Open File Backups

How BackupAssist can backup open files in Windows NT, 2000, XP and 2003

Introduction

This White Paper discusses how BackupAssist deals with backing up open files and is divided into the following sections:

Overview

BackupAssist provides a basic level of open file backup protection by enhancing the functionality of NTBackup. It is able to backup all open files on Windows XP and 2003 Server, and also all open files that are not exclusively locked on Windows NT, 2000, XP and 2003. This level of open file support is ideal and sufficient for many small and medium organizations, and BackupAssist provides a cost-effective way of delivering basic open files support.

This white paper explains how BackupAssist handles Open Files, through a simple example. It also explains how to restore Open Files.

For full enterprise level open file protection, extra software such as Open File Manager (from St Bernard) is required. See http://www.stbernard.com for more details. Such software is expensive – the Enterprise Server License for OFM is $1288.00 at the time of writing – but does provide complete open file support.

How BackupAssist Handles Open Files

BackupAssist's handling of open files varies based on the Windows Operating System version.

Two levels of Open File Support (OFS) are provided, and these are described in the following sections.

Levels of Open File Support

Full Support

On Windows XP and 2003, files on a local drive that are currently in use are backed up completely as if a "snapshot image" was taken at the time of the backup.

This is done through a feature known as *volume shadow copy*. This feature ensures data integrity and reliable backups.

Basic Support

Basic support – files that are in use are skipped by NTBackup during the backup. BackupAssist will detect these files, and attempt to copy them to a temporary directory, and perform the backup on that temporary directory.

Open files locked with a shared lock or no lock are successfully backed up via this method. Examples of these open files include Outlook .pst files.

However, exclusively locked files cannot be copied, and cannot be backed up. These are typically SQL Server or Exchange data files.

(Exchange Server should be backed up via the Exchange Server backup facilities in BackupAssist).

Operating system	OFS on local disks	OFS on network disks
Windows 2003 Server	Full support via shadow copy	Basic support for all network drives
Windows XP Professional	Full support via shadow copy	Basic support for all network drives
Windows 2000	Basic support	Basic support for mapped network drives
Windows NT	Basic support	Basic support for mapped network drives

Under Windows XP and 2003, basic support is provided for all network drives (including those referenced by UNC naming – eg. \\server_name\share_name\

Under Windows 2000 and NT 4.0, basic support is provided for only network drives that are mapped as a drive letter.
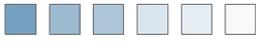
Turning On Basic open File Support

To turn on Basic Open File Support, use the Options tab in BackupAssist as depicted below by ticking the '*Re-attempt backup of open files*' checkbox.

How Open File Support Works

BackupAssist backs up your data in two phases:

Phase One
Your selected drives and directories are backed up. Open files are skipped by NTBackup.
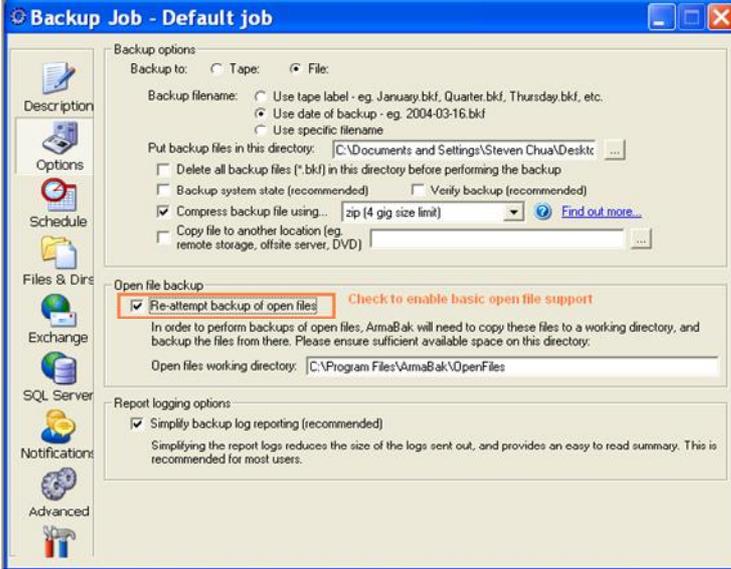
Phase Two
Any open files are copied and backed up, as well as additional data (Exchange Server, any add-on modules)
This process is unique to BackupAssist, and extends the capabilities of Windows Backup (NTBackup). The following chapters explain how BackupAssist will backup open files, and how to restore your open files.

Open File Backup—A Practical Example

This following simple example illustrates how BackupAssist handles open files with Basic Open File support.

Example details
The following system has been used for this example:

Operating System: Windows NT 4.0 Server
Directory to backup: C:\TestDir
Open files in this directory:

> C:\TestDir\Open file – shared lock.txt
>   (locked with a shared lock)
> C:\TestDir\Open file – exclusive lock.txt
>   (locked with an exclusive lock)

Backup procedure
When BackupAssist first runs NTBackup to backup your files, all open files are skipped by NTBackup.

There are two open files in this directory, so we expect both files to be skipped. This is shown in the email report that's sent out by BackupAssist (See next screenshot).
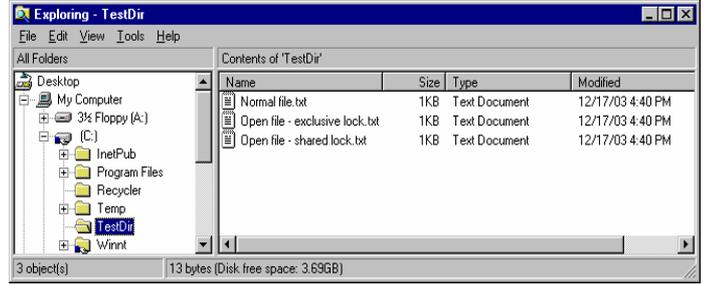
BackupAssist will then attempt to copy the open files to the Open Files working directory. Only the shared lock file can be copied. The exclusively locked file cannot be copied, because the Windows Operating System prevents programs from accessing that file.

This is also summarised in the email report that's sent out by BackupAssist.
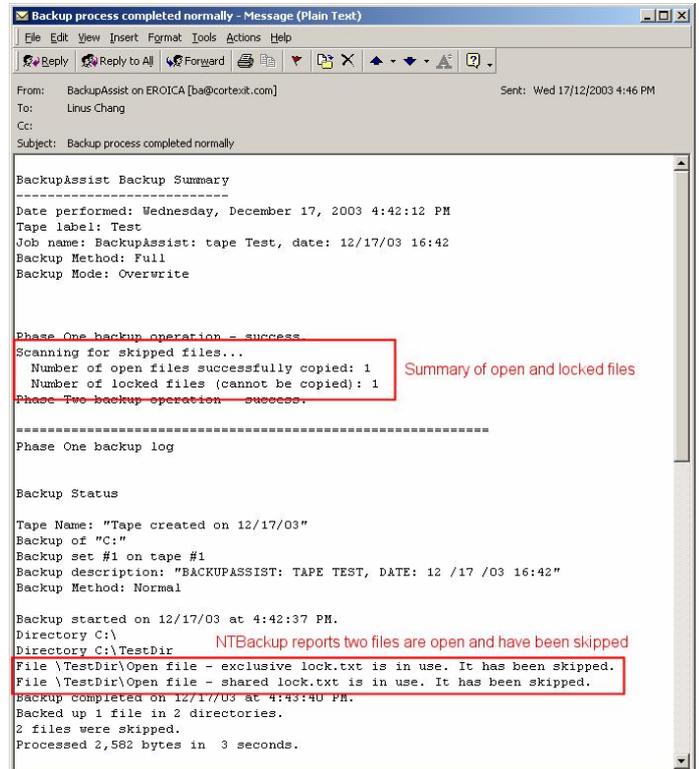
BackupAssist will try to copy the open files to the Open Files Working Directory, which has been set to:

> C:\Program Files\BackupAssist\OpenFiles

BackupAssist will then run NTBackup again, and backup files from the Open Files Working Directory.
From this directory, BackupAssist recreates the full directory structure of the open files.

Original Location of Open File	BackupAssist copies this file to... (OFWD = Open Files Working Directory)
c:\TestDir\Open file – shared lock.txt	OFWD\c\TestDir\Open file – shared lock.txt
d:\hello\there.txt	OFWD\d\hello\there.txt
\\server-name\sharename\abc.exe	OFWD\servername\sharename\abc.exe

The table below provides instructive examples of how this works:

Restoring your Open Files

To perform a restoration of open files, run NTBackup. On Windows NT, you should insert your tape into the tape drive; on Windows 2000 and later you should locate your tape from the *Restore* tab and insert it when prompted.
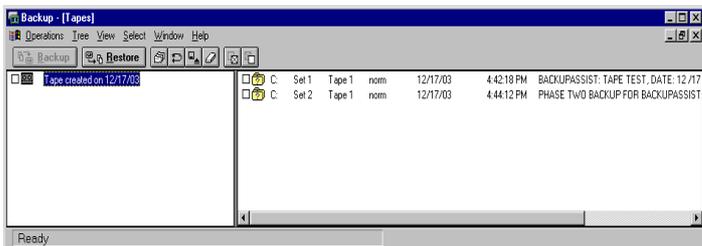
Set 1 corresponds to the first backup phase – where files and directories are backed up. Any open files are skipped during this phase.
Set 2 corresponds to the second backup phase – where open files are copied and backed up (along with additional data such as Exchange Server, and any add-on modules such as SQL Server data).

Phase One Backup
During the Phase One backup of c:\TestDir, only one file was closed (ie. not open) – Normal file.txt.

In the view of the tape (shown below), you can see that file is available on the tape. To restore, select that file and click the Restore button.
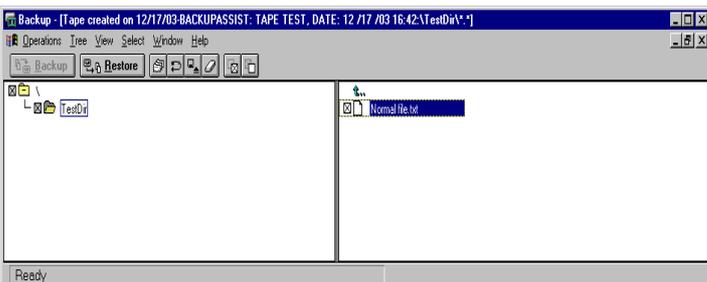
Phase Two Backup
During the Phase Two backup, the open files were copied to the Open Files Working Directory (in this case – c:\Program Files\BackupAssist\OpenFiles).
The file, **Open file – shared lock.txt** was copied, and as shown in the screenshot below, is available for restoration.
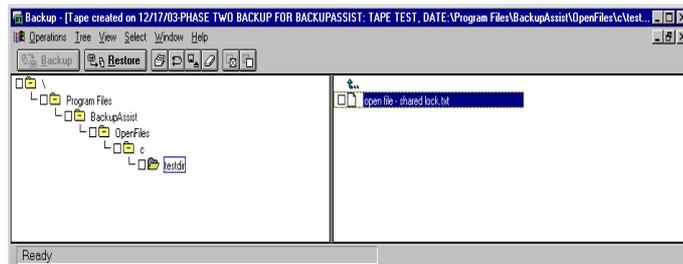
When you restore this file, you can restore it to its original location (in the Open Files Working Directory). You'll then manually copy this file back to its original location (in this case, C:\TestDir).

Open files on Windows XP and 2003
The Windows XP and 2003 operating systems provide a capability known as **Volume Shadow Copy** which means that open files on local hard drives will be backed up during the Phase One Backup.
BackupAssist provides basic open file support for network drives on Windows XP and 2003.

Summary

BackupAssist provides a basic level of open file backup protection by enhancing the functionality of NTBackup. It is able to backup all open files on Windows XP and 2003 Server, and also all open files that are not exclusively locked on Windows NT, 2000, XP and 2003.

This level of open file support is ideal and sufficient for many small and medium organizations, and BackupAssist provides a cost-effective way of delivering basic open files support.
For full enterprise level open file protection, extra software such as Open File Manager (from St Bernard) is required. See http://www.stbernard.com for more details on Open File Manager.

Additional Resources

From time to time, we discover additional useful resources, and publish this information on our website:

> http://www.BackupAssist.com/resources