CA ARCserve® Backup for Windows

Image Option Guide

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CA Product References

This documentation set references the following CA products:

- Advantage™ Ingres®
- BrightStor® ARCserve® Backup for Laptops and Desktops
- BrightStor® CA-1® Tape Management
- BrightStor® CA-Dynam®/B Backup for VM
- BrightStor® CA-Dynam®/TLMS Tape Management
- BrightStor® CA-Vtape™ Virtual Tape System
- BrightStor® Enterprise Backup
- BrightStor® High Availability
- BrightStor® Storage Resource Manager
- BrightStor® VM:Tape®
- CA ARCserve® Backup Agent for Novell Open Enterprise Server for Linux
- CA ARCserve® Backup Agent for Open Files on NetWare
- CA ARCserve® Backup Agent for Open Files on Windows
- CA ARCserve® Backup Client Agent for FreeBSD
- CA ARCserve® Backup Client Agent for Linux
- CA ARCserve® Backup Client Agent for Mainframe Linux
- CA ARCserve® Backup Client Agent for NetWare
- CA ARCserve® Backup Client Agent for UNIX
- CA ARCserve® Backup Client Agent for Windows
- CA ARCserve® Backup Enterprise Option for AS/400
- CA ARCserve® Backup Enterprise Option for Open VMS
- CA ARCserve® Backup for Windows
- CA ARCserve® Backup for Windows Agent for IBM Informix
- CA ARCserve® Backup for Windows Agent for Lotus Domino
- CA ARCserve® Backup for Windows Agent for Microsoft Data Protection Manager
- CA ARCserve® Backup for Windows Agent for Microsoft Exchange
- CA ARCserve® Backup for Windows Agent for Microsoft SharePoint

- CA ARCserve® Backup for Windows Agent for Microsoft SQL Server
- CA ARCserve® Backup for Windows Agent for Oracle
- CA ARCserve® Backup for Windows Agent for Sybase
- CA ARCserve® Backup for Windows Agent for VMware
- CA ARCserve® Backup for Windows Disaster Recovery Option
- CA ARCserve® Backup for Windows Disk to Disk to Tape Option
- CA ARCserve® Backup for Windows Enterprise Module
- CA ARCserve® Backup for Windows Enterprise Option for IBM 3494
- CA ARCserve® Backup for Windows Enterprise Option for SAP R/3 for Oracle
- CA ARCserve® Backup for Windows Enterprise Option for StorageTek ACSLS
- CA ARCserve® Backup for Windows Image Option
- CA ARCserve® Backup for Windows Microsoft Volume Shadow Copy Service
- CA ARCserve® Backup for Windows NDMP NAS Option
- CA ARCserve® Backup for Windows Serverless Backup Option
- CA ARCserve® Backup for Windows Storage Area Network (SAN) Option
- CA ARCserve® Backup for Windows Tape Library Option
- CA XOsoft™ Assured Recovery™
- CA XOsoft™
- Common Services™
- eTrust® Antivirus
- eTrust® Firewall
- Unicenter® Network and Systems Management
- Unicenter® Software Delivery
- Unicenter® VM:Operator®

Contact Technical Support

For online technical assistance and a complete list of locations, primary service hours, and telephone numbers, contact Technical Support at http://ca.com/support.

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Chapter 1: Introducing the Option

CA ARCserve Backup is a distributed comprehensive storage solution for application, databases, distributed servers, and file systems. It provides backup and restore capabilities for databases, business-critical applications, and network clients.

Among the options CA ARCserve Backup offers is the CA ARCserve Backup Image Option. This option enables high-speed backups by bypassing the file system, creating a snapshot image of the drive, and reading data blocks from the disk. The option treats the entire drive like a single large file. This method replaces the slower traditional method of traversing an entire file system file-by-file.

This guide provides the information you need to install, configure, and troubleshoot the CA ARCserve Backup Image Option. This chapter provides information about features and functions, and system requirements of the CA ARCserve Backup Image Option technology.

You must back up a complete drive but, you may either restore the complete drive or individual files.

This section contains the following topics:

Benefits of Using the Option

The CA ARCserve Backup Image Option offers the following benefits:

- Provides file scanning to optimize performance. The scanning process scans the drives and collects the necessary information from all of the files and uses this information to optimize backup and restore performance.

- Provides optimized image drive level backups and restores. When backing up and restoring at the drive level, the option bypasses the file system to optimize the process.

- Provides device independence. Writes to any device supported by CA ARCserve Backup, including media devices, media libraries, and media RAID devices.

- Restores individual files as well as full drives. The option can restore data at the file level and at the drive level.

- Backs up both Windows NT File System (NTFS) and File Allocation Table (FAT) file systems, and NTFS with compressed and encrypted files, directories, and drives.

- Maintains all of the file information, such as file name, file size, date, and security.

How the Option Works

The CA ARCserve Backup Image Option performs a backup in two phases.

1. **Scanning phase** - The CA ARCserve Backup Image Option collects information about all of the files on a drive including file name, file size, date, time, attributes, clusters used by the file, file security attributes, and any other information required to back up the file during the backup phase.

    File Scanning is always enabled for FAT/FAT32. File scanning for NTFS is only done when Enable File Level Restore is selected from the CA ARCserve Backup Image Option display or wizard. The option still does a minimal scan of the drive to find the occupied drive spaces to back up.

2. **Backup phase -** The drive backup occurs in this phase. The CA ARCserve Backup Image Option backup engine reviews the information from the scanning phase, and then streams the data as fast as possible on to the backup media.

Scanning Phase

Scan the drive structure

↓

Collect information on all files

Backup Phase

Review the information

↓

Back up data onto the chosen backup media
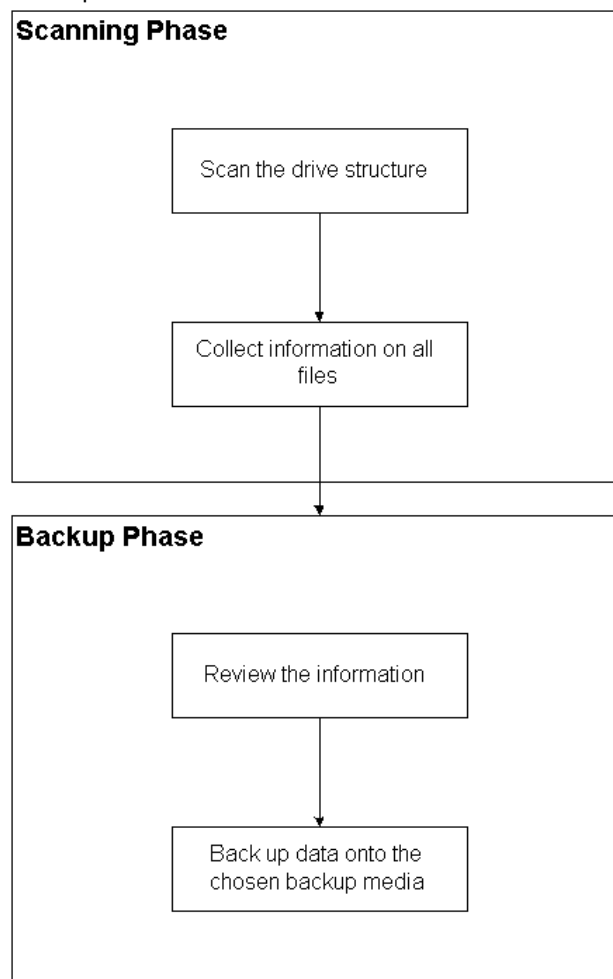
Snapshot Feature

The CA ARCserve Backup Image Option allows you to run a backup operation by taking a snapshot of the drive at a specific point in time. To the backup operation, the drive appears to be frozen at a particular time, whereas to other applications, it appears normal. This permits other applications to continue sending read and write requests to the drive. The Snapshot feature is automatically installed with the option.

The Snapshot feature has the following benefits:

- At the start of the backup process, the option does not attempt to lock the drive about to be backed up.

- If applications write to the drive while a backup is in progress, the integrity of the backup data is maintained at all times. The backup continues and is successful even when files are being written to during the backup process.

Chapter 2: Installing the Option

This chapter describes how to install the CA ARCserve Backup Image Option. It assumes you are familiar with the characteristics and requirements of the specified Windows operating systems in general, and with administrator responsibilities on those operating systems in particular.

This section contains the following topics:

Installation Prerequisites

Before installing the option, verify the following prerequisites:

- You have the following applications installed and working properly:

    - CA ARCserve Backup

    - CA ARCserve Backup Enterprise Module

    Important! You must install the Image Option (which is installed as part of the CA ARCserve Backup Enterprise Module) and CA ARCserve Backup on the same machine. This machine can be either a local machine or a remote machine.

- Your system configuration meets the minimum requirements needed to install the option.

    For a list of requirements, see the readme file.

- You have administrator privileges on the computers on which you want to install the option.

Licensing

The Enterprise Module is enhanced to include the Image Option. Ensure that the CA ARCserve Backup Enterprise module is properly licensed to use the Image Option.

For more information about licensing, see the *Implementation Guide*.

Installation Procedure

The Image Option image is installed locally when you install the Enterprise Module. You can use one of the following methods to install the option:

- Install the option using the Enterprise Module Configuration utility (EMConfig.exe) during the post-installation process.

- Run the EMConfig.exe utility located in the ARCserve home directory to install the Image Option after you install the Enterprise Module.

  Note: You can also access the EMConfig.exe utility from the Windows Start menu (Start, Programs, CA, ARCserve Backup, Enterprise Module Configuration).

After you complete the installation procedure, ensure to restart your computer when prompted.

Complete the Installation

You must complete two post-installation tasks before using the CA ARCserve Backup Image Option:

- Verify that the driver for the CA ARCserve Backup Image Option loaded successfully by checking the registry key for the presence of the driver. An example of a registry key location is:

  `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\hbmnt`

- After rebooting, check the Windows Event Viewer to ensure that the driver HBMNT5.SYS loaded successfully. The driver is installed in the following location:

  `[System Root]\System32\drivers\hbmnt5.sys`

Chapter 3: Using the Option

This chapter describes the use of the CA ARCserve Backup Image Option. It explains how to use the Backup Manager to configure your backups, and how to restore data.

This section contains the following topics:

General Considerations

To run successful backups and restores consider the following:

- Keep some empty space on the drive where the option is installed. Since the option creates temporary files to enhance performance and logs, it needs space in this drive. Ideally, 15-20 MB free space should be sufficient.

- To accommodate the Snapshot feature, the option creates a temporary storage file on a local drive that has the greatest amount of free space available. In addition to the 15-20 MB free space suggested above, you must have at least 20 MB free for the Snapshot feature.

- While restoring the active system drive, you must have at least 50 MB available on the drive. This amount of space is needed to store additional temporary files and registry files when you back up and restore.

Define Backup Jobs Using the Backup Manager

You can use the Backup Manager to configure and set up your backup jobs.

Notes:

- You can only back up an image on a machine where CA ARCserve Backup and the option are both installed.

- You can backup a partition to a file system device. The file system device can be on the same partition, but the backup may fail if the other drives do not have sufficient disk space. It is recommended that you have the file system device on a different drive.

During backup, the backup application instructs the Snapshot feature to freeze the drive. The drive is then synchronized, which means that it waits for a period when nothing is being written to the drive. If this write inactivity period cannot be found, the synchronization times out after a specified time period and the freeze request fails. The inactivity period is the number of seconds of inactivity on the drive before the drive is deemed safe to freeze.

To change the default registry value for SyncTimeout, InactivityPeriod, and PreviewFilename, you must create the following key and set the values for these parameters:

```
Software\ComputerAssociates\CA ARCserve Backup\Base\TapeEngine\Image
```

The SyncTimeout is 80 seconds by default. The Inactivity Period is 3 seconds by default.

If the registry contains a PreviewFilename key and value, the path name identifies the location of the preview file. If the file name is not specified, the path name identifies the volume that contains the most free space and is on a drive that is not being backed up. (If there is only one drive, the path name identifies the only drive). If the PreviewFilename specifies one or more subdirectories, the subdirectories will automatically be created.

Note: There is no attempt to validate the directory. If, during the backup, the directory cannot be accessed or created (usually due to an invalid volume), the backup fails.

The global backup option, **Encryption,** is **not** supported at this time.

The procedure to configure and set up you backup job is described below.

To configure and set up backup jobs

1. Open the Backup Manager and select the Source tab.

   All sources available for backup are listed to the left.

   Note: To successfully complete a backup using the Backup Manager, you must select an entire drive on the machine that you are backing up. Using the Backup Manager, you can configure your backup jobs by selecting Use Image Option when you right-click a drive in the Source tab of the Backup Manager window. The Destination tab allows you to specify the destination media where you want to store your backup data.

2. Right-click on a **computer** node listed in the Source tab of the Backup Manager and select Use Image/Serverless Backup Option.

   The following dialog opens:
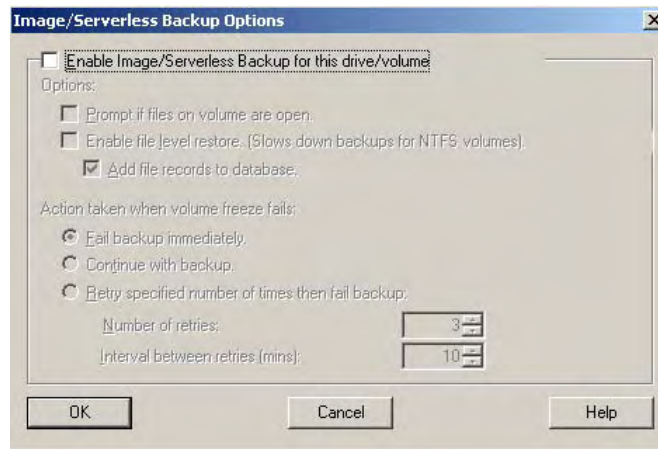
3. Choose **Enable Image/Serverless Backup for this drive/volume.**

   Note: This dialog allows you to set values for the entire computer.

4. Select or deselect the following options:

   – **Prompt if files on volume are opened**—When this option is selected, if an open file is found, you are prompted to cancel or continue with the backup job.

   – **Enable file level restore** — When this option is selected, you may restore individual files on a volume.

5. Click one of the following options to indicate how the option handles a failed volume freeze:

   – **Fail backup immediately** — The option stops the backup process.

   – **Continue with backup** — The option continues the backup process.

   – **Retry specified number of times then fail backup** — The option attempts to continue the backup for a preset number of times.

     Number of retries — Select the number of times that the option attempts to complete the backup.

     Interval between retries (mins) — Select the number of minutes that the option waits after a failed backup attempt.

6. Click OK.

7. Right-click on a **disk** node listed in the Source tab of the Backup Manager and select Use Image/Serverless Backup Option.

   The following dialog opens:

8. Select Use these settings in preference to machine options and select the options you require for the backup. This dialog allows you to set values for a particular disk drive or volume.
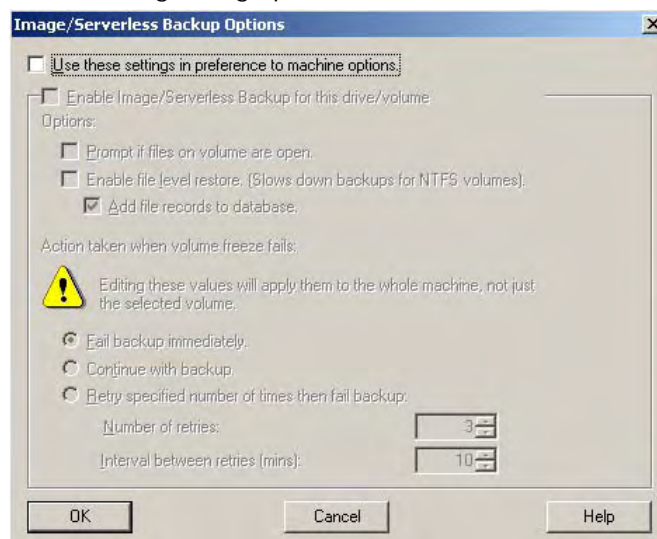
9. Select or deselect the following options:

   – Prompt if files on volume are opened—When this option is selected, if an open file is found, you are prompted to cancel or continue with the backup job.

   – Enable file level restore—When this option is selected, you may restore individual files on a volume.

10. Click one of the following options to indicate how the option handles a failed volume freeze:

    – Fail back immediately—The option stops the backup process.

    – Continue with backup—The option continues the backup process.

    – Retry specified number of times then fail backup—The option attempts to continue the backup for a preset number of times.

        ■ Number of retries—Select the number of times that the option attempts to complete the backup.

        ■ Interval between retires (mins)—Select the number of minutes that the option waits after a failed backup attempt.

11. Click OK.

   You have configured and set up your backup jobs with the help of Backup Manager.

For more information on backing up using the Backup Manager, see the online help.

View Job Status

To check the status of your submitted image backup job from the Job Status window, follow these steps:

1. On the Job Queue tab, select the job.

2. Right-click and choose Properties from the pop-up menu.

   The Job Monitor dialog appears.
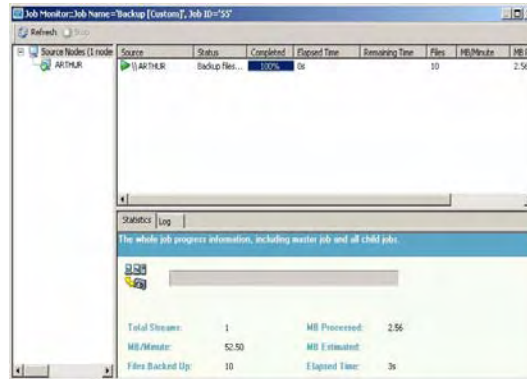
   The Job Monitor dialog displays current job attributes and the job complete percentage. The screen also displays the following:

   Job Name

   Displays the type of job that is running, such as backup or restore.

   Source

   Displays the backup source machine name, the size of the backup and restore, and the drive that is currently being backed up or restored.

Status

Displays the current job status.

Files

Displays the total number of files in the backup or restore.

The Statistics tab displays the following:

Total Streams

Displays the total number of streams in the backup or restore.

MB/Minute

Displays the current transfer rate used to transfer files during a backup or restore.

Files Backed Up

Displays the total number of files in the backup.

MB Processed

Displays the number of megabytes processed at this time.

MB Estimated

Displays the estimated number of megabytes in the current backup or restore.

Elapsed Time

Displays the number of minutes and seconds that have elapsed from the backup or restore start time.

Remaining Time

Displays the number of estimated minutes and seconds remaining to complete the backup or restore.

The Log tab displays the following:

Error

Displays the errors occurred during the backup or restore process.

Error and Warning

Displays the errors and warnings occurred during the backup or restore process.

All

Displays the backup or restore job information.

Restore Methods

You can use the following methods to restore data backed up by the CA ARCserve Backup Image Option:

- **Restore by Image**—Restores the entire drive in one pass. To be successful, the Image Restore must be completed from beginning to end. Canceling leaves the drive in an inconsistent stage, and therefore inaccessible.

  - The Restore by Image method supports only full volume restores. Using the Restore by Image method from the Restore Manager, the agent overwrites the target volume, so you must be sure that the target drive selected is the one you want to restore.

    Important! *Using the Restore by Image option completely overwrites your drive. Be sure this is what you want to do.*

  - In the Restore by Image method, selecting multiple sources is only permitted when using the Restore to Original Location option.

  - The Restore by Image method supports cluster sizes up to 16 KB for NTFS partitions, and requires multiple drives or partitions for proper functionality. This option does not support single partitions.

  - The Restore by Image method always overwrites existing files during restore operations, regardless of the restore options selected.

  - The Restore by Image sessions cannot be restored to network drives. They require the same or greater local hard disk drive.

  - During a Restore by Image session, the drive cannot have any open files. The option attempts to lock the drive before the restore process begins, and, if any files are open, the drive cannot be locked and the restore job fails.

- **Restore by Session**—Restores individual files and directories. Canceling a job that is in progress can leave many incomplete restored files on the drive.

The following global restore options are **not** supported at this time:

- **Destination**—Directory Structure and File Conflict Resolution

- **Operation**—Restore Registry Files and Event Logs

- **Virus**—Enable Virus Scanning, Skip, Rename, and Delete

The CA ARCserve Backup Image Option does not support the Restore by Backup Media method at this time.

Restore a Drive

CA ARCserve Backup restores the entire drive backed up by the CA ARCserve Backup Image Option.

To restore a drive

1. Open the Restore Manager.

2. Select the Restore by Image option in the drop-down menu below the Source tab.

3. Select the source containing the backup made by the CA ARCserve Backup Image Option in the Source tab.

4. Click Start to submit the job.

Restore Individual Files

CA ARCserve Backup restores individual files backed up by the CA ARCserve Backup Image Option.

To restore a single file

1. Open the Restore Manager.

2. Select the Restore by Session option or the Restore by Tree Option in the drop-down menu below the Source tab.

3. Select the source containing the backup made by the CA ARCserve Backup Image Option in the Source tab.

4. Click Start to submit the job.

Appendix A: Troubleshooting

This appendix provides troubleshooting information to help you resolve issues that you may encounter.

To provide information about any problems and supply descriptions about recent or ongoing operations, check on the status of a job by clicking on the Activity Log tab in the Job Status Manager. It has time-stamped events and descriptions of any errors. Error incidents have the prefix E with a number following it. For example, you may see an error incident number E11018.

This section contains the following topics:

Troubleshooting Tips

Problem—The drive cannot be frozen during a backup.

Possible reasons and solutions—If there is an activity on the drive, the CA ARCserve Backup Image Option may not be able to freeze the drive. The following occurs if the drive cannot be frozen during the backup:

- If the drive does not freeze, and Continue with Backup has been selected for the freeze fail action, the option tries to lock the drive for exclusive access.

- If the drive cannot be locked and you change any data, the backup data may be inconsistent and unusable.

The drive cannot be locked if:

- Windows Explorer has this drive expanded. Make sure the drive is not expanded.

- A DOS box with the drive letter is open. Close the DOS box associated with the drive letter.

- Any application opens a file on the drive. Make sure you close all applications that may open a file on the drive that you are backing up.

Problem—The backup process is very slow.

Possible reasons and solutions—The most common reasons and solutions why a backup process may be slow are:

- **Slow processor**—Older machines have slow processors and may not be able to handle the volume of data processed during the backup and restore process. This is normal if you have an older machine with a slow processor. If your machine is up-to-date, check your hardware performance and reboot your machine.

- **Poor processor performance**—Check your hardware performance and reboot your machine.

- **Open applications**—You may have applications running that use excessive processing power. Close all of your applications before you begin the backup and restore process.

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