

O&O software

# O&O DiskImage 18

## Professional / Server Edition

# Table of Contents


1 Introduction ..... 5

2 Get started ..... 7

2.1 Editions ..... 7

2.2 System requirements ..... 8

2.3 Install, license and uninstall ..... 10

2.4 Quick start ..... 15

2.5 Express view ..... 25

3 Back up drives ..... 26

3.1 Back up computers and drives ..... 26

3.2 Image drives ..... 28

3.3 Create a one-click image ..... 31

3.4 Image the changes only ..... 33

3.5 Imaging options ..... 35

4 Back up files ..... 42

4.1 Back up files ..... 42

4.2 Back up file changes ..... 45

4.3 File backup options ..... 46

5 Restore ..... 50

5.1 Restore drives ..... 50

5.2 Restoration options ..... 53

5.3 Restore files ..... 55

6 Clone drives ..... 56

6.1 Clone drives ..... 56

6.2 Cloning options ..... 58

7 Different hardware (M.I.R.) ..... 62

7.1 Restore on different hardware ..... 62

7.2 Restore automatically with M.I.R. ..... 63

7.3 Adapt manually ..... 65

7.4 Restrictions of M.I.R. ..... 67

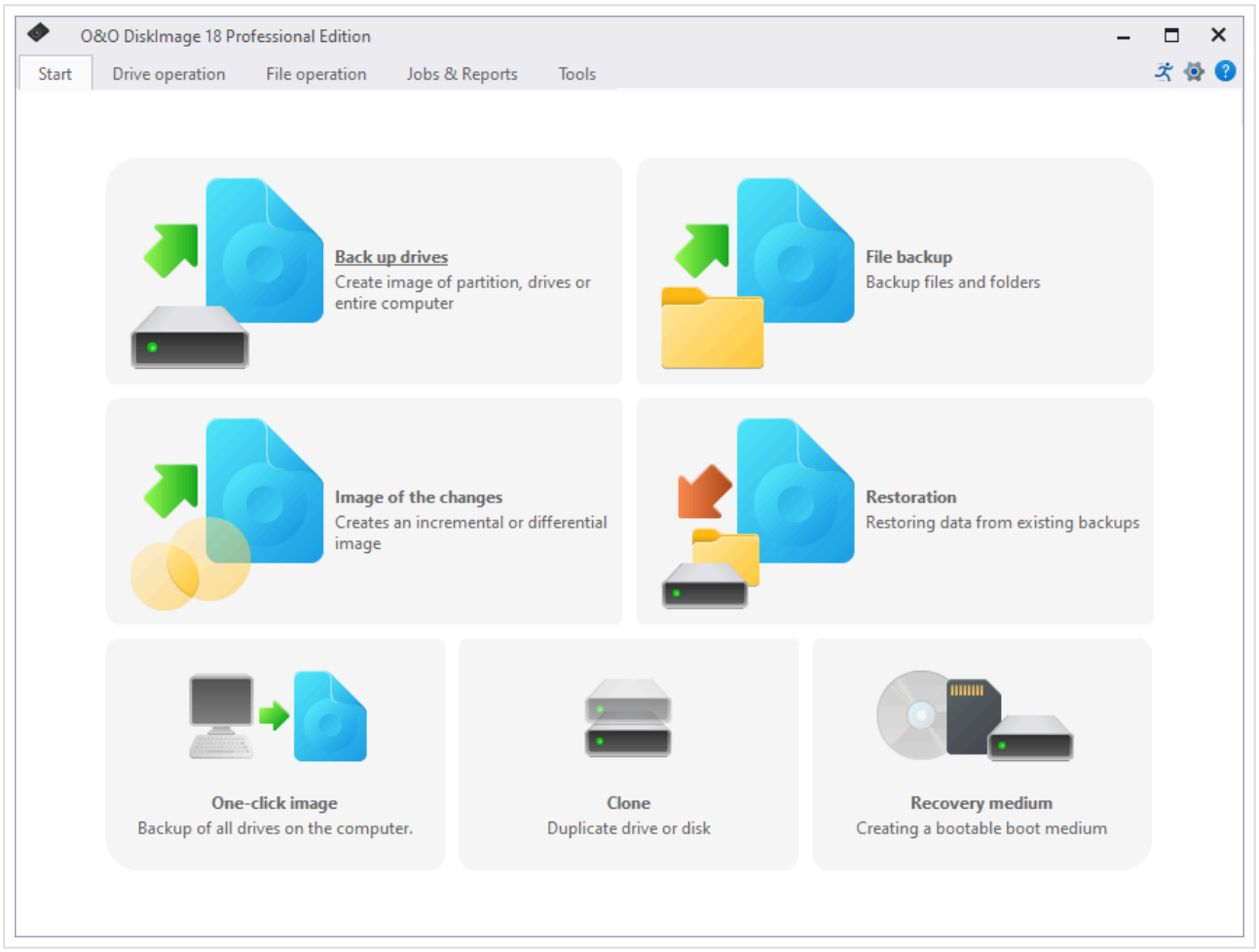
8 Boot medium and recovery 68
8.1 Start from a bootable medium 68
8.2 Create a boot medium 70
8.3 Load drivers 73
8.4 BitLocker 75
8.5 O&O DiskImage RecoveryPartition 76
8.6 O&O DiskImage ToGo 79
9 Tools 82
9.1 Tools 82
9.2 Convert and merge images 84
9.3 VHD and VHDX files 87
9.4 Read and validate image files 88
9.5 Virtual drives 90
9.6 Command prompt 94
9.7 Computer identity and drive check 99
10 Jobs and reports 102
10.1 Jobs and reports 102
10.2 Add as job 104
10.3 Manage jobs 112
10.4 Job files 115
10.5 Reports 116
11 Settings 117
11.1 Program settings 117
11.2 Default settings 119
11.3 Notification 126
11.4 Network authentication 128
11.5 Use FTP 131
11.6 Tray icon 134
12 Script interface 136
12.1 Script interface 136
12.2 Conditions 137
12.3 Environment and template parameters 138

12.4 Commands 139
12.5 File-based backup functions 140
12.6 Disk management functions 143
12.7 Functions for system properties 153
12.8 Sector-based imaging functions 155
12.9 Command-specific parameters 162
12.10 Global parameters 189
12.11 Preset values of selected parameters 190
12.12 Examples of command files 191
13 Reference 193
13.1 Glossary 193
13.2 Registry entries 195
14 Troubleshooting 199
15 FAQ 203
16 Support and more from O&O 208

# Introduction

O&O DiskImage 18 creates images of entire computers and of individual drives, including dynamic drives and RAID systems, backs up files and folders, restores them, clones drives and restores a system on different hardware. This manual describes the Professional Edition and the Server Edition of version 18.

> **Earlier version**
>
> This is the manual of O&O DiskImage 18. It is no longer updated. The manual of the current version is available at manuals.oo-software.com/oodiskimage/.




## What you can do

- **Image computers and drives** – the entire computer with one click, individual drives, or only the changes since the last image. See Back up computers and drives.

- **Back up files** – individual files and folders in a file backup. See Back up files.
- **Restore** drives, the entire computer or individual files, also on different hardware with M.I.R. See Restore drives and Restore on different hardware.
- **Clone drives** – back up and restore in one step, for example to replace a disk. See Clone drives.
- **Start without Windows** from a boot medium, the O&O DiskImage RecoveryPartition or O&O DiskImage ToGo. See Start from a bootable medium.
- **Automate** imaging and backups with jobs, or control them with command files. See Jobs and reports and Script interface.

## Where to start

| You want to | Start here |
|---|---|
| Install and activate the program | Install, license and uninstall |
| Get to know the main functions | Quick start |
| Check which edition you need | Editions |
| Solve a problem | Troubleshooting and FAQ |

## License

O&O DiskImage is commercial software. You can try it during the trial period; continued use requires a valid license. See Support and more from O&O.

# Editions

O&O DiskImage is available for both desktop PCs and servers. In addition, there are specially-priced volume license packages (Combi Packs) available. For further information, please contact our sales team: sales@oo-software.com or an O&O Partner.

The Professional Edition is intended for imaging a desktop computer or individual drives. It cannot be used on a server operating system.

The Server Edition can be used on both servers and desktop computers.

# System requirements

- The system requirement of each operating system has to be fulfilled
- Supports 64-bit operating systems
- Windows® 8.1 till Windows® 11 (all editions)
- Windows® Server 2012 till Windows® Server 2022 (all editions)

| | Professional Edition/Special Edition | Server edition |
|---|---|---|
| Windows® 11 | yes | yes |
| Windows® 10 | yes | yes |
| Windows® 8.1 | 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 |

:::note

A minimum of 4GB RAM is required for booting with an O&O DiskImage bootable medium.

:::

:::note

When using O&O DiskImage, please make sure that the disk drivers needed by your operating system are all the most current versions available. If you're unsure about this, refresh the driver(s).

:::

:::note

Dynamic disks are only supported for those features available under Microsoft Windows. Given that Microsoft Windows does not always support dynamic disk bootablity, we cannot guarantee system cloning and restoration will be successful when using dynamic disks.

:::

**Access permissions** In order to install and register O&O DiskImage you must be a member of a local administrator group or possess an equivalent level of permissions. Domain administrators normally already

possess these permissions.

## Supported file systems

O&O DiskImage supports the following file systems: FAT, FAT32, NTFS and as of O&O DiskImage 12, exFAT as well.

:::note

With O&O DiskImage you can backup the used sectors of all file systems that it supports. Whenever a volume or partition is found with an unknown file system, O&O DiskImage will automatically create a forensic image, i.e., an image of all sectors. If you wish to make an image like this manually, you'll need to switch from image all used sectors to forensic imaging in **imagingoptions**.

:::

| File System | Explanation |
|---|---|
| **exFAT** | Starting from O&O DiskImage 12, the exFAT-file system is supported. This was designed especially by Microsoft in regard to flash drives, and delivers better performance than FAT. It is also much better against structural damage to the file system and protected against data loss. |
| **FAT** | FAT is the oldest data system, the roots of which go back to MS DOS. It is supported by Windows. O&O DiskImage can be used without any problem on FAT drives. |
| **FAT32** | FAT32 is the native file system of Windows 95b/98/Me. It offers some advantages compared to the older FAT. FAT32 drives are Windows- supported by default and can be defragmented without any problem using O&O DiskImage. |
| **NTFS** | The NT file system was developed completely new for the Windows NT family. It offers the option of security restrictions on the file level, increases the security against data errors, and achieves higher performance.It is supported by Windows. |

# Install, license and uninstall

Installing O&O DiskImage is very straight forward. Please follow the steps below:

1. Start the computer on which you would like to install O&O DiskImage.
2. Login as local administrator or as a user possessing comparable permissions.
3. Start the installation file for O&O DiskImage, which you have either downloaded from our Server or have on your personal CD ROM.
4. After the setup program has been successfully initialized, please follow the installation dialog.
5. When prompted, restart your computer.

:::note

Please make sure that no other backup or imaging software is installed on your computer when installing or working with O&O DiskImage. This can lead to complications with the filter driver, especially when different software is working simultaneously on multiple drives.

:::

## Enter license

:::note

In order to activate the product after installation or to gain access to the Full Version at a later time, you must possess a valid license key. This license key is also called a registration code, serial number, or product ID.

:::

The dialog for registration always appears automatically at the start to guide you if you are using an unregistered version or have entered the registration code incorrectly. The registration wizard allows for a simple registration process.

When you select the option **I want to enter my license**, a dialog box will appear where you can enter the registration code you received when purchasing the software.

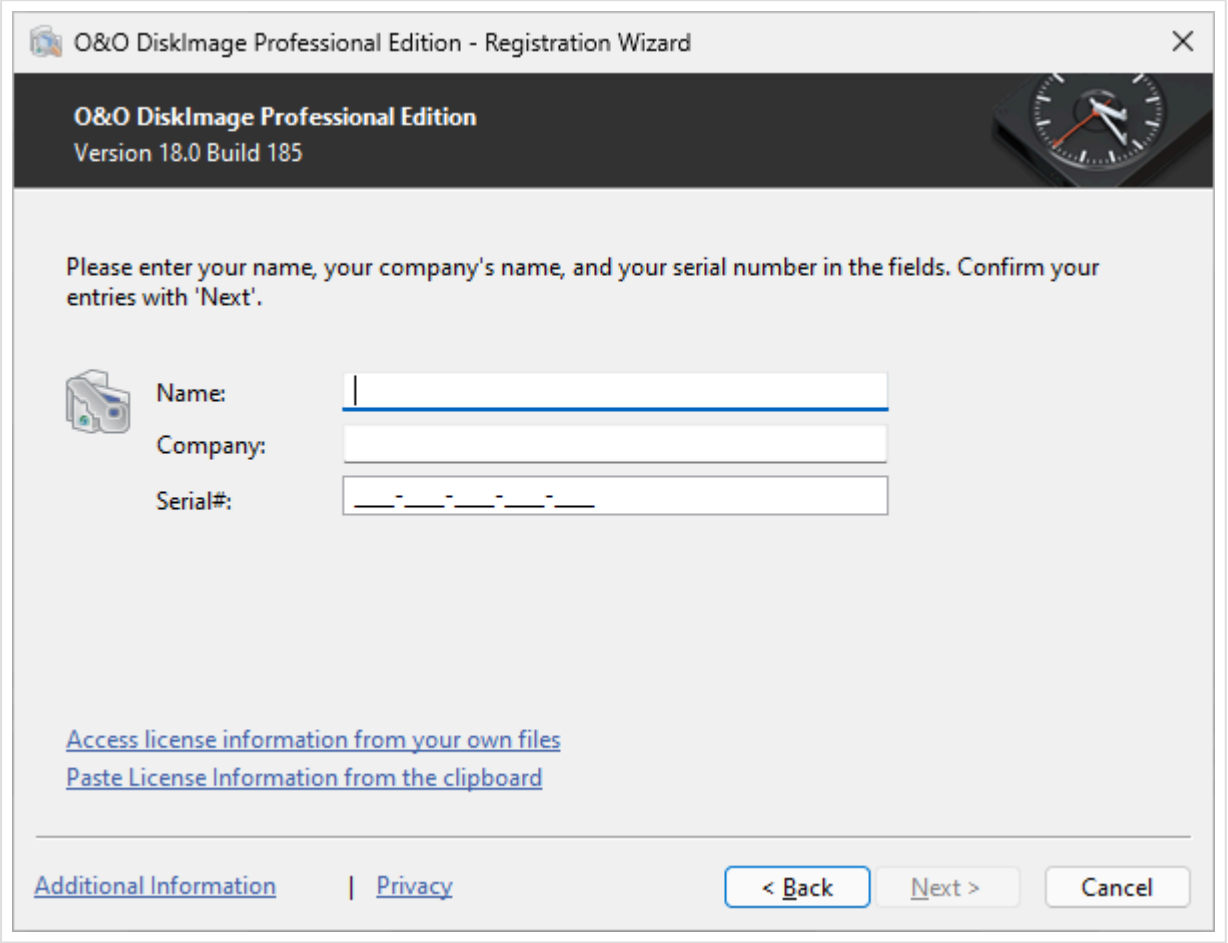
- If you have purchased the **download version** of the software, please enter the license information ("Name", "Company" and License key), just as they are written in the confirmation E-Mail you received.
- If you have purchased the **box version** of the software, please enter the license key as it is written on the license card included. In addition, please enter your name and if needed your company.

1. Please make sure that you do not confuse the digit “1” with “I” or enter any empty spaces where they don’t belong.
2. Press **Next** to save the registration data or **Cancel** to leave the dialog window without saving the data.
3. When you have correctly entered the license code you will receive a confirmation in the dialog window.

Should you run into any problems when entering your registration code, please contact our Support Team.

**Information about licensing** You can test O&O DiskImage for 30 days free of charge and with no obligation. The remaining trial period will be displayed each time you start the program.

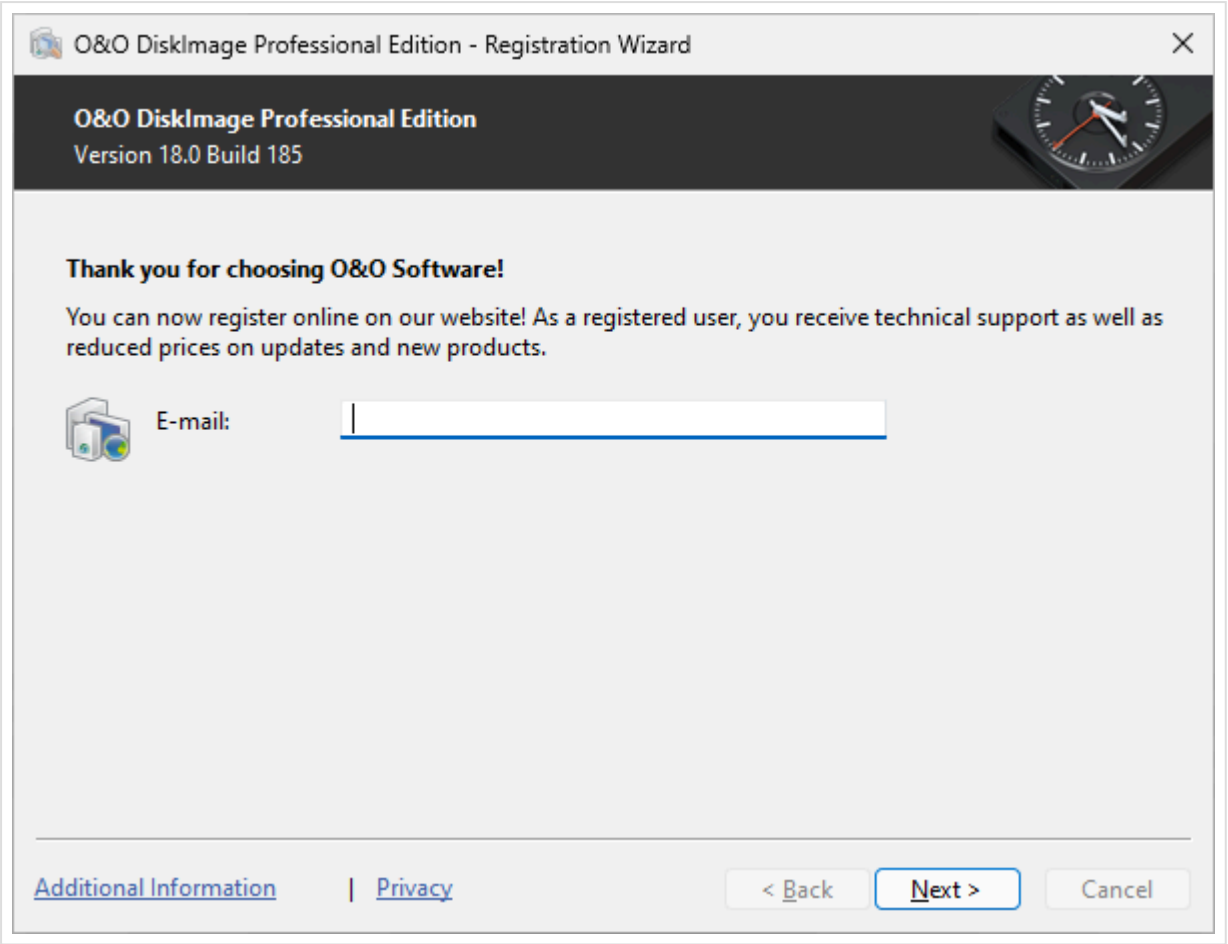
If you would like to implement O&O DiskImage in your company or as a technician for your customers, then please contact our resellers or distributors.




## Online registration

To register O&O DiskImage online, you'll need the license key you received when you purchased the program.

To register online, start O&O DiskImage. The questions related to online registration always appear at the start, provided you haven’t registered online.




**What are the advantages of online registration?** Online registration gives you the benefit of having your customer data kept safely in our files, which means we can provide you with even better service. If, for example, you accidentally lose your license key, we can quickly resend it to you without any problem. The license key is needed for using the full version of a program, getting updates, and for reinstalling the program when you make a new setup of your computer.

Further advantages will let you:

- Be supplied with the latest information about our products
- Make free updates on new versions of purchased items (minor updates)
- Upgrade to a new version at a special discount price (major update)
- Obtain support from our customer service

**How do I register online?** If O&O DiskImage was purchased on our Online Shop, you've automatically registered with us. If O&O DiskImage purchased at a retailer, you will be asked if you want to register while entering the license information. You then have the option of either registering immediately or at another time. All you'll need is a functioning Internet connection and a valid license key.

You may also complete the registration form right here: http://www.oo-software.com/en/register

Just return the completed online form by clicking “Send” and you’ll be eligible to take full advantage of our O&O Customer Service.

## Uninstall

To remove O&O DiskImage from your computer, please follow the instructions below:

1. Open the **Control Panel** from the **Start menu** and select **Software**.
2. Select **O&O DiskImage** from the list of installed software programs and then click **Change**.
3. In the InstallShield Wizard click **Next**.
4. In the next dialog select the option **Remove program.**
5. Select **Remove the O&O DiskImage user data**, if you want to remove this together with the uninstallation.
6. Confirm the uninstallation of O&O DiskImage with **Remove**. You'll receive a confirmation notice when uninstallation is completed.
7. After a successful uninstallation, you'll need to restart the computer when prompted in order to apply all settings.

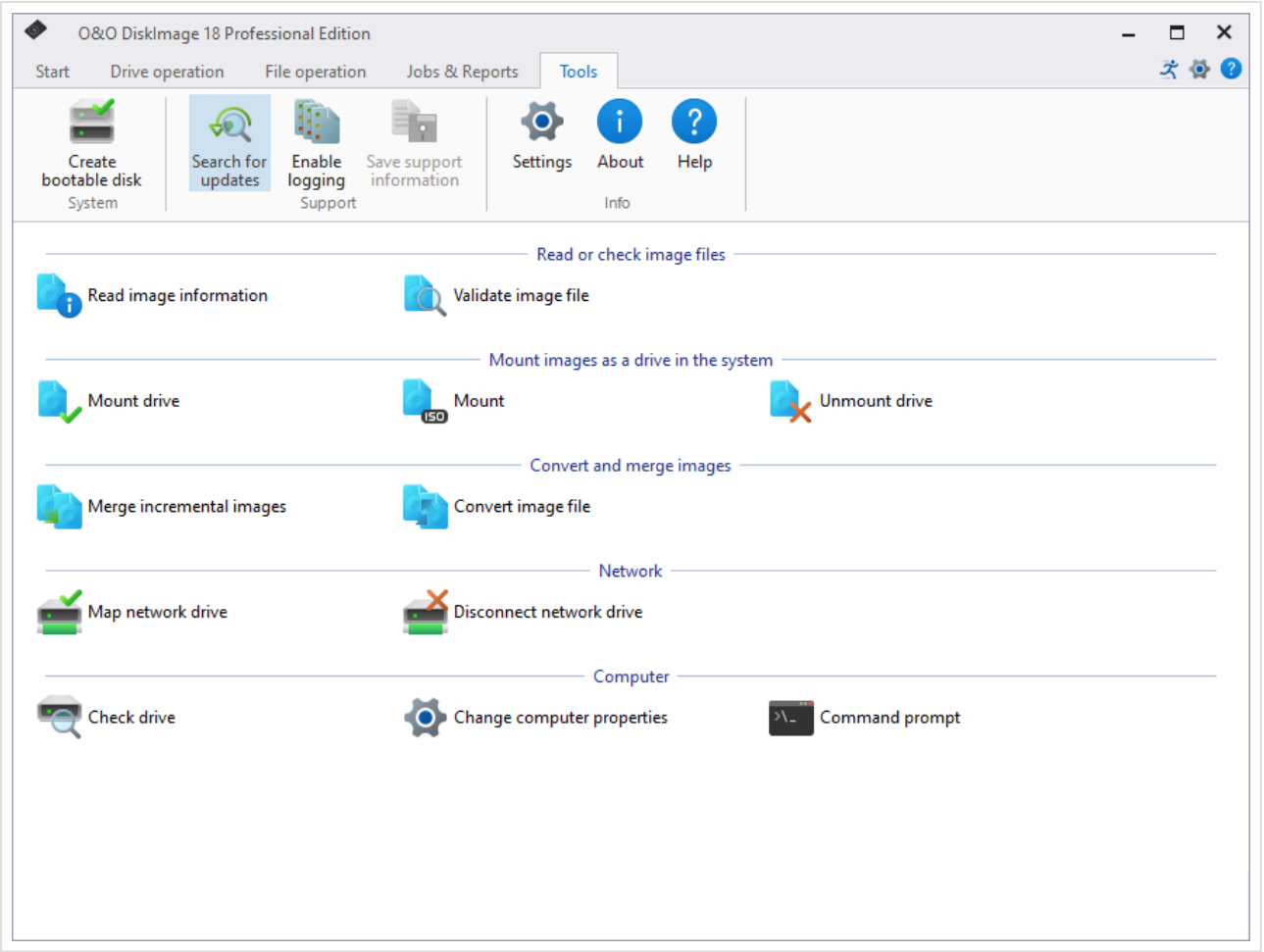
## Updates

O&O DiskImage automatically checks if your program version is a current one or if a newer version is available.

:::tip

Under **Tools/About O&O DiskImage** you can see your license data and the number of your program version.

:::




So-called "Minor Updates" (Version 18.0 to 18.1, 18.2, etc.), where smaller changes in the program have been made, are free. "Major-Updates", such as from version 18 to 19, must generally be purchased.

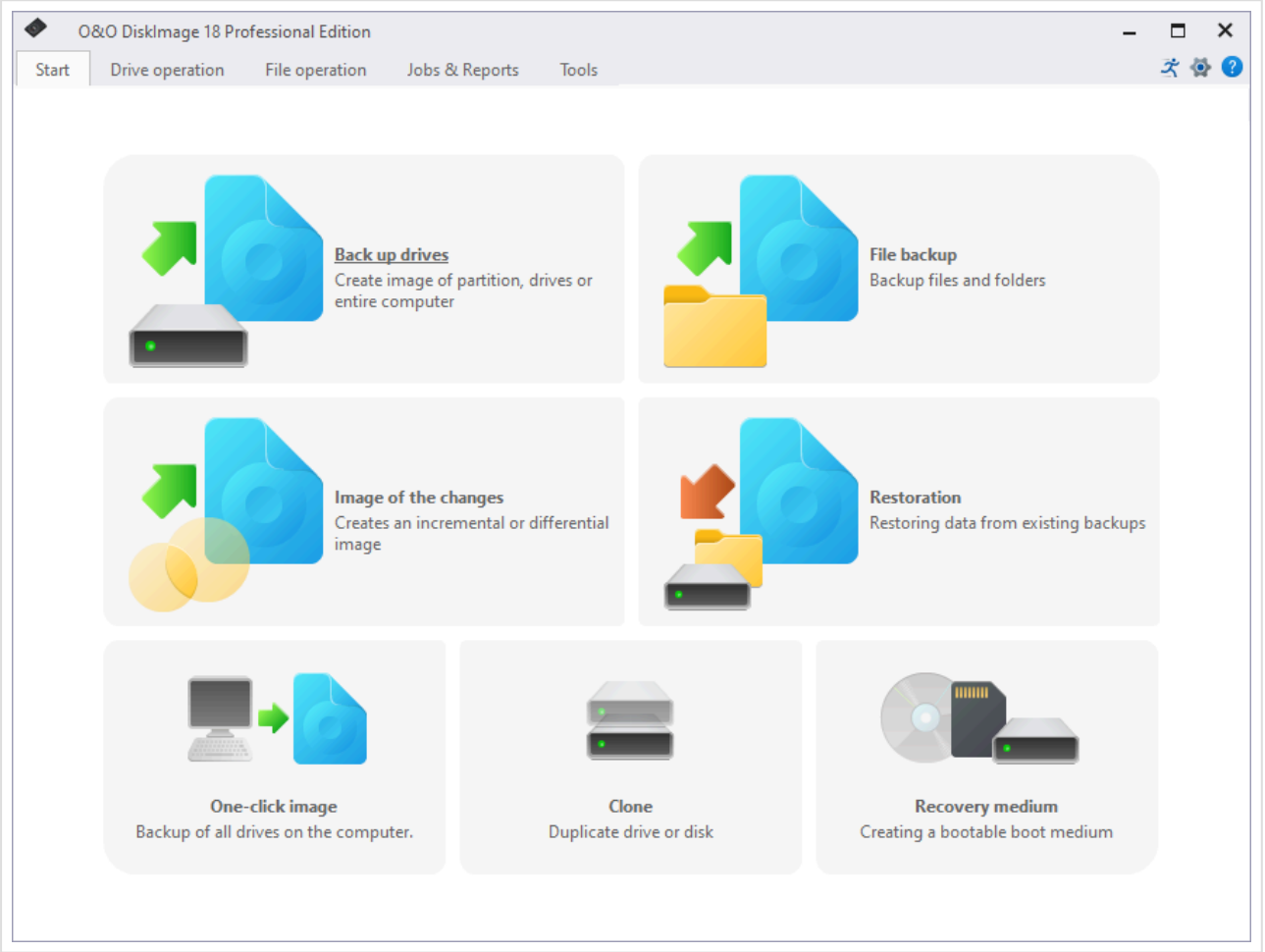
:::warning

If you are using O&O DiskImage from a network and performing a major update, you will need to copy the password file if you want to use the automatic authentication. After a full installation and the restart, you will need to place the password file in the O&O DiskImage default folder. After restarting, the password management has to be started and the password has to be entered for the password file. As a result, the required initializations will be run and automatic authentication can continue to be possible.

:::

# Quick start

In this section we will explain how, after successfully installing O&O DiskImage, you can take images of drives or your entire computer and restore them back to your computer.




**Start O&O DiskImage**

- Start O&O DiskImage vie the Desktop shortcut or via the Windows menu **Start/All Programs/O&O Software/O&O DiskImage/O&O DiskImage**.
- For the simplified view select **O&O DiskImage Express**(Express View).
- **O&O DiskImage Tray** starts the TrayIcon, which is shown in the info area in the task bar and informs you on the activity status of O&O DiskImage.

You can access the program help by clicking on **Help** in the menu bar in the tab Help or by pushing **F1**.

# Image individual drives

O&O DiskImage will let you image individual drives (partitions/volumes). This enables you to image system and data drives separately from each other. In case of data loss, it then only becomes necessary to restore the data drive. You don't need to restore your entire computer.

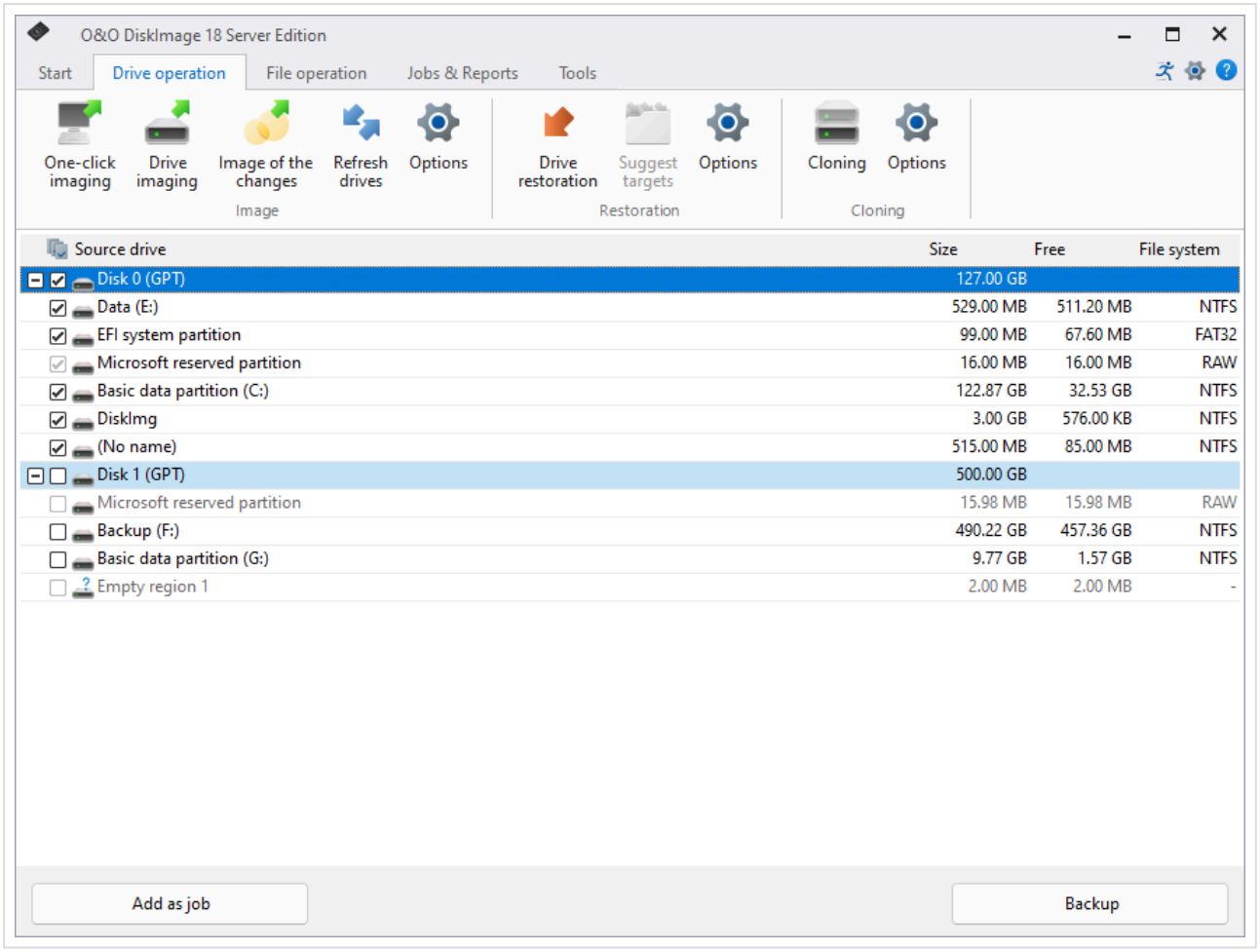
To create an image of one or more drives, please follow the instructions below:

1. In the start page select **Drive imaging**.
2. Select one or more drives from the drive list. Enable the check next to the drive you want to select.
3. Optionally, you can specify further settings under **Imaging options** or add the selected activity as **Job.**
4. To start the imaging process click on **Start drive imaging**.
5. Enter the target path of the drive on which you want to save the image. You can either accept the suggested default path or select another location. Under **Program settings**, you can also select individual default paths.
6. The image is automatically named after the date of creation. You can, however, enter a name manually. All information from the image will be saved and can later be accessed through Image Information.
7. Select **Start**. The image file will now be created.

:::note

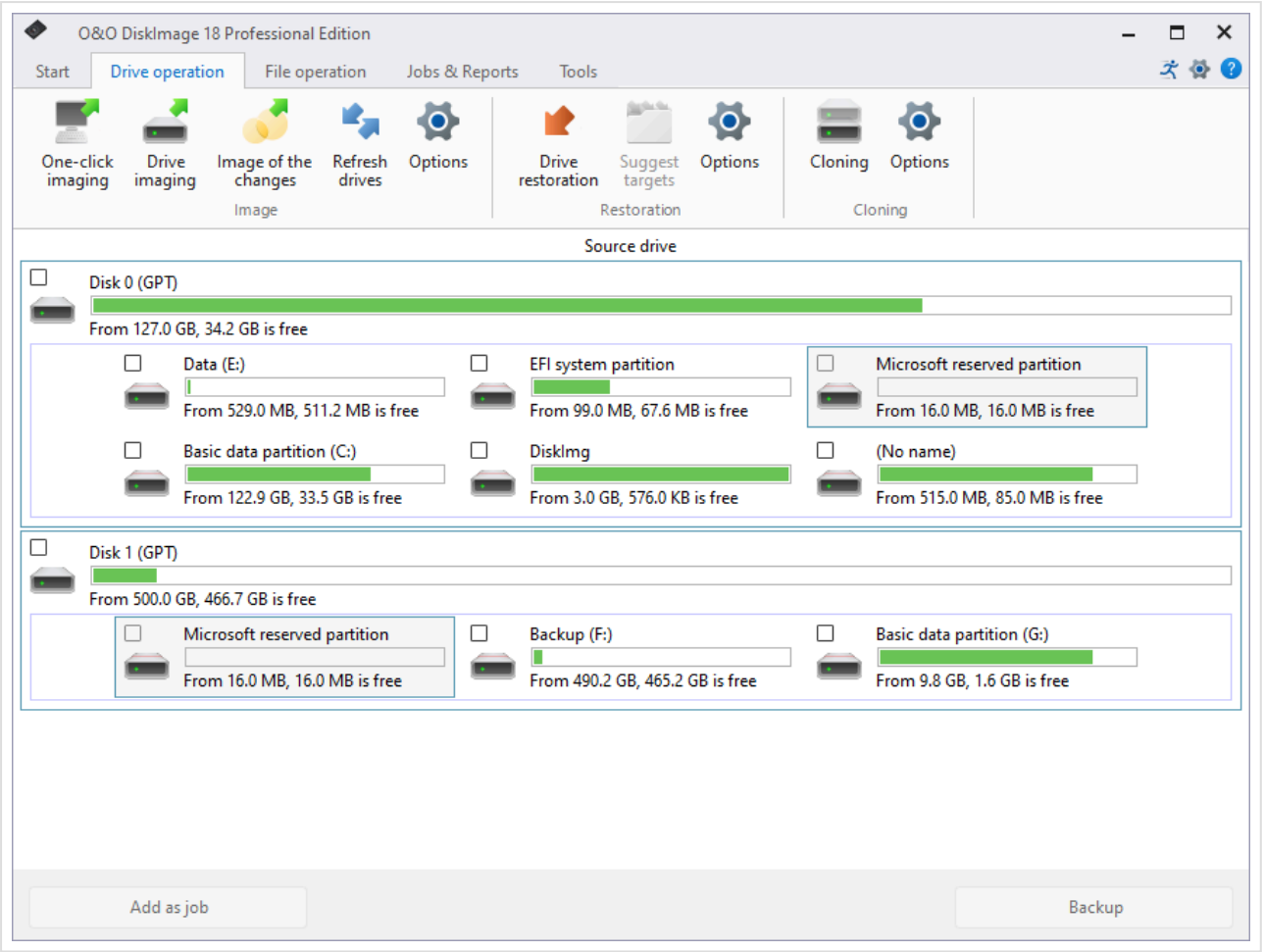
If there is not enough space to store the entire image, you will be prompted to enter a new target path during the imaging process.

:::




## Drive lists

Although the drive list in the Professional Edition appears somewhat different than the one seen in the Server Edition, this is only a question of presentation: the functionality of both Editions is here identical.




## Image the entire computer

One-click imaging is the fastest and easiest way to create a complete image of all your data and settings. One-click imaging is especially useful if you are using O&O DiskImage for the first time, or have not yet created an image of your computer. Your entire computer including the system partition can be imaged with just one click. The compression method (LZNT1) and the imaging method (imaging used sectors) are set as default.

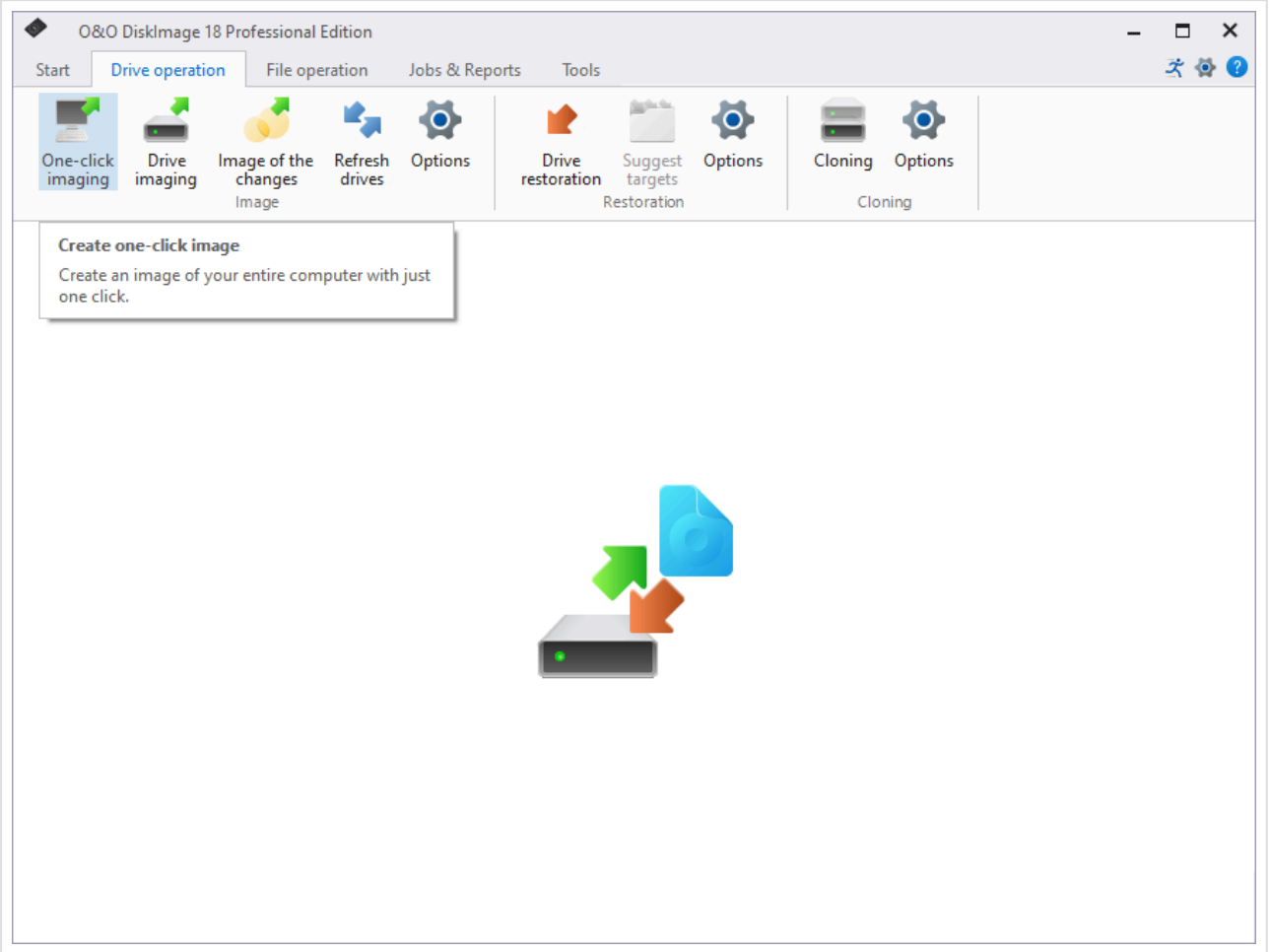
:::note

We recommend using an external storage medium, e.g. a USB hard disk or a network drive, as target folder for One-click imaging.

:::

1. Start O&O DiskImage and select **Drive imaging** on the Start page.
2. Now click the symbol **Create one-click image** in the activity bar.
3. Check to make sure the target path is set to your desired storage location. The [...] button allows you to navigate to any folder.
4. The image is automatically named after the creation date. You can however enter a name manually.

5. Click **Start** to begin the imaging process. The imaging process can take some time depending on the size of the hard disk(s).




## Restore the entire computer

**Restore entire computer** In order to restore your entire computer or system partition, you need to start O&O DiskImage from a bootable medium under Windows PE. Please proceed as described in chapter Start directly from bootable disk .

:::tip

For the restoration of an image onto a computer with hardware different than the source computer, please consult the notes in chapter **Machine independent restoration (M.I.R.)**.

:::

1. Start O&O DiskImage directly from the bootable medium.
2. Select **Drive restoration** in the start page of O&O DiskImage.
3. Click **Select image** in the form field or navigate to the storage location of the image in the browser button.
4. Select the image containing the system partition i.e. all drives of your computer and click **Open.**

5. All drives included in the image will be shown in the drive list.
6. Check the drives you want to restore from the image. If you want to restore your entire computer, check all drives.
7. Then select the target drive or disk that should be overwritten with data from the image.*
8. Click the Start drive restoration symbol to start the restoration process.
9. After restoration is successful, you can restart your computer.

***Note:** Keep in mind when selecting the target drive that in Windows PE as of Windows Vista, drive letters are different: Drive C: (normaly containing the non-active operating system) will be assigned another letter (for example D).

## Clone drives

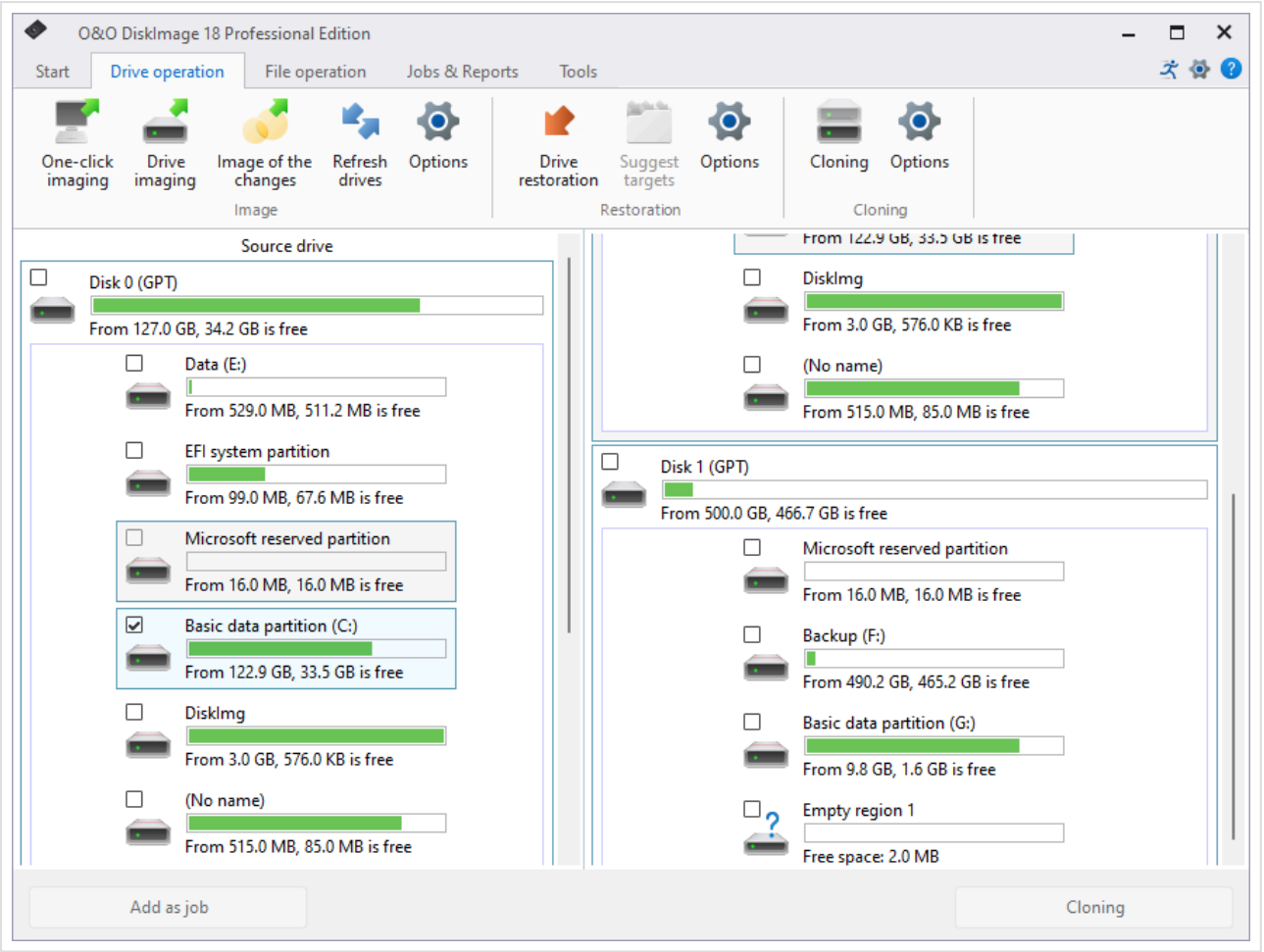
Cloning is recommended if you wish to replace one disk with a new one. This process combines imaging and restoration in one step. Cloning can be performed file-based or forensically. File-based cloning transfers all recognized data onto the target and this method is fully adequate in most scenarios.

We recommend forensic cloning for scenarios where the disk being cloned has a file system not supported by O&O DiskImage or you need to recover data. This will involve transferring every sector of the source onto the target. Forensic cloning can take some time and does place demands on computer performance.

Entire storage volumes or individual drives can be cloned, which in turn can be used instead of the originals. This function allows you to clone a drive and all its saved data without creating image files. The source disks/drives will be reproduced without any changes.

Please keep in mind that a clone requires much more free space than an image.

Unlike images, there are **no** incremental or differential clones possible for reducing the data volume of successive "Clone drives"clones. In addition, a clone **cannot** be compressed or encrypted compared to an image.




## Restore drives

To restore one or more drives from an image, proceed as follows:

1. If you want to restore one or more drives from an existing image, click **Drive restoration** on the O&O DiskImage start page.
2. Select the image you want to restore in the DropDown list of **Select image**. If the proposed images (*.obk) are not the ones you want to restore, check your drives and enter the path to the image file.
3. Select the image file (*.omg, *.vhd or *.vhdx) from the browser and click on **Open**.
4. All drives contained in the image will then be displayed.
5. Click the drive that you want to restore ("play back").
6. Then, select the target drive for restoration by checking the box next to it. You can either replace an existing drive or create a new one: for example, in an empty sector.
7. Optionally, you can specify further settings for the restoration under **Restoration options**.
8. Whenever you have specified all settings, click on **Start drive restoration** to start the restoration.

:::warning

During restoration, the image overwrites your selected drive with the data of the drive contained within the image. All data saved on the target drive is thereby lost and replaced by that of the image.

:::

:::note

If your image is split among various disks, all these disks will be required for a restoration. If you have created an incremental image, all images - from the last complete image to the last incremental image - will be needed.

:::

:::note

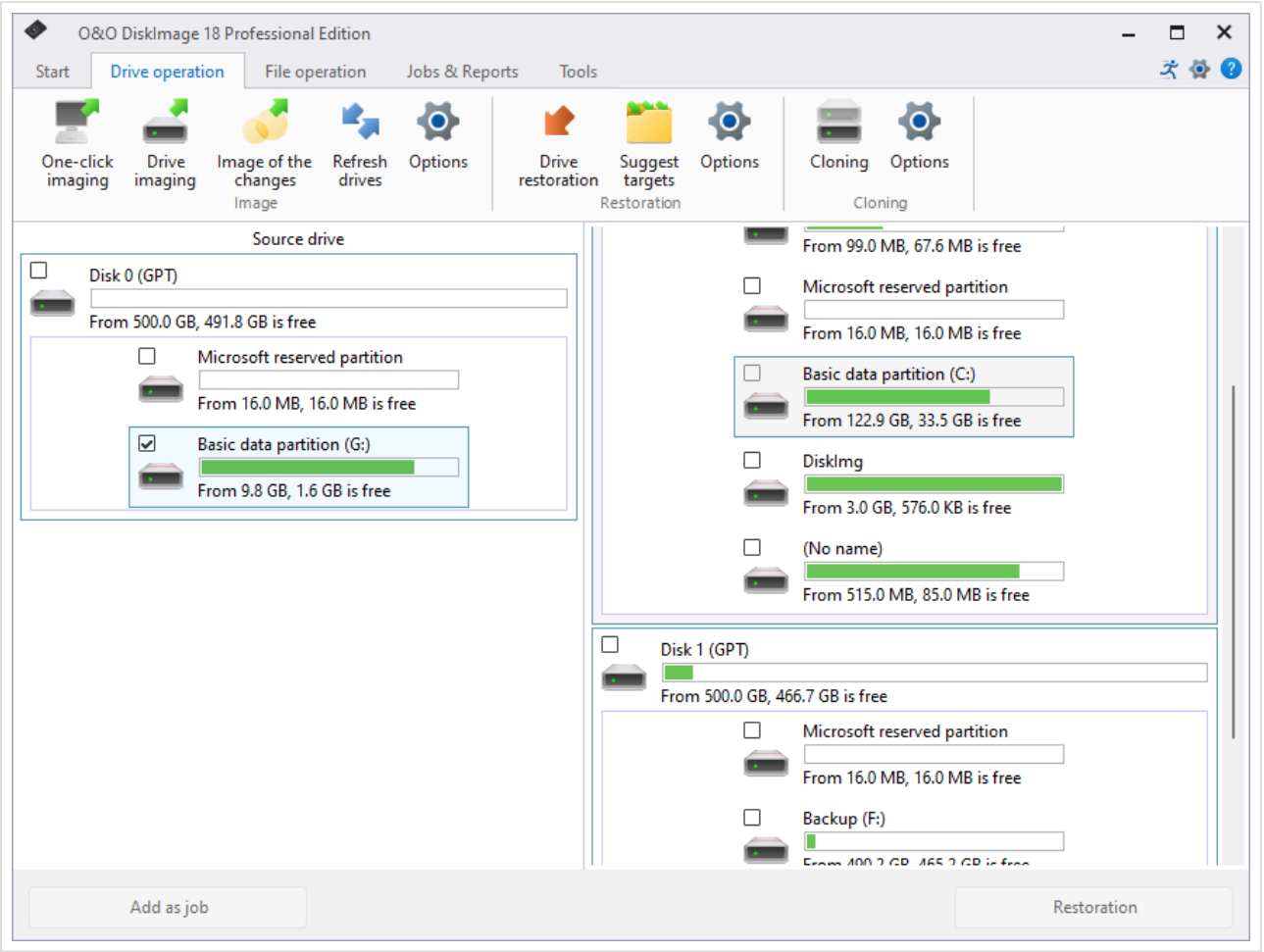
If you have a imaged an entire hard disk and the restoration is run on a different hard disks, then the new hard disk must possess at least as much space capacity as the source hard disk.

:::

:::note

If you want to restore an entire system or system partition, you'll need to start your computer with the O&O DiskImage bootable medium and perform the restoration from there, seeStart directly from the bootable disk. If you should run a restoration of the system partition to different hardware, read chapter: Restoration on different hardware.

:::




## O&O DiskImage RecoveryPartition

O&O DiskImage saves the recovery environment on the computer itself, so that in the event of system failure the system can be started directly from there. - including, of course, the last system image.

https://www.youtube.com/watch?v=20XdhlTpZVI

Thanks to the integration into the system, the O&O DiskImage RecoveryPartition can be accessed immediately so that the last system image can be restored directly. If the Windows operating system does not start or faulty drivers must be uninstalled, with the integrated recovery environment, all O&O tools are available to get the system up and running again as easily as possible.

More information can be found here: Create a new O&O DiskImage RecoveryPartition

## Image the changes only

If you only want to store the changes since the last image, you can create an **Image of the change**.

To create an image of the changes, you need to have created at least one complete image of the drives or folders involved.

## Differential/incremental imaging

As a base image you can use either the complete image created using the “Used sector imaging”, “Forensic imaging” or “Direct forensic imaging”, or by using a previously created incremental image/differential image.

Follow the instructions below:

1. Please make sure that the drive containing the base image is connected to your computer.
2. Start O&O DiskImage and select **Image of the changes** on the start page.
3. Select your base image in the explorer window and click **Open**.
4. Now you can either select the recommended target folder for saving the image, or enter a new target path. For the sake of clarity, we recommend saving the base image and any subsequent images in one folder. The image is automatically named after the creation date. You can however enter a name manually.
5. Now click **More options** (if you want to specify further settings) or on **Start** to initiate the imaging process.

:::note

When creating an image of the changes, O&O DiskImage compares each sector of the existing image with the corresponding sector of the (source) disk being imaged. This might require more time than a complete image. The image of the changes, however, takes up much less space than a complete image.

:::

:::note

The option **Compare data with checksums** is set by default. The last incremental image is all you'll need as a base image for creating a new incremental image **Use checksums to administer unchanged data** is not set, you will need the last base image and all the incremental images previously created, because all of them must be accessed for creating the new image.

:::

## Backup changes in a file

A complete image or a previously created image of the changes can be used as base image.

Follow the instructions below:

1. Please make sure that the drive containing the base image is connected to your computer.
2. Start O&O DiskImage and select **Start File backup** on the start page. Now select **File backup of the changes**.
3. Select your base image in the explorer window and click **Open**.
4. Now you can either select the recommended target folder for saving the image or enter a new target path. For the sake of clarity, we recommend saving the base image and its subsequent images in one folder. The image is automatically named after the creation date. You can however enter a name manually.
5. Now click **More options** (if you want to specify further settings) or **Start** to initiate the imaging process.

# Express view

The Express view provides a simple and intuitive way of using the main features of the program. You can use the Express view for creating, mounting, and restoring images. You can also switch easily from one view to another.

:::tip

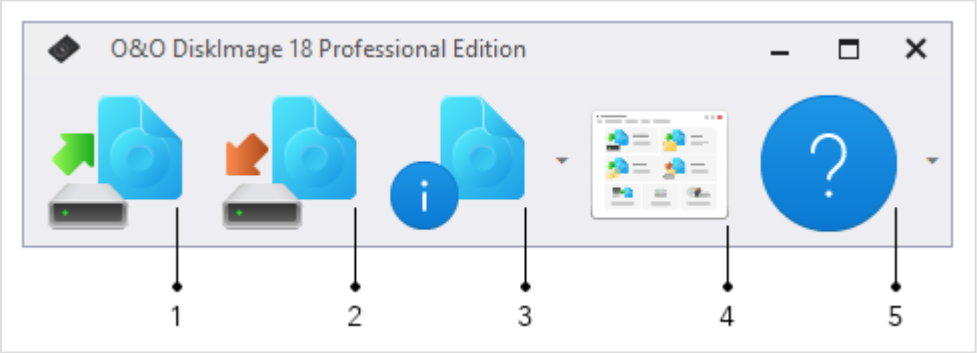
If you want to hide certain function from the user, you can disable them over the Registry entry ExpressFlags. For further information consult chapter Explaining the Registry entries.

:::

:::note

Restoring the system partition is not possible while the computer's running. Use the boot medium for this and run O&O DiskImage directly from it.

:::

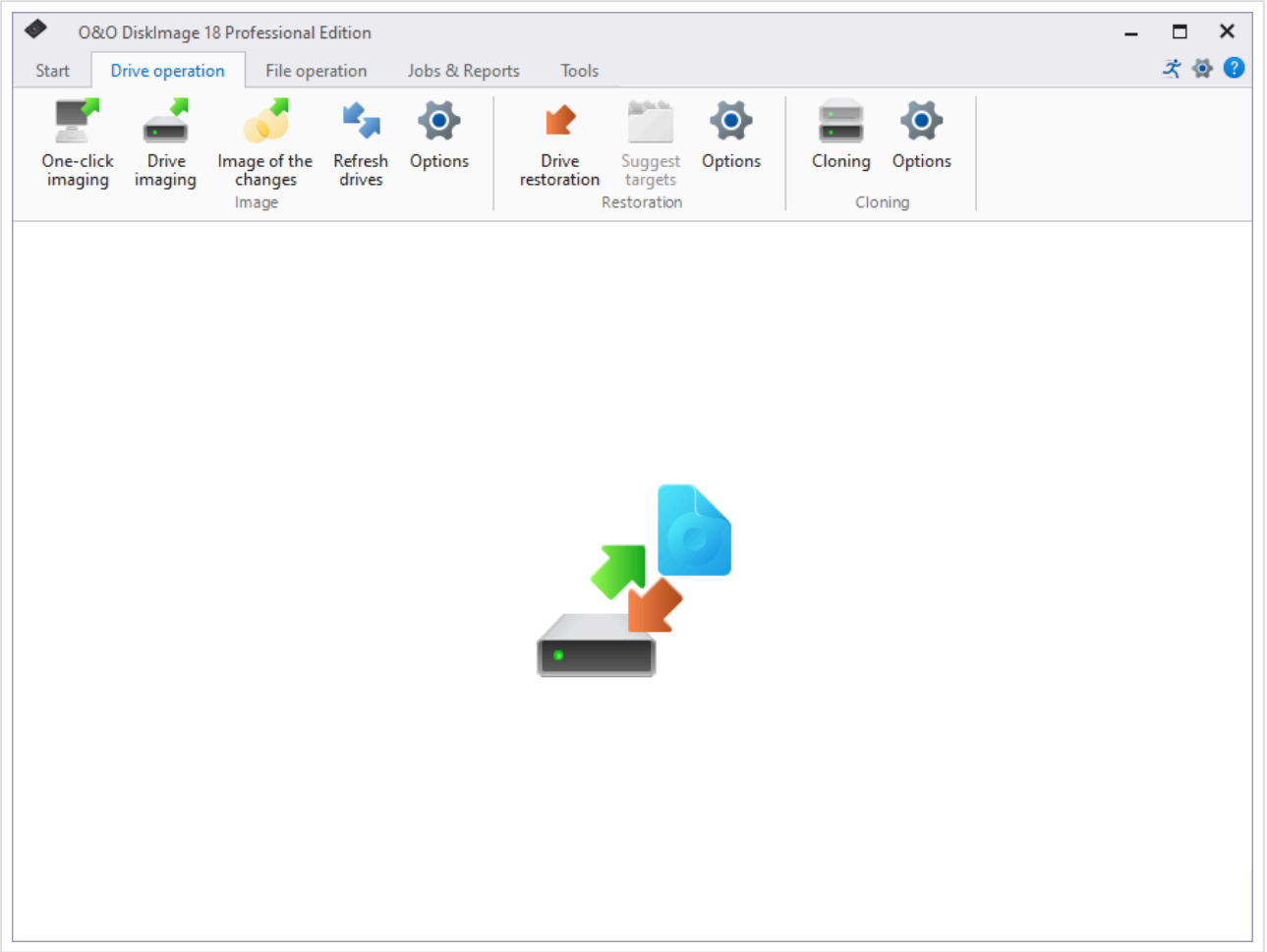



**Key**

1. Create image - starts the imaging of one or more drives.
2. Restore image - starts the restoration of the image.
3. Read image information - displays detailed information about an image file. You can also use the drop-down menu (small arrow on the right) to mount and unmount an image from a drive.
4. Restores the full view of O&O DiskImage's user interface.
5. Displays the program's Help.

# Back up computers and drives

All available features involving backup/imaging, cloning, or restoration can be found under **driveoperations**.




## Imaging functions

O&O DiskImage offers two different types of imaging; complete imaging and imaging of the changes. Any image, regardless of the type, can be created either file-based or forensically.

A file-based complete image, such as one for partition D, contains all data found on the partition. The size of the image corresponds approximately to the used space plus the space needed for metadata. Sector-based imaging is enabled by default and is fully adequate for most user scenarios.

The size of a forensic image of a partition corresponds to the size of the disk, regardless of how the current space is allocated. All clusters of the disk will be backed up according to their current status. You can enable forensic imaging if you experience data loss and need the exact status of that disk in order to recover data, but

still have to use the system. In cases like this, we recommend using the O&O DiskImage bootable disk. Doing so helps prevent O&O DiskImage from overwriting the lost data. Further information about this can be found under Create bootable disk

An image of the changes requires either a complete image or another image of the changes as a starting point. A check will be made to see if any data has been added, removed, or changed. These changes will then be saved in the new image. This type of imaging is especially useful for saving space. The image will be the size of the changed data plus any metadata.

:::note

For security reasons, we recommend a limit of five to ten images of the changes for every complete image. For optimal protection, create one complete image and then five images of the changes. After that, you can create a new complete image that can be used as the base for another five to ten images of the changes.

:::

# Image drives

O&O DiskImage will let you image individual drives (partitions/volumes). This enables you to image system and data drives separately from each other. In case of data loss, it then only becomes necessary to restore the data drive. You don't need to restore your entire computer.

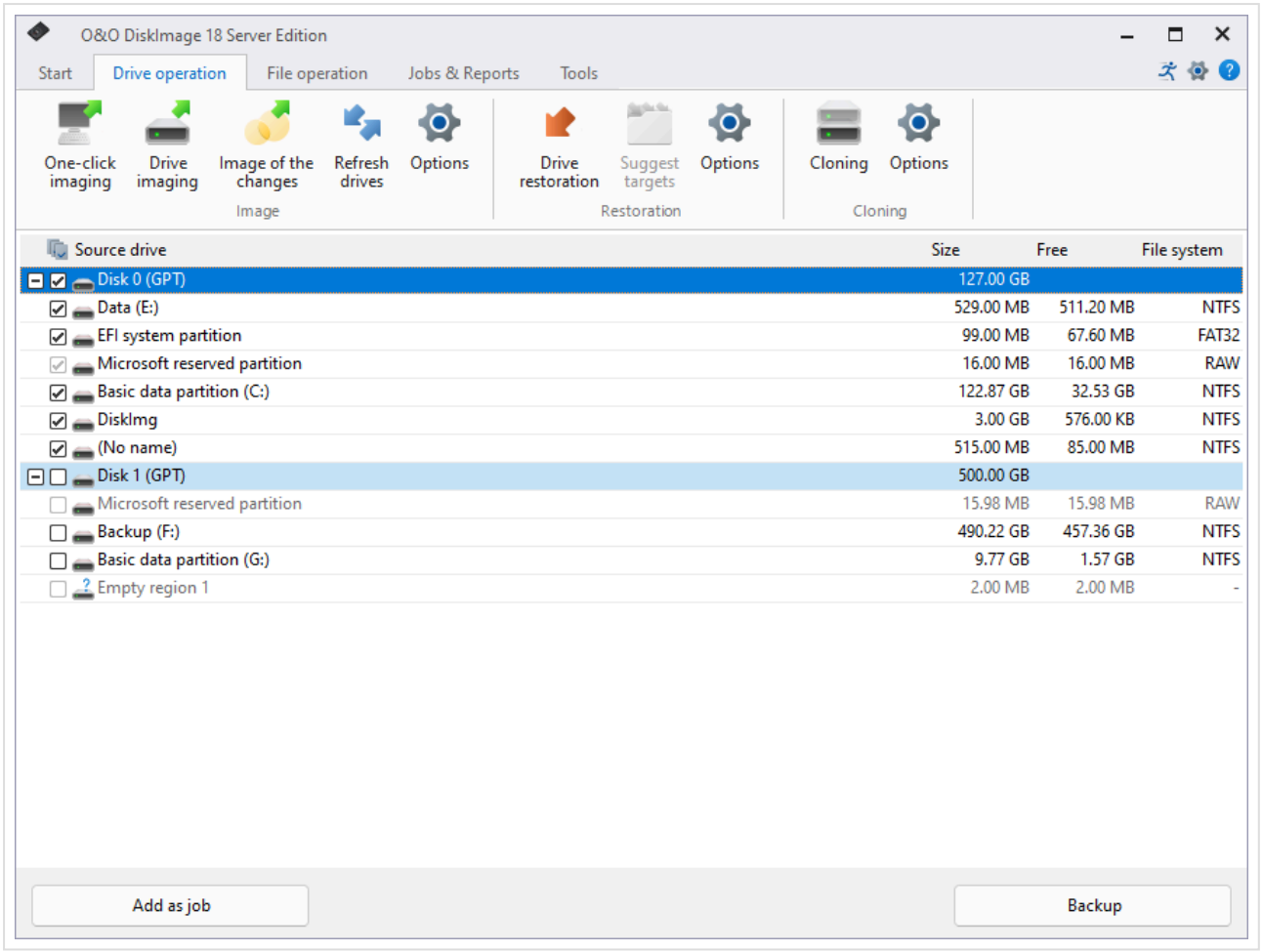
To create an image of one or more drives, please follow the instructions below:

1. In the start page select **Drive imaging**.
2. Select one or more drives from the drive list. Enable the check next to the drive you want to select.
3. Optionally, you can specify further settings under **Imaging options** or add the selected activity as **Job.**
4. To start the imaging process click on **Start drive imaging**.
5. Enter the target path of the drive on which you want to save the image. You can either accept the suggested default path or select another location. Under **Program settings**, you can also select individual default paths.
6. The image is automatically named after the date of creation. You can, however, enter a name manually. All information from the image will be saved and can later be accessed through Image Information.
7. Select **Start**. The image file will now be created.

:::note

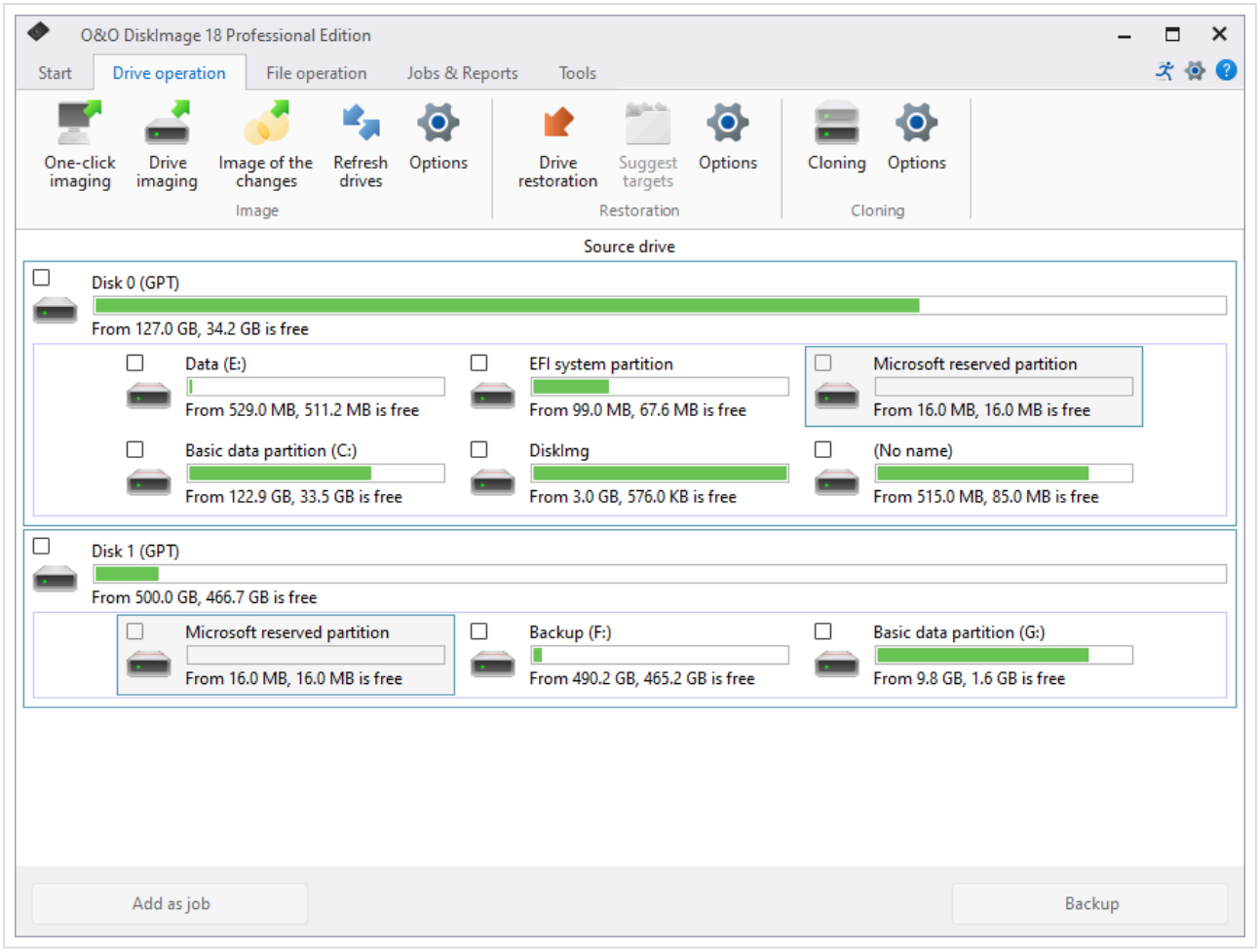
If there is not enough space to store the entire image, you will be prompted to enter a new target path during the imaging process.

:::




## DiskView

The interactive graphical display gives you an overview of all the hard disks. You'll be able to see used space, as well as the size of the partitions. You can select a drive for imaging.


O&O DiskImage 18 Professional Edition
Start
Drive operation
File operation
Jobs & Reports
Tools
One-click imaging
Drive imaging
Image of the changes
Refresh drives
Options
Image
Drive restoration
Suggest targets
Options
Restoration
Cloning
Options
Cloning
Source drive
Disk 0 (GPT)
From 127.0 GB, 34.2 GB is free
Data (E:)
From 529.0 MB, 511.2 MB is free
EFI system partition
From 99.0 MB, 67.6 MB is free
Microsoft reserved partition
From 16.0 MB, 16.0 MB is free
Basic data partition (C:)
From 122.9 GB, 33.5 GB is free
DiskImg
From 3.0 GB, 576.0 KB is free
(No name)
From 515.0 MB, 85.0 MB is free
Disk 1 (GPT)
From 500.0 GB, 466.7 GB is free
Microsoft reserved partition
From 16.0 MB, 16.0 MB is free
Backup (F:)
From 490.2 GB, 465.2 GB is free
Basic data partition (G:)
From 9.8 GB, 1.6 GB is free
Add as job
Backup

# Create a one-click image

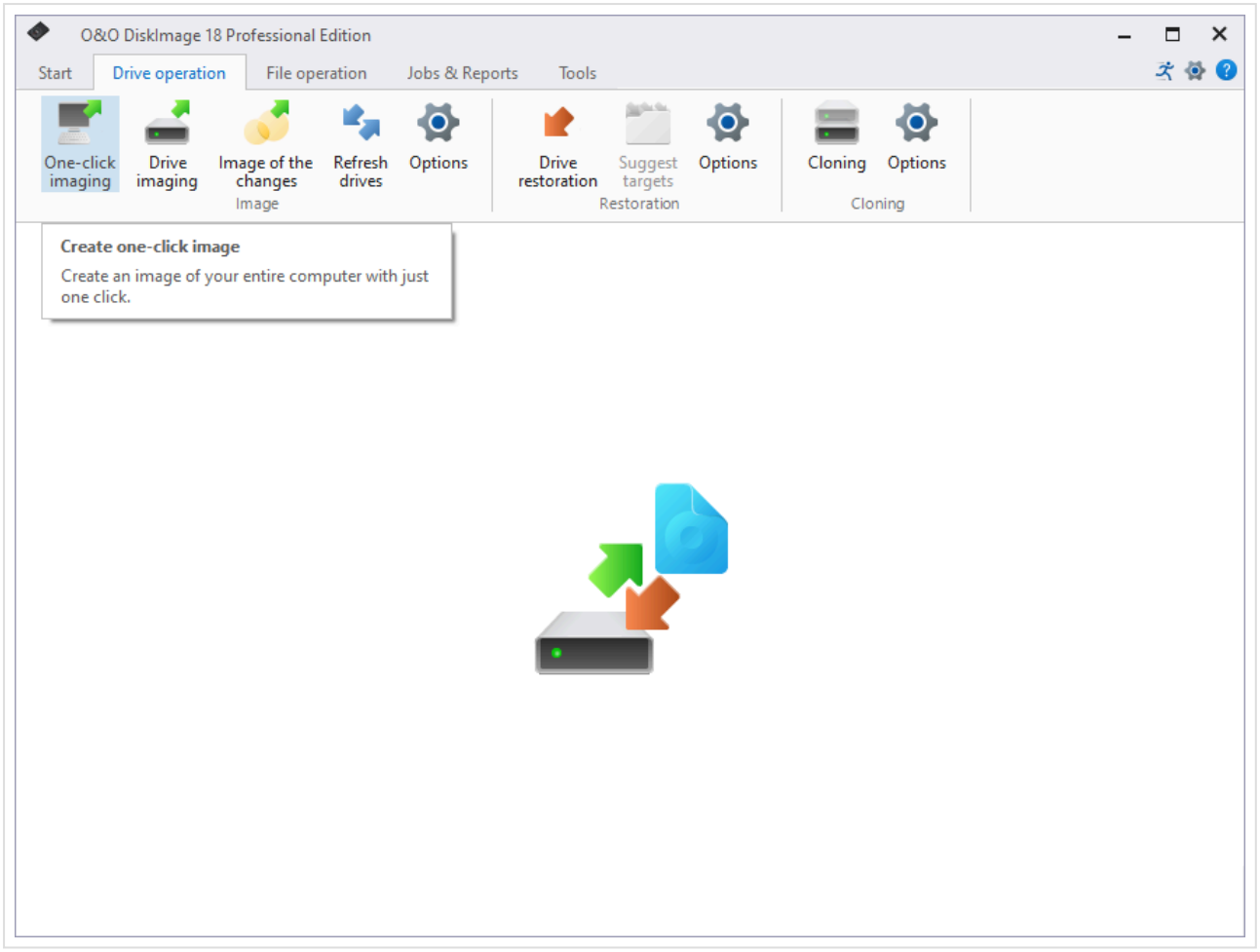
One-click imaging is the fastest and easiest way to create a complete image of all your data and settings. One-click imaging is especially useful if you are using O&O DiskImage for the first time, or have not yet created an image of your computer. Your entire computer including the system partition can be imaged with just one click. The compression method (LZNT1) and the imaging method (imaging used sectors) are set as default.

:::note

We recommend using an external storage medium, e.g. a USB hard disk or a network drive, as target folder for One-click imaging.

:::

1. Start O&O DiskImage and select **Drive imaging** on the Start page.
2. Now click the symbol **Create one-click image** in the activity bar.
3. Check to make sure the target path is set to your desired storage location. The [...] button allows you to navigate to any folder.
4. The image is automatically named after the creation date. You can however enter a name manually.
5. Click **Start** to begin the imaging process. The imaging process can take some time depending on the size of the hard disk(s).


O&O DiskImage 18 Professional Edition
Start
Drive operation
File operation
Jobs & Reports
Tools
One-click imaging
Drive imaging
Image of the changes
Refresh drives
Options
Image
Drive restoration
Suggest targets
Options
Restoration
Cloning
Options
Cloning
Create one-click image
Create an image of your entire computer with just one click.

# Image the changes only

If you only want to store the changes since the last image, you can create an **Image of the change**.

To create an image of the changes, you need to have created at least one complete image of the drives or folders involved.

## Differential/incremental imaging

As a base image you can use either the complete image created using the “Used sector imaging”, “Forensic imaging” or “Direct forensic imaging”, or by using a previously created incremental image/differential image.

Follow the instructions below:

1. Please make sure that the drive containing the base image is connected to your computer.
2. Start O&O DiskImage and select **Image of the changes** on the start page.
3. Select your base image in the explorer window and click **Open**.
4. Now you can either select the recommended target folder for saving the image, or enter a new target path. For the sake of clarity, we recommend saving the base image and any subsequent images in one folder. The image is automatically named after the creation date. You can however enter a name manually.
5. Now click **More options** (if you want to specify further settings) or on **Start** to initiate the imaging process.

:::note

When creating an image of the changes, O&O DiskImage compares each sector of the existing image with the corresponding sector of the (source) disk being imaged. This might require more time than a complete image. The image of the changes, however, takes up much less space than a complete image.

:::

:::note

The option **Compare data with checksums** is set by default. The last incremental image is all you'll need as a base image for creating a new incremental image **Use checksums to administer unchanged data** is not set, you will need the last base image and all the incremental images previously created, because all of them must be accessed for creating the new image.

:::

## Create a job for incremental or differential imaging

In order to create a differential or incremental imaging job, you'll need a complete or base image that was previously created. This complete image will serve as a base for creating differential/ incremental imaging jobs.

The first image after the complete image is always a differential image. Incremental images can be based on a differential or other incremental images.

1. Select **Drive imaging** from the O&O DiskImage Start Page.
2. At the top, click on **Imaging Options** and activate **Image of the changes** then select the base image. Now close the options Window.
3. Now click on **Add as job**.
4. Enter the name and the schedule for the image in the job dialogue.
5. Under Imaging you can either use the standard path or manually enter another storage location for the image.

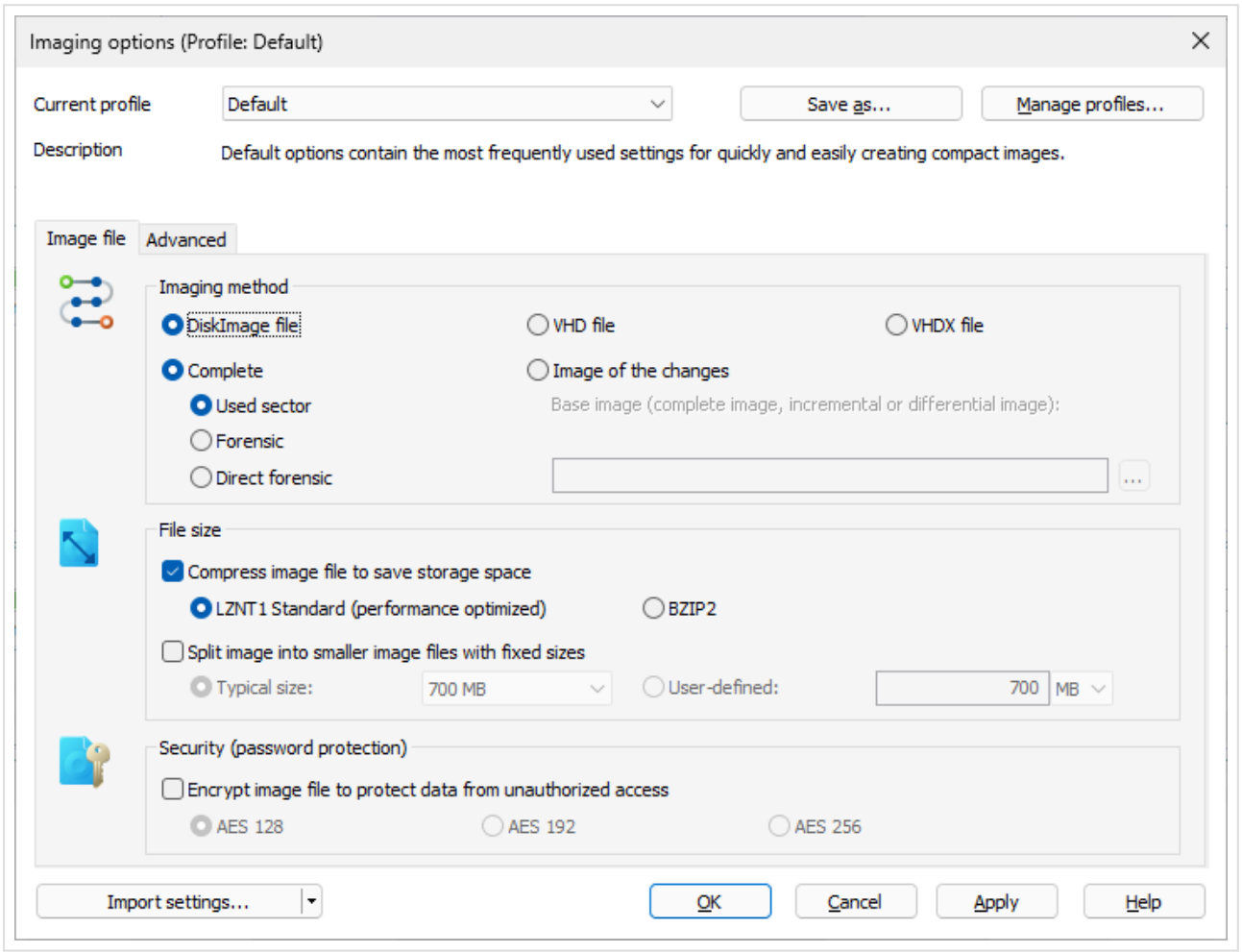
The option **Use created image as base image for the following execution** is enabled by default. Incremental images will always be created based on the last image of changes. As a result of this, the data volume of the incremental image will end up being very small. All previous cumulative images and the last complete image will be needed for restoration. We recommend saving the complete image as well as any successive image of the changes in one folder.

If this is not possible, the default check has to be removed from **Disable user inquires while task is running**. The process is only partially automatic because every time an imaging is performed, all earlier images will be requested. If these are not entered, the job will be aborted as a result of error.

The selection check for **Use created image as base for the following execution** is enabled by default. If you disable it, all further images will be created as differential ones using the last complete image for their base. Restoration will then require the last differential image along with the complete. Incremental images that were created in the meantime will no longer be needed. The data volume of these differential images is correspondingly larger than a series of incremental images.

# Imaging options

Under the menu heading Drive operation, you can specify settings and set them as default for every new image by clicking **Drive operation/Imaging options**.




## Select the imaging method

Under **Drive operation/Imaging options/Image file** you can specify which imaging method should be applied as standard to every new image. In most cases, the default option **Used sector** is recommended.

**Used sector imaging** Using this imaging method will limit the imaging process to only used sectors on a drive. This method will let you save time, computer performance, and disk space. Used sector imaging is set in the program by default.

**Image of the changes** If you only want to save changes made since the last imaging, select **Image of the changes** as method under Imaging options. This will allow you to create an image that saves only those

changes that have occurred since the last base image.

While creating an image of the changes, O&O DiskImage compares each sector of the existing image with the corresponding sector of the disk(source)being imaged. This might require more time than a complete image. An image of the changes, however, takes up much less space than a complete image.

:::note

If you want to create an image of the changes, you must have created at least one complete image of each drive that can then serve as a base image. Afterwards, the image of the changes you've created can also serve as a new base image.

:::

:::note

The option **Use checksums to administer unchanged data** is always set by default. The last incremental/differential image created is enough to serve as the base image when creating an **Image of the changes**. If **Use checksums to administer unchanged data** is not set, you will need the last base image and all existing incremental images because these must be accessed as part of the imaging process.

:::

**Forensic imaging** This imaging method is especially useful when creating images of non-supported file systems or when, for example, you would like to recover deleted data from a source drive using special data recovery software. With this method, an exact sector-level copy of the source drive is made. By saving all sectors of a partition or drive, the unoccupied and deleted portions of file systems can be imaged in their entirety.

**Direct forensic**

:::note

Please note that direct forensic imaging of an active operating system is only possible if our snapshot driver is installed. It will otherwise not be possible to create a consistent image.

:::

Direct forensic imaging is a special case. The difference, however, lies in data being read over deep system interfaces. As with regular forensic imaging, a complete copy of a source drive will be created. This makes it possible to, among other things, image an encrypted hard disk using encryption software.

Please note that direct forensic imaging is intended for imaging encrypted disks using encrypted data. This data remains encrypted even after the image is restored. If the source drive being used is an encrypted drive, only sector-based restoration is possible. The file-based restoration or browsing of such an image is not possible. In addition, spanned volumes (stripped/spanned) are also excluded from this, since the logical link here between the regions is taken over by the operating system. Direct forensic imaging makes no sense if the drives are not encrypted. Here we recommend forensic imaging because all sectors of the drive, including the sectors marked as free, will be included in the image.

## Specify the size of an image file

An image can be split into multiple image files. If a disk doesn't have enough space to contain a full image of your selected drives, you will automatically be requested to enter another target location. It is also possible to manually set the maximum size of an image file before creating the image. If the image being created is larger than the entered file size, additional image files will be created.

This function is especially useful when you plan to burn your image onto a CD/DVD at a later time. Sometimes a CD/DVD is not large enough to contain the entire image file. We recommend your limiting image files to the size of the blank CD/DVD onto which you will be writing your images.

The image file can also be split at a later time using the **Convert image file** function. It is, however, recommended to split images at the time they are created to avoid any confusion that may arise.

Under **Drive operation/Imaging options/File size/Split image into smaller files with fixed sizes** you can specify the size of individual image files.

## Encryption

Your data can be securely encrypted using the recognized AES method. This permits O&O DiskImage to provide your image with an extremely high level of security with a key length of up to 256 bits.

You can select the encryption level for your files under **Drive operation/Imaging options/Image file/Security**. If you then start the imaging process (**Drive imagings**), enter a password when being prompted.

A belated encryption of the image is possible under **Convert image file**.

## Compress the image

Under **Drive operation/Imaging options/Image file** you find the settings **Compress image file to save storage space**. You can choose from the LZNT1 Standard or theBZIP2 process.

**LZNT1:**This is a compression type based on the Lempel-Ziv algorithm, which is laid out on a real time application. Speed is preferred over the rate of data compression.

**BZIP2:** is a block type compression process. Compression rate is preferred over velocity.

You can also compress the image after creation under **Convert image file** in the Tools menu.

:::note

Compression increases the time required to create an image file. However, the file then requires less space on the disk.

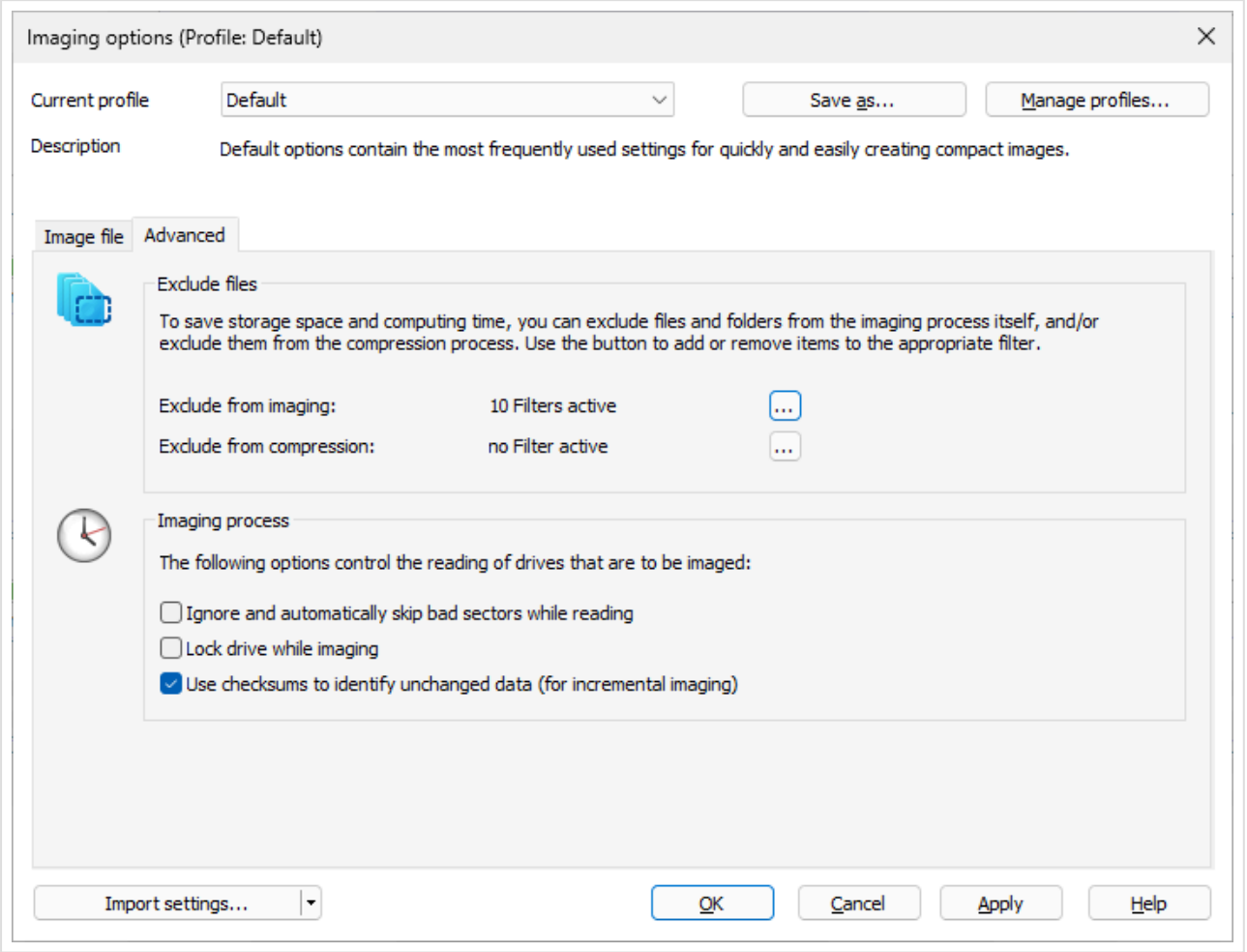
:::

## Exclude files from an image

:::note

Several minutes may be needed for excluding files, depending on the amount of data on the hard disk.

:::




When using the imaging method **Used Sector Imaging** you have the option of excluding data from the image or compression. Please follow these instructions for excluding data:

1. Enable the check next to the drive to be imaged under **Drive operation**.
2. Make sure you have selected the method **Complete/only used sectors** under **Imaging options**.
3. In the **Imaging options** click on **Advanced** and open the dialogue to exclude files in **Exclude from imaging**.
4. In the right hand window select the files and folders you wish to exclude from the imaging and confirm this with **Add**. Only the data on your selected drives will be excluded.
5. You can close the window after your settings are made. The changes you made will then be applied.

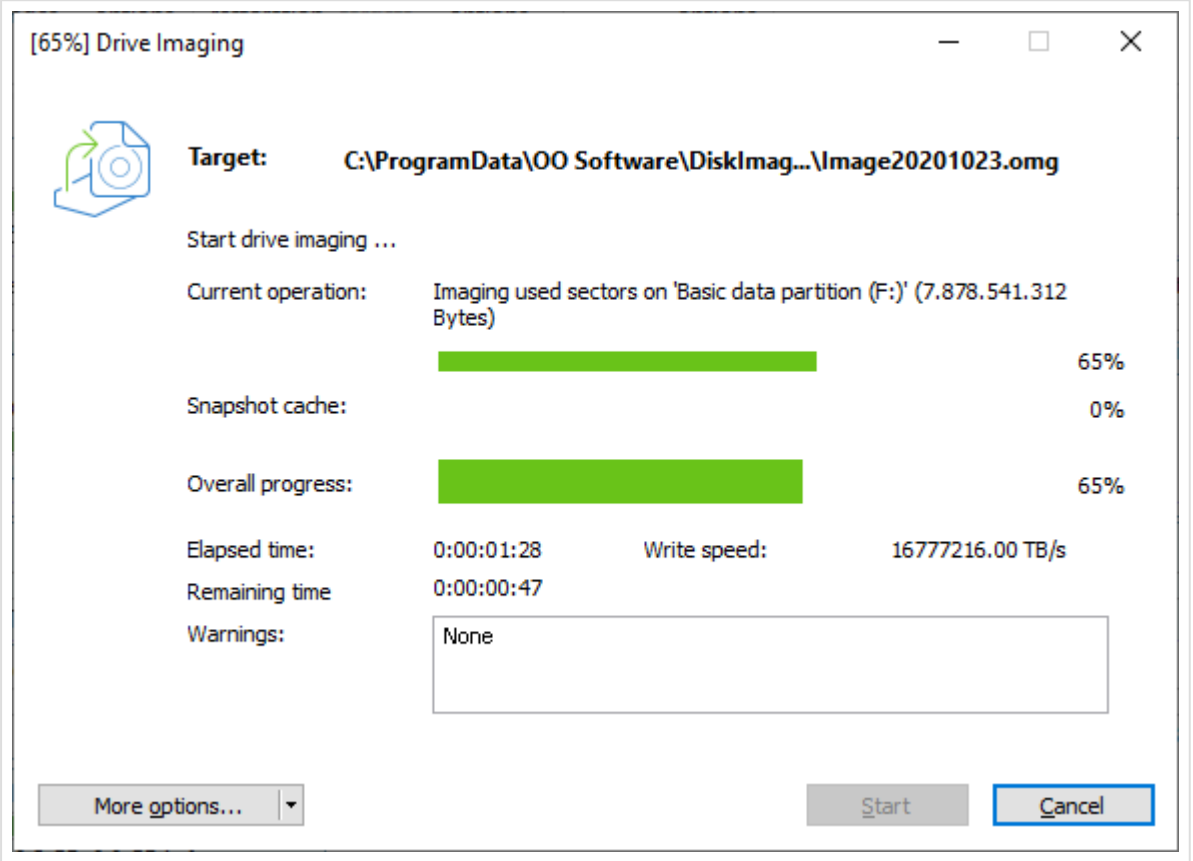
## Exclude data from compression

Data that is already compressed, e.g. *.rar or *.zip files, will not be compressed any further during the imaging process and so may be excluded from compression. To exclude data from compression, please follow the

procedure laid down in Exclude files from an image.

## Lock a drive

You can lock the drive you wish to image during the imaging process. This prevents any changes being made to the drive while the image is being created. The drive will no longer be displayed in Explorer and all applications will be closed. The drive is not locked by default.




To lock a drive, under **Drive operation/Imaging options/Advanced** select **Imaging procedure/Lock drive during imaging**.

If you leave a drive unlocked during an imaging because, for instance, you want to continue working on the drive, the original status will be “cached”, i.e. stored in the working memory buffer. The working memory buffer space is, however, limited. You can see how much space is available by looking at the memory buffer display.

:::note

It is not possible to lock a system partition. If you want to prevent temporary files from being written onto a particular drive, enter the entry NoSnapshotTmpFiles in the Registry. More information can be found in the chapter Explanation of registry entries.

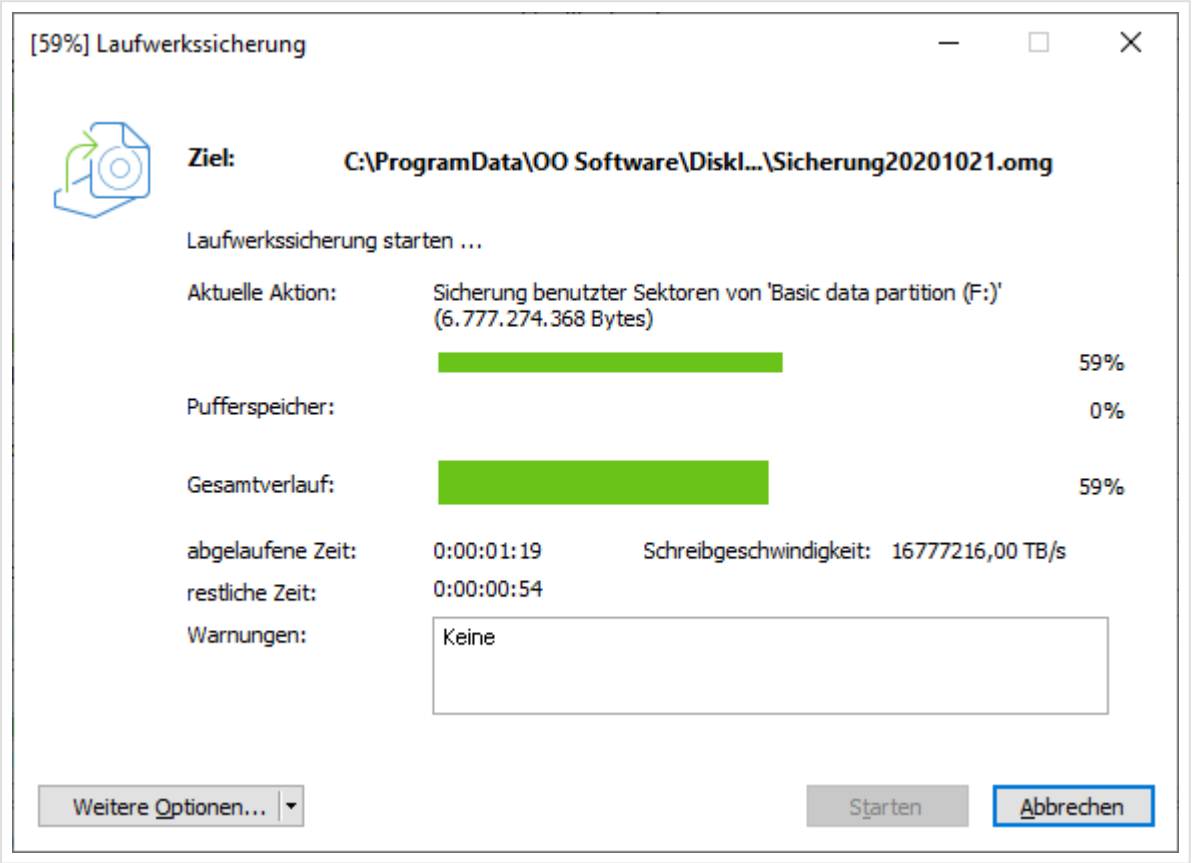
:::

**Please note**: If you exceed the available working memory, original data sectors will no longer be saved and included in the image. This makes the image inconsistent and may render it unusable. In this case, after imaging, you should mount the image (Mount the image as a drive) and check its accuracy.

:::note

To avoid overloading the memory buffer, close or stop all write procedures on the source drive: for example, running a defragmentation.

:::




## Ignore bad sectors

You can specify under **Drive operation/Imaging options/Advanced** whether the read process should be aborted or continued in case of error. If continued, the bad sector will be saved in the image as an unused sector. The remaining data that is still readable will then be available in the image.

- Enable the check for **Ignore and automatically skip bad sectors while reading**.

## Data comparison with checksums

Unchanged data resulting from incremental images is saved using checksums by default. Such a file will be slightly larger. That's why it's enough, when creating the next incremental image, to use an existing incremental

image (with checksums) as the base image. This function is activated by default. If you save all images in a single folder, you can deactivate this function. Your images will then take up less space on disk.

- Please make sure that the function **Use checksums to administer unchanged data** under **Drive operation/Imaging options/Advanced** is enabled.

## Use profiles for drive imaging

Under **Drive operation/Imaging options/Current profile** you can reset current settings to **Default**, or select an already existing profile.

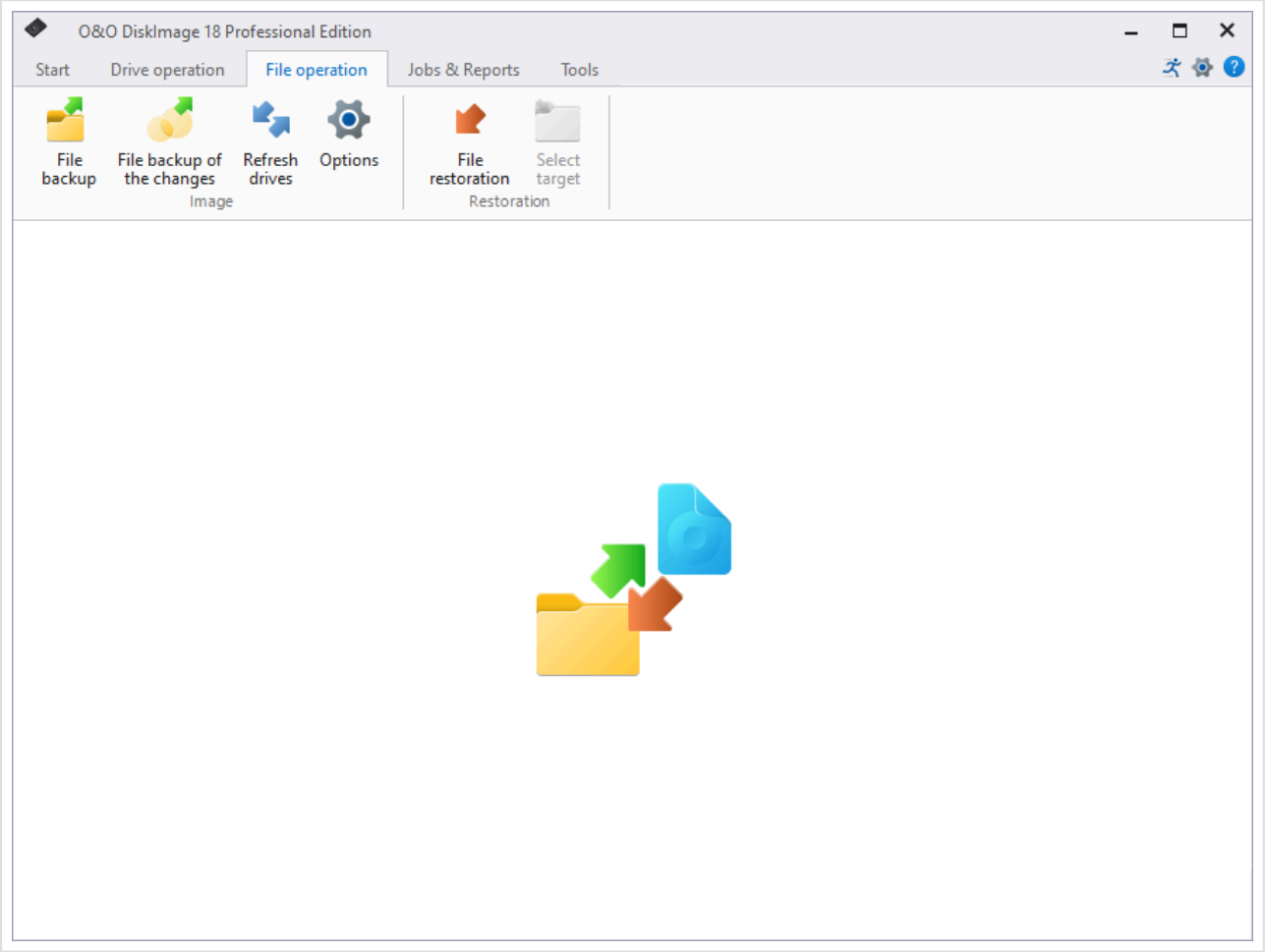
Under **Current profile** you can select a preset Multimedia or Archive profile. The Multimedia profile automatically excludes already compressed music and video data (i.e. *.avi, *.mp3, *.mpeg) from the compression. The Archive Profile excludes other compressed data such as *.zip or *.rar.

If you would like to save your user-defined settings, please follow these instructions:

1. Enable your settings under **Drive operation/Imaging options**.
2. Select under **Save as...**.
3. Give your newly created profile a name in the dialog window and confirm.
4. Under **Manage profiles** you can change or delete an existing profile.

# Back up files

We strongly recommend backing up entire partitions or disks because doing so protects you from not including important data in the backup by mistake. There are some cases, however, where it may be useful to backup only certain files or folders. All features for backing up files and folders can be found under File operations.




A file backup can be created as a full backup or a backup of the changes. A full backup contains all the selected data. A backup of the changes contains only the data that has been added, changed, or deleted from the base. The base can be either a full backup or a backup of the changes.

## Create a file backup

Do you want to backup individual folders or files instead of an entire drive? You can now do so with a file backup. Files are backed up directly during file backup. Compared to imaging a drive, file backup only includes the file information. No drive information is saved.

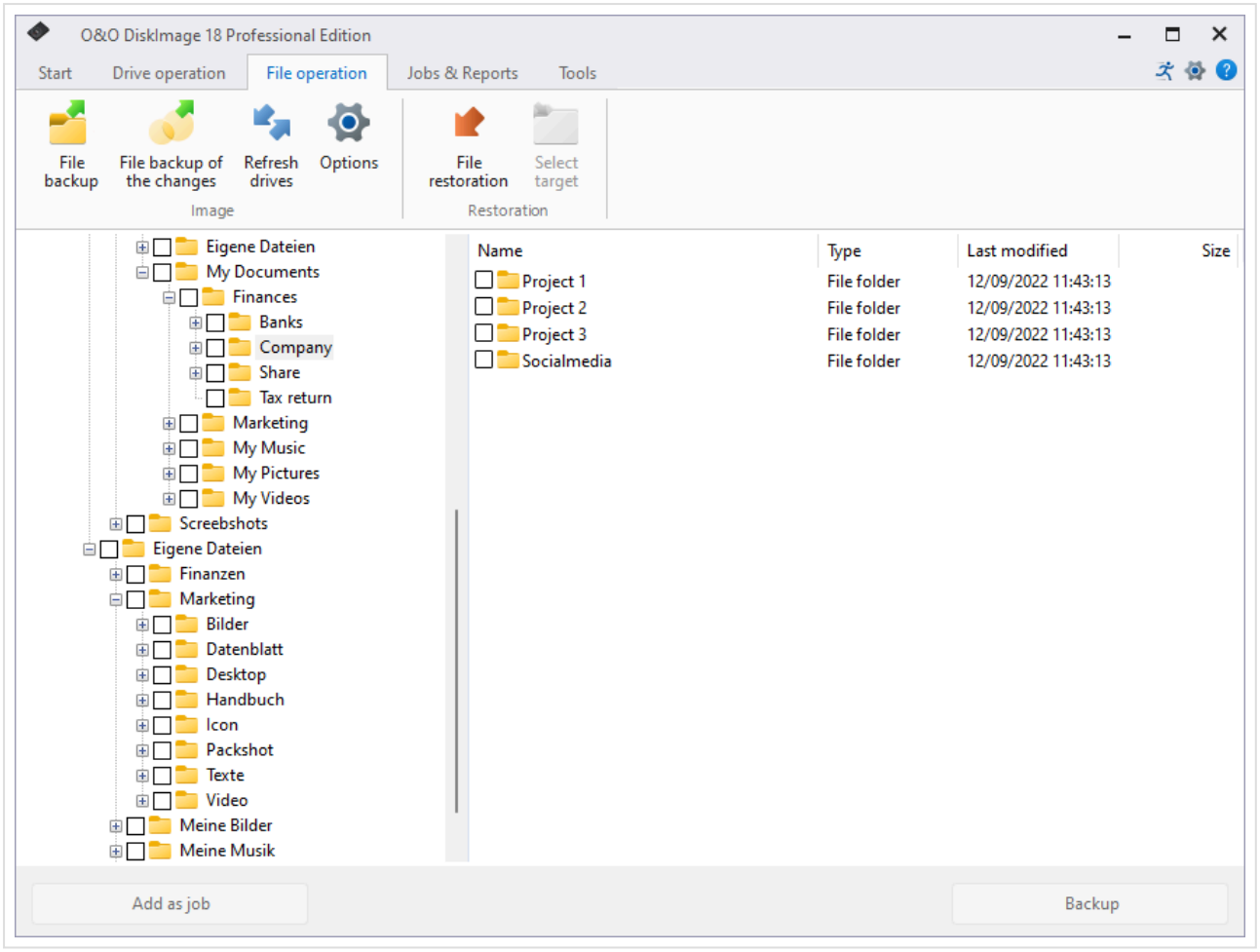
1. On the start page of O&O DiskImage click **File backup**.
2. Navigate to the folder you want to backup.
3. Check the box next to those folders you want to backup. Multiple selections are also possible. You can also select an entire drive. All files located on the drive will be imaged.
4. Then click the symbol **Start file backup.**
5. If you don't want to use the default target path shown in the following dialog, please enter a new target.
6. Click **Start** to continue with the file backup.
7. A compressed file will then be created with the file extension OBK (*.obk).

**Selection criteria** Before starting file backup, there's an option for selecting files or file types in the folder that you want to have included or excluded from the backup. In the dialog, click Criteria and specify the settings you want.

:::tip

You can specify further settings by clicking the icon File backup options. If you want to repeat the file backup at a later time, you can create a job for it. To do this, click the icon Add as job.

:::


O&O DiskImage 18 Professional Edition
Start
Drive operation
File operation
Jobs & Reports
Tools
File backup
File backup of the changes
Refresh drives
Options
Image
File restoration
Select target
Restoration
Eigene Dateien
My Documents
Finances
Banks
Company
Share
Tax return
Marketing
My Music
My Pictures
My Videos
Screebshots
Eigene Dateien
Finanzen
Marketing
Bilder
Datenblatt
Desktop
Handbuch
Icon
Packshot
Texte
Video
Meine Bilder
Meine Musik
Name
Type
Last modified
Size
Project 1
File folder
12/09/2022 11:43:13
Project 2
File folder
12/09/2022 11:43:13
Project 3
File folder
12/09/2022 11:43:13
Socialmedia
File folder
12/09/2022 11:43:13
Add as job
Backup

# Back up file changes

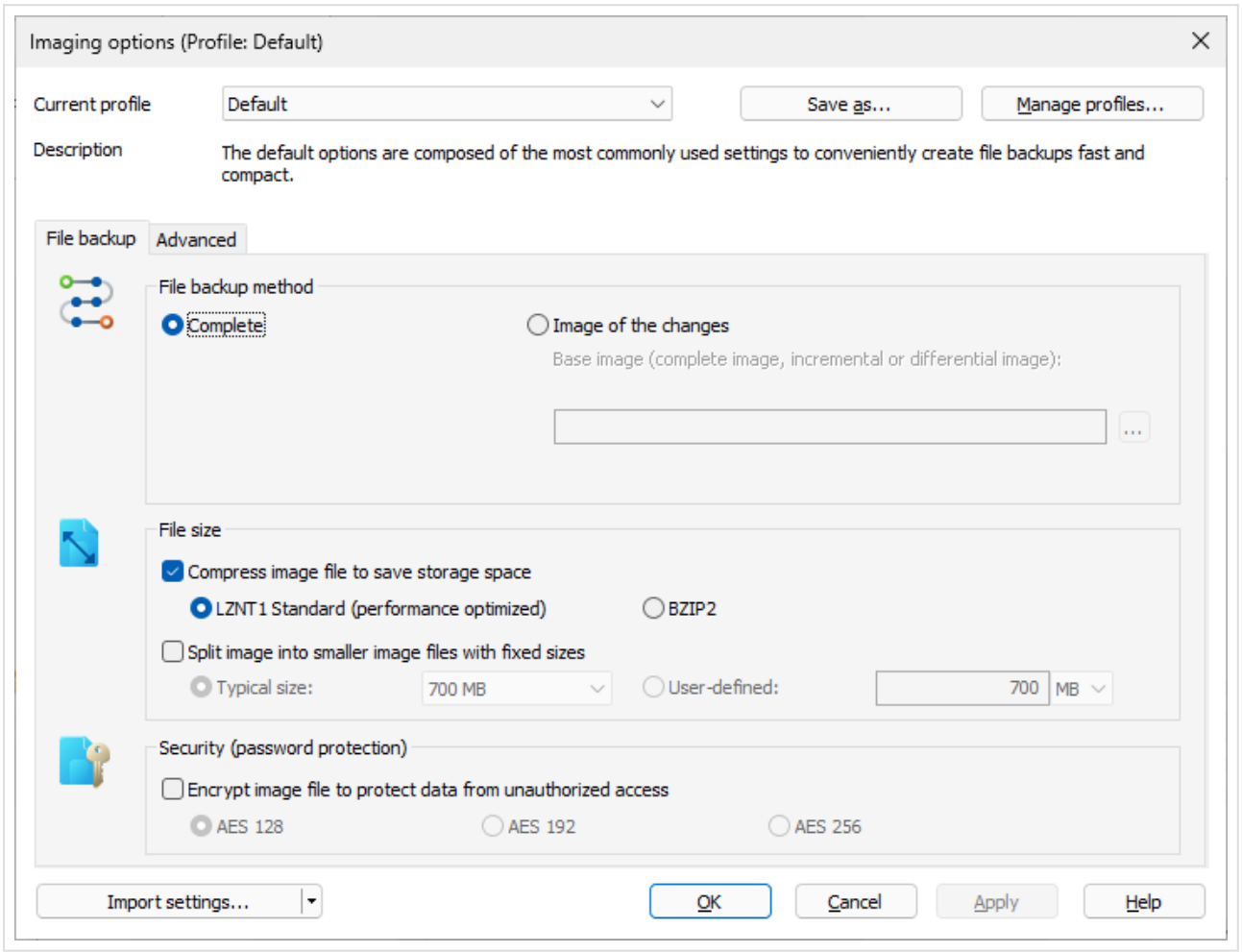
A complete image or a previously created image of the changes can be used as base image.

Follow the instructions below:

1. Please make sure that the drive containing the base image is connected to your computer.
2. Start O&O DiskImage and select **Start File backup** on the start page. Now select **File backup of the changes**.
3. Select your base image in the explorer window and click **Open**.
4. Now you can either select the recommended target folder for saving the image or enter a new target path. For the sake of clarity, we recommend saving the base image and its subsequent images in one folder. The image is automatically named after the creation date. You can however enter a name manually.
5. Now click **More options** (if you want to specify further settings) or **Start** to initiate the imaging process.

# File backup options

Under **File operation /File backup options** you can specify further settings that should be applied by default for the current or every new backup.




## Encrypt a file backup

Your data can be securely encrypted using the recognized AES method . This permits O&O DiskImage to support extremely high security levels with a key length of up to 256 bits.

- You can select the level of encryption for your files under **File operation/File backup options/Security**.
- If you then start the imaging process (**Start file backup**), enter a password when being prompted.

You also have the option of encrypting the image after it's been created under Convert image file.

## Imaging method for file backups

Under **File operation/File backup options/File backup /File backup method** you can specify which method should be preset for every file backup.

The options are:

- Complete
- Image of the changes

For normal use, we recommend the **Complete** method which is already set by default.

If you've already made one or more back ups of a folder or individual files, you can select the method **Image of the changes**. Only changes made since the last base image will be saved.

When creating an image of the changes, O&O DiskImage compares the data of the existing image with corresponding data from the current folder. That's why this backup method might require more time than the creation of a complete image. On the other hand, an image of the changes normally requires much less disk space than a complete image.

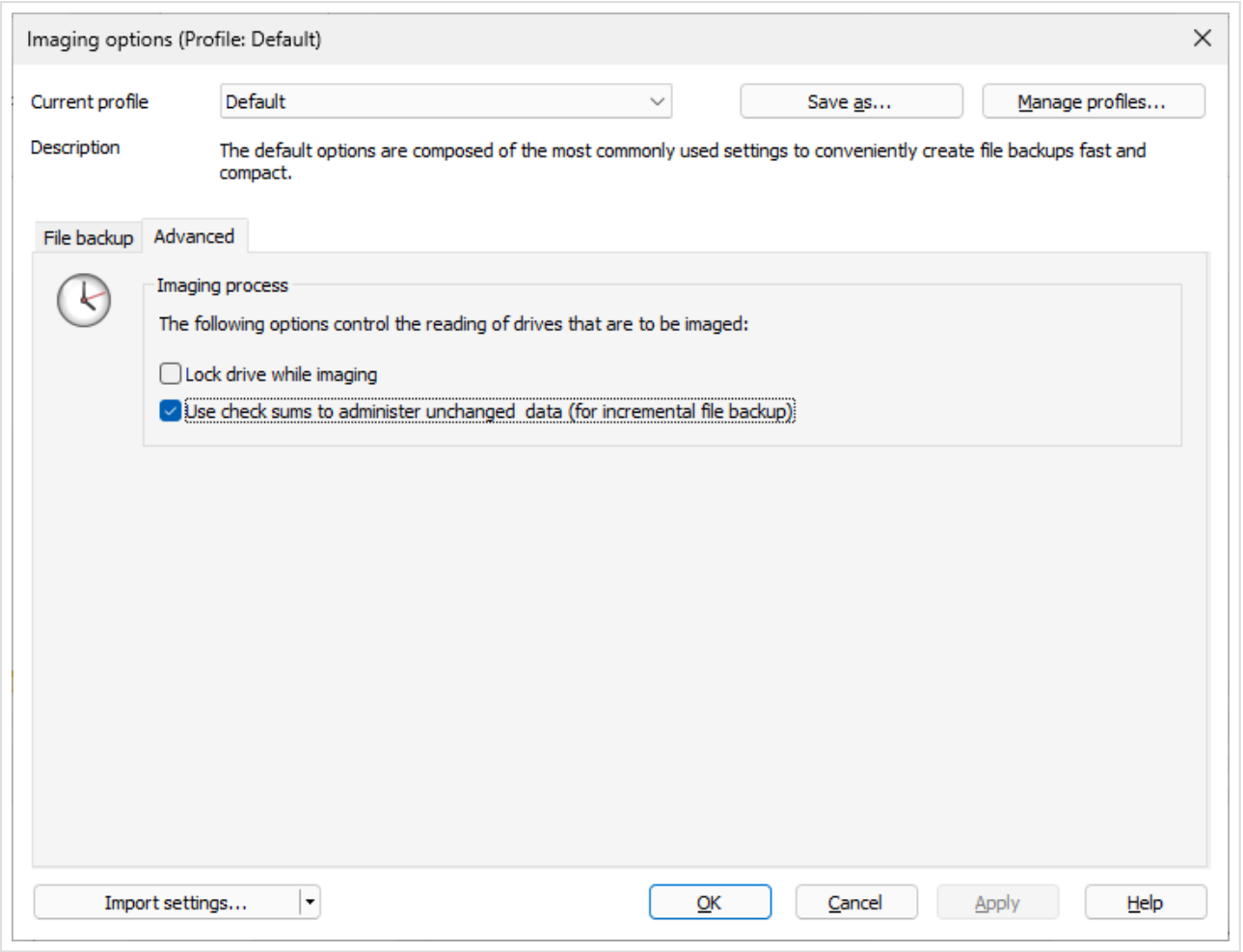
## Advanced settings

You can specify further settings under **Advanced** in the File backup options.

**Lock drive while imaging** While processing a file backup, you can lock the drive where the folders/files being backed up are located. This prevents any changes from being made to the drive while the backup is being created. The drive will no longer be displayed in Explorer and all applications will be closed. The drive is not locked by default. If the drive is not locked, changes will be buffered either in the snapshot cache (if installed) or over the volume shadow copy service of Windows so that these changed won't influence the backup.

**Use check sums to administer unchanged data (for incremental file backup)** Unchanged data is saved by default using checksums by the method **Image of the changes**. The file is slightly larger. It's therefore enough if you enter an existing image of the changes as source image for the next **Image of the changes**(with checksums). This function is enabled by default. If you save all images in a single folder, you can also disable this function. Your images will then take up less space on the disk.

- Make sure that the option**Use checksums to administer unchanged data** under **File operation/File backup options/Advanced** is enabled.




## Regulate the size of a file backup

A file backup can be split into multiple backup files. If one disk is not enough for storing a complete backup, you will automatically be asked to indicate a different storage location. It is also possible to manually set the maximum size of an file before. If the image being created is larger than the entered file size, additional image files will be created.

This function is especially useful when you plan to burn your image onto a CD/DVD at a later time. Sometimes a CD/DVD is not large enough to contain the entire image file. We recommend limiting image files to the size of the blank CD/DVD onto which you will be writing your images.

The image file can also be split at a later time using the **Convert image file** function. It is, however, recommended to split images at the time they are created to avoid any confusion that may arise.

- Under **File operation/File backup options/File size/Split image into smaller image files with fixed sizes** you can specify the size of individual image files.

# Apply profiles for file backups

Under **File operation/File backup options/Current profile** you can reset the current settings to **default** for the image or select a wide ranging user-defined profile.

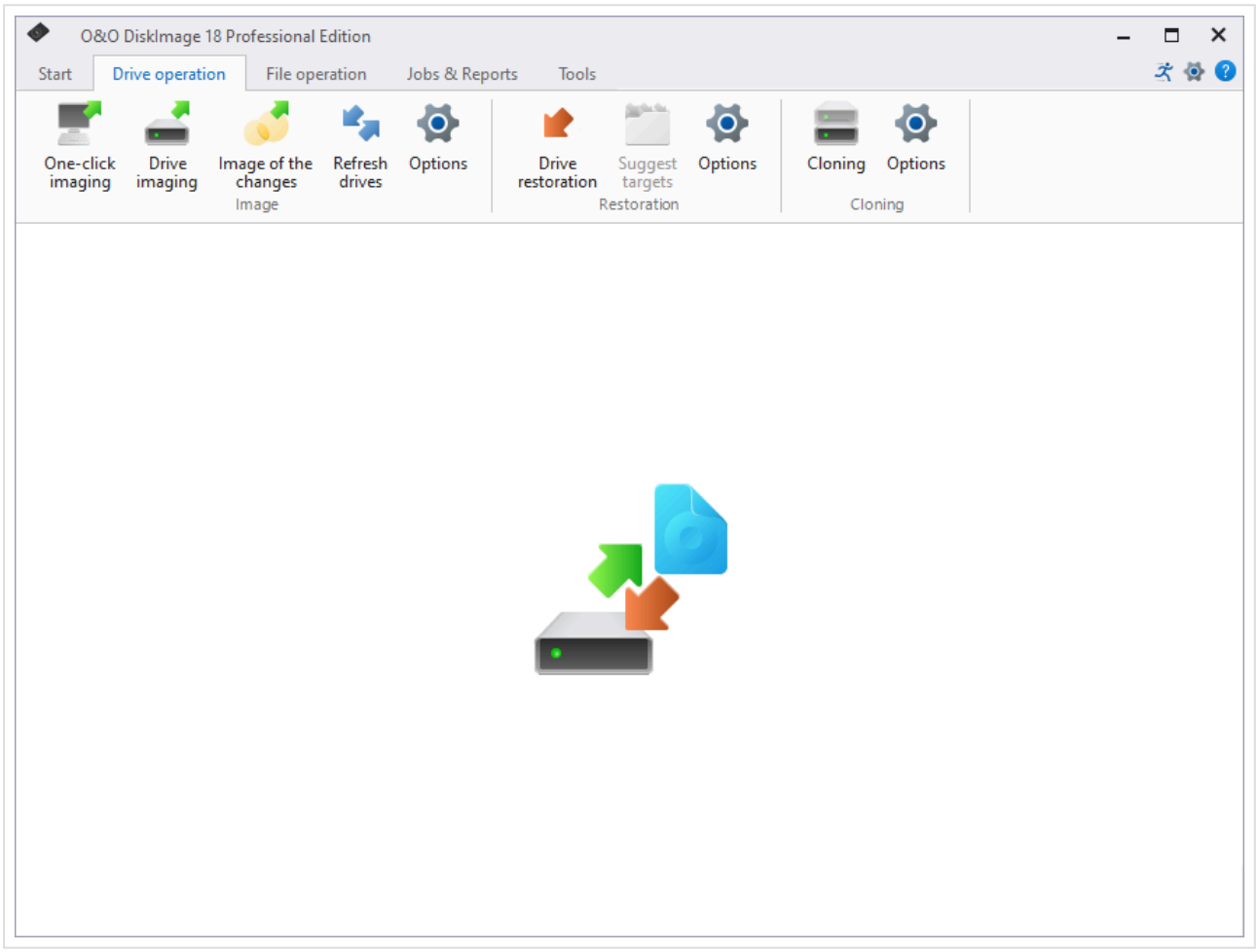
If you would like to save your user-defined settings, please follow these instructions:

1. Enable your settings under **Drive imaging/Imaging options**.
2. Select under Imaging options **Save as...**.
3. Give your newly created profile a name in the dialogue window and confirm.
4. Under **Manage profiles** you can change or delete an existing profile.

# Restore drives

Restoration will be optimized according to the type of imaging. In most instances there's no need to make any changes to the settings.

If you want to restore an image of the changes, enter the image that contains the time frame or database you want. Please note, however, that all previous images of the changes as well as the corresponding complete image must be available!




To restore one or more drives from an image, proceed as follows:

1. If you want to restore one or more drives from an existing image, click **Drive restoration** on the O&O DiskImage start page.
2. Select the image you want to restore in the DropDown list of **Select image**. If the proposed images (*.obk) are not the ones you want to restore, check your drives and enter the path to the image file.
3. Select the image file (*.omg, *.vhd or *.vhdx) from the browser and click on **Open**.
4. All drives contained in the image will then be displayed.

5. Click the drive that you want to restore ("play back").
6. Then, select the target drive for restoration by checking the box next to it. You can either replace an existing drive or create a new one: for example, in an empty sector.
7. Optionally, you can specify further settings for the restoration under **Restoration options**.
8. Whenever you have specified all settings, click on **Start drive restoration** to start the restoration.

:::warning

During restoration, the image overwrites your selected drive with the data of the drive contained within the image. All data saved on the target drive is thereby lost and replaced by that of the image.

:::

:::note

If your image is split among various disks, all these disks will be required for a restoration. If you have created an incremental image, all images - from the last complete image to the last incremental image - will be needed.

:::

:::note

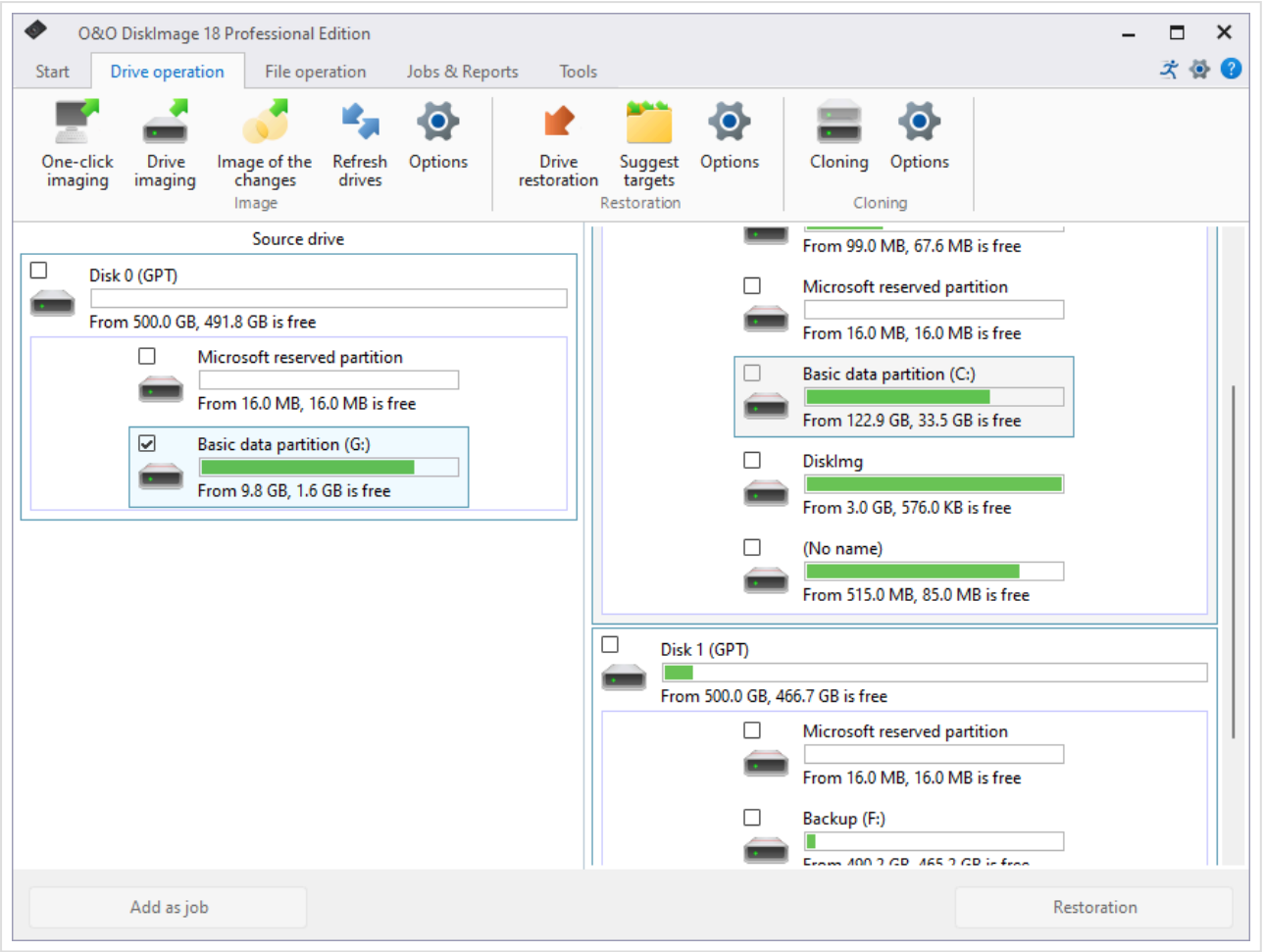
If you have a imaged an entire hard disk and the restoration is run on a different hard disks, then the new hard disk must possess at least as much space capacity as the source hard disk.

:::

:::note

If you want to restore an entire system or system partition, you'll need to start your computer with the O&O DiskImage bootable medium and perform the restoration from there, seeStart directly from the bootable disk. If you should run a restoration of the system partition to different hardware, read chapter: Restoration on different hardware.

:::



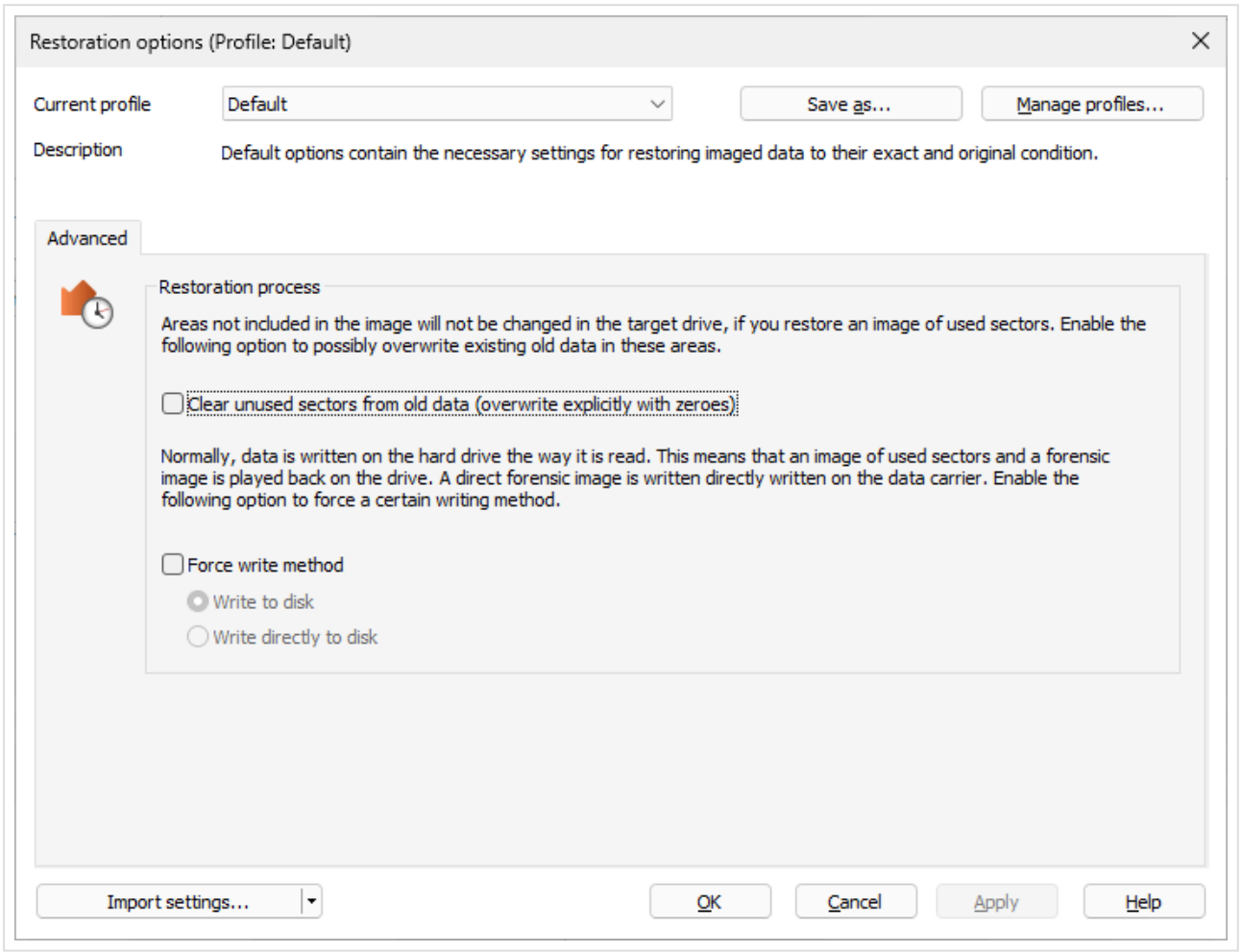

**Restore/Duplicate to Smaller Disks** It is possible to restore/duplicate to smaller disks as well. For example, select the "C" drive as the source and a smaller data carrier as the destination. When asked whether the partitions necessary for booting should also be copied or restored, answer "Yes". In this case, O&O DiskImage recognizes that an identical copy cannot be created and asks whether the process should be based on sectors or files.

If you now select "File-based", you can specify the size of the target partition to be created and processing will begin. The partitions required to start are created identically to the original. If the source disk contains multiple partitions, you must then select the next source partition and select the empty space on the target disk as the destination.

The Microsoft Volume Shadow Copy Service (VSS) is required for this processing. Since this could possibly lead to problems, we recommend performing the recovery/duplication using our boot environment if this is not already being used.

# Restoration options

Under **Drive restoration/Restoration options** you can specify additional settings for the restoration of drives from an image.




## Create a restoration profile

Under **Drive restoration/Restoration options** you can return the current settings for an imaging back to their default settings or select an already created profile.

Under **Current profile** you can choose between **Default** and **User-defined**.

If you want to save your user-defined settings, do the following:

1. Enable your settings under Restoration Options
2. Select **Save as**

3. Give your newly created profile a name in the dialog window and confirm.

Under **Manage profiles** you can change or delete an existing profile.

## Force the writing method

Under **Drive restoration/Restoration options/Advanced** you can force a writing method. "Write to drive" is the default writing method used during restoration of images created with the "Used sector" or "Forensic" methods. "Write directly to disk" is the only writing method used during "Direct Forensic" cloning. You can, however, force a user-defined writing method.

Enable **Force writing method** and select the respective method.

Using the option **Write to drive**, data will be written to the drive with help from the operating system, and not from the offset to the disk.

With the option **Write directly to disk**, you can decide whether a restoration should be written directly to a disk, bypassing the file system driver. This function applies especially to encrypted disks and is required for restoring any disks that have been imaged using the direct forensic method.

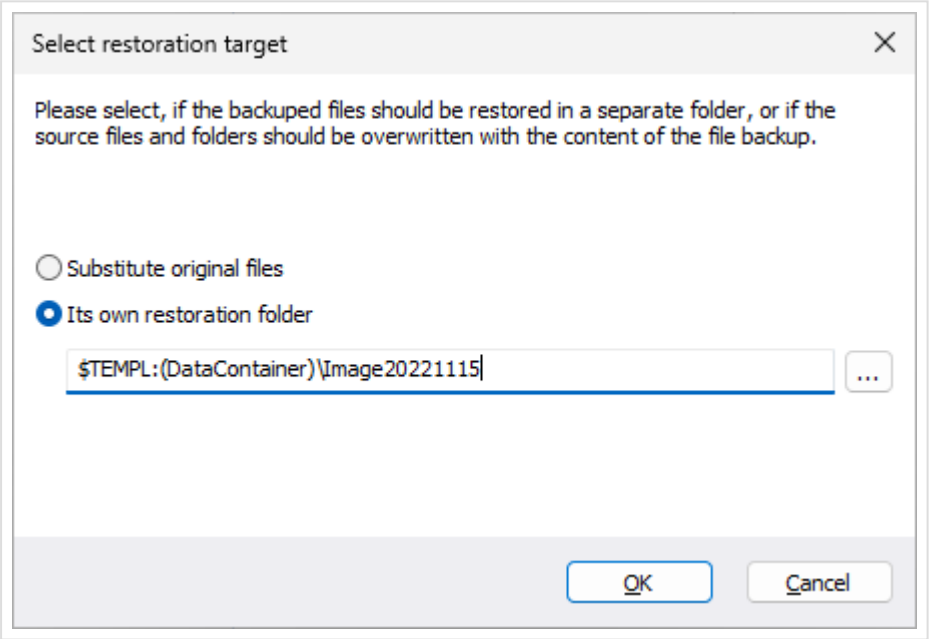
## Overwrite unused sectors

Under Drive **restoration/Restoration** options you can overwrite unused sectors explicitly with zeros: Data that has been stored in these areas cannot be restored - not even with specialized data recovery software.

# Restore files

**File restoration** If you want to restore files or folders from already existing images, proceed as follows. The first thing to do is make sure you are able to access the image (*.obk).

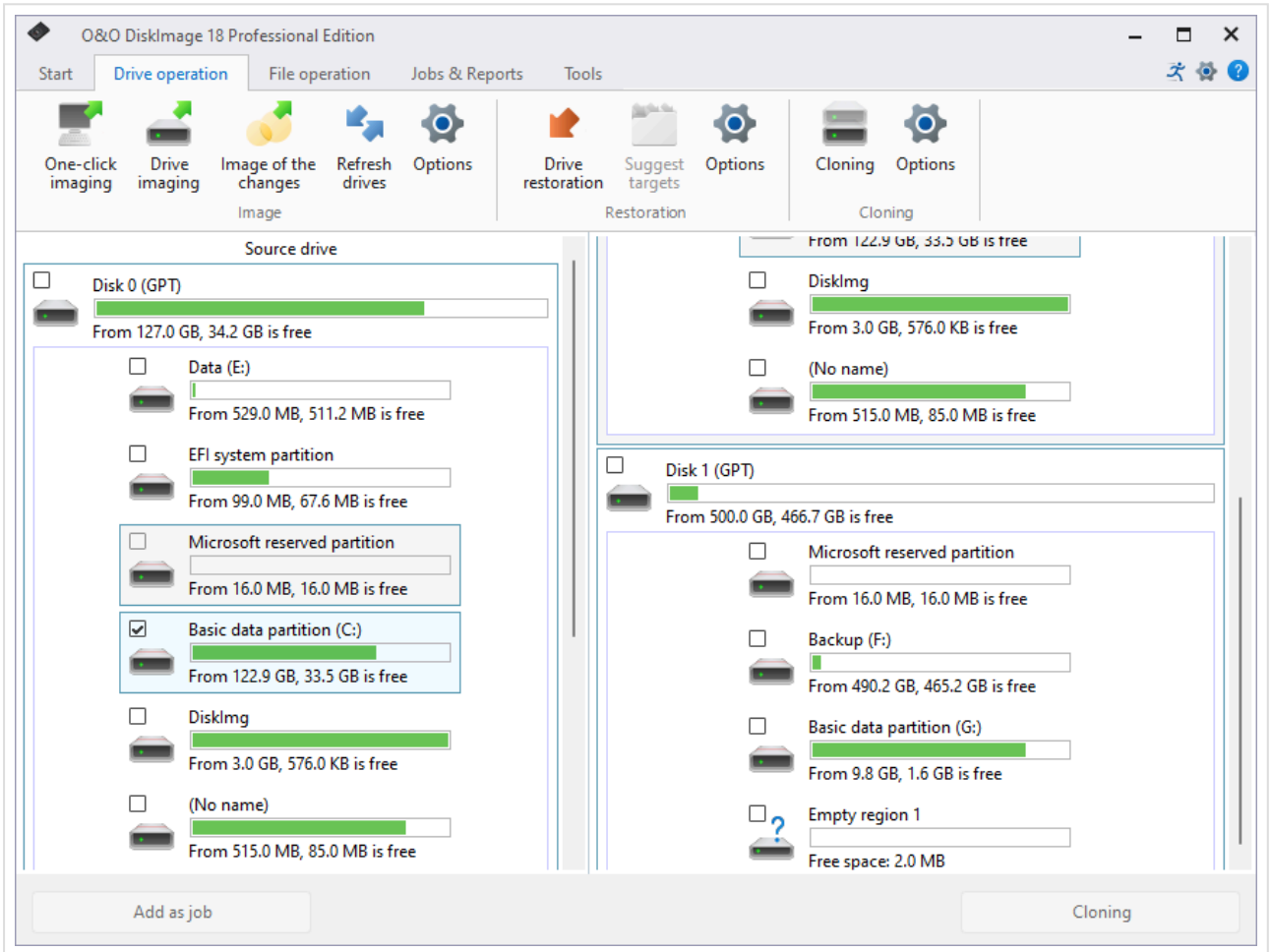
1. In the Quick Access bar click **File restoration**.
2. Select the image you want to restore in the DropDown list of **Select image**. If the proposed images (*.obk) are not the ones you want to restore, check your drives and enter the path to the image file.
3. Now click the symbol **Select target folder**.
4. You can now restore data from the image in a new folder, or replace current data with that from the image.
5. Once you've done that, start restoration.



# Clone drives

Cloning is recommended if you wish to replace one disk with a new one. This process combines imaging and restoration in one step. Cloning can be performed file-based or forensically. File-based cloning transfers all recognized data onto the target and this method is fully adequate in most scenarios.

We recommend forensic cloning for scenarios where the disk being cloned has a file system not supported by O&O DiskImage or you need to recover data. This will involve transferring every sector of the source onto the target. Forensic cloning can take some time and does place demands on computer performance.




Entire storage volumes or individual drives can be cloned, which in turn can be used instead of the originals. This function allows you to clone a drive and all its saved data without creating image files. The source disks/drives will be reproduced without any changes.

Please keep in mind that a clone requires much more free space than an image.

Unlike images, there are **no** incremental or differential clones possible for reducing the data volume of successive "Clone drives"clones. In addition, a clone **cannot** be compressed or encrypted compared to an

image.

1. Select **Clone drive** in the Quickaccess bar.
2. Select the drive which you want to clone by enabling the check next to each drive or the entire disk.
3. You can set additional settings for cloning under Cloning options.
4. You can then specify the target drive. Simply enable the check next to the drive or the disk.
5. In the following dialog under **Advanced**, you can specify whether certain functions should be executed when cloning is completed. These functions are disabled by default.
6. Once you've enabled all your settings, click **Start cloning,** to begin the cloning process.
7. You can also “recopy” your clone in exactly the same fashion - to put it back on your computer/drive.

:::warning

When cloning your drive (source drive), the selected target drive, will be overwritten. All data stored on it will be deleted and replaced by the clone! You should therefore save the clone on something like an external hard disk chosen for this purpose.

:::

:::note

When cloning a drive, you should adjust the properties of the target drive for future application. Make sure, for example, that the system partitions of the clone will also be able to boot.

:::

:::note

If you're using a second hard disk as a target, O&O DiskImage will change its signature. This will guarantee that there are no two hard disks with the same signature connected to your computer. There might otherwise be complications during cloning or even a possible system crash. With simple hard disk structures (basic disk), all partitions in the operating system will be recognized by a link from hard disk signature and partition offset. During cloning, the registry entries of the drive letters, including the letters, will be adapted to the target system.

:::

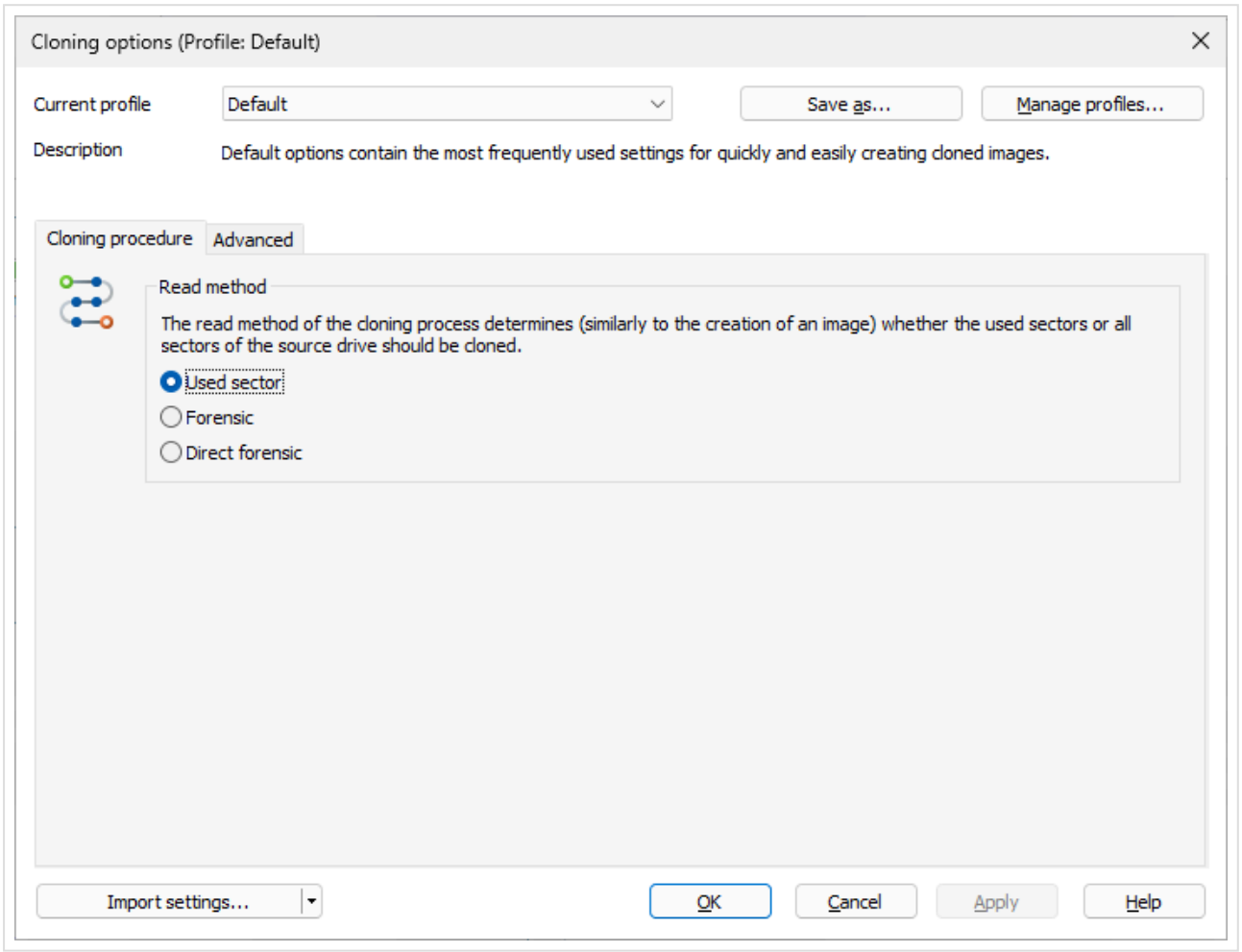
:::note

If you want to restore the clone of a system partition onto a PC with different hardware, please bear in mind the notes in chapter Restoring on different hardware (M.I.R.).

:::

# Cloning options

Under **Clone drive/Cloning options** you can specify further settings to clone drives. To specify the settings, you need to open the Cloning options window.




## Ignore bad sectors

You can specify under Clone **drive/Cloning options/Advanced** whether the read process should be aborted or continued in case of error. If continued, the bad sector will be saved in the copy as an unused sector. The remaining data that are still readable will be present in the image.

## Lock a drive

You can lock the drive you want to clone during the cloning process. This prevents interim changes to the drive being made during creation. The drive will no longer be displayed in Explorer and all applications will be closed.

The drive is not locked by default.

1. To lock a drive, enable it under **Clone drive/Cloning options /Advanced/Read procedure**
2. If you leave a drive unlocked during cloning, because, for instance, you want to continue working on the drive, the original status will be “cached”, i.e. stored in the working memory buffer. The working memory buffer is however restricted. You can see how much is available in the Memory buffer display.

:::note

Locking a system partition is not possible. If you want to prevent temporary files from being written on a particular drive, make the entry NoSnapshotTmpFiles in the registry. More information can be found in the chapter **Explanation of registry entries**.

:::

**Please note:** Should you exceed the available working memory, the current changes will be written directly to the target drive. This makes the image inconsistent and may render it unusable.

:::note

To avoid overloading the memory buffer, close or stop all write procedures on the source drive, for example, running a defragmentation.

:::

## Set the read method

Under **Clone drive/Cloning options**, you can set your individual read method just as you can when creating an image. (Cloning method). The cloning methods are constructed in a way similar to the imaging methods.

It's possible to choose from “Used sector”, “Forensic” or “Direct forensic” methods. You can read more about this under Select imaging method.

## Create a profile for cloning

Under **Clone drive/Cloning options**, you can reset the default settings for cloning or select an existing profile.

Under **Current profile** you can choose between **Default** or **User-defined**. If you wish to save your user-defined settings for cloning, please follow the instructions below:

- Select **Save as** and enter a name for the new profile.
- Under **Manage profiles** you can change or delete an existing profile.

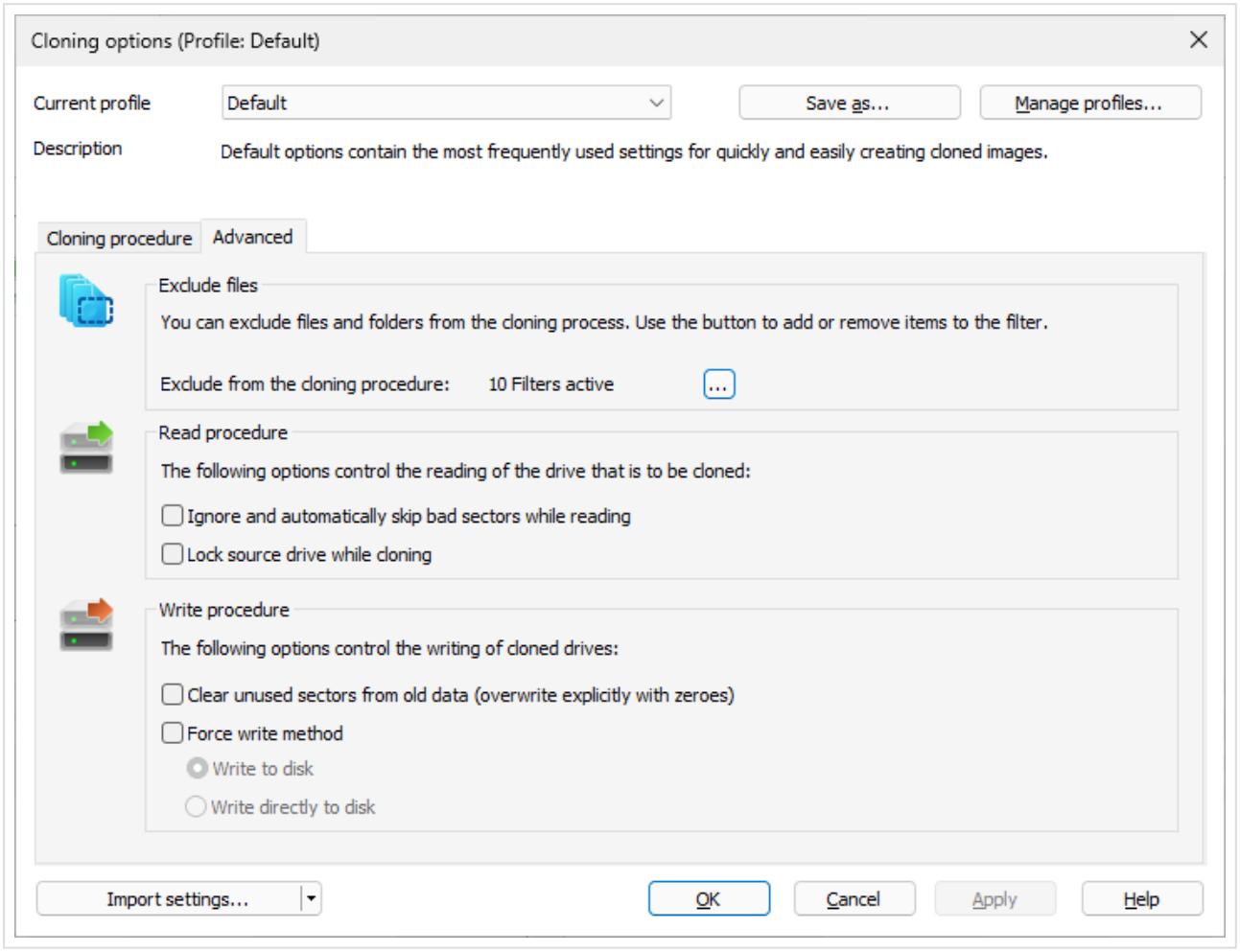
## Force the writing method

Under **Clone drive/Cloning options/Advanced** you can force the writing method. "Write to drive" is the default writing method used for the "Used sector" and "Forensic" cloning methods . "Write directly to disk" is the only writing method used during "Direct Forensic" cloning. You can, however, force a user-defined writing method.

Enable **Force writing method** and select the respective method.

Using the option **Write to drive**, data will be written to the drive with help from the operating system, and not from the offset to the disk.

With the option **Write directly to disk**, you can decide whether a restoration should be written directly to a disk, bypassing the file system driver. This function applies especially to encrypted disks and is required for restoring any disks that have been imaged using the direct forensic method.




## Overwrite unused sectors

You can specify that unused sectors of the source drive be overwritten with zeros under **Clone drive/Cloning options/Advanced/Clear unused sectors from old data**. By enabling this function, you will not be able to restore data of the empty areas from the drive clone.

This function will be run during the next clone activity of the selected drive.

:::tip

If you delete data normally under Windows, it still remains intact on the hard disk. The data will no longer be accessed by the operating system and remains invisible for the user. The space is declared as free area by

Windows. This data can still be restored using special software. To make sure that nobody can restore data from the drive clone, enable the function **Clear unused sectors from old data**. After overwriting, not even specialized data recovery software will be able to restore this deleted data.

:::

# Restore on different hardware

Until now, you were only able to restore a system partition onto a computer having hardware identical to the source computer. The same goes for the restoration of clones. The most frequent application scenarios have therefore been limited to the creation of images and restoration of these on the same computers

O&O DiskImage now offers you the option of restoring an image, even the system partition, onto a computer with different hardware using the M.I.R. function(Machine Independent Restoration). You can also clone a computer with different hardware.

Enable M.I.R. if you've made changes to the hardware after imaging and these changes affect the functionality of the Windows operating system being started. M.I.R. is also necessary if you want to transfer an already existing computer configuration onto a new computer.

M.I.R. can therefore be used or enabled in the following cases:

- Restoration of an image onto a computer with different hardware or cloning/duplication of a computer.
- With the help of a bootable disk, M.I.R. can be used for exchanging damaged or malfunctioning drivers of an existing system.
- Migration of physical computers onto virtual machines or virtual machines on physical computers.

:::note

When duplicating a source system, i.e. duplicating installed Microsoft Windows operating system versions and programs, we recommend changing the computer name and SID to avoid future problems when using the configured computer within the network.

:::

# Restore automatically with M.I.R.

M.I.R. of O&O DiskImage is available to you when restoring system partitions from an image or when cloning. Meant is the direct selection of the system partition or the indirect selection, e.g. the entire disk including the system partition.

Whenever you want to restore or clone, simply enable the M.I.R. function before the restoration or cloning process is completed.The automatic adaptation will do the rest.

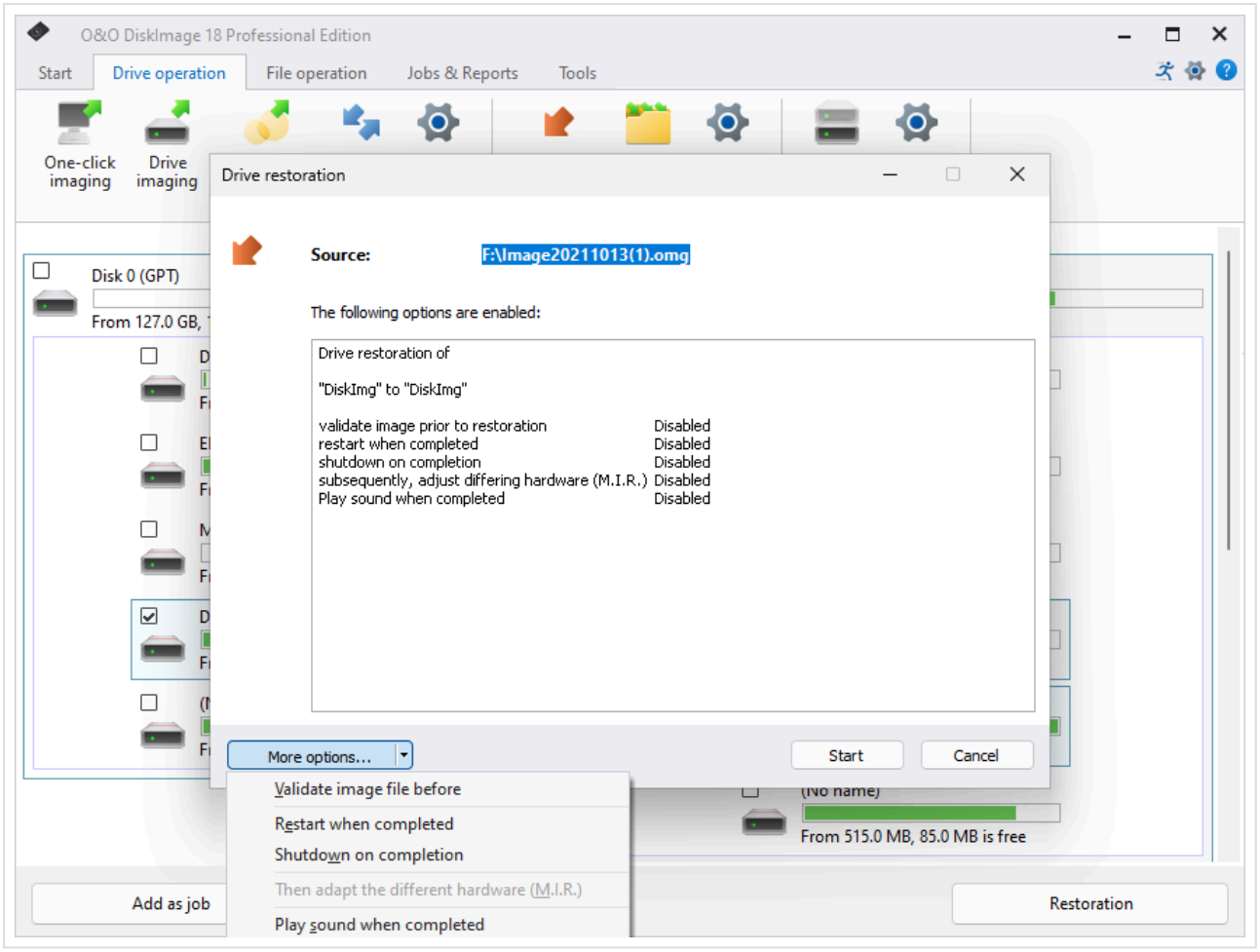
For restoration on different hardware proceed as follows: The example here describes restoration from an image:

1. To restore an entire system or a system partition, you'll need to start your computer with an O&O DiskImage bootable medium and perform the restoration from there. To boot from CD proceed as described in chapter Start directly from bootable disk.
2. On the start page of O&O DiskImage click **Drive restoration.**
3. O&O DiskImage, by default, will always go the place where the last image was saved. If the image file presented is not the one you want, browse through your drives and enter the path to the image file.
4. Select the image file in the browser and click **Open**.
5. All drives contained in the image will then be displayed.
6. Click the drive that you want to restore ("play back").
7. Then select the target drive for restoration by checking the box next to it. You can either replace an existing drive or create a new one: for example, in an empty sector.
8. Once you have specified all the settings, click **Start drive restoration** to begin the restoration.
9. Under Additional options, enable the setting **Adapt to different hardware afterwards** in the restoration or cloning dialog.
10. You can then follow the other dialog prompts and restart your computer once restoration is successful.

:::warning

During restoration, the image overwrites your selected drive with the data of the drive contained within the image. All data saved on the target drive is thereby lost and replaced by that of the image.

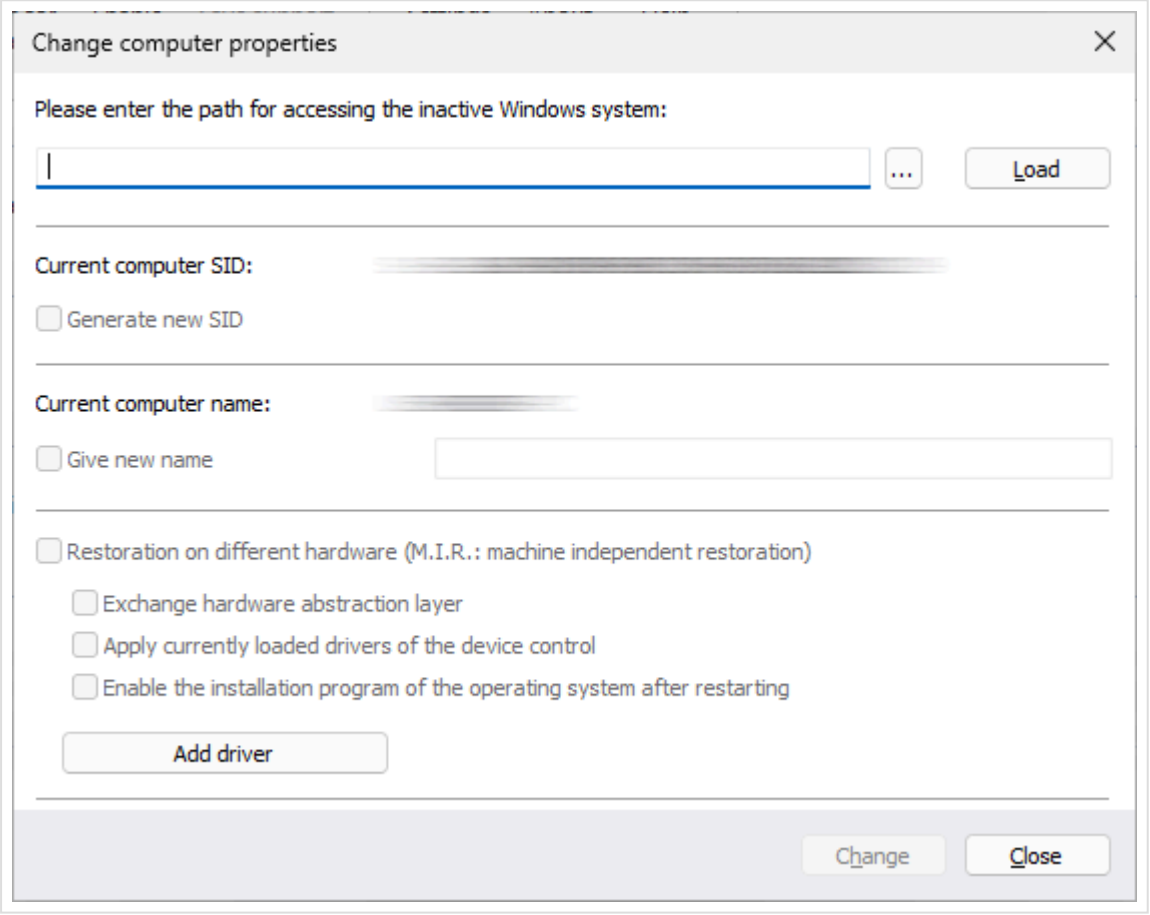
:::


O&O DiskImage 18 Professional Edition
Start
Drive operation
File operation
Jobs & Reports
Tools
One-click imaging
Drive imaging
Drive restoration
Source:
F:\Image20211013(1).omg
The following options are enabled:
Drive restoration of
"DiskImg" to "DiskImg"
validate image prior to restoration Disabled
restart when completed Disabled
shutdown on completion Disabled
subsequently, adjust differing hardware (M.I.R.) Disabled
Play sound when completed Disabled
More options...
Start
Cancel
Validate image file before
Restart when completed
Shutdown on completion
Then adapt the different hardware (M.I.R.)
Play sound when completed
Disk 0 (GPT)
From 127.0 GB,
(No name)
From 515.0 MB, 85.0 MB is free
Add as job
Restoration

# Adapt manually

You can make manual adaptation to the changed hardware following restoration orcloning.

- To do this, run a restoration or cloning of the system partition or the entire computer.
- After successful restoration, please open the O&O DiskImage dialog to change the computer properties **Tools/Change computer identity**.




The adaptations made by M.I.R can be divided into three activities which can be enabled/disabled when selecting **Restoration on different hardware** (machine independent restoration).

**Exchange hardware abstraction layer (HAL)** Windows operating systems must be compatible with a variety of hardware platforms. This portability is achieved through a special layer within the operating system that is responsible for the management and control of hardware, architecture and machine-dependent devices, such as the I/O interfaces, Interrupt Controller and multi processor communication mechanisms. This layer is commonly installed on and aligned to the current hardware on an installed and running Windows. If the hardware is exchanged, it becomes necessary to align the layer accordingly in order to ensure smooth and continued functionality of the operating system and the programs installed.

**Apply currently loaded drivers of the device control** Drivers are an interface between the I/O-Manager and the corresponding hardware. They are not accessed directly, but over the hardware abstraction layer. After replacement, the corresponding driver of new hardware has got to be installed in order to make sure it can work properly with this layer.

**Enable the installation program of the operating system after restarting** This activity tells the Windows operating system that the internal setup should be run to complete the information at the next start. The Windows operating system will then be able to automatically adapt itself after incomplete changes, and complete the registration of the new hardware.

# Restrictions of M.I.R.

Under certain circumstances, it's possible that the restored or duplicated system does not start or is malfunctioning. The following constellations may lead to malfunctions:

- No hard disk was selected as target, only part of a hard disk (partition/volume/empty area).
- While creating the layout on the target, "delete layout" was not selected. This option makes it possible to create partitions/volumes on a different Offset.
- You did not select a hard disk as source but rather individual partitions/volumes and are missing the partitions/volumes containing the needed boot information.
- You are trying to boot from a hard disk connected to controllers that were not initialized by Windows at the time of booting, e.g. booting from a hard disk connected to the computer via a USB controller (not a USB stick).

:::note

If error messages appear during booting, you will get instructions on how to proceed in chapter Assistance when error messages occur during booting.

:::

:::note

To make sure a restored system or clone is bootable, it's important to create an image of the entire system hard disk and then restore/clone it completely.

:::

# Start from a bootable medium

If you start O&O DiskImage directly from bootable disks such as CD, DVD or a USB stick, you will have access to all available functions.

The bootable disk contains Windows PE and can be used, for example, to restore an entire computer or a system partition, if an image has already been created. You can use the bootable disk with O&O DiskImage even if your Windows is incapable of booting as a result of software error.

**Starting from CD/DVD**

1. Make sure that your system is able to be started from a CD. You can configure the necessary settings in BIOS. Further information can be obtained from your motherboard manufacturer.
2. Insert the O&O DiskImage Start CD in your computer’s CD/DVD drive.
3. Restart the computer. Follow the instructions at the start of the CD.
4. The system settings will subsequently appear in the window. Select a language and region.
5. At the next stage you can load drivers for those devices where no drivers under Windows PE were initially found, see also chapter "Load Drivers".
6. O&O DiskImage will start after confirmation of the license regulation.

**Start from USB stick**

To boot from an USB stick, you normally have to change the boot sequence in the boot menu of your computer. Alternatively, you can also configure the necessary settings in BIOS. Further information can be obtained from your motherboard manufacturer.

1. Open the boot menu while the computer is booting.
2. You can change the sequence in the menu by placing the USB entry (removable devices) at the beginning.
3. After that, your computer will recognize your USB stick as boot medium, and will start the program from there.

:::note

The sequence in the boot menu is normally only valid for the current computer status. This step might have to be repeated the next time your computer is booted.

:::

:::tip

If you purchased O&O DiskImage electronically, you will find more information on the creation of bootable disk here: Create boot medium.

:::

:::note

If you want to restore on different hardware, you should also consider the notes in chapter Machine Independent Restoration (M.I.R.).

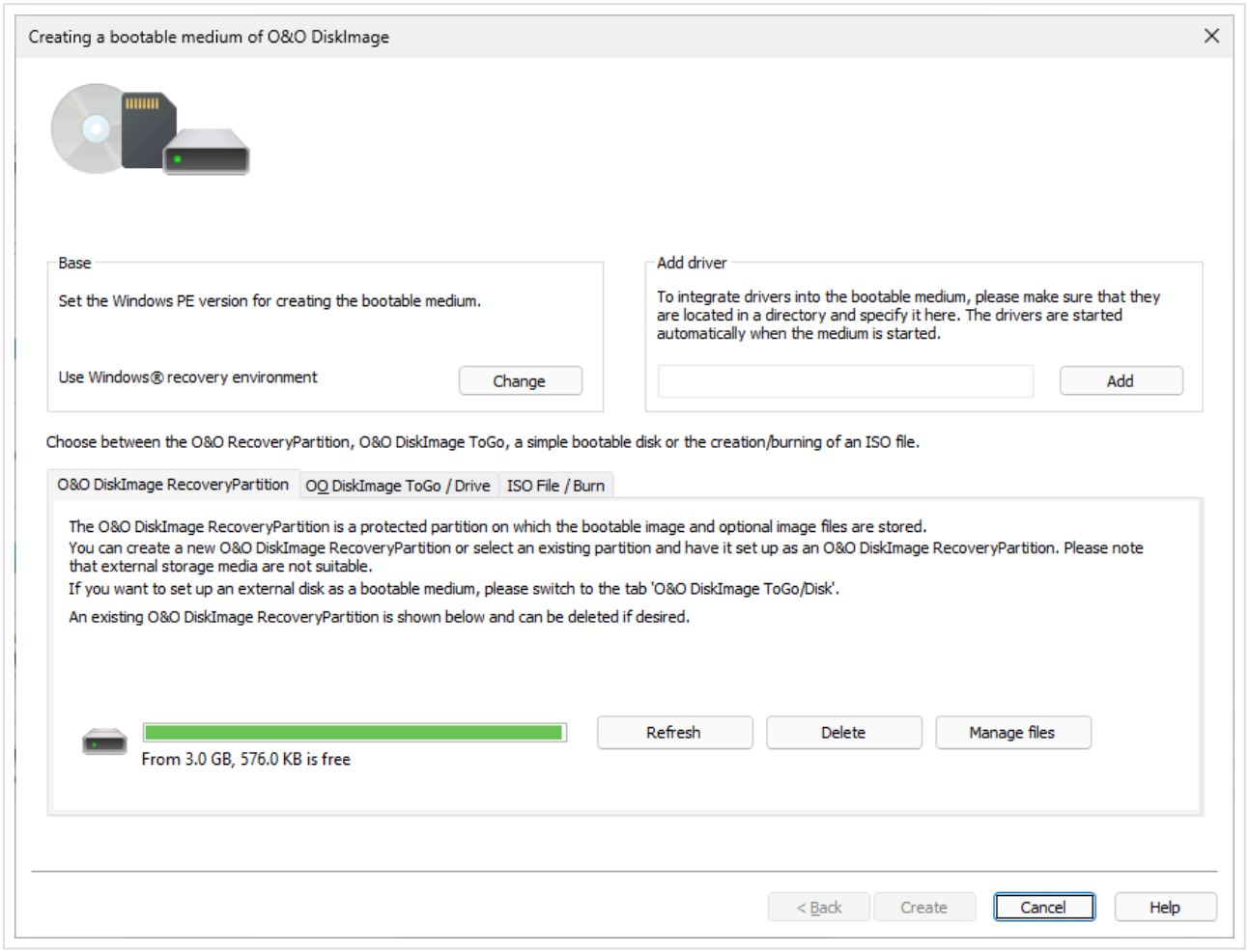
:::

:::note

The Start CD, needed for running O&O DiskImage without an operating system and for restoring system partitions, is not included n the O&O DiskImage Special Edition.

:::

# Create a boot medium




The bootable disk is created based on the operating system you are using. This means that if you have a 64-bit system, a 64-bit boot disk will be created. Using a 64-bit boot disk you'll be able, among other things, to restore images of GPT hard disks under UEFI/EFI systems.

Creating a bootable disk with O&O DiskImage is possible by going to the menu item **Tools** -> **Create bootable disk**. This feature detects those options available for creating a bootable disk within the system. It will then copy all the files that are required for doing this.

The current options available for creating will be identified with a green check . Those options not available, because their components are either not installed or not recognized, will be displayed with a red


cross .

The base will be selected automatically, providing that a base can be found. You can adjust the base by clicking **Change**. This is, however, normally not necessary because the settings on your system and the possible bases will be adjusted automatically.


Open the respective Microsoft Download page for the ADK or AIK. The Windows ADK/AIK is rather large, taking up between 1.7 – 3.4 GB. The download can therefore take up to a few hours, depending on download speed.


Open the respective installation file (ADK/AIK) and start it.

The program will first try creating a bootable disk using the Windows® recovery environment. When this isn't possible, it will use the "Windows Assessment and Deployment Kit (ADK) for Windows®". The Kit contains a combination of tools that can be used for personalizing, evaluating, and preparing Windows operating systems for use on new computers.

| | |
|---|---|
| **Windows 11** | **If you're using Windows 11, install ADK for Windows 11. You can download the installation file on the following page, it is necessary to download and install both the "Windows ADK" and the "WinPE add-on for the Windows ADK": https://msdn.microsoft.com/en-gb/en-des/windows/hardware/dn913721.aspx** |
| **Windows 10** | If you're using Windows 10, install ADK10. You can download the installation file on the following page: https://docs.microsoft.com/en-us/windows-hardware/get-started/adk-install |
| **Windows 8.1** | If you're using Windows 8.1, install ADK8.1. You can download the installation file on the following page: https://www.microsoft.com/en-gb/download/details.aspx?id=39982 |
| **Windows 8** | If you're using Windows 8, install ADK8.0. You can download the installation file on the following page: https://www.microsoft.com/en-gb/download/details.aspx?id=30652 |

**Individual driver integration when creating a boot medium** You can specify a driver directory so that every driver accepted by the operating system for the boot device is included in the boot media and run automatically when you boot from it. You can integrate drivers into the boot medium for all types of devices, even ones not PnP compatible.

**Individual driver integration when using a boot medium** You can specify a driver directory so that every driver accepted by the offline operating system is included in the operating system and run automatically when you boot up. You can integrate drivers into the boot medium for all types of devices, even ones not PnP compatible, for example graphics cards or network cards.

The next step will involve using the data detected to create a bootable disk. You have the option to burn the CD image onto a CD/DVD or copy it onto a USB stick. Select the CD/DVD burner or USB drive you want. You also have the option of saving the CD image as an ISO file for later use. This will require your entering a file name as well as a path. To complete creation, click "Create".

:::note

On account of the limitations placed on creating Windows bootable disks, O&O DiskImage can only use 2TB for making a bootable medium. If your disk is larger than 2 TB, the remaining space cannot be used.

:::

# Load drivers

If a device such as a hard disk or network card is not automatically recognized when using the bootable medium under Windows PE, a necessary controller driver (e.g., RAID controllers) might be missing.

You can start loading a new driver immediately after inserting the Start CD using the dialog **O&O System settings** and the tab **Drivers**.

Please follow these instructions for loading a new driver:

1. Open the tab **Drivers** in the dialog **O&O System settings** as described above. All recognized Windows devices as well as all devices missing installed drivers will be displayed.
2. Select the device for which you want to load a driver.
3. Click **Load.**
4. Select the desired driver such as one on a connected hard disk, USB Stick or CD*.
5. In the dialog, select **Open** to install the driver.
6. You'll then see a program message informing you about the status of the installation.

***Note:** You can remove the Start CD from the drive in order to insert a driver CD from a manufacturer.

:::note

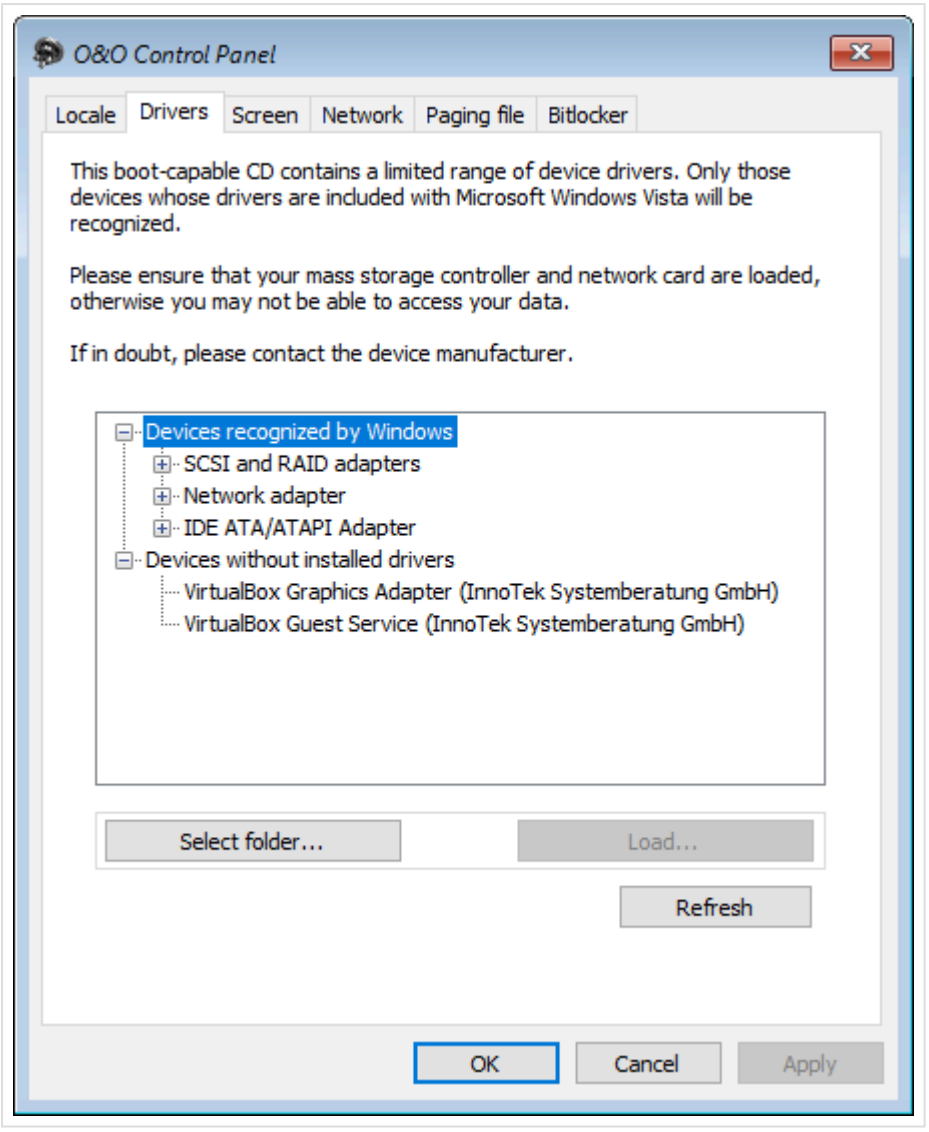
Under certain circumstances, you may receive a notice requiring you to restart if you have loaded an additional driver under Windows PE. This message is automatically generated by Windows PE but is irrelevant when starting from a CD. Simply reject the request and follow the further instructions in the pop-up window.

:::

:::note

Encrypted drives are not supported under Windows PE

:::


O&O Control Panel
Locale
Drivers
Screen
Network
Paging file
Bitlocker
This boot-capable CD contains a limited range of device drivers. Only those devices whose drivers are included with Microsoft Windows Vista will be recognized.
Please ensure that your mass storage controller and network card are loaded, otherwise you may not be able to access your data.
If in doubt, please contact the device manufacturer.
Devices recognized by Windows
SCSI and RAID adapters
Network adapter
IDE ATA/ATAPI Adapter
Devices without installed drivers
VirtualBox Graphics Adapter (InnoTek Systemberatung GmbH)
VirtualBox Guest Service (InnoTek Systemberatung GmbH)
Select folder...
Load...
Refresh
OK
Cancel
Apply

# BitLocker

O&O DiskImage currently requires the Bitlocker recovery key in order to access the drives.

**Restore** If the entire hard drive is encrypted (and backed up), recovery can also be done without first entering the Bitlocker recovery key. If only a single drive is to be restored from the backup, access must be gained by entering the Bitlocker recovery key.

Use the command line (“cmd”) for this:

```
manage-bde -unlock x: -RecoveryPassword
```

Where x represents the drive and the recovery key must be entered after RecoveryPassword.

:::note

Even if it says "Recovery Key", it just does "unlock".

:::

**It should be noted that the status of the encryption depends on the selected backup method** With the default setting "Used Sectors", the encryption information is not backed up. If restored, Bitlocker would not be active. To create the backup including the encryption information, select the "Direct forensic" method in the backup options for the drive backup. This backs up all sectors of the hard drive, including empty sectors. This means that the backup is larger, but the hard disk remains encrypted during the restore.

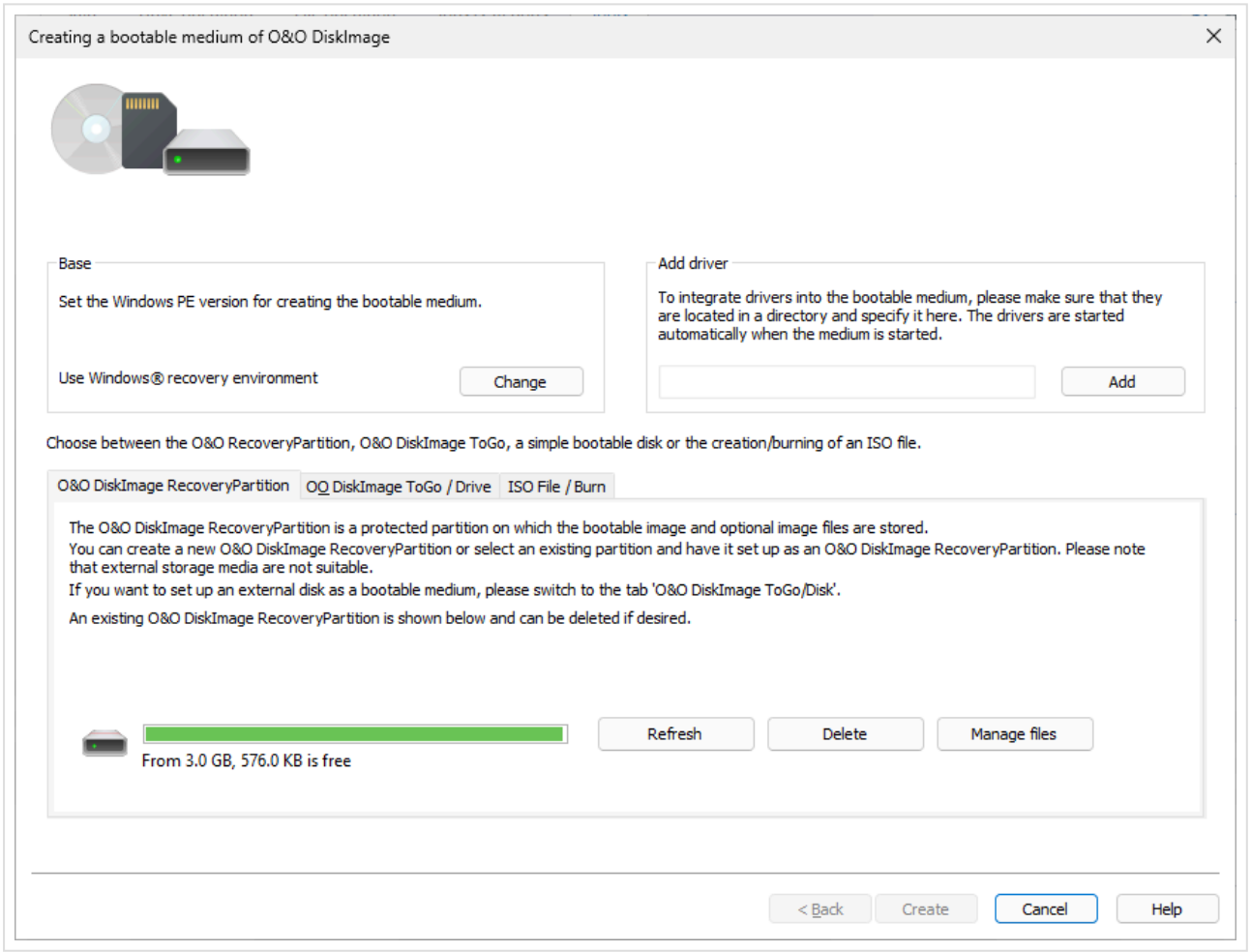
# O&O DiskImage RecoveryPartition

**System requirements**

- Required free space: 3GB
- Required free space if the recovery partition is being used by default: at least 10% of the hard disk size but no less than 25 GB 25GB
- Used with MBR layout: maximum 3 primary partitions
- Dynamic disks are not supported

**Create O&O DiskImage RecoveryPartition**

The O&O DiskImage RecoveryPartition contains a bootable image and, if wanted, your backups. If ever your operating system is no longer able to start, the O&O DiskImage boot environment will start automatically. Here you'll be able to restore backups from your O&O DiskImage RecoveryPartition or from an external disk.




To create this kind of partition, please do as follows:

1. Open O&O DiskImage and click **Recovery media**.
2. If you already created an empty partition, select **Choose**.
3. Or you can have O&O DiskImage create the partition for you by clicking **Create**.
4. In the open dialog, select the drive from the dropdown menu where you want the O&O DiskImage RecoveryPartition to be created. If you want to use a partition you already created, select it from the drive list.
5. You can use the O&O DiskImage RecoveryPartition as your default path for future backups. If you chose this option for creating a new partition, the O&O DiskImage RecoveryPartition created might be very large so that there'll be enough space for backups. In the field **Maximum size** you can change the size of the O&O DiskImage RecoveryPartition to meet your requirements.
6. By clicking **OK**, a bootable image will be generated. If ever an error occurs while the system is booting, the O&O DiskImage boot environment will start automatically and you'll be able to restore a backup.
7. Once creation is completed, we recommend making a complete or One-click image. To do this, switch over to **Drive imaging** and run the imaging option you want. If you selected the O&O DiskImage RecoveryPartition as your default backup path, the image will be saved there.

**Booting from the O&O DiskImage RecoveryPartition**

1. Hold the **shift** key while clicking **Restart** in the start menu.
2. As an alternative you can select **Update & Security** in Settings. Left-click **Recovery** in the menu. At the right under **Advanced start** you'll be able to boot from the advanced start environment by clicking **Restart now**.
3. Under **Resolve problems**, **Advanced options** select **Start help** to boot from the boot environment.
4. If your system has a problem, the advanced start will be run automatically and under Resolve problems, **Advanced options**, **Start help** you'll be able to boot from the O&O DiskImage RecoveryPartition and restore a backup.

:::note

After booting, the O&O DiskImage RecoveryPartition will be displayed in the O&O DiskImage interface as a drive with the last available drive letter (usually "Z").

:::

**Delete or update an existing O&O DiskImage RecoveryPartition**

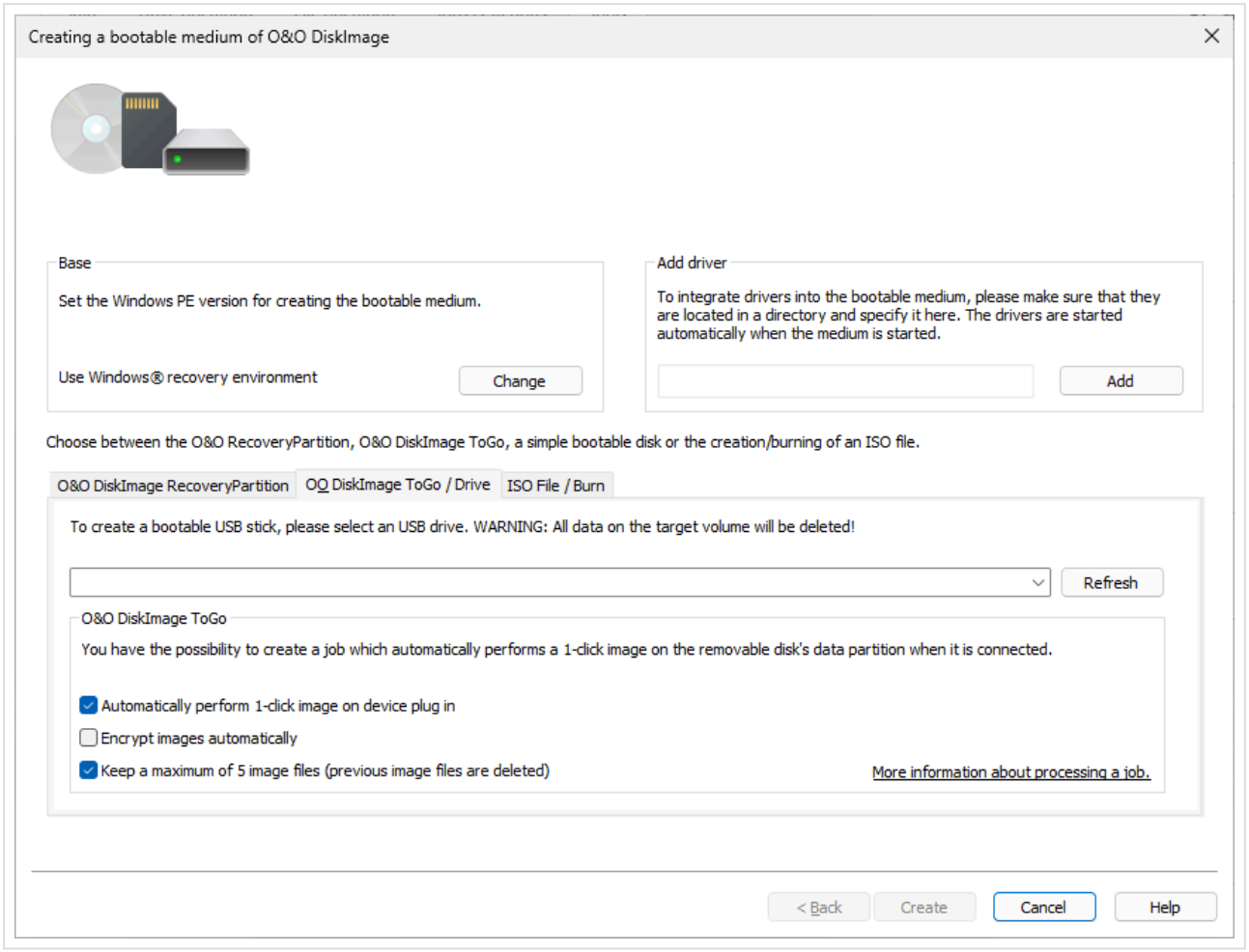
1. If you already have an O&O DiskImage RecoveryPartition and wish to change or remove it, click **Recovery media** on the program's start page.
2. In the opening dialog you'll see the existing O&O DiskImage RecoveryPartition.
3. Select the option **Update** if you want to update O&O DiskImage and use the latest version of the bootable image for your O&O DiskImage RecoveryPartition. Doing so will have not affect your backups.
4. Select **Delete** if you want to remove the O&O DiskImage RecoveryPartition completely. The partition will then be deleted and the Windows restoration environment, if available, reactivated.

:::warning

When you select **Delete**, all backups on the O&O DiskImage RecoveryPartition will be lost. Use only the integrated deletion feature in O&O DiskImage to delete the O&O DiskImage RecoveryPartition. Deleting any other way could result in serious damage to the system.

:::

# O&O DiskImage ToGo

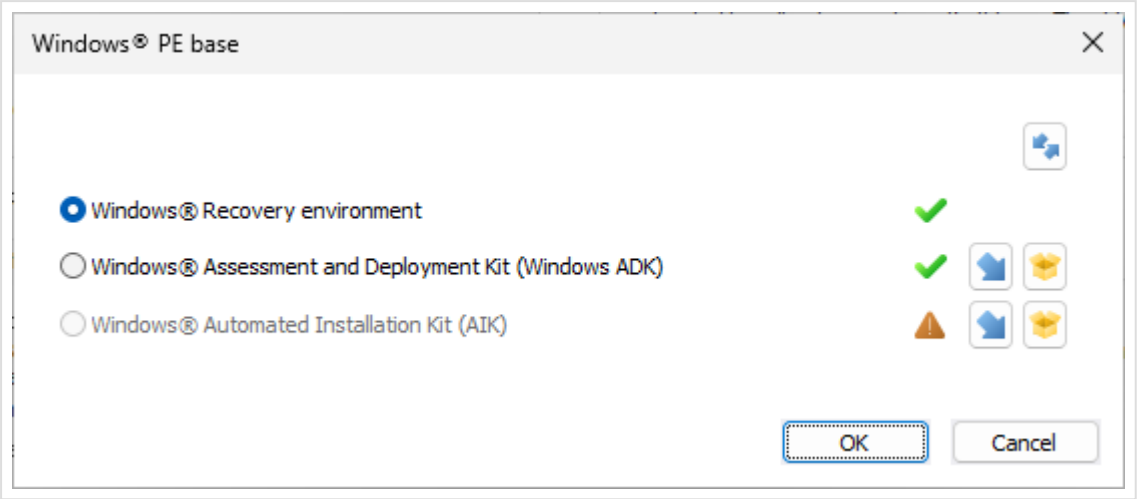



O&O DiskImage ToGo function automatically turns an external hard drive that you select to store an image on (or USB flash drive with enough storage space) into an O&O DiskImage boot medium, and marks this disk as the preferred storage medium for future system backups. As soon as you connect this external USB hard disk to your computer, O&O DiskImage automatically creates an image of all internal drives and the data partition onto it.

This makes it easy to create a recent backup. And, if something really happens to your computer or you want to transfer your system and all your data to a new computer, then with the O&O DiskImage boot medium you can restore the image stored on it with just one touch of a button, without the hassle of searching for the boot medium and the external hard drive with the backup.

Creating a bootable disk with O&O DiskImage is possible by going to the menu item **Tools** -> **Create bootable disk**. This feature detects those options available for creating a bootable disk within the system. It will then copy all the files that are required for doing this. To begin the process, click **Create**. Once this step is successfully completed, click **Finish**.

**Change Windows PE version**




The current options available for creating will be identified with a green check . Those options not available, because their components are either not installed or not recognized, will be displayed with a red cross .

When enabled, automatic prioritization guarantees that the best option for creating will be selected automatically. Select "Disable the automatic setting" if you wish to use another option. Once this is done, the various options available for creating will be displayed for selection.

Open the respective Microsoft Download page for the ADK or AIK. The Windows ADK/AIK is rather large, taking up between 1.7 – 3.4 GB. The download can therefore take up to a few hours, depending on download speed.

Open the respective installation file (ADK/AIK) and start it.

The program will first try creating a bootable disk using the Windows® recovery environment. When this isn't possible, it will use the "Windows Assessment and Deployment Kit (ADK) for Windows®". The Kit contains a combination of tools that can be used for personalizing, evaluating, and preparing Windows operating systems for use on new computers.

| | |
|---|---|
| **Windows 11** | **If you’re using Windows 11, install ADK for Windows 11. You can download the installation file on the following page, it is necessary to download and install both the "Windows ADK" and the "WinPE add-on for the Windows ADK": https://msdn.microsoft.com/en-gb/en-des/windows/hardware/dn913721.aspx** |
| **Windows 10** | If you’re using Windows 10, install ADK10. You can download the installation file on the following page: https://msdn.microsoft.com/en-gb/en-des/windows/hardware/dn913721.aspx |
| **Windows 8.1** | If you’re using Windows 8.1, install ADK8.1. You can download the installation file on the following page: https://www.microsoft.com/en-gb/download/details.aspx?id=39982 |
| **Windows 8** | If you’re using Windows 8, install ADK8.0. You can download the installation file on the following page: https://www.microsoft.com/en-gb/download/details.aspx?id=30652 |

**Change removable medium** Select an external hard drive to store an image on (or USB flash drive with enough storage space).

:::note

On account of the limitations placed on creating Windows bootable disks, O&O DiskImage can only use 2TB for making a bootable medium. If your disk is larger than 2 TB, the remaining space cannot be used.

:::

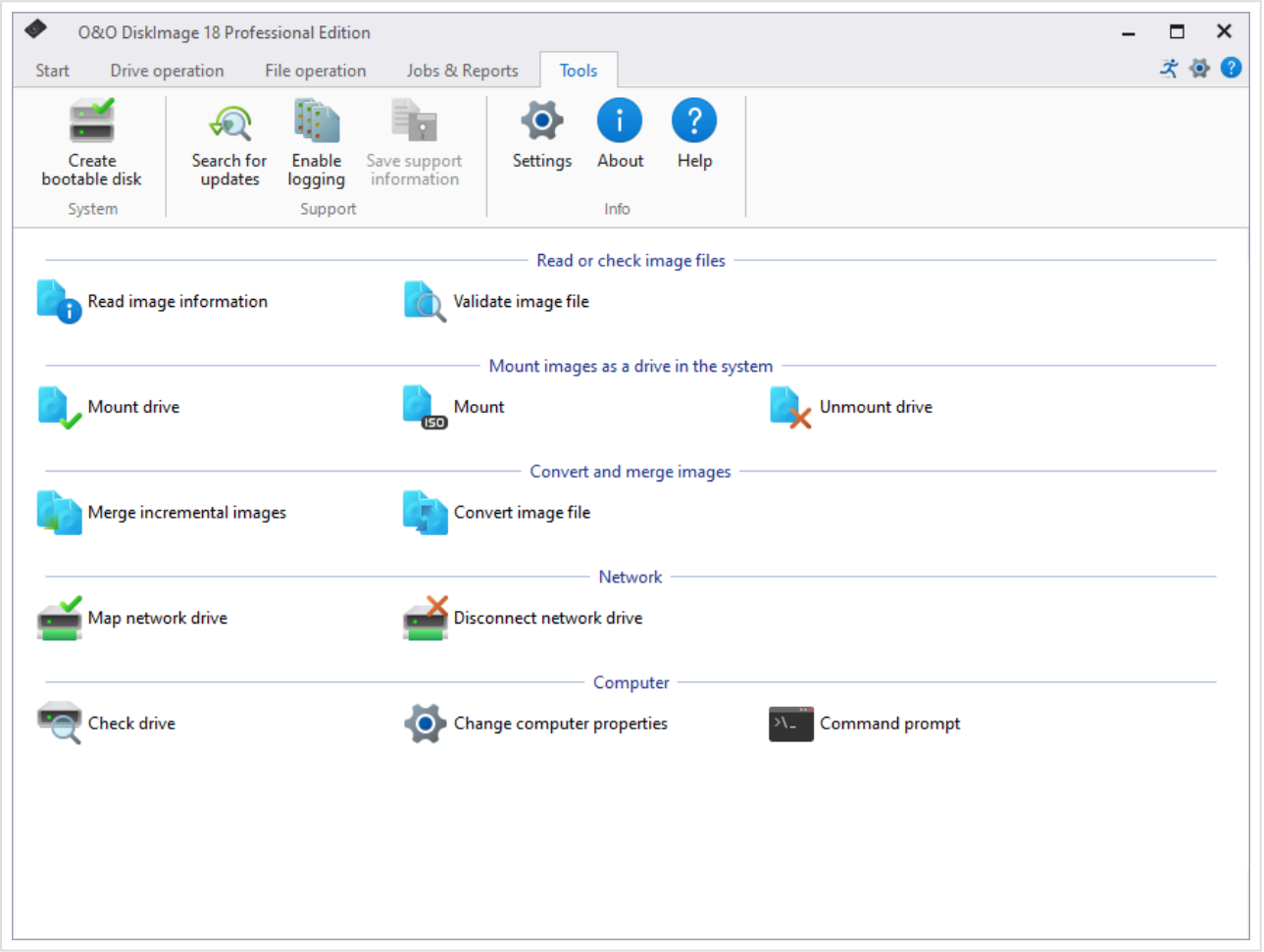
:::warning

All data on the target volume will be deleted.

:::

# Tools

The tools menu includes options for processing images and further activities.



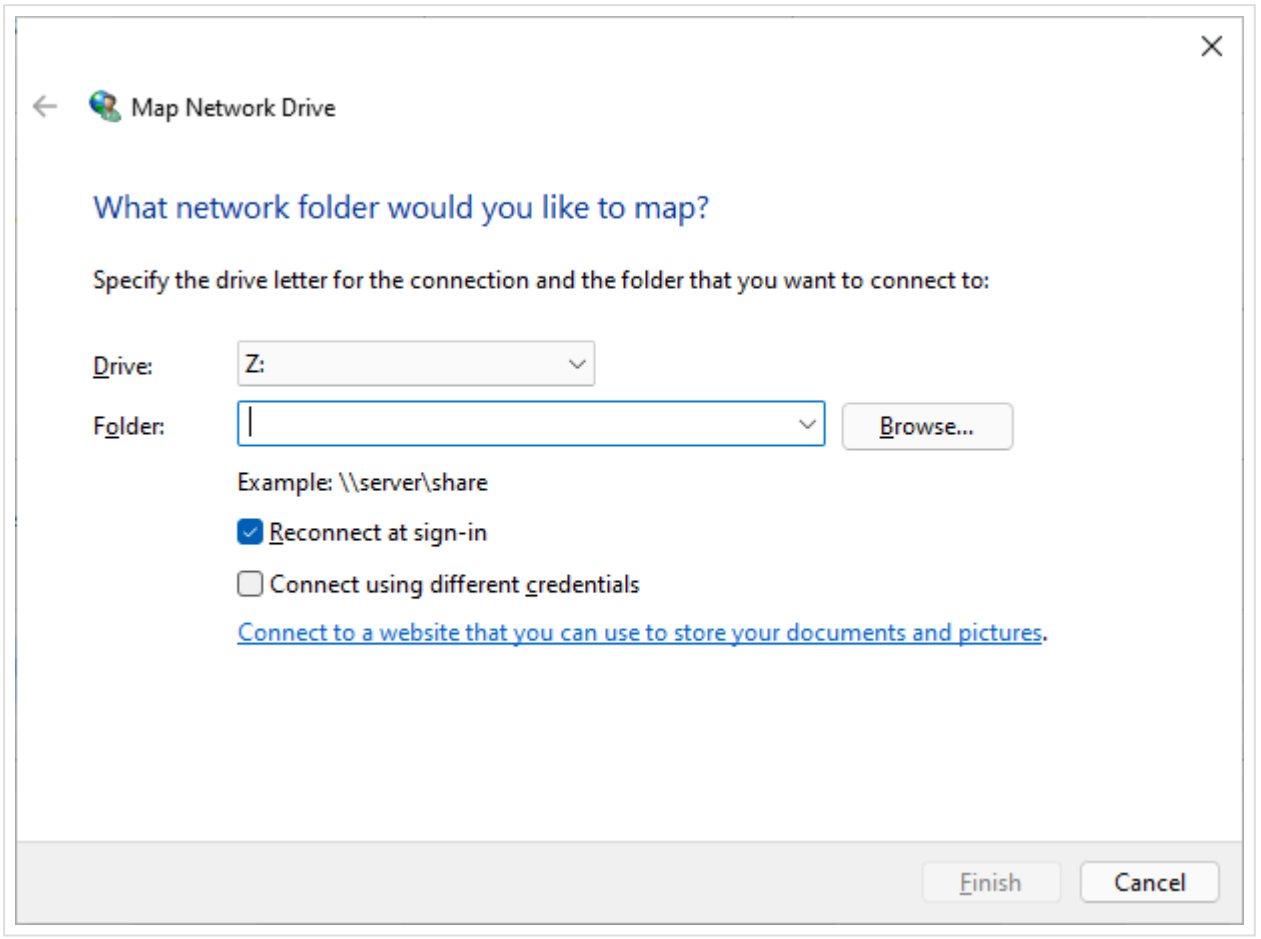

## System

Along with specific features for imaging, O&O DiskImage offers a selection of additional tools. You can, for example, use the **check drive** feature to estimate your drive's health. O&O DiskImage also provides options for **Command prompt** and **Change computer properties**.

It's advisable to create an O&O DiskImage bootable medium, either as a simple disk or ToGo. Using the simple disk, you can boot the computer from it whenever needed and start restoration. The O&O DiskImage ToGo option is a bootable medium that can also be used as a storage device for your images. If you haven't yet made a boot medium for your images, we recommend using O&O DiskImage ToGo.

# Network

**Map/Disconnect network drive** Under Tools in the ribbon bar, you can select the setting **Map network drive**.Under **Disconnect network drive** the connection can be interrupted.




:::note

Network authentication is needed for accessing network drives when images are saved on or restored from them. Read more about it in the chapter Authentication within the network.

:::

# Convert and merge images

We recommend that you always create images in O&O DiskImage's own format. This will allow you to work easily with the image in the future and use all the program's features on it. If you do wish to use a different format, please use conversion. This feature will allow you, for example, to change the format of your O&O DiskImage file into a virtual hard disk.

You can also combine the images of changes into one complete image. This can be helpful when, for example, you want to save older image files and improve the clarity of your archive.

## Convert an image file

The tool **Convert image file** allows you to change the properties and content of existing images (OMG). It creates a copy of the image file (OMG), so that the original image remains intact.

Further settings like compression, encryption or splitting images into several image files with a certain size are possible.

**Merge images** In Tools under **Convert image file/Add** you can select the drives for merging.

This enables separate image files to be merged together. Only image files of similar types can be merged: that means only forensic, direct forensic or used sector images can be combined.

Simply add the drive from the list.

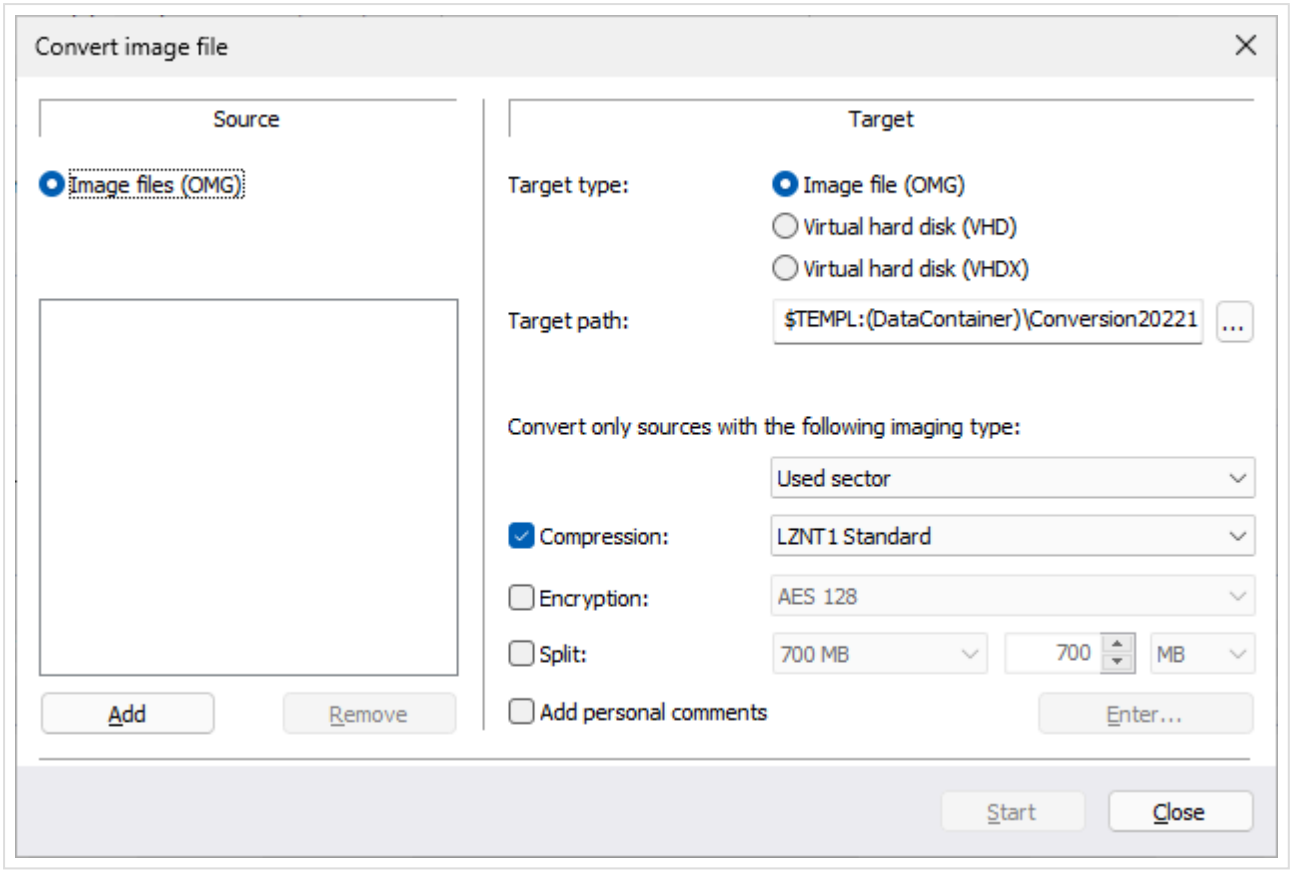
**Handling virtual hard disks (VHD/VHDX)** To simplify working with Microsoft Virtual PCs (VPC), you can now convert image files into virtual drives (VHD/VHDX). The converted image can be integrated as a virtual drive in the VPC, without having to install O&O DiskImage there.

1. To convert an image to a virtual drive file (VHD/VHDX), click **Convert image file** in the Tools menu.
2. Select **Image file (OMG)** as source in the Convert image file dialog and attach the desired image file.
3. Enter **Virtual hard disk (VHD/VHDX)** as target and click **Start**.

:::note

The following options **cannot** be selected for a VHD/VHDX: Compression, Encryption, and Split. In addition, only the following imaging methods are available "Only used sectors" or "Forensic".

:::




## Merge incremental images

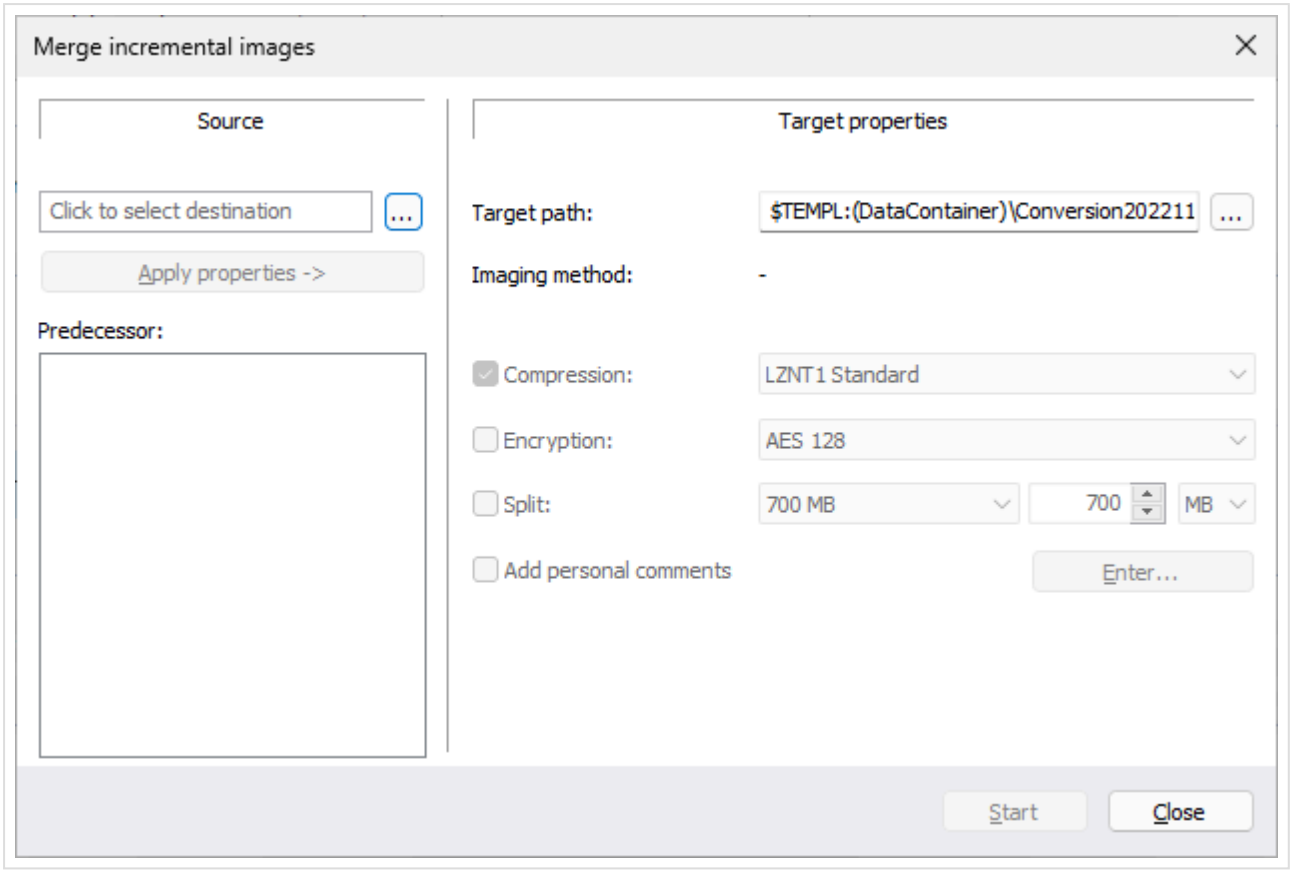
If you have already created several incremental images, you can combine them to form a new base image. The newly created base image is now a "complete" image. Older images that contained only changes can be deleted once the combining has been completed.

1. Make sure your computer will be able to access all drives where the base and incremental images are located.
2. In the menu bar under **Tools** click **Merge incremental images**.
3. A program window will appear where you can select and merge the existing image files.

:::note

Only consecutive image files (Image of the changes) with the same base image may be merged. By clicking **Image information** and the corresponding **Drive information** you will find all details about the image(s).

:::


Merge incremental images
Source
Click to select destination
...
Apply properties ->
Predecessor:
Target properties
Target path:
$TEMPL:(DataContainer)\Conversion202211
...
Imaging method:
-
Compression:
LZNT1 Standard
Encryption:
AES 128
Split:
700 MB
700
MB
Add personal comments
Enter...
Start
Close

# VHD and VHDX files

To make working with Microsoft Virtual PCs (VPC) easier, you can convert backups (*.omg) into virtual drives (*.vhd/*.vhdx files). The converted image can be integrated as a virtual drive on the VPC without having to install O&O DiskImage there.

## Use VHD/VHDX files

Images converted with O&O DiskImage can be started in situations where your computer no longer starts. Converted *.vhd/*.vhdx files can be run as virtual machines.

You can mount a *.vhd/*.vhdx file as an additional drive with Windows 8.1/10/11. The *.vhd/*.vhdx file can contain any number of partitions.

To verify that your backup is valid and can be restored as a bootable operating system, you can boot and test your system in a converted *.vhd/*.vhdx file.

:::note

The following options cannot be selected for a VHD/VHDX file: Compression, Encryption and Splitting. Furthermore, only the backup methods "Only used sectors" or "Forensic" are available.

:::

## Of importance

A file backup cannot be converted to a *.vhd/*.vhdx file.

Any changes you make to a started or mounted *.vhd/*.vhdx file will also be saved within it. If you start your system from a *.vhd/*.vhdx file and make changes to data that are not included in the backup, these changes will affect your current system.

In order to boot from a converted *.vhd/*.vhdx file, it must contain the following: • The system partition of the same computer. You cannot use the *.vhd/*.vhdx file to start another computer. • Windows 8.1 or newer operating system.

A VHD/VHDX file can contain a maximum of one data medium/"disk". Multiple disks cannot be converted into one VHD/VHDX file.

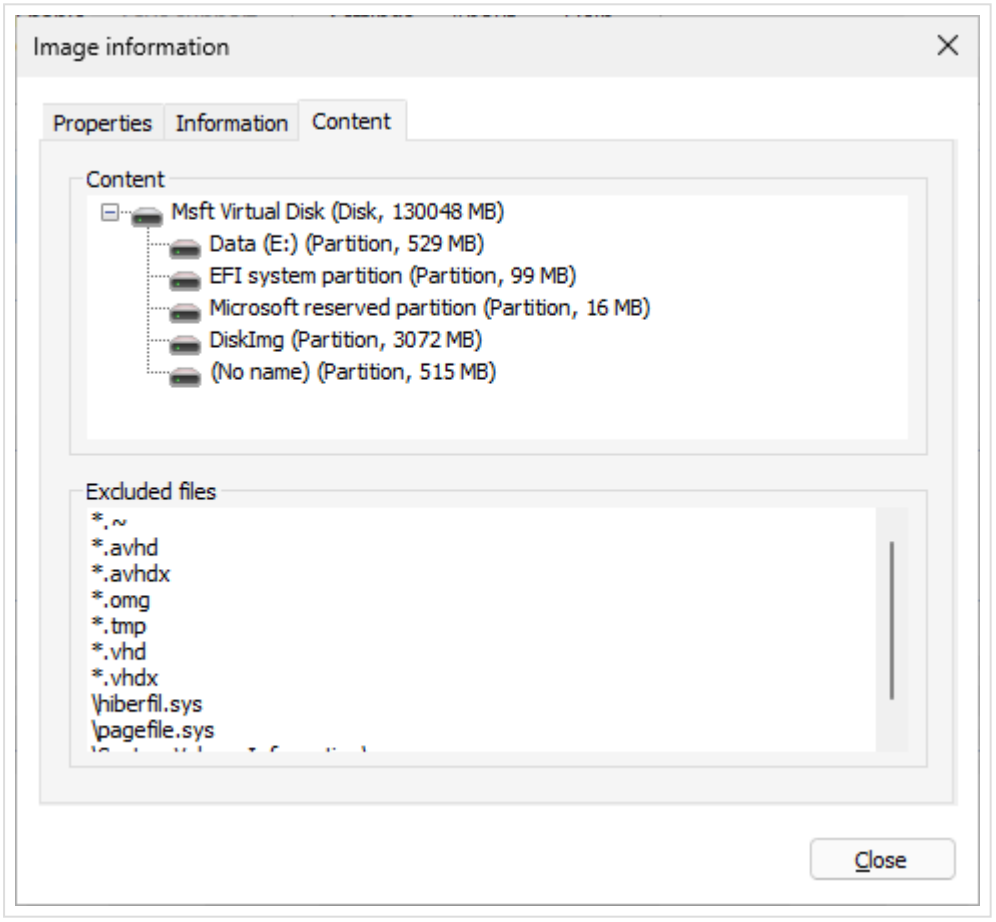
O&O DiskImage cannot convert *.omg files that contain dynamic partitions that are located on multiple drives (dynamic partitions of the "spanned" or "mirrored" type).

# Read and validate image files

All tools that can be used for managing image files can be found in the program window under Tools. They can be used on existing image files of every type.

## Image information

Select **Read image information** to access information on existing image files (*.omg/*.obk). After you've selected an image file in the browser window, you'll see information such as the imaging method, date of creation and image contents displayed.




## Validate an image file

Under **Tools** is a function called **Validate image file**. This function checks the structural integrity of an image file. It determines whether the logical structure is intact. Damage can be caused by virus attacks or defective

hardware. In addition, encrypted and/or compressed images will be checked to determine if decryption or decompression is possible without error.

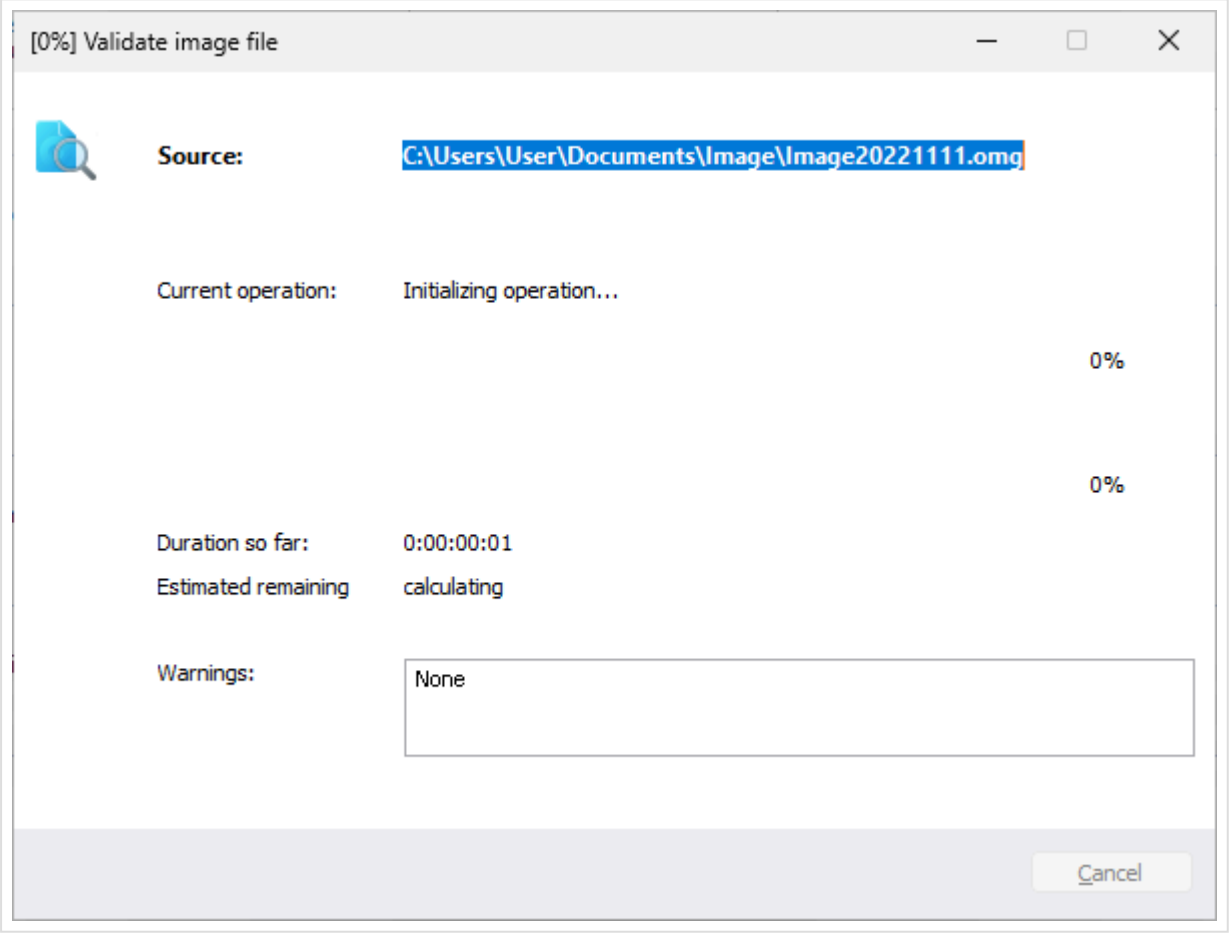
Reasons for an abortive validation:

- Encryption and decryption are not functioning
- Compression and decompression are not functioning (Windows API/System interfaces)
- The user has changed the image file
- Image has been changed by a program driver (e.g. anti-virus software)
- Image is stored on a defective volume

:::note

To make sure your image is created or restored without error, keep the validation process running until the imaging or restoration is completed. If you choose to “Skip” or “Abort”, there’s no guarantee that your image will be created or restored intact.

:::



# Virtual drives

Virtual drives can often be very helpful which is why O&O DiskImage has the option for mounting them from images. Thanks to virtual drives, images don't have to be restored if you only want to use individual files from the backup. Images can instead be mounted and used while the system's running.

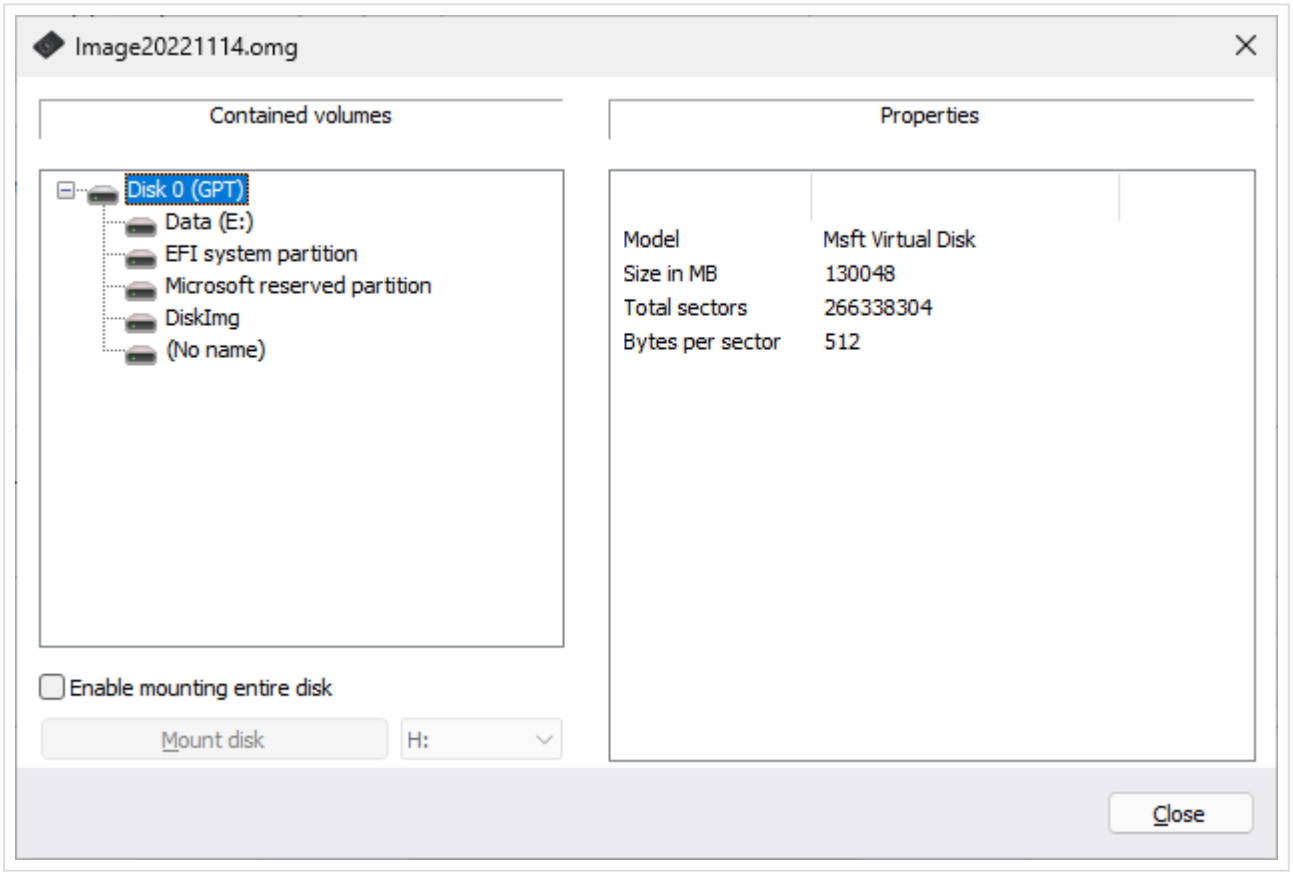
:::note

A special driver from O&O DiskImage will often be needed for mounting images. The program will inform you if this driver is needed and prompts you to install it.

:::

## Mount a drive

You can have your created image file displayed in Windows Explorer as a virtual drive. This allows you to copy files or directories from the image file onto existing hard disks.It is, however, not possible to make changes (such as deleting or adding files) to the virtual hard disk mounted from the image file.




1. Open **Tools** in the menu bar and select the option **Mount drive** . Or use ctrl+M.

2. In the dialog window, select the image file (*.omg) from which you want to mount the drive. If you are not sure, you can look up the details of the image under **Image information**.
3. After selecting the image file, all drives included in the image will be listed in the program window.
4. Select the displayed drive from the image.
5. Afterwards, you can select any name from the drive list (e.g. G:) for the drive from the image.
6. Then, click **Mount drive**. The virtual drive from the image will then be visible as a regular drive in the Windows Explorer.

Please note that you may only access sectors which contain image files. Refreshing can take a few moments.

:::note

Please keep in mind that drives can only be mounted from an image if the image is available locally. You cannot mount a drive from an image located in the network.

:::

Enable mounting disk: If you create an image of one or more partitions/volumes, the image contains additional information about the disk (or hard disk) along with the imaged data. This information will concern the hard disk's structure as well as its corresponding system areas such as the master boot record, possibly existing extended boot records, the LDM (logical disk management) database or the GUID partition table. With the function **Enable mounting entire disk**, you can load this information or use it for acquainting the hard disk to the operating system based on the disk's original information. We recommend using this function when you want to restore deleted or destroyed data from a forensic image.

:::note

Creating a virtual disk out of an entire hard disk can result in recognition problems for the virtual disk when the following applies to the hard disk being imaged: - defective or invalid partition tables - partitioning process not supported by your operating system (e.g. GPT) - dynamic hard disks containing volumes that are spanned, striped, mirrored or RAID5 when not all the hard disks being used were imaged - encrypted hard disk

:::

**Technical limitations** - Windows refresh problem: if you're working with a remote desktop connection, a new login will be needed for displaying the mounted drives. - Mounting images larger than 2TB is not supported by Windows XP (32-bit).

:::note

After restarting from Windows, the virtual drive is removed automatically from the drive list.

:::

:::note

When mounting VHD / VHDX files, the following error message may appear: "File could not be mounted. The disk image is not initialized, contains partitions that cannot be recognized, or contains volumes that have not been assigned drive letters. Use disk management Snap-in to ensure that the disk, partitions, and volumes are in a usable state. " This particular error message can be ignored. Your file is integrated correctly despite the error message.

:::

## Mount an ISO file

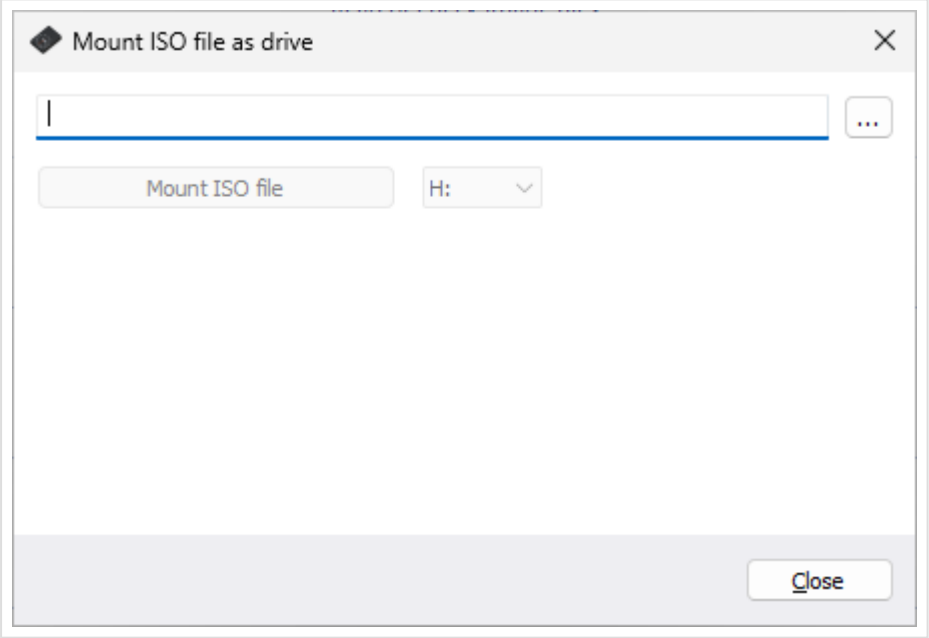
If you have saved data as an ISO file, you can mount this ISO file as drive and view the files it contains. This allows you to copy individual files and folders from the ISO file onto existing drives. It is, however, not possible to make changes (such as deleting or adding files) to the virtual hard disk mounted from the ISO file.

1. Open **Tools** in the menu bar and select the option **Mount ISO file as drive.**
2. Select the ISO file (*.iso), whose content you want to mount as a drive.
3. After selecting the ISO file, click **Mount ISO file.** If you want to label it with a certain letter, you can select another letter from the list.
4. Refreshing can take a few moments.
5. The virtual drive from the ISO file will then be visible as a regular drive in the Windows Explorer.

:::tip

If you want the virtual drive to also be visible in the O&O DiskImage drive list, make sure to check **Include CD and DVD drives** under **Program settings/General** and click **Show drives not able to be imaged** under **View**.

:::




:::note

After restarting from Windows, the virtual drive is removed automatically from the drive list.

:::

# Unmount a drive

**Remove mounted drive** If you no longer wish to see a virtual drive that you mounted from an ISO or imaging file, under **Tools** click /strong>Remove and remove the drive in the program window.

:::tip

The virtual drive will be automatically removed from the drive list after you restart Windows.

:::

# Command prompt

O&O DiskImage also has a command line version available. You can use it from the Windows command prompt (cmd). The O&O DiskImage command line makes it possible to manage disks, partitions/volumes, and images by use of commands.

Please start the command prompt (**Tools** -> **Command prompt**). The graphical user interface of O&O DiskImage will not be shown during a start from the command line. First, navigate in the command line (cmd) to the installation folder of O&O DiskImage. You will then be able to use the parameters listed in the chart.\

**Example:** C:\Program Files\OO Software\DiskImage>oodicmdc.exe /create image /source S: /destination E:\Sample.org

:::note

Please note that when entering the parameter in the command line, **no** manual line break may be included in the command sequence. Otherwise, the command will not be executed as intended. The line breaks in the examples are caused by the document’s formatting.

:::

**Structure of a command** "Command" |Subcommand| "Parameter" Example: /Help /?

**Example:** Creating an image of Drive "S". oodicmdc.exe /create image /source S: /destination E:\Sample.omg

Validating the image "E:Sample.omg". oodicmdc.exe /validate /source E:Sample.omg

Restoring the image of drive “S“ onto drive "T". All data on drive "T" can be overwritten/deleted. oodicmdc.exe /restore image /image E:\Sample.omg /source S: /destination T: /OverwriteTargetData

The command line interpreter from O&O DiskImage can process the following commands and parameters:

:::note

Values can be additionally defined by the use of " and '.

:::

Example: /format "O&O DiskImage"

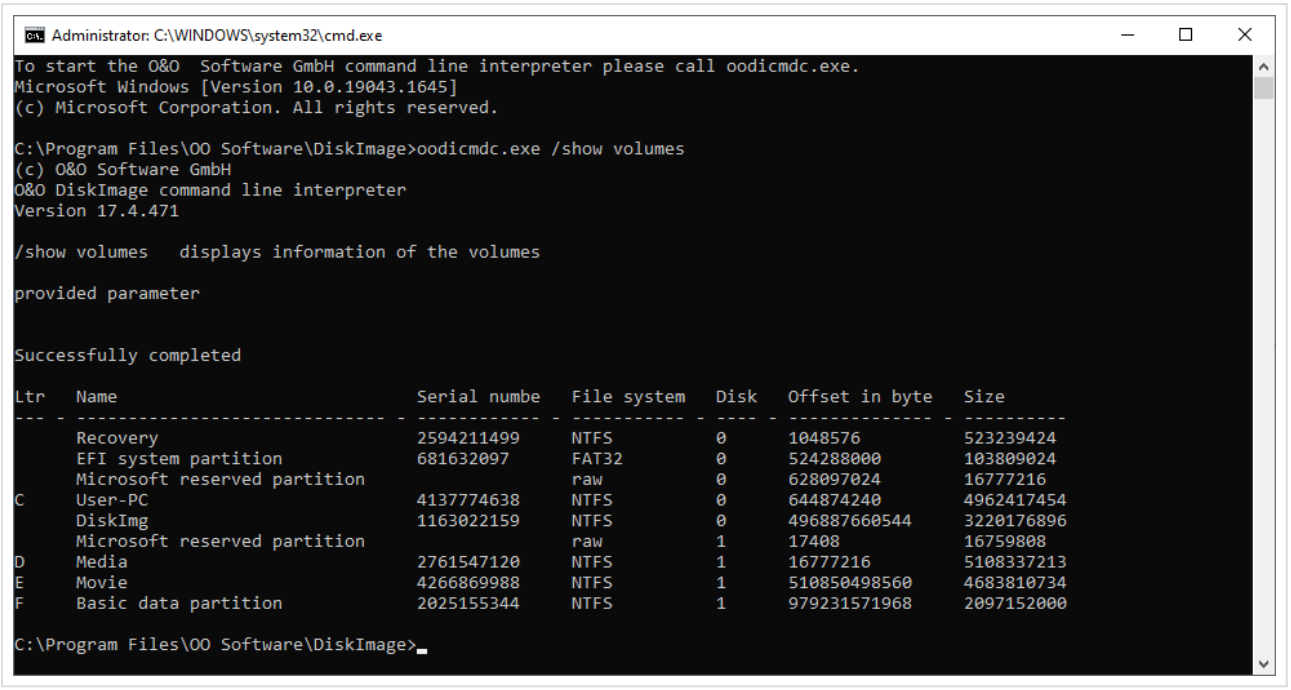
The command line interpreter from O&O DiskImage can process the following commands and parameters:

| Command | Explanation |
| --- | --- |
| /create image /source "Parameter"<br>Parameter: Drive letter x:<br>Parameter: VolumeGuid {xxxx-xxxx-xxxx-xxxx}<br>Parameter: DiskNo X<br>Parameter: Offset@DiskNo X@Y<br>/destination "Parameter" (optional)<br>/password "Parameter" (force dismount) (optional)<br>/comment "Parameter" (optional)<br>/exclude "Parameter" (optional)<br>/type "Parameter" (optional)<br>/max "Parameter" (optional)<br>/format (optional)<br>/VirtualDiskType (optional) | Creation of a sector-based image. Source selection:<br>Drive letter, e.g. D:<br>Volume Guid, e.g. {xxxx-xxxx-xxxx-xxxx}<br>Disc number, e.g. 0<br>Offset of the volume on the disk, e.g. 1048576@1<br>backup path/backup name<br>Automatic encryption<br>Comment<br>File name including path and/or wildcards<br>Type of backup "used sector" or "forensic" are possible, default used sector<br>Maximum size of the target file in MB<br>Format of the backup file: "O&O DiskImage", "VHD Format" or "VHDX Format", standard "O&O DiskImage". Example: /format "O&O DiskImage"<br>Type of the corresponding format: "dynamic hard disk" or "fixed hard disk", default "dynamic hard disk" Example: /VirtualDiskType "dynamic hard disk" |
| /create image increment | Creation of an incremental sector-based image |
| /restore image /image "Parameter"<br>Parameter: Drive letter x:<br>Parameter: DiskNo X<br>Parameter: Offset@DiskNo X@Y<br>/source "Parameter"<br>/destination "Parameter" (optional)<br>Parameter: Drive letter x:<br>Parameter: VolumeGuid {xxxx-xxxx-xxxx-xxxx}<br>Parameter: DiskNo X<br>Parameter: Offset@DiskNo X@Y<br>/DecryptPassword "Parameter" (optional)<br>/FillEmptyBlocksNull (optional)<br>/WriteHarddiskDrive (optional)<br>/CreateVolumeLikeSource (optional)<br>/IgnoreReadErrors (optional)<br>/SetBootPartitionBootable (optional)<br>/ClearTargetDrive (optional)<br>/OverwriteTargetData (optional)<br>/IgnoreDataModification (optional) | Restoration of a sector-based image Path and name of the backup file<br>Source selection, objects from the backup file:<br>Drive letter, e.g. D:<br>Disc number, e.g. 0<br>Offset of the volume on the disk, e.g. 1048576@1<br>target selection<br>Drive letter, e.g. D:<br>Volume Guid, e.g. {xxxx-xxxx-xxxx-xxxx}<br>Disc number, e.g. 0<br>Offset of the volume on the disk, e.g. 1048576@1<br>Password for an encrypted backup<br>Fill unused sectors with '0' bytes<br>Do not open the device via the volume but via the data medium<br>Create the target volume like the source volume without asking<br>Ignore read errors without asking<br>Mark a bootable partition as bootable without asking<br>Delete the layout on the target without asking<br>Overwrite data on the target without asking<br>Report data modifications but do not cancel |
| /convert image /image "Parameter"<br>/source "Parameter"<br>/DecryptPassword "Parameter"<br>/destination "Parameter" | Conversion of a sector-based image Imaging path/image name<br>Drive letter x: or DiskNo #<br>For an encrypted image<br>imaging path/image name |

| Command | Explanation |
| --- | --- |
| /destinationPassword "Parameter"<br>/comment "Parameter" (optinal)<br>/max "Parameter" (optinal)<br>/format (optional)<br>/VirtualDiskType (optional) | Automatic encryption<br>Comment<br>Maximum size of the target file in Mbytes<br>Format of the image file: "O&O DiskImage", "VHD Format" or "VHDX Format", default "O&O DiskImage". Example: /format "O&O DiskImage"<br>Type of the according formats: "dynamic hard disk" or "fixed hard disk", default "dynamic hard disk" Example: /VirtualDiskType "dynamic hard disk" |
| /create backup /source "Parameter"<br>/destination "Parameter"<br>/password "Parameter" (optinal)<br>/dismount (force dismount) (optinal)<br>/comment "Parameter" (optinal)<br>/exclude "Parameter" (optinal)<br>/max "Parameter" (optinal)<br>/IgnoreReadErrors (optinal) | Creation of a file-based image File name including path and/or wildcards<br>Imaging path/image name<br>Automatic encryption<br>Log off for protection from data modification, default vss or snapshot<br>Comment<br>File name including path and/or wildcards<br>Maximum size of the target file in Mbytes<br>Ignore read errors without inquiry |
| /restore backup /source "Parameter"<br>/destination "Parameter"<br>/DecryptPassword "Parameter"<br>/IgnoreReadErrors (optional)<br>/OverwriteTargetData (optional)<br>/IgnoreDataModification (optional) | Restoration of a file-based image Imaging path/image name<br>Complete path<br>For an encrypted image<br>Ignore read errors without inquiry<br>Overwrite data on the target without inquiry<br>Report data modifications but don’t stop |
| /validate /source "Parameter"<br>/DecryptPassword "Parameter"<br>/AllSplits (optional) | Validation of a sector-based or file-based image Imaging path/image name<br>For an encrypted image<br>Take all splits into consideration for split image files |
| /mount image /source "Parameter"<br>/image "Parameter"<br>/DecryptPassword "Parameter"<br>/driveletter "Parameter" | Mounting a sector-based image as a virtual disk Drive letter x: or DiskNo #<br>Imaging path/image name<br>For an encrypted image<br>Drive letter x: |
| /unmount image /source "Parameter" | Unmounting a sector-based image Drive letter x: or DiskNo # |
| /duplicate /source "Parameter"<br>Parameter: Drive letter x:<br>Parameter: VolumeGuid {xxxx-xxxx-xxxx-xxxx}<br>Parameter: DiskNo X<br>Parameter: Offset@DiskNo X@Y<br>/dismount (force dismount) (optional)<br>/exclude "Parameter" (optional)<br>/type "Parameter" (optional) | Duplicating a drive or a disk Duplicate a drive or disk<br>Source selection:<br>Drive letter, e.g. D:<br>Volume Guid, e.g. {xxxx-xxxx-xxxx-xxxx}<br>Disc number, e.g. 0<br>Offset of the volume on the disk, e.g. 1048576@1<br>Log out to protect against data modification, default vss or snapshot<br>File name including path and/or wildcards<br>used sector or forensic, default used sector |

| Command | Explanation |
| --- | --- |
| /destination "Parameter"<br>Parameter: Drive letter x:<br>Parameter: VolumeGuid {xxxx-xxxx-xxxx-xxxx}<br>Parameter: DiskNo X<br>Parameter: Offset@DiskNo X@Y<br>/FillEmptyBlocksNull (optional)<br>/WriteHarddiskDrive (optional)<br>/CreateVolumeLikeSource (optional)<br>/IgnoreReadErrors (optional)<br>/SetBootPartitionBootable (optional)<br>/ClearTargetDrive (optional)<br>/OverwriteTargetData (optional) | Target selection:<br>Drive letter, e.g. E:<br>Volume Guid, e.g. {xxxx-xxxx-xxxx-xxxx}<br>Disc number, e.g. 1<br>Offset of the volume on the disk, e.g. 1048576@1<br>Fill unused sectors with '0' bytes<br>Do not open the device via the volume but via the data medium<br>Create the target volume like the source volume without asking<br>Ignore read errors without asking<br>Mark a bootable partition as bootable without asking<br>Delete the layout on the target without asking<br>Overwrite data on the target without asking |
| /add license /name "Parameter"<br>/company "Parameter"<br>/serial "Parameter" | Product registration Your name<br>Your company<br>The serial number |
| /stop | End all running actions |
| /creating bootable medium /recovery environment (optional)<br>/ADK (optional)<br>/AIK (optional)<br>/installation media (optional)<br>/boot device (optional)<br>/ISO path (optional) | Creating a bootable medium Windows® Restoration environment<br>Windows® Assessment and Deployment Kit (ADK)<br>Windows® Automated Installation Kit (AIK)<br>Windows® Installation media<br>CD/DVD burner or USB stick<br>Memory path of the ISO file |
| /show volumes /image "Parameter" | Displays the drives. Path and name of the backup file, if no other parameter is specified, the system volumes are displayed. |

With the help of "/show volumes" a lot of information about the volumes can be displayed, including the drive letter, the disk number and the offset in bytes.


Administrator: C:\WINDOWS\system32\cmd.exe
To start the O&O  Software GmbH command line interpreter please call oodicmdc.exe.
Microsoft Windows [Version 10.0.19043.1645]
(c) Microsoft Corporation. All rights reserved.
C:\Program Files\OO Software\DiskImage>oodicmdc.exe /show volumes
(c) O&O Software GmbH
O&O DiskImage command line interpreter
Version 17.4.471
/show volumes   displays information of the volumes
provided parameter
Successfully completed
Ltr Name Serial numbe File system Disk Offset in byte Size
Recovery 2594211499 NTFS 0 1048576 523239424
EFI system partition 681632097 FAT32 0 524288000 103809024
Microsoft reserved partition raw 0 628097024 16777216
C User-PC 4137774638 NTFS 0 644874240 4962417454
DiskImg 1163022159 NTFS 0 496887660544 3220176896
Microsoft reserved partition raw 1 17408 16759808
D Media 2761547120 NTFS 1 16777216 5108337213
E Movie 4266869988 NTFS 1 510850498560 4683810734
F Basic data partition 2025155344 NTFS 1 979231571968 2097152000
C:\Program Files\OO Software\DiskImage>

# Computer identity and drive check

## Change the computer identity

You can change the identity of your computer to avoid authentication problems whenever the same computer identity is already being used within a network. This can be helpful whenever a system image is being rolled out onto several computers across a network, meaning a fully installed and configured Windows computer is transferred onto the drives of another computer.

Although this method does save time and effort compared to other kinds of duplication, there is a problem arising with each cloned system having the identical computer SID. This influences the security in working group environments. In addition, the security of transfer media might be inhibited in networks with many computer SIDs.

To avoid this problem, O&O DiskImage provides an option for changing the computer identity.

:::note

The SID can only be changed when you run O&O DiskImage from the bootable medium (Start CD) and not during normal Windows operation.

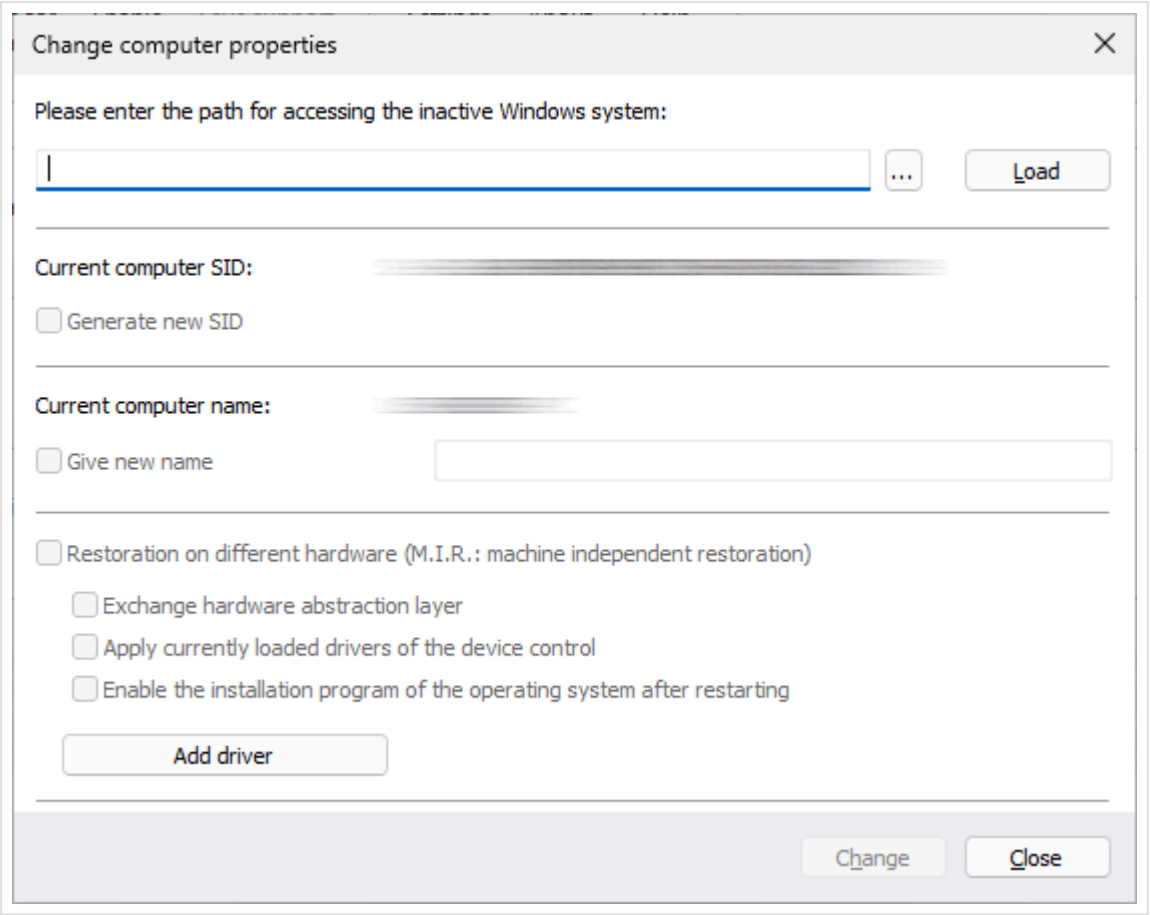
:::

:::note

If an error occurs while changing the current computer SID, we recommend resetting the registration structures SECURITY and SAM.

:::

1. Under **Tools** click **Change computer identity**.
2. Load the computer's non-active Windows system.The active system is the Windows PE being run on the bootable medium.This means that the non-active Windows system is the one not being booted by the hard disk.The path to the non-active Windows system is normally C:Windows.
3. You should then enter a computer name for your computer (Give new name). **Change** saves your settings and the computer identity after you have changed them. **Close** cancels the dialog without applying any changes.

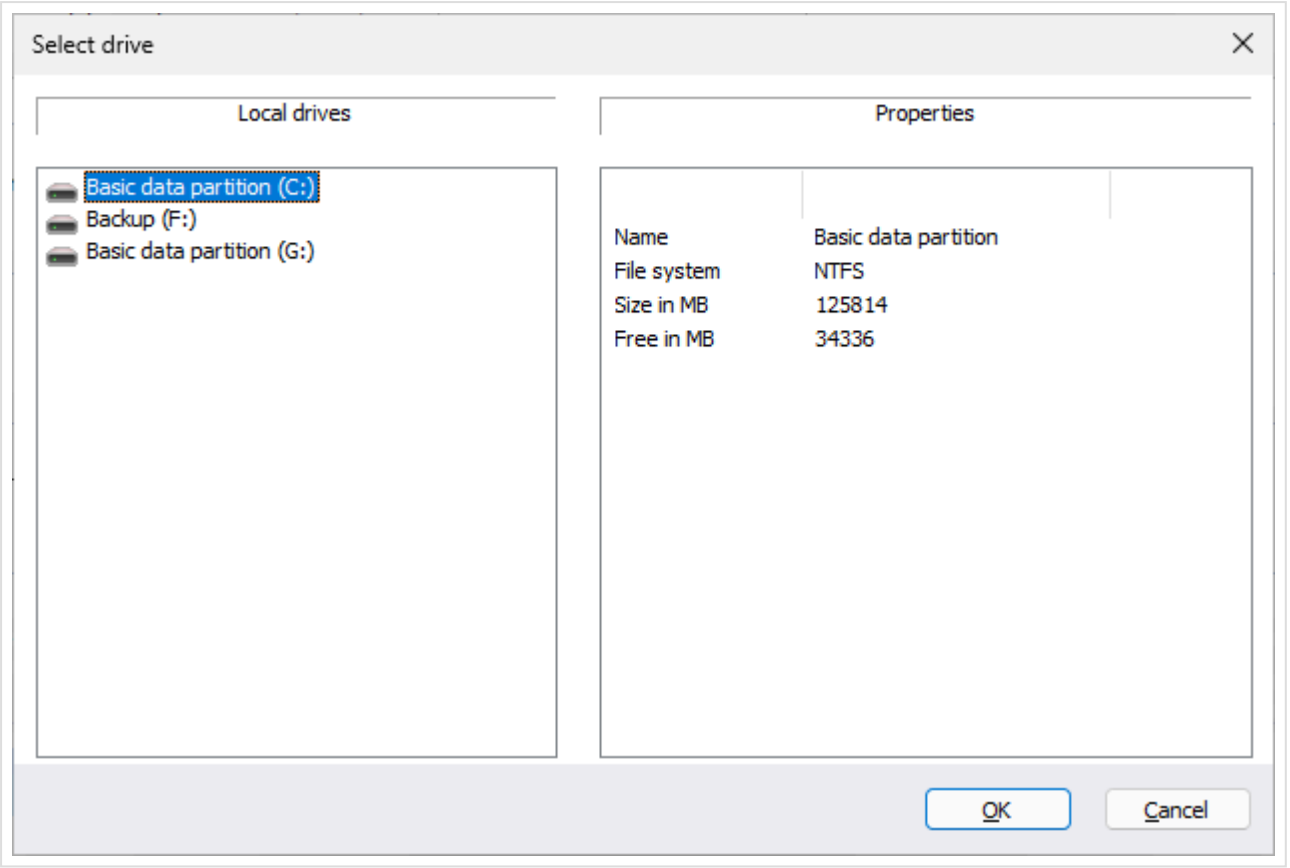



## Check a drive

Under Tools the function **Check drive for errors** runs an intensive analysis of the file system and data storage interface to protect you against any possible loss of data.

The Wizard (CheckDisk) will guide you step by step through the process of checking your drives. Simply follow the instructions in the dialog window and select your drive.

In the next stage the analysis is carried out. You can monitor progress by means of the progress bar where all the program status messages are listed.


Select drive
Local drives
Properties
Basic data partition (C:)
Backup (F:)
Basic data partition (G:)
Name
Basic data partition
File system
NTFS
Size in MB
125814
Free in MB
34336
OK
Cancel

# Jobs and reports

The Job Assistant provides options for scheduling program functions to be run automatically. You can, for example, plan to have your data drives imaged once a week.

- You will be forwarded to the corresponding activity window for your selected job via **Start/Jobs & reports**, which lists all jobs and reports created in O&O DiskImage. With a double click you can see the corresponding report or edit the job.
- You can create a new job schedule by clicking the **Add as job** symbol after selecting the drive or a folder in the activity window.

:::note

In order to execute jobs on a regular basis, the starting conditions (e.g., source drive, images, or target drives) have to be the same. If you make changes to a drive's name, the storage location of the image, or on the layout of a target drive, the job may no longer be executed successfully.

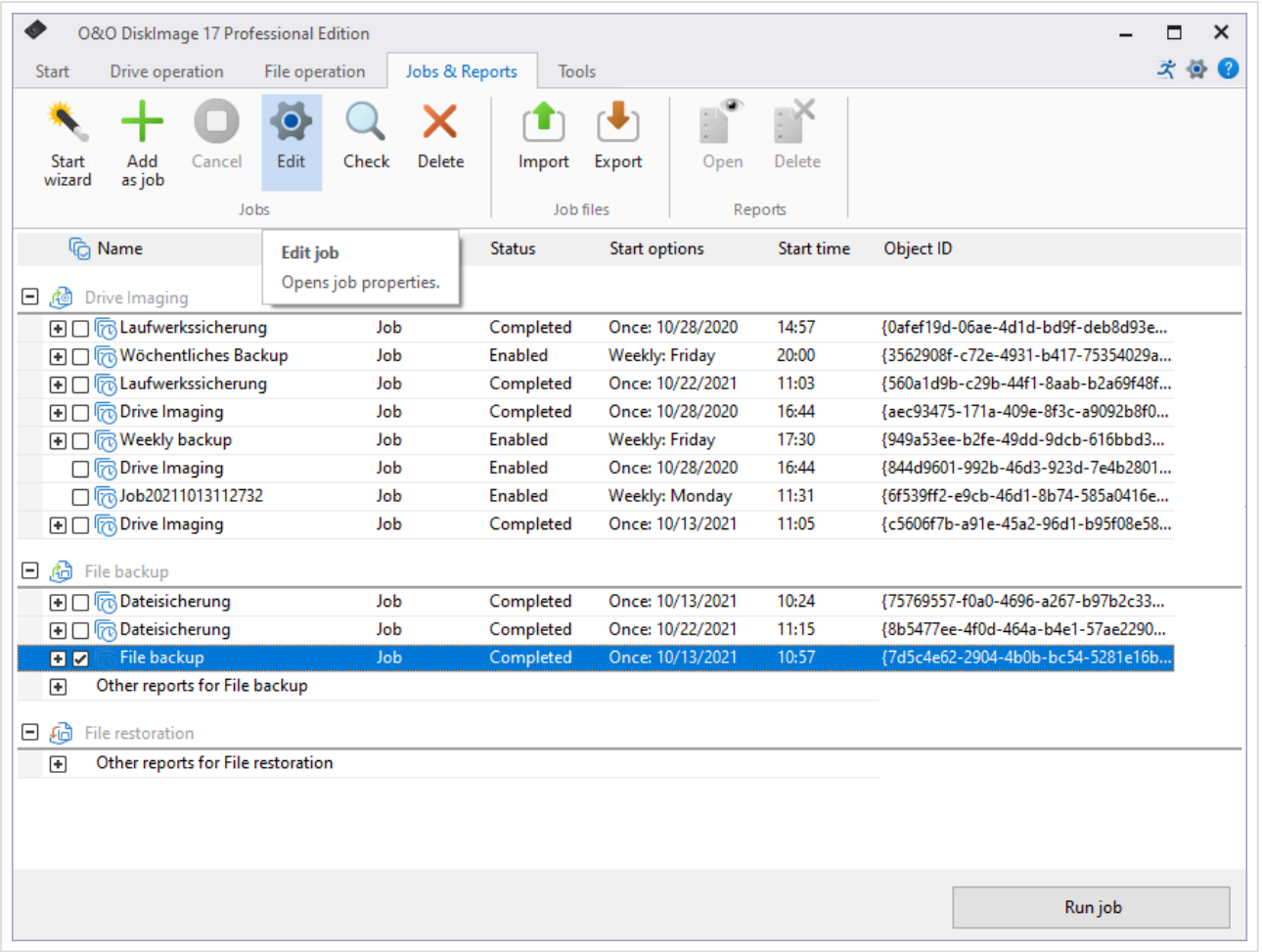
:::

**Example:** If you've created a job for incremental imaging, you need to enter where you saved all the previous images serving as a basis for the new incremental image. If you've moved the "base image" to another storage location, you'll need to enter the new storage location in the Job Assistant: otherwise the new path will not be found and the job cannot be run successfully.

:::note

The tabs for Scheduling and Notification are not available in the Job Assistant when starting from the O&O DIskImage bootable medium.

:::



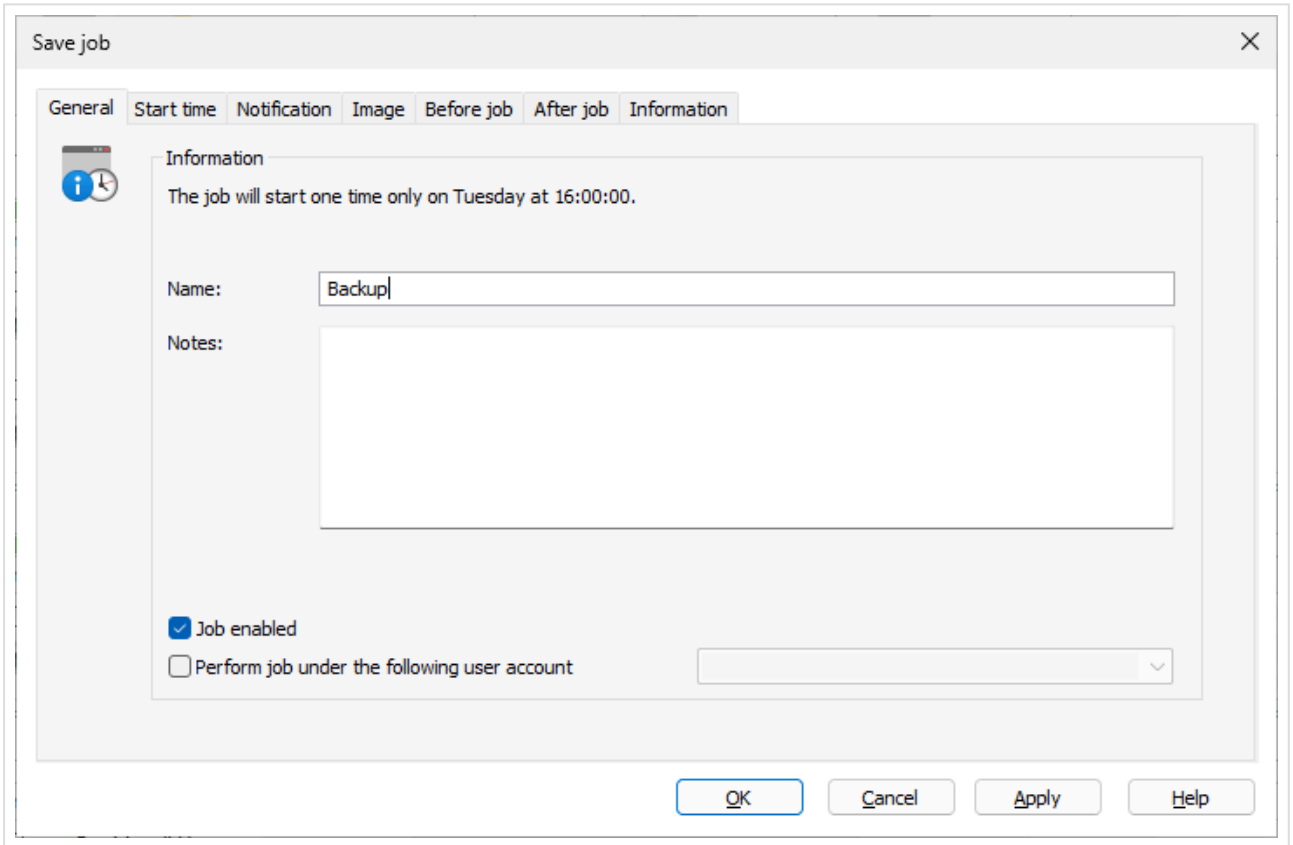

To run a job select Jobs and reports in the start page of O&O DiskImage. Start will begin the selected activity after a security question is answered.

# Add as job

Before setting up a job, you'll have to select an activity.

1. On the start page, click the activity you want to perform, e.g. **Drive imaging**, or **File backup**.
2. Select a drive or, in case of a file backup, a folder.
3. Click Options if you want to specify certain settings for a job, such as the imaging method, encryption, or compression. Your settings will then be saved and applied to the subsequent job.
4. Now click the symbol **Add as job**.
5. Enter the name of your job in the dialog. It will later be used for the creation of the report and serve as reference. The name of the job has only symbolic meaning and may already be applied to other jobs.
6. Specify further settings such as scheduling, notification, imaging, etc.

In the field **Notes** you may enter text for providing a few details about the job.



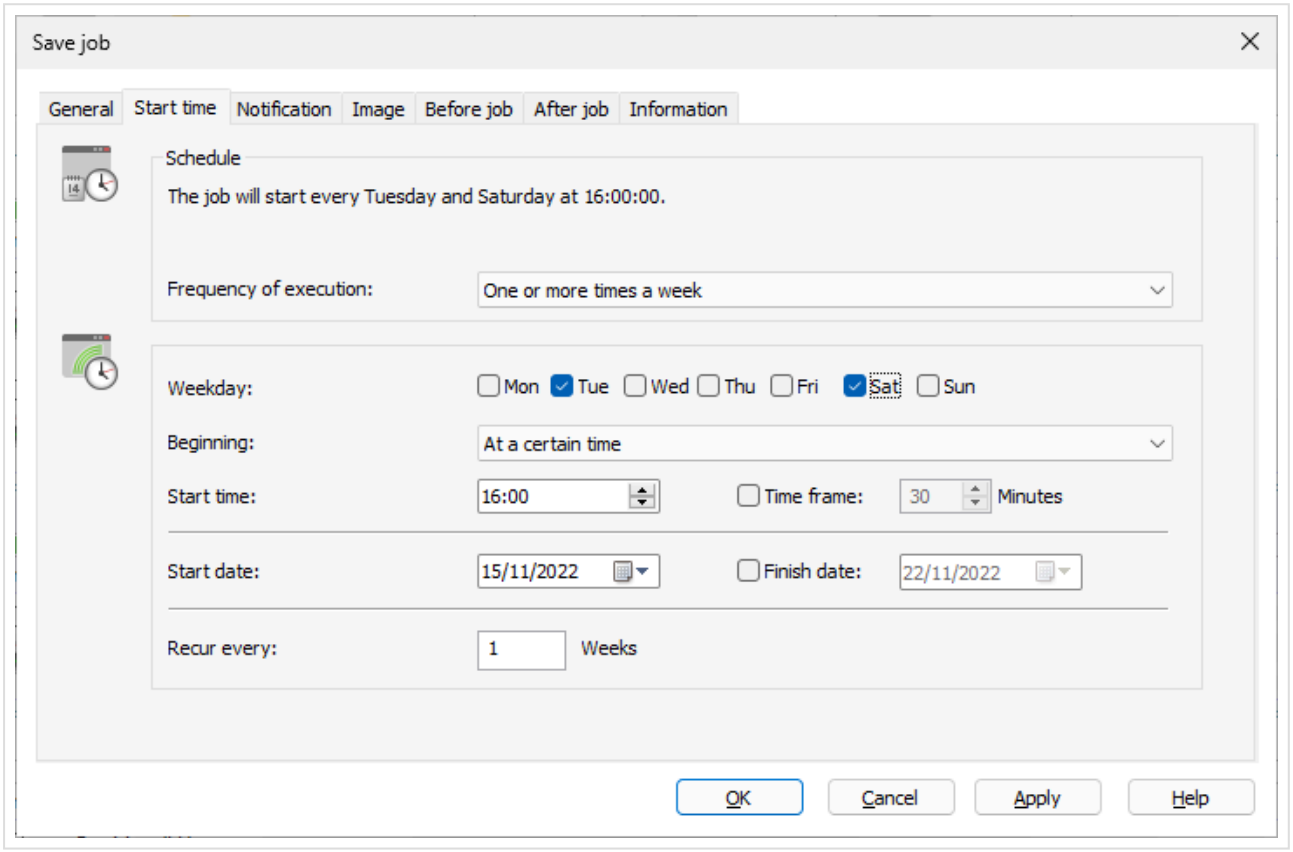

**Job enabled** If you don't wish to run a job for a short period of time but don't want to delete it altogether, you may disable it. The job will then not be run until you enable it once again.

When creating a job, a recognized user can be selected in the security settings. When the task is executed it will be listed under that users account. This applies both to saving the image as well as preliminary work and

editing. This enables the use of commands in preliminary work and editing, but these require authentification information and access to a network.

## Start time - Scheduling

Under Scheduling in the Job assistant, you can specify the exact moment when a job should be run. A job can be performed one time only or repeatedly. The options for execution (date, day of the week) will change along with the corresponding selection.




- Time

For weekly execution:

- Selection of weekday, date, and time
- Selection of the start and finish dates for the interval. The job will be performed, for example, five weeks in a row, once a week.

## Notification

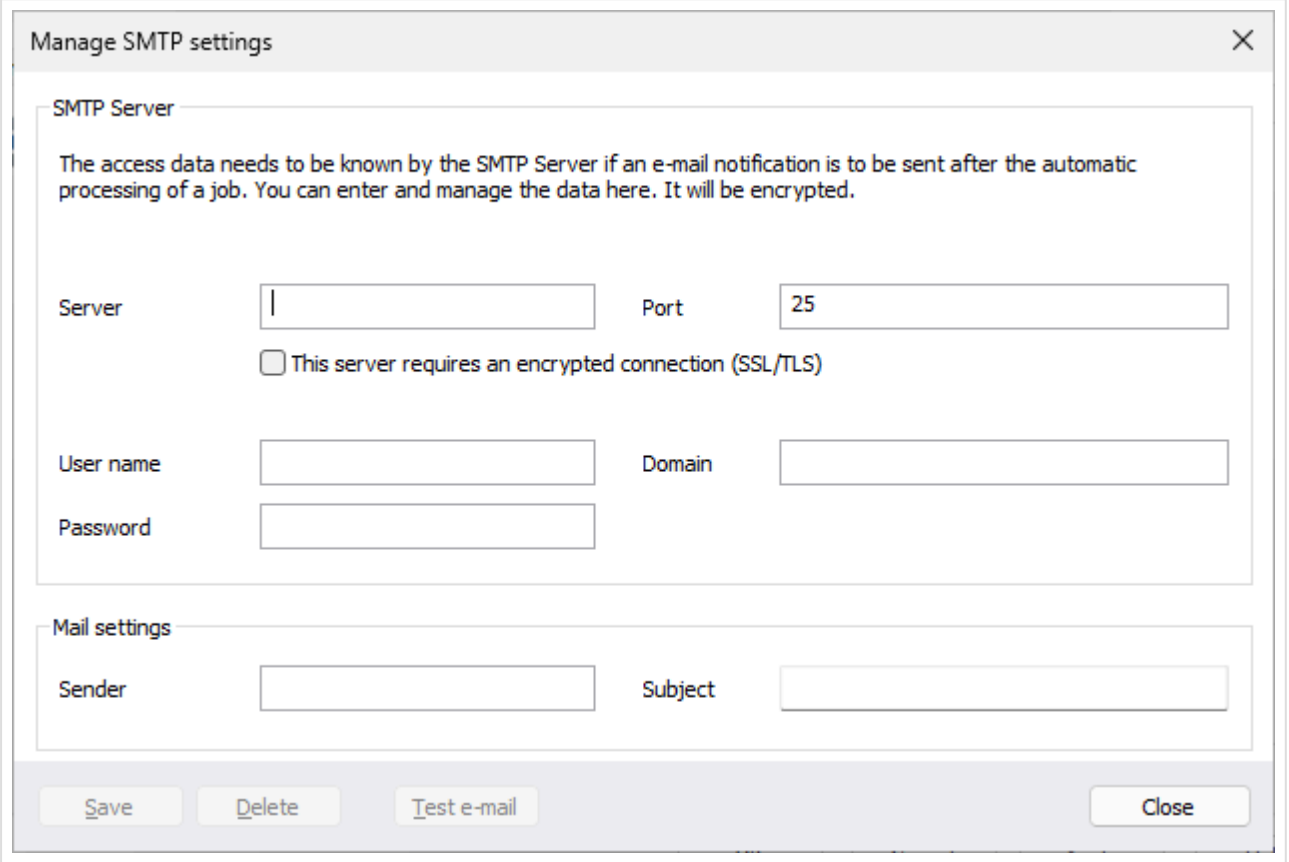
In the **Job assistant** under **Notification**, you can arrange to be notified by email about the running of tasks during events.

- If you want to be notified about the running of a job, select an event and enter your email address in the field for recipient.

:::note

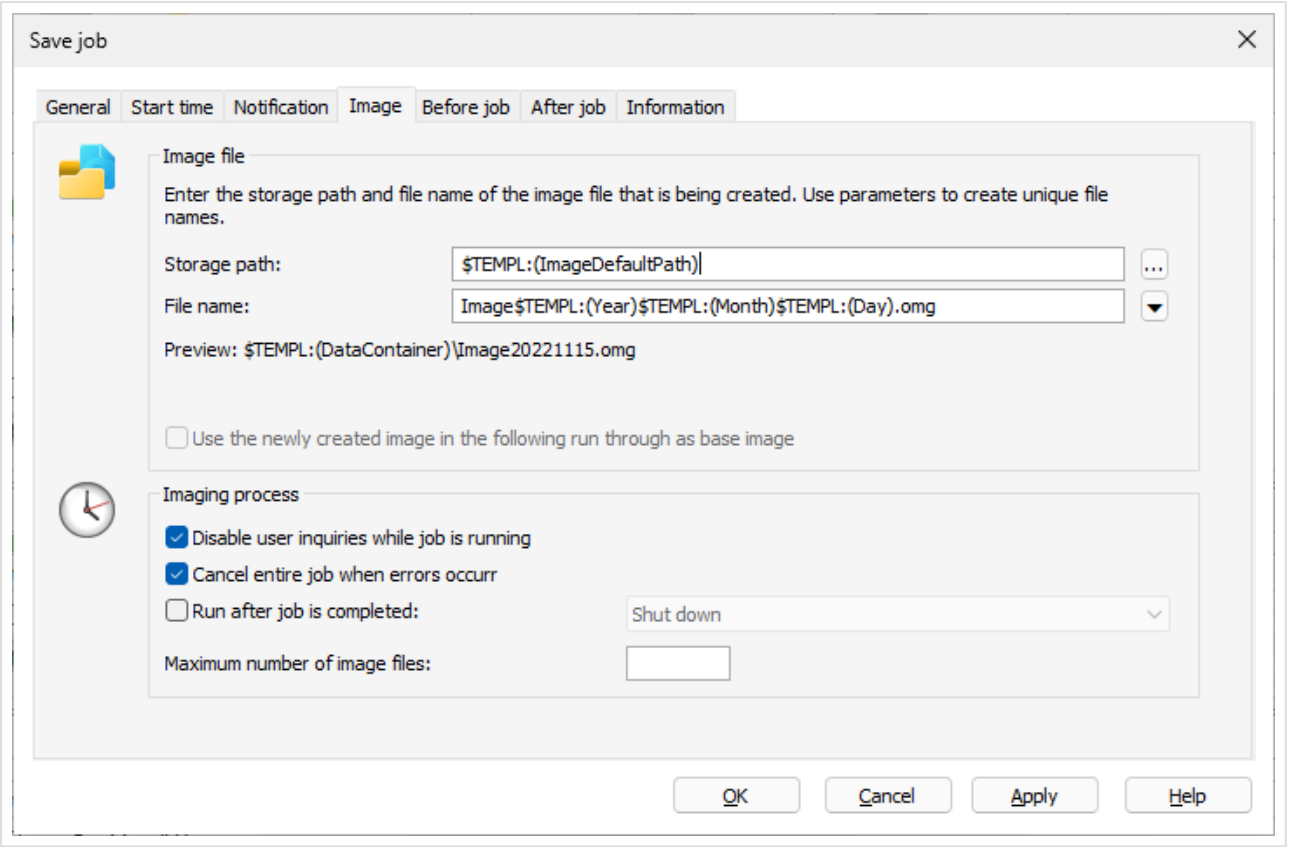
In order for your entry to be successfully processed, you'll have to set the sender data of your email server in **Program settings** under **Notification**.

:::




## Image - Options

You can set additional options for your job in the fourth tab (**Image**) of the Job Wizard. The choice of settings is based on your selected activity. For an imaging activity, you could, for example, enter a storage location and a name for the image.




**Disable user inquiries while job is running** User inquiries are questions that can arise during the normal course of running a job or while the scripts are being processed.

If in doubt, you will need to confirm questions, e.g. with a security check if the name of the image already exists. The job will thereby be interrupted because the user either has to make a decision or additional information is required for continuing. You can setup some user queries with special parameters: for this please consult the script documentation.

User queries are currently made only if the user interface of O&O DiskImage is open.

User queries will not be filed until the user interface is closed during job execution, or if you have enabled the option **Disable user inquiries while job is being run**. Should this interactive option be turned off, in a worst case scenario there will be no confirmation dialog while the job is being run and it will be aborted by default and logged as an error.

**Abort entire job when an error occurs** The job will be aborted whenever an error occurs.

**Run after job is completed** Here you can choose between **Restart** and **Shut Down**. If you don't select anything, the computer will return to its condition prior to imaging. It will usually just remain on.

**Characteristics of an imaging job Storage path** The target path to the storage location of the image will be applied from the program settings by default. You may, however, select or enter a new path manually.

**Apply dynamically generated file names** For a file name, the terms “Image” and the dynamically mounted parameters “year”, “month”, and “day”, will be used by default. In addition, you can select from a list of alternative parameters. If you’re making, for example, a number of images on a single day, it’s advisable to

include the “time” in the file name. Otherwise, files with the same name would emerge and that could lead to the imaging process being aborted.

:::note

If you’re using O&O DiskImage on a computer in a network, the data from the computer will be automatically read and file names will be dynamically generated. You could, for example, add the “Computer Name” to the image name for use in a network.

:::

## Run commands before and after a job

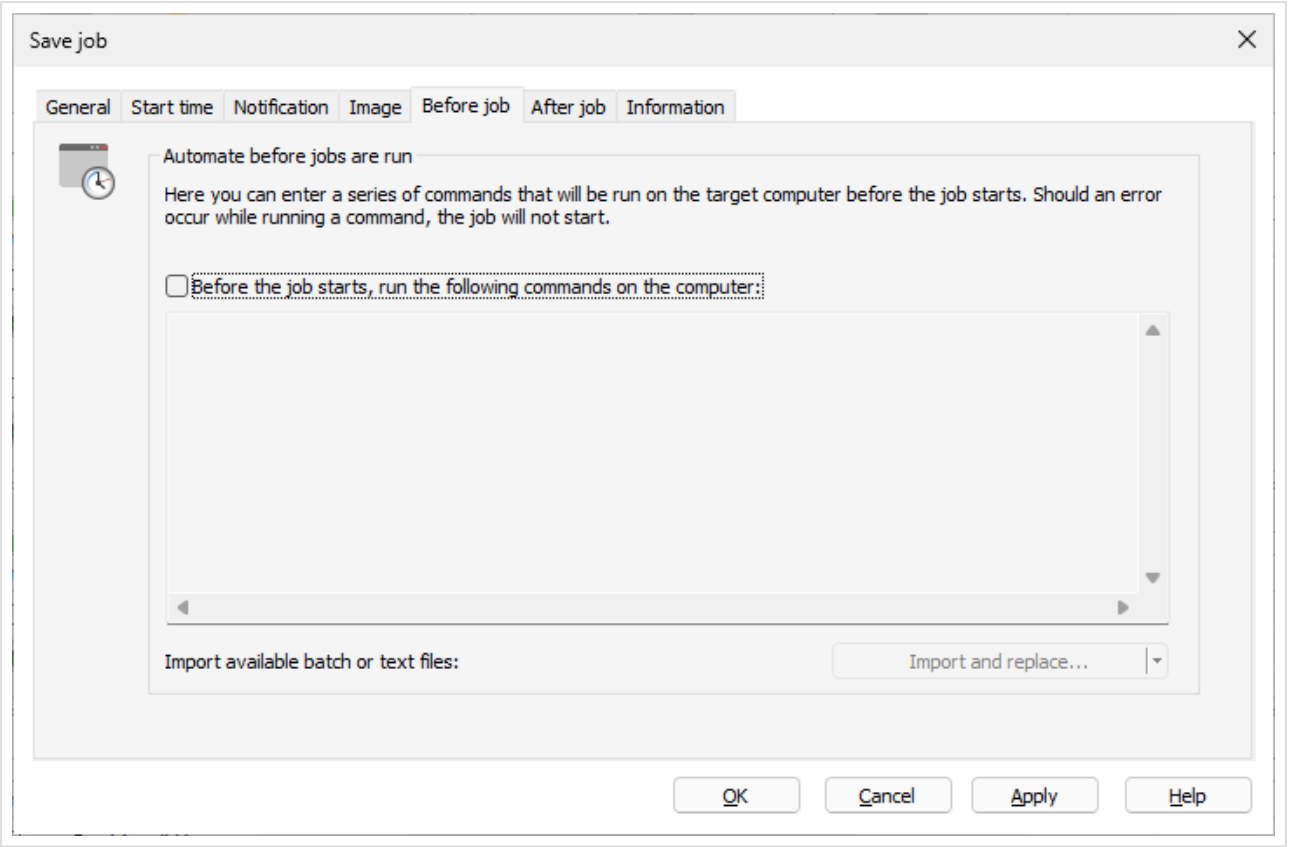
Carrying out commands before and/or after a job can allow you to stop certain Windows services and then restart them again afterwards. If you’re using O&O DiskImage on a Microsoft Exchange or SQL-Server, you could stop these services beforehand, create the image and then have them automatically start again once the imaging is done. You no longer need to create a script to do this.

**Before Job** If you select this option, the commands entered in the text field will be carried out before the job begins. You can also import existing command files so that their contents will be shown in the text field. Just click on **Import** select the file in the dialog (.BAT, .CMD or .TXT). Confirm with **OK**.

:::note

Please make sure that all commands exist and are able be carried out on the target computer. All commands will be carried out under the SYSTEM User and his permissions.

:::

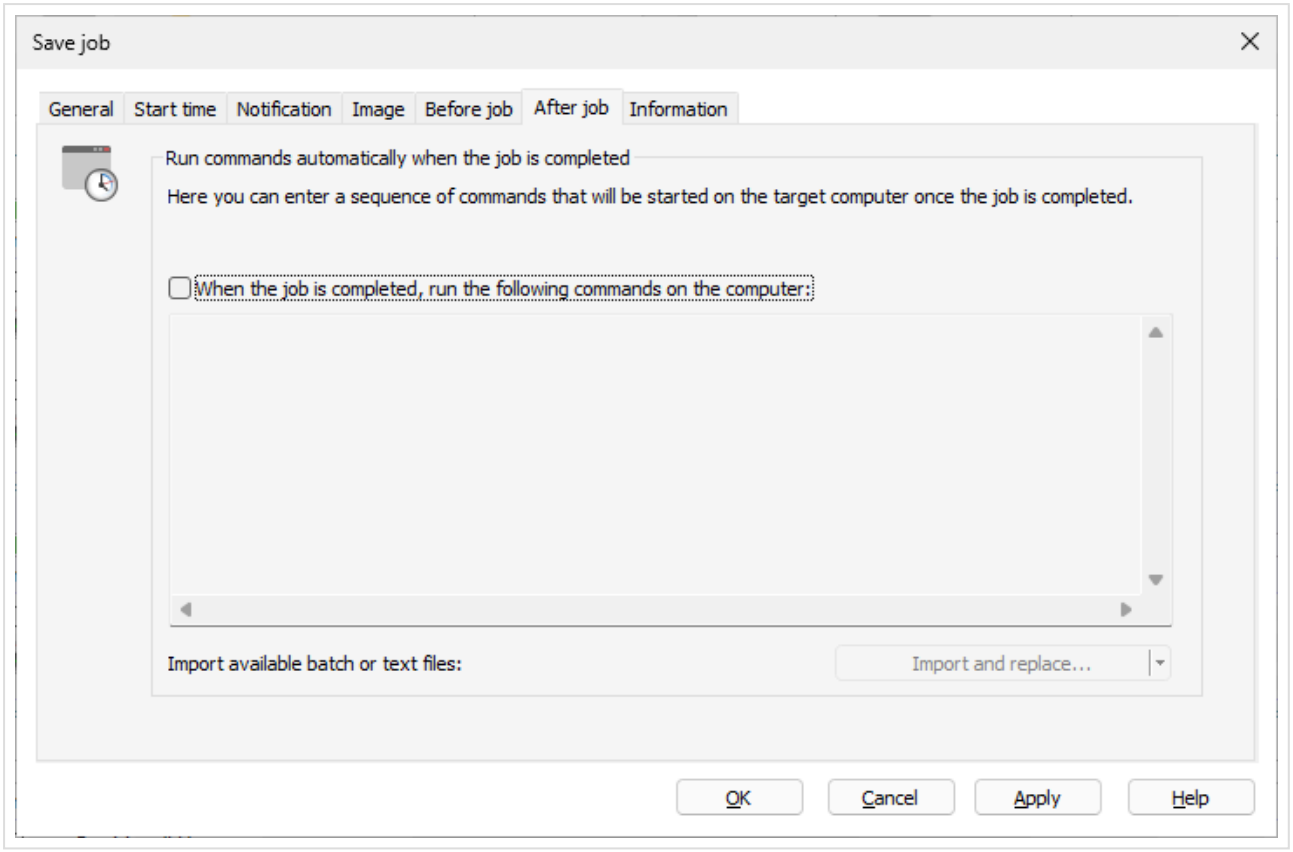



**After Job** If you select this option, the commands entered in the text field will be carried out when the job is completed. Entry and application is similar to the command instructions in “Before Job”.

:::note

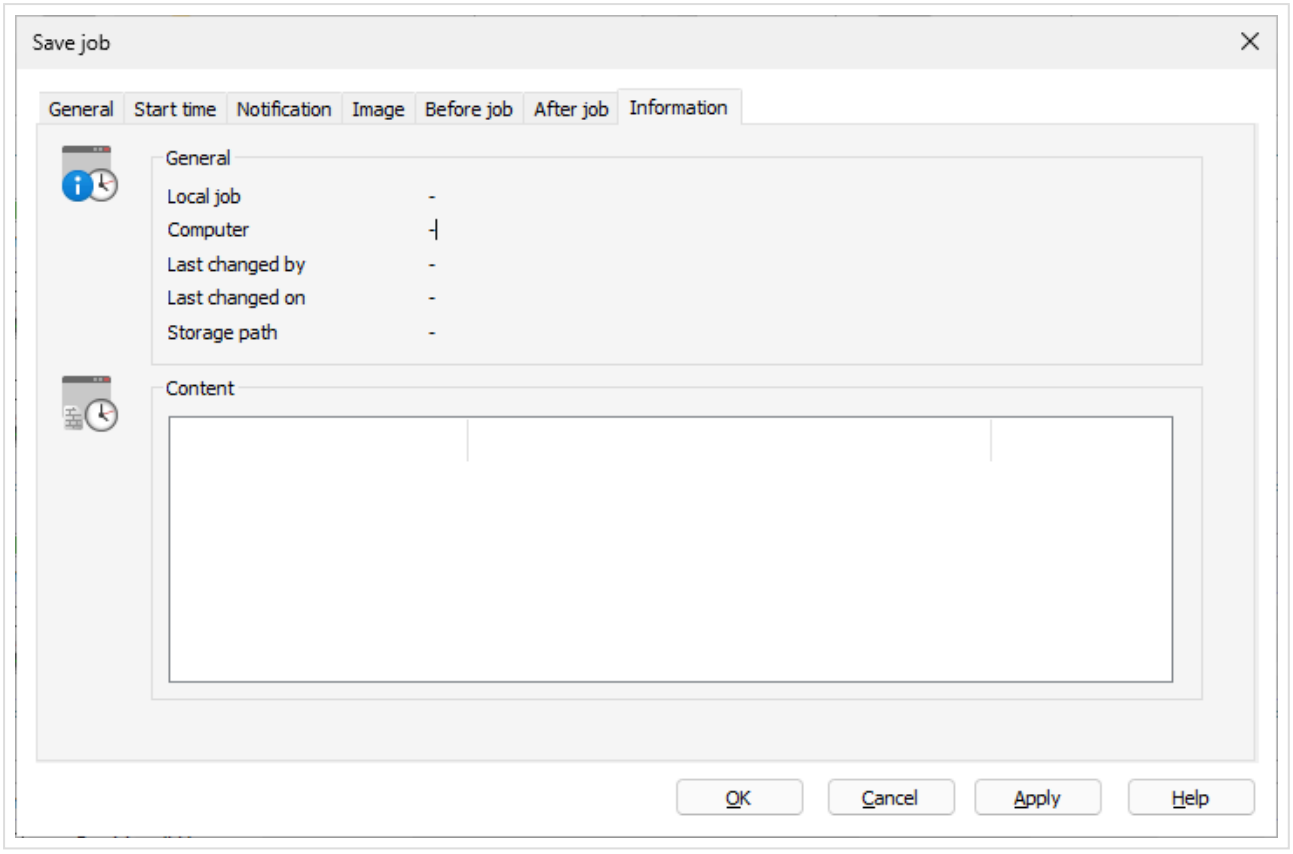
Please make sure that all commands exist and are able be carried out on the target computer. All commands will be carried out under the SYSTEM User and his permissions.

:::



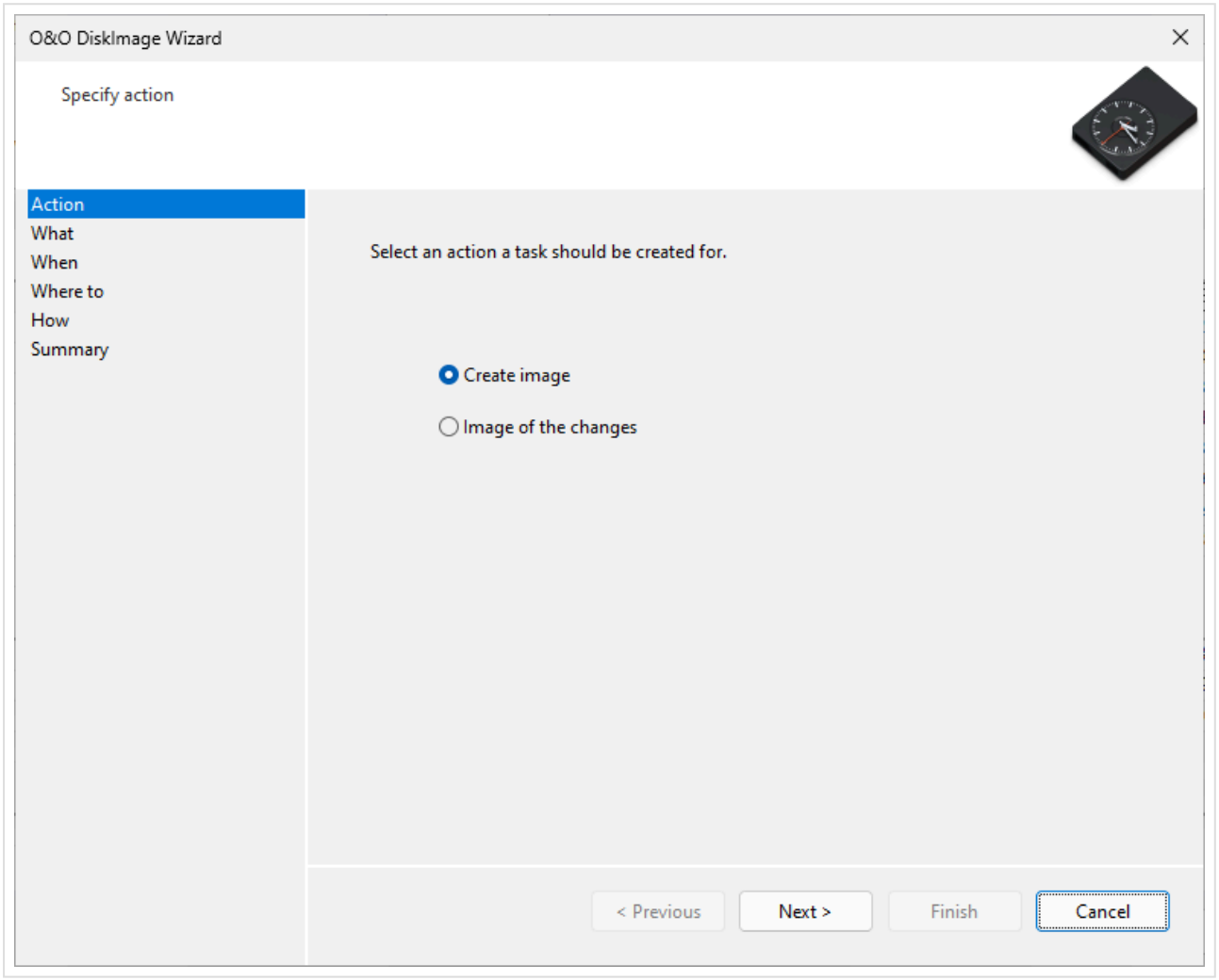

## Information

The exact settings of a job are listed under **Information** in the Job assistant. The view provides information only; you will not be able to make any changes there.


Save job
General
Start time
Notification
Image
Before job
After job
Information
General
Local job -
Computer -
Last changed by -
Last changed on -
Storage path -
Content
OK
Cancel
Apply
Help

# Manage jobs

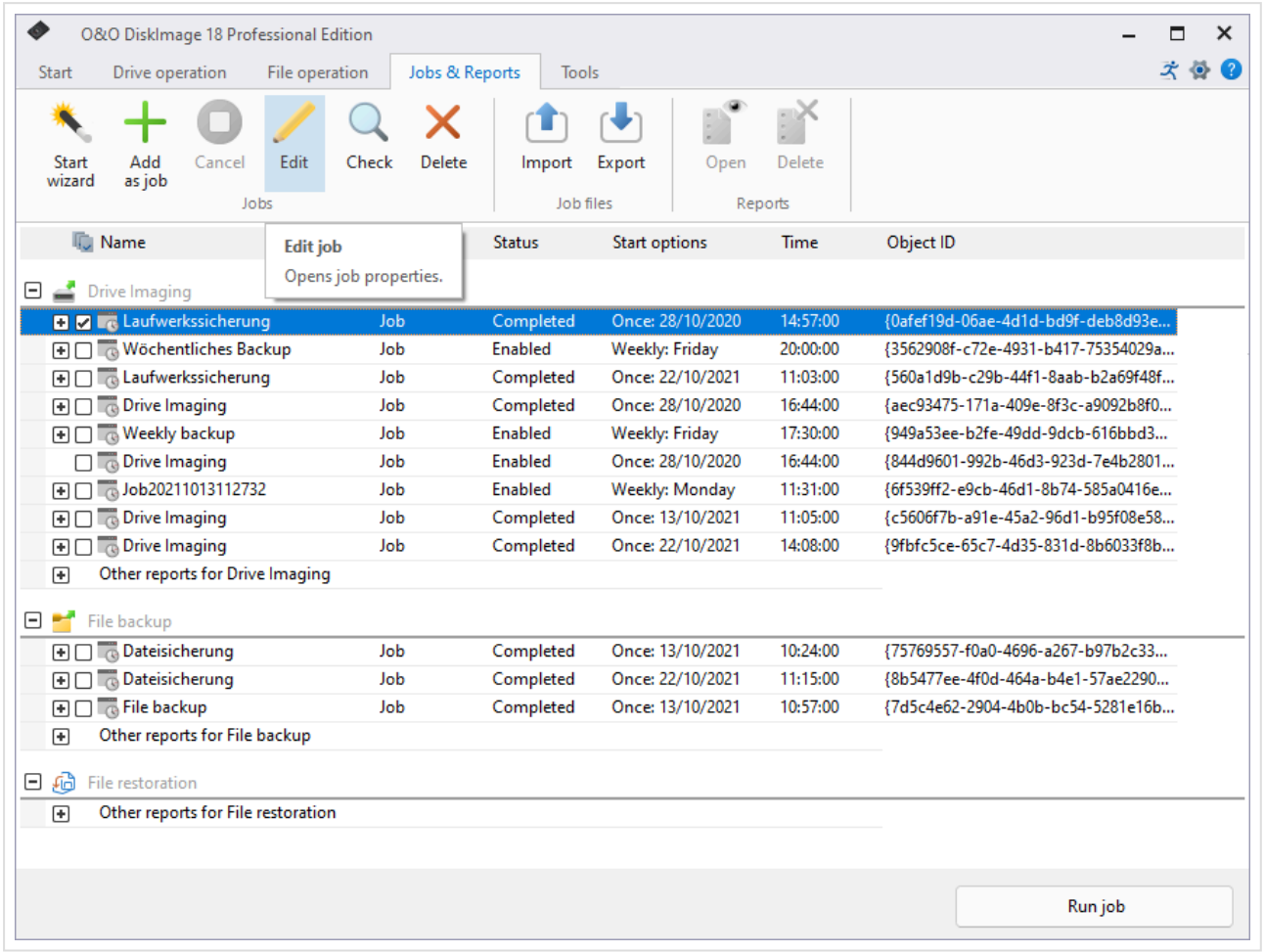
## Start the wizard




## Edit a job

1. To edit a job select **Jobs and reports** in the start page of O&O DiskImage.
2. You can change a job by selecting it in the job list and then clicking the symbol **Edit**.
3. The Job assistant will then appear with the settings of the job.
4. Make the desired changes in the properties and confirm the changes with **OK**.
5. If you decide not to apply the changes, click **Cancel**.

For certain tasks, e.g. deleting or importing/exporting one or more jobs, you have to select the desired jobs in the list. Afterwards, you can run desired tasks on all selected jobs.

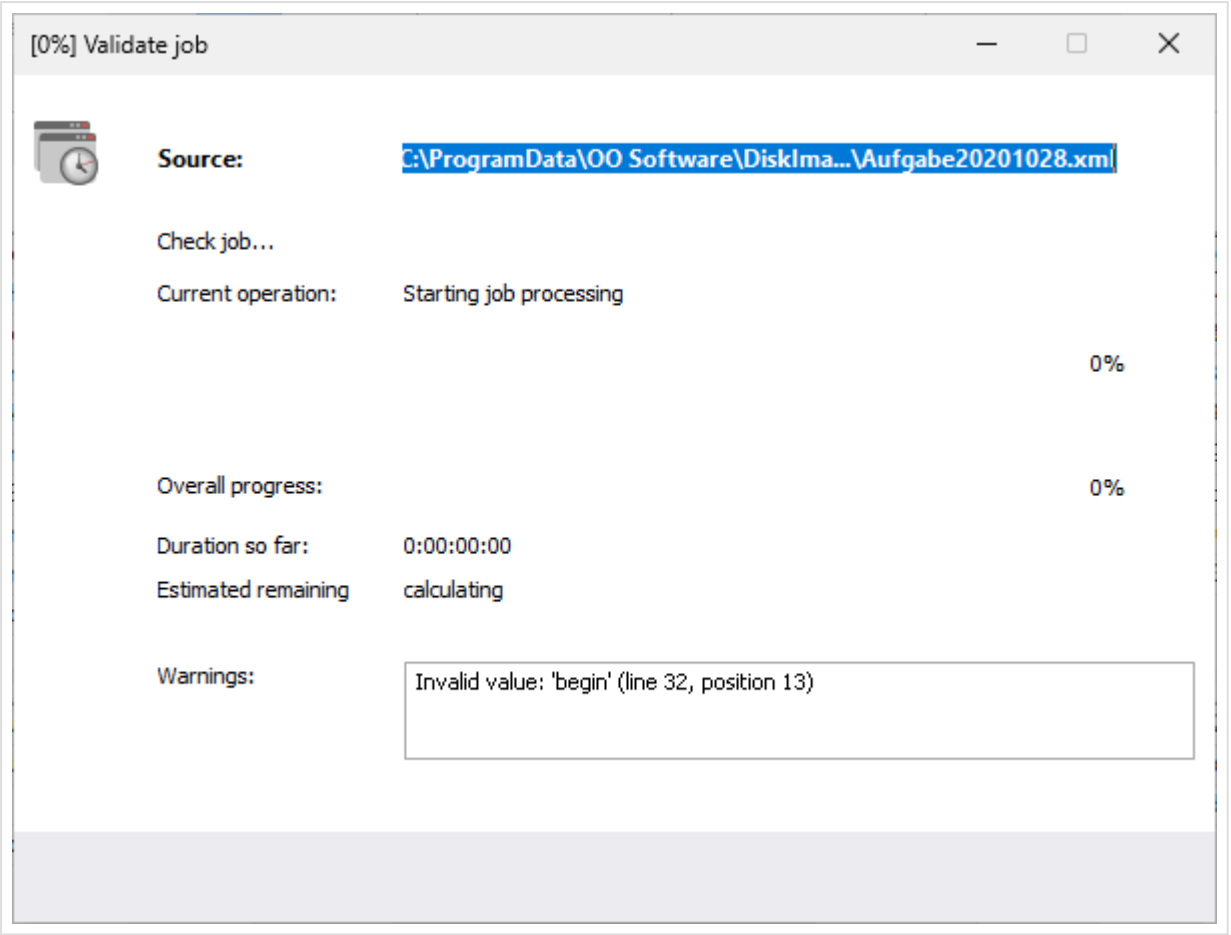



## Delete a job

To delete a job select Jobs in the start page of O&O DiskImage. Mark the job you wish to delete with a check and then click on Delete.

## Check a job

To check if the settings for a job are valid, i.e., to check if its contents and syntax can be executed on a local system, select Jobs and reports in the file menu on the Start page of O&O DiskImage. Then select the job you want to check and click on Check job.


[0%] Validate job
Source:
C:\ProgramData\OO Software\DiskIma...\Aufgabe20201028.xml
Check job...
Current operation:
Starting job processing
0%
Overall progress:
0%
Duration so far:
0:00:00:00
Estimated remaining
calculating
Warnings:
Invalid value: 'begin' (line 32, position 13)

# Job files

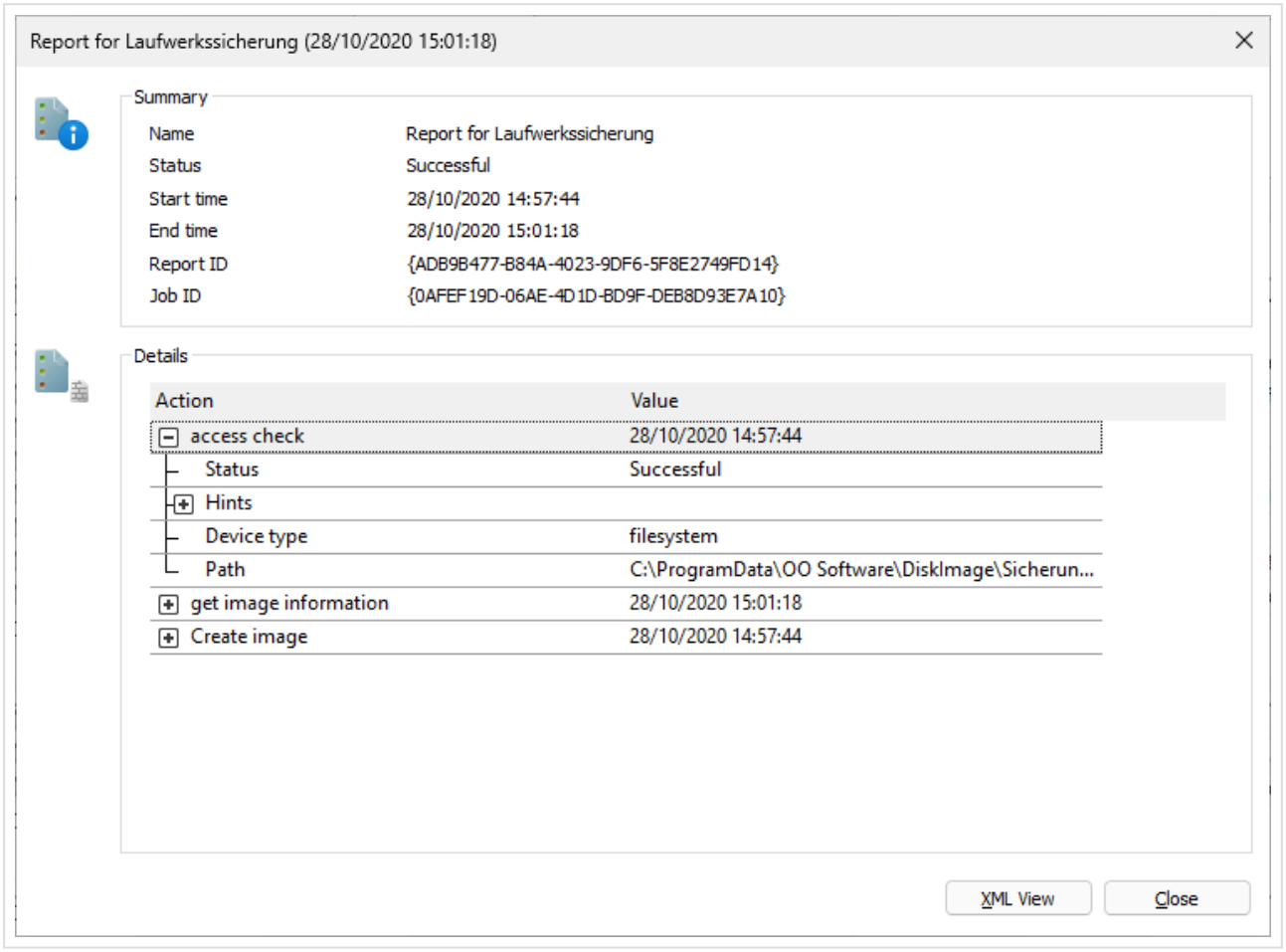
**Import** To import a job, select Jobs and reports on the start page of O&O DiskImage and select the function Import jobs. Select the desired job in the dialog window. This will then be added to the Job List. You can then transfer the created job from one computer to another, without having to make new settings for the job.

**Export** To export a job, select Jobs and reports on the start page of O&O DiskImage. Mark the job selected in the job list and then select Export. Save the job file (*.xml) on an external storage volume so that it can be used again on another computer (see “Import jobs”).

# Reports

A status report will be created for every action performed by O&O DiskImage. It can be accessed as a XML document from the start page of O&O DiskImage under **Jobs and reports**.

In the report you will find all information about the progress of an installation or a job.



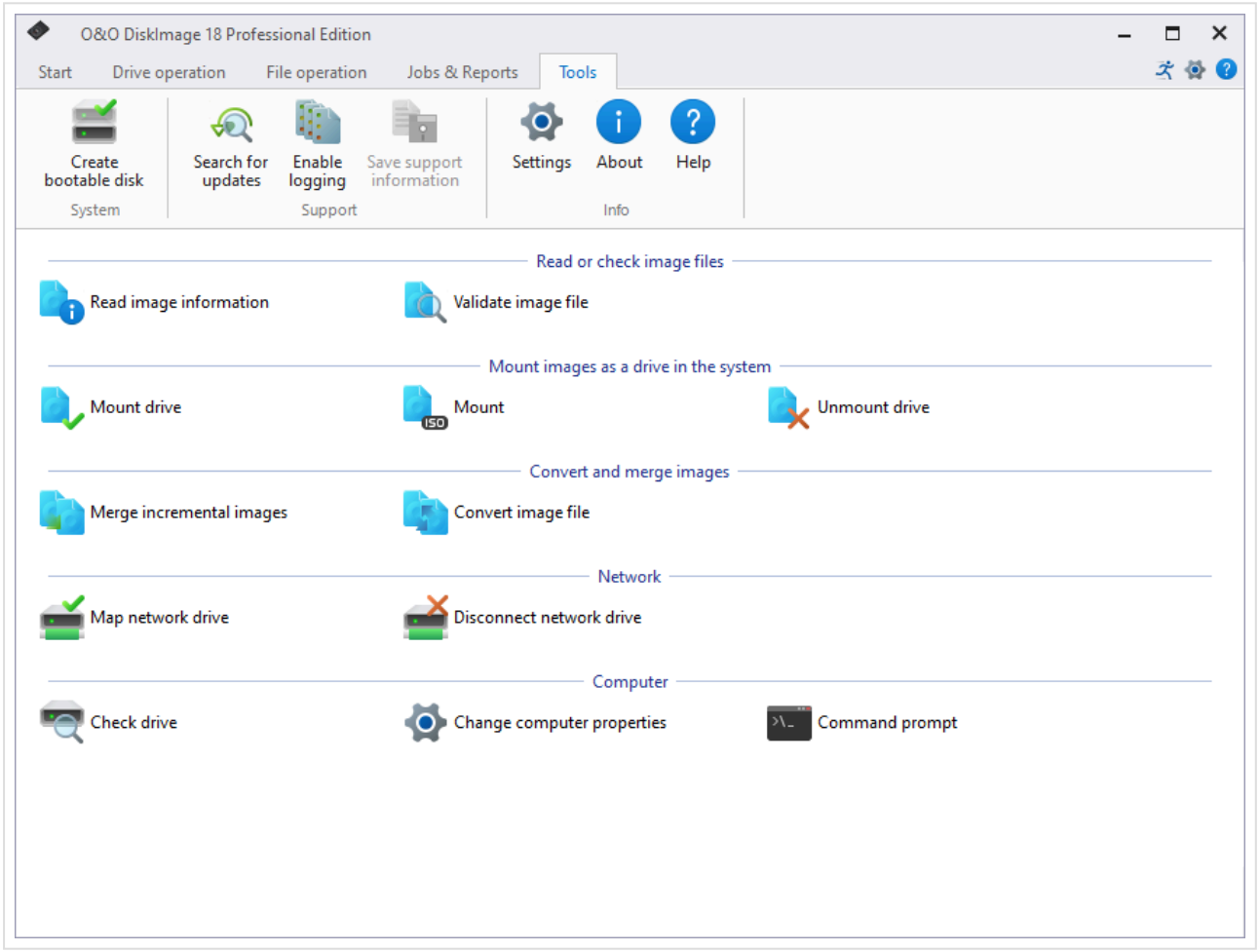
# Program settings

You can adapt O&O DiskImage to your needs in the start menu via **Start/Program settings**. Here it's possible to determine, for example, whether created settings should be saved and applied as preferred settings when you start the program the next time.

:::note

The tabs for General, Security, and Email notification are not available in the Program Settings when starting directly from the O&O DiskImage bootable medium.

:::




## General

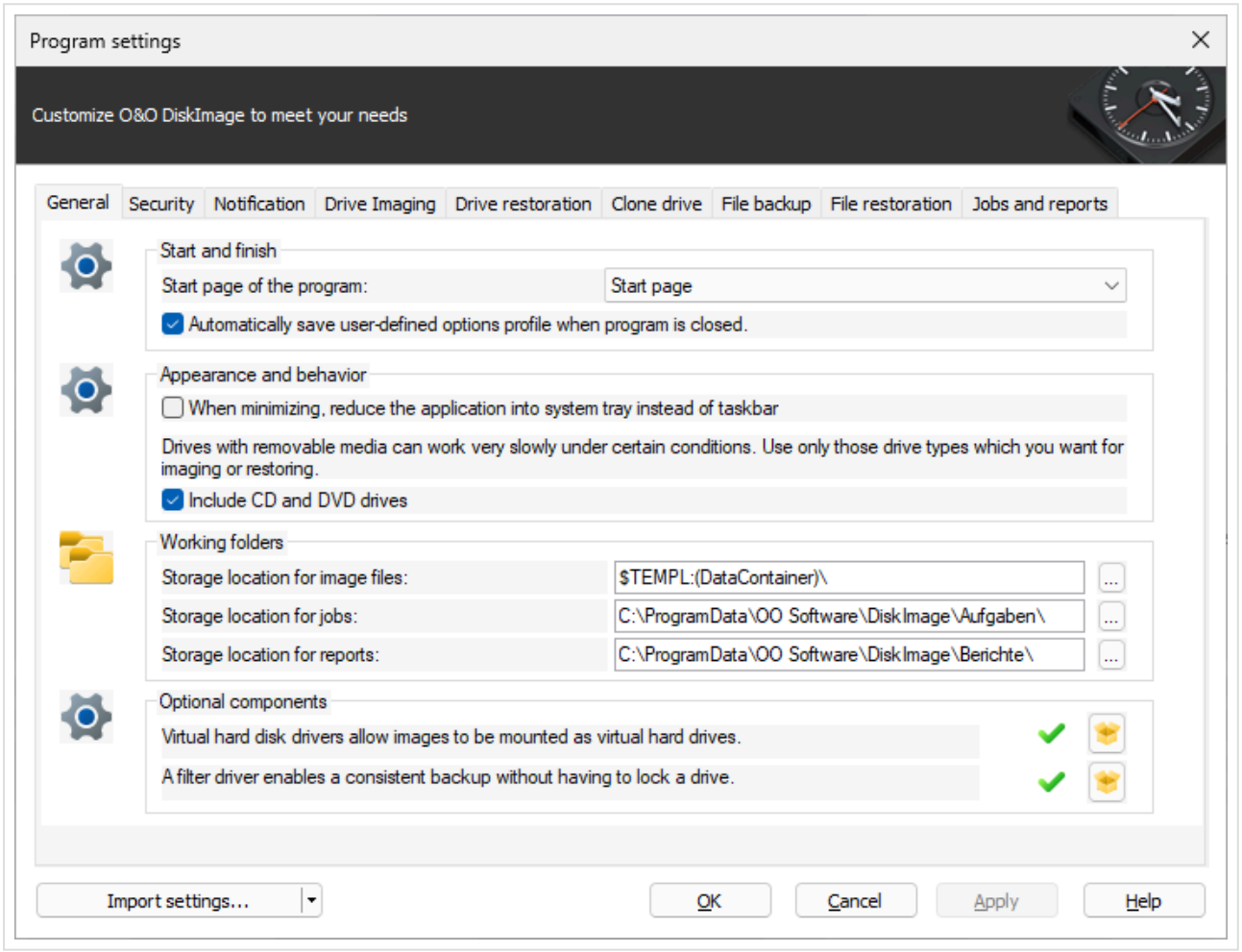
Under **General** in the **Program settings** you have the possibility to determine the program page that will be displayed at the start of O&O DiskImage. You can, for example, specify that the "Imaging" page appears

whenever you start the program.

**Access removable drives** Under **Appearance and behavior** you can decide whether removable drives should be accessed when creating images or during restoration. As these removable volumes tend to work very slowly under certain conditions, it is advisable to use only those types which you would want for imaging or restoring.

**Default settings for storage locations** Under **Program settings/General/Working folders** you can determine and edit the folder in which the image should be saved by default. The path entered (target path) will be saved and applied to every imaging by default.

The storage location for jobs and reports can be similarly specified.



# Default settings

## Drive imaging

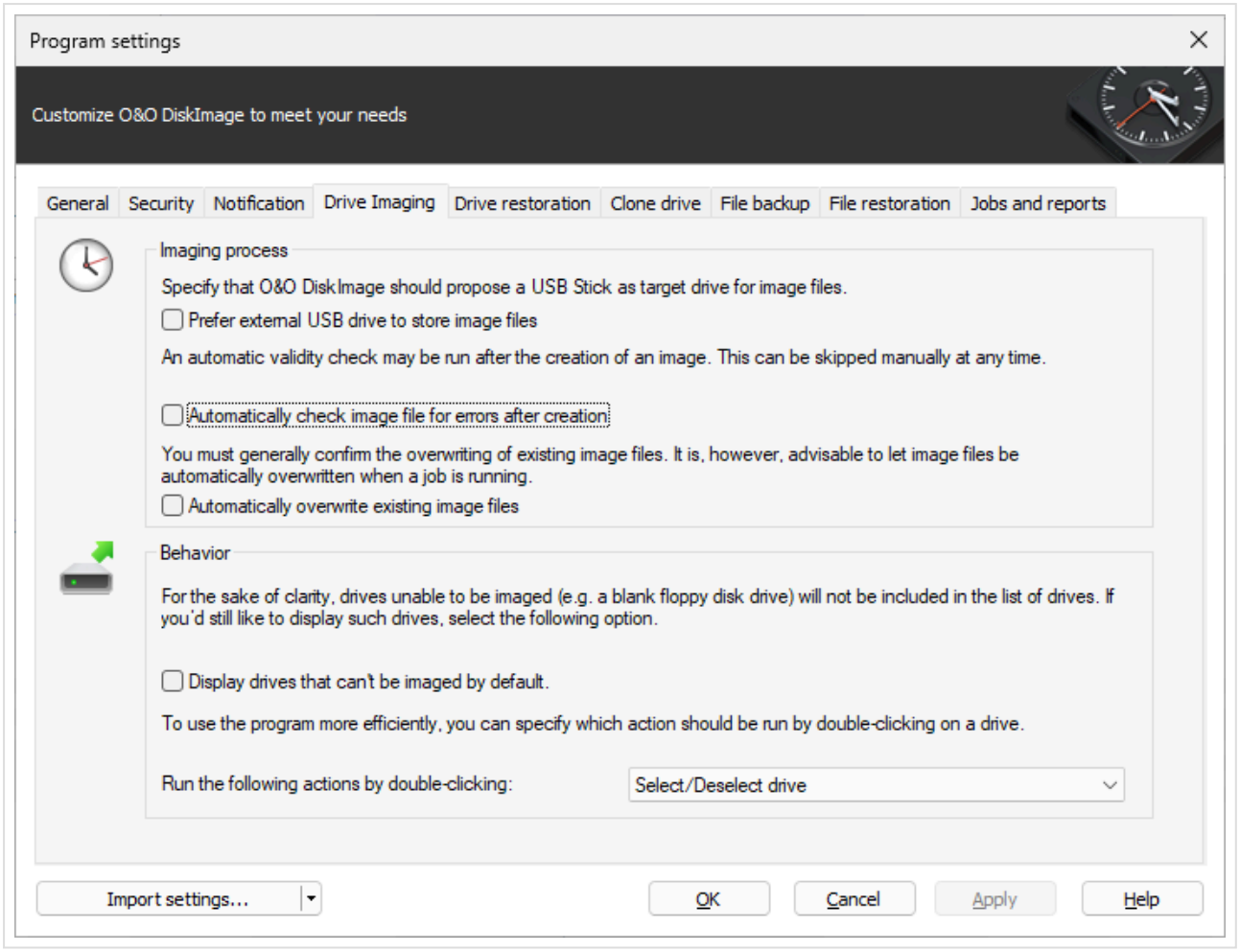
Under **Drive imaging** in the **Program settings** you can set specific settings for imaging.

**Prefer external USB drive to store image files** If you enable this function, external USB drives will be preferred as the target drives for storing images.

Under the option **Automatically check image file for errors after creation** you can specify whether image files should be checked for errors immediately after they are created.

When you enable **Overwrite existing image files**, the prompting for overwriting image files with the same name will be suppressed during the creation of new images. This function is very useful when, for example, you're imaging data a number of times daily, and the image is automatically being named after the Day/Month/Year.

Under **Behavior** you can hide or un-hide drives that cannot be imaged by default in the user interface. Drives that cannot be imaged are for example: empty card reader or disk drives, the "Microsoft reserved partition" in GPT drives, OEM-BIOS-partitions in DELL and IBM or the system area in basic disks.

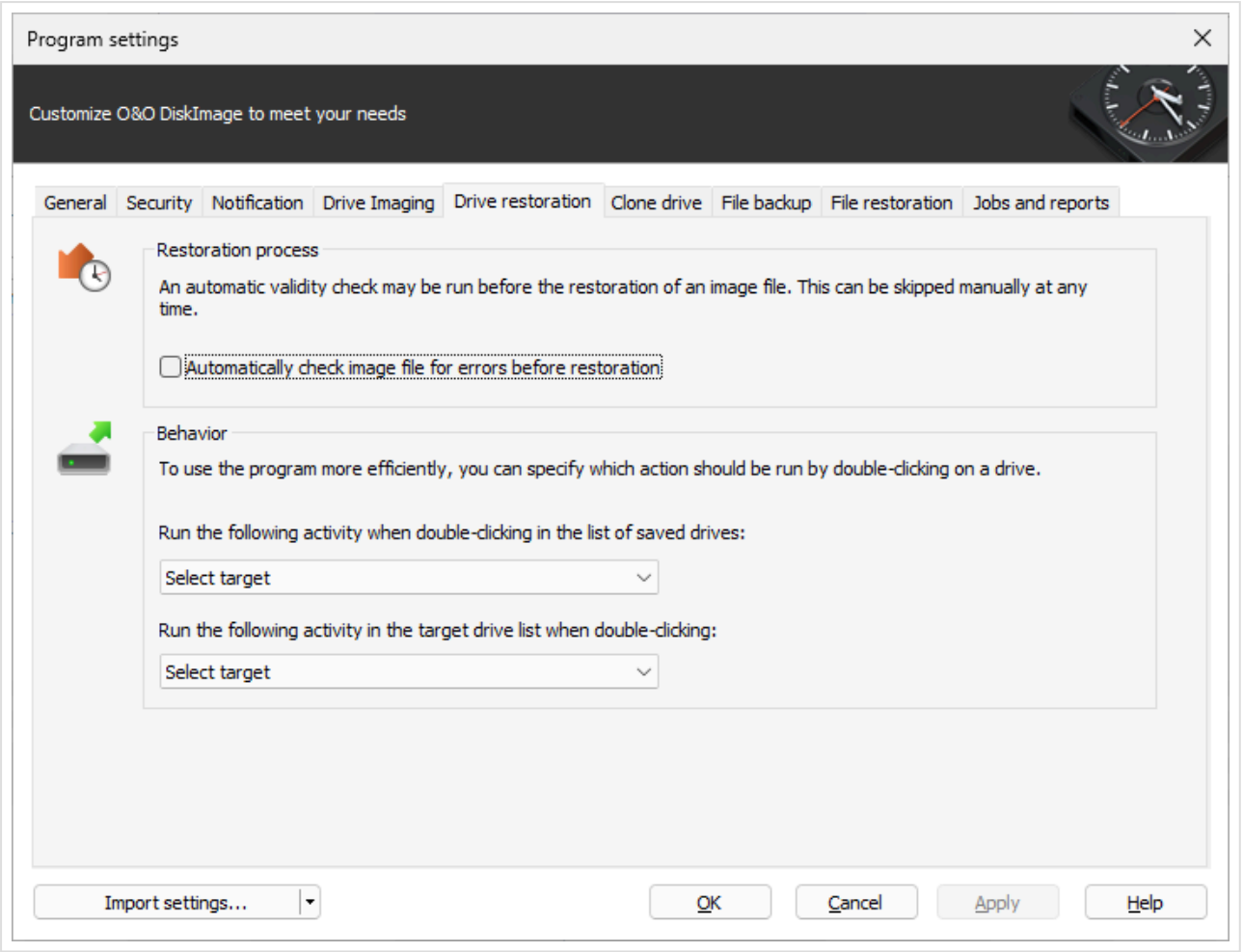



## Drive restoration

You can specify the default settings for restoration behavior under **Drive restoration** in the **Program settings**.

Under **Drive restoration** you can enable a validity check before the restoration of an image.

In addition, under **Behavior** you can specify which activity should be run when double-clicking a drive in the list.

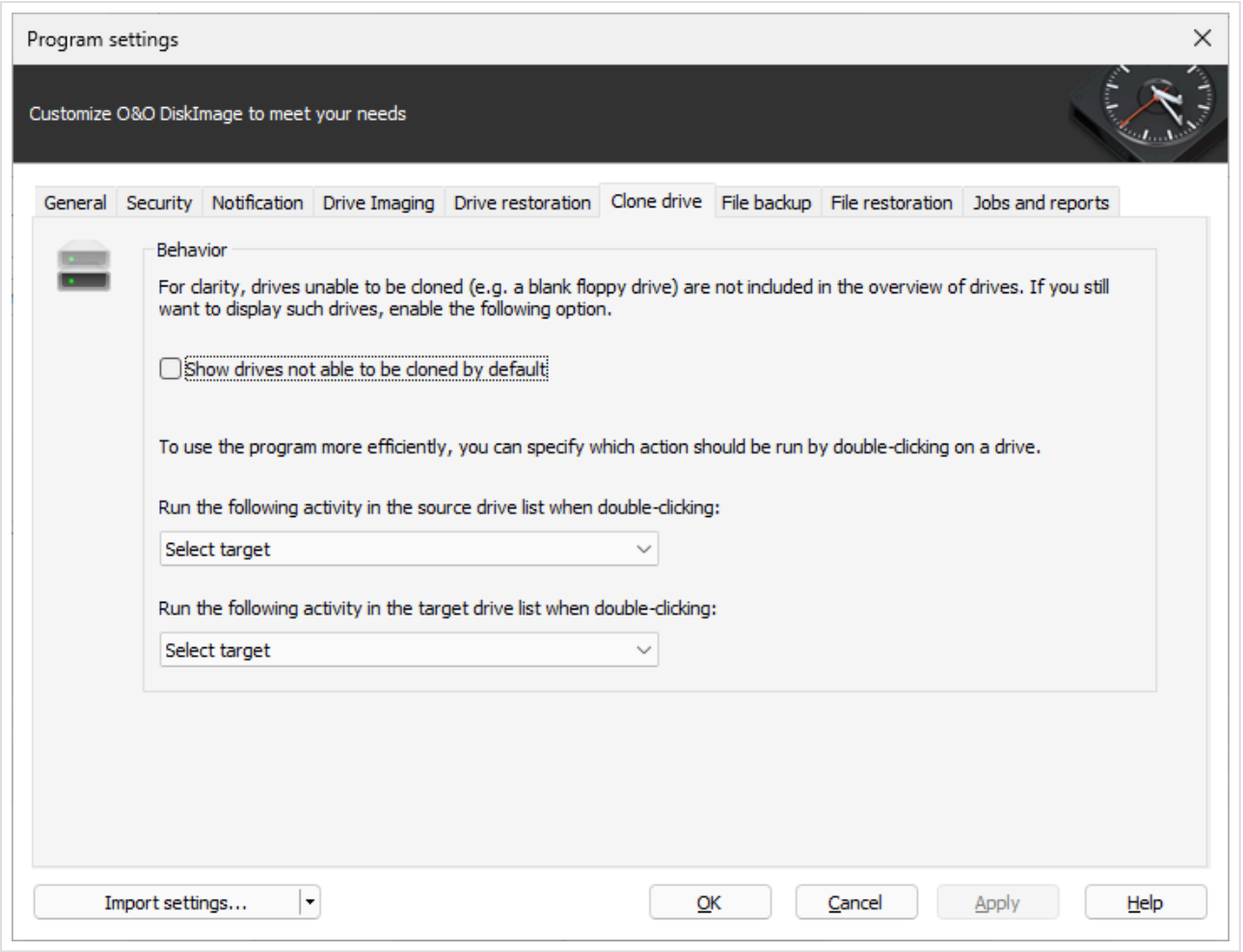



## Drive cloning

If you're looking to change or enable the default settings for cloning, click **Clone drive** in **Program settings**

You can specify, if drives not able to be cloned by default e.g. a CD/DVD drive or empty disk drive should be shown in the activity window "Cloning".

Also, you can specify what should happen when you double-click on a drive in the activity window "Clone drive".




## File backup

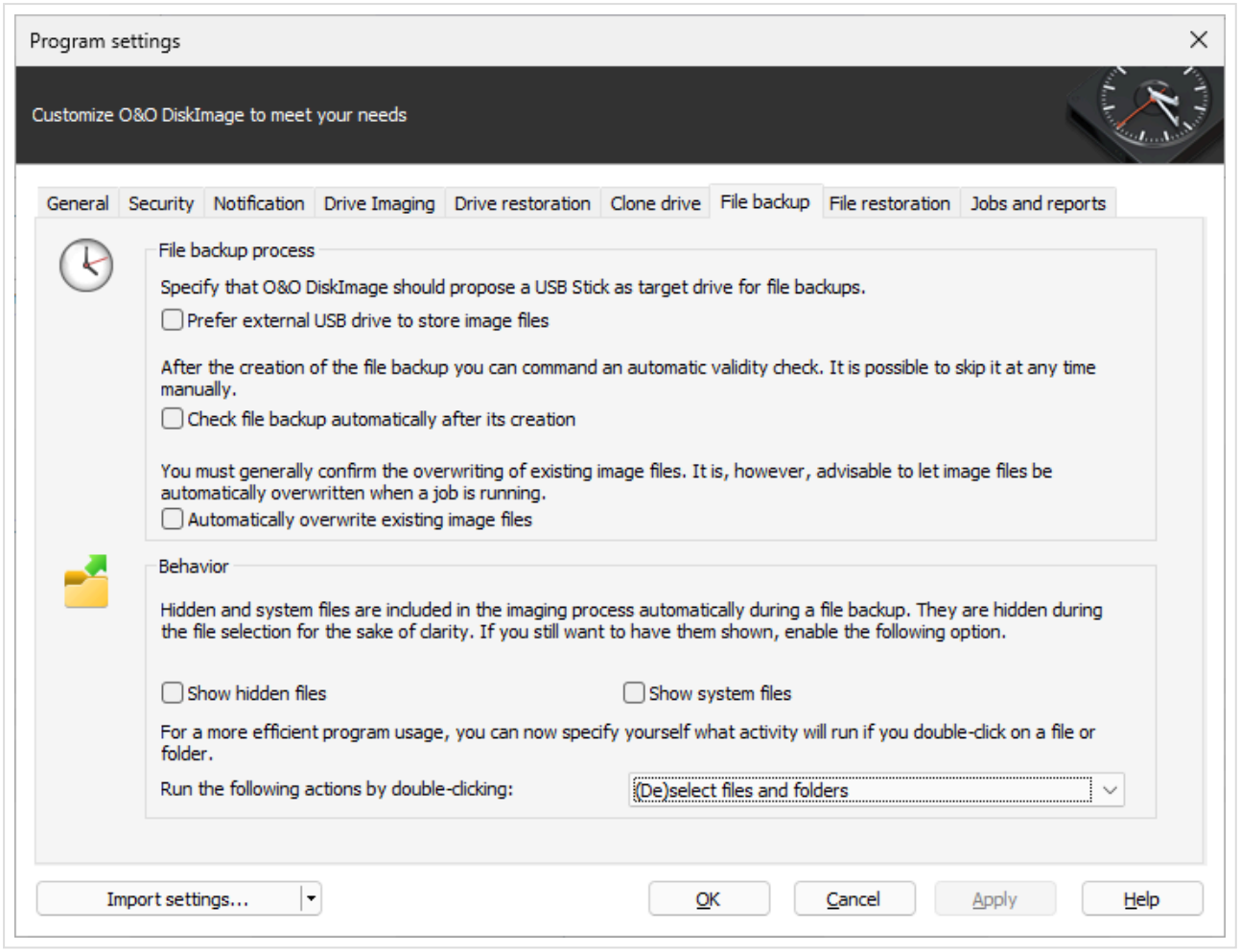
Under **File backup** in the **Program settings** you can set specific settings for a backup.

**Prefer external USB drive to store image files** If you enable this function, external USB drives will be the preferred target for storing images.

Under the option **Check file backup automatically after its creation** you can determine if image files should be checked for errors immediately after they are created.

By selecting **Automatically overwrite existing image files**, the prompt asking if you want to overwrite an existing older image file with the same name will be suppressed. This function is very useful when, for example, you're imaging data a number of times daily, and the image is automatically being named after the Day/Month/Year.

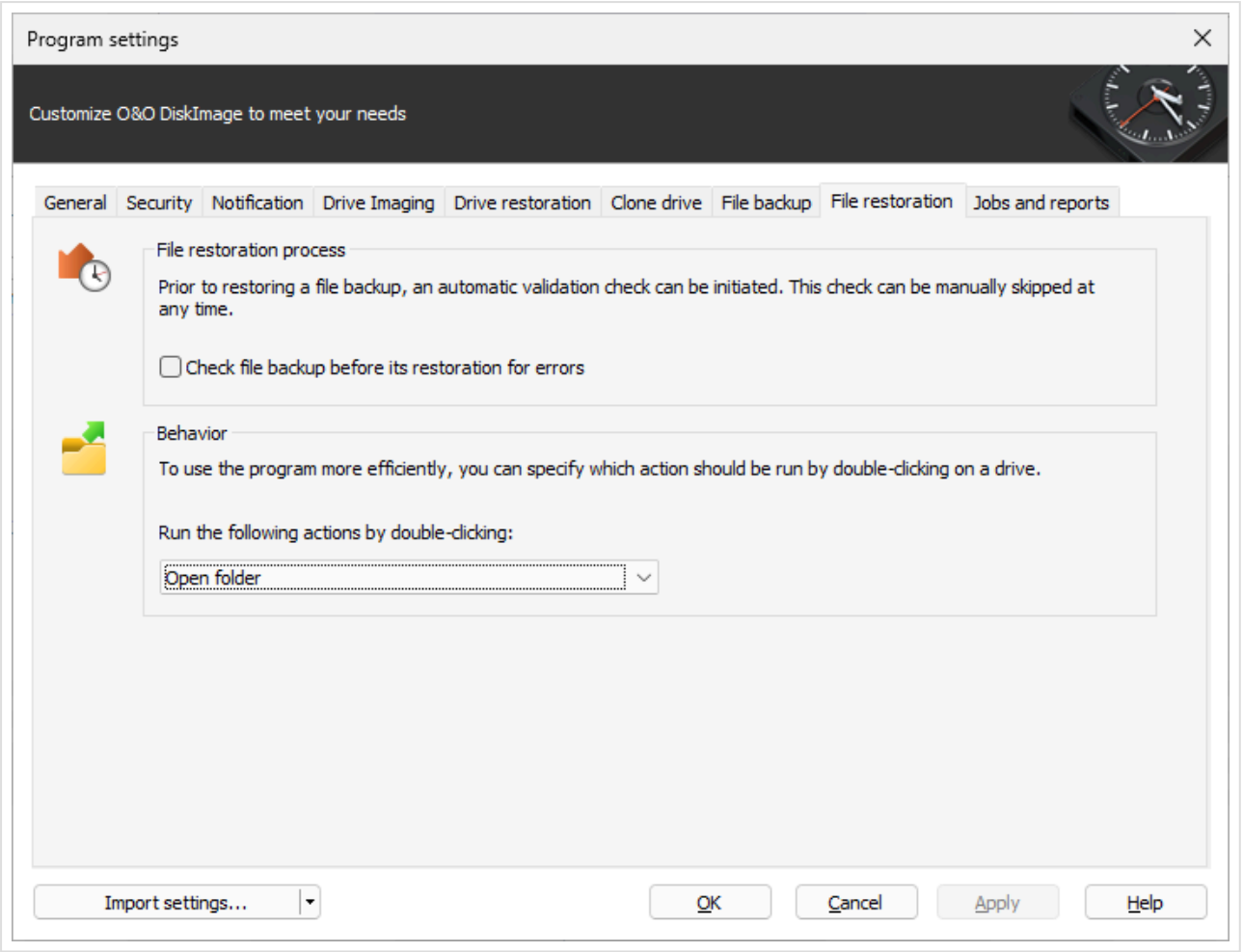
Under **Behavior** you can adapt the program user guidance individually. In the DropDown menu, you can select what will happen when you double-click a file or folder.




## File restoration

Under **File restoration** in the **Program settings** you can change the default settings for behavior during restoration .

You can set the **Behavior** by double-clicking a drive in the activity window "File restoration".



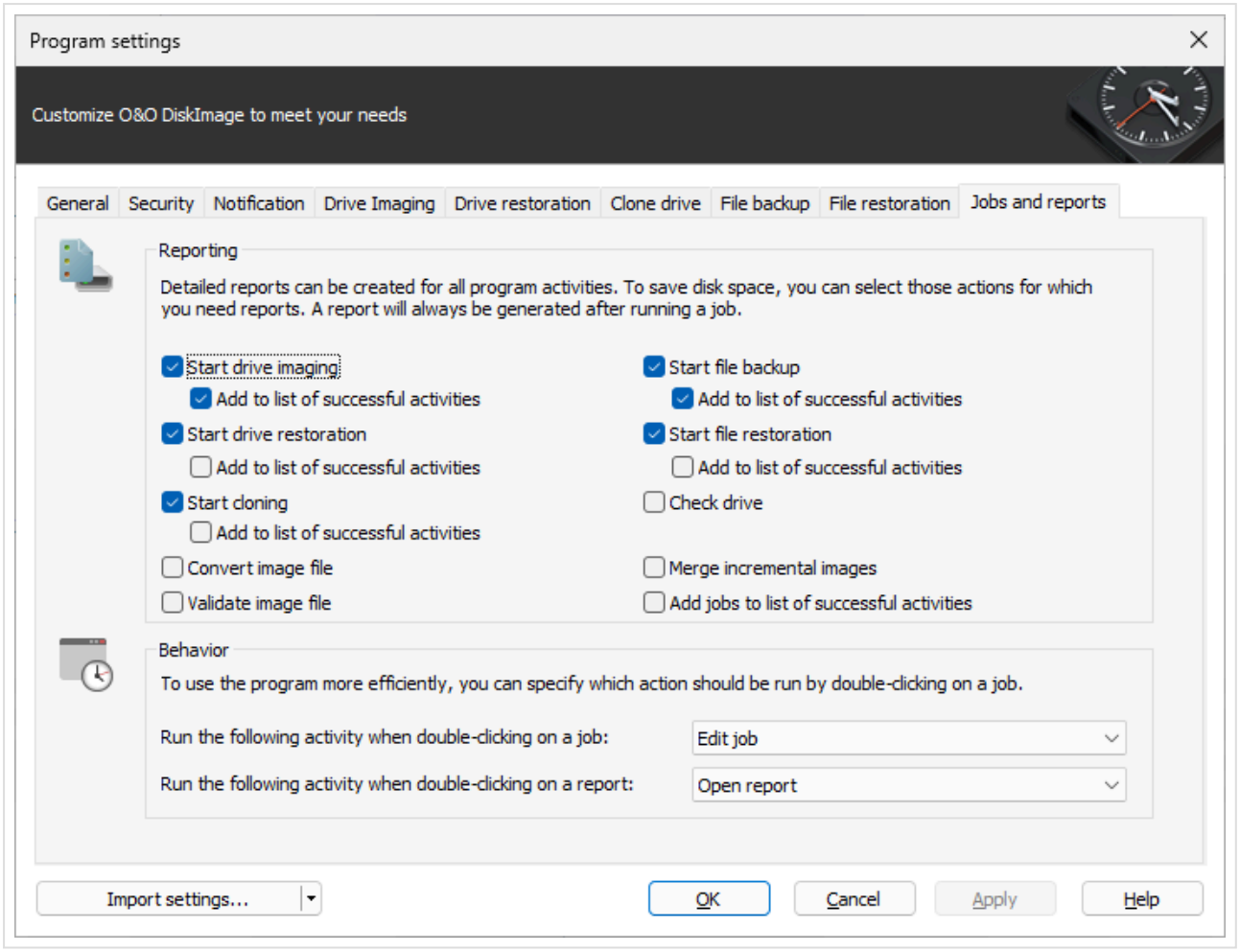

## Jobs and reports

If you want to change or use the default settings for jobs and reports, click **Start/ Program settings** and then **Jobs and reports**.

**Reporting** Detailed reports can be created for all program activities. To save space, you can select the activities you need for reports. Running a job always creates a report.

**Behavior** Under **Behavior** you can specify which activities to run, if you double-click on a job in the job list.

You can also set the behavior by double-clicking a report in the report list.


Program settings
Customize O&O DiskImage to meet your needs
General
Security
Notification
Drive Imaging
Drive restoration
Clone drive
File backup
File restoration
Jobs and reports
Reporting
Detailed reports can be created for all program activities. To save disk space, you can select those actions for which you need reports. A report will always be generated after running a job.
Start drive imaging
Add to list of successful activities
Start drive restoration
Add to list of successful activities
Start cloning
Add to list of successful activities
Convert image file
Validate image file
Start file backup
Add to list of successful activities
Start file restoration
Add to list of successful activities
Check drive
Merge incremental images
Add jobs to list of successful activities
Behavior
To use the program more efficiently, you can specify which action should be run by double-clicking on a job.
Run the following activity when double-clicking on a job:
Edit job
Run the following activity when double-clicking on a report:
Open report
Import settings...
OK
Cancel
Apply
Help

# Notification

To receive email notification about the running of a job, you'll have to enter the corresponding login data in the SMTP server. You will also need to enter the sender data.

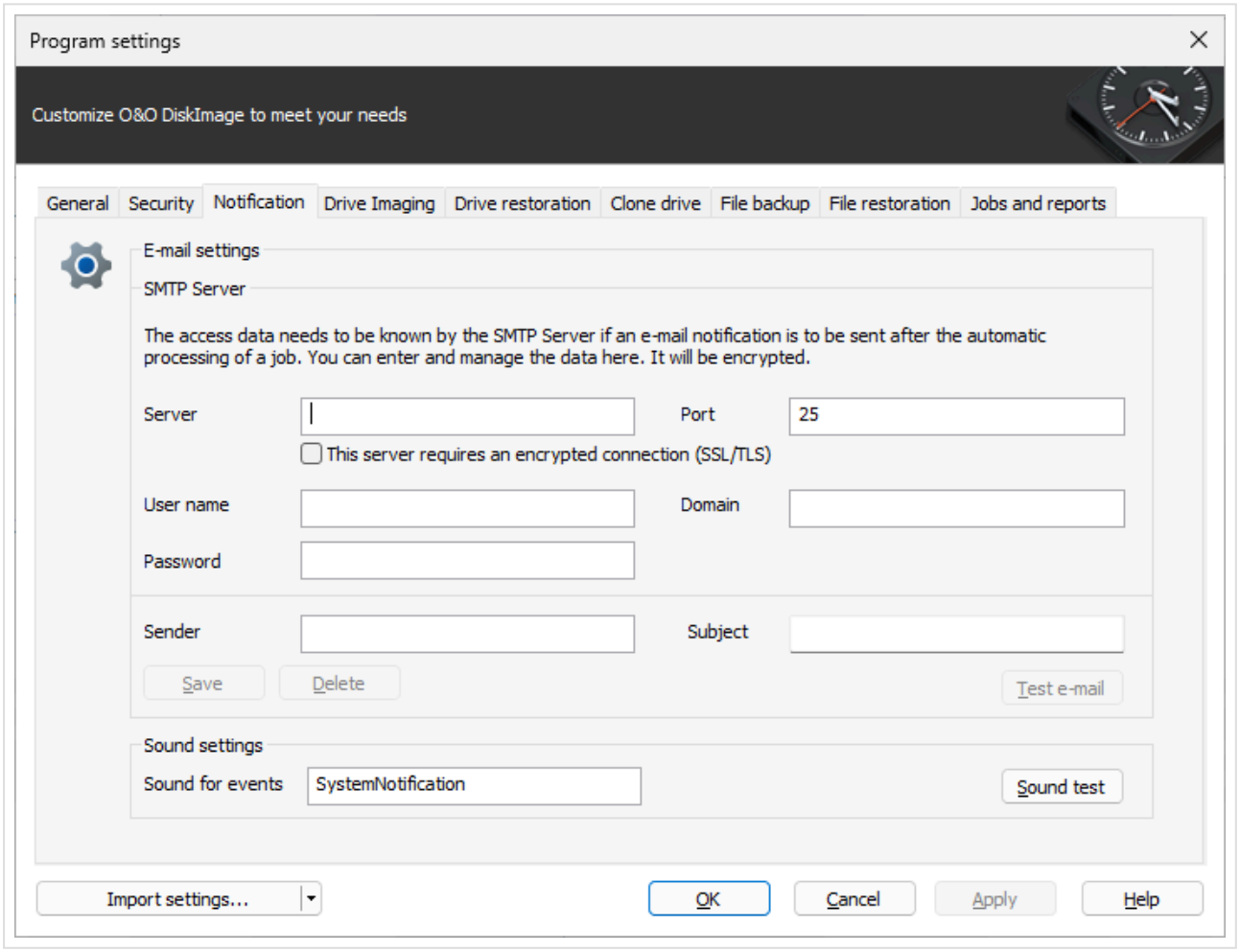
- Execute the relevant actions in **Program settings** under **Notification.**

You can only enter your Email address in the Job assistant after you've entered the required data completely.

:::tip

Your domain does not necessarily need to be entered in the field "Domain". You can also enter the name of your Email Server so that the EHLO or HELO including the mail server name can be run. The Email notification will then also work under a stricter setup Server.

:::




:::tip

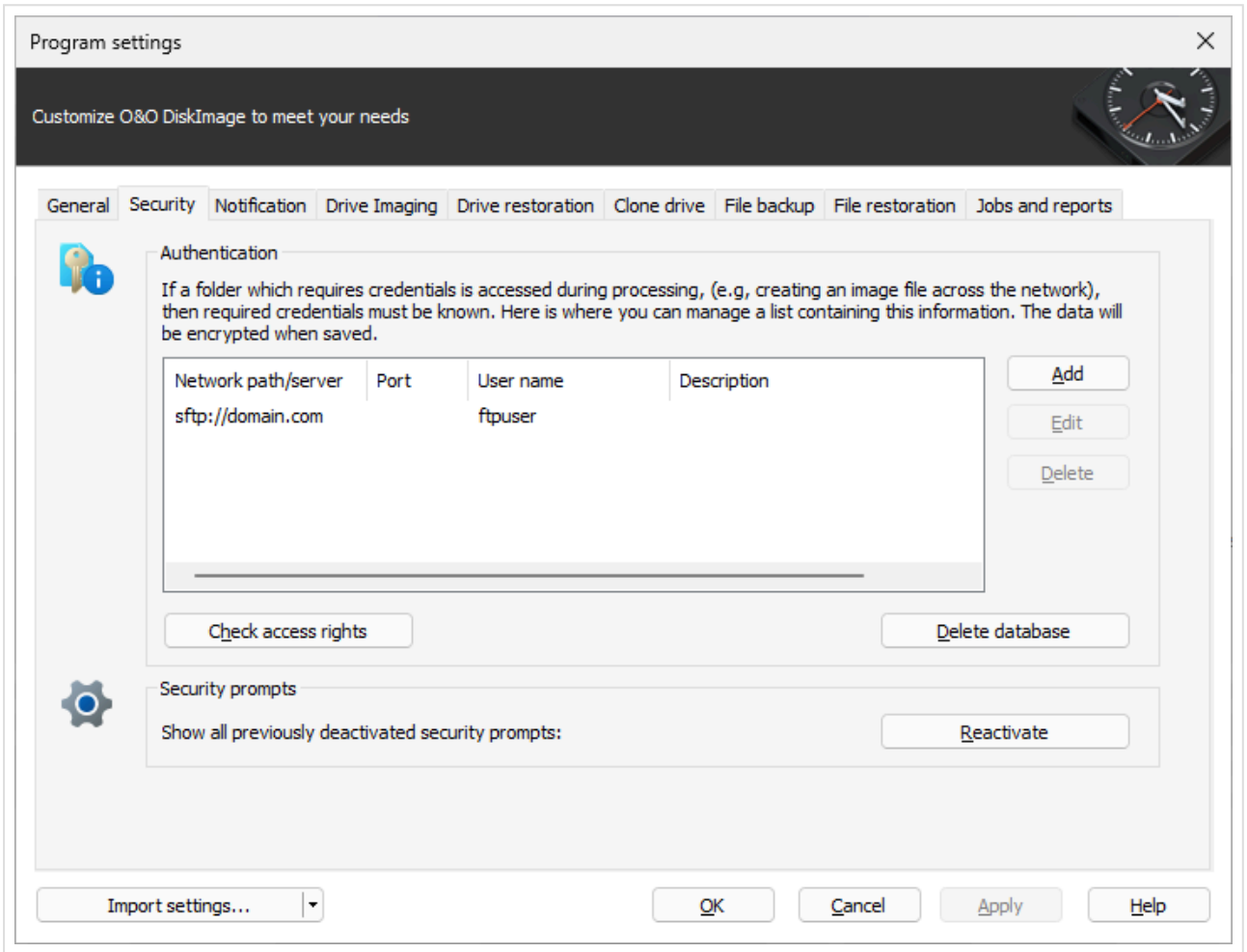
Try sending yourself a test email to make sure your entries are correct.

:::

# Network authentication

To login locally or to the network, e.g. to enable access to protected folders, you have to authenticate yourself. The authentication occurs through your user account. The user account is composed of the user name and the corresponding password, and can be coupled with additional permissions and sharing rights. It is possible to place the images on network drives while working with O&O DiskImage.

Please use the password manager of O&O DiskImage for automatic authentication.




**Reset security confirmations** Most of the security confirmations of O&O DiskImage can be deselected. Once disabled, they will be suppressed and no longer be displayed. If you want all the security confirmations to be displayed as they were when the program first started, under **Program settings/Security** click **Reactivate**.

**Explanation: Password management** Managing the password is a program feature which allows you to store authentication data and to manage it. These data is compresses in the password file, using the Advanced Encryption Standard-Algorithm (AES) and then stored. In addition, the order of the data sets is chosen at random.

A public and a private key are used to encrypt the password. The public key is set by default and can be changed in the registry under `HKEY_LOCAL_MACHINE\SOFTWARE\O&O\O&O DiskImage`. Please bear in mind that the key has to hold a value. An empty key will not be accepted. The private key is preset to a size of 64 Byte.

:::warning

Changes in the Registry may cause severe problems affecting the entire system and may cause the need to reinstall the complete operating system. Before making changes in the Windows Registry database, you should create an image of all the important data on your computer using O&O DiskImage.

:::

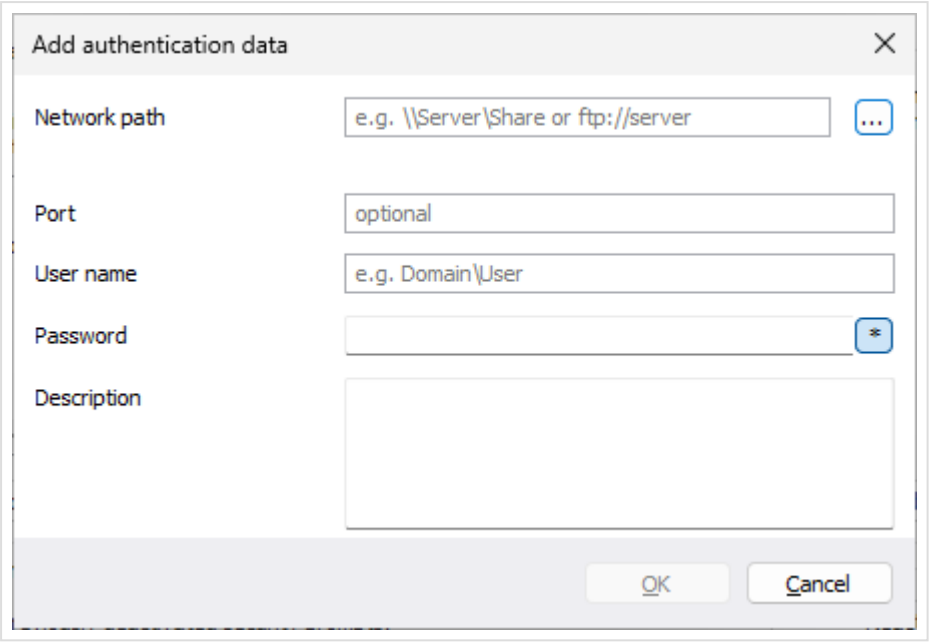
:::note

If you make changes in the Registry, it will require loading the database again. In the following chapter you'll find brief explanations of the registry entries. **Network authentication**

:::

Enter the following settings under **Start/Program settings/Security**:

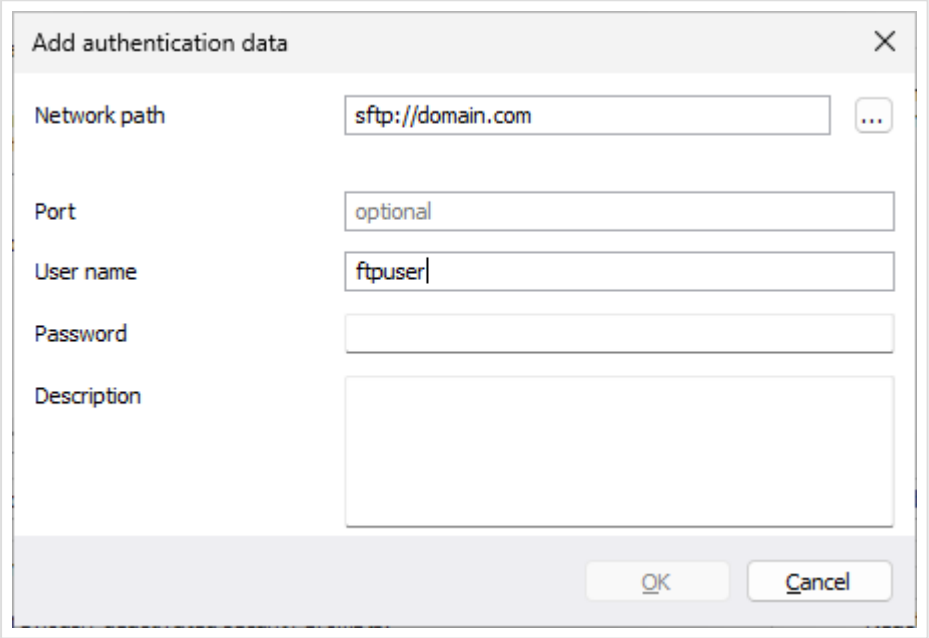
1. If you have not yet created a database, click **Create database**.
2. Enter any password you'd like and confirm your entry. This password will then be encrypted and filed. In order to encrypt the password, a new one will be generated that is composed of two parts: public (Public Key) and private (Private Key). This ensures that you are the only one who can open and read the password file. The O&O DiskImage Service will have automatic access to this password as well.
3. Then click **Add** in the security dialog.
4. Under **Computer/Folder** enter the path under which the image is to be saved, or from where it is supposed to be loaded: Computer nameFolder name or Domain nameFolder nameUser name. Alternatively, you can enter the computer name only if all the sharing options can be opened by the selected user.
5. You have to enter a qualified name of a user account when entering the user name. For example, the corresponding domain for the specific domain account has to be entered and covered, e.g. domainuser1 or User1@domain.
6. Enter the network password of the user, or of his user account. Please keep in mind that the user under which you login has to hold access rights for the target or original folder. You can check for them under Properties in the corresponding target directory under Security.
7. You can also add descriptions to the credentials.
8. After the authentication, you can, for instance, enter a new "network path" as saving location and also restore an image from there.


Add authentication data
Network path
e.g. \\Server\Share or ftp://server
Port
optional
User name
e.g. Domain\User
Password
Description
OK
Cancel

# Use FTP

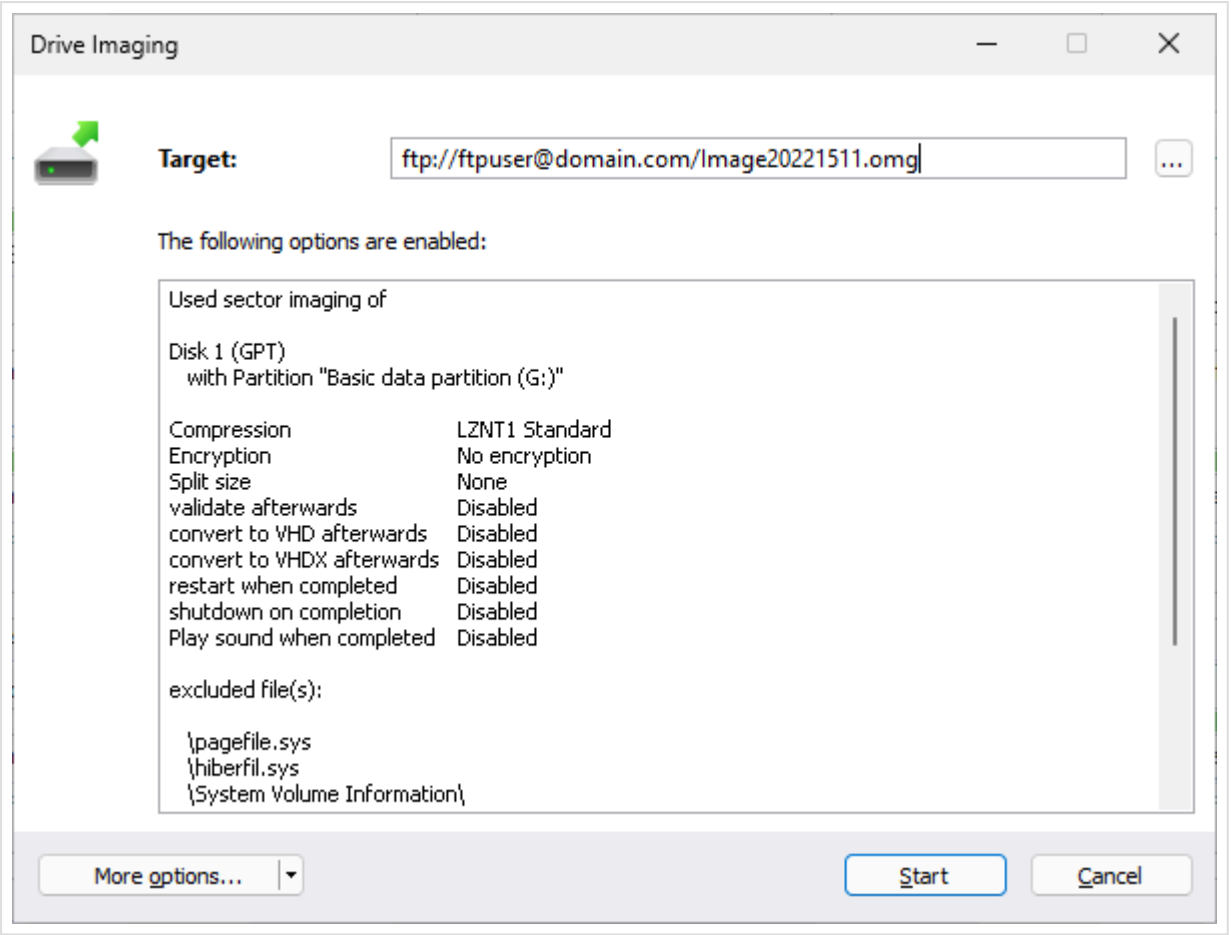
O&O DiskImage supports so-calles passive FTP.

In order to save your image on an FTP Server, you'll need to authenticate yourself in your FTP user account. The user account is essentially based on your FTP user name and the corresponding FTP password. It's important to label FTP access as "ftp://". Please note that the network path/server you set will be consulted while the authentication information is being detected, i.e., this string is the one being looked for.



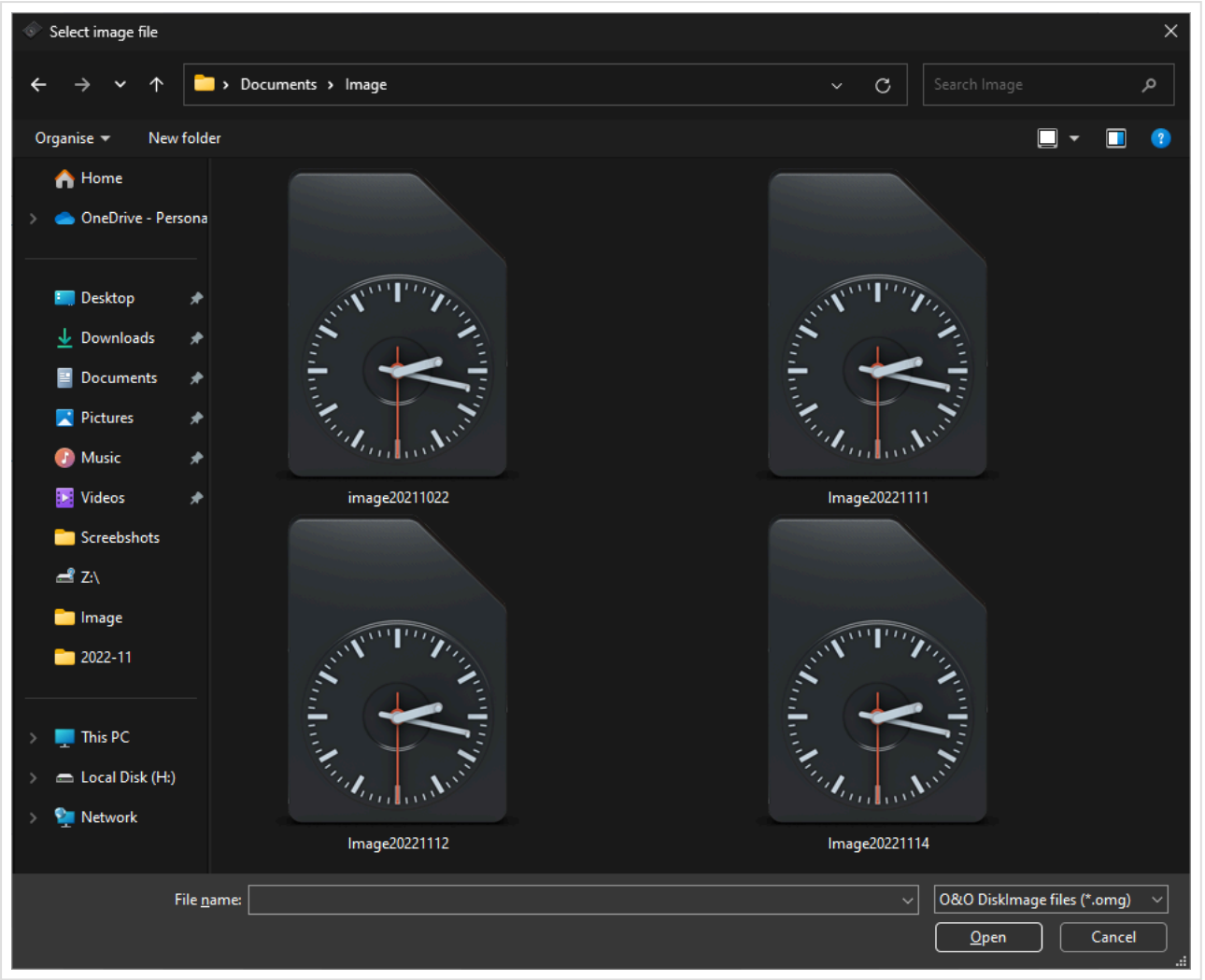

If all the data has been correctly gathered, a test of the authentication information should be successful.

During imaging, the program (O&O DiskImage) must be given the FTP user and the path.




This is always done in the format “ftp://user@server/path“. User and server are needed in order to assign the entry correctly in the authentication information.

**Image selection** The user and password must be entered if an image is being selected from an FTP server via a file selection dialog, e.g., by Open file.




Using “ftp://user:password@server/“ it‘s possible to scan the folder and select the image.

# Tray icon

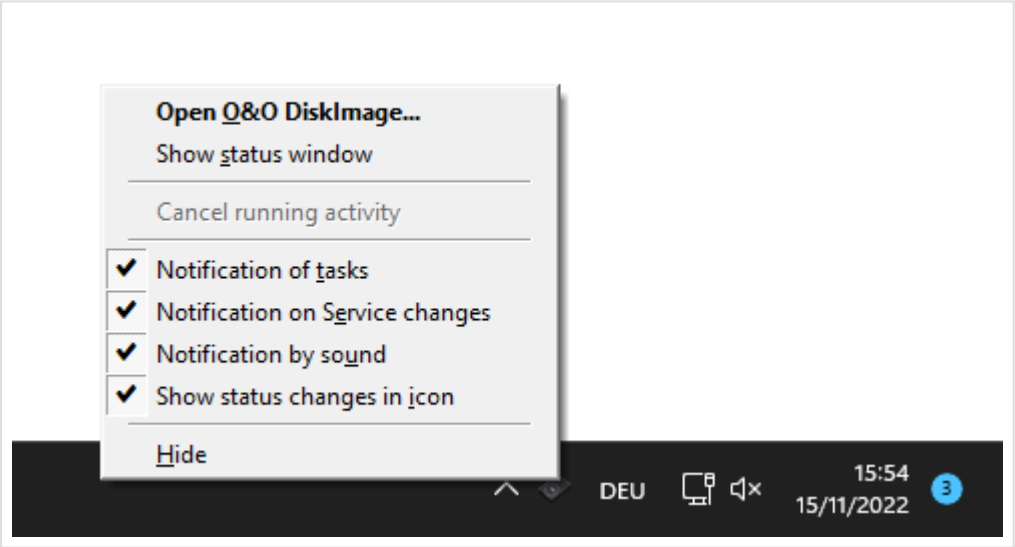
The O&O DiskImage Tray icon is displayed by default in the info area of the task tray following successful installation of O&O DiskImage. The tray icon will indicate whether O&O DiskImage is currently enabled. The icon will be animated while an action is being processed, otherwise, the tray icon will remain still.

Right-clicking the tray icon will show you various control options for O&O DiskImage. You'll be able to open the O&O DiskImage program interface, cancel a running action, hide the tray icon, or suspend the animation.

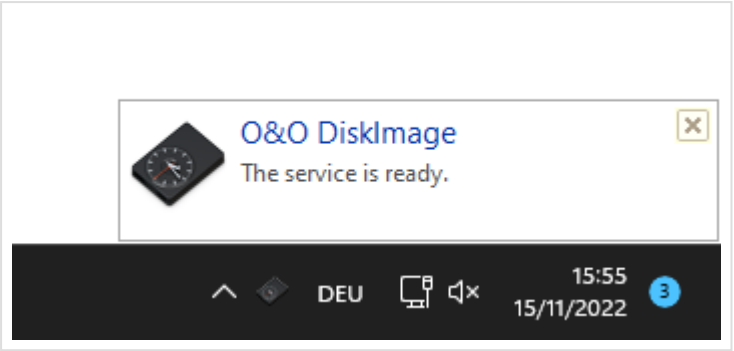
If you don't have administrator rights for this computer, you will not be able to start DiskImage. It will not be possible to click.

In addition, you'll be able to hide or show the progress of a job or changes in the service.

**Our suggestion:** If you'd like to have the tray icon permanently disabled (hidden), do so using the menu **Start/All programs/O&O Software/O&O DiskImage/O&O DiskImage Tray**. The same path can be used for reversing the process whenever you want the icon to be shown.




**Show status window** You'll be able to see the program's current activity displayed in the status window.


O&O DiskImage
The service is ready.
DEU
15:55
15/11/2022
3

# Script interface

The O&O DiskImage Command Interpreter makes it possible to manage disks, partitions, or volumes and images with the assistance of command files (XML documents). All scenarios displayed by O&O DiskImage directly or indirectly can in this way be re-enacted.

:::note

The O&O DiskImage program prevents a large number of user activities that might unintentionally result in loss of data.It is strongly recommended to use the Command Interpreter with great caution, as it enables the user to directly control partitions, volumes, disks and images.

:::

Drive letters will not be automatically assigned by using the Command Interpreter. To be certain that a particular partition or volume has a drive letter; you will have to assign it one directly.You can either assign the drive a letter yourself, or have the next available drive letter assigned for you. Otherwise, the created storage volume will not be accessible or visible to certain programs such as Microsoft Explorer.

Use the command "oodi /s PathFile.xml", to access and run a command file. In addition, you can introduce and run the command file in the program over the program's "Import" feature.

As a default setting, O&O DiskImage can end the command process and send an error code if the command file is defective.To continue running a command file even under these conditions, set the parameter "stop_at_error" on the value "false" or "no",.If there was no error, the value "0" will be sent as a confirmation of success.

Upper and lower case will not be considered when using labels and names i.e., there will be no difference between, for example, "command", "COMMAND" or "Command".

Single commands have to be enclosed in the element "DiskImage", "Job" or "DiskImageJob".

## Formatting legend

| Format | Description |
|---|---|
| Ellipsis (...) | Parameters which can be repeated several times in a command line |
| Between square brackets ([]) | Optional Elements |
| Curly brackets ({}) Separate options from each other with a pipe sign ( | ). Example:<br>{even |

# Conditions

In a command file, commands and/or parameters can be connected with conditions when needed to run or apply them.A condition is labelled with the string "CONDITION".The following operations can be used for getting a verification of validity:

- the values are equal- ("==")
- the values are unequal- („!=“)
- the left value is greater than the right value (">")
- the left value is smaller than the right value ("<")

A dynamic command file processing can be attained by evaluating the environment variables in conditions.

**Example** `<command name="create partition"> <CONDITION> $ENV:(ImageStep)==2</CONDITION> <drivenumber>0</drivenumber> <!—target object is disk 0 --> <remaining_range>true</remaining_range> <!-- layout of a partition on the remaining range --> <driveletter_to_set>D</driveletter_to_set> <!—set drive letter D --> <chs_alignment>yes</chs_alignment> <!—alignment of the new partition on cylinder/head/sector --> <NTFS>true</NTFS> <!—create NTFS partition (fix partition type, fix file system for formatting) --> <format>true</format> <!—run formatting with fixed file system --></command>`

In the above example, the command to create a partition will only be run if the value of the environment variable "ImageStep" is equal to the value "2".

# Environment and template parameters

The command interpreter has been extended with an option for validating environment variables and conditions. A value included in the string "$ENV:()" is replaced at running time with the value of the environment variable.Similarly at running time, a set environment variable "image_name" with the value "C:\Image20990226.omg" is replaced in the command file by using the string "$ENV:( image_name)" with the value "C:\Image20990226.omg."

The following additional template parameters are available wildcards for use as replacements during the command file procedure.These parameters will be enclosed in the string "$TEMPL:()". The following fixed values are possible:

- ComputerName: the current name of the Computers
- UserName: the name of the current user, of the process
- DefaultPath: the standard path saved in/by the program
- Day: current date of the operating system
- Month: current month of the operating system
- Year: current year of the operating system
- Hour: current hour of the operating system
- Minute: current minute of the operating system
- Second: current second of the operating system
- Weekday: written day of the week
- WeekNumber: calendar week number

**Example**
```
<command name="restore image"> <image_name>C:\Image$TEMPL:(Year)$TEMPL:(Month)$TEMPL:(Day).omg</image_name> <!-- dynamic formation of the image name --> <target_drivenumber>0</target_drivenumber> <!—target object is disk 0 --> <image_driveletter>C</image_driveletter> <!—source object is the Volume/Partition with the drive letter C --> <chs_alignment>yes</chs_alignment> <!—alignment of the new partition on cylinder/head/sector --> <set_bootable_partition_bootable>yes</set_bootable_partition_bootable> <!—in case the source object was bootable,set again to bootable --> <append_on_target_drive>yes</append_on_target_drive> <!—the partition being restored will be appended in the existing layout, other partitions will not be overwritten --> </command>
```

The file name in the example will become the running time, if the current date would be 26.02.2099, it would be changed into “20990226”.The image file called „image20990226.omg“ found in partition „C:“ would be used for restoration.

# Commands

A command refers to a functioning part or special feature of the program. With the help of the relevant command, an operation such as “Creating an Image” can be implemented.An operation is specialized through parameters. These parameters are divided in optional, non-optional, and dependent parameters. Optional parameters are not required to be used; however, they do expand the program’s usefulness. Non-optional parameters must be set and filled with valid values. If the values of this parameter or the parameter itself are missing during the processing of the command, the command processing will be aborted. False or missing parameters will then be noted in the log file. Dependent parameters are parameters which are optional and used to particularize another parameter. Alone, they have no validity.

**Examples of dependent parameters:** The parameter "begin" is, by itself, insignificant.Through the parameter "disk_number", however, the offset will be recognized on a hard disk. Using the qualifier „command“, you can apply and control the following commands during the processing of the command interpreter.

**Footnote:** Presentation and Text Formatting are explained under Formatting legend

# File-based backup functions

Creates a file-based backup using transferred criteria.

**Parameters**

- backup_type
- compression_type
- encryption_type
- checksum_type
- device_type
- backup_name
- backupset_id
- backupset_criteria
- [ password ]
- [ comments ]
- [ max_backup_size ]
- [ force_dismount | snapshot | vss ]
- [ ignored_read_errors ]
- [ ignore_invalid_free_size_appointment ]
- [ automatically_validate_backup ]
- [ automatically_overwrite_backup ]
- [ ignore_snapshot_cache_overflow ]
- [ automatically_convert_to_vhd ]
- [ backupset_name ]
- [ backupset_comments ]
- [ backupset_exclude ]

:::note

When the maximum file size of the target drive's file system is reached or the drive is full, the backup file will be automatically split unless there's a maximum size set for it.

:::

**Example** `<command name="create backup"> <backup_type>extended ZIP file backup<backup_type> <compression_type>BZIP24K</compression_type> <device_type>filesystem</device_type> <backup_name>c:\OODIImage20171005.obk</backup_name> <ignored_read_errors>yes</ignored_read_errors> <backupset_id>{00000000-0000-0000-0000-`

```
000000000000}</backupset_id>> <backupset_criteria>I:documents</backupset_criteria>
</command>
```

## create incremental backup

Creates an incremental file-based backup. A backup will be created that contains only the changed files from a selected existing backup.

**Parameters**

- device_type
- backup_name
- compression_type
- encryption_type
- new_backup_name
- new_device_type
- [ password ]
- [ new_password ]
- [ new_comments ]
- [ new_max_backup_size ]
- [ force_dismount | snapshot | vss ]
- [ignore_data_modification ]
- [ ignored_read_errors ]
- [ ignore_invalid_free_size_appointment ]
- [ automatically_validate_backup ]
- [ automatically_overwrite_backup ]
- [ ignore_snapshot_cache_overflow ]

**Example** `<command name="create incremental backup"> <device_type>filesystem</device_type> <backup_name> c:\OODIImage20171005.obk </backup_name> <compression_type> BZIP2 4K </compression_type> <new_device_type>filesystem</new_device_type> <new_backup_name> c:\OODIImage20171005_INC.obk</new_backup_name> <ignored_read_errors>yes</ignored_read_errors> <max_backup_size>-1</max_backup_size> </command>`

## restore backup

Restores files/data from a file-based backup.

**Parameters**

- device_type

- backup_name
- [ password ]
- [ target_path ]
- [ overwrite_target_data ]
- [ ignored_read_errors ]
- [ ignore_data_modification ]

:::note

If no target parameter (target_path)is indicated, the original data will be overwritten with data from the backup.

:::

**Example** `<command name="restore backup"> <device_type>filesystem</device_type> <backup_name>c:\OODIImage20117005.obk</backup_name> <overwrite_target_data>yes</overwrite_target_data></command>`

## validate backup

This function checks the structural integrity of the backup file. It will examine whether the required logical structure is intact or undamaged. In addition, encrypted and/or compressed backups will be checked to determine whether decryption or decompression is possible without error.

**Parameters**

- device_type
- backup_name
- [ all_splits ]
- [ password ]
- [ ignore_data_modification ]

:::note

If no target parameter (target_path) is indicated, the original data will be overwritten with data from the backup.

:::

**Example** `<command name="validate backup"> <device_type>filesystem</device_type> <backup_name>c:\OODIImage20171005.obk</backup_name></command>`

# Disk management functions

## assign drive letter

Assigns a drive letter to the selected drive or changes it.

**Parameters**

- driveletter_to_set
- { devicename | driveletter | drivenumber | serialnumber | begin }

:::note

Drive letters of current system volumes and the startup volume cannot be changed.

:::

A maximum of 26 letters are allowed for one computer. The drive letters A and B are reserved for floppy drives. These letters, however, may be assigned to removable media drives when the computer doesn't feature a floppy drive.

**Example** `<command name="assign drive letter"> <drivenumber>2</drivenumber> <begin>32256</begin> <driveletter_to_set>X</driveletter_to_set></command>`

## checkdisk

Command that checks disks for problems. It also offers the option to correct recognized problems.

**Parameters**

- correct_errors
- verbose
- check_only_if_dirty
- locates_bad_sectors_recover_readable_information
- { devicename | driveletter | drivenumber | serialnumber | begin | system_volume | data_volumes}

:::note

This command can possibly require a large amount of time to run. The amount of time needed will depend on the number of files and folders, the size of the disk, the disk's performance and the available system resources, such as processor and memory.

:::

**Example** `<command name="checkdisk"> <driveletter>E</driveletter> <correct_errors>no</correct_errors> <verbose>yes</verbose> <check_only_if_dirty>no</check_only_if_dirty> <locates_bad_sectors_recover_readable_information>no</locates_bad_sectors_recover_readable_information> </command>`

## clear disk

Removes all formatting from partitions and volumes on the selected storage volume.

**Parameters**

- { devicename | drivenumber | serialnumber}
- [ is_superfloppy ]

:::note

All drives will be deleted.

:::

**Example** `<command name="clear drive"> <drivenumber>1</drivenumber | serialnumber> <is_superfloppy>no</is_superfloppy></command>`

## create mirrored volume

Creates a mirrored volume.

**Parameter**

- size
- { devicename_one | drivenumber_one | serialnumber_one}
- { devicename_two | drivenumber_two | serialnumber_two}
- [ driveletter_to_set ]

:::note

The function for creating a mirrored volume is dependent on the operating systems that are currently installed and enabled.

:::

Two dynamic volumes are needed for creating a mirrored volume.

It is possible to mirror a simple available volume.

Mirrored volumes are error-tolerant and use RAID-1. Redundancy is assured through the creation of two identical copies of a volume.

It is not possible to extend mirrored volumes or to convert them into stripe set volumes.

Both copies (mirrors) of the mirrored volumes use the same drive letters.

You can install an operating system on a simple or mirrored dynamic volume only.Entries in the partition table must exist for this volume (i.e., that this was a system or start volume).

**Example** `<command name="create mirrored volume"> <drivenumber_one>2</drivenumber_one> <drivenumber_two>3</drivenumber_two> <size>8589934592</size> <driveletter_to_set>M</driveletter_to_set></command>`

## create RAID5 volume

Creates a RAID-5 volume with at least three selected dynamic volumes.

**Parameter**

- RAID5_column_size
- size
- { devicename | drivenumber | serialnumber} ...
- [ driveletter_to_set ]

:::note

Depending on current and enabled operating systems, a mirrored volume can be created.

:::

At least three dynamic volumes are required for creating a RAID-5 volume.

A RAID-5 volume helps you achieve error-tolerance.This will merely require an additional storage volume for the volume. If you’re using, for example, three 10 GB storage volumes to create a RAID-5 volume, the volume will contain a total of 20 GB. The remaining storage space of 10 GB will be used for parity.

RAID-5 volumes can neither be extended nor mirrored.

**Example** `<command name="create RAID5 volume"> <drivenumber>2</drivenumber> <drivenumber>3</drivenumber> <drivenumber>4</drivenumber> <size>8589934592</size> <RAID5_column_size>8589934592</RAID5_column_size> <driveletter_to_set>R</driveletter_to_set> </command>`

## create simple volume

Creates a simple volume.

**Parameter**

- { devicename | drivenumber | serialnumber }
- { size | complete_region_size | remaining_range | part_of_disk_size }
- [ driveletter_to_set ]

:::note

You can create simple volumes on dynamic volumes only.

:::

Simple volumes are not error-tolerant.

You can install an operating system on a simple or mirrored dynamic volume only.Entries in the partition table must exist for this volume (i.e., that this was a system or start volume).

**Example** `<command name="create simple volume"> <drivenumber>2</drivenumber> <size>5368709120</size> <driveletter_to_set>S</driveletter_to_set></command>`

## create spanned volume

Creates a spanned volume.

Parameter

- size
- { devicename | drivenumber | serialnumber }

- [ driveletter_to_set ]

:::note

You can create spanned volumes on dynamic volumes only.

:::

At least two dynamic volumes are needed for creating an spanned volume.

A spanned volume can be expanded for as many as 32 dynamic volumes.

It is not possible to mirror spanned volumes or to convert them into stripe set volumes.

Spanned volumes are not fault-tolerant.

**Example** `<command name="create spanned volume"> <size>5368709120</size> <drivenumber>2</drivenumber> <size>2684354560</size> <drivenumber>3</drivenumber> <size>2684354560</size> <driveletter_to_set>S</driveletter_to_set></command>`

## create striped volume

Creates a stripe set volume with at least two selected dynamic volumes.

**Parameter**

- size
- { devicename_one | drivenumber_one | serialnumber_one}
- { devicename_two | drivenumber_two | serialnumber_two}
- [ driveletter_to_set ]

:::note

At least two dynamic volumes are needed for creating a stripe set volume. A stripe set volume can be created for as many as 32 storage volumes.

:::

Stripe set volumes are not fault-tolerant, and can neither be extended nor mirrored.

**Example** `<command name="create striped volume"> <drivenumber_one>2</drivenumber_one> <drivenumber_two>3</drivenumber_two> <size>8589934592</size> <driveletter_to_set>S</driveletter_to_set></command>`

## create partition

Creates a partition on a basic disk.

**Parameters**

- { devicename | drivenumber | serialnumber | begin }
- { size | complete_region_size | remaining_range | part_of_disk_size }
- [ format ]
- { NTFS | FAT16 | FAT32 | huge | extended }
- [ label ]
- [ no_alignment | default_windows_alignment | chs_alignment ]

- [ driveletter_to_set ]

:::note

Primary partitions, extended partitions and logical drives can only be created on a basic disk.

:::

On volumes with an MBR (Master Boot Record), you can optionally create up to four partitions, or three primary partitions and one extended partition.

On volumes with a GPT (GUID-Partition Table), you can create up to 128 primary partitions

**Example** `<command name="create partition"> <drivenumber>1</drivenumber> <begin>8595417600</begin> <size>2147483648</size> <huge>yes</huge> <default_windows_alignment>yes</default_windows_alignment> </command>`

## delete partition

Deletes the selected partitions on a basic disk.

**Parameter**

- { devicename | driveletter | drivenumber | serialnumber | begin }

:::note

**Important!** As a result of deleting a partition, all data on the deleted partition or logical drive will be lost

:::

:::warning

Deleted partitions or logical drives cannot be restored.

:::

You cannot delete the system volume, the start volume and any volumes upon which the active swap file or crash dump (memory dump) are found.

An extended partition can only be deleted when it is empty.

You must delete all logical drives in an extended partition before you can delete it

**Example** `<command name="delete partition"> <driveletter>G</driveletter></command>`

## delete volume

Deletes the entire volume.

**Parameter**

- { devicename | driveletter | drivenumber | serialnumber | begin }

:::note

**Important!** Be very careful when deleting volumes.All data on the volume, as well as the volume itself, will be deleted when you delete a simple, spanned, mirrored or RAID-5 volume.

:::

:::warning

Deleted volumes cannot be restored.

:::

You cannot delete the system volume, the start volume and any volumes upon which the active swap file or crash dump (memory dump) are found.

**Example** `<command name="delete volume"> <driveletter>S</driveletter></command>`

## disconnect network drive

Disconnects an existing connection between the computer and an available resource.

**Parameter**

- localname

:::note

This will attempt to break the connection to this resource with the highest priority; i.e., all links and uses of files and/or folders from this resource will become invalid.

:::

**Example** `<command name="disconnect network drive"> <localname>Z</localname></command>`

## fill disk sectors

Overwrites sectors of a storage volume, a region area of a storage volume, a partition or a volume with a specific value.

**Parameters**

- { devicename | driveletter | drivenumber | serialnumber | begin | data_volumes}
- [ value_to_fill ]

:::note

**Important!** All data in this region will be permanently destroyed. If a region was selected that was linked with a partition or a volume, the data on that partition or volume will be destroyed. When a complete hard disk is selected, all objects and partitions/volumes with related data will be deleted and cannot be restored.

:::

**Example** `<command name="fill disk sectors"> <drivenumber>1</drivenumber> <value_to_fill>0</value_to_fill></command> <command name="fill disk sectors"> <driveletter>F</driveletter> <value_to_fill>0</value_to_fill></command>`

## format

Formats a disk for use under Windows.

**Parameter**

- quickformat
- enable_compression

- force_dismount
- { devicename | driveletter | drivenumber | serialnumber | begin }
- { NTFS | FAT16 | FAT32 }
- [ allocation_unit_size ]
- [ label ]

:::note

It is not possible to format current system or boot partitions.

:::

Compression will only be supported by NTFS volumes.

Quick formatting will remove all files from the disk; the disk will not, however, be checked for bad sectors.

**Example** `<command name="format"> <driveletter>G</driveletter> <quickformat>yes</quickformat> <enable_compression>no</enable_compression> <force_dismount>yes</force_dismount> <NTFS>yes</NTFS> </command>`

## grow partition

Extends the partition into the next, non-reserved storage space on the same disk. Beyond that, it must follow on the partition (i.e., feature a higher sector number).

**Parameters**

- { devicename | driveletter | drivenumber | serialnumber | begin }
- { size | remaining_range | part_of_disk_size }

:::note

If the previous partition was formatted with the NTFS file system, the file system will be so extended that the larger partition will be occupied.A loss of data does not occur.

:::

If the previous partition was formatted with a file system other than the NTFS, the command fails and no changes will be made to the partition.

It is not possible to extend the current system or boot partition.

**Example**

## grow volume

With the help of this command you can extend newly created storage space onto an available volume.The selected volume will be thereby extended into the following non-reserved storage space.A dynamic simple or spanned volume can be extended onto any available storage space on any dynamic volume.

**Parameter**

- size
- { devicename | driveletter | drivenumber | serialnumber | begin }

:::note

A volume can only be extended when the respective volume features no file system or was formatted with using NTFS.Volumes formatted with FAT or FAT32 cannot be extended.

:::

It is not possible to extend the current system or boot partition.

Simple or extended volumes that are not system or start volumes can be extended provided there is enough available storage space. Among these are volumes which were created as dynamic or basic, and then were converted into dynamic volumes.

It is not possible to extend stripe set or RAID-5 volumes.

It is possible to extend a simple volume onto multiple dynamic volumes.In this way they obtain a spanned volume.It is not possible to mirror spanned volumes or to convert them into stripe set volumes.

Should a spanned volume be extended, you cannot delete any part of it without deleting the entire spanned volume.

**Example** `<command name="grow partition"> <driveletter>J</driveletter> <size>-52428800</size> </command>`

## initialized storage devices

Definition for identifying and displaying existing storage volumes.

**Parameter**

- { default_devices | all_devices | disk_devices | cddvd_devices | floppy_devices }

:::note

If a particular storage volume group was adjusted and enabled, drives from other disk groups will not be identified and accessible.

:::

**Example** `<command name="initialized storage devices"> <disk_devices>yes</disk_devices></command>`

## initialize disk

Initializes a disk into a selected type of disk

Parameter

- { devicename | drivenumber | serialnumber}
- { basic_disk | gpt_disk | dynamic_disk }

:::note

**Parameter "basic_disk":** The disk must be blank in order for it to be converted into a dynamic volume. First secure the data, and then delete all partitions or volumes before converting it.

:::

**Parameter "dynamic_disk":** All partitions existing on the disk will be converted into simple volumes.

**Example** `<command name="initialize disk"> <drive_number>1</drive_number> <basic_disk>yes</basic_disk></command>`

## map network drive

Connects a computer with an available resource.

**Parameter**

- remotename
- [ localname ]
- [ username ]
- [ password ]

**Example** `<command name="map network drive"> <remotename>servershare</remotename> <localname>Z</localname></command>`

## rescan disks

Renewed detecting of an initialized drive.Among other reasons, you need this command to search for new disks which could be possibly added to the computer.

**Parameter** (no parameter)

**Example** `<command name="rescan disks"></command>`

## restart

Restarts the computer.

**Parameter** (No parameters)

:::note

All data and documents not saved will be lost.

:::

**Example** `<command name="restart"></command>`

## set partition active

With this command, partitions on basic disks will be marked as active. In this way, the Basic Input/Output System (BIOS) or the EFI (Extensible Firmware Interface) will be informed that the partition or volume is a valid system partition or system.

**Parameter**

- set_active
- { devicename | driveletter | drivenumber | serialnumber | begin }

:::note

A logical drive cannot be marked as an active partition.

:::

Only a partition on a MBR basic disk can be marked as active.

Only one active partition per storage volume is possible on a computer.

Changing or deleting an active partition may result in the computer no longer being able to start.

Partitions containing the boot and operating system files are labeled boot or system partitions by default.

The system partition must be a primary partition that is marked as active for starting. It must be located on the disk that the computer will access when it starts up. There is always only one active system partition on any one disk. Multiple basic disks with a corresponding active partition are possible. The computer will be booted, however, from only one disk. Should you wish to use another operating system, you will first have to label the corresponding system partition as active before restarting the computer.

The system partition can never be part of a stripe set volume, a spanned volume or a RAID-5 volume.

An existing dynamic volume cannot be marked as an active partition. You can, however, convert a basic disk containing the active partition into a dynamic volume. After a successful conversion of the volume, the partition will be a simple, active volume. If the active partition is not the current system or boot partition, it will become a simple volume and loses its entry in the partition table. Therefore, the partition cannot be enabled anymore.

**Example** `<command name="set partition active"> <drivenumber>1</drivenumber> <begin>32256</begin> <set_active>false</set_active></command>`

## set volume label

Assign or transpose the drive name of a partition or volume.

**Parameter**

- label
- { devicename | driveletter | drivenumber | serialnumber | begin }

**Example** `<command name="set volumelabel"> <devicename>DeviceHarddiskVolume3</devicename> <label>Datenpartition</label></command>`

## shutdown

Shutdown the computer.

**Parameter** (No parameters)

:::note

All data and documents not saved will be lost.

:::

**Example** `<command name="shutdown"></command>`

# Functions for system properties

## activate setup

Enables the setup of the operating system after restart.

**Parameter**

- operating_system_path
- setup_type
- { unattended }

:::note

In order for the operating system to consider changes to the computer name, a restart is required.

:::

**Example** `<command name="activate setup"> <operating_system_path>"E:WINDOWS" </operating_system_path> <setup_type>mini_setup</setup_type> <unattended>true</unattended></command>`

## assume devices

Device management drivers that are currently loaded should be applied.

**Parameters** operating_system_path

:::note

In order for the operating system to consider the changes to the computer name, a restart is required.

:::

**Example** `<command name="assume devices"> <operating_system_path>"E:WINDOWS" </operating_system_path ></command>`

## change computer name

Change the computer name of the current operating system or the one forming the regular basis.

**Parameter**

- Computer_name
- { registry_information_path }

:::note

In order for the operating system to consider changes to the computer name, a restart is required.

:::

**Example** `<command name="change computer name"> <computer_name>MyComputer</computer_name> </command>`

## change computer sid

Change the SID of the current or the underlying operating system.

**Parameter**

- { registry_information_path }

:::note

In order for the operating system to consider changes to the computer name, a restart is required.

:::

**Example** `<command name="change computer sid"> <registry_information_path>"E:WINDOWSsystem32config"</ registry_information_path > </command>`

## replace hal

Replacement of the hardware abstraction layer.

**Parameter**

- { operating_system_path }

:::note

In order for the operating system to consider changes to the computer name, a restart is required.

:::

**Example** `<command name="replace hal"> <operating_system_path>"E:WINDOWS" </operating_system_path></command>`

# Sector-based imaging functions

**clone device** With this function you can clone a device and all its saved data without creating image files. The device will be saved directly and without compression on another device. A device can be a partition, a volume or an entire disk.

## Parameters

### clone_type

- { devicename | driveletter | drivenumber | | serialnumber | begin }
- { target_devicename | target_driveletter | target_drivenumber | target_serialnumber | target_begin }
- [ignored_file_pattern | ignored_file]
- [ driveletter_to_set ]
- [ force_dismount | snapshot | vss ]
- [ ignored_read_errors ]
- [ set_bootable_partition_bootable ]
- [ clear_target_drive | append_on_target_drive ]
- [ chs_alignment ]
- [ write_data_directly ]
- [ automatically_checkdisk ]
- [ overwrite_target_data ]
- [ ignore_snapshot_cache_overflow ]
- [automatically_convert_multi_disk_volumes]
- [automatically_create_target_drive_like_source_drive]
- [ fill_empty_blocks ]

:::note

**Important!** By using the parameter "clear_target_drive", all drives on the target drive will be deleted and overwritten with the data of the clone.

:::

When cloning a hard disk with an MBR (Master Boot Record), the "serial number" of the target hard disk will be converted to the serial number contained in the MBR. Under certain conditions, this can lead to encrypted systems being identified as defective.

When cloning, it’s possible that the drive’s properties will not be automatically applied.Under the "used sector" cloning method, encrypted drives able to be read and displayed by the current operating system will be created

on the target hard disk unencrypted. The option "direct forensic sector" must be selected to apply the drive’s properties.

**Example** `<command name="clone device"> <clone_type>used sector image</clone_type> <ignored_read_errors>yes</ignored_read_errors> <target_drivenumber>2</target_drivenumber> <drivenumber>1</drivenumber></command> <command name="clone device"> <clone_type>forensic sector image</clone_type> <target_drive_number>2</target_drive_number> <driveletter>E</driveletter> <driveletter_to_set>I</driveletter_to_set> <driveletter>F</driveletter></command>`

## convert image

Converts an existing image file in which the following settings are possible:

- Change the compression or encryption of an existing image
- Merge images of the same kind to form a new image, also incremental image
- Split the image
- Extract certain partitions of the image and image them separately

**Parameters**

- compression_type
- encryption_type
- new_image_name
- new_device_type
- device_type
- image_name
- [ new_password ]
- [ password ]
- [ comments ]
- [ignore_data_modification ]
- [ max_image_size ]
- { image_object_id | image_driveletter | image_drivenumber | image_serialnumber | image_begin | all_sources }
- [ uncompressed_file ]
- [ automatically_validate_image ]
- [ automatically_overwrite_image ]
- [ ignore_data_modification ]
- [ target_image_type ]

:::note

The original image file remains intact and will not be modified. A new image file will be created with the selected settings.

:::

**Example** `<command name="convert image"> <encryption_type>AES 192</encryption_type> <new_device_type>filesystem</new_device_type> <new_image_name>c:\oodiconvert.omg</new_image_name> <device_type>filesystem</device_type> <image_name>C:\OODIImage_I.omg</image_name> <all_sources>yes</all_sources> <new_password>password</new_password> <max_image_size>750</max_image_size></command> <command name="convert image"> <compression_type>LZNT1 standard</compression_type> <new_device_type>filesystem</new_device_type> <new_image_name>c:\oodiconvert2.omg</new_image_name> <device_type>filesystem</device_type> <image_name>C:\OODIImage_I.omg</image_name> <image_object_id>6</image_object_id> <comments>extract volume I</comments> <max_image_size>-1</max_image_size></command>`

## create image

Creates an image of one or more drives of one or more hard disks.

**Parameters**

- image_type
- compression_type
- encryption_type
- checksum_type
- device_type
- image_name
- [ password ]
- [ comments ]
- [ max_image_size ]
- [ force_dismount | snapshot | vss]
- { devicename | driveletter | drivenumber | serialnumber | begin | system_volume | data_volumes }
- [ ignored_file_pattern | ignored_file ]
- [ uncompressed_file ]
- [ ignored_read_errors ]
- [ ignore_invalid_free_size_appointment ]
- [ automatically_validate_image ]
- [ automatically_overwrite_image ]
- [ target_image_type ]
- [ ignore_snapshot_cache_overflow ]

- [ automatically_convert_to_vhd ]
- [ automatically_convert_to_vhdx ]

:::note

When the maximum file size of the target drive's file system is reached or the target drive is full, the image file will be automatically split unless there's a maximum size set for it.

:::

**Example** `<command name="create image"> <image_type>used sector</image_type> <compression_type>LZNT1 standard</compression_type> <device_type>filesystem</device_type> <image_name>c:\OODIimage20071127.omg</image_name> <ignored_read_errors>yes</ignored_read_errors> <driveletter>E</driveletter> <driveletter>F</driveletter> <max_image_size>-1</max_image_size> <ignored_file>pagefile.sys</ignored_file> <ignored_file>hiberfil.sys</ignored_file> </command> <command name="create image"> <image_type>forensic sector</image_type> <compression_type>LZNT1 standard</compression_type> <encryption_type>AES 128</encryption_type> <checksum_type>none</checksum_type> <device_type>filesystem</device_type> <image_name>c:\OODIimage20071128.omg</image_name> <ignored_read_errors>yes</ignored_read_errors> <drivenumber>1</drivenumber> <password>PASSWORT</password> <comments>complete forensic image</comments> <max_image_size>-1</max_image_size> <ignored_file>pagefile.sys</ignored_file> <ignored_file>hiberfil.sys</ignored_file></command>`

## create incremental

Creates an incremental image.An image will be created which contains only the changes made to a selected existing image.

**Parameters**

- device_type
- image_name
- compression_type
- encryption_type
- new_image_name
- new_device_type
- [ password ]
- [ new_password ]
- [ comments ]
- [ max_image_size ]
- [ force_dismount | snapshot | vss]
- [ hash_unchanged_data ]
- [ ignored_file_pattern | ignored_file ]

- [ignore_data_modification ]
- [ ignored_read_errors ]
- [ ignore_invalid_free_size_appointment ]
- [ automatically_validate_image ]
- [ automatically_overwrite_image ]
- [change_initial_condition ]
- [target_image_type ]
- [ ignore_snapshot_cache_overflow ]

:::note

If the parameter „hash_unchanged_data“ with „true“ or „yes“ is applied during the imaging process of the incremental image, this incremental image can be used as the base image for successive incremental images. You will otherwise require all previous images to create a new incremental image. The parameter "ignored_file" represents an extension to existing ignored files on the base image.

:::

**Example** `<command name="create incremental"> <device_type>filesystem</device_type> <image_name>C:\OODIImage_I.omg</image_name> <compression_type>LZNT1 standard</compression_type> <new_device_type>filesystem</new_device_type> <new_image_name>c:\oodiIncrement_Image_I.omg</new_image_name> <hash_unchanged_data>yes</hash_unchanged_data> <ignored_read_errors>yes</ignored_read_errors> <max_image_size>-1</max_image_size> <ignored_file>pagefile.sys</ignored_file> <ignored_file>hiberfil.sys</ignored_file> </command>`

## dismount image

Unmounts a mounted image file as a virtual drive.

**Parameters**

- { devicename | driveletter | drivenumber | all_sources }

**Example** `<command name="dismount image"> <drivenumber>3</drivenumber></command>`

## mount image

Mounts an image file as a virtual drive.

**Parameters**

- device_type
- image_name
- [ password ]
- { image_object_id | image_driveletter | image_drivenumber | image_begin | all_sources }

- [ driveletter_to_set ]

:::note

Changes such as adding or deleting files are not possible on image files. When mounting the image of an entire drive, it's not possible to assign any drive letters.

:::

When mounting an entire hard disk, the original layout will be displayed, i.e., it will be identified by operating system partitions not contained in the image file. These drives, partitions/volumes are not formatted and cannot be accessed using, for example, Windows Explorers.

**Example** `<command name="mount image"> <device_type>filesystem</device_type> <image_name>C:\OODIImage_I.omg</image_name> <image_object_id>1</image_object_id> </command> <command name="mount image"> <device_type>filesystem</device_type> <image_name>C:\OODIImage_I.omg</image_name> <image_driveletter>F</image_driveletter> <password>passwort</password> <driveletter_to_set>I</driveletter_to_set></command>`

## restore image

Restores data from an image file onto one or more drives.

**Parameters**

- device_type
- image_name
- [ password ]
- { target_devicename | target_driveletter | target_drivenumber | target_serialnumber | target_begin }
- [ driveletter_to_set ]
- { image_object_id | image_driveletter | image_drivenumber | image_begin }
- [ set_bootable_partition_bootable ]
- [ clear_target_drive ]
- [ fill_empty_blocks ]
- [ append_on_target_drive ]
- [ chs_alignment ]
- [ ignored_read_errors ]
- [ignore_data_modification ]
- [ write_data_directly ]
- [ overwrite_target_data ]
- [automatically_convert_multi_disk_volumes]
- [automatically_create_target_drive_like_source_drive]

:::note

**Important!** During the restoration process, the image will overwrite your target drive with the drive data saved on the image. All data saved on the target drive is thereby lost and replaced by that of the image. If the parameter "clear_target_drive" was set to true or yes, a confirmation dialogue about deleting the target volume system will not appear!

:::

If the source hard disk is still contained in the current system and the image will not be restored on it, the serial number of the target hard disk will be converted into the serial number of a hard disk with an MBR. Under certain conditions, this can lead to encrypted systems being identified as defective.

**Example** `<command name="restore image"> <device_type>filesystem</device_type> <image_name>C:\OODIImage_I.omg</image_name> <target_drivenumber>2</target_drivenumber> <image_drivenumber>1</image_drivenumber> <clear_target_drive>yes</clear_target_drive> </command> <command name="restore image"> <device_type>filesystem</device_type> <image_name>C:\OODIImage_I.omg</image_name> <target_driveletter>I</target_driveletter> <image_object_id>8</image_object_id></command>`

## validate image

This function checks the structural integrity of an image file. It will examine whether the required logical structure is intact or undamaged. In addition, encrypted and/or compressed images will be checked to determine if decryption or decompression is possible without error.

**Parameters**

- device_type
- image_name
- [all_splits]
- [ password ]
- [image_object_id]
- [ignore_data_modification ]

**Example** `<command name="validate image"> <device_type>filesystem</device_type> <image_name>c:\OODIimage20071127.omg</image_name> <all_splits>yes</all_splits></command>`

# Command-specific parameters

## all_devices

Initializes and displays all drive types of system.

Valid values: "yes", "no", "true" and "false"

Example

```
<all_devices>yes</all_devices>
```

## all_sources

All (Source-) objects from an image should be included in the processing.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<all_sources>yes</all_sources>
```

## all_splits

All parts of an image should be used for the processing.

It can be specified during the check, whether the current part of the image should be checked.

Valid values: “yes”, “no”, “true” and “false”

**Example**

```
<all_splits>false</all_splits>
```

## allocation_unit_size

The selected cluster size when creating a file system on a drive. The size is specified in bytes.

**Example**

```
<allocation_unit_size>4096</allocation_unit_size>
```

## append_on_target_drive

Denotes that the selected object should be appended onto the storage volume. Existing partitions of the disk will not be affected by it.

Valid values: "yes" or "true"

**Example**

```
<append_on_target_drive>true</append_on_target_drive>
```

## automatically_create_target_drive_like_source_drive

The target layout is automatically created equally to the source layout. A restoration/cloning will not take place with the interpretations of the file systems.

Valid values: "yes", "no", "true" and "false"

Example

<automatically_create_target_drive_like_source_drive>true

```
</automatically_create_target_drive_like_source_drive>
```

## automatically_checkdisk

Mark if the default parameters should be run after processing the command chkdsk automatically.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<automatically_checkdisk>true</automatically_checkdisk>
```

## automatically_convert_multi_disk_volumes

Label that without prompting a volume, which was originally distributed on several hard disks, should be the target of a partition when allocating on an empty space of the basic disk. Valid values: "yes", "no", "true" and "false"

Example

```
<automatically_convert_multi_disk_volumes>true</automatically_convert_multi_disk_volumes
```

## automatically_convert_to_vhd

Label indicating whether, the image should be converted into a "Virtual Hard disk Image" with the same nameafter the command has been processed.Valid values: "yes", "no", "true" and "false"

**Example**

```
<automatically_convert_to_vhd>true</automatically_convert_to_vhd>
```

## automatically_overwrite_backup

Label indicating whether the existing imaging file should be deleted without asking beforehand.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<automatically_overwrite_backup>true</automatically_overwrite_backup>
```

## automatically_overwrite_image

Label indicating whether the existing imaging file should be deleted without asking beforehand.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<automatically_overwrite_image>true</automatically_overwrite_image>
```

## automatically_validate_image

Denotes whether the image file should be checked automatically after the processing of the command.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<automatically_validate_image>true</automatically_validate_image>
```

## automatically_validate_backup

Denotes whether the image file should be checked automatically after the processing of the command.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<automatically_validate_backup>true</automatically_validate_backup>
```

## backup_name

Defines the name of the image file including path.

**Example**

```
<backup_name>C:\Image20111006.obk</backup_name>
```

## backup_type

Labels the type of backup, the desired backup method for data-based backup.

extended ZIP file backup: creation of backup file that displays a ZIP format extension.

**Example**

```
<backup_type>extended ZIP file backup</backup_type>
```

## backupset_comments

A backupset is a resume of criteria used to describe the files/folders being backed up. This parameter will help you include comments within the backupset.

**Example**

```
<backupset_comments>backup personal files</backupset_comments>
```

## backupset_id

This parameter displays an ID with which a backupset can be clearly identified. This parameter is currently not being used and should be filled with "0".

**Example**

```
<backupset_id>{00000000-0000-0000-0000-000000000000}</backupset_id>
```

## backupset_name

The name of a backupset for easier classification and display.

**Example**

```
<backupset_name>my documents</backupset_name>
```

## backupset_exclude

A backupset is a resume of criteria used to describe the files/folders being backed up.This parameter is for excluding a data volume determined by a criterion. It describes files or folders using path and/or filename details. The established wildcards "*" and "?"are also permitted here.

**Example**

```
<backupset_exclude>*.tmp</backupset_exclude>
```

## backupset_criteria

A backupset is a resume of criteria used to describe the files/folders being backed up. This parameter is a criterion for creating a file-based backup. This criterion describes files or folders using path and/or filename details. The established wildcards "*" and "?"are also permitted here.

**Example**

```
<backupset_criteria>C:Documents and SettingsMy Documents</backupset_criteria>
```

## basic_disk

Initialization of a disk as a "basic disk".

Valid values: "yes", "no", "true" and "false"

**Example**

```
<basic_disk>yes</basic_disk>
```

## begin

Definition of a position at the beginning of a disk.

**Example**

```
<drivenumber>1</drivenumber>
```

```
<begin>32256</begin>
```

## cddvd_devices

Only CD/DVDs should be initialized and prepared for display.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<cddvd_devices>yes</cddvd_devices>
```

## change_initial_condition

Label indicating that the original values should be adapted dynamically to a command in order to repeat that command.While creating an incremental image file it is possible to set an image file created with the help of template parameter as base image for the sucessive processing.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<change_initial_condition>yes</change_initial_condition>
```

## check_only_if_dirty

Checks a drive only when it is labeled as defective or will check only its defective regions.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<check_only_if_dirty>no</check_only_if_dirty>
```

## checksum_type

| Value | Meaning |
|---|---|
| none | No checksum procedure selected |
| MD5 | checksum procedure using the MD5 algorithm |
| SHA1 | checksum procedure using the SHA1algorithm |
| SHA2 256 | checksum procedure using the SHA2 256 algorithm |
| SHA2 512 | checksum procedure using the SHA2 512 algorithm |
| CRC32 | checksum procedure using the CRC32 algorithm |

**Example**

```
<checksum_type>MD5</checksum_type>
```

## chs_alignment

Specifies the alignment on partitions. This parameter will force the alignment on cylinders (cylinder/head/sector).

Valid values: "yes", "no", "true" and "false"

**Example**

```
<chs_alignment>true</chs_alignment>
```

## clear_target_drive

Automatic deletion of the target disk. All existing partitions/volumes will be deleted.

:::note

**Important!** This parameter disables the confirmation dialogue and automatically deletes all drives!

:::

Valid values: "yes", "no", "true" and "false"

**Example**

```
<clear_target_drive>yes</clear_target_drive>
```

## clone_type

Label indicating the clone type.

| Value | Meaning |
|---|---|
| used sector | cloning of the used sectors |
| forensic sector | forensic cloning of all sections of a drive |
| direct forensic sector | direct forensic cloning of all sectors of a drive |

**Example**

```
<clone_type>used sector</clone_type>
```

## comments

You can use this parameter to add comments to the image.

**Example**

```
<comments>This is a sample for creating incremental images... </comments>
```

## complete_region_size

The complete region should be used for processing. When creating a partition, the complete size of the region will be used as the basis for the partition.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<complete_region_size>true</complete_region_size>
```

## compression_type

Label indicating the compression type.

| Value | Meaning |
|---|---|
| none | No compression selected |
| LZNT1 standard | LZNT 1 standard compression |
| LZNT1 maximum | LZNT 1 maximum, stronger compression - considerably more time required |
| BZIP2 1K | BZIP2 compression with block size of 100000 Bytes |
| BZIP2 4K | BZIP2 compression with block size of 400000 Bytes |
| BZIP2 9K | BZIP2 compression with block size of 900000 Bytes |

**Example**

```
<compression_type>LZNT1 standard</compression_type>
```

## correct_errors

Detected errors should be corrected.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<correct_errors>no</correct_errors>
```

## data_volumes

Label indicating only non-system volumes or non-system partitions should be included for processing.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<data_volumes>yes</data_volumes>
```

## default_devices

The standard disks should be initialized and be ready display. The initialized standard disks include hard disks, CDROMs and DVDROMs.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<default_devices>yes</default_devices>
```

## default_windows_alignment

Specifies how partitions will be aligned. This parameter draws on the type of alignment from the operating system or the hard disk to align the partition.

Valid values: "yes", "no", "true" and "false"

**Example**

<default_windows_alignment>yes

```
</default_windows_alignment>
```

## device_name

The name of the selected drive/disk.

**Example**

```
<device_name>DeviceHarddiskVolume2</device_name>
```

## device_name_two

The name of a second device.

**Example**

```
<device_name_two>DeviceIenIenDeviceP1T0L0-e</device_name_two>
```

## device_type

Indicates the type or description of the target or source drive.

| Value | Meaning |
| --- | --- |
| filesystem | Standard – file system |

**Comment:**

Reserved for future versions. A value other than "filesystem" is currently invalid and will lead to error.

**Example**

```
<device_type>filesystem</device_type>
```

## disk_devices

Only hard disks should be initialized and prepared for display.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<disk_devices>yes</disk_devices>
```

## drivenumber

The number of the selected drive.

**Example**

```
<drivenumber>1</drivenumber>
```

## drive_number_one

The number of the first selected drive.

**Example**

```
<drivenumber_one>2</drivenumber_one>
```

## drive_number_two

The number of the second selected drive.

**Example**

```
<drive_number_two>2</drive_number_two>
```

## driveletter

The drive letter of the selected drive.

**Example**

```
<driveletter>C</driveletter>
```

## driveletter_to_set

The drive letter to be set.

**Example**

```
<driveletter_to_set>Y</driveletter_to_set>
```

## dynamic_disk

Initializing a disk as a „dynamic disk“.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<dynamic_disk>true</dynamic_disk>
```

## enable_compression

Files created on a new volume or partition will be compressed by default.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<enable_compression>yes</enable_compression>
```

## encryption_type

Label indicating the type of encryption.

| Value | Meaning |
|---|---|
| none | No encryption type selected |
| AES 128 | AES – encryption with 128 bit |
| AES 192 | AES – encryption with 192 bit |
| AES 256 | AES – encryption with 256 bit |

**Example**

```
<encryption_type>AES 192</encryption_type>
```

## extended

Creates an extended partition, i.e., a drive upon which a logical drive can be created.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<extended>yes</extended>
```

## FAT16

Indicates the partition and/or file system that will be created when you want to create a FAT16 drive and/or file system.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<FAT16>true</FAT16>
```

## FAT32

Indicates the partition and/or file system that will be created when you want to create a FAT 32 drive and/or file system.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<FAT32>yes</FAT32>
```

## fill_empty_blocks

Fills empty regions on the target drive with the value „0“.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<fill_empty_blocks>no</fill_empty_blocks>
```

## floppy_devices

Use this parameter when you only want to initialize floppy drives and prepare them for display.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<floppy_devices>true</floppy_devices>
```

## force_dismount

Forces the cancellation of the volume’s deployment when necessary. All files/handles opened to the volume will be closed.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<force_dismount>yes</force_dismount>
```

## format

Indicates whether or not the drive should be formatted after creation, and if the file system should be created.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<format>yes</format>
```

## gpt_disk

Initializes a disk as a „gpt disk“.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<gpt_disk>yes</gpt_disk>
```

## hash_unchanged_data

Indicates whether the unchanged data of an incremental image should be stored in the image as a hash-value (checksums). This increases the size of the incremental image but will accelerate data access for the next imaging procedure.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<hash_unchanged_data>no</hash_unchanged_data>
```

## huge

Indicates the drive that will be created, especially for labeling a large partition.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<huge>yes</huge>
```

## ignore_data_modification

Influences the behavior while restoring or validating images, if it was detected that data was changed within the image. If these parameters are not set with a negation, the handling will be cancelled. Otherwise, only the change will be recorded in the report and the process will continue.

Valid values: "yes", "no", "true" and "false"

:::note

If the data in the image is changed outside the program, they might contain errors and be rendered useless.

:::

**Example**

```
<ignore_data_modification>yes</ignore_data_modification>
```

## ignore_snapshot_cache_overflow

Label indicating whether a potential overflow of the cache should be considered as an error, and as a result, will be canceled.

Valid values: "yes", "no", "true" and "false"

:::note

Should you exceed the available cache space, the original data sectors will no longer be saved and included in the image. This makes the image inconsistent and may render it unusable.

:::

**Example**

```
<ignore_snapshot_cache_overflow>yes</ignore_snapshot_cache_overflow>
```

## ignore_invalid_free_size_appointment

Indicates whether an error occurring during the detection for free storage space on a drive should be ignored and the process continued.

Valid values: "yes", "no", "true" and "false"

:::note

When creating the image file, this parameter could lead to its being made invalid when nothing more can be written onto the target drive. It should be used mainly for allowing access to NAS drives that do not report free regions and are not able to be imaged.

:::

**Example**

```
<ignore_invalid_free_size_appointment>yes</ignore_invalid_free_size_appointment>
```

## ignored_file

Indicates files that should be excluded. Data from these files will not be applied to the image.

**Example**

```
<ignored_file>*.temp</ignored_file>
```

```
<ignored_file_pattern>*.~</ignored_file_pattern>
```

## ignored_read_errors

Possible read errors that occur should be ignored without a confirmation dialogue. These sectors will be skipped during the read procedure and noted in the log file.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<ignored_read_errors>yes</ignored_read_errors>
```

## image_begin

Defines a position at the beginning of a disk and indicates a region of the image file.

**Example**

```
<image_drivenumber>2</image_drivenumber>
```

```
<image_begin>1048576</image_begin>
```

## image_drivenumber

Defines the number of the selected disk from the image.

**Example**

```
<image_drivenumber>1</image_drivenumber>
```

## image_driveletter

Defines the drive letters of the selected drive from the image.

**Example**

```
<image_driveletter>D</image_driveletter>
```

## image_name

Defines the name of the image file including path.

**Example**

```
<image_name>C:ImageFilesImage20071127.omg</image_name>
```

## image_object_id

Defines the ID of the selected object from/in the image.

**Example**

```
<image_object_id>3</image_object_id>
```

## image_type

Label indicating the type of imaging, i.e., the selected imaging method.

| Value | Meaning |
| --- | --- |
| used sector | imaging of the used sectors |
| forensic sector | forensic imaging of all sectors of a drive |
| direct forensic sector | direct forensic imaging of all sectors of a drive |

**Example**

```
<image_type>used sector</image_type>
```

## is_superfloppy

Labels a storage volume as "superfloppy". Such a disk consists of one drive only and contains no system regions, i.e., no partition structure will be written on it.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<is_superfloppy>yes</is_superfloppy>
```

## label

Label of the selected drive based on the drive´s name.

**Example**

```
<label>System</label>
```

## localname

The local name of the resource.

**Example**

```
<localname>Z</localname>
```

## locates_bad_sectors_recover_readable_information

An investigation of bad sectors and the restoration of the readable data are requested.

Valid values: "yes", "no", "true" and "false"

**Example**

<locates_bad_sectors_recover_readable_information>yes

```
</locates_bad_sectors_recover_readable_information>
```

## max_backup_size

Fixes the maximal size of the image file in bytes. A division will be made when this level is almost reached.

:::note

The minimum value of a backup file is 1 megabyte, or 1048576 bytes. If a value lower than this amount is entered, the maximum size of the backup file will be set to 1 MB.

:::

**Example**

```
<max_backup_size>786432000</max_backup_size>
```

## new_comments

This parameter will let you add comments into the new image file.

**Example**

```
<new_comments>incremental image wg. Windowsupdate </new_comments>
```

## max_image_size

Fixes the maximal size of the image file in bytes. A division will be made when this level is almost reached.

:::note

The minimum value of an image file is 5 Megabyte, more exactly 5242880 bytes. If the value is smaller than this, the maximal size of the image file will set at 5 MB.

:::

**Example**

```
<max_image_size>786432000</max_image_size>
```

## new_device_type

Indicates the type or description of the new target drive.

| Value | Meaning |
| --- | --- |
| filesystem | Standard – file system |

**Comment:**

Reserved for future versions.A value other than "filesystem" is currently invalid and will lead to error.

**Example**

```
<new_device_type> filesystem </new_device_type>
```

## new_backup_name

Describes the name of the new backup file including path.

**Example**

```
<new_backup_name>C:\backup\20111006_new.obk</new_backup_name>
```

## new_image_name

Describes the name of the new image file including path.

**Example**

```
<new_image_name>C:\Temp\Image20071031.omg</new_image_name>
```

## new_password

Define a password as a parameter for creation.

**Example**

```
<new_password>my new password</new_password>
```

## no_alignment

Specifies how partitions will be aligned.This parameter will use no type of alignment: the position will be considered as absolute.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<no_alignment>true</no_alignment>
```

## NTFS

Label indicating the partitions and/or the file system that will be created if you want to create an NTFS drive and/or data system.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<NTFS>true</NTFS>
```

## operating_system_path

Path to the folder where the installed operating system files can be found.

**Example**

<operating_system_path>E:Windows</operating_system_path>

## overwrite_target_data

Automatic deletion of the target drive. All existing data on partitions/volumes will be deleted.

:::note

These parameters deactivate the confirmations and data on the target drive will be automatically deleted!

:::

Valid values: "yes", "no", "true" and "false"

## part_of_disk_size

Part of the selected size of the drive being created in relation to the size of the disk.

**Example**

```
<part_of_disk_size>1/3</part_of_disk_size>
```

## password

Marks a password as a parameter.

**Example**

```
<password>My_Passwort</password>
```

## quickformat

Runs a formatting with quick formatting.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<quickformat>no</quickformat>
```

## remotename

The name of the server and the shared resource.

**Example**

```
<remotename>WantedServerSharedFolder </remotename>
```

## serialnumber

The serial number of the desired disk.

**Example**

```
<serialnumber>JK1101YAH6KWMZ</serialnumber>
```

## serialnumber_one

The serial number of the first desired disk.

**Example**

```
<serialnumber_one>2</serialnumber_one>
```

## serialnumber_two

The serial number of the second desired disk.

**Example**

```
<serialnumber_two>2</serialnumber_two>
```

## setup_type

Label indicating the type of installation being activated.

mini_setup: Minimum setup installation of the operating system

**Example**

<setup_type>mini_setup</setup_type>

## sequential_access

Sequential access to the image file is requested. This will mean an advantage in performance over non-sequential access, given that larger data regions can be included here.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<sequential_access>true</sequential_access>
```

## set_active

Labels whether "enable" or "disable" should be set for the selected drive.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<set_active>true</set_active>
```

## set_bootable_partition_bootable

Automatic setting of the bootable source partition as bootable. The confirmation dialogue will be disabled with this parameter.

Valid values: "yes", "no", "true" and "false"

**Example**

<set_bootable_partition_bootable>yes

```
</set_bootable_partition_bootable>
```

## size

The size of an object in bytes.

**Example**

```
<size>1073741824</size>
```

## snapshot

As an option to the parameter "force_dismount", the installed filter drivers will help log changes in data so that unchanged data can be included in the backup.

See also parameter "vss".

**Example**

```
<snapshot>true</snapshot>
```

## system_volume

Label indicating that only the system volume or system partition will be drawn into the processing.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<system_volume>yes</system_volume>
```

## target_begin

Defines a position at the beginning of a target disk.

**Example**

```
<target_drivenumber>1</target_drivenumber>
```

```
<target_begin>32256</target_begin>
```

## target_devicename

The name of the requested target drive/target disk.

**Example**

```
<target_device_name>DeviceHarddiskVolume6</target_device_name>
```

## target_drivenumber

Number of the target drive.

**Example**

```
<target_drivenumber>2</target_drivenumber>
```

## target_driveletter

Drive letter of the target drive.

**Example**

```
<target_driveletter>G</target_driveletter>
```

## target_image_type

Type of the image to be created.

o&o image - the goal is to create an image by O&O DiskImage.

vhd image - a virtual hard disk of the Microsoft Virtual PC should be the target.

**Example**

```
<target_image_type>o&o image</target_image_type>
```

## target_path

A target parameter where files/data should be written.

**Example**

```
<target_path>C:\New Folder</target_path>
```

## target_serialnumber

Serial number of the target disk.

**Example**

```
<target_serialnumber>GTA0L2PBGJPSSF</target_serialnumber>
```

## uncompressed_file

Label indicating the files that should not be compressed.

**Example**

```
<uncompressed_file>*.zip</uncompressed_file>
```

## unattended

Label indicating an unattended installation, i.e., standard components will be installed and prompting questions avoided.Valid values: "yes", "no", "true" and "false"

**Example**

<unattended>yes</unattended>

## username

User name for identification of the person doing the requested operation.Such a user name can be extended through the name of a domain.

**Example**

```
<username>domainHMuster</username>
```

## value_to_fill

Label indicating the value which will be used to fill (overwrite) an object. Possible are values from 0 to 9.

**Example**

```
<value_to_fill>0</value_to_fill>
```

## verbose

Display of extended information.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<verbose>true</verbose>
```

### vss

As an alternative to the parameter "force_dismount", the Microsoft VolumeShadowCopyService can log changes in data so that unchanged data is included in the backup.

See also parameter "snapshot".

Valid values: "yes", "no", "true" and "false"

**Example**

```
<vss>true</vss>
```

## write_data_directly

Data should be written directly on the drive, meaning without use of the file system driver.This is needed by an image file or cloning process of the type "direct forensic" for restoring an encrypted drive back to its original condition, or for cloning.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<write_data_directly>true</write_data_directly>
```

# Global parameters

## logfile

Creation of a log file to communicate the status of the processing.

**Example**

```
<logfile>C:\DiskImage\Logfile.log</logfile>
```

## interaction

During the command processing, denotes if a confirmation dialogue is possible or if the processing should take place in the background. No processing in the background is default.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<interaction>no</interaction>
```

## stop_at_error

Denotes whether the processing of a command file should continue if an error occurs. No further processing is the default value, which means that the processing will be aborted when an error occurs.

Valid values: "yes", "no", "true" and "false"

**Example**

```
<stop_at_error>no</stop_at_error>
```

# Preset values of selected parameters

| Parameter name | Default value |
|---|---|
| append_on_target_drive | false/no |
| automatically_convert_multi_disk_volumes | false/no |
| automatically_convert_to_vhd | false/no |
| automatically_checkdisk | false/no |
| automatically_overwrite_image | false/no |
| automatically_validate_image | false/no |
| clear_target_drive | false/no |
| fill_empty_blocks | false/no |
| force_dismount | false/no |
| hash_unchanged_data | true/yes |
| ignore_data_modification | false/no |
| ignore_snapshot_cache_overflow | false/no |
| ignore_invalid_free_size_appointment | false/no |
| ignored_read_errors | false/no |
| overwrite_target_data | true/yes |
| set_active | false/no |
| set_bootable_partition_bootable | false/no |

# Examples of command files

## Create an image of the "C" drive

**Example 1:** Create an image of the "C"drive.This image will be compressed and saved whereby sectors not being imaged (those sectors that have not changed since the base image was created) will be given a hash value to check for changes in the future.The image will be compressed and split into files that have a maximum size of 650 MByte each.Once it’s successfully created, the image will be automatically validated.

```
<DiskImageJob version="12.0"> <command name="initialized storage devices">
<disk_devices>YES</disk_devices></command> <command name="create image"> <image_type>used
sector</image_type> <compression_type>LZNT1 standard</compression_type>
<device_type>filesystem</device_type> <image_name>E:image_20100128.xml</image_name>
<ignored_read_errors>YES</ignored_read_errors> <driveletter>C</driveletter>
<comments>Image of the system drive</comments> <max_image_size>650</max_image_size>
<automatically_validate_image>YES</automatically_validate_image>
<ignored_file_pattern>C:\MSO\Cache*.*</ignored_file_pattern>
<ignored_file_pattern>pagefile.sys</ignored_file_pattern>
<ignored_file_pattern>hiberfil.sys</ignored_file_pattern> <ignored_file_pattern>System
Volume Information</ignored_file_pattern></command> </DiskImageJob>
```

## Create an incremental image from the base image

**Example 2:** Create an incremental image from the image "E:image20100120.omg".This image will be compressed and saved whereby sectors not being imaged (those sectors that have not changed since the base image was created) will be given a hash value to check for changes in the future.The incremental image will be named according to the date when the image is created.The parameter "automatically_overwrite_image" is set to “NO“ so that an image with the same name may not be overwritten.

```
<DiskImageJob version="12.0"> <command name="initialized storage devices">
<disk_devices>YES</disk_devices></command> <command name="create incremental">
<device_type>filesystem</device_type> <image_name>E:image20100120.omg</image_name>
<compression_type>LZNT1 standard</compression_type>
<new_device_type>filesystem</new_device_type> <new_image_name>E:image_$TEMPL:
(Year)$TEMPL:(Month)$TEMPL:(Day)_inc.omg</new_image_name>
<hash_unchanged_data>YES</hash_unchanged_data>
<ignored_read_errors>YES</ignored_read_errors>
<automatically_overwrite_image>NO</automatically_overwrite_image>
<max_image_size>-1</max_image_size> <force_dismount>YES</force_dismount>
<automatically_validate_image>YES</automatically_validate_image>
<change_initial_condition>YES</change_initial_condition>
```

```
<ignored_file_pattern>hiberfil.sys</ignored_file_pattern>
<ignored_file_pattern>*.tmp</ignored_file_pattern>
<ignored_file_pattern>*.omg</ignored_file_pattern> <ignored_file_pattern>*.~
</ignored_file_pattern> <ignored_file_pattern>System Volume
Information</ignored_file_pattern> <ignored_file>pagefile.sys</ignored_file></command>
</DiskImageJob>
```

## Deleting a hard disk and creation of a partition

**Example 3:** This example will supply a short illustration of the O&O DiskImage disk manager's functionality.Hard disk "0" will first be deleted and then initialized as a Basic – MBR disk.After that, a 2 GByte partition will be created after position 32256 on the hard disk, aligned according to standard Windows disk alignment.

```
<DiskImageJob version="12.0"> <command name="initialized storage devices">
<disk_devices>YES</disk_devices></command> <command name="clear drive">
<drivenumber>0</drivenumber> <is_superfloppy>NO</is_superfloppy></command> <command
name="initialize disk"> <drivenumber>0</drivenumber> <basic_disk>YES</basic_disk>
</command> <command name="create partition"> <drivenumber>0</drivenumber>
<begin>32256</begin> <size>2147483648</size> <huge>YES</huge>
<default_windows_alignment>YES</default_windows_alignment></command> </DiskImageJob>
```

## Create a file-based backup

**Example 4:** A file-based backup of the file "Documents" will be created and saved on drive "Z". The backup's name will be based on the current date at the time of creation.

```
<BackupJob version="12.0"> <interaction>NO</interaction>
<stop_at_error>YES</stop_at_error> <command name="create backup"> <backup_type>extended
ZIP file backup</backup_type> <compression_type>BZIP2 4K</compression_type>
<device_type>filesystem</device_type> <backup_name>Z:backupsImage_$TEMPL:(Year)$TEMPL:
(Month)$TEMPL:(Day).obk</backup_name> <comments>automatisches backup via
Skript</comments> <backupset_id>{527FC970-C7BF-40C4-83BA-946CA5E62EBD}</backupset_id>
<backupset_name>BackupSet 20171006 Skript</backupset_name>
<backupset_criteria>C:\Users\Muster\Documents</backupset_criteria></command>
</BackupJob>
```

# Glossary

To simplify working with O&O DiskImage, certain terms will be explained in the following chapters:

**Drive/Partition** A drive is a reserved area of the hard disk. Multiple drives can be found on a hard disk. In the following text, the term “drive” will be used to depict (single) partitions as well as logical drives in extended partitions and volumes. Drives are used, for example, to separate documents from programs. A division in two partitions has become generally accepted:

- Drive C: for operating systems and programs
- Drive D: for documents, e.g. photos, Office documents, music, etc.

This, for example, makes it easier to separate data and system images with O&O DiskImage.

**Image** An image is a "mirror" of your drive (partitions). This “copy” contains all information taken from the original. A special feature of an image is that the file format is specially compressed and takes up much less disk space than the original. The more often you create images of your drive, the less you need worry about data loss. Should data on the original drive be lost or damaged, you can restore your last image with all its data onto your computer. With just a few mouse clicks, you can recover the original status of your drive before the last imaging. An image can be made up of multiple image files (*omg). For example if one disk is not sufficient to store the image and more are needed, e.g. CD/DVDs. The term image is also used in a wide sense for file backups.

**Difference File backup and Drive image** Files are backuped directly in the form of data. This type of image includes only file information, no drive information is imaged. The file format is OBK (*.obk). A drive image stores all used or all sectors of a drive. This automatically also creates an image of the file system and all files and folders. The file format is OMG (*.omg).

**Image file** An image can be made up of one or more image files (*omg). If, for example, the disk where you want to save the image isn't large enough, you can split the image onto multiple disks. When you split your image onto several disks, a new image file will be created on each disk and together, these image files will be parts of one entire image. It's important to number the disks (CD/DVD/Blu-ray) in case you want to later restore a drive using the image, or use it as a base for an incremental imaging.

**File formats** O&O DiskImage creates its own file formats when imaging but is also able to process other file formats.

**File format OMG** O&O DiskImage generates the file extension (*OMG) for the image files it creates when imaging your entire computer or single drives. This file type can be used for further activities by O&O DiskImage, such as restoration, validation or conversion.

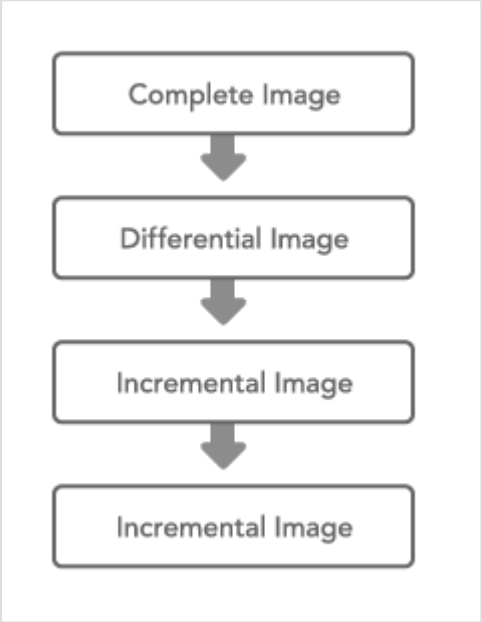
**File format OBK** While creating a file backup using O&O DiskImage, the files and folder are compressed and stored as OBK file (*.obk).

**File format VHD** O&O DiskImage is able to create and edit file formats for virtual computers (VPC/VM-Ware). This allows you to also mount a drive from an image as a virtual drive in the VPC or your VM-Ware.

**File format VHDX** This further enhances the options for virtual environments. The main advantage of VHDX is its increased storage capacity of 64 TB (terabytes), instead of VHD's standard storage limit of 2 TB. Another advantage of VHDX is the file corruption protection.

**Complete image** Using the Complete image method, the data selected for imaging will be imaged all over again and stored in a folder on the target disk. Complete images can be created using the "Used sector", "Forensic", or "Direct forensic" methods.

**Differentiation: Image of the changes** If you only want to image changes of your hard disk or drives, you will need to have created at least one complete image previously. Changes made can then be saved as differential and incremental images.




**Base image** A base image is an image that serves as a basis for any further image of the changes. Differential images require a complete image as a base image. Incremental images can usually be made using the last image of the changes as their base image. It's possible, for example, to use a differential image as a base image for an incremental image. In this way, an incremental image can also serve as base image for further incremental images. Also see picture in chapter Image of the changes.

**Incremental images** Incremental images only save the changes made since the last base image. As a rule, data is compared using checksums in O&O DiskImage, so that the incremental image does not require a complete image as base image. The last incremental or differential image is enough for doing this. To restore an incremental image, you need the last complete image as well as all the following images recording any changes.

**Differential images** Differential images compare present data with the last complete image and store only the changes. The first "successive" image after the complete image is always a differential image. To restore a differential image, you will need both the complete image and the differential image.

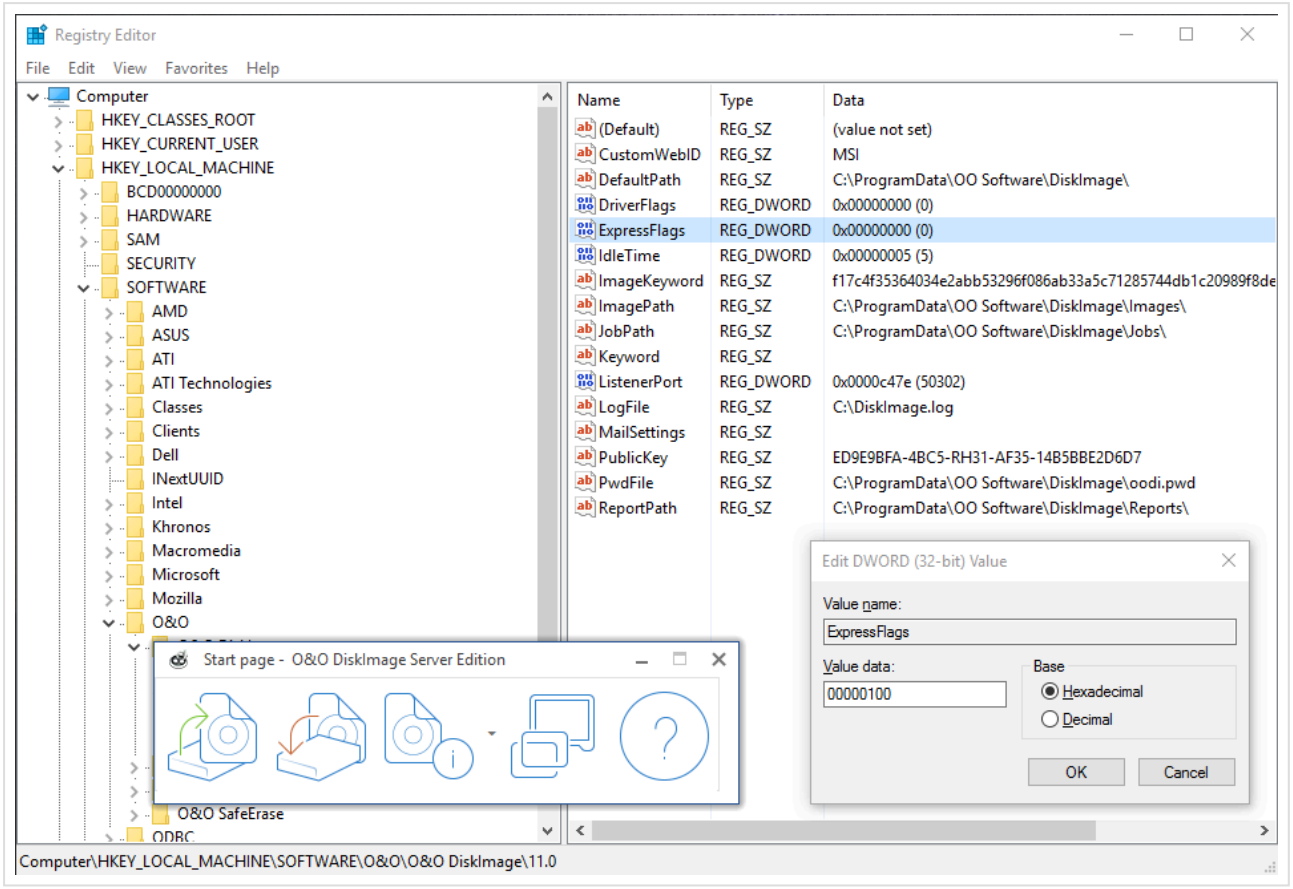
# Registry entries

In the Windows registry, under `HKEY_LOCAL_MACHINE\SOFTWARE\O&O\O&O DiskImage`, you can configure certain settings for O&O DiskImage. Please note that changes in the registry can influence the functionality of O&O DiskImage and such changes will continue to be applied after restarting the computer.

| |
|---|
| Name of the entry |
| ImagePath |
| JobPath |
| ReportPath |
| PwdFile |
| PublicKey |
| NoSnapshotTmpFiles |
| Version |
| ExpressFlags |

* Can also be controlled over the user interface. If you're not sure, make changes over the user interface. There you can find additional explanations and selection options. ** The format of image files was extended in O&O DiskImage 4. In addition to the imaged data, checksums are placed in the image so that an identity check can be carried out for data inside the image. Older versions of O&O DiskImage do not recognize this extended image format and would label the image as invalid. To help older versions of O&O DiskImage work with images

created by a newer version, the new version can create an image using the "old" format.




## Allocating objects

When cloning or restoring an image, the source and target can be linked differently. Source is the name for a drive or disk that is being restored from an image or that has been used as the base for cloning. **Terminology**

- **Disk:** A hard disk or disk in general that contains one or more drives.
- **Area:** An area on a disk. It may be empty, contain disk information (MBR, GPT, LDM) or belong to a drive.
- **Drive:** A partition or a volume that is found on one or more hard disks.

Source and target may be linked in the following combinations:

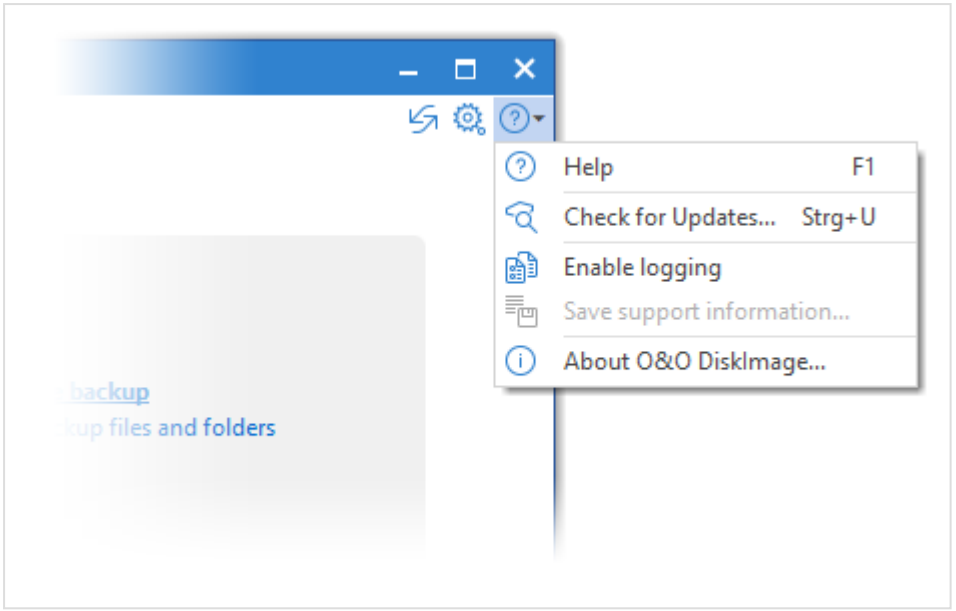
| |
|---|
| |
| 1. |
| 2. |
| 3. |
| 4. |
| 5. |
| 6. |
| 7. |
| 8. |
| 9. |

## Enable/Disable logging

If errors occur while creating or restoring images under Windows, enable logging in O&O DiskImage and try repeating the operation to see if the problem reoccurs. Logging can be turned on and off starting from O&O DiskImage 8:

Open O&O DiskImage, click the arrow at the top right next to the Help button and select **Enable logging**. This will restart the O&O DiskImage service and can take up to two minutes.

When the error reoccurs, send us the O&O DiskImage log file: click the arrow next to the Help button and select **Save support information...**.




To disable logging, click the Help button at the top right and select **Disable logging**. This will restart the O&O DiskImage service and can take up to two minutes.

# Troubleshooting

## My incremental image is not smaller than my base image. Where does this file come from?

This can occur if you have, for example, defragmented your computer in the meantime. The newly structured file segments will then be recognized as “changes” and imaged as new files.

## What does "Drive cannot be locked" mean? Does this affect the data imaging?

As a result of system processes having to be in constant operation, it's not normally possible for system partitions to be locked. You get this notification even when you want to image a data drive and this is directly integrated into the system processes. The notification doesn’t generally have an effect on the imaging process; it is still able to be run without a problem. To be totally sure, shut down all running system applications, e.g. defragmentation or cloning processes, before imaging.

## While cloning, O&O DiskImage reports that the target volume is too small although the source drive is smaller than the target disk. What is the reason for this?

Make sure you haven’t selected the entire hard disk as your source. Example: You have a hard disk with 100GB that is divided into two partitions:

- System partition (20GB)
- Data partition (80GB)
- While trying to clone the system partitions on an external 40GB hard disk, O&O DiskImage reports that the target volume is too small.

By just making a check, you can select the system partitions as your only source, and not the entire hard disk.

## What do I do if O&O DiskImage takes very long to start, or doesn't even start at all?

Please read the note about System requirements and make sure you're using the latest versions of your drivers.

## During restoration, O&O DiskImage created a new temporary file on my hard disk. Where does this file come from?

Before creating an image, O&O DiskImage normally deposits a number of metadata in a local file. This data is needed by O&O DiskImage in order to create the image. The file will be included in the imaging to assure consistency in the image. This file will normally be automatically removed during restoration. Under certain circumstances, it's possible that another action of the operating system or the user will prevent this temporary file from being deleted. This will then result in the file remaining undeleted in the system. You can, however, delete this temporary file without any risk.

## Behavior when receiving error notices

Various error notices may appear while working with O&O DiskImage. These can either be displayed in dialogs or seen in reports.

| Error notice | Description |
|---|---|
| IDS_ERROR_LOGON_FAILURE<br>Registration has failed on account of invalid user name or authentication information. | User name and/or password is false. Where required, consult your system administrator. |
| IDS_ERROR_ACCOUNT_RESTRICTION<br>The authentication information entered is valid but restrictions on the user account have prevented a successful authentication. | Change the settings of the respective user account. It's possible that there is a restriction such as "read only" enabled there. |
| IDS_ERROR_INVALID_LOGON_HOURS<br>The user account is subject to time limitations and is therefore not available for registration at this time. | Maximum login time has expired. Please login again. |
| IDS_ERROR_PASSWORD_EXPIRED<br>The password for the user account has expired. | Your password has expired. Please enter a new password. |
| IDS_ERROR_ACCOUNT_DISABLED<br>The account referred to is currently disabled and cannot be accessed for registration. | User account was disabled. When applicable, consult your system administrator. |
| IDS_ERROR_ACCOUNT_LOCKED_OUT<br>The user account has been automatically blocked because too many invalid registration attempts have been made. | User account was blocked. Where required, consult your system administrator. |

**Internal error codes** The internal error code (individually designed error code) is the last digit in the error code after the last period.

| Error notice | Description |
|---|---|
| 0x385 | Invalid job or script. |
| 0x387 | Unsupported task or incorrectly written job / script |
| 0x388 | Parameter is false or is not supported by the task. |
| 0x38A | An obligatory parameter is missing. |
| 0x70 | Invalid or damaged installation. |
| 0x7D1 | Unknown Host |
| 0x7D2 | Invalid Host Port |
| 0x6A6 | Invalid password file |
| x6A9 | Invalid keyword in parameter (registry) |
| 0x6AA | No password file registered |
| 0x6AA | A target folder is missing in the password file. |

**Windows errors / Microsoft error definitions (primary value)**

| Error notice | Description |
|---|---|
| C0000240 | Prompting was cancelled |
| C0000022 | Access denied: process requires access to an object to which access is being denied. |
| C0000033 | Object (path/file) is invalid, e.g. is especially marked. |
| C0000034 | Object (path/file) not found |
| C0000035 | Same object (path/file) already exists. |
| E0040702 | An image file was changed or is located on a defective medium. All data could not be read. |
| E0040703 | An image file is defective, reading the data is not possible. |
| E0040704 | The target selected is too small. Please correct the source-target linkage. |
| E0040705 | An image file from an image chain does not exist or cannot be found. |
| E0040706 | Completion of an incremental image is not possible. Please create a new base image or combine the image files. |

# FAQ

## When and how often should I make images?

We recommend imaging on a regular basis (at least once a month). The more regularly it’s performed, the more up-to-date the data contained within those images will be. As a guiding rule, you should always image an intact system.

## Which drives should I image?

You should generally image all drives, meaning the system drive (Windows), primarily Drive C, and all remaining data drives where private and business data, e.g. customer data, photo collections or music are stored.

## Where should I store my image?

Don’t save the image on the same hard disk where the imaged drive is located. It should be ideally stored on an external hard disk or a CD/DVD.

## I just bought myself a new computer. If I take a complete image of my old computer, can I restore it to my new one?

Restoring data drives is not a problem even with differing hardware. However, system partitions can only be restored on differing hardware using the Start CD and the integrated M.I.R. You can read more about this in the chapter Settings for restoration on different hardware.

## Do I have unlimited use of all functions with the trial version?

The trial version is not restricted – all program functions are fully operational.

## When do I need the bootable CD from O&O DiskImage?

You will need the Start CD, if you want to restore your entire computer or a system partition. The Start CD can also be used, if the operating system doesn't start up anymore.

## How do I save an image to CD/DVD?

1. You must create an image file(s) and save it to your hard disk before you can write it to CD/DVD.

2. When creating the image, under **Drive imaging/Imaging options/File size**, you should restrict the maximum image file size to the size of the intended removable medium where it will be saved.
3. Should the image exceed the selected maximum file size, it will be split into several image files.
4. You can then burn the image files to CD/DVD.
5. Select **Tools** on the start page, then on **Burn image file(s)** and follow the instructions.

**What do I do when my image is too big for a CD/DVD?**

1. If the Image you already saved to your hard disk is too big for the blank CD/DVD, you can, of course, still split the image file.
2. Under **Tools**, open up **Convert image file**.
3. Select the Image you wish to change by using **Add**.
4. Merge incremental Images
5. During conversion, one copy of the Image will be made while the original remains unchanged.

I have split the image and saved it on various disks (CD/DVD). I want to:

- restore this image
- display drives from the image
- use the image as a base image for incremental imaging purposes
- merge incremental images
- convert the image file

Before you go ahead with any of the above named steps, we strongly advise you to save all parts of the Image in a folder on your hard disk. Please ensure the folder is not on the drive where you wish to restore the Image. Once you have done this you can complete the steps outlined above by simply following the instructions in the corresponding chapters of the User’s Guide.

## Can I continue working during the imaging process?

You can continue working and making changes without any problem. The working memory buffer is however restricted. You can see how much is available in the Memory buffer display. See Chapter "Lock a Drive".

## Can I change an existing image?

Under Tools you can find the function Convert Image File. This enables you to change certain properties and contents of an existing image.

## I have created an image of several drives. Can I extract the image from just one of those drives and store it separately?

Follow the instructions below:

1. Under **Tools** select Convert image file.
2. Select the image using **Add** and then select the drive you wish to separately image.
3. Click **Open** and select a drive. After confirming with OK, click Start.
4. After confirming with (**OK**) click **Start**.
5. The old image remains unaltered.

## What is the difference between a clone and an image?

Using the **Clone drive** function, you can make a 1:1 copy of a drive including all its stored data, without producing any image files. The storage volume /drive is saved directly without compression. The advantage of a clone as opposed to an image is that the detour through an image file is avoided. You can access the clone of a drive without having to restore the drive. You do, however, require a lot more storage space for a clone than for an image. **Important!** When cloning your drive (source drive) the selected target drive will be overwritten. You should therefore save your copy on an external hard disk, either in an unused region or overwrite a previously selected drive purely for this purpose.

## Why are temporary files created?

If you leave a drive unlocked during an imaging because, for instance, you want to continue working on that drive, the original status will be “cached”, i.e. stored in the working memory buffer. “Temporary files” are created in the process. The working memory buffer space is, however, limited. You can see how much space is available by looking at the memory buffer display.

## What is the advantage of an incremental image?

An incremental image normally has a smaller data volume than a base image. In addition, you can identify the differences, more precisely, the changes made since the base image was created.

## Why are partitions that weren't imaged displayed when mounting an image in Explorer?

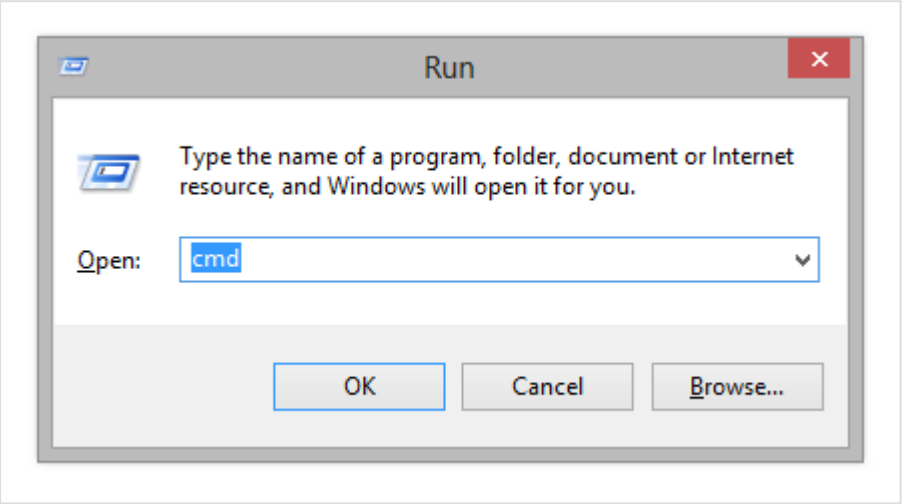
In addition to saving data from the partition being imaged, O&O DiskImage also needs to save information about the disk on which that partition was originally located. All of this is required for mounting an image, converting it into a virtual disk, or performing any future restoration. There will also be information included about partitions that were not imaged. When mounting an image, just as when using a virtual hard disk after conversion from an image, Microsoft Windows uses this information to recognize that there were originally multiple partitions on the disk, and attempts to integrate them into the system. Because information/data about these partitions is missing, it's not possible to assign them to any file system. As a result, partitions that weren't imaged will be displayed as RAW, i.e., non-formatted.

# Frequent questions on authentication

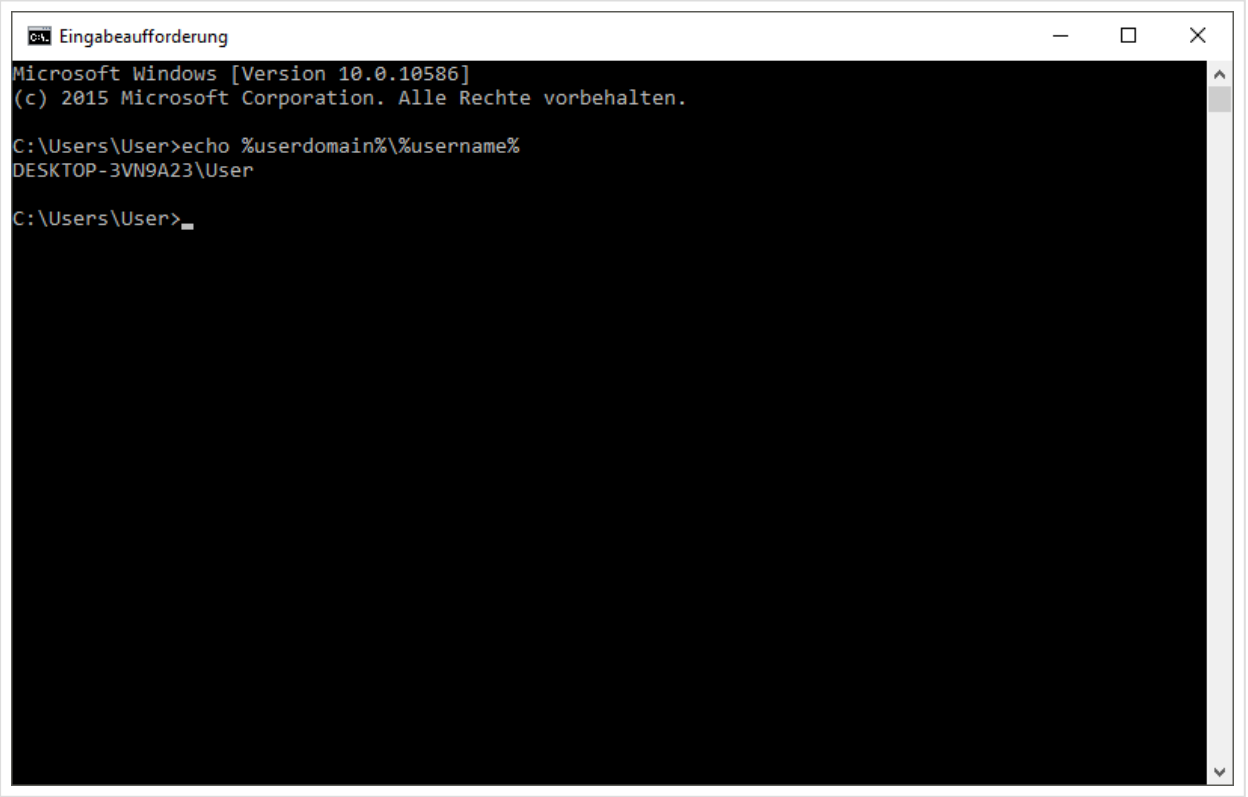
## Where do I find the domain and user name to use for authentication?

If you are not sure, please proceed as follows:

- Call the command line under **Run...** in the Start menu. Enter the command cmd in the dialogue.



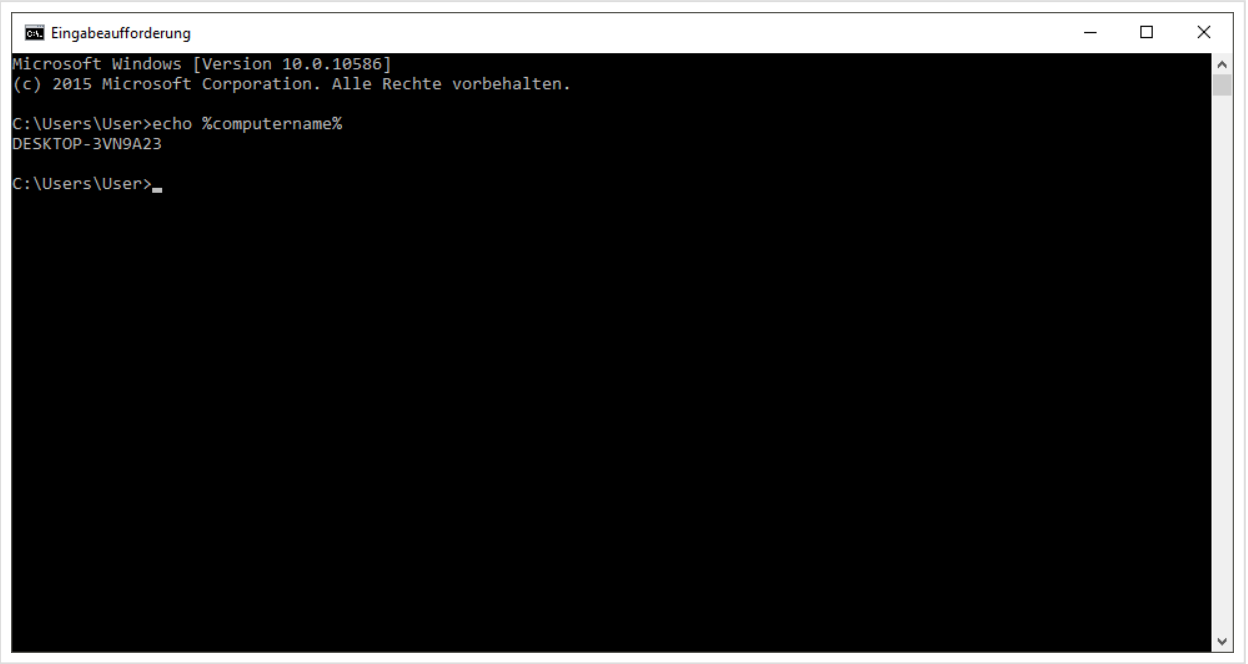

- Enter the command: echo %userdomain%%username% into the command line and confirm your entry with Enter. If your computer is not signed on to a domain, your computer name will appear instead of the domain name.



## Where do I find the computer name for, running activities?

If you are not sure, please proceed as follows:

- Call the command line under **Run...** in the Start menu. Enter the command cmd in the dialogue.
- Enter the command: echo %computername% and confirm your entry with Enter.




## How can I check my access rights on the target computer or the target folder?

If you are not sure if your entries are correct, you can view them under **Program settings/Security** and recheck them. Alternatively, you can check your access rights on the target computer in the properties of the corresponding target folder under "Security" in Windows Explorer.

- Click in the context menu of the folder on **Properties** and then **Security**. All users with access to the folders will be listed.

**Although I have already entered my authentication data for a network drive, I am asked once again for every activity.** It is possible that you are requested to re-enter your authentication data for an activity like the restoration of an network drive image. The reason for this can be traced back to Windows. Certain dialogs, e.g. the browser dialog are not originally from O&O DiskImage but from Windows. Because Windows doesn't have access to your O&O DiskImage authentication data, it is necessary to re-enter the access data for the selected drive.

# Support and more from O&O

O&O Software support helps with questions and problems concerning O&O DiskImage 18.

## Contact support

Open O&O Software support. Include:

- The version and edition of O&O DiskImage and the Windows version.
- The report of the failed action.
- The type of source and destination.
- Whether the action was started manually or as a job.
- Whether the problem occurred in Windows or after starting from the boot medium.

See Reports for where to find the reports, and Troubleshooting for common problems and their solutions.

## Licensing and updates

O&O DiskImage is commercial software. You can try it during the trial period; continued use requires a valid license. Licensing, registration and updates are described under Install, license and uninstall. Product information on the current version is available on the O&O DiskImage product page.

## More O&O products

| Product | Purpose |
|---|---|
| **O&O Syspectr** | Remote monitoring and management of PCs and servers |
| **O&O Defrag** | Storage optimization for PCs and servers |
| **O&O DiskRecovery** | Recovery of deleted files and data from damaged file systems |
| **O&O ShutUp10** | Control of Windows privacy settings |
| **O&O SafeErase** | Secure, unrecoverable deletion of files and free space |

See all O&O products.