

# **CA ARCserve® Backup for Windows**

## **Agent for Open Files Guide**

**r15**



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## CA Product References

This documentation set references the following CA products:

- BrightStor® Enterprise Backup
- CA Antivirus
- CA ARCserve® Assured Recovery™
- CA ARCserve® Backup Agent for Advantage™ Ingres®
- 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
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- 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 ARCserve® Backup Patch Manager
- CA ARCserve® Backup UNIX and Linux Data Mover
- CA ARCserve® D2D
- CA ARCserve® High Availability
- CA ARCserve® Replication
- CA VM:Tape for z/VM
- CA 1® Tape Management
- Common Services™
- eTrust® Firewall
- Unicenter® Network and Systems Management
- Unicenter® Software Delivery
- Unicenter® VM:Operator®

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- Online and telephone contact information for technical assistance and customer services
- Information about user communities and forums
- Product and documentation downloads
- CA Support policies and guidelines
- Other helpful resources appropriate for your product

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## Documentation Changes

The following documentation updates have been made since the last release of this documentation:

- [Licensing](#) (see page 9)—This new topic describes the licensing requirements for the agent.
- [A backup job fails with license errors when backing up open files on a virtual machine](#) (see page 70)—This new topic describes how you can troubleshoot this problem.

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# Chapter 1: Introducing the Agent

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

Among the agents CA ARCserve Backup offers is the CA ARCserve Backup Agent for Open Files. Using the agent, you can easily and reliably back up open files across your network. It solves the problem of accessing open files for backup, enabling you to:

- Back up all files safely and consistently, even when they are open and continually updated by applications.
- Continue working on critical files during a backup.
- Perform backups as they are needed.

This guide provides the information you need to configure and run the Agent for Open Files (OFA), as well as troubleshooting advice.

This section contains the following topics:

[Licensing](#) (see page 9)

[File Access Control](#) (see page 10)

[The Data Integrity Problem](#) (see page 10)

[Agent Components](#) (see page 12)

## Licensing

You can install and verify the license for the CA ARCserve Backup Agent for Open Files on the CA ARCserve Backup primary server or a stand-alone server. When you upgrade to CA ARCserve Backup r15, you must enter both, the r15 upgrade key and the old license key for the agent on the primary server, or the stand-alone server.

If you are using an older version of the agent, then CA ARCserve Backup checks for the license on the computer where you have installed the agent. For more information about licensing, see the online help.

**Note:** If the license for the CA ARCserve Backup Agent for Open Files is not available on a backup node, the corresponding VSS writer will not be shown in the Source tab of the Backup Manager.

## File Access Control

When an application opens a file, no other application can access it. As long as the file is open, it remains under the exclusive control of the application that opened it, and all other applications—even backup programs, which only need to read the file—are prevented from accessing the file.

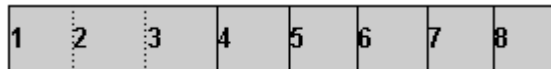
The Agent for Open Files solves the access control problem. It recognizes file open requests from backup programs (or *backup clients*, as they are known to the agent) and allows them to be honored, even if they would normally conflict with operating system file access control. Additionally, the agent only honors file-open requests from backup clients, ensuring that all other applications continue to be subject to normal file access restrictions.

## The Data Integrity Problem

To ensure data integrity, the backup copy of a file must be an exact image of the original at a given point in time. However, copying a file is not an instantaneous process. Unless the file is very small, the backup client must read from the file and write to the backup media several times to make a complete copy. If the backup client cannot ensure that no other application modifies the file while it is being copied, you may have a problem with the integrity of the data being copied.

### Example: Copy eight successive read and write operations

This example illustrates the data integrity problem, where a file is copied by eight successive read and write operations.



The backup client copies each block in turn. Halfway through the backup, while block 4 is being copied, an application makes small changes to blocks 2 and 6, which together form a single transaction (a debit and a credit, for example). The backup captures the change to block 6, but not the change to block 2, since it has already been copied. The backup copy, therefore, contains a partial transaction that may render the backup useless, because the application that created the file will probably consider the file corrupt.

This is a common problem in database applications. Many users require simultaneous access to a particular file, and at the same time, a single transaction is likely to make a number of small changes in different places within the file, or even to a group of files.

## File Synchronization

The Agent for Open Files solves the data integrity problem by ensuring that when a backup client attempts to open a file, access is not granted until the agent is satisfied that the file is in a good state to be backed up. To do so, the agent does the following:

1. The agent searches for a period of time during which no applications are writing to the file. This period of time is known as the *Write Inactivity Period* and is typically set to five seconds.
2. After the Write Inactivity Period has been found, the agent establishes that the file is stable, and it allows the backup process to continue. The file is now *synchronized*.
3. After a file is synchronized, applications can write to the file, but the agent ensures that the backup client receives the file data as it was at the time of synchronization. To accomplish this, when an application attempts to write to a synchronized file, the agent creates a copy of the data that is about to be changed before allowing the write to occur. This private copy of the data, called the *preview data*, is sent to the backup client when the backup is made, ensuring that the file remains synchronized. Thus, applications can continue to write to synchronized files while a backup is taking place without jeopardizing the integrity of the file.
4. The agent also accumulates preview data if a file being backed up is opened by an application after the backup has started. In this situation, synchronization occurs at the point when the application opens the file.

## Group Synchronization

Configure the agent to synchronize a number of files as a group. Group synchronization is useful for situations in which a single transaction can affect several files—for example, when working with a database. To preserve *transactional integrity* (a transaction is a set of procedures used to preserve database integrity), the agent does the following:

1. The agent applies the Write Inactivity Period to all the files in a group simultaneously. Only when all the files in the group have been inactive for this period does the agent synchronize the group, allowing the backup client to start copying the files.
2. When all the files have been backed up, the agent releases the group and discards any preview data.

## Volumes Synchronization

The Agent for Open Files supports open file access on NSS volumes in NetWare 6.0 and 6.5. This includes partial data backup, which eliminates backup redundancy by reading only the information that changes rather than all of the data. The agent does this by using volume level snapshots, rather than the file and group synchronization used for Windows and for NetWare traditional volumes. The agent creates a virtual volume that is a point-in-time snapshot of the whole volume from which files are being backed up. This is done by carrying out copy-on-write processing whenever the original volume is changed. Backup clients access the files on the virtual volume, thereby avoiding the open file problems that occur when trying to access them on the original volume.

## Agent Components

The Agent for Open Files consists of the following components:

### **The Console**

Allows you to install, configure, and monitor the agent on one or more servers.

### **Windows Engine**

Consists of a service and device driver executables, a client definition file, and a configuration file for Windows. This component requires a valid CA license and is only installed on Windows computers.

### **NetWare Engine**

Consists of NetWare Loadable Modules (NLMs), a client definition file, and a configuration file for NetWare. This component requires a valid CA license and is only installed on NetWare computers.

## Console

The Backup Agent for Open Files (BAOF) Console is the user interface for the agent. It allows you to configure your backups and monitor the status of the servers on which the Windows or NetWare Engine has been installed. You can perform these tasks for all such servers from any computer running the console.

The Backup Agent for Open Files Console also allows you to select either the Microsoft Volume Shadow Copy Service or Backup Agent for Open Files on servers on which the Windows Engine has been installed to back up open files.

## Windows Engine

The Windows Engine is the software that enables CA ARCserve Backup to back up open files without conflicting with the operating system file access control on a computer running Windows. The Windows Engine does not have a user interface, so you cannot manage your servers from a computer with only the Windows Engine installed. You must use the Console to manage your servers.

## NetWare Engine

The NetWare Engine performs the same function as the Windows Engine, but on computers running NetWare.



# Chapter 2: Installing the Agent

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This chapter describes how to install and configure the Agent for Open Files on Windows and NetWare computers. You must be familiar with the characteristics and requirements including the administrator responsibilities on the specified operating systems.

This section contains the following topics:

[Installation Prerequisites](#) (see page 15)

[Agent Installation](#) (see page 15)

[Uninstall the Agent](#) (see page 19)

[Uninstall the NetWare Engine](#) (see page 19)

## Installation Prerequisites

Before installing the Agent for Open Files, verify the following prerequisites:

- Your system meets the software requirements needed to install the option.  
For more information about these requirements, see the readme file.
- You have administrative privileges or the proper authority to install software on the computers where you will be installing the agent.
- If you do not use the default installation path, make a note of the installation path you use for easy reference.

## Agent Installation

The Agent for Open Files follows the standard installation procedure for the system components, agents, and options of CA ARCserve Backup.

For more information about this procedure, see the *Implementation Guide*.

You must install the Windows or the NetWare Engine on each Windows or NetWare computer that has files to be backed up. Install the Backup Agent for Open Files Console on a server or workstation on the network from which you will manage the backup and restoring of files.

Restart your computer after the installation is complete.

**Note:** CA ARCserve Backup Microsoft Volume Shadow Copy Service is automatically installed when you install the Agent for Open Files.

## Console and Windows Engine Installation

To install the console and Windows Engine, follow the standard installation procedure for the system components, agents, and options of CA ARCserve Backup.

For the detailed steps in this procedure, see the *Implementation Guide*.



## NetWare Engine Installation

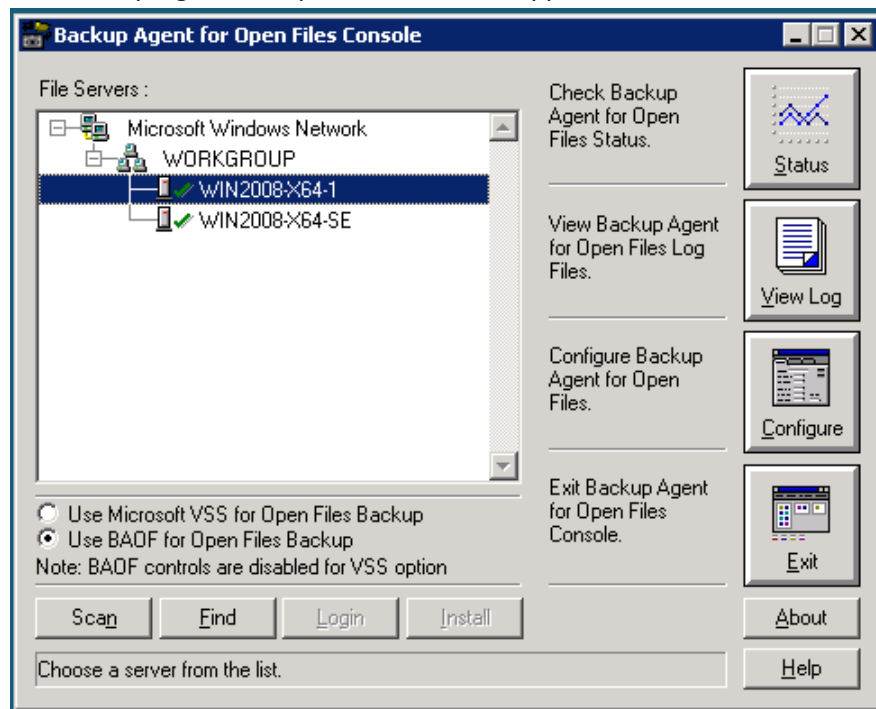
You must install the NetWare Engine from a Windows server on which both the Console and the Novell NetWare Client software are installed. NetWare Engine lets you back up open files on NetWare computers.

For more information about how to install the agent on Windows, see the *Implementation Guide*.

### To install the NetWare Engine

1. Select Programs, CA, ARCserve Backup, and Agent for Open Files from the Start Menu.

The Backup Agent for Open Files Console appears.

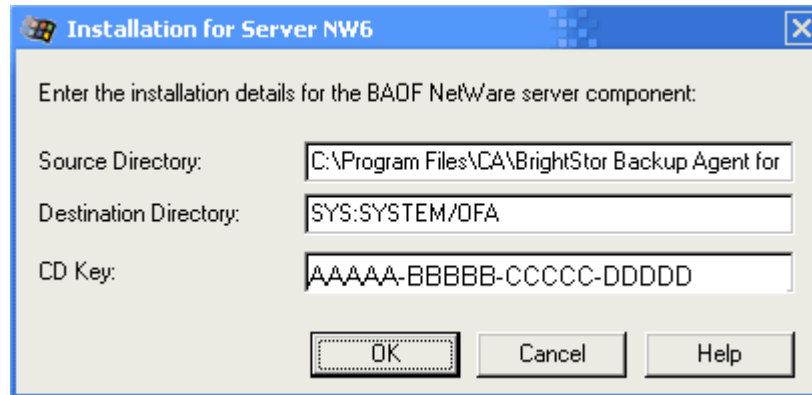


2. Expand the NetWare Services tree and select the computer on which you want to install the NetWare Engine.

**Note:** If the NetWare server you want is not in the tree, click Find, enter the name of the computer, and click OK.

3. From the NetWare Services tree, select the computer on which you want to install the agent and click Install.

The Installation for Server (name) dialog opens as shown in the following example:



The dialog displays the source directory (the directory in which the installation files are stored) and the destination directory (the directory on the target computer in which the agent will be installed). If necessary, you can change these directory names.

**Note:** The installation directory on NetWare computers must always be a subdirectory of SYS:SYSTEM.

4. Enter your CD key or keycode, and click OK.

By default, a live trial keycode is already entered in this field. The NetWare Server Installation dialog opens when the installation is complete.

5. Click OK.

The NetWare Engine is installed.

**Note:** To start the agent, type LOAD OFA at the server console and press Enter.

## Uninstall the Agent

Use the following procedure to uninstall the agent.

### To uninstall the Agent for Open Files

1. Open the Windows Control Panel.
2. Double-click the Add or Remove Programs icon.  
The Add or Remove Program dialog opens.
3. Select CA ARCserve Backup.  
The CA ARCserve Backup Remove Application window opens.
4. Select CA ARCserve Backup Agent for Open Files, and then click Next.  
Warning messages if any appear.
5. Click Next.
6. Select the Click this check box to confirm that you want to remove the specified components from your computer check box and then click Remove.  
The agent is uninstalled and the updated list of CA ARCserve Backup components available on your server appears.

## Uninstall the NetWare Engine

Use the following procedure to uninstall the NetWare Engine.

### To uninstall the NetWare Engine

1. Delete the following OFA files:  
SYS:SYSTEMOFA.NLM  
SYS:SYSTEMOFANSSX.NLM  
SYS:SYSTEMOFANSS.CDM
2. Delete the OFA directory in the SYS:\SYSTEM\ directory.  
The NetWare Engine is uninstalled.

**Note:** The directories SYS:\ and SYS:\SYSTEM\ are the default locations of the files.



# Chapter 3: Using the Agent

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The following sections provide information about the console, procedures to configure the agent, view the agent status, and perform advanced configuration.

This section contains the following topics:

[Preliminary Considerations for Using the Agent](#) (see page 21)

[The Console](#) (see page 23)

[Configure the Agent](#) (see page 26)

[Advanced Configuration](#) (see page 41)

[Agent Status](#) (see page 46)

[Access Log File Viewer](#) (see page 52)

## Preliminary Considerations for Using the Agent

Install the Windows or NetWare Engine on your server, to start using CA ARCserve Backup to back up open files. In most cases, you can use the agent quite effectively without any further configuration but to avoid possible problems, verify the following preliminary considerations:

- Ensure that the Windows or NetWare Engine is running on the same server as the files you will be backing up. This is usually, but not always, the server on which you run CA ARCserve Backup. If you want the agent to operate on files located on more than one server, you must purchase and install a separate copy of the Windows or NetWare Engine for each server.
- If CA ARCserve Backup runs on another server and executes a backup of any remote computers running the Windows or NetWare Engine by using a network share, ensure that the remote server clients are enabled in the Agent for Open Files configuration of the remote computer running the Windows or NetWare Engine.
- If your backup program runs on another server, and uses a client agent to perform a backup of remote computers running the Windows or NetWare Engine, you must ensure that the client agent is enabled in the Agent for Open Files configuration of the target server.
- Configure the file groups. If you have an application that maintains a set of related files, such as a database manager or an email system, there is a possibility that you will need to set up one or more file groups.

- Configure VSS settings. On Windows Vista and newer operating systems, whether or not the global option **Use VSS** is enabled, all backups will use only VSS to back up open files. By default the Agent for Open Files will update the registry key on the agent machine to always use VSS to back up files.
- Use the Console for configuration. The Console does not need to be running for the agent to work on your server, but you do need it for configuration and status monitoring.

**More information:**

[Clients Tab](#) (see page 40)

[Group Synchronization](#) (see page 11)

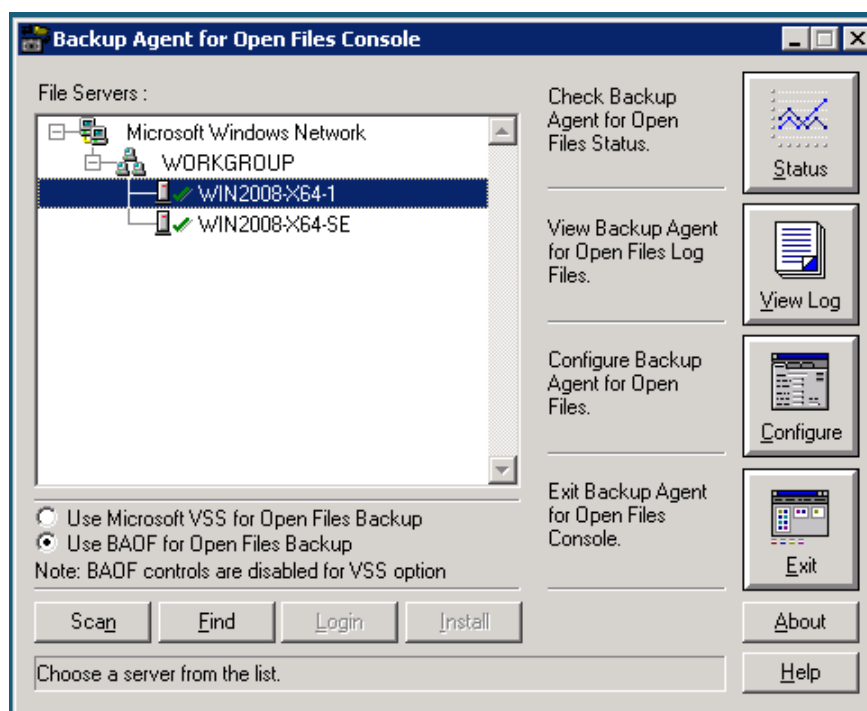
[The Agent and VSS](#) (see page 55)

[Configure the Agent](#) (see page 26)

[Advanced Configuration](#) (see page 41)

## The Console





When you start the Console on your workstation, the main dialog opens. From this dialog, you can control and monitor CA ARCserve Backup on the selected computer:



The File Servers field lists the active Windows and NetWare servers that the agent found on your network. Windows and NetWare networks are shown as separate hierarchies that you can expand or collapse.

To add a specific computer to the console display, click Find and enter the name of the computer. To search your entire network, click Scan.

The following icons represent the state of the agent on each server:

Icon	Agent Status
	The agent is running on this server; you can configure if you are logged in with administrator, backup operator, server operator, supervisor, or console operator rights. To view the agent status, double-click the entry.
	The agent is running on this server, but you can only view its status because you are not logged in as an administrator, backup operator, server operator, supervisor, or console operator. To log into the server, click Login. To view the agent status, double-click the entry.
	You are not logged into this server, so the Console cannot determine if the agent is running.
	The agent is not running on this server. The agent can be installed on this server, but a user might have temporarily suspended or unloaded the agent.

## Console Dialog

The Console buttons operate on specific servers. Select a server before using the Status, View Log, Configure, Login, or Install button.

### File Servers

Lists the active Windows and NetWare servers that the agent found on your network. You can expand or collapse the Windows or NetWare network hierarchies.

### Scan (or F5)

Searches for active servers on your network and updates the File Servers list.

The Console only scans expanded branches of the network tree, it does not scan collapsed branches. When you expand a branch, the Console scans it and updates any newly added server. To do a full scan of the branch, expand the branch and click Scan.



**Find**

Locates a server. In the Find Server dialog, select the networks for to search, and specify the name of the server. You can include wildcard characters (\* and ?) in the server name. More than one matching server may be found. The agent prompts you to log into the server if you do not have access rights.

- For NetWare computers, you must log in using the Login button.
- For Windows computers, you must log in using Windows Explorer.

**Note:** When using wildcard characters, you can only use those supported by the filesystem that owns the volume. Wildcard character behavior is controlled by the filesystem.

**Login**

Lets you log in to the selected computer. When you log in with administrator, backup operator, server operator, supervisor, or console operator rights, you can configure the server. When you log in to a NetWare server, you can install the NetWare Engine.

**Note:** If you are already logged in to the server with administrator or supervisor rights, this button is disabled.

**Install**

Installs the NetWare Engine on the selected NetWare computer. If the agent is already installed and ofa.nlm is unloaded, you can reinstall NetWare Engine using the install button. This option is not available for Windows servers.

**Use Microsoft VSS for Open Files Backup**

Open files will be backed up using Microsoft VSS based technology on the selected Windows computer. If you select this option, you will not be able to view Agent for Open Files status, log files, and view or edit the Backup Agent for Open Files configuration.

**Use BAOF for Open Files Backup**

Open files will be backed up using Agent for Open Files on the selected Windows computer. If you select this option, the Status, View Log and Configure buttons will be enabled.

**Status**

Displays the Agent for Open Files Status dialog and allows you to view the files and groups the agent is currently processing on the selected computer. You can double-click a server to go to the Agent for Open Files Status dialog if the agent is running on that server and Agent for Open Files option is selected to back up open files.

### **View Log**

Displays the Log File Viewer dialog and to see the log file for the selected computer.

### **Configure**

Lets you configure the General tab of the agent Configuration window and set global settings for the agent on the selected computer.

### **More information:**

[Servers Scan](#) (see page 45)

[Agent for Open Files Status Dialog](#) (see page 48)

[Access Log File Viewer](#) (see page 52)

[Configure the Agent](#) (see page 26)

## **Configure the Agent**

Use the Agent for Open Files Configuration dialog to configure global settings on the selected computer.

### **To access the Agent for Open Files Configuration dialog**

1. Click Configure from the console.

**Note:** The Configure button will be enabled only if you configure the server to back up open files using Agent for Open Files.

The Agent for Open Files Configuration dialog appears.

For more information about the Backup Agent for Open Files Console, see the section The Console in this chapter.

2. Configure the global settings on the selected computer.

Alternatively, you can use the following procedure to access the Agent for Open Files Configuration dialog from the CA ARCserve Backup Manager.

**Note:** This procedure will be enabled only if you have installed the Agent for Open Files Console on the same computer as the CA ARCserve Backup Manager.

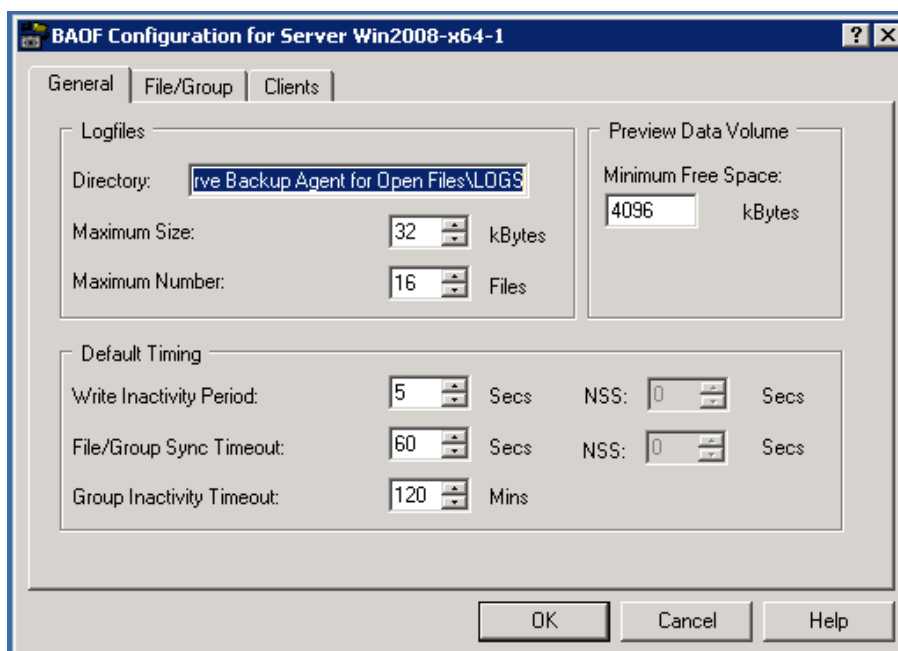
1. On the Source tab, select a computer from the browser in the left pane.
2. From the Additional Information pane, click Configure Open File Agent.

The Agent for Open Files Configuration dialog opens.

The following sections describe the options you set in the General, File/Group, and Clients tab of the dialog.

## The General Tab

The General tab of the Agent for Open Files Configuration dialog allows you to change the default settings for log files, timing, and free space.



## Logfiles Configuration

The agent keeps a record of its activity on the server in log files. The log file is updated in real-time and contains information about specific files and routine agent functions.

Use the Logfiles group to change the default settings for the Logfiles Directory, the maximum size of the log files, and the maximum number of log files.

**Note:** If CA ARCserve Backup Agent for Open Files and CA ARCserve Backup are installed on the same Windows server, real-time agent events are written to the CA ARCserve Backup activity log.

The following options are available in the Logfiles section of the General tab:

### Directory

Defines the directory in which the agent places its log files. You must give the full path, including the volume or drive name.

#### Default

#### Windows:

C:\Program Files\CA\ARCserve Backup Agent for Open Files\LOGS

#### NetWare:

SYS:SYSTEM\OFANSS\OFANSS.LOG for NetWare 6.0

SYS:SYSTEM\OFANSSX\OFANSSX.LOG for NetWare 6.5

**Note:** If you change the default path of the log, you must restart the CA ARCserve Universal Agent service (using either the CA ARCserve Server Admin option or the Windows Control Panel), or close the main window of CA ARCserve Backup Manager and open it again. Only then the Central Agent Admin gets the Open File Agent log files from the changed log path.

### Maximum Size

Specifies the maximum size, in kilobytes, to which a log file can grow before the agent starts a new file.

### Maximum Number

Specifies the maximum number of log files the agent can retain. After this number of log files has been reached, the agent automatically deletes the oldest log file and creates a new one.

## Default Timing Configuration

Use the Default Timing section of the General tab to change the default settings for the Write Inactivity Period, the file/group sync timeout, and the group inactivity timeout. The agent uses these values for all open files on the selected server that belongs to the agent. If you specify non-default values for any of the files in the File/Group tab, those files do not use these settings.

The following options are available in the Default Timing section of the General tab:

### Write Inactivity Period

The number of consecutive seconds that an open file must be inactive before the agent considers the file safe for backup. In the case of a group, the agent applies the Write Inactivity Period to every file in the group simultaneously before synchronizing the files in the group. The agent will continue to try to find a Write Inactivity Period of the indicated duration for each file or group until the File or Group Sync Timeout is exceeded. The default value is applied to all files unless modified by a specific entry in the File/Group tab of the Configuration dialog.

**Note:** You can apply independent Write Inactivity Period settings for NetWare NSS and traditional NetWare volumes.

For example, if the Write Inactivity Period is set to five seconds, and no write activity occurs on a file for five seconds, the agent determines that a backup client can safely back up the file.

### Default NSS Write Inactivity Period (NSS Volumes Only)

The period, specified in seconds, that the agent waits to determine if it is safe to create the NSS snapshot volume from which a backup client can access the files. The agent continues to try to establish an inactivity period of the required duration until the NSS Sync Timeout is exceeded.

### File/Group Sync Timeout

The number of consecutive seconds that the agent continues attempting to determine if a file, or group of files, is inactive (as defined by the Write Inactivity Period). If the timeout expires before it finds a safe time, the agent rejects the open request from the backup client.

**Note:** You can apply independent File/Group Sync Timeout settings for NetWare NSS and traditional NetWare volumes.

For example, if the File/Group Sync Timeout is set to 60 seconds, the agent tries for 60 seconds to find a Write Inactivity Period for the file or group. If a Write Inactivity Period for a file cannot be found within the specified time, the agent rejects the open request for the file or group.

### **Default NSS Sync Timeout (NSS Volumes only)**

The period, specified in seconds, that the agent waits before it stops trying to find a safe time to create the NSS snapshot volume. If the timeout expires without finding a safe time, the agent does not create the NSS snapshot volume. In this case, the backup client can either fail the backup, or it can access the files from the original volume but without access to any open files.

### **Group Inactivity Timeout**

The period the agent waits to determine when to close an open group if the backup client has not processed all of the files in the group, but none of the files is currently open.

If this activity times out, it is noted in the log, the group is closed automatically, and the preview data is discarded. You should set this parameter to at least the time normally taken for the client to perform a complete backup run. The default value is applied to all new groups you add using the File/Group tab of the Configuration dialog.

For example, if there are five files in a group and you set the Group Inactivity Timeout to two hours, a timeout occurs if the backup client takes more than two hours between finishing the backup of file 4 and opening file 5. This can happen for a number of reasons, such as those listed below:

- The files are in different volumes.
- The drive has run out of media.
- The backup is aborted.

**Note:** This option is not available on NetWare computers that have only NetWare NSS volumes. A NetWare computer must have at least one traditional volume to use this option.

## **Data Volume Preview**

The Minimum Free Space Value specifies the minimum amount of free space that must exist on the selected computer's preview data volume for the agent to function.

The following option is available in the Preview Data Volume section of the General tab:

### **Minimum Free Space**

The agent requires a certain amount of free space in which to create temporary preview file data (the data that is accumulated for open files when applications make changes while the backup client is active).

- If there is insufficient free space, the agent prevents the backup client from opening any new files, and fails any ongoing client operations.
- When sufficient free space becomes available, the agent automatically resumes its activities.

**More information:**

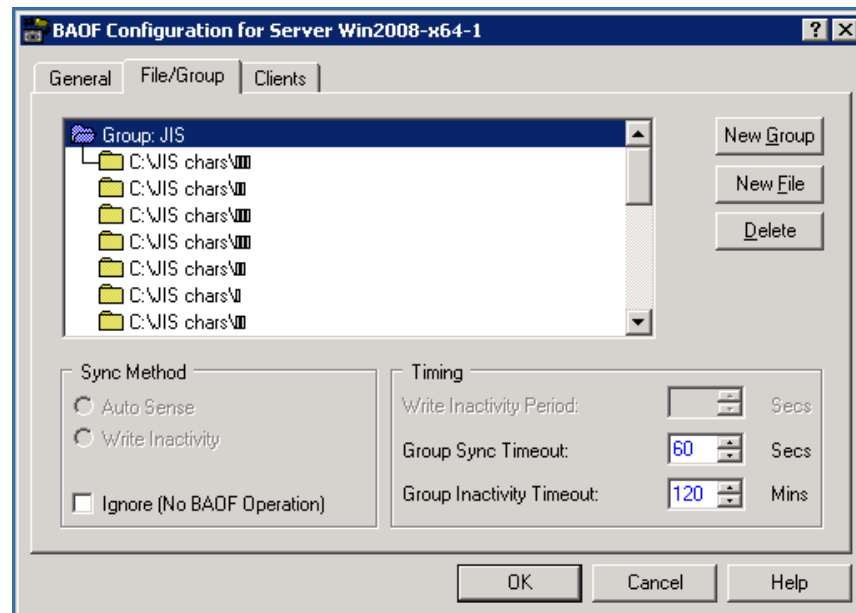
[Change the Preview Data Volume](#) (see page 46)

## The File/Group Tab

Use the File/Group tab to configure files and groups of files to have non-default timing values.

For more information on Groups, see Group Synchronization in the chapter "Introducing the Agent."

**Note:** The File/Group tab is not available on NetWare computers that have only NSS volumes. A NetWare computer must have at least one traditional volume to use these options.



The files list displays the files and groups that you have selected for non-default settings. A file specification appears here if the agent is handling it in a non-default way. If a file does not appear in the list, the agent handles it using the default settings.

Each file specification consists of either a single file or directory name, or a wildcard defining a range of files in a single directory. The order of the entries is important, particularly if wildcards are used, because it determines the order in which the agent performs its checks for processing eligibility.

**Note:** When using wildcard characters, you may only use those supported by the file system that owns the volume. Wildcard character behavior is controlled by the file system.

To edit a group or file specification, double-click on a group or file.

The New Non-Group File icon is a special entry to enable a new file to be added. Select the icon and click New File to add a file that is not part of a group. The remaining controls in the Files tab of the Configuration window (with the exception of New Group) all operate on the file or group currently selected in the file list.

**Note:** If you want to add all files under a root volume to the Agent for Open Files configuration, you must use wildcards as shown in the following example: Use: C:\\*.\*. Specifying only the volume label is not supported.

**More information:**

[Default Timing Configuration](#) (see page 29)

## New Group Addition

Groups are useful when a single transaction can affect several files; for example, when working with a database.

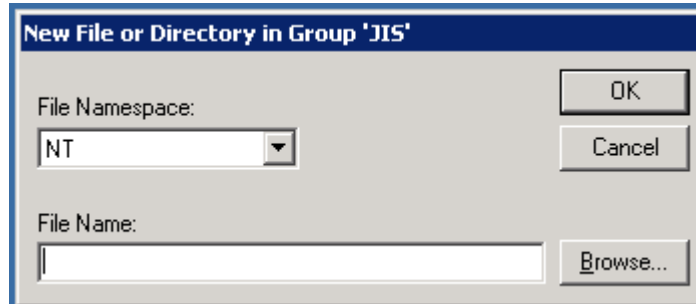
**To add a group, file, or directory**

- To add a new group to your agent configuration, click New Group.  
You must provide a unique name for the group.
- To add a new file or directory to an existing group, select the group in the file list, and then click New File.
- To add a new file or directory that will not be part of a group, highlight the (New Non-Group File) icon in the Files list, and then click New File.



## New File Addition

The New File or Directory dialog has the following fields:



### File Namespace

Defines the namespace for the new file or directory name in the File Namespace list. File servers normally support a number of different file systems, corresponding to different client operating systems. Each different system of file naming is known as a *namespace*, which embodies all of the conventions for file naming, wildcard symbols, and so on.

### File Name

Specifies the full path of the file or directory to be added.

In the DOS namespace, you can also use wildcards such as "?" or "\*" to include some or all files in a directory.

### Example: Paths

#### Windows:

```
C:\ACCOUNTS\2002\DATA.DBS
C:\ACCOUNTS\2002\DATA.*
C:\ACCOUNTS\2002*
```

#### NetWare:

```
SYS:ACCOUNTS/2002/DATA.DBS
SYS:ACCOUNTS/2002/DATA.
SYS:ACCOUNTS/2002/*
```

#### Macintosh

```
SYS:folder1:folder2:filename
```

When defining file names for the Macintosh namespace, use the colon character ( : ) as the path separator, and not the backslash (\) or slash (/) used in other namespaces.

**Note:** Wildcards are not available in the Macintosh namespace.

### Browse

Lets you browse for files and directories using the Add Files and Directories dialog.

**More information:**

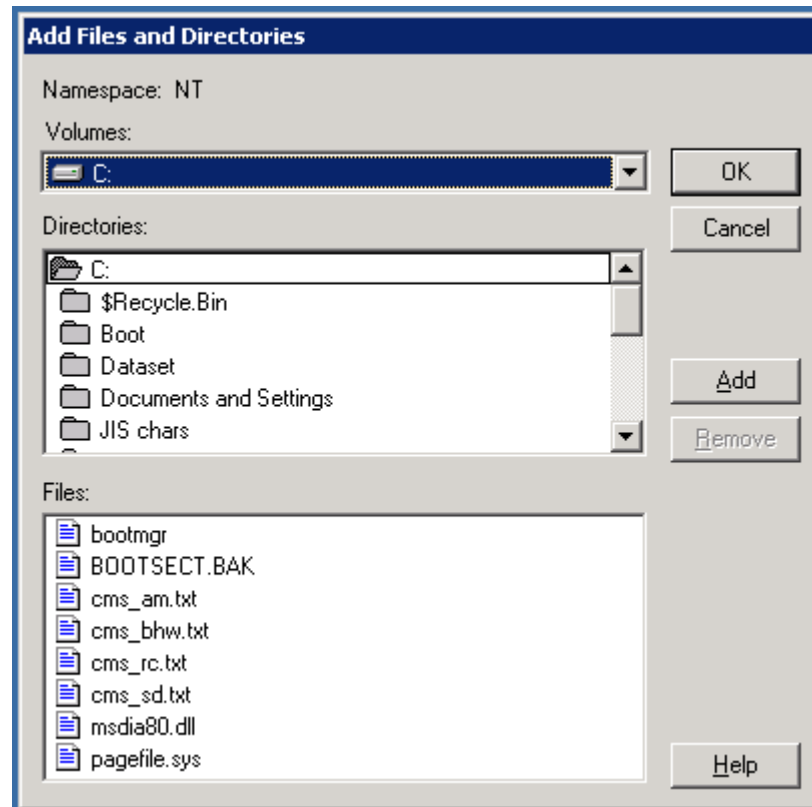
[Add Files and Directories](#) (see page 35)

**Delete Files or Groups**

Click Delete to remove the selected file or group on the File/Group tab. You will be prompted to confirm the deletion.

## Add Files and Directories

Use the Add Files and Directories dialog to add or remove files or directories by browsing your computer's volumes.



The Add Files and Directories dialog contains the following fields:

### Volumes

Displays the volumes or drives available on the selected server. When you select the name of a volume or drive, the Directories list and the Files list are updated. On NetWare computers, only traditional volumes are displayed.

### Directories

Displays the directory tree for the volume or drive currently selected in the Volumes list. Double-click a directory name to expand the subtree and display its contents in the Files list. A yellow folder icon identifies directories that have already been added.

### Files

Displays the files in the directory currently selected in the Directories list. Double-click the name of a file, or click Add, to add a file either to the currently selected group or as a nongroup item. A yellow file icon identifies files that have already been added.

### Add

Adds the current selection either to the current group, or as a non-group item. You can add more than one file or directory at a time. Select all the files or directories you require and click Add. To select multiple files, either drag your mouse over them, or click each name while holding the CTRL key down.

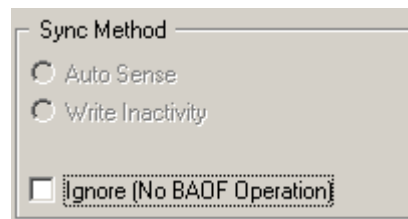
**Note:** Subdirectories are not included when you add a folder.

### Remove

Removes the current selection either from the current group or as a non-group item. To remove a file that was previously added, double-click its name, or click Remove.

## Sync Method Options

The File/Group tab provides access to the Sync Method options. Use these to specify how the agent detects if an open file is ready to be backed up by the backup client.



The Sync Method section contains the following options:

### Auto Sense (NetWare only)

Automatically selects which method to use to check if a file is in a safe state to be backed up (either Write Inactivity or Transaction Tracking) on a file-by-file basis. This is the default option for new files on NetWare computers.

### Write Inactivity

Selects Write Inactivity as the method to use to check if a file is in a safe state to be backed up. If no write activity occurs on a file for the number of seconds specified by the Write Inactivity Period, the agent considers the file to be in a safe state to be backed up.

If write activity does occur during this period, the agent again begins looking for a safe period for a backup, as defined by the Write Inactivity Period, until the File/Group Sync Timeout is exceeded.

For more information, see [Group Synchronization](#) (see page 11).

**Note:** This is the only synchronization method available for Windows-based computers.

**Transaction Tracking (NetWare Only)**

Waits until no Transaction Tracking System (TTS) transactions are outstanding. The agent stops waiting if the File/Group Sync Timeout is exceeded.

**Ignore (No BAOF Operation)**

Processes a file or group as though the agent were not present.

- If this option is set on a file (either a single file or a file within a group), the agent does not try to synchronize the file if it is open when the backup client tries to back it up.
- If this option is set on a group, the agent still attempts to synchronize the files in the group, but does so as if the group definition were not present. That is, if one of the files in the group cannot be synchronized, the rest of the files can still be backed up.

For example, consider a group that consists of the following files:

```
C:\CA ARCserve SRMDatabase\index1.dat  
C:\CA ARCserve SRMDatabase\index2.dat  
C:\CA ARCserve SRMDatabase\data.dat
```

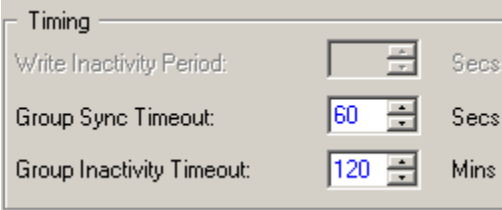
If you set the Ignore (No BAOF Operation) option on this group, and if index2.dat cannot be synchronized, index1.dat and data.dat are still backed up, assuming that the agent could synchronize them.

**More information:**

[File Synchronization](#) (see page 11)

## Timing Options

The Timing options let you configure non-default timeout values for individual files and groups.



The screenshot shows a window titled "Timing" with three configuration fields:

- Write Inactivity Period:** A numeric input field with a value of 0 and a unit of "Secs".
- Group Sync Timeout:** A numeric input field with a value of 60 and a unit of "Secs".
- Group Inactivity Timeout:** A numeric input field with a value of 120 and a unit of "Mins".

**Note:** To reset any of the three Timing fields to its default value, double-click the setting, or press Ctrl+D.

The Timing section contains the following options:

### Write Inactivity Period

Specifies the number of consecutive seconds that an open file must be inactive before the agent considers the file safe for backup.

- In the case of a group, the agent applies the Write Inactivity Period to every file in the group simultaneously before synchronizing the files in the group.
- The agent will continue to try to find a Write Inactivity Period of the indicated duration for each file or group until the File or Group Sync Timeout is exceeded.

**Note:** The Write Inactivity Period applies only if you select the Auto Sense or Write Inactivity method.

For example, if the Write Inactivity Period is set to five seconds, and no write activity occurs on a file for five seconds, the agent determines that it is safe for a backup client to back up the file.

### **File Sync Timeout or Group Sync Timeout**

Specifies the number of consecutive seconds that the agent continues attempting to determine if a file, or group of files, is inactive (as defined by the Write Inactivity Period).

- After this period is exceeded, the agent stops trying to find a safe time to allow the backup client access to the file or group.
- If the timeout expires without a safe time having been found, the agent rejects the open request from the backup client.

**Note:** The name of this field changes depending upon your selection. If you select a file in the File list, it is called File Sync Timeout; if you select a group, it is called Group Sync Timeout.

For example, if the File/Group Sync Timeout is set to 60 seconds, the agent tries to find a Write Inactivity Period for the file or group for 60 seconds. If the agent cannot find a Write Inactivity Period within this time, the agent rejects the request for the file or group.

### **Group Inactivity Timeout**

Specifies the number of consecutive seconds in a backup process during which the backup client can fail to back up additional files in the group. If this period is exceeded, the agent closes the group and stops the group backup. The timeout is noted in the log and the agent discards preview data.

You should set this to the lowest time value normally taken for your backup client to perform a complete backup. The default timeout is applied to all new groups added using the Files/Group tab of the Configuration dialog; those groups given a different, non-default Group Inactivity Timeout in the File/Group tab do not use this value.

**Note:** This option is not available on NetWare computers that only have NetWare NSS volumes. A NetWare computer must have at least one traditional volume to use this option.

For example, if there are five files in a group and you set the Group Inactivity Timeout to two hours. If the backup client takes more than two hours between finishing the backup of file 4 and opening file 5, a timeout occurs. A number of factors might lead to the time out, such as:

- The files are in different volumes.
- The drive has run out of media.
- The backup is aborted.

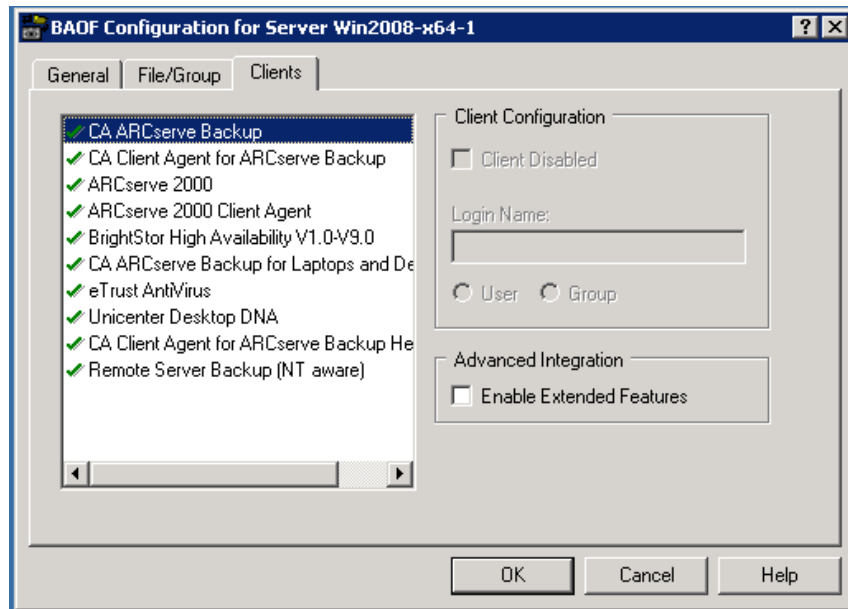
## Clients Tab

Use the Clients tab in the Configuration dialog to enable, disable, and configure backup clients on the selected computer.

**Note:** Whenever you disable or enable the CA Client Agent for ARCserve Backup, you should also disable or enable the CA Client Agent for ARCserve Helper service.

For information about configuring remote servers, see the section Advanced Configuration in this chapter.

**Note:** The Clients tab is not available on NetWare computers that have only NSS volumes. A NetWare computer must have at least one traditional volume to use these options. If a NetWare computer does not have any traditional volumes, use the NetWare Client Agent to back up remote servers.



The following options are available in the Clients tab:

### Clients

Displays all the backup clients supported by the agent. A green tick mark appears next to a client if it is enabled.

### Client Disabled

Disables the selected backup client. When a client is disabled, the agent prevents it from accessing open files.

This field is currently disabled. This behavior is now controlled by the backup server.



**Login Name**

Specifies the name to be associated with the selected login based client. The agent recognizes workstation-based backup clients and remote server-based clients, by associating particular login names with them. This field is currently disabled.

**Note:** If a client does not require a login name, you must disable this field for that client.

**Important!** This name must be reserved for use only by the client when performing backups. Other file activity under the same name causes unnecessary agent activity, which interferes with its correct functioning. Do not use "Admin," "Administrator" or any other name that is easy to guess as the login name.

**User and Group (Windows only)**

Determines whether the login name is a user or belongs to a group.

- When you select User, the current login-based client is recognized only when file activity originates from the user specified in the Login Name field.
- When you select Group, the current login-based client is recognized when file activity originates from any user belonging to the group specified in the Login Name field.

**Enable Extended Features**

Sends logging information and alerts to the CA ARCserve Backup event system. You can do this only if you are using CA ARCserve Backup as your backup client and have not enabled extended features for any other entries in the Client list, except for remote clients. If you select the option while other clients are selected, you are asked if you want to disable them.

**Note:** The agent can only send information to the local CA ARCserve Backup server when both, the CA ARCserve Backup server and the agent are installed on the same computer.

## Advanced Configuration

The following sections provide information about advanced configuration changes. In most cases, you will not need to modify the way you use your backup program. However, in one or two cases, small configuration changes may be necessary.

## Login Name Configuration for Remote Backup Programs

Backup applications that log in to a server, either from a workstation or from another server, must have a login name configured. This does not include backup applications that use remote agents such as Push Agents or NetWare Target Service Agents. If your backup application is not of this type, leave the corresponding client entries disabled.

### Example: Login name configuration

#### To set the login name using CA ARCserve Backup

1. Open the Backup Manager and go to the Source tab.
2. Right-click the server for which you want to configure the login name, and then select Security from the pop-up menu.
3. Enter a login name and password.

The login name should be the same name configured for the Workstation Based Backup (Login) client or the Remote Server Backup (Login) client in the Clients tab of the Configuration dialog.

- If the login name is the same name configured on the client workstation, you can successfully log in.
- If it is not the same name configured on the client workstation, update the login information.

#### More information:

[Clients Tab](#) (see page 40)

## Retry Mechanisms

Some backup programs try to gain access to open files by attempting a series of open requests, so that one of the attempts in the series might succeed. This method of backing up open files can only be partially successful, and it is rendered obsolete by the ability of the agent to obtain unconditional access to open files. You should, therefore, disable any such retry mechanisms in your backup program.

For example, if you are using CA ARCserve Backup, ensure that you disable the Retry Immediately and Retry After Job options in the Open File Retry Options area of the Global Options dialog.

**Note:** The agent does not provide the eTrust® Real-Time scan engine with access to open files. This is to prevent a virus from potentially hiding itself, by presenting the scan engine with a version of the infected file concealed as an uninfected file.

## Remote Server Configuration

Remote servers are backed up either by logging in or by using a remote backup agent (loaded on the remote server). Some backup products can use both methods during the same backup run. Therefore, you should enable both Remote Server methods in the Clients tab of the Configuration screen.

For Windows systems, the agent supports remote server-backup programs, where both the server on which the backup program is running and the target server being backed up are Windows systems. The backup program uses a special operating system feature ("open for backup intent") that is available only to holders of the user-right policy "Backup Files and Directories." This right is typically granted to administrators and backup operators. Use of this feature eliminates the need to configure a login name for remote server backup.

For NetWare systems, the agent supports remote server backup programs that support the Novell Storage Management Services (SMS) backup method. If you are using SMS, a Netware Loadable Modules (NLM) named SMDR.NLM is loaded on the remote server during backup.

### **More information:**

[Clients Tab](#) (see page 40)

## File Write Cache

Some application programs have the ability to cache file writes on the workstation on which they are run. Therefore, a backup program on the server is not guaranteed to see an up-to-date view of the file. This can lead to data integrity problems. This problem is not created by the agent, but may arise as a result of using the agent, since you can now, for the first time, back up such files while they are in use.

The best solution is to configure the application, if possible, to prevent write caching.

### Example: prevent write caching

In Microsoft Access, ensure that your database does not have the 'exclusive' attribute.

If you are using a Novell client software and if your application does not let you to turn off write caching, use the following methods to prevent write caching:

- If you are using VLMs, add the following line to the NetWare DOS Requester section of your NET.CFG file:

```
CACHE WRITES OFF
```

- If you are using NETX, add the following line to the NetWare DOS Requester section of your NET.CFG file:

```
CACHE BUFFERS=0
```

## Renamed or Deleted Files

If an application tries to rename or delete a file while the client is backing it up, the agent delays the rename or delete request for a period up to the File Sync Timeout setting for the file. If the client is still backing up the file when the timeout expires, the agent passes the rename or delete request on to the server operating system, which may fail it with a File In Use error.

Files that are part of an active agent group can give rise to warning messages in the log file when they are renamed or deleted.

Files that are frequently renamed or deleted are typically text, spreadsheet or similar files of relatively small size, which are backed up before the timeout expires.

## Servers Scan

The first time the agent starts, it displays only your local computer in the File Servers list. When you run the agent subsequently, it displays all the computers found in all previous scans. You must expand any collapsed network branches to see these computers.

- In the File Servers list, when you expand a collapsed network branch (such as Microsoft Windows Network or a workgroup or domain name), the agent displays any servers already known to exist in that branch.
- If no servers are known to exist in the branch, the agent automatically performs a scan as soon as you expand it.
- If you double-click the name of a server whose status indicates that it is not running the agent, that server is re-scanned to update its status, if necessary.

To force the agent to re-scan all expanded components of the network hierarchy, click Scan.

If the Console encounters more than 200 servers when scanning, it terminates the scan and reports only those servers in the recently-used list. The agent then prompts you to use Find to locate the server you want.

### **More information:**

[The Console](#) (see page 23)

## Change the Preview Data Volume

In some circumstances, you might need to move the preview data generated by the agent to a different disk volume—for example, if the volume on which the preview data is stored is too small. The default volume for Windows is the volume on which the agent was installed.

### To change the preview data volume

1. Check that no backup sessions are in progress enter the following command:

#### For Windows

```
NET STOP OPENFILEAGENT
```

#### For NetWare

```
UNLOAD OFA.NLM
```

The agent closes.

2. Use a text editor and open the agent's configuration file, OFANT.CFG.

By default, the agent is located in the following directory:

```
C:\Program Files\CA\ARCserve Backup Agent for Open Files
```

3. Add a new line to the section that starts with [General]. If the section does not exist, you can create it.

```
[General]
```

```
PreviewDataVolume = x
```

**Note:** Substitute x with the desired volume identifier.

4. Save the changes to the configuration file.
5. Restart the agent using the following command:

#### Windows

```
NET START OPENFILEAGENT
```

#### NetWare

```
LOAD OFA.NLM
```

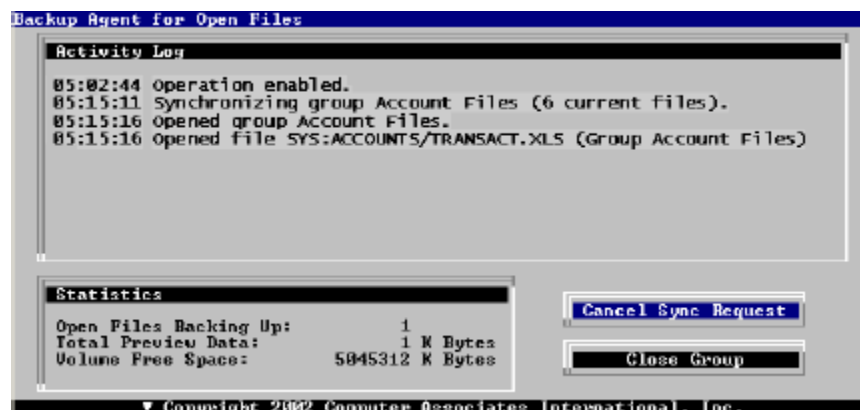
The preview data volume is changed.

## Agent Status

This section describes how you can check the agent for both NetWare and Windows servers using the Agent for Open Files Status dialog.

## Agent Status on a NetWare Server

To view the status of the agent on a NetWare server, press Alt+Esc until the Backup Agent for Open Files status dialog displays. You can also press Ctrl+Esc to open a list of windows, and then choose the status dialog from the list.



The following options are available in the dialog:

### Cancel Sync Request

Stops the synchronization of a file. You must select a file from a list.

### Close Group

Closes an open file group. You must select a group from a list.

The display-only fields under the Statistics heading give information about space usage and about the files being used by the agent.

### Open Files Backing Up

Displays the number of open files with the agent that are currently being backed up.

### Total Preview Data

Displays the amount of temporary file data the agent currently holds on the selected computer's preview data volume. The agent makes a temporary copy of those portions of files that are changed by an application while they are open for backup.

### Volume Free Space

Displays the amount of free space on the preview data volume on the selected computer.

## Agent Status on a Windows Server

The Agent for Open Files Status button is enabled only if you configure Agent for Open Files to back up open files on the server. This button is disabled when you configure Agent for Open Files to back up open files using Microsoft VSS.

### To view the Agent for Open Files Status on a Windows server

1. Open the Backup Manager.
2. Select a computer in the Source tab.
3. Right-click the computer that has Windows or NetWare Engine installed and select View Agent for Open Files Status from the pop-up menu.

The BAOF Status for Server (name) dialog opens.

You can also select this option from the Additional Information pane on the Backup Manager.

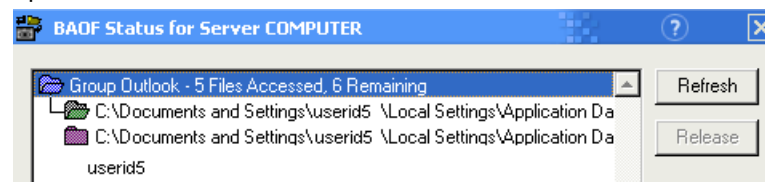
**Note:** The option is enabled only if the Agent for Open Files Console and CA ARCserve Backup Manager are installed on the same computer.

To access the BAOF Status for Server (name) dialog from the console, select a server from the File Servers list, and then click Status.


### Agent for Open Files Status Dialog

The Agent for Open Files Status dialog shows the files and groups currently being processed by the agent on the selected computer.

- The list displays a file if the file is currently open or waiting to be opened by the agent.
- The list displays a group if the group contains open files or files waiting to be opened.






The following table shows the icons next to each file name or group name, and indicates the status of that file or group.

File	Status
	The file is open and the agent is using it.
Green	



---

File	Status
 Red	The file is waiting for the agent to open it. The file will not be opened until it is in a safe state for backup as determined by timeout values.
 Purple	This synchronized file is part of an open group and has preview data, which the agent is retaining. The preview data is retained until the group closes.
 Blue	This group contains at least one open or waiting file. The dialog also shows the total number of files from the group that has been processed (including currently open files) and the total number of files remaining to be processed.

---

**Note:** The Agent for Open Files Status dialog displays an alert if the agent becomes disabled. The agent is disabled if there is insufficient free space on the server's preview data volume or if a license violation occurs, for example. The alert closes when the error condition is corrected.

The following options are available in the dialog:

#### **Refresh**

Refreshes or updates the information in the Agent for Open Files Status dialog.

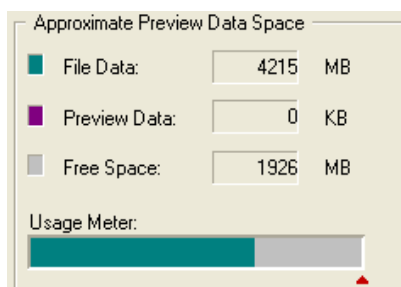
#### **Release**

Cancels the synchronization request for a file or to close an open group after selecting an entry in the Agent for Open Files Status dialog. You should do this only when you think the file or group is no longer being processed by the backup client.

**Note:** The Release option is available only if you have administrator rights.

## Preview Data Volume Space

The Preview Data Volume Space section of the Agent for Open Files Status dialog displays information about the space for preview data volume (the volume on your computer where the temporary preview data is kept) for NetWare NSS volumes.



The following list explains the fields in this section:

### File Data

Displays the amount of space in use on the selected computer's preview data volume, excluding the temporary file data used by the agent. This is indicated in green on the Usage Meter.

### Preview Data

Displays the amount of temporary file data the agent is currently holding on the selected computer's preview data volume. The agent makes a temporary copy of those portions of files that are changed by an application while they are open for backup by a client. This is indicated in purple on the Usage Meter.

### Free Space

Displays the amount of free space on the selected computer's preview data volume. This is indicated in gray on the Usage Meter.

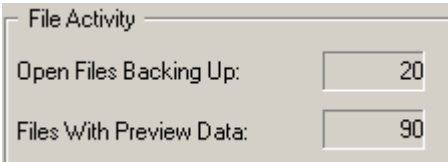
### Usage Meter

Graphically illustrates the current usage of space on the selected computer. A red triangle indicates the current setting of the Minimum Free Space threshold, below which the agent suspends activity. You can set this value in the General tab of the Configuration window. Green indicates File Data; purple indicates Preview Data; and gray indicates Free Space on the server's preview data volume.

## File Activity

The File Activity section of the Agent for Open Files Status dialog displays real-time information about the files that are currently used by the agent.

**Note:** The File Activity values do not include information about NetWare NSS volumes.



The screenshot shows a dialog box titled "File Activity". It contains two rows of information. The first row is "Open Files Backing Up:" followed by a text box containing the number "20". The second row is "Files With Preview Data:" followed by a text box containing the number "90".

The File Activity section contains the following fields:

### Open Files Backing Up

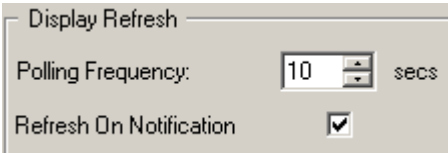
Displays the number of open files that the agent is currently backing up.

### Files With Preview Data

Displays the number of files currently with the agent and in use by an application. These files may have temporary preview data held by the agent.

## Display Refresh

The Display Refresh section of the Agent for Open Files Status dialog lets you set notification options for the agent.



The screenshot shows a dialog box titled "Display Refresh". It contains two rows of information. The first row is "Polling Frequency:" followed by a spin box containing the number "10" and the text "secs". The second row is "Refresh On Notification" followed by a checked checkbox.

The following fields are available in this section:

### Polling Frequency

Specifies the frequency, in seconds, with which the status display is updated. Saved from one run of the Console to the next.

### Refresh on Notification

Updates the display whenever there is a change in the status of the agent. This option is independent of the Polling Frequency setting.

## Access Log File Viewer

You can access the Agent for Open Files Log File Viewer from the Backup Manager.

### To access the Agent for Open Files Log File Viewer

1. Select a computer from the browser in the left pane of the Source tab.
2. Right-click the computer that has the Windows or NetWare Engine installed and select View Agent for Open Files Log File from the pop-up menu.

The agent log files on the selected computer are displayed.

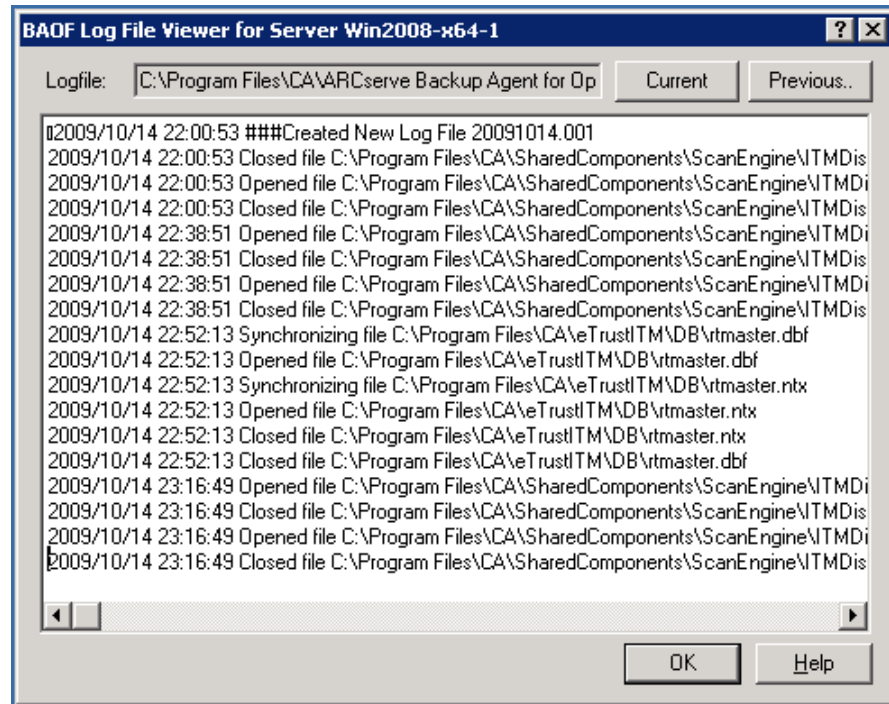
You can also select this option from the Additional Information pane on the Backup Manager. This option is enabled only if the Agent for Open Files Console and CA ARCserve Backup Manager are installed on the same computer.

To access the BAOF Log File Viewer for Server (name) from the console, select a server from the File Servers list and click View Log.

**Note:** The View Log button is enabled only if you configure Agent for Open Files to backup open files.

## Log File Viewer

The Agent for Open Files Log File Viewer displays log file information. The Viewer selects the most recent log file by default. The Logfile field displays the full name of the log file you are currently viewing.



Each log file is shown as a range of dates and times. You can scroll forward and backward through the entries. You can also select multiple files from the list and copy them to a clipboard or any text editor.

**Note:** The date is displayed in the format yyyy/mm/dd.

Each entry in the log shows the agent's activity with respect to a single file or group of files.

If you are viewing the currently active log file on a Windows server, you can see agent events in real time simply by scrolling to the end of the log file. New entries appear automatically as they are generated by the server.

**Note:** If the Agent for Open Files and CA ARCserve Backup are installed on the same Windows server, real-time agent events are written to the CA ARCserve Backup activity log.



# Chapter 4: Best Practices

---

This chapter provides information about making the best use of the agent and Microsoft's Volume Shadow Copy Service (VSS) to handle the backup of open files. It gives a comparison of the agent with the VSS feature and provides specific recommendations for their use in backup jobs.

This section contains the following topics:

[The Agent and VSS](#) (see page 55)

[Using the Agent to Handle Open Files](#) (see page 55)

[Backing up a Small Amount of Data on a Large Volume](#) (see page 56)

## The Agent and VSS

Open files can cause significant problems when backing up data. CA ARCserve Backup provides two solutions for dealing with open files:

- Agent for Open Files
- Support for VSS

VSS works with CA ARCserve Backup and VSS-aware applications and services to create shadow copies of the volumes on your computer. A shadow copy is a frozen view (a snapshot) of a volume's file system; it resides on a volume separate from the one that was copied. The shadow copy serves as the source for the backup after it is created.

The following sections describe when it is most appropriate to use each solution.

## Using the Agent to Handle Open Files

Use the agent to back up files in the following scenarios:

- When you are backing up small amounts of data on a large volume
- When you are backing up files on a volume that has high utilization
- When you are backing up files that are not supported by a Writer (A Writer is an application that is aware of VSS.)

### **More information:**

[Introducing the Agent](#) (see page 9)

## Backing up a Small Amount of Data on a Large Volume

The agent operates on a per-file basis. This means that each open file is processed as it is encountered. By contrast, VSS operates on a per-volume basis, which means that VSS must prepare the entire volume for the backup job before the backup job can begin. With this in mind, consider a backup consisting of 10 gigabytes of critical database files that reside on a 120 gigabyte hard disk.

- Using VSS, a snapshot of the entire 120 gigabyte volume must be taken, and each Writer with data on that volume must prepare its files (both open and closed) before the backup job can begin.
- Using the agent, if the files to be backed up are closed when the request for the backup is made, the backup can begin immediately. If there are any open files, the agent synchronizes them and allows CA ARCserve Backup to back them up.

For these reasons, when you are backing up a small amount of data (relative to the size of the volume on which it resides), using the agent to handle open files results in a much faster backup.

### Backing up Files that are Not Supported by a Writer

The agent operates independent of other applications. The agent for CA ARCserve Backup backs up open files without disturbing an application; an application can write to its files when a backup job is running without having to communicate with the agent at all.

- When backing up open files, VSS relies on VSS-aware applications, known as *Writers*, to prepare their associated files for backup. For example, the Microsoft Exchange Writer is responsible for preparing Microsoft Exchange files.
- If there is no Writer available for a certain application, any open files of that type are not reliably backed up.

Using the agent for backing up is the only way to guarantee that all open files, including those that are not associated with a Writer, will be reliably backed up. If open files that are not associated with a Writer are backed up using VSS, there is no guarantee of transactional integrity and you will run the risk of invalidating the entire backup.



## Using VSS to Handle Open Files

VSS technology is best used when the files you are backing up are associated with a Writer. Because of the way in which Writers communicate with their applications and the application's files, VSS is able to obtain an in-depth knowledge of the transactional behavior of a Writer's files. In a situation where file activity is very high, the agent may take much longer than VSS to find a transactionally safe period to back up the open files.

VSS support is enhanced on Microsoft Windows Vista and other new operating systems. It is recommended that you use VSS on Microsoft Windows Vista and Microsoft Windows Server 2008, to backup open files.

For more information on how VSS works, see *CA ARCserve Backup for Windows Microsoft Volume Shadow Copy Service Guide*.



# Appendix A: Troubleshooting

---

This section contains the following topics:

[Common Problems](#) (see page 59)

## Common Problems

This section describes some common problems that you may encounter.

### Install the agent on a compressed drive

#### **Cannot install the agent on a compressed drive**

##### **Symptom:**

Installing the agent on a compressed drive, partition, or directory may cause data corruption.

##### **Solution:**

If you must use compressed storage, store the Preview Data volume in an uncompressed location to prevent data corruption.

##### **More information:**

[Change the Preview Data Volume](#) (see page 46)

## Unable to Access the Agent Using the Console

### Unable to Access the Agent Using the Console

#### Symptom:

You are unable to access the Windows or NetWare Engine on your server using the Backup Agent for Open Files Console on your workstation.

#### Solution:

If you encounter this problem, you must:

- Check that the Windows or NetWare Engine is properly installed and running on the server.
- Check if you can view the server from Windows Explorer on your workstation. If not, a problem may exist in your network hardware or software configuration.
- If a server is displayed in Windows Explorer but does not appear in the File Servers list on the console, check if you are scanning the network properly. Verify if you have at least Guest access to the server.

If the server appears in the File Servers list but you cannot configure the agent on it, you may not be logged in to the server with sufficient rights.

#### More information:

[Servers Scan](#) (see page 45)

## Cannot access agent on my server when using the Console

### **Cannot Access the Agent on my server when using the Console on the Workstation**

#### **Symptom:**

Any or all of the following:

- The file is not listed in the log.
- The log shows Unable to Sync File/Group Filename.

#### **Solution:**

Use the console to check the agent log file to identify the server that is storing the skipped files. Each time CA ARCserve Backup accesses an open file, an entry is made in the log.

- If the file is not listed in the log, the agent has not recognized the client.
- If the log shows Unable to Sync File/Group Filename, the agent could not find a time when the file or group was in a consistent state to be backed up. Try increasing the value of File Sync Timeout or reducing the value of Write Inactivity Period. Make sure that the timers are set with enough time to ensure transactional integrity.
- If the file is not part of a group, you can create an entry for the file in the File/Group tab of the Configuration dialog rather than change the default values in the General tab.

#### **More information:**

[Clients Tab](#) (see page 40)

## Fails to Load Successfully After the Agent Is Loaded

### **An NLM Fails to Load Successfully After the Agent Is Loaded**

#### **Symptom:**

A NetWare Loadable Modules (NLM), which loaded successfully before the agent was installed, fails to load when the agent is loaded.

#### **Solution:**

Load the problematic NLM first, and then load the agent. This problem may occur with some of the older antivirus NLMs or with NLMs that modify the NetWare server kernel, although the agent is generally compatible with such NLMs.

## Network Scan Takes Too Long

### Network Scan Takes Too Long

**Symptom:**

The agent takes an extremely long time to scan the Microsoft network.

**Solution:**

This can happen if the files you are copying are held locally in a cache on your workstation.

**Note:** This is the cache used by the network client software, and is not related to local disk caching, for example, by SMARTDRIVE. In these circumstances, the agent, on the server, never sees you access the files on your workstation, and cannot tell when to close the group.

You can prevent this from happening if you ensure that you only access the files once. This forces the workstation to get the file data from the server, allowing the agent to function properly. If you were to access the files a second time, there is a good chance that the data would be obtained from the cache.

**More information:**

[Servers Scan](#) (see page 45)

## Insufficient Rights to Display File Name

### Insufficient Rights to Display File Name message

**Symptom:**

File names do not display.

**Solution:**

To view file names on the BAOF Status dialog, log in to the server with administrator, backup operator, server operator, supervisor, or console operator rights. The system security only identifies file names you have on one of these levels of access.

**Note:** You can still view synchronization status and group information, including group names and progress information, even if you are not logged in to the server with administrator, backup operator, server operator, supervisor, or console operator rights.

**More information:**

[Advanced Configuration](#) (see page 41)

---

## CA ARCserve Backup Loses Its Connection to a Remote System

### CA ARCserve Backup Loses Its Connection to a Remote System

#### Symptom:

CA ARCserve Backup sometimes loses connection to a remote system while executing a backup job.

#### Solution:

If a file on the remote system being backed up takes a long time to synchronize—for example, if it is written to continuously by an application—the host system (the one on which you are running CA ARCserve Backup) can time out, leading to a lost connection.

There are two possible solutions:

- Reduce the File Sync Timeout period to 40 seconds to increase the chances that the file will be synchronized.
- If this is not possible, increase the session timeout on the host system, as follows:
  - From the Windows Start menu, click Run. Enter REGEDIT, and click OK. The Registry Editor opens.
  - Locate the following registry key:

```
HKEY_LOCAL_MACHINE/System/CurrentControlSet/Services/  
LanmanWorkstation/Parameters
```
  - Set the value of SessTimeout to be greater than the File Sync Timeout. For example, if File Sync Timeout is set to 60 seconds, set SessTimeout to 70 seconds. If SessTimeout does not exist, create it as a new REG\_DWORD value.

**Important!** Be very careful when editing the Windows Registry. Incorrectly modifying registry settings can cause your system to become unstable. For assistance, contact CA Support at <http://ca.com/support>.

## Windows Computer Stops Responding When Many Files Are Open During a Backup Job

### **Windows Computer Stops Responding When Many Files Are Open During a Backup Job**

**Symptom:**

Your Windows computer stops responding when many files are open during a CA ARCserve Backup job.

**Solution:**

When a computer running Windows has many files open that are frequently being written to and a backup job is requested, the agent may require a large amount of disk space to store the file preview data. By default, preview data is stored on the C:\ drive. Thus, if the disk usage gets to be too high, your system can stop responding.

To solve this problem, reconfigure the agent to store the preview data on a different drive. For instructions on how to change the drive on which the preview data is stored, see Change the Preview Data Volume in the chapter "Using the Agent."

## Backup seems to pause

### **Backup seem to pause for a while**

**Symptom:**

When CA ARCserve Backup tries to copy an open file, the agent holds the request until it has established that the file is in a good state for backup. Because of the Write Inactivity period, this can take a few seconds. The backup continues automatically once the file or group is synchronized or when the File/Group Sync Timeout has expired.

**Solution:**

None



## Frequent File In Use Errors on Certain Files

### **Frequent "File In Use" Errors on Certain Files**

#### **Symptom:**

Certain files cannot be backed up because they frequently report a File In Use error.

#### **Solution:**

If an application tries to rename or delete a file while it is being backed up by a client, the agent delays the rename or delete request for a period of time up to the File Sync Timeout setting for the file. If the client is still backing up the file when the timeout expires, the agent passes the rename or delete request onto the server operating system, which may fail it with a File In Use message.

Files that are frequently renamed or deleted are text files, spreadsheet files, and relatively small files that are usually backed up before the timeout expires. Files that are part of an active agent group can also trigger warning messages in the log file when they are renamed or deleted.

To solve this problem, increase the File Sync Timeout value on the files that are generating the File In Use errors.

For more information on setting non-default File Sync Timeout values for specific files, see Clients Tab in the chapter "Using the Agent."

## Backup log reports open files are skipped

### Backup log reports open files are being skipped

#### Symptom:

Your version of the agent may support more than one login client. All login clients identify the backup program by comparing the current logged-in user name with the user name specified for the login client in the Clients tab of the Configuration screen. The user name you select should be reserved for backup and not used for any other purpose.

#### Solution:

- Check that a Windows or Netware Engine is loaded on each of the servers you are backing up. If you have more than one server, you need multiple copies of the Agent for Open Files or a multi-server license.
- If you are using a server-based backup product to back up the local server (the server where the backup program is running), check that the backup product is included in the list of supported clients and that the client is enabled in the Clients tab of the Configuration screen.

For more information on configuring clients, see Clients Tab in the chapter "Using the Agent."

- If you are using a server-based backup product to back up a remote server, check that a login client is enabled on the remote server and that the login name is set to the same user name that the backup product is using to access the remote server.

For more information on configuring clients, see Clients Tab in the chapter "Using the Agent."

- If you are using a workstation-based backup product or a dedicated backup server, check that a login client is enabled on all the servers you are backing up and that the login name on each is set to the same user name that the backup product is using to access the server.

For more information on configuring clients, see Clients Tab in the chapter "Using the Agent."

## File groups stay open after backup has finished

### File groups stay open after backup has finished

**Symptom:**

If you are performing an incremental or differential backup, some files are not backed up because they have not changed. If these files are in a group, the agent does not close the group because CA ARCserve Backup did not access all the files. This is not harmful, and the group closes automatically when the Group Inactivity Timeout expires.

**Solution:**

To force the group to close, click Release in the Agent for Open Files Status dialog.

## Agent does not recognize file name for Macintosh namespace

### Agent does not recognize the file name for Macintosh namespace

**Symptom:**

The backslash (\) or slash (/) characters used in other namespaces are not valid path separators on the Macintosh.

**Solution:**

Ensure to use the colon ( : ) character as the path separator when using the Macintosh namespace.

The following illustrates a valid Macintosh namespace:

```
SYS:folder1:folder2:filename
```

**Note:** Wildcards are not available in the Macintosh namespace.

## Files belonging to my backup problem could not be synchronized

### Files belonging to my backup program were not synchronized

#### Symptom:

Your backup program probably maintains its own database and log files containing information about backups, media, and so on. It probably uses these files quite often, and this activity can be sufficient to prevent the agent from synchronizing the files during backup.

#### Solution:

To solve this problem, define a group containing all these files and configure the agent to ignore these files. (These files typically occupy only one or two directories.) To do this, go to the File/Group tab of the Configuration dialog and select the Ignore (No CA ARCserve Backup Agent for Open Files Operation) option for each file specification within the group.

**Important!** Do not select the Ignore (No BAOF Operation) option at the group level. Setting this option at the group level does not stop the agent from backing up the files in the group; it only makes the agent function as though the files were not part of the group.

## Open Files Status dialog appears to be corrupted

### Agent for Open Files Status dialog appear to be corrupted

#### Symptom:

Some of the techniques the agent uses in the server display cannot be replicated by RCONSOLE and this causes blinking and incorrect formatting of the remote display. Operation is unaffected and it is safe to use RCONSOLE with the agent.

**Note:** RCONSOLE is the DOS-based Remote Console utility which is used to log in to NetWare machines remotely. RCONSOLE.EXE is available in the following location:

```
\\<Server Name>\SYS\PUBLIC
```

#### Solution:

If you use RCONSOLE frequently, you can disable the graphic display and use a conventional text format. To do this, add the -v switch when loading the agent:

```
LOAD OFA -v
```

## When using workstation as a backup client to copy files, groups do not always close

### **When using workstation as a backup client to copy files, groups do not always close**

#### **Symptom:**

This can happen if the files you are copying are held locally in a cache on your workstation. In these circumstances, the agent on the server does not know when you access the files on your workstation and cannot tell when to close the group.

**Note:** This is a cache used by the network client software and is not related to local disk caching (for example, the kind of caching done by SMARTDRIVE).

#### **Solution:**

To prevent this from happening, ensure that you only access the files once. This forces the workstation to get the file data from the server, allowing the agent to function properly. If you were to access the files a second time, there is a good chance that the data will be obtained from the cache.

## When agent synchronizes a group it does not wait for the entire Write Inactivity Period

### **When agent synchronizes a group, it does not wait for the Write Inactivity Period**

#### **Symptom:**

Under Windows, the agent is able to determine accurately when a file was last modified. When it needs to synchronize a group, it may find that none of the files in the group have been modified for a period equal to or exceeding the Write Inactivity Period so that it can synchronize the group immediately.

#### **Solution:**

None.

## A backup job fails with license errors when backing up open files on a virtual machine

**A backup job fails with license errors when backing up open files on a virtual machine.**

**Symptom:**

A backup job fails with license errors when backing up open files on a virtual machine.

**Solution:**

Verify if you have the following items installed on the virtual machine:

- A valid license for the Agent for Open Files on Windows, or a valid license for the Agent for Open Files for Virtual Machines on Windows
- VMware tools

If you do not have these items, install them and then resubmit the backup job.

## Cannot see Agent for Open Files menu items

**Valid on Windows XP, Windows Vista, and Windows 7**

**Symptom:**

Any or all of the following:

- I cannot see the menu items for the Agent for Open Files in the Source tab of the Backup Manager.
- When I add a server from the Console using the Find button, the operation fails and the message, "Unable to locate the specified file server" appears.

**Solution:**

Verify if you have turned on the Windows firewall. If you have turned it on, add Netlogon Service to the Windows firewall exception list.

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