

Laplink® Defrag

User Guide

Laplink Software, Inc.

Customer Service/Technical Support:

Web: <http://www.laplink.com/contact>

E-mail: CustomerService@laplink.com

Tel (USA): +1 (425) 952-6001

Fax (USA): +1 (425) 952-6002

Tel (UK): +44 (0) 870-2410-983

Fax (UK): +44 (0) 870-2410-984

Laplink Software, Inc.
14335 NE 24th Street, Suite 201
Bellevue, WA 98007
U.S.A.

Copyright / Trademark Notice

© Copyright 2009 Laplink Software, Inc. All rights reserved. Laplink, the Laplink logo, Connect Your World, and Defrag are registered trademarks or trademarks of Laplink Software, Inc. in the United States and/or other countries. Other trademarks, product names, company names, and logos are the property of their respective holder(s).



Contents

About Laplink Defrag	1	Laplink Defrag Methods	8
Welcome to Laplink Defrag	1	Overview	8
New with Defrag 11	1	Conflicts with Shadow Copies during Defragmentation	8
Important Features at a Glance	1	STEALTH Method	9
Other Features of the Server and Workstation Edition	1	Algorithm	9
Three different Editions: Professional, Workstation and Server	2	Recommended Application	9
Installation and System Requirements	2	SPACE Method	9
System Requirements	2	Algorithm	9
Operating Systems Supported	2	Recommended Application	10
Access Permissions	2	COMPLETE/Access Method	10
Microsoft Windows Installer	3	Algorithm	10
Installing Laplink Defrag	3	Recommended Application	10
Installing Updates of Laplink Defrag	4	COMPLETE/Modified Method	10
Entering the serial number	4	Algorithm	10
Registration Wizard	4	Recommended Application	10
Using a Trial Version	5	COMPLETE/Name Method	11
Uninstallation	5	Algorithm	11
		Recommended Application	11
First Steps	5	User Interface (GUI)	11
Starting Laplink Defrag	5	Main View	11
Laplink OneButtonDefrag	5	Ribbon Bar	11
Analyzing Your Drives	6	Drive List	11
Starting an Analysis	7	Block View	12
Defragmenting Your Drives	7	Job View	12
Defragment Single Drives	7	Report View	13
Defragment an Entire Computer	7	Drive Status View	13
Defragmenting Individual Files and Folders	7	File Status View	13
Background Monitoring	7	Laplink ClusterInspector	13
Tips for Your First Defragmentation	7	All About the File	13
Online and Offline Defragmentation	8	Settings Dialog	14
Continue Working During Defragmentation	8	General Tab	14
		Offline Defragmentation Tab	15

Contents (cont.)

Tuning Tab	15
Laplink Defrag Screen Saver	16
Automatic Defragmentation	17
Overview	17
Creating New Jobs	17
Job-ID Tab	17
Schedule Tab	18
Drives Tab	18
General Tab	19
Tuning Tab	20
Executing Batches Before and After a Job	20
Changing a Job	21
Deleting a Job	21
Status Reports	21
Overview	21
Status Reports Show Increases in Performance	21
Creating Status Reports	21
Evaluating Status Reports	21
Deleting Status Reports	22
Technical Information	22
Using the Command Line Version	22
Tips and Frequently Asked Questions	25
Tips for Optimizing Your Performance	25
Feedback and Support	27
Laplink Software Contact Information	27

About Laplink Defrag

Welcome to Laplink Defrag

Thank you for choosing Laplink Defrag 11! In doing so you now have access to one of the best and most user-friendly defragmentation software packages developed for Windows. With its exclusive OneButtonDefrag, you will be able to optimize your computers' performance for the rest of its usable life with just the touch of a button. No additional settings or customizations are required.

We hope that you're satisfied with our new Laplink Defrag 11 and that it helps you, like it has helped millions of other users worldwide, to keep your system performance at a maximum level!

Laplink Software, Inc.

<http://www.laplink.com>

Note: As a result of regular program updates, some information in the printed manual may vary from that found in Online Help. For this same reason, there may be slight differences in the presentation of the program's interface.

New with Defrag 11

We have added many helpful new features that make the new Laplink Defrag 11 even easier for you to use. One of these is a background monitor which protects against heavy fragmentation without your view having to do a thing. In addition to the familiar block view, there is also a file status display in which the number and the level of fragmentation of the most strongly affected files can be read.

The block view was also expanded to include more detailed information. You'll now be able to see information such as where the separate parts of fragmented files are located on the hard disk. By right-clicking, you can find the setting Defragmentation which will let you optimize individual folders or files.

Important Features at a Glance

- User Interface with clear and concise Ribbon Bar
- Update Check
- Enhanced task tray functionality and control of Laplink Defrag over the task tray
- Enhanced OneButtonDefrag functions for automatic defragmentation with just a few mouse clicks (adapts to computer type and intended usage)

- Online and Offline defragmentation of all drives supported by Windows including RAID systems
- Five different defragmentation methods for optimal acceleration.
- A lot less free space needed for defragmentation (only about 5% or less, depending on the size of the volume)
- Unique ActivityGuard for monitoring the system load and adjusting the resource usage of Laplink Defrag
- Unique block view for detailed information on the state of the drives.
- Unique Laplink Screen Saver
- Power management for Notebooks
- Laplink ClusterInspector for targeted inspection of hard disk regions.
- Automatic defragmentation with integrated heuristic evaluation for optimal planning
- Status reports in HTML format to keep track of developments in performance.
- Windows Explorer Integration – Disk drive defragmentation in Windows Explorer
- Support of removable drives (USB Sticks, Memory Cards, etc.)
- Execution of Windows commands (Batches) before and after defragmentation
- Screen saver mode automates defragmentation whenever the computer is idle
- Compatible with the new Windows Vista operating system from Microsoft

Other Features of the Server and Workstation Edition

The Workstation and Server Editions will let you run the following network functions using the O&O Enterprise Management Console 2

- Easy defragmentation of the entire company network
- Management of your computers in groups (Sites)
- SiteWizard to create sites graphically (only Workstations or Servers)
- Definition of group settings for PCs
- Creation of a time table for automatic defragmentation in just a few clicks (Defrag Jobs)
- Automatic installation of Laplink Defrag-Software in the network with integrated distribution software
- Integration into Active Directory and group policies for network distribution and configuration of software
- Execution of Windows commands (Batches) before and after Defragmentation

The O&O Enterprise Management Console 2 is delivered on a separate CD – the O&O Network Components CD. It is part of your software delivery when you have acquired licences in the volume licence program of O&O EasyLicensing. If you have not received a CD, or if you are not in possession of a volume licence contract, please contact us. We will send you the CD and provide consultation on application of the O&O Enterprise Management Console 2 within your company.

Three different Editions: Professional, Workstation and Server

Laplink Defrag 11 is available in three versions:

- Laplink Defrag 11 Professional Edition
- Laplink Defrag 11 Workstation Edition and
- Laplink Defrag 11 Server Edition

Professional Edition: Use for defragmenting a single PC. It cannot be used on a server system and contains no network management console but it can be used as client for the Server Edition.

Workstation Edition: Contains the management console to control Laplink Defrag in a network in connection with the O&O Enterprise Management Console 2. The Workstation Edition can only be used on workstations.

Server Edition: Contains the management console to control Laplink Defrag in a network in connection with the O&O Enterprise Management Console 2. It can be used on both server computers and workstations, the latter making more sense when the administrator wishes to control and monitor the defragmentation process from his computer.

Installation and System Requirements

System Requirements

- System with Intel® Pentium™ III or comparable processor
- Minimum of 128 MB RAM

Note Server Edition: Minimum of 512 MB RAM (depending on the operating system).

- 50 MB free hard disk space for installation
- VGA graphics card with minimum 800x600 and 256 colors

- CD/DVD drive, keyboard and mouse

If you wish to use the network functionality, you must also have the following available:

- Network card and connection

Operating Systems Supported

Operating System	Professional Edition	Workstation Edition	Server Edition
Windows 7	Yes	Yes	Yes
Windows Server 2008	No	No	Yes*
Windows Vista	Yes	Yes	Yes
Windows XP	Yes	Yes	Yes
Windows Server 2003	No	No	Yes*
Windows 2000 Professional	Yes	Yes	Yes
Windows 2000 Server	No	No	Yes*

* All variants of this server operating system are supported, except Core-Installations

Note XP/Vista/Windows 7 64-bit: Laplink Defrag can also be used on XP, Vista, and Windows 7 64-bit operating systems. Make sure to install using the separate 64-bit version Setup file, which is provided on the CD or as a download from Laplink's website.

Access Permissions

Local Administrative Permissions: To install Laplink Defrag, make sure you are logged on to your PC as a local administrator.

Network: In a network, you must be the domain administrator if you wish to install and control Laplink Defrag locally as well as on the network computers.

Microsoft Windows Installer

The installation takes place with the help of the Microsoft Windows Installer. This is a component already integrated into Windows which simplifies the installation process.

If you are using Windows 2000 (up to SP3), the version of the installed Windows Installer will be checked before the actual installment of Laplink Defrag. If there is no program on your system or only an older one, Laplink Defrag Setup will install a suitable version.

Installing Laplink Defrag

Note: Before beginning installation of Laplink Defrag, make sure you are logged on to your PC as a local administrator.

To complete Laplink Defrag registration, your PC must be connected to the Internet.

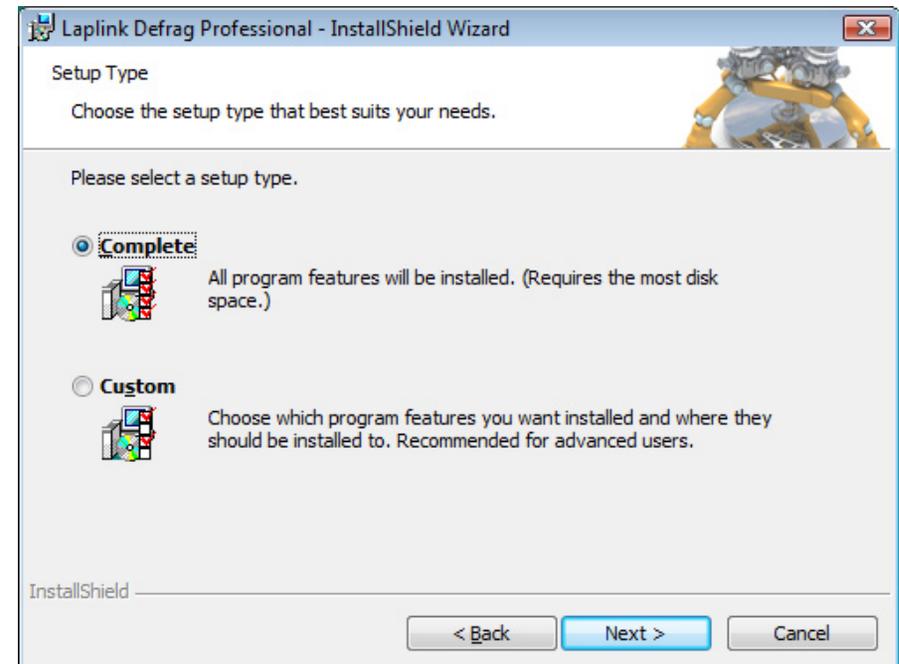
All of the screens shown in this guide are representative of Laplink Defrag Professional screens in Windows Vista. If you are using a different operating system or a different Edition of Laplink Defrag, your screens may vary slightly.

1. Run the Laplink Defrag Setup file.

- **Downloaded File:** Double-click on the Laplink Defrag executable file in the folder where the file was saved. Then continue with step two of the installation instructions (next).
- **CD (boxed product):** Insert the CD into the CD-ROM drive. If the autorun feature is enabled, the installation begins automatically. Follow the on-screen prompts, and then continue with step two (next).

If autorun is disabled, use Windows Explorer or some other file management program to display the contents of the CD. Browse to the Laplink Defrag Setup file to begin the installation.

2. Follow the installation instructions in the InstallShield Wizard. When you reach the **Setup Type** screen, click **Next** to continue with the default "Complete" installation.



Note: The 'Complete' installation is recommended. If you do choose 'Custom', please be careful when changing from the default installation settings, as these affect how the application is installed on your PC.

3. Click **Install** on the **Ready to Install** screen to begin installation.

4. Your installation is complete once you see the **InstallShield Wizard Completed** screen. Click **Finish**.

5. To start Laplink Defrag, double-click on the Laplink Defrag desktop icon. When you first start Laplink Defrag, you will see the **Laplink Defrag - Registration Wizard**, where you will be asked to enter your serial number to register the application. Please proceed to the **Registering Laplink Defrag** section.

Note: If you receive an error during the initial phase of the Setup program, your PC may not meet all of the requirements for installation of Laplink Defrag.

Possible error messages and explanations:

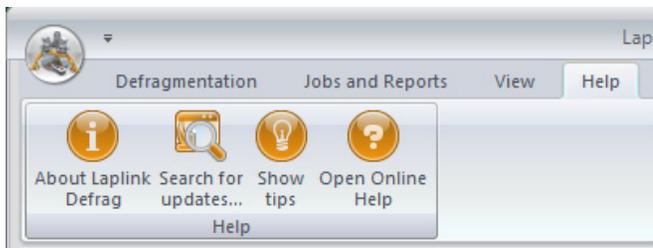
- **Windows 2000 required** – Laplink Defrag only runs under Windows 2000 and above.
- **Administrator's rights** – You have to be an administrator or have similar permissions to install Laplink Defrag.
- **Internet Explorer 5.01 required** – Laplink Defrag only runs when Internet Explorer Version 5.01 or higher is installed.
- **Other Edition installed** – You can install the Professional or the Server Edition on the same computer but not both at the same time.
- **Not on servers** – You cannot install the Professional Edition on a server operating system.

Installing Updates of Laplink Defrag

When updating from a previous version of Laplink Defrag, please follow the steps listed below:

1. Uninstall the previous version of Laplink Defrag and keep your registration data handy.
2. Start the update installation for Laplink Defrag.
3. Simply follow the normal on-screen steps to install Laplink Defrag. Once the installation dialogue has closed, the new version of Laplink Defrag will be installed.

Note: To check for application updates to Laplink Defrag, click 'Search for updates' under the 'Help' tab on the Laplink Defrag start page (see image below).

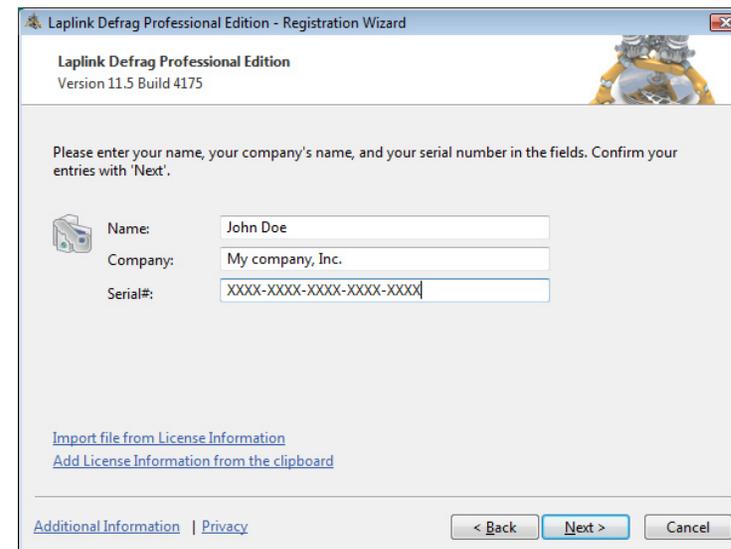


Registering Laplink Defrag

Note: In order to activate the product after installation or at a later date, you need to have a valid serial number. If you do not type in a valid serial number, you may use Laplink Defrag as a trial version only for a maximum of 30 days. If you have any questions, please don't hesitate to contact our support.

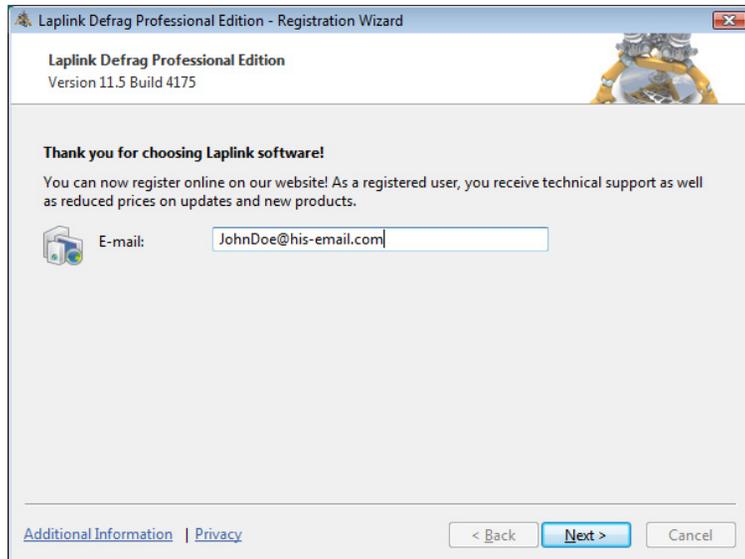
Registration Wizard

1. After starting Laplink Defrag, you will see the Registration Wizard. Choose **Enter your registration code** and click **Next**.
2. Enter your Name, Company, and Serial Number and click **Next**.



3. Review the information regarding your license and click **Next**.

4. Enter your E-mail Address and click **Next**. Your registration is now complete and the Laplink Defrag application will start. Please proceed to the section **First Steps - Starting Laplink Defrag** for more information about using the application.



Using a Trial Version

You can test a fully functional trial version of Laplink Defrag free of charge and with no obligation for a period of 30 days. Each time you start the program, the Registration Wizard will appear informing you of the remaining trial period. Should you have any questions, please contact our Support Team.

Uninstallation

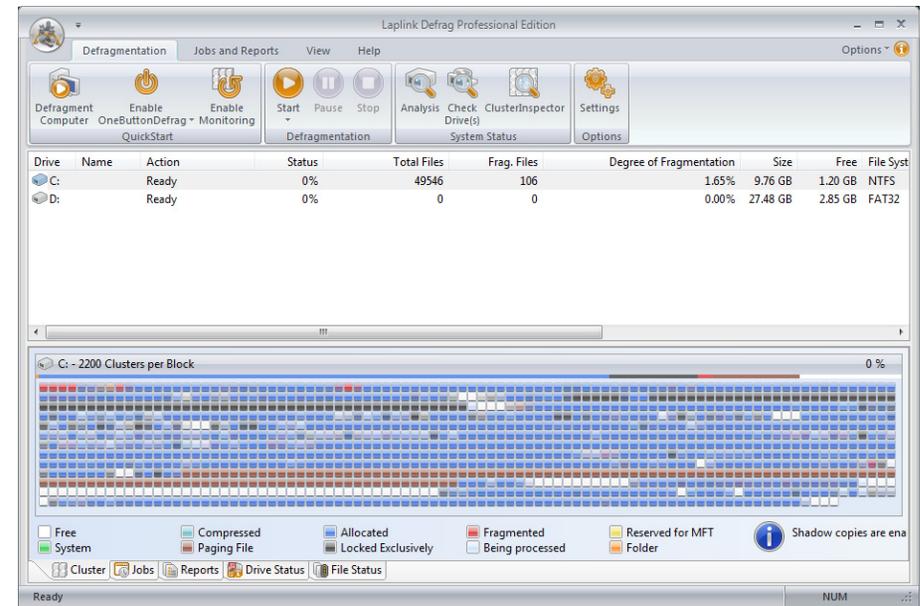
To uninstall Laplink Defrag, please follow these steps:

1. Open the Control Panel from the Start menu.
2. Click **Add/Remove** programs.
3. Select **Laplink Defrag** in the list of programs. Click **Remove** and follow the on-screen prompts.

First Steps

Starting Laplink Defrag

The following chapters will explain how you can use Laplink Defrag after it has been successfully installed. To do this, start Laplink Defrag from a shortcut on your desktop or under **Start/All Programs/Laplink/Laplink Defrag/Laplink Defrag**. You can also have online help displayed by clicking **Help** or pushing **F1**. Please note that as a result of ongoing program updates, the information in the printed Manual may differ somewhat from that seen on online **Help**.



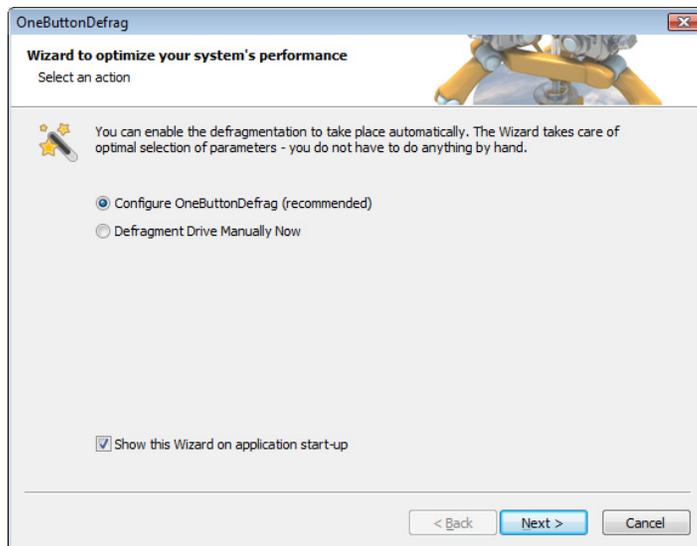
Laplink Defrag Start Page

OneButtonDefrag

With OneButtonDefrag it is possible to automate the defragmentation of your computer with just a few mouse clicks. With the Server edition you can apply this to all computers on a network. Once set up, you will never have to worry about the optimization of your hard disks again. Everything will be taken care of in the background by Laplink Defrag. The OneButtonDefrag Wizard appears by default with every new program start. You can also call up the Wizard from the program.

1. In the Defragmentation tab click on the feature **Enable OneButtonDefrag** and then click **Set OneButtonDefrag**.
2. The OneButtonDefrag Wizard will then open.
3. Select **Configure OneButtonDefrag**, and then click **Next**.
4. Select computer type and scope of use by following the dialogue windows.
5. After the Wizard has been completed, the defragmentation of your computer is now automated.
6. You can now close Laplink Defrag. Defragmentation will now be carried out automatically in the background and adapted to the level of fragmentation on your computer.

You can disable this function at any time. Under Defragmentation in the ribbon bar click **Enable/Disable OneButton Defrag**.



OneButtonDefrag Wizard

Analyzing Your Drives

Analyzing your hard disks gives you an overview of how heavily fragmented they are. Laplink Defrag creates a detailed status report about the fragmentation level once the analysis has been completed.

This level will be somewhere between 0 and 100 – the lower the number (zero is the ideal), the less fragmented your hard disk. A value near 100 is the worst case – your files are almost completely fragmented. Even values of around 30 mean that the performance of your system is seriously suffering from the level of fragmentation, and that a defragmentation run is strongly recommended.

Level	Explanation and action needed
<30	All files are almost completely defragmented. This is the ideal condition and can only be achieved and maintained through regular defragmentation.
10-30	This level is reasonable, and means that your hard disks are in good condition.
31-50	Your system is working more slowly than normal because of heavy fragmentation. Defragment regularly and use the time scheduling feature included in Laplink Defrag. This will keep your system running at a good speed.
51-90	Your system is very heavily fragmented and is suffering from very serious performance loss. You should defragment your system right away and create jobs for regular defragmentation. Compare the fragmentation levels before and after the defragmentation run.
>90	Almost all of your files are fragmented – you've probably never, or very seldom, defragmented your system. The effect on your system is dramatic. Defragment your hard disks frequently, and bear in mind that it might take several runs before an ideal fragmentation level is reached.

Starting an Analysis

- Select the drive to be analyzed from the drive list.
- Click the **Analysis** button under the **Defragmentation** tab on the Ribbon Bar to start the analysis. You may also right-click on the drive and choose **Analyze**.
- The analysis can take a few moments, depending on the size of the drive. You can follow the progress of the analysis on the drive symbol and the progress display.
- When the analysis is complete, you can view the detailed status report as a HTML document in your web browser.

Note: You can analyze several drives simultaneously. Mark the various volumes by keeping the Ctrl key depressed while selecting.

Defragmenting Your Drives

Laplink Defrag allows you to defrag single drives or entire computers with just a few mouse clicks.

Defragment Single Drives

1. Select the drive you wish to defragment from the drive list.
2. Start the defragmentation by clicking **Start** under the **Defragmentation** tab on the Ribbon Bar, or you may right-click on the selected drive and choose the desired defragmentation method.
3. Depending on the size of your drive, the defragmentation can take up to a few hours. You can follow the defragmentation process via the drive symbol and the status display.
4. Thanks to the ActivityGuard Pro, you can continue working undisturbed on your PC while the defragmentation is being run.
5. Once the defragmentation is finished, you can have the detailed status report displayed as an HTML document in your web browser.

Note: You can defragment several drives simultaneously. Mark the various volumes by keeping the Ctrl key depressed while making your selection.

Defragment an Entire Computer

To defragment your whole computer, under the Defragmentation tab in the Ribbon Bar click **Defragment Computer**.

Depending on the size of your drive, the defragmentation can take up to a few hours. Laplink Defrag will display the estimated time remaining in the drive list. You can follow

the defragmentation process via the drive symbol and the status display.

Defragmenting individual files and folders

You can also defragment individual folders or files. Just right-click any file or folder on your computer and click **Defragment**. Laplink Defrag will be opened and the defragmentation begins. Defragmentation of smaller amounts of data is often completed within just a few seconds.

Background Monitoring

Thanks to the new Background Monitoring feature, Laplink Defrag is able to offer you the option of preventing fragmentation at its point of origin. Newly added and modified files will be inspected and defragmented, if they are not being accessed at the time. In this way, Laplink Defrag remains working behind the scenes to make sure your hard disk is always performing at its best.

To keep it that way, make sure the setting **Enable Monitoring** is always enabled under the **Defragmentation** tab in the ribbon bar.

Tips for Your First Defragmentation

As a rule, the first defragmentation will take the longest, as Laplink Defrag has to perform a complete check on your system and perhaps move fragmented files into an optimum position. Especially with systems that have been in use for a long time and have seldom or never been defragmented, this can take a long time.

The COMPLETE methods in particular are very time-consuming, because the entire file structure is thereby optimized, which involves moving even files that are not fragmented.

We therefore recommend an initial defragmentation with the STEALTH or SPACE methods. These methods consolidate your hard disks very quickly and efficiently. Afterwards, you can use the COMPLETE methods for optimum performance or stick to the quicker STEALTH and SPACE methods. Whichever method you choose, your system will be significantly quicker than it was before!

Set Hibernation Mode

If you need to have all your computer's performance resources available at a certain time, you can right-click on the Laplink Defrag icon in your Windows system tray and select **Hibernation Mode** (your system tray is usually located in the lower left corner of the screen next to your clock). Choosing **Hibernation Mode** will stop all defragmentation jobs or make sure they will not be started.

Online and Offline Defragmentation

Laplink Defrag can carry out defragmentation jobs online and offline. In this context, "online" means that the defragmentation is carried out in the background while your system is running. Thus, you can carry on your work as usual.

However, some system files are locked by the operating system while it is running, and these files can only be defragmented before the operating system has locked them. This is possible in the so-called start phase of Windows. As this occurs before the usual operating system processes take place and you, as a user, are unable to start any applications, defragmentation at this time is known as offline defragmentation (or often boot-time defragmentation).

The following table shows which file types can be defragmented on- and offline, according to which operating system you are running. If online defragmentation is impossible, Laplink Defrag will automatically select offline defragmentation. This will take place at the next system start. You can stop this at any time by pressing any key.

The options for offline defragmentation can be viewed and changed by clicking the **Settings** button under the **Defragmentation** tab on the Ribbon bar.

	Windows 7/Vista/ 2008/XP/2003	Windows 2000
System files	online+offline	online+offline
Paging file	offline only	offline only
MFT (NTFS volumes)	online+offline	offline only
Registry	online+offline	offline only
Directories (NTFS volumes)	online+offline	online+offline

Continue Working During Defragmentation

Laplink Defrag is the only defragmentation software to offer you the ActivityGuard. This tool checks the CPU usage during the defragmentation process. Whenever you require the full performance of your computer, it will lower the strain caused by Laplink Defrag to a minimum.

Laplink Defrag will keep operating unnoticed in the background which enables you to continue working undisturbed during the defragmentation. At times when you're not using the PC, for example at lunchtime, ActivityGuard notices this and automatically allocates more resources to Laplink Defrag.

To enable the ActivityGuard Pro, click **Settings** under the **Defragmentation** tab on the Ribbon bar. In the **Settings** dialog box that appears, choose the **Tuning** tab. Then select the option **AutoSense** or enter a maximum value in percentage terms of what should be put aside for the defragmentation.

You can find more information about the ActivityGuard in the Settings section of this manual.

Laplink Defrag Methods

Overview

Laplink Defrag offers you five different methods of defragmenting your computer:

- STEALTH
- SPACE
- COMPLETE/Access
- COMPLETE/Modified
- COMPLETE/Name

Each of these methods offers you an efficient and quick online defragmentation of your files, i.e., no service or application must be paused or stopped while the defragmentation takes place.

STEALTH and SPACE are optimized for the fastest possible defragmentation of your files, whereas the COMPLETE methods provide a more thorough defragmentation which requires more time and free hard disk space. By re-arranging your files to use the available space as efficiently as possible, further fragmentation is avoided.

All methods can be used on all drives, including volume sets, stripe sets with and without parity, etc., and are equipped for best possible data security. This is achieved by their working together with the defragmentation routines integrated into Windows, and making sure that data is not lost if your computer or network crashes, or if there is a power cut.

Conflicts with Shadow Copies during Defragmentation

The operating systems Windows Vista, XP 64-bit, Server 2003, and 2008 offer users

the ability to create "shadow copies" for protecting their data. This new feature automatically creates copies of files currently in use at regular time intervals. Because Vista only records the changes made to files, normally only minimal memory resources are required.

Accidentally deleted files and folders or previous versions of documents can be easily restored using a convenient command accessible through the context menu. Simply right-click the object to be restored and click "Restore Previous Versions".

The shadow copy is activated by default when installing Windows Vista. On Windows XP64 and Windows 2003 Server this functionality is deactivated.

During defragmentation, files on a volume get moved. Vista perceives this as a deletion and creates a new shadow copy for the moved file. Because defragmentation requires the moving of multiple files, many shadow copies are created, which in turn leads to the higher demand on disk space.

This behavior can lead to the deletion of shadow copies for some files. This can also affect the integrity of system restore points. The effects are most noticeable when defragmenting volumes using the COMPLETE-Method.

Shadow copies are filed in the folder "System Volume Information" and cannot be defragmented. This can end up having a negative influence on the result of the defragmentation. There is, on the other hand, almost hardly any loss in performance caused by fragmented shadow copies.

Although these files will be displayed as fragmented, they still have only a minimal influence on the operating speed of your system. You could disable the shadow copies to achieve improved defragmentation results but you would then wind up losing the operating system's built-in backup functionality. That's why we recommend your leaving the shadow copies enabled.

Microsoft is already aware of this problem, as this issue also occurs in the Windows native defragmentation software. More details may be found in this article from Microsoft:

<http://support.microsoft.com/default.aspx?kbid=312067>

In Windows XP64 and Windows 2003 Server, this problem will not occur as long as storage volumes have been formatted with a cluster size of 16KB or larger. If the cluster size is smaller and cannot be changed or you are using Windows Vista, this issue can be avoided by first performing a STEALTH defragmentation followed by a SPACE defragmentation.

STEALTH-Method

The STEALTH method differs from the other methods in that it is much faster and uses much less main memory for the defragmentation.

The STEALTH method has been designed with large file servers in mind. It can, however, be used to great effect on workstations and other computers.

Algorithm

The STEALTH method is based on our unique STEALTH technology and allows an unprecedented level of defragmentation on computers having a large number of files, little free space or available main memory.

This method defragments all fragmented files and tries to consolidate them in order to optimize available free disk space. Speed and resource usage are the main considerations here and the method is therefore not quite as thorough as the SPACE and COMPLETE methods.

Recommended Application

The STEALTH method is particularly recommended for the following systems. STEALTH can also be used for regular defragmentation runs.

- Initial defragmentation of your system
- Computers with few available resources, as the method does not greatly increase the CPU usage and does not require much free hard disk space
- Servers with very large hard disks (e.g. more than 4 terabytes)
- Computers with a very large number of files (more than 3,000,000 files)

SPACE-Method

The SPACE methods offer you a great solution for heavy fragmentation. It also allows you to consolidate your data so that the amount of contiguous free space is as large as possible and further fragmentation is prevented.

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.

Algorithm

All fragmented files will be defragmented, and then placed into the free slots in which they fit. This maximizes contiguous free space. This method is very quick and efficient and it does reorganize your volume, but not as thoroughly as the COMPLETE methods.

Further defragmentation will not be affected by the SPACE method. The SPACE method is ideal for the first defragmentation run on a system that has never been defragmented, as it requires far less free space than the COMPLETE methods.

Recommended Application

The SPACE method is particularly recommended for the following systems. SPACE can also be used for regular defragmentation runs.

- For the initial defragmentation of your system.
- Computers with few available resources, as the method does not greatly increase the CPU usage and does not require much free hard disk space.
- Servers with large hard disks (e.g. more than 1 terabyte)
- Computers with a large number of files (more than 100,000 files)

COMPLETE/Access Method

The COMPLETE/Access method defragments your files and reorganizes your file structure. Although this method is slower than the STEALTH and SPACE methods, it guarantees maximum system performance when your files are being read.

The COMPLETE/Access method is suitable for servers and workstations. Please bear in mind that this method uses a lot of central memory due to the reorganization of your system. If this is likely to be a serious problem for your system, we recommend you use the STEALTH or SPACE methods.

Algorithm

Files are sorted according to when they were last accessed. The files that have been accessed the least will be placed at the beginning of the partition and those accessed most frequently are put near the end. Seldom-used files are defragmented and will not need to be moved in future. Frequently-used files are placed at the end of the drive. This strategy means that future defragmentation runs will require the least amount of time, as fewer files need to be checked and defragmented.

Recommended Application

The COMPLETE/Access method is particularly suitable for use on the following systems. Please bear in mind that using the COMPLETE/Access method for regular defragmentation should not be combined with other methods (COMPLETE, STEALTH, and SPACE). Doing so can result in longer defragmentation times because the file system has to be reorganized again.

- Maximizes the read access performance on servers
- For regularly defragmenting your volumes

- On computers that have sufficient resources available when the defragmentation takes place – CPU usage is likely to increase significantly (it is strongly recommended that you use the ActivityGuard). A larger amount of free disk space is necessary with this method.
- All kinds of servers and workstations

COMPLETE/Modified Method

The COMPLETE/Modified method defragments your files and also reorganizes your file structure. Although this method is slower than the STEALTH or SPACE methods, it guarantees maximum performance in the reading of your files.

The COMPLETE method is particularly suitable for databases and file servers. It is important to bear in mind that this method requires quite a lot of main memory due to file reorganization. If this is a serious problem for your system, we recommend you use the STEALTH or SPACE methods.

Algorithm

Files are sorted according to the date on which they were last changed. The files which have not been changed recently are placed at the beginning of the partition and those recently changed are placed at the end. This option is a good one for file or database servers containing files that have never been changed (e.g. system files), but where others, on account of their size or content, are frequently modified. (e.g., database files)

This strategy means that future defragmentation will require the least amount of time, as only a few files need to be checked and defragmented.

Recommended Application

The COMPLETE/Modified method is particularly suitable for use on the following systems. If you want to use the COMPLETE/Modified method for your regular defragmentation runs, you should use only this method on your drive. Combining various methods (COMPLETE, STEALTH, and SPACE) can result in defragmentation taking much longer, as the file system would need to be reorganized each time.

- Maximizes the performance for write access on servers
- For regular defragmentation of a drive
- On computers with sufficient free resources at the time you wish to defragment because CPU usage can increase and a lot of free space is required – (use of the ActivityGuard is particularly recommended)
- Suitable for all types of servers and workstations

COMPLETE/Name Method

The COMPLETE/Name method defragments your files and also reorganizes your file structure. Although this method is slower than the STEALTH and SPACE methods, it guarantees maximum performance for the read access to your system.

The COMPLETE/Name method is particularly suitable for system drives. Please bear in mind that this method needs a lot of main memory due to the reorganization process. If this is a serious problem for your system, we recommend you use the STEALTH or SPACE methods.

Algorithm

Files are sorted alphabetically from the beginning to the end of the partition and this leads to quick access to files in a directory. When Windows starts up, many system files will be read in sequence from the \WINDOWS and the \WINDOWS\system32 directories (DLLs, system drives, etc.) and the start-up time will therefore be shorter.

This method is particularly recommended for computers on which the files rarely change. This reduces the reorganization time that is needed for every defragmentation.

Recommended Application

The COMPLETE/Name method is particularly suitable for use on the following systems. Please bear in mind that if you use the COMPLETE/Name method for your regular defragmentation runs, it should be the only one used on the drive. Combining it with other methods (COMPLETE, STEALTH, and SPACE) can result in defragmentation taking longer, as the files will have to be rearranged each time.

- Maximizes the performance for the read access to workstations
- For regular defragmentation of a drive
- For computers with sufficient available resources at the time you wish to defragment because CPU usage will increase and a lot of free hard disk space is required (use of the ActivityGuard is particularly recommended)
- All types of servers and workstations

User Interface (GUI)

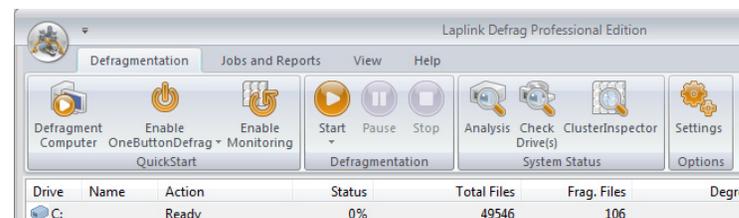
Main View

The main view of Laplink Defrag consists of the following components:

Ribbon Bar

The Ribbon Bar displays all the actions that you'll be able to run using Laplink Defrag.

All settings and functions are at your disposal with just a few clicks of the mouse. Click the different tabs - **Defragmentation**, **Jobs and Reports**, **View**, and **Help** - to access these settings and functions. All views of Laplink Defrag also come with context menus that will offer you the commands that can be run on any given view.



Ribbon Bar

Drive List

The drive list displays information about the drive and the task which is currently being carried out. You can configure the list columns yourself. Just right-click the drive and click **Change Columns**.

As a default option, the following information is displayed:

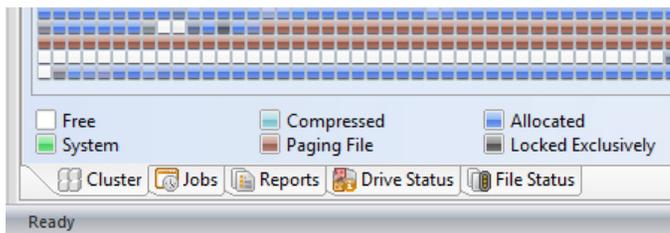
- drive letter
- name of drive
- action being performed on the drive (if any)
- status (% completed)
- total files in drive
- fragmented files
- degree of fragmentation (% of drive that is fragmented)
- total size of the drive
- free disk space
- file system type
- current file/directory being processed
- remaining time for current action

Drive	Name	Action	Status	Total Files	Frag. Files	Degree of Fragmentation	Size	Free	File Syst
C:		Ready	0%	49546	106	1.65%	9.76 GB	1.20 GB	NTFS
D:		Ready	0%	0	0	0.00%	27.48 GB	2.85 GB	FAT32

Block View

Click the **Cluster** tab in the lower left corner of the main window to access the Block view.

The block view displays the allocation of the selected drives in the drive list by means of a block graphic. Please note that by selecting them simultaneously, you can view several drives in a split block view.



For viewing purposes, a certain number of drive clusters will be summarized in one block. This number is displayed at the top of the block view. You can change the size of the blocks and the way they appear on screen (Classic Block View/Shaded Block View) in the Ribbon Bar (in tab View) or by right-clicking. The Shaded View shows you how full the block is with darker and lighter shades. If you choose not to use shading, the block will be displayed in prioritized full color. The varying conditions that can be prioritized with color are listed in the following chart.

Description	Explanation
In processing	O&O Defrag is currently working on one or more cluster in this block.
Fragmented	At least one cluster belongs to a fragmented file.
Exclusively locked	The block contains files that are exclusively locked by Windows or other applications (e.g. the registry).
Paging file	Block contains clusters from the pagefile. .
Occupied	At least one cluster contains data.
Compressed	At least one cluster is compressed (NTFS only).
System	At least one cluster belongs to a system file.
Reserved for the MFT	At least one cluster is reserved for the MFT.
Directory	Block contains cluster of one or more directories (Windows 2000 or XP only).
Free	All clusters are empty.

Job View

Click the **Jobs** tab in the lower left corner of the main window to access the Job view.

In **Jobs** at the bottom of the screen, all defragmentation jobs available on the computer will be displayed. You can edit or remove these jobs by highlighting them and selecting the relevant function from the Menu. You can also access these functions by right-clicking.

Report View

Click the **Reports** tab in the lower left corner of the main window to access the Report view.

When you have chosen to have status reports created, these will be displayed in **Reports** at the bottom of the screen. You can open a report by double-clicking it and having it displayed in your internet browser.

Drive Status View

Click the **Drive Status** tab in the lower left corner of the main window to access the Drive Status view.

The Drive Status view supplies information about your drive, the drive allocation, and the file system. The refreshed pie chart will dynamically represent the proportional level of fragmentation during a defragmentation run. The status report at the bottom of the screen lists more detail about the file system and the number of files on your drive.

File Status View

Click the **File Status** tab in the lower left corner of the main window to access the File Status view.

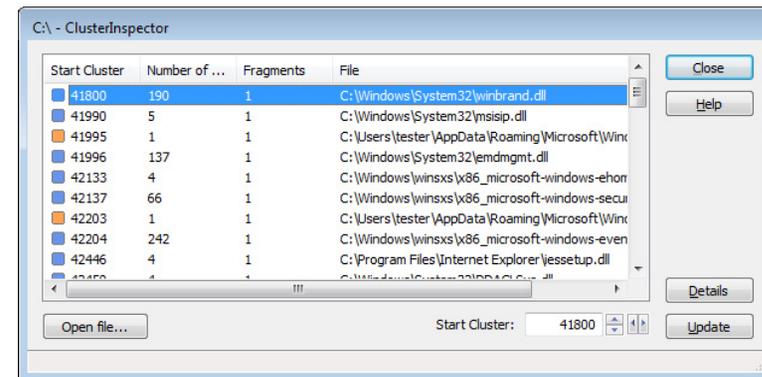
File Status provides an overview list of the largest and most heavily fragmented files on your drive. The contents of this file system statistic can also be found in the status reports.

You have to first analyze the file statistics of a drive in order to have them displayed here. This will occur after you click **Analysis** under the **Defragmentation** tab in the Ribbon Bar.

Laplink ClusterInspector

Laplink Defrag's ClusterInspector offers you a convenient way of finding individual files within the Block View. The ClusterInspector can be enabled by clicking on a block in the Block View. The dialog window shows which clusters are occupied by which files. The File name can be found next to the cluster.

To choose another cluster or block, enter the Start Cluster number. The list will be immediately refreshed.



ClusterInspector

All about the file

In the ClusterInspector you are provided with information regarding where individual file fragments are located on your hard disk and in addition, can see the cluster number or number of file fragments of a file.

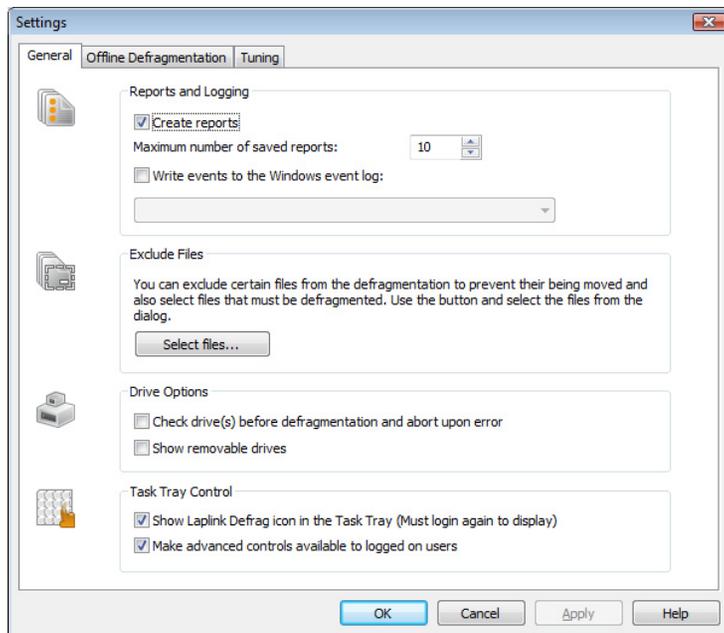
1. Click on a cluster in the Block View.
2. The Cluster Inspector will then be opened and under Details it gives you the option to learn more about the selected file fragment.
3. All the corresponding file fragments will be highlighted in the block view. You can see the number of file fragments the file is divided into and where the fragments are located on the hard disk. The size of the respective fragments will also be displayed.

Settings Dialog

The settings will specify the way Laplink Defrag performs during analysis and defragmentation. To make changes to the settings, choose the **Defragmentation** tab, and then click the **Settings** button.

Note: Making changes to the following settings will affect all defragmentation jobs.

To define options for one specific job, create a new job or edit an existing job. A dialog box will then appear automatically, where you can make changes as necessary to the default settings (see pages 17 - 21 for more information).



General Tab - Reports and Logging

You can create status reports which you may be later examined as HTML documents. A maximum of 999 reports can be saved for one computer.

You can enable this option if you want to log all Laplink Defrag actions simultaneously in the Windows result log. You'll be able to specify the level of detail you want recorded, whereby Level 1 records only errors as opposed to Level 4 which saves all information. Please note that Level 4 can include an enormous number of results which may end up using considerable disk space.

General Tab - Exclude Files

If you don't want to include certain files and/or directories in a defragmentation, you'll be able to specify them here. These files will be ignored in the defragmentation.

General Tab - Drive Options

Check Drives before Defragmentation (chkdsk): You can have Laplink Defrag check the integrity of your drives before a defragmentation. If Laplink Defrag finds an error on one of your drives, the defragmentation will not be run (for safety reasons). This check is like the Windows chkdsk function but errors that are found will not be corrected. These will have to be corrected manually using the chkdsk function.

Note: This option in Laplink Defrag makes use of the native Windows chkdsk functionality. When activated, Laplink Defrag executes a chkdsk on the selected drive(s) prior to running a defragmentation.

If chkdsk encounters a problem or error, Laplink Defrag will refuse to initiate a defragmentation. This action is taken to preserve the data security and integrity of the system. As an added warning, a yellow triangle will appear next to the affected drives.

A test of the connected drives in Windows can also be run manually. It is strongly recommended to thoroughly check a drive if an error is detected. More information can be found in the Windows Help file.

General Tab - Task Tray Control

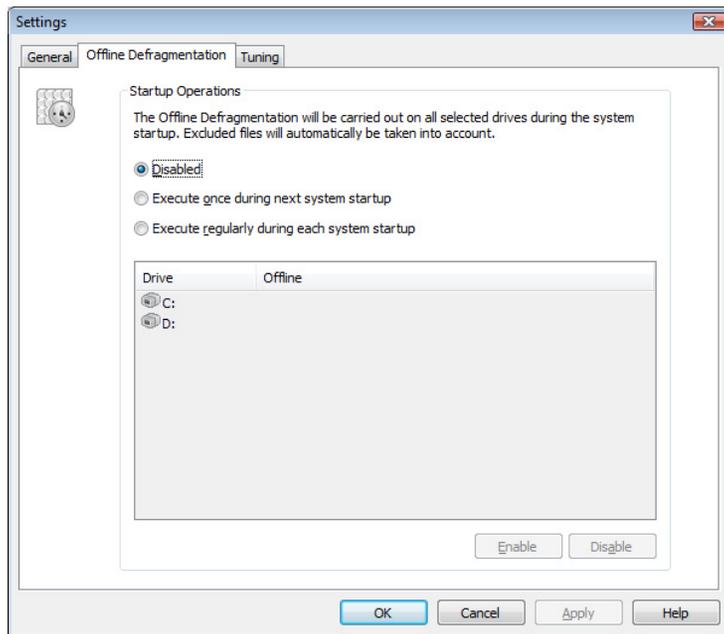
Choose **Show Laplink Defrag icon in the task tray** and an icon that displays the present Defrag status will be placed in the Windows system tray (lower left corner of the screen near the clock).

By double-clicking on the icon in the system tray, you can display the Laplink Defrag main screen.

By right-clicking you can control the defragmentation without opening the user interface.

Make advanced controls available to logged on users: You can allow the registered user to stop or fully end a defragmentation.

Deactivating this function means the user can only monitor the defragmentation but not control it.



Offline Defragmentation Tab - Startup Operations

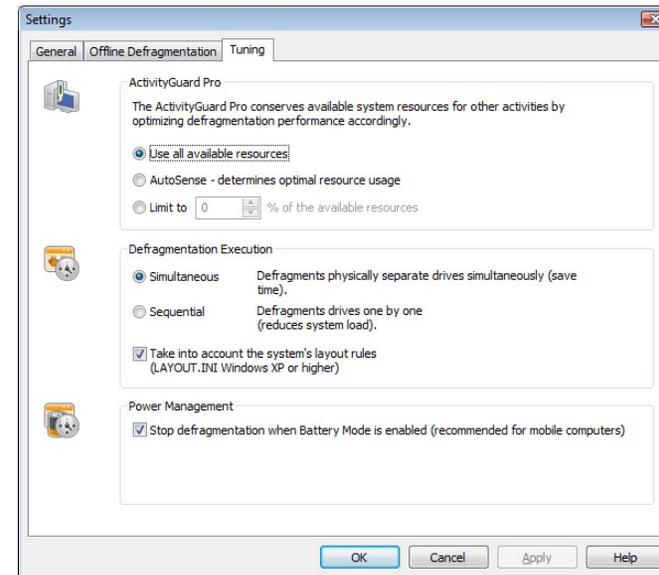
Using Laplink Defrag, you can perform a so-called offline defragmentation – a defragmentation that is run upon system start-up, right before the whole operating system has been loaded. It is now possible, using this feature, to defragment files which are in exclusive use by the operating system. These files are usually the page file, the registry databases, the hibernation file and the MFT (Master File Table).

Note: Starting from Windows XP/2003, MFT and registry databases are able to be defragmented online. An offline defragmentation for these files is not required.

Enable the offline defragmentation:

- Choose when you want the offline defragmentation to be run: **Execute once during next system startup** or **Execute regularly during each system start-up**.
- Select the drives to be defragmented upon system start-up from the drives list and enable the offline defragmentation using the **Enable** button.

Note: You can disable the offline defragmentation at any time by using the Disable button.



Tuning Tab

Laplink Defrag offers many ways in which you can make your defragmentation even more effective and efficient. The standard configurations are already optimized for most systems which means you won't normally have to make any alterations here. You can, however, also adjust the tuning options yourself.

Tuning Tab - ActivityGuard Pro

This feature controls the demand on your system and automatically adapts it to current conditions. You can thereby work undisturbed while your system is being defragmented in the background. This is particularly helpful if you don't know exactly when a computer will be available for a defragmentation. Thanks to the ActivityGuard Pro, you don't have to worry about that anymore. The AutoSense method regularly performs an automated check on how much of your resources are available for the defragmentation and is the recommended configuration.

If you want to run the defragmentation as quickly as possible, you should use all the system's power for this purpose. Please note that it is considerably difficult to work undisturbed during defragmentation on heavily strained or older systems.

You can also enter manually the percentage of the resources Laplink Defrag should use. Laplink Defrag will then limit itself to this percentage and the remaining resources will be available for other applications.

Tuning Tab - Defragmentation Execution

You can defragment your drives using either **simultaneous** (parallel) or **sequential** defragmentation. **Sequential** defragmentation means that one drive will be defragmented after the other, in alphabetical order.

If you choose **simultaneous** defragmentation, drives (partitions) that lie on physically separate hard disks can be defragmented at the same time. This makes for a much faster defragmentation. If you only have one physical hard disk in your computer, your volumes will be defragmented sequentially.

Take into account the system's layout rules (LAYOUT.INI): For Windows XP and Vista operating systems, the LAYOUT.INI file is used as a reference to optimize the layout of files on the hard disk during defragmentation. When you select **Take into account the system's layout rules**, Laplink Defrag will defragment according to the order of system files dictated by the operating system. Doing so can accelerate the speed at which these files are loaded during a system's startup.

Note: This feature to defragment according to the system's layout rules is only available on Windows XP and Vista operating systems.

Tuning Tab - Power Management

Power Management is a special feature designed for notebooks. Using it, you can make sure that defragmentation will not take place if the notebook is working from battery power. This means your notebook's battery will last longer. The notebook will only be defragmented when it is reconnected to the main power.

If your computer is switched off, Laplink Defrag can "wake" it from standby mode in order to run a defragmentation. You can therefore defragment at night or on the weekend without having to leave your computer running all the time, and without your having to be present!

Laplink Defrag Screen Saver

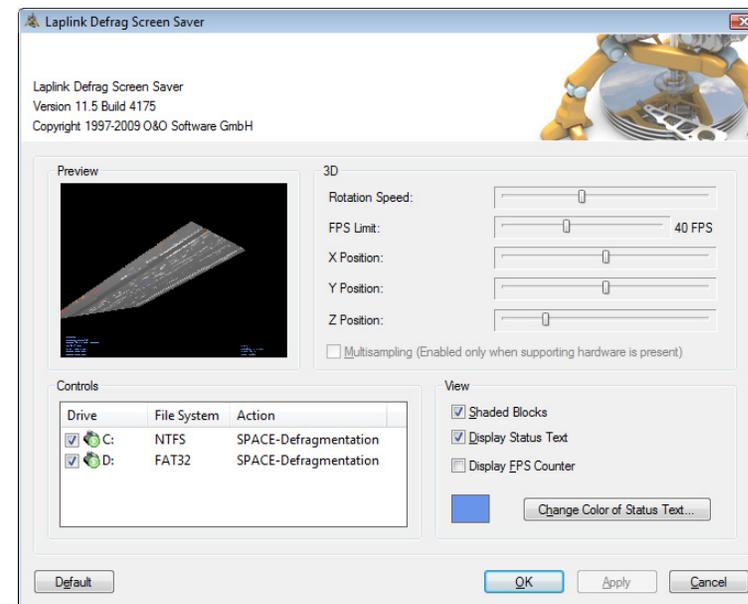
The Laplink Defrag Screen Saver allows for the defragmentation of your partitions whenever you are not using your computer.

When activated, the drive being defragmented is displayed in detail on screen, giving you the ability to follow the defragmentation process "live", as it happens.

In addition, the status text generated by Laplink Defrag is shown in the background. As is the case with most screen savers, the operation of the Laplink Defrag Screen Saver stops when mouse or keyboard activity is detected.

To change the settings for the Laplink Defrag Screen Saver, go to the Control Panel, click **Appearance and Personalization**, then **Appearance**, and then **Screen Saver**.

Choose **Defrag** from the screen saver drop-down list, and then click the **Settings** button to the right of the drop-down list. In the dialog box that appears, you can make changes to the settings for the Laplink Defrag Screen Saver.



Rotation Speed:

This slide bar regulates the rotation speed of the defragmentation display.

FPS Limit:

FPS stands for "Frames Per Second". This is the number of frames displayed on screen per second. A higher FPS limit increases the load on the system and improves the resolution of the image.

X, Y, and Z Position:

These slide bars can be used to control the horizontal and vertical positioning of the displayed drive. The "Z Position" slide bar controls the size of the image.

Quadruple Edge Smoothing:

When supported by your graphics card, this option enables a smoother graphical representation of corners.

Controls:

In this section, it is possible to select the drives you wish to have defragmented when the Laplink Defrag Screen Saver is active. In the **Action** column, select the desired method of defragmentation for the corresponding drive.

Additional information concerning the different methods of defragmentation can be found in this Guide under **Methods**.

View:

In this menu various parameters concerning the appearance of the application can be changed.

Automatic Defragmentation

Overview

Defragmentation on a regular basis is the key to maintaining top performance. Laplink Defrag offers you a sophisticated scheduling system so that you don't have to run the defragmentation manually each time.

Defragmentation jobs (in short, jobs) allow you to define the time, action and other parameters for the defragmentation. You can configure all options in the **Edit Job** dialog.

Note: The 'Edit Job' dialog is similar to the 'Settings' dialog. The 'Edit Job' dialog controls the settings for one specific job, while options chosen in 'Settings' affect all jobs.

You have the power to create, change or delete jobs. If you want to leave out a job for a short period of time, but don't wish to cancel it completely, you can disable it. In this way, the job will not be run until you once again enable it.

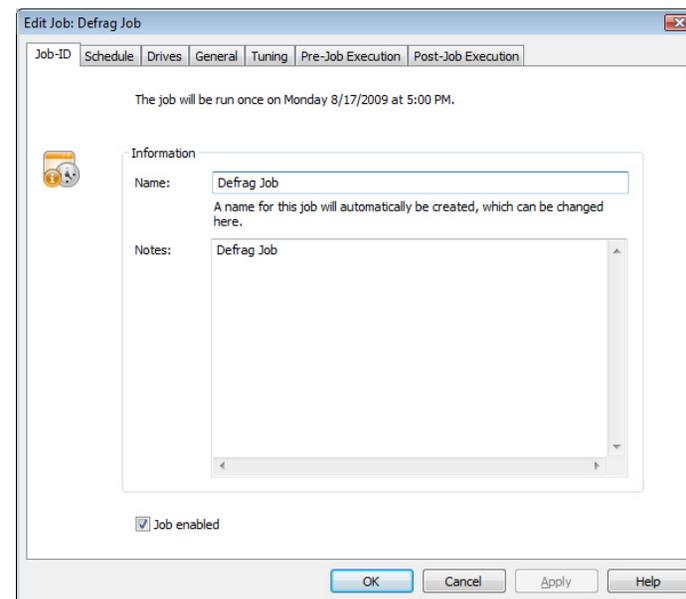
With the automatic scheduling system, Laplink Defrag automatically detects the right time for the next defragmentation using heuristic methods. As a rule of thumb: the more severely and quickly your system fragments, the more often it will be defragmented. If your system does not show a high degree of fragmentation, the frequency of defragmentation runs will decrease.

Creating New Jobs

Under the **Jobs and Reports** tab in the Ribbon Bar click **Add Job**.

If you want to use a job that already exists as a template, you can simply duplicate the job by selecting the desired job and clicking **Duplicate**.

After creating the job, you can then edit and save it using the **Edit Job: Defrag Job** dialog box that appears.



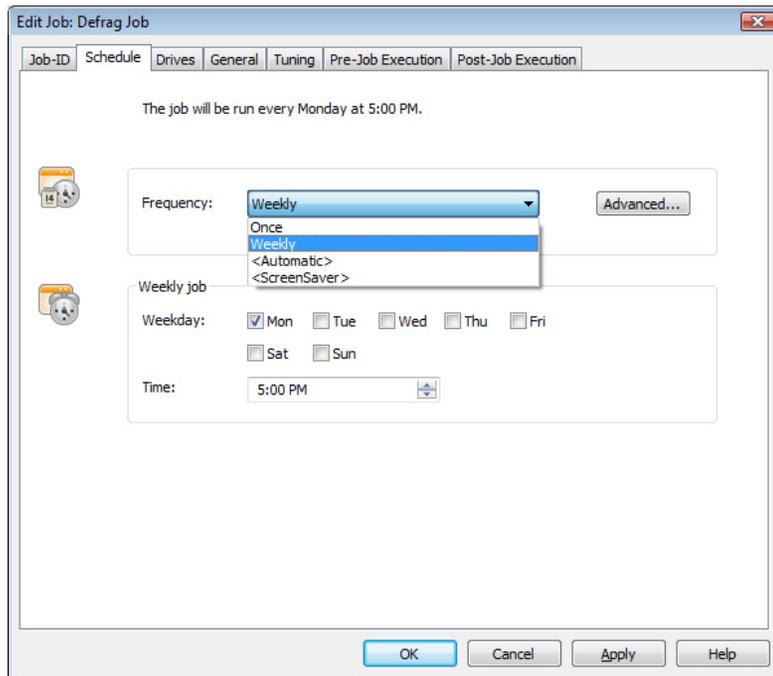
Job-ID Tab - Name

Enter the name of your job. This will be used for the creation of reports and serves as information about which action is being carried out by the job. The name of the job is only important for this purpose and it is possible to use this name for other jobs too.

In the field **Notes**, you can enter any other information you wish to remember or share about the job.

Job-ID Tab - Job Enabled

If you want to leave out a job for a short period of time, but don't wish to delete it altogether, you can disable it. It won't be run until you enable it once again.



Schedule Tab - Frequency

On the scheduling page, you can define the time at which the job should be carried out. You can run the job just once, weekly, automatic or when the screen saver is active. The options change according to the frequency you've chosen.

You can also enter advanced options by clicking **Advanced**. The start and end dates let you define the period over which the job should be carried out. The maximum running time limits the running of a job to a particular time frame, after which the job will stop whether it has finished or not. The job will then start from where it left off when the next defragmentation run begins.

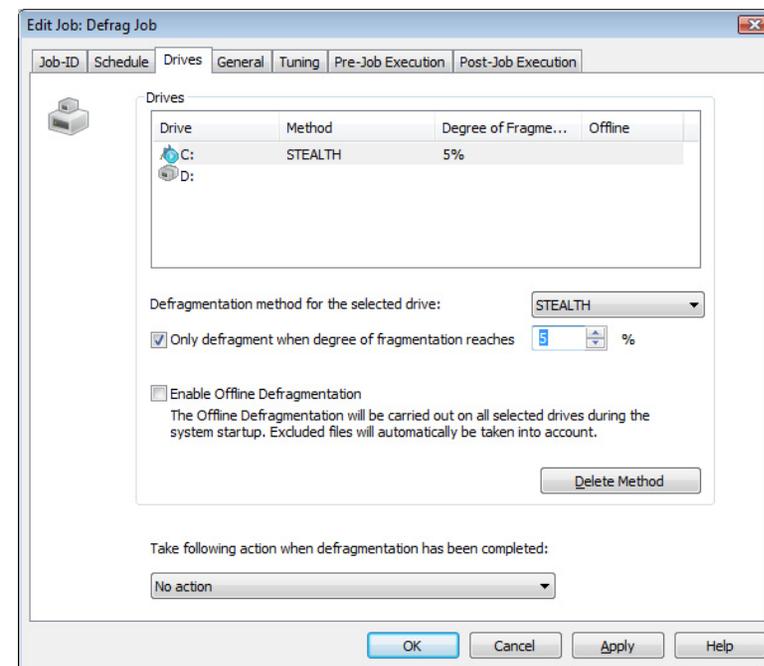
If you want a job to be run more than once a day, click **Advanced** and enter the required time interval under **Start date**.

The option of starting the job later if a defragmentation is not possible at a given time is intended for systems that are not always on. Normally, the job would simply be left out if the computer is switched off. If this option is enabled, the defragmentation will be run whenever the computer is switched back on. This ensures that your job won't be left out.

Screen Saver Mode: Laplink Defrag can be instructed to always start when the screen saver is active. This will allow Laplink Defrag to run automatically when your computer is idle. Select **Screensaver** in the **Frequency** drop-down list, and all other configurations will be handled automatically by Laplink Defrag.

As soon as the screen saver is ended (through user activity on the computer), Laplink Defrag ceases operation. When activated again, either manually or automatically, Laplink Defrag will continue from where it left off.

Note: Laplink Defrag will only run when the screen saver is activated in Windows. More information on activating the screen saver can be found in the Windows help file.



Drives Tab

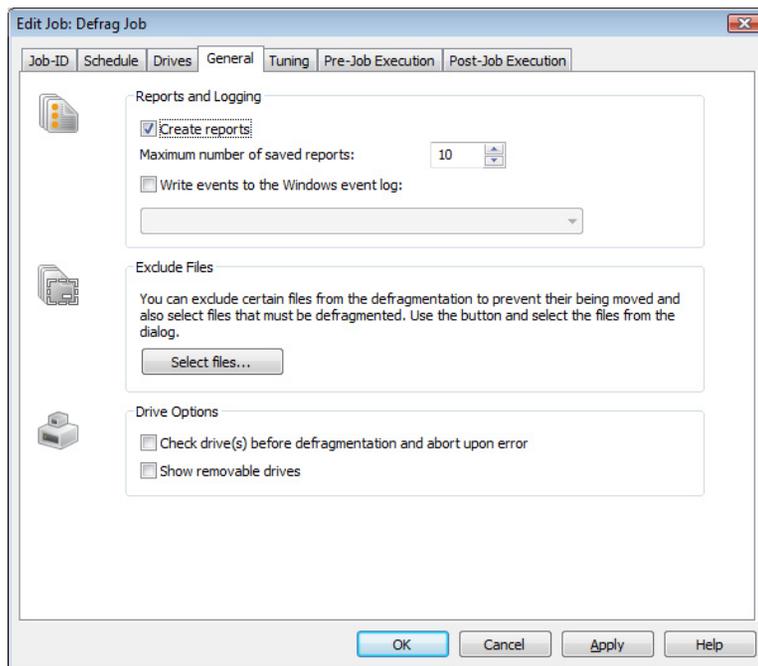
Select the drives and defragmentation methods you wish to use. You can also enable offline defragmentation for each drive, so that blocked files can be defragmented when your system starts up.

Degree of Fragmentation: By entering a fragmentation level, you can define the fragmentation level at which defragmentation will automatically be started. You can

thereby reduce significantly the number of defragmentation runs needed, if you don't require a fully defragmented system all the time. 0 means that your system will always be defragmented. We would recommend you enter a value of between 2 and 5.

Select the drives, choose your method and further options, and then click on **Apply**. In the same way, you can switch off the defragmentation by marking the drive and clicking **Delete Method**.

If your system BIOS supports power management functions, you can choose for Laplink Defrag to shut down or restart your system when the defragmentation is finished. If you chose to restart, the program can perform an offline defragmentation run. You can then leave your computer while it is being defragmented – it will shut down afterward automatically. In the **Take Following Action...** drop-down list, choose the desired action.



General Tab

You can determine the settings for each job as well as defining them for a computer. These settings will then override the computer settings while the job is being run.

General Tab - Reports and Logging

You can create reports with Laplink Defrag. These are status reports that you can later view as HTML documents. A maximum of 999 reports can be saved for each job.

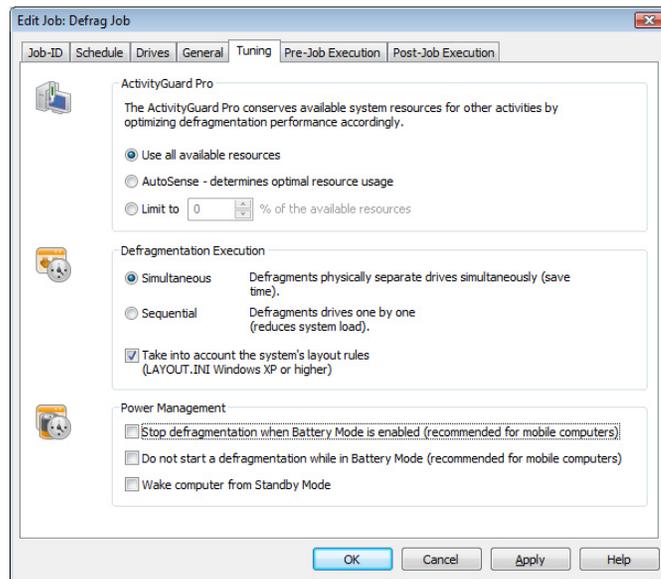
If you also wish to simultaneously write of all Laplink Defrag's actions in the Windows event log, enable this option. You can determine the level of detail – Level 1 only logs errors, whereas Level 4 logs all available information. Please bear in mind that this can constitute a lot of information and requires a large amount of free disk space.

General Tab - Exclude Files

If you don't wish to defragment particular files and directories, you can enter them here. These files will be ignored by the defragmentation.

General Tab - Drive Options

You can choose for Laplink Defrag to check the integrity of your drives before each defragmentation. For safety reasons, the defragmentation will not be run if Laplink Defrag finds errors on your drives. The checking of your drives is similar to the chkdsk function in Windows, although the errors won't be corrected. This can be done manually using the chkdsk function.



Tuning Tab

Laplink Defrag offers you many ways of making your defragmentation even more effective and efficient. The standard options are optimized for most systems, so these won't normally have to be changed. You can, however, adapt these configurations to suit your requirements.

Tuning Tab - ActivityGuard Pro

This feature controls the burden on your system caused by defragmentation and automatically adapts it to meet current conditions. You can continue working without interruption while the defragmentation runs in the background. This is particularly useful if you don't know when a computer is going to be available for defragmenting. With ActivityGuard Pro, you don't have to worry about this.

AutoSense: The AutoSense method automatically detects the resource usage at regular intervals and is the recommended setting.

If you want to run your defragmentation at the highest possible speed, you can use all of the computer's power for this. Please note that it can be very difficult to work undisturbed on heavily strained or older systems during defragmentation.

You can also enter manually the percentage of power Laplink Defrag should use. Laplink Defrag will only use this percentage and the rest will be available for other applications.

Tuning Tab - Defragmentation Execution

You can defragment your drives using either **Simultaneous** (parallel) or **Sequential** defragmentation. Sequential defragmentation means that one drive will be defragmented after the other, in alphabetical order.

If you choose simultaneous defragmentation, drives (partitions) that lie on physically separate hard disks can be defragmented at the same time. This speeds up defragmentation significantly. If you only have one physical hard drive on your system, the volumes will be defragmented in sequence.

Take into account the system's layout rules (LAYOUT.INI): For Windows XP and Vista operating systems, the LAYOUT.INI file is used as a reference to optimize the layout of files on the hard disk during defragmentation. When you select **Take into account the system's layout rules**, Laplink Defrag will defragment according to the order of system files dictated by the operating system. Doing so can accelerate the speed at which these files are loaded during a system's startup.

Note: This feature to defragment according to the system's layout rule is only available on Windows XP and Vista operating systems.

Tuning Tab - Power Management

Power management is especially intended for notebooks. Using it, you can ensure that defragmentation will not take place when the notebook is running on battery power. Defragmentation will only be resumed automatically when the notebook is reconnected to the main power.

If your computer is switched off, Laplink Defrag can "wake" it from standby mode in order to run a defragmentation. You can thereby defragment at night or at the weekend without leaving the computer on or having to be physically present.

Executing batches before and after a job

Running batch commands before and after a job enables you, for example, to pause certain Windows services before defragmenting and then continuing them afterwards. Files that are normally in use by other applications can now be defragmented online. If you are using Laplink Defrag on a Microsoft Exchange or SQL server, you can pause these services, run defrag, and then automatically restart them. Scripts are no longer needed.

See **Pre-Job** and **Post-Job Execution** tab sections (next) for more information.

Pre-Job Execution Tab

Choose **Run the following commands before job execution** and all the commands entered into the text field will be run before defragmentation. You can also import an existing file and insert its contents into the text field. To do so, simply click the Import button and select the desired file in the dialog box (.BAT, .CMD, or .TXT). Confirm your selection by clicking **OK**.

Note: All commands must exist and be capable of running on the target computer. All commands are run under the SYSTEM username with the maximum system permissions.

Post-Job Execution Tab

Choose **Run the following commands after job execution** and all the commands entered in the text field will be run after defragmentation. The entering and running of commands after a job are similar to those run before a job.

Note: All commands must exist and be capable of running on the target computer. All commands are run under the SYSTEM username with the maximum system permissions.

Changing a Job

You can change a job by selecting it in the job view and clicking the **Edit** button in the Ribbon Bar under **Jobs and Reports**. The Laplink Defrag job dialog will appear with the options for that job. Change the settings you wish and then confirm this by clicking **OK**. If you don't want to apply the changes, simply click **Cancel**.

You can find more explanation about the job options in the section "Creating New Jobs".

Deleting a Job

Choose a job from the job list and select **Delete** under Jobs and Reports. The job will then be removed from the computer. Any job currently running will be automatically canceled.

Status Reports

Overview

Status reports give you information on the condition of your computer or the computers in your network. They sum up the general information about a drive such as its name, size, file system, level of fragmentation, recent actions, the time needed, etc. The

reports are HTML documents and can be read with any internet browser.

Status reports show increases in performance

Status reports all have a date and time of creation which allows you to compare them and see how performance has improved.

Creating Status Reports

Status reports are made after each analysis and each defragmentation, provided you've enabled the creation of status reports. This can be done in the Settings dialog. You can keep a maximum of 999 reports for one computer, after which the oldest reports will be replaced by newer ones.

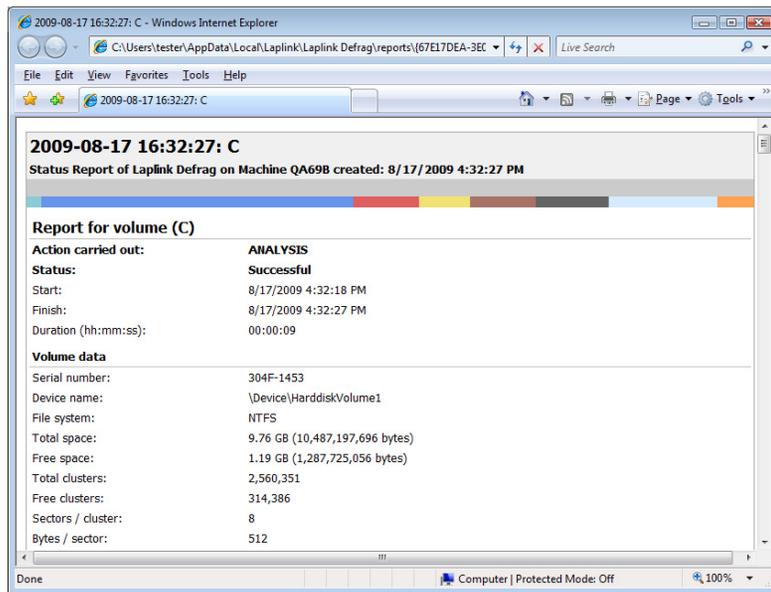
- In the drive list, click the drive for which you wish to create a status report.
- Under the **Jobs and Reports** tab in the Ribbon bar, click **Create**.
- The drive will be analyzed, which you can see from the drive icon and the view of the progress.
- Once the analysis is finished, the status report will be automatically saved and displayed.

Note: You can also create status reports for several drives at the same time by holding the Ctrl key down and clicking the drives.

Evaluating Status Reports

Laplink Defrag status reports allow you to keep track of the fragmentation and defragmentation of a system. They contain all important information regarding your hard disk drives.

The level of fragmentation is particularly important as it represents a fragmentation value which can be used for comparing hard disks having different sizes and using different systems. This value ranges from 0 (completely defragmented) to 100% (completely fragmented). It is best to have a lower value (below 5%). You can also use this value in jobs when defining a threshold for an automatic defragmentation.



Deleting Status Reports

Click on the report you wish to delete in the list of reports and click **Delete** under the **Jobs and Reports** tab in the Ribbon Bar. You can also right-click on the report in the list of reports and choose **Delete Status Report**. The report will be removed from your system.

Technical Information

Using the Command Line Version

You can also control the defragmentation by means of the command line version of Laplink Defrag. In this way, you can also integrate Laplink Defrag into scripts that you run at startup or login.

When you start the program from the command line, the main interface window will not appear. A mini Laplink Defrag icon will appear in the task tray, and you can follow the progress of the actions in your DOS prompt.

Laplink Defrag runs independently of the main user interface and the DOS prompt in the background. If you close the DOS prompt or cancel the command line tool with Ctrl+Break/Ctrl+C, you can choose whether to end the program or have it continue in the background. You can also cancel the processes later by using the STOP command.

Note: If you start Laplink Defrag from the command line, you can also start the main user interface later. This will show you the status as usual without interrupting or stopping the running processes.

Starting Laplink Defrag

The following list shows you the possible parameters for the command line version.

```
OODCMD {C:[,] | ... | Z:} | {<←COMMAND→}&{C:[,] | ... | Z | ALL}
[/MAXUSAGE:AUTO|0..100|MAX] [/OUTPUTFILE:<←File name→>] [/SILENT] [/NOHEADER]
[/NOWAIT] [/WAITKEY]
```

<←COMMAND→> must be one of the following volume commands:

ANALYSIS, COMPNAME, COMPACC, COMPMOD, FRAGFILES, SPACE, STEALTH

Parameter

Syntax	Description
/ANALYSIS:{C[,] ... Z ALL}	Analyzes the given drives. The result will be shown in the standard output device (generally the DOS prompt) or written into the output file.
/COMPACC:{C[,] ... Z ALL}	Starts the COMPLETE/Access defragmentation on the given drives, or on all drives (ALL).
/COMPMOD:{C[,] ... Z ALL}	Starts the COMPLETE/Modified defragmentation on the given drives, or on all drives (ALL).
/COMPNAME:{C[,] ... Z ALL}	Starts the COMPLETE/Name defragmentation on the given drives or on all drives (ALL).

/FRAGFILES:{C[,] ... Z ALL}	Analyzes the given drive and lists the fragmented files. The result will be shown in the standard output device (generally the DOS prompt), or written into the output file.
/INFO:{C[,] ... Z ALL}	Shows the drive information for the given drives or for all drives (ALL).
/NOHEADER	Stops the display of program information when the program is started from the DOS prompt.
/NOWAIT	Starts the given operation and ends the command line program immediately. The operation runs in the background. This is useful if you want to start an operation with a multiple file, but don't wish to wait until this process has finished.
/OUTPUTFILE:<File name>	All output values will be saved to a file with the given path and name.
/SILENT	There are no output values.
/SPACE:{C[,] ... Z ALL}	Starts the SPACE defragmentation on the given drives or on all drives (ALL).
/STEALTH:{C[,] ... Z ALL}	Stops all processes (analysis, defragmentation etc) on the given drives or on all drives (ALL).
/STOP:{C[,] ... Z ALL}	Stops all processes (analysis, defragmentation etc) on the given drives or on all drives (ALL).
/WAITKEY	Waits for a keystroke before ending the command line program (once the operation has ended).

Status Reports and Program Output

Event Logging of Online Defragmentation

Laplink Defrag logs the events in the system application log (Event viewer) according to the option you have chosen.

How to start the event viewer when running Windows 2000:

- To open the event view, click **Start**, then **Settings**, then **Control Panel**. Double-click on **Administration**, then **Event Viewer**.

How to start the event view when running Windows Vista/XP/2003:

- Click on **Start**, then **Control Panel**, then double-click **Administrative Tools**, then double-click **Event Viewer**.

Outputs from Offline Defragmentation

The following table contains a list of all possible outputs from the offline defragmentation, along with an explanation.

Ouput	Type	Explanation
OK	STATUS	The given file was successfully defragmented.
Already defragmented	STATUS	The given file has already been defragmented.
Drive xyz could not be opened	ERROR	The given drive could not be found by the system, or the file system is not supported.
Could not open drive	ERROR	An internal error has occurred, suggesting a lack of free space or wrong registry entries for the boot time defragmentation.
Could not open file	ERROR	The given file could not be found, is encrypted or has been exclusively locked by the system.

Not enough space to move	ERROR	In order to defragment the MFT, contiguous free space at least as large as the MFT must be available. The defragmentation cannot be run because there is not enough free space available.
Could not be moved	ERROR	The defragmentation failed because of problems with the file system. The file is still fragmented.
MFT could not be defragmented	ERROR	The defragmentation of the MFT failed because of problems with the file system. It is still fragmented.
Not enough space to move the MFT	ERROR	In order to defragment the MFT, contiguous free space at least as large as the MFT must be available. The defragmentation cannot be run because there is not enough free space available.
Could not write to partition	ERROR	During the MFT defragmentation, a file system error occurred which blocked writing on the disk. The MFT has not been changed and is still fragmented. The drive should be checked for errors.
Attribute error in the MFT. Please start chdsk.	ERROR	Erroneous entries in the MFT were found during the defragmentation. The drive should be checked for errors.

Data Security and Integrity

Laplink Defrag guarantees you complete data integrity and security. The only functions that are used for the defragmentation are already integrated into Windows.

File attributes (Date, Time, System, Archive etc.) and the security settings for NTFS drives will not be changed. Access rights also remain unchanged. In addition, only one file per drive will be processed at any one time. This ensures that even in a worst case

scenario, only one file will be lost (e.g. if there is a power cut). If you have any further questions about data security or need more information, please don't hesitate to contact us.

Supported Hardware

Laplink Defrag supports all hardware components that are also supported by Windows. Please note the software requirements of the corresponding manufacturer.

Note: As a rule, if you can access your hardware with Windows as you would a normal Windows partition and this partition is formatted using a supported file system, then this hardware can be defragmented. Exceptions are removable drives such as CD-RWs, or streamers – as it makes little sense to defragment such drives.

RAID

Laplink Defrag supports all known RAID systems. According to many hardware manufacturers, defragmenting RAID systems is especially important – as their files are spread over several hard disks, their fragmentation level is likely to be very high.

Supported File Systems

Laplink Defrag supports all Windows file systems although certain conditions must be respected in order for Laplink to work without any problem. The following paragraphs will tell you more about each of these file systems.

FAT

FAT is the oldest data system, the roots of which go back to MS DOS. It is supported by Windows. Laplink Defrag can be used without any problem on FAT drives.

FAT32

FAT32 is the native file system of Windows 95b/98/Me. It offers certain advantages when compared to the old FAT. Windows Vista/XP/2003 and Windows 2000 offer an integrated support of FAT32, which allows Laplink Defrag to function perfectly. FAT32 drives are Windows supported by default and can be defragmented without any problem using Laplink Defrag.

NTFS

The NTFS file system is the continuation of FAT for Windows. It provides security restrictions for accessing data and offers a higher level of security regarding file errors, and faster data access.

It is native supported and Laplink Defrag is able to achieve the best defragmentation results on NTFS drives.

EFS

Windows 2000 introduced a new file system based on NTFS and with a higher level of data security against unauthorized access and abuse. The Encrypted File System (EFS) leaves files unreadable for non-authorized users. Laplink Defrag supports EFS hard drives and does not change or disturb the data integrity and security of these files.

Free Space Needed for Defragmentation

The following limitations are valid for Laplink Defrag and are caused by Windows. They cannot be bypassed without endangering the integrity of your files.

Size of the allocation units

The size of the allocation units on NTFS drives on Windows 2000 has to be equal to or smaller than 4096 Bytes. NTFS drives with larger clusters cannot be defragmented. The size of the allocation unit cannot be changed after Windows has been formatted. You will, however, find third party tools which give you this possibility.

Note: These limitations were removed with Windows Vista, XP and Windows 2003 so that all drives, regardless of the size of their allocation unit, can be defragmented.

Size of Drive

All drive sizes supported by Windows are supported by Laplink Defrag.

Laplink Defrag was optimized for use on file systems having an especially large number of files. The storage capacity of a drive is therefore irrelevant.

Directories

Any number of directories can be defragmented. Laplink Defrag has an optimized memory management which allows it to record all file and directory information.

Free Hard Disk Space

Drives without any free disk space cannot be defragmented. For the best possible results, at least 5% of the whole hard disk capacity should be free. It might not be possible to defragment files larger than the available free and contiguous disk space.

To speed up the defragmentation process, we recommend you keep about 10 to 15% of free space available on your hard disk, although the larger the hard disk, the smaller

this percentage will be. What really matters is the size of the largest file which needs to be defragmented or moved around- for a file like this, you must have enough contiguous free space available.

Tips and Frequently Asked Questions

Tips for optimizing your performance

Defragment your system regularly!

Only defragmentation on a regular basis can ensure that you always get the best out of your system! Laplink Defrag offers you the best way of planning an optimum defragmentation of your system.

Don't wait too long before you defragment!

As soon as you've installed your operating system, the file system will begin to fragment. Avoid reduced performance right from the beginning and install Laplink Defrag in good time! Only then can you be sure that your hard disks can access your files quickly. You will also avoid unnecessary wear and tear on your hardware due to increased movement of the read/write head.

Large files need more free hard disk space

If you want to defragment large files, you need more free hard disk space. For reasons of data security, the original (fragmented) file remains on the volume until the defragmented copy has been safely saved to disk. We recommend you have at least 5% free disk space – if you have more, this will speed up the defragmentation. For modern hard disks having more than 100 gigabytes, this value can be significantly lower.

Avoid moving large numbers of files during the defragmentation

If you are using the SPACE or COMPLETE methods, Laplink Defrag will calculate the best position for your files before and during the defragmentation. If you copy, move or delete files, these calculations will have to be carried out again. This will take time and lengthen the defragmentation time. Please keep this in mind!

Automatic defragmentation with the threshold tool

Along with its default background monitoring, Laplink Defrag offers you the option of automatically defragmenting your system with a time schedule. You can

Additionally increase your system's performance by defining threshold values for your defragmentation. This means that defragmentation will only take place when a particular degree of fragmentation is reached. You can thereby avoid unnecessary defragmentation runs. In the job dialogue under Drives, just enter a degree of fragmentation, e.g., 5%, upon which the job should be run.

Using Laplink Defrag on your notebook

We have introduced a new power management in this latest version of Laplink Defrag. This allows you to suppress defragmentation runs when your notebook is running from battery power. The length of your battery's life will therefore not be affected and you won't have to stop the defragmentation manually. Laplink Defrag recognizes the switch between main and battery power and will run the defragmentation according to your own configuration. You can read more on this in the section about Settings.

Laplink Defrag and Firewalls

When I start Laplink Defrag my firewall tells me that someone is trying to access my hard drive and I receive Error Message "10061". Why is this and how can I solve the problem?

The communication between the components of Laplink Defrag (e.g. the Agent and the GUI) is based on TCP/IP. This communication takes place only internally, and doesn't access the internet. Most firewalls, however, are programmed to recognize internal IP communication, so you receive a warning message.

You don't have to turn off your firewall! Simply open up port 50300. Since Laplink Defrag automatically checks access permissions, there can be no external access over this port even if you are connected to the internet.

In most cases, it is enough to authorize Laplink Defrag for exclusively internal communication when the software is started for the first time.

If this did not happen, however, including the files OODAG.EXE and OODCNT.EXE on your firewall's list of trusted programs has also proven successful with all of the firewalls we have tested.

Please consult your firewall's documentation for precise configuration procedures.

Note: If you have configured your firewall accordingly and are still receiving Error Message "10061", please verify that the services "Laplink Defrag" and "Event Viewing" are enabled. If this is not the case, please enable these services.

Which defragmentation method for which type of system?

Below, you will find several pieces of advice concerning which method is the best for your

system. Search for the relevant tip and use this to determine the best defragmentation method for you!

My computer is mainly used as a workstation

The STEALTH, SPACE and COMPLETE/Name methods are best suited for workstations. User files are changed less regularly on workstations than they are on servers. For this reason, sorting by name is a good way of speeding up the startup of your system. The files that are read at startup are arranged in the Windows directory so that they are read in sequence.

We recommend an initial defragmentation with COMPLETE/Name and then regular defragmentation using the STEALTH or SPACE methods.

My computer is mainly used as a server

The methods STEALTH, SPACE, COMPLETE/Access and COMPLETE/Modified are best suited for servers. Files are created, changed and deleted with great regularity on all servers, but particularly on file servers. Fragmentation therefore occurs more quickly and severely than on other computers. The COMPLETE methods organize your files in order to prevent the need for subsequent complete reorganizations – only the files that have recently been changed need to be defragmented.

We recommend an initial defragmentation with COMPLETE/Modified and then the use of STEALTH or SPACE.

Note: Using COMPLETE/Access, COMPLETE/Modified and COMPLETE/Name on one partition leads to much slower defragmentation runs because the files are sorted in different ways in each of these methods. Please decide on just one of the COMPLETE methods for use on your system!

A large number of files are saved on my computer

If you have a large number of files saved on your system, e.g., more than 500,000, STEALTH defragmentation is the best method for you. The STEALTH method avoids reading the complete file information, which under certain circumstances can be extremely time-consuming.

How much free disk space is needed for defragmentation?

Free disk space is a very important factor for a successful defragmentation. The less space that is available, the greater the time required for the defragmentation. This is true of all methods described here. We recommend you keep at least 5% free space available on the drive(s) you wish to defragment. This value is, however, dependent on the individual system configuration, the number of files and their size. On NTFS drives, it is particularly important to note the real free disk space. You can find this information

in Drive Status after the words **Free without res. MFT**. The number indicated is the amount of space that is actually available for the applications such as Laplink Defrag. Windows itself can also write to the MFT reserved area but for security reasons, other applications may not. This is one reason why Windows displays more space than is actually available.

Continue working undisturbed while defragmenting

Particularly in the case of workstations or servers that are under pressure all the time, it is important that defragmentation take place in the background without negatively affecting the day-to-day running of the system. In such situations, we recommend you use ActivityGuard Pro for keeping an eye on the resource usage and automatically adjusting the burden placed on your system by Laplink Defrag.

Windows is also able to write in the MFT sector. Other applications, for reasons of security, are not allowed to do this. This is also the reason why Windows Explorer displays more free disk space than is actually available for the defragmentation.

Feedback and Support

Contacting Laplink

We invite your comments about Laplink Defrag 11. Please feel free to contact us at:

feedback@laplink.com

In addition to the contact information for Customer Service at the top of this page, you can engage in a live chat online with a Technical Support Representative at the link below, during the hours listed on the Web page:

<http://www.laplink.com/contact/mychat.html>