



ULTIMATE DEFRAG

DEFRAG & OPTIMIZE YOUR HARD DRIVE...
ANY WAY YOU WANT!

2008

Program Version 2.0.0.47

User Guide



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What's New In 2008

UltimateDefrag 2008 incorporates numerous new features since the Version 1 release. Here is a brief summary of what's new.

- **New Graphical User Interface.** We've vastly improved the graphical user interface to be aesthetically more pleasing.

We now also display even more information on the disk display. High performance and Archive data is clearly shown in different colors so you can see ahead of time which files are going to which zone on your drive.

- **Significantly Faster Defrag Engine.** Our defrag engine was already fast but we've further improved it for defrag speed that is 30 to 100% faster and, at times, up to 1000% faster depending upon the operation. We use such techniques as nearest free space placement, preemptive space clearing and minimal file movement algorithms.

We've also included a "Very Fast Placement" option that doesn't move a single byte of data more than it has to. You'll find this option in the High Performance and Archive setting options. Very Fast Placement will deliberately leave an occasional small gap between files if it decides that the time saved in the defrag process will offset the need to have 100% contiguous data. It will never leave a file fragmented.

There's much more done under the hood of the defrag engine and you'll notice an amazing speed increase as files are repositioned around your drive.

- **More File Placement Options Including Wild Card Support.** There are many more options for selecting files for High Performance and Archive. We have also now included Wild Card support. So there's not much you can't do as far as determining which files go where on your hard drive. You can now choose frequency of use data based upon percentage of total data, amount of data or frequency of use.

- **Enhanced Auto Defrag Function.** For non-power users who simply want to push a button to defrag, the Auto feature works with a little more flexibility. You can now determine whether your Archive Files go to the inner tracks of your drive or just inside the High Performance data. Aside from that it is still a one button defrag.

- **More Information Displayed On GUI**

Part of the improvements to the GUI include more information being displayed and more color choices for categories of files. We now include unique colors for High Performance and Archive files which enable you to see which files are in or going to be placed in those particular bands.

- **Significant Streamlining of Code**

This latest version of UltimateDefrag has been completely rewritten and



recoded from the ground up. The result is a much more efficient program. Along the way we also identified and eliminated any minor bugs that may have appeared in the use of the program.

In spite of all of these changes and improvements to the program one thing still remains and that is that optimal hard drive performance for your PC remains as the #1 priority of UltimateDefrag. All of the new features simply make it easier and faster to achieve that state.

Enjoy UltimateDefrag 2008.

Introduction

UltimateDefrag is revolutionary defrag software that not only lets you defrag, but also considers a more important phenomenon, and that is, the placement of files and folders on your hard drive. With UltimateDefrag you can place the files you want the best performance from onto the faster areas of your hard drive and also get all of your unused data right out of the way and repositioned onto the slower areas of your hard drive in order to make way for the data that you want to place in the “hot” sections of your hard drive where performance is greatest.

UltimateDefrag lets you specify defrag and file placement routines right down to the individual file and folder level. No other defragger has previously enabled you to do this to this extent and with this kind of power and flexibility.

UltimateDefrag has a High Performance file section option so that you can get the best possible performance out the programs you want the best performance from, whether it's a particular game, program or data file. You can move these programs and files ahead of other files and folders to the area of your drive that gives you the best performance.

You choose the files that you want performance from and those that you don't or let UltimateDefrag do it for you – automatically based on file usage.

UltimateDefrag is very powerful yet very easy and intuitive to use. Once you understand the basic concepts and issues that slow your hard drive and principles that result in increased performance you can use UltimateDefrag as a powerful tool to give you hard drive file access that will perform significantly faster than what hard drive manufacturers quote for their hard drive's performance.

When done right – these principles of performance promotion, that UltimateDefrag enables you to address, all compound like magic to give you performance that you have not previously experienced from your hard drive. After defragging and optimizing with UltimateDefrag – your whole PC will respond with the speed and sprite as when it was new. You'll see the performance results instantly!

If you decide that you do not want to use all of the advanced options and simply want a fast reliable defrag, then you can also use UltimateDefrag for that purpose only. Simply select the AUTO option and you'll be enjoying what is probably the fastest and cleverest defrag engine on the market even with its approach to standard defragging which uses efficient “in-place” defragging algorithms for fast, reliable and complete defrags.

One other item that you'll find incredibly amazing about UltimateDefrag is the size of the program itself – only 1.7 Mb! You'll be amazed that so much power can be packed into such a small program. One thing that UltimateDefrag **isn't** and that's bloatware!



System Requirements

- Windows Vista (all versions), Windows XP (all versions), Windows Server 2003 or 2008.
- Hard Drive (internal or removable) with NTFS or FAT32 file system
- 3.3 Mb Free Hard Disk Space
- 3D Graphics Accelerator for best performance of GUI Disk Display

Last Access Times

UltimateDefrag requires relatively accurate Last Access time stamps for your files. Last Access times are how it generally determines file usage frequency.

For this purpose it is suggested that you have Last File Access time stamping enabled. By default this is already set to enabled. Some programs and published Windows tweaks suggest that you disable it due to performance issues. In most circumstances the performance difference is unnoticeable however to get the performance increases that UltimateDefrag provides and for UltimateDefrag to function properly it is suggested that you enable it.

To check whether Last Access Time Stamping is ON or OFF - Go to the Command Prompt (START => ALL PROGRAMS => ACCESSORIES => COMMAND PROMPT) in Windows and type the following:

FSUTIL BEHAVIOR QUERY DISABLELASTACCESS (then hit Enter)

If it returns a value of 0 or "not set" then you do not need to do anything.

If it returns a value of 1 then you need to enter the following:

FSUTIL BEHAVIOR SET DISABLELASTACCESS 0 (then hit enter).

Your system will now be set correctly for UltimateDefrag's use of Last Access to work correctly.

Please Note: Some antivirus programs and desktop search and indexing programs update the Last Access times of files that they scan and index. Technically this contravenes Microsoft's suggested practice for updating Last Access time stamps since it is not a true "normal use" access. In this instance we suggest that you lobby the maker of your antivirus program or search program to have their products not alter the last access time stamp when doing their scans of your files.

Installation

Installing The CD-ROM Version

If you purchased the CD-ROM version of UltimateDefrag – insert the CD into your CD or DVD drive. The installer should start automatically. Simply follow the installation prompts.

If the installation routine doesn't automatically start – the use Windows Explorer to browse the drive, then locate and run UltimateDefragSetup.exe.

Installing The Download Version

Simply double-click on the installer file – UltimateDefragSetup.exe.
Follow the prompts to complete the install.

Running UltimateDefrag

Select the Windows Start Menu, Locate the DiskTrix - UltimateDefrag program group and then simply select the UltimateDefrag icon.

The program will then start.

Product Activation

UltimateDefrag is protected using a user specific license key. The first time you run UltimateDefrag you will need to unlock and activate the software.

You will be presented with a screen to unlock and activate the software.

Activating Online

Provided you have an internet connection, activation can be completed in as little as 30 seconds. At the product activation splash screen, simply select Activate Online. Enter your license number and password, press activate. License information will be sent to our license servers and your product will be activated.

Activating From Another Computer

If the system you are installing on does not have an active internet connection then you can activate it from a computer that does.

To do this you will need to have some means of walking the license information from the computer that has the connection back to the computer you are installing on without the internet connection. This means a floppy disk device or a flash memory drive or being able to copy across a network.

The procedure is outlined when you perform this step.

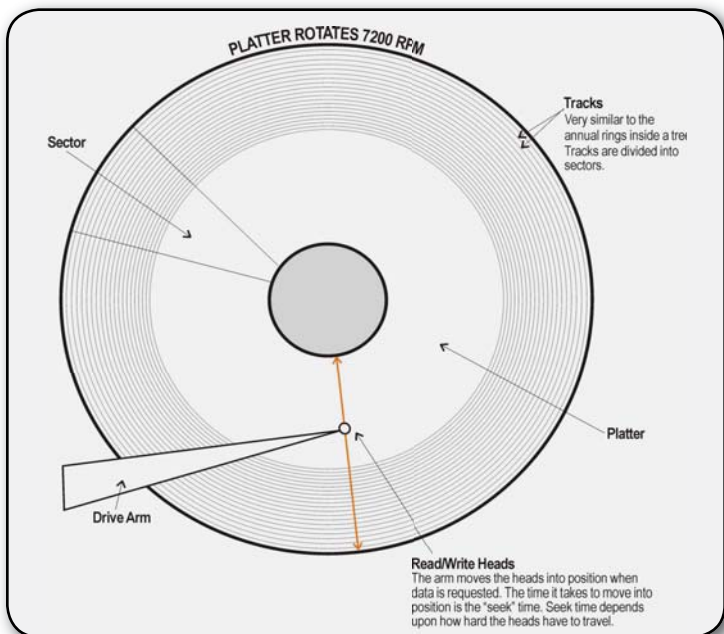
Product Activation Count

UltimateDefrag gives you ten activations for each license purchased. This means that you get ten opportunities to activate, in the event that you need to reformat a hard drive. If you use up your ten activations, you will need to contact support@disktrix.com. Please activate wisely to avoid any future inconvenience.



Hard Drive Performance Theory

Please read on to see how fragmentation and other, even more, important factors act to slow your hard drive's performance.



How Your Hard Drive Works

Your hard drive is the only “data handling” peripheral in your computer with moving parts. This makes it the slowest performing peripheral, when compared to the CPU and memory. As a result it is the performance rate limiting device on your computer. Most of the time, the CPU and memory has done its work and is waiting on the hard drive to provide or save data.

In the most simplistic of descriptions, your hard drive consists of spinning platters and read/write heads. The platters contain data bits that consist of magnetic patterns of data. The platters spin at a rate of anywhere between 4,200 and 15,000 RPM, depending upon your drive specifications. This rapid rotation of the platters results in a cushion of air that makes the read/write heads float only a few micrometers above the surface of the platters - just like a hovercraft floats a few inches above the water. When a request for a file is sent from the main CPU the read/write heads move across your drive to locate the file, they then read that file and send the data back to the CPU.

A file may be 512 bytes in size or it may be many Gigabytes in size.

If you do not run any kind of defragging or file ordering process, generally speaking, files exist on your drive in random order. Files may also become fragmented and this is a leading cause of reduced hard drive performance.

A Little About Drive Fragmentation.

Fragmentation of your computer's hard drive is a natural phenomenon that occurs when deleted files leave empty spaces amongst your drive's data. When the operating system needs to write another file back to the hard drive it generally looks for the first available free space and writes the data to that free space. If the data to be written does not fit in that space it will fill the space with data and then move onto the next free space and continue to write the data until the file is completely written – the result is parts of a file scattered in a fragmented (non-contiguous) manner.

When the operating system requests that fragmented file from the hard drive the hard drive read-write heads need to move around the drive to collect all the pieces of that file. The result is vastly reduced performance since the hard drive head has to make many movements to collect all the pieces of the file rather than pick it all up in one smooth motion from consecutive clusters.

The more fragments a file has the longer it takes to load that particular file. The result is that your hard drive performs far slower than it is capable of in the process of loading that file.

This is, in a nutshell, the phenomenon of file fragmentation.

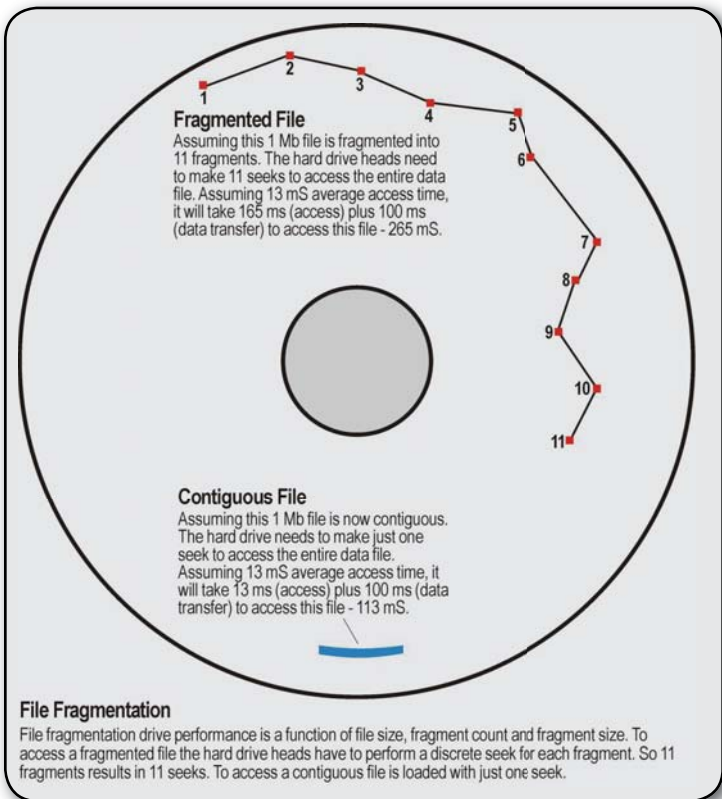
Fragmentation and Optimization

File fragmentation is only part of the equation in the cause of reduced hard drive performance. UltimateDefrag addresses this and the other, more important, part of the equation in reduced hard drive performance and that is, the placement and ordering of files on your hard drive.

File Placement - A More Important Issue

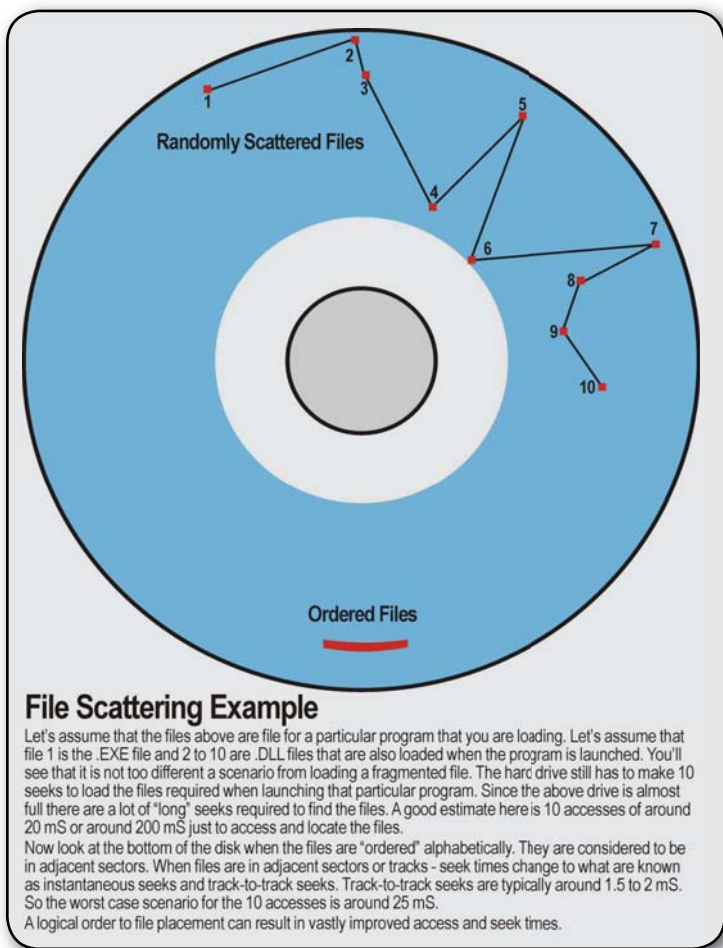
Most defraggers that are out there have pretty much ignored this much more important aspect of hard drive performance – the placement of files on your hard drive. Loading one file that is fragmented is a discreet issue at the individual file level. However, the way in which the Windows operating system and NTFS file system function results in an almost constant dialog between the computer and the hard drive as hundreds of files are accessed during system boot time and during regular operation of the computer.

What comes into importance here is the work the hard drive read-write



heads need to do to read all of these files that are both fragmented and scattered all around the drive. If they are not fragmented they are still scattered all around the drive and loading these files requires extensive movement of the hard drive read-write heads to pick up these files from wherever they may be on the drive – from the outer tracks to the inner tracks. Reading a file from the outer tracks and then having to go all the way to the very inner tracks takes the amount of time that is actually twice as slow as your drive's rated seek speed. If your hard drive has an average access speed of 13 mS then reading a cluster from the outer and then the inner track takes about 26 mS.

See the File Scattering Example diagram.



Hard Drive File Location

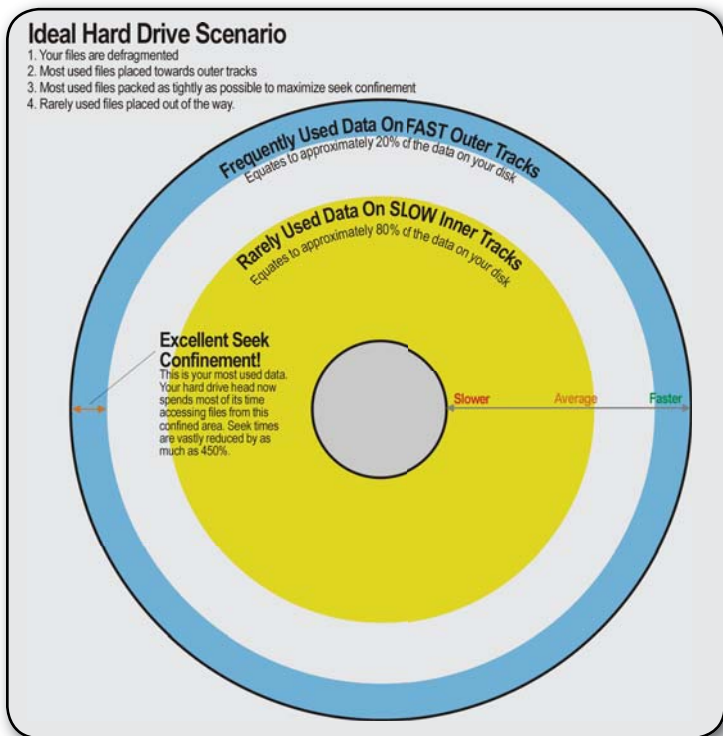
Another important item to note is the location of the data on your hard drive. It is a fact that data transfer from the outer tracks of your hard drive platter is about 180 to 240% that of your inner tracks. This is due to the phenomenon of zoned bit recording and angular velocity. Please consult the Basic Hard Drive Theory section for more information on this.



The Ideal Scenario

Your hard drive is capable of performing around 4 times what manufacturers specify as average performance for your hard drive. This is what UltimateDefrag strives to achieve. In order to have your hard drive perform as fast as it is capable of and even faster than the average rated speed, four elements need to be considered.

1. Your files need to be defragmented in order to minimize drive head movement while reading a file.
2. Your files need to be placed as far as possible towards the outer tracks of your hard drive in order to be accessed from the fastest part of the hard drive.
3. Your files need to be placed or consolidated as closely together as possible to minimize head movement while loading different files – also known as “seek confinement”



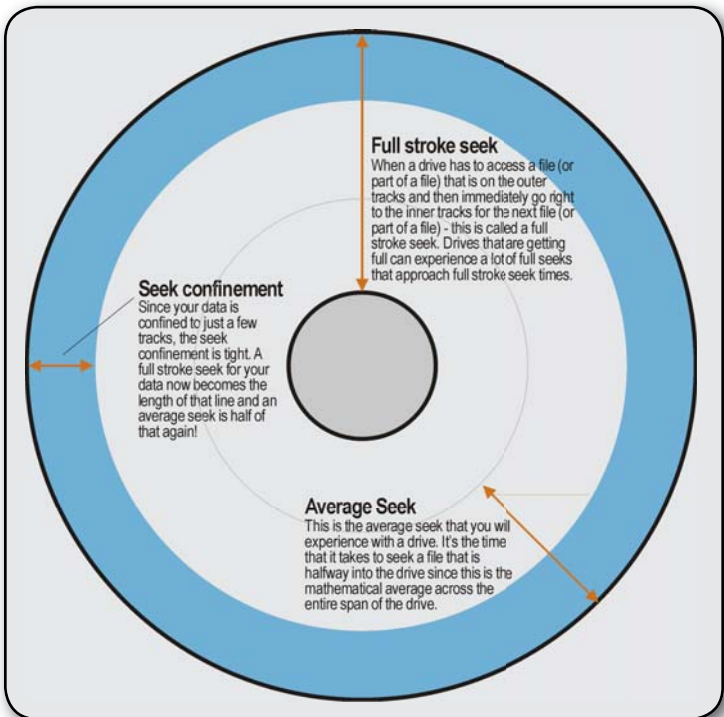
4. Files that are rarely used should be placed out of the way so that your most used files are clustered as closely together as possible.

UltimateDefrag achieves all this with the end result being hard drive performance that is around 300 to 400% that of your drive's current manufacturer rated performance.

Since hard drives and the Windows OS already have built in performance enhancing measures - the performance increases you'll see from UltimateDefrag will be anywhere between 30% and 100%.

Basic Hard Drive Theory

We will now focus a little more closely on how your hard drive works from the viewpoint of data access. When you understand this you will understand how UltimateDefrag, which is more than just a defragger, does what it does to vastly improve your drive's performance.





Some Important Terms:

Seek Time: The amount of time a drive head takes to move to the correct position to access data. Usually measured in milliseconds (mS)

Latency: Also known as rotational delay. The amount of time it takes for the desired data to rotate under the disk heads. Usually the amount of time it takes for the drive to perform a half revolution. Usually measured in milliseconds (mS)

Access Time: The amount of time a drive head takes to access data after the request has been made by the operating system. Usually measured in milliseconds (mS). Other minor factors taken out of the equation it is very closely approximate to: $\text{Access Time} = \text{Seek Time} + \text{Latency}$.

So when data is being requested from the drive the hard drive head moves into position (seek), waits for the data/sector to move into position under the head (latency) and then accesses the data. The time taken for these 2 steps is the access time.

Full Stroke Seek: The amount of time it takes for the drive head to move from the outermost track to the inner most track.

Track-To-Track Seek (Adjacent Track Seek): The amount of time it takes for the drive head to move from one track to the very next track

Data Transfer Rate: The speed at which data can be read from the hard drive. Measured in Megabits per second

Zoned-Bit Recording: A method of optimizing a hard drive (at the factory) by placing more sectors in the outer tracks of a hard drive than on the inner tracks. Standard practice for all modern hard drives.

Sectors: The smallest individually addressable unit of data stored on a hard drive. In a typical formatted NTFS hard drive it is usually 512 bytes.

Tracks: Tightly packed concentric circles (like the annual rings on inside of a tree) where sectors are actually laid out.

Rotational Speed: The speed at which a drive platter rotates in revolutions per minute.

With all these terms now outlined, let's look at the numbers in a typical 160 Gb EIDE hard drive.

Read Seek Time:	8.9 mS
Latency:	4.2 mS
Full Stroke Seek:	21.0 mS
Track-To-Track Seek:	2.0 mS
Transfer Rate:	750 Mbits/s

Hard Drive Performance Explained

Let's look at how these factors work to affect hard drive performance

Data Access

When the CPU submits a request for a file from the hard drive - this is what happens.

1. CPU sends request to the hard drive
2. The read/write head moves into position above the track where the data is. This is the seek and the amount of time taken is the seek time.
3. The read/write head waits until the data that is requested spins underneath the head. It then reads the data. The time taken for the data to move beneath the head is the latency and is usually the time it takes for the platter to rotate a half revolution.
4. Data is accessed and transferred back to the CPU.

The time it took for the initial request, the seek and the latency is approximately equal to the access time.

Having the numbers above available now enable further explanations of data performance to be put into comprehensible perspective.

The average Access Time for this hard drive is $8.9 + 4.2 = 13.1$ mS.

The minimum access time is $2.0 + 4.2 = 6.2$ mS and the maximum access time is $21.0 + 4.2 = 25.2$ mS.

When complete data files or parts of a data file are scattered all around the hard drive you will get a performance that is the average rated access time – in this case 13.1 mS – some accesses are as little as 6.2 mS but some are as great as (or approaching) 25.2 mS. So there is a 406% performance difference between fastest and slowest access time.

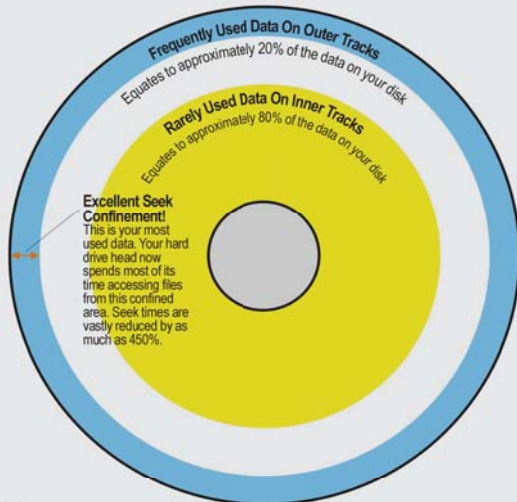
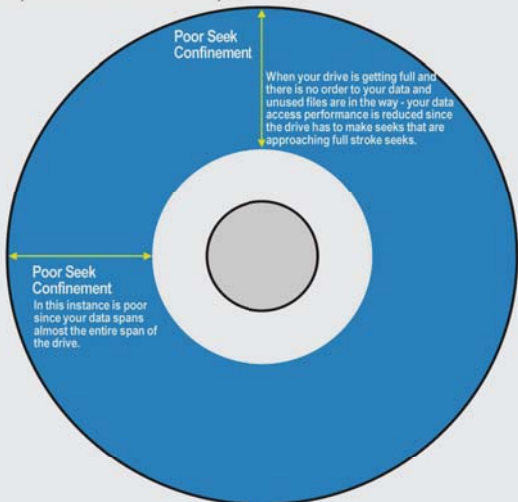
Often, hard drive and operating system intelligence result in a lot of instantaneous track-to-track seeks i.e. without the latency due to file layout patterns and relative location of data. On top of this, the “seek confinement” of the data also promotes vastly increased probabilities of instantaneous, zero-latency, seeks due to the “compaction” of the data. This increases the probability that the data requested will already be under the drive read/write heads. This actually increases the theoretical 406% figure in the above paragraph to a greater number however it is not accurately quantifiable but can be as high as 1000%.

In a typical fragmented and non-optimized hard drive you will only achieve the average rated performance as average access time with some accesses faster and some slower.



Seek Confinement

When your data is spanned randomly across the drive you experience seek times that approach full stroke seek times. When your data is consolidated on the outer tracks (blue band) you increase the seek confinement and seek and access times are dramatically reduced to a fraction of that when your data is scattered.



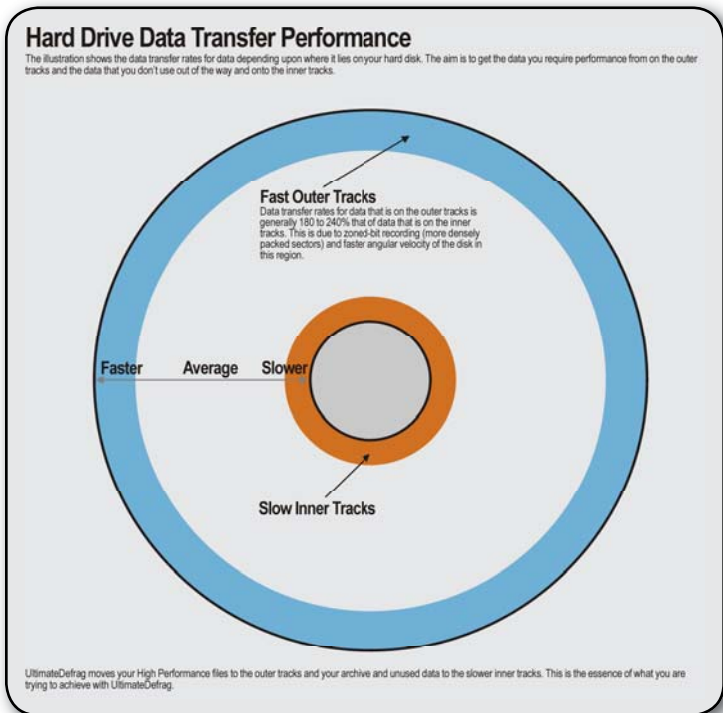
Pareto's Rule

80% of the time you only use 20% of your data. So let's put this data on the outer tracks and compact it. And let's put the other 80% of the data on the inside tracks.

Data Transfer

Part of the hard drive performance equation is Data Transfer Rates. Due to a combination of Zoned-Bit Recording (more densely packed sectors) and angular velocity i.e. the outer tracks of the hard drive have a greater angular velocity – data transfer at the outer tracks of the drive is typically 180 to 240 % that of the inner tracks. So when a drive is boasting a maximum of 750 Mbits/second as the maximum – the minimum is about 350 and the average about 550 Megabits per second.

Again – if you're operating a full, fragmented and non-optimized hard drive, performance is more around the average of 550 Megabits per second.



Hard Drive Fatigue

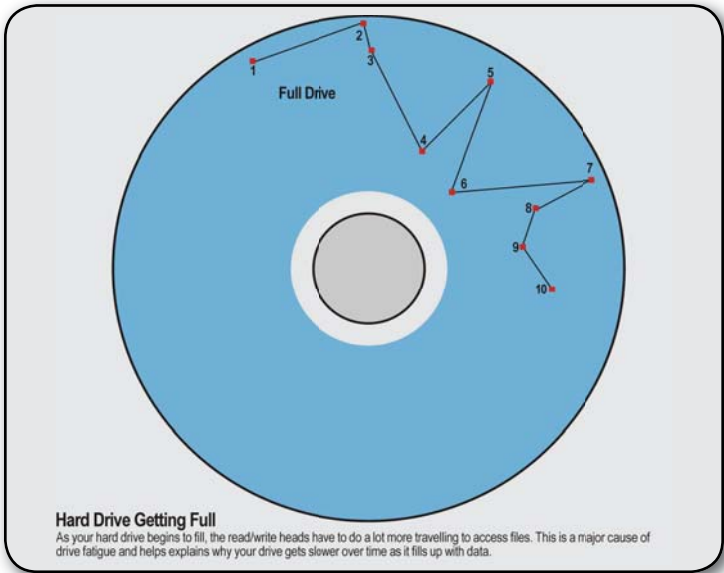
When it comes to hard drives, entropy is alive and well.

If you've had your computer for a while you will notice that, when compared to when it was brand new, it feels a whole lot slower. Also, as your hard drive gets fuller you'll notice the same phenomenon.



This is due to several factors with the main one being that with the hard drive filling up and files being fragmented and scattered all over the drive in no particular order, your drive is performing more like the “average” quoted performance as opposed to when the drive was new and mostly empty and performing better than quoted.

Depending upon where your mostly accessed files are located, it could be performing much less than quoted averages.



UltimateDefrag Does It's Magic

Please refer to the ideal scenario at the beginning of this help file. There are four main factors that contribute to reduced hard drive performance and subsequently four main factors that can be addressed to improve your hard drive performance. These incremental improvements all compound each other so the result is greater than the sum of parts. The improvement is not just an improvement to average performance, instead it's improved by up to 300 to 400% of your drive's quoted average performance!

Most defraggers only deal with “fragmented” files – they quote performance improvements by up to 100%. But all they are referring to is the performance of accessing those fragmented files. Which you may only rarely access anyway! They might add only milliseconds of performance improvement. No consideration is taken into placement of files and other items that need to be considered to improve the performance of your drive.

As a result – a “defragger” only brings your hard drive and fragmented files back up to average quoted performance.

This is where UltimateDefrag does its magic! UltimateDefrag brings your hard drive up to performance that exceeds average drive manufacturer quoted performance by around 300 to 400%. Since there are already performance enhancing systems in hard drive logic and Windows O/S, you will experience performance increases anywhere between 30 and 100%.

Pareto's Rule – The 80/20 rule

Pareto's rule pervades our world. 80% of the wealth is distributed amongst 20% of the population. 20% of a company's customers contribute to 80% of its revenue.

Pareto's rule also applies to PC file access. 80% of the time you only access 20% of your files. You can extrapolate that to 90% of the time you only access 10% of your files.

UltimateDefrag Applies Pareto's Rule To Give a Boost To Your Hard Drive's Performance

If you apply Pareto's Rule to 100 Gb of data, generally speaking, 80% of the time you only access about 20% of that data, so why not...

1. Place your least accessed data out of the way of the high performing areas of your drive and move it to the slowest part?
2. Get the data that you access the most and place it to where you get the best performance?

These two single most important aspects of file placement are what UltimateDefrag addresses – and it gives you almost no limit of power as to what you can do as far as manipulating what goes where on your hard drive – right down to the individual file level. This is why UltimateDefrag is a revolutionary defragmentation and disk optimization product.

Is UltimateDefrag (and Defragging) Safe?

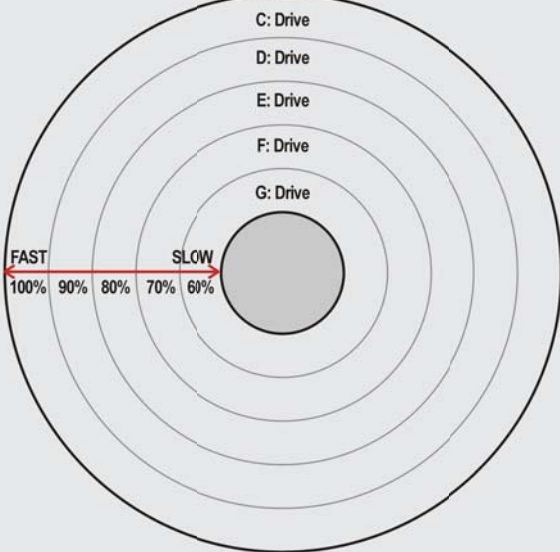
This is one question that a lot of people ask. In the pre-NTFS days there was risk to defragging. If there was a power outage in the midst of a defrag – you could have lost important data. That has all changed now and defragging with NTFS is 100% safe. The actual defragging APIs are APIs created by Microsoft themselves for NTFS and all defraggers use these API's. In general with these API's – data is not erased from its original location until it is verified as being correctly written. A product such as UltimateDefrag simply uses those API's to place files where it wants them to go.



What About Partitioning?

There are many arguments for partitioning. Proponents of partitioning argue that it helps organize your data, keep your hard drive “less” complex etc. They advise to put your operating system on one partition, archive on another, program files on another, data on another and it seems a sound argument.

The main problem with partitioning however is that actually creates drives that are slower and slower as more partitions are created. Partitions are created in cylinders (group of tracks) working their way inwards as more are created. So when you create say 5 partitions of 40 Gb on a 200 Gb drive. The very inner partition – the highest drive letter is actually also created at the inner tracks. So it actually performs twice as slow as the primary partition. Remember our discussion of data transfer above. Each partition is about 10% slower than the previous one. C: drive gives you fastest performance; D would be approximately 10% slower; E: approximately 20% slower; F: 30% Slower; and so on. You may be putting the games or product that you want highest performance from on a partition that results in much slower performance of that product.



Partitioning Creates Slower Drives

When you create partitions, the partitions are created as cylinders working their way towards the center (slower inner tracks) of the drive. In this example above, C: drive is the fastest performing drive. Performance drops by about 10% with each subsequent partition. G: drive only performs at approximately 60% of that of C: drive. There is no sound reason to partition your drives when you are running UltimateDefrag since it keeps your high performing data away from the slower inner tracks.

UltimateDefrag eliminates any requirement for partitioning for the purpose of data organization and totally dispels the requirement for partitioning from a performance point of view.

UltimateDefrag lets you take the hotchpotch of files that are on your system – put the least used and unused files to the inner tracks and keep the most often used files to your outer tracks where you require performance regardless of which files they may be. It's like partitioning on the fly without the “mental” decisions of needing to constantly think about what goes to which drive when you are saving data and installing programs. Simply do it all on the one physical drive. Partitioning overhead is eliminated. Use folders for what they were intended for and then use UltimateDefrag to keep what you need where you need it on your drive. No partitioning required!

Using UltimateDefrag

UltimateDefrag is very simple to use yet very powerful in its defragging and file placement options.

Even though it's more about file placement and relocation (as well as defragging), we will refer to each option as a “Defragging Method”. With UltimateDefrag there is a Defragging Method for virtually every computer or hard drive application – from gaming machines to servers, from empty drives to full drives.

UltimateDefrag lets you customize your hard drive layout right down to where individual files are placed on your hard drive relative to the other files.

If you have a specific game or application that you want best performance from – you can move its files to the very outer tracks (“hot spots”) of your drive. If you want all your programs to load as fast as possible when you execute them – put all your EXE's and DLL's to the outer tracks. If you want Windows to boot as fast as possible – put all your Windows boot files to the outer tracks. If you want best performance from your digitized photo album browsing – put all these to the outer tracks.

Conversely, if you have Zip files of archived data that you never use – put them to the inner tracks where performance is slowest since you will never need them. All those Windows update files that never get used again – put them to the inner tracks and out of the way. Windows actually only uses about 20% of the files in the Windows folder – the ones that aren't can be placed right out of the way and to the slower performing inner tracks since you never use them. In UltimateDefrag, we call putting these files to the inner tracks “archiving”

You can choose individual files or file types for both high performance and archiving or you can let UltimateDefrag do it automatically based on last usage of those files.



UltimateDefrag Mindset Goals

Please refer to the Ideal Scenario diagram on page 12. When you are using UltimateDefrag – the mindset you should have when performing your Defrag Scenarios is to aim towards:

1. Defragging Files
2. Getting your rarely used data out of the way – ZIP files, unused system files, etc.
3. Getting your most often used data to
 - i. The outer tracks
 - ii. As close together and compacted as possible to optimize “seek confinement”
4. Maintaining optimum performance
5. Making subsequent defrags complete as fast as possible.

Option 3 in this list is the most critical in getting the performance increases we promise. You are placing your most used (and most likely to use) files to the outer tracks.

At the outer tracks the transfer performance is double that of the inner tracks and 150% of the average you would normally achieve with a non-optimized drive where files are scattered all around the drive.

You have compacted your most used files to only spread over a smaller percentage of your hard drive area – so you are confining most of the seeks to being adjacent track seeks of 1 to 2 mS and probably no more than 3 or so mS. You are also promoting instantaneous seeks where expected requested data is already there under the heads thus completely eliminating latency in a vast percentage of your hard drive data accesses.

Hard drive access is generally random and with UltimateDefrag we are minimizing the randomness of the placement of files on your hard drive volume.

Getting Started

Running UltimateDefrag

To run UltimateDefrag:

1. Click On Your Windows XP Start Menu
2. Locate The DiskTrix Program Group
3. Locate The UltimateDefrag Program Group
4. Click On the UltimateDefrag Shortcut

When it's running.

The Main GUI

The main graphical user interface is where it all happens. Almost everything you need to operate UltimateDefrag is just a mouse-click away.

Under the Tools option on the top menu bar is the Options selection. This is where most of the power of UltimateDefrag is since this is where you select your high performance and archiving options. We will look at this later.

The Disk Display

The first thing you'll notice with UltimateDefrag when you first load the program is our unique true disk metaphor.

This true disk metaphor helps you to more accurately see what is happening with your drive – where your files are and where they are not. It also gives you a very good look at the location of your metafiles such as MFT and Paging File.

The legend at the bottom left of the screen shows you the different file categories that the disk is displaying.

When you first load the program it will default to your C Drive being selected - most of the file space is green. This is a brief snapshot of the disk usage bitmap. When you hit the Analyze button it will analyze your drive and you will see the colors of the blocks change according to their use. The red blocks contain fragmented files.

The disk is divided up into rectangular blocks. Each block comprises of a group of clusters. Clicking on a block displays the filenames and a color from the legend that are in the group of clusters on the bottom left hand side of the display under Cluster Analysis. Clicking on a filename in Cluster Analysis shows you the full path of the file, the cluster positions of the file, and also the number of fragments the file has. If the file is contiguous it will display the word contiguous.

Using the up or down arrows when you have selected a file will display information on the next highlighted file.



Screen Section – Local Drives

This will display all local drives on your computer. You can only defrag local drives. This includes removable drives. You cannot defrag network drives.

To Analyze a Drive:

1. **Select The Drive You Wish To Analyze**
2. **Press the Analyze Button**

UltimateDefrag has a very fast drive analysis feature and on a typical drive with 50,000 to 100,000 files will analyze in around 20 seconds. The more files on your drive the longer it will take to analyze.

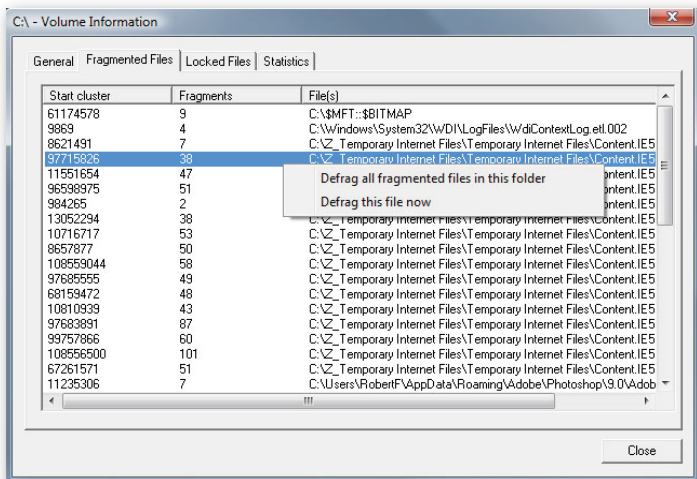
Analysis will display the file count and space occupied by these files and will then also breakdown into contiguous files and space and fragmented files and space.

To find a list of which files are fragmented and how many fragments they have:

1. **Right-click on the drive letter**
2. **Select Volume Info.**
3. **Select The Fragmented Files Tab**

You can sort the list by Start Cluster, Fragment Count or Path by clicking on the top of one of the columns.

When you right click on one of the files on that list, you are presented with a small menu that enables you to defrag that particular file or to defrag all fragmented files in the entire folder.



This way you can take a quick look at which are your most and least fragmented files. Contiguous files are not displayed in this list.

The General Tab will show you basic information on your drive including File System, Cluster Size and other information.

File Menu – Tools – Options

This is the section where you set critical high performance and archiving options. While elegantly simple it is extremely powerful with you being able to select which files you require high performance from, which files are to be archived and which files are excluded.

To select the Options menu:

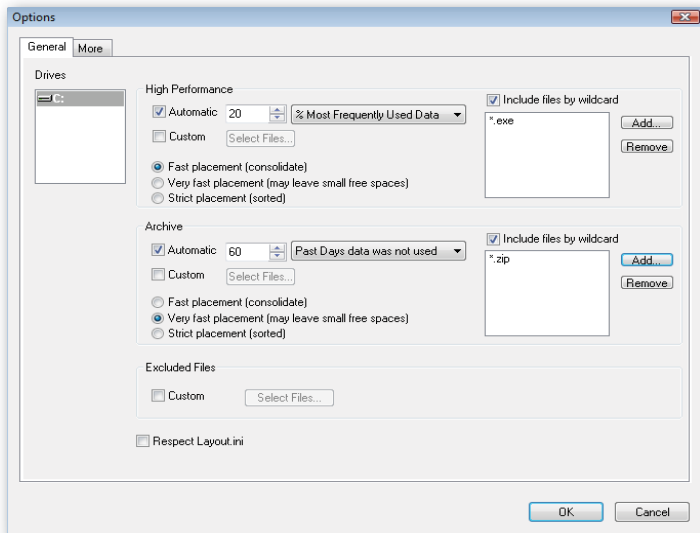
1. **Select Tools From The Top Menu**
2. **Then Select Options**

You will then be taken to the Options menu.

Some important terms to understand:

High Performance Files are moved to the outer tracks in the order they are selected

Archive files are moved to the inner tracks – these files are files that you would consider not used or rarely used and can be moved to the slower inner tracks and out of the way.



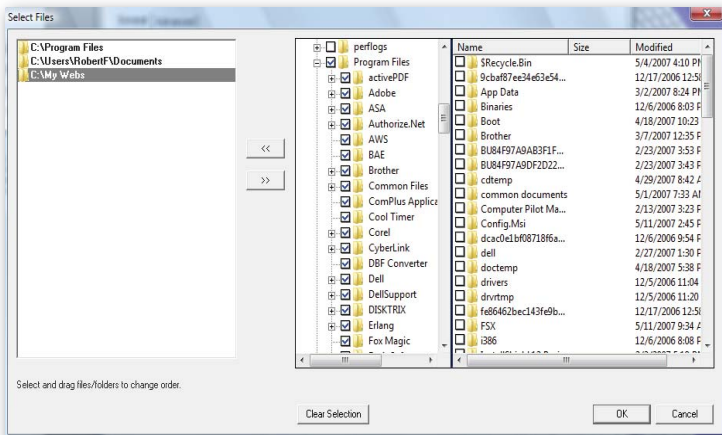


Excluded Files are ignored by the defrag process. These can be whatever files you want. They are left in their place unmoved when the defragmentation is performed.

To change options for a drive:

1. **Highlight the drive you wish to set options for**
2. **Then select the options you wish to set for that particular drive.**

IMPORTANT: Any parameters specified under High Performance or Archive are ignored unless the “Respect High Performance” or “Respect Archive” is selected when you perform an actual defrag.



Selecting High Performance files

This option is very powerful and this is where you can achieve the high levels of performance outlined above.

High Performance files are moved to the very outer tracks of the drive – this is where data transfer rates are the highest – about double that of the inner tracks. Also putting these files closer together towards the outer tracks – you’re improving “seek confinement” thus reducing seek and access times – significantly.

By default High Performance files are shown in purple on the disk display. If you have selected Respect High Performance, after the analysis phase and your defrag has commenced you will see a number of blocks in the color that you have selected to display High Performance files. You will see the outermost tracks in the disk display begin to be populated with the blocks of that color. All files and blocks shown in that color will take order on the outer tracks of your drive display.

Automatic Option

If you use your computer for general computing use – you may want to simply automatically put all files that you normally use on a day to day basis to the very outer tracks of the drive. You can specify who you want to select files based upon the frequency of use based upon the following parameters:

% Most Frequently Used Data relates to the frequency of use relative to other files. So if you want to automatically place your 20% most used files to the outer tracks then simply select 20%.



Gb Of Most Used Data simply selects the amount of most frequently used data in Gigabytes. For example you can select the most used 20 Gb of data to go to the outer tracks.

Past Days Data Was Used. You may just wish to keep all files used in the past 30 days (or whatever period you specify) to the outer tracks.

File usage patterns are statistically determined and it is most likely that the most of the files that you used yesterday, you will also use today. So often even if you change this from 3 days to 7 days to 30 days you will not see that much difference in the number of files that go to the High Performance band.

File Types Based On WildCards

If you want to make all programs load as fast as possible regardless of when you last used them then, under "Include files by Wildcard" add the appropriate Wildcard expression. In this example you would add *.EXE and *.DLL

This will place ALL files with the extension .EXE and .DLL to the outer tracks.

Wildcards are very powerful and let you specify virtually any file you want.

Examples of use include:

*.EXE, *.MP?, MS*.EXE

And so on. The asterisk * will replace any number of characters and question mark ? will replace individual characters.

Selecting 10% and adding .EXE to the Include option will place your 10% most used files and all .EXE files to the outer tracks of the disk. You can also add .DLL files since these are used a lot in launching and operation of most programs.

Custom Option

If you want much more customization you can go click on the Custom option and select folders and even individual files and then you can specify the order of these files and folders.

To select a folder or file simply place a check next to the folder names/or files and then click them across to the High Performance list. If you wish to change the order of the folders or files in the High Performance list, simply select the file or folder on the left hand column and drag it up and down to the position you want it.

If you then have Strict Sorting selected, the folders and the files within them will be placed in that exact order when the disk is being defragged.

In this instance you may have a particular game that you want to achieve highest performance for – drag that to the top of the list – or if you want

fastest boot performance and general Windows and Program performance – put Windows to the top of the list and Program Files below it.

Sorting Options

The sorting option you select make a big difference in the time taken to complete the optimization.

The following sorting options apply:

Fast Placement (consolidate): This method will completely eliminate all spaces between files but sort them in no particular order.

Very Fast Placement: This method will place files in no particular order but will occasionally leave a space between files for the sake of completing the defrag faster. This is the fastest method.

Strict Sorting: This method will strictly sort files according to the HP files you selected. Even if you selected a number of different HP parameters it will strictly sort files. This is the slowest method.

Now you're beginning to see why the slogan for UltimateDefrag is "defrag and optimize – any way you want to!"

Selecting Archive Files

If there are files that you are simply not using – or not using often at all – this is the way to get them out of the way and move them to the slowest part of the disk since they are rarely required (if at all).

This option is as powerful and as flexible as the High Performance option. Archive files by default are shown as green on the disk display.

Files that may fall into this category are ZIP files, or folders with collections of pictures that you don't ever view. You may want to put other least used files into archive. Remember the 80/20 rule – 80% of the time you only use 20% of the files, so here you can put your 80% least used files into archive or files not used in the past 90 days. If a file does get used – then in the next defrag it will be moved out of the archive area.

Selecting files/folders, wildcards or frequency of use works just like the High Performance only in reverse – they get put into the inner tracks.

In this instance you may want to archive some of those extraneous Windows XP update files that will never be used again. Look in your Windows folder – you will see about 70 folders beginning with \$ - these are updates that will never be required again. Finally you can get them out of the way!

The sorting options mentioned at the top of this page also apply to Archive files. Strict sorting is rarely needed and we highly recommend you either select Fast or Very Fast Placement.



Fast And Very Fast Placement For Archive

The options speed up the archive process. They do not completely resort the archive files. Instead, they look at each file, if it belongs in the archive section based on your archive criteria, it gets placed there. If a file is already in Archive, it is generally ignored. If it doesn't belong as specified by the defrag method or High Performance option – then it is moved out.

Fast placement performs a full reverse consolidation of the archive data resulting in complete defrag of free space in the archive file region. Very Fast Placement will place files in no particular order but will occasionally leave a space between files for the sake of completing the defrag faster.

A complete drive with a lot of data can take very little time to be brought back to optimum performance because archived files are only moved if they need to be.

Excluded Files

You may want to leave certain files or folders completely untouched and ignored by the defrag process. e.g. You may have a folder with 20 Gb of data comprising of very large files – you never use them – they are defragmented. Simply select them as **Excluded files** – they will be ignored and untouched by the defrag methods.

If you want them moved to the inner tracks first, you can make them the only files in the archive. Defrag to move them to the inner tracks. Then remove them from the Archived file list and then add them to the exclude list. They will be out of the way and completely ignored in subsequent defrags.

Respect Layout.ini

The Windows operating system is constantly adjusting itself for best performance and in doing so creates a file called layout.ini which contains an optimal file layout for your drive as far as fastest program launching and fastest boot performance.

Layout.ini exists in the Prefetch Folder in Windows.

Every 3 days Windows performs a boot optimize and uses elements of the Layout.ini file to layout the files. This however is only a partial attempt. Not all files in the layout.ini are optimized and they are not placed in the fastest section of your hard drive. UltimateDefrag has the option to read the layout.ini file and exhaustively layout files according to optimal file layout.

When you have this option checked, the optimal file layout is laid out at the very beginning of your drive but is sorted according to the sort options of High performance file selection. If you want your layout.ini files sorted according to the layout.ini order then select Strict Sorting under High performance. File access for your most commonly used files will be the absolute fastest that it can be for your system since all sequential file access

patterns when launching a program and booting your system are taken into account.

Note: When you have Respect Layout.ini selected, it is considered a High Performance option so if you just want UltimateDefrag to layout your layout.ini file only, then select Complete High Performance Then Stop under any defrag method.

An Example Scenario of Selecting High Performance and Archive Files

One example of a scenario that will give you a very fast system would be to do as follows:

1. Under Archive select Automatic and select 80% Least Used Files. You can also select any other file types such as ZIP files since they are unlikely to be used.
2. Under High Performance select "Select Files" option – go in and select some of the critical folders that you know you will use a lot e.g. Windows, Documents and Settings, Program Files. Drag the folders up and down as required to place the folders in that exact order.

When you run one of the defrag methods – this High Performance and Archive setting will result in all of the files that meet the criteria of being in the 80% least used file category going to the inner tracks. Windows XP uses about 15 to 20% of the files in the 18,000 or so files in the Windows directory. The rest are just unused and in the way. You don't even have to think about which files these are. If they are rarely used they are most likely to be obsolete and not required for your system use. They go to the inner tracks.

What this then does is to compact together the important Windows files only and puts them right to the outer tracks. The result is much faster boot times and overall Windows and desktop performance – as sequential file access and zero seek access is promoted during boot and system operation.

The same applies with your Documents and Setting folder – there are a lot of temporary unused files there. These are moved out of the way and only those recently used including desktop related files, icon files and other related files are compacted together and right at the outer tracks. The same will apply to the Program Files folder and their associated files, exe's and dlls. Only those you are likely to use are consolidated and placed on the outer, faster, tracks.

If you do not change these settings in all future defrags – all important files as per the High Performance settings are kept at the outer tracks and files will be added and removed from the archive section as they fall under last usage criteria.



The High Performance and Archive selections are handled as a priority before any other file placement stipulated by the defrag method in the next section.

Defrag Methods

Auto Defrag

If you are not a power user and simply want the most efficient, hands-off, yet intelligent, defrag method then choose the AUTO method. The Auto method uses our proprietary OptiSeek technology to automatically tune the performance of your hard drive to achieve absolute optimum performance for most file accesses.

OptiSeek aims to achieve file access performance that is closely equal to the minimum seek time for your hard drive (also known as track-to-track) seek. For most hard drives this is around 1 to 2 milliseconds. For faster drives it is less however we have arbitrarily cut this off at 2 milliseconds.

When you select options for the Auto Method, UltimateDefrag automatically decides the percentage of your file system to be divided into Most Frequently Used Data and Least Frequently Used Data. The default figures give you an Average Seek Time of 2 milliseconds. If you adjust the performance slider to the left the percentage of files that go to the outer tracks increases and your Average Seek Time increases.

The cost of having the performance set to Optimum is slightly longer defrag times due to a little more flux between files that may get exchanged between archive and high performance zones due to regular PC use. Dragging the slider downwards for slightly slower performance will give you slightly faster defrags but with slightly slower than optimal performance.

If you are unsure simply leave it at the default settings where the slider is set to Optimum.

We also suggest that you do select Place Directories Next To MFT since this will give you fastest file access performance.

You can also specify whether your Least Frequently Used Data goes to inner tracks or just inside Most Frequently Used Data.

Sending the Least Frequently Used Data to the inner tracks will result in longer defrag times but will give you better write performance when saving new files to your hard drive.

Placing The Least Frequently Used Data after most frequently used data will result in faster defrag times but result in slightly slower write performance when saving new files to your hard drive.

Please note that as your hard drive fills over time, the percentage of

files to High Performance and Archive zones changes. This is because OptiSeek aims to optimize your seek times to achieve that minimum seek time of 2 mS.

The AUTO method performs a simple Consolidate defrag which only moves the files necessary to defrag all files and pack all the files without any free space between files to the outer tracks. A full consolidate is also done on Least Frequently Used Data, whether it is to the inner tracks or after most used files.

Other Defrag Methods

UltimateDefrag's defrag methods, coupled with the powerful High Performance and Archive Options give you ultimate flexibility and enable you to defrag your drive – any way you want to or by whatever method your computer use dictates.

Five main defrag methods exist. All but one of the defrag methods have further customizable options. With the further customizable options a total of hundreds of different combinations for defragging are available.

In each of these methods you will find 3 options that recur:

1. Respect High Performance
 - a. Complete High Performance Then Stop
2. Respect Archive
3. Put Directories adjacent to the MFT

What they do is self explanatory – to “respect” (conform) to the High Performance and Archive settings you set – then select the “respect” option otherwise the defrag method will ignore the High Performance or Archive settings. It will never ignore the Exclude settings if there are files to be excluded.

With regard to the respect options – we suggest that you always respect the archive otherwise there is no point in the archive option. We make this an option however in the event that you want your entire drive to be defragged according to the defrag method.

If you have say just one program or folder that you wish to have high performance with then respecting High Performance will move the files identified by this selection to the outer tracks first and then perform the optimization outlined by the particular method on the remainder of the files.

When Respect High Performance and Respect Archive is selected for any defrag method – these will always be performed first followed by the algorithm of each method.

Option 3 – put directories close to MFT significantly improves hard drive performance since there is often a lot of dialog between the MFT (Master



File Table) and the Directories regarding information on the files on your drive before they are fetched. Having these adjacent to each other vastly reduces seek times for these transactions.

Complete High Performance Then Stop

Use this option if you are only concerned with processing your high performance files. When you are using this option, deselect 2 and 3 and UltimateDefrag will simply process High Performance options and then stop.

Consolidate

This is what most defraggers already do. They pack the data towards the outer tracks of your drive but it's usually an all inclusive affair so that a drive that is almost full still experiences drive fatigue since there is no "order" to the files and no preferential placement of frequently accessed files.

However, with UltimateDefrag you have the option of the Archive and High Performance so that you still can get your High Performance Files to the outside tracks and Archive to the inner tracks. When your most and least important files are where you want them then what happens with the remaining files is not as important and they can just be consolidated.

So if you have your High Performance requirements and Archive requirements in place then you can use this method to take care of the remainder of your files. Files are sorted in no particular method but are defragged and consolidated – after the High Performance files. Defrags are quick and performance is excellent.

If you just want to defrag without all of the extra file placement and are happy with having a less than optimum file ordering then you can happily use UltimateDefrag to just do a Consolidate on a regular basis. The result is that same as Windows native defragger.

If you just wish to Consolidate - then the Archive option used in conjunction with this method vastly improves performance since about 80% of your files are archived. This then only leaves the drive to have to work through about 20% of your data when loading files. So you vastly improve your seek confinement regardless. Defrags with Consolidate and Archive and Fast Archive are fast and usually completed within minutes.

If you prefer to not use the archive and high performance feature then this method will give you a fast defrag and also consolidate free space. Only files that need to be moved or defragmented will be touched. The other files will stay in place.

You can also make the consolidate defrag work faster by selecting Very Fast Placement within the Consolidate Options.

Recommend Use Of Consolidate Option. A great way to use Consolidate is to use HP and Archive file selection with No Sorting i.e. Fast

or Very Fast Placement. The program will ALWAYS place HP files to the outer tracks but will do so fast since you are not strictly sorting the HP files. Same applies to Archive. These will be placed fast and will always be to the inner tracks. So this method is using the fasted defrag method (consolidate) on all of your zones - HP, Archive and regular files.

Fragmented Files Only

While this method will leave holes in your data – if all you require is a quick defragmentation of fragmented files – simply use this option. UltimateDefrag will move and defrag only the fragmented files that it finds - with rapidity and ease. It will place the defragmented file in the first available gap on the drive that will fit each particular file.

Advanced Sorting Methods

We suggest that you use the next 3 sorting methods (Folder/Filename, Recency and Volatility) with discretion and care since they can take a very long time to complete. They are much more efficient and complete much faster when used in conjunction with archive options. You may not need to use them often but we have included them for power users.

Folder/Filename Method

This will layout files on your hard drive according to Folder Name Order and then within each folder the files are sorted based upon name order.

If you want to override and manually determine the folder order – you can do this in the High Performance options where you can manually drag and drop folders into the order you want. You then need to respect High Performance for this manual sort to take effect.

Files and/or Folders that qualify for archive will be moved to inner tracks when you select respect Archive – the files that are not moved to the inner tracks will then be sorted.

This method of ordering files on your hard drive will promote performance since files are sorted in strict order and directory look ups are faster when in alphabetical order. Adjacent track seeks and instantaneous seeks are often achieved since often dll and other data files are called upon by programs in alphabetical order.

Recency

With this option you get extensive flexibility in ordering files based upon last access dates, modify dates or file creation dates and then extensive flexibility in placement of these files. This method is suited perfectly for drives that may consist exclusively of data files as in a file server situation. This method is also perfect for situations where a hard drive is getting full



and you want and need performance for particular files with room to grow and with fast subsequent defrags.

If you require it, this method gives you the ability to place all of the files on your hard drive starting at the inner tracks and working outwards. This is ideal for data drives that are getting full but contain data that is rarely accessed or modified.

Align to end options start from the inner tracks and work outwards – align to beginning options start at the outer tracks and work inwards.

You can then decide the order – oldest to most recent and vice versa.

If you have an 80% full, mostly (or only) data, drive – you can put your oldest files to the inner tracks and then order to most recent – so the most recent files will be around 20% in from the outer tracks. Your most often required data will be about 20% in from the outer tracks and the space on the outer side of this will be empty. Disk reads and writes will be very fast and importantly subsequent defrags will be faster since older data is in the inner tracks.

You might **not** need to respect Archive and High Performance with this method but the option is there if you require it.

Volatility

This method is a variation on Recency method and uses the concept of “folder” volatility or frequency of change of a folder and files within it. This method acts to compartmentalize folder and files within based on how often the contents of that folder will change. If you use this method without respect Archive or High Performance it will order files on your hard drive based on the last modification date of the folder and within each folder files will be sorted alphabetically. This promotes the tendency for infrequently changed files/folder to remain in place on the hard drive making subsequent defrags faster since the folders that never/rarely change, and all files within, will stay in place.

Defragging Individual Files Only

This is another very powerful feature and function of UltimateDefrag. There may be some instances where you only want to defrag one individual file only. After you perform an analysis and the disk display is updated locate a fragmented file by clicking on a red block. In the cluster analysis list on the left the file(s) will be displayed. If you click on the file in the list a fly-out box will open and the option to **Defrag This File** the file will appear. Simply click on the option and the file will be defragged. Depending upon the size of the file it will take as little as a fraction of a second.

You can also access this same feature in the File Highlighter and under Volume Information=>Fragmented Files.

Defragging All Files In A Particular Folder.

There may be instances where you want to defrag all files in a particular folder. You may wish to do this after you have just installed a new program. After you perform an analysis and the disk display is updated locate a fragmented file by clicking on a red block. In the cluster analysis list on the left the file(s) will be displayed. If you click on the file in the list a fly-out box will open and the option to **Defrag All Files In This Folder**. Simply click on the option and the entire folder will be defragged. Depending upon the number of fragmented files in the folder it will take as little as a fraction of a second to a minute or two.

You can also access this same feature in the File Highlighter and under Volume Information=>Fragmented Files.

If You Don't Want To Use The Archive Option

You may just not want to, for whatever reason, use the archive option. And this is fine too because you can still enjoy the highest performance but with slightly longer defrags.

In this instance simply do not use the archive function – select High Performance and select all files used in the past 30 days.

Select the Consolidate Method, Respect High performance – all files used in the last 30 days will be placed on the outer tracks sorted by dates of last use. Files that have not been accessed beyond this are then simply consolidated i.e. placed in no particular order inside the High performance data. The High Performance Data will always be on the outer tracks. Your system will still enjoy very close to optimum performance.

If you just want to put ZIP files in the archive and certain folders then add these to the archive, perform the method in the above paragraph this time selecting "Respect Archive" and all the ZIP files will be placed out of the way and the rest of the procedure in the above paragraph will proceed.

As you can see, you have the power and the flexibility beyond your wildest dreams when it comes to defragging and file placement. The more you use and understand the power that you have at your disposal the sooner you will begin to enjoy and settle on a method that suits you most. Whatever you want to do – you can!

If You Don't Want To Use All The Advanced Features

If you just want to use UltimateDefrag as a regular defragger and not use all of the advanced features, you can do that too. You will enjoy what is probably the fastest and most efficient defrag engine available today.

If you want defragmentation and consolidation (which will reduce re-



fragmentation), then use the AUTO (OptiSeek) method. All files will be defragged and consolidated in one fast and efficient pass using our "in-place" defrag algorithm.

If you simply want your fragmented files defragged without consolidation then simply use Fragmented Files Only - defrags will complete very fast and only your fragmented files will be defragged and moved into the first available space that each file will fit into.

Other Options

Customizing Colors In Your Disk Display

You can customize the colors of the blocks in the disk display to suit your preferences. Simply click on the color and then change the color to suit. When you select OK the colors in the disk GUI will change for the particular file class you selected. You will also find this feature under Tools=>Options=>Advanced.

Maximum Resource Usage

You can use UltimateDefrag to defrag while you are working while barely noticing that it is defragging in the background. Simply reduce the resource usage from anywhere between 1% to 100% and UltimateDefrag will not use more than the resources specified. You can safely work while defragging is in progress. Selecting AUTO will automatically allocate system resources to the defragging process according to other demands and processes running on your system. This is the ideal setting if you wish to defrag while you are using your PC. Please be aware that if other processes are using significant CPU and system resources this could vastly slow the defrag process.

Navigating The Disk Display

You can navigate the disk display any time during a defrag with your arrow keys. Simply select any block and then use the arrow keys to move to the next or previous block (left and right arrows) or to the next or previous ring (up and down arrows).

Zooming The Disk Display

Simply right-click your mouse on the disk display and you can zoom in or out making the blocks smaller or larger. Plus (+) and minus (-) keys on your numberpad will zoom the disk display in and out.

Logging

On occasion you may be asked by tech support to activate logging of your defrag in the event that your defrags are stalling. To toggle logging simply press the keys CTRL-SHIFT-F12 simultaneously. Logging will create a file called _Defrag.log in the root directory of your system drive. You may be asked to send this file to our tech support team. Please note that this file grows very fast so we only recommend running logging for around 60 seconds and no more than 2 minutes.

Scheduler

UltimateDefrag also includes a schedule which enables you to schedule your defrag and optimization jobs to run whenever you want to and whatever schedule you want to.

Any schedules you set are actually transferred to the Windows Task Scheduler so requires that you set the password in the schedule in order for Windows to activate the scheduler.

There is virtually unlimited flexibility in the schedules you can create.

To add a scheduled defrag, simply Select schedule from the main GUI.

Select Add Job

Then select your drive and the defrag method along with options you wish to configure for that job.

The default is a single scheduled run, however select advanced to set up recurring defrag runs.

You can add as many schedules as you like to run when you like.

Note: It is important that you also enter your Windows log-in password when setting up a scheduled job otherwise the job will not be scheduled and will not run.

So – how often should I schedule defrags to run?

That is entirely up to you however we DO NOT suggest that you run complete comprehensive defrags where ALL files are ordered on a daily basis. This will cause unnecessary wear and tear on your hard drive without much improvement benefit.

We suggest that perhaps monthly or weekly you perform complete defrag that places your archived files and high performance files. Then, as often as you want – weekly, or even daily, you can run a Consolidate defrag that respects the archive, uses Fast Archival but does not respect your High Performance settings. This way – your archive files are out of the way and your High Performance files are still consolidated at the outer tracks of your drive. If



they were not modified they will most likely stay in place anyway. If it is only one or two folders that you have selected for High Performance then you can go ahead and select Respect High Performance. Generally though, for a day to day defrag, just select consolidate but certainly Respect Archive and use Fast Archive. You will find that your day to day defrags may only take minutes instead of hours resulting in less wear and tear and still giving you vastly improved performance.

You may wish to simply run a Fragmented Files Only defrag on a daily basis. Some users actually run this type of defrag hourly or every several hours. A Fragmented Files Only defrag only takes seconds to complete. The scheduler allows such frequency.

Of course it is up to you to select whatever schedule you want to. As you become more familiar with UltimateDefrag and way it interacts with your particular system and file mix, you will find a routine that suits you.

File Highlighter

A useful feature for power users is the File Highlighter feature which you will find in the Options Menu. The File Highlighter enables you to see where on the disk a specific file is located. When you select the File Highlighter the program will perform an analysis (if it has not already done so) and then display the file tree structure. Simply select a file or folder and press highlight and the clusters containing the file will flash 5 times. Files that are less than 1 Kb will usually show that they are in the MFT. This is because NTFS stores files 1Kb or smaller in the actual MFT itself.

If you right-click your mouse on any selected file in the File Highlighter - you are presented with an option to defrag the individual file or all fragmented files in the containing older.

Items Specific To Windows Vista

Windows Vista has some specific items that can affect the way defraggers operate.

A new feature of Vista is Volume Shadow Copy. It is automatically activated when System Restore is activated. You cannot turn off Volume Shadow Copy if System Restore is on. Volume Shadow Copy stores previous copies of saved files on your system. This presents a defragmentation challenge for a number of reasons.

VSC files are not intended to be defragged and are generally created contiguously by the operating system. These files can also get immensely large (30 to 50 Gb) and occasionally may be created with a few fragments. Unfortunately this is something that has to be lived with and it will not affect your system's performance. So when you see large red display of clusters usually towards the center of your drive - these are Volume Shadow Copy files. The

only way to remove them is to turn off System Restore. The downside to that is that you forego System Restore protection. If you operate with System Restore on, then Volume Shadow Copy is on.

UltimateDefrag will not move or defrag VSC files.

If you run VSSADMIN.EXE within the command prompt, there are some functions that enable you to reduce the amount of space allocated to VSC. It can never be less than 300 Mb.

Another challenge that VSC presents is that it is not entirely compatible with defragging when your hard drive cluster size is less than 16 Kb. At less than 16 Kb, the operating system cannot distinguish between a defrag I/O and a normal file I/O. So that every file that is moved during the defrag process is saved in the VSC file. This slows down your defrag and also can cause your VSC to grow and fill up quickly. On occasion the file may disappear. If it does it will be automatically recreated by the Operating System.

VSC can also slow your hard drive performance to variable extents depending upon a number of factors. Each change to a file results in a copy of that file being saved in the VSC file. So protection does come at a performance price.

Fastest system performance is achieved with System Restore, and subsequently Volume Shadow Copy, turned off. Again, you give up the protection that System Restore provides.

Conclusion

We trust that you'll enjoy the newfound level of computing performance that UltimateDefrag gives you.

Please feel free to tell a friend about UltimateDefrag or direct them to our website at **www.disktrix.com**

Technical Support

Technical Support for UltimateDefrag is provided by e-mail and online FAQ.

For e-mail technical support

support@disktrix.com

For web support via our Frequently Asked Questions

www.disktrix.com/DTSupport.htm



Product FAQ

1. Can I Defrag FAT32 Drives

Yes the defrag API's support FAT32 drives – the only feature you will not be able to use is the Place Directories Adjacent to MFT since FAT32 drives do not have an MFT

2. Can I Defrag External Drives

Yes, as long as a drive is recognizable as a local drive you can defrag it. This includes internal drives and external USB drives. UltimateDefrag does not defrag flash memory drives or SD drives.

3. How many drives can I defrag simultaneously

Theoretically there is no limit to how many drives you can simultaneously defrag with UltimateDefrag. Our recommendation is to not defrag more than 2 drives simultaneously purely from a performance point of view

4. Is defragging safe?

Yes, defragging is 100% safe. UltimateDefrag (and most modern defraggers) use Microsoft Defragging API's (application programming Interface). A defragger simply uses and manipulates those API's in its defrag routines.

A system defrag will survive a power outage during defrag however we strongly recommend that you minimize risk. Do not do such things as cycle the power on your PC during a defrag.

If you stop the defrag in process and the hard drives keeps operating it usually means that it has not completed the writing of a large file. Wait for your hard drive activity to stop before cycling any power on your PC.

You should not cycle power at any time where you see disk activity on your system. Any sudden loss of power – especially during read/write operations always carries the risk of spiking your hard drive and/or valuable data.

5. Does UltimateDefrag defrag my MFT and Page Files

Yes. Your page file, hibernation file and several other system files are defragged using the Offline Defrag option. Select Enable Boot Time Defragmentation in the Tools=>Options menu. If these system files are not fragmented, nothing will be processed and it will complete quickly.

6. What method should I use for my very first defrag run

We suggest that when you first run UltimateDefrag – the very first thing you do is a simple Consolidate Defrag without respecting archive or high performance. This will at least get all of your files and consolidate them on the outer tracks. Some drives may have never been defragged and may be a "mess". It will be easier on UltimateDefrag (and any other defragger for that matter) to first do this consolidate method.

Then after that is done then you can and should go ahead and create your "defragging system".

7. How long should a defrag run take?

That is a function of fragmentation degree, the amount of data on your drive, the amount of data that needs to be moved and defragged, and the defrag method chosen. Typically on most modern systems – allow for about 20 Gb per hour for a consolidation method. A Fragmented Files Only Defrag performs very fast at about 50 to 60 Gb per hour.

Defrag time reduction is one of the benefits of the Fast Archive option. This will eliminate the need to move about 80 to 90% of your data. So if you typically have about 20Gb of regularly used data – a defrag run will take about 1 hour. If you have 2 or 3 Gb only about 10 to 15 minutes and can take a little as just a few minutes if you are using the fast archive option and a regular consolidate defrag.

Attempt to create your defragging system so that it needs to move the least amount of data while maintaining performance. UltimateDefrag gives you the capability to do that.

8. Can I use the computer while I am Defragging?

Yes, you can work on your PC while you are defragging. Use the Maximal Resource Option to reduce resource usage of UltimateDefrag while you are working. AUTO is the best method to use in this circumstance since it will automatically throttle the CPU according to other processes. We advise against using disk intensive programs (such as extensive photo work or video editing work) while defragging – both will be significantly slowed and extensive disk I/O always carries the risk of hanging your system or crashing a program. Defrag wisely!

9. Should I use the Windows Vista or XP built in defragger?

The Windows XP and Vista defragger works well however all it does is to consolidate your data across the board. If you have ordered your files using Ultimate Defrag and especially if you've created archives – then the Windows defragger will undo UltimateDefrag's work. So avoid using the Windows Defragger if you are defragging with UltimateDefrag.

10. What single Defrag method will give me the fastest overall system performance?

That depends primarily on the type of use that the PC is primarily used for.

In a desktop/workstation scenario - performing a Folder/Filename method will give your system that fastest overall performance. In this circumstance it is important that you archive your least used files to better compact the data you are using regularly.

In a server environment or a drive that has a lot of changing data files then use a recency method that keeps your most accessed data files closest together.

11. What single Defrag method will give me the fastest overall Defrag?

Selecting Fragmented Files Only will take the shortest amount of time however this method does also leave your free space fragmented.

For a more comprehensive method that is fast and also consolidates free space use the Consolidate option. This places files in no particular order but consolidates them and leaves no free space between files and clusters. The consolidate method only moves files it needs to in order to defragment files and free space.

In this circumstance it is also important that you archive your least used files to better consolidate the data you are using regularly.

Credits

Product Concept and Project Lead: Robert Ferraro

Programming and Coding By: Isatech Software

Product Manual: Robert Ferraro

Published By: DiskTrix Inc.

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