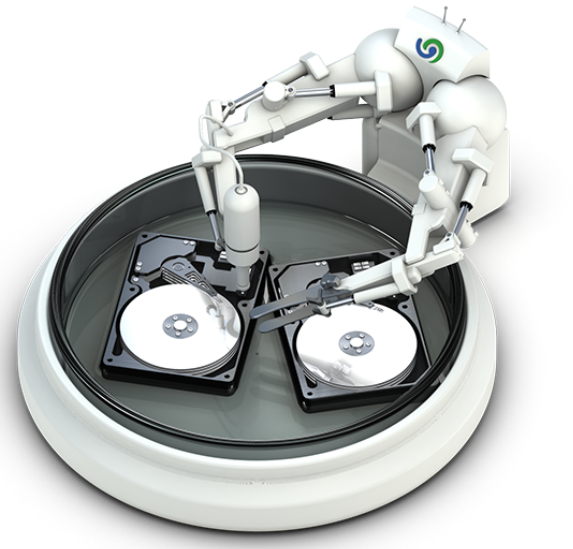
Restoration onto different Hardware



O&O Software

O&O DiskImage

Copyrights

Rev. 26.09.2016

http://www.oo-software.com

Contents

System restoration using boot media

Data volumes, those that save your private and business data, can be imaged and restored quickly in the event of a crash or damage. It is also very easy to image your entire computer or the system partition.

Should you need to restore an image contained in Windows, then you need to start O&O DiskImage directly from the boot medium *.

There are plenty of reasons to restore an operating system, such as:

- Windows reports serious errors or crashes regularly.
- Windows no longer starts.
- You want to set up your pc a new and transfer your operating system and all your settings.
- You want to transfer your operating system and all your settings to a new pc.

The boot media will enable you to restore a system partition, or a hard disk on which a system partition is located.The necessary pre-requisite being that you already have created one or many images of the computer or the system partition in question. It makes no difference if a classic singleboot or a multiboot computer was secured. - both systems are supported by O&O DiskImage.

To start O&O DiskImage directly from boot media, it is not necessary for the operating system to run properly.The boot media includes a bootable Windows operating system (Windows PE) including all the needed default drivers. If special hardware is not recognized, you can download additional drivers, e.g. for a controller or network cards with the help of an assistant.

The following chapters provide additional information and point to possible causes in the case of problems during the restoration from the boot media.

Tip: If you bought O&O DiskImage as an electronic download, you can create the boot medium yourself. You can choose whether to use a CD, DVD, or USB Stick as the medium. The only condition is that your pc can be booted. You receive detailed information on creating a boot medium by e-mail when you purchase O&O DiskImage.

Tip: Instructions as well as further notes on booting from boot media can be found in the O&O DiskImage User Handbook (PDF) or in the program help.

Restoration onto different hardware

Until now, you could only restore an image containing the system partition to a pc with exactly the same hardware as the original pc. This is also valid 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 possibility to restore an image, even the system partition, on a computer with different hardware thanks to the M.I.R. function (Machine Independent Restoration). Cloning on a computer with different hardware is also possible.

Enable M.I.R. if you changed the hardware composition after an image and these changes have consequences for the functionality on the booting Windows operating system. M.I.R. is also necessary if you want to transfer an already existing computer configuration to a new computer.

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

- Restoration of an image on a computer with different hardware or cloning/duplication of a computer.
- Enabling M.I.R. by using the boot media to exchange faulty or defect drivers of an existing system.
- Migration of physical computers onto virtual machines or virtual machines on physical computers.

There are two possibilities to enable M.I.R.

- Automatic update
- Manual adaptation

Note: When cloning a source system, which entails cloning installed versions of the Microsoft Windows operating system and programs, we recommend to change the computer name and the computer SID to avoid future problems when using the configured computer within the network.

Tip: When selecting the target drive, please take note of the changed drive letters applicable from Windows Vista on: Drive C: (normally contains the operating system) is allocated to another drive letter, for example D.

Limitations when restoring on different hardware

Under certain circumstances it is 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 a part of a hard disk (partition/volume/empty area).
- While creating the layout on the target "delete layout" was not selected. This makes it possible to create partitions/volumes on a different offset.
- You have not selected a hard disk as source, but a single partition/volume and skipped over the partitions/volumes, which contain the needed boot information.

- The hard disk, from which you are booting, is connected to controller which haven't been initialized by Windows at the time of the booting. For example, boot from a hard disk, which is connected to the computer via a controller (not 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.

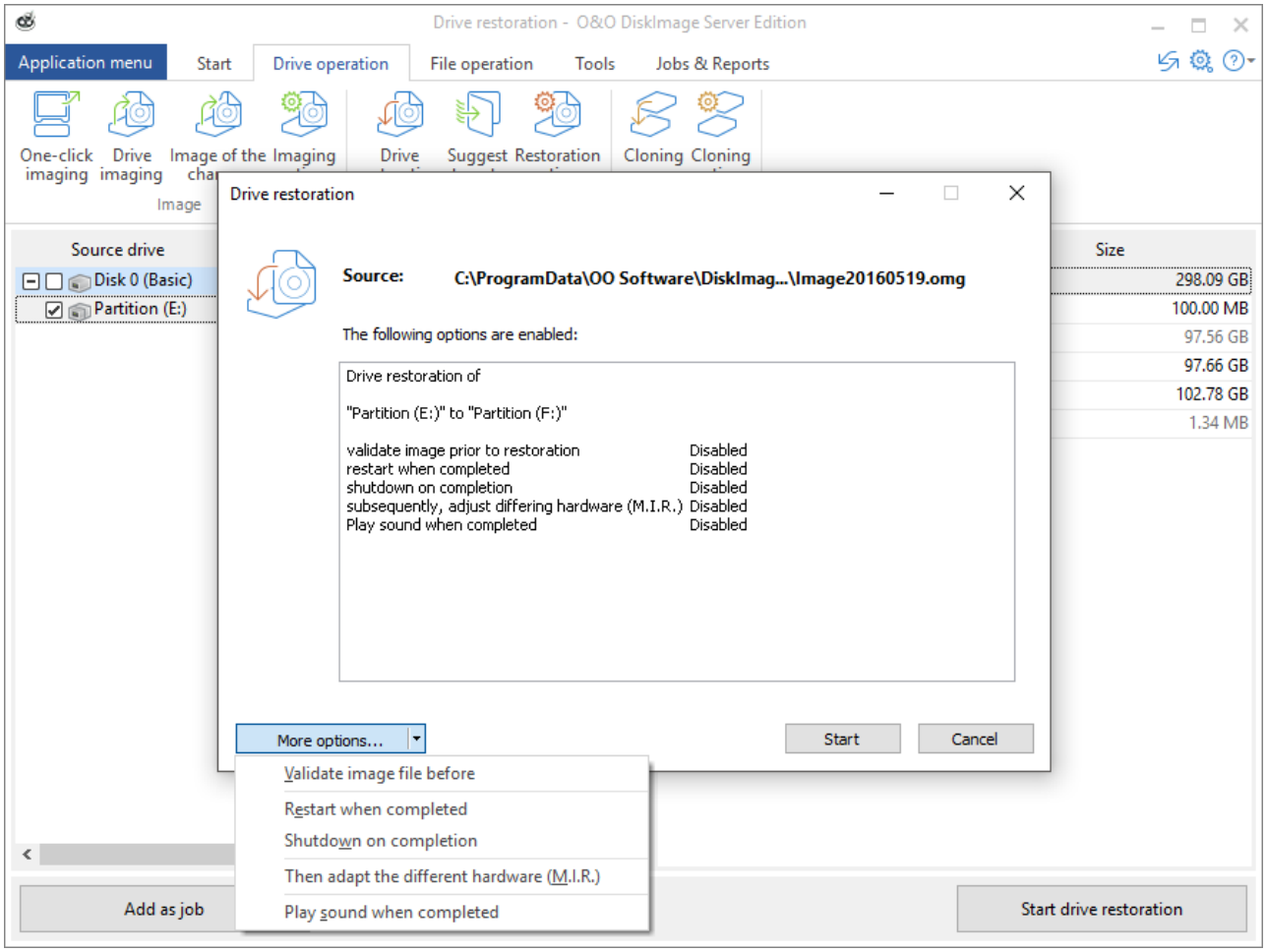
Note: To ensure a restored system or a clone is bootable, it is important to create an image of the entire system hard disk and then in turn completely restore/clone it.

Automatic update

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.

You only need to enable the function M.I.R. whenever you want to restore or clone before the restoration or cloning process is completed. The automatic adaptation will do the rest.

- To do this, enable the option **Restore on different hardware when finished** in the dialogs for restoration or cloning.
- Then follow the other dialog prompts and restart your computer after the successful restoration.



Enable automatic adaptation on changed hardware (M.I.R.)

Manual adaptation

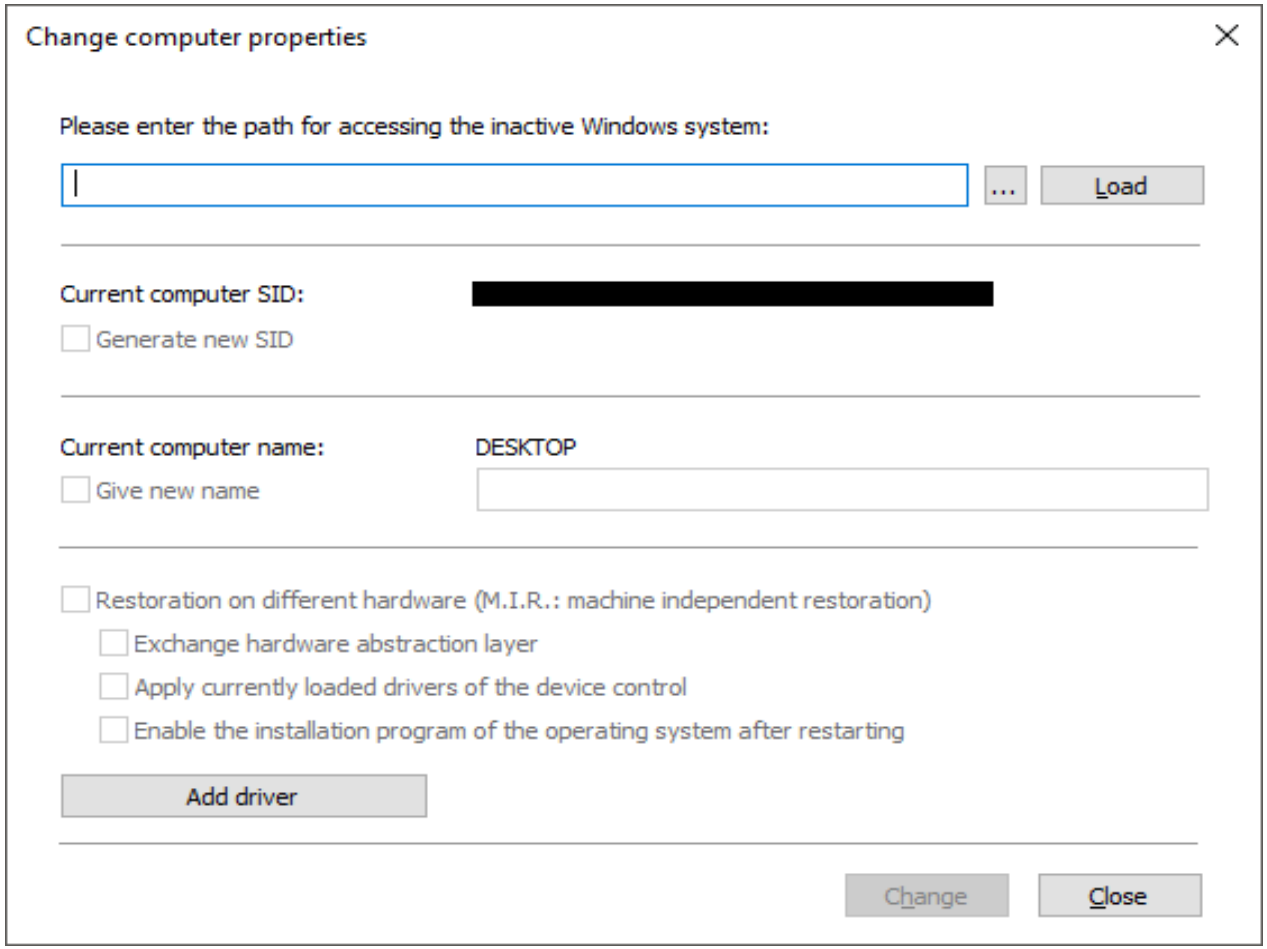
Under certain circumstances you may have to carry out an adaption manually.Examples where this may be the case include:

- The M.I.R. featureAccidentally not activating the M.I.R. function when restoring/duplicating onto different hardware.
- Using different hardware (new Processor, new hard disk controller) in your pc.
- Using defective or wrongly-installed driver.

You can make manual adaptation with O&O DiskImage to the changed hardware after the restoration or the cloning.

- After the 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 in three activities, which can be enabled/disabled when selecting **Restoration on different hardware** (machine independent restoration).

Note: When selecting the inactive Windows, please take note of the changed drive letters under Windows PE, applicable from Windows Vista on: Drive C: (normally contains the operating system) is allocated to another drive letter under Windows PE, for example D. The inactive Windows must also be "complete", i.e. a successful restoration/duplication must have been made.



Change computer properties manually

Replace 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, which 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 hard-

ware is exchanged, it becomes necessary to align the layer accordingly, 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 setup of the operating system after restart

This activity messages the Windows operating system to run an internal setup during the next startup to complete the information, so that it automatically adapts to any changes, or so that you are able to register new hardware.

Assistance when error messages occur during booting

If your computer displays an error message at the start, you can "by-pass" your Windows operating system by using the O&O DiskImage boot media. You may then restore a previously created image with the help of the boot media.This will help you solve existing problems and enable you to get back to work as per usual.

The most common error messages at the start are briefly explained in the following section.

Error notice	Problem description	Cause	Problem solution
„Invalid Partition Table“, „Error Loading Operating System“ or „Missing Operating System“	After starting the computer the BIOS is started, and the BIOS information is shown.Then, one of the mentioned error messages is displayed on a black background.	The MBR (master boot record), which is located in the first sector of the hard disk is defect or cannot be read.	Boot your computer with the help of the O&O DiskImage Start CD.Then restore the MBR (the first system area) or the entire hard disk.Alternatively, you can start the Microsoft Recovery Console and run the command „fixmbr“
„A disk read error occured“, „NTLDR is missing“ or „NTLDR is compressed“.	After starting the computer the BIOS is started, and the BIOS information is shown.Then an error message is displayed on a black background, very similar to the one shown when a MBR is defect or cannot be read	The boot block, of the Windows boot sector code for the system partition, is defect or cannot be read.	Boot your computer with the help of the O&O DiskImage Start CD.Then, restore the system partitions or the entire hard disk of the image.Alternatively,you can start the Microsoft Recovery Console and run the command „fixboot“.
„Windows could not start because of a computer disk hardware configuration Problem”, “Could not read from selected boot disk”, “Check boot path and disk hardware” or “invalid or missing file hal.dll”	After starting the computer the BIOS is started, and the BIOS information is shown.After a short Windows boot dialogue, one of the mentioned error messages is displayed on a black background.	The file „boot.ini“ or the „BCD“ is defect, or cannot be read, or the entries refer to a non-existent boot/system partition.	Boot your computer with the help of the O&O DiskImage Start CD.Then, load the image and copy the file boot.ini or BCD (from Windows Vista on) from the boot/system partition onto the boot/system partition of your computer. Alternatively, you can also restore the system partition, or the entire hard disk, or boot the Microsoft Recovery Console, and then run the command „bootcfg /rebuild“.

„Windows could not start because the following file is missing or corrupt" or a blue screen with "STOP: 0xC0000135 {Unable to Locate Component}."	After starting the computer the BIOS is started, and the BIOS information is shown.Then, one of the mentioned error messages is displayed on a black background, very similar to the ones mentioned whenever a MBR is defect or cannot be read.	The system partition or the file system is defect.	Boot your computer with the help of the O&O DiskImage Start CD.Then, restore the system partitions or the entire hard disk.

You will find further explanations on the Windows Recovery Console and its parameters under http://www.support.microsoft.com/kb/314058