

# **Unique Differences Between PerfectDisk 10 and O&O Defrag 11**

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## Introduction

This paper provides an overview of the differences between PerfectDisk® 10 and O&O Defrag® 11 based on key areas of functionality and defragmentation methods. Information is based on vendors' described methods and features as defined in marketing material, product documentation and web sites. The process of comparing two utilities that have a high-level similarity in functionality (i.e. disk defragmentation) is not necessarily a case of comparing "apples to apples," as the two utilities' philosophies and strategies differ substantially in many cases.

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The goal of this paper is to highlight key areas of functionality, which the reader can use as a basis for his or her own analysis.

## Defragmentation Strategies and Methods

### *Single Pass Defragmentation*

PerfectDisk employs a single-pass defragmentation engine. This means PerfectDisk will defragment 99-100% of all data files in one run regardless of the severity of fragmentation or the amount of free space.

O&O Defrag uses a multi-pass defragmentation engine. O&O Defrag recommends that you first perform a Stealth Mode defrag or a Space Defrag followed by one of its other defragmentation methods. The total elapsed time, CPU, and memory usage required by O&O Defrag to get to the same quality exceeds those consumed by PerfectDisk's one pass.

A Gartner Research published a report in February 2003 made this observation about multi-pass defragmenters:

"The Windows 2000 Server built-in defragmentation tool is a multi-pass defragmenter that must be run over and over to defragment the disk, especially when defragmenting very large disks with heavy fragmentation and limited free space. As such, multi-pass defragmenters characteristically fragment the remaining free space on the disk, which accelerates fragmentation later. It is recommended that a third-party single-pass server defragmentation tool be implemented instead."

### *SMARTPlacement™ Strategy*

PerfectDisk has a patented file placement strategy that is based on file modification activity. This strategy groups files with similar modification patterns together. When all "rarely modified" files (files that haven't changed in 60 days) are grouped together, the next time PerfectDisk runs it is very likely nothing in this file group has changed. The files are already contiguous so PerfectDisk leaves them alone.

The “recently modified” files (created or changed in 30 days) are adjacent to the contiguous free space. If one of these files grows, the extent will be created in one piece from the contiguous free space. This file can be made contiguous with minimal shuffling of clusters. As a result, subsequent PerfectDisk defrag passes take less time, CPU, and memory. PerfectDisk implements SMARTPlacement™ during its single pass on the disk. This means that in one pass with PerfectDisk you get 99-100% of all data files defragmented, free space consolidated, and intelligent file placement based on a sound strategy.

*PerfectDisk's patented SMARTPlacement file placement technology is the only proven and patented method to provide the absolute best in drive performance.*

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#### *Consolidation of Free Space*

Consolidation of free space improves drive write performance and allows new files to be created contiguously. PerfectDisk performs free space consolidation as part of Smart Placement. PerfectDisk also has a Consolidate Free space defrag method that defragments files and consolidates free space but does not place files by modification date.

While O&O Defrag has a SPACE defrag method, according to their help file “The SPACE method is the best one for your initial defragmentation and for defragmentation in the background, **as long as there is enough free space on the hard disk and the number of files is not too great.** Otherwise, you should consider using the STEALTH method.” However, STEALTH method doesn't perform as complete of a defragmentation job as SPACE or Complete methods.

#### *Defrag Files Only*

PerfectDisk provides a Defragment only method where no free space consolidation and no placement of files by modification date is performed – only fragmented files are optimized. O&O Defrag doesn't provide this ability.

While O&O Defrag allows placing of files COMPLETE/Access (by last access date), COMPLETE /Modification (by last modification date) and COMPLETE /Name (Alphabetically by name), according to the O&O Defrag online help, using any of these methods “**uses a lot of central memory**” and if this is an issue, then STEALTH defrag should be used. The O&O Defrag online help also states that a STEALTH defrag doesn't perform as complete of a defragmentation job as their COMPLETE or SPACE methods. This means that you have to trade off the ability to defragment effectively with resource usage consumed by the defragmentation pass. Use STEALTH mode to reduce system resource usage and defragment large drives, but it won't result in as good of a defragmentation job or free space consolidation.

To get a better defragmentation job, use COMPLETE or SPACE methods, which can result in a large amount of system resources used and doesn't perform well on large drives.

## **Automating Defragmentation - Flexible Un-attended Operation**

PerfectDisk provides more flexibility and control than O&O Defrag. Defragmentation occurs on your terms - when you want it to.

### *Screen Saver Mode*

Part of AutoPilot Scheduling™, Screen Saver Mode allows users to have PerfectDisk automatically defragment drives when their computer is idle and the drive hasn't been defragmented in a user-defined number of days (Professional version only). This ensures that defragmentation occurs only if needed.



With O&O Defrag Screen Saver mode, drives are defragmented whenever the screen saver kicks in, resulting in wasted resources.

### *StealthPatrol*

PerfectDisk's StealthPatrol can defragment the system when the computer is idle and includes the ability to specify applications to look for and not defragment when that specific application is running. O&O Defrag does not provide the ability to not defragment when a specified application is running.

### *Defined Dates/Times*

Both PerfectDisk and O&O Defrag provide the ability to defragment at defined dates/times. Both support selecting which day(s) of the week to run and to configure a maximum duration for the defrag pass. However, PerfectDisk provides more granularity and allows you to schedule defrag to run every "x" days or every "x" weeks.

## **Centralized Management and Control**

PerfectDisk comes with the Enterprise Console, a management console that centralizes the management of defragmentation across the enterprise. The Enterprise Console can be used to deploy, configure, schedule, patch, manage, and report. Other capabilities include:

- A dashboard that provides a situation analysis overview of the enterprise fragmentation situation.
- Custom-defined groups that allow the administrator to only see those computers that are to be managed; if an administrator only manages 10 computers, the administrator won't have to see others that are not managed.
- Automatic email notification if thresholds are reached, sent as they occur or in a daily summary.

- 11 user-configurable warnings and alerts for problematic situations across the enterprise.
- Remote control via an automatically generated hotlink to terminal service or remote desktop without leaving the Enterprise Console, saving troubleshooting time.
- Access to PerfectDisk client statistics from the Enterprise Console, allowing administrators access to the data for trending and reporting purposes.
- Active Directory® support includes the linking of Organizational Units, allowing the Enterprise Console to reflect changes to Active Directory with respect to the adding and removing of machines from a domain.

O&O Defrag offers its Management Console for enterprise management. It performs essentially the same deployment and scheduling functions as the PerfectDisk Enterprise Console. The O&O Management Console does not provide any of the alerting or reporting features included with the PerfectDisk Enterprise Console. It is also important to note that the O&O Management Console does not support the linking of Organizational Units via Active Directory.

The O&O Defrag network scheduling options do not allow the same degree of flexibility when scheduling a defrag pass on remote computers. Drives on remote systems are either considered the system drive or are considered a data drive. You can schedule the system drive to be defragmented or data drives. If there is more than 1 data drive on a remote computer, you do not have the ability to specify which data drive to defragment – a network schedule will defragment all data drives.

### Free Space Requirement

All defragmenters require some free space to defragment. On Windows 2000, the free space available for defragging is limited to the space outside the Master File Table (MFT) Reserved Zone. PerfectDisk needs only a minimum of 1% available free space.

O&O Defrag suggests a minimum of 10-15% free space in order to defragment effectively (although they also state that they can run with as little as 5%). However, O&O Defrag also states that **“It might not be possible to defragment files larger than the available free and contiguous disk space”**. This means that on low free space drives with large files, O&O Defrag will not be able to defragment the drive.

Users should perform their own testing in low free space conditions to verify results in their own environment.

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## **Volume Shadow Copy Service (VSS) Capability Mode**

On Windows Server® 2003 and Windows Vista® systems, defragmentation activity can result in snapshots/shadow copies being purged ([Microsoft KB article 312067](#)). If the drive is formatted with a 16k cluster size (or multiple of 16k), then VSS can detect defrag activity and minimize the purging of snapshots/shadow copies. On VSS enabled drives where the cluster size is < 16k, to minimize snapshot/shadow copies being purged you need to minimize the amount of file movement when defragmenting. By default, PerfectDisk addresses this issue with our VSS compatibility mode.

O&O Defrag recognizes that this can be an issue and recommends letting only O&O Defrag background monitoring function run on these drives. Running O&O Defrag's SPACE, COMPLETE or STEALTH defrag methods can result in purging of restore points/shadow copies.

## **Online Directory Consolidation**

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Raxco has always recognized the performance improvement achievable by consolidating directories on the drive. PerfectDisk has provided automatic online directory consolidation since 2002.

O&O Defrag does not consolidate directory data.

## **Designed for Disks of Several Terabytes**

PerfectDisk was the first defragmenter to support large drives of several terabytes that are now more common. Available with PerfectDisk Professional, Server and Home Edition, PerfectDisk is designed to defragment these large drives quickly and using minimal resources.

O&O Defrag provides large drive support through its STEALTH defragmentation method. However, real-world testing shows that Stealth Mode still takes longer, consumes more system resources and doesn't improve drive performance to the level provided by PerfectDisk.

## **MFT Placement**

PerfectDisk repositions the MFT to the location where Microsoft research has indicated provides a 5-10% performance improvement. In the Microsoft white paper "[NTFS Preinstallation and Windows XP](#)", published January 16, 2003 the author's state:

"In Windows 2000 and earlier versions of Windows NT, the MFT was typically placed at the start of the disk space available to the file system. In Windows XP, the NTFS format utilities place the MFT 3 GB further into the disk space, which has been found to improve system performance by 5 to 10 percent."

O&O Defrag does not reposition the MFT as recommended.

*The PerfectDisk offline defragmentation will completely defrag the page file as long as there is a minimum of 5% free space available on the partition.*

## **NTFS Metadata**

PerfectDisk defragments all of the NTFS metadata files. These are the files that define the file system to NTFS. You can see a list of these files in PerfectDisk by clicking on the Excluded Files tab in the Statistics windows that appears after a partition analysis. PerfectDisk defragments all of these during the offline (boot time) defrag.

O&O Defrag does not defragment all NTFS metadata files.

## **Page File Defragmentation**

The PerfectDisk offline defragmentation will completely defrag the page file as long as there is a minimum of 5% free space available on the partition.

O&O Defrag offline defrag will only defrag the page file if there is contiguous free space equal to or greater than the size of the page file.

## **Hibernate File**

PerfectDisk defragments the hibernate file on workstations.

O&O Defrag offline defrag will only defrag the hibernate file if there is contiguous free space equal to or greater than the size of the hibernate file.

## **GUI-less Installation**

PerfectDisk can be installed without the GUI present on the user's machine. This feature is made available for those installations exercising a "locked down", secured environment. Only the administrator can schedule or initiate defragmentation.

O&O Defrag does not offer this capability.

## **Summary**

PerfectDisk and O&O Defrag contain many differences in functionality, strategies and methods. Evaluators of the products are encouraged to use this paper as a guide for their own testing and analysis. By digging deep into actual functionality and actual results, testers should be in a better position to make a well-informed decision.

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