Restore Operations

This chapter provides information concerning the restoration of data from tape to backup server drives, network drives, and Arcada agent drives.

Overview

The Restore operation uses the Tapes icon found at the bottom of the Backup Exec main window. Each tape created during a backup session appears in the Tapes window. These tapes represent cataloged backup jobs that have been processed by Backup Exec. Because each tape listed resides in the Backup Exec catalog database, selecting files for restore becomes quick and easy, whether you restore an entire drive or selected individual files.

The Tapes Window

The Tapes window appears after double-clicking the Tapes icon found at the bottom of the Backup Exec main window. The window is divided into 2 panes called the left and right pane.

The Left Pane

The left pane displays backup tapes that have been created. The listed tapes represent cataloged backup jobs that have been placed on tape during a Backup Exec session.

Icons

Each tape listed appears with an associated status icon to the left of the entry.

The Right Pane

The right pane displays all backup sets on the tape that is selected in the left pane.

The Description Bar

A detailed description bar appears at the top of the right pane. This bar allows you to view information about each tape. Informational categories include the following:

Volume Name	This displays a backup set's identifier.
	For example, C:
	    D:\NTFS
	    \\MOO\NTFS

Set #	This displays the number of backup sets on each tape.
Tape #	This category is helpful when spanning multiple tapes becomes necessary to complete the backup operation. This will display a tape's sequential order within a multiple tape set.
Method	This displays the type of method used on a tape during a backup session. The types are: Normal, Copy, Incremental, Differential, and Daily.
Set Size	This displays the size of the backup set in kilobytes.
Date	This displays the date the backup set was created.
Time	This displays the time the backup set was created.
Description	This displays the job name that was placed on the tape when starting the backup operation.

Each description bar field can be resized simply by moving the slider bar between each field with the mouse.

Sorting each field is also possible by clicking each field's name.

Note: Because the description bar contains more information than the right pane can display at one time, you may want to use the horizontal scroll bar at the bottom of the pane to see additional information.

Revealing Additional Set Information

Double-clicking a backup set name or icon in the right pane allows you to expand the backup set which reveals the details of the set itself. This allows you to select individual files or groups of files if data restoration becomes necessary.

Catalog Issues

Normally, the backup sets listed in this pane have been partially or fully cataloged during a previous Backup Exec session. However, if a tape's catalog is removed from the Backup Exec catalog database, and the tape is placed in the tape drive, the tape will appear in the left pane but its associated backup set icon appears in the right pane with a ? on the backup set icon.

Double-clicking this tape icon will present you with a series of dialog boxes designed to help you retrieve the tape's on-tape catalog.

Basic Restore Operations

Restoring a Device

Important: To restore a file that spans more than one tape, Backup Exec must begin with the first tape containing the file to be restored and continue with each successive tape containing the file.

To An Original Location

To restore an entire local drive's data to its original location, follow these steps:

1. Double-click on the Tapes icon located at the bottom of your screen.

    The Tapes window appears. Displayed on the left side of this window are the tape(s) you have created. Backup sets are displayed on the right side of the window.

2. Click the check box of the tape that contains the data you want to restore.

    A check mark appears indicating that the backup set has been selected for the next restore operation. If you select a wrong backup set, clicking the check mark again erases it and removes the backup set from the restore operation.

3. From the menu bar, click Restore.

    The Restore Job window opens. The Restore Job window has the restore defaults selected.

Important: If you have more than one tape drive attached to the backup server, make sure the drive containing the tape to be restored appears in the Device window under Hardware. If not, select it now.

4. Click Run Now.

    A Scanning Catalog Files message appears. Once completed, the Job Status – Restore window appears displaying the progress of the backup operation.

5. Click OK after the operation completes.

To a Different Location

To restore data somewhere other than the original destination, use the following steps:

1. Double-click on the Tapes icon located at the bottom of your screen.

   The Tapes window appears.

2. Click the check box of the tape that contains the data you want to restore.

   A check mark appears indicating that the backup set has been selected for the next restore operation. If you select a wrong backup set, clicking the check mark again erases it and removes the backup set from the restore operation.

3. From the menu bar, click Restore.

   The Restore Job window opens.

4. Deselect the Destination check box, Restore To original location.

   The Restore to and Restore to path options become active and are no longer gray.

5. Click the arrow button found to the right of the Restore to field.

   All devices that appear under the Global View|Drives section of the Backup Selections window appear.

6. Select a different drive in which to restore data.

   Example:_____Select a different local drive.

7. Enter a new Restore To Path string.

   Example:_____Restore to path \TEMP

Under Options, the Preserve Tree option, by default, is turned on. This option restores data exactly the way it was originally backed up. If you deselect this option, all data will be restored (including the data in subdirectories found on the tape) but the tape's sub-directory structure will not be preserved in the new target path. De-activating the Preserve Tree option is useful when restoring individual files from tape, but it should not be de-activated when restoring an entire drive.

Important: If you have more than one tape drive attached to the backup server, make sure the drive containing the tape to be restored appears in the Device window under Hardware. If not, select it now.

8. Click Run Now.

   A Scanning Catalog Files message appears. Once completed, the Job Status – Restore window appears displaying the progress of the backup operation.

9. Click OK after the operation completes.

   Check the target sub-directory to find the files you just restored.

Restoring Network Drives and Arcada Agents

You can restore data to network drives or Arcada agents using the principles found in this section.

Restoring Network Drives

To An Original Location

1. Double-click on the Tapes icon located at the bottom of your screen.

   The Tapes window appears.

2. Click the check box of the tape that contains the data you want to restore.

   A check mark appears indicating that the backup set has been selected for the next restore operation. If you select a wrong backup set, clicking the check mark again erases it and removes the backup set from the restore operation.

3. From the menu bar, click Restore.

   The Restore Job window opens.

4. If you are restoring to the data's original drive, make sure a check mark appears in the Restore To Original Location check box. The original destination path appears in the Restore To field and is grayed out.

Important: If you have more than one tape drive attached to the backup server, make sure the drive containing the tape to be restored appears in the Device window under Hardware. If not, select it now.

5. Click Run Now.

   A Scanning Catalog Files message appears. Once completed, the Job Status – Restore window appears displaying the progress of the backup operation.

6. Click OK after the operation completes.

   All data is restored to the connected network drive.

To a Different Location

There may be times when you do not want to restore selected files and/or directories to the original location. Use the following example as a guide.

1. Double-click on the Tapes icon located at the bottom of your screen.

    The Tapes window appears.

2. Double-click the icon or volume name of a backup set appearing in the right pane of the Tapes window.

    A selection window appears.

3. Make the desired file selections by clicking the check box preceding the file(s) or directory(s) you want.

4. From the Backup Exec menu bar, click Restore.

    The Restore Job window appears.

5. Deselect Restore To Original Location by clicking its check box.

    The Restore To and Restore To Path fields become active.

6. In the Restore To field, enter the target machine name and share, or select a target drive in the drop down list box.

    Example:_____Restore To \\<machine_name>\<share_name>

Important: Entering a name of an agent drive that does not appear in the Restore To drop down list box will cause the agent restore operation to fail. To alleviate this, open the Backup Selections window and double-click the Arcada Agents icon. Once Backup Exec "sees" the agent in question, the agent shares will appear in the Restore To drop down list and the restore operation can be attempted again.

7. In the Restore To Path field, enter the target path.

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8. Click Run Now.

    A Scanning Catalog Files message appears. Once completed, the Job Status – Restore window appears displaying the progress of the backup operation .

9. Click OK after the operation completes.

    All data is restored to the new destination drive.

Aborting a Restore

To abort a restore:

1. Click Abort during a restore operation. You are given the opportunity to confirm your decision to abort.

   If the operation is not currently processing a file, the Abort window will be displayed.

2. Select Yes or No.

   If the operation is currently processing a file, the following window appears.

The following choices appear within the Abort dialog box:

Button	Description
Yes	This immediately aborts the restore operation. You may get only part of a file backed up or restored.
EOF	End of File. This aborts the operation after completing the restore operation of the current file being processed.
Cancel	This ignores the abort instruction and continues the restore operation.
Help	This displays help on the abort process.

The Restore Job Window

The following options are available in the Restore Job dialog box:

Job Name	The name you assign the job.

Password	If you are restoring from a tape that has been password-protected, enter the tape's password here.

Destination	
Restore to original destination	Click this option to restore the tape's data to it's original location.
Restore to drive	Only active when Restore to original location is not active. Use this option to restore data to a drive other than the original drive it came from. Click the drop down arrow for a list of drives to restore to. If the drive you want to restore to is not listed, go to the Backup Selections window and make sure the machine you want to restore to appears in one of the sections (Networks, Arcada Agents, User-defined) of this window.
Restore to path	Only active when Restore to original location is not active. Use this option to indicate the path structure you want the data restored to.

Options	
Restore registry	Gives you the option of restoring registry information to Windows NT computers. You must also select the registry files during the file selection process for this option to work.

|	
Restore security	Gives you the option of restoring security information to Windows NT NTFS partitions.
Preserve tree	This option restores data exactly the way it was originally backed up. If you deselect this option, all data will be restored (including the data in subdirectories found on the tape) but the tape's sub-directory structure will not be preserved in the new target path. De-activating the Preserve Tree option is useful when restoring individual files from tape, but it should not be de-activated when restoring an entire drive.

Hardware	
Device	This allows you to pick a tape drive to use with this restore job. If only one tape drive is attached to this backup server, the default tape drive will appear. If you have multiple tape drives attached, single-clicking the Device field presents you with a list of attached drives. Click the one you want to process this job.
Magazine	This selection is used with attached autoloaders. This option is grayed-out unless a loader is selected in the Hardware|Device drop-down list found within the Restore Job dialog box. If a loader is attached, this field displays the previous magazine that was used to process a job.
Group	This selection is used with attached autoloaders. This option is grayed-out unless a loader is selected in the Hardware|Device drop-down list found within the Restore Job dialog box. If a loader is attached, this field displays the previous tape group (within a magazine) that was used to process a job.

Run Now	Initiates an interactive, real-time job.

Schedule	Allows you to schedule the job for processing at a later time using the Backup Exec Scheduler.

Save Job	Allows you to save all selection and Backup window information as a job to be run at a later time. A Saved Job appears in the Jobs option on the main menu bar.

Job Status Window

The Job Status window displays the status of the current operation. The title bar indicates the operation in progress (e.g., Backup, Restore, Verify). The following information is displayed in the Job Status window:

Set Information *x* of *y*	This indicates that backup set x is currently being processed and y indicates the total number of backup sets in the current operation.
Directories	This indicates the number of directories currently processed.
Files	This indicates the number of files currently processed.
Bytes	This indicates the number of bytes currently processed.
Elapsed time	This indicates the amount of time used while performing this operation.
Corrupt files	This indicates the number of corrupt files encountered while performing this operation.
Skipped files	This indicates the number of files skipped while performing this operation.
Source and destination devices	The source and destination devices are displayed.
Directory and file being processed	This displays the directory and file currently being processed.
Percentage of completion	This indicates percentage of completion and the number of bytes currently processed. A "progress indicator" is displayed showing the completion percentage for this operation. It can be turned on or off based on choices within the Settings|Preferences dialog box.
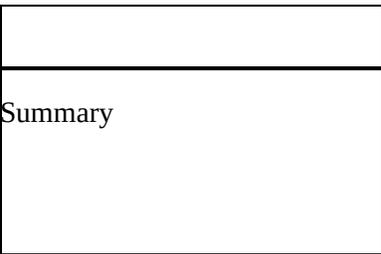
Summary

Summary   This contains statistics and error messages for this operation. Use the arrow buttons to scroll through the information displayed in the Summary window. This information is also contained in the logfile.

Click Abort to terminate this operation or click OK when the operation is completed.

Advanced Restore Operations

This section covers advanced restore topics including:

- Advanced Restore File Selection

- Searching for files to restore

- File Versioning

- Restoring Compressed Files

- File Permissions

- Disaster Recovery of a Windows NT Server Computer

Advanced Restore File Selection

Advanced Restore File Selection enables you to quickly select groups of files to be included in or excluded from your backup operation.

The Advanced Restore File Selection window enables you to:
- Include or exclude specific files
- Define file specifications
- Include subdirectories
- Define selection criteria
- Files dated From:/To:

    To make your Advanced Restore File Selections:

1. Double-click the Tapes icon.

2. Select a tape to restore by clicking its name or icon.

3. Click the Advanced Restore File Selection button on the Selection bar.

    The Advanced Restore File Selection window opens. The following choices are available in the Advanced Restore File Selection window:

Tape Specification	Allows you to select the tapes that contains the files to include or exclude. Scroll the box to reveal additional tapes. • Tape – Name of the tape

File Specification	Specifies the Backup Set, Path, and File specifications for the restore operation.
Backup Set	Allows you select from a list of backup sets for the tape selected in the Tape field above.
Path	The default is \. Backup Exec starts at the beginning of tape and searches the catalogs for the specified files. A path such as \production\drawings, however, causes Backup Exec to search only this particular directory tree for the specified files once it finds this structure on the tape; it will not search the entire tape.
File	Specify any files to be included or excluded. The use of wildcards is permitted. The asterisk (*) in a file name or extension is a wildcard character that represents all characters occupying any remaining position in the file name or extension. The question mark (?), the wildcard for a single character, is also supported.
	For example, to exclude all files with the .exe extension, type the following:
	*.exe
	The default for File is *.*, which means every file name with every extension will be selected.
Include subdirectories	Choosing to Include Subdirectories will include all subdirectories contained within all directories that are part of your selections.
	If the operation is beginning at the root level of a disk (e.g., drive C:), all directories and subdirectories on that disk will be included. If you entered a specific path (directory), all of the subdirectories contained within that directory will be included.

Type	Used to determine the type of operation to be performed on the file selection criteria.
Include/Exclude	Select whether to Include or Exclude all files that meet your file specifications. Include is the default. Click on Exclude if you want to exclude files.

Selection Criteria	The selection criteria defined here enables you to select:

	• Files dated within this range
Files dated From/To	Choosing Files dated within this range will include or exclude all files that have a modified date within the range of dates specified. You must specify a beginning (From) and ending (To) date.

• Files dated within this range

4.____After making your file selections, click OK.

If you are going to use these selections for only this restore you can now begin the restore operation. If you want to save these selections for future use, click Select on the menu bar and click Save Selections to create a Selection List.

Searching for Files

You can search fully cataloged tapes for file(s) you want to restore by either clicking the Search button on the Selection bar, or Operations|Search Catalogs from the Menu bar. If the tape is not cataloged, use the Catalog a Tape option under Operations in the Menu Bar.

File Version

The File Version feature enables you to display a list of all versions of a file that have been backed up to tape.

1. Locate the file through either the Backup Selections window or the Tapes window.

2. Double-click on the file, or click on the file and use the Display Info button, to begin the File Version search.

   The Search Results window will be displayed. Backup Exec will search all of your tape catalogs and list the file version(s). The Search Results window lists the following information:

- File Extension
- File name
- File size (in bytes)
- File modification date
- File modification time
- File attributes
- Path (location at the time of backup)
- Set # (backup set containing the file)
- Tape Name (name of the tape containing the file)
- Backup set label

> **Note**: When Backup Exec performs a file version search, it searches for all versions of the file that have the same path (i.e., the file is located in the same directory).

3. Check the version of the file you want to restore and start the restore.

   The Restore window opens.

4. Select your options, if desired, and click OK.

   Backup Exec will prompt you to insert the correct tape.

Restoring Compressed Files

Files that were backed up or archived using software compression will be uncompressed when they are restored.

Important: To restore a file that spans more than one tape, Backup Exec must begin with the first tape containing the file to be restored and continue with each successive tape containing the file.

Restoring File Permissions

Note: This security feature applies only to NTFS partitions.

This section contains details on restoring data using the Restore Security switch which affects file security.

When restoring data with Restore Security selected, Backup Exec over writes all directory security from the directory where the data was restored, down to the root of the drive, with the security levels associated with the file(s) being restored (files on tape).

Example:

       With the following data on disk:

              \(root)   Security applied: Users - Read
                    \Users   Security applied: Users - Change
                          \User1   Security applied: User1 - Full
                         DATA.TXT   Security applied: User1 - Full

       With the following data on tape:

              \(root)   Security applied: Users - Full
                    \Users   Security applied: Users - Full
                          \User1   Security applied: User1 - Full
                         DATA.TXT   Security applied: User1 - Full

      After a restore with Restore Security selected, the security level of
      the data on disk looks like this:

              \(root)   Security applied: Users - Full
                    \Users   Security applied: Users - Full
                        \User1   Security applied: User1 - Full
                       DATA.TXT   Security applied: User1 - Full

If the data is restored without the Restore File Permissions switch selected, data.txt would inherit the permissions of the directory in which it was restored. In this case, it would inherit User1 directory's security level of "Full".

Disaster Recovery – Windows NT Computer

These procedures will step you through a complete restoration of the Windows NT operating system using Backup Exec for Windows and are helpful in the following instances:

- The Emergency Repair Diskette cannot revive Windows NT back to an acceptable state.

- An unrecoverable hard drive error has occurred that requires you to reformat the disk that contains the Windows NT operating system.

- Replacing the hard drive that contains the Windows NT operating system.

Single Computer Procedure

This procedure requires that a Tape Drive is attached to the computer to be recovered. The items you will need are:

- A current Full Backup of your system and any subsequent Incremental/Differential backups.

- The Windows NT installation disks.

- The Backup Exec for Windows NT installation disks.

Note: Always log in to Windows NT using the Administrator account (or an Administrator equivalent) during this procedure.

Follow these steps:

1. Reinstall Windows NT. This Windows NT installation will be overwritten by your backed up version. If you are recovering from an entire hard disk failure, select to partition and format the new disk during Windows NT's setup. Remember to format the partitions with the same File System as before the failure.

2. Using Windows NT Setup, install the Tape Driver necessary for the tape drive you have attached.

3. Install Backup Exec for Windows NT.

4. Shutdown and restart the computer (to load the Tape Driver).

5. Start Backup Exec.

6. Insert the latest Full backup tape of the computer to be recovered and fully catalog it. If the subsequent Differential/Incremental backups are on a different tape, insert it now and fully catalog it also.

7. Select all sets from the Full and Incremental backups that contain logical drives on the hard disk. If Differential backup sets are to be restored, only the last Differential set (the newest) needs to be selected.

8. Click Restore. Select the "Restore Registry" switch and ensure that the "Restore To Drive:" field is correct. If the target drive is a NTFS partition, select the "Restore Security" switch. If more than one set is being restored, scroll through each of the backup sets and select the same switches (if only one set was selected, no scroll bar will appear). While scrolling through the sets, ensure that the sets are in

chronological order (oldest to newest) with the Full Backup set first.

9.___Click OK to start the restore. If prompted to restore over existing data, select Yes To All.

10. Shutdown and restart the computer.

11. If there are any filenames starting with REG or USE followed by five (5) alphanumeric symbols (e.g., REG84E64, USE491HD.log, etc.) left in the \WinNT\System32\Config directory, you may delete them now.

   The recovery procedure is now complete.

Remote Computer Procedure

This remote computer procedure uses Backup Exec over a network to revive a Windows NT computer. This procedure requires that Backup Exec for Windows NT is running on a Windows NT computer with an attached tape drive and is networked with the Windows NT computer to be recovered. The items you will need are:

- A current Full Backup of the computer to be recovered and any subsequent Incremental/Differential backups.

Note: Always log in to Windows NT using the Administrator account (or an Administrator equivalent) during this procedure.

Follow this step on the computer to be recovered:

Re-install Windows NT - This Windows NT installation will be overwritten by your backed up version. If you are recovering from an entire hard disk failure, select to partition and format the new disk during Windows NT's setup. Remember to format the partitions with the same File Systems as before the failure.

Follow these steps on the Remote Windows NT Computer:

1. Start Backup Exec for Windows NT.

2. Insert the latest full backup tape of the computer to be recovered and fully catalog it. If the subsequent Differential/Incremental backups are on a different tape, insert it now and fully catalog it also.

3. Select all sets from the Full and Incremental backups that contain logical drives from the hard disk. If Differential backup sets are to be restored, only the last Differential set (the newest) needs to be selected.

4. Click Restore. Ensure that the Destination options, Restore to and Restore to path are correct for your situation. Ensure the Restore Registry switch is NOT selected. If the target drive is a NTFS partition, select the Restore File Permissions switch.

5. Click Run Now to start the restore. If prompted to restore over existing data, select Yes To All.

   Follow this step on the computer to be recovered:

Shutdown and restart the computer once the restore has completed.

Follow these steps to restore Registry information to the remote Windows NT computer:

1. Using the same Full and Incremental/Differential backup sets you just restored from, select ONLY the \WinNT\System32\Config directory from each set that contains the active Windows NT operating system.

2. Press Restore. Select the Restore Registry switch and ensure that the Destination options, Restore to and Restore to path are correct for your situation. If the target drive is a NTFS partition, select the Restore File Permissions switch.

3. Press Run Now to start the restore. If prompted to restore over existing data, select Yes To All.

   Follow these steps on the computer to be recovered:

1. Shutdown and restart the computer once the restore has completed.

2. If there are any filenames starting with REG or USE followed by five (5) alphanumeric symbols (e.g., REG84E64, USE491HD.log) left in the \WinNT\System32\Config directory, you may delete them now.

   The recovery procedure is now complete.

Double Boot Explanation

When Backup Exec restores files that are open, it restores them as filenames starting with USE followed by five (5) alphanumeric symbols. Then, Backup Exec makes a call to Windows NT to tell the operating system to rename these files to their "real" names at the next boot up (this instruction is stored in the registry). Likewise, when Backup Exec restores Registry files, it restores them as filenames starting with REG followed by five (5) alphanumeric symbols and it tells the operating system to rename these files at the next boot up. If open files and registry files are restored at the same time, an additional call to Windows NT is made to attach the list of files that need to be renamed at boot up to the newly restored registry. This is necessary so that when the registry files are switched at boot up, Windows NT will not "forget" to rename the other open files during the bootup sequence. This process works fine during local restores. However, during remote restores, the call for Windows NT to attach the list of open files to the newly restored registry on the remote computer fails, and the computer "forgets" to rename the files at the next bootup. For this reason, the remote restore is split into two operations:

- Restore the open files
- Restore the Registry files