

Disk Clone Industrial



USER MANUAL

Ver. 1.0.0

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Legal Statement

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Introduction

Disk Clone Industrial (drive duplication unit) is a vital tool used to manage and protect data. Why to clone:

- **Simplest case:** Hard Disk Upgrade! **Disk Clone** can help to upgrade hard disk from old small disk to a new larger one without re-installations of operating system and the applications
- **OS Transfer:** Cloning a disk with ANY OS installation enables to transfer OS to another hard drive or much faster SSD without reinstalling
- **Make a Duplicate Disk:** If all the data on the current system installed disk are important, it is necessary to do a complete backup of the source disk by cloning it to a target disk
- **Data Recovery:** In order to avoid secondary damage to the hard disk during data recovery, it is necessary to clone the disk and then restore what you want from the cloned disk
- **"REBOOT AND REFRESH":** an option for public computers
- **"RESET":** to return a system to an original configuration with no personal data before selling or giving a computer away
- Set up multiple computers with identical configurations

Related information

[File Browser](#) on page 65

Cloning Data

Disk cloning is an act of copying the contents of a computer's physical drive byte by byte onto another physical drive. The contents are typically saved as a disk image file and transferred to a storage medium, which could be another computer's hard drive or removable media such as a DVD or a USB drive.

Disk Clone Industrial is an affordable industrial-grade disk duplication hardware solution supporting parallel cloning of multiple disks. Easy to use, extremely quiet and energy efficient. Supports cloning physical disks, *ISO* images or compressed *Disk Images* to different type of media: HDD/SSD/NVMe/USB.

Related tasks

[Disk Clone](#)

Related information

[Clone Sources](#) on page 80

Erasing Confidential Data

Modern methods of data encryption are deterring network attackers from extracting sensitive data from stored database files.

Attackers (who want to retrieve confidential data) become more resourceful and look for places where data might be stored temporarily. For example, the Windows **DELETE** command merely changes the files attributes and location so that the operating system will not look for the file. The situation with *NTFS* is similar.

One avenue of attack is the recovery of data from residual data on a discarded hard drive. When deleting confidential data from hard drives, removable disks or USB devices, it is important to extract all traces of the data so that recovery is not possible.

Most official guidelines regarding the disposal of confidential magnetic data do not take into account the depth of today's recording densities nor the methods used by the OS when removing data.

Removal of confidential personal information or company trade secrets in the past might have been performed using the **FORMAT** command or the **FDISK** command. Using these procedures gives users a sense of confidence that the data has been completely removed.

When using the **FORMAT** command Windows displays a message like this:

`Important: Formatting a disk removes all information from the disk.`

The **FORMAT** utility actually creates new *FAT* and *ROOT* tables, leaving all previous data on the disk untouched. Moreover, an image of the replaced *FAT* and *ROOT* tables is stored so that the **UNFORMAT** command can be used to restore them.

FDISK merely cleans the Partition Table (located in the drive's first sector) and does not touch anything else.

Disk Clone Industrial is able to erase data on entire drive with a choice of [One Pass Zeros](#) and [One Pass Random](#) international disk sanitizing standards

Related tasks

[Disk Erase](#)

Related information

[Erase Disk Concepts](#) on page 96

Disk Clone Overview

Disk Clone for Industrial Systems



This edition of **Disk Clone** is designed to provide a software solution for industrial workstations, configured to service disks in high volumes. **Disk Clone for Industrial Systems** is distributed as a software package that may be installed on a disk erase workstation and used to examine, erase and even write images to individual or batches of disks. Highly customizable, the software is able to conform to any company standards - erasure standards, examination type, reporting, error handling are only a subset of the configurable settings **Disk Clone** supports. All elements of **Disk Clone** operations may be documented in XML reports, PDF certificates, or even printable labels for erased hard drives. Versatile, easy to navigate and rich in features, **Disk Clone for Industrial Systems** is the ideal disk cloning solution for corporations to securely erase and clone hard drives as well as their images - simply and efficiently.

Customizable interface allows to define layouts, batches and processing automation. Supports cloning Hard Disk Drives, solid state drives (SSD) and latest NVMe disks, SATA and SAS disks, external disks via eSATA and USB. Cloning any file systems and operating systems: Windows, Linux/Unix, MacOS.

Disk Clone is a powerful software that delivers the following main features:

- Parallel cloning of up to 20 disks from a single source
- Clone ALL known file systems and operating systems
- **Fast** erase data on entire drive, supports parallel erasing of large numbers of drives (hardware-limited)
- Destroy data with a choice of **One Pass Zeros** or **One Pass Random** international disk sanitizing standards
- **Disk Clone** allows you to write an image or copy a *Master Disk/Partition* to newly erased hard drives with its cloning feature
- Sanitize and clone external disks (USB drives, external HDD/SSD) connected to both USB 2.0 and 3.1 ports
- Auto-erase mode sanitizes disks and prints certificates without of any user interaction
- Hot-swap operations are fully supported, erase could be auto-initiated upon HDD plug-in

- Browse file systems on disk volumes and inspect particular sectors *Hex Viewer* on a low level
- Print different types of labels to be attached to hard disks after erase completion
- Provides enhanced information about disks and their attributes including [S.M.A.R.T.](#) monitoring
- And more...

Related information

[Erase Methods \(Sanitation Standards\)](#) on page 98

System Requirements

Disk Clone Industrial is designed to run on Linux and Windows operating systems with the following minimum requirements:

Workstation

- IBM PC compatible machine
- Intel Pentium or higher
- 2 Gb of RAM
- 100Mb of free disk space

Video

- VGA (1024x768) resolution or better

Operating Systems

- Windows XP or higher
- Linux Kernel 2.x or higher

Drive Storage

Disk types supported:

- IDE
- ATA
- SSD
- SATA
- eSATA
- SCSI
- NVMe

Disk Clone Industrial works with all drives supported by the Operating System with read/write access

Related information

[Disk Clone Installation and Distribution](#) on page 12

Software Licensing

Disk Clone Industrial is supplied with a security USB key that contains number of licenses being purchased (one license is required per slot where HDD/SSD is plugged into).



Figure 1: Security USB license key

This key must be inserted into any USB slot on the PC before running **Disk Clone** software, otherwise authorization error appears.

Software Updates

Disk Clone has a built-in update client to ensure you always have access to the latest version of the application. To update, use the file menu bar to navigate to **Help > Check for Updates**

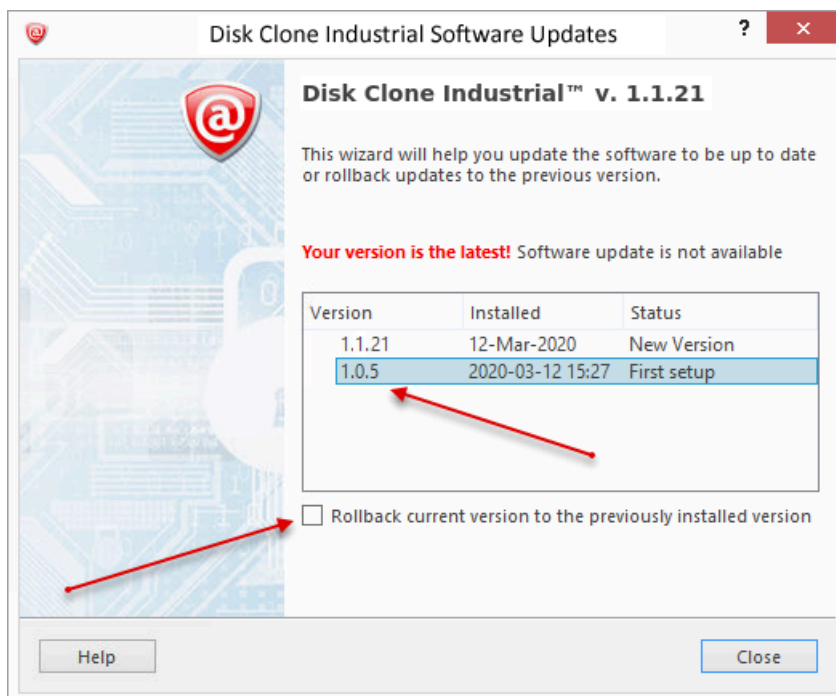


Figure 2: Checking for updates

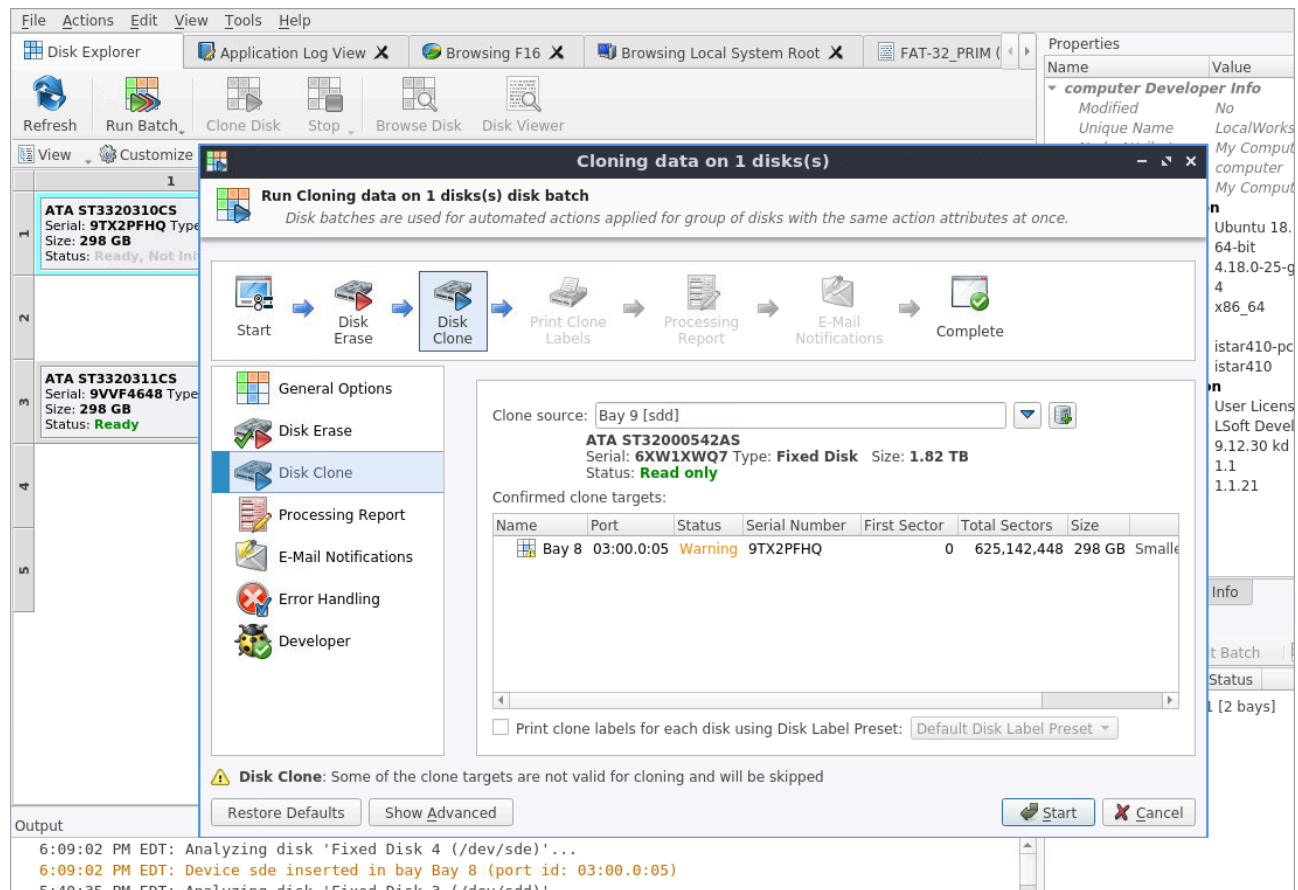
Update dialog contains history of previously installed versions and updates.

If a new version or update is detected it can be downloaded and installed on the next wizard steps.

Note: **Disk Clone** stores your previously installed versions so you may roll back to any of your older versions at any time.

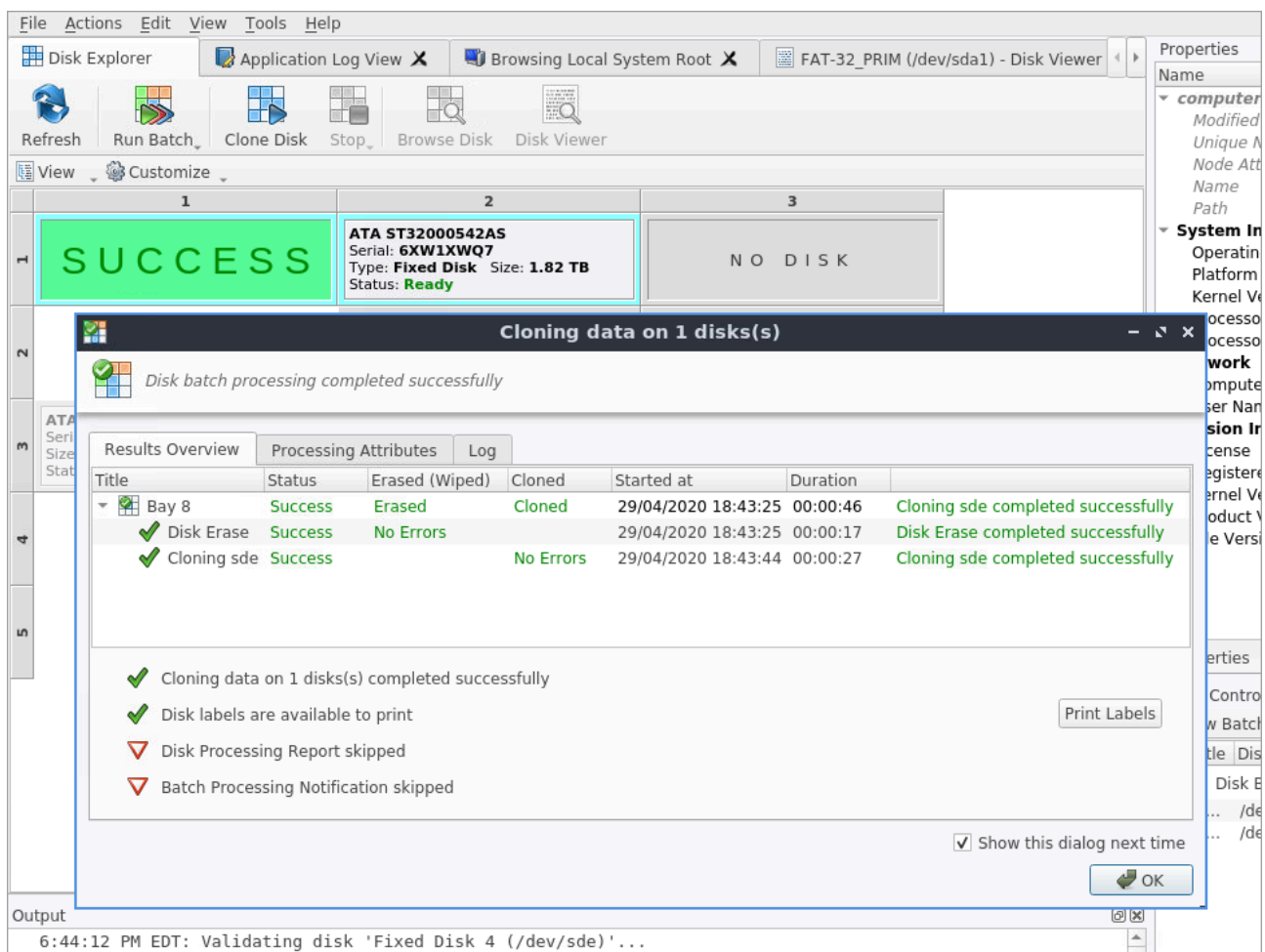
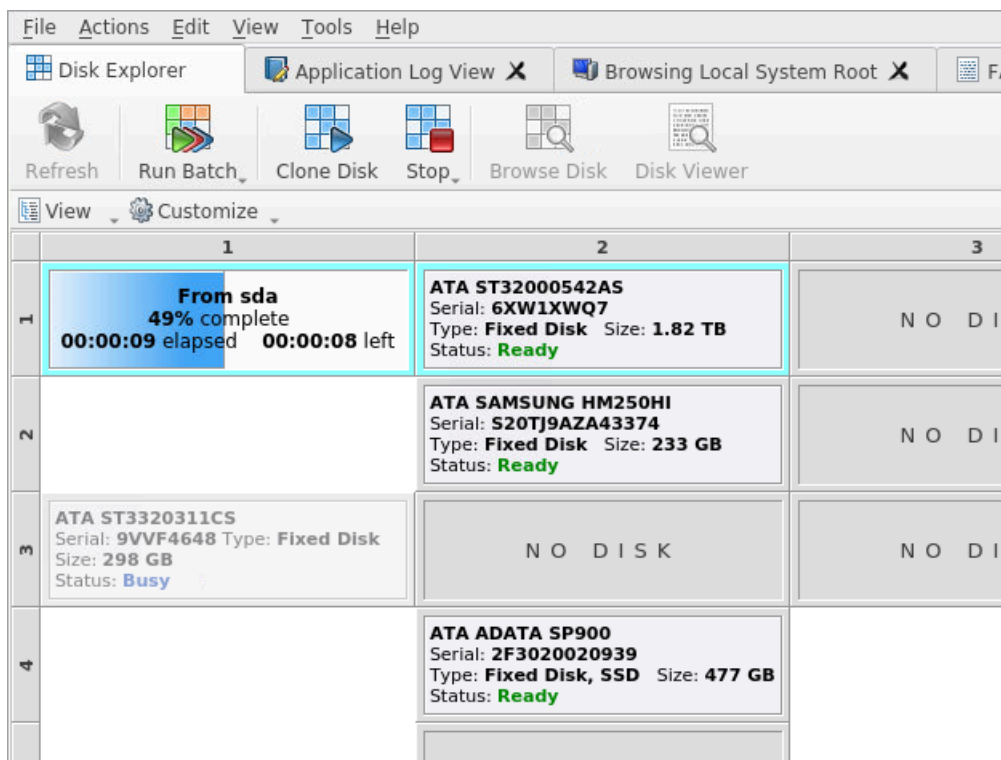
Getting Started with Disk Clone Industrial

This section describes the key features of **Disk Clone Industrial** and explains basic functionality.



File Actions Edit View Tools Help			
Disk Explorer Application Log View X Browsing F16 X Browsing			
Refresh Run Batch Clone Disk Stop Browse Disk Disk Viewer			
View Customize			
1	2		
1	ATA ST3320310CS Serial: 9TX2PFHQ Type: Fixed Disk Size: 298 GB Status: Ready, Not Initialized	ATA ST32000542AS Serial: 6XW1XWQ7 Type: Fixed Disk Size: 1.82 TB Status: Ready	N O
2	One Pass Zeros: pass 1 of 1 (0x00) 82% complete 00:00:11 elapsed 00:00:01 left		N O
3	ATA ST3320311CS Serial: 9VVF4648 Type: Fixed Disk Size: 298 GB Status: Ready	N O D I S K	N O
4	ATA ADATA SP900 Serial: 2F3020020939 Type: Fixed Disk, SSD Size: 477 GB Status: Waiting		

File Actions Edit View Tools Help			
Disk Explorer Application Log View X Browsing F16 X Browsing Lo			
Refresh Run Batch Clone Disk Stop Browse Disk Disk Viewer			
View Customize			
1	2		
1	ATA ST3320310CS Serial: 9TX2PFHQ Type: Fixed Disk Size: 298 GB Status: Ready, Not Initialized	ATA ST32000542AS Serial: 6XW1XWQ7 Type: Fixed Disk Size: 1.82 TB Status: Ready	N O
2	ERASED		N O
3	ATA ST3320311CS Serial: 9VVF4648 Type: Fixed Disk Size: 298 GB Status: Ready	N O D I S K	N O
4	ATA ADATA SP900 Serial: 2F3020020939 Type: Fixed Disk, SSD Size: 477 GB Status: Read only		




Disk Clone Installation and Distribution

Disk Clone Industrial is distributed as a software solution with a DVD-ROM and security USB license. DVD-ROM contains two installations:

- **DiskCloneIndustrial-Setup.exe** - installation for Windows OS
- **DiskCloneIndustrial.run** - installation for the Linux OS

Simply install the application into your data erasure workstation environment and [configure it](#).

Launching and initial Configuration

 **Note:** Before launching **Disk Clone** make sure the security USB stick is plugged into the workstation's USB slot.

Upon first launching the application you will encounter the **Disk Bay Layout Wizard**.

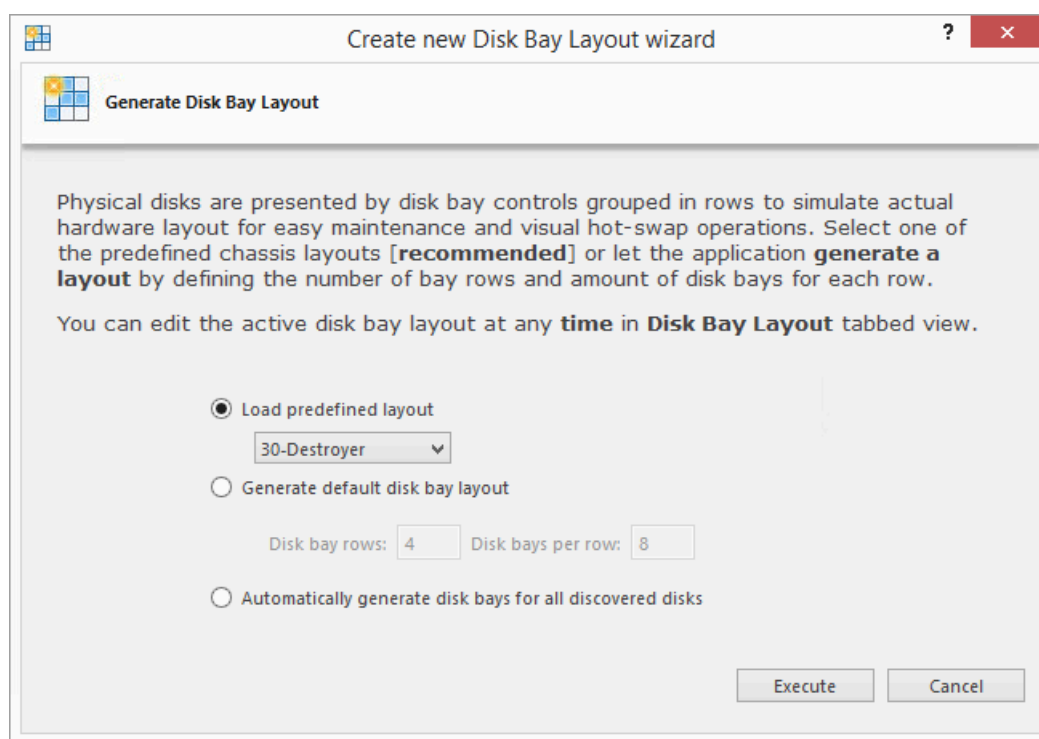


Figure 3: Disk Bay Layout Wizard

This menu allows you to initialize **Disk Clone** to display your hardware in an intuitive way. To illustrate the purpose of this read this section on [Disk Bay Layouts](#). This initial configuration can be done in 1 of 3 ways:

Load predefined layout

Here you can find 1 of our predefined layouts that may fit your system. If an appropriate layout is not listed you may try the next option

Generate default Disk Bay layout

Define your hardware in terms of a disk array arranged in a X by Y grid of disks. You may make adjustments to this later so this may just be a template to start from

Automatically generate Disk Bays for all discovered disks

Defines your *Disk Bay* layout based on the disks recognized by your system's device manager. The disks will be placed in their own individual row when the layout is generated. The result could be looking as the following:

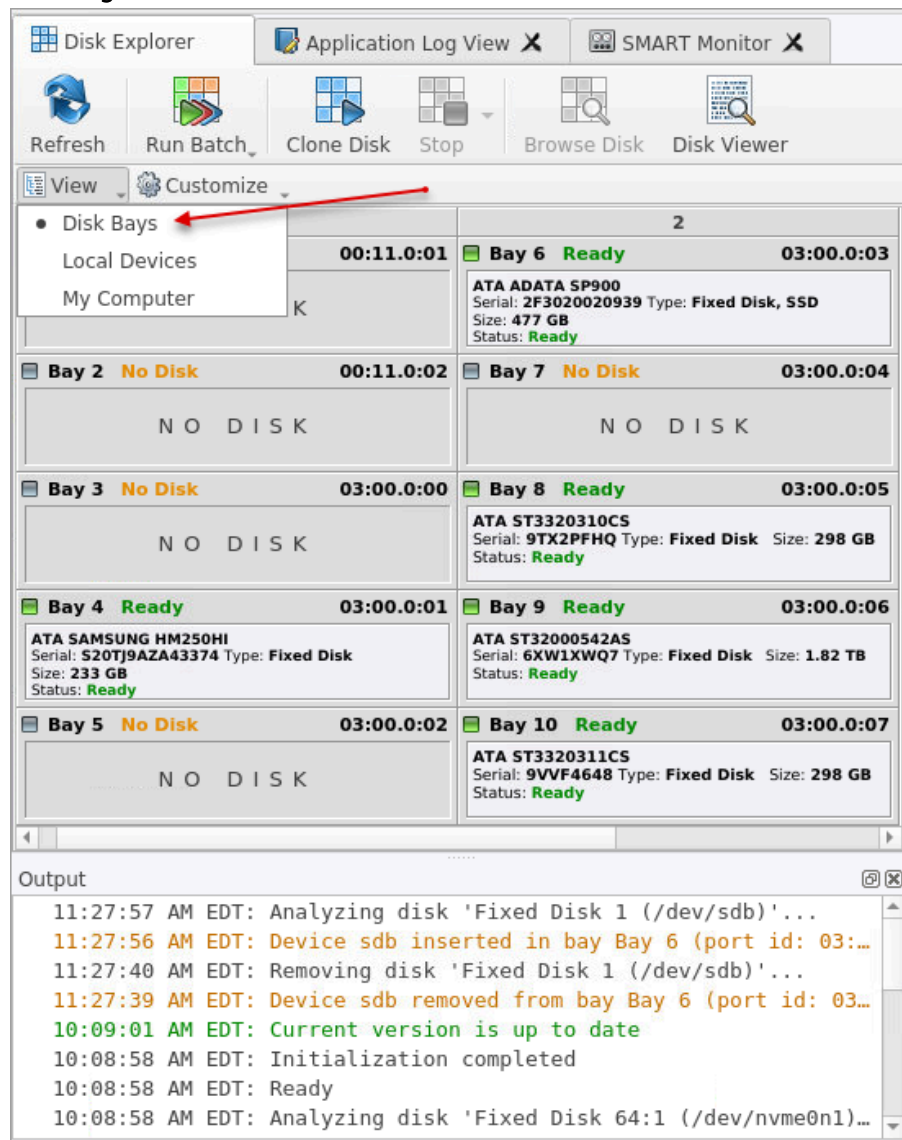


Figure 4: Disk Bay View (automatically generated)

Disk Explorer					
Application Log View X SMART Monitor X					
Refresh Run Batch Clone Disk Stop Browse Disk Disk Viewer					
View Customize					
Name	Port	Status	Total Sectors	Platform Name	Serial Number
Bay 6	03:00.0:03	Ready	1,000,215,216	/dev/sdb	2F3020020939
Unallocated Space		Ready	2,047		
SSD (/dev/sdb1)		Ready	1,000,210,432		
Unallocated Space		Ready	2,736		
Bay 7	03:00.0:04	No Disk			
Bay 8	03:00.0:05	Ready	625,142,448	/dev/sde	9TX2PFHQ
FAT-32_PRIM (/dev/sde1)		Ready	91,013,120		
Local Disk (/dev/sde2)		Ready	392,495,104		
Extended Partition		Ready	141,615,104		
Bay 9	03:00.0:06	Ready	3,907,029,168	/dev/sdd	6XW1XWQ7
Unallocated Space		Ready	2,047		
NT-1 (/dev/sdd1)		Ready	1,890,312,192		
F-1 (/dev/sdd2)		Ready	2,016,698,368		
Unallocated Space		Ready	16,560		
Bay 10	03:00.0:07	Ready	625,142,448	/dev/sda	9VVF4648
Unallocated Space		Ready	2,047		
FAT-32_PRIM (/dev/sda1)		Ready	91,013,120		
ExFat-1 (/dev/sda2)		Ready	392,495,104		
Unallocated Space		Ready	505		
Extended Partition		Ready	141,615,104		
Unallocated Space		Ready	63		
NTFS-111 (/dev/sda5)		Ready	45,942,784		
Unallocated Space		Ready	62		
NTFS-222 (/dev/sda6)		Ready	95,670,272		
Unallocated Space		Ready	1,921		
Unallocated Space		Ready	16,567		

Figure 5: Disk Bay Tree View (automatically generated)

Related information

[Security Hardware](#)

[Disk Layout Overview](#) on page 16

Navigating Disk Clone

Once the **Disk Clone** application is launched the main application's dashboard appears. From here you can use any of **Disk Clone**'s tools on your system. This section describes the main components of the application. The full functionality and features of these components are discussed in their corresponding sections later.

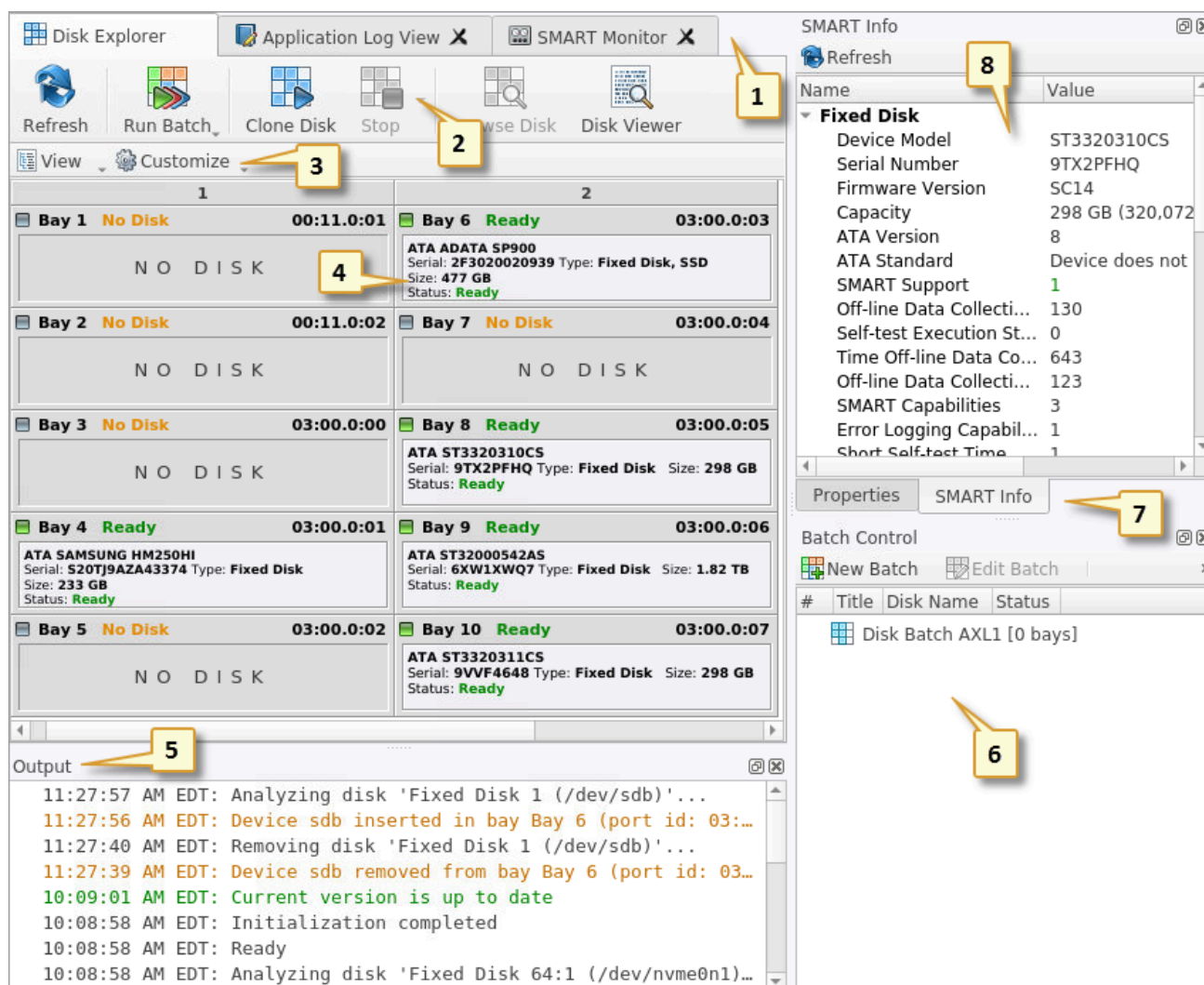


Figure 6: Disk Clone Industrial application dashboard

Where:

1 - Tabbed Windows

Here you can navigate between **Disk Clone** tabbed windows such as [Disk Explorer](#), [Application Log](#) etc..

2 - Command Toolbar

The command toolbar is a dynamic toolbar that allows the user to perform Tabbed Window-specific actions (depending on the context).

3 - View Selection

This *View Selection* (only available in **Disk Explorer View**) allows you to manipulate how the *Bays* are displayed in the **Windowed View** as well as manipulating with type of graphics used to show the *Bays* in **Disk Bay View**.

4 - Windowed view

Contains the window that is currently active. By default you can see here all *HDD/SSD/USB* disks attached to the workstation.

5 - Output window

Contains the log of operations **Disk Clone** has performed.

6 - Batch control window

The *Batch control* window is an easily accessible interface to create, delete and manipulate disk batches.

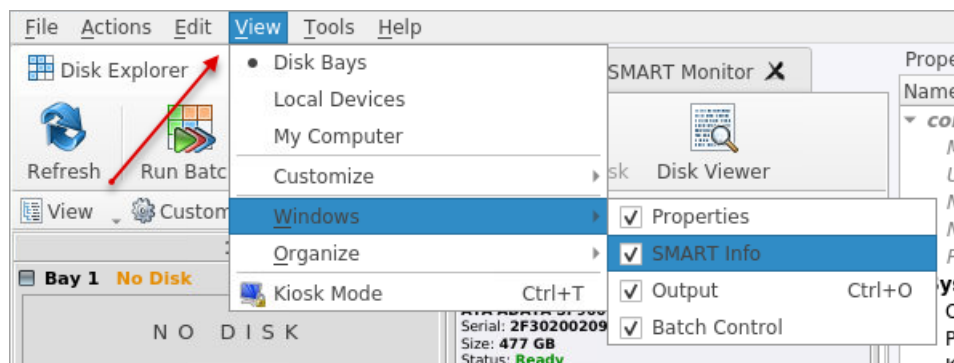
7 - Advanced tool tabs

These tabs allow to navigate between the different *Advanced Tool* windows.

8 - Advanced tool window

This window shows the data for the *Advanced Tool* selected. The window can be moved, popped out and re-sized.

To browse through each of these *Views* click on the appropriate tab. You may also open a *View* from the **View** menu.



To open any closed *View* just select it from the **View** menu.

The status bar at the bottom of the workspace shows the current status of the application or status of the activity in progress.

Related information

[Using Disk Clone](#) on page 35

[Property Views](#)

Disk Layout Overview

The purpose of **Disk Bay Layouts** is to match **Disk Clone**'s graphical disks' representation to your actual hardware configuration making it easy to manage disks for cloning, erasure and more. To illustrate this let's look at the example, using the hardware below:



Figure 7: Example of a generic disk array

In the example above we have a generic disk array consisting of 16 disks arranged in a 4x4 grid. The machine using these disks would see the disks similarly to **Disk Clone**'s **Local Devices** View:

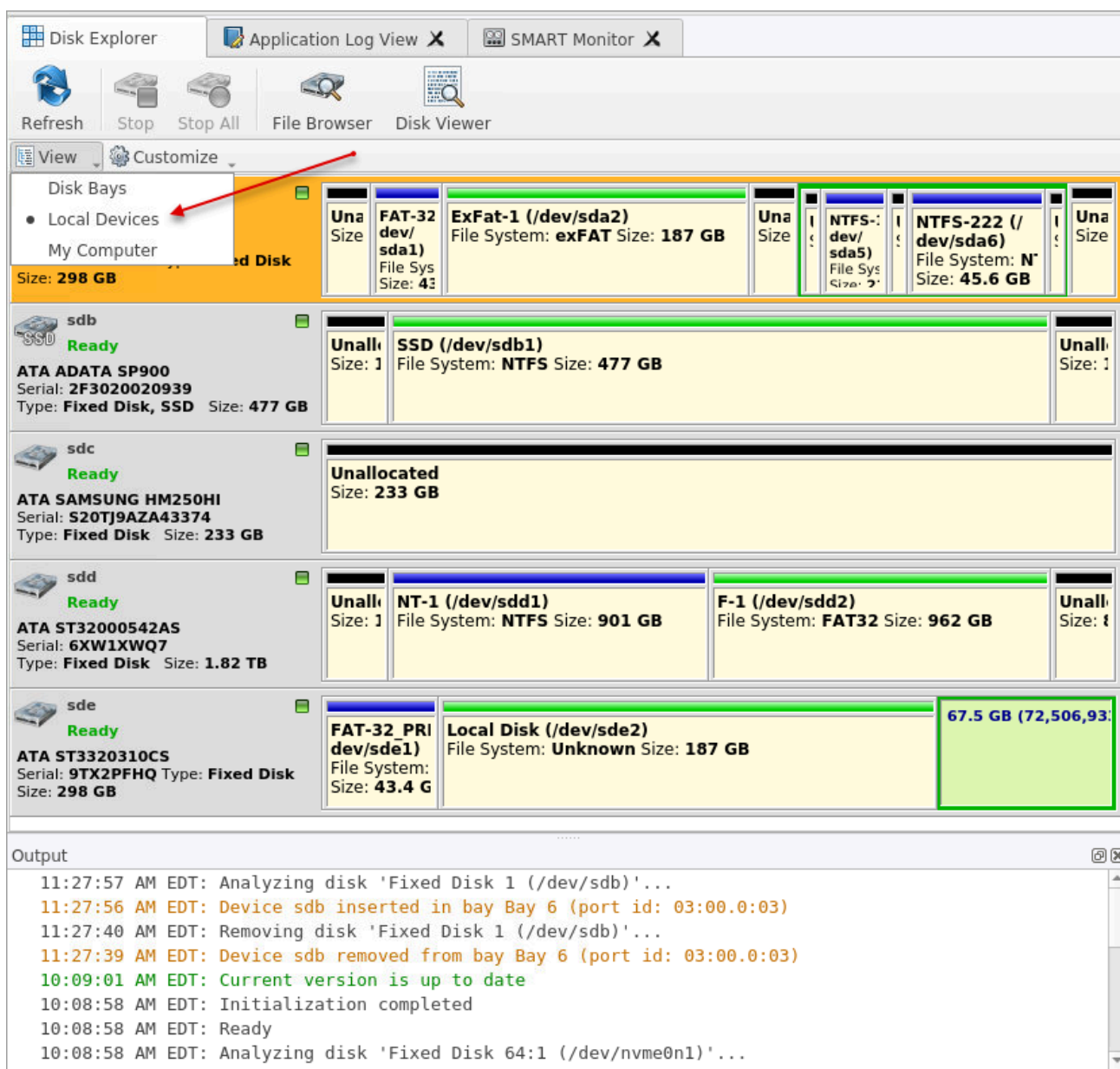


Figure 8: Local Devices View

Now imagine inserting a *HDD* into the bottom-leftmost *Bay* of the disk array. Even finding the device in a list of 15 other disks would be tedious and not very intuitive. This is when creating a **Disk Bay Layout** is extremely useful. By creating a 4x4 **Disk Bay Layout** we can map the physical ports to their corresponding *Bay* in **Disk Clone** and visually see our disk array like this:

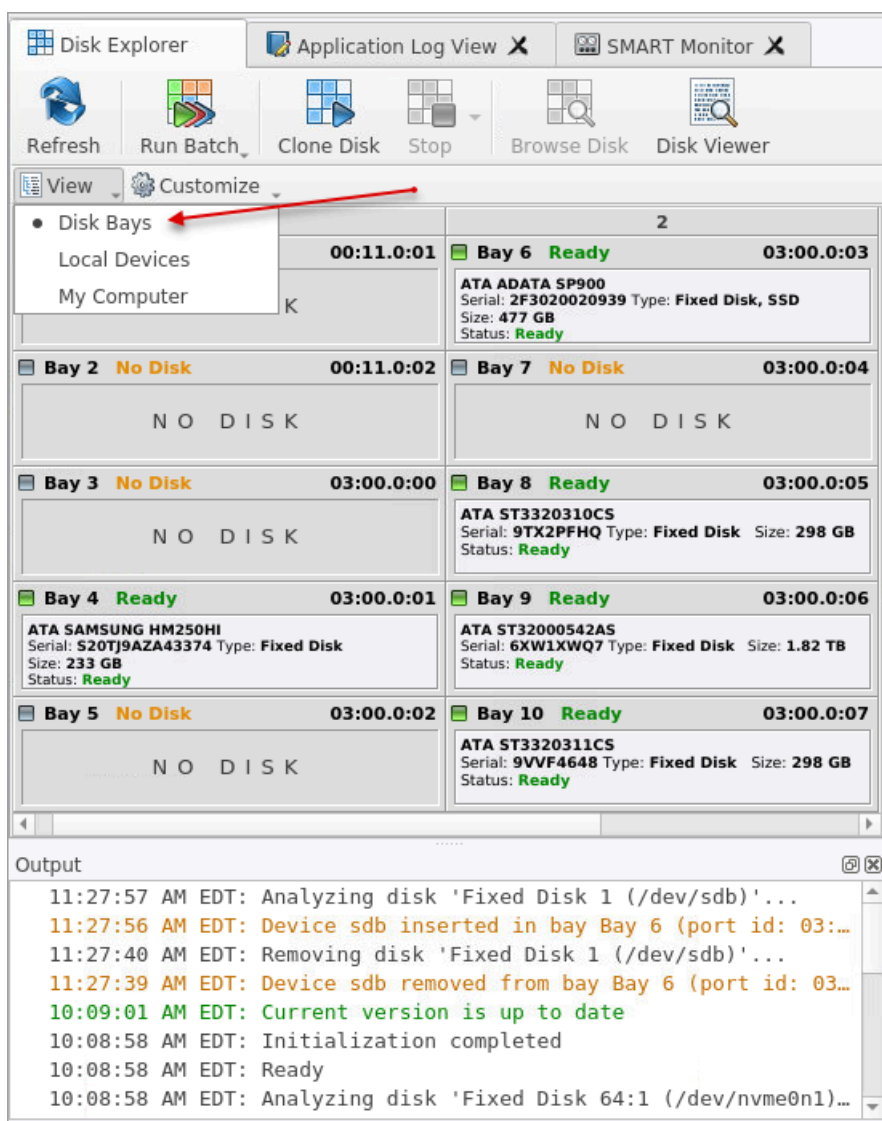


Figure 9: Disk Bays View

Assuming that the *Bays* were mapped correctly finding the correct disk to manipulate with is now much easier in the **Disk Bays** View than it would have been in *Disk Bays View* on page 28 or *Local Devices View* on page 31. You can now select the bottom-leftmost disk in the **Disk Bays** View and perform any necessary actions on it.

Related information

[Editing Disk Bay Layouts](#) on page 18

[Export and Import of Disk Bay Layouts](#) on page 22

[Layouts Advanced Features](#) on page 23

Editing Disk Bay Layouts

To create or edit current *Disk Bay Layout* select **Edit > Edit Disk Layout** in the menu or use a shortcut **CTRL + M**.

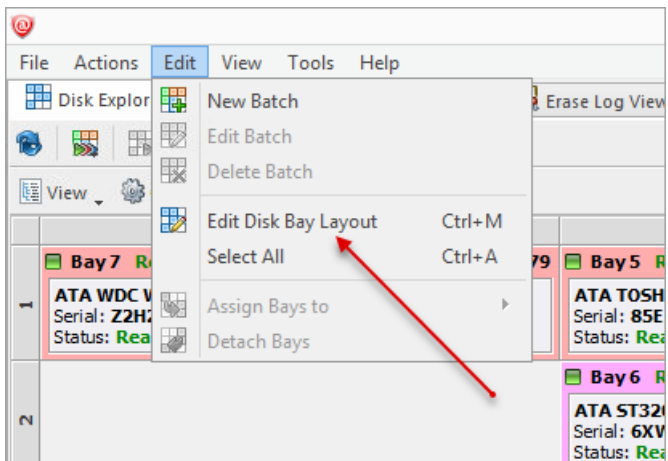


Figure 10: Opening the Disk Bay Layout View

This will bring you to the **Disk Bays Layout View** where you can manipulate, save, import and create *Disk Bay Layouts*.

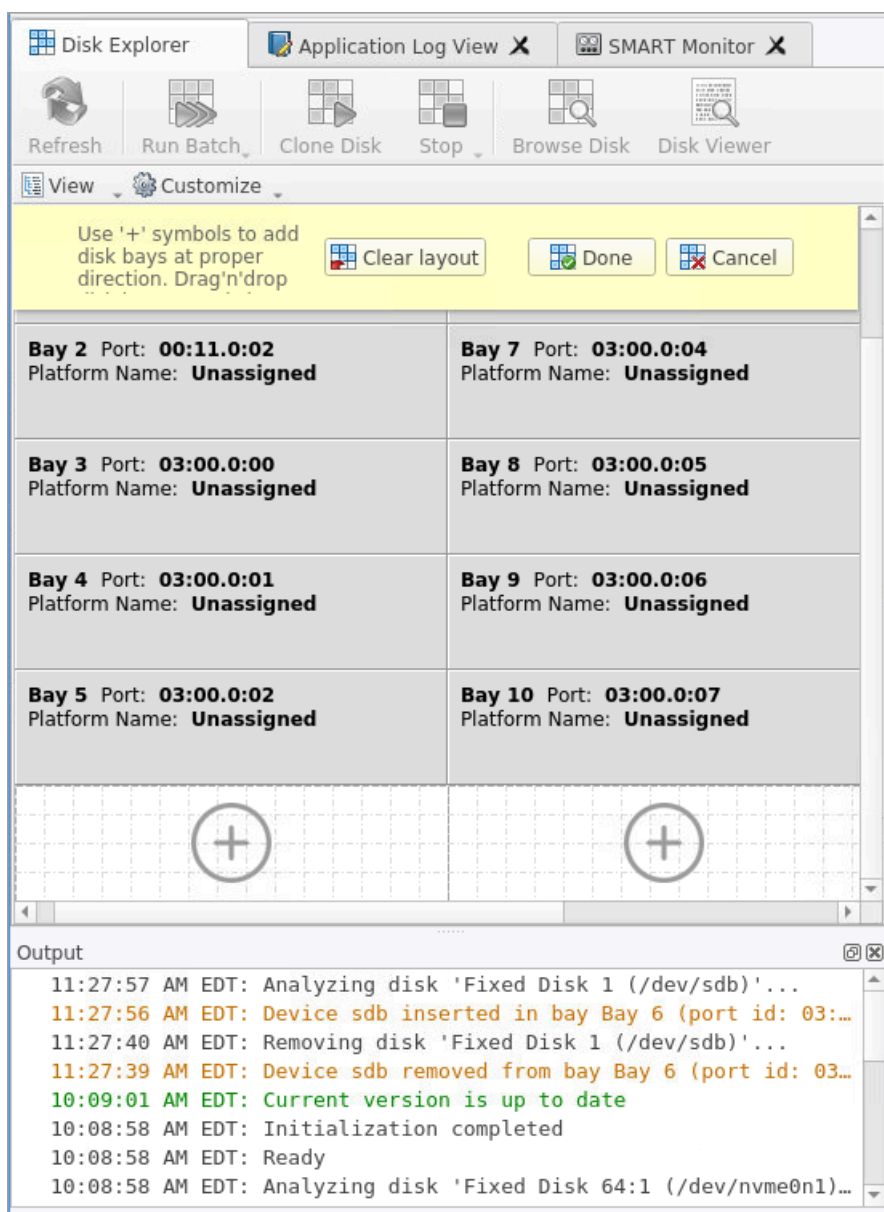


Figure 11: Disk Bays Layout View

There are 2 types of layouts:

- **Free Grid Layout** allows user to place *Disk Bay* widget at any position, change *Bay* widget size and its alignment (vertically or horizontally) individually for each *Bay*. Hence, user can create relatively accurate mocking layout of actual (physical) disk *Bay* slots located on hardware chassis
- **Table Layout** is similar to *Disk Bay Layout* from previous versions. However, now user can re-size or select *Disk Bay* widgets by using row and column headers

Creating a new layout

To create a new layout select either **>Free Grid** or **Table** layout option and start adding *Disk Bays* using circled "+" symbols.

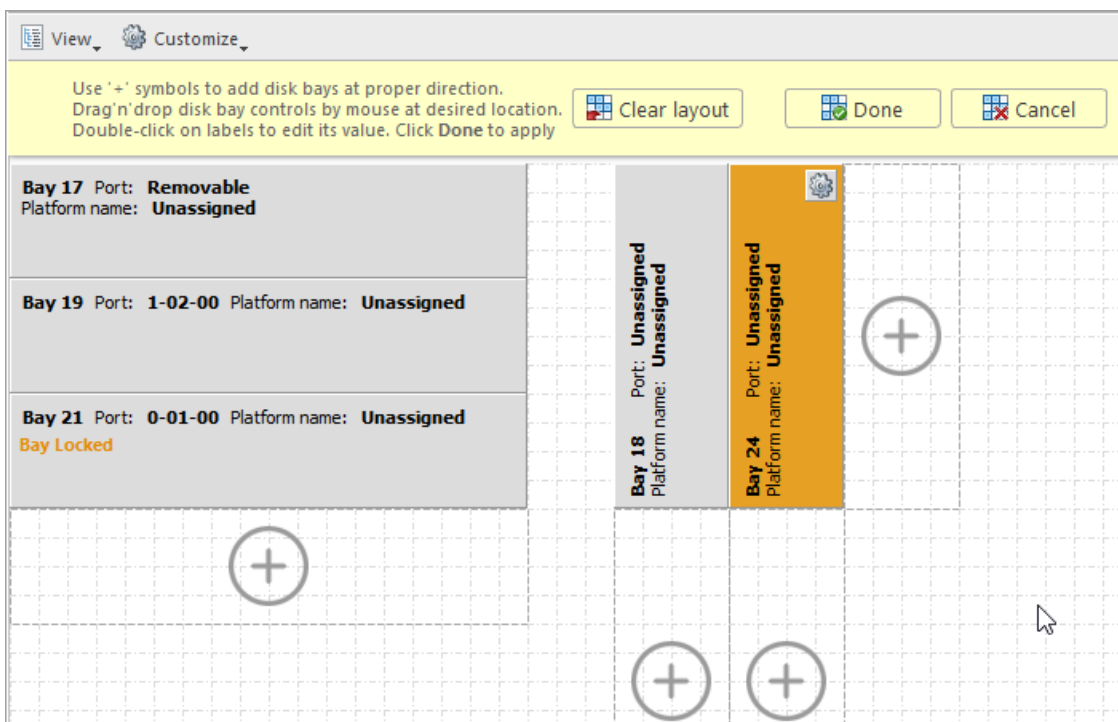


Figure 12: Editing Disk Bay Layout

If predefined layout already exists click **Clear Layout** to remove it and create a new one.

Editing Disk Bay layout

- Click on circled "+" signs to add new *Disk Bay* widget on a side of existing one. New *Disk Bay* widget size will be corresponded to adjusted *Disk Bay*
- To re-size *Disk Bay* use mouse to drag it's right side or bottom
- To set *Disk Bay* vertically-oriented use mouse to drag it's right side to shrink it until it changes to vertical state.
- To delete *Bay(s)* select it and press **Delete** keyboard key or use service menu by clicking "gear" icon on left upper corner
- Use mouse to drag-n-drop selected *Disk Bay* widgets to new location. If hovered location is invalid *Disk Bay* widgets will be highlighted with crossed sign
- To change disk label or port, click on corresponded labels on disk widget to start editing
- To change *Disk Bay* attributes use menu by clicking on "gear" sign on selected *Bay*

Important: Due to different hard disk controller manufacture standards and platform limitations physical disk port address format may vary.

Note: If both platform name and disk port are assigned to *Disk Bay* widget then platform name is used for *Disk Bay* mapping.

Disk Bay Layout Wizard

To create a new layout using the wizard click **Customize > New Layout Wizard**. This will launch the **Disk Bay Layout Wizard**

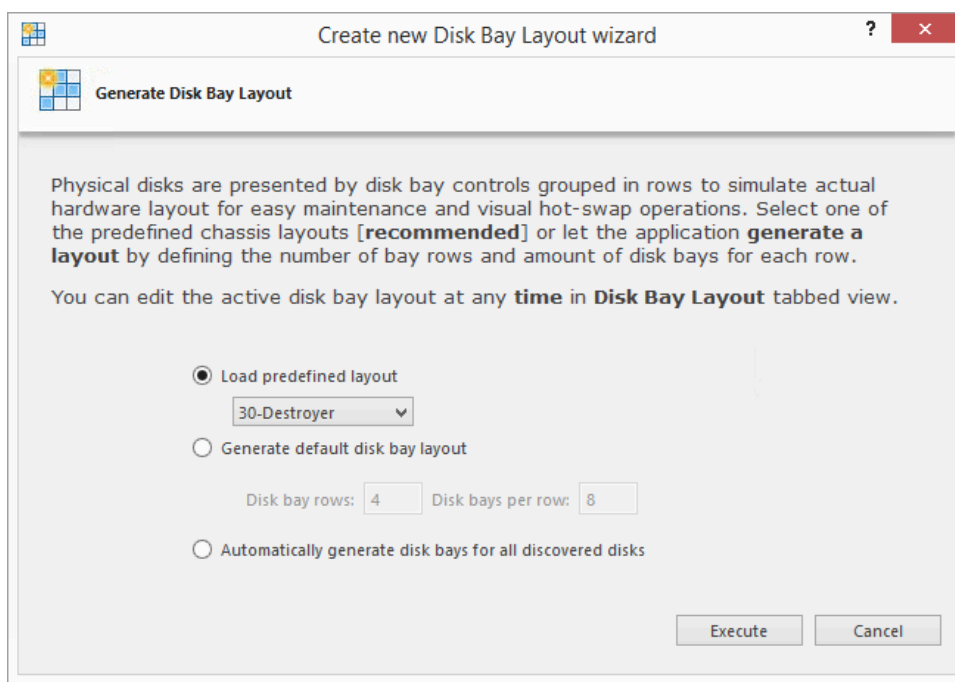


Figure 13: Disk Bay Layout Wizard

This configuration of a new layout can be done in 1 of 3 ways:

Load predefined layout

Here you can find one of our predefined layouts that may fit your system. If an appropriate layout is not listed you may try the next option.

Generate default *Disk Bay* layout

Define your hardware in terms of a disk array arranged in a X by Y grid of disks. You can make adjustments to this later so this may just be a template to start from. Table-style layout will be created.

Automatically generate *Disk Bays* for all available physical ports

Defines your *Disk Bay* Layout based on the disks recognized by your system's Device Manager. The disks will be placed in their own individual row when the layout is generated.

! Warning: Make sure to save the layout by clicking **Done** otherwise your layout WILL be lost.

With the old layout cleared out you now have a new layout ready to be configured to your machine.

Saving and Reverting changes

Click **Done** button to commit any changes to the application *View* layout.

Note: **Done** will apply current change to the application session so the changes will be seen in the *Disk Bays* View and even be loaded in future application launch. These changes will not affect the .dbl file.

Click **Cancel** to revert any changes you made to the layout.

Export and Import of Disk Bay Layouts

Once a *Disk Bay* Layout is configured it can be saved and later used with other **Disk Clone** configurations. This is done with the **Export** and **Import** features.

Exporting a *Disk Bay* Layout

Layouts are saved using the *Disk Bay* Layout command tool bar's commands. Select **Customize** then **Export Layout as...** in the drop down list of commands. This will open a dialogue where the layout can be configured by setting the *Title*, *Description*, *File name* and path to save the layout to. Once these settings are configured click **Save** and the layout will be saved as a .dbl file in the specified location.

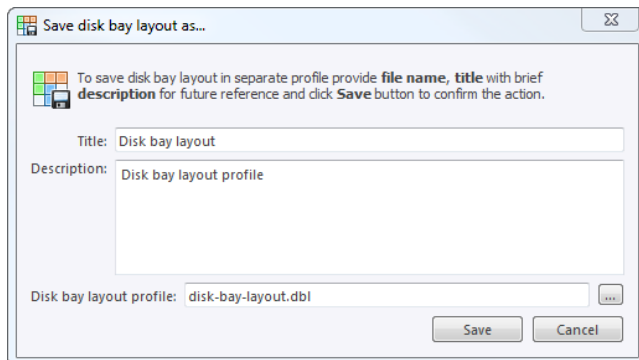


Figure 14: Export Disk Bay Layout dialog

Title

Enter any label to distinguish newly created *Disk Bay* Layout to differentiate it among other *Disk Bay* Layouts.

Description

Describe all the specs and features of the new *Disk Bay* Layout.

Layout profile name

Select the name of the file that the *Disk Bay* Layout will be saved as. File extension should remain as **.dbl**.

Importing a *Disk Bay* Layout

Saved *Disk Bay* Layouts are imported into separate application sessions using the **Import** feature. In the command tool bar select **Customize** and **Import Layout**. Select the desired *Disk Bay* Layout (.dbl file) in the file explorer window and click **Open**.

This will import the *Disk Bay* Layout into the current application session. Finally, click **Done** to update the disks in the **Disk Explorer** and the import should be complete.

Layouts Advanced Features

Once a *Disk Bay* Layout is created there are a number of actions that can be performed to format or manipulate the layout and appearance of the disks in the **Disk Clone** application.

Locking Disks

In order to prevent accidental deletion of important disks **Disk Clone** supports locking of disks. Once a disk is locked no write operations are allowed to be performed on the drive. To do this simply find the disk that needs to be locked and execute **Bay Locked** menu command from the **Change disk bay attributes** drop down menu:

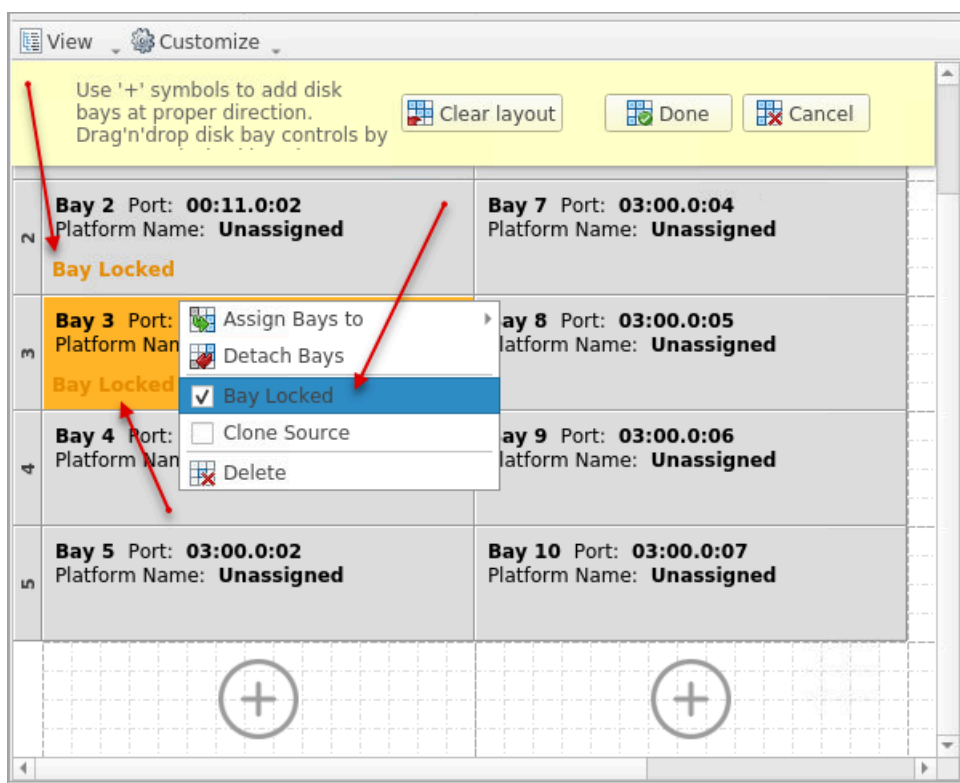


Figure 15: Locking a disk to prevent accidental destruction

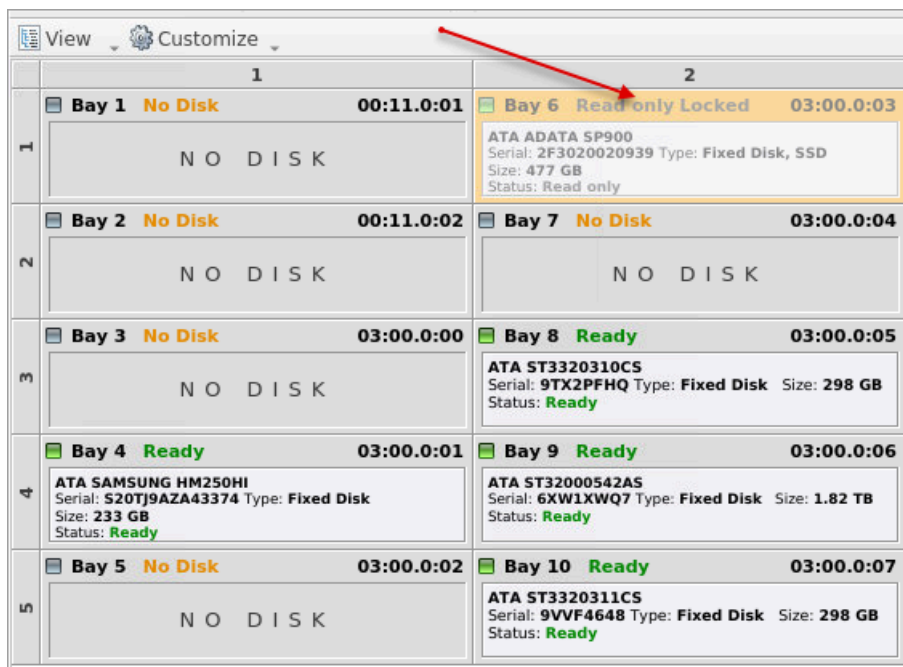



Figure 16: Locked Bay

Locking Clone Source

Disks that are planned to be used as master copy for [Disk Clone](#) could be marked in *Disk Bay Layout* by selecting *Disk Bay* and clicking **Clone Source** from the **Change disk bay attributes** drop down menu. Hence, disks marked this way will be protected from accidental destruction and also will be available in devices' list as source for disk cloning.

Saving and Reverting changes

Click **Done** button to commit any changes to the application View layout.

 **Note:** **Done** will apply current change to the application session so the changes will be seen in the *Disk Bays View* and even be loaded in future application launch. These changes will not affect the *.dbl* file.

Click **Cancel** to revert any changes you made to the layout.

Disk Explorer

The **Disk Explorer** is a default View and interface for the **Disk Clone** application. All the attached *HDD/SSD/USB* disks are visualized can be selected and manipulated here. New procedures like erasure can be initiated from here as well as displaying statuses and progress for actions performed with disks. There are **3** available main Views: [Disk Bays View](#) on page 28, [Local Devices View](#) on page 31 and [My Computer View](#) on page 33

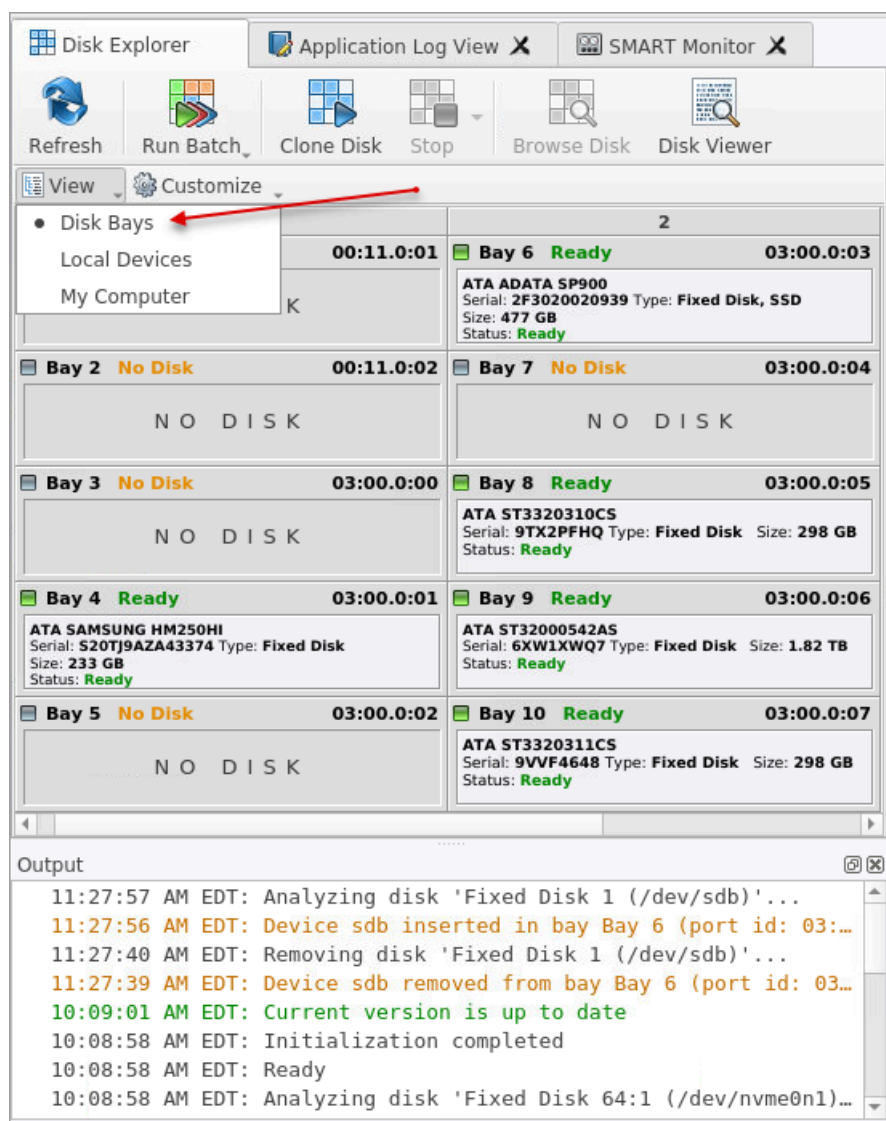


Figure 17: Disk Bays View

The screenshot shows the Disk Explorer application interface. At the top, there are tabs for 'Disk Explorer', 'Application Log View', and 'SMART Monitor'. Below the tabs are buttons for 'Refresh', 'Stop', 'Stop All', 'File Browser', and 'Disk Viewer'. A 'View' dropdown menu is open, showing 'Disk Bays', 'Local Devices' (selected), and 'My Computer'. The main area displays a list of disk bays (sdb, sdc, sdd, sde) and their partitions.

Bay	Device	File System	Size
sdb	Unallocated		Size: 1
	FAT-32 (/dev/sda1)	File System: exFAT Size: 187 GB	Size: 43
	NTFS-222 (/dev/sda6)	File System: NTFS Size: 45.6 GB	Size: 1
sdc	Unallocated		Size: 233 GB
	NT-1 (/dev/sdd1)	File System: NTFS Size: 901 GB	Size: 1
sdd	F-1 (/dev/sdd2)	File System: FAT32 Size: 962 GB	Size: 1
	Unallocated		Size: 1
sde	FAT-32 PRI (/dev/sde1)	File System: Unknown Size: 187 GB	Size: 43.4 G
	Local Disk (/dev/sde2)	File System: Unknown Size: 187 GB	67.5 GB (72,506,93)

The bottom section shows the 'Output' log with the following entries:

```

11:27:57 AM EDT: Analyzing disk 'Fixed Disk 1 (/dev/sdb)'...
11:27:56 AM EDT: Device sdb inserted in bay Bay 6 (port id: 03:00.0:03)
11:27:40 AM EDT: Removing disk 'Fixed Disk 1 (/dev/sdb)'...
11:27:39 AM EDT: Device sdb removed from bay Bay 6 (port id: 03:00.0:03)
10:09:01 AM EDT: Current version is up to date
10:08:58 AM EDT: Initialization completed
10:08:58 AM EDT: Ready
10:08:58 AM EDT: Analyzing disk 'Fixed Disk 64:1 (/dev/nvme0n1)'...

```

Figure 18: Local Devices View

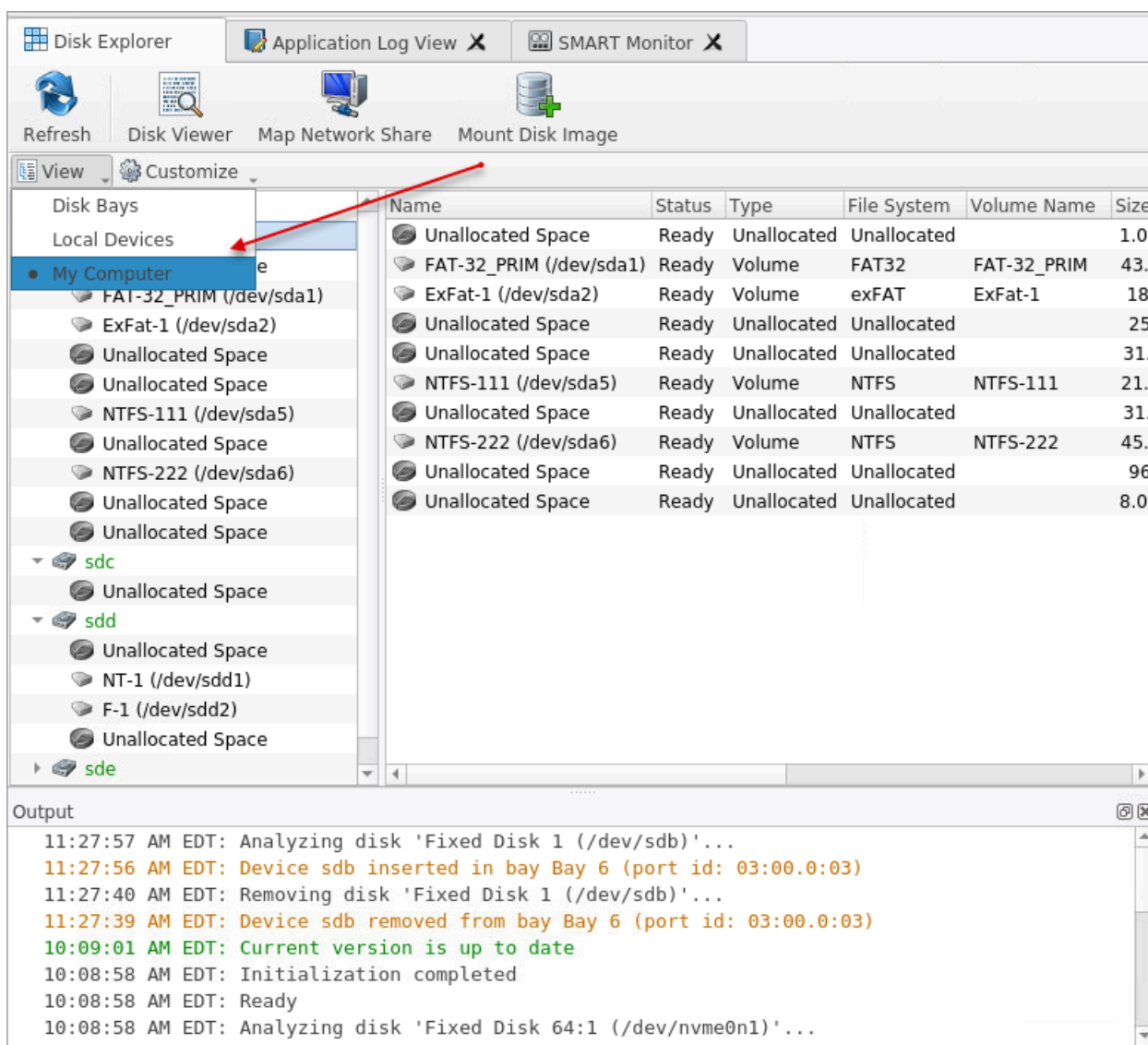


Figure 19: My Computer View

An additional toolbar helps to execute frequently performed tasks. It contains the following buttons with drop-down menus:

View

The disk explorer supports a range of different *Views* to use when performing **Disk Clone** actions, each with their own customizable settings for different use cases.

Customize

These settings (different for each View) let you customize appearance for better experience for each *View*.

Related information

[Preferences](#) on page 75

[Disk Bays View](#) on page 28

[Local Devices View](#) on page 31

[My Computer View](#) on page 33

Disk Bays View

This *View* displays the disks configured in the [Disk Layout Editor](#). The *Bays* are grouped by their row, colored by the batch color, and show the current status of the disk. If any operations are being performed on the disk the operation status and progress are displayed.

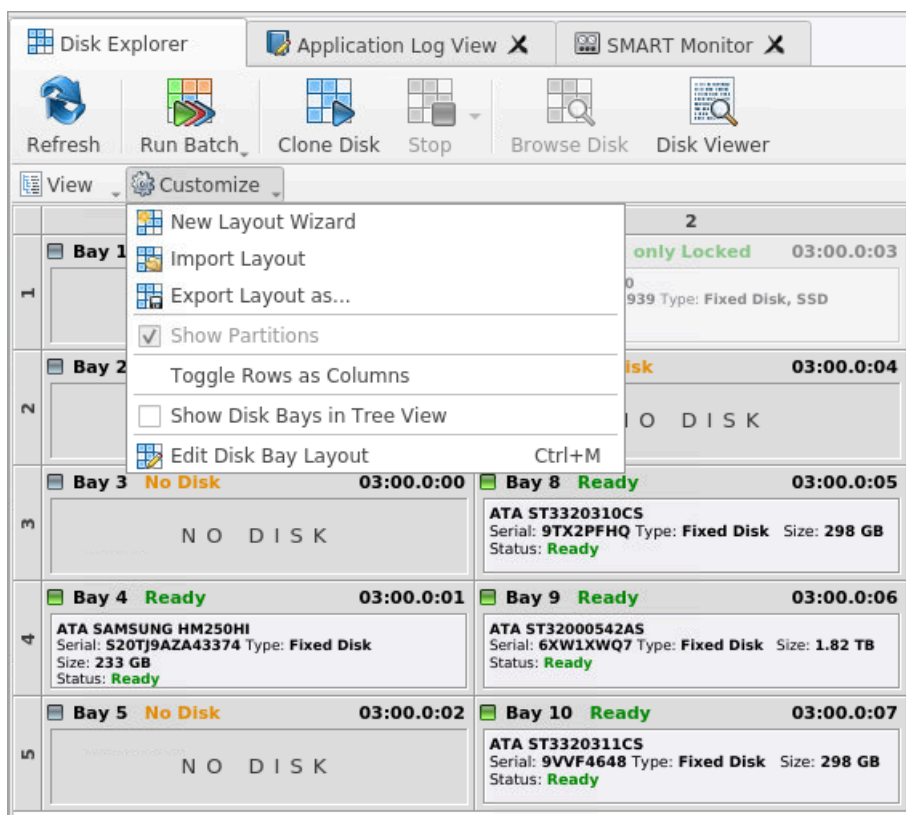


Figure 20: Disk Bays View

Customize menu

New Layout Wizard

Launches the [Disk Bay Layout Wizard](#)

Import Layout

Imports saved (exported) layout (*.dbl)

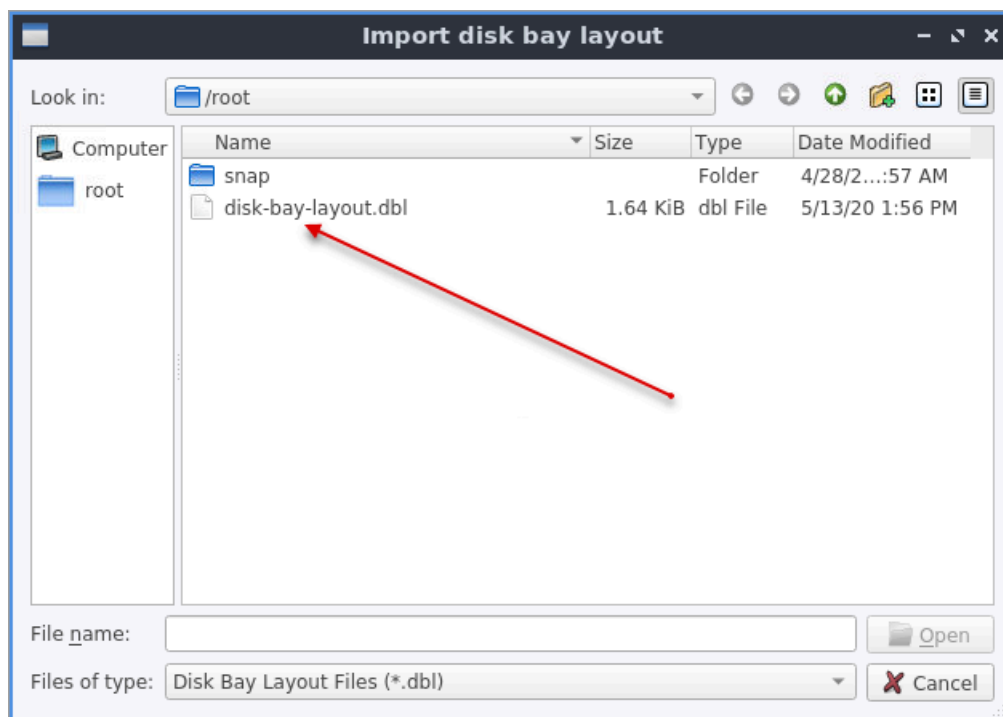


Figure 21: Disk Bay Layout Import

Export Layout as..

Exports custom (built) layout (*.dbl)

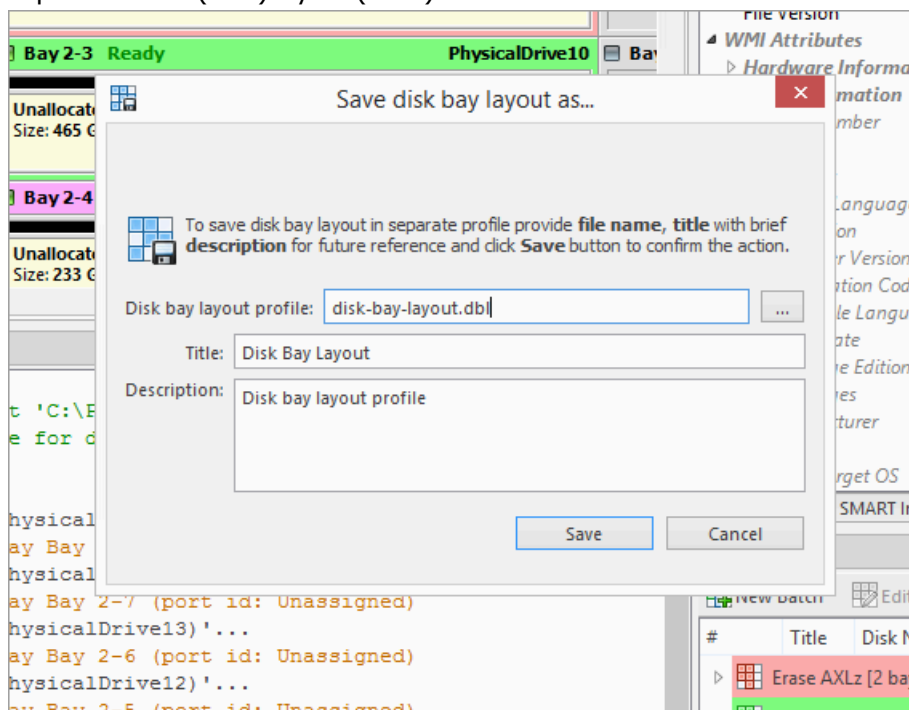


Figure 22: Disk Bay Layout Export

Show Partitions

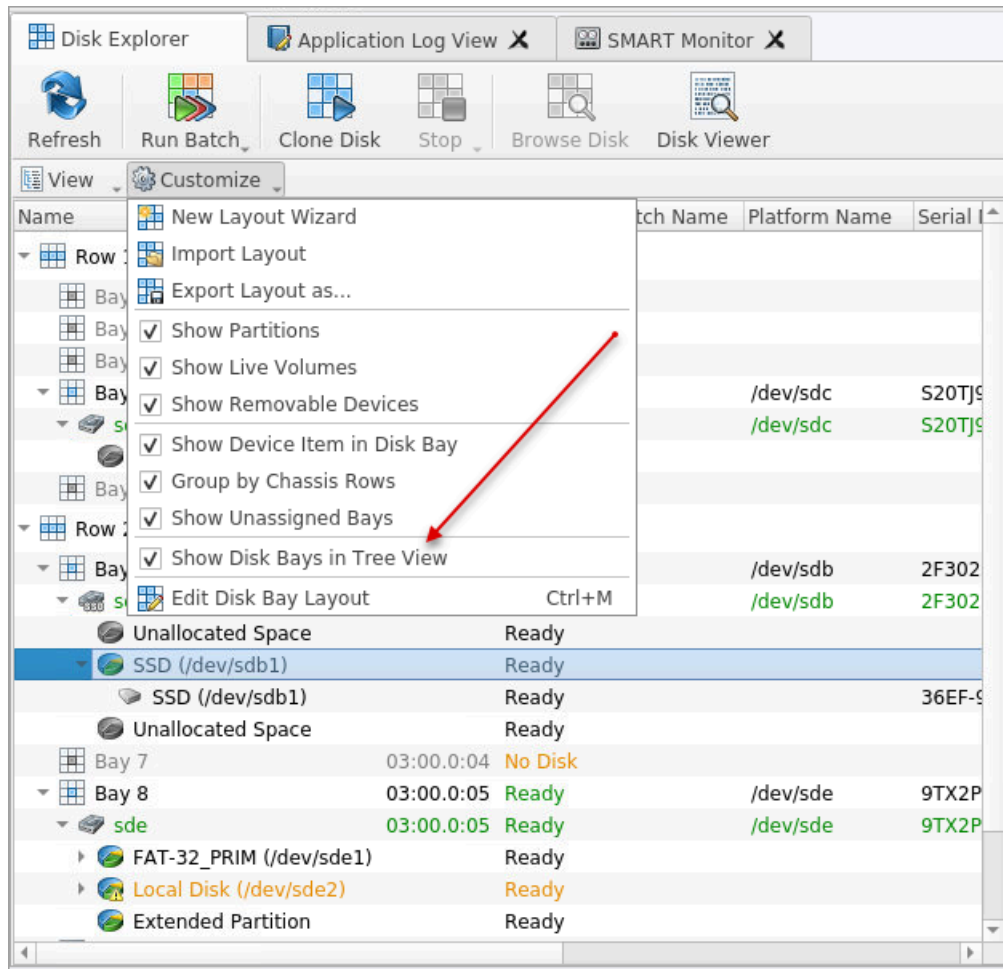
Show or hide additional layout for partitions and volumes.

Toggle Rows as Columns

This setting can be toggled on/off to display the rows (defined by the *Disk Bay Layout*) as columns in the **Disk Bays View**.

Show Disk Bays in Tree View

Switches **Disk Bays View** to *Tree View* for user convenience and customization related to the one configured in [Disk Layout Editor](#).



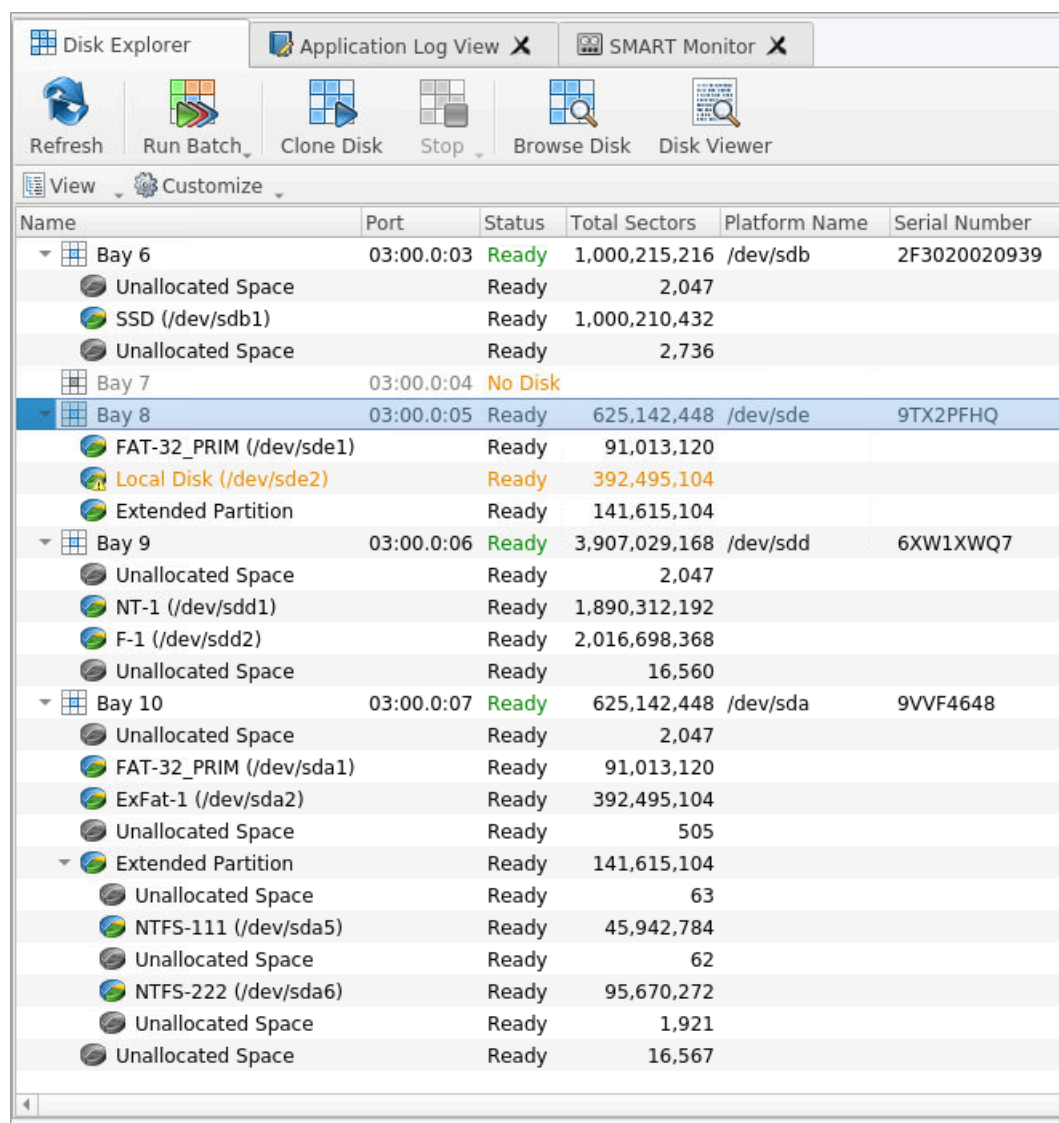


Figure 23: Tree View Layout

Edit Disk Bay Layout

Opens [Disk Layout Editor](#) for current layout customization or creating a new layout.

Related information

[Disk Explorer](#) on page 25

[Local Devices View](#) on page 31

[My Computer View](#) on page 33

[Disk Layout Overview](#) on page 16

Local Devices View

Local Devices View shows all disks recognized by OS and available for application in a *List View*:

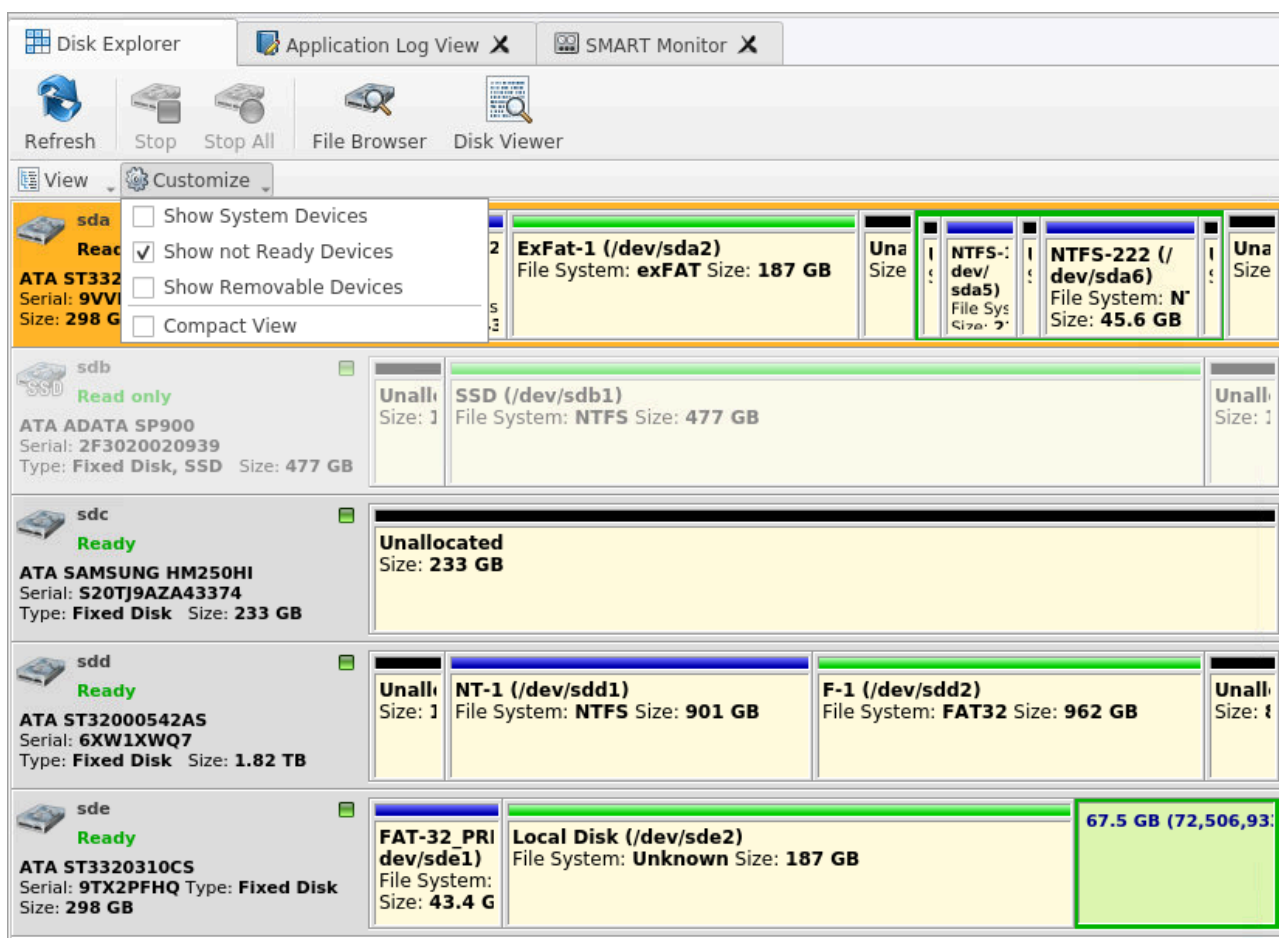


Figure 24: Local Devices View

Customize menu**Show System Devices**

Displays the disk where OS installed

Show Not Ready Devices

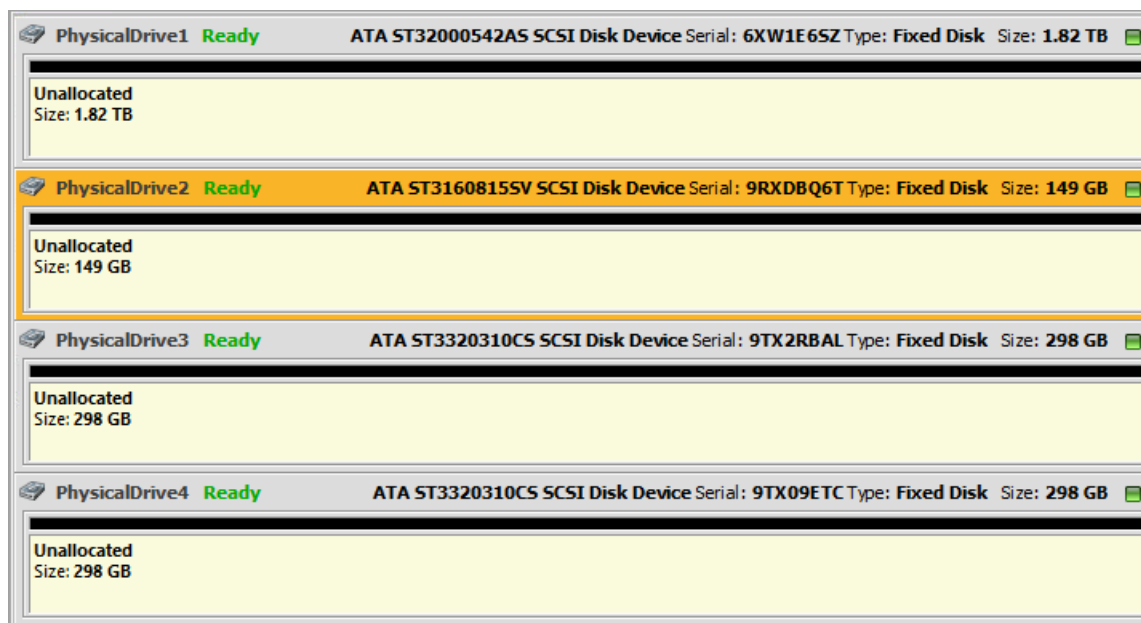
Displays devices not yet initialized and used by OS

Show Removable Devices

Displays all removable and externally connected disks (such as *USB's*)

Compact View

Changes the layout of the *Disk View* from display block to inline block orientation.



Related information

[Disk Explorer](#) on page 25

[Disk Bays View](#) on page 28

[My Computer View](#) on page 33

My Computer View

My Computer View presents the *Disk Bay* Layout in a standard list form, much like the disks in *Windows Explorer*. *Disk Bays* are grouped by row and can be colored according to their batch color. Information such as disk status, serial number, partitioning are shown in list form next to their respective *Disk Bays*. Properties window at the right side displays attributes of the currently selected object.

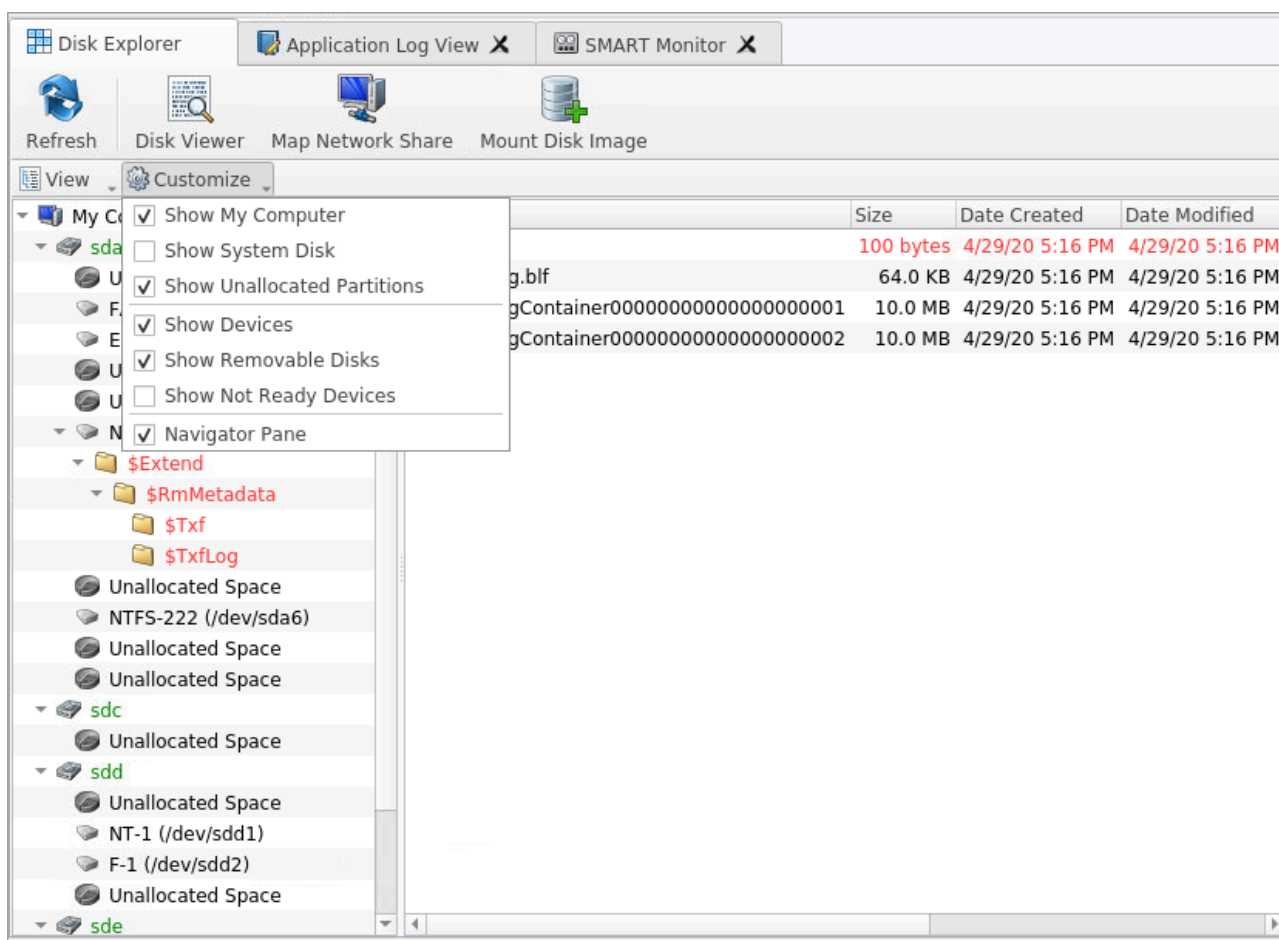


Figure 25: My Computer View

Customize menu

Show My Computer

Displays all devices that are detected by the system Device Manager.

Show System Disk

Displays the disk containing the Operating System. This is *off* by default to prevent accidental erasure of the system.

Show Unallocated Partitions

Displays partitions that may not yet been formatted.

Show Devices

Switches between display of devices (physical disks containing volumes) and "volumes only" display.

Show Removable Disks

Displays removable media storage (USB Flash Disk, External USB etc.).

Show Not Ready Devices

Displays devices that may not yet been initialized and accessed by the OS.

Navigator Pane

Shows/hides **Navigator Pane** (on the right side of *the View*)

Related information

[Disk Explorer](#) on page 25

[Disk Bays View](#) on page 28
[Local Devices View](#) on page 31

Using Disk Clone

Disk Clone Industrial is a powerful industrial tool to provide disk cloning and erasure solutions for large workstations with many disks. The features in the **Disk Clone Industrial** software are built with this goal in mind. This section describes the key features of the software and how they are used to erase/clone single disks and images to large batches. The software is highly customizable and this guide will help get you started with configuring **Disk Clone Industrial** for your system and using it to the full potential.

Disk Clone

To clone a disk (or [image to a disk](#)) follow the steps below.

1. Navigate to the [Disk Bays View](#) on page 28 and select a disk to clone. For multiple selection use **Ctrl +Left Mouse Click** or row/column selection buttons. If none of drives is selected, the user must select the source and targets on the next step.

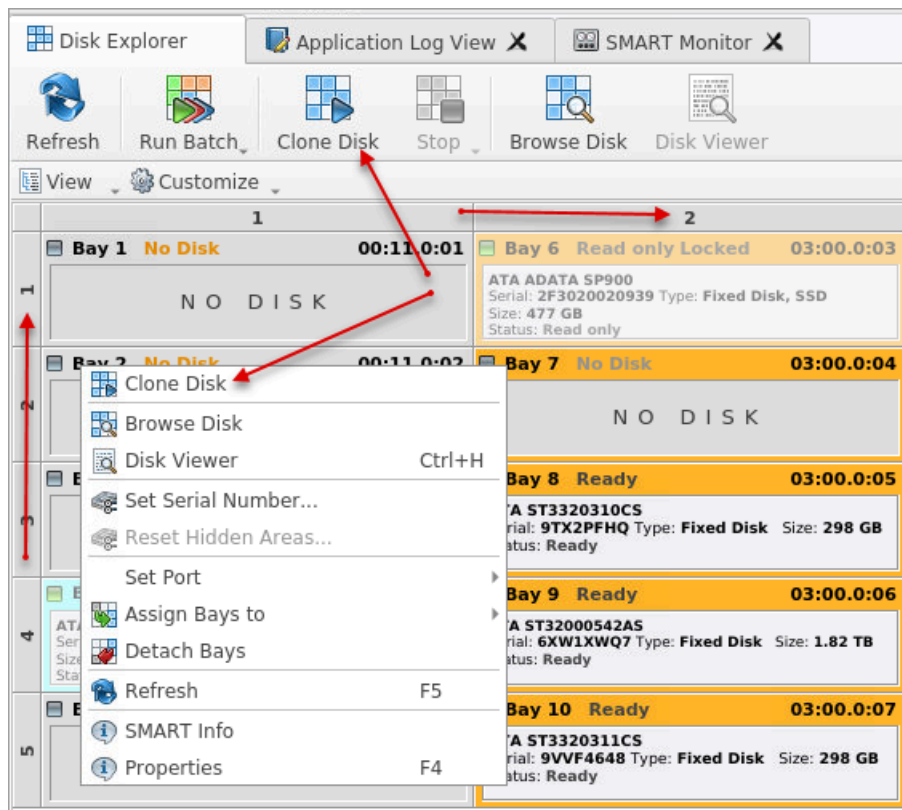


Figure 26: Disk Bays View disk's selection

- Click **Clone Disk** in main or context menus (**Actions > Clone Disk** as alternative) and select **targets** (if one disk was selected in previous step) or select **source** (if multiple disks were selected) and click **Clone**.

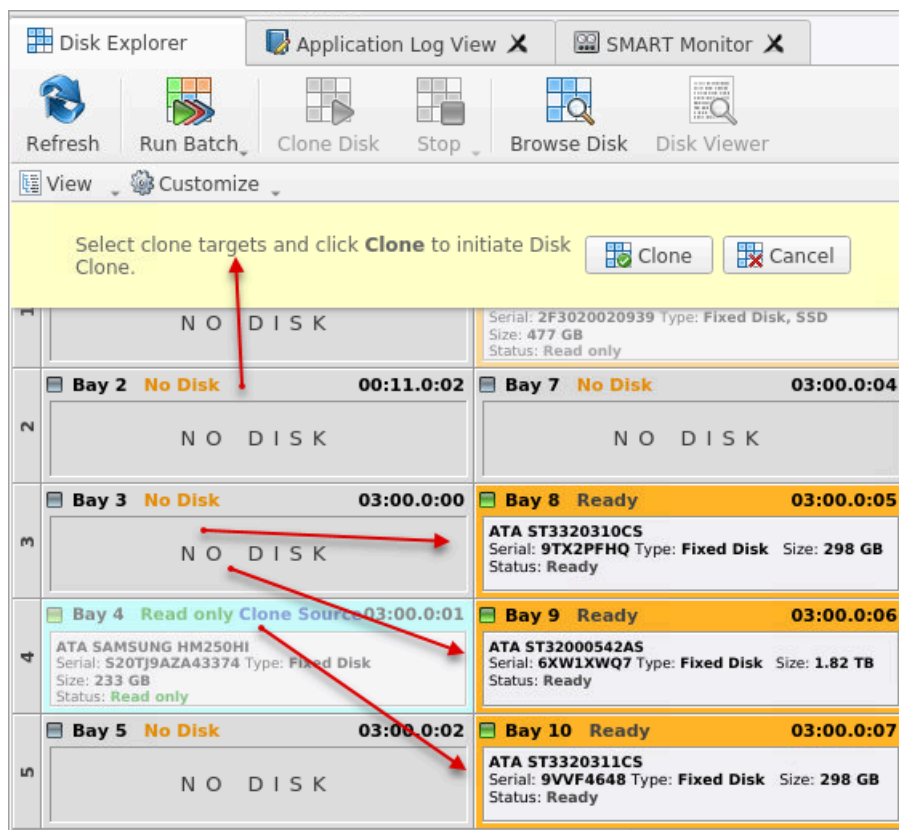


Figure 27: Targets selection for cloning

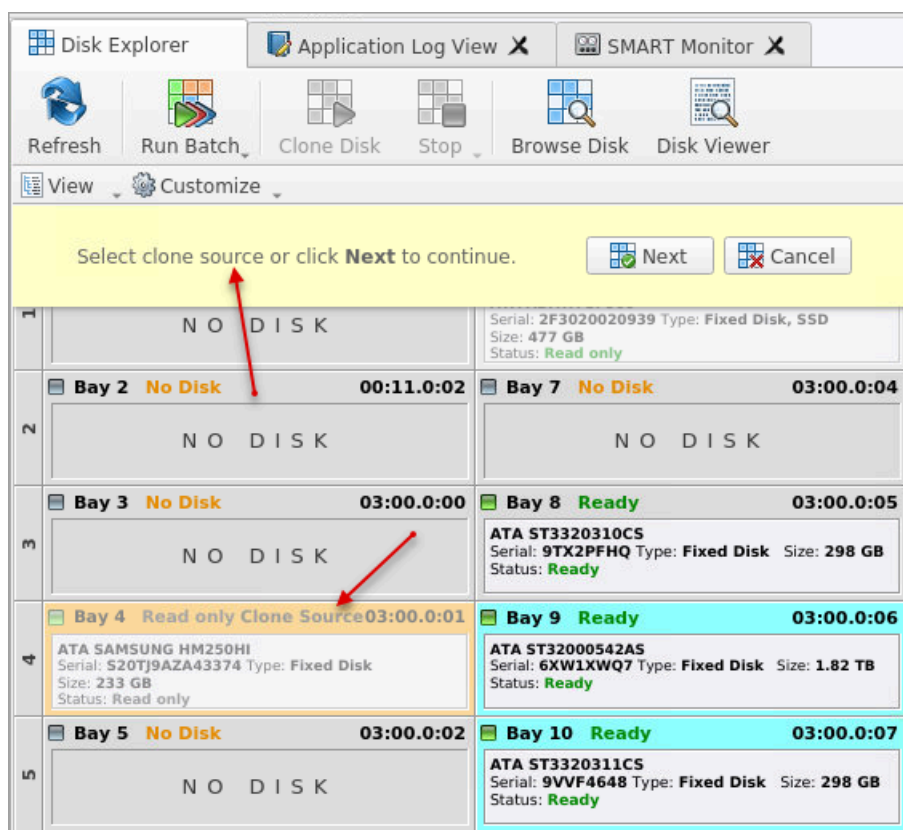


Figure 28: Source selection for cloning

3. Next is the main work cycle settings' dialog. Available (configurable) options are:

- [General Settings](#) on page 76
- [Disk Erase](#) on page 44
- [Disk Clone](#) on page 35
- [Processing Report](#)
- [E-mail Notifications](#) on page 92
- [Error Handling](#) on page 90

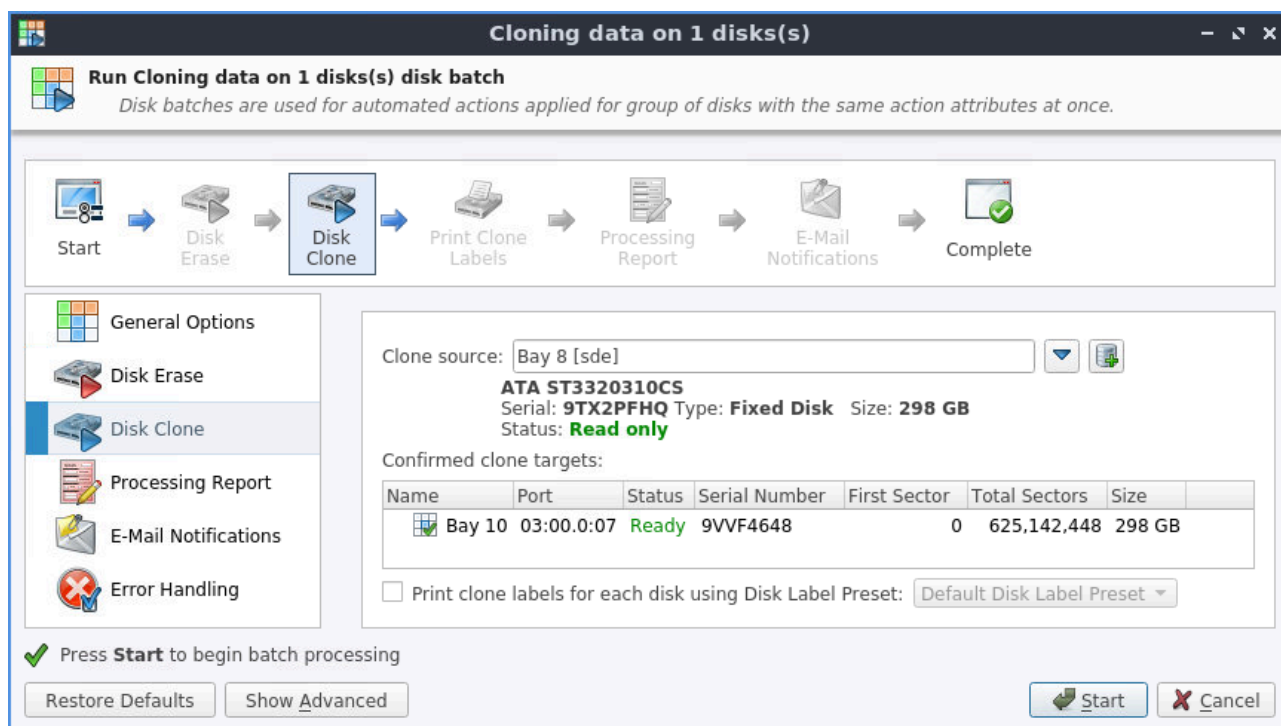


Figure 29: Cloning options

User is able to review and edit cloning options:

Clone Source

Selected bay or [image](#) as a source for cloning

Confirmed clone targets

Selected targets (Bays) where to clone

Print clone labels for each disk using Disk Label Preset is an optional feature for providing a [specific label](#) for each disk in work cycle according to [presets](#).

Note:

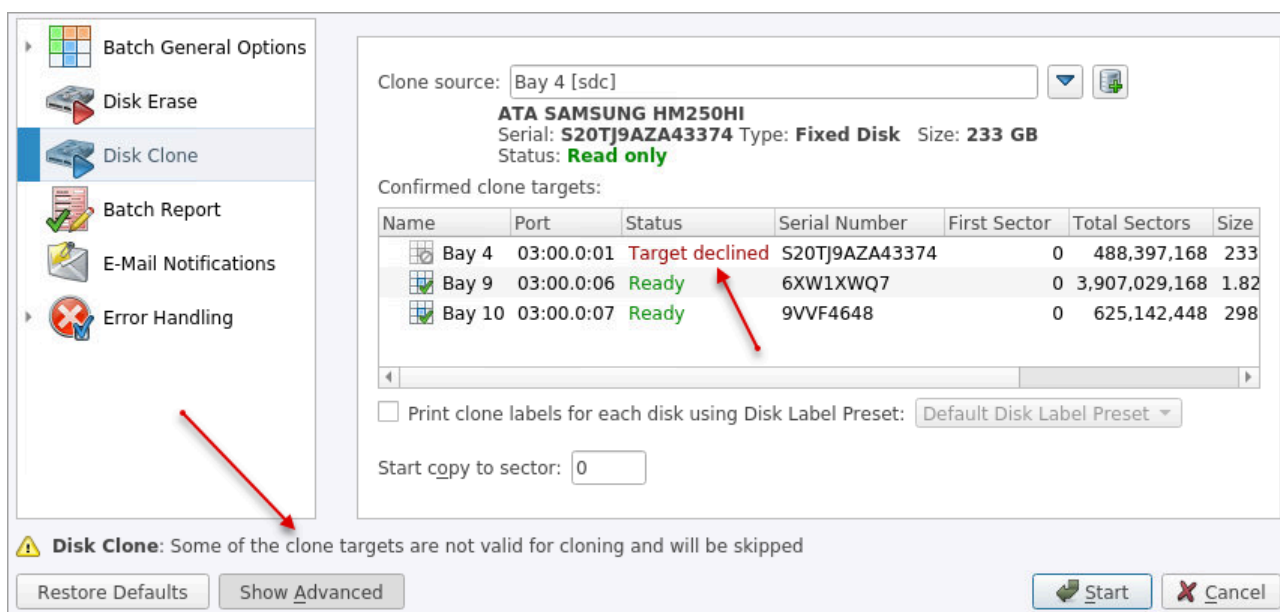
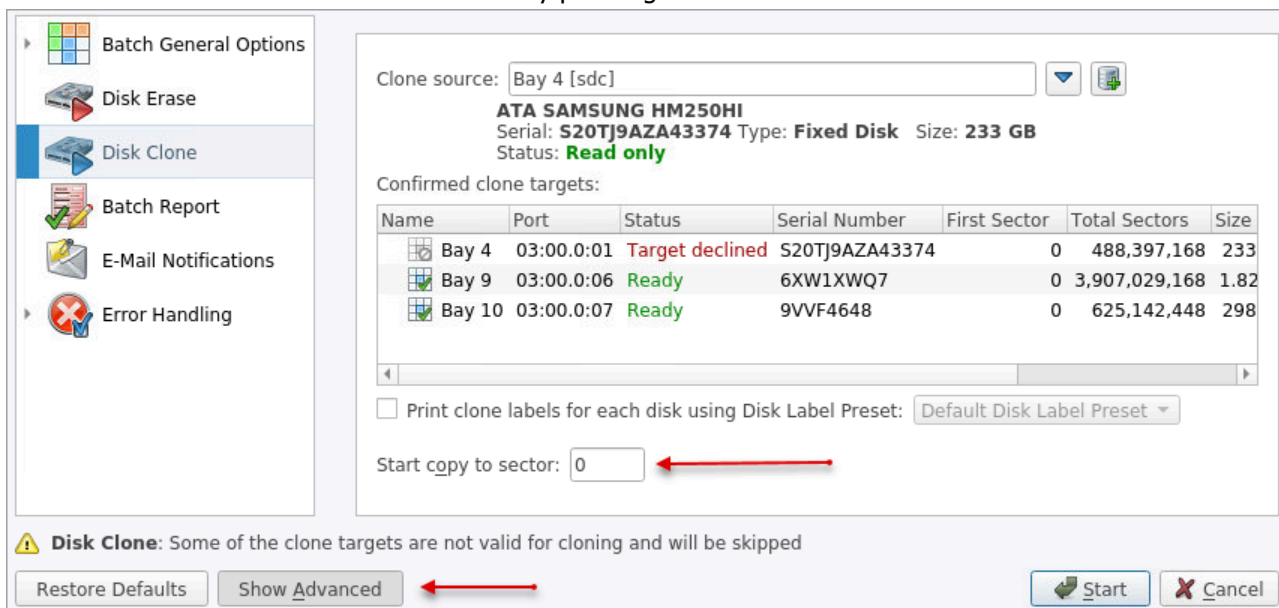


Figure 30: Targets will be DECLINED if configuration is invalid

Start copy to sector stands for specifying a sector where the cloning starts and considered as a advanced feature activated by pressing **Show Advanced** button:



- When all the settings are verified press **Start** button. The work cycle starts and user is able to see the progress in **Disk Bays** and **Local Devices** Views. The progress bar represents the percentage

of disk space processed. As the procedure progresses the percentage increases and estimated time is recalculated.

Note: If preliminary [Disk Erase](#) on page 44 procedure is configured and selected (activated), it starts first, right before an actual cloning.

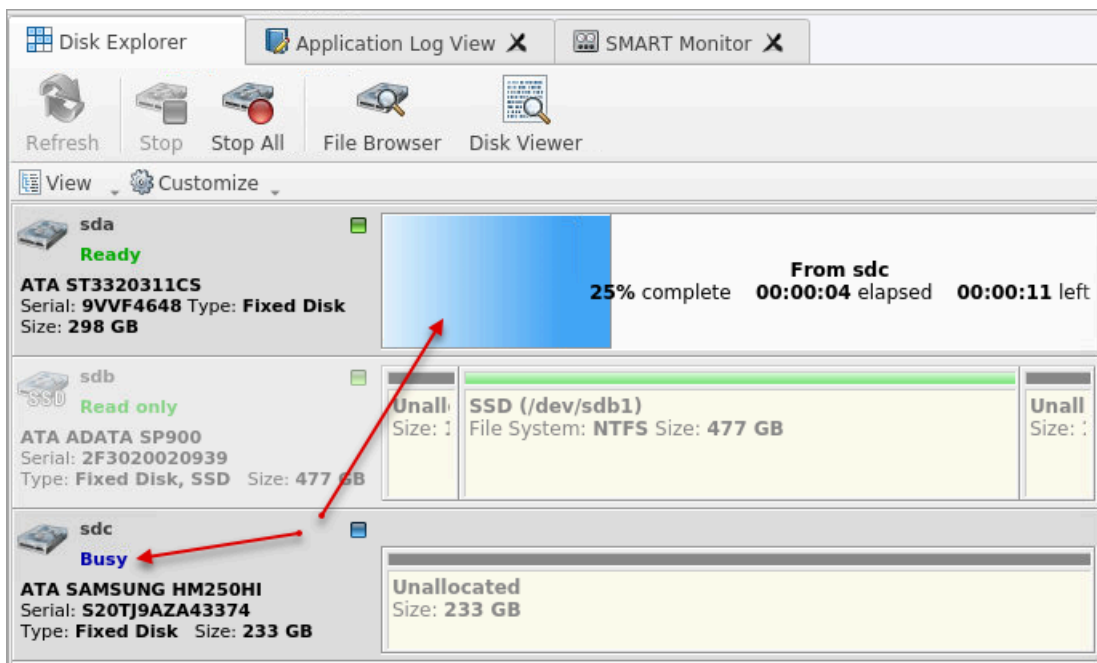
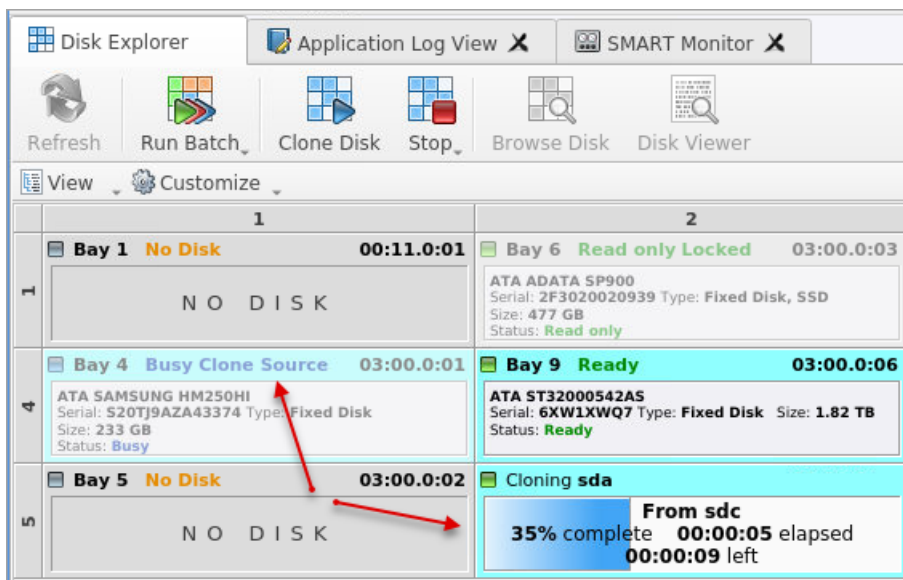


Figure 31: Disk Clone Progress (Local Devices & Disk Bays Views)

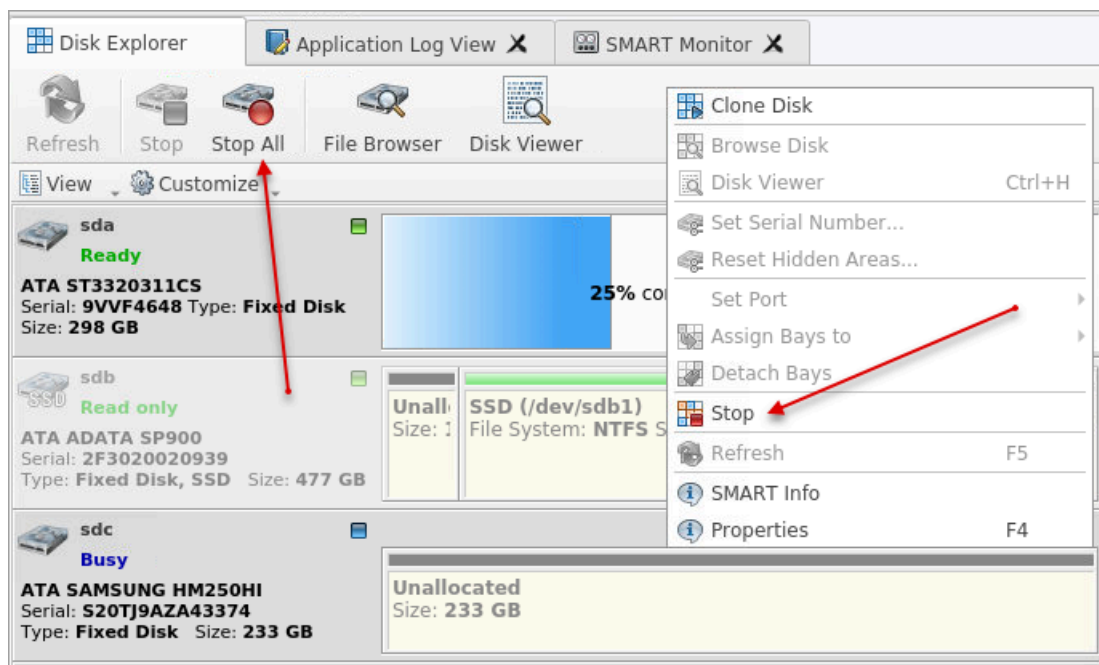
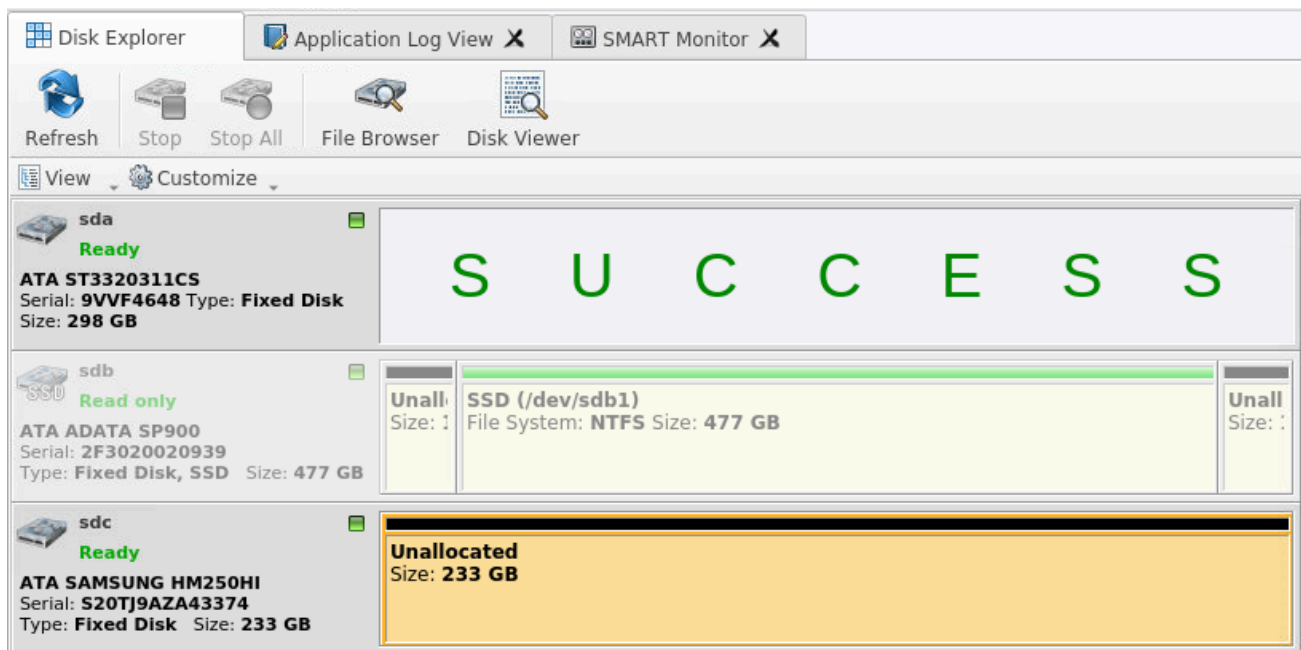


Figure 32: User is able to STOP the process at any time (main menus and context menu)

When the work cycle is succeeded (or failed) the [Processing Report](#) on page 49 dialog appears for reviewing and further actions.



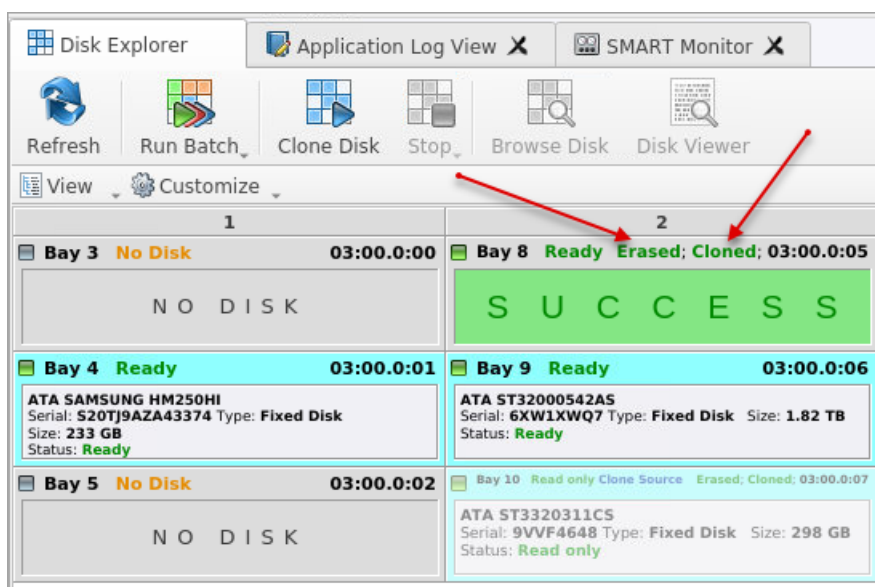


Figure 33: Disk Clone Success (Local Devices & Disk Bays Views)

Related tasks

[Disk Erase](#) on page 44

[Mount Disk Image](#) on page 42

Related information

[Clone Sources](#) on page 80

[Disk Label Presets](#) on page 86

Mount Disk Image

To use image file as a data source for one or several disks

1. To open the Mount Disk Image dialog do one of the following:

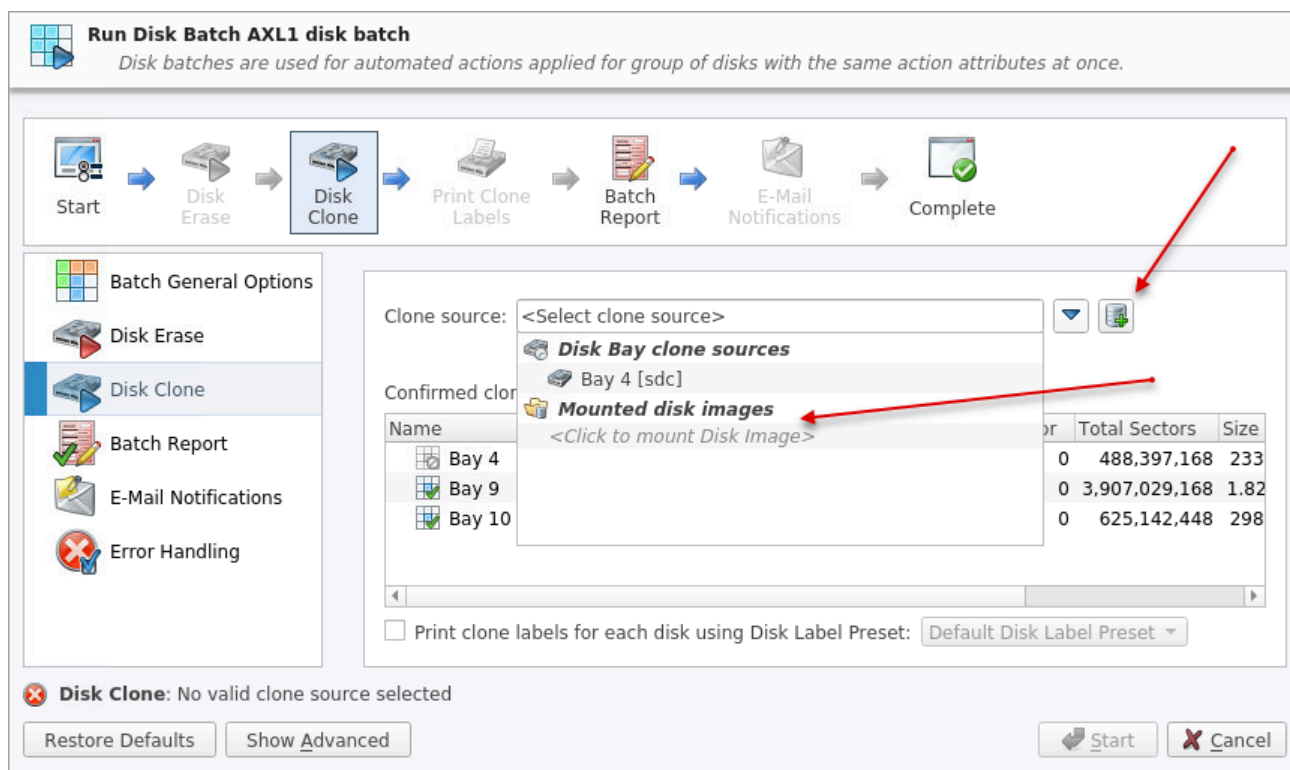


Figure 34: Mount Disk Image selection

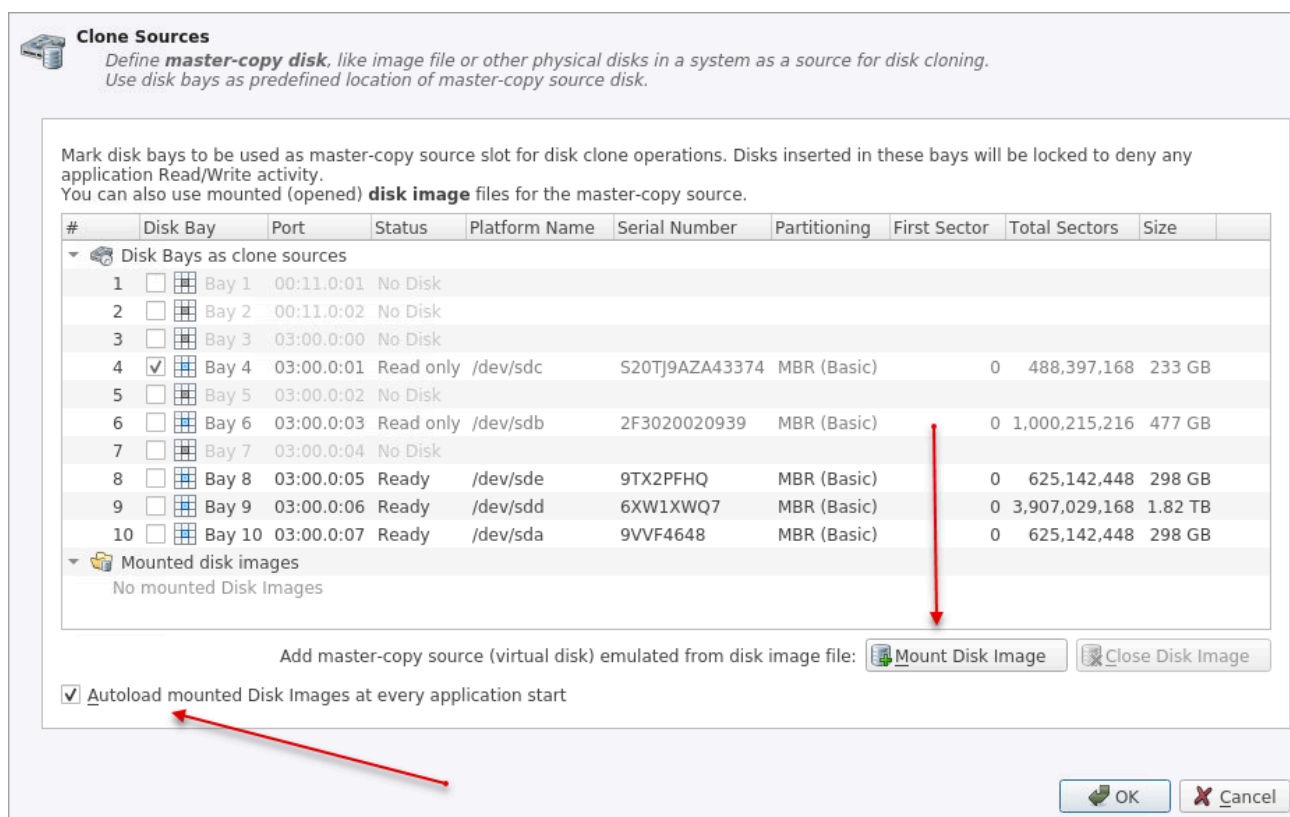


Figure 35: Mount Disk Image selection (Preferences)

2. Mount Disk Image dialog appears:

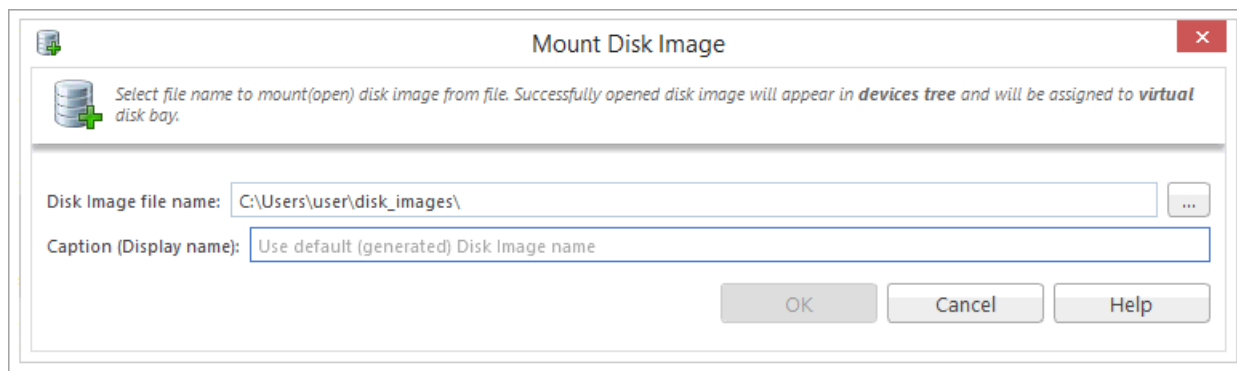


Figure 36: Mount Disk Image dialog

Disk Image file name

Full path to the image file

Caption (Display name)

Enter any label to distinguish newly opened (mounted) disk image among other devices and disks.

3. Confirm and open disk image

Click **OK** to mount a Disk Image.

If disk image opens successfully then disk image node appears in **Disk Explorer View** and will be available as a clone source in [Clone Sources](#) on page 80 tab and in drop-down list of clone sources in task dialog.

Related tasks

[Disk Clone](#)

Disk Erase

Fast disk erase is a core part of **Disk Clone** functionality. Individual disks (or batches of disks) can be erased during the process of [cloning](#) according to the [standards](#) with just a few clicks.

Note: User is not able to activate the Erase Procedure without subsequent Cloning. For effective erasure using more than 20 required international sanitation standards (U.S. DoD 5220-22M, Canadian OPS-II, British HMG IS5 Enhanced, US Army AR380-19, German VSITR, Peter Gutmann etc.) use LSoft's premium product **KillDisk Industrial** <https://www.killdisk-industrial.com>

To add an erase procedure to the work cycle:

1. Navigate to the **Erase Disk** tab when you go through the clone settings and check the **Use Disk Erase** box as shown below.

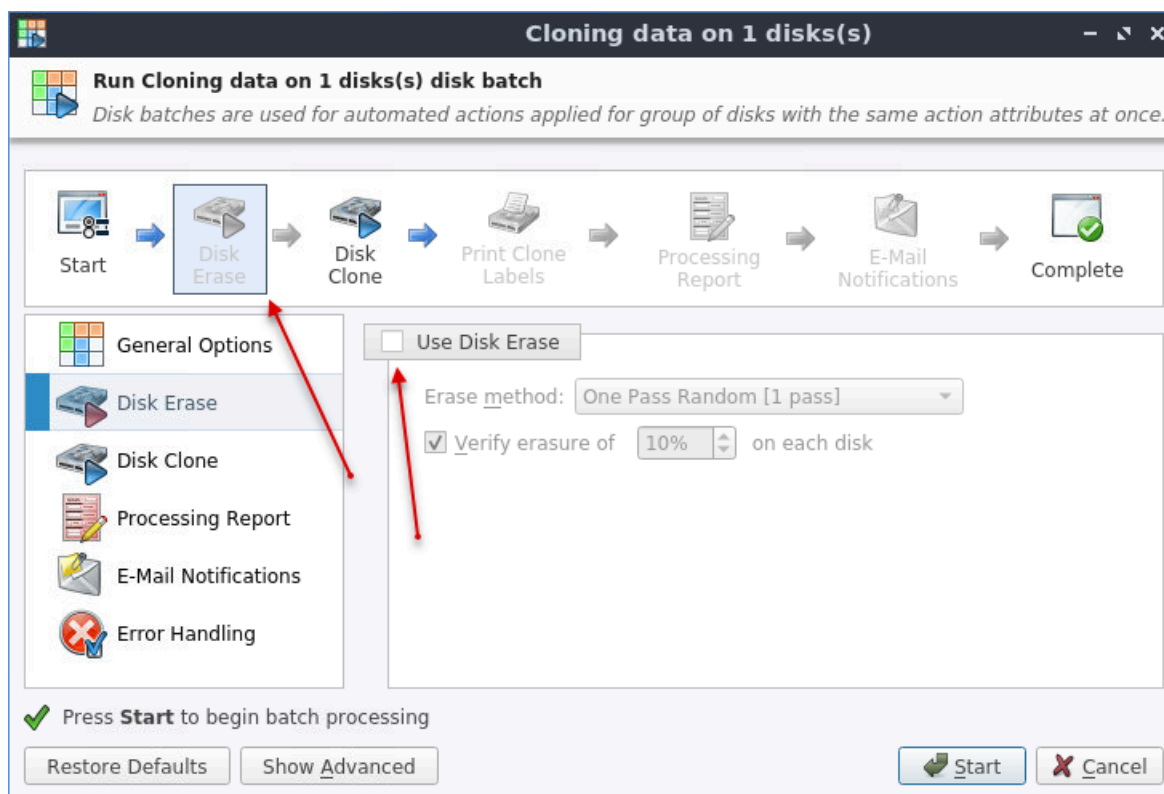


Figure 37: Erase Tab

2. The **Disk Erase Options** tab provides settings' configuration for the **Disk Clone** erase procedures. The same erase options for each batch could be set through [Edit Batch Attributes](#) on page 63 dialog. Choose the [erase method](#) from dropdown list.
3. If erasure verification is required select it and set a percentage of disk to be verified after erase procedure.

After the erasure is completed this feature scans the entire drive evenly and verifies the integrity of the erase operation. This option is the percentage of the sectors to check across the disk. Most standards specify 10% as an accurate sample size for the verification.

4. Click **Start** button to begin the disk erase process (with the following cloning)

5. Observe erase process

When the *Erase* procedure begins you see the disk area representation as a progress bar as well as an [erase method](#) and its progress. The progress bar represents the percentage of disk space processed. As the procedure progresses the percentage increases and estimated time is recalculated.

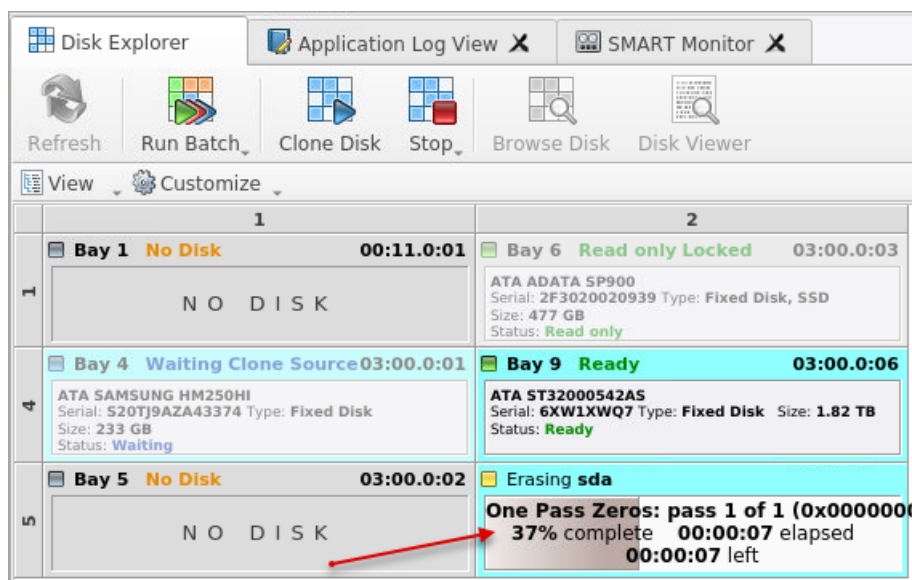
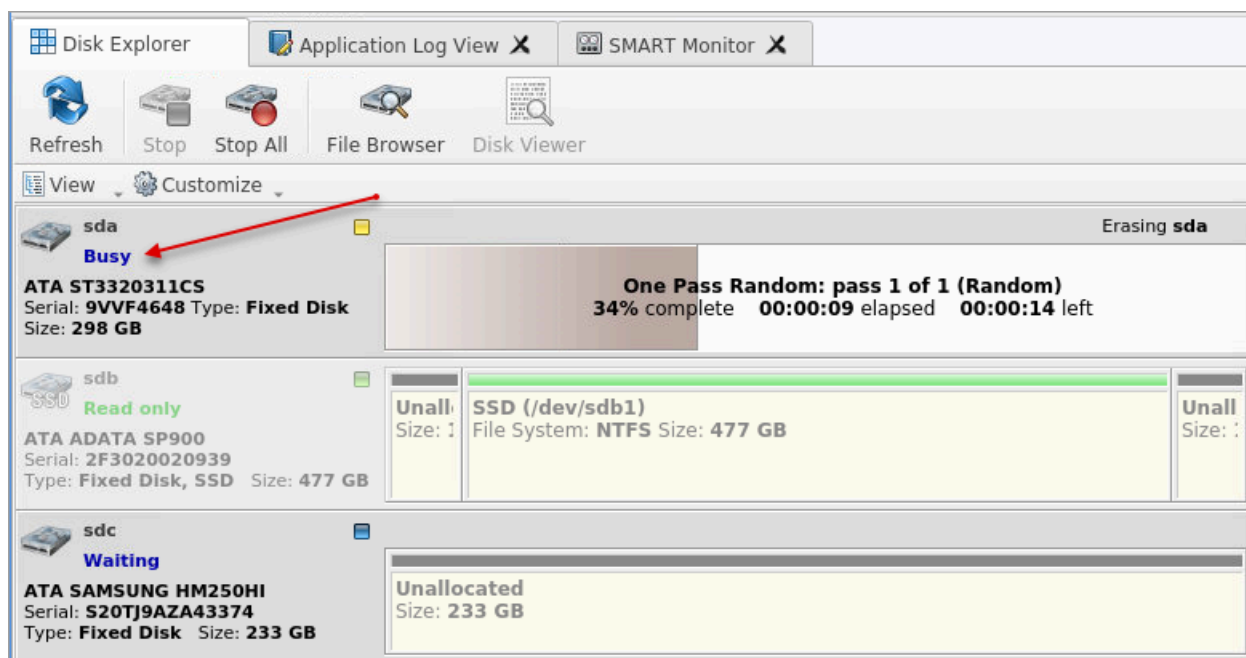
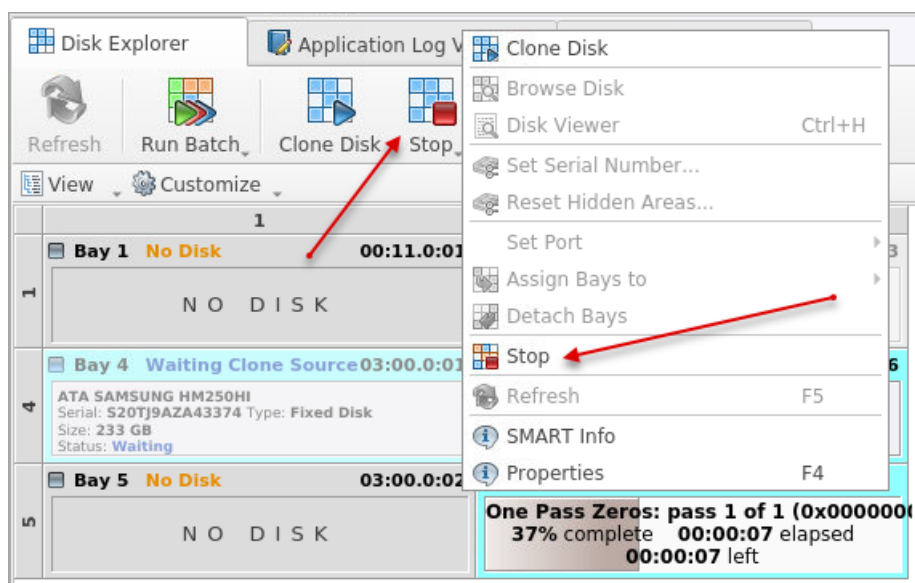


Figure 38: Disk Erase Progress (Local Devices & Disk Bays Views)

User is able to STOP the process at any time (main menus and context menu)



When the erasing is done with no errors, the final stage starts immediately: data **cloning** from source to all the successfully erased disk(s).

6. When all the procedures are completed the **Disk Bays** and **Local Devices** Views report the status of the work cycle

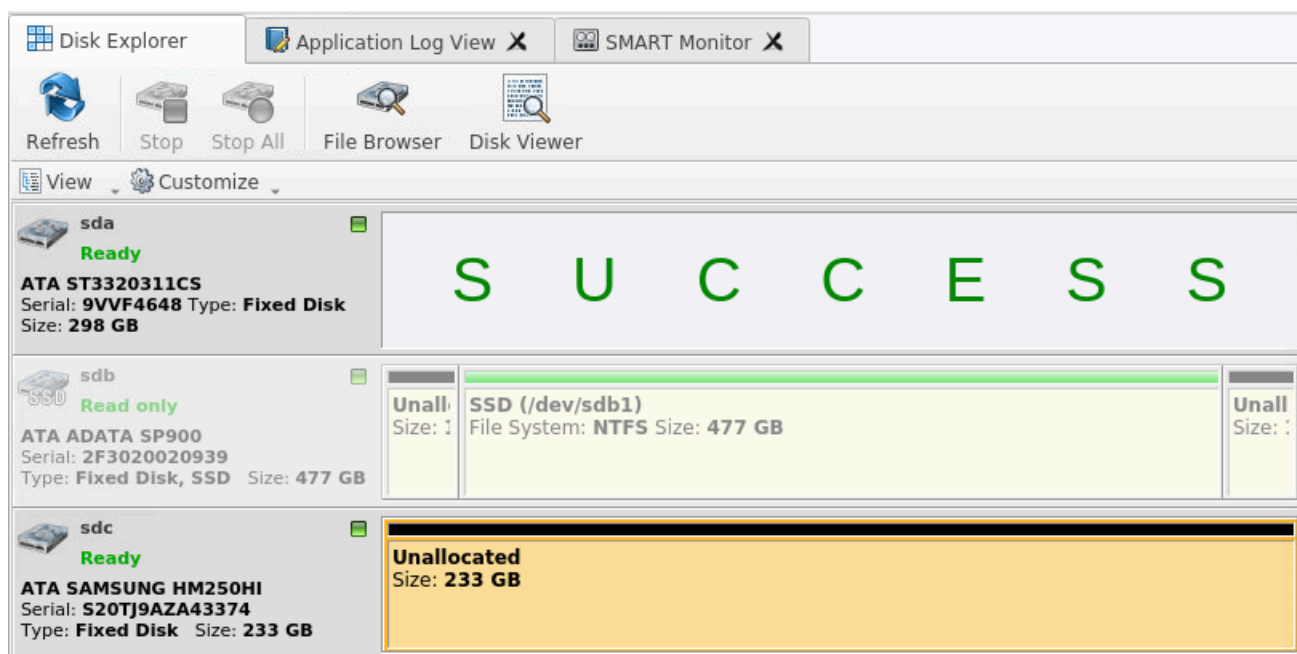
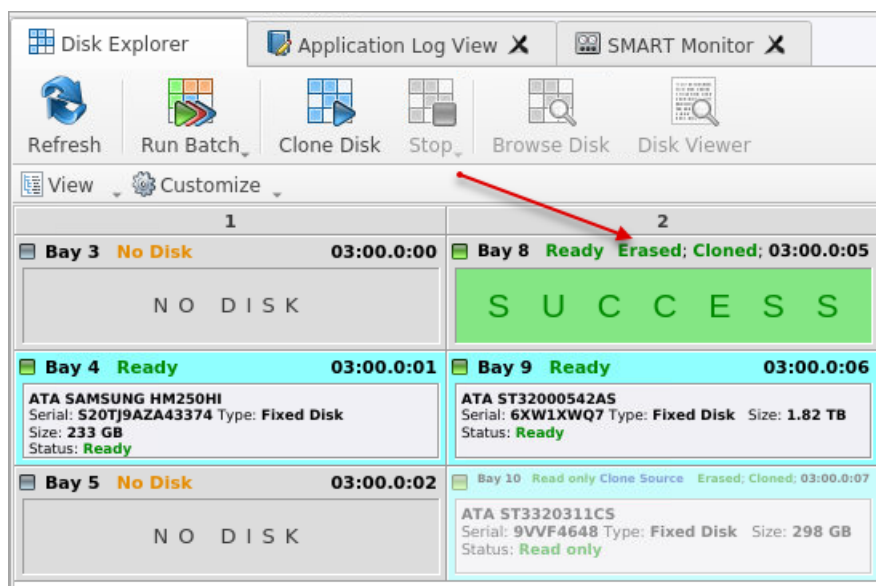


Figure 39: Disk Erase (and Cloning) Completed (Local Devices & Disk Bays Views)

At the final stage user is able to [review results](#) (logs, processing reports and attributes) and print [Disk \(clone\) Labels](#) for processed disks.

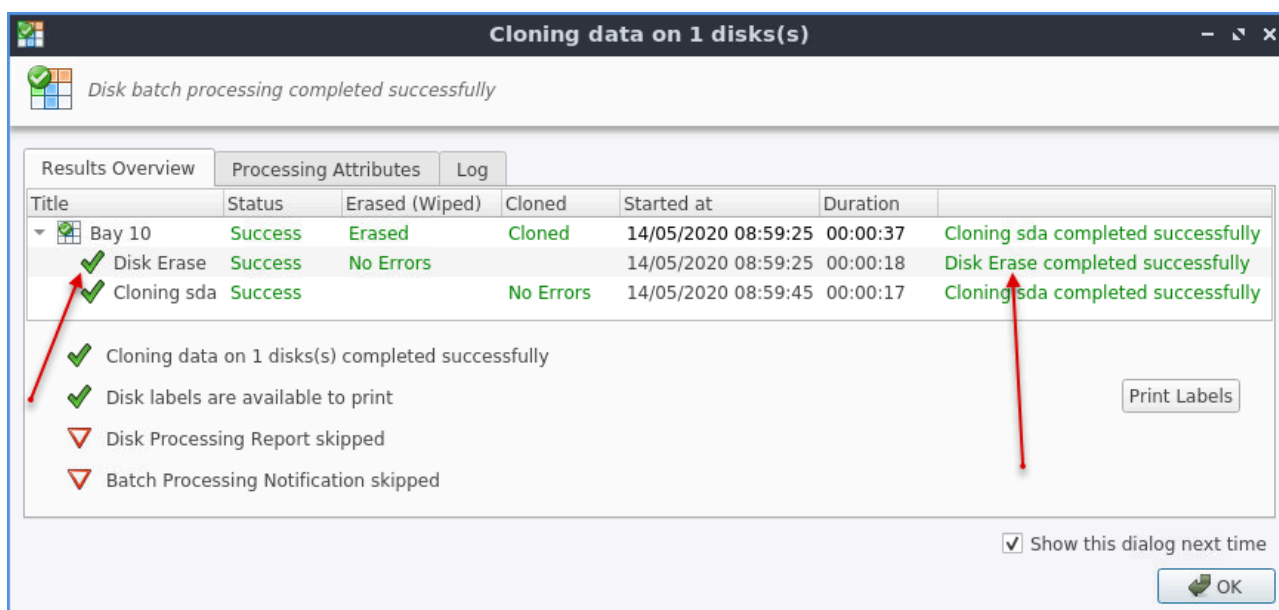


Figure 40: Summary

Related information

[Erase Methods \(Sanitation Standards\)](#) on page 98

[Processing Report](#) on page 49

[Labels and Reports](#) on page 51

Processing Report

Once **Disk Clone** finishes processing all the tasks, a summary dialog appears. It contains all of the information regarding to the operation(s). For example, it includes information like disks operated on, status of cloning and erasure, logs and all associated labels and reports.

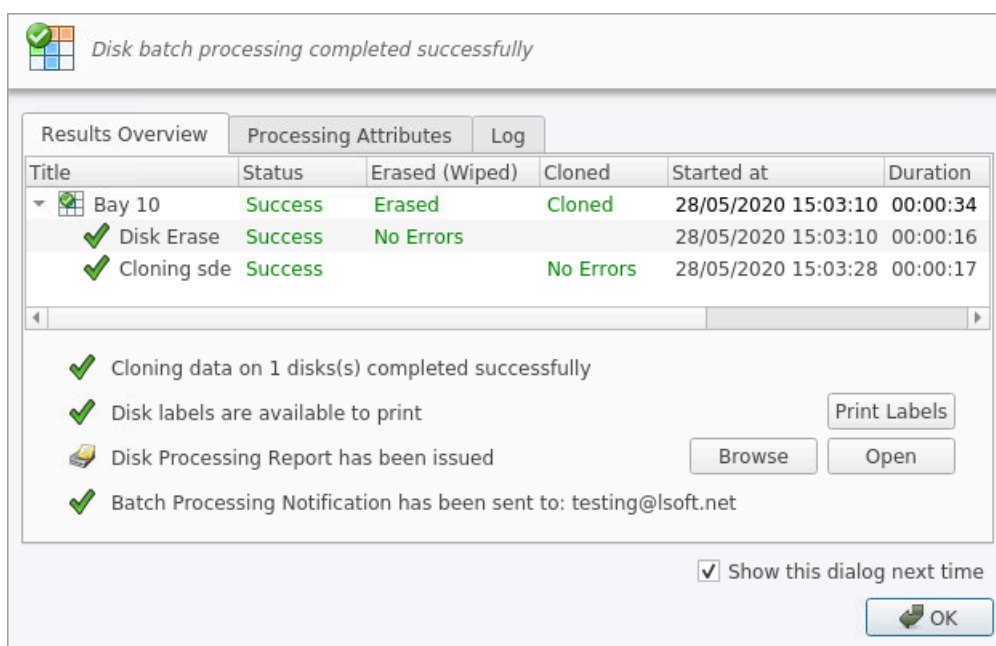


Figure 41: Example of task complete dialog

Results Overview window contains the options for the successful erasure:

Title

All the devices processed are displayed with their success/failure status in TreeList-format.

Status

An actual status (success/fail)

Erased

Status of the disk erase operation

Cloned

Status of the disk clone operation

Started at

Time & date of operation's start

Duration

Duration of the operation

Processing Attributes window contains all the status and attributes of the operations (as more detailed View)

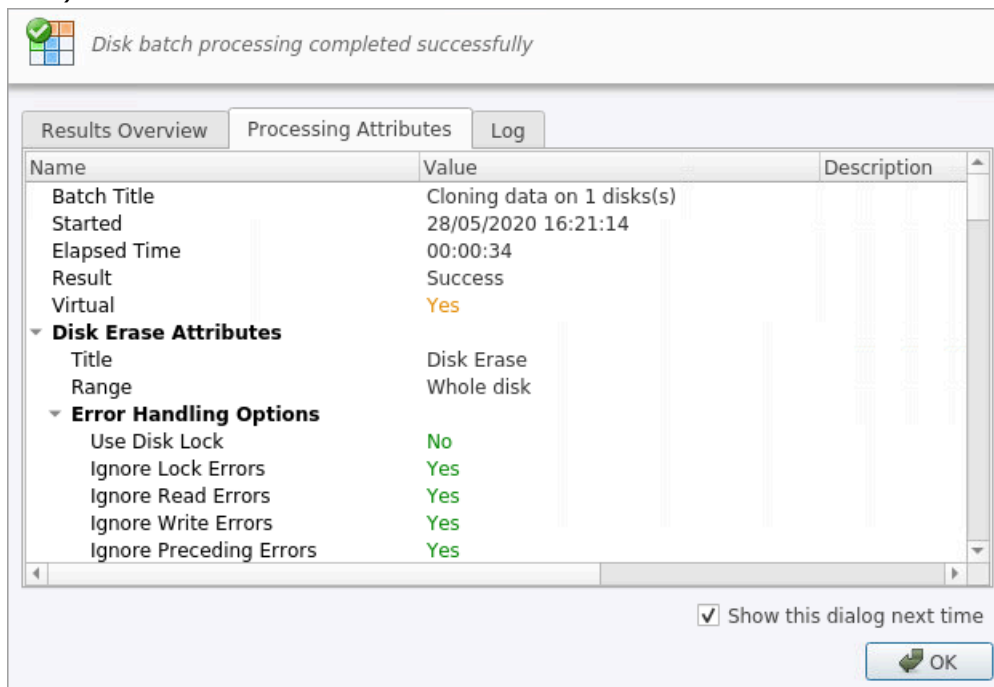


Figure 42: Summary Processing Attributes sample

Log window shows an actual *Log* file.

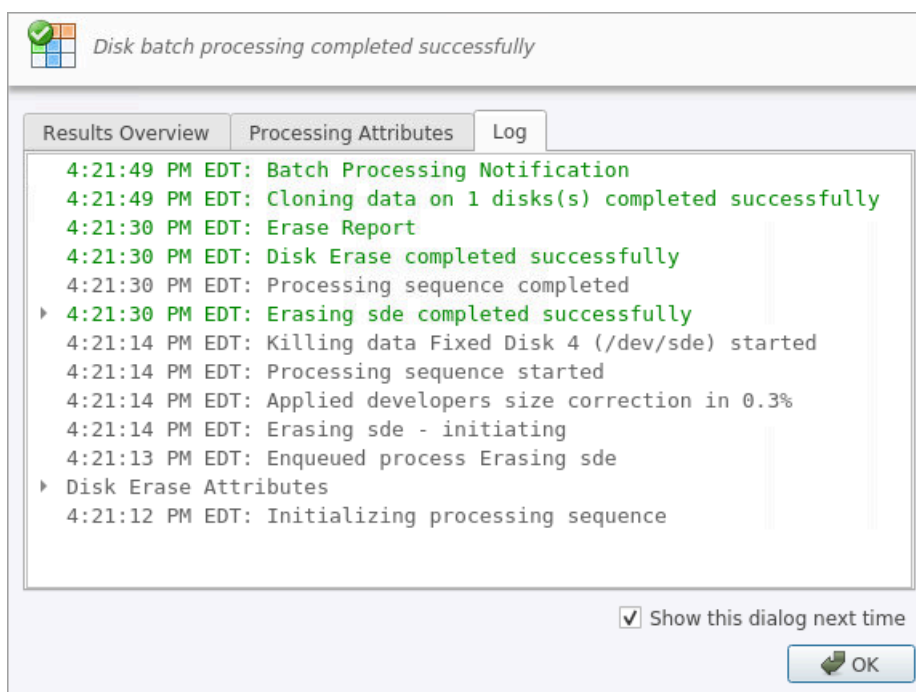


Figure 43: Log view sample

Clickable options are:

Print Labels

Allows user to examine, customize, change options and print [Disk Labels](#) on page 55 by pressing the **Print Labels** button.

Disk Processing Report

Specifies the path to the saved [Disk Processing Report](#). Allows user to examine the *.xml* disk processing report by pressing the **Browse** (to navigate to the containing folder) or **Open** buttons.

Related information

[Labels and Reports](#) on page 51

Labels and Reports

Disk Clone maintains the highest standards in cloning as well as in disk erasure. The software provides extensive documentation options for those operations with [Reports](#) and [Labels](#) features

Related information

[Disk Processing Reports](#) on page 51

[Disk Labels](#) on page 55

Disk Processing Reports

Disk Clone gives you the option to save XML reports for all the operations it performs on a disk(s).

In order to get the reports generated, simply select and configure them during the process of [Disk Clone](#) on page 35 setting or in [Processing Report Preferences](#).

Run Cloning data on 1 disks(s) disk batch
Disk batches are used for automated actions applied for group of disks with the same action attributes at once.

Start → Disk Erase → Disk Clone → Print Clone Labels → **Processing Report** → E-Mail Notifications → Complete

☒ **Use Processing Report**
 Report location: /root/.local/share/LSoft Technologies Inc/Disk Clone Industrial/reports/ ...
 File name template: Report-**{SerialNumber}**-**{Status}**-**{Date(YYYY-MM-DD)}**-**{Time}** ...
 Preview: Report-9QG3NCKC-Success-2012-08-24-18-45-03
☒ Include company information ☒ Include system info
☒ Include technician information ☒ Include hardware info
☒ Include disk SMART information

Report Location

Specifies the path for XML-files to save.

File name template

Allows user to use [Name Tags](#) on page 99 for building a file name. **Preview** shows how the tags build the file name string.

These reports may include (selected by user) all the information regarding to the **Disk Clone** procedures, such as:

<p>Company Information</p> <ul style="list-style-type: none"> • Name • License • Location • Phone • Disclaimer <p>Technician Information</p> <ul style="list-style-type: none"> • Name • Comments <p>System & Hardware Info</p> <ul style="list-style-type: none"> • OS version • Architecture • Kernel • Processors • Manufacturer <p>Erase Attributes</p> <ul style="list-style-type: none"> • Erase verify • Passes • Method • Verification passes <p>Error Handling Attributes</p> <ul style="list-style-type: none"> • Errors terminate • Skip interval • Number of Retries • Source Lock • Ignore Write Error • Ignore Read Error • Ignore Lock Error 	<p>Disks</p> <ul style="list-style-type: none"> • Device Size • Device Type • Serial Number • Revision • Product Number • Name • Geometric Information • Partitioning Scheme <p>Batches</p> <ul style="list-style-type: none"> • Name • Disks • Time <p>Additional Attributes</p> <ul style="list-style-type: none"> • Fingerprint Information • Initialization <p>Erase Result</p> <ul style="list-style-type: none"> • Bay • Time and Date Started • Disk Information • Status • Result • Time Elapsed • Errors • Name of operation
---	--

```

Report-9VVF4648-Success 2020-05-27-16-56-19.xml X
<?xml version="1.0" encoding="UTF-8"?>
<report created="27/05/2020 16:56:19" provider="Disk Clone Industrial" version="1.1.21" kernel-version="9.12.30 kd">
  <!-- Technician (operator) Information-->
  <technician>
    <name>Technician</name>
    <note></note>
  </technician>
  <!-- Company (provider) Information-->
  <company>
    <name></name>
    <licensed></licensed>
    <location></location>
    <phone></phone>
    <disclaimer>I hereby state that the data erasure has been carried out in accordance with the instructions
given by software provider.</disclaimer>
  </company>
  <task>
    <device>
      <title title="Name">sda</title>
      <serial-number title="Serial Number">9VVF4648</serial-number>
      <platformname title="Platform Name">/dev/sda</platformname>
      <product title="Product Name">ATA ST3320311CS</product>
      <type title="Type">Fixed Disk</type>
      <revision title="Product Revision">SC13</revision>
      <size title="Size">298 GB</size>
      <geometry>
        <partitioning title="Partitioning">MBR (Basic)</partitioning>
        <total-sec title="Total Sectors">625,142,448</total-sec>
        <first-sec title="First Sector">0</first-sec>
        <bps title="Bytes per Sector">512</bps>
        <spt title="Sectors per Track">63</spt>
        <tpc title="Tracks per Cylinder">255</tpc>
      </geometry>
    </device>
  </task>
</report>

```

```

<task>
  <title>Disk Erase</title>
  <!--Erase attributes-->
  <erase method="One Pass Zeros" passes="1" verification="no"/>
  <!--Additional report attributes-->
  <kill-disk>
    <fingerprint write="no">Erased by Disk Clone Industrial</fingerprint>
    <diskinit initialize="yes"/>
    <range first="0" total="625,142,448"/>
  </kill-disk>
  <!--Processing results-->
  <results>
    <started title="Started at">27/05/2020 16:55:43</started>
    <elapsed title="Duration">00:00:16</elapsed>
    <process>
      <name title="Name">Erasing sda</name>
      <started title="Started at">27/05/2020 16:55:43</started>
      <elapsed title="Duration">00:00:16</elapsed>
      <errors title="Errors">No Errors</errors>
      <result title="Result">Erased</result>
    </process>
    <errors title="Errors">No Errors</errors>
    <result title="Result">Erased</result>
  </results>
</task>
<task>
  <title>Disk Clone</title>
  <!--Clone attributes-->
  <clone start-sector="0">
    <clone-source>sdc</clone-source>
  </clone>
  <name title="Name">Cloning sda</name>
  <started title="Started at">27/05/2020 16:56:01</started>
  <elapsed title="Duration">00:00:17</elapsed>
  <errors title="Errors">No Errors</errors>
  <result title="Result">Cloned</result>
</task>
<!--System (OS) Information-->
<sysinfo>
  <os version="Ubuntu 18.10" platform="64-bit"/>
  <type>x86_64</type>
</sysinfo>
<!--Hardware Information-->
<hardware>
  <manufacturer>BIOSTAR Group</manufacturer>
  <model>A10N-8800E</model>
  <host name="istar410-pc"/>
  <cpu logical="4"/>
</hardware>
<conclusion>Disk bay processing completed successfully</conclusion>
</report>

```

Figure 44: XML reports' samples:

Disk Labels

Disk Clone allows you to print *Disk Labels* to place on erased disks with its *Print Label* features. Disk Labels with process results and essential disk information could be issued for any disk processing (such as [Disk Erase](#) or [Disk Clone](#)). These labels may be completely customizable to print on any sized sheet with any dimension. Simply specify the parameters and **Disk Clone** will prepare the printable labels for you.

Activating a Disk Clone Labels feature

When configuring a main work cycle select **Print clone labels for each disk using Disk Label Preset**

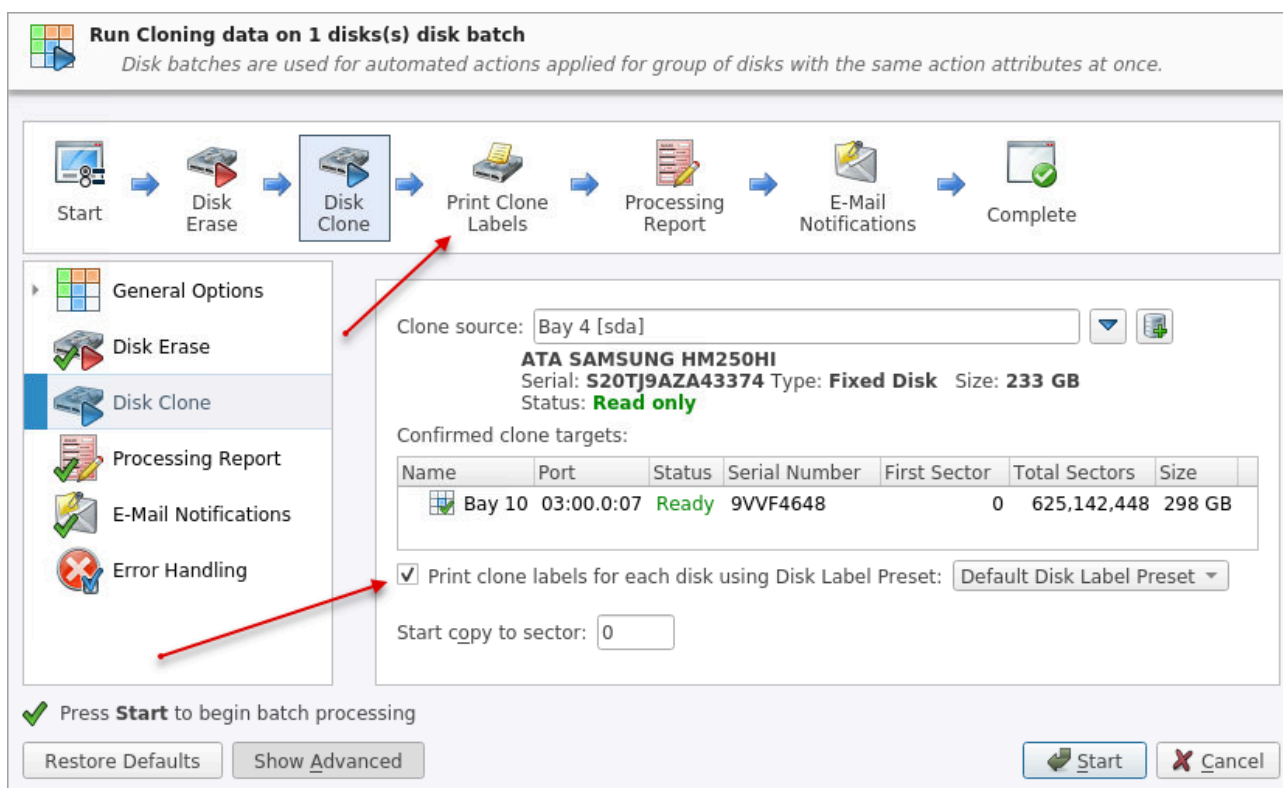


Figure 45: Activating Print Clone Labels feature

Accessing the Print Labels Option

Upon the completion of a work cycle **Disk Clone** you will see a report dialog. In the list of completed tasks you will see the **Print Labels** button. Click it to enter the **Print Label Dialog**.

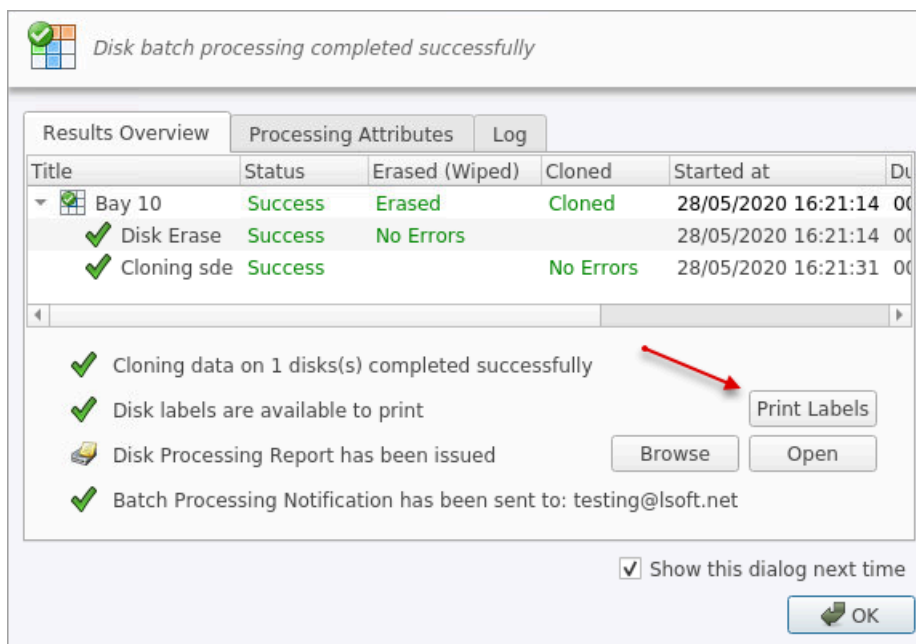


Figure 46: Opening Print Label Dialog

Print Label Dialog

This dialog allows you to configure the labels and prepare them for printing. The top of the dialog shows a list of the drives that will have labels generated for them. At any point in the operation a sample of the label is shown in the **Preview** window on the left side. The right side of the dialog has the styling and template configuration options.

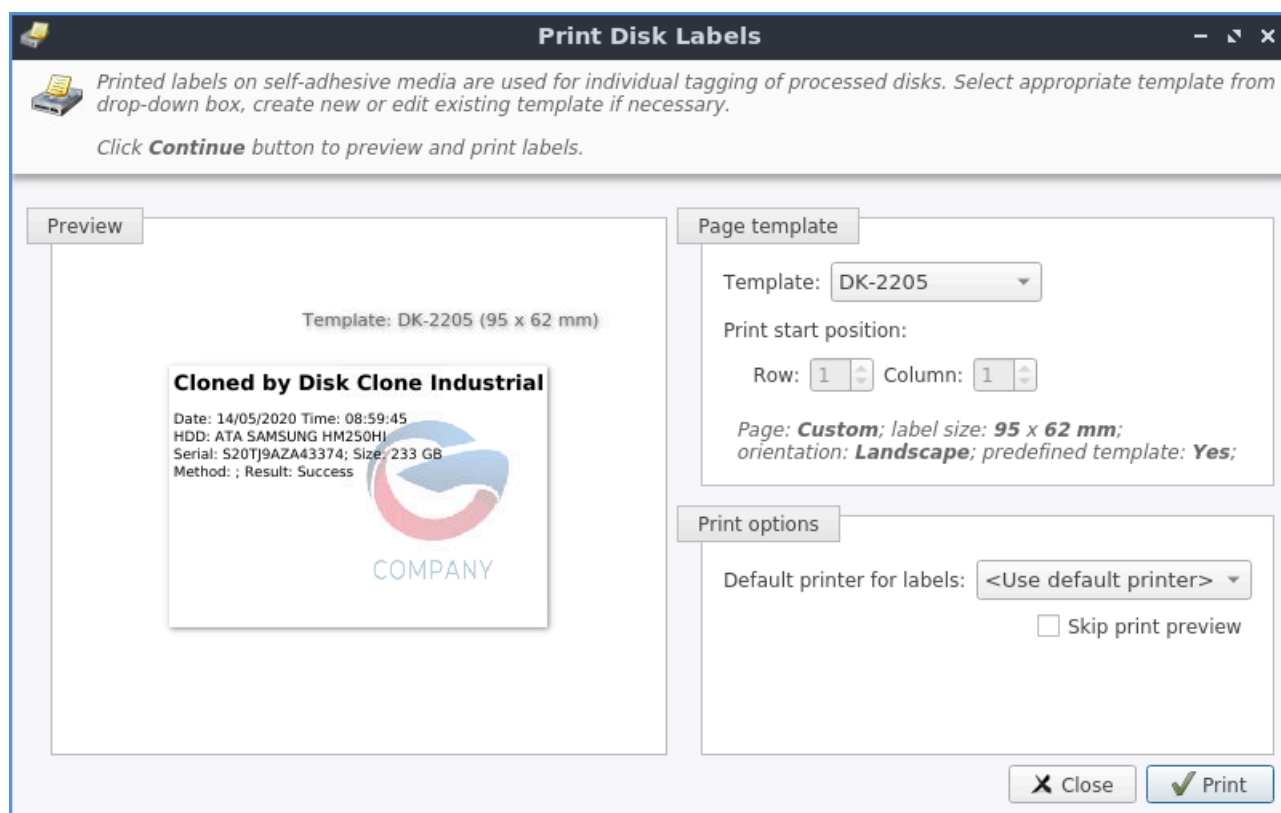


Figure 47: Print Label Dialog

Page template options

The print label dialog gives you an access to a number of predefined standard presets and custom templates you may create. These templates may be easily selected without opening any additional dialogs. All the details of the selected template will be displayed below the selection box.

Print Start Position

The print start position section of the dialogue allows you to select what label on the page start printing from. The labels won't always start from the 1x1 position so you can adjust this setting accordingly.

Print Preview and Printing

Once all the settings are configured you may see the *Print Preview* by clicking the **Continue** button. The *Preview* displays what the print is going to look like and from here the print job can be sent to a printer that is configured in the system.

Skip Print Preview

Disable system *Print Preview* dialog and print labels immediately.

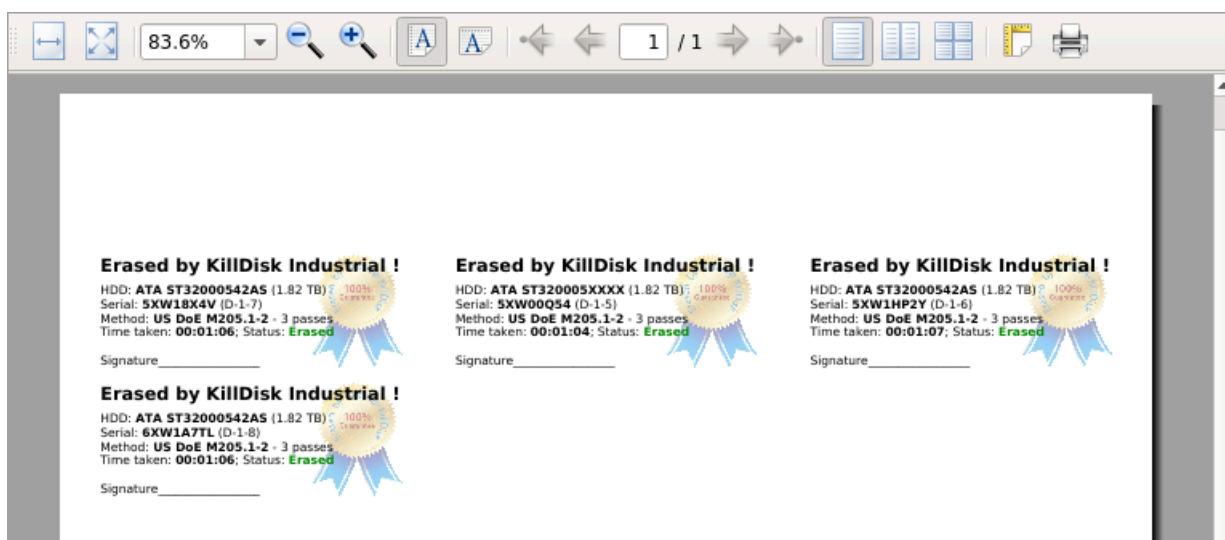


Figure 48: Example of a Print Preview

Related information

[Disk Label Presets](#) on page 86

Compact Operating Modes

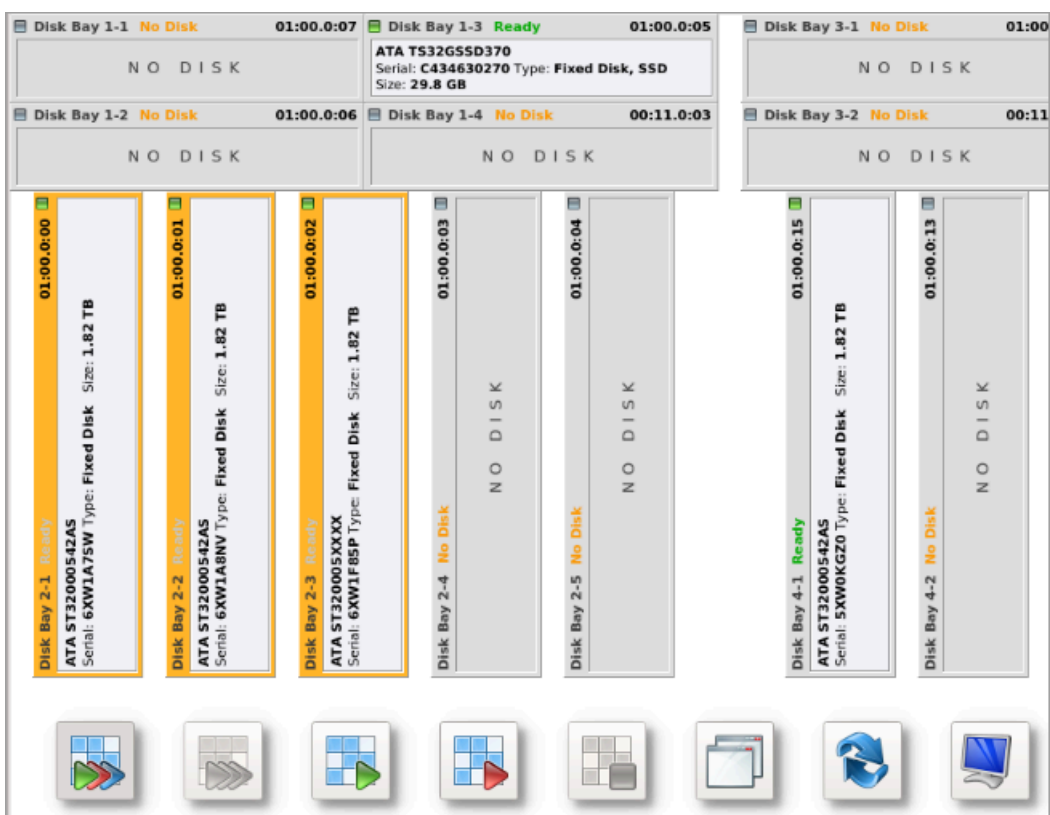
Disk Clone has advanced operating modes simplifying product usage in the industrial environments.

Touch Mode & Kiosk Mode

Compact operating modes added to simplify routing tasks. In these modes user have an access only to the features being used most frequently.

To switch to compact modes, select **Kiosk Mode** (or **Touch Mode**, depending on the product configuration) from the **View** menu. Also, you can press **Ctrl+T** to switch to and return back from compact modes.

All menus, toolbars and other supplementary windows, like *Properties* and *Output* will be hidden while operating in compact mode. Access to commands is through floating menu at the bottom left corner of application's main window.



There are 2 compact modes available:

- **Touch Mode** - designed to support portable touch-screen monitors
- **Kiosk Mode** - works similar to previous one but also supports mouse and designed to support commercial grade monitors. It attempts to show as many *Disk Bays* as possible at once, simplifying visual control and ongoing processes for operator. This mode still supports mouse and giving access to most advanced features.

To switch from compact mode back to windowed operating mode click the most right button (blue computer monitor) at the bottom.

Disk Batches

Disk Batches are used to organize disks into groups depending on what the disks are being used for, type of disk or the desired operation to be performed on them: **Erase**, **Clone** and combinations. User is free to use disk batches in any manner. Disks can be added or removed from *Batch* at any time.

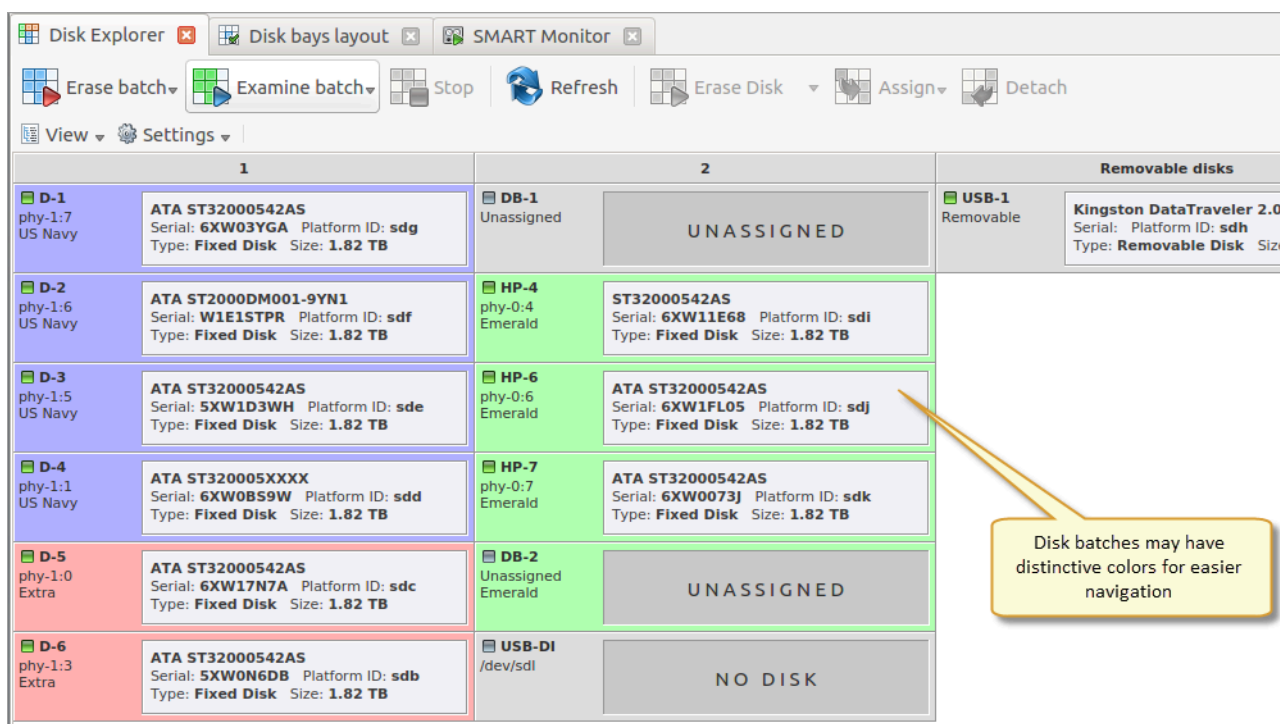


Figure 49: Disk Batches distinguished by color

Once disks are batched together they may be treated as a group and similar settings may be set for this batch. Likewise, operations may be performed on these batches - initiating the operation on a batch performs the operation on all the disks in the batch.

Related tasks

[Assign Disk Bays to Batches](#) on page 62

Related information

[Create / Delete Batches](#) on page 60

[Edit Batch Attributes](#) on page 63

Create / Delete Batches

Create a Disk Batch

Disk batches are created using the *Batch Control* toolbox.

Note:

If you can't find the Batch Control toolbox make sure that you have a proper View activated. To do this navigate to the file menu bar and click **View > Windows > Batch Control**. There should be a check mark next to the Batch Control View.

In the *Batch Control* toolbox click **New Batch**. This will open the *Create a New Batch* configuration wizard. After [configuring batch settings](#) click **Finish** and the new batch will appear in the *Batch Control* window.

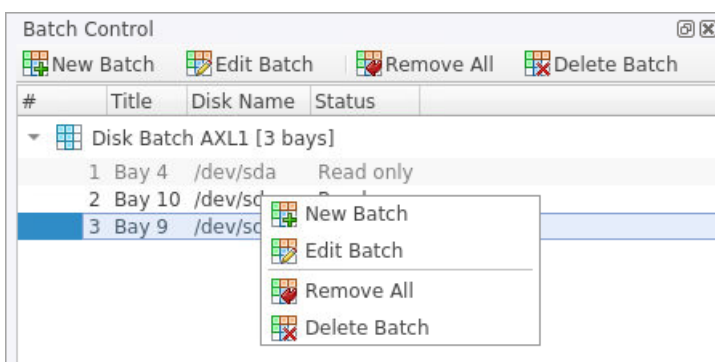


Figure 50: Batch Control Toolbox

Adding disks to a Disk Batch

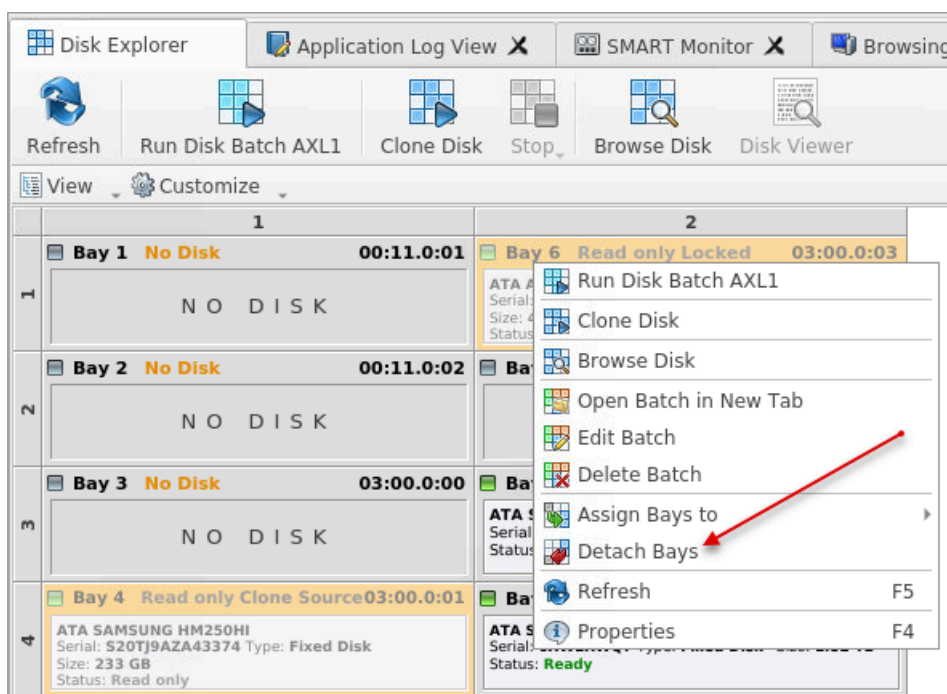
Disk Bays can be added to *Batches* in several ways:

- From **Disk Bays** View
- From **Edit** menu

Read [Add Disks to Batches](#) for more information.

Removing disks from a Disk Batch

Disks are removed from a Batch in a very similar way to the way they are attached. Follow the same steps as with *Adding Disks* but select bays that are attached to batches and choose the **Detach Bays** command.



Deleting Batches

Batches can be deleted by selecting the batch in the *Batch Control* toolbar and choosing the **Delete Batch** or **Remove All** commands.

Edit batch attributes

Batch attributes can be edited at any time after batch created. See: [Edit Batch Attributes](#) on page 63

Note:

Disk batch attributes changed every time if altered in confirmation dialog.

Related tasks

[Assign Disk Bays to Batches](#) on page 62

Related information

[Disk Batches](#) on page 59

[Edit Batch Attributes](#) on page 63

Assign Disk Bays to Batches

Disk Bays can be assigned to existing disk *Batches* in order to apply same batch attributes for selected tasks (disk erase, cloning etc).

Note:

Single Disk Bay can only belong to one Batch.

Disk Bays are assigned to *Batches* in one of several ways:

From Disk Bays View

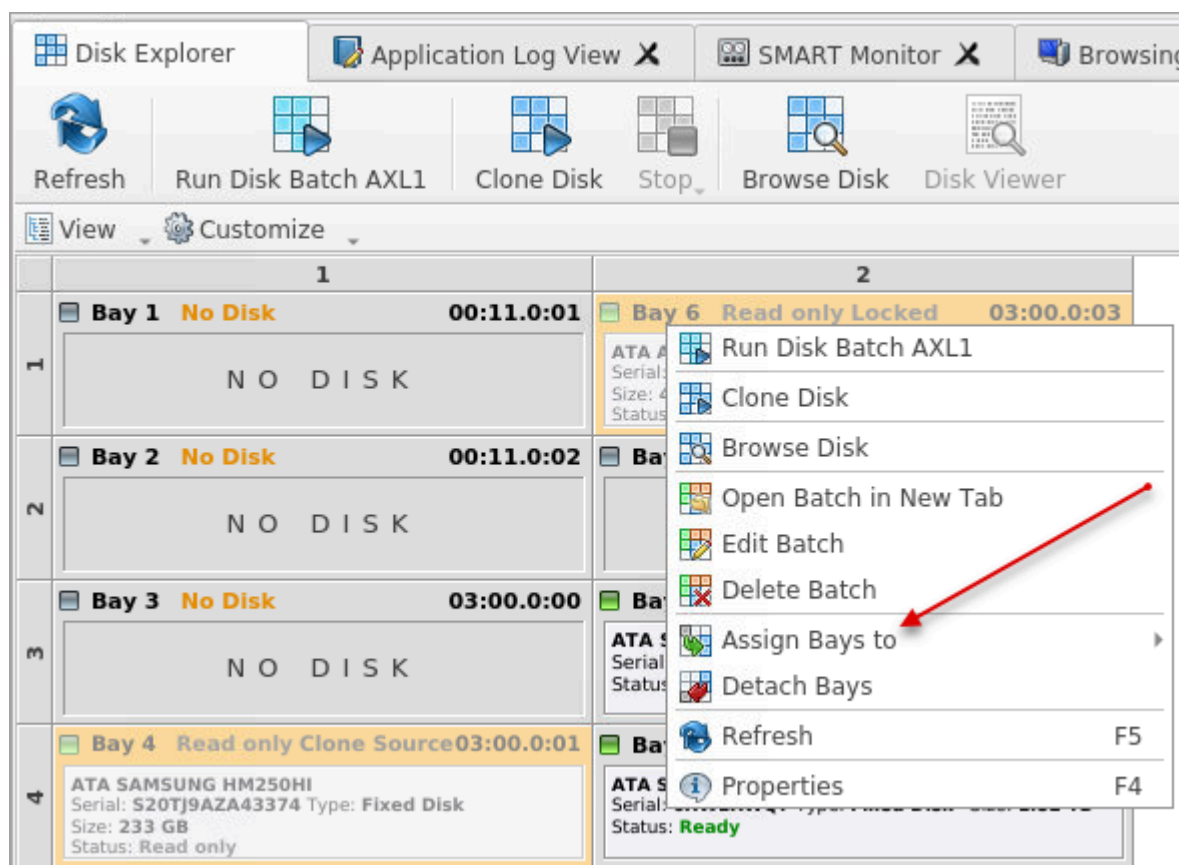


Figure 51: Assign Disk Bay through the Disk Bays View

1. In the Disk Bays View: select the disk(s) that you'd like to place in a Batch.

2. Right-click on the disk.
3. Hover the **Assign Bays to** option to see a list of available Batches.
4. Select the desired Batch from the list to place the selected disk into.

From Edit menu

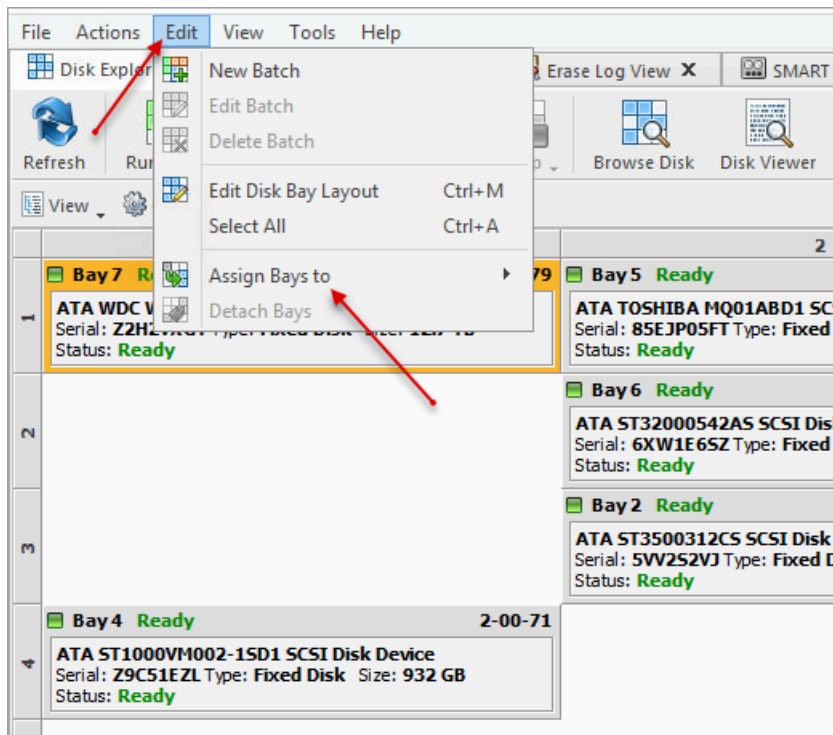


Figure 52: Assign Disk through the Edit menu bar

1. In the Disk Explorer: select the Disk Bay(s) that needs to be assigned
2. Click **Edit** menu bar
3. Hover the **Assign Bays to** action to see a complete list of available Batches
4. Click on the desired Batch. The selected Bay(s) will be assigned to that Batch.

Edit Batch Attributes

After creating a new *Disk Batch* user is able to work with *Edit Batch* window where the *Disk Batch* settings may be changed. For existing *Disk Batches* it is possible to access this window by selecting the desired *Batch* in the *Batch Control* toolbox and clicking **Edit Batch**.

Batch General Options

These are *General Settings* for the *Batch* (such as Title, Color, how the Batch is displayed etc.)

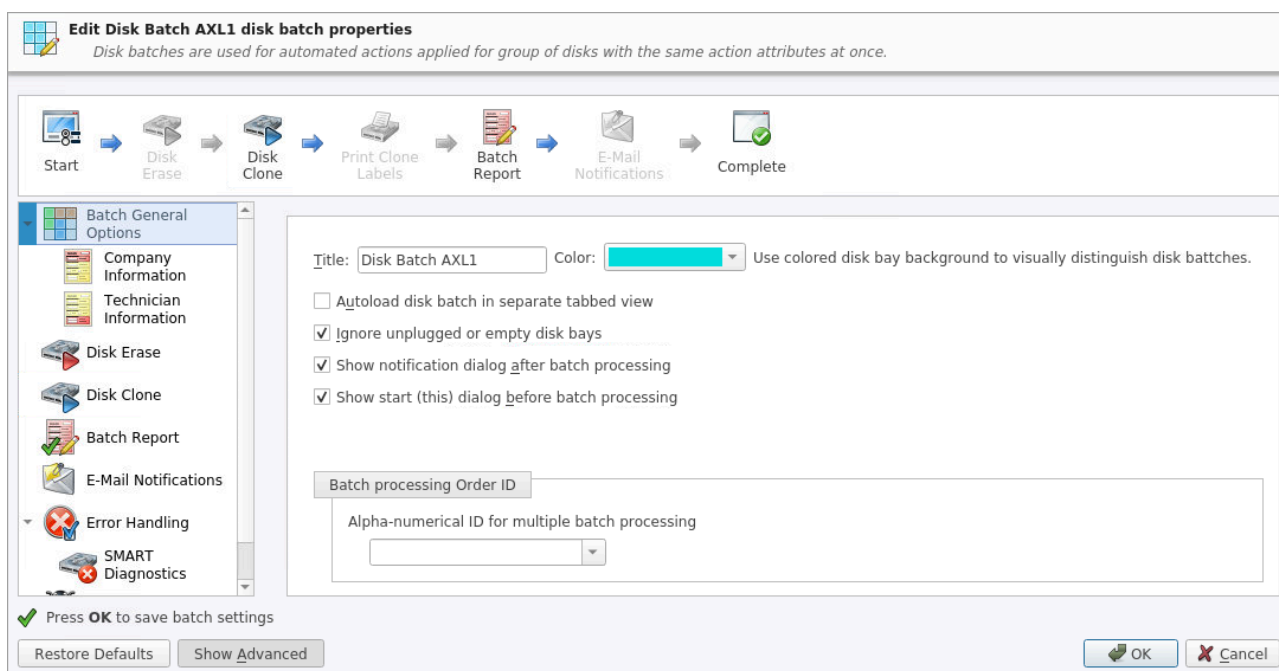


Figure 53: Batch Editor - General Settings

Company Information

These settings allow user to configure *Company Information* for Batch Processing Reports.

It is the [same form](#) as in **Preferences > Company Information**

Technician Information

This setting allows user to configure *Technician Information* for Batch Processing Reports.

It is the [same form](#) as in **Preferences > Technician Information**

Disk Erase

These settings configure *disk erase* settings for the Batch. Erase methods, verification and report settings can be changed here.

Disk Clone

This feature allows user to configure either a disk or disk image for cloning to all the disks in the batch. Available for *Erase Batches* with examined disks only.

Read [Clone Sources](#) on page 80 for description of each attribute.

Batch Report

These settings give user an option to toggle whether or not to issue an erasure XML report upon erase and configure the options to include (like a name, destination, [S.M.A.R.T.](#) details etc.). Options for issuing individual XML reports for the particular disks in the batch can be configured.

Read [Processing Report](#) on page 83 for description of each attribute.

Email Notifications

User can turn on email notifications for Batch operations and attach a *Certificate*, *XML Report* and *Erase Log* to the email.

Read [E-mail Notifications](#) on page 92 for description of each attribute and *SMTP* settings configuration.

Disk Labels

User can turn on displaying and printing disk labels after Batch operation is completed. As well as configuring a default printer and customizing label templates.

Read [Disk Label Presets](#) on page 86 for description of each attribute.

Error Handling

For each Batch error handling attributes can be set individually. [S.M.A.R.T.](#) attributes may also be configured in error handling by clicking **SMART Diagnostics** button.

Read [Error Handling](#) on page 90 for description of each attribute.

Related information

[Disk Batches](#) on page 59

[Create / Delete Batches](#) on page 60

Advanced Tools

Disk Clone offers a number of advanced tools to work in conjunction with the software to make operations easier to perform and the disks easier to navigate. **Disk Clone** makes it possible to browse through disks on both: a file level and a low, hexadecimal (HEX) level. Disk health analysis with its [S.M.A.R.T.](#) monitor as well as logs/reports export to the external databases fully supported in **Disk Clone Industrial** version. This section describes each of these features:

- [File Browser](#)
- [Hexadecimal Viewer](#)

File Browser

Disk Clone includes a built-in *File Browser* for examining the contents of disks for verification purposes, for hard drives' selection control or for erased files validation after erase . Details on using this feature are discussed in this section.

Opening the Browsing View

To browse the contents of a specific disk from the *Disk Bay* Layout View simply select the desired disk and click **Browse Disk** in the action toolbar or select the related command from the context menu. Shortcut is **Ctrl-B**.

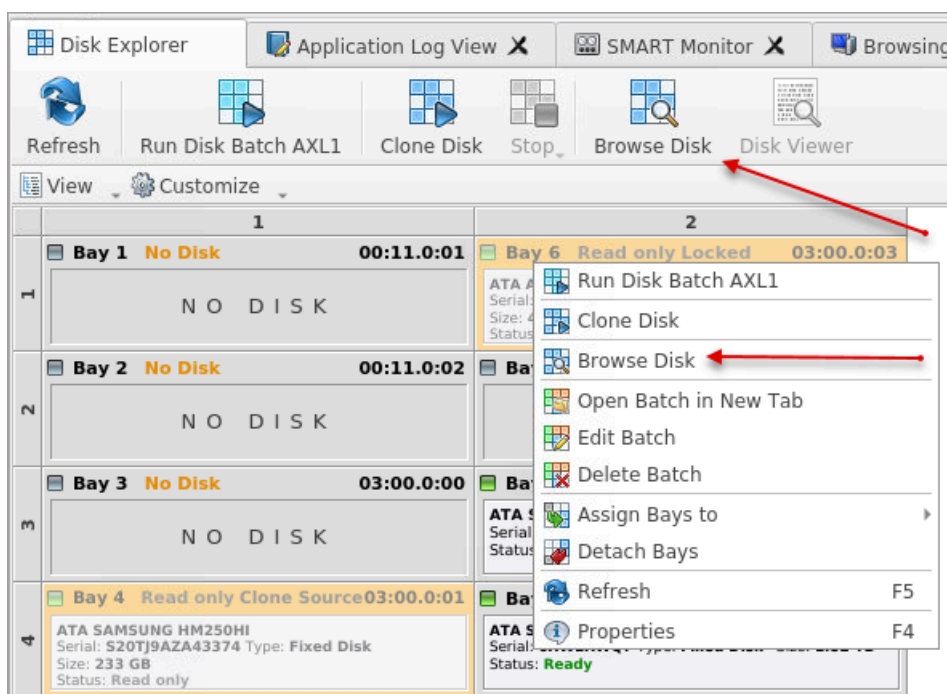


Figure 54: Launching the File Browser

This will open the *File Browser* tab:

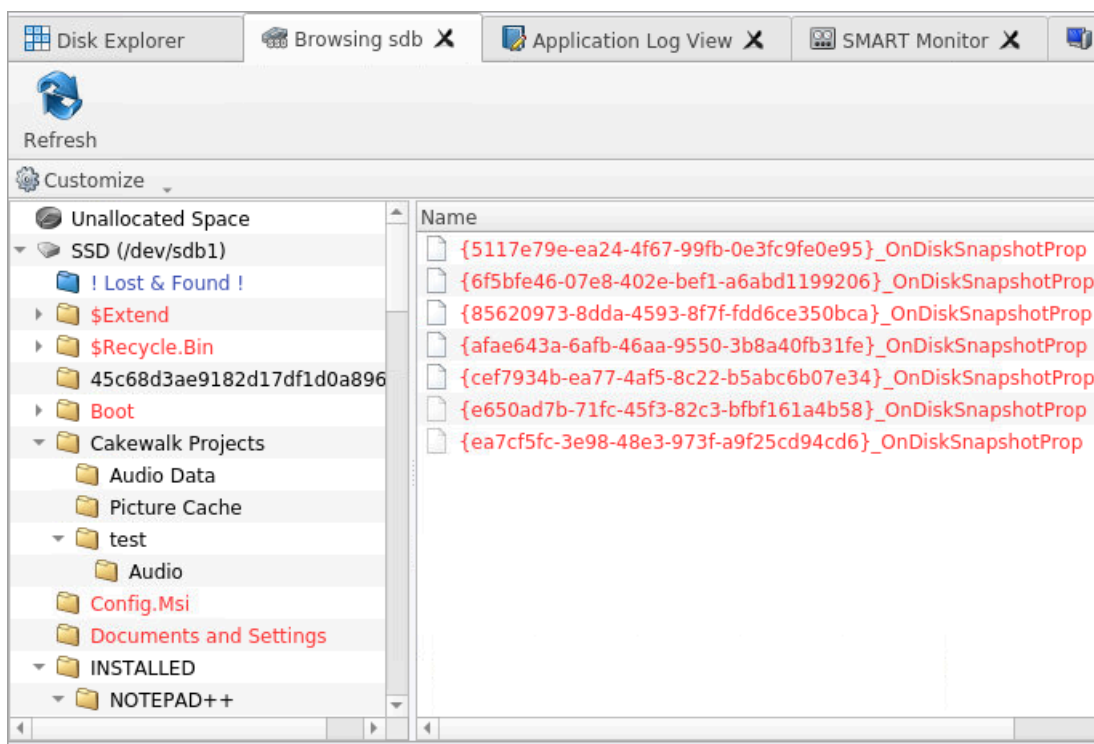


Figure 55: File Browser Window

The *File Browser* tab displays files and folders on the disk being selected.

The *File Browser* tabbed View may also be manipulated by navigating to the **Customize** button at the top. Here you have options to adjust:

Show System Files


Toggles advanced disk information (system files) being shown

Show Unallocated Partitions

Toggles the unallocated disk partitions being shown

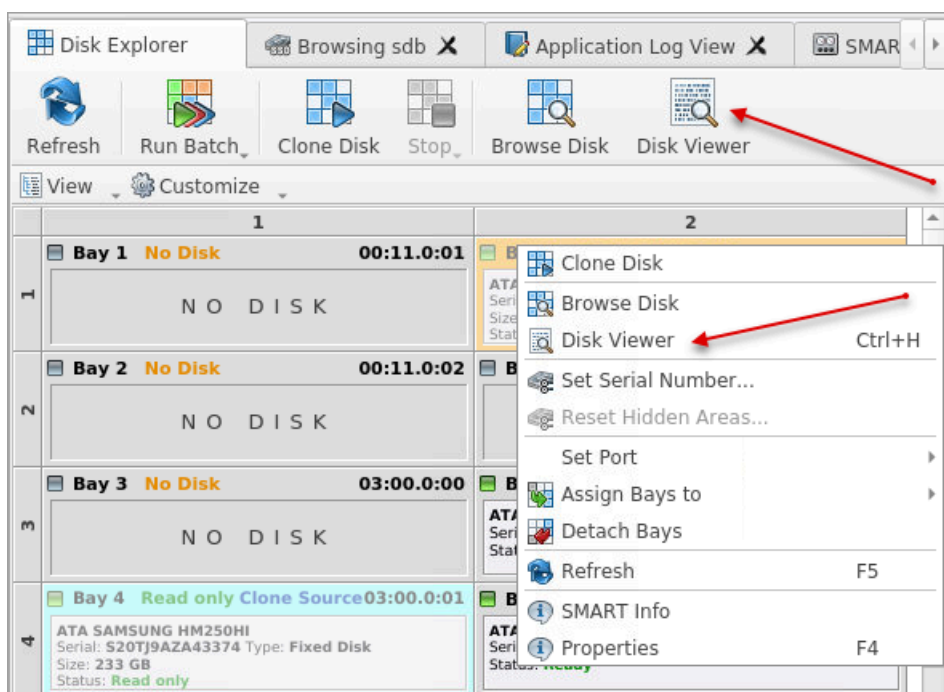
Navigator Pane

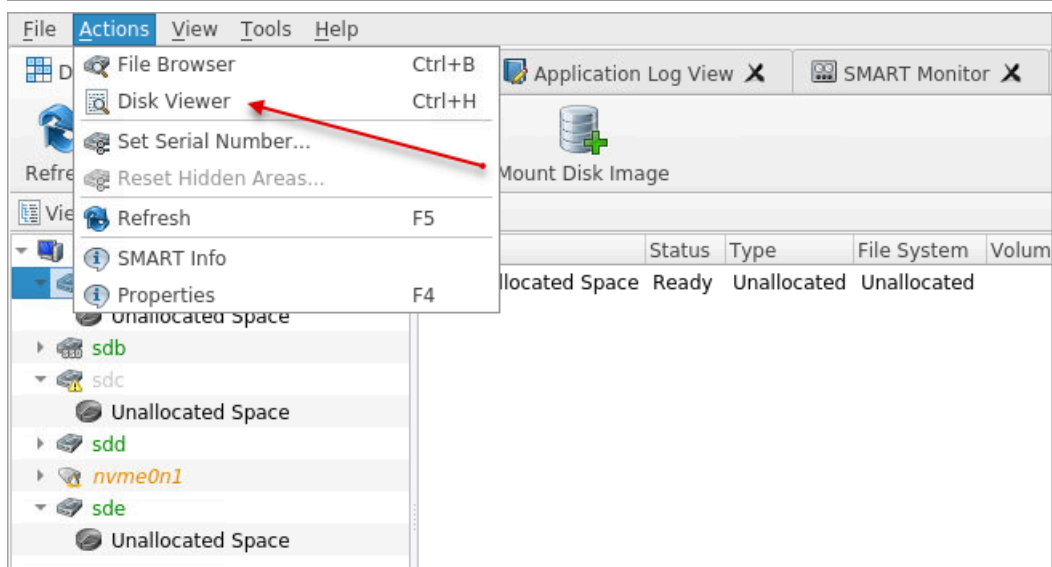
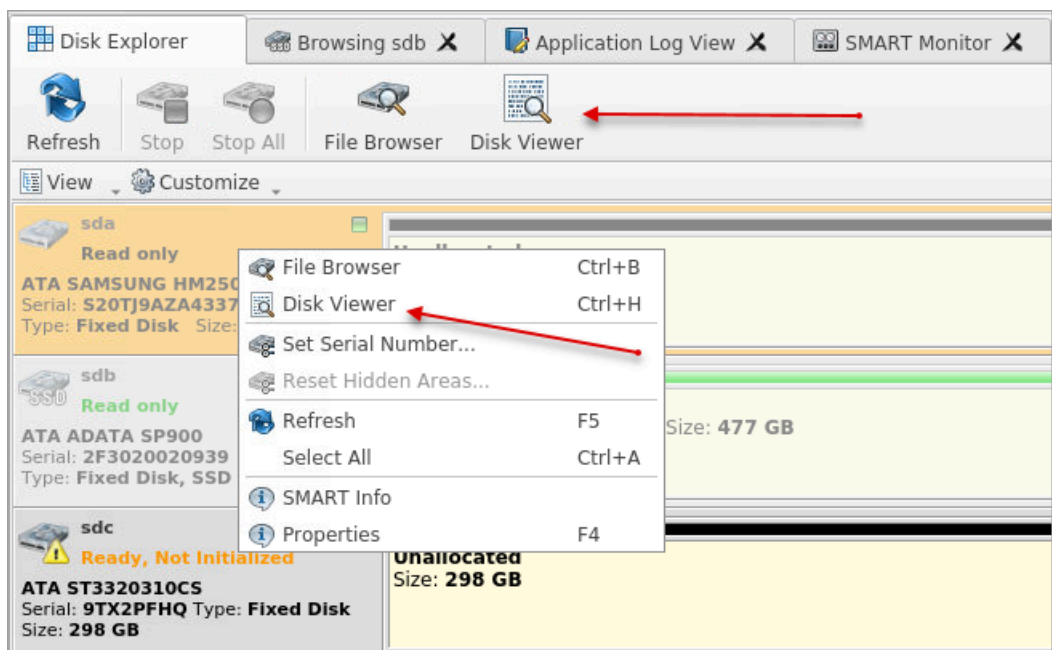
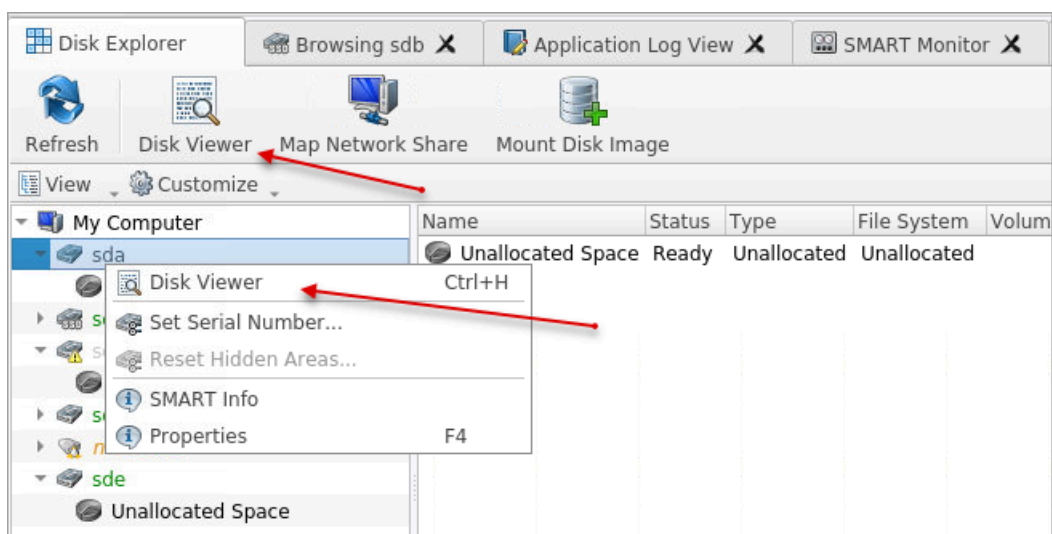
Toggles the *Navigator Pane* View ON and OFF.

 **Note:** Found deleted files appear in their original directory (before they were deleted). The **! Lost & Found !** folder is a virtual directory created for found deleted files with not discovered directory information.

Disk Viewer

Disk Viewer allows users to view the contents of connected drives on a sector's level in a hexadecimal, ASCII and Unicode representations. User is able to launch *Disk Viewer* on all main **Disk Explorer** Views (**Disk Bays**, **Local Devices**, **My Computer**) as well as through the main menu bar. Shortcut is **Ctrl-H**.





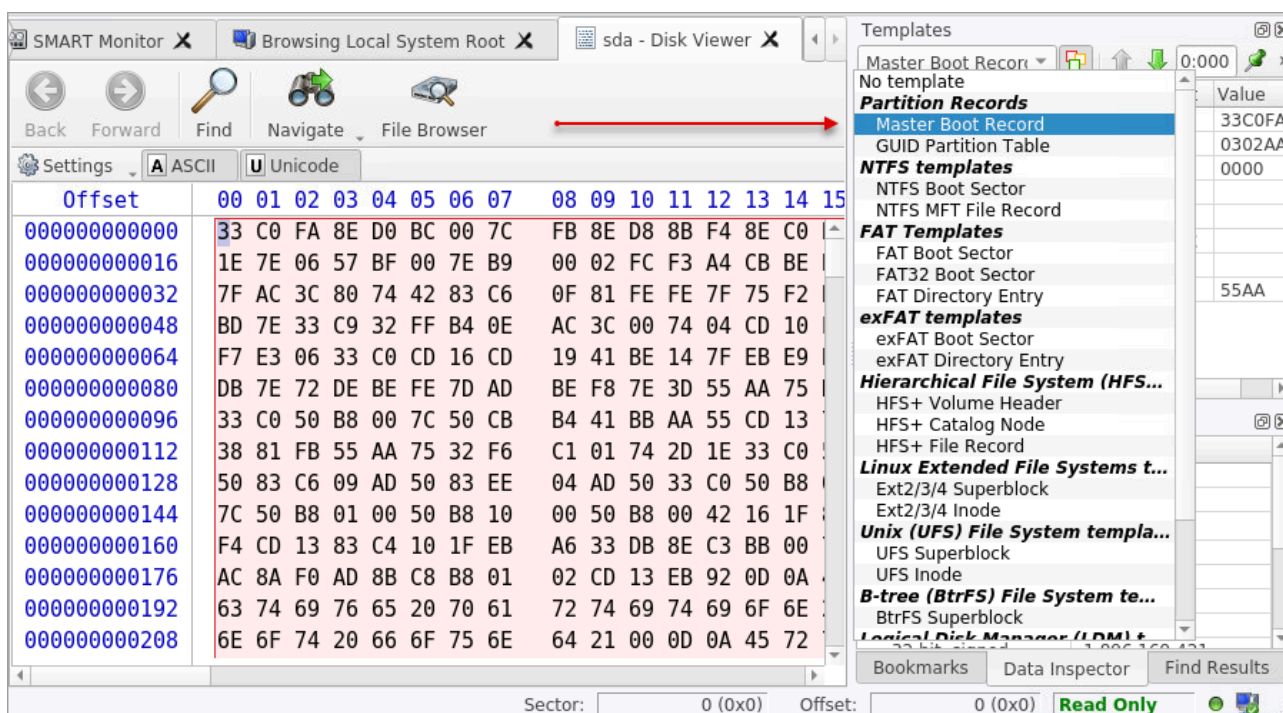


Figure 56: Disk Viewer with the MBR Template

Disk Clone also offers a list of templates to help display the organization of the sectors on the disk by colored sections. The above uses the *MBR* template, below is a template for *NTFS* file system boot sector.

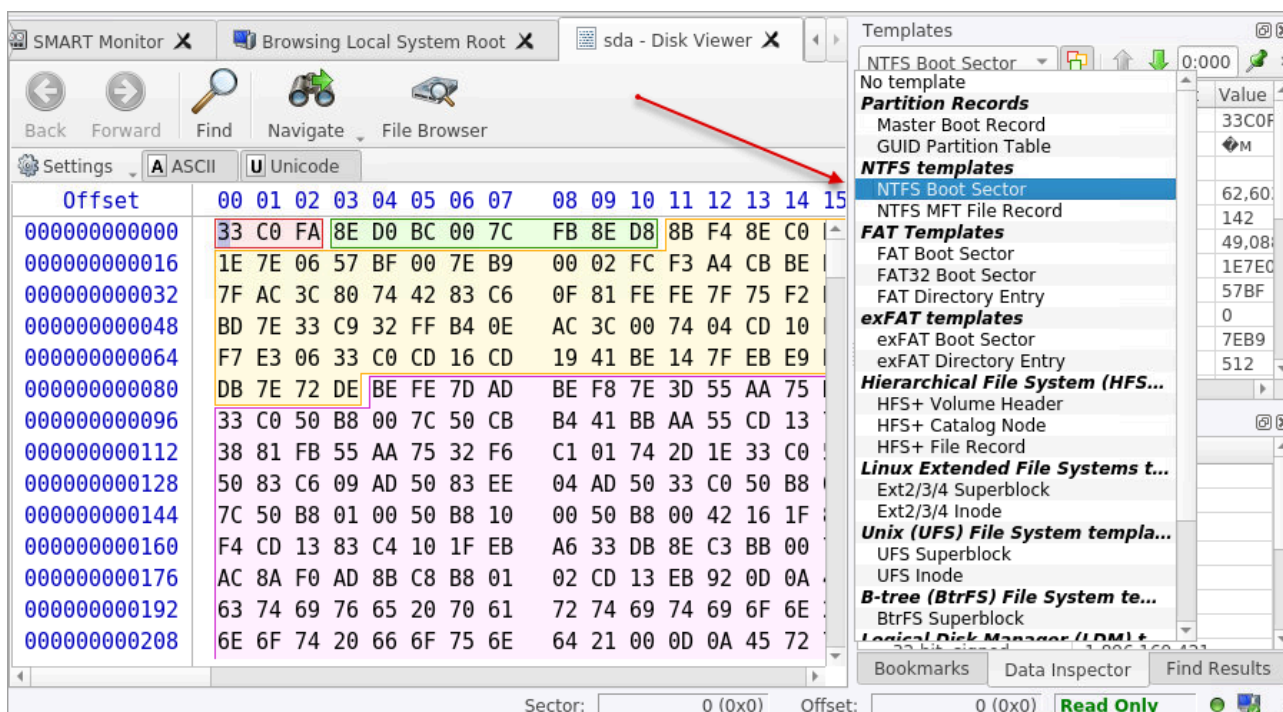


Figure 57: NTFS Boot Sector Template

The *Disk Viewer* also includes a *Find* feature for locating specific data in the low-level disk View

Find what

Input the characters you are searching for in ANSI, Hex or Unicode

Search Direction

If you have an idea of where the data may be located specify where to search

Not

Search for characters that do not correspond to the **Find what** parameter

Ignore case

Disables case-sensitivity in the search

Use

Select between *Regular Expressions* and *Wildcards*

Per block search

To speed up the search process (if you are familiar with the location of the data in the data block) you may specify a search with an offset of the object

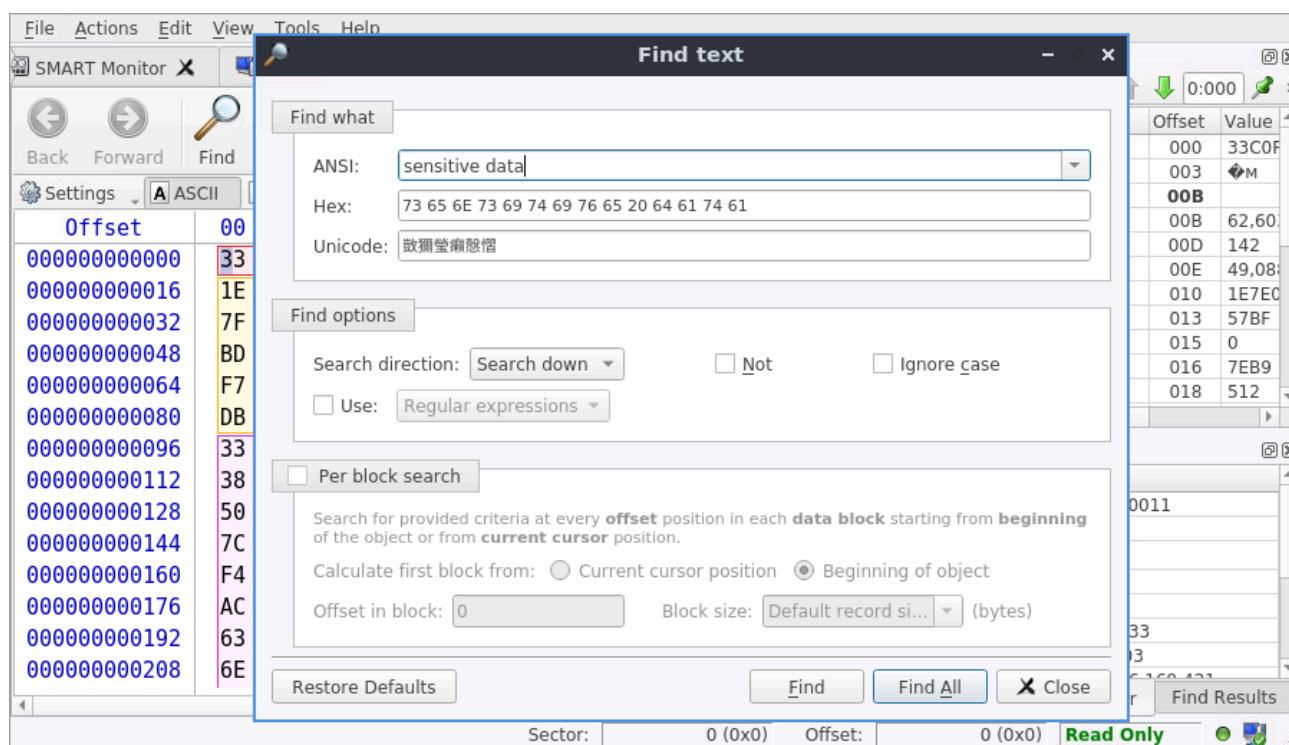


Figure 58: Finding Data

Disk Viewer's *Navigate* feature allows:

Go to Offset

Jumps to the particular offset that needs to be entered manually in a decimal or hexadecimal format

Go to Sector

Jumps to the particular sector or cluster on the disk

Partition Table

Jumps to the sector where partition table is located

Particular Partition

Lists all partitions and allows to jump to the boot sectors, to the beginning and to the end of any available partition.

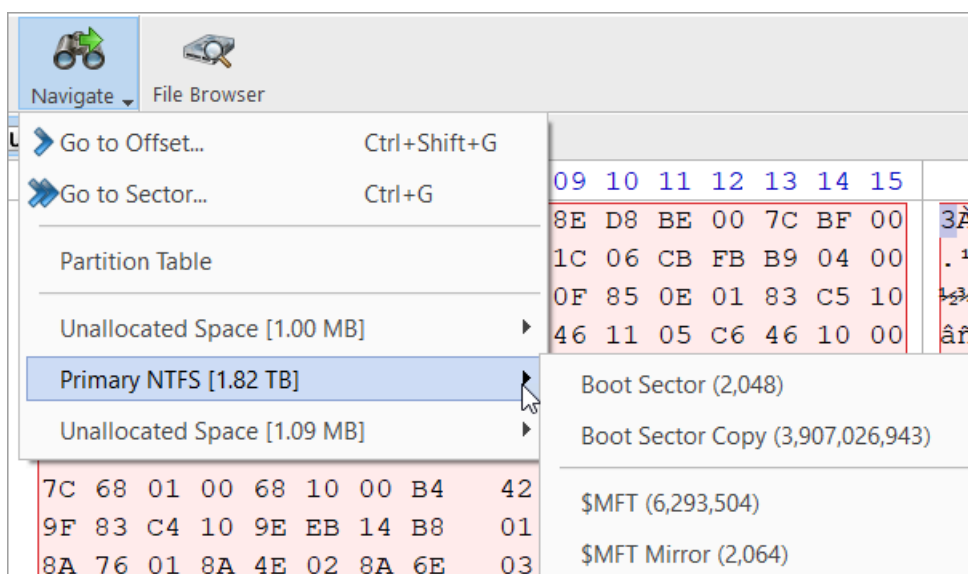


Figure 59: Disk Viewer Navigation Options

S.M.A.R.T. Monitor

Disk Clone supports displaying [S.M.A.R.T.](#) information. Just navigate to the file menu bar and selecting **Tools > SMART Monitor**. It opens the [S.M.A.R.T.](#) monitor window shown below:

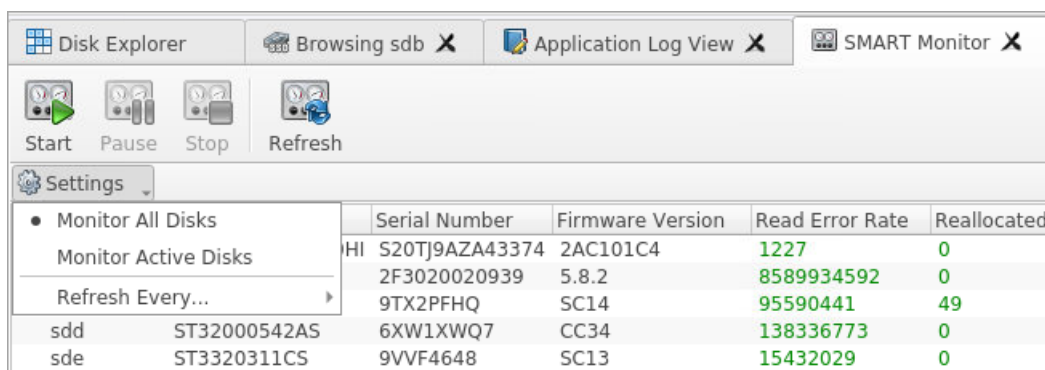


Figure 60: S.M.A.R.T. Monitor

S.M.A.R.T. Information

The [S.M.A.R.T.](#) monitor displays a list of all discovered disks and shows the S.M.A.R.T. information next to them in table format. The following [S.M.A.R.T.](#) information is shown as separate columns:

- Display Name
- Device Model
- Serial Number
- Firmware Version
- Read Error Rate
- Reallocated Sectors Count
- Spin-up Retries
- Command Timeout
- Reallocated Event Count
- Current Pending Sectors

- Reported Uncorrectable Errors
- Soft Read Error Rate
- Read Error Retry Rate

Configurable Settings

These are the parameters to be configured in the **Settings** drop-down menu on a toolbar:

Monitored disks

Here you have the option to either display *All Disks* seen by the system or only the *Active* (processing) disks.

Refresh Rate

This specifies the interval in seconds between updates to the [S.M.A.R.T.](#) information displayed when the [S.M.A.R.T.](#) monitor is running.

Running the S.M.A.R.T. Monitor

The [S.M.A.R.T.](#) monitor can either be refreshed manually or run to keep the information current. To run the [S.M.A.R.T.](#) monitor simply click the **Start** button in the action toolbar. To pause or stop auto-refreshing sequence click **Pause** or **Stop** buttons in *View's* toolbar accordingly.



Note:

S.M.A.R.T. monitoring is a process that requires a lot of resources. It can slow down erase/clone process significantly. We advise you to avoid querying S.M.A.R.T. information very often.

Troubleshooting and System Recovery

In the event that you experience any technical difficulties with **Disk Clone** you may choose to either troubleshoot the system yourself or, if you have an active support and updates (you receive 1 year free with your purchase), contact our support team and attach your application log and hardware configuration file ([hardware diagnostic](#))

Common Troubleshooting Tips

Disk data is not erased

Ensure you are not erasing the system disk from the application.

Erased the wrong disk

Stop the operation as soon as possible. Once data is sanitized by erase features it will no longer be accessible. Use a tool like **Active@ File Recovery** (<https://www.file-recovery.com>) to recover any data that has not been sanitized yet

Application Log

This *Log View* reflects every *action* taken by the application and displays messages, notifications and other service information. Use the messages in this screen to observe and further analysis of the recovery process.

To open and activate *Application Log View* do one of the following:

- From main menu choose **Tools > Application Log** or
- Use **F8** keyboard shortcut at any time

It is best to save the log file to a physical disk (different from the disk that holds the deleted data). By doing this you reduce the risk of writing over the data that you are trying to recover.

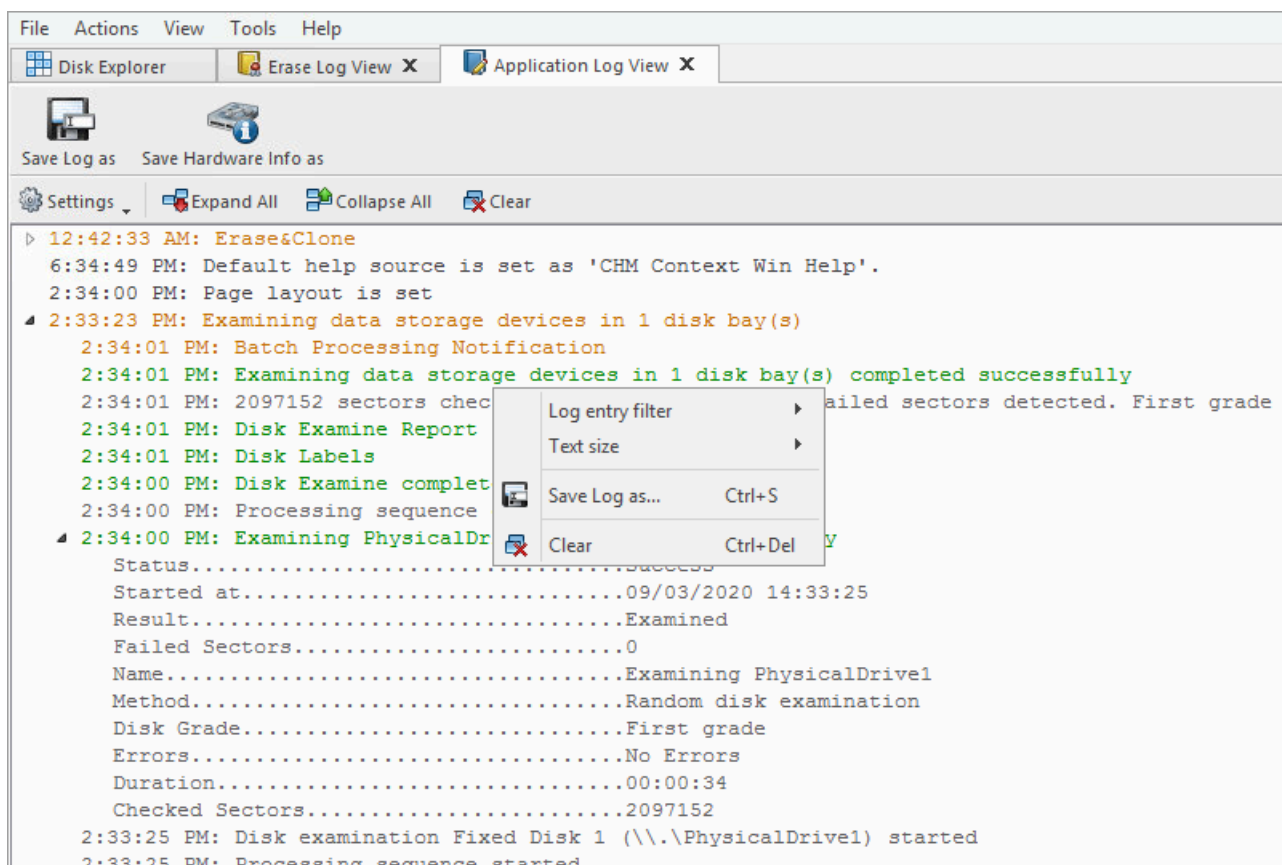


Figure 61: Application Log View

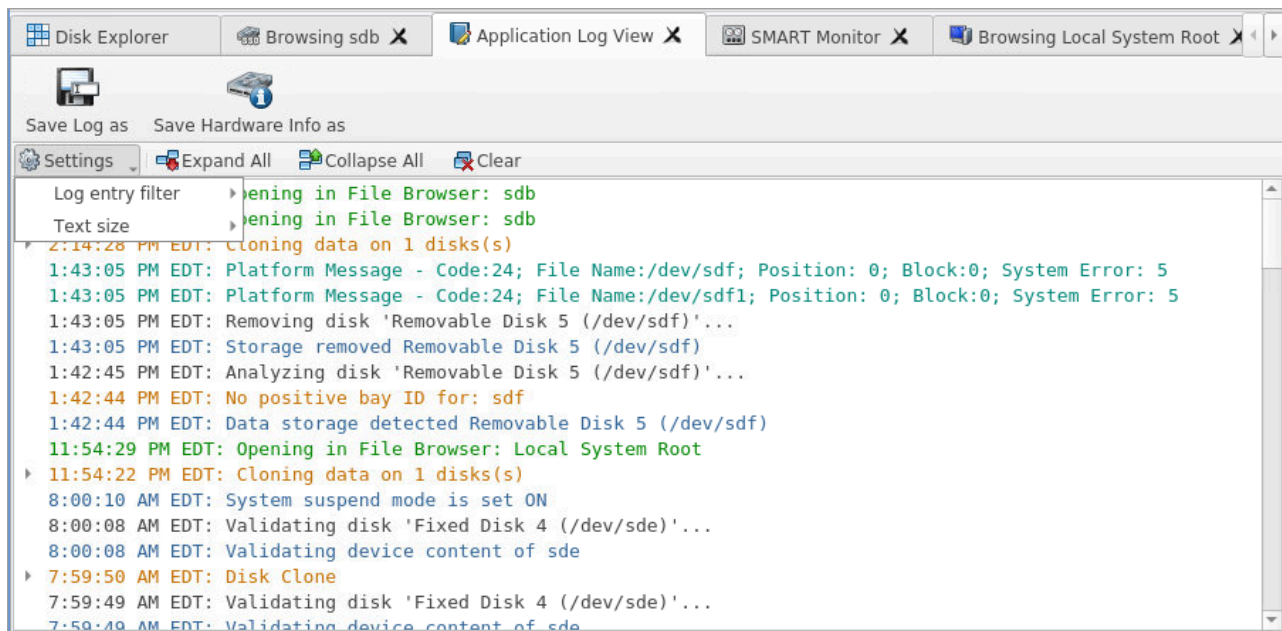


Figure 62: Application Log View

Save Log As

Opens a standard **save as** dialog. Save the actual application log file to the local disk (default extension is *.log*)

Save Hardware Info as

Opens a standard **save as** dialog. Save the *disk diagnostic file* to the local disk (default extension is *.xml*)

With sub-menu the following items are available:

Log entry filter

Shows or hides specific entry types in *Log View*:

Minimum details

Shows non-critical warning entries

Maximum details

Shows advanced entries related to the application behavior and data analysis

Text size

Changes text size to **Large**, **Normal** or **Small**

Expand All

Expands a tree log data if available

Collapse All

Collapses a tree log data if available

Clear

Clear log for current application sessions

It is possible to go through the options with the context menu (right mouse click).

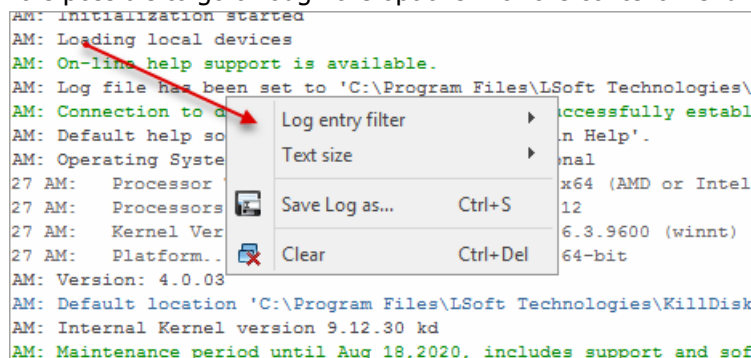


Figure 63: Context menu

i Tip: We recommend that you attach a copy of the log file to all requests made to our technical support group. The entries in this file will help us to resolve certain issues.

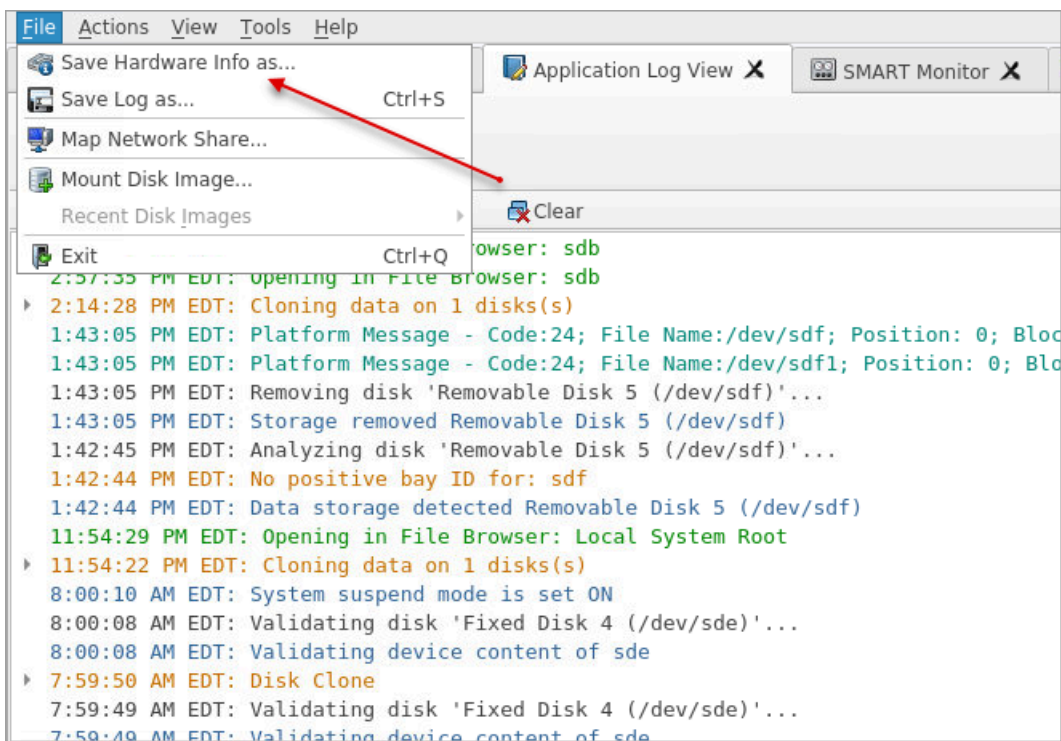
Hardware Diagnostic File

If you want to contact our technical support a file that contains a summary of your local devices is helpful.

Disk Clone allows you to create a summary listing file in XML format. This data format is “human-readable” and can help our technical support staff to analyze your computer configuration or point out disk failures or abnormal behavior.

Create a hardware diagnostic file from the **File** menu by clicking the **Save Hardware Info as...** button.

Note: To save time when contacting our technical support staff we highly recommend that you provide us with a hardware diagnostic file.



Related information

[Application Log](#) on page 72

Preferences

Disk Clone Preferences window is the central location where **Disk Clone** features can be configured. These features are divided into several tabs.

To open **Preferences** dialog:

- From main menu choose **Tools > Preferences...** or
- Use **F10** keyboard shortcut at any time

Preferences dialog could be open from other task dialogs to change related settings.

- [General Settings](#) on page 76
 - [Environment](#)
 - [Sound Notifications](#)
 - [Action Triggers](#)
- [Clone Sources](#)
- [Company Information](#)
- [Technical Information](#)
- [Processing Report](#)
- [Disk Label Presets](#)
 - [Disk Label Templates](#)
- [Disk Viewer](#)
- [Error Handling](#)
 - [S.M.A.R.T. Diagnostics](#)

- [E-Mail Notifications](#)
 - [SMTP Server Setting](#)

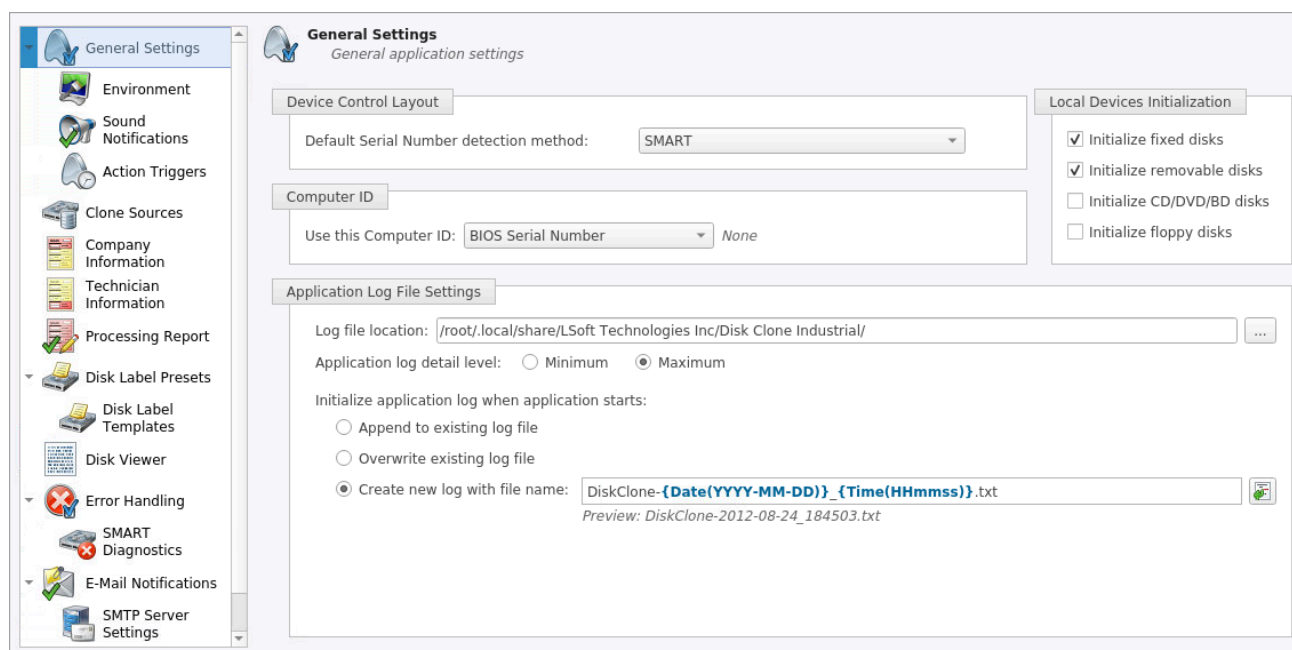
Preferences allow users to configure all the global settings for the application.

Notice: When **General Settings**, **Disk Label Presets**, **Error Handling** or **E-mail Notifications** command initiated smaller subset of these settings is available to modify.

General Settings

The **General Settings** allow to configure general application settings as well as the visual aspects of the application.

These are configurable options pertaining to the applications functionality.



Device Control Layout

These settings control visual disk behavior in [Disk Explorer](#) on page 25 and allow to Show or Hide system disk and devices which are not ready (offline)

Default Serial Number detection method

Select how **Disk Clone** retrieves the disk serial number by default. Values are: **SMART**, **IOControl** & **WMI**

Local Devices Initialization

Select which types of devices appear in **Disk Clone** by default: **Fixed disks**, **Removable disks**, **CD/DVD/BD** and **Floppies**

Computer ID

Configure how the **Disk Clone** workstation is identified in logs & reports. Values are: **None**, **BIOS Serial Number**, **Motherboard Serial Number**

Application Log File Settings

These settings apply to the log file generated by the application. All operations performed in a **Disk Clone** session will be saved in this log.

Log file location

Allows the user to specify where the application log file is saved. By default this is set to a **Disk Clone** installation directory

Application log detail

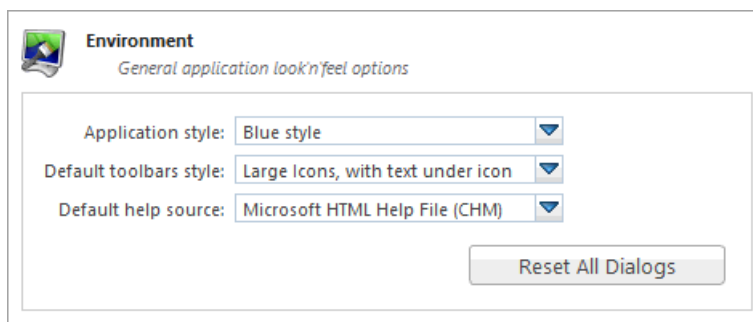
Manipulate the amount of details included in the logs. Options are: **Minimum** and **Maximum**

Initialize application log when application starts

This setting configures whether **Disk Clone** generates a new log file for every session (erasing the log of the previous session) or appends new sessions to one log file. Moreover, logs can be placed to the files being named using naming pattern specified

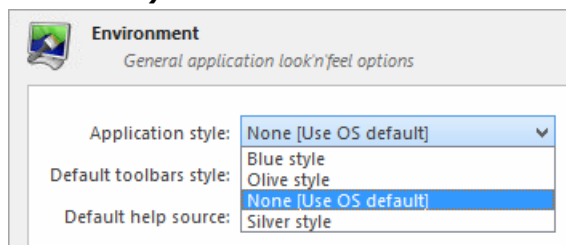
Environment

These are configurable options pertaining to the applications user interface and user experience.



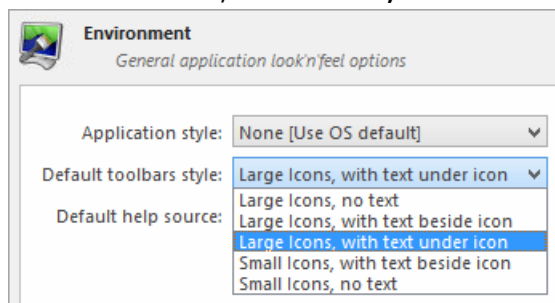
Application style

Configures the color scheme used in the application. Values are: **Blue**, **Olive**, **None (Use OS default)** and **Silver**



Default toolbars style

Configures how icons are shown in the toolbar. Values are: **Large icons, no text**, **Large icons, with text beside icon**, **Large icons, with text under icon**, **Small icons, with text beside icon**, **Small icons, no text**



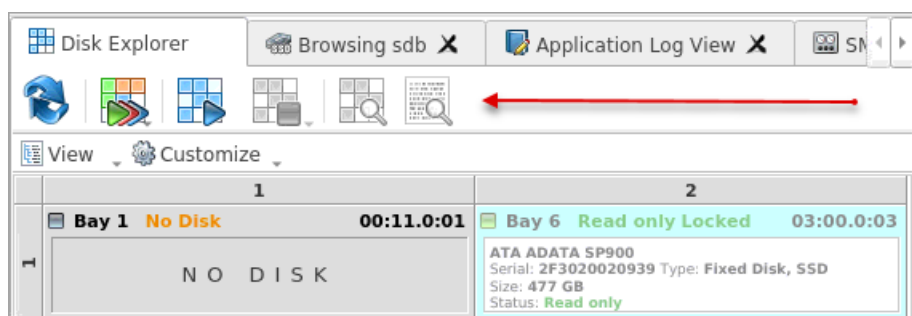


Figure 64: Large icons, no text

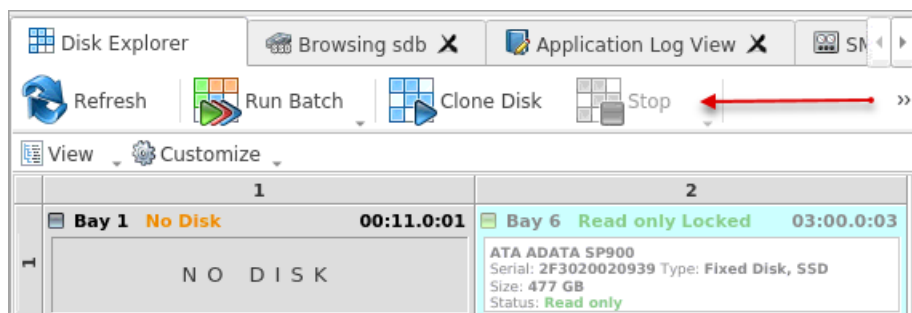


Figure 65: Large icons, with text beside icon

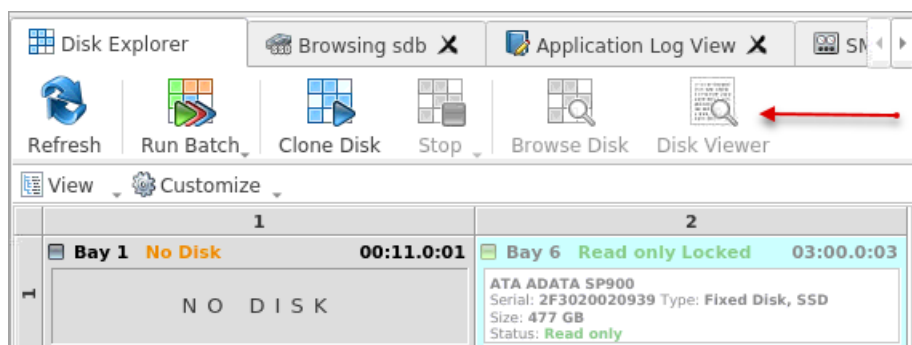


Figure 66: Large icons, with text under icon

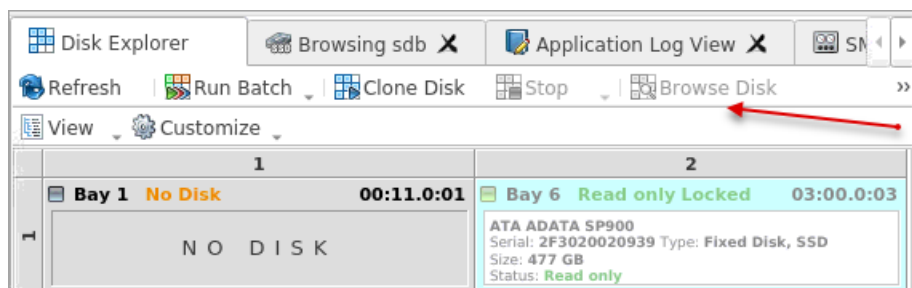


Figure 67: Small icons, with text beside icon

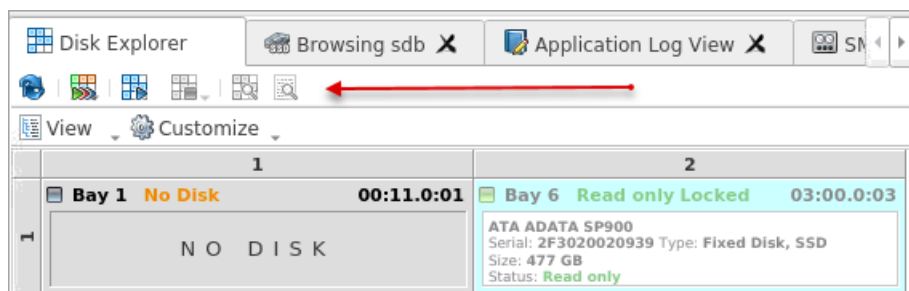
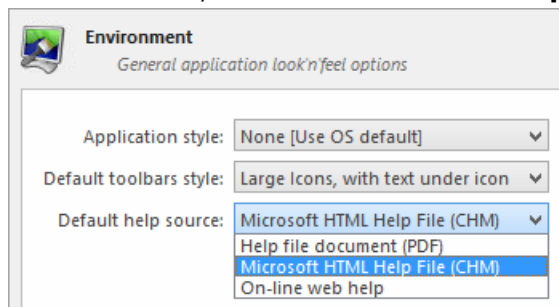


Figure 68: Small icons, no text

Default help source

If available, user can select help documentation source to be addressed when requested. Values are: **PDF**, **CHM** and **On-line web help**

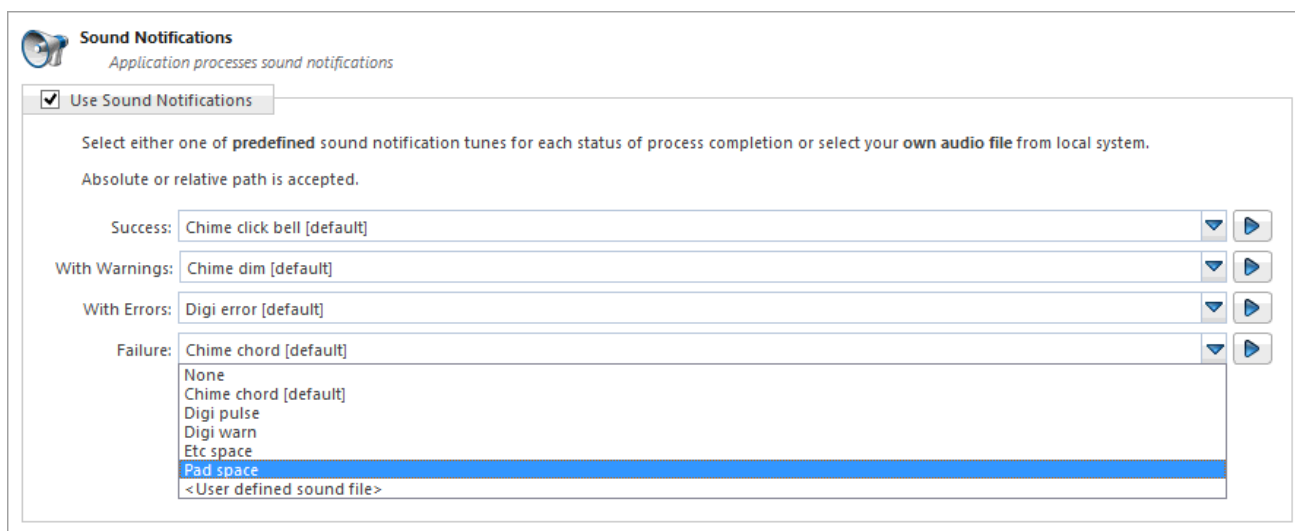


Reset All Dialogs

Pressing the button resets all the changes to default state.

Sound Notifications

These are configurable options related to application sounds: you can use either predefined values or assign your own sounds (<User defined sound file>)

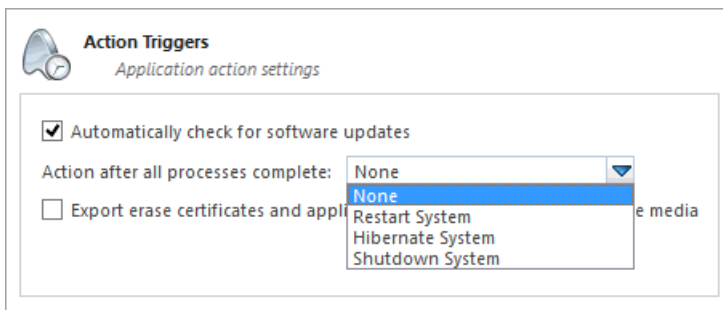


Use Sound Notifications

Toggles sound tones being used for notifying the user of the completion of a task, errors and notification during an operation: **Success/With Warnings/With Errors/Failures**

Action Triggers

Configure actions performed while application is running




Automatically check for software updates

If this option set, application will check for a new updates during every start up

Action after all processes complete

Select either **None**, **Hibernate**, **Shutdown** or **Restart** system after all processes have been finished

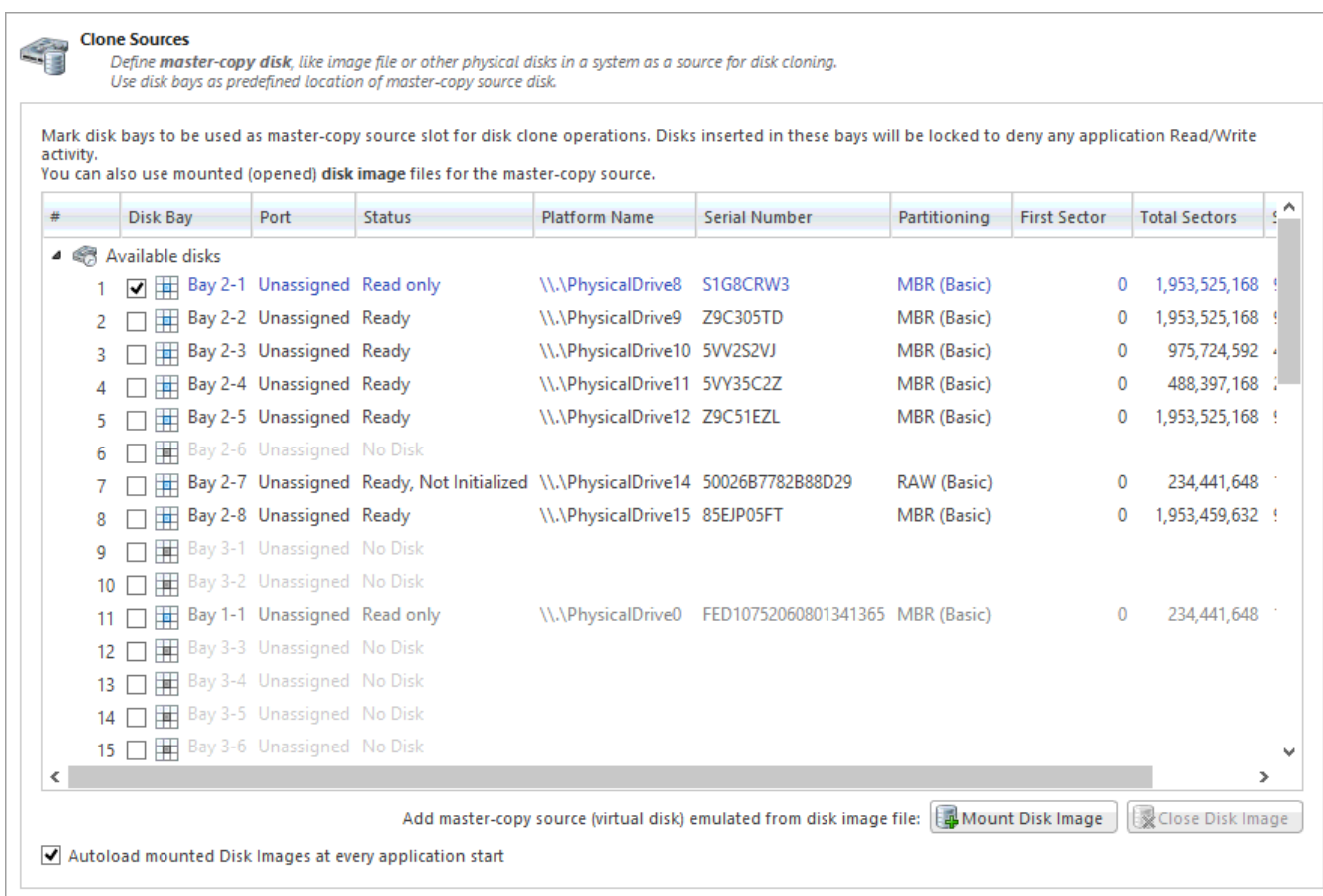
 **CAUTION:** You will have 30 seconds to abort system hibernation, restart or shutdown.

Export erase certificates and application log to all detected removable media

Upon erase completion all certificates and logs will be automatically exported to attached USB disks (removable media)

Clone Sources

This preferences tab allows you to select a master-copy disk to use for cloning to other disks after they have been erased.



Selecting a Disk for cloning

Any disk recognized by **Disk Clone** may be used as a master-copy for *Cloning*. Simply find the disk under the **Available Disks** column and check the box next to the desired *Disk Bay*. This disk will be locked and read/write operations will be restricted for it until the cloning operation is complete.

Selecting a Disk Image for cloning

Additionally to cloning a disk, cloning can be done from a mounted disk image. In the *Disk Clone* preferences tab:

1. At the bottom of the dialog, click **Mount Disk Image**

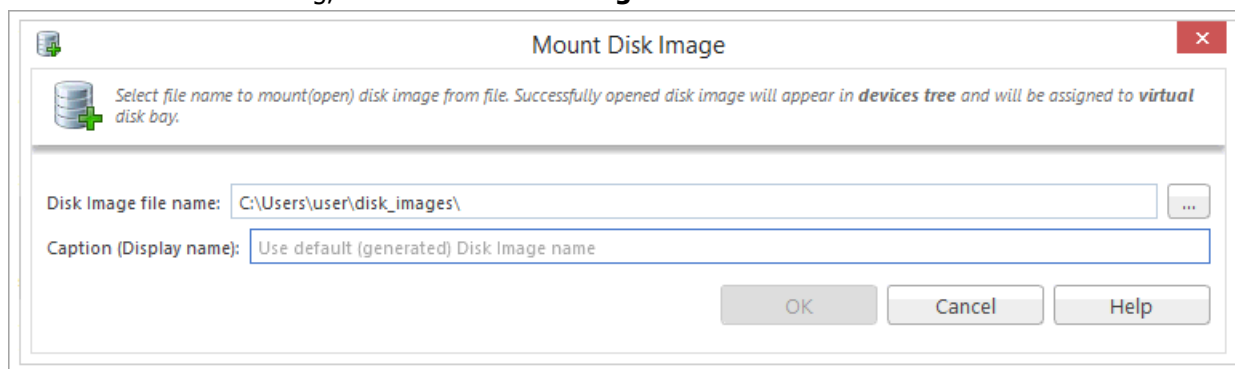



Figure 69: Mount Disk Image dialog

2. To the right of the "Disk Image file name" field click the ... button
3. Find the desired disk image in the *file explorer* and click **Open**

4. Fill in the "*Display name*" text box with a desired name for the image and click **OK**
5. The mounted disk image should appear under **Disk Images** in the Master-copy sources window.

 **Note:** To avoid repeating steps 1-4 every time the application is launched check the "*Autoload mounted Disk Images at every application start*" box. This will complete the mounting process automatically in the future.

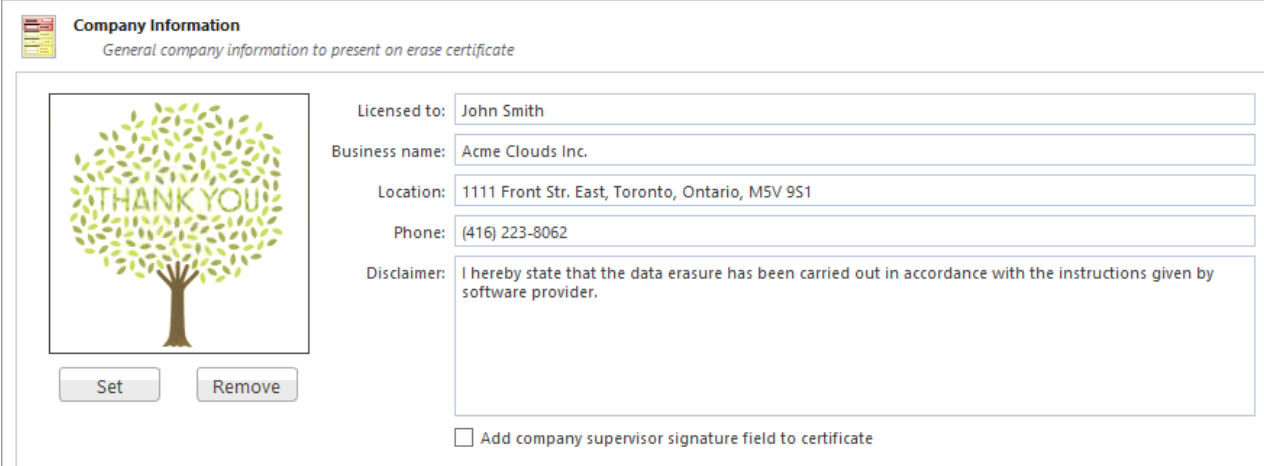
Related tasks

[Mount Disk Image](#) on page 42


[Disk Clone](#)

Company Information

These settings allow user to configure *Company Information* for [Erase Certificates](#).



To specify a *Company Logo* image just use the **Set** and **Remove** buttons. It allows you to select a desired image with local *File Explorer*. Most of the image formats are supported: JPEG, TIFF, BMP, PNG etc. The logo will be previewed in the *Company Logo* space.

 **Tip:** It is recommended to use company logo with resolution suitable for printing (300dpi) with a side not exceeding 300px.

Add all the company information to the related fields.

When the **Add company supervisor signature field to certificate** checkbox is selected the required field is added to the actual certificate.

Related information

[Erase Certificate](#)

Technician Information

This setting allows user to configure *Technician Information* for [Erase Certificates](#).

Add `Operator name` and `Comments` to the related fields.

When the **Add technician (operator) signature field to certificate** checkbox is selected the required field is added to the actual certificate.

Related information

[Erase Certificate](#)

Processing Report

These settings allow you to configure the XML reports generated by **Disk Clone**.

Report Location

User may configure where XML erasure reports are saved

File name template

Here you may specify the *template* for the XML reports. The main tags available are:

Available element:	Tag:
Serial ID	{Serial ID}
Erasure Status	{Status}
Date of Erasure	{Date(YYYY-MM-DD)}
Time of Erasure	{Time(HH-mm-ss)}

There are additional tags available (see the [tags section](#) in Appendix)

Include company information

Optionally adds the company information (defined in [Company Information](#)) into the XML erasure report

Include technician information

Optionally adds the technician information (defined in [Technician Information](#)) into the XML erasure report

Include system info

Ensures that the system-specific information is saved in the XML report, such as:

- Operating system
- Kernel version
- Architecture (x86, x64)

Include hardware info

Ensures that the system-specific information is saved in the XML report, such as:

- Motherboard manufacturer
- Motherboard description
- Host (name, domain)
- CPU (logical, physical)
- Memory

Include S.M.A.R.T. information for each disk

Optionally adds an additional information about disk health based on [S.M.A.R.T.](#) attributes into the XML erasure report.

The **Disk Clone** XML report contains the following parts:

Table 1: XML Report Parameters (sample)

Type of Information	Specific data
Technician Information	Name
	Note
Company Information	Name
	Licensed
	Location
	Phone
	Disclaimer
System Information	OS version
	Platform
	Kernel
Hardware Information	Motherboard Manufacturer
	Motherboard Description
	Number of Processors

Type of Information	Specific data
Erase Attributes	<i>Erase Verify</i>
	<i>Passes</i>
	<i>Method</i>
	<i>Verification Passes</i>
Error Handling Attributes	<i>Errors Terminate</i>
	<i>Skip interval</i>
	<i>Number of Retries</i>
	<i>Lock</i>
	<i>Source?</i>
	<i>Ignore Write?</i>
	<i>Read?</i>
	<i>Lock?</i>
Disks	<i>Device Size</i>
	<i>Device Type</i>
	<i>Serial Number</i>
	<i>Revision</i>
	<i>Product Number</i>
	<i>Name</i>
	<i>Geometric Information</i>
	<i>Partitioning Scheme</i>
Additional Report Attributes	<i>Fingerprint Information</i>
	<i>Initialize disk?</i>
Results	<i>Bay</i>
	<i>Time and Date Started</i>
	<i>Disk Information</i>
	<i>Status</i>
	<i>Result</i>
	<i>Time Elapsed</i>
	<i>Errors</i>
	<i>Name of operation</i>
Conclusion	<i>Overall result of the operation</i>

**Note:**

If internal tag <task> is present the *Result* is appeared inside.

Related information

[Name Tags](#) on page 99

Disk Label Presets

These preferences help to adjust label settings for the **Disk Clone** system globally. Labels may be formatted for any printer, page or label type (device) using **Disk Clone** highly customizable labels' features.

Disk Label Presets
Declare Disk Label Presets for different types processes and Printer Options

Label preset: Default Disk Label Preset [Add] [Delete]

Label title: **{ProcessedAs} by {AppName}** [Insert Name Tag]

Date: {DateStarted} Time: {TimeStarted}
HDD: {ProductID}
Serial: {SerialNumber} Size: {Size}
Method: {Method} Result: {Status}

☐ Rich text formatting ☐ Word wrap
☒ Add certificate logo ☐ Add signature line

☒ Append
Barcode: Aztec 2D barcode
Code 39 1D
Code 93 1D
Code 128 1D
Format: **QR Code** [Insert Name Tag]

Preview: ^{TimeStarted}^{OrderID}^{Sequence 0#}^{ProcessType}^{Method}^{Status}
^XL-546453PF-D002^03^Erase^NIST-800-88 (Three Passes)^Success

Encoding: Not specified Error correction level (0-8): 0 Size, mm: 25

Print Options

Default printer for labels: <Use default printer> [Print Test Label]

Add vertical and horizontal 'on page print positioning' shift to adjust output for different printers / drivers:
Horizontal: 0.00 in Vertical: 0.00 in Size units: Inch

Label preset

Displays and let you select a default *Label Preset* or create a new one. **Add New Label Preset** button

allows you to create a custom label preset with your own specifications. **Delete** button deletes the selected label preset

Label title

Allows you to set a title to be printed (in bold) at the top of the labels. It can be company name, batch name or any other descriptors you may consider useful to identify the operation. Static text can be typed in or any dynamic attributes (tags) can be inserted at current cursor's position. Click **Insert Name Tag**

button to insert predefined tag from the drop-down list

Label Area

Label's content for the preset. Static text can be typed in or any dynamic attributes (tags) can be inserted

at current cursor's position. Click **Insert Name Tag** button to insert predefined tag from the drop-down list. Click **Clear Pattern** button to empty all label's area

Label Attributes

You can use **RTF formatting** and set **Word Wrapping** behavior using related check boxes

Add signature line

Toggling this "ON" places a line at the bottom of the label for the technician to sign off on upon completion of the wipe

Add certificate logo

Includes the logo used in the certificate as a label's watermark background

Label preview

Displays a preview of one label with the current input settings. Refreshes when any adjustments are made to the settings.

Print options

Define options for label printing including special label printers (Brother QL-570 etc.):

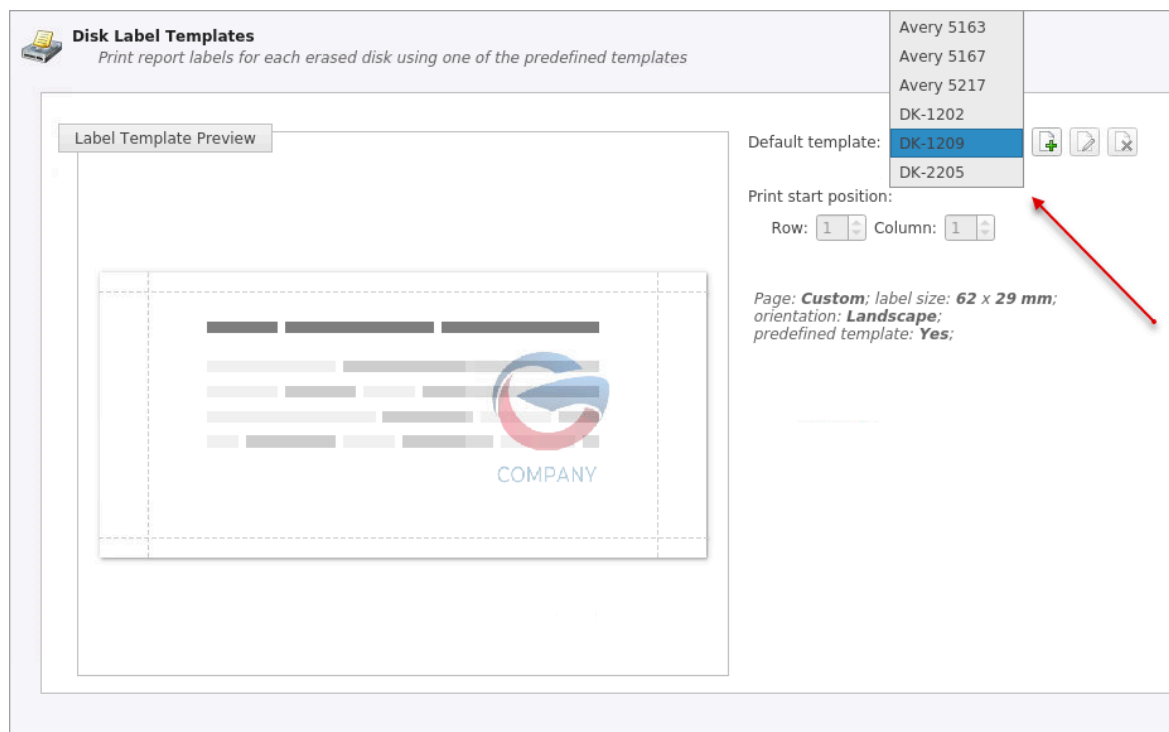
Default printer





Define printer to be used exclusively to print labels from the list of installed printers

Print output adjustments





The print output adjustments section of the dialogue allows you to *vertically* or *horizontally* displace the position measured in specific *print units* to adjust to different printers.

Print test label command will let you print *Disk Label* sample to verify your settings and selected layout attributes.






Default template: Avery 5160    

Print start position:

Row:   Column:  

*Page: Letter / ANSI A; page size: 8.5 x 11 in;
30 labels per page; label size: 2.64 x 1 in; orientation: Portrait;
predefined template: Yes;*

Page template

The print label dialog gives you an access to a number of predefined standard templates and to any custom templates you may create. These templates may be easily selected without opening any additional dialogs. The details of the selected template are displayed below the selection box. If your specific labels differ from any of the templates available the  button allows you to create a custom template with your own specifications. Additionally, the  button allows you to modify an existing template and the  button deletes the selected template.

Print Start Position

The *print start position* section of the dialogue allows you to select what label on the page is the one to start from. The labels won't always start from the 1x1 position, so you can adjust this setting accordingly.

Creating a new template

Upon clicking the  button the following *template editor* window appears. Descriptions of the *template editor* options are listed below.

Template title:

Preview

Page

☒ Page size

☐ Custom page size

Width: Height:

Orientation

Page margins

Label Layout

☐ Full page label

☒ Label grid

Rows: Columns:

Label spacing

Horizontal: Vertical:

Actual label size: 67.3 x 23.99 mm

Size units

Figure 70: Create a New Disk Label Template

Template Title

Here you may create a custom title for your template. This is the name to refer this template when selecting it in the *Print Label* dialog.

Page

Here you can specify the dimensions of the page used to print the labels. This may be selected from the list of standard sizes or defined using exact measurements.

Page margins

Page margins are defined for the top, bottom, left and right sides of the page.

Label Layout

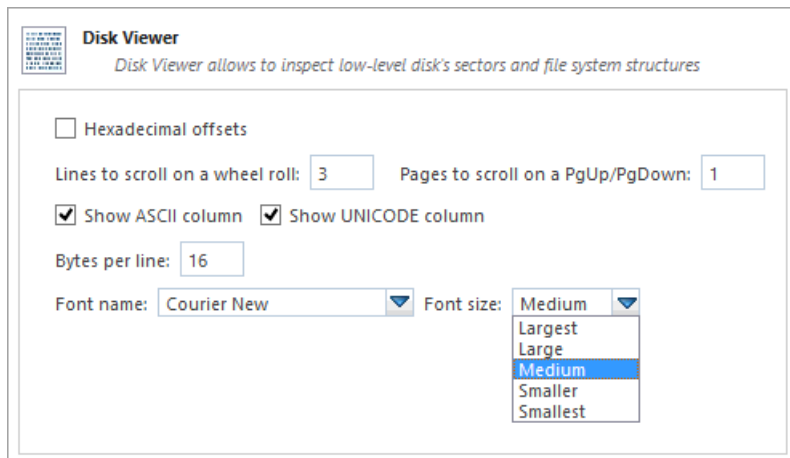
These settings define how the labels appear on the page. You may define the spacing in between labels on the page and the dimensions of the label grid. Once you've enter the proper measurements **Disk Clone** will take care of the formatting.

Size units

The units of measurement may vary between millimeters, inches, pixels and points. If a value is entered in one measurement and the unit size is changed the appropriate conversion will take place.

Disk Viewer

These settings allow user to set hexadecimal *View* settings, font and interaction.



Hexadecimal offsets

Toggles offset format between decimal and hexadecimal

Show ASCII column

Toggles display content in ASCII format

Show UNICODE column

Toggles display content in UNICODE format

Lines to scroll

Number of lines to scroll for a single mouse wheel sweep

Pages to scroll

Number of pages to skip for a single **PageUp** or **PageDown** click

Bytes per line

Defines amount of bytes per line in binary display

Font name

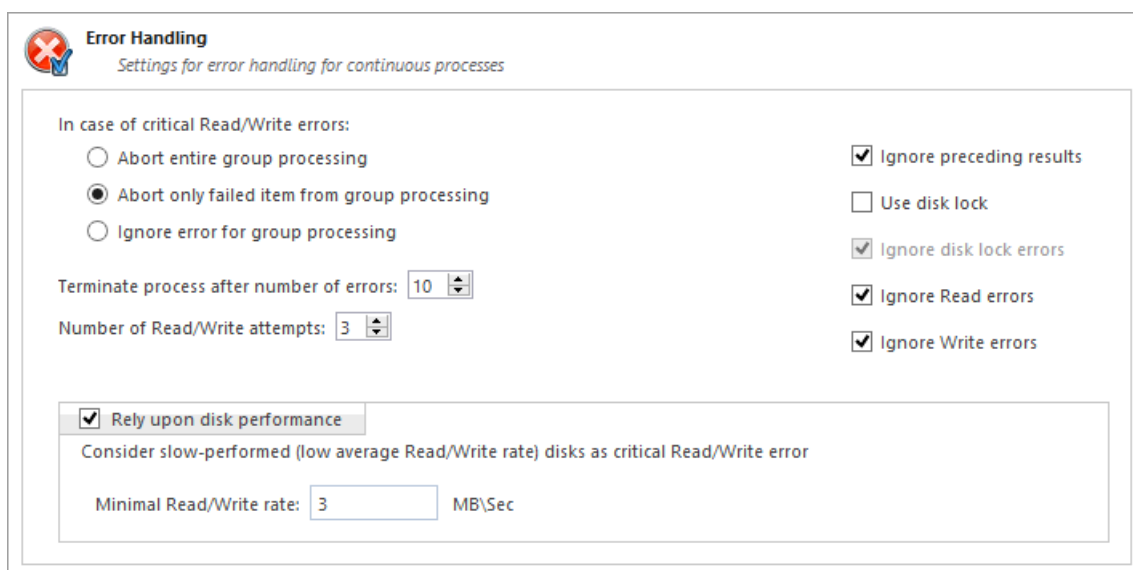
Select any *monospace* font available for better experience

Font size

Font size to be used in binary view

Error Handling

Disk Clone has a wide capabilities to handle errors during continuous disk processing. Those are the advanced settings to configure **Disk Clone**'s error handling.



Error handling attributes

Disk Clone allows user to select 1 of 3 ways to handle Read/Write Errors:

Abort entire disk group processing

This means that if user runs a *Batch* erase and one of the disks has errors the erase process for ALL the disks in the batch is terminated

Abort only failed disk from group processing

This is the suggested setting. Failed disks return an error and terminate the erase process. But other disks in the batch are not interrupted from the erase operation

Ignore error for disk grouping

Ignores the read/write error and continues erasing wherever is possible on the disk. No active or forth going operations are terminated

Terminate process after number of errors

Sets the error threshold to a certain amount before the disk operation is terminated and deemed unsuccessful

Number of Read/Write attempts

Sets the number of attempts **Disk Clone** makes to perform an operation when an error is encountered before it stops execution

Ignore preceding results

Errors (if any) on previous steps (i.e. *Examination*) are ignored and following steps (i.e. *Erase*, *Clone*) will be performed. If turned off the errors on previous steps will stop all further actions

Use disk lock

Locks disks from being used by any other applications

Ignore disk lock errors

Errors encountered with **Disk Clone** not being able to access locked disks are ignored

Ignore read/write errors

Toggle whether errors should appear for read/write errors

Rely upon disk performance

Set a minimum acceptable read/write speed in megabytes per second for disks to flag under-performing drives.

S.M.A.R.T. Diagnostics

S.M.A.R.T. attributes may also be used in error handling. So threshold limits may be set on some or on all of the disks S.M.A.R.T. parameters. This may speed up processing by immediately terminating operations with unusable drives

SMART Diagnostics
Disk S.M.A.R.T. attributes failure control

☒ Use SMART Diagnostics

Use S.M.A.R.T. attributes to determine threshold limits to **terminate** any long-going disk action, such as **Erase** or **Disk Examine** to avoid unstable behavior due to **disk failures**, if any of define SMART attributes rules criteria is met.

Critical device status attributes

- ☐ [003] Spin-Up Time Might indicate either a controller or a spindle bearing problem
- ☐ [005] Reallocated Sectors Count Indicates how many defective sectors were discovered on the drive and remapped using a spare sectors pool
- ☒ [010] Spin-up Retries Indicates severe controller or bearing problem
- ☐ [197] Current Pending Sectors Indicates how many suspected defective sectors are pending for further investigation
- ☐ [198] Off-line Uncorrectable Indicates how many defective sectors were found during the off-line scan

Device error attributes

- ☐ [007] Seek Error Rate Frequency of the errors during disk head positioning
- ☐ [013] Soft Read Error Rate
- ☒ [187] Reported Uncorrectable Errors The number of UNC errors, i.e. read errors which Error Correction Code (ECC) failed to recover
- ☐ [200] Write Error Rate Rate of errors during write operations
- ☐ [201] Soft Read Error Rate
- ☐ [250] Read Error Retry Rate

Drive lifetime information

- ☒ [004] Start/Stop Count Estimated remaining life, based on the number of spin-up/spin-down cycles
- ☐ [009] Power-On Hours Count Estimated remaining lifetime, based on the time a device was powered on
- ☐ [192] Power-Off Retract Cycles The number of unexpected power outages when the power was lost before a command to turn off the disk is i
- ☐ [240] Head Flying Hours Time a disk head spent in the data zone, rather than in the parking area or on a head ramp

Select All Select None

Validate disk SMART attributes at every 10% of ongoing process

Note: Query execution for S.M.A.R.T. attributes is time and resource consuming operation. It can interrupt disk erasure procedure for several seconds. Thus it is recommended to validate these attributes not very frequently

Related information

[S.M.A.R.T. Monitor](#) on page 71

E-mail Notifications

Disk Clone can deliver results of its sanitation process by e-mail.

Run Cloning data on 1 disk(s) disk batch
Disk batches are used for automated actions applied for group of disks with the same action attributes at once.

Start → Disk Erase → Disk Clone → Print Clone Labels → Processing Report → E-Mail Notifications → Complete

☒ Use E-Mail Notifications
 Send to:
 E-Mail attachments:
☒ Report file (XML) ☒ Application log file (LOG)

General Options
 Disk Erase
 Disk Clone
 Processing Report
E-Mail Notifications
 Error Handling

XML Report and Application Log files can be sent to the email specified, just check the related option.

When user selects **Use E-Mail Notifications** option the next set of options: **SMTP Server Settings** will be available for configuration in these Preferences.

SMTP Server Settings

These settings allow configuring mailer settings for delivering erasing/wiping reports to user's mailbox. *Simple Mail Transport Protocol* (SMTP) is responsible for transmitting e-mail messages and needs to be configured properly.

SMTP Server Settings
Settings for e-mail notification

☒ Free Account ☐ Custom Account

To:
 From:
 Server:
 Port: Choose any port number within range from 25 to 5000

☒ SMTP Server Authorization
 Username:
 Password:

Account Type

Disk Clone offers you a free *SMTP* account located on **www.smtp-server.com** that can be used for sending reports out. By default all the required parameters are pre-filled and configured properly. The only field you need to type in is the e-mail address where reports will be sent to. If your corporate policy does not allow using services other than its own you need to switch this option to *Custom Account* and configure all the settings manually. Ask your system/network administrator to get these parameters.

To

Type an e-mail address where erasing/wiping reports will be sent to

From

Type an e-mail address which you expect these reports to come from

SMTP Server

Disk Clone offers you the use of smtp-server.com for a free *SMTP* account. This account is pre-configured for **Disk Clone** users. Ask your system/network administrator to get the *SMTP* server name to be used in the *Custom Account*

SMTP Port

For the free *SMTP* account **Disk Clone** allows you to use smtp-server.com on port 80. This is a standard port being used by all web browsers to access the Internet. This port most likely is open on a corporate and home networks. Other ports can be filtered by and closed by a network firewall. Ask your system/network administrator to set up a proper *SMTP* port for the related *SMTP* server.

SMTP Server authorization

To avoid spam and other security issues some *SMTP* servers require each user to be authorized before sending e-mails. In this case a proper *username* and *password* are required. Ask your system/network administrator to get proper configuration settings.

Appendix

Glossary

BIOS settings

Basic Input Output Subsystem is the program a personal computer's microprocessor uses to get the computer system started after you turn it on. It also manages data flow between the computer's operating system and attached devices such as the hard disk, video adapter, keyboard, mouse and printer. A typical method to access the BIOS settings screen is to press F1, F2, F8, F10 or ESC during the boot sequence.

Boot priority

BIOS settings allow you to run a boot sequence from a floppy drive, a hard drive, a CD/DVD-ROM drive or a USB device. You may configure the order that your computer searches these physical devices for the boot sequence. The first device in the order list has the first boot priority. For example, to boot from a CD/DVD-ROM drive instead of a hard drive, place the CD/DVDROM drive ahead of the hard drive in priority.

CSV-file

A *comma-separated values (CSV)* file is a delimited text file that uses a comma to separate values. Each line of the file is a data record. Each record consists of one or more fields, separated by commas. The use of the comma as a field separator is the source of the name for this file format. A *CSV-file* typically stores tabular data (numbers and text) in plain text, in which case each line will have the same number of fields.

Data Cluster

A cluster or *allocation unit* is a unit of disk space allocation for files and directories. To reduce the overhead of managing on-disk data structures, the filesystem does not allocate individual disk sectors by default, but contiguous groups of sectors, called clusters. A cluster is the smallest logical amount of disk space that can be allocated to hold a file. Storing small files on a filesystem with large clusters will therefore waste disk space; such wasted disk space is called *slack space*. For cluster sizes which are small versus the average file size, the wasted space per file will be statistically about half of the cluster size; for large cluster sizes, the wasted space will become greater. However, a larger cluster size reduces bookkeeping overhead and fragmentation, which may improve reading and writing speed overall. Typical

cluster sizes range from 1 sector (512 B) to 128 sectors (64 Kb). The operating system keeps track of clusters in the hard disk's root records or MFT records. (See lost cluster).

Deleted boot records

All disks start with a boot sector. In a damaged disk (if the location of the boot records is known) the partition table can be reconstructed. The boot record contains a file system identifier.

ISO

An International Organization for Standardization ISO-9660 file system is a standard CD-ROM file system that allows you to read the same CD-ROM whether you're on a PC, Mac, or other major computer platform. Disk images of ISO-9660 file systems (ISO images) are a common way to electronically transfer the contents of CD-ROMs. They often have the filename extension .ISO (though not necessarily), and are commonly referred to as "ISOs".

Lost cluster

A cluster that has an assigned number in the file allocation table, even though it is not assigned to any file. You can free up disk space by reassigning lost clusters. In DOS and Windows you can find lost clusters with the ScanDisk utility.

MFT records

Master File Table. A file that contains the records of every other file and directory in an NTFS-formatted hard disk drive. The operating system needs this information to access the files.

Root records

File Allocation Table. A file that contains the records of every other file and directory in a FAT-formatted hard disk drive. The operating system needs this information to access the files. There are FAT32, FAT16 and FAT versions.

Sector

The smallest unit that can be accessed on a disk. Tracks are concentric circles around the disk and the sectors are segments within each circle.

S.M.A.R.T.

S.M.A.R.T. (*Self-Monitoring, Analysis and Reporting Technology*; often written as *SMART*) is a monitoring system included in computer hard disk drives (*HDDs*), solid-state drives (*SSDs*) and *embedded MultiMediaCards (eMMC)* drives. Its primary function is to detect and report various indicators of drive reliability with the intent of anticipating imminent hardware failures. When **S.M.A.R.T.** data indicates a possible imminent drive failure, software running on the host system may notify the user so preventative action can be taken to prevent data loss, and the failing drive can be replaced and data integrity maintained.

Unallocated space

Space on a hard disk where no partition exists. A partition may have been deleted or damaged or a partition may not have been created.

Windows system caching

Windows reserves a specified amount of volatile memory for file system operations. This is done in RAM because it is the quickest way to do these repetitive tasks.

Windows system records

The Windows registry keeps track of almost everything that happens in Windows OS. This enhances performance of the computer when doing repetitive tasks. Over time, these records can take up a lot of space.

Erase Disk Concepts

Erasing Confidential Data

Modern methods of data encryption are deterring network attackers from extracting sensitive data from stored database files.

Attackers (who want to retrieve confidential data) become more resourceful and look for places where data might be stored temporarily. For example, the Windows **DELETE** command merely changes the files attributes and location so that the operating system will not look for the file. The situation with *NTFS* is similar.

One avenue of attack is the recovery of data from residual data on a discarded hard drive. When deleting confidential data from hard drives, removable disks or USB devices, it is important to extract all traces of the data so that recovery is not possible.

Most official guidelines regarding the disposal of confidential magnetic data do not take into account the depth of today's recording densities nor the methods used by the OS when removing data.

Removal of confidential personal information or company trade secrets in the past might have been performed using the **FORMAT** command or the **FDISK** command. Using these procedures gives users a sense of confidence that the data has been completely removed.

When using the **FORMAT** command Windows displays a message like this:

Important: Formatting a disk removes all information from the disk.

The **FORMAT** utility actually creates new *FAT* and *ROOT* tables, leaving all previous data on the disk untouched. Moreover, an image of the replaced *FAT* and *ROOT* tables is stored so that the **UNFORMAT** command can be used to restore them.

FDISK merely cleans the Partition Table (located in the drive's first sector) and does not touch anything else.

Disk Clone Industrial is able to erase data on entire drive with a choice of [One Pass Zeros](#) and [One Pass Random](#) international disk sanitizing standards

How fast?

An actual speed depends on many factors:

- HDD speed: RPM and *SATA/SCSI/SAS* type - the most important factor
- Disk Controller speed: *SAS* (6 Gbps/12 Gbps), *SATA III* (6Gbps), *SATA II* (3 Gbps), *SATA I* (1.5 Gbps)
- Computer overall performance (CPU + RAM)

For most modern computers and disks (manufactured within the last 5-7 years) *SATA III* standard is supported, so erase speed is limited by HDD throughput (disk write speed) only.

Our tests give the results: **10 GB per minute (in average) per pass** with decent computer configuration and disks with age of up to 5 years old.

For example, 2 TB *Toshiba* disk has been erased on Windows platform with one pass within 3 hours and 32 minutes, 14 TB *Western Digital* disk - within 18 hours 53 minutes.

The following snapshots are real-test certificates for erasing of:

1) **2 TB Toshiba** (manufactured in 2015) *SATA III* (6 Gbps) 7200 rpm disk with [One Pass Zeros](#) showing the average speed of **9 GB/min** per pass

Active@ KillDisk



ERASE CERTIFICATE

Disk Erase

Attributes

Erase Method: **One Pass Zeros, 1 pass**
 Verification: **No**
 Use Fingerprint: **No**
 Initialize Disk: **No**

Disk Information

Name: PhysicalDrive1	Partitioning: RAW (Basic)
Product Name: TOSHIBA DT01ACA200	Size: 1.82 TB
Serial Number: X5G677ATS	Total Sectors: 3,907,029,168
Platform Name: \\.\PhysicalDrive1	Bytes per Sector: 512

Results

Erase Range: **Whole disk**
 Name: **Erasing PhysicalDrive1**
 Started at: **07/05/2020 10:04:27**
 Duration: **03:32:19**
 Errors: **No Errors**
 Result: **Erased**

System Information

OS: **Windows 10 (10.0) Professional 64-bit**
 Type: **x64 (AMD or Intel)**

2) **14 TB Western Digital** (manufactured in 2019) *SATA III* (6 Gbps) 7200 rpm disk with [One Pass Zeros](#) showing the average speed of **12 GB/min** per pass

Active@ KillDisk

ERASE CERTIFICATE



Disk Erase

Attributes

Erase Method: **One Pass Zeros, 1 pass**
 Verification: **No**
 Use Fingerprint: **No**
 Initialize Disk: **No**

Disk Information

Name: PhysicalDrive1	Size: 12.7 TB
Product Name: WDC WUH721414ALE6L4	Total Sectors: 27,344,764,928
Serial Number: Z2H2VXGT	Bytes per Sector: 512
Platform Name: \\.\PhysicalDrive1	

Results

Erase Range: **Whole disk**
 Name: **Erasing PhysicalDrive1**
 Started at: **07/05/2020 17:48:54**
 Duration: **18:53:08**
 Errors: **No Errors**
 Result: **Erased**

System Information

OS: **Windows 10 Professional 64-bit**
 Type: **x64 (AMD or Intel)**

Hardware Information

Manufacturer: System manufacturer	Name: System Product Name
Description: AT/AT COMPATIBLE	System: x64-based PC
Logical Processors: 8	Physical Processors: 1
Memory: 15.8 GB	

Erase Methods (Sanitation Standards)

One Pass Zeros or One Pass Random

When using *One Pass Zeros* or *One Pass Random* standard, the number of passes is fixed and cannot be changed. When the write head passes through a sector, it writes only zeros or a series of random characters.

Name Tags

General

{Computer ID}

Workstation (computer) ID

{OS}

Operating System name

{AppName}

Application name

{AppVersion}

Application full version

{KernelVersion}

Kernel version

{UniqueID}

Generated unique 8 symbols ID

Date & Time

Tags to represent current date in different formats:

{Date(YYYYMMDD)}

Complete date in full form without delimiters

{Date(YYYY-MM-DD)}

Complete date in full form with delimiters

{Date(YMMDD)}

Complete date in short form without delimiters

{Date(YYYY)}

Year in full form

{Date(YY)}

Year in short form

{Date(Month)}

Full month name as literal

{Date(MM)}

Month as digital with leading zero

{Date(DD)}

Day of month with leading zero

{Time(HHmmss)}

Time with hours, minutes and seconds without delimiters

{Time(HH-mm-ss)}

Time with hours, minutes and seconds with delimiters

{Time(HH)}

Hours with leading zero

{Time(mm)}

Minutes with leading zero

{Time(ss)}

Seconds with leading zero

Disk

Values for these name tags retrieved from context device:

{Serial ID}

Disk serial number, retrieved from OS or from [S.M.A.R.T.](#) attributes

{Platform ID}

Disk platform identification (may be vary due to OS format)

{Product ID}

Disk manufacturer Id

{Model}

Disk model name (if available)

{Size}

Disk size in gigabytes

{Sectors}

Disk size in sectors

Processing attributes

Disk processing attributes based on execution conditions:

{Method}

Erase method

{Passes}

Erases passes description

{Verified}

Verification attribute

{DateStarted}

Process start date

{TimeStarted}

Process start time

{TimeElapsed}

Process elapsed time

{Status}

Overall completion status for group processing or separate disk processing status.

{StatusCode}

Overall process result digital code

Item processing attributes

Item processing attributes based on execution conditions:

{ProcessType}

Process type name

{ProcessedAs}

Process short name

{Range}

Processed disk range