

BrightStor[®] ARCserve[®] Backup for Windows

Agent for Open Files Guide

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Computer Associates®

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Chapter 1: Introducing the Agent

BrightStor® 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 BrightStor ARCserve Backup offers is the BrightStor® 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, as well as troubleshooting advice. This chapter provides information about the agent and its components, as well as file access control and data integrity under the agent.

File Access Control

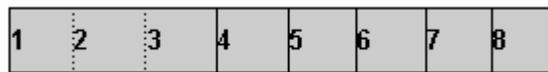
Conventional backup programs cannot reliably back up open files. When an application opens a file, no other application can access it. As long as the file is open, it remains under the exclusive control of the application that opened it, and all other applications—even backup programs, which only need 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.

Consider the following example, 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 Computer Associates 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 Computer Associates license and is only installed on NetWare computers.

Console

The Backup Agent for Open Files 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.

Windows Engine

The Windows Engine is the software that enables BrightStor 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

This chapter describes how to install and configure the Agent for Open Files on Windows and NetWare computers. The information in this chapter assumes you are familiar with the characteristics and requirements of the specified operating systems in general, and with administrator responsibilities on those operating systems in particular.

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 a list of these requirements, see the readme files.
- 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.

Installation Procedure

The Agent for Open Files follows the standard installation procedure for the system components, agents, and options of BrightStor ARCserve Backup. For the detailed steps in this procedure, see the *Getting Started*.

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

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

Installation of the Console and Windows Engine

To install the console and Windows Engine, follow the standard installation procedure for the system components, agents, and options of BrightStor ARCserve Backup. For the detailed steps in this procedure, see the *Getting Started*.

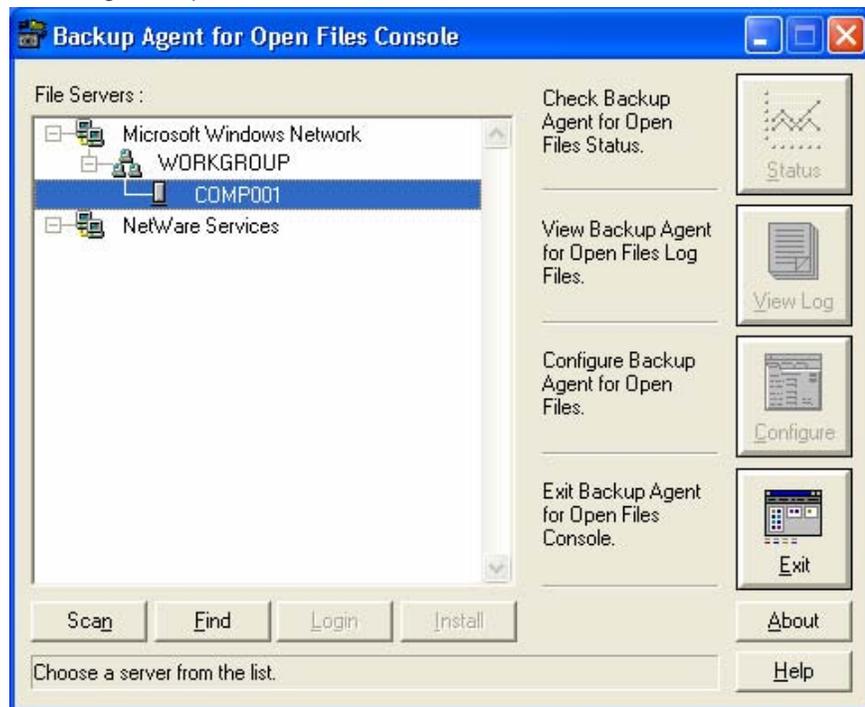
Installation of the NetWare Engine

The NetWare Engine—the software that you use to back up open files on NetWare computers—must be installed from a Windows server on which both the Console and the Novell NetWare Client software are installed. For instructions on how to install the agent on Windows, see the *Getting Started*.

To install the NetWare Engine, follow these steps:

1. Select Programs, Computer Associates, BrightStor, ARCserve Backup Agents, and Agent for Open Files from the Start Menu.

The Backup Agent for Open Files Console appears as shown in the following example:



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.

- 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 appears 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.

- 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 appears when the installation is complete.



- 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

To uninstall the Agent for Open Files, follow these steps:

1. Open the Windows Control Panel.
2. Double-click the Add or Remove Programs icon.
3. Select CA BrightStor ARCserve Backup Agent for Open Files.
4. Click Remove.

The Add or Remove Programs dialog appears asking whether you want to remove CA BrightStor ARCserve Backup Agent for Open Files.

5. Click Yes.

The Agent for Open Files is uninstalled.

Uninstall the NetWare Engine

To uninstall the NetWare Engine, follow these steps:

1. Delete the following OFA files:

```
SYS:SYSTEM\OFA.NLM  
SYS:SYSTEM\OFANSSX.NLM  
SYS:SYSTEM\OFANSS.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

This chapter provides information for you to start using the BrightStor ARCserve Backup as quickly as possible. It discusses how to get started, the Console, general configuration, viewing the agent status, and some advanced configuration topics.

Preliminary Considerations for Using the Agent

After installing the Windows or NetWare Engine on your server, you are ready to start using BrightStor 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, follow these steps:

- 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 BrightStor 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 BrightStor 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.

For more information about remote clients, see Clients Tab later in this chapter.

- 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.

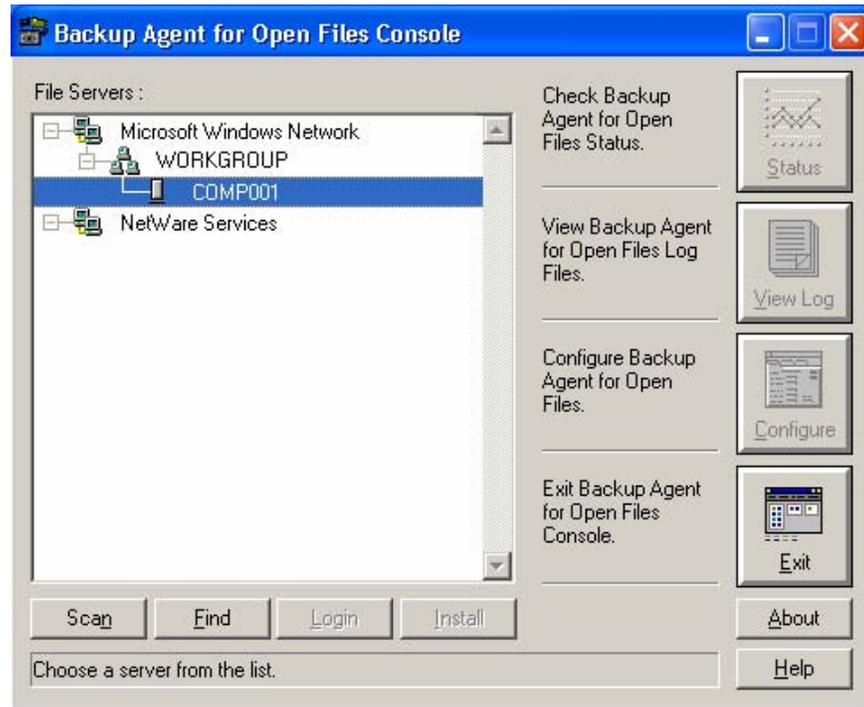
For a description of groups, see File Synchronization in the chapter "Introducing the Agent."

- 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.

For more information on post-installation configuration, see Agent Configuration and Advanced Configuration topics in this chapter.

The Console

When you start the Console on your workstation, the main dialog appears. From this dialog, you can control and monitor BrightStor 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 and can be configured because you are logged in with administrator, backup operator, server operator, supervisor, or console operator rights. Double-click the entry to view the agent status.

Icon	Agent Status
	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. Then double-click the entry to view the agent's status.
	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.

- **Scan (or F5)**—Searches for active servers on your network and update the File Servers list.

The Console only scans expanded branches of the network tree. It does not scan collapsed branches. To scan a collapsed network branch, you must first expand it. If the Console is unaware of any servers known to exist in that branch, it scans the branch immediately. To do a full scan of the branch, expand the branch and click Scan.

For more information about how the Console performs scans, see the Servers Scan later in this chapter.

- **Find**—Locates a server. In the Find Server dialog, select the networks for the Console 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 asks you to log into the server if you do not have access rights.
 - For NetWare computers, you can log in using the Login button.
 - For Windows computers, you must log in using Windows Explorer.

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

- **Login**—Allows you to 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**—Click Install to install 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.
- **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 straight to the Agent for Open Files Status dialog if the agent is running on that server.

For more information, see Status Dialog or Agent Log Files in this chapter.

- **View Log**—Displays the Log File Viewer dialog and to see the log file for the selected computer.

For more information, see Agent Log Files in this chapter.

- **Configure**—Configures the General tab of the agent Configuration window and allows you to set various global settings for the agent on the selected computer.

For more information, see Agent Configuration in this chapter.

Agent Configuration

To access the Agent for Open Files Configuration dialog, do one of the following:

- **From the Console**—Click Configure.

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

- **From the BrightStor ARCserve Backup Manager**—On the Source tab, select a computer from the browser in the left pane. You can either right-click the computer or go to the Additional Information pane on the bottom-right of the window. Click Configure Open File Agent.

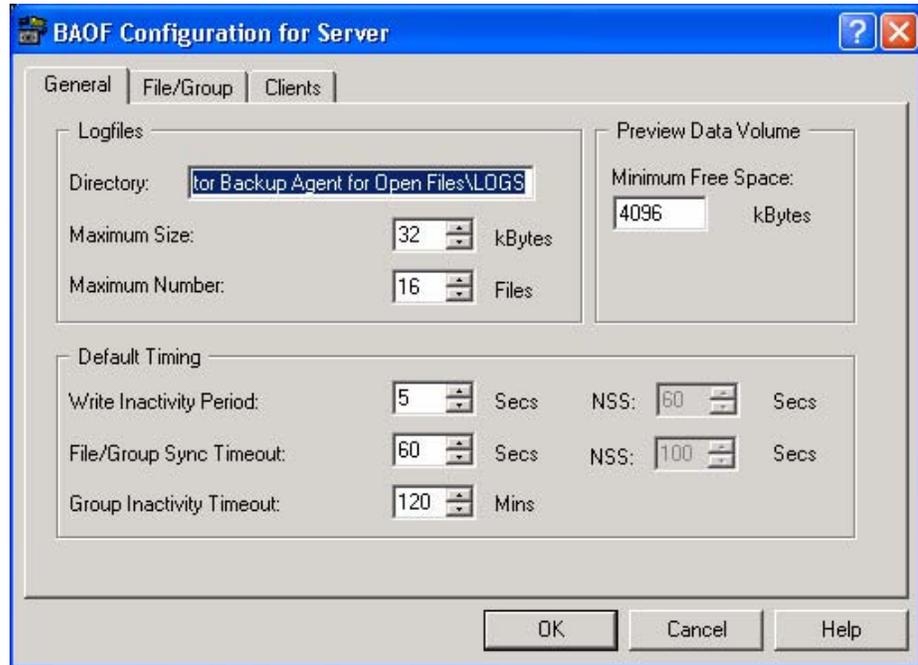
Note: This procedure will be enabled only if you have installed the Agent for Open Files Console on the same computer as the BrightStor ARCserve Backup Manager.

The Agent for Open Files Configuration dialog appears for the selected computer. You can configure a number of global settings on the selected computer from this dialog.

The following sections describe information about the settings available to you.

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

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

- **Directory**—The directory in which the agent places its log files. You must give the full path, including the volume or drive name. For example, the default paths for:

Windows:

C:\Program Files\CA\BrightStor 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

- **Maximum Size**—The maximum size, in kilobytes, to which a log file can grow before the agent starts a new file.
- **Maximum Number**—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 the values you specify for all open files on the selected server that come under the control of the agent. Files that have been given non-default values using the File/Group tab 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 are currently open.
 - If a timeout does occur, it is noted in the log, the group is closed automatically, and the preview data is not retained.
 - You should set this 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 added 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.

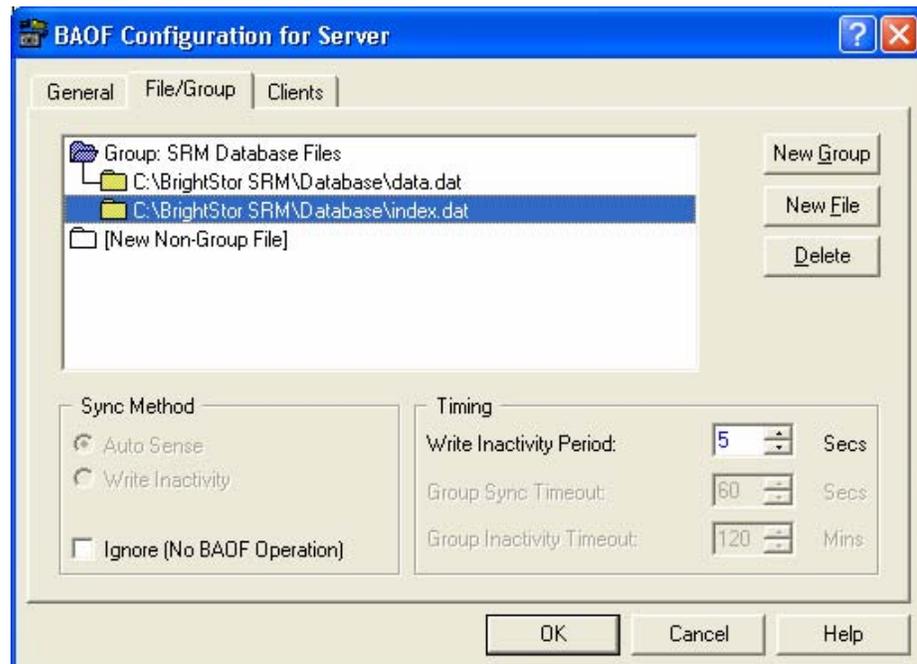
For information regarding changing the preview data location, see Change the Preview Data Volume in this chapter.

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 shows the files and groups currently known to the agent. 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 (see The General Tab in this chapter).

For more information on setting default values, see Default Timing Configuration in this chapter.

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 it.

The New Non-Group File icon is a special entry to enable a new file to be added. Select this, 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.

New Group Addition

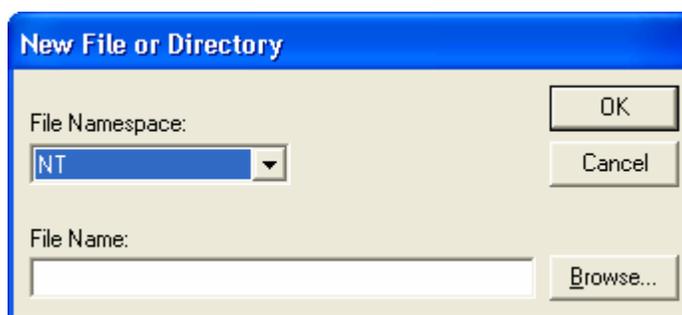
Click New Group to add a new group to your agent configuration. You must supply a unique name for the group.

New File Addition

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.

In either case, the New File or Directory dialog appears as shown in the following example:



If you try to add a file twice to the agent configuration using its physical path and using a reparse point, the Agent for Open Files does not detect that the same file was added twice to the configuration. For example, if you have the reparse point set at C:\DriveD for volume D: , you can add the file test.txt to the configuration from D:\test.txt and C:\DriveD\test.txt.

Note: If a file is added twice, the Agent for Open Files uses the values set for the physical path. In the above example the agent considers D:\test.txt.

The New File or Directory dialog contains the following fields:

- **File Namespace**—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.
 - Define the namespace for the new file or directory name in the File Namespace list.
- **File Name**—Specify 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.

For example, the paths for:

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/*
```

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. For example:

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

Wildcards are not available in the Macintosh namespace.

- **Browse**—Click Browse to browse for files and directories using the Add Files and Directories dialog.

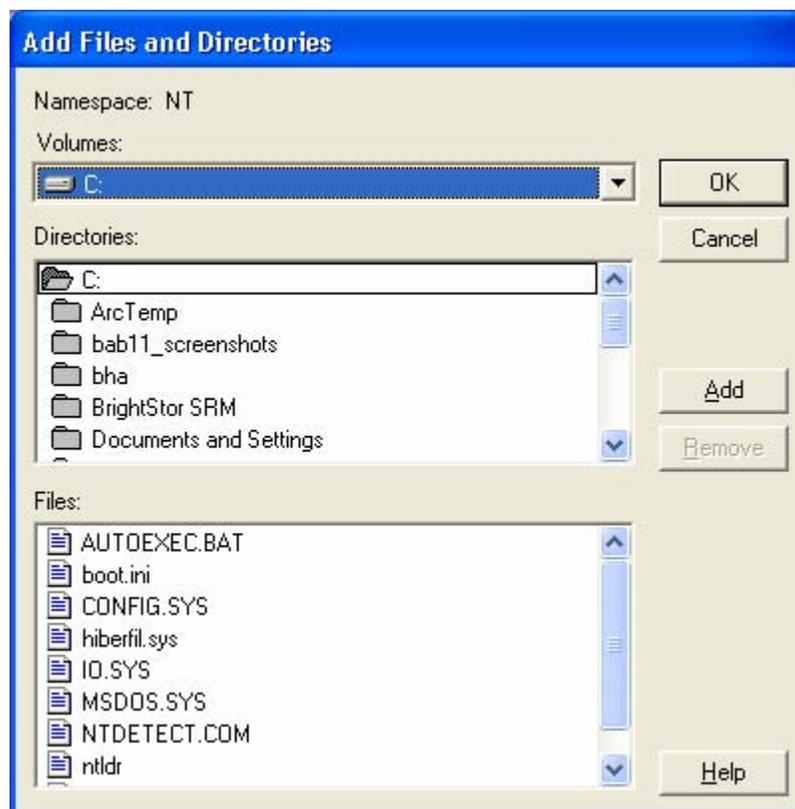
For more information, see Add Files and Directories in this chapter.

Files and Groups Deletion

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, as shown in the following example:



The Add Files and Directories dialog contains the following fields:

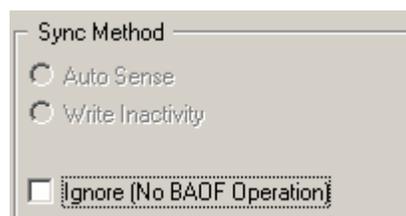
- **Volumes**—Displays the volumes or drives available on the selected server. When you select the name of a volume or drive, the Directories list and the Files list are updated. On NetWare computers, only traditional volumes are displayed.
- **Directories**—Displays the directory tree for the volume 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**—Click Add to add the current selection (one or more files or directories) 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**—Click Remove to remove the current selection (one or more files or directories) 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)**—The agent 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**—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 File Synchronization in the chapter "Introducing the Agent."

Note: This is the only synchronization method available under Windows.

- **Transaction Tracking (NetWare Only)**—With this option, the agent 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)**—When selected for a file or group, the backup client processes the 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.

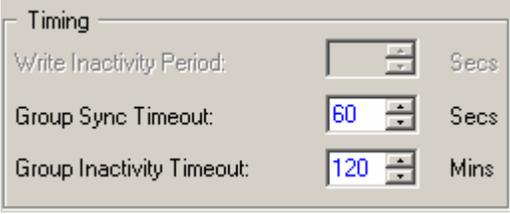
For example, consider a group that consists of the following three files:

```
C:\BrightStor SRM\Database\index1.dat
C:\BrightStor SRM\Database\index2.dat
C:\BrightStor SRM\Database\data.dat
```

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

Timing Options

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



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

Setting	Value	Unit
Write Inactivity Period:	[Empty]	Secs
Group Sync Timeout:	60	Secs
Group Inactivity Timeout:	120	Mins

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

The following fields explains the available timing options:

- **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.

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.

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

- **File Sync Timeout or 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).
 - After this period of time 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**—This determines 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.

For example, 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.

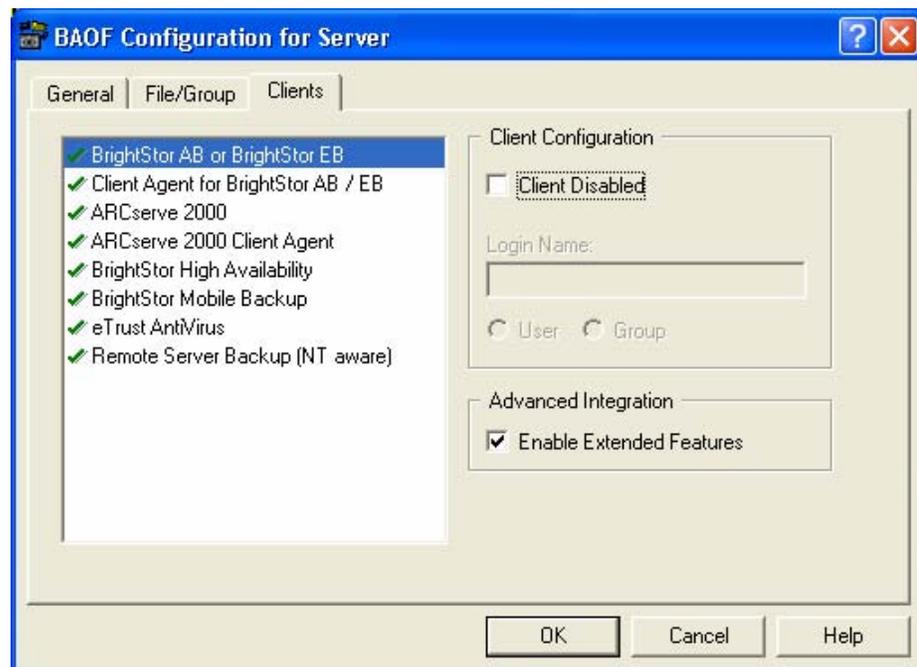
Note: This option is not available on NetWare computers that only have NetWare NSS volumes. A NetWare computer must have at least one traditional volume to use this option.

Clients Tab

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

For information about configuring remote servers, see 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 utilize 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 Clients tab:

- **Clients**—Displays all the backup clients supported by your copy of the agent. A check is shown next to a client if it is enabled. Double-click an entry to change its state from enabled to disabled, or vice versa.

Note: Some clients (either workstation-based or remote server-based) require a login name to be specified. You should disable these clients if you are not using them.

- **Client Disabled**—Select this option to disable the selected backup client. When a client is disabled, the agent prevents it from accessing open files.
- **Login Name**—The Agent for Open Files recognizes workstation-based backup clients, and some remote server-based clients, by associating particular login names with them. Use this field to specify the name to be associated with the selected login-based client.

Note: If a client does not require a Login Name, this field is disabled for that particular 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)**—The login name can be either a user or a group depending on which of these two options you select.
 - When you select User, the current login-based client is recognized only when file activity originates from the user specified in Login Name.
 - When you select Group, the current login-based client is recognized when file activity originates from any user belonging to the group specified in Login Name.
- **Enable Extended Features**—Select this option if you want the agent to send logging information and alerts to the BrightStor ARCserve Backup event system. You can do this only if you are using BrightStor 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 BrightStor ARCserve Backup server when they both are installed on the same computer.

Advanced Configuration

The following sections provide information about advanced configuration changes. These depend on your particular needs and environment.

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 programs that log in to a server, either from a workstation or from another server, may need to have a login name configured. This does not include backup programs using remote agents such as Push Agents or NetWare Target Service Agents.

For example, to set the login name using BrightStor ARCserve Backup, follow these steps:

1. Right-click the server in the Backup Source screen of the Backup Manager.
2. Select Security from the pop-up menu.
3. You are asked to 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.

For more information on updating login information, see Clients Tab in this chapter.

If you are not using this type of backup program, you should leave the corresponding client entries disabled.

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 Agent for Open Files 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 BrightStor ARCserve Backup, ensure that the Retry Immediately and Retry After Job options are disabled in the Open File Retry Options area of the Global Options dialog.

Note: The Agent for Open Files 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 more information, see Clients Tab in this chapter.

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) called SMDR.NLM is loaded on the remote server during backup.

File Write Cache

A few 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. For example, in Microsoft Access, you should ensure that your database does not have the 'exclusive' attribute.

If your application does not let you to turn off write caching, there is another possible method for users of various types of Novell client software.

- 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. Small delays to the rename or delete request normally go unnoticed by the user.

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 parts of the network hierarchy, click the Scan button.

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.

For more information on the File Servers list, see The Console in this chapter.

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, follow these steps:

1. Check that no backup sessions are in progress and close down the agent. To do so, enter the following command depending on your operating system:

Windows

```
NET STOP OPENFILEAGENT
```

NetWare

```
UNLOAD OFA.NLM
```

2. Using a text editor such as Notepad, open the agent's configuration file, OFANT.CFG, located in the agent's home directory. By default, the agent is located in the following directory:

```
C:\ComputerAssociates\BA0F
```

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 and restart the agent using the following command:

Windows

```
NET START OPENFILEAGENT
```

NetWare

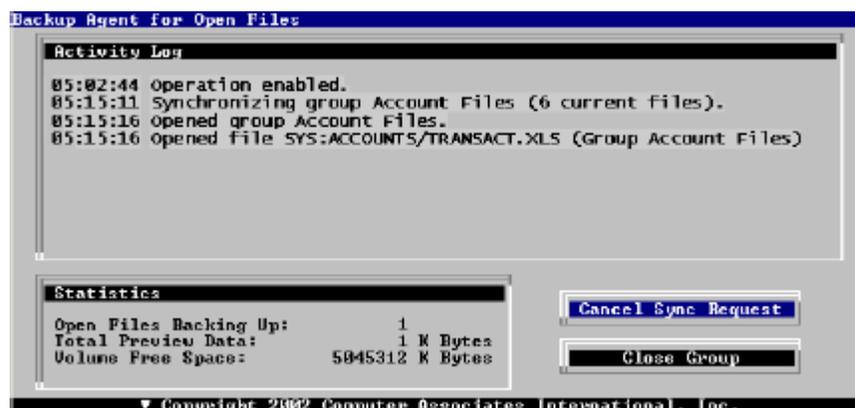
```
LOAD OFA.NLM
```

Agent Status

Monitor the status of your systems for various types of information from time to time. This section describes how to check the Agent for Open Files for both NetWare and Windows servers using the agent's 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**—Use this button to stop the synchronization of a file. The agent prompts you to select a file from a list.
- **Close Group**—Use this button to close an open group. The agent prompts you to select a group from a list.

The display-only fields under the Statistics heading give information about the files under the control of the agent and space usage.

- **Open Files Backing Up**—Displays the number of open files under the control of 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 selected computer's preview data volume.

Agent Status on a Windows Server

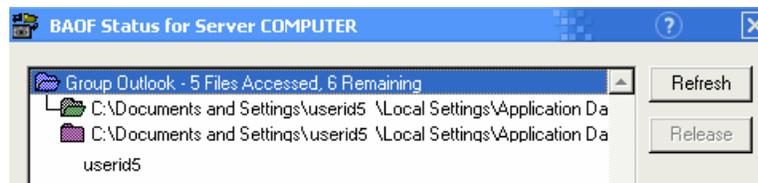
Access the Agent for Open Files Status dialog from the Console or the Backup Manager.

- **From the Console**—Select a server from the File Servers list, and click the Status button.
- **From the Backup Manager**—From the Source tab, select a computer from the browser in the left pane. To view the agent status on a computer with Windows or NetWare Engine installed, you can right-click the computer and select View Open File Agent Status from the pop-up menu. You can also select this option from the Additional Information pane on the bottom-right of the Backup Manager. This procedure is enabled only if the Agent for Open Files Console and BrightStor ARCserve Backup Manager are installed on the same computer.

Status Dialog

The top panel of 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 under the control of the agent.
- A group displays in the Agent for Open Files Status dialog if the group contains open or waiting files.



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

File	Status
 Green	The file is open and is under the control of the agent.
 Red	The file is waiting to be opened under the control of the agent. The file will not be opened until it is in a safe state for backup as determined by timeout values discussed in this chapter.
 Purple	This synchronized file is part of an open group and has preview data, which the agent is retaining. The preview data are retained until the group closes.

File	Status
 Blue	This group contains at least one open or waiting file. The dialog also shows the total number of files from the group that have been processed (including currently open files) and the total number of files remaining to be processed.

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

The following options are available in the top panel of the dialog:

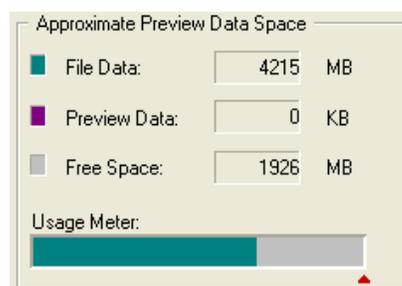
- **Refresh**—Refreshes or updates the information in the Agent for Open Files Status dialog.
- **Release**—Cancels the synchronization request for a file or to close an open group after selecting an entry in the Agent for Open Files Status dialog. You should do this only when you think the file or group 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 space information about the preview data volume (the volume on your computer where the temporary preview data is kept).

Note: The Approximate Preview Data Space values include information about NetWare NSS volumes.



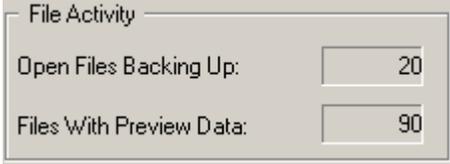
The following list explains the fields in this section:

- **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. 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 currently under the agent's control.

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



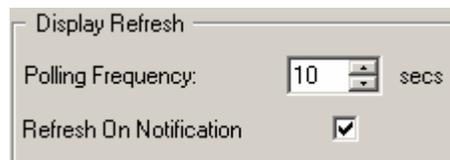
File Activity	
Open Files Backing Up:	20
Files With Preview Data:	90

The File Activity section contains the following fields:

- **Open Files Backing Up**—Displays the number of open files under the control of the agent that are currently being backed up.
- **Files With Preview Data**—Displays the number of files currently under the control of 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 allows you to set notification options for the agent.



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**—Select this option if you want the display to be updated whenever there is a change in the status of the agent. This option is independent of the Polling Frequency setting.

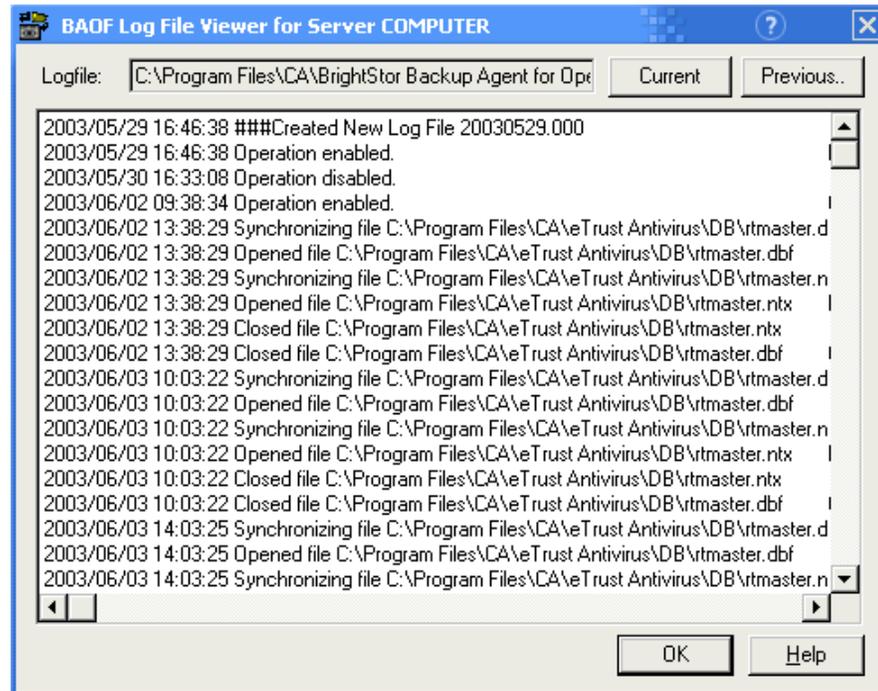
Agent Log Files

Access the Agent for Open Files Log File Viewer from the Console or from the Backup Manager.

- **From the Console**—Select a server from the File Servers list and click the View Log button.
- **From the Backup Manager**—Select a computer from the browser in the left pane of the Source tab. To view agent log files on a computer has the Windows or NetWare Engine installed, right-click the computer and select View Open File Agent Log File from the pop-up menu. You can also select this option from the Additional Information pane on the bottom-right of the Backup Manager. This procedure is enabled only if the Agent for Open Files Console and BrightStor ARCserve Backup Manager are installed on the same computer.

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.



- Click Previous to view an earlier log file.
- Click Current to return to the most recent log file.

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.

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

Chapter 4: Best Practices

This chapter provides information about making the best use of Agent for Open Files and Microsoft's Volume Shadow Copy Service (VSS) to handle the backup of open files. It compares the agent with the VSS feature and provides specific recommendations for their use in different backup scenarios.

The Agent and VSS

Open files can cause significant problems when backing up data. BrightStor ARCserve Backup provides two solutions for dealing with open files—Agent for Open Files and support for VSS.

VSS works with BrightStor 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 when you are:

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

For detailed information about how the agent works, see the chapter "Introducing the Agent."

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 before the backup can begin. With this in mind, consider a backup consisting of 10 gigabytes of critical database files that reside on a full 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 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 BrightStor 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 independently of other applications. An application does not need to know about the agent for BrightStor ARCserve Backup to back up open files, and an application can write to its files during a backup without having to communicate with the agent at all. Everything is handled by the agent.

- 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 cannot be reliably backed up.

Using the agent for your backups 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 in which to back up the open files.

For more information on how VSS works, see Volume Shadow Copy Service Support in the *Administrator Guide*.

Appendix A: Frequently Asked Questions

This appendix provides answers to the questions most commonly asked by Agent for Open Files users.

Can I install the agent into a compressed drive?

No. Installing the agent into compressed drive, partition, or directory may cause data corruption. If you must use compressed storage, store the Preview Data volume in an uncompressed location to prevent data corruption.

For more information about changing the Preview Data volume, see [Change the Preview Data Volume](#), in the chapter "Using the Agent."

After installing the agent, my backup log still reports that some open files are being skipped. Why?

- 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."

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.

I cannot access the agent on my server when I use the Console on my workstation—why is this?

Use the console to check the agent log file to identify the server that is storing the skipped files. An entry is made in the log each time an open file is accessed by BrightStor ARCserve Backup.

- 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 File Sync Timeout or reducing the Write Inactivity Period. You need to 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.

For more information about configuring files and groups, see Clients Tab in the chapter "Using the Agent."

Why do my file groups sometimes stay open after the backup has finished?

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 BrightStor ARCserve Backup did not access all the files. This is not harmful, and the group closes automatically when the Group Inactivity Timeout expires.

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

Why does my backup seem to pause?

When BrightStor 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.

Why doesn't the agent recognize file names for the Macintosh namespace?

Be sure to use the colon (:) character as the path separator when using the Macintosh namespace. The backslash (\) or slash (/) characters used in other namespaces are not valid path separators on the Macintosh. The following illustrates a valid Macintosh namespace:

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

Note: Wildcards are not available in the Macintosh namespace.

My workstation-based application is caching file writes locally. Will I have a data integrity problem, and if so, what can I do about it?

This problem is discussed in the File Write Cache, in the chapter "Using the Agent."

The Console Status dialog shows the message 'Insufficient Rights to Display File Name'. What does this mean?

To view file names on the Status dialog you must be logged in to the server with Administrator or Console Operator rights, since it would be a breach of system security to identify file names.

For more information on setting up user rights, see Advanced Configuration in the chapter "Using the Agent."

You can still view synchronization status and group information, including group names and progress information if you are not logged in to the server with Administrator or Console Operator rights.

How can I obtain diagnostic information to help troubleshoot my problem?

On a NetWare server, you can obtain a diagnostic report by using the following command line at the server console:

```
LOAD OFA -d
```

The report is written to OFADIAG.TXT in SYS:SYSTEM.

On a Windows server, you should look in the System and Application logs for unusual entries. Use the Windows Event Viewer utility, normally located in the Administrative Tools program group.

- In the System log, look for all event sources with the name 'OFADriver.'
- In the Application log, look for 'OpenFileAgent'.

Another NLM, which previously loaded successfully, fails to load when the agent is loaded. Why?

This problem may occur with some older antivirus NLMs (NetWare Loadable Modules) or other NLMs that modify the NetWare server kernel. The agent is generally compatible with such NLMs, but you may need to load the antivirus (or other) NLM first, and then load the agent.

My log file shows that some files belonging to my backup program could not be synchronized. Why?

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.

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 BrightStor 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 for the group itself. 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.*

Why does the BrightStor ARCserve Backup Agent for Open Files Status dialog appear to be corrupted when I use RCONSOLE?

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.

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
```

The Console takes an extremely long time to scan my Microsoft network. How can I speed this up?

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

Note: This is a 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.

When I use my workstation as a backup client to copy files, groups do not always close when they should. Why is this?

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).

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 the agent synchronizes a group, why doesn't it always wait for the whole of the Write Inactivity Period?

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.

Why does my backup program sometimes lose its connection to a remote system being backed up?

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

There are two possible solutions:

- Reduce the File Sync Timeout period to 40 seconds, to give you a better chance of synchronizing the file.
- If this is not possible, increase the session timeout on the host system, as follows:
 - Use REGEDT32.EXE (normally in the SYSTEM32 directory) to 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 60 seconds, set SessTimeout to 70 seconds).
 - If SessTimeout does not exist, create it as a new REG_DWORD value, and set it as described above.

Appendix B: Troubleshooting

Common Problems

This section describes a few samples of common problems that agent users encounter.

The Approximate Preview Data Space Displays Incorrect Data Size

Reason:

The Preview Data is installed on a compressed drive.

Action:

Store the Preview Data Volume in an uncompressed volume. For more information about changing the Preview Data Volume, see *Change the Preview Data Volume* in the chapter "Using the Agent."

Unable to Access the Agent Using the Console

Reason:

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

Action:

If you encounter this problem, you should:

- Check that the Windows or NetWare Engine is properly installed and running on the server.
- Check that you are able to see the server from Windows Explorer on your workstation. If not, a problem may exist in your network hardware or software configuration.
- If the server is visible from Windows Explorer but does not show up in the File Servers list on the console, check that you are scanning the network properly. See *Servers Scan* in the chapter "Using the Agent". Also, check that 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.

An NLM Fails to Load Successfully After the Agent Is Loaded

Reason:

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

Action:

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, even though the agent is generally compatible with such NLMs.

The BAOF Status Dialog Does Not Display File Names

Reason:

The BAOF Status dialog displays the message "Insufficient Rights to Display File Name."

Action:

To view file names on the BAOF Status dialog, you must be logged into the server with administrator, backup operator, server operator, supervisor, or console operator rights, because it would be a breach of system security to identify file names if you did not have this level of access.

Note that 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.

Network Scan Takes Too Long

Reason:

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

Action:

You may be able to improve the speed by scanning only those parts of the network, workgroups, domains or all of the previous in which you are interested. If you leave a network branch collapsed, the agent does not scan it.

For more information on scanning your network, see Servers Scan in the chapter "Using the Agent".

BrightStor ARCserve Backup Loses Its Connection to a Remote System

Reason:

BrightStor ARCserve Backup sometimes loses its connection to a remote system being backed up.

Action:

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 BrightStor 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 Start Menu, select Run. Enter REGEDIT, and click OK to open the Registry Editor.
 - 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. If you are not familiar with the Windows Registry, contact technical support.*

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

Reason:

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

Action:

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".

Frequent "File In Use" Errors on Certain Files

Reason:

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

Action:

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".

Obtaining Diagnostic Information

You can obtain diagnostic information to help troubleshoot your problem by following the instructions below:

- **Windows**—Check the Windows Application Log for entries that come from the Source “OpenFileAgent,” and check the Windows System Log for entries that come from the Source “OFADriver.”

To access these logs, from the Control Panel, open Administrative Tools and select the Event Viewer.

- **NetWare**—Enter the following command at the server console:

```
LOAD OFA -d
```

A diagnostic report is written to OFADIAG.TXT in SYS:SYSTEM.

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