O&O software

O&O Defrag

Inhaltsverzeichnis

Introduction

Thank you for choosing **O&O Defrag 30**!
O&O Defrag unlocks the hidden performance of your computer by efficiently and safely consolidating fragmented files. From fully automatic defragmentation to detailed professional settings, O&O Defrag offers everything that defines modern defragmentation software.

With O&O Defrag, you can take the performance of your storage media to a whole new level. Files are organized efficiently, access times are significantly improved, and the lifespan of your hardware is extended.

Why is my PC getting slower?

Over time, computers no longer store files as a whole but in fragments—split into many small pieces scattered across the hard drive or SSD.
This storage chaos significantly increases access times.

Defragmentation reverses this process: files are reassembled and optimally arranged. The result is a noticeably faster and more stable system.

Key Features at a Glance

- **Automatic background defragmentation**
  O&O Defrag works quietly and efficiently without interrupting your work.
- **SSD optimization with SOLID technology**
  Specifically developed to improve the performance and lifespan of SSDs—without unnecessary write operations.
- **O&O DiskCleaner**
  Removes unnecessary files and frees up additional disk space for improved system performance.
- **Task scheduling**
  Define fixed times for defragmentations that will run automatically.
- **Status and performance reports**
  Receive detailed analyses of your drives and their optimizations.
- **Check & Repair function**
  Detects and repairs drive errors to improve data security.
- **BitLocker support**
  Optimized defragmentation even for encrypted drives—without compromising security.

Welcome to O&O Defrag 30

We are delighted that you have chosen **O&O Defrag 30** as your partner for hard disk and SSD optimization. Discover the advantages of our technologies and enjoy smoother, faster performance—like millions of users worldwide.

Your O&O Software Team
www.oo-software.com

> Note: Please be aware that the PDF manual may differ from the online help due to regular program updates.

In addition, illustrations in this help may differ slightly from the actual program interface.

O&O Defrag Editions

O&O Defrag is available in two editions:

- **O&O Defrag Professional Edition**
  For defragmenting a single desktop computer. This edition cannot be used on a server operating system.
- **O&O Defrag Server Edition**
  Designed for use on server operating systems and optimized for the specific requirements of professional environments.

Installation

To install O&O Defrag, please proceed as follows:

1. Start the computer on which you want to install O&O Defrag.
2. Log in as a user with administrative rights.
3. Launch the O&O Defrag setup file, either downloaded from our website or found on your installation media.
4. Once the setup program has initialized, please follow the installation dialogs.

Install and That's All
If you downloaded O&O Defrag from our website or purchased it from the online shop, a simplified standard installation is performed. Optimized settings are automatically applied. O&O Defrag is immediately active and works in the background to improve system performance.

For an **update or upgrade**, you should check the automatic defragmentation settings in case they were previously disabled.

If you do not want a standard installation, click on **Advanced Installation** in the dialog. This opens the classic installation with all configuration options.

Licensing
To unlock O&O Defrag as the full version after installation, you will need a valid license key (also called registration code, serial number, or product ID).

- At first start, a registration dialog will appear.
- Alternatively, you can click **Register now** in the **Info** section of the ribbon.
- Enter your license information (name, company, license key) exactly as provided in your purchase confirmation.
- Be careful not to enter spaces or confuse characters such as "1" and "I."
- Once successfully entered, licensing will be confirmed.

If you encounter problems, please contact our support: **support@oo-software.com**.

Trial Version
O&O Defrag can be used for 30 days as a **free trial version**. When starting the program, the registration assistant shows the remaining trial period.

Online Registration
If you purchased the software from the **online shop**, you are already registered automatically.
If you bought O&O Defrag from a retailer, you can register via the registration assistant.

Requirements:
- Valid license key
- Internet connection

Direct link to the form: www.oo-software.com/register

Benefits of Online Registration:
- Request your license key again if lost
- Receive up-to-date information about our products
- Free minor updates (e.g., Version 30.1 → 30.2)
- Discounted upgrades to new major versions (e.g., Version 29 → 30)
- Access to our customer support
- and much more

Uninstallation
To uninstall O&O Defrag:

1. Open the **Settings** via the Start menu.
2. Click on **Apps (Apps & Features)**.
3. Select your edition (Professional or Server) from the list.
4. Click **Uninstall**.
5. Follow the uninstallation program.
6. Restart the computer if necessary.

Updates
O&O Defrag automatically checks for a new version each time it starts.

- **Minor updates** (e.g., 30.1 → 30.2) are free of charge.
- **Major updates** (e.g., Version 29 → 30) are subject to a fee.

Tip: Under **Info → About O&O Defrag**, you can find your license data and the exact program version.

System Requirements

General Requirements - The minimum requirements of the respective operating system must be met
- 64-bit support
- Windows® 10 up to Windows® Server 2025 (all editions)
- ARM platform support

Supported Operating Systems

Operating System	Professional Edition	Server Edition
Windows 11	yes	yes
Windows 10	yes	yes
Windows Server 2012	no	yes*
Windows Server 2012 R2	no	yes*
Windows Server 2016	no	yes*
Windows Server 2019	no	yes*
Windows Server 2022	no	yes*
Windows Server 2025	no	yes*

* All variants of the server operating system are supported.

Network Functionality
If network functionality is to be used, the following is additionally required:
- Network card and connection
- Appropriate access rights

User Rights
- To install and use O&O Defrag, you need **local administrative rights**.
- In networks, you should be a **domain administrator** to install and administer O&O Defrag locally and on other computers.

Microsoft Windows Installer
Installation is performed using the built-in **Windows Installer**, which manages the entire installation and uninstallation process.

Supported File Systems

File System	Explanation
exFAT	Supported as of Windows Vista. Designed for flash drives, offering better performance than FAT and increased data security.
FAT	The oldest Windows file system originating from MS-DOS. Supported natively.
FAT32	Introduced with Windows 95b/98/Me. Supported natively and can be defragmented without issue.
NTFS	Developed completely new for the Windows NT family. Supports security restrictions, high performance, and data security. Best results with O&O Defrag.
EFS	Available as of Windows 2000. Based on NTFS, provides additional encryption (Encrypted File System). O&O Defrag fully supports EFS without affecting data integrity or security.

Supported Storage Media - O&O Defrag supports all hardware components also supported by Windows.
- If the operating system recognizes a partition as a normal Windows partition and it is formatted with a supported file system, it can be defragmented.

Exceptions:
- Removable drives (e.g., tape drives, CD-RWs)
- Network drives as a target for defragmentations

RAID Support - All well-known RAID systems (striped, mirrored, RAID5) are supported.
- Defragmenting RAID volumes is useful because fragmented files distributed across multiple disks cause particularly strong performance losses.

> Note: Optimization of SSD drives in a RAID array is not possible! RAID controllers present a virtual drive to the operating system. The underlying drives remain hidden and cannot technically be accessed directly.

Dark Mode > [!WARNING]
> **Note:** If the operating system is running in **Dark Mode**, O&O Defrag's ModernUI will also automatically adapt to Dark Mode.

ModernUI

O&O Defrag provides a modern user interface that makes it easier for beginners to carry out important optimization tasks.
For experienced users, the classic view remains available.

Main View
The ModernUI offers compact access to all key functions and additional components:

- Checking the operating system for inconsistencies
- Displaying installed apps
- Removing temporary and unnecessary files

Drive Analysis
1. Select a drive from the drive list.
2. Start the analysis.
3. Depending on the drive size, the analysis may take some time.

Defragmentation
Defragmentation is an effective means of boosting performance for both HDDs and SSDs.

Defragment individual drives:
1. Select the drive from the list.
2. Click **Defragment** (the default method starts automatically).
3. Duration: depends on the amount of data (up to several hours).

You can monitor progress via the status and the O&O Defrag icon in the task tray.

Visualization (O&O VisualDisk)
- **Traceable visualization**: Graphical display of write activities on SSDs and NVMe drives.
- **Gentle optimization**: Avoids unnecessary write operations, extending lifespan.
- **Ease of use**: Storage activity can be monitored without deep technical knowledge.

Cleanup (O&O DiskCleaner)
- Removes temporary and unnecessary files.
- Frees up space, speeds up backups, and reduces fragmentation.

Startup Optimization (O&O StartManager)
- Manage programs that run automatically at system startup.
- Disable unnecessary or faulty entries.
- Increases startup speed and prevents hidden processes.

Remove Apps (O&O AppBuster)
- Overview of all installed programs, including hidden apps.
- Easily uninstall software that is no longer needed.
- Saves disk space and increases security.

Check & Repair
- Scans drives for inconsistencies.
- Repairs errors in system files.
- Special routines for the **Windows Recovery Environment**:
- Check integrity and configuration
- Automatically repair damaged or missing files
- Ensure functionality in case of system errors

Automatic Defragmentation
- Optimizes in the background without performance loss.
- Starts based on specific criteria:
- When a defined fragmentation level is reached
- On specific weekdays
- When the screensaver is activated

O&O IntensiveOptimize
- Starts Windows in a special maintenance mode.
- Maximum system resources available for defragmentation.
- Access to system and locked files.

BitLocker Support in IntensiveOptimize Mode
- Detects encrypted drives before optimization.
- Provides secure access to BitLocker-encrypted drives.
- No compromise on security or data integrity.

Configuration

By default, O&O Defrag is configured to work optimally for most users.
The options available in the configuration dialog cover the most common use cases, ensuring that your computer maintains high performance without requiring additional adjustments.

You can access the configuration via the **ribbon menu** at the top left of the user interface.
If you make any changes, please click **OK** to apply them.

Automatic Defragmentation - Automatically optimize hard disks
All new or modified files are checked. Fragmented files are automatically defragmented once they have not been written to for a while.
 Your system remains permanently optimized, and fragmentation is actively prevented.

- **Optimize when the user is away**
  Starts defragmentation as soon as the screensaver is active (e.g., during breaks).
  Defragmentation pauses as soon as you return to the computer and will automatically resume later.
- **Defragmentation at scheduled times**
  Set up recurring schedules for defragmentation, which will then run automatically.

Additional Automatic Optimizations - SSD Optimization with TRIM
O&O Defrag optimizes SSDs vendor-independently using TRIM commands.
- Frees up no longer needed storage areas
- Faster access times
- Reduced wear on flash memory cells

- **ThinProvisioning for Virtual Machines**
  - Faster release and reallocation of storage space
  - Reduced storage requirements
  - Increased performance

ThinProvisioning can be executed regularly, either independently of defragmentation or after each defragmentation process.

Analyzing Your Drives

By analyzing your hard disks, you will get an overview of how files are arranged on a drive and how fragmented they are.
Once the analysis is complete, O&O Defrag generates a detailed status report that also shows the **degree of fragmentation**.

This degree can range from **0% to 100%**:
- A low value (ideally 0%) means your files are optimally arranged.
- A high value (close to 100%) is the worst case: files are almost completely fragmented.
- Values above **15%** already lead to noticeable performance losses, so defragmentation is strongly recommended.

Degree of Fragmentation – Explanation and Recommendations

Degree	Explanation and Recommendations
< 2%	Almost all files are optimally arranged. Ideal state – only achievable through regular defragmentation.
2% – 5%	Still acceptable on system drives. Performance nearly optimal.
6% – 10%	Acceptable on pure data drives, but noticeably slower access compared to the ideal state.
11% – 20%	System becomes noticeably slower. Regular defragmentation and use of scheduling recommended.
Over 20%	Very high fragmentation with significant performance losses. Immediate defragmentation required, followed by regular monitoring and comparison of the fragmentation level.

Starting an Analysis
1. In the **drive list**, select the desired drive.
2. Start the analysis via the **ribbon menu** or the **context menu**.
3. Depending on the drive size, the analysis may take some time.
- Progress is shown on the drive icon and in the progress bar.

After completion, you can open a **status report** as an HTML document in your web browser.

> Note: You can also analyze multiple drives at the same time. To do this, hold down the Ctrl key and select the desired drives.

Defragmenting Your Drives

Defragmentation is an effective tool for improving performance on both **HDDs** and **SSDs** – but for different reasons.

Defragmenting HDDs
- HDDs lose significant speed when heavily fragmented.
- The read/write head has to travel longer distances when file fragments are spread far apart.
- Consequences:
- Slower read and write processes
- Increased mechanical stress
- Reduced lifespan due to additional head movements

Defragmenting SSDs
- SSDs do not have a read/write head but store data in states.
- Fragmentation still affects **performance** and **lifespan**.

Reasons:
- The SSD controller distributes file fragments across free storage sections (*pages*).
- Fragmented files must be reassembled via mapping tables during access.
- Fragmented data often occupies more blocks than necessary additional wear on memory cells.

Advantages of Defragmentation for SSDs
- Reduction of write cycles (a limited resource for SSDs).
- Example:

Case 1: File *test.txt* is spread across Block A and Block B.
- Content modification Both Block A **and** Block B each lose one write cycle.

Case 2: File *test.txt* is located only in Block A.
- Content modification Only Block A loses one write cycle.

Since up to 8 clusters can reside in one block, Case 2 results in up to an **eightfold reduction** in write cycles compared to Case 1.
 This significantly extends the SSD's lifespan.

With the specialized SSD defragmentation methods of **O&O Defrag**, exactly this reduction can be achieved.

> Note: This calculation is highly abstracted and simplified. It is intended solely to illustrate SSD behavior and does not claim full technical accuracy.

Defragmentation Methods

In addition to the five methods for speed zones, O&O Defrag offers **seven traditional defragmentation methods**:

- **STEALTH**
- **SPACE**
- **COMPLETE/Name**

- **COMPLETE/Modified**
- **COMPLETE/Access**
- **SOLID/Complete**
- **SOLID/Quick**

> Note: The traditional methods are only available when the zone configuration is disabled.

Performance Characteristics of Traditional Methods

Traditional Methods	SOLID/Complete	SOLID/Quick	SPACE	STEALTH	COMPLETE Methods
Defragmentation of files	++		+	+	++
Defragmentation of free space	++		++		++
Prevention of further fragmentation	++		++		+
Results with extreme fragmentation *	++			+	+
Suitable for very large files (> 4GB)	++			+	
Suitable for very many files (>1M)	++		+		++
Runtime first defragmentation **	++		+		++
Runtime repeated defragmentation	++		+		++
RAM usage	++	++	+		++
CPU load	++	++	+		++
HDD	+			++	++
SSD	++	++			

Legend:
- **+** = well suited (runtime: fast)
- **++** = very well suited (runtime: very fast)

* Extreme fragmentation refers to rarely maintained drives containing many heavily fragmented files and very little free space.

** The first defragmentation takes longer than in previous versions, as your data must initially be divided into speed zones.

COMPLETE/Access Method

The **COMPLETE/Access Method** defragments files and also reorganizes their structure.
Although slower than the **STEALTH** and **SPACE** methods, it ensures optimal system performance when reading files.

Algorithm
- Files are sorted by the date of last access.
- Infrequently accessed files are moved to the **beginning of the partition**.
- Frequently accessed files are moved to the **end of the partition**.

Advantages:
- Rarely used files only need to be defragmented once.
- Frequently used files can be read faster.
- Reduced effort during subsequent defragmentations, as fewer files are affected.

Use Cases:
- Maximizes **read performance**, especially on **servers**.
- Suitable for **regular defragmentation** of a drive.
- Recommended for systems with sufficient resources, as:
- higher CPU load may occur (use of the **O&O ActivityMonitor** is recommended),
- more free disk space is required.
- For **servers and workstations of all types**.

Note: For regular defragmentation, only use the COMPLETE/Access Method. Mixing with other methods (COMPLETE, STEALTH, or SPACE) can result in much longer runtimes, as the file order must be rebuilt each time.

COMPLETE/Modified Method

The **COMPLETE/Modified Method** defragments files and also reorganizes their structure.
Although slower than the **STEALTH** and **SPACE** methods, it ensures optimal system performance when reading files.

It is particularly suitable for **database and file servers**. Due to the reorganization, increased memory usage may occur.
If this is an issue, the **STEALTH** or **SPACE** methods are recommended.

Algorithm
- Files are sorted by the date of last **modification**.
- The oldest unchanged file is moved to the beginning of the partition.
- The most recently modified file is moved to the end.

Advantages:
- Ideal for systems where some files rarely change (e.g., system files), while others change frequently (e.g., databases).
- Reduces effort for future defragmentations, as only modified files need to be checked.

Use Cases:
- Maximizes **write performance** on servers.
- Suitable for regular defragmentation of a drive.
- Recommended for systems with sufficient resources, as:
- higher CPU load may occur (use of the **O&O ActivityMonitor** is recommended),
- more free disk space is required.

Note: For a drive, only use the COMPLETE/Modified Method. Mixing with other methods (COMPLETE, STEALTH, or SPACE) can significantly increase runtimes.

COMPLETE/Name Method

The **COMPLETE/Name Method** defragments files and also reorganizes their structure.
Although slower than the **STEALTH** and **SPACE** methods, it ensures optimal system performance when reading files.

It is especially suited for **system drives**. Again, increased memory usage may occur.
If this is problematic, use the **STEALTH** or **SPACE** methods.

Algorithm
- Files are sorted alphabetically (A–Z) and arranged on the partition.
- Advantage: Faster access to files in the same directories.
- Speeds up Windows startup since many system files (DLLs, drivers, etc.) are read sequentially.

Use Cases:
- Maximizes performance during **system startup** and file reading.
- Suitable for regular defragmentation of a drive.
- Recommended for workstations and servers with free resources at the time of defragmentation.

Note: For a drive, only use the COMPLETE/Name Method. Mixing with other methods (COMPLETE, STEALTH, or SPACE) significantly increases runtimes.

SOLID/Complete Method

The **SOLID/Complete Method** combines two steps:
1. Fragments are sorted and, if possible, reduced.
2. A second pass is performed to close gaps.

Advantages:
- Faster access through reduced fragmentation.
- Protects memory cells by reducing unnecessary usage.
- Prevents future fragmentation by writing new data into consolidated areas.

After completion, the **SOLID/Quick Method** is also executed to optimally use free cells.
Result: Immediate performance improvement and long-term resource conservation.

SOLID/Quick Method

SSDs have intelligent storage management that partly compensates for fragmentation.
However, after prolonged use, an **internal cleanup** is required.

The **SOLID/Quick Method** uses SSD-native functions and combines them with additional cleanup mechanisms.

Advantages:
- Increased performance
- Better resource utilization
- Protection of memory cells

Regular use is recommended to keep the SSD at its highest performance level.

SPACE Method

The **SPACE Method** is particularly effective for heavy fragmentation.
It consolidates files, increases contiguous free space, and helps prevent new fragmentation.

Algorithm
- All fragmented files are defragmented.
- They are then moved to create as much contiguous free space as possible.

Use Cases:
- Ideal for the **first defragmentation** of a previously unmaintained system.
- Suitable for computers with little free space or resources.
- Particularly useful for servers with large drives (e.g., >1TB) or systems with very many files (>100,000).

STEALTH Method

The **STEALTH Method** is characterized by high speed and low memory consumption.

Algorithm
- Defragments all fragmented files.
- Performs a fast, resource-saving consolidation of free space.
- Less thorough than SPACE or COMPLETE methods, but significantly faster.

Use Cases:
- Particularly suitable for **regular defragmentation**.
- Ideal for:
- Computers with limited resources
- Servers with very large drives (>4TB)
- Systems with very many files (>3,000,000)

Speed Zones

By dividing drives into **speed zones**, the data set is logically separated into performance-critical and non-critical files.
A special algorithm ensures that data on the storage device is arranged optimally.

- Files are sorted by purpose and access frequency and moved into zones.

- System and program files that require especially fast access are separated from less critical data such as documents or downloads.

- Separating frequently and infrequently used files proactively reduces fragmentation.

Benefits:
- Faster system and application startups
- Shorter subsequent defragmentations
- Fragmentation of program files is largely prevented

> Note: Using speed zones is not recommended for SSDs. SSD controllers automatically arrange data so that all blocks are used evenly. A zone configuration is neither technically possible nor meaningful here.

Default Configuration
By default, the **system drive** is divided into three zones.
The suggested layout is optimal for most users:

1. **Zone 1:** Windows system files and installed applications

2. **Zone 2:** User data (e.g., Office documents, temporary files, user profiles)

3. **Zone 3:** Infrequently used or very large files (e.g., Recycle Bin, files > 500 MB)

> Note: Zone division is disabled by default.

Enable Zone Division
1. Open the **ribbon menu**.
2. Go to **Options** → **All Settings**.
3. Under **General** → **Advanced Options**, check **Divide into speed zones**.

Disable Zone Division
1. Open the **ribbon menu**.
2. Go to **Options** → **All Settings**.
3. Under **General** → **Advanced Options**, uncheck **Divide into speed zones**.

Defragmentation Method for Speed Zones

O&O Defrag offers three methods for defragmenting a drive that has been divided into **speed zones**.
The method selection appears when you open the submenu of the **Start button**.

> Note: Using speed zones is not recommended for SSDs. SSD controllers automatically arrange data so that all blocks are used evenly. A zone configuration is neither technically possible nor meaningful here.

Standard Assignment (preconfigured, customizable)
- **Zone 1 (Operating system and programs):** Sort by file name
- **Zone 2 (User data and settings):** Sort by last access date
- **Zone 3 (rarely used and large files):** Consolidate to create as much contiguous free space as possible

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Overview – Recommended Method by Use Case

Recommended for:	OPTIMIZE	OPTIMIZE/Quick	OPTIMIZE/Complete
First-time run	+		++
Occasionally repeated run	++	+	+
Frequently repeated run	+	++	
After installing a large program	++		+
After installing a game	++		+

Recommended for:	OPTIMIZE	OPTIMIZE/Quick	OPTIMIZE/Complete
After installing a major update	+		+
After uninstalling a program/game	++		
Defragmentation of system drives	++	+	++
Defragmentation of data drives	++	++	
Very large files, rarely changed	+	++	
100,000 files	++		++
500,000 files	++	+	+
1 million files	+	++	
From 5 million files		++	

Legend:
- **++** = highly suitable
- **+** = suitable

OPTIMIZE
- Performs a **SPACE defragmentation** on all three zones.
- Goal: maximize contiguous free space.
- Recommended **default method**: thorough and fast.

OPTIMIZE/Quick
- Fast defragmentation with short runtime and minimal memory usage.
- Defragments all fragmented files within the speed zones.
- Moves files to the correct zone if they are misplaced.
- Aggressively reduces fragments on heavily fragmented files without needing to analyze the entire file system.

OPTIMIZE/Complete
- Combines the previous **COMPLETE methods**.
- For each zone, the user-selected method is executed (**SPACE** or a **COMPLETE** sorting).
- More thorough, as it resorts the entire data set.
- Significantly slower than OPTIMIZE.
- Only necessary when files should be completely rearranged after major changes (e.g., program installations).

Rules for Individual Drives

You can customize the default configuration and define **your own settings for individual drives or drive groups**.

Create New Drive Rules
1. In the drive list, select **All Drives** and click **Add New**.
2. In the dialog, choose the desired drives:
- **System drive** or **All other drives (data drives)**
- Optional: select specific individual drives
3. Confirm with **OK**.
4. The selected drives now appear in the drive list.
5. Select a drive and, for each zone, add a **New rule** under **Custom rules** in the right pane.

Custom Zone Configuration
With **custom rules**, you define—based on **file names and paths**—**which speed zone** a file should be moved to.
You can find the **rule syntax** in the chapter *Rule Syntax*.

You can:
- Create **global rules** (for **All Drives** ⊠ Zone ⊠ **Custom rules** ⊠ **Add new rule**).
- Create **specific rules** for individual drives (select drive ⊠ Zone ⊠ **Custom rules** ⊠ **Add new rule**).

> Note: In case of conflicts, specific drive rules take precedence over global rules.

Always Move to Zone Three
You can specify that **files above a certain size** are always moved **to Zone 3**.
This option is suitable for **rarely used** or **very large files**.

> Note: Path-based rules have higher priority than the file-size rule and can override it.

Choose Optimization Strategy per Zone (for OPTIMIZE/Complete)
For each zone, you can set an **optimization strategy**. This setting is used by the **OPTIMIZE/Complete** method:

- **Consolidate files**
  Defragments files and packs them **as tightly as possible** to create **large contiguous free areas**.
  ☒ helps prevent new fragmentation.
- **Sort files**
  Sorts files by a criterion (e.g., **file name**, **modification date**, **last access date**).
  ☒ frequently used files **load faster** (e.g., improved boot and app load times).

Rule Syntax

With rules, you can precisely define **which files are moved to which speed zone**.
Rule syntax is based on **file names**, **path elements**, or **file sizes**.

Syntax Examples
- **File name:**
`*.docx` ☒ move all Word files to the defined zone
`report_*.pdf` ☒ all PDFs that start with "report_"

- **Path:**
  `C:\Users\*\Documents\*` ☒ all files in users' Documents folders
  `*\Downloads\*` ☒ all files from the Downloads folder
- **File size:**
  `>500MB` ☒ all files larger than 500 MB are moved to Zone 3

Wildcards
- `*` matches any character sequence (e.g., `*.jpg` for all JPG files).
- `?` matches exactly one character (e.g., `file?.txt` matches `file1.txt`, `fileA.txt`).

Priorities
- **Path-based rules** take precedence over general rules (e.g., file size).
- Specific rules for a single drive **override** global rules.

Examples of Practical Rules
- `C:\Windows\*` ☒ all Windows system files into Zone 1
- `C:\Users\*\AppData\*` ☒ temporary user files into Zone 2
- `>1000MB` ☒ very large files into Zone 3

> Note: Review your custom rules regularly. Incorrectly defined rules can cause important system or program files to be moved into inappropriate zones.

Settings

To optimally tailor **O&O Defrag** to your use case, you can configure various settings.
These options determine the program's behavior during **analysis** and **defragmentation**.

Open the settings via the **ribbon menu** and click on **All Settings**.

General Settings

The **General Settings** control O&O Defrag's behavior during **analysis** and **defragmentation**.
You can find these options under **All Settings** ☒ **General** in the ribbon menu.

Check drives before defragmentation (chkdsk)
- Before each defragmentation, the **integrity of the drives** is checked.
- Equivalent to Windows' integrated **chkdsk function**, but without automatic error correction.

- If errors are detected, defragmentation is **aborted** for security reasons.
- Affected drives are marked with a **yellow warning triangle**.

> Note: Errors must be fixed manually using the Windows chkdsk command.

Defragment multiple physical disks in parallel
- **Parallel:** Drives on different disks are defragmented simultaneously.
- Advantage: shorter overall duration.
- Disadvantage: higher system load.
- **Sequential:** Drives are defragmented one after the other in alphabetical order.
- Advantage: lower load.

Take system file layout into account
- Uses Windows' **Layout.ini** file to optimally arrange startup files.
- Results in a **faster system startup**.

Advanced Options
- **Include removable drives**

Allows defragmentation of removable media (e.g., ZIP, Jaz, MO).

- **Include external drives**
  Allows defragmentation of externally connected drives (USB, FireWire).
- **Show defragmentation result**
  By default shows a before/after block view and history. Can be disabled.
- **Protect SSDs from defragmentation**
  Protects SSDs from unnecessary write cycles. Defragmentation of SSDs is not meaningful (see chapter *Handling SSDs*).
- **Divide into speed zones**
  Divides files into zones based on access speed (see chapter *Speed Zones*).
  Disabled by default.
- **Disable automatic optimization**
  Disables background optimization.
- **Allow remote access from the same network**
  Allows O&O Defrag to be controlled remotely by other users in the same network.
  Firewall settings are automatically adjusted.
  See chapter *Working in a Network*.

Reports and Event Logging
- Create **status reports in HTML format** (max. 999 reports).
- Optional: log all actions in the **Windows Event Log**.
- **Detail levels:**
- Level 1 = errors only
- Level 4 = all information
- Warning: Excessive entries may overwrite other system or program logs.

Tray Icon Settings
- **Show O&O Defrag icon in the notification area**

Enable or disable the icon in the taskbar notification area.
Change only takes effect after logging in again.

- **Extended control for the logged-in user**

- Enabled: user may pause or stop defragmentations.
- Disabled: user only sees the status without being able to intervene.

Automatic Defragmentation

The **automatic defragmentation** relieves you of manual planning.
Once activated, it works **in the background** without affecting computer performance.

This benefits both **administrators** under time pressure and **home users** unfamiliar with defragmentation, ensuring consistently optimal system performance.

If desired, you can adapt the **default settings** to your individual needs.

> Note: Automatic defragmentation is only started on internal hard drives – not on external storage devices. This prevents data loss if a medium is removed during defragmentation.

Automatic Defragmentation Settings
- All **write accesses** and **new files** are monitored.
- New fragmented files are automatically defragmented once they are no longer in use.
- Regular **resource-saving passes** optimize all files to minimize existing fragmentation.

Examples of heavily used files:
- Windows registry database
- Data containers of download programs
- Temporary internet cache files

These are also regularly defragmented by automatic optimization.

Configuration Options
- Choose between **fast** and **thorough defragmentation** for hard drives.
- Further details on the methods can be found in the chapter *Traditional Defragmentation Methods*.

Notes on Automatic Defragmentation
- Very large files (e.g., virtual machine containers) can slow down system performance if frequently defragmented.
 Such files should be excluded under **Settings Files before defragmentation**.
- External **USB and FireWire drives** are **never** defragmented automatically.
Reason: unexpected removal of the medium could cause **data loss**.

Files

In the **Files** section of the settings dialog, you can specify which files and folders should be excluded from or explicitly included in defragmentation.
This allows O&O Defrag's behavior to be tailored precisely to your needs.

Select files for defragmentation
- You can **exclude entire folders** while still **including individual files** from them.
- You can also define that **very large files** should not be defragmented or moved for time-saving reasons.

Exclude files
1. Click **Select files**.
2. In the dialog, mark the desired files or directories in the Explorer view.
3. Click **Add**.

4. Optionally add more files or folders.
5. Confirm with **Apply**.

 All specified files/folders will be excluded from future defragmentation.

Explicitly include files
1. Click **Select files**.
2. Mark the desired files or folders.
3. Click **Add**.
4. Optionally add more entries.
5. Confirm with **Apply**.

 These files will **always** be defragmented – even if a higher-level rule would exclude them.

By size
- Optionally, very large files can be excluded from defragmentation.
- Define a **size threshold**.
- Files exceeding this size will **neither be defragmented nor moved**.

> Note: Excluding very large files may shorten runtime but can also leave certain areas of your drive fragmented.

O&O ActivityMonitor

The **O&O ActivityMonitor** monitors **system load** and controls when and how intensively O&O Defrag is allowed to use resources.
This ensures that defragmentation runs **in the background** without disrupting your work.

Default settings are optimal for most systems. If needed, you can fine-tune the options.

> Note: The settings apply to both recurring jobs and automatically running defragmentations (see Automatic Defragmentation). In the task dialog, you can also define specific settings for individual tasks.

Load
- Limit how much O&O Defrag may use the **CPU** during defragmentation.
- Specify that no automatic defragmentation should start if:
- the **target drive is heavily used**, or
- other programs have high CPU demand.

Program List
- Define programs during whose runtime no defragmentation should occur.
- Typical examples:
- **Backup programs**
- **Antivirus scanners**
- **Games**

Power
- Particularly useful for **notebooks**:
- Start defragmentation only when running on **AC power**.
- Enable the option **Pause when computer switches to battery power**.

> Tip: This setting extends **battery life** and prevents performance issues when running on battery.

Scheduling

A **regular defragmentation** is the key to consistently high performance.
If you prefer zero effort, **Automatic Defragmentation** is the ideal solution.

If you want to decide **when** defragmentation runs, use **Scheduling** in O&O Defrag.
With so-called **defragmentation tasks**, you define:
- the time of execution
- the desired action
- additional parameters for execution

You can **create, edit, or delete** tasks.
Unneeded tasks can be **disabled** without being removed. The task will only run again once it is re-enabled.

To create a new defragmentation task:
1. In the **ribbon menu**, open **Scheduling**.
2. Click **Create**.
3. In the **O&O Defrag Task dialog**, configure all settings for the task.

Scheduling – Set up regular defragmentation

A **regular defragmentation** is essential to ensure maximum system performance over time.

- If you don't want to manage it yourself, **Automatic Defragmentation** is recommended.
- If you want to decide **when** a defragmentation runs, use O&O Defrag's **Scheduling**.

With **defragmentation tasks**, you define:
- the execution time,
- the desired action,
- additional parameters for the defragmentation.

Task management
- **Create tasks**: Define new scheduled defragmentations.
- **Edit tasks**: Adjust existing schedules or options.
- **Disable tasks**: Temporarily turn off without deleting.
- **Delete tasks**: Permanently remove the task.

A **disabled task** will not run until you manually re-enable it.

Create a new task
1. In the **ribbon menu**, open **Scheduling**.
2. Select **Create**.
3. In the **O&O Defrag Task dialog**, configure:
- the desired schedule,
- the associated drives,
- the defragmentation method,
- further options for the task.

> Note: Regularly scheduled defragmentation is especially recommended for servers and workstations with high data activity.

Create task – General

In the **General** section, define the basic properties of a new defragmentation task.

Name and notes
- **Task name**: Enter any name.

- Used for generating reports.
- Helps you identify which action the task performs.
- The name has no technical meaning and may be reused.

  - **Notes**: Optional field for additional information or comments about the task.
    - Example: “Weekly defragmentation of system drive”

Final action
After defragmentation finishes, O&O Defrag can perform a **final action**.
Requirement: your system BIOS must support the relevant **power management functions**.

Possible final action:
- **Shut down**
- The OS is shut down after the task completes.
- The computer powers off automatically.

> Note: Use the “Shut down” final action only when you are sure no other programs or user processes are active.

Edit, duplicate, or delete a task

With O&O Defrag you can **adjust**, **duplicate**, or **remove** existing tasks at any time,
giving you maximum flexibility in managing defragmentation schedules.

Edit task
- Select the desired task in the **Task view**.
- Choose **Edit** from the **context menu**.
- The **O&O Defrag Task dialog** opens with current settings.
- Make your changes and confirm with **OK**.

Duplicate task
- Select the desired task in the **task list**.
- Choose **Duplicate task** from the **context menu**.
- The task is copied and can then be adjusted and saved via **double-click** in the task dialog.
- Useful when you want to use an existing task as a **template**.

Delete task
- Select the desired task in the **task list**.
- Choose **Delete task** from the **context menu**.
- The task is removed immediately from your computer.
- A running execution is aborted automatically.

> Note: Deleted tasks cannot be restored. Create the task again if needed.

Include and exclude files

For each **defragmentation task**, you can define individual settings for **included** or **excluded files**.
These apply only to the specific task and **complement** the global rules defined for the entire computer.

Exclude files
1. In the task wizard, open **Files**.
2. Click **Select files**.
3. In the Explorer view, select the desired file or folder.
4. Click **Add**.
5. Optionally add more files or folders.
6. Confirm with **Apply**.

 All specified files/folders are **excluded** from defragmentation.

Explicitly include files
1. In the task wizard, open **Files**.

2. Click **Select files**.
3. Select the desired file or folder.
4. Click **Add**.
5. Optionally add more entries.
6. Confirm with **Apply**.

 These files are **always defragmented**, even if a higher-level condition would otherwise exclude them.

By size
- You can specify that **very large files** are neither defragmented nor moved.
- In the dialog, set a **size threshold**.
- Files above this threshold are **ignored** during defragmentation.

> Note: Excluding very large files can reduce runtime and system load, but those files will remain fragmented on the drive.

Select drives

Within a scheduled task, you can set the **defragmentation method** individually for each drive.

Minimum fragmentation level
- You can specify that a drive is **only** defragmented if a certain **fragmentation level** is exceeded.
- Benefits: fewer defragmentation runs, conserved system resources.
- **0%** = the drive is always defragmented.
- **Recommendation:** A value between **2% and 6%** offers an optimal balance of performance and efficiency.

Divide into speed zones
- Optionally, you can specify that a drive's data set is divided into **zones**.
- Benefits:
- Faster system and application startups
- Efficient prevention of fragmentation of important system and program files

> Note: Dividing into speed zones only makes sense for HDDs. For SSDs, this offers no advantage because the SSD controller distributes data evenly by itself.

O&O ActivityMonitor for tasks

For each scheduled task, use the **O&O ActivityMonitor** to define under which system conditions it is executed. This ensures tasks start only when sufficient resources are available and your system is not impacted.

Load
- Define how intensively O&O Defrag may use the **CPU** during defragmentation.
- Specify that a task **must not run** if:
- the **target drive is heavily utilized**, or
- other programs require high CPU time.

Program list
- Specify programs during whose runtime **no defragmentation** should occur.
- Typical examples:
- **Backup programs**
- **Antivirus scanners**
- **Games**
- Click the **plus icon** and select the desired programs in the browser window.

Power
- Especially important for **notebooks**:
- Run tasks only on **AC power**.
- Option: **Pause the task when the computer switches to battery power**.

  - Additionally, you can specify:

  - A task may **wake the computer from sleep (standby)** so it can run successfully.

> Note: Enable the wake option only if automatic wake-ups are acceptable (e.g., in the office, but not on the go).

Additional task settings

Under **Settings** in the task dialog, you can influence default behavior for different drive types and additional execution options.

Check drives before defragmentation
- Before defragmentation, the **integrity of the drives** is checked.
- Equivalent to Windows **chkdsk**, but **read-only** (no automatic repair).
- If errors are detected, defragmentation is **aborted**.
- Errors must be fixed manually using the **chkdsk command**.

Parallel defragmentation
- **Parallel**: Multiple physically separate drives are defragmented simultaneously.
- Advantage: shorter total duration
- Disadvantage: higher system load
- **Sequential**: Drives are processed one after another in alphabetical order.

System defaults for file layout
- Uses Windows' **Layout.ini** file as a reference.
- Respects the OS's suggested optimal order for startup files.
- Result: **fastest possible system startup**.

Advanced options
- **Include removable drives**
Media such as ZIP, Jaz, or DVD-RAM can also be defragmented.

- **Include external drives**
  Defragmentation for drives connected via **USB** or **FireWire**.
- **Protect SSDs from defragmentation**
  Use O&O Defrag's special **SOLID method** to reduce write cycles and extend SSD lifespan.
- **Divide into speed zones**
  Data is sorted into **zones** based on access frequency (see chapter *Zone Configuration*).
  - Enabled by default
  - Not recommended for SSDs

Reports and event logging
- Create **status reports** in HTML format (max. 999 reports).
- Optional: log all actions in the **Windows Event Log**.
- **Detail levels:**
- Level 1 = errors only
- Level 4 = all information

> Note: A high logging level can create very many entries and overwrite existing logs from other programs or the system.

Batch commands before and after a task
- Allows execution of **batch commands** (e.g., `.BAT`, `.CMD`, `.TXT`) directly before or after defragmentation.
- Use cases:
- Stop Windows services (e.g., Exchange, SQL Server)
- Run defragmentation
- Automatically restart services

Batch commands before a task
- Enable the option and enter commands in the text field.
- Alternatively, select a file via **Import**.

Batch commands after a task
- Enable the option and enter commands in the text field.
- Same procedure as configuring the pre-task commands.

> Note: All commands must exist on the target computer and be executable. They are executed under the system account with maximum possible privileges.

Set schedule

Under **Schedule**, specify when a defragmentation task should run.
You can choose between the following options:

- **One time**: runs only at a specific time.
- **Recurring**: runs regularly on selected weekdays.
- **On screensaver**: runs each time the screensaver becomes active.

The available **execution options** change dynamically depending on the selected setting.

Define time frame
- **First run on / Last run on**
- Defines the period during which the task is valid.
- **Maximum runtime**
- Limits the task's execution duration.
- Once reached, the task stops regardless of progress.
- Incomplete tasks are **resumed** at the next run.

Advanced settings
- **Repeat execution**
- Set intervals if the task should run multiple times per day.
- Example: every 2 hours.

- **Run later if not possible at the start time**
  - For computers that are not always on.
  - Default: the task is **skipped** if the computer is off at the start time.
  - With this option: the task is run automatically as soon as the computer is turned back on.
  - Ensures that scheduled defragmentations **will definitely be executed**.

Reports

O&O Defrag manages all **reports** in the **Report view**.
You can find this in the **Scheduling** section by switching to the **Reports** tab at the bottom of the user interface.

When the option for **report generation** is enabled, all **analysis** and **optimization operations** are automatically recorded.
Reports are clearly organized by **date and recency** and grouped into **directories**.
In parentheses, you can see for which **drives** and for which **tasks** a report was created.

Reports contain all relevant information about a drive's **data set**, as well as:
- General information about the drive and file system
- Details of the performed defragmentation and its results
- Lists of fragmented or particularly large files that may **negatively impact system performance**

Reports are generated as **HTML documents** and can be viewed with any common web browser.
Double-click a report to open it.

Generate reports
- Reports are automatically created after each **analysis** and each **defragmentation**.
- Requirement: the option **Create reports** is enabled under *Settings* → *General*.
- O&O Defrag stores a maximum of **999 reports** per computer. After that, older ones are automatically overwritten.

Manual creation:
1. Select the desired drive in the **drive list**.
2. In the **ribbon menu**, click **Create**.
3. An analysis is started (indicated by the drive icon and progress bar).
4. After completion, the report is saved and displayed automatically.

> Note: You can also generate reports for multiple drives simultaneously. To do so, hold down the Ctrl key and select the desired drives.

Evaluate reports
- Reports document the course of fragmentation and the results of defragmentations.
- **Degree of fragmentation**:
- Normalized value between **0% (optimal)** and **100% (heavily fragmented)**.
- A value below **5%** is desirable.
- Can also be used as a **threshold** for starting a scheduled defragmentation.

Delete reports
- **Individual reports**: Select and remove them via the ribbon menu (**Delete**).
- **Report groups**: e.g., “Last month” – deletes all reports from that period.
- **All reports**: Remove all saved reports using the **Delete All** function.

TrayIcon (Notification Area Icon)

The status of a running defragmentation can be monitored not only in the user interface but also via the **TrayIcon** (notification area icon).
The icon is located in the **Windows taskbar notification area**.

Status display and operation
- **Hover over the TrayIcon**: Displays the current status in a tooltip.
- **Open context menu (right-click)**:
- Start or stop defragmentations
- Activate quiet mode
- Open the user interface
- Exit the program (close TrayIcon)

> Note: If the TrayIcon has been closed, the user must log in again to re-enable it.

TrayIcon indicators
- Icon variants show the **current program activity**.
- The tooltip provides additional information when hovering over the icon with the mouse.

Quiet mode
Quiet mode prevents O&O Defrag from working in the background when you need your computer's full performance for other applications.

- **Activate quiet mode**:
  - Right-click the TrayIcon
  - Select **Quiet mode** from the menu
- **Deactivate quiet mode**:
  - Right-click the TrayIcon
  - Select **End quiet mode** from the menu
  - Restart the user interface if necessary

Tip: We recommend also closing the user interface while in quiet mode to save additional memory.

Extras

Check drive
Using the **ribbon**, you can check your drives for errors with the **Check drive** command.

- The related report is automatically saved under *Scheduling* → *Reports*.
- The check corresponds to Windows' **chkdsk function**, but runs in **read-only mode**.
  - No errors are fixed automatically.
  - You must correct errors manually using the Windows **chkdsk** command.

If an error is detected, we recommend a **thorough check** of the drive.
You can cancel the check at any time using the **Stop** button.

Note: Because the check runs in read-only mode, your data is not modified by the process.

O&O ClusterInspector
O&O ClusterInspector is a tool for detailed analysis of **disk allocation**.

- Open it with a **double-click** on a block in the **block view**.
- It shows the files located in that area of the disk.
- By default, **up to 50 file entries per page** are displayed. You can view more entries using the **navigation buttons**.

Displayed information:
- **Start cluster**: Start of the currently displayed section
- **Number of clusters**: Number of clusters occupied by the file in the block
- **Fragments**: Number of file parts — greater than 1 indicates fragmentation
- **Size**: Physically occupied storage space
- **File**: Absolute path of the file

Tip: A **cluster** is the smallest logical allocation unit for files on a storage device.

Show file layout (Details)
- Click **Details** to view information about a selected file.
- All **fragments with cluster number and size** are displayed.
- In the **block view (ClusterView)**, occupied clusters are highlighted.
- You can immediately see how fragmented a file is and where its fragments are located.

Determine file position
- Via the ribbon: **Determine file position**.
- Select the desired file in the dialog.
- In the block view (ClusterView), all areas occupied by the file are highlighted.
- This provides a quick overview of how the file is physically distributed on the disk.

Optimize Thin Provisioning
Thin Provisioning is a technique for virtual machines that assigns storage dynamically.
Goal: **More efficient use of resources**, reduced **power consumption**, smaller **footprint**, and less **heat generation**.

- O&O Defrag supports Thin Provisioning by reporting **changed storage demand** (especially reduced demand) to the virtual machine.

- Benefit: Allocation can be reduced **future storage requirements decrease**.

Import/Export base settings
O&O Defrag allows you to **export** and **import** your custom base configuration via **.xml files**.

Export:
1. In the main window, under **Extras**, click **Export…**.
2. Enter a file name (e.g., `ood_settings.xml`).
3. Choose a save location in the file browser and confirm.

Import:
1. In the main window, under **Extras**, click **Import…**.
2. Select the desired configuration file.
3. Confirm your selection.

> Note: Make sure the configuration file is complete and compatible before importing.

Defragment individual drives

Select the desired **drive** in the drive list.
- Clicking the **Start button** in the ribbon begins defragmentation with the default **SPACE method**.
- If you want to use a different method, open the **Start button's submenu** and choose the desired method.

The duration of defragmentation depends on the **size of the data set** and can take several hours.
- A running process is indicated by an **animated drive icon** and the **progress bar**.
- After completion, you can display a **status report** in your web browser.

Defragment SSDs
- SSD controllers store files fragmented across **pages** (free memory sections).
- As a result, more memory cells must be read than necessary when accessing data.
- Consequences:
- **Slowdowns** due to searching for fragments
- **Increased wear** on memory cells shorter lifespan

The resource-friendly **SOLID/COMPLETE** method reduces unnecessary fragmentation by optimally consolidating file fragments.
- Benefit: Fewer memory cells are used **longer lifespan** and **stable performance**.
- **Note:** SOLID/COMPLETE can be used for **SSDs and HDDs** alike.

Defragment HDDs
- On traditional hard drives, fragmentation increases **access times**, because the read/write head must travel longer

distances.
- Causes: daily work, browsing, gaming, frequent server access.
- Consequences:
- **Significantly longer access times**
- **Increased wear** on mechanics
- Benefits of defragmentation:
- Faster access times
- Less hardware stress
- Longer hard drive lifespan

> Note: You can also defragment multiple drives simultaneously. Hold down the Ctrl key and select the desired drives.

Defragment the entire computer
- Select **all drives** in the drive list (multi-select with **Ctrl key**).
- Start defragmentation using the **SPACE method** or select another method from the submenu.
- Running operations are shown via the icon and progress bar.
- After completion, you can display a comprehensive **status report in the browser**.

Defragment individual files and folders
- In a file's or folder's **context menu**, select **Defragment** directly.
- O&O Defrag opens and starts defragmentation immediately.
- Especially for small amounts of data, defragmentation completes in just a few seconds.

> Note: For verification, you can run an analysis. If the file no longer appears in the list of fragmented files after completion, it was successfully defragmented.

Work over the network

The **network feature** allows you to **remotely control O&O Defrag** on another computer within the same network. This lets you run all program functions you use locally **remotely** as well.

Requirements
- O&O Defrag must be installed on the **target computer**.
- **Port 50300** must be open in the target system's firewall.
- By default, you can only control O&O Defrag on computers where your user account is a member of the **local Administrators group**.

Optional:
- If you want to allow all users on the network to control it, enable the option in **Settings**:
"Allow remote access from the same network."

Establish a connection
1. In the **Extras** menu, select **Connect to computers**.
2. Choose the desired network computer.
3. Once connected, you have access to all O&O Defrag features as if you were working directly on the target machine.

Firewall settings
To ensure the connection works, configure the firewall correctly:

1. Open **Windows Firewall** at:
   `Control Panel → Security → Windows Firewall → Advanced settings → Exceptions`.

2. Create a **new port**.

3. Enter port number **50300** and name it, e.g., **O&O Defrag**.

4. Confirm the changes.

5. Check the **O&O Defrag** box in the exceptions list.

> Note: Incorrect firewall configuration can block remote control. Ensure that port 50300 is open on all involved computers.

Defragmentation information & S.M.A.R.T. functionality

O&O Defrag provides various **information views** to monitor the progress and results of your defragmentation. Use the **tabs at the bottom** of the *Defragmentation* ribbon to switch between the following categories:

Timeline
- Overview of actions you have performed recently.
- Shows defragmentation results per drive.

History
- Shows how many files were sped up and how many fragments were removed.
- Overview of the **total amount of data defragmented**.

Drive status
- Summary of the status of selected drives **before and after defragmentation**.
- Includes information about:
- Drive details
- Drive usage
- File system
- A dynamic **pie chart** displays the current fragmentation level proportionally.
- Also includes:
- Total and analyzed number of files and folders
- Dynamic updates during defragmentation

File status
- Overview of the **largest** and **most fragmented files**.
- This information is also included in the **status reports**.
- Sorting options by different criteria (e.g., file size, fragmentation level).
- Requirement: The drive must be **analyzed** beforehand.

Notes on the first defragmentation
- The **first defragmentation** usually takes the longest.
- Reason: O&O Defrag must examine and optimally position all files.
- The **COMPLETE methods** are particularly time-consuming because they **move non-fragmented files** as well.
- Recommendation:
- Perform the first defragmentation using the **STEALTH** or **SPACE** method quick consolidation.
- Then optionally use the **COMPLETE methods** for maximum performance.

> Note: No matter which method you choose, your system will be noticeably faster after the first defragmentation.

S.M.A.R.T. functionality

O&O Defrag uses the **S.M.A.R.T.** (Self-Monitoring, Analysis and Reporting Technology) built into drives to monitor the **health of your drives**.

- Reads key drive attributes (e.g., power-on hours, error rates).

- Changes in these values indicate **wear** or **impending issues**.

- The view shows details such as:
  - Power cycles
  - Temperature
  - Read errors
  - Write operations
- Each value is displayed on a **scale (raw value)** from 0 to 100, 200, or 255.

Typical SSD attributes

Name	Description
Temperature	Temperature in °C (normal 40–65 °C). The lower, the better.
Power-on hours	Total operating time in hours.
Power cycles	Number of power on/off cycles.
Interface / transfer mode	Interface through which the SSD is connected.
Read/Write operations	Total number of read and write operations.
Block size	Indicates the SSD's block size.
Critical warning	Number of critical error messages.
Available spare	Remaining spare capacity.
Wear percentage	SSD wear level.
Data units read/written	Number of processed data units.
Executed read/write commands	Details on command usage.
Command wait time (min)	Average wait time in minutes.
Unsafe shutdowns	Number of improper shutdowns.
Integrity errors	Number of detected integrity issues.
Error log entries	Number of stored error logs.

Typical HDD attributes

Name	Description
Temperature	Temperature in °C (normal 40–65 °C). The lower, the better.
Power-on hours	Total operating time in hours.
Power cycles	Number of power on/off cycles.
Interface / transfer mode	Interface through which the HDD is connected.
Read error rate	Uncorrectable read errors ⊠ may indicate surface issues.
Average spin-up time	Number of attempts to reach rated speed ⊠ indicates motor problems.
Start/stop cycles	Number of load cycles during start/stop.
Reallocated sectors	Number of used spare sectors ⊠ decreasing reserves = increasing risk.
Seek error rate	Read/write errors due to head movement.
Spin-up retries	Problems when the disk spins up.
Recalibration retries	Frequent recalibrations indicate wear.
Power-off retract count	Improperly completed shutdowns.
Head parking events	Number of head parking operations.
Used spare sectors	Number of already used spare sectors.
Remaining spare sectors	Number of not yet assigned spare sectors.
Uncorrectable sectors	Direct indication of impending data loss.
Interface CRC errors	Number of faulty transfers.
Write errors	Number of uncorrectable write errors.

> Note: If S.M.A.R.T. values look suspicious, make sure to back up your data in time. Critical warnings or increasing errors are a sign of imminent failure.

TRIM compatibility

The TRIM feature is critical for maintaining the **lifespan and performance of SSDs**.
O&O Defrag helps you ensure your system is **TRIM-capable** and provides solutions for common configuration issues.

What is TRIM?
- **Flash memory cells** in SSDs have a limited number of write cycles.
- To achieve even wear, the SSD controller spreads writes across as many cells as possible (**wear leveling**).
- The **TRIM command** tells the SSD which data blocks are no longer in use and can be reused.
- Result:
- Fewer unnecessary writes
- Longer lifespan
- More stable performance

Requirements for TRIM
For TRIM to work, **four conditions** must be met:

1. The **SSD or NVMe** must support TRIM/Deallocate (standard on almost all models since ~2010).

2. **Controller in AHCI or NVMe mode**:
   - SATA SSDs: **AHCI mode**
   - NVMe SSDs: natively via the **NVMe protocol**

3. **No RAID array**: TRIM only works with **single drives** and **basic disks**.

4. **Driver support**: The controller/NVMe driver must not block TRIM commands.
   - Safe: **Windows 10/11 standard AHCI or NVMe drivers**
   - Vendor drivers only if they explicitly support TRIM.

Enable AHCI on Windows 8/8.1, 10, and 11
If your system runs in IDE mode, set the following registry values **before** switching the BIOS to **AHCI**:

```
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\storahci]
"Start"=dword:00000000

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\storahci\StartOverride]
"0"=dword:00000000
```

Then **open the BIOS** → change SATA mode from **IDE to AHCI**.

Restart → Windows 8/8.1/10/11 will now boot in AHCI mode.

NVMe SSDs and TRIM
- NVMe SSDs use **NVMe Deallocate (Dataset Management)** instead of classic ATA TRIM.
- Since **Windows 8.1**, this command has been supported natively; in **Windows 10 and 11**, it is enabled automatically.
- **No special settings required** → as long as Windows uses the **standard NVMe driver**, TRIM is active.

Common problem cases
- **IDE mode active** → TRIM blocked → **Solution**: switch to AHCI.
- **Marvell controller with vendor drivers** → TRIM blocked → **Solution**: use Windows' standard AHCI driver.
- **RAID array** → TRIM does not work → **Solution**: connect SSD as a single drive.

Validated TRIM-capable configurations

SSD Type	Controller/Port	Mode	Driver	Note
SATA SSD	Chipset SATA port	AHCI	Windows standard AHCI driver	–
SATA SSD	Chipset SATA port (Intel/AMD)	AHCI	Latest vendor drivers	Keep drivers up to date
SATA SSD	Secondary controller SATA port	AHCI	Windows standard AHCI driver	Vendor drivers often incompatible
NVMe SSD	Onboard NVMe port (PCIe)	NVMe	Windows standard NVMe driver	Fully TRIM-compatible

SSD Type	Controller/Port	Mode	Driver	Note
SATA SSD	Chipset port in RAID	RAID	Latest Intel/AMD drivers	TRIM only with single drive
SAS SSD	SAS controller (e.g., LSI, Adaptec)	–	Current firmware & drivers	Must implement SAT layer

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Checklist: Is TRIM active?

1. **Open Command Prompt with admin rights**
   - Start menu type “cmd” right-click *Run as administrator*.
2. **Run the command**
   “‘cmd fsutil behavior query DisableDeleteNotify
3. Interpret the output DisableDeleteNotify = 0 TRIM is active DisableDeleteNotify = 1 TRIM is disabled
4. Check NVMe (optional)

Open Windows PowerShell and enter: Get-PhysicalDisk | Select FriendlyName, MediaType, TrimEnabled Column TrimEnabled shows True if TRIM is active.

> Note: If TRIM is disabled, check BIOS settings, drivers, and controller mode. With RAID or older add-on controllers, TRIM is often not available.

Using the Command Line Version

You can also control defragmentation through the **command line version of O&O Defrag**.
This makes it possible, for example, to integrate it into **scripts** that run automatically at system startup after user logon.

- When started via the command line, the **graphical interface** is not displayed.
- An icon appears in the **task tray**, and progress can be tracked in the **DOS prompt**.
- O&O Defrag runs in the background independently of the interface and prompt.

If you close the DOS prompt or stop the process with **CTRL-Break/CTRL-C**, you can choose:
- Let the process continue running in the background
- End the process immediately

> Tip: If you start O&O Defrag via the command line, you can launch the graphical interface at any time. It will display the current status without interruption.

Invocation
The O&O Defrag command line accepts the following commands and parameters:

OODCMD {C:[,] | … | Z:} | {/{}:{C[,] | … | Z | ALL}} [/OUTPUTFILE:] [/SILENT] [/NOHEADER] [/NOWAIT] [/WAITKEY]

where one of the following actions must be specified:

`ANALYSIS, OPTIMIZE, QUICK, COMPLETE, COMPNAME, COMPACC, COMPMOD, FRAGFILES, SPACE, STEALTH`

Parameter overview with examples

Syntax	Description	Example
`/ANALYSIS:{C[,] | ... | Z | ALL}`	Analyzes the specified drives. Results in prompt or file (via `/OUTPUTFILE`).	`OODCMD /ANALYSIS:C`
`/OPTIMIZE:{C[,] | ... | Z | ALL}`	Starts the **OPTIMIZE defragmentation**.	`OODCMD /OPTIMIZE:C,D`
`/QUICK:{C[,] | ... | Z | ALL}`	Starts the **OPTIMIZE/Quick defragmentation**.	`OODCMD /QUICK:C`
`/COMPLETE:{C[,] | ... | Z | ALL}`	Starts the **OPTIMIZE/Complete defragmentation**.	`OODCMD /COMPLETE:ALL`
`/COMPACC:{C[,] | ... | Z | ALL}`	Starts the **COMPLETE/Access method** (no drive zones).	`OODCMD /COMPACC:C`
`/COMPMOD:{C[,] | ... | Z | ALL}`	Starts the **COMPLETE/Modified method** (no drive zones).	`OODCMD /COMPMOD:D`
`/COMPNAME:{C[,] | ... | Z | ALL}`	Starts the **COMPLETE/Name method** (no drive zones).	`OODCMD /COMPNAME:C`
`/FRAGFILES:{C[,] | ... | Z | ALL}`	Outputs a list of fragmented files.	`OODCMD /FRAGFILES:C`
`/INFO:{C[,] | ... | Z | ALL}`	Displays drive information.	`OODCMD /INFO:ALL`
`/NOHEADER`	Suppresses display of program information.	`OODCMD /ANALYSIS:C /NOHEADER`
`/NOWAIT`	Starts operation, CLI exits immediately.	`OODCMD /OPTIMIZE:C /NOWAIT`
`/OUTPUTFILE:<path>`	Redirects output to a file.	`OODCMD /ANALYSIS:C /OUTPUTFILE:C:\analysis.txt`
`/SILENT`	Suppresses all output.	`OODCMD /OPTIMIZE:C /SILENT`
`/SPACE:{C[,] | ... | Z | ALL}`	Starts the **SPACE defragmentation**.	`OODCMD /SPACE:C`
`/STEALTH:{C[,] | ... | Z | ALL}`	Starts the **STEALTH defragmentation**.	`OODCMD /STEALTH:D`
`/SSDOPTIMIZER`	Gentle optimization for SSDs.	`OODCMD /SSDOPTIMIZER:C`
`/STOP:{C[,] | ... | Z | ALL}`	Stops running operations.	`OODCMD /STOP:C`
`/TRIM`	Sends TRIM command to SSD.	`OODCMD /TRIM:C`
`/THINPROV`	Optimizes VM disk thin provisioning.	`OODCMD /THINPROV`
`/WAITKEY`	Waits for a key press after completion.	`OODCMD /ANALYSIS:C /WAITKEY`

Note: Some methods (COMPLETE/Access, COMPLETE/Modified, COMPLETE/Name, SPACE, STEALTH) do not support speed zones.

O&O DiskCleaner

With **O&O DiskCleaner**, O&O Defrag provides a tool to **search for and remove temporary and unnecessary files** that consume disk space and increase fragmentation.

Benefits - **Recover storage space**: Removes files no longer needed by the system.
- **Improve privacy**: Temporary files, browser caches, or thumbnails may contain remnants of sensitive data.
- **Ease of use**: Analyze and clean with just one click.

You can find O&O DiskCleaner in the **ribbon** under *O&O DiskCleaner*. There you can start an **analysis** or choose **Clean** directly.

Settings
The settings are located **below the drive list**.
Here you can select the file types to be deleted. By default, a **safe preselection** is enabled.

> Note: - The Windows Indexing Service cache and Recycle Bin are disabled by default. - If the index cache is deleted, Windows search may slow down. - Automatically emptying the Recycle Bin may lead to accidental data loss.

File type descriptions - **Temporary files**: Created by the system or programs, not deleted after use. Safe to remove.
- **Temporary Internet files**: Downloaded by browsers and mail programs, often very large. Can be deleted.
- **Downloaded Windows updates**: Leftover installation files. No longer needed.
- **Memory dumps from errors**: Dump files from crashes or driver errors. Can be removed.
- **Windows error reports**: Logs for Microsoft. Can be removed.
- **Thumbnails**: Previews of images and videos. Can be deleted.
- **Setup log files**: Installation log files. Can be deleted.
- **Windows Indexing Service cache**: Contains search index data. Deletion possible, but search speed may decrease.
- **Recycle Bin (not recommended)**: Contains deleted files. Automatic cleanup may result in loss of important files.

O&O DiskCleaner – Analysis 1. Select a drive.
2. Click **Analyze**.
3. After completion, the **settings table** shows all deletable files.
4. The process can be paused or stopped at any time.
5. A **report dialog ("File overview")** shows the results.

O&O DiskCleaner – Cleaning - After starting the cleanup, you can **pause or stop** at any time.
- After completion, the results are documented in the **timeline** and in a **detailed report**.

> Note: Not all files can be deleted. - Files in use or locked by the operating system remain untouched.

Comparison table: File types, storage gain, and risk

File type	Storage gain	Deletion risk
Temporary files	Medium to high	No risk – files are no longer needed
Temporary Internet files	High (depends on browser usage)	No risk – cache data only
Downloaded Windows updates	High (several GB possible)	No risk – updates already installed
Memory dumps from errors	High (depends on crashes)	Low – only needed for analysis
Windows error reports	Low	Low – only relevant for Microsoft diagnostics
Thumbnails	Medium	Low – rebuilt if needed, access may be slower temporarily
Setup log files	Low	No risk – log data only

File type	Storage gain	Deletion risk
Windows Indexing Service cache	Medium	Medium – search function may slow down
Recycle Bin	High (depends on usage)	High – risk of permanently losing important files

Note: For maximum safety, we recommend cleaning the Recycle Bin and index service cache only if you are certain their contents are no longer needed.

Drive Activity

The **drive activity display** in the **Windows taskbar** shows the **read and write operations** of your PC in real time. This allows you to keep track of the current activity of your storage devices.

Enable
You can enable the display via the menu path:
Defragmentation Configuration Show drive activity in taskbar

- An icon with the **current activity** then appears in the taskbar.
- By **right-clicking** on a drive letter, you can directly start a **search on that drive**.

Hide
- **Right-click the drive letter in the task tray** to open the context menu.
- Select **Exit** to hide the drive activity display.

Storage requirements for defragmentation

The following limitations apply to O&O Defrag.
They are **Windows-related** and cannot be bypassed.

Drive size
- All **drive sizes** supported by Windows are supported.
- O&O Defrag is optimized for use on **file systems with very large numbers of files**.
- The **total capacity** of a drive is **irrelevant** for defragmentation.

Directories
- An **unlimited number of directories** can be processed.
- Optimized memory management ensures that all **file and directory information** can be processed.

Free disk space
- **Defragmentation is not possible** if no free space is available.
- For good results, at least **5% of the total capacity** should be free.
- Files **larger than the largest contiguous free space** may require **multiple passes** for defragmentation.

Recommendation
- For faster defragmentation: keep **10–15% free space** available.
- As drive size increases, the required percentage decreases.
- The decisive factor is the **size of the largest file to be defragmented** there must be enough **contiguous free space** for this file.

Calculation examples
- Drive with **500 GB**: approx. **50–75 GB** should be free.

- Drive with **1 TB**: approx. **100–150 GB** should be free.
- Drive with **2 TB**: approx. **200–300 GB** should be free.

> Note: These values are guidelines. Depending on the type and number of files, more or less free space may be required.

Tips and FAQs

Regular defragmentation is the key to keeping your system running at its **highest performance level** over the long term.
O&O Defrag offers several options for this:
- **Automatic defragmentation** in the background
- **Scheduled tasks**
- **Screensaver defragmentation**
- **Manual defragmentation**

Recommended defragmentation plan

Recommended for	Manual Defragmentation	Automatic Defragmentation	Screensaver Tasks	Scheduled Tasks
Gaming PC (constant use)	++		+	
Home desktop PC	+	++	+	
Office desktop	+	++	+	+
Workstation	+	+	++	+
Notebook on battery		+		
Video editing, hard disk recording	++		+	
Server with large files (> 4 GB)	+			++
Server with very many files (> 1 million)	+			++

Legend:
- + = well suited
- ++ = very well suited

Recommendations for different scenarios

- **Gaming PCs**: Manual defragmentation is recommended. Only the user decides when system resources are available. Alternatively, configure O&O ActivityMonitor so that no defragmentation runs while gaming.
- **Home desktop PC**: Enable automatic defragmentation (*All Settings* ⊠ *Automatic Defragmentation*). This keeps the system optimized without manual action.
- **Office desktop**: Same recommendation as for home desktops.
- **Video editing / hard disk recording**: Manually defragment before and after a session. Avoid automatic defragmentation to prevent interruptions.
- **Servers under heavy load**: Run a nightly job with *Optimize/Quick*, and on weekends a full *Optimize* run.

Additional tips

- **Don't wait too long**: Fragmentation begins immediately after installing the operating system. Install O&O Defrag as early as possible to avoid performance loss and reduce hardware wear.
- **Avoid moving files during defragmentation**: Copying, moving, or deleting files forces O&O Defrag to restart calculations, slowing down the process.
- **Automatic defragmentation with thresholds**: In the task dialog under *Drives*, set a fragmentation threshold (e.g., 5%). The task runs only if this value is exceeded, saving unnecessary runs.
- **Notebook use**: O&O Defrag automatically detects the switch between AC and battery power. Defragmentation can be blocked while on battery to **extend battery life**.

> Note: For notebooks, we recommend enabling the option "Pause when computer switches to battery power."

Data security and integrity

O&O Defrag guarantees **full data integrity and security**.
It only uses functions that are **implemented by Windows itself** and synchronize all file access.

- **File attributes** (date, time, system, archive, etc.) and **NTFS security settings** remain unchanged.
- **Shares** remain intact.
- Only **one file per drive at a time** is processed.
  Even in the event of a power failure, at most one file could be affected.

For questions about data security, contact our support: **support@oo-software.com**

Conflicts with shadow copies during defragmentation

Starting with **Windows 7**, shadow copies are enabled by default, storing multiple file versions and restore points.
While this increases data safety, it can cause disadvantages during defragmentation:

- HDDs: Write operations are significantly slowed.
- SSDs: Additional writes shorten lifespan.
- Files moved during defragmentation Windows treats them as *deleted* and creates new shadow copies.
  Result: High storage consumption, overwriting old shadow copies, potential loss of restore points.

Recommendation:
- Disable shadow copies before defragmentation.
- Re-enable afterwards:
- `Windows + R` **sysdm.cpl** **System Protection** **Configure…** *Enable system protection*.

> Note: Disabling system protection removes existing restore points.

O&O Defrag and firewalls

When starting O&O Defrag, your firewall may report an **access attempt (error "10061")**.
Reason: Internal O&O components communicate via **TCP/IP (Port 50300)**, but **only locally** on your computer.

- Do **not disable the firewall**!

- Open Port **50300** or allow O&O Defrag as trusted on first start.
- Alternatively: Add files **OODAG.EXE** and **OODCNT.EXE** to the trusted program list.

If error “10061” persists, check if the services
“O&O Defrag” and **“Event Log”** are running.

Status messages and program output

- All **start and stop times** as well as errors are recorded in the **Windows Event Log**.
- To open the Event Viewer:
  – Control Panel Administrative Tools Event Viewer

Technical FAQs

Why do write operations increase with SOLID/Quick and SOLID/Complete?
- **SSD mechanics:** Each change from `1 → 0` means erase, which counts as a write.
- **SOLID/Quick:** Resets outdated data that the SSD would have erased anyway on the next write.
 Long-term write activity remains the same, but write speed increases.
- **SOLID/Complete:** Reorganizes data, using fewer blocks. Short-term more writes, long-term fewer and gentler.

Why does ClusterView differ between HDDs and SSDs?
- **HDDs:** Traditional cluster structure, small gaps are uncritical. - **SSDs:** Work block-based unused clusters within blocks unnecessarily wear multiple cells. - Solution: Fully consolidate fragments to reduce block usage. - Result: Higher performance and longer lifespan. - New ClusterView shows blocks incl. clusters inefficient usage (e.g., 2 clusters in one block, 3 in another) becomes visible and optimizable.