

# Arcserve® Backup for Windows

## Enterprise Module Guide

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## Arcserve Product References

This document references the following Arcserve products:

- Arcserve® Backup
- Arcserve® Unified Data Protection
- Arcserve® Unified Data Protection Agent for Windows
- Arcserve® Unified Data Protection Agent for Linux
- Arcserve® Replication and High Availability

## Contact Arcserve

The Arcserve Support team offers a rich set of resources for resolving your technical issues and provides easy access to important product information.

<https://www.arcserve.com/support>

With Arcserve Support:

- You can get in direct touch with the same library of information that is shared internally by our Arcserve Support experts. This site provides you with access to our knowledge-base (KB) documents. From here you easily search for and find the product-related KB articles which contain field-tested solutions for many top issues and common problems.
- You can use our Live Chat link to instantly launch a real-time conversation between you and the Arcserve Support team. With Live Chat, you can get immediate answers to your concerns and questions, while still maintaining access to the product.
- You can participate in the Arcserve Global User Community to ask and answer questions, share tips and tricks, discuss best practices and participate in conversations with your peers.
- You can open a support ticket. By opening a support ticket online, you can expect a callback from one of our experts in the product area you are inquiring about.

You can access other helpful resources appropriate for your Arcserve product.



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# Chapter 1: Introducing the Arcserve Backup Enterprise Module

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This section contains the following topics:

[Introduction to the Enterprise Module](#) (see page 7)

[Purpose of the Guide](#) (see page 7)

## Introduction to the Enterprise Module

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.

The Arcserve Backup Enterprise Module (Enterprise Module) is a separately-installed component that includes the following options and features:

- Multistreaming: two or more streams of backup data.
- Disk staging backups and tape staging backups with multistreaming and transmit three to 32 streams of backup data.

**Note:** If you do not license the Enterprise Module, Arcserve Backup lets you transmit two streams of backup data for disk staging and tape staging backup jobs, and one stream for custom backup jobs. A "custom" job is a job that does not utilize a rotation schedule, a grandfather-father-son (GFS) rotation, or media pools. For more information, see the *Administration Guide*.

- Media Management Option.
- Raw backup and restore of physical disks and volumes.
- Enterprise Option for VSS Hardware Snap-Shot.
- Image Option.

**Note:** The license for the Enterprise Module is registered on the primary or the stand-alone Arcserve Backup server.

## Purpose of the Guide

The Enterprise Module Guide describes the following tasks:

- Executing backup and restore jobs using the Arcserve Backup Image Option.



# Chapter 2: Image Option

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This section contains the following topics:

[Introducing the Image Option](#) (see page 9)

[Installing the Image Option](#) (see page 11)

[Using the Image Option](#) (see page 12)

## Introducing the Image Option

Arcserve Backup offers the Image option, which backs up data at a high speed. The option bypasses the file system, creates a snapshot image of the drive, and reads data blocks from the disk. The option treats the entire drive like a single file, and replaces the traditional method of traversing the file system file-by-file.

The option provides device independence. It writes to any device supported by Arcserve Backup, including media devices, media libraries, and media RAID devices.

Using the Arcserve Backup Image Option, you can do the following:

- Scan files to optimize performance. During this process the drives are scanned, and the information about the files present on the drive is used to optimize backup and restore performance.
- Perform optimized image drive level backup and restore operations. When backing up and restoring at the drive level, the option bypasses the file system to optimize the process.
- Restore individual files as well as full drives. The option can restore data at the file level and at the drive level.
- Back up Windows NT File System (NTFS) file systems, Windows NT File System (NTFS) Deduplication file systems, Resilient File System (ReFS) file systems, and File Allocation Table (FAT) file systems. In addition, the option lets you back up NTFS file systems with compressed and encrypted files, directories, and drives.
- Maintain all of the file information, such as file name, file size, date, and security.

## How the Option Works

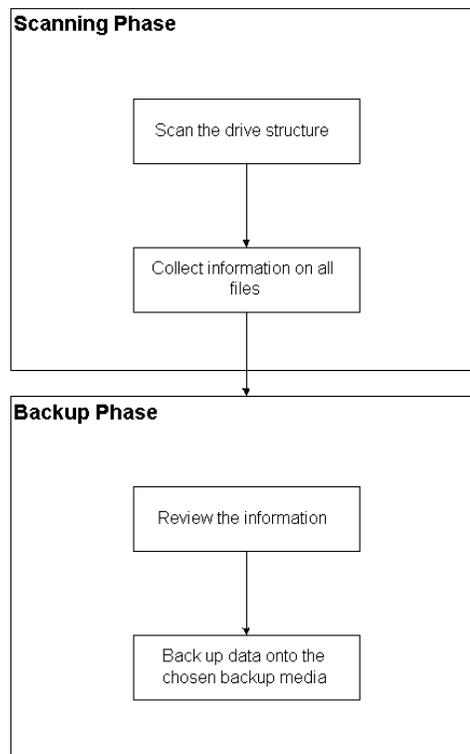
The Arcserve Backup Image Option performs a backup job in two phases.

### Scanning Phase

The 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, NTFS Deduplication is performed only when the Enable File Level Restore options is specified elected from the Image Backup Options dialog.

**Note:** File scanning is not supported on ReFS volumes.



### Backup Phase

The Arcserve Backup Image Option backs up data in this phase. The backup engine reviews the information from the scanning phase, and then streams the data as fast as possible on to the backup media.

## Backup Method

The Arcserve Backup Image Option backs up data by taking a snapshot of the drive at a specific point in time. Although the drive appears to be frozen at a particular time, it functions normally and lets other applications send read and write requests. This feature is known as the Snapshot feature, and it is automatically installed when you install the option.

This method has the following advantages:

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

## Installing the Image Option

To install the Image option, you should be familiar with the characteristics and requirements of the specified Windows operating systems, and with administrator responsibilities on those operating systems.

## Installation Prerequisites

Before installing the option, verify the following:

- 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.
- You have the following applications installed and working properly:
  - Arcserve Backup
  - Arcserve Backup Enterprise Module

**Important!** You must install the Enterprise Module (which automatically includes this option) and Arcserve Backup on the same computer. This computer can be located either locally or remotely.

## Install the Image Option

The Image Option is installed locally when you install the Enterprise Module.

### To install and configure the option

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

**Note:** You can also access the EMConfig.exe utility from the Windows Start menu (click Start, All Programs, Arcserve, Arcserve Backup, Enterprise Module Configuration).

2. Complete the installation and configuration procedure, and restart your computer when prompted.

## Post-Installation Tasks

Complete the following tasks before you start using the Arcserve Backup Image Option:

**Note:** These tasks do not apply to Windows Server 2012 systems.

- Verify that the driver for the Arcserve Backup Image Option is 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

## Using the Image Option

This section explains how you can use the Arcserve Backup Image Option Backup Manager to configure your backup jobs and restore data.

## General Considerations

To run successful backup and restore jobs, consider the following:

- Keep some empty space on the drive where the option is installed. Because the option creates logs and temporary files to enhance performance, it needs space on 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 in the previous point, you must have at least 20 MB free for the Snapshot feature.
- While restoring an 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 data.
- When restoring millions of NTFS deduplication optimized files, Microsoft Windows limits the amount of virtual address space of the image module. You can increase the amount of virtual address space for a 32-bit program by using a 4-GB Tuning (Windows) feature. After you enable the feature, the 32-bit image module can then access more than 2 GB of virtual memory and has more chances of completing the restore job. Alternatively, you can reduce the number of files to restore by dividing separate sets and submit separate jobs for each of the set.

**Note:** This only applies to the Image Option module when restoring millions of NTFS deduplication optimized files. For more information about how to increase the virtual address space limit, click the following link:

<http://msdn.microsoft.com/en-us/library/windows/desktop/bb613473%28v=vs.85%29.aspx>

## Limitations of Backing up and Recovering Data Using the Image Option

When backing up and recovering data using the Image Option, consider the following limitations.

- The option does not support backing up and recovering data at application level granularity.
- The option does not support backing up and recovering the computer's system volume. For example, drive C:\.
- File level restore is not supported for ReFS Volumes.
- File level restore is not supported for NTFS Deduplication volumes when the "system volume information" folder is compressed or encrypted.

## Backup Job Definition

You can use the Backup Manager to configure and set up your backup jobs. You can back up an image only on a computer where Arcserve Backup and the option are both installed.

You can back up a partition to a File System Device. The File System Device can be on the same partition, but the backup job may fail if the other drives do not have sufficient disk space. We recommend that you have the File System Device on a different drive.

During backup, the Snapshot feature is required 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 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
```

While SyncTimeout is 80 seconds by default, the Inactivity Period is 3 seconds by default.

If the registry contains a value and a key for PreviewFilename, 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.

Be aware of the following behaviors:

- There is no attempt to validate the directory. During backup, if the directory cannot be accessed or created (due to an invalid volume), the backup job fails.
- Arcserve Backup does not use the driver on Windows Server 2012. Instead, Arcserve Backup uses VSS to take a snapshot of the device. Therefore, configuration of the registry key described in this topic is not applicable to backing up Windows Server 2012 systems.

**Note:** Encryption and compression are not supported as a global backup option.

## Define Backup Jobs Using the Backup Manager

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

### To configure and set up backup jobs

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

All sources available for backup are listed in the left pane.

**Note:** To successfully complete a backup job using the Backup Manager, you must select an entire drive on the computer that you are backing up.

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

The Image Backup Options dialog opens.

3. Complete the fields in the dialog, and then click OK.

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

The Image Backup Options dialog opens.

5. Repeat steps 3 and 4.

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

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

### More information:

[Image Backup Options Dialog](#) (see page 16)

[How the Option Works](#) (see page 10)

## Image Backup Options Dialog

The Image Backup Options dialog lets you configure backup jobs.

The Image Backup Options dialog contains the following fields:

### **These settings take precedence over machine options**

Indicates that the settings on this dialog override any options that you may have specified on the node.

The dialog has the following options:

### **Enable file level restore (Slows down backups for NTFS volumes)**

Enables restoring at the file level. However, this slows down the process when you back up NTFS volumes, because the IO has to generate the file/folder information by parsing the file system layout on the disk.

### **Add file records to database**

Adds details of files to the database. This is helpful when you choose to enable restoring at file level, as the backup sessions will have the details of files in the database. If you do not add these details to the database, when you restore at the file level, you will have to merge the backup sessions with the file details before restoring.

The following fields let you specify the action when a volume freeze fails:

### **Fail backup immediately**

Stops the backup process when a volume freeze fails.

### **Continue with backup**

Continues with the backup process although a volume freeze has failed.

### **Retry specified number of times then fail backup**

Attempts to continue the backup process for a preset number of times.

#### **Number of retries**

Specifies the number of times that the option attempts to complete the backup process.

#### **Interval between retries (mins)**

Specifies the number of minutes that the option waits after a failed backup attempt.

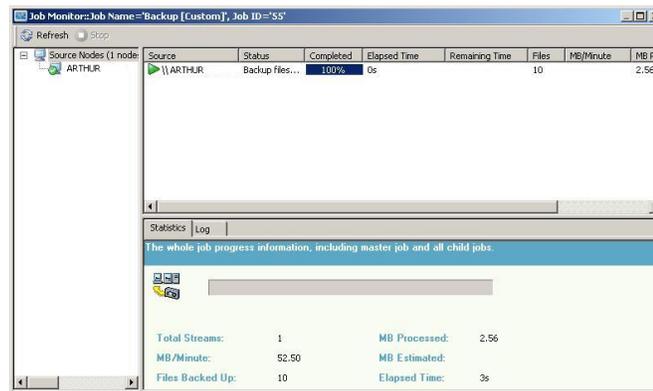
## View Job Status

You can check the status of the backup jobs you have submitted, from the Job Status window.

### To check the status of the backup job

1. On the Job Queue tab, select the job.
2. Right-click and choose Properties from the pop-up menu.

The Job Monitor dialog opens.



The Job Monitor dialog displays the current job attributes and the job complete percentage.

### More Information:

[Job Monitor Dialog](#) (see page 18)

## Job Monitor Dialog

The Job Monitor dialog displays the current job's attributes and the percentage of completion.

The dialog displays the following:

**Job Name**

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

**Source**

Displays the backup source computer name, the size of the backup and restore file, 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 job.

The Statistics pane displays the following:

**Total Streams**

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

**MB/Minute**

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

**Files Backed Up**

Displays the total number of files in the backup job.

**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 job.

**Elapsed Time**

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

**Remaining Time**

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

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

Use one of the following methods to restore data backed up by the Arcserve Backup Image Option:

■ **Restore by Image**

Restores the entire drive in one pass. To be successful, the restore job must be completed from beginning to end. Canceling leaves the drive in an inconsistent stage, and therefore inaccessible. The following are the limitations of this method:

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

**Important!** The Restore by Image option overwrites your drive completely. 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 to function properly. 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/Restore by Tree**

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 Arcserve Backup Image Option does not support the Restore by Backup Media method at this time.

## Restore a Drive

Arcserve Backup restores the entire drive backed up by the Arcserve Backup Image Option.

### To restore a drive

1. Open the Restore Manager.
2. On the Source tab, select the Restore by Image option in the drop-down list.
3. Select the drives containing the backup taken using the option.
4. (Optional) On the Destination tab, select the destination where you want to restore.
5. Click Submit on the toolbar.

The restore process starts or is scheduled to be executed.

## Restore Individual Files

Arcserve Backup restores individual files backed up by the Arcserve Backup Image Option.

### To restore individual files

1. Open the Restore Manager.
2. On the Source tab, select Restore by Session or Restore by Tree from the drop-down list.

The sessions appear in the session directory tree.

3. Select the files, folders, or both that you want to restore.

(Optional) On the Destination tab, clear the check mark next to Restore files to their original location(s) and then specify the location where you want to restore the data.

Click Submit on the toolbar.

The restore process starts or is scheduled to be executed.



# Appendix A: Troubleshooting

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This appendix provides troubleshooting information to help you resolve issues that you can encounter in the Enterprise Module options.

You can encounter job failures and errors while performing backup and restore operations. To check the problems that can occur, select the Activity Log tab in the Job Status Manager.

The Activity Log contains time-stamped events with applicable error descriptions. Error incidents have the prefix E followed by a number (for example, E11018).

This section contains the following topics:

[Backup Process is Slow](#) (see page 23)

[Image Option: Drive Cannot be Frozen](#) (see page 24)

## Backup Process is Slow

### Symptom

The backup process is very slow.

### Solution

The most common reasons and solutions for which a backup process may be slow are:

- **Slow processor**

Older computers 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 computer with a slow processor. If your computer is up-to-date, check your hardware performance and reboot your computer.

- **Poor processor performance**

Check your hardware performance and reboot your computer.

- **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.

## Image Option: Drive Cannot be Frozen

### Symptom

The drive cannot be frozen during a backup operation.

**Note:** This problem is specific to Image Option.

### Solution

If there is any activity on the drive, the Arcserve Backup Image Option may not be able to freeze the drive. The following occurs if the drive cannot be frozen during a backup operation:

- If the drive does not freeze, and the Continue with Backup option 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 for the following reasons:

- Windows Explorer has this drive expanded. Make sure the drive is not expanded.
- An MS-DOS command prompt dialog is opened with this drive letter. Close the MS-DOS command prompt dialog associated with the drive letter.
- An application has opened a file on the drive. Make sure you close all applications that may open a file on the drive that you are backing up.

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