



NovaBACKUP

**NovaBACK and NovaDISK
Backup and Restore Software**

User's Manual

April, 1999

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NovaBACKUP

NovaBACK and NovaDISK Backup & Restore (Revision April 1999)

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Chapter 1 *Installation*

BEFORE YOU BEGIN

NovaBACKUP is comprised of two programs – NovaBACK and NovaDISK. NovaBACK is specifically for tape devices. NovaDISK is for backing up to hard drives and removable disk media.

This manual contains information pertaining to both NovaBACK and NovaDISK programs and in most instances the functionality is the same for both. However, some features are program specific and have been labeled accordingly.

INSTALLATION - CD-ROM

The NovaBACKUP CD-ROM contains programs for different backup device configurations, languages and operating systems. The NovaBACKUP for Windows NT Server (Limited) CD-ROM is for Windows NT users only and is an English only version.

Windows® 3.xx

To install NovaBACKUP® for Windows 3.xx, insert the CD-ROM and open the Windows Program Manager. From the menu bar, select File, then select Run, type the appropriate drive letter, and type SETUP.EXE, i.e.

D:\SETUP.EXE

Windows® 95, 98, or NT

To install NovaBACKUP for Windows 95, 98 or NT 4.0, insert the CD-ROM, and click Start, then Run, type the appropriate drive letter, and type SETUP.EXE, i.e.

D:\SETUP.EXE

The install program will prompt you for an installation destination and a program group name. Once the install has completed, you are ready to setup and configure your backup device. Please refer to [Chapter 2](#).

CHAPTER 1 - INSTALLATION

OS/2® WARP 3.0

To install NovaBACKUP for OS/2 Warp 3.0, insert the CD-ROM and open an OS/2 command prompt from the command prompts folder.

Type <drive>:\SETUP OS2.EXE

i.e. if you are installing NovaBACKUP from the D: drive, type

D:\SETUPOS2.EXE

OS/2® WARP 4.0

To install NovaBACKUP for OS/2 Warp 4.0, insert the CD-ROM and go to Warp Center, pull down drives. Click on D:, then click on Setup.

The installation program will ask you to confirm the installation location, and give you a summary of disk space required.

Select a destination directory for installation and press <Enter> or **OK**. Hit Cancel or **Ctrl-X** to leave the setup program. Once the install has completed, you are ready to setup and configure your backup device. Please refer to [Chapter 2](#).

DOS

To install NovaBACKUP® for DOS, insert the CD-ROM, change directories to the appropriate drive letter, then type SETUPDOS.EXE, i.e.

CD D:

D:\SETUPDOS.EXE

The install program will prompt you for an installation destination and a program group name. Once the install has completed, you are ready to setup and configure your backup device. Please refer to [Chapter 2](#)

INSTALLATION Diskette

Windows® 3.xx

To install NovaBACKUP for Windows 3.xx, insert disk 1 and open the Windows Program Manager. From the menu bar, select File, then select Run, type the appropriate drive letter, and type SETUP, i.e.

A:\SETUP

NOVABACKUP® BACKUP & RESTORE

Windows®95, 98, or NT

To install NovaBACKUP for Windows 95, 98 or NT 4.0, insert disk 1, and click Start, then Run, type the appropriate drive letter, and type SETUP, i.e.

A:\SETUP

The install program will prompt you for an installation destination and a program group name. Once the install has completed, you are ready to setup and configure your backup device. Please refer to [Chapter 2](#).

OS/2® WARP 3.0

To install NovaBACKUP for OS/2 Warp 3.0, insert disk 1 and open an OS/2 command prompt folder from the command prompts folder.

Type <drive>:\SETUP

i.e. if you are installing NovaBACKUP from the A: drive, type

A:\SETUP

OS/2® WARP 4.0

To install NovaBACKUP for OS/2 Warp 4.0, insert disk 1 and go to Warp Center, pull down drives. Click on A:, then click on Setup.

The installation program will ask you to confirm the installation location, and give you a summary of disk space required.

Select a destination directory for installation and press <Enter> or **OK**. Hit Cancel or **Ctrl-X** to leave the setup program. Once the install has completed, you are ready to setup and configure your backup device. Please refer to [Chapter 2](#).

UNINSTALL

An uninstall utility is provided with NovaBACKUP. This program provides for convenient one-step removal of your NovaBACK/NovaDISK program group and associated files.

You will be provided with two levels of uninstall:

- Selective - which removes only the files installed (leaves behind any items you have added or other items you wish to save in the NovaBACK/NovaDISK subdirectory.
- Complete - which removes the entire group and any items you have added to the NovaBACK/NovaDISK subdirectory.

To run the uninstall utility, simply click on the uninstaller icon located in the NovaBACK/NovaDISK program group.

CHAPTER 1 - INSTALLATION

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Chapter 2

Part I - QIC Tape Drive Setup

Part II - SCSI Tape Drive Setup (page 7)

TAPE DRIVE SETUP

If you have installed NovaDISK as your backup program, there is no configuration necessary and you may skip this chapter.

If you have installed NovaBACK as your backup program, the tape drive must be configured. This is typically done automatically the first time the NovaBACK program is run, but the following chapter outlines the various options and settings that may be available.

To configure your tape drive, double click on the Tape Setup icon.

PART I - QIC TAPE DRIVE SETUP

If you are using a QIC tape drive (running off a floppy controller, secondary controller or parallel port), you can automatically configure your tape drive (recommended). Simply select Auto Configure.

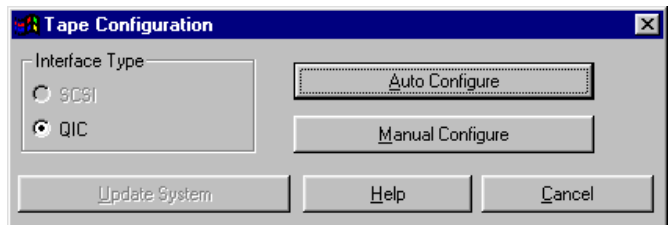


Fig. 1 - Tape Configuration Window

Auto Configure (QIC)

When the Auto Configure option is selected, NovaBACK runs a program that seeks and retrieves configuration information for connections and tape drives (see the following dialog box). In Windows 3.xx and NT or OS/2, NovaBACK will require a reboot and then continue automatically. If NovaBACK finds the tape drive, it will pop up configuration information for you to accept or to alter manually.

CHAPTER 2 - TAPE DRIVE SETUP

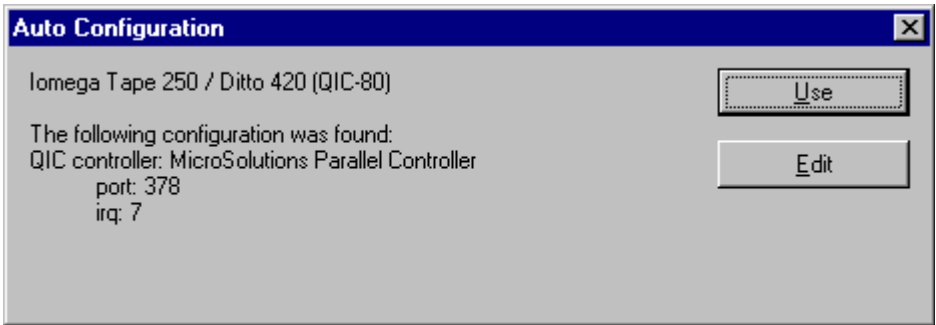


Fig. 2 - Configuration Dialog

When the tape drive has been located, the program restarts the operating system and pops up the configuration it has detected.

If the program has found the tape drive, it is recommended that you click Use. For more information on Edit, see Manual Configuration.

After you select Use, NovaBACK puts the required information in the .INI files, and renames your old .INI files with the extension .NOV. Then NovaBACK asks if it can restart the operating system for the changes to take effect (Windows 3.xx, NT, and OS/2). Please see [page 12](#) for more information.

Manual Configuration (QIC)

The Manual Configure button accesses the QIC Drive Setup screen.

In this box you can click on the type of controller card that you have in your system. Different controller cards have different default settings and options that can be changed, which are shown in the Floppy Drive Setup box to the right.

High Speed Check Box

The high-speed check box is for fast CPU processors and fast controller cards with the tape drive. The software will

automatically detect the fastest speed the transfer can go and will adjust accordingly. Often the tape drive systems do not handle such transfers of data well, and have to keep repositioning the tape (shoe shining). In many instances it is better to transfer at a slower rate and stream the data to the tape continuously, than it is to have a high transfer rate, and to have the tape reposition constantly.

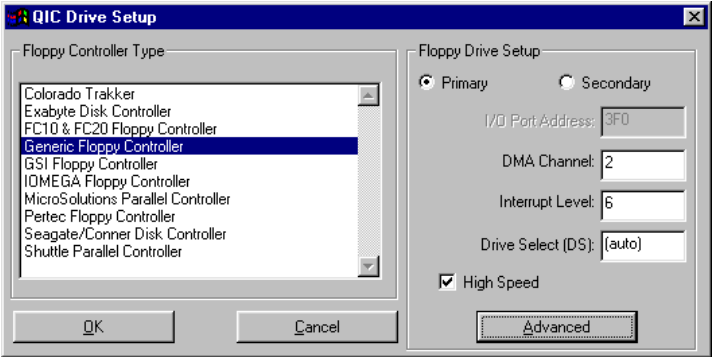


Fig. 3 - QIC Drive Setup

NOVABACKUP® BACKUP & RESTORE

When you are finished, NovaBACK asks if it can restart the operating system for the changes to take effect. Please see [page 12](#) for more information.

PART II - SCSI TAPE DRIVE SETUP

Tape drive setup for SCSI drives gives you the ability to select which tape drive to use, or to change the configuration of the tape drive. NovaBACK supports multiple tape drives, cascading tape drives, and tape drives with loader options.

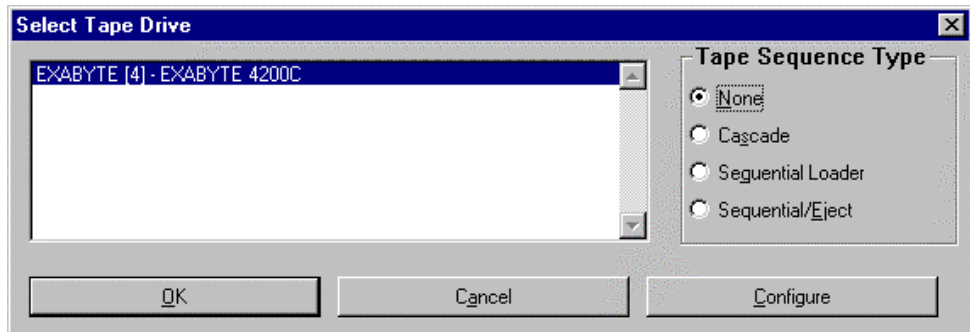


Fig. 4 - Select Tape Drive

Tape Sequence Type

None	This means that no changer/loader is being used.
Cascade	If you have multiple tape drives attached this allows you to designate the order in which the tape drives will be used after each tape drive's tape becomes full.
Sequential loader	Specifies that the tape device has the ability to change tapes when reaching the end of tape.
Sequential/ Eject	This will issue an unload and eject command after a backup.

CHAPTER 2 - TAPE DRIVE SETUP

Configure

To configure the tape drive into various modes of operation, press configure. The following screen will appear.

The tape drive configuration menu displays the currently configured tape drives and gives you the option to add or edit new drives to the table.

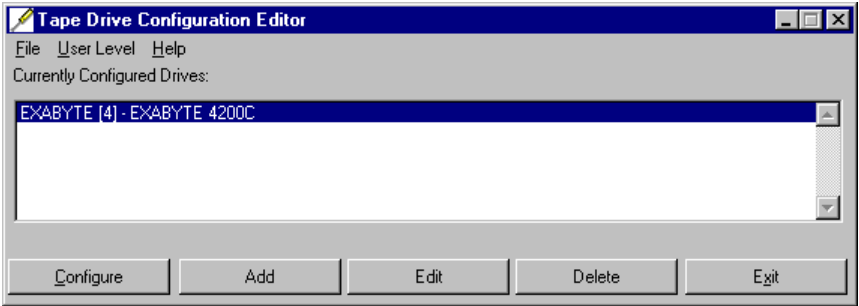


Fig. 5 - Tape Drive Configuration Editor

Configure

Configure changes and updates the system information pertaining to the tape drive.

Add

This is used to add new devices to the drive table. NovaBACK has the ability to create virtual tape drive names, selecting various modes of operation for any given tape drive name.

After you click on Add, you will be asked to select from a list of tape drives NovaBACK sees on the SCSI bus, so you can create a new drive table entry.

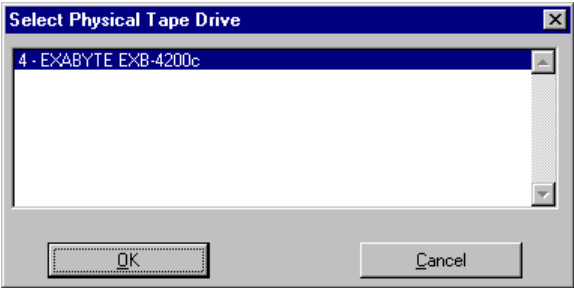


Fig. 6 - Select Physical Tape Drive

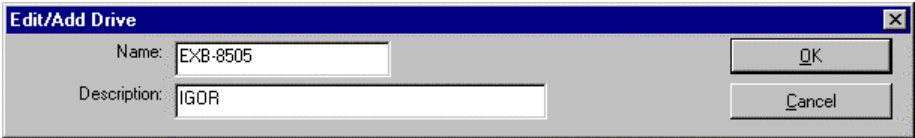


Fig. 7 - Edit/Add Drive Virtual Name

NOVABACKUP® BACKUP & RESTORE

An example would be an Exabyte 8505 that has several modes of operation. The following table provides some examples.

Virtual Drive Name	Actual Tape Drive Name	Mode of Operation
8200_STD	EXB-8505	8200 Standard Mode
8200_COMP	EXB-8505	8200 Compressed Mode
IGOR	EXB-8505	8500 Standard Mode
8500_COMP	EXB-8505	8500 Compressed Mode
8505_VAR	EXB-8505	Variable Block Mode

For more information on adding and editing tape drives, see the Edit/Add Drive section below.

Delete

This deletes the highlighted tape drive from the drive table.

Edit

The User Level specified in the main configuration menu determines the level of tape drive editing allowed by the program. All the options available with the User Level set to 'Expert' are described here. If the user level is set to a different level, all of these options may not be accessible.

Edit / Add Drive

Name

This is the SCSI ID string that was returned by the tape drive.

Description

This is the name you wish to associate with this configuration of the tape drive (virtual tape drive name).

Fig. 8 - Expert Options - Edit / Add Drive

CHAPTER 2 - TAPE DRIVE SETUP

Address

Any	This means the tape drive is not expected at any specific SCSI ID.
Specific	This means that the virtual tape drive must reside at the predefined SCSI ID. Please note SCSI IDs range from 0 to 7 and IDs 0 and 1 are typically reserved for hard disks. ID 7 is typically reserved for SCSI card control. We recommend using an ID of 3, 4, 5 or 6 for tape drives, the higher the ID, the higher the priority.

Manufacturer

This is the name of the manufacturer returned in the SCSI ID string.

Model

This is the model number returned from the SCSI ID string.

Type

The drive type controls how NovaBACK interfaces with the tape drive. This is a key feature of the setup table, so be careful to select the proper drive type.

Reel	This designates the tape drive as having the characteristics of a 9-track/3480 tape drive.
Streamer	This designates the tape drive as a cartridge streamer drive.
Exabyte / 8mm	This designates the tape drive as having the characteristics of an 8mm Exabyte <i>only</i> , not DAT or streamer type drives.
Gigatape	This designates the drive as a turbo tape format.
DAT	This designates the tape drive as a partitionable DAT for DDS-1, DDS-2 and DDS-3 tape drives.

Block Size

Fixed	This designates that the tape drive will record data in standard block size. The standard block size varies depending upon the drive type that was specified.
Variable	This is used to select a non-standard block size or write variable sized blocks to the tape.

NOVABACKUP® BACKUP & RESTORE

Options

QFA (Quick File Access)	This must be set if the tape drive supports Quick File Access and has a directory track or index partition. Most drives that support QFA will have this feature enabled automatically. Only set this option if you are <i>sure</i> it is supported.
Partitionable	This designates that the tape drive can create multiple logical portions of the tape, such as the ones used in QFA. This typically means 4mm DAT drives.
Random Changer	This designates that the tape drive has multiple tapes and the ability to randomly access those tapes.
Sequential Stacker	This designates that the tape drive has multiple cartridges and can access them in a sequential fashion.
Formattable	This designates that the tape drive needs formatting in order to record data properly.
No space EOD	This designates that the tape drive does not have a physical end of data marker.
No back space	This designates that the tape drive does not support read reverse commands.
Use short tape mark	This designates that the tape drive will write short file marks instead of long file marks.

Density/Mode Description

If the tape drive has multiple densities, you can choose between them with this item. This includes setting many tape drives' hardware compression states. See your tape drive's manual for the densities the hardware supports.

Edit Mode Select

(THIS IS ONLY FOR VERY ADVANCED USERS)

Edit mode select allows you to enter SCSI mode select commands in hexadecimal, either SCSI 1 or SCSI 2 commands. We strongly suggest that only advanced and experienced users who are familiar with SCSI firmware use this feature. Do not attempt to use this function without thorough documentation on your tape drive's SCSI command set.

CHAPTER 2 - TAPE DRIVE SETUP

SYSTEM RESTART

When the Tape Drive Setup is complete, NovaBACK puts the required information in the required .INI files, and renames your old .INI files with the extension .NOV. Depending on the options selected, NovaBACK may prompt for a restart of the program or the operating system. This action will be necessary in order to put the new settings into effect.

SYSTEM TEST

When Tape Drive Setup is complete, and the system is restarted (Windows 3.xx, NT, and OS/2), NovaBACK will prompt you, asking if a test can be run on your tape system.

This test is a function of Dr. Tape™, and loads the program to run a basic test on a formatted, non-critical tape, just to make sure everything is set up and working properly. To run the test later, click No. If you click Yes, The ‘run test’ dialog box appears. See Chapter 7, [page 42](#) for more information on the various utilities included in Dr. Tape™, including the Tape Test utility. **If the test runs properly, you are ready to run your NovaBACK program!**

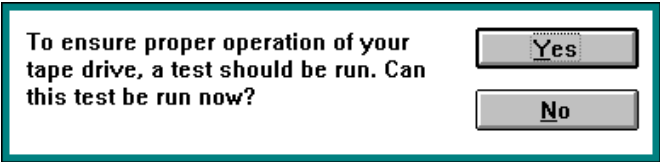


Fig. 9 – Tape Test

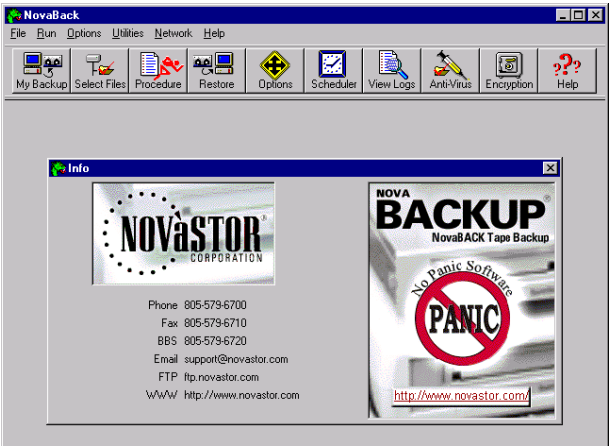


Fig. 10 - NovaBACK Main Menu

Chapter 3

Part I - Select Files

Part II - Procedure (page18)

Part III - My Backup (page19)

PART I - SELECT FILES

Select Files gives you the ability to easily select volumes, directories and files to be backed up. The Select Files window has a wide range of selection criteria including global include/exclude variables, wildcard tag and untag, user selection and file attribute selection. Once all the selection criteria have been set, the Select Files configuration can be saved as a procedure to be run again or used by the Scheduler for unattended backup.

To select files for backup, simply click on the Select Files button, or choose it from the menu under Run – Backup – Select Files. You will be presented with a list of volumes and files to choose from. See Fig. 11 - Select Files Screen.

To select a volume, directory, or file, put the mouse pointer directly over the item's name and click once. NovaBACKUP's default option is to include all available subdirectories and files, so if you tag a volume, the entire directory tree of that volume will be selected. If you tag a directory, all subdirectories and files in those subdirectories will be tagged as well. To display subdirectories, either click once on the '+' sign or double click on the directory name.

Backup - NovaBACK

This will run the backup of the selected volumes, directories and files. See Running a Backup, page 16, for more detail.

Backup - NovaDISK

This will take you to the **Backup To...** window. See **Running a Backup**, [page 17](#), for more detail on backup destinations.

Cancel

This cancels the backup selections and closes the file selection window.

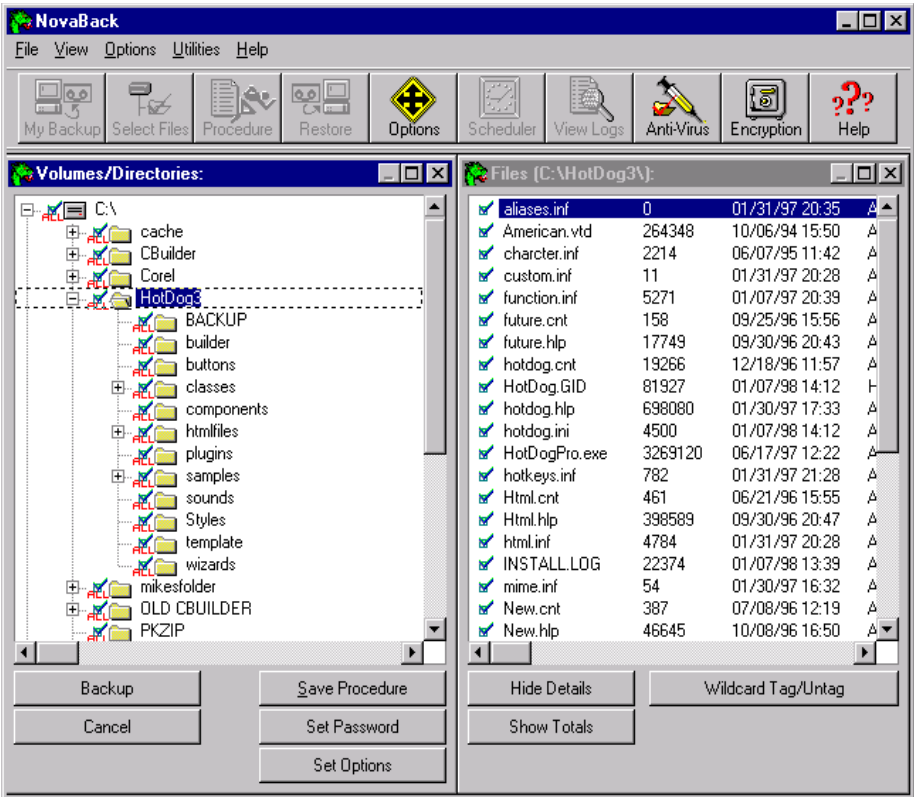


Fig. 11 - Select Files Screen

Save Procedure

This button will save the current procedure. Click on the Save Procedure button, enter the name of the procedure and (optional) a description of the procedure. When naming things, try to use names that are unique and descriptive. NovaBACKUP adds the extension .BUP to the file name for backup procedures.

Set Password

This option will allow you to assign a password to the backup about to be performed. This password must be supplied at the time of restore. A unique password may be assigned to each backup set on the tape. **PLEASE NOTE: A password protected backup will not be restorable without the password. There is no way around this. There is no back door.**

Set Options

This button displays the options available for the backup. You may choose to backup read-only files, hidden files, modified only files, system files, and a wide variety of other options. For more information on NovaBACKUP backup and restore options, see Chapter 5, [page 27](#).

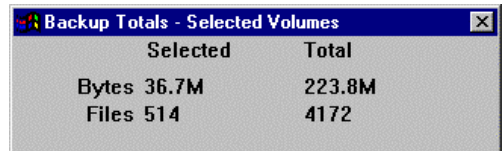
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Show / Hide Details

Selecting this button will show the detailed information behind each file including file attributes, file size and last modified date.

Show / Hide Totals

When this button is pressed, a dialog appears that shows the total number of files and bytes available and the amount already selected for the current backup session. The total byte count will not include any specifically excluded files or swap files.



Backup Totals - Selected Volumes			
	Selected	Total	
Bytes	36.7M	223.8M	
Files	514	4172	

Fig. 12 - Show Totals

Wildcard Tag/Untag

This tags or untags files based on wildcard criteria in the directory that is currently selected, **not** sub-directories. Simply enter the wildcard designation as if performing a directory listing from the command line. To select or de-select files using wildcard criteria over a range of directories or volumes, please use the include or exclude lists available from the View menu. For more information on include and exclude lists, please see [page 32](#).

FILES WINDOW

The Files window is for tagging or untagging individual files or groups of files within a given directory. The file names may be displayed in various colors.

Display Color	Definition
Black	A normal file not part of global include or exclude list
Red	The highlighted file is excluded either by having a specific attribute (e.g. read-only) selected so as not to be backed up (see options, Chapter 5, page 27) or is in an exclude list option (see Chapter 5, page 33).
Gray	The file has been selected using the global include (see include list option, page 32)

To hide the display of files that have been excluded through either their file attributes (read only, hidden, etc.) or have been excluded through the exclude list, select View from the Main Menu, and de-select Show all files. The default is to show all files.

CHAPTER 3 - BACKUP

RUNNING A BACKUP NOVABACK (TAPE)

Now that the criteria for the file list have been set, click on the Backup button in the Backup File Selection window. If there is more than one tape drive available, you will be asked to select which drive you wish to use. If there is only one tape drive, it will be the default drive (unless otherwise indicated). The following dialog box appears (Fig. 13).

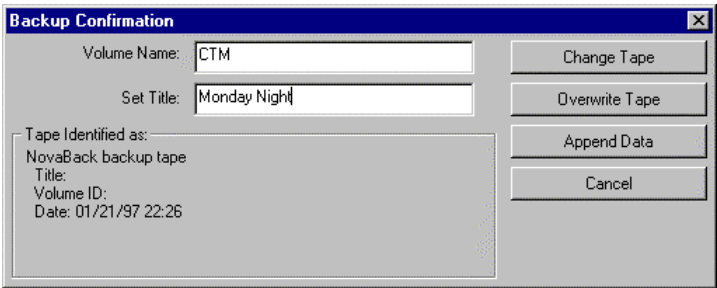


Fig. 13 - Backup Confirmation

also used to set the backup Volume Label (The tape title) and the individual backup set title.

When you have selected the desired option, NovaBACK will start the backup and the following progress window will appear (Fig. 14).

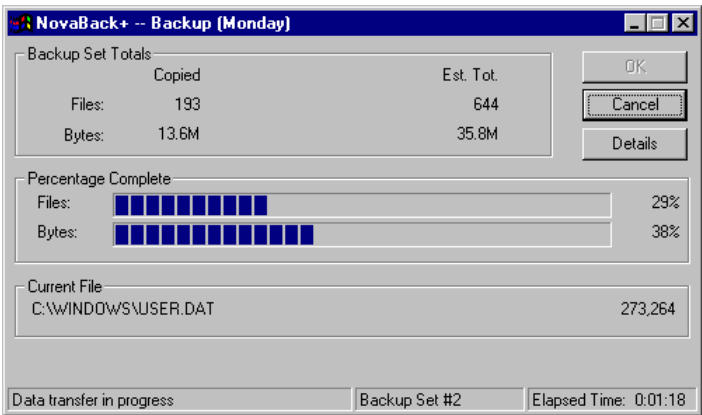


Fig. 14 - Backup Progress Screen

Please note that if you have the verify option turned on, NovaBACK will immediately jump into the verify routine. We **STRONGLY** encourage all users to run a verify on every backup, and whenever possible, to restore the last two files on tape. This selective restore forces NovaBACK to read the entire tape and is the best way to ensure data integrity.

At this point, NovaBACK checks the backup tape for existing data and if it finds any, it will identify it for you. You must choose whether to append the data to the end of the existing data on the tape, overwrite any existing data on the tape, or to change the tape in the drive. This Dialog box is

The Backup Progress screen shows the files being backed up, the number of files, how far into the backup it is, and how long the backup has been running. The Details button extends the screen down and shows certain tape options, any errors that occur, or any viruses encountered during the backup. All this information can later be viewed in the Error Log.

This screen is designed to provide some useful feedback on the progress of the backup.

NOVABACKUP® BACKUP & RESTORE

RUNNING A BACKUP - NOVADISK

When the criteria for the backup have been set and the files have been selected, click on the Backup button.

NovaDISK prompts you for the name of the file that you want to set as the backup file. All NovaDISK backup files are assigned the extension .QIX. Also, all files will be preceded with the number 001 (for the first disk, 002 for the second disk, etc.).

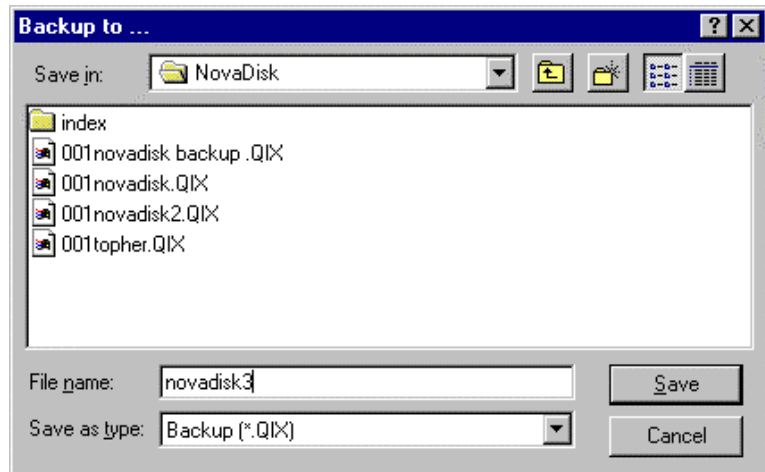


Fig. 15 - Backup File Name

Example:

Specified name: NovaDISK

Final file name: 001novadisk.QIX

When restoring files, you do not need to remember the specific file name. NovaDISK will give you a list of backups by date, time and title.

When you have specified the location and name of the backup file, press the Save button.

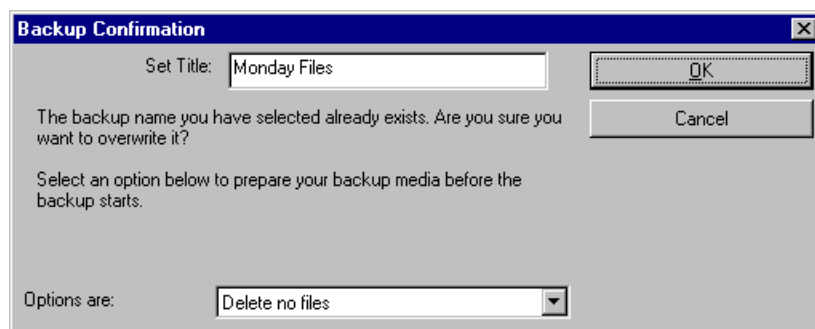


Fig. 16 - Backup Confirmation

NovaDISK then checks to see if you have a backup of the same name. If you do have a backup of the same name, you will be asked if you wish to overwrite the existing file. This window also prompts the user to set the backup Set Title and the Backup Options

for Erase. The backup option for erase is where you set whether you would like to have NovaDISK erase any old backups (*.QIX) before writing new ones (helpful when reusing media).

CHAPTER 3 - BACKUP

When you have selected the desired option, NovaDISK will start the backup, and the progress window will appear.

The progress window is designed to provide some useful feedback on the progress of the backup. It shows the files being backed up, the number of files, how far into the backup it is and how long the backup has been running. Please note that if you have the verify option turned on, NovaDISK will immediately jump into the verify routine.

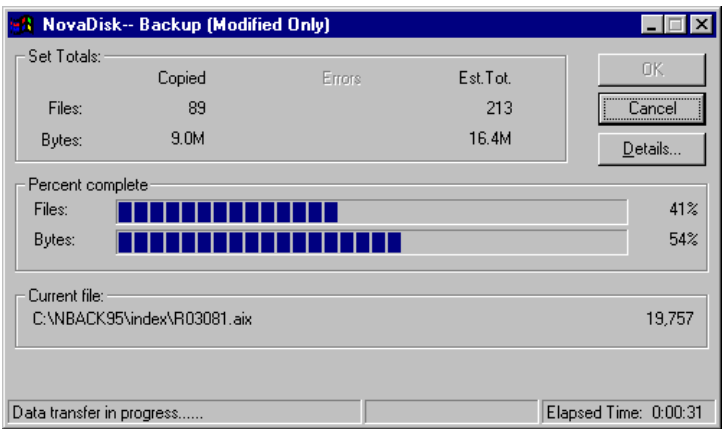


Fig. 17 - Backup Progress Screen

messages. Errors can be viewed in the error log after the backup and verify complete.

PART II - PROCEDURE

One of the most powerful features of NovaBACKUP is the ability to create backup procedures. Backup procedures are custom scripts for easily managing backup requirements.

It is not unusual to create procedures that run global backups on a weekly basis and additional procedures that backup only files that have been created or modified on a daily basis. Sample procedures (set to run just on the C: drive) are included in the program for you. The **DRVC_BKP.BUP** procedure will make a full backup of C:, including all files (Read only, etc.), updating archive indicators for all files backed up. The **MOD_BKP.BUP** procedure will back up any file with the archive attribute set, meaning any new or modified file since the last backup of the file. It is also set to update the archive indicator. The **DIF_BKP.BUP** procedure does a differential backup of the C: drive, meaning it does a backup of all modified files but does not update their archive bit.

NOTE: We **STRONGLY** encourage all users to run a verify on every backup and, whenever possible, to restore the last two files backed up on the disk. This selective restore forces NovaDISK to read the entire set. This is the best way to ensure data integrity.

When you hit the Details button, you can see the specific options selected for the backup, as well as any error

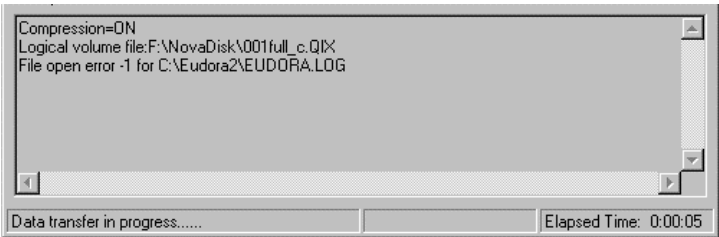


Fig. 18- Backup Progress Details

NOVABACKUP® BACKUP & RESTORE

Once you have selected Procedure, you will be presented with a list of all defined procedures.

Run

Click on this button to run the highlighted procedure.

Edit

This takes you to the Backup File Selection menu. From here, follow the same steps that you would use to create a procedure, and at the end you may rename or save this modification as a new procedure. See Save Procedure option, [page 14](#).

Delete

This deletes the highlighted backup procedure.

Cancel

Cancel will return you to the NovaDISK/NovaBACK Main Menu.

PART III - MY BACKUP

The My Backup button runs a standard backup procedure, usually set to a particular type of backup that is used often, so that with the click of one button you can be off and running. When a NovaBACKUP program is first run, it scans your system for all mapped volumes immediately. All of the available volumes are added to the backup. You can see the volumes that were sensed at the bottom left corner of the main screen when the mouse pointer is over the My Backup button. By simply clicking this button, you can backup your entire system, or you can customize My Backup to be anything you wish.

Set My Backup

To customize My Backup, from the Main Menu, select Options- My Backup. The Set My Backup window appears (see Fig. 20).

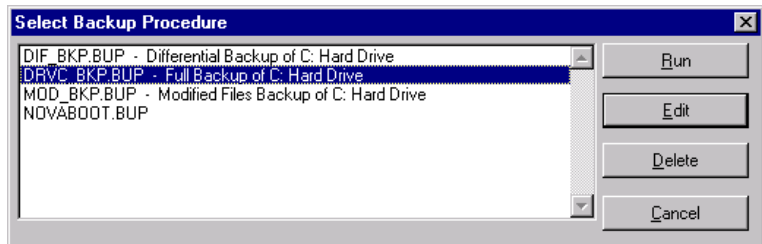


Fig. 19 - Select Backup Procedure

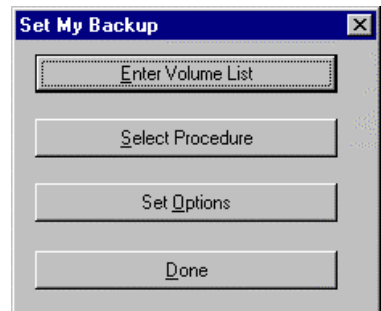


Fig. 20 - Set Standard Backup

CHAPTER 3 - BACKUP

Enter Volume List

This option is for easily selecting which volumes you would like backed up as part of My Backup. Click on the volume / drive letter to select it, or click an already highlighted drive to deselect. The default is to backup all local volumes.

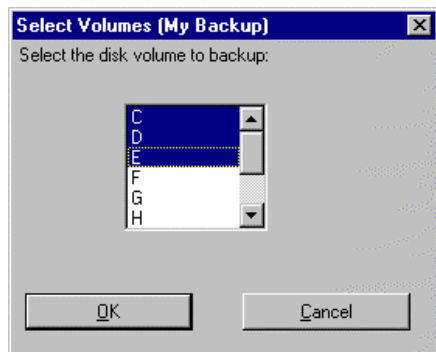


Fig. 21 - Select Volumes (My Backup)

Select Procedure

This will set a defined procedure as the standard My Backup procedure. Simply click on the desired procedure and click OK to select. See Procedure, [page 18](#) for more information on running and editing procedures.

Set Options

This will take you to the Set My Backup Options screen. For more information on the different options available, please see Chapter 5, Setting Backup and Restore Options ([page 27](#)).

Chapter 4

Restore

RESTORE

Restore will search the database to locate and/or perform a restore of any individual file or group of files. Once you have selected restore, you will be asked whether you would like to use the backup indexes that are stored on disk or whether you would like the program to check the current tape or media location for indexes of files related only to the specific tape or media.

Current Tape / Current Media

This button will run a scan the current tape or media for available indexes of files, from which you can then select files, directories or volumes to restore.

Disk Indexes

The Disk Indexes button is your access to the NovaBACKUP program's backup database stored on your hard drive. These keep track of all of the previously run backups and allow you to search the database for any file or group of files. This is the preferable selection for speed of access to the files database.

Exit

This will return you to the NovaBACKUP main menu.



Fig. 22 - Restore From Location

CHAPTER 4 - RESTORE

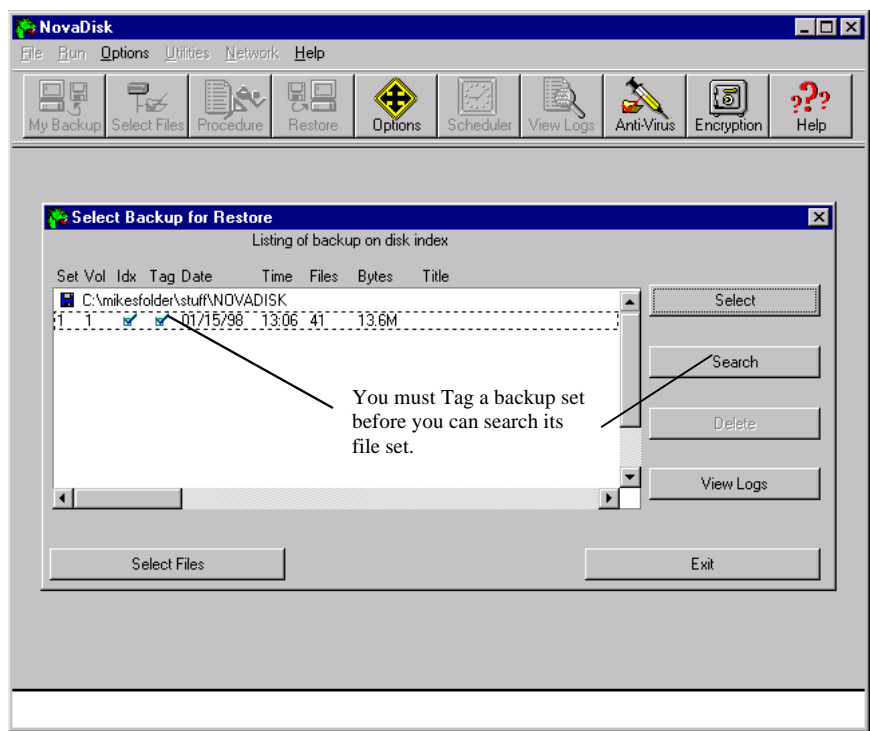


Fig. 23 - Select Backup Set for Restore

Select a Backup Set to Restore From

Once you have clicked on one of the indexing options, NovaBACKUP will scan the currently mounted tape/volume or the disk indexes, and present you with a list of the backup sets that are available for restoration.

If you are going to search an index database, tag the backup set(s) to search by clicking on the set and clicking the Select button. A check mark will appear in the Tag column to show that it has been added to the search list.

Double clicking on a backup set has the same effect as clicking on the backup set and clicking Select Files. Either action will bring you to the restore files screen.

NOVABACKUP® BACKUP & RESTORE

View Logs

The View Logs button brings up a list of any log files associated with the selected backup set. To view the log file, double-click on it, or click once to highlight it and click View.

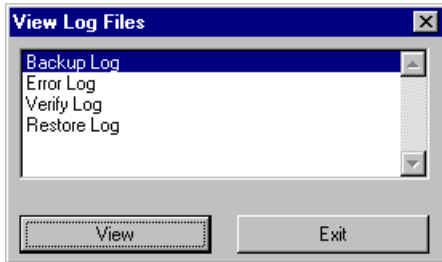


Fig. 24 - Restore - Search File Selection

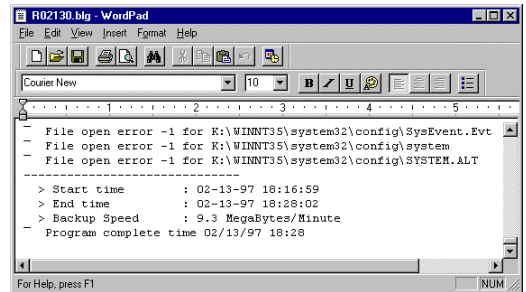


Fig. 25 - Sample Backup Log

Restore Volume List

Search

Search scans the tagged backup sets for a given file or groups of files. You will be asked to enter the file name to search for. Wildcards are accepted as valid input.

NovaBACKUP will search for the file(s) and report the number of files that match. The dialog box that appears provides you with the option to review the results of the search, or simply accept that the search was complete. If you choose to view the results, you will be given a detailed list of the file or files that match, and the path name and the backup sets where those files are located. Please note that when you return to the backup set list, there will be a new button at the bottom labeled 'View Search Results'.

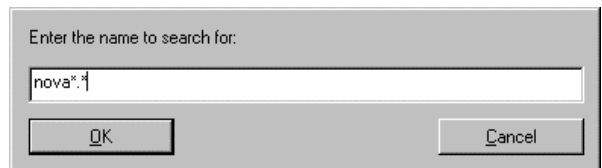


Fig. 26 - Restore - Search File Selection

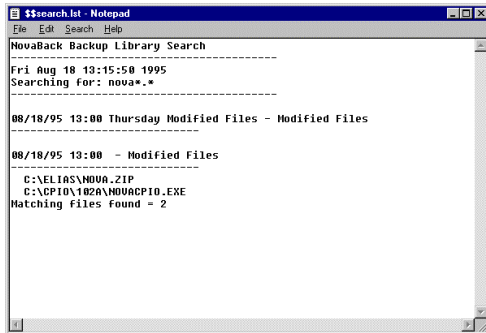


Fig. 27 - Search Results Listing

You may customize which word processing program NovaBACKUP uses by selecting Option, Setup Editor. For more information on editor options, please see [page 31](#).

Delete

This will delete the highlighted volume's index files from the NovaBACKUP database. This is only a valid option for Volumes, not individual backup sets.

CHAPTER 4 - RESTORE

Restore File Selection

To restore from the highlighted backup set, click on Select Files, or double click on the desired backup set name. The program will show you volume/directories and files windows, so you may select the volumes, directories or files you wish to restore. The Restore File Selection window is similar to the Select Files for Backup selection window, with many of the same options.

For more information on the different options, please see the Select Files section, [page 13](#).

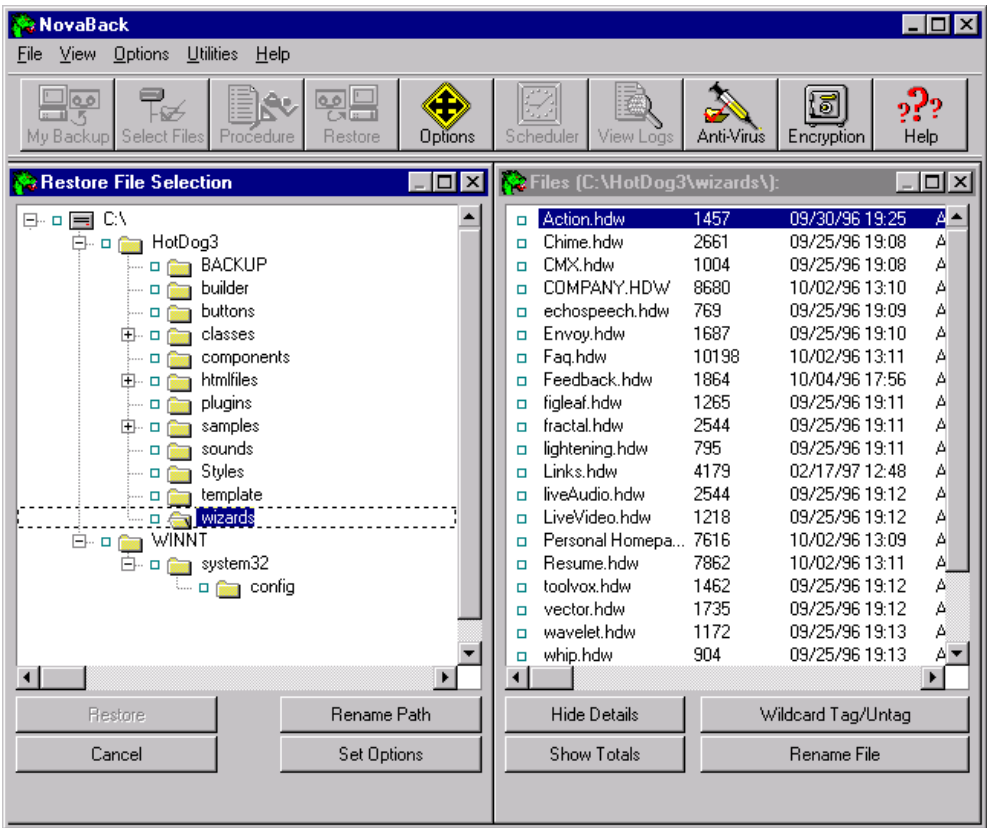


Fig. 28 - Restore File Selection Window

Restore

To restore the data, select the files and click on the Restore button.

Rename Path

This option gives you the ability to assign an alternate location for restoring files, subdirectories, or volumes.

NOVABACKUP® BACKUP & RESTORE

Rename File

This offers you the ability to change the name of the file being restored.

After the restore options have all been selected, click the Restore button to restore your data. The following progress screen will appear, and NovaBACKUP will restore the files based on the criteria selected.

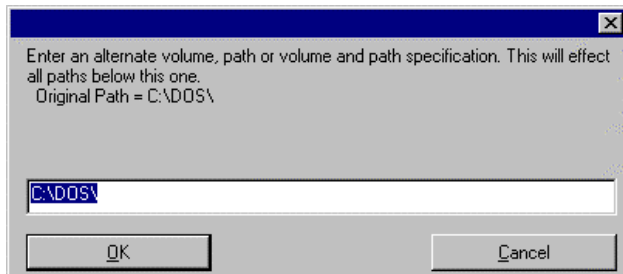


Fig. 29 - Rename Path

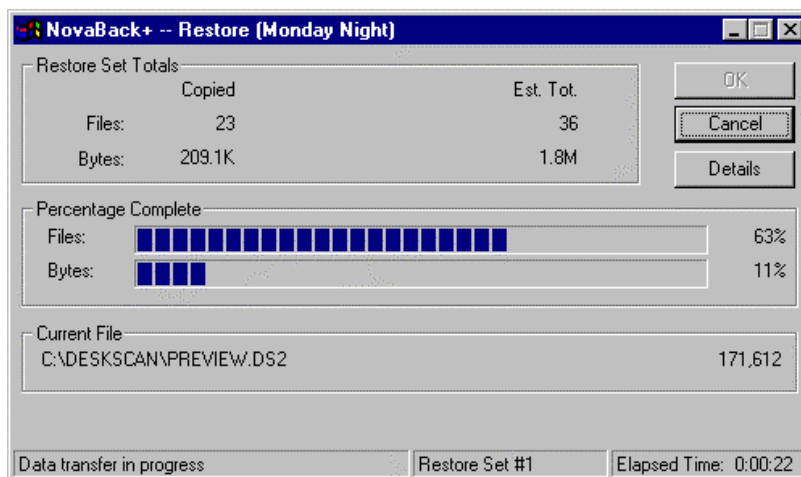


Fig. 30 - Restore Progress Screen

CHAPTER 4 - RESTORE

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Chapter 5

Part I - Setting Backup and Restore Options

Part II - Other Options (page 31)

OPTIONS

The items in the Options Menu give you the ability to configure every step of the backup and restore processes. You can easily select option parameters, default settings, and more.

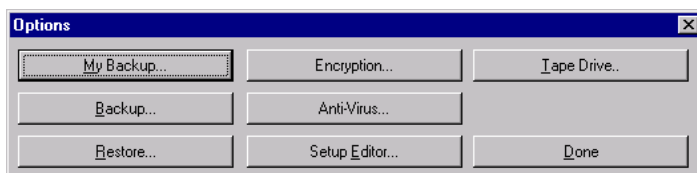


Fig. 31 - Options Menu

PART I - SETTING BACKUP & RESTORE OPTIONS

There are a variety of options to choose from when running a backup or restore. When you change the options, the new settings will then be set as the default options.

MY BACKUP OPTIONS

This will bring up the options menu for My Backup. Most of the options for My Backup are the same as “Backup Options” discussed below, although other options are available. For more information on customizing My Backup, see [page 19](#).

BACKUP OPTIONS

File/Directory Sorting

This gives you the ability to specify how the files and directories will be sorted when viewing them - by Name, Date, Size, or Off (physical location on the disk), and the order in which to sort the files.

Log Level

There are three options for log levels shown on the following table.

None	This will not create any logs
Subdirectories	This creates a log file that only contains the volumes & directories that were backed up
All names	This creates a log file that contains all of the volumes, directories and files that were backed up

CHAPTER 5 - OPTIONS

Write Mode (NovaBACK Only)

This specifies whether you would like the data to overwrite any existing data on tape or append the dataset (currently selected data) to the end of the data already on the tape.

Compression

Compression of data allows for optimized speed and media space utilization for backups. There are three levels of compression available for Windows 3.xx. If you are using OS/2, Windows 95, 98, and/or Windows NT, the only compression options are On or Off.

Windows 3.xx Compression Options

High Compression - The maximum level of compression. Selecting this will use maximum compression and fit as much data on the media as possible. Faster computers (486-66Mhz or better) will achieve the greatest transfer speed with this setting.

Medium Compression - This setting optimizes the balance between speed and space optimization, and depends primarily on the type of computer and drive controller.

Low Compression - This is the minimum level of compression. For machines with less than a 486-66Mhz, this setting will probably result in the best speed and performance while still utilizing compression.

Backup Set Title

If this checkbox is checked, you can specify the current backup set title in the box next to it. That way, if Append is also selected, the screen prompting for Volume Title and Backup Set will not be needed and the NovaBACKUP program will go right into writing the backup set.

Verify Tape/Backup Media after Backup

After the backup is run, if this selection is checked, the program will run a byte by byte verification of the data on tape/backup media compared to the data that is on disk.

Backup Only Files Modified Since the Last Backup

This will backup files that have changed since the last backup was run. Files with the Archive File Indicator (or "Archive bit") set to "on" will be backed up. This means any new files that were created, changed or modified since the last backup was completed. If you plan to use this option, you should also use the Update Archive File Indicator option.

Update Archive File Indicator for Backed Up Files

If this option is checked, after a file has been backed up the attribute will be turned off. If this option is left unchecked, the archive bit will be left in its original state.

NOVABACKUP® BACKUP & RESTORE

Prompt Operator Before Backing Up Each File (Available only in NovaBACK SCSI versions)

If this option is checked, you will be prompted to confirm each file to be backed up.

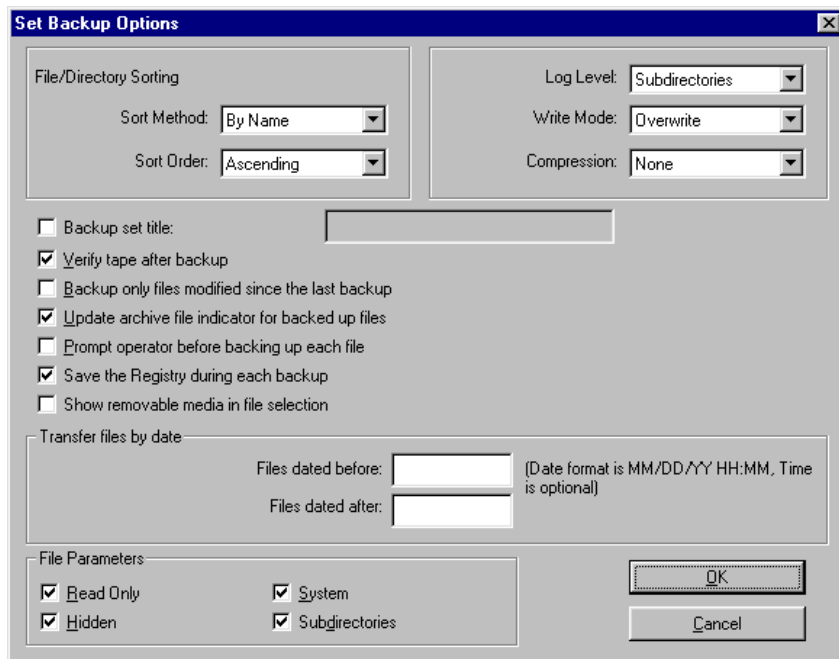


Fig. 32 - Backup Options Window (NovaBACK)

Save the Registry During Each Backup (Available only in Windows 95, 98 and NT versions)

If this option is checked, the NovaBACKUP program will automatically include important system and registry data with any other files selected for backup.

Show Removable Media in File Selection

(This option is only available under the main global option settings)

If this option is checked, any floppy drives or removable media drives will be shown in the Backup - File Selection windows, so you can select files from these devices as well as hard drives.

Transfer Files by Date

(Files dated before:) (Files dated after:)

Transfer Files by Date gives you the ability to specify a date/time range for file selection. This date/time range determines which files will be backed up or restored by looking at their creation date/time. An example would be if you would like to backup all the files created or edited during the month of February, you would enter 02/01/99 and an end date of 02/28/99.

CHAPTER 5 - OPTIONS

File Parameters

Under File Parameters there are four check boxes. These determine if the NovaBACKUP program will backup (or restore) files that have the attributes of read-only, hidden, system, or to apply tagging and untagging to subdirectories.

RESTORE SPECIFIC OPTIONS

Overwrite Existing Files

If this option is checked, the program will automatically overwrite any file that already exists on the hard drive.

Preserve Archive File Indicator for Restored Files

If this option is checked, then after a file has been restored, the archive attribute will be kept on. This flags the file to be backed up next time an incremental backup is run.

Prompt Operator Before Restoring Each File

If this option is checked, the program will ask you to confirm each file to be restored.

Enable Registry Restoring

(Available only in Windows 95, 98 and NT versions)

If this option is checked, the program will restore the registry files during the restore. Be very careful using this option.

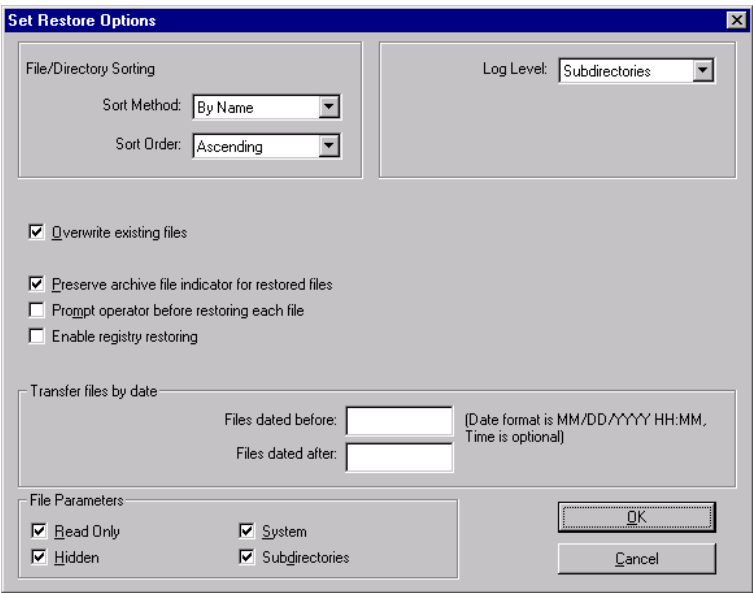


Fig. 33 - Set Restore Options

PART II - OTHER OPTIONS

Anti-Virus Options

The virus scanning options are set in the Anti-Virus Options window (see Fig. 34).

Virus check files before backup

Don't backup infected files - select this option to skip backing up any file that may contain a virus. Any skipped file will be shown in the Error log.

Backup infected files - select this option to override any virus detection and back up files even if they may be infected.

Virus check files before restore

Don't restore infected files - select this option to skip any files that may be infected with a virus. Any skipped file will be shown in the Error log.

Restore infected files - select this option to override any virus detection and restore files even if they may be infected.

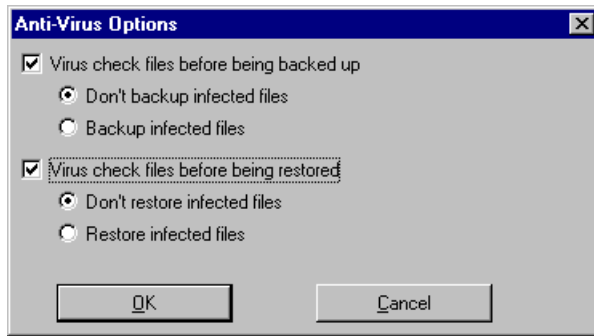


Fig. 34 – Anti-Virus Options

Setup Editor

This gives you the ability to choose text editors for any text editing to be performed from the NovaBACKUP program. When you enter the name of the new editor, you must include the full path.



Fig. 35 - Set Editor Window

Encryption

This gives you the ability to encrypt the files scheduled for backup using a special Encryption Key code that you assign. By using encryption, you encode backup data written so that it cannot be seen or read by anyone without the key code. This means you must have this key when restoring the files.



Fig. 36- Encryption

CHAPTER 5 - OPTIONS

Tape Drive (NovaBACK Only)

This gives you the ability to select the tape drive you would like to use for this operation, or to change the configuration. For more information on Options -Tape Drive, please see Chapter 2, [page 5](#).

Include / Exclude Lists (Available from the Backup or Restore File Selection screens)

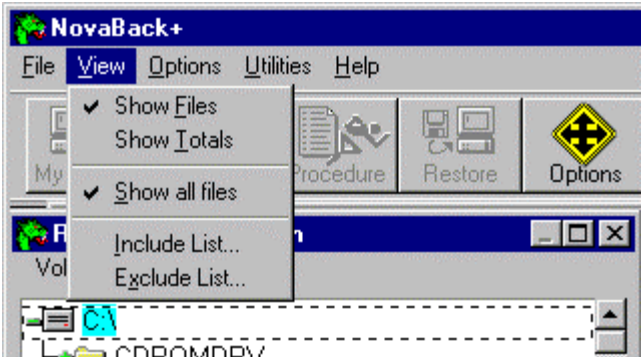


Fig. 37 - Select Files / View Lists Menu

another, but the database files were stored in perhaps 50 or 100 different directories throughout the volume. All you need to do is simply create an entry in the include list and it will automatically search the specified volumes and directories for files ending in .DBF (for example) without having to go through the laborious task of searching for these files.

Backup - View Include List

This will start the Backup Include List Manager. When you select this menu item, the following screen (Fig. 38) will appear.

Add

This will add entries to the Include List. The Add List Entry window allows you to enter items for the global include list. When you enter these items, you must include the volume and path name to which you would like it to apply.

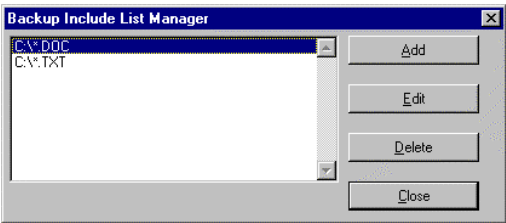


Fig. 38 - Backup Include List Manager

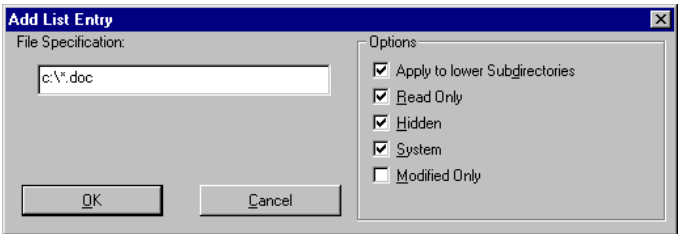


Fig. 39 - Backup Add / Edit List Entry

The Include List and Exclude List options give you the power to create global lists of files for inclusion or exclusion in a backup or restoration. These are extremely powerful options for building a complete backup system. Some of the more common reasons for using this option are to give you the ability to easily select certain file types spread through a variety of directories or volumes. An example would be if you wish to move your database from one system to

You may use any wildcard that is valid for command line directories. The list entry box also allows you to select whether this included item applies to read-only, hidden, system and modified only files. Whether the Apply to lower Subdirectories option is turned on or not, the list will include

NOVABACKUP® BACKUP & RESTORE

subdirectories. When you have finished selecting the options and entering the file specification, click on **OK** or press Enter to complete the entry. Your new entry will be displayed in the include list.

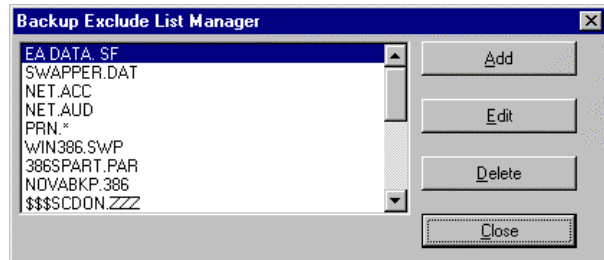


Fig. 40 - Backup Exclude List Manager

Backup - View Exclude List

The Backup Exclude List Manager behaves like the Backup Include List Manager referenced above with the exception that all settings will apply across the whole system to all files that meet the requirements without having to specify a volume or directory path. If you do specify a volume and path, then the Apply to lower Subdirectories check box will apply. The backup exclude list comes with approximately 15 entries by default.

These are files that are temporary and

changing in nature or that should not be included in a backup (such as any old backup files).

Restore - View Include List

Alternate Restore Location

This option will restore all the specified files in the list to an alternate location. If you are going to be restoring any file with Read Only, Hidden, System

or Modified Only attributes, make sure you allow the selection of those types of files by checking the appropriate option boxes. The current default is to not include the files with those attributes set (whether the Apply to lower Subdirectories option is turned on or not, the list will include subdirectories).

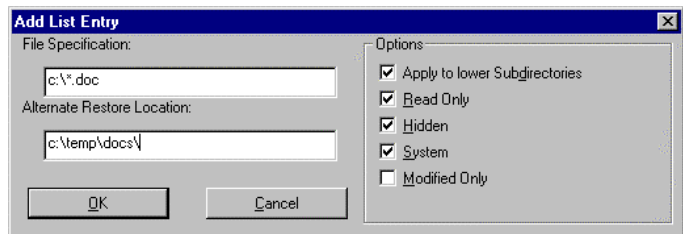


Fig. 41 - Restore Add List Entry Dialog

Restore - View Exclude List

The Restore Exclude List behaves like the Restore Include List referenced above with the exception that all settings will apply across the whole system to all files that meet the requirements without having to specify a particular path (which is required by the Include List). If you would like to limit the exclude to a specific directory or volume, you must specify by entering a specific path. Then the Apply to lower Subdirectories check box will then apply.

CHAPTER 5 - OPTIONS

HELP MENU

On Context help

This activates context sensitive help. You can easily search for topics you wish to receive assistance on.

Contents

This is the content of the Help Menu system.

Index

This gives an index of specific topics in the help menu.

Search

This searches for key words within the Help system.

Help on help

This provides information on how to use the Help system.

Purchase (Demo versions only)

This provides information on how to purchase the software if the software is a demonstration version.

On the Web

This provides direct connection to NovaStor's World Wide Web site for technical support, registering your copy of NovaBACKUP, making purchases, upgrade information, anti-virus updates, and other great information on NovaStor products.

About

This contains information about NovaBACKUP, its authors and the current version number.

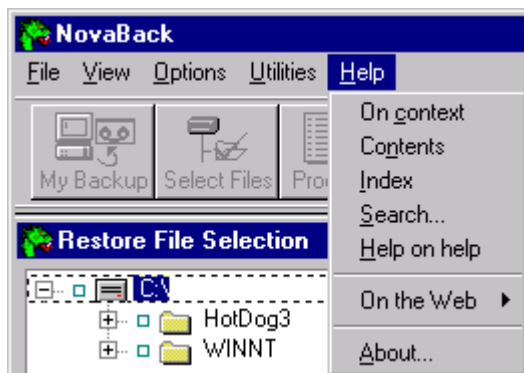


Fig. 42 - Help Menu

Chapter 6

Part I - Scheduler

Part II – Scheduler as a Windows NT Service (Page 35)

PART I - SCHEDULER

The Scheduler is an important tool in the automatic management of your backup and data protection plan. The Scheduler is available from the main toolbar or under the Run menu. You can also access the Scheduler by double-clicking on its icon in the NovaBACK/NovaDISK program group. The Scheduler lets you select when given tape functions, operations, or other commands will occur, and launches them automatically.

The Scheduler is traditionally used to perform unattended backups during non-peak hours, it can also schedule procedures or any standard command line command (such as batch files, executables, and system diagnostic utilities), giving it a great deal of flexibility.

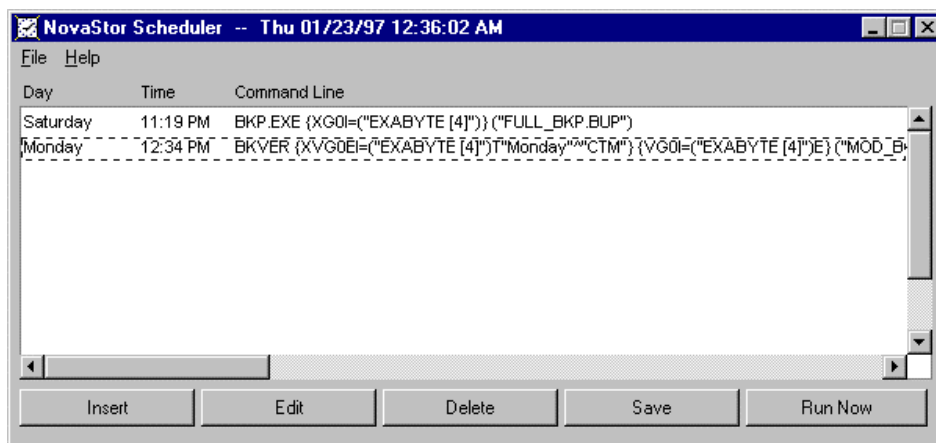


Fig. 43 - Scheduler Window

The Scheduler must be running as a task in order to perform unattended backups. (It may be minimized.) NovaBACKUP for Windows NT Server (Limited) users have the option of running the Scheduler as a Windows NT service. (see Part II, [page 38](#))

CHAPTER 6 - SCHEDULER

Insert

The Insert button will add an item to the Scheduler. Please see Inserting an Item in the Scheduler, below.

Edit

Edit gives you the ability to modify an existing schedule item. This is similar to inserting a schedule item.

Delete

This removes the highlighted item from the schedule.

Save

This saves the items currently listed in the NovaBACKUP Scheduler.

Run Now

This will execute the highlighted schedule item immediately, regardless of the scheduled time.

INSERTING AN ITEM IN THE SCHEDULER

Click the Insert button, and the Enter/Edit Schedule window comes up. By selecting **On selected day(s) of the week**, you can select the days of the week that you would like to schedule your backup procedure or command. By selecting **On one day of the month**, you can specify which day of the month to run the specified backup procedure or command. You can enter any valid command line (what you would type at the C:\ prompt, such as the name of a batch file or executable), or you can select a backup procedure. When you select a backup procedure you have a choice of previously saved procedures, and options to use with the procedure (overwrite current data, verify, etc.).

Select Backup Procedure

There are a few options available when selecting a backup procedure. See [page 27](#) for the different backup procedure options.

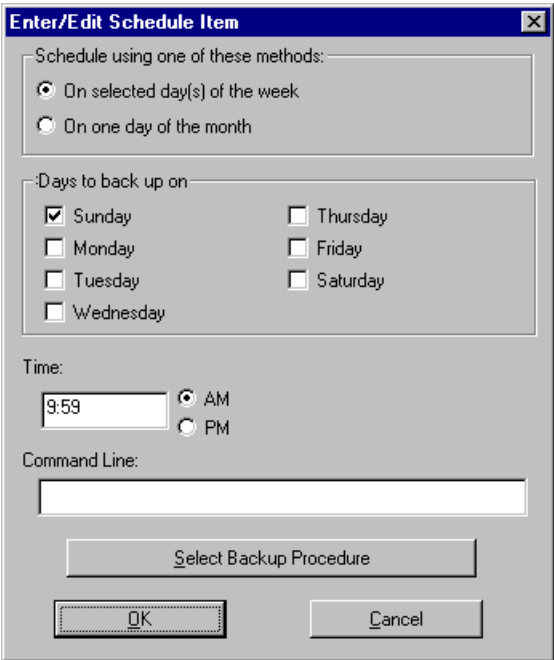


Fig. 44 - Enter / Edit Schedule Item

NOVABACKUP® BACKUP & RESTORE

Set Up Destination (NovaDISK ONLY)

You must select a backup destination before scheduling an unattended backup. This button will take you to the Backup File Name screen. For more information on backup file names, please see [Running a Backup, page 17](#).

Set Up Drive (NovaBACK ONLY)

This is where you select which tape drive you would like to perform the operation with. This is covered in detail in Chapter 2, Tape Drive Setup, [page 5](#).

Tape Write Mode -Overwrite (NovaBACK ONLY)

This will overwrite all of the data on the current tape and any data previously recorded on this tape will be lost.

Tape Write Mode -Append (NovaBACK ONLY)

This will add a new data set to your tape after any other data sets on the tape (appending to the end). If for some reason you have inserted a new tape, the new backup set will start at the beginning of the tape and use program defaults for the tape title and Volume Id.

Options are: (NovaDISK ONLY)

These erase options include **Delete no files** or to **Delete old *.QIX** (backup) files. The Delete old *.QIX files is an option available so that you may easily overwrite any old backup files, which is best used with floppy disks (if you are using the same disks).

Verify after Backup

When this box is checked, it tells the Scheduler that you want to run a verification after the backup is performed.

Backup/Verify Log Listing

This determines whether you would like to have a log of the currently scheduled backup, and what level of detail that log will contain. You have a choice of no logging (the 'None' option), just volumes and directories (the 'Subdirectories' option), or volumes, directories and all file names (the 'All names' option).

Backup Set Title

If this checkbox is checked, you can specify the current backup set title in the box next to it.

Tape Volume ID (NovaBACK ONLY)

If you choose the Overwrite option, this is where you would put in a name for the entire tape.

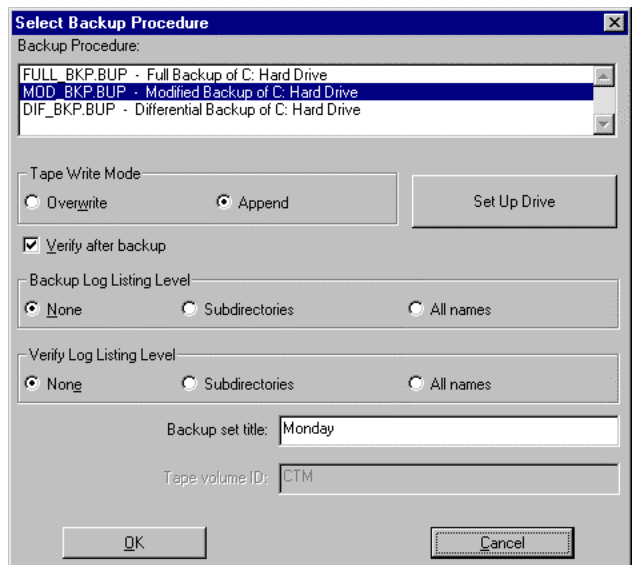


Fig. 45 - Schedule Options

CHAPTER 6 - SCHEDULER

PART II SCHEDULER AS A WINDOWS NT SERVICE

If you have purchased and installed NovaBACKUP for Windows NT Server (Limited), you have the capability to run NovaBACKUP as a Windows NT Service, for truly transparent and integrated backups. The scheduler can still be used to schedule any other commands, which provides a great deal of flexibility to tie in other applications that you can run from the command line.

Please note that in order for the scheduler to run as a service, the NovaStor SCD Service must be started. During installation, the service is started automatically, and set to load automatically on startup. To change the startup options for the scheduler, use the Services panel (accessible through the Services icon in the Control panel), highlight the NovaStor SCD service, and click the Startup button. For more information on Windows NT services and service options, please refer to your Windows NT administrator's guide.

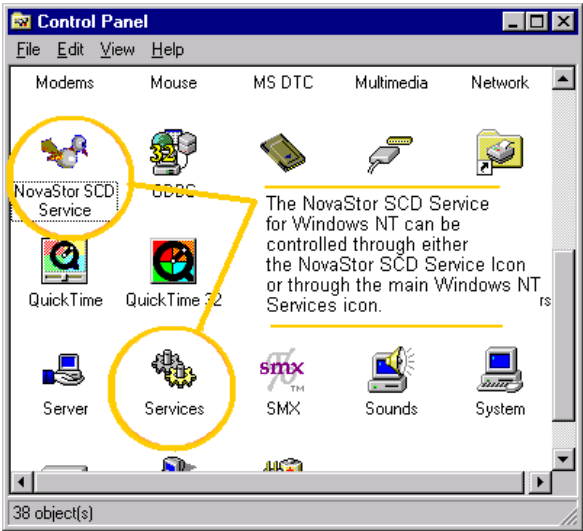


Fig. 46 – Windows NT Control Panel

You can control the NovaStor Scheduler Service via the NovaStor SCD Service Manager icon or through the Services icon in the Control Panel under "NovaStor SCD Service".

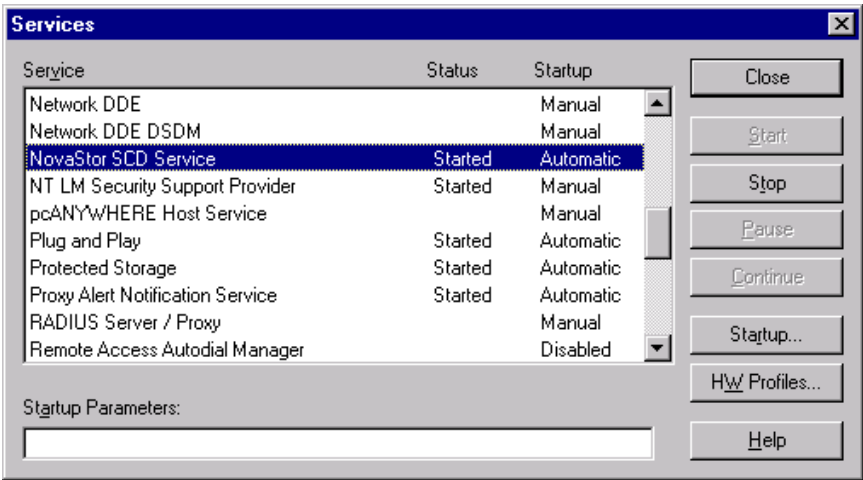


Fig. 47 – Control Panel - Windows NT Services Window

LIMITATIONS TO THE NOVABACKUP SCHEDULER SERVICE FOR WINDOWS NT

There are certain limitations for backups scheduled through the Windows NT Service. These limitations include:

- The NovaStor SCD service is designed to run as a single Windows NT server backup solution only. NovaBACKUP does not support Universal Naming Conventions for Windows (UNC), and Windows NT does not support drive letter mapping without being logged in, so client backups are not possible under the current scheduler service (when someone is not logged on to the service). The NovaStor SCD Service also, by default, runs in the "System"-level security context. This security context only allows for "administrator" access to local files on the server. It's a potential security risk to have a service run under any other setting other than System, however, running the service at the System security level also means any attempts to access network-related devices will not be successful. For more information on security and file access rights, UNC, or Windows NT services, please consult your Windows NT administrator's guide.
- Only one of the two NovaBACKUP components (either NovaBACK or NovaDISK) may have the scheduler installed as a service. By default, the first program installed will control the service.
- If the computer is turned off or is down when a scheduled activity is supposed to run, or if a backup schedule is missed for any reason, the scheduled activity will automatically begin when the machine is rebooted. The user need not be logged in if the service has been enabled to run automatically on startup.
- If multiple scheduled jobs are missed, the missed scheduled activity will automatically begin when the machine is rebooted, and all jobs scheduled will be run in sequence. Successive jobs will not run until the previous job has been run, so the scheduled activities won't conflict.
- There is no support for backing up open files (such as MS Exchange, SQL, etc...). If you need open file backup, please see our NovaNet 7 products at <http://www.network-backup.com/>.



Fig. 48 – Scheduler Service Manager

CHAPTER 6 - SCHEDULER

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Chapter 7

Part I - NovaDISK Utilities

Part II - NovaBACK Utilities

Part III - Dr. Tape® Utilities (page42)

PART I - NOVADISK UTILITIES (from the NovaDISK Main Menu)

Verify a Backup

This performs a byte-by-byte comparison of the data in a backup set with the data on disk.

Summarize a Backup Disk

This scans the contents of a backup and directs the output to a file. You have the choice of scanning entire backup sets or volumes, or scanning at a directory or file level.

View Log Files

This will bring you to the View Logs screen as discussed on [Page 23](#).

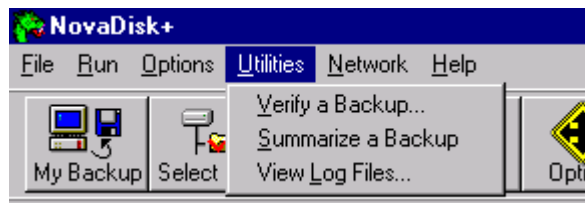


Fig. 49 - NovaDISK Utilities Menu

PART II - NOVABACK UTILITIES (from the NovaBACK Main Menu)

Check/Format Tapes

Check for Backup Data - This quickly determines whether or not the tape currently loaded in the selected tape drive has a valid backup set on it.

Retention Tape

This will retention a backup tape, which can be important with some QIC tape drives. Please see [page 45](#) for more information on retensioning tapes.

Erase Tape

This erases the data on the currently selected tape.

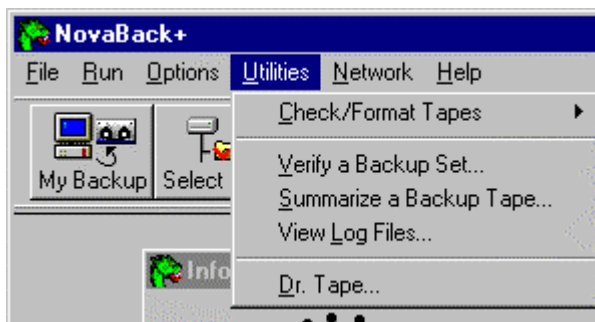


Fig. 50 - NovaBACK Utilities Menu

CHAPTER 7 - UTILITIES

Format Tape

There are many forms of backup media that require formatting. There are two fundamental kinds of formatting:

- (1) The first prepares the tape to receive data. The tape drive is unable to record data to the tape until this format is performed. This is required for QIC-80 and 3010/20 tape drives.
- (2) When using a DAT tape drive, you have the option to manually partition the tape. Partitioning the tape creates two distinct portions to store data. One partition is typically reserved for storing directory information that allows the tape drive to perform Quick File Access (QFA). There are times when performing a backup of an extremely large network or using other partitionable media, such as the Exabyte 8500 series, that require manual intervention. This function determines how large the directory and data partitions should be.

Verify a Backup Set

This performs a byte for byte comparison of the data on tape with the data on disk.

Summarize a Backup Tape

This scans the contents of a tape and directs the resulting output to a file. You have the choice of creating summary reports on backup sets, on volumes, or on directories and files.

PART III - DR. TAPE™ UTILITIES

Dr. Tape™ is a utility that performs diagnostics on the tape subsystem, including data integrity tests, tape identification, complete erasure, retensioning, and viewing the tape as a raw data dump. These tools can prove invaluable when working with tapes from various sources, or troubleshooting problems with tape subsystems.

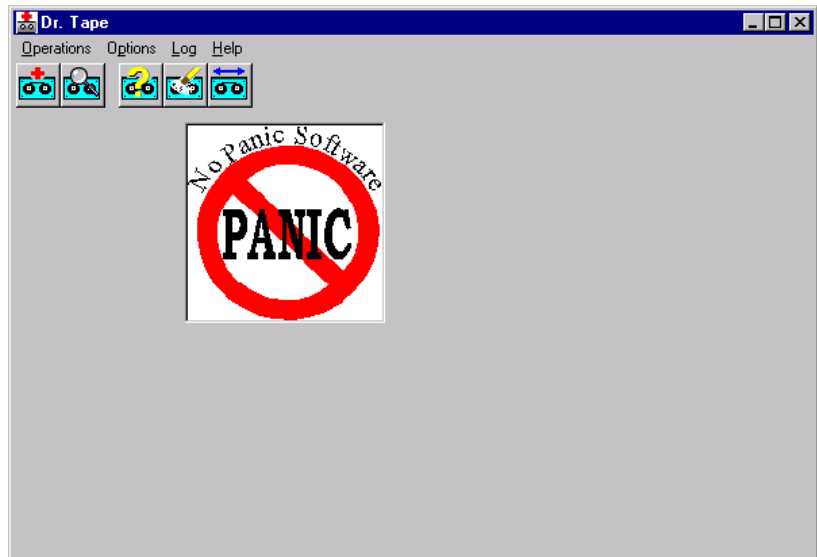
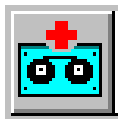


Fig. 51 - Dr. Tape Main Menu



TEST TAPE & TAPE DIAGNOSTICS

The Test Tape Button runs a test on your tape subsystem. The program will write a predetermined data pattern to your tape drive, read it back and verify that all of the data is complete. When you press the Tape Test button, you will be asked to select the tape

drive to perform tests on, if Dr. Tape™ is started from the NovaBACK icon group. Select the drive you would like to test and click OK, and the Tape Test window will appear (see Fig. 52).

The Tape Test menu displays the selected drive, the default block size and the number of data blocks to be written to tape. You have the option to determine the number of blocks to be written to tape.

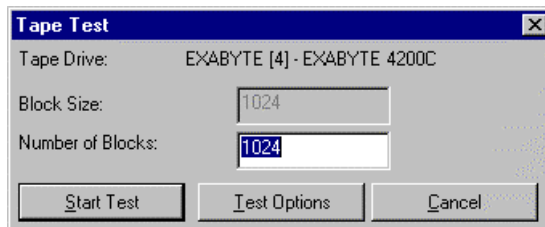


Fig. 52 - Tape Test Window

Start Test

Start Test will run Tape Test. Please note you will be asked to confirm if you really wish to write on this tape. **If you are using a SCSI tape drive only: Tape Test is a test that will make any data previously recorded on the tape unreadable.**

Running Tape Test

To have Tape Test write to the tape, confirm by clicking on the OK button. Dr. Tape™ will then examine the tape in the tape drive in an attempt to identify it. If it determines that there is any form of valid data on the tape, it will ask you again to confirm that you would like to overwrite this tape. From this point, selecting Overwrite Tape will perform the tape test.

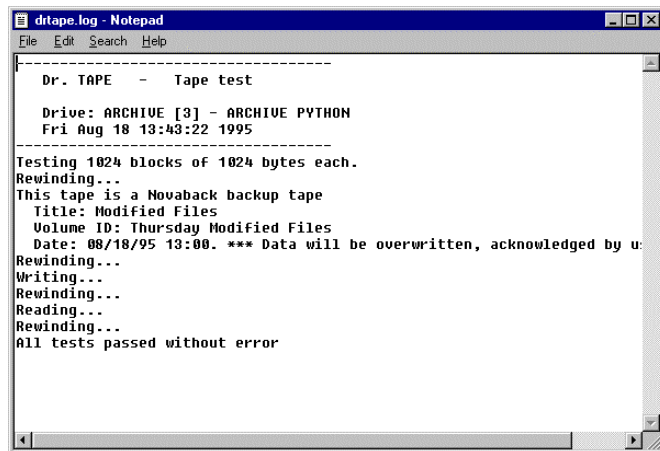


Fig. 53 - Dr. Tape Sample Log

After the test is run, you have the option of viewing the test log. The test log contains each test operation that was run and the results of the test.

CHAPTER 7 - UTILITIES

Test Options

Single Pass

This will perform tape test routine once. It will write the number of blocks that were displayed in the Tape Test menu.

Continuous

This will perform the tape test until the user interrupts it.

Tape Test Until EOT (End of tape)

This will run tape test to the physical end of media. **Not recommended on QIC tape drives.**

Log File

This gives you the ability to customize the name of the log file.

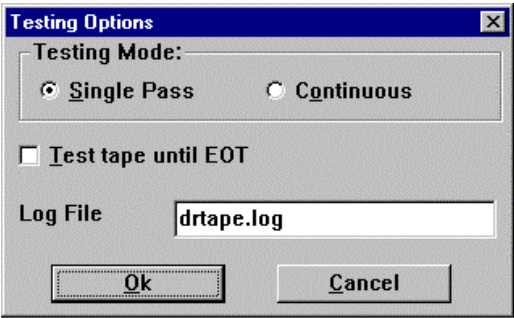


Fig. 54 - Tape Test Options



VIEW TAPE

View Tape will display the data on the tape in a raw data format. You can easily switch between the ASCII and EBCDIC character sets. After you press the View Tape button the View Data screen will appear (Fig. 55).

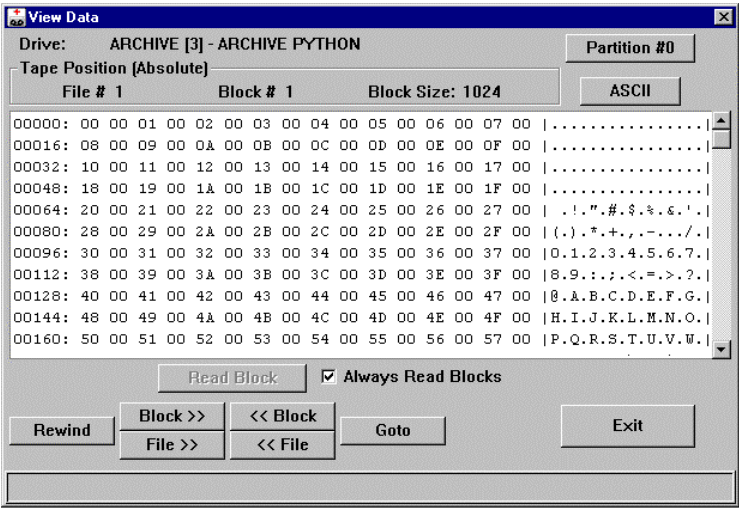


Fig. 55 - View Tape Screen

NOVABACKUP® BACKUP & RESTORE

Drive

This is the tape drive that will be used by the Dr. Tape™ program.

Tape Position

There are two methods of tracking your location on tape. One of them is absolute, which means everything is measured from the physical beginning of tape. The other is relative positioning, which means you measure from your current position forward or backward.

File Number

This is the number of file marks that you are from the Beginning of Tape.



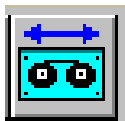
ERASE TAPE

WARNING: THIS WILL DESTROY ALL DATA ON YOUR TAPE. You will be asked to confirm by clicking OK.



IDENTIFY TAPE

This tells Dr. Tape™ to examine the contents of a tape and attempt to identify the tape format. Dr. Tape™ is familiar with several different data formats (see on-line help for a listing of formats). This option can be extremely useful when dealing with unlabeled tapes.



RETENSION TAPE

This option will fast forward and then rewind the tape media to restore factory fresh tension. This is particularly important with QIC (Quarter Inch Cartridge) drives. It is not advisable for 4mm or 8mm tape drives. This can be a time consuming task, depending on the tape drive.

Tape Configuration Info

This tells you about Dr. Tape™ and system configurations.

CHAPTER 7 - UTILITIES

DR. TAPE™ OPTIONS MENU

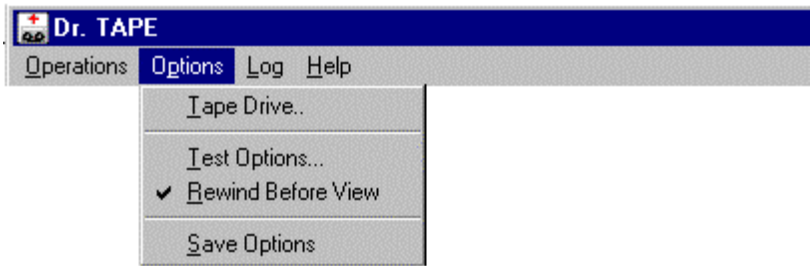


Fig. 56 - Dr, Tape Options Menu

Tape Drive

This option accesses the same routine as reviewed in the Tape Drive Setup and selection section. Please see Chapter 2, [page 5](#) for more information on setting up and selecting your tape drive.

Test Options

This is the same as pressing the Test Options button when doing a Tape Test. Please see Test Options, this chapter ([pg. 44](#)), for more information.

Rewind Before View

This option tells the program to rewind the tape before viewing a tape's contents. For more information on viewing tapes, please see View Tape on [page 44](#).

Save Options

This will save your current settings as the default options for future Dr. Tape™ diagnostics.

DR. TAPE™ LOG MENU

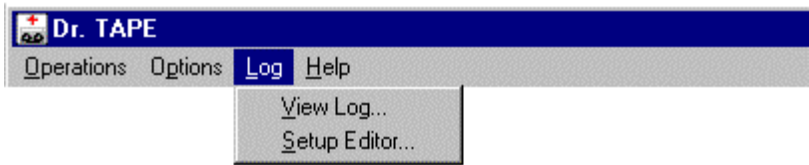


Fig. 57 - Dr. Tape Log Menu

View Log

This option will open the log files for Dr. Tape™ operations for you to view.

Setup Editor

This lets you specify the editor that you would like to use to edit and view notes, log files and other files.

Chapter 8

Network Connections

NETWORK CONNECTIONS

The NovaBACKUP network options on the main menu bar is only visible if you are running the program on a computer connected to a network. If a network connection is not sensed by NovaBACKUP, this option will not be visible. It is a powerful, advanced user option provided for easy and convenient access to your network environment. You have the ability to view the network mappings, set map roots, and delete network mappings.

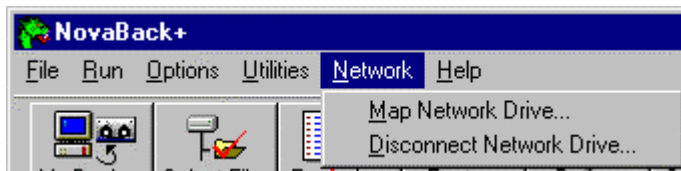


Fig. 58 - Network Menu

For more information on network mappings, please consult your network administrator or the operating system manuals.

CHAPTER 8 - NETWORK CONNECTIONS

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Chapter 9

Part I - NovaBOOT For Windows 3.x/95/98

Part II - NovaBOOT For Windows NT (page 61)

Part I - NovaBOOT for Windows 3.x/95/98

Overview

NovaBOOT for Windows 3.x/95/98 provides the safety of complete system disaster recovery. If you are unable to start Windows 3.x/95/98 due to any malfunction, you can simply boot from the NovaBOOT diskette and recover your system from backup. This takes all the guesswork out of system repair, with the added convenience of having a simple one-step solution to total system disaster recovery.

Two procedures make up the NovaBOOT disaster recovery solution:

1. Making the NovaBOOT Boot Diskette.

Part of this procedure includes creating and backing up test data. Then, after booting from the diskette, the data is restored to hard disk. After rebooting from hard disk, the restored test data is checked for accuracy. Materials required for this step include one or more high density floppy diskettes for drive A: and backup media.

2. Making the NovaBOOT Recovery Backup.

Upon successful completion of step 1, the actual disaster recovery backup may be made. You are able to select from a list of all hard disks to backup. As a courtesy, you also may exclude directories at your own discretion so that you are not unconditionally forced to back up the entire hard disk(s). Compressed disks are handled automatically and require no special knowledge on the part of the user. Materials required include the NovaBOOT boot diskette made in procedure 1, and as many units of backup media (tapes or disks) as is required to contain all data from the list of hard disks you have selected.

CHAPTER 9 - NOVABOOT

Wise Precautions

1. Saving System Setup

Put simply, NovaBOOT allows you to restore data to a hard disk that has failed. In order to do this, there must be a hard disk READY to receive data. But what if your hard disk is not recognized at all by your computer? In this case, since your hard disk must be recognized in order to restore its data from the backup, some additional steps must be taken. Utilities are included on the NovaBOOT diskette to assist. For details, see the following section on Utilities included on the NovaBOOT Diskette, [page 60](#).

In every computer, there is a special area of memory called CMOS. Even when your computer is turned off, the information is kept available thanks to a battery inside your computer. If this battery should lose its charge or fail for some reason, you will likely lose the information in this CMOS memory area. This should concern you, because vital information about your hard disk is stored there which, if lost, will cause your hard disk NOT to respond to ANY recovery software.

Therefore, you should take this simple step to ensure that you can recover your hard disk data, even if CMOS settings are lost:

When you first turn power on to your system, look for some message on screen which offers you the chance to change system setup. Often this is a matter of pressing the DEL key. Your system may be different. If you do not see anything like this, please ask your computer vendor how to access your CMOS settings. When the setup screen appears, write down all the information you see, especially hard disk information. This typically shows tracks, sectors, drive type, etc. Then, if you have problems such as hard disk not recognized, re-enter the settings you have written down.

If you STILL have similar problems, then you probably need to run FDISK and FORMAT on your hard disk. **WARNING! Running FDISK or FORMAT will destroy any data that used to be on the hard drive!**

NOTE: If you are using a boot manager to launch one of several operating systems, then please refer to the “Booting Multiple Operating Systems” section, [page 59](#).

2. Knowing disk partition sizes

On rare occasion, it may be necessary to re-partition your hard disk. In fact even if it's not necessary to do so, some users may desire to change the space allocated to a particular drive volume. In either case, it may be useful to examine partition settings and write this down for later reference if needed. You may do this by using the FDISK command. You must exercise caution when running FDISK! All you want to do at this point is examine settings, NOT change any. After typing the FDISK command, you are presented a list of options. Choose option 4, display partition information. If you have more than one physical hard disk in your computer, you will also have a fifth option that allows you to select the hard disk for which you wish to examine partition information. You should do this for each hard disk available.

3. A Backup to your Backup

When creating the full recovery backup, NovaBOOT sets your system to disable long filenames. Immediately after the backup has completed, NovaBOOT returns your system to long filename usage as normal. However, if power were to go out during the backup, or some other event occurred preventing NovaBOOT to reset long filename usage, it may be difficult (if not impossible) to recover long filename information.

Therefore, the best policy for fool-proof data recovery is to do a full backup of your system IN ADDITION to creating your NovaBOOT recovery backup. This is consistent with normal backup methods anyway. Typical backups involve doing a full backup on a regular basis (for example, weekly), and incremental backups (backing up only files that have changed) more frequently. Whatever method you choose, it may be wise to have a regular full backup on hand in addition to the NovaBOOT recovery backup. This will give you the option of reinstalling Windows 95/98, reinstalling NovaBACKUP for Windows 95/98, then performing a restore using NovaBACKUP for Windows 95/98 with Windows 95/98 fully operational to begin with.

Procedure 1

You can make your NovaBOOT boot diskette by starting NovaBOOT, then selecting the Make Boot Diskette option. You must complete this procedure before making the NovaBOOT recovery backup. You should also repeat this procedure if you have made any changes to your hardware, particularly if related to your backup device.

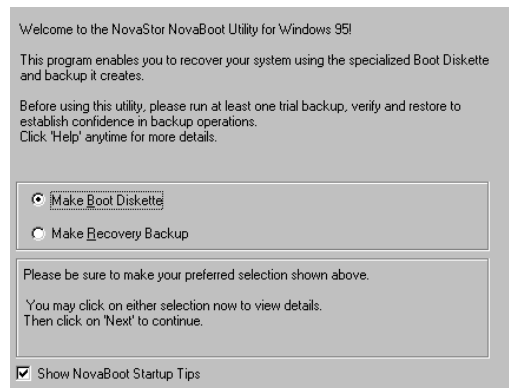


Fig. 59 – NovaBOOT Welcome

CHAPTER 9 - NOVABOOT

NovaBOOT's procedure for making the boot diskette:

1. Get ASPI device driver (SCSI backup devices only).
2. Conditionally prompt for the desired backup device to use.

NovaBACK

Tape: Present a list of all logical tape drives **if more than one** has been configured. By default, the currently active tape drive is selected for you, but you may change that selection if you wish.

NovaDISK

Logical Device: Present a list of **possible** devices to use for backup including floppy disk, hard disk, and other vendor specific logical devices.

3. Format diskette in drive A:, make it bootable, copy files.

You need to provide this diskette (high density, not write protected) and you must be sure that it is acceptable to lose any data which may currently exist on it. This is important because when the disk is formatted, all previous data on the disk is destroyed. A warning to that effect will appear prior to the actual format taking place. After this is done, NovaBOOT copies all files to the diskette which are needed to carry out the NovaBOOT functions when booting from that diskette.

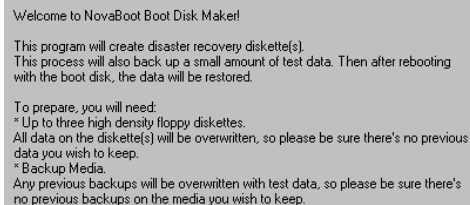


Fig. 60 – Disk Maker

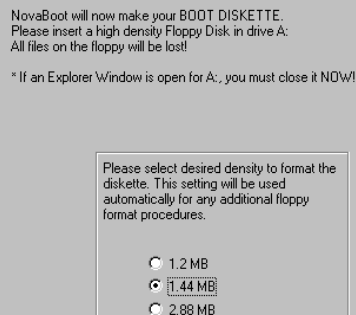


Fig. 61 – Boot Diskette

4. Create test data on disk and back it up.

The \~TMP~TST directory is created, then all files from the Windows Command directory are copied there. The purpose is simply to provide a small source of test data to use for backup tests. The backup begins, then runs a verify after the backup has completed. This ensures that the backup matches the data on disk.

5. Reboot the system from the new NovaBOOT boot diskette.

This is to confirm the ability to restore data to disk from the backup after booting from the NovaBOOT disk. Although you are given the option NOT to reboot at this time, you should allow this to complete at least once. Once you have booted from the NovaBOOT disk, your system is automatically checked and the RUNTAPE or RUNMEDIA command is created for you. This command will restore the backed up data to the test directory created in step 4.

6. Reboot the hard disk, check the restored data.

After booting from floppy and restoring the test data, start up as usual from hard disk. Prior to displaying desktop icons, a data verification process automatically begins. This is a comparison of the test data to the original data from which it was copied. This eliminates any question of the integrity of the data restored.

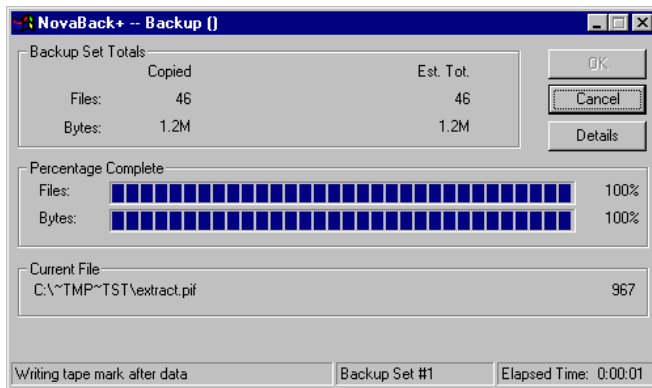


Fig. 62 – Test Backup

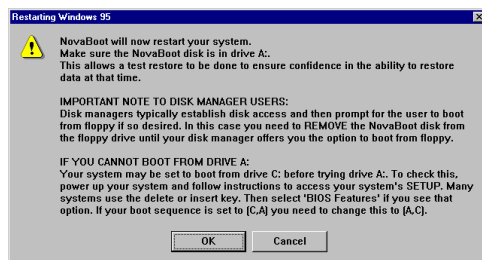


Fig. 63 – System Restart

Procedure 2

You can make your NovaBOOT recovery backup by starting NovaBOOT, then selecting the Make Recovery Backup option. You should only do this if you have already made the NovaBOOT boot diskette. This diskette must be available for NovaBOOT to modify during the course of making the recovery backup. You do not have to make a new NovaBOOT boot diskette prior to each time you make your recovery backup. However, you should remake your NovaBOOT boot diskette if you have made any changes to your hardware, particularly if related to your backup device.

NovaBOOT's procedure for making the recovery backup:

- 1. Present a list of all local hard disks to the user.

By default, the entire list is selected for backup, but you may deselect any drive in the list by clicking on its entry.
- 2. Conditionally prompt for the desired backup device to use.

Tape (NovaBACK): Present a list of all logical tape drives **if more than one** has been configured. By default, the current active tape drive is selected for you, but you may change that selection if you wish.

Logical Device (NovaDISK): You may not select a different logical device for backup than that used when you made the boot diskette.

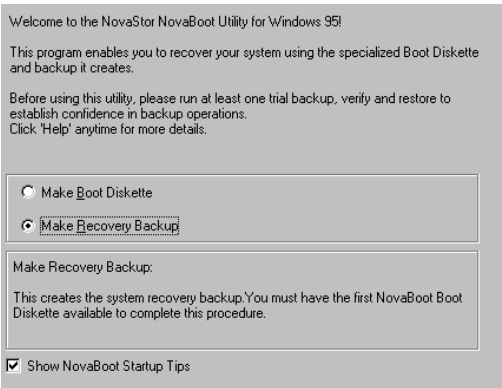


Fig. 64 – Recovery Backup

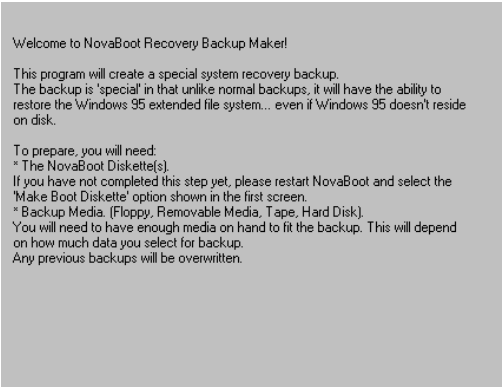


Fig. 65 – Recovery Backup List

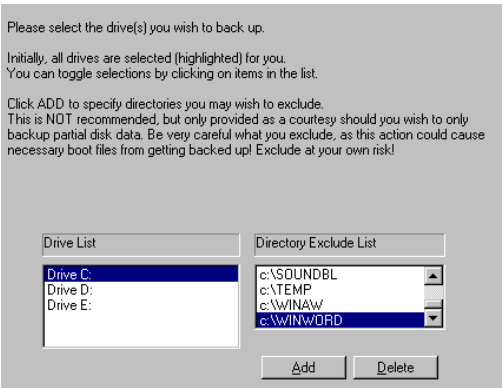


Fig. 66 – Select Drive List

NOVABACKUP® BACKUP & RESTORE

3. Modify the NovaBOOT boot diskette.

This allows the boot diskette to get information about your selections in step 1 and 2.

Booting from the NovaBOOT Diskette

When booting from the NovaBOOT diskette,

1. The DOS operating system loads.
2. If using a SCSI backup device, the appropriate DOS ASPI driver will load.
3. If using a QIC tape drive (NovaBACK users), the appropriate settings are set in the environment table.
4. A message appears on screen announcing that an analysis of your hard drive(s) will begin, and that you may press CTL-BREAK to avoid doing this.

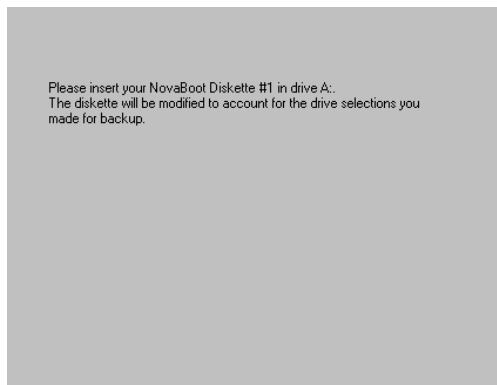


Fig. 67 - Modify the NovaBOOT boot diskette

This final step actually runs the PREP_RST command, which is the final command run from your autoexec.bat file.

If using a logical backup device, the PREP_RST process will prompt you to insert the appropriate driver disk necessary to set up and recognize your backup device so that it is ready to restore data. A message is then posted on screen indicating success or any problems that may have occurred.

What PREP_RST actually does:

PREP_RST also examines disks to be restored from the backup to be sure that they are recognized and ready to receive data. It knows what drives to check because when the NovaBOOT disk was written, it specified this information to PREP_RST in the form of command line arguments. PREP_RST posts a report of its findings on screen showing the condition of your hard disk(s). That is, if the disk(s) are ready to receive the data to be restored from the backup.

IF ANY DRIVE IS NOT RECOGNIZED:

In this case, the screen reports the drive name. NovaBOOT takes no further action, because the hard disk is unavailable to restore data from the backup.

IF ALL DRIVES ARE READY TO RECEIVE DATA:

1. A directory is created on hard disk and all files from floppy are copied there.
2. A RUNTAPE or RUNMEDIA command is created and written to the root directory on hard disk.
3. A message appears prompting you to run the RUNTAPE or RUNMEDIA command.

CHAPTER 9 - NOVABOOT

4. After running the RUNTAPE or RUNMEDIA command, the temporary directory on hard disk is removed, then a message appears on screen prompting you to remove the NovaBOOT diskette from drive A: and to restart your computer.

PREP_RST.EXE parameters:

Note that NovaBOOT automatically sets this up. However, you may want to know how it works. You may actually type PREP_RST with no other information on the command line to obtain extended syntax information including several examples of its use.

RUNTAPE.BAT or RUNMEDIA.BAT contents:

1. Change to temporary directory.
2. Run the restore command.
3. Change to the root directory.
4. Remove the temporary directory on hard disk and all its files.

[RESTORE] command syntax:

The [RESTORE] command can actually be one of three possible commands, depending on whether you are using NovaBACK or NovaDISK and whether have a SCSI device or not. The possible [RESTORE] commands are:

RSTE - NovaBACK (SCSI tape)

QRSTE - NovaBACK (QIC tape)

QRUNE QRSTE - NovaDISK (Logical Device)

[RESTORE]{options} [drive_volumes]

where:

drive_volumes = the hard drive list to restore.

options:

s = restore all subdirectories

d = restore all files set to read-only status

h = restore all files set to hidden status

y = restore all files set to system status

i = (name) where name = specific tape drive name to use, if any is given

Note that restored data can be redirected. For example, data backed up from drive C: can be restored to drive D:. A forward slash symbol is used for this.

For example, if you originally backed up drive volumes C: D: and E:, and you wished to restore all data, except put the data that was backed up from E: on to drive F:, you would use these parameters for the restore command:

RSTC or QRSTE {sdhy} C: D: E:/F:

NOVABACKUP® BACKUP & RESTORE

Note that the redirection ability plays a key role in restoring data backed up from compressed hard disks. For more detail, please see the following on Disk Compression.

Disk Compression

NovaBOOT automatically supports disks that are compressed. There is no special handling required of the user. However, it may be of interest how this is basically done.

When a disk is compressed, another drive letter for it appears, which is known as the host drive. For example, if you compress drive C:, you may find that there now exists a host drive H: upon which drive C: is dependent. When running NovaBOOT to make the recovery backup, the user is shown a list of drives to back up. If a drive is compressed, a single entry in the list is shown for that drive indicating both the user drive letter (such as C:) and its associated host drive letter (such as H:). Actually, the drive you think of as C: is really one huge file, and C: files are actually read or written by accessing this huge file. What USED TO BE drive C: is now drive H:, which contains this huge file and all support files needed to properly set up and maintain disk compression. So, using the drive letter examples above, NovaBOOT does NOT backup C: at all, but it backs up H: instead.

After booting from the NovaBOOT diskette, drive H: is typically still available, so the data may simply be restored to recover the compressed drive. But what if drive H: does not exist? No problem for NovaBOOT because it knows since the host drive is unavailable that the data may be restored to the original physical disk (which by definition is then uncompressed, since the host drive does not exist!). So in that case, data backed up from drive H: is restored to drive C:. However, prior to doing this NovaBOOT will ask your permission to remove all files from drive C: first, so that it can put back an exact copy and be sure to have enough space on the disk to do so.

Please note that the C: and H: pairs are only used for illustration in this example. If you use disk compression, these letters may be different. Also, NovaBOOT can handle several compressed hard drives, so you are not restricted by the number of compressed drives or any combination of compressed and non-compressed hard drives.

Different Backup Device Types

Backup devices come in the form of internal or external types. Internal devices are attached directly into your computer. Attached cables are usually hidden from view since all connections exist inside the computer. External devices sit on the desk next to your computer. These are connected using a cable running from the device to a plug accessible from the outside of your computer.

NovaBOOT classifies a device in two main areas:

1. **SCSI or non-SCSI Devices**

SCSI (small computer system interface) devices require that you connect them to a SCSI controller, also known as a SCSI host adapter. Such controllers are usually installed inside your computer, allowing you to connect to them inside the computer case (for internal device connection) or through a plug accessible from the outside of your computer case (for external devices). You may possibly use a parallel to SCSI interface. This means that your SCSI controller actually connects to your parallel (printer) connector on your computer.

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However it still electronically communicates to your backup device using the SCSI protocol, and therefore should still be thought of as a SCSI interface.

SCSI devices require that you have a DOS ASPI device driver for your particular SCSI host adapter. Therefore, when running NovaBOOT for a SCSI backup device, you will be required to select (if automatically detected in config.sys) the appropriate device driver, OR will need to specify the full path and filename for the driver. This is simply the nature of operating SCSI backup devices under a DOS environment, which by definition is necessary when booting from the NovaBOOT diskette.

Non-SCSI devices do not require this special device driver.

2. Tape (NovaBACK) or Logical (NovaDISK) Devices

The **NovaBACK** program uses tape devices for backup. If you are using NovaBACK then your tape device falls into one of two general categories, QIC or SCSI. Some users may be unsure whether they have a QIC tape drive or a SCSI tape drive.

- QIC (quarter inch cartridge) drives are tape drives which are controlled by a floppy disk controller. This includes drives known as QIC80, 3010, 3020 and most Travan drives. There are also types that physically connect to your parallel port, but are still controlled with the aid of a floppy to parallel interface inside the tape enclosure. The tape used can identify many of these drives - it fits in the palm of your hand and has a metal back plate. However there are a few exceptions where this same tape is used but actually has a SCSI controller, in which case the drive should be considered a SCSI drive.
- SCSI (small computer system interface) drives are tape drives which are controlled by a SCSI controller, also known as a SCSI host adapter. There is a wide variety of media for these, including 4mm DAT, 8mm EXABYTE, larger quarter inch cartridges, reel to reel and others.

You may refer to documentation accompanying your tape drive if you are not able to tell. However, there is little concern from a user stand point on which is used. In fact NovaBOOT works identically on QIC and SCSI tape drives, with the exception that SCSI devices require the use of a special device driver as mentioned in Different Backup Device Types.

QIC tape drive users have no concern about device drivers at all. NovaBOOT automatically provides the appropriate device support directly. Therefore, when running NovaBOOT, no device driver selection screen is given for QIC tape drive users.

The NovaDISK program uses logical devices for backup. A logical device means that you can use the device like any disk drive. For example, you may refer to it by a letter, such as drive C:. The term logical just implies the simplicity of hiding the wide variety of technical and physical differences for you so that you may simply refer to it by a letter reference.

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Logical devices fall into two main categories, depending on the type of disk used:

- Removable Media

This means you can actually remove the disk from the device and insert others. For example, your floppy disk drive is a removable media device.

- Non-Removable Media

This means you cannot actually remove the disk from the device. The disk is permanently installed inside the device. For example, your hard disk drive is a non-removable media device. These devices are sometimes also referred to as fixed disk devices, which is not to imply that the disks were recently repaired.

Logical devices typically come in SCSI or Parallel varieties.

If SCSI, then the comments regarding SCSI devices (above) apply.

If Parallel, then the unit attaches to your parallel (printer) connector on your computer.

Whether SCSI or parallel, however, you will need a special DOS device driver which comes with your backup device in order for NovaBOOT to recognize the device after having booted from the NovaBOOT Diskette. These materials are mentioned at the time you select the device you wish to use and no special preparations are required on your part. You only need to be certain that you in fact have a DOS install disk for your device.

NovaBOOT will prompt for this disk when needed and perform all details needed to set up and recognize the backup device automatically.

Booting Multiple Operating Systems

NovaBOOT does not provide the ability to save and recover boot managers or multiple operating system bootup services. There are many variations in multi-OS bootup techniques, so specific advice cannot be given. However, it may help you to understand the NovaBOOT requirement. Simply stated, the hard disk volumes which are backed up (when creating the NovaBOOT recovery backup) must be visible after booting from the NovaBOOT diskette. For example, the C: drive that was visible during backup must appear as drive C: when attempting to restore data from the backup.

These observations and recommendations are offered:

1. A fast diagnostic test.

Simply create a bootable floppy. You can do this in Windows 95/98 or you may access the DOS screen and use the command, SYS A:, with a floppy disk in drive A:. Or you may use the FORMAT A: /S command. Observe a few of the directories on EACH hard drive volume you may wish to backup. Then boot from the floppy disk you just made bootable. After booting, can you still see those directories? Note that directories with long names will appear different. This is normal, since you have booted from floppy and by definition cannot view your file system in long filename form.

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2. The Windows 95/98 or Windows NT multiple OS boot manager.
Windows 95/98 and Windows NT can set up your system so that you are presented a list of bootup choices. This situation is generally compatible with NovaBOOT. Note however that if you format your C: drive you will lose the NT boot manager facility.
3. Third party boot managers and the OS/2 boot manager.
There are several variations where, depending on how you use these, you may or may not be able to see the hard disk volumes NovaBOOT expects to see when restoring data from the backup. In some cases, you will have drive letters actually representing different physical hard drives after booting from floppy than after booting from hard disk! This can be managed by NovaBACKUP's redirection operator. For example, if you find that data backed up as drive C: becomes visible as drive D: after booting from floppy, then you may edit the RUNTAPE.BAT or RUNMEDIA.BAT command to redirect data backed up as drive C: data to be restored to drive D:.

Utilities Included on the NovaBOOT Diskette

You can do more than just restore the backup data when you have booted your system with the NovaBOOT diskette. These additional operations are available:

1. NOVABOOT /H or BOOTHELP - To view this text pertaining to utility programs.
2. FDISK - In very rare instances it may be necessary to repartition your hard disk. That is, there must exist a drive C: in order to restore data to that drive! Therefore it would be wise to run FDISK and write down your current settings (partition sizes, etc.) in the event you need to restructure your disk.
3. FORMAT - This is usually only necessary if you had to run FDISK. In the example of formatting drive C:, use the FORMAT C: /S command. The /S parameter is only needed if you are formatting drive C:. You may safely omit the /S parameter for any other drive.
4. CHKDSK - To be sure a hard drive is healthy enough to retain restored data, the CHKDSK command can be of help. For example, to check drive C, use the 'CHKDSK C:' command.
5. SYS - This command will make your C: drive bootable. This may be necessary in the event that you have formatted drive C: and forgot to use the /S parameter. If when attempting to boot from hard disk you receive the message missing operating system, the SYS command can fix this.
6. DELPATH - This is used by NovaBOOT when removing it's temporary work directory. In some cases it may be used when host drives (related to compressed disks) are unavailable to receive backup data. If you wish, you can remove all files on a hard disk with one DELPATH command. To do so, use the command DELPATH drive:\ where drive: is the drive letter of the hard disk from which you wish to remove all files. One instance where you may wish to do this is if you know you have a lot of files on your hard disk that you do not want, and would like to remove all files prior to restoring data from the backup. Note that this can also be done using the FORMAT command as shown above. If you wished to

remove one directory structure and all its lower structure, DELPATH could be used for that, too. Example: if you wished ONLY to remove D:\OLD and all directories underneath it, you could use the command, DELPATH D:\OLD.

Problems and Solutions

1. Inability to access drive C: after booting from floppy.
In many cases, particularly with 1.2 GB hard disks, a disk manager is used, such as ONTRACK. Do not confuse this with the boot manager as discussed earlier in the topic, Booting Multiple Operating Systems. A disk manager helps manage large amounts of disk space and MUST be allowed to initialize BEFORE attempting to boot from floppy disk. There are messages in the NovaBOOT application to this effect. In this case, you need to wait until you see an on screen message offering you the option to boot from floppy. Then you may insert the floppy boot disk, and press the key indicated to boot from floppy (typically the spacebar).

Also, you may have lost your CMOS system settings. Details on this may be found in the section on Wise Precautions, [page 50](#).

Part II - NovaBOOT for Windows NT

Overview

The purpose of NovaBOOT is to facilitate a full system recovery in the event of a complete disaster. Such a disaster could occur as the result of a disk crash or corrupted files, causing the inability to reboot the computer system.

NovaBOOT can also be used to migrate entire hard drives from one physical drive to another while maintaining all the configuration settings.

NovaBOOT operates differently for Windows NT than it does for Windows 95/98. A reliable way to boot Windows NT from floppy diskettes is not yet available in Windows NT. Because of this limitation, NovaBOOT cannot restore a full system from a floppy-based boot-up procedure as it can for Windows 95/98. Thus, NovaBOOT utilizes other methods to help you recover from a full system disaster. NovaBOOT (by your direction) will create four sets of diskettes to cover the most common disasters.

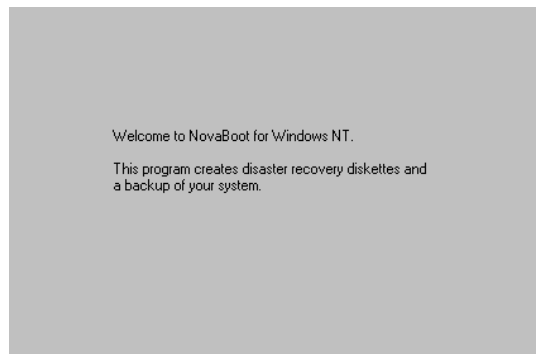


Fig. 68 – NovaBOOT Welcome

The steps to creating an NT NovaBOOT disaster recovery media set:

1. Make sure you are logged in as the Local System Administrator prior to starting NovaBOOT.
2. Create Single Boot Diskette (Requires one diskette).

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3. Create an Emergency Repair Diskette. (Requires one diskette).
4. Create Windows NT Startup Diskettes (Typically three diskettes).
5. Create NovaBOOT Restore Diskettes (Requires three diskettes).
6. Create NovaBOOT Backup (Requires appropriate backup media).

The steps to restoring a system with NovaBOOT are:

1. Boot up with NT Startup Diskettes.
2. Reinstall base NT system via Microsoft NT CD-ROM.
3. If you backed up the machine with any Service Pack installed, install the Service Pack again prior to doing the NovaBOOT restore.
4. Log in as LOCAL System Administrator.
5. Insert NovaBOOT Restore Diskette #1 and run NTDATA Utility, restoring your NovaBOOT Backup.
6. Reboot. Log in as Local Administrator. Restore the Registry a second time. Reboot again.

Single Boot Diskette

When you boot a Windows NT computer, there is an NT boot manager that comes up. If, for any reason, you can't boot the computer and get to this boot manager, simply boot from this diskette. The diskette can be used to bypass or fix the problem.

You can use this diskette to fix your boot manager should you become unable to boot your system from the hard drive. You only need to create this diskette once.

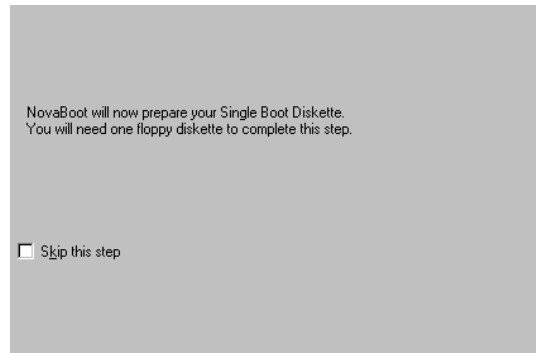


Fig. 69 – Single Boot Diskette

Emergency Repair Diskette

After the NT boot manager comes up, you can select to boot Windows NT, or whatever other operating system you may have installed. If you select to boot Windows NT, and for some reason, it doesn't boot, the Emergency Repair Diskette should be used.

This diskette contains the important information about your system. Should your system become completely un-bootable, you can use the ERD diskette, in conjunction with the NT boot manager, to re-build your system so it can boot.

This diskette can only be used if the hard drive is intact, meaning that NT is still on the hard drive, but for some reason it is not booting. The Emergency Repair Diskette will make all the necessary repairs to recover Windows NT. You will have to boot from the NT Setup Diskette, which is created in the 3rd step, to be able to access the Emergency Repair Utility function.

This diskette should be updated on a fairly frequent basis - anytime there is a hardware or setup change.

NT Setup Diskettes

These diskettes allow you the ability to re-install your NT system should a complete system disaster occur (such as corrupted partition, etc). If this should happen, use these diskettes to install a basic NT system to the hard drive and utilize the next set of disks to recover your system. You only need to re-build these diskettes when you update your version of Windows NT.

If the 2nd step above doesn't help "fix" the problem, then simply boot from this diskette, and have your Windows NT CD-ROM ready to re-install Windows NT.

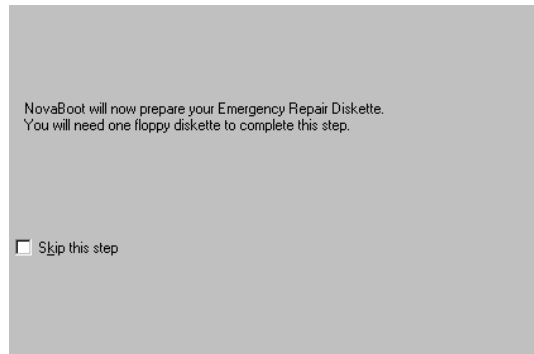


Fig. 70 – Emergency Repair Diskette

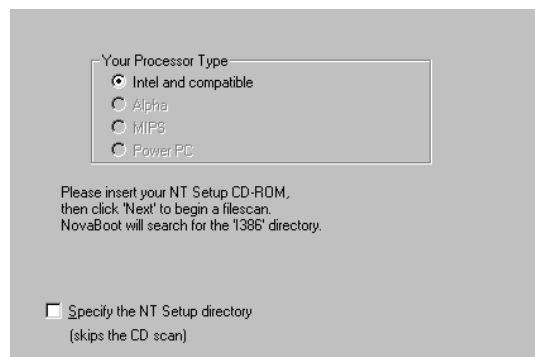


Fig. 71 – Select CPU Type

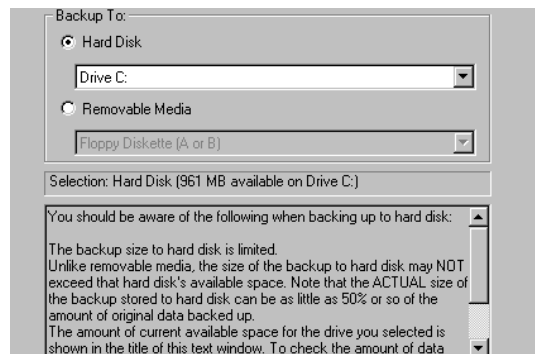


Fig. 72 – Local Device List

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This diskette would also be used to boot from if you had a total hard disk failure. You have to boot from this diskette, re-install Windows NT, re-install the proper service pack, and then use the Restore diskettes that are created in the next step to start your restore.

Before preparation for backup, NovaBOOT asks you to confirm CPU type and to insert your NT CD-ROM.

When all the diskettes have been made, NovaBOOT will begin preparation for a backup. If you are running NovaBOOT for NovaDISK, NovaBOOT gives the user the option of backing up to a local or network device. If you are Running NovaBOOT for NovaBACK, you will be asked to choose the SCSI host adapter and/or the tape drive to backup to.

If you choose to use a local device such as your hard drive, you will see the local device options screen.

If you select the "Backup to a Network Device" option then you will see the "Backup to a Network Device" options screen that allows you to select a network device for backup storage.

NovaBOOT gives the user the option of backing up only specific drives and the ability to exclude files that you do not want to backup. One way to save time on a NovaBOOT backup is to exclude directories that are not system critical, which you can then restore by a normal backup. However, you should be very careful, and you should understand which directories are truly required. Never exclude the root directory, windows and directories under windows (eg. /WINNT and /WINNT/SYSTEM32/), subdirectories with system drivers, or the NovaBACK/NovaDISK subdirectories.

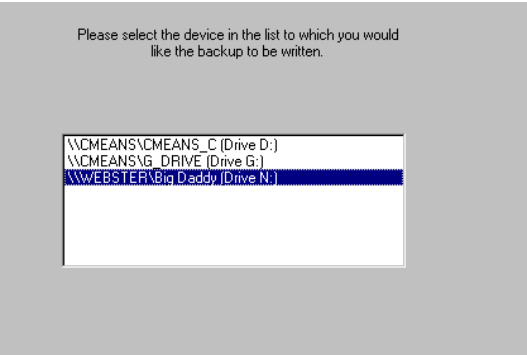


Fig. 73 – Network Device List

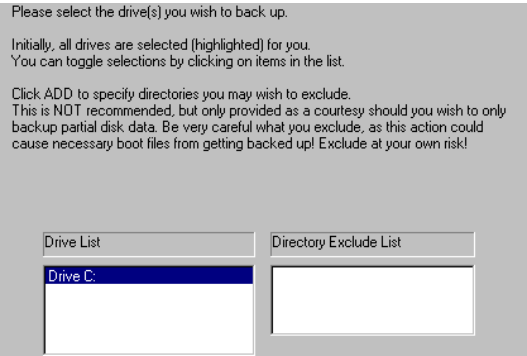


Fig. 74 – Select Files for Backup

Restore Diskettes

After you have chosen the file parameters of your backup, NovaBOOT will then prepare your Restore Diskettes.

In this step, NovaBOOT creates special 'restore' diskettes. These diskettes are made so that you can restore the data using one simple command, called: NTDATA. What you will need to do is have Windows NT base installed (i.e., re-install Windows NT and any Service Packs that were previously installed) then run the NTDATA utility from the diskette that is created in this step. Please note that you must be able to start NT from hard disk in order to run this data recovery procedure.

These diskettes contain the necessary programs to restore your system after a complete system disaster. You would insert your disaster recovery backup set in the necessary location and run the NTDATA program from the first diskette to start the system recovery process. You only need to re-build these diskettes when your system hardware changes.

You do not have to re-make all these diskettes on a daily basis. NovaStor HIGHLY recommends that the 4th set of diskettes, Make Backup and Diskettes for Restore, be performed to ensure a complete recovery of the system in case of hard disk failure.

In the effort to conserve space used by the backup, NovaBOOT offers the user data compression.

In addition to data compression, NovaBOOT also offers the user the ability to exclude any files that fail an included virus scan.

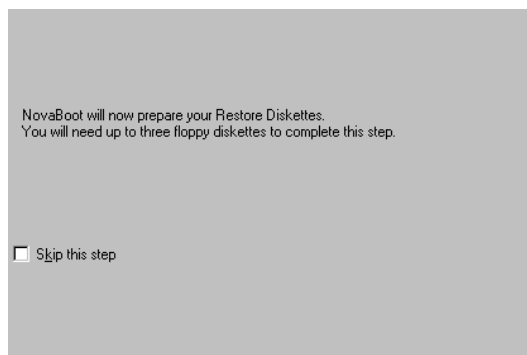


Fig. 75 – Restore Diskettes

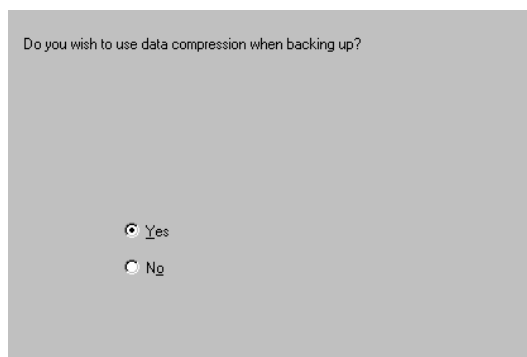


Fig. 76 – Data Compression

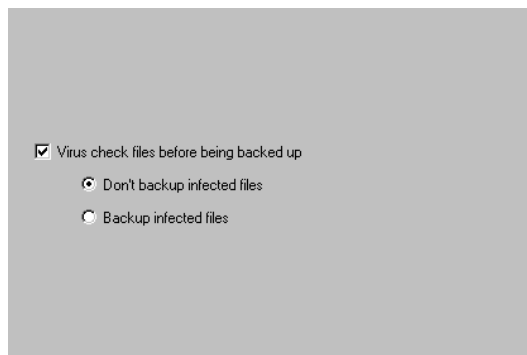


Fig. 77 – Virus Scan

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Restoring an NT System with NovaBOOT

In essence, here is what you should ensure you are doing when you are rebuilding an NT machine with our product:

1. Install Windows NT and any Service Packs you had previously installed on your system. It is important to note you must install the Service Packs that were installed at the time the backup was made prior to performing the full system restore. See the section entitled 'Installing Service Packs,' below.
2. After the full system restore, you must perform a registry restore after the reboot. You can do this by enabling RESTORE REGISTRY in OPTIONS-RESTORE and then choosing any single file on the drive to restore. See the section entitled 'Full Registry Restore.'
3. You must be logged in as the LOCAL MACHINE ADMINISTRATOR. See the section entitled 'The LOCAL MACHINE ADMINISTRATOR Explained.'

No one of the above is more important than the other. If you expect a full and reliable system restore, you absolutely **MUST** do all three things.

Listed below are some things that **MUST** be taken into consideration if you are to have complete success in rebuilding your NT system.

Installing Service Packs:

You have backed up your system and the system had a Service Pack installed. Your system dies. You, of course, need to build a bare NT system to perform the NT rebuild. In this case, you absolutely **MUST** also install the Service Packs again before you can perform the system restore (NovaBOOT). If you do not do this, the system gives you a "blue screen of death" upon reboot.

Full Registry Restore/User desktop settings:

When you perform a full system restore, after doing the "bare bones" rebuild stuff, you notice that such things as the desktop colors, schemes, sounds, etc. are not put back to normal (i.e. what was backed up) after the reboot. This is due to NT's unique way of handling the registry. To solve this, you must restore the registry again and restart the system. The settings will then come back. So, in summary, when you build a bare NT system for total system recovery, the registry needs to be restored **TWICE** in order for all settings to come back.

Full Registry Restore/User file and directory permissions:

Some of you may notice in a system rebuild process (bare system + NovaBOOT + 2nd registry restore) that the user file and directory permissions did not come back (those of you familiar with Novell can think of this as the "trustee" settings). The reason for this is because you did not have the proper permissions when you logged in to restore this information. Logging in as 'Administrator' is not enough to have the proper permissions to enable the recovery of these file and directory permissions. In order to restore user file and directory permissions, you must be logged in as the "LOCAL MACHINE ADMINISTRATOR".

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The "LOCAL MACHINE ADMINISTRATOR" Explained:

Computer "SERVER" is setup as the PDC (Primary Domain Controller) with domain named "DOMAIN". You now setup an NT workstation and or server machine called "MACHINE2" and have it configured to partake in domain security with "DOMAIN". "MACHINE2" now technically has TWO domains, a "DOMAIN" domain and a "MACHINE2" domain. You can see this when you go to login. The DOMAIN field has a pull down menu where you can see both of these. In order for you to restore any local machine file and directory user permission settings, you **MUST** login as "Administrator" for the "MACHINE2" domain. If you login as you are used to (the "DOMAIN" domain), you will be unable to restore user file and directory permissions.

The exception here is if the machine in question you are rebuilding is the PDC. In this case the LOCAL machine administrator and the DOMAIN administrator are one and the same, thus, it doesn't matter.

Of course, the process to restore the file and directory permissions is to restore the registry. You cannot restore/backup this information on a file-by-file and/or directory-by-directory basis.

Restoring the Registry and You

You will notice that if you attempt to restore your registry that NovaBOOT will warn you numerous times. This is because should ANYTHING go wrong during the registry restore, your system will be corrupted and potentially un-bootable. Certain precautions should be followed when restoring your registry:

Windows NT: Ensure any and all programs are stopped. Stop as many services as possible, especially server services such as SQL, RAS, DNS, WINS, TCP/IP, etc. You do not want anyone logging onto the machine in question while the registry restore is in process.

Don't be afraid to restore your registry, just be aware of the potential dangers. Of course, you will want a current NovaBOOT Disaster Recovery backup handy just in case things go wrong.

After the full system restore, you must perform a registry restore after the reboot. You can do this by enabling RESTORE REGISTRY in OPTIONS-RESTORE and then choosing any single file on the drive to restore.

To restore the NT Registry, you **MUST** be logged in as the LOCAL MACHINE ADMINISTRATOR.

No one of the above is more important than the other. If you expect a full and reliable system restore, you absolutely **MUST** do take all these steps.

Questions & Answers

Q: If my hard drive crashes, to the point I have to replace it or format, do I have to re-install NT before I can use NovaBOOT?

A: Yes. It doesn't matter whether you are using an NTFS or a FAT file system for your NT machine, a basic/minimal re-install of NT is required to be able to do the restore. NovaBOOT is dealing with

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the operating system, not the file structure. You can't simply boot from floppies and start the restore from tape. Research and development has not yet developed a reliable way to boot NT from floppies.

Q: What about my Registry & Security files for Windows NT, can you restore them from NovaBOOT?

A: Absolutely. When you perform a NovaBOOT restore, or a "normal" restore via NovaBACKUP / NovaBOOT, they are allowed to restore the Registry. This is true even if Windows NT is running. A couple of precautions: When a restore is being performed and the registry is going to be restored, make sure that no users are logged in, make sure all services are stopped, and no applications other than NovaBACKUP / NovaBOOT are running to prevent corruption of the registry.

Q: Will NovaBOOT back up and restore NT Security Settings?

A: Depending on your system configuration, you can have special security configurations for files, drives and/or subdirectories. NovaBACKUP and NovaBOOT have full support for this information. This data is backed up each time you backup your NT registry. Please note that this information will ONLY be restored if you restore your NT registry, it is not stored on a file-by-file basis due to potential security issues. Please see the section "RESTORING THE REGISTRY AND YOU" on [page 67](#) before attempting a registry restore.

Appendix A

Technical Tips - Troubleshooting

INSTALLATION

Problem - You can't see the current file name during installation. There is a black box on your screen where the current file name should be.

Solution - There is nothing to fix here. A cosmetic conflict with your current video driver could black out the file name window, but it does not affect the actual transfer of files. You can continue installation, or try a different video driver.

INSTALLATION - TAPE SETUP

Problem - Error comes back, Unable to locate tape drive, or Tape drive not found.

Solution - There are a variety of potential conflicts that happen in the setup of a tape drive. Here are a few suggestions for the most common problems with this type of error.

A. Bad cables, no power.

Often it is as simple as the cables not being fully connected to the tape drive or host adapter card, or the power cable was not connected. Check the connections to make sure they are all tight and secure, and that the drive is getting power.

The cables themselves may be a problem. A kink could kill a previously good cable, or it may short pins on the connector. Try a different, shorter cable, (sometimes length can be a problem; 1 foot is a good test length), and try it also with any B: drive unplugged if it is in the cable train.

B. The tape drive is busy during the attempt to sense it.

If the tape drive is busy, it may have not been able to respond to the command sent to it.

C. QIC only - The tape drive's drive select jumper is not set correctly.

Most tape drives come with a drive selector switch or jumper set. Typically you can set these for DS-0, DS-1, DS-2, and DS-3, and Auto (sometimes called Phantom). DS-0 and DS-1 are normally set for the Drive A: and Drive B: The best setting to have the tape drive at is Auto. This is not an intermittent problem. If this jumper is set wrong, you will not be able to see the tape drive at all.

APPENDIX A - TECHNICAL TIPS & TROUBLESHOOTING

D. SCSI only - The SCSI ID is improperly set.

As a general rule, stay away from SCSI ID 0, 1, or 7 for a tape drive. In the event of a problem, you should change the SCSI ID if it is set to 0, 1, or 7 . . . even if it was working before! Why? These SCSI IDs are reserved. SCSI IDs 0 and 1 are usually hard disks, and 7 is the ID of the host adapter. Generally SCSI IDs 5 and 6 are safe for tape drives. Be sure to choose an ID that is NOT being used by another device.

E. SCSI only - The SCSI chain is improperly terminated.

Proper SCSI termination can be tricky. Do not confuse termination with term power. This is a step that shouldn't be skipped. . . even if everything was working fine earlier. Termination is the installation of resistor packs, external plugs, or DIP switches on SCSI devices and host adapters that eliminate bus impedance mismatches and improve data transmission reliability. Most host adapter cards are terminated with 3 resistor packs, which measure about 1 1/4 inches long, 3/8 inch high, and 1/8 inch thick. These are inserted directly into the printed circuit card. Internal SCSI devices usually have terminating resistors installed in them when shipped. External SCSI devices are generally shipped without terminating resistors.

So what does all this mean? Proper termination means that only two devices on the SCSI chain are terminated, the first device on the bus and the last one. The host adapter is considered to be located in between any internal and external devices.

Note: External SCSI drives are just internal drives that are installed into a chassis (case). If the drive is removed from the case, you can look at the termination on it. Whoever assembled the case should have removed the termination from the internal drive. It's common to see situations where this doesn't happen, and it is a good idea to check the internal termination on external drives whenever problems occur.

Example A: You have a single SCSI card and an internal tape drive (and no other SCSI devices attached to the card). Both of them should be terminated (remember that SCSI cards are also SCSI devices; hence the name host adapter).

Example B: You have an internal SCSI card, internal SCSI hard drive, internal SCSI tape drive, and internal SCSI CD-ROM drive. The termination must be removed from two of these devices. Which ones?

You must remove the terminators from the devices in the middle of the chain. Look at the SCSI ribbon cable in the computer. The ribbon comes off the controller and goes to the first device in the SCSI chain, (i.e., hard drive), then to the next device on the chain (tape drive) and finally to the last device in the chain (CD-ROM). In this example, the hard drive and tape drive are in the middle of the chain, so they need to have their termination removed.

Example C: You have an internal SCSI card, internal SCSI hard drive and external SCSI tape drive. Remove termination from the middle device on the chain, which in this case is the SCSI card. Whenever you have both internal and external devices attached to your SCSI card, you always remove the termination from the SCSI card and then follow examples A and B.

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We stated earlier that external tape drives usually do not have termination. In the above example C, we need to add termination to the external tape drive. This can be done two ways. One is to take the internal drive out of the case and plug terminators into the circuit board (not recommended). The other way is to plug in an external terminator on the back of the case. Most external cases have two SCSI connectors in the back. One of the connectors has a cable going to the host adapter, and the other one should have a terminator attached to it. If you have a SCSI device that only has one connector on the back, use a *pass-through* terminator. This is a special looking terminator that sandwiches itself between the SCSI drive and the SCSI cable.

F. QIC & Windows 95/98 only - Another 386 VXD (Virtual Device Driver) is using the tape drive.

If you have changed programs or run other programs with the tape drive, you may have a conflict between this program and the others device drivers. It is a good idea to check the SYSTEM.INI file, especially the [386 Enh] section, for conflicting drivers (see also part G and H). Also, try uninstalling any other programs that may have been used with the tape drive.

G. QIC & Windows 3.xx only - [NovaBACK] section in SYSTEM.INI is missing or mis-configured.

NovaBACK puts a section in the SYSTEM.INI with important setup parameters. Check to make sure it is there, and/or re-run Tape Setup to configure the parameters in that section.

H. QIC & Windows 3.xx only - NovaBACK's device driver in the [386 Enh] section of SYSTEM.INI is missing or mis-configured.

NovaBACK puts the following line in the [386 Enh] section of the SYSTEM.INI file:
DEVICE=Novastor.386

If this line isn't there, put it in or run Tape Setup again.

I. There is a conflict with the host adapter, or the host adapter is mis-configured.

This is one of the most common problems with hardware setup. The problems that arise from mis-configured cards can be intermittent or totally disabling. The most important settings to look for conflicts are I/O Port Address, IRQ setting, and the DMA setting. If it is a SCSI drive, it is also important to check SCSI IDs. See section D on SCSI IDs for more information on that.

J. QIC only - The software and the tape drive's DMA settings are different.

When a QIC tape drive is auto configured, the software must guess at the DMA setting. While the guess is usually correct, it is not always. The setting should be checked with the drive settings. The tape drive is usually configured with jumpers, and the software is configured through Tape Setup.

K. SCSI & Windows 95/98 Only - Other things to try

Ensure you are NOT loading any DOS-based drivers for your SCSI host adapter via the CONFIG.SYS. Check to see that Windows 95/98 can identify your tape drive (under "Other Devices") and host adapter via the control panel without any errors. We highly suggest

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downloading/installing any ASPI upgrade as well as the most current drivers from the host adapter manufacturer.

Ensure the System Agent (SAGE, or Scheduler) is disabled/suspended at the time of backup. If SAGE starts a Defrag or Scandisk at the time of the backup or verify, it will severely impede the operation of NovaBACK and may even cause it to stop functioning.

For testing purposes, you may wish to disable all background programs running at the time of the backup. To do this in Windows 95/98, press CTRL-ALT-DEL. This brings up the task bar with all the running processes displayed. You will want to "End Task" every program on that list except "Explorer" and, if running, "NovaBACK". Run your backup again. This will tell you if a program running in the background is having a negative effect on the backup.

L. The tape drive is not supported.

Check with NovaStor to make sure that the software supports your tape drive. Check the NovaStor WWW location (<http://www.novastor.com/>) or call (805) 579-6700 for a list of supported drives.

TAPE BACKUP PERFORMANCE

Problem - The tape backup is slow.

Solution - There are a variety of things that can be done to improve poor performance of a tape backup. Here are a few suggestions for the most common problems.

A. The tape head is dirty.

Cleaning the tape head on a tape drive is a low priority for most people, but it is important for keeping the tape drive working and reliable. Try running a cleaning cartridge through the tape drive, or otherwise follow the manufacturer's recommendation for cleaning the tape drive.

B. The amount of free space on the hard drive is too small. (this problem is swap file related. Please see Windows or OS/2 operating system manuals for more information on swap file settings.)

NovaBACK likes to have at least a 10 megabyte swap file to work with, either temporary or permanent. Try re-setting the swap file size. If the recommended size is still too small, try freeing up hard drive space and/or defragmenting the hard drive before re-setting the swap file.

C. Amount of free space on the uncompressed portion of the hard drive is too small.

The swap file can only exist on an uncompressed drive. If the uncompressed portion of the hard drive is too small (the free space on that portion), you can have significant performance loss. See also part B.

D. Other programs are running and causing CPU drain.

With all the multi-tasking going on, each program must compete for CPU time and resources. Try quitting other applications when running NovaBACK.

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E. System CPU is too slow to stream the tape drive with compression enabled.

Adding compression to the data often can tax the main CPU processor, especially older model computers. Try running the program with compression disabled.

F. The tape drive repositions (shoe-shines) rather than streaming the data.

Streaming data means writing the data to tape without the tape drive having to constantly reposition itself. It is often better to stream the tape drive at lower data transfer rates than to shoe-shine at higher data rates. Try setting the data transfer speed to normal rather than high-speed (tape setup options).

G. There is too little RAM / System resources are low.

NovaBACK requires a minimum of 8MB of RAM and sufficient system resources to run efficiently (16MB of RAM for Windows NT). In Windows, you can check system resources from the Program Manager, under Help - About Program Manager. Try closing some applications and freeing some system resources.

READ AND WRITE ERRORS, CAN'T FORMAT TAPE

Problem - Can't read tape / Write errors (Unrecoverable read/write errors).

Solution - Usually problems of this type come from tape media errors. Here are some more hints that have not been previously covered in this appendix.

A. The tape life has expired / the tape is old / the tape is well used.

Try a fresh tape. Tapes have a limited life, related to age and usage. You can also try re-formatting the tape (for QIC drives, this could take up to 5 hours). Remember that all data on the tape will be lost when it is formatted.

B. The tape has been demagnetized.

Sometimes passing a tape by a magnetized surface such as a magnet or digitizer board can corrupt the data on the tape. Try a fresh tape or re-format. Remember that all data on the tape will be lost when it is formatted.

C. The tape is from a higher density drive.

Sometimes it is easy to get the wrong type of tape for the tape drive. A 3010 tape drive would not support a 3020 tape, for example. Make sure the tape is compatible with the drive.

D. The tape is write protected.

There is a tab on most tapes to write protect the tape drive. If you want to re-use the tape, you must move the tab so that it is not write protected.

APPENDIX A - TECHNICAL TIPS & TROUBLESHOOTING

E. Format tape problems - The tape has not been erased well (QIC drives).

This can be a problem with QIC tapes, and are usually the result of a poor bulk erase, or if the erase wasn't complete and data is still on the tape somewhere. Try erasing the tape again, or use a fresh tape.

GENERAL PROTECTION FAULTS, SYSTEM ERRORS

Problem - There is a hang up, General Protection Fault, or the system re-boots when started or NovaBACK/NovaDISK is run.

Solution - There are a few basic things to look for when there is system trouble. If the following suggestions do not solve your problem, see the following section on Troubleshooting your system, [page 75](#).

A. The FILES= statement in the CONFIG.SYS file is too small.

NovaBACK/NovaDISK needs at least FILES=45 in the CONFIG.SYS, and recommends FILES=85.

B. The System Resources are too low.

See Tape Backup Performance, section F, [page 73](#). Try closing other programs and freeing up system resources.

C. Windows 3.xx only - "MaxBPS=" should be set in the SYSTEM.INI file.

This statement comes into play when you have many programs open at once in your desktop while running NovaBACK. Try adding the line MaxBPS=768 in the [386 Enh] section of the SYSTEM.INI file. WARNING: Setting MaxBPS may cause difficulties with some third party memory managers such as QEMM or 386^Max. Check with the memory manager manufacturer.

D. Windows 3.xx only - The Memory Manager is mis-configured.

When adding statements to your CONFIG.SYS or AUTOEXEC.BAT files, it is always a good idea to re-run your memory manager program, such as QEMM or MEMMAKER. If using QEMM, make sure it is at least version 7.0. Sometimes it helps to exclude the memory range used by your video card (C000-C7FF).

E. Windows 3.xx or OS/2 only - The System needs to be setup differently.

See the information in Windows about troubleshooting by typing WIN /? in Windows 3.10 and 3.11. You can also try installing a clean version of Windows or OS/2 in an alternate directory, and run NovaBACK under that version to help pinpoint troubles with the current system setup.

**F. SCSI & Windows 3.xx only - The statement
DEVICE=<drive><directory>NASPIBUF.SYS /S5000
is missing from the CONFIG.SYS file.**

This statement must be in the CONFIG.SYS file UNLESS you have installed Adaptec's ASPI Manager for Windows through Adaptec's EZ-SCSI program. To see if you have the Adaptec

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Windows manager installed, check your WINDOWS\SYSTEM\ directory for a file called WINASPI.DLL. You need one or the other, but not both.

G. Windows 3.xx only - There are secondary buffers set in the CONFIG.SYS file.

Starting with DOS 6.0, a secondary buffer was added to the BUFFERS command by using a comma. Try eliminating the comma and the number after it.

Example:

OLD: BUFFERS=24,0

NEW: BUFFERS=24

H. SCSI & Windows 3.xx only - The ASPI driver is loaded into High Memory Area.

If the ASPI driver is loaded high in the CONFIG.SYS, try loading it into conventional memory.

Example:

OLD: DEVICEHIGH=ASPI4DOS.SYS

NEW: DEVICE=ASPI4DOS.SYS

I. Windows only - There is a line in the CONFIG.SYS file that reads

DEVICE=C:\WINDOWS\SMARTDRV.EXE /DOUBLE_BUFFER

This statement is for older disk drive software, and is not needed when using an ASPI manager. Delete this line from your CONFIG.SYS and reboot.

TROUBLESHOOTING YOUR SYSTEM

This is an outline of procedures to troubleshoot problems occurring with NovaBACKUP. It outlines the basics for troubleshooting system conflicts and resolving issues ranging from “No tape unit found” all the way to full system lockups. Of course success isn’t always guaranteed, but over 90% of non-instructional problems (user errors) can be solved by following the suggestions in the previous section and this guide. Use the previous sections as a starting point, then try these procedures, so you can eliminate the basic problems. This will also help determine if it is a hardware problem or system setup problem.

STEP 1 - Windows 3.xx only - Do a Vanilla Boot (Plain)

This is a great idea for distinguishing between driver conflicts and other problems. You want to boot the system into a plain environment where only the basic software is being loaded. REM (disable) everything from the CONFIG.SYS except for the following:

DEVICE=ASPI4DOS.SYS (or other ASPI driver - SCSI tape only)

DEVICE=HIMEM.SYS

DOS=HIGH

FILES=50

BUFFERS=24

APPENDIX A - TECHNICAL TIPS & TROUBLESHOOTING

DEVICE=NASPIBUF.SYS /S5000

Also, rename the AUTOEXEC.BAT to AUTOEXEC.BAX so the system doesn't run it when it boots. If this fixes the problem, add lines back into the CONFIG.SYS and AUTOEXEC.BAT one at a time so you can pinpoint which line is the troublemaker. If this step doesn't solve the problem, try step 2.

STEP 2 - Windows 3.xx only - Try a clean, new installation of Windows to a different drive or directory.

This is for distinguishing between hardware problems or software problems. A clean installation will setup new parameters for running the program, factory fresh. Then re-install the software under the new, clean setup. If this works, check the system settings in the new system against the settings in the old setup. Make any changes one at a time so that you can pinpoint any conflicts.

If this step doesn't solve the problem, there is probably some type of hardware problem or conflict.

So it's probably the hardware.

At this point, we can usually conclude that there is a hardware problem. Go over the suggestions throughout this appendix once again, as well as the following list of things to look for in the hardware setup:

- a. Make sure that the drive supports the tape being used. Some older QIC 80 format drives cannot support newer, longer tape formats such as 2120XL, etc.
- b. Try using a different tape.
- c. Try cleaning the tape drive with a cleaning cartridge.
- d. SCSI - Make sure the terminators are not plugged in backwards.
- e. SCSI - If an external device is the last device in the chain, make sure that it is turned on (in order for the terminators to be effective).
- f. SCSI - Try turning off sync negotiation on the SCSI host adapter card.
- g. SCSI - Try turning off parity on the SCSI host adapter card. (Be careful with this one, it can make things worse).
- h. SCSI - Try turning off disconnect on the SCSI host adapter card.
- i. SCSI - Try slowing down the transfer speed on the host adapter to the lowest setting.
- j. SCSI - Make sure only 1 device (including the adapter) is supplying termination power.
- k. Remove all but 1 device from the chain if possible.
- l. Minimize cable length.
- m. Verify that each SCSI or QIC device on the chain is set to a unique SCSI ID or Drive Select setting, respectively.
- n. Check with the manufacturer of the tape drive for current firmware.
- o. SCSI - Check with the manufacturer of the SCSI controller for current firmware and driver revisions.

When contacting Technical Support, please have the following information: Contents of the CONFIG.SYS, AUTOEXEC.BAT, the DOS/Windows or OS/2 Version, Tape Drive or Media Model and the Software's Serial Number.

Appendix B

Known Limitations to NovaBACKUP

LIMITATIONS

Every attempt has been made to deliver the finest backup software we can develop at the best prices, however, certain limitations exist in the NovaBACKUP software family. Notably, these limitations include:

- NovaBACKUP does not support Universal Naming Conventions for Windows (UNC) for tape backups. The ability to backup an alternate drive on the network requires a drive letter to be mapped to the shared resource (for example, mapping a network path like \\cmeans\c_drive to a drive letter such as F). For more information on mapping drives and sharing network resources, please see your Windows user guide.
- There is a single file limit of 4GB for backup to tape drives. This means any single file over 4GB in size will not get backed up properly to tape. If you need to back up files larger than 4GB, please see our NovaNet 7 products at <http://www.network-backup.com/>.
- There is no support for backing up open files (such as MS Exchange, SQL, etc...). If you need open file backup, please see our NovaNet 7 products at <http://www.network-backup.com/>.
- NovaBACK SCSI: Autoloader support is limited to sequential mode, always starting at tape #1. There is no Library support. (Library is defined here as a unit with 2 or more tape drives inside). If you need more comprehensive library and autoloader support, please see our NovaNet 7 products at <http://www.network-backup.com/>.
- File Permissions are not backed up or supported with NovaBACKUP products, with the exception being full NovaBOOT disaster recovery backups. If you need to backup and preserve file permissions and user rights, please see our NovaNet 7 products at <http://www.network-backup.com/>.

APPENDIX B - KNOWN LIMITATIONS

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