You
    should see a list that tells you:

    > xxxxxxxx bytes total disk space
    > xxxxxxxx bytes in x hidden files
    > xxxxxxxx bytes in xx directories
    > xxxxxxxx bytes in xxxx user files
    > xxxxxxxx bytes available on disk
    >
    > xxxxxx byte s in each allocation unit
    > xxxxxx total allocation units on disk
    >
    > xxxxxx available allocation units on disk
    >
    > xxxxxx total bytes memory
    > xxxxxx bytes free

    If any unusual messages appear as a result of this check, refer to your
    DOS manual or see your local dealer.

    Be sure you have at least 512K of memory available (524,288 bytes
    free as reported by CHKDSK). The amount available will be listed on
    the last line of CHKDSK. If you do not run the software with the
    appropriate amount of memory, you will receive an *Out of Memory*
    message.

4. Go to the directory that contains the Backup Exec software and
    type: *bedos <Enter>*

    If the software now functions properly, determine what is in the
    AUTOEXEC.BAT or CONFIG.SYS files that may be conflicting with
    the Backup Exec software. If you are loading the software from the
    root (e.g., C:\) make sure the BEDOS.BAT file is present. If the file is
    missing, you will need to re-install Backup Exec.

"Unable to Open Resource File" Message

If you get an *Unable to open resource file* error message, the files essential to running the Backup Exec software cannot be found. This may occur if you have executed BEDOS with an explicit path and the Backup Exec resource file (BEDOS.RES) file cannot be located. To remedy the situation, type a *SET* command for the Backup Exec software.

Example: The Backup Exec software was in a directory called *tape* on drive C: type: *set BEDOS=c:\tape.* The set statement can also be added to your AUTOEXEC.BAT file.

Handling Corrupt Files

If, while performing a backup operation, DOS is unable to read a file successfully (after performing several retries), Backup Exec will consider the file as corrupt on the disk. Backup Exec will display a warning message informing you that a corrupt file has been found. Backup Exec will then attempt to salvage as much of the file's contents as possible. Corrupt files found during a backup are listed in a special log file called CORRUPT.LST (located in the Backup Exec directory).

Backup Exec denotes corrupt files with an additional <C> attribute during file selections from tape or directory listings.

If a CORRUPT.LST file exists in your Backup Exec directory at the start of a restore operation, Backup Exec will warn you of its presence. You should view the contents of this file, and take corrective steps to *repair* your file(s) and/or hard disk. Once the problems have been corrected, you can delete the CORRUPT.LST file.

During a backup you may receive a *retry* message. If you answer *Yes* to this question, there is a chance that the corrupt file may be backed up. Answering *No* causes the Backup Exec software to read a smaller portion of the file in an attempt to bypass the corrupt area and preserve more data.

Troubleshooting/Error Message Chart

The following chart lists problems and error messages you may encounter, and their solutions. Error categories included are: *Catalog*, *.EXE*, *Fatal*, *File*, *Hardware* (for Maynard controllers only), *Memory*, *Network*, *Resource File* (BEDOS.RES), *Tape* and BEDOS.

If you don't find your problem on this chart, or a solution suggested here does not solve the problem, please contact Conner Technical Support.

Error Message	Problem	Solution
Catalog		
Error Message: "Fatal Cataloging Error...".	When backing up a NetWare fileserver, you can verify the backup but can't use the catalog when trying to catalog large directory trees.	If you have a subdirectory path that requires 135 characters to display, or if your subdirectory tree extends more than 63 levels from the "root" (SYS:), you may prevent the error by disabling Cataloging for the backup session that includes this path; or, you should split the tree, if possible, into more manageable "branches". These limitations are being addressed in a future release of Backup Exec.
Error Message: "Unrecoverable catalog error: n". Following are the values for "N".	Backup Exec encountered a problem when using the disk-based catalog.	
0x40b	There are not enough file handles available.	Modify the FILES= line inside your workstation's CONFIG.SYS file to at least 20. Re-boot and try the operation again.
0x40e	The software is loaded on the Novell server without write rights.	Give the user write rights to the directory where Backup Exec is installed.
0x410	The disk based catalogs could be corrupt.	Re-start the application and compact the catalogs.

Error Message	Problem	Solution
0x412	A DOS disk file seek error has occurred during a read operation from the catalog.	Re-start the application and compact the catalogs.
0x415	Memory corruption has been detected	Re-boot the system and try the operation again.
0x415	Memory corruption has been detected.	Re-boot the system and try the operation again.
0x415	Memory corruption has been detected.	Re-boot the system and try the operation again.

.EXE

Error Message: nnnnn = _MAIN nnnnn = _ARES nnnnn = _AUTO	Backup Exec encountered a problem when it tried to access one of the program .EXE files.	
nnnnn.EXE = 2 nnnnn.EXE was not found	1) The file was assigned another name 2) The file was deleted.	1) Rename the file back to its original name. 2) Re-install the Backup Exec software.
nnnnn.EXE = 8 nnnn.EXE was found but is not executable	The file is corrupt.	Re-install the Backup Exec software.
nnnnn.EXE = 24 too many files are open to determine that nnnn.EXE is an executable file	1) FILES in your CONFIG.SYS is not set properly. 2) TSRs have opened too many files	1) Increase the FILES value in your CONFIG.SYS file to at least 15. 2) Remove any TSRs that are opening files.

Error Message	Problem	Solution

Fatal

Error Message	Problem	Solution
Error Message: "Fatal Error on [Tape Drive] 1".	An error was detected in the Backup Exec system.	Exit Backup Exec at once. Re-enter the application by typing *BEDOS /ZL.* You will notice a debug window at the bottom of your screen comes up. Try the operation that caused the error again and locate the last occurrence of "Device error =" in the debug window. Find the code in the Symptom column. If you are not able to determine the error code from the window, view the debug.log file in your Backup Exec directory. If the "Ret Val =" field equals -520, match the "Device Error" code listed below in the Symptom column. If the "Ret Val =" field does not equal -520, contact Conner Tech Support.
Device error = 0	The operation was completed without an error.	This is not an error code.
Device error = 1	A device time-out occurred.	Check the cabling and termination (if SCSI) on the drive.
Device error = 2	This error is typically encountered when the tape is spanned to the end during the backup. This is typically not a problem.	Exit Backup Exec, re-start the application and try the operation with a new tape.
Device error = 3	Bad data was read from the tape.	Retension the tape and try the operation again. If the problem occurs during backup, replace the tape.
Device error = 4	No tape was found in the drive.	This is not an error code. Insert a tape to continue with the operation.

Error Message	Problem	Solution
Device error = 5	A filemark was found. This is typically not a problem.	This message is returned when the end of the backup set is encountered.
Device error = 6	Backup Exec attempted to read data from the tape, but the drive reported that no data was found. The data on the tape could be corrupt.	Tension the tape and retry the operation.
Device error = 7	Invalid command sent to drive.	Check the cable and termination.
Device error = 8	Drive reset detected.	Check the cable and termination.
Device error = 9	1) The tape is write-protected.	1) This is not a fatal error. Un-protect the tape if an overwrite is desired and try the operation again.
	2) There is a problem with the drive.	2) If the tape is not write protected, your drive may be faulty. Contact Conner Technical Support for further instructions.
Device error=10	The tape drive reported a hardware failure.	Check the cables and termination. Replace the tape and retry the operation.
Device error=11	A hardware or software error occurred.	Contact Conner Technical support.
Device error=12	Physical end of media was detected.	Replace the tape and retry the operation.

Error Message	Problem	Solution
File		
Error Message: "File xxxxxxxxx is different".	File attributes have changed between the time the file was backed up and verified.	The file appearing as different might have been changed by someone at another workstation since the backup. If you know this is true, then your backup is good. If this is not true, your backup is suspect. Back up the data again and compare it to be sure it is good. If you suspect that the file is corrupt, restore it to a directory and use the DOS compare program "comp" to verify that the file is actually different. To check for a hard drive problem, copy the file to NUL or run DOS's chkdsk /f if the drive is not a server. Clean the heads your tape drive.
Error Message: "File x in use - skipped".	The Backup Exec configuration file has been set to skip files that are open.	Go into *Settings/Commands/Backup* and change "Skip OPEN files?" to No.
Error Message: "File x in use - waiting".	The Backup Exec configuration file has been set to wait for open files to close before it can back up the file.	Go into *Settings/Commands/Backup* and change "Skip OPEN files?" to Yes.
Error Message: "File not found on disk".	The file on the tape does not exist on the drive.	The wrong path or file name may have been entered into the command line, or if you are using a backup script, the file in the script may not be on the drive. The file was deleted or moved since the time it was backed up.
The number of files backed up do not match the number of files compared.	Not a problem if the condition is one of the situations listed in the solution column. Compare is not attempted on certain files.	There are five Backup Exec catalog files located in the Backup Exec directory that are not compared, so whenever this directory is included in the backup, the number of files will not match. The Backup Exec log files are not compared either.

Error Message	Problem	Solution
Hardware **(Maynard Contollers** **only)**		
Error Message: "Unable to determine DMA or IRQ channel".	There is a conflict with another card in the system.	Make sure no other cards in your system are using the same settings as your controller and try different DMA and IRQ settings on the controller card.
Backup Exec will not allow me to append backup sets to a tape.	Power to the tape drive was interrupted during the last backup.	The Backup Exec software was not able to write a file mark on the tape because of the power loss. You will not be able to append to this tape, however, you can overwrite the data on the tape.
	The tape is a foreign tape or the tape is in a format unidentifiable to Backup Exec..	Backup Exec cannot read the data on the tape. If you wish to re-use the tape, perform a Full Erase on it.
Error Message: "Parity errors detected".	1) The backup is probably good. Most likely Backup Exec tried to free the buffer pool.	1) Perform a Compare on the backup. If it compares with no errors, the backup is okay. If it does not, check the memory in the computer.
	2) Video flicker may be causing the error.	2) Change your answer to the flicker question under Settings\Screen.
	3) Intermittent bus slot.	3) Move the controller to a different slot closer to the power supply.
		If none of these solutions help, the computer should be checked out by a service center.

Error Message	Problem	Solution
Error Message: "Out of memory".	1) Your hard disk is full.	1) Free up some space on your hard disk and try the operation again.
	2) You don't have rights on your network to create a file.	2) Get the appropriate rights for the drive/directory where the Backup Exec software is located.
	3) The file is read-only and exists on the disk.	3) Flag the file as Read-write to overwrite the file.
	4) There is a mapping problem on the network.	4) Make sure your drives are mapped correctly.
	5) You have less than 512KB of free memory.	5) Unload TSRs to free memory.
Error Message: "Unable to open file x - skipped".	The Backup Exec software is unable to open a file on the disk.	The Backup Exec software will either wait for the file to be closed or skip the file. If you are on a network, make sure you have sufficient rights to the file or directory.
Error Message: "Unable to read extended file information for file x".	A network disk error is encountered.	The backup will continue, but upon completion, you should run Novell's VREPAIR to correct this disk error.

Error Message	Problem	Solution

Memory

Error Message: "Insufficient Memory".	Not enough memory available for the operation.	Backup Exec requires 512K of available memory. If you have an expanded memory manager loaded, make sure the Backup Exec software is configured to use expanded memory in BEDOS.CFG. This loads approximately 30K of resource information into expanded memory. You may also get the "Insufficient memory" message if available disk space on your hard drive is getting low. Backup Exec defaults to using Virtual Memory, which treats disk space as if it were RAM. If you receive the Insufficient Memory message and you suspect that you have limited available space on your hard drive, you can turn off Virtual Memory by editing the BEDOS.CFG file. Change the setting from "Virtual_memory = 1" to 0, which will disable Virtual memory.

Error Message	Problem	Solution
Error Message: "Fatal virtual memory error-x"	1) There is not enough space on the disk.	1) Exit the application and check your available disk space. You should have at least 1 MB free on the disk, if not, free up some disk space and try again.
	2) Bad clusters were located on the disk.	2) Run a disk diagnostics program (i.e., CHKDSK /f) to search for bad clusters. Have the program clean up the bad clusters and try the operation again.
	3) Virtual memory is interfering with the operation.	3) Turn off virtual memory temporarily. Change the BEDOS.CFG file setting in the "Virtual_memory = 1" field to 0.

Network

Error Message	Problem	Solution
Error Message: "Error in NOVELL.NKS network script".	1) The wrong network was selected in the BEDOS.CFG file. 2) The Novell.NKS script is corrupted.	Re-install the Backup Exec software and try the operation again. Make sure the "set BEDOS" statement in your AUTOEXEC.BAT file is pointing to the directory that contains the Backup Exec software.
Error Message: "Unable to restore security information for directory x".	The security information was not backed up because you were not logged in as Supervisor..	For these files to be backed up, you must be logged in as Supervisor or equivalent.
Error Message: "Unable to restore trustee information".	1) The trustee information was not backed up.	1) Make sure you are logged in to the server with Supervisor rights before performing the back up and make sure you answer "Yes" to the "restore trustee information" prompt.
	2) No trustee information exists for the directory you selected.	2) This is not a problem.

Error Message	Problem	Solution
Read and write audit bits are not set following backups of a NetWare 3.11 server. Message: "Invalid Source Path".	This is not an error message.	Backup Exec does not support the Read or Write Audit bit on a Netware 3.1 server.

Resource File

Error Message	Problem	Solution
Error Message: "Error x loading resource file: C:\CONNER\DOS\BEDOS.RES	The file was not found or Backup Exec was unable to initialize the system with the BEDOS.RES file that was found.	Make sure the "set bedos" statement in your AUTOEXEC.BAT file indicates the directory that contains the Backup Exec software. Check the hard disk for any possible problems and re-install the Backup Exec software.
Error Message: "Error x opening resource file: C:\CONNER\DOS\BEDOS.RES.	1) The BEDOS.RES file is missing from the Backup Exec directory. 2) The resource file that Backup Exec was trying to use is from another version of the software.	1) Re-install the Backup Exec software. 2) Delete the older version of the software and reinstall the current version.
The Backup Exec software does not recognize my default drives	The Default_backup_ drives option in the BEDOS.CFG resource file has changed.	Make sure additional lines with the drive letters are not preceded by a space. The + sign needs to be the first character. For example, default_backup_drives = C +D +E

Error Message	Problem	Solution

Tape

Error Message	Problem	Solution
Error Message: "Tape positioning error on tape x".	An error occurred while positioning to a set on tape.	First try exiting the application, re-boot your system and try the operation again. If that does not work, Retension the tape.
Error Message: "Unexpected end of backup set encountered on Tape x".	Backup Exec encountered an error at the end of a set where <Ctrl + Break> was pressed to terminate a tape function. This is not usually a problem.	First try exiting the application, re-boot your system and try the operation again. If that does not work retension the tape.
Error Message: "The tape in tape drive x is foreign and cannot be read".	The tape is recognized by the tape drive, but the application cannot determine the format of the tape's data. The tape was probably used by a different software package and/or operating system.	First try exiting the application, re-boot your system and try the operation again. Then, try retensioning the tape several times. If that does not work, the data on the tape cannot be accessed. If you want to re-use the tape, perform an erase operation on it.
Error Message: "Fatal tape format inconsistency on tape drive x".	The current data block that was read was not a Backup Exec control block. The information that was recorded to tape may have been corrupted, or the data on tape could be damaged.	First try exiting the application, re-boot your system and try the operation again. If that does not work Retension the tape and retry the operation. (You should ALWAYS compare your data after a backup to make sure it is not corrupt.)

Error Message	Problem	Solution
Error Message: "Unable to read tape".	1) You have an IRQ or DMA conflict.	1) Check your DMA and IRQ settings to be sure there is not a conflict in the system.
	2) The tape is bad.	2) Tension the tape and try the operation again.
	3) The tape drive's heads are dirty or out of alignment.	3) Clean the heads with a tape drive cleaning kit. If that does not solve the problem, contact Conner Technical support.
Error Message: "Fatal translation error on tape in Backup Exec x".	If encountered during a backup operation, the path size for a file being written to tape exceeds the maximum block size of the tape drive. If encountered during a read operation there is corrupt data on the tape.	Re-organize the directory structure on the disk.

BEDOS

Backup Exec locks up.	1) Jumper settings have been changed.	1) Specify the controller card configuration in the Backup Exec software. Do this by typing *BEDOS /C* to start the Backup Exec software. This will take you to the *Settings* option in the software. Move to *Controller* and choose *Type*. Once you have selected the type of controller you have, press <Enter>. Next, specify the Backup Exec controller configuration to match your hardware settings. (This procedure only pertains to ISA controllers.)
Pressing <CTRL-BREAK> may cause ^C characters to scroll off the screen.	Pressing <CTRL-BREAK> when it is not an available option will cause this condition.	Only press <CTRL-BREAK> to stop a tape function when it is shown as a valid option on your screen.

Error Message	Problem	Solution
Error Message: "Directory x not found".	1) The specified directory does not exist.	1) Check to see if the directory still exists.
	2) You are using an old script file which does not contain the directory.	2) Make a new script file for the operation.
	3) There is a mapping problem on the network.	3) Check to make sure you are mapped to the directory.
Directory paths with long names are not restored.	Backup Exec can only restore paths up to 64 characters in length.	There are 2 ways to restore this information: 1) Using Backup Exec, enter the *Commands* menu and go to *Restore*. Press <Enter> twice. Go to the directory you want to restore and highlight it with the spacebar. 2) Using Backup Exec, enter the *Commands* menu and go to *Restore*. Press <Enter> twice. Move several levels deep in your directory structure to where the path will fit in the pop up *Include Files* (<+>) window. Press <+> to bring up the *Include Files* window. Press <F2> to accept the path structure and to begin the backup. (The path should be limited to 64 characters.)

Networks

Network Considerations

Compatibility

Backup Exec is compatible with these networks:

- Novell NetWare 2.0 or later
- Novell NetWare 386 Version 3.0 or later
- Novell NetWare Lite
- 3Com 3+*
- IBM PC Network*
- LANtastic*

    * = supported only as flat DOS file system

You can perform backup, restore, and compare operations on server volumes with the Backup Exec software. In order to back up a server from your workstation, the network supervisor must "map" (assign) a drive on your system to the root (SYS:) of the server. (Servers with more than one volume must have a drive letter mapped to the root of each volume.)

Installation on a Novell Network

If you want to install the Backup Exec software on the server, follow these steps:

Note You can install the software to any drive and directory to which you have rights. If you specify *M:*, the software will be installed in the \CONNER\DOS directory on drive M:.

1. Install the Backup Exec software on the desired drive and directory.

   Example: To install the software on drive M: in the \CONNER\DOS subdirectory, insert the Backup Exec installation disk and type: *A:install m:\CONNER\DOS* <Enter>.

Note M: should be mapped to the SYS: directory on the server. If this drive is not mapped to SYS: you will only be able to back up the directories that are descendants of the M:\CONNER\DOS directory.

2. Answer <N> when prompted to create the BEDOS.BAT file.

3. Answer <N> when prompted to update/create the CONFIG.SYS file, since there is no CONFIG.SYS file on a NetWare server.

4. Map the next available *search drive* to the Backup Exec directory by adding the following line to the Supervisor login script (Novell's SYSCON utility can be used to edit the Supervisor login script):

   ```
   map insert s9:=SYS:\CONNER\DOS
   ```

   s9 is the last search drive specified plus 1. If there is no existing login script, make sure you have a search drive mapped to SYS:\PUBLIC directory.

5. Add this line to the Supervisor login script:

   ```
   DOS SET BEDOS = "m:\\BEDOS"
   ```

   Note the spaces after BEDOS and after "=". Also, for a complete path, two backslashes (\\) and one set of double quotes (" ") are required.

NetWare Rights

When you start Backup Exec on a network, a check is made of your rights. Backup Exec abides by the rights assigned to each user. If you do not have sufficient rights to a directory, you will not be able to back up or restore files in that directory. Below are each of Backup Exec's main functions with the network rights needed to perform each function:

NetWare Rights	
Backup Read Files File Scan Modify file attributes Access control	**Restore** Write files Create files File scan Modify file attributes Access control
Compare Read Files File Scan Modify file attributes Access control	**Directory of Tape** No rights required

NetWare Bindery Files

The NetWare bindery is a database that contains NetWare specific information for individual users, groups, and workgroups. You must have supervisor rights to perform operations on bindery files.

Backing Up Bindery Files

When a server's SYS: volume is selected for back up, the Backup Exec software will prompt you with a choice to back up the NetWare bindery files. To back up these files, Backup Exec must briefly close the bindery. During this very short time, all access to the network bindery is suspended and some network operations, such as login, are delayed for a moment. This interruption is so brief, most users will not notice its occurrence.

Comparing Bindery Files

Backup Exec always reports bindery files as having compared successfully. This is because the files constantly change. Even though the bindery files are not included in the compare operation, Backup Exec verifies that the files can be read in the event they need to be restored.

Restoring Bindery Files

If you have supervisor rights and you are restoring information to a server's SYS: volume, you will be asked, *Do you wish to restore the bindery files if they exist on this tape?* Exercise caution before restoring old bindery information. Recent changes made to user and group information may be lost.

Backing Up a Novell Network

With Backup Exec, you can back up any directories for which you have sufficient rights. Backup Exec will back up the following:

▫ programs and data

▫ DOS file attributes (hidden, read-only, system, modified, etc.)

▫ extended file attributes

▫ Macintosh AFP files (if AFP configuration is enabled)

▫ hidden files (if enabled)

▫ bindery and trustee information

Note If you are a supervisor or a supervisor equivalent and you are backing up the SYS: directory (or a drive that is mapped to the SYS: directory), Backup Exec will prompt you before backing up bindery information and directory security information.

What is not Backed up

NOVELL.NKS is a Backup Exec, file that contains a list of NetWare files that are not backed up unless you log in as a supervisor. These NetWare utility files are not backed up because they are always open. These files include:

\net$msg.sys
\net$spl.que
\dirstamp.sys
\q$*.*
\desktop*.*
\desktop.afp*.*
\backout.tts
\deleted.sav*.*
\q_*.s??
\sys$log.err

All files except for bindery files are utility files. Utility files will be re-created if needed. Bindery files will only be backed up if you are a network supervisor or a supervisor equivalent and you are backing the SYS: volume. To back up the bindery information, you must answer <Y> when prompted to back bindery information.

If you have the minimum rights to back up (Read, Open, Search, and Modify for NetWare 286 or Read, File Scan, and Modify for NetWare 386), but you lack Parental rights (Access Control rights in NetWare 386) to a directory, you will back up the directory but you will not back up the trustees for that directory.

Note While the network is running, Backup Exec will back up all closed files on any network volume from any user workstation (if the user has rights to these files). Files will not be accessed or backed up by Backup Exec, while they are open. *Open* files are files which are being written to or updated by another network user. If you want to wait for open files to close before continuing with the backup, answer <N> to *Skip OPEN files* under the *Settings/Commands/Backup* window.

Server Volumes and Mapping Drives

Before you can back up server volumes with Backup Exec, you must map a drive to the root of each volume on the server(s). For example, to have the ability to back up a server that has three volumes, SYS:, SYS1:, and SYS2: you may want to map your drives similar to this:

map r:=[server name]\SYS:
map s:=[server name]\SYS1:
map t:=[server name]\SYS2:

Backing Up the File Server

1. Login as supervisor or equivalent.

2. Make sure you have a drive mapped to the directory on the server where the Backup Exec program files reside.

   Example: *MAP M:=SYS:\CONNER\DOS*

   where SYS:\CONNER\DOS is the path
   where the Backup Exec, software files are located.)

3. Go to the drive that is mapped to the Backup Exec software and start Backup Exec, by typing BEDOS and pressing <Enter>.

4. Select the server volume(s) you want to back up and proceed with starting the backup as you would normally.

Restoring on a Network

Backup Exec will restore all of the following:

- programs and data
- DOS attributes
- extended file attributes
- directory security information, (if you have supervisor privileges)
- bindery information (You must log in as a supervisor or equivalent).

Notes If you are a supervisor and you are restoring a tape, you will be asked:

```
Do you wish to restore the bindery files if they are present
on this tape?
```

Be careful of restoring old bindery files over more recent bindery files. Changes made to user and group information may be lost.

Before the restore operation begins, you will see:

```
Do you want to restore directory and file security
information for each directory?
```

You have the option of restoring files without restoring directory security information that may be outdated. If you press <Y>, recent changes made to security information may be lost.

If the network hard drive crashes, the supervisor should restore the most current backup. This will re-establish the bindery and place the most current directory security information on the drive.

Novell extended file attributes will be restored regardless of supervisor privileges with the exception of owner ID).

Restoring from a Server to a Workstation

You can restore files from a server volume to a workstation. If the name of the file or directory you are restoring is longer than 11 characters, Backup Exec will restore the files and truncate the directory/file name to 11 characters (eight characters plus a three character extension).

Replacing a NetWare Server Disk

What you will need:

◻ A valid backup of all volumes on all existing server disks. This backup should include network bindery files.

◻ A bootable DOS diskette.

◻ Your working copy of the Novell NetWare installation diskettes.

◻ Access to a workstation containing the tape drive and Backup Exec software.

1. Remove the old server hard disk from the file server if it has failed.

2. Install the new server hard disk, if required.

3. Compsurf the new server disk, if required.

4. Initialize the disk with the original installation parameters (i.e., server name, volumes, number of directories, etc.).

5. Boot the server.

6. Go to the workstation that contains the Backup Exec software. Login as supervisor (no password is required).

7. Map a drive to the root directory. (e.g., map g:=SYS:)

8. Run Backup Exec from the workstation's hard drive and restore the backup to the above drive letter (the drive letter mapped to SYS:).

9. Answer <Y> when prompted to restore the bindery and the directory security information.

Note If you have multi-volumes you have to map to the root of each volume and perform multiple restores for each root/backup set combination.

Restoring NetWare Mapped Drives

To restore files:

1. Select the drive which is mapped to where the files should be restored

2. Type: *map t:=sys:* (SYS: is the desired volume)

3. Type: *map m:=sys:\tape* (SYS:\TAPE includes the Backup Exec software)

4. Type: *M:* then press <Enter>

5. Type: BEDOS then press <Enter>

6. Select drive T: to perform the Backup Exec function

Using Backup Exec with NetWare Lite

There are two ways you can use Backup Exec to back up a NetWare Lite server: by installing the tape drive, controller and software directly in the NetWare Lite server; or by backing up the server from an attached workstation.

To install the backup system directly on the server, install the controller card and tape drive, then run the Backup Exec installation program .

Note To install the software on a NetWare Lite server from an attached workstation, NET MAP a DOS drive to the appropriate resource on the network (e.g., CDRIVE). Then, run the Backup Exec installation program using the optional command line parameters for specifying the target drive\path.

Example: If you NET MAP drive D: to CDRIVE, you would type *install D:\CONNER\DOS* at your system console prompt.

Backing up a NetWare Lite Server

If the backup system is located on the server, simply run the Backup Exec software and back up the server's hard drive(s). There is no need to NET MAP a DOS drive to make the drives visible to Backup Exec.

To back up the Lite server from an attached workstation, make sure the tape drive, controller and Backup Exec software are functioning properly in the workstation and NET MAP a drive to the server. (For more information on mapping workstation drives, consult your NetWare Lite documentation.

If the backup system is located on a workstation, take note of the following:

- Ensure there is a network directory defined for the root of each volume you are backing up.

- Also be sure that the user performing the backup has complete rights to these directories. (By default, the NetWare Lite installation creates the network directory CDRIVE which is C:\.)

Notes   The security information for the NetWare Lite server is contained in the directory \NWLITE\NWCNTL. Backup Exec automatically backs up this information.

If you are using AUTOBACK, make sure that it is loaded *before* loading the NetWare Lite module.

The Configuration File

BEDOS.CFG

The configuration file (BEDOS.CFG) is created/updated when you select *Save Options* in the Backup Exec *Settings* menu.

It may be easier to change the configuration file while in Backup Exec by using the options that appear under the *Settings* menu than to manually edit the configuration file with a word processor or ASCII text editor.

The configuration options for the BEDOS.CFG file are described throughout the rest this chapter. The defaults for the options are in **bold** type. Options not accessible through the *Settings* menu in the Backup Exec software are indicated with a "*".

All numeric values are in hex (base 16).

Automatically_clean_up_catalog =

If this option is enabled, all records of overwritten and deleted tapes are removed from the catalog after each backup.

Settings:

0 = disable automatic catalog cleanup
1 = enable automatic catalog cleanup

Back_up_devices_alphabetically =

Backup Exec can be configured to back up randomly selected drives in alphabetical order.

Example: If you selected drives F:, D: and C: (in that order), and you want them to be included in the backup set in alphabetical order (C:, D:, and F:) select this option.

Settings:

0 = back up drives in the order they were chosen
1 = back up drives alphabetically

*Backup_files_in_use =

Backup Exec can be configured to back up files that are in-use. If a file was opened for *exclusive use* or *deny read*, Backup Exec will still be unable to open these files and they will be processed according to how your *skip open files (Settings/Commands/Backup)* option is set.

Since using this capability is NOT recommended, it is available only as a configuration file option.

Settings

0 = Do not back up files in-use.
1 = Back up files in-use.

Backup Exec *locks* open files to prevent them from being modified while the file is being backed up. If an attempt is made to write to this locked file, typically a *write error* will be produced (this is dependent upon the application that is being used to save the file). Once Backup Exec backs up the file, it will be *unlocked* and a warning message will be displayed indicating that an open file was backed up.

If you are backing up files while they are in-use, it is likely that they will fail to compare because their contents are in the process of changing.

Backup Exec will *mark* files that were backed up while in-use. When restoring, comparing or listing files, in-use files will be marked with an <I> attribute.

Catalog_level =

This option allows you to set the level of detail for entries added to the catalog. A fully cataloged tape contains fully cataloged backup sets, which contain detailed file information. Partially cataloged tapes contain backup set listings and the directory listings for each backup set.

Settings:

0 = disable cataloging
1 = **partial cataloging enabled**
2 = full cataloging enabled

Compare_after_backup =

This option is used to automatically perform a compare operation after a backup operation has completed.

Settings:

0 = do not automatically compare a backup
1 = **automatically compare a backup**
2 = prompt whether the backup should be compared

Compare_after_restore =

This option is used to automatically perform a compare operation after a restore operation has completed.

Settings:

0 = do not automatically compare a restore
1 = **automatically compare a restore**
2 = prompt whether the restore should be compared

Controller =

For Technical Support use only.

Current_driver =

The drivers available for this option include:

ARCHQIC = Archive QIC 02 controllers
MS_SCSI = Backup Exec SCSI
AD_ASPI=Adaptec SCSI

*Debug_mode =

For Technical Support use only.

0 = default

*Default_backup_drives =

This option allows you to define which drives are to be automatically selected for backup when you enter Backup Exec. When you load Backup Exec, you will notice that drive C: is already selected for backup. You can configure Backup Exec to automatically select more, or different drives. For example, if you wanted Backup Exec to automatically select drive D:, you would enter the following line:

```
default_backup_drives = C
+D
```

*Desired_buffer_reserve =

This option allows you set the maximum tape buffers for Backup Exec. The recommended setting for this option is 20.

20 = default

*DOS_drives =

This option defines all DOS drives. Any DOS drive not included in this line will be excluded in the list of drives available for backup or restore. Backup Exec defaults to none, so the software will automatically determine the drives. If you want to define the DOS drives as being only C: and D:, even though you have mapped drives that appear in your *Source Select* window, you would set the lines like the following example:

```
DOS_drive_definition = C
+D
```

Excluded_from_buffers

For Technical Support use only.

Extended_date_support =

This option is for use with NetWare networks and can be used to prevent Backup Exec from setting a file's last accessed and last archived date and time. Before a file is backed up, Backup Exec saves the original accessed date and time value. Normally after a file is backed up, NetWare sets the accessed date. If you set this option to 1, Backup Exec resets the accessed date to its original value.

When set to 1, Backup Exec also sets NetWare's *last archive date* if changing the archive bit is enabled. If you set this option to 0 a backed up file will be treated as an accessed file and the file's last accessed date will be changed.

0 = Do not reset the file's date and time

1 = Reset the file's last accessed date to its original date and time and set the archived date and time

Highlight_active_window =

This option places a border around the active window to make it more visible.

0 = do not place a border around the active window
1 = place a border will appear around the active window

List_files =

This option lists filenames on your screen as they are being backed up. If you do not have this option selected, only directories are listed.

Settings:

0 = do not display individual files
1 = **display individual files**

Log_destination

This option allows you to select where the log file will be output.

Settings:

1 = Printer
2 = **File**

Log_file_name =

This option specifies the name of the log file. The default is BEDOS.LOG. You may enter any filename (maximum 8 characters and a 3 character extension). Do not enter a complete path name. The file is automatically placed in the \CONNER\DOS subdirectory, or the directory where you installed the Backup Exec software files.

Log_level =

This option allows you to select the level of detail for the log file. There are four levels of logging information from which to choose.

Settings:

0 = no logging

1 = **includes a drive letter, the backup set number on the tape, the tape number, the tape label, the starting date and time, any errors encountered, ending date and time and completion statistics.**

2 = includes level 1 plus a list of all processed subdirectories

3 = includes levels 1 and 2 plus a "wide" listing of all the files processed.

4 = includes levels 1 and 2 plus file sizes, file date/time and file attributes, includes the drive or server name, the starting date and time, the backup set number on the tape, the tape number, any errors encountered, completion statistics, and the ending date and time.

*Machine_Type =

This option can be used when Backup Exec fails to identify whether the tape drive is on an ISA (Standard Bus) or Micro Channel system.

0 = Auto-determine
1 = ISA
2 = Micro Channel

*Max_screen_height =

This option allows adjustment of the screen for different heights in one of the following cases:

If you have:

>   EGA/VGA with 43 lines enter 2B.
>   EGA with 35 lines enter 23.
>   VGA with 60 lines enter 3c

Note Before starting the program, the monitor must be in the correct mode (i.e., in 43 or 35 line mode).

The default is 19 (25 lines). When the field is set to 0 (Auto-determine) additional memory is required for the screens.

*Max_tape_buffers =

For Technical Support use only.

Minimize_monitor_flicker =

This option can be helpful if you sometimes have a problem with your monitor screen *flickering*. This is called video snow and it can occur when your computer accesses its video memory. If you experience this while running Backup Exec, enter the correct entry for this option.

0 = default
1 = if your screen is flickering

Monitor =

This option allows you to specify whether your monitor is color or monochrome. The default for this option is to autodetermine the monitor type. Enter the number for the monitor type.

Settings:

0 = Auto-determine screen type
1 = color
2 = monochrome

Network =

This option allows you to select which network you are using with the Backup Exec software.

Settings:

0 = No network
1 = Novell
2 = 3Com Net
3 = IBM PC Net
4 = Other

Overwrite_existing_log_file =

This option specifies whether the log file will be appended to, or overwritten after an operation.

Settings:

0 = do not overwrite the existing log file
1 = overwrite the logfile

If you choose *do not overwrite the existing log file*, remember that the file can grow rapidly depending on the amount of information you are logging. You may want to edit the logfile with a word processor or ASCII text editor to delete old information on a regular basis.

Password_protect_tapes =

This option instructs the software to prompt you for a tape password. Passwords may be used to protect the data on a tape. Whenever you overwrite a tape, you will be asked to enter a password. Once a tape has a password, you must be able to re-enter the password in its exact form to access the data on the tape.

⚠️ **Important** The purpose of a password is to stop unauthorized access of the information on the tape. A password will not stop anyone from destroying the information on the tape. Therefore, protected information may be erased without entering the password.

Settings:

0 = Do not prompt for a password
1 = Prompt for a password

*Path_for_catalog_files =

This option allows you to place your catalog files in a directory other than where the Backup Exec files are located.

Path_for_catalog_files = the catalog files will be located in the directory where the software is installed

Path_for_catalog_files = [PATH] the catalog files will be located in the directory specified in the drive\directory you specify for [PATH]

Process_empty_directories =

This option instructs Backup Exec to back up, restore or compare empty directories (directories that contain no files).

Settings:

0 = do not back up, restore or compare empty directories
1 = back up, restore or compare empty directories

Process_hidden_files =

This option controls backing up, restoring and comparing hidden files. Hidden files are used by DOS and some copy protected applications, and you will not see them when you perform a DIR command in DOS. Be careful of restoring these files over certain copy-protected applications, as this could corrupt the application.

Settings:

0 = do not back up, restore or compare hidden files
1 = backup, restore or compare hidden files

Process_Macintosh_files =

This option is available if you have Backup Exec configured to back up a NetWare file server and applies to backing up Apple File Protocol (AFP) folders and files found on the server.

Settings:

0 = Do not process Macintosh files
1 = Process Macintosh files

Process_special_files =

This option specifies whether *Special* files will be backed up. Special files include files marked *system* or *read-only*.

Settings:

0 = do not backup special files
1 = Backup all system and read-only files

Prompt_before_restoring_over_read_only_or_modified_files =

This option has Backup Exec prompt you to confirm before restoring *read-only* or *modified* files. *Read-only* files typically never change, and *modified* files are files which have been modified on your system since the backup took place.

Settings:

0 = restore all files
1 = Prompt the user before restoring each *read-only* or *modified* file

Prompt_for_set_description =

This option has Backup Exec prompt you to enter a backup set description each time you begin a backup. A backup set description helps you better identify the contents of a tape.

Settings:

0 = Do not prompt for a backup set description
1 = Prompt for a backup set description

Prompt_for_set_name =

This option has Backup Exec prompt you to enter a backup set name each time you begin a backup. A backup set name helps you better identify the contents of a tape.

Settings:

0 = Do not prompt for a backup set name
1 = Prompt for a backup set name

Prompt_for_tape_name =

This option has Backup Exec prompt you to enter a tape name each time a blank tape is used. You will also be prompted for a tape name when overwriting a tape containing data. Tape names help you keep track of your backups.

Settings:

0 = Do not give the tape a name
1 = Prompt for a tape name

Reset_modified_bit_after_backup =

This option has Backup Exec clear the *modified bit* after a backup. When you create a new file or change an existing file, the modified bit is turned on. If you have this option set, Backup Exec will turn off the modified bit to show that the file has been backed up. This is necessary if you are performing *Modified* backups.

Settings:

0 = leave the modified bit intact after backup
1 = clear the modified bit after backup

Restore_over_existing_files =

This option allows you to select whether files that exist on the tape will overwrite files with same name on your hard drive during a restore. Note that the file versions on the hard drive may be more recent than the same files on the tape. After you have upgraded your operating system or a software package, you will not want to restore the old versions of the software.

Settings:

0 = restore only the files that are on the tape and not on the drive
1 = restore all files

Skip_open_files =

This option pertains to using Backup Exec on a network. When this option is selected, files that are open on server volumes are skipped during a backup operation.

Settings:

0 = Wait for open files to close
1 = Do not wait for open files to close (skip open files)

Skipped_script =

This option has Backup Exec create a script including the names of the files that were skipped if you have the *Skip_open_file* option selected. This script, titled SKIPPED, can be executed later when the files have been closed.

Settings:

0 = Do not create SKIPPED script file
1 = Create SKIPPED script of files that were skipped during backup

*Special_word =

For Technical Support only.

0 = default

*Tape_buffer_size =

For Technical Support only.

8 = default

*Use_EMS_Memory =

This option allows you to specify whether you are running an expanded memory package like 386 Max or QEMM. If you are running a memory manager, make sure this option is set to 1.

0 = do not use EMS memory
1 = use EMS memory

*Use_fast_file_access =

This option disables the *Fast File Access* feature. Fast File Access is available on all drives that have *advanced block seeking* capabilities.

Settings:

0 = disable Fast File Access
1 = enable Fast File Access

*Use_virtual_memory =

This option enables Backup Exec to optionally use virtual memory during memory intensive disk operations.

0 = virtual memory support disabled
1 = virtual memory support enabled

Start-up Switches

The following command line switches can be used when starting Backup Exec.

Backup Exec Start-up Switches	
Switch	**Definition**
BEDOS **/C**	Places you directly at the *Settings* menu; recommended when starting Backup Exec for the first time.
BEDOS **/P**	Shows one page of information at a time while using Backup Exec's *Directory Listing* command.
BEDOS **/ZL**	Used to run debug mode to determine the source of error conditions. This switch will create a file called DEBUG.LOG in your Backup Exec directory. Conner Technical Support may ask you to print and fax the contents of DEBUG.LOG to help diagnose a problem (see *Fatal* on page 8–6).

Customer Service

At Conner, the service doesn't stop once you've purchased one of our products. We understand how important it is for your system to remain at peak performance. So, when you need more help or more information where do you turn?

Consult the documentation that accompanies the product. Most questions can be answered by referring to this information. Be sure the product you purchased is compatible with the operating system, controller cards, tape drives, and other peripherals in your computer.

Register Your Product

It is important for you to register the product you've purchased. This will help us get to know you and the system you are using the product on. If you need assistance product registration ensures quicker assistance.

To register your product, complete the enclosed Product Registration Card and:

- Fax the card to (407) 262-8181 or,
- Mail the card.

If you prefer, register by calling our toll-free number, (800) 541-2220.

Technical Support

If you purchased this product from a dealer or distributor and they are unable to help you, we suggest you contact Conner Technical Support. This is a skilled and experienced group of professionals whose primary responsibility is to answer questions about all Conner products. See *Table 1* for available phone support hours.

Hours	Locations and Numbers
8:30 a.m. - 8:00 p.m. EST	U.S., Canada, Pacific Rim and Latin America (407) 262-8029 FAX: (407) 262-8181
9:00 p.m. - 5:30 a.m. GMT	Europe 44-494-473434 FAX: 44-494-536578

Table 1   *Conner Technical Support Hours and Phone Numbers*

Before contacting Conner Technical Support, complete as much information as you can on the last page of this chapter. This information will save you time and will allow us to better assist you. You can phone, mail, or fax the information to us (see *Technical Support Information Chart* on page D–4).

When calling, be sure your computer is turned on. If possible, call from a phone that is next to the computer you are using.

Also, print a copy of your *STARTUP.CMD* or *AUTOEXEC.BAT* and *CONFIG.SYS* files.

If your questions pertain to an NLM product, print a copy of your *AUTOEXEC.NCF, STARTUP.NCF,* and a list of other NLMs (run modules).

Bulletin Board Service (BBS)

Conner maintains an electronic Bulletin Board Service (BBS) for end-user access into Conner's technical support department via electronic mail. This BBS may also include: *product bulletins, technical notes, upgrade information, downloadable software utilities,* and *demonstration software.* By accessing a mailbox on the BBS, you can post questions and comments for reply from Conner Technical Support staff as well as from other Conner product users accessing the BBS. For BBS parameters and phone numbers, see *Table 2.*

Conner Bulletin Board Parameters		
Phone Number	**Modem BAUD Rate**	**BBS Operating Parameters**
United States (407) 262-8123	9600 \ 2400 \ 1200 \ 300	8 Word Bits 1 Stop bit No parity (N,8,1)
The United States BBS is available 7 days a week, 23 1/2 hours a day (except weekdays from 8:00 a.m. to 8:30 a.m. EST for system maintenance.		
Europe 44-494-436-302	14400 \ 9600 \ 2400 \1200 \ 300	8 Word Bits 1 Stop bit No parity (N,8,1)
The European BBS is available 7 days a week, 24 hours a day		

Table 2   *Conner Bulletin Board Parameters*

Technical Support Information Chart

Complete the information on this page and either fax, phone, or mail it to Conner Technical Support.
Phone: (407) 262-8029 FAX: (407) 262-8181

Name: _____ Title: _____

Company Name: _____

Address: _____

_____

Telephone:_____ Fax: _____

Product name: _____

Product version number: _____

Computer (Brand) and model: _____

Processor: ☐ 286   ☐ 386   ☐ 486
Bus Architecture: ☐ ISA/AT   ☐ EISA   ☐ Micro Channel

System speed (MHz): _____ System RAM (MB):_____

O/S and version: ☐ NetWare   ☐ DOS   ☐ OS/2   ☐ Windows   version:_____
                                                          ☐ Windows NT   version: _____

Backup device (Manufacturer, model, capacity of media, controller manufacturer and model)

_____

Hard disk: type: ☐ SCSI   ☐ ESDI   ☐ RLL   ☐ MFM   ☐ IDE   Capacity: _____

Video board and monitor: _____

Expansion boards (e.g., RAM expansion board): _____

Modem and speed: _____

Other hardware: _____

Description of the problem: _____

_____

_____

Error number and exact error message: _____

Print and attach copies of the following files: STARTUP.CMD (OS/2); AUTOEXEC.BAT / CONFIG.SYS (DOS);
AUTOEXEC.NCF / STARTUP.NCF (NetWare); other NLMs (NLM run modules - NetWare).

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