



**Open Transaction Manager™**  
**White Paper & Competitive Analysis**  
The de-facto standard in Windows Open File Management

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# Open Transaction Manager™

## Protect every file on the network – even if it's being used

### Table of Contents

INTRODUCTION .....	3
OTM FEATURES & BENEFITS:.....	3
WHAT IS OPEN TRANSACTION MANAGER (OTM)?.....	4
WHAT IS AN OTM TRUE IMAGE? .....	4
WHY IS OTM NEEDED?.....	4
HOW OTM WORKS .....	5
<i>Figure 1: Backup of physical drive C selected (no other drives present in system)</i> .....	5
<i>Figure 2: OTM's data path during backup when ANY write occurs</i> .....	6
<i>Figure 3: Open Transaction Manager Data Path on Non-backup Reads</i> .....	6
<i>Figure 4: Open Transaction Manager data path on backup reads</i> .....	7
OTM ELIMINATES THE BACKUP WINDOW & IMPROVES PERFORMANCE .....	7
TECHNOLOGY COMPARISONS .....	7
<i>OTM gives users 100% system availability during backup.</i> .....	7
<i>"TrueThrottling" provides 100% of the IOs to the user during the backup.</i> .....	7
OPEN TRANSACTION MANAGER VERSES MIRRORS.....	8
HOW OTM COMPARES TO FILE-BY-FILE OPEN FILE AGENTS.....	8
PERFORMANCE BENEFITS .....	8
DIFFERENCES BETWEEN OTM AND OTHER OPEN FILE MANAGERS™ .....	9
<i>Figure 5: Data path on reads using Open File Agents &amp; Managers</i> .....	9
SUMMARY .....	10
OPEN TRANSACTION MANAGER FEATURE SUMMARY .....	10





## WHAT IS OPEN TRANSACTION MANAGER (OTM)?

Open Transaction Manager is an enabling technology that creates a coherent, point-in-time snapshot or Truelmage™ representation of the data contained on a single volume or on multiple volumes. Instead of attempting to back up the active volume(s), backup applications will backup the static snapshot presented by OTM. Activity continues unabated, files are added and deleted while the backup application transfers the data represented by the Truelmage to tape.

Open Transaction Manager seamlessly integrates with many backup applications to handle open files at the volume level. Open Transaction Manager can be implemented on its own or with specific database agents.



## WHAT IS AN OTM TRUE IMAGE?

Open Transaction Manager “Truelmage” is a point-in-time representation of the data on a volume, called Truelmage because OTM operates below the file system, at the device block level. Working at the block level, and not the file level, yields dramatic performance advantage as its work is done within the application and not the Operating System or file system.



## WHY IS OTM NEEDED?

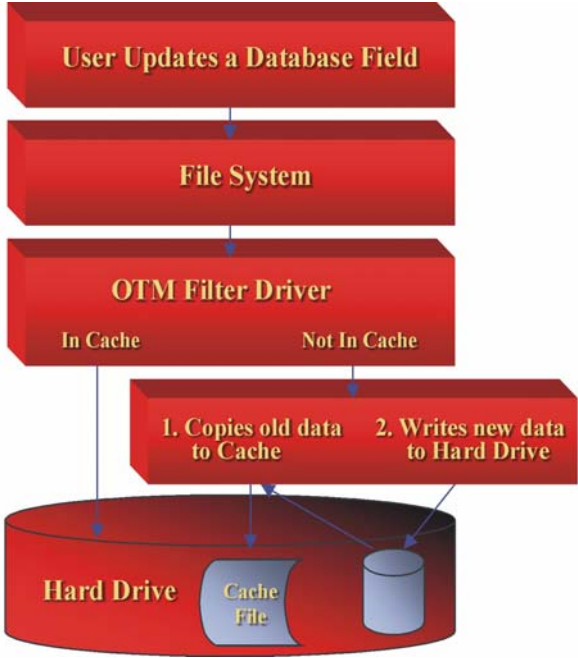
Enterprises can no longer tolerate being shut down for backups, therefore their networks are constantly up and running. Each application behaves differently with respect to open files; the most common behavior is to deny access, even to backup applications, so the most important files, the ones in use, are skipped by basic backup procedures. Open Transaction Manager enables back up of a server or workstation with all files and databases open and active.

Oracle databases, SQL Servers, Lotus Notes, E-Mail servers, all present another level of complexity in back up. Databases are comprised of many separate components, often running on different volumes, all of which when backed up must possess relational integrity. Open File Option’s Truelmage contains all the components from a point-in-time with relational integrity.

Essentially, Open Transaction Manager is needed for all backups!



As soon as the mapping of the TrueImage is complete, OTM will start caching all of the old, overwritten data. OTM is a filter-class driver intercepting all read and write requests to each volume. When a write request is received (Figure 2), OTM pauses the write, copies the old corresponding data to its cache file and immediately writes the new data to the active volume.



**Figure 2: OTM's data path during backup when ANY write occurs**

Read requests from all applications except the backup are passed directly to the hard drive (Figure 3) with no intervention.



**Figure 3: Open Transaction Manager Data Path on Non-backup Reads**

Read requests from the backup package (Figure 4) are passed to the OTM filter driver which determines if the data is in cache or on the active volume. If it is in cache, OTM transfers the cached data to BE, if there has been no change the data is passed directly from the volume. OTM works at the "SECTOR" level. No file or sector interception or interpretation is necessary.

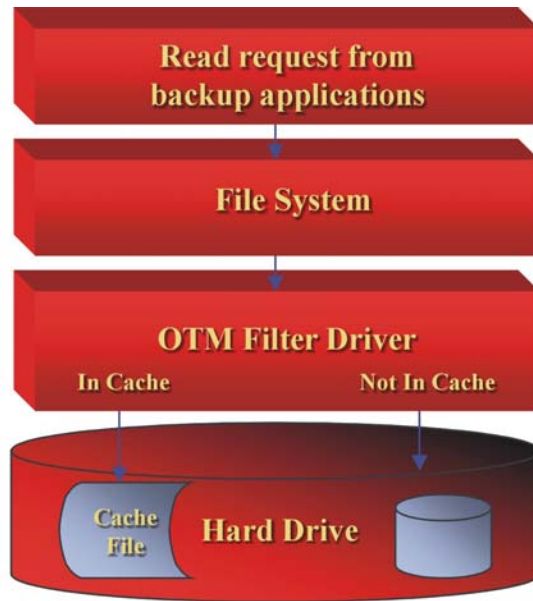


Figure 4: Open Transaction Manager data path on backup reads

OTM ELIMINATES THE BACKUP WINDOW & IMPROVES PERFORMANCE

**Technology Comparisons**

File-by-file backup applications have relied on secondary and tertiary agents and managers to allow the backup of the open files while the system is live and in use. These file-by-file applications combined with open file agents and managers are extremely CPU and I/O intensive, bringing server performance to its knees during backup. So how does Open Transaction Manager solve this problem?

***OTM gives users 100% system availability during backup.***

Files that are in use are "locked" by the application or operating system to prevent potential corruption caused by multiple users attempting simultaneous writes. In the dark ages of computing network administrators would lock all the users out of the network and get a clean backup with the absence of user activity. This strategy becomes more unworkable daily – the volume of data is growing to the point that it cannot be backed up in an acceptable window and more importantly in today's computing environment data is accessed, changed, stored and transmitted around the clock.

***"TrueThrottling" provides 100% of the IOs to the user during the backup.***

Operating below the O/S Open Transaction Manager sees all IOs, prioritizes user activity, pausing the backup. Remember, OTM has created a point in time TrueImage representing the quiesced data on the volume(s) and the backup application will create a backup from that image. Once the image is created the urgency is over, the active volumes(s) remain current while Open Transaction Manager retains the data required to complete the backup. Since the system will time slice, no one will ever have to wait for his or her data. When the system is at 100% IO utilization, then the backup will wait, not the user, (as it should be) – when time permits the backup application will write the data to tape.



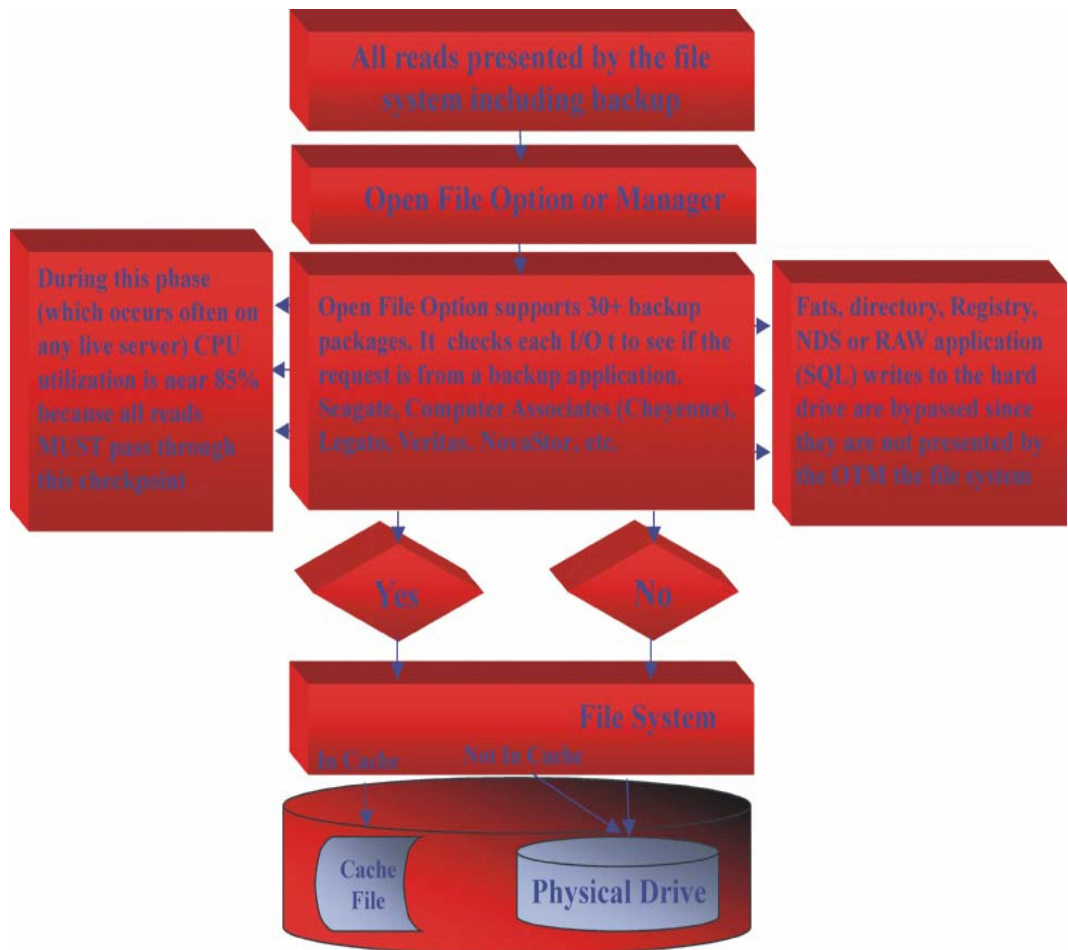


## DIFFERENCES BETWEEN OTM AND OTHER OPEN FILE MANAGERS™

CDP's Open Transaction Manager maps in a virtual volume and presents a stable point-in-time view to the backup application. All user reads are passed through Open Transaction Manager directly to the hard drive.

Other Open File Agents & Managers intercepts only the files presented to it by the file system. Other data, such as the MFP, FATS, Directory, Registry, NDS or raw application (SQL) writes to the hard drive are bypassed since they are not presented to OFM by the file system. Open File Manager then tries to determine if the application is a backup application or not. If it is, it returns the original data to the backup application. This is slow, as tremendous amounts of processing must occur (CPU utilization is typically 85% or more) since Open File Manager creates an additional "file system layer".

Since OTM provides a separate volume, the backup application doesn't need to be determined, as anyone who accesses the volume will get a static image. This makes it impossible for Open Transaction Manager to mistake user I/Os for backup I/Os that could cause lost data.



**Figure 5: Data path on reads using Open File Agents & Managers**  
 Open File Manager works at the "FILE" level, requiring each file to be intercepted and interpreted



## SUMMARY

Open Transaction Manager is a strategic component to backup and restore procedures. As an enabling technology, OTM presents a stable, coherent, point-in-time snapshot alternate view of one or more volumes or physical drives to any backup application, without impacting system performance.

Open Transaction Manager ensures that every file on your network is protected even if it's being used. Administrators need not know which files are open ahead of time before backing them up and can set a scheduled backup with a mouse click. OTM seamlessly integrates with many backup software to handle open files at the volume level and can be implemented on its own or with specific database agents.

### **Open Transaction Manager Feature Summary**

Open Transaction Manager allows you to back up a server or workstation with all files and databases open and active. Oracle databases, SQL Servers, Lotus Notes, E-Mail servers, all can be in use and running. OTM corrects the tragedy of lost data that is only evident after restoring a group of related files that were properly backed up, but lacked relational integrity. Additionally, Open Transaction Manager:

- Eases system performance, as it acts at the disk sector level, bypassing the operating system, and CPU overhead.
- Time stamps all files concurrently, to precisely match those from when the backup commenced.
- Enables proper backup and restore integrity with critical applications such as email, web-servers and transaction servers without needing to shut down the applications
- Solves configuration induced loss issues – all files and even hidden system transactions are automatically grouped together across the entire server, so there is no chance of data relational integrity loss due to improper configuration.
- Improved backup performance – consumes less than 4% of the CPU utilization, enabling users and vital processes to run while a backup is performing.
- Open Transaction Manager will protect any and all hidden structures that reside on the drives, such as FATs, Directories, NDS, registries, partition tables, NDP's, sparse files, deleted unpurged files, or even hidden application copy-protected raw sector writes.
- Compatible with Microsoft Windows NT 4.0, Windows 2000 Professional (Server, and Advanced Server) and Novell NetWare



## ABOUT COLUMBIA DATA PRODUCTS

Columbia Data Products, Inc. is the leader in TrueImage storage solutions that provide the highest level of data integrity for Windows and NetWare environments. Since its inception in 1976, CDP has enabled its OEM partners to provide robust yet easy-to-use TrueImage/snapshot and open file storage solutions. An award-winning company, CDP's Open Transaction Manager and Persistent Storage Manager products have been widely adopted as well as sold and supported through its OEM partners. Columbia Data Products is a privately held corporation headquartered in Altamonte Springs, Florida. For more information call 407.869.6700 or visit [www.cdp.com](http://www.cdp.com).