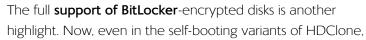# HDClone X.4

New Version

HDClone X.4 ushers in some entirely new abilities to the program. One special highlight being the LAN-based **PC-to-PC copy,** which negates the need to connect both disks to the same PC.

Once HDClone is installed in Windows, it can be **run in a normal user account without administrator rights.** This eliminates the UAC query at program startup. Not only is this generally practical, but it can also be vital when using HDClone in corporate environments.

The full **support of BitLocker**-encrypted disks is another highlight. Now, even in the self-booting variants of HDClone, they can be unlocked for file access and to save or restore images within. In addition, BitLocker-encrypted volumes can be used in conjunction with the smart functions (SmartCopy/SmartImage) and the respective speed and size advantages.

The **integrated remote access** via VNC opens up new possibilities for users, service providers and IT departments. HDClone, regardless whether in Windows or in its self-booting variants, can display the program screen on a remote PC with a VNC client via LAN and WAN. The connection can be set up in or outbound. This works with the common VNC client programs and does not rely on other, proprietary screen sharing software.

HDClone X.4 also makes significant strides in terms of utilizable hardware. It now supports **USB 4** and **Thunderbolt 4,** enabling the use of particularly fast external NVMe disks at full speed and the use of Thunderbolt docking stations for notebooks. In addition, **UFS disks**, a new type of flash disk primarily used in notebooks, are now also supported.

Network shares and NAS drives can now be used directly in the variant **HDClone/S**, for example to store backups or to access them when restoring.

Some valuable details have also been added. In Windows, **all subst and network drives** of the current user account are now available in HDClone. With version X.4, **HDClone/L** is completely converted to **64 bit** in order to take full advantage of the system hardware performance in this variant as well. Furthermore, the variants **HDClone/W** and **HDClone/L** have been optimized especially for **high-end server systems** with a large number of CPU cores, for which **HDClone/S** now also supports modern **X2 APIC controllers** and **software RAIDs on NVMe and VMD disks**.

Details about HDClone's ongoing improvements can be found online in the HDClone changelog at: https://www.miray-software.com/Changelog/HDClone

HDClone X.4

New Features (★ incl. version 13.1)

PC-to-PC copy – with NetDisk technology | 13.0 PE and up

Create 1:1 copies and deploy data directly via LAN. Deployment via LAN is an ideal approach especially for notebooks that contain built-in storage media and that come with only few USB ports.

NetDisk Server app brings disks into LANs | 13.0 PE and up

The NetDisk Server app can be started on a computer in order to make its disks available over the network, so that they can be used as NetDisks by HDClone running on a different PC.

NetDisk applet mounts NetDisks via LAN | 13.0 PE and up

Manages access to other PCs' disks, shared as NetDisks via LAN with the NetDisk Server app. It allows to mount remote NetDisks transparently on the local system used them like local disks.

FlashRefresh app – refresh flash memory | 13.0 PE and up

The flsh memory of some SSDs, NVMEs, eMMC or UFS disks can "age" over time, just by being steadily powered. This becomes evident when a simple read access takes much longer than it used to. In some cases, the speed may dip below 1% of its original read rate. This app can "refresh" these disks in one run without deleting any of their data.

USB 4 – the latest USB standard | 13.0 FE/AE and up

Devices conforming with the USB 4 standard can be automatically detected and supported, provided the appropriate firmware is installed.

Thunderbolt 4 – with hot plugging | 13.0 FE/AE and up

Thunderbolt 4 standard conforming devices can be automatically detected and supported, provided the appropriate firmware is installed.

HDClone in standard user accounts | 13.0 PE and up

HDClone can now be executed without administrator rights ('non-elevated') and can therefore be run in standard user accounts.

Subst and network drives directly utilizable | 13.0 PE and up

Subst and network drives that were created in a standard Windows user account are now immediately available in HDClone.

BitLocker applet – unlocking disks | 13.0 AE and up

The applet allows you to manage access to BitLocker-protected disks. These disks can be unlocked in order to read and write files and can then be locked again.
Note: Access to BitLocker-encrypted files requires that the respective recovery key is available.

BitLocker – SmartCopy and conversion | 13.0 AE and up

BitLocker volumes can now be unlocked, either for all or only for selected partitions. This enables these volumes to be used with SmartCopy or SmartImage for fast copying and compact images. The BitLocker encryption may also be completely removed "on the fly".
Note: Access to BitLocker-encrypted files requires that the respective recovery key is available.

UFS disks are now supported | 13.0 BE/AE and up

The new disk type UFS, mostly found in ultrabooks, can now be used to create copies, images and to access files with HDClone.

Remote access – universal screen sharing | 13.0 PE and up

With its own integrated remote screen solution, the program screen can be mirrored to another PC via LAN. This can be achieved in all variants, incl. self-booting, It facilitates remote use as well as convenient central control in local networks.

Network shares & NAS in HDClone/S | 13.0 SE and up

The self-booting HDClone variant now also offers the use of network shares and NAS devices in order to save or restore from file images.

HDClone/L64 – full 64 bit power | 13.0 PE and up

HDClone/L, the self-booting, Linux-based variant of HDClone can now also take advantage of the full 64 bit performance.

Improvements of various features | 13.0 FE and up

Many features have been significantly advanced and improved, incl.:
- support of modern X2 APIC in high-end PCs,
- software RAIDs on NVMe and VMD are now also supported,
- checksum for the source in the RescueCopy Resume app
- optimization for systems with a high CPU core count.

★ NetDisk auto discovery | 13.1 PE and up

Disks that are made available within the LAN with the NetDisk Server app are now automatically visible in the NetDisk applet. In most cases, this will eliminate the need to enter the NetDisk server's IP.

★ LAN drivers – Broadcom/Marvell/Atheros | 13.1 FE and up

The commonly integrated Ethernet controllers from Broadcom, Marvell and Atheros are now also supported by HDClone/S.

HDClone X.4

★ HDClone/L – updated Linux | 13.1 PE and up

The integrated minimized/elemantary/rudementary/reduced/downsized Linux has been updated to version 6.1.15 and now contains the latest Linux drivers for RAID and SAS controllers, as well as WLAN and other device types.

★ Partitioner app – NTFS resizing | 13.1 AE and up

The Partitioner app now allows you to resize NTFS partitions within certain limits. These are usually lower than with the cloning and restore functions, yet, in many cases, they can help to create necessary space or to use free space completely without cloning or restoring.

★ Help applet | 13.1 FE and up

The help icon can now be used to explicitly choose a specific help source: in Windows, it can be convenient to use the integrated help window in full screen mode. In other cases, displaying the help in the Windows help system or in the browser may be preferable. When using a self-booting variant, the online help can be accessed with a QR code with a second device (smartphone, tablet or additional PC/notebook).

★ Windows Command shells integrated | 13.1 FE and up

In HDClone/W, you can now open a Windows Command shell or a PowerShell right within the program. This can be helpful for remote access via the built-in remote assistance function. Since only the HDClone program screen is transmitted with this function, the Windows command line can still be started and used.

HDClone X.4

Feature Matrix

The table below provides an overview of the main features that have been added to HDClone, along with their availability in the respective editions. Unfilled dots (▫) indicate that, while the feature is available, it cannot be used to its full extent when working with the edition in question.

Ver.	New Features in HDClone X	FE	BE	SE	AE	PE	EE
13.0	**PC-to-PC copy** – with NetDisk technology					■	■
13.0	**NetDisk Server app** brings disks into LANs					■	■
13.0	**NetDisk applet** mounts NetDisks via LAN					■	■
13.0	**FlashRefresh app** – refresh flash memory					■	■
13.0	**USB 4** – the latest USB standard	▫	▫	▫	■	■	■
13.0	**Thunderbolt 4** – with hot plugging	▫	▫	▫	■	■	■
13.0	**HDClone in standard user accounts**					■	■
13.0	**Subst and network drives** directly utilizable					■	■
13.0	**BitLocker applet** – unlock disks				■	■	■
13.0	**BitLocker** – SmartCopy and conversion				■	■	■
13.0	**UFS disks** are now supported			▫	▫	■	■
13.0	**Remote access** – universal screen sharing					■	■
13.0	**Network shares & NAS** in HDClone/S			■	■	■	■
13.0	**HDClone/L64** – full 64 bit power					■	■
13.0	**Improvements of various features**	▫	■	■	■	■	■
13.1	★ **NetDisk** auto discovery					■	■
13.1	★ **LAN drivers** – Broadcom/Marvell/Atheros	▫	■	■	■	■	■
13.1	★ **HDClone/L** – updated Linux					■	■
13.1	★ **Partitioner app** – NTFS resizing				■	■	■
13.1	★ **Help applet** | 13.1 FE and up	■	■	■	■	■	■
13.1	★ **Windows command shells** integrated	■	■	■	■	■	■

Information on Modifications

The following information pertains to modifications which do not represent features in the actual sense, yet which bring about a different or new program behavior in comparison to the previous version. Therefore, this information is specifically aimed toward users of HDClone X.3 or older versions.

New apps marked with '+' in corner of icon

To make this version's new and fundamentally modified apps stand out in the menu, the respective app icons have been marked with a '+' symbol in the upper right hand corner.

Changes to the QuickSelect tab

The NetDisk Server app has been added to this tab. The Partitioner app has been moved to the Tools tab.

Changes to the Tools tab

The Partitioner app has been moved to this tab from the QuickSelect tab. The FlashRefresh app has also joined the Tools tab. The apps have been regrouped. The shell apps have been removed and can now be found in the Toolbox applet.

New NetDisk applet (client)

The existing "Network Shares" applet and the new NetDisk applet have been colocated the new "Network Storage" applet group. It can be found in the system bar at the former location of the "Network Shares" applet.

New BitLocker applet

The new BitLocker applet was merged into the SafeDisk applet group, where the Disk Quarantine and ATA password applets are already located.

New Remote Access applet

The new applet for remote access was merged into the "Online Services" applet group.

NetDisk technology

The newly introduced NetDisk technology can handle disks over the network just as if they were local disks. In contrast to network shares or NAS, NetDisk also contains functions that are needed to directly access disks. As a result, it is possible to create copies and images from, and to restore from images to disks that are built into a remote PC or server.

Note: It is currently not possible to access NetDisks with the Spot file manager, for example in order to save or restore images. In these cases, please continue to use network shares for this purpose.

Network and "subst" drives

Users' network and subst drives that are set up in Windows are now also available in HDClone/W. If needed, the previous behavior can be envoked with the option "Run as administrator" upon starting HDClone.

Network shares in HDClone/S and HDClone/L

The NTLM protocol is currently needed in the domain server network shares in order to use network shares in the self-booting HDClone variants.

BitLocker drives

Thusfar, HDClone had been able to copy, image or restore BitLocker drives in RAW mode without changes to the size or any other adjustments. HDClone/W could only create unencrypted copies or images of unlocked BitLocker drives. Now BitLocker drives can also be unlocked in the self-booting variants HDClone/S and HDClone/L. In Windows, previously unlocked BitLocker drives can now be copied or saved to an image while pertaining encryption. SmartCopy and SmartImage can now be used to create time and storage space saving copies or images from BitLocker drives.

Note: The BitLocker applet must be used to unlock in cases of regular file access (e.g. with the Spot file manager) or to store or read images. When creating copies or images from BitLocker drives or when restoring images with BitLocker content, the unlocking can be done in the respective app.