



Backup You Can TrustSM

TOLIS OFM (Open File Manager) for Live System Backup

Whether a desktop or server system, backup of a live Microsoft® Windows™ client system is always a problem because of the manner in which Windows filesystems manage open files. Without special help from an open file access tool (or the users being friendly and actually closing Word or Excel when they are done), open files are locked in a manner that prevents a normal backup application from including them in a system backup.

The value of the OFM Module

Database systems running on Windows-based systems are continuously open and present a challenge to accurately and reliably back them up - especially since users continually access them.

Often the most important data within an organization is their database information. Assuring that database contents are adequately backed-up is important should a system failure or natural disaster be realized. At a minimum, normal operations will be disrupted until the information can be manually re-constructed and re-entered; at worst, irreparable harm to the organization can occur.

Within a BRU Server-supported backup environment, TOLIS' OFM module works in concert with the BRU Server agent software on Windows systems to reliably and accurately back up open files, regardless of the application currently using them. Application platforms such as Exchange, Outlook, SQL Server, FileMaker, Oracle, DB2, and even simple open files used in Word or Excel can be properly backed-up.

When it comes time to restore the open file information that has been backed-up, the restores are reliable and accurate as well.

What is OFM and how does it work?

OFM is a low level file system filter driver that runs during Windows startup and provides access to any exclusive, in use, or even locked file so that it may be accurately backed-up. OFM supports computers implementing Windows 2000, XP, and the Windows 2000/2003 Server family. The Open File Manager runs in the background and works in concert with BRU Server to allow the backing-up of live databases that is seamless and transparent to users and the application accessing the database.

Operationally, unlike other Windows open file backup tools, OFM does not require pre-allocation of cache space or extra hard disk drive capacity to function. OFM was designed to monitor the file system for read requests coming from the BRU Server, causing no noticeable impact to system performance.

Designed for protection against corruption, OFM allows BRU Server to backup a snapshot of the target data, while caching all write operations that are done to that file during the backup job. Should the database application need to perform a read during the backup, OFM will check the cache first and then within the actual database. This process ensures that all data at the point of the backup is complete.

Specifically:

1. OFM filters the file system for any read requests that will come from the BRU backup agent software. Once OFM detects a backup of a locked, open or in-use file, OFM will wait for a period of inactivity and then start the backup process. In the mean time the application that has the file locked continues to store the information directly to disk as usual.
2. Once the backup of the locked file has begun, OFM will automatically cache any part of the file that is about to receive new information (a new write) to a temporary location. OFM will continue to monitor all files for any new changes and cache them as well without any cache limitation.
3. At this point the BRU agent software and the application see the file differently. The application that has the file locked sees all changes that it makes to the file as it would without OFM installed. On the other hand, the backup software sees the file as it originally did when the backup first began, without any of the new changes (the new writes). This allows a consistent and non-corrupted snapshot of the file.
4. OFM also allows for the synchronization of multiple files at once while ensuring relational integrity. For example, a database backup would include a snapshot of both the database's logs and data files as they were at an instance of time.

The design of OFM allows it to support heterogeneous computing environments and offers support for Windows NTFS and FAT32 file systems as well as network file systems. Support of these file systems is transparent and no pre-configuration work is needed.

OFM provides access to NTFS ADS (Alternate Data Streams) that allow data to be stored in hidden files that are linked to a normal visible database file. There is no limit to the size of the ADS supported, and there can be more than one stream linked to a normal file.

An OFM license is needed only for those Windows clients that require open file backup support. The process to install OFM licenses locally on the system is easy and straightforward using the standard Windows installer tools, and there are third-party administration tools available to support installation across the network. OFM delivers uncommon value in today's market of similar tools, and licenses are available individually, or in value packs of 5, 10, and 25 licenses. Pricing is available at <http://www.tolisgroup.com/pricing.html>

How does OFM contrast to using the Microsoft® VSS (Volume Shadow Copy Service)?

Microsoft's VSS provides a backup and recovery infrastructure, but it is limited to the Windows Server 2003 operating system. VSS includes a mechanism for creating point-in-time copies of data. While the Service can provide coverage for some missed files during backups, there are several limitations because most business applications are either non-VSS aware or IT administrators are using VSS to back up file-only servers. Consider also, most computers on a typical network are not based on the Windows Server 2003 platform.

The following sequence outlines how VSS is typically used in conjunction with backup software tools:

1. The backup application is run.
2. The backup application sends a command to VSS to take a snapshot.
3. VSS communicates with the business application to finish existing transactions and hold any new transactions.
4. VSS communicates with the storage snapshot technology (provider) to create a snapshot.
5. The provider creates a snapshot of the volume set.
6. VSS communicates with the business application to resume normal operations.
7. The backup software copies the snapshot creating a backup of the volume set. Since the snapshot is not being accessed by any other application, all files on the volume will appear as closed and available to the backup software even though application programs are accessing the files on the original volume.
8. Upon completion of the backup, the requestor communicates with VSS to delete the snapshot.

While VSS can be used successfully, there are limitations that can be experienced in one's computing environment.

- VSS can be complex to properly set up
- The business application managing the data file must be VSS aware
- Applications that are not built specifically with VSS technology won't be able to have their data files backed up when in use
- VSS cannot predict or control the I/O flow of non VSS-aware applications
- VSS pauses business operations while it makes the snapshot
- VSS only guarantees file system integrity and does not guarantee legacy writer transaction integrity
- VSS is only supported on NTFS drives under Windows XP and Windows 2003 Server systems
- Volume space for shadow copies must be specified - if the volume space is exceeded, then no shadow copy is created and the volume backup fails
- No support for file servers - VSS is designed to manage data on machines where both the application and its related files reside
- In a networked environment, where a file and the associated application both reside on different machines, VSS is not supported.

It is noteworthy that none of these limitations are experienced when using the OFM module under BRU Server. The BRU Server/OFM combination renders VSS considerations irrelevant, and assures that all new application's data will be appropriately backed up even if VSS support is not included.

The OFM Advantage

Operation of the OFM module mirrors that of the elegant BRU engine. It is small in size, easy-to-use, incurs very little overhead, is cost-effective, and is very fast and reliable. A demo version is available.