

# User Guide

## Storage Executive

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### Introduction

This guide describes how to install and use Storage Executive to monitor and manage Micron solid state drives (SSDs).

Storage Executive provides the ability to:

- View all drives installed in a system and see current drive status and capacity, temperature, firmware version, and driver information
- View SMART attributes
- Update firmware
- Remove all data from a drive by performing a sanitize , format drive or physical security ID (PSID) revert operation
- Enhance burst performance by enabling the Momentum Cache feature
- Improve drive performance and endurance by allocating over-provisioning capacity
- Increase drive endurance by setting Flex Capacity (supported drives only)
- Perform a drive self-test
- Create or delete namespaces

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## Installing and Starting Storage Executive

Storage Executive supports the SSDs listed below. Install Storage Executive on each system containing the SSD(s) you want to manage.

**Table 1: System Requirements**

Requirement	Description
Micron SSD	<div>SATA SSDs:</div> <ul style="list-style-type: none"> <li>• 5300 Series</li> <li>• 5210</li> <li>• 5200 Series</li> <li>• 5100 Series</li> <li>• 1300</li> <li>• 1100</li> <li>• M500</li> <li>• M500DC</li> <li>• M500IT</li> <li>• M510</li> <li>• M510DC</li> <li>• M550</li> <li>• M600</li> <li>• P400M</li> </ul> <div>SAS SSDs:</div> <ul style="list-style-type: none"> <li>• S610DC</li> <li>• S630DC</li> <li>• S650DC</li> <li>• S655DC</li> </ul> <div>NVMe™ SSDs:</div> <ul style="list-style-type: none"> <li>• 2100AI, 2100AT</li> <li>• 2200</li> <li>• 2210</li> <li>• 2300</li> <li>• 9300 Series</li> <li>• 9200 Series</li> <li>• 9100 Series</li> <li>• 7300 Series</li> <li>• 7100 Series</li> </ul>
Operating system	<ul style="list-style-type: none"> <li>• Microsoft Windows Server® 2019</li> <li>• Microsoft Windows Server 2016</li> <li>• Windows Server 2012, 2012 R2</li> <li>• Windows Server 2008 SP2 (x64), 2008 R2</li> <li>• Windows® 10 (x86, x64)</li> <li>• Windows 8.1, 8 (x86, x64)</li> <li>• Windows 7 (x86, x64)</li> <li>• Red Hat® Enterprise Linux® version 6.0 or later</li> <li>• SUSE® Linux Enterprise Desktop 12, 11</li> <li>• Ubuntu® Desktop 16.04, 18.04</li> <li>• CentOS 7.x, 6.x, 5.x</li> </ul>

**Table 2: NVMe Driver Support**

Driver	Description
Micron Windows NVMe	For all supported versions of Windows; supports all Storage Executive features
Inbox Microsoft Windows 10 NVMe	For Windows 10; supports all Storage Executive features except: -Configure Power Management feature for an NVMe drive -Perform format namespace operation

**Table 3: RAID Controller Support**

RAID Controller	Details
Avago MegaRAID	Drives connected to MegaRAID controllers appear with the following device name, where X indicates the ID of the MegaRAID controller and Y indicates the ID of the drive behind the controller: mraidX:Y

## Installation

1. Download Storage Executive from [micron.com](http://micron.com).
2. Run the installation file:
  - Windows: **Storage-Executive-setup.exe**
  - Linux: **Storage-Executive-setup.run**
3. Follow the instructions on the screen.
4. Click **Finish** when the installation completes.

## Starting Storage Executive

In Windows:

1. Open the Windows **Start** menu.
2. Click **All Programs > Micron Storage Executive > Micron Storage Executive**.

In Linux:

1. Navigate to `/opt/MicronTechnology/MicronStorageExecutive`.
2. Run the following command: `./StorageExecutiveClient.run`

When Storage Executive starts, the System Information screen appears (Figure 1 (page 7)).

## Stopping and Exiting Storage Executive

To stop and exit Storage Executive, click the **X** in the upper right window of the application.

## Obtaining Help

For help or additional information while using Storage Executive, click the **Help** link.

To contact customer support, click the **Support** link and enter the requested information.

For a list of global SSD support websites, click the **About** link and select **SSD Support Website**.

## Updating Storage Executive

To view the version of Storage Executive installed on the system, click the **About** link.



## **Storage Executive User Guide Installing and Starting Storage Executive**

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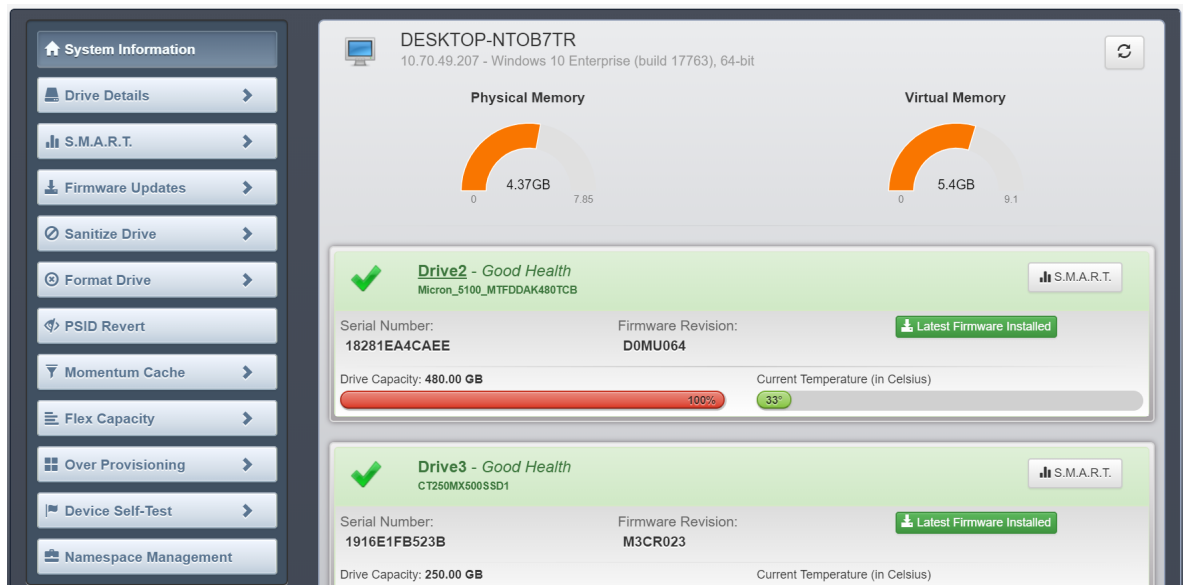
When a new version of the software becomes available, a notice automatically appears above the management options.

## Using Storage Executive

At startup, Storage Executive detects all supported Micron SSDs installed in the system as well as standard hard drives and third-party SSDs. The System Information screen appears and displays:

- Management options
- System information
- All detected drives and their status

**Figure 1: System Information**



## Management Options

Options for managing a drive appear on the left side of the screen. Options available vary depending on the type and model of drive(s) installed in the system:

- System Information
- Drive Details
- SMART
- Firmware Updates
- Sanitize Drive
- Format Drive
- PSID Revert
- Momentum Cache
- Flex Capacity
- Over-Provisioning
- Device Self-Test
- Namespace Management

## System Information

General system information appears at the top of the screen:

- System details: hostname, IP address, and installed operating system.
- Physical memory: amount of memory installed in the system.
- Virtual memory: amount of virtual memory configured in the system.









## Detected Drives

All drives installed in the system appear in the lower portion of the screen. Information displayed depends on the type and model of drive(s) detected:

- Drive status: Overall status of the drive (Table 4).
- Drive number and name: Name and number assigned to the drive. Click on the drive number to view the drive's details.
- Serial number: Manufacturing serial number of the drive.
- Firmware availability: Indicates if a new version of firmware is available for the drive. This information is not available for standard hard drives or third-party SSDs.
- Current temperature: Current operating temperature of the drive as reported by the SMART temperature attribute. This information is not available for standard hard drives or third-party SSDs.
- Drive capacity: Percentage of drive capacity used out of total capacity.
- SMART button: Click to view the drive's Self-Monitoring, Analysis, and Reporting Technology (SMART) attributes.

The order of the drives displayed on the screen is determined by the status of each drive. Drives with errors or warnings appear before drives that are functioning properly (with no errors).

**Table 4: Drive Status**

Drive Status	Description
 <b>Drive3 - Good Health</b> Micron_M550_EEFDDAK512MAY	<b>Good Health</b> Drive is operating properly (no errors).
 <b>Drive3 - Busy</b> Micron_M550_EEFDDAK512MAY	<b>Busy</b> Drive is busy with an operation. This is a temporary state and occurs when a long-running operation is in progress.
 <b>Drive6 - Sanitize In Progress</b> Micron_M600_EEFDDAK512MAY	<b>Sanitize In Progress</b> Sanitize drive operation is in progress.
 <b>Drive5 - Near TBW</b> Micron_M600_EEFDDAK512MAY	<b>Near TBW/Has Met TBW</b> Drive is nearing or has met its limit for total bytes written (TBW). The drive will continue to operate normally; however, it is recommended to back up all drive data to an alternate storage device and replace the drive as soon as possible.
 <b>Drive4 - Nearing Write Protect</b> Micron_M500_EEFDDAK512MAY	<b>Nearing Write Protect</b> Drive is approaching the end of its lifespan and will soon enter write protect (read-only) mode. It is recommended to back up all data to an alternate storage device and replace the drive as soon as possible.
 <b>Drive4 - Exceeded SMART Threshold</b> Micron_M600_MTFDDAK1T0MBF	<b>SMART Threshold Exceeded</b> One or more SMART threshold values has been exceeded on the drive.
 <b>Drive3 - In Write Protect</b> Micron_M550_EEFDDAK512MAY	<b>In Write Protect</b> Drive has reached the end of its lifespan and is in write protect (read-only) mode. Any pending data should be saved to an alternate storage device and the drive replaced as soon as possible.
 <b>Drive4 - In Fault State</b> Micron_M500_EEFDDAK512MAY	<b>In Fault State</b> Drive is in a faulty state, which could result in unreliable behavior (drive operations may fail or drive information may no longer be available). Contact Micron support on the Contact Support page.



### Refreshing Information

Click the **Refresh** icon in the upper right corner of the screen to refresh detected drives and drive information:

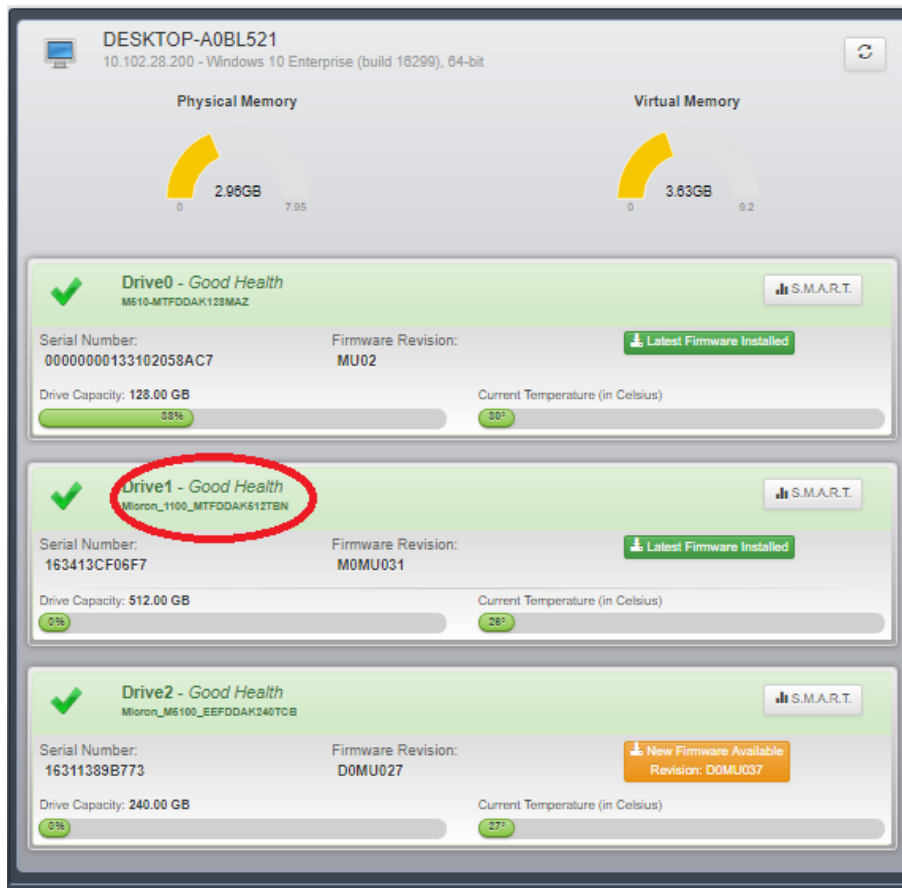


### Selecting a Drive

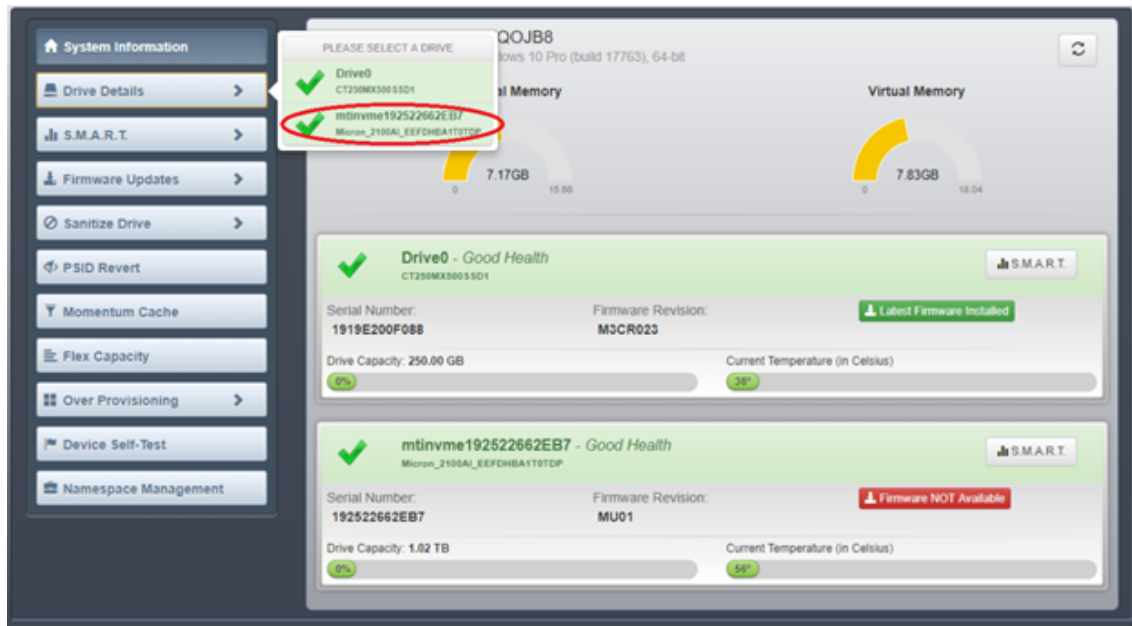
Select a drive using one of two methods:

- Click on a drive number to view the drive's details (Figure 2)
- Click a management option and then select a drive to manage (Figure 3)

**Figure 2: Selecting a Drive for Details**



**Figure 3: Selecting a Drive to Manage**



## Viewing and Saving Drive Details

The Drive Details screen provides various information about a selected drive, including:

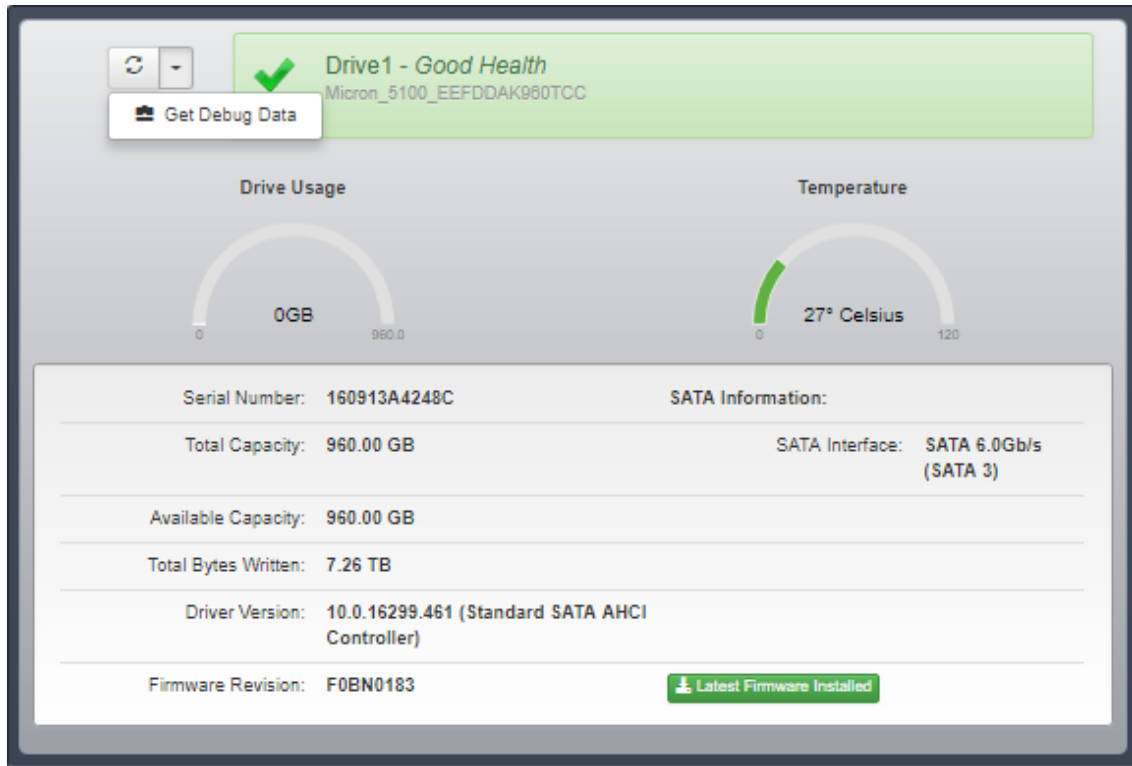
- Basic information such as capacity, interface, temperature, and driver versions
- Performance and optimization information
- SMART threshold alerts
- Debug data including controller and OS information

### Viewing Basic Information

1. Click a drive number on the System Information screen or click on the **Drive Details** menu and select a drive.

The drive's details appear.

**Figure 4: Drive Details**



**Note:** The drive capacity reported by Storage Executive may vary from the capacity reported by the operating system. Storage Executive reports 1KB as 1000 bytes. Most operating systems report 1KB as 1024 bytes. Also note:

- Drive capacity (Drive Usage gauge) does not appear for drives behind a RAID controller.
- If a drive does not contain partitions, the entire drive is reported as available.
- If a drive does contain a partition but the partition is not mounted, the entire partition is reported as unavailable.
- If a drive contains a partition and the partition is mounted, the portion that is used is reported as unavailable while the remaining portion is reported as available.

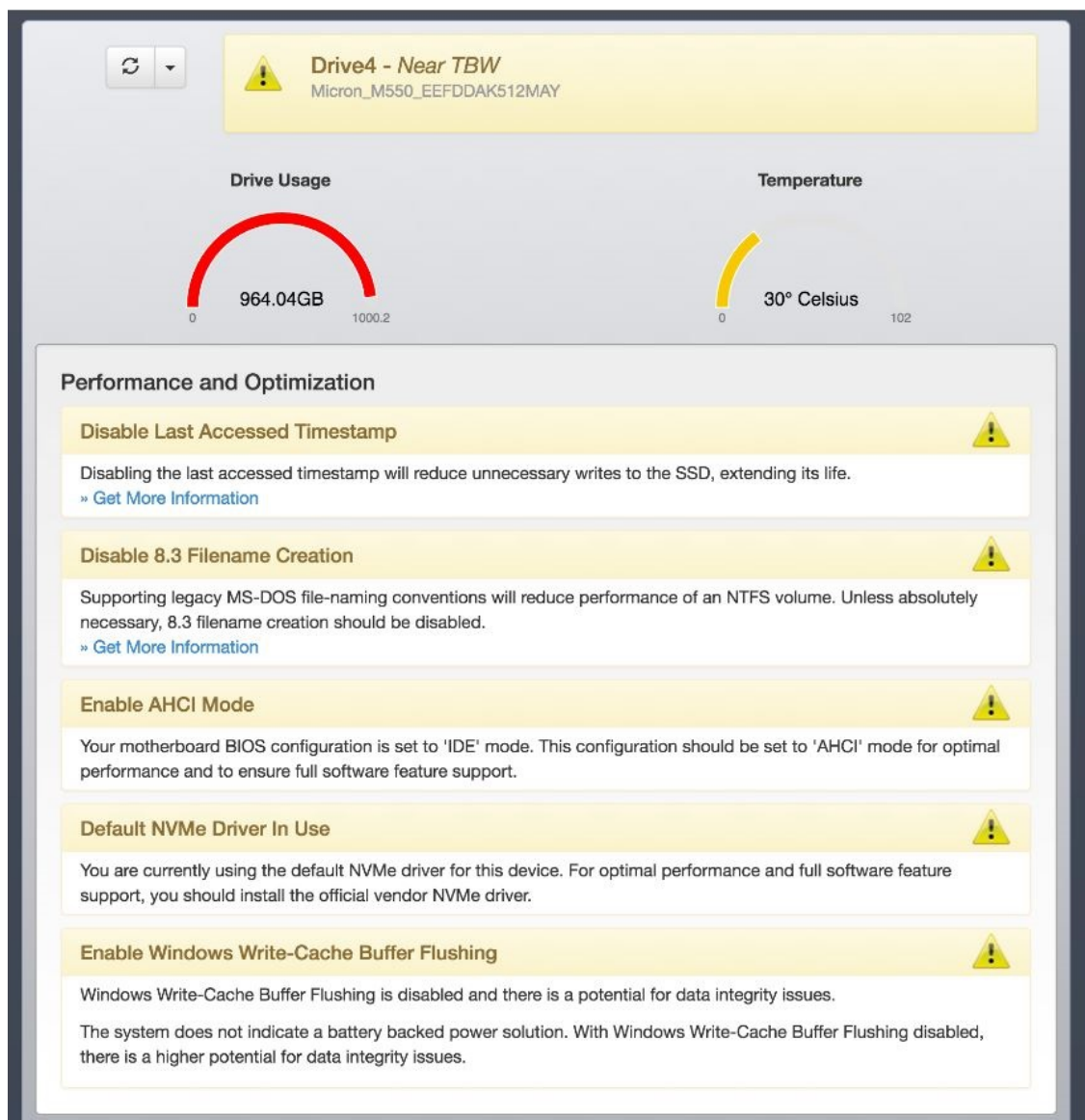
2. Click the **Refresh** button to refresh the information.

### Viewing Drive Performance and Optimization

If the selected drive can be optimized for performance, information appears at the top of the Drive Details screen describing what action(s) can be taken.

Note: This information varies and only appears if the selected drive is not meeting a performance or optimization condition.

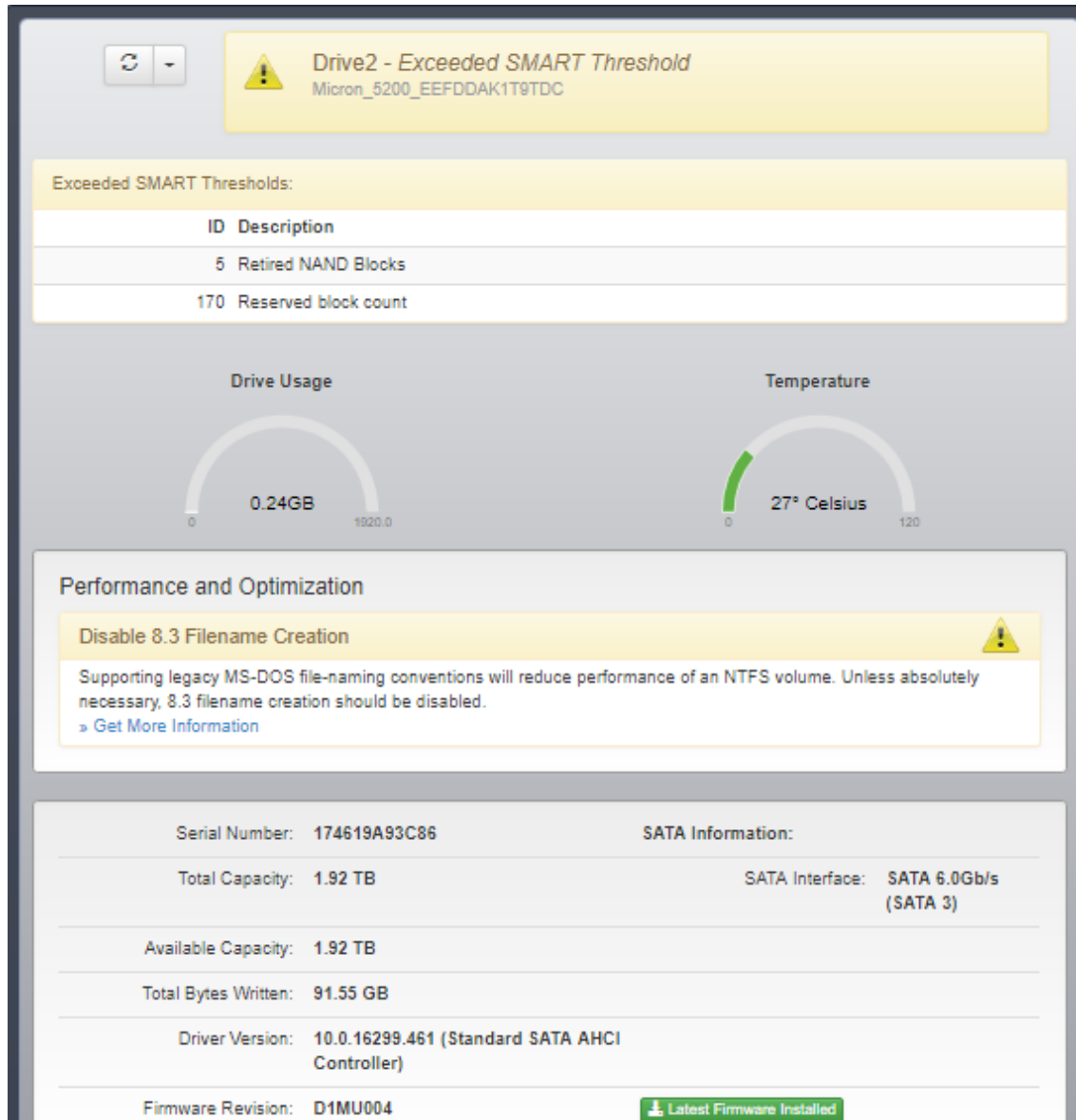
**Figure 5: Performance and Optimization Information**



### Viewing SMART Thresholds

If the selected drive exceeds a SMART threshold, a warning appears at the top of the Drive Details screen with a list of SMART attributes.

**Figure 6: Drive Details—SMART Threshold Exceeded**



### Saving Drive Debug Data

Drive debug data can be useful when contacting customer support. This information includes:

- Controller information (firmware logs, SMART data, and SMART logs)
- Drive information (serial number, model number, firmware version, drive status, and driver version)
- OS information (memory usage, kernel version, system interrupts, and CPU information)

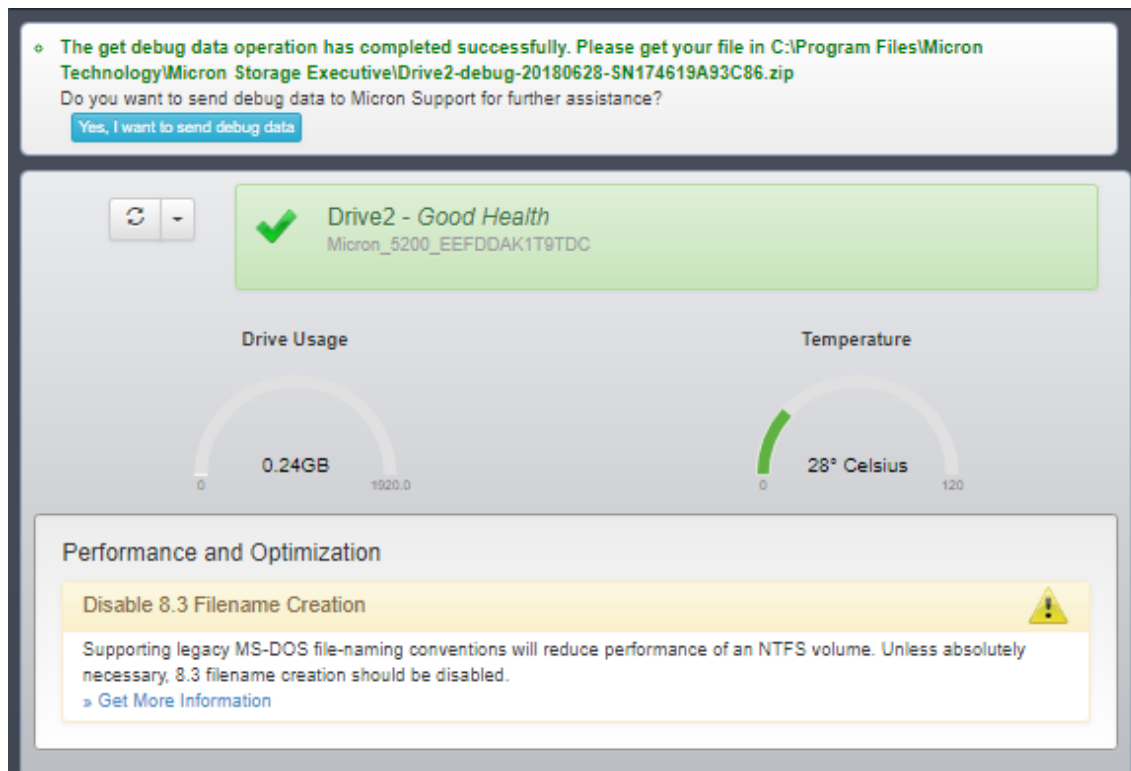
1. Open the drop-down menu at the top of the Drive Details screen and select the **Get Debug Data** option.

**Figure 7: Get Debug Data Option**



The data is saved as a .zip file in the Storage Executive installation directory, as noted at the top of the Drive Details screen:

**Figure 8: Debug Data**



2. You can send the debug data to Micron support by clicking the **Yes, I want to send debug data** button.
3. Click the **Get Debug Data** option multiple times to overwrite the .zip file with the latest information.

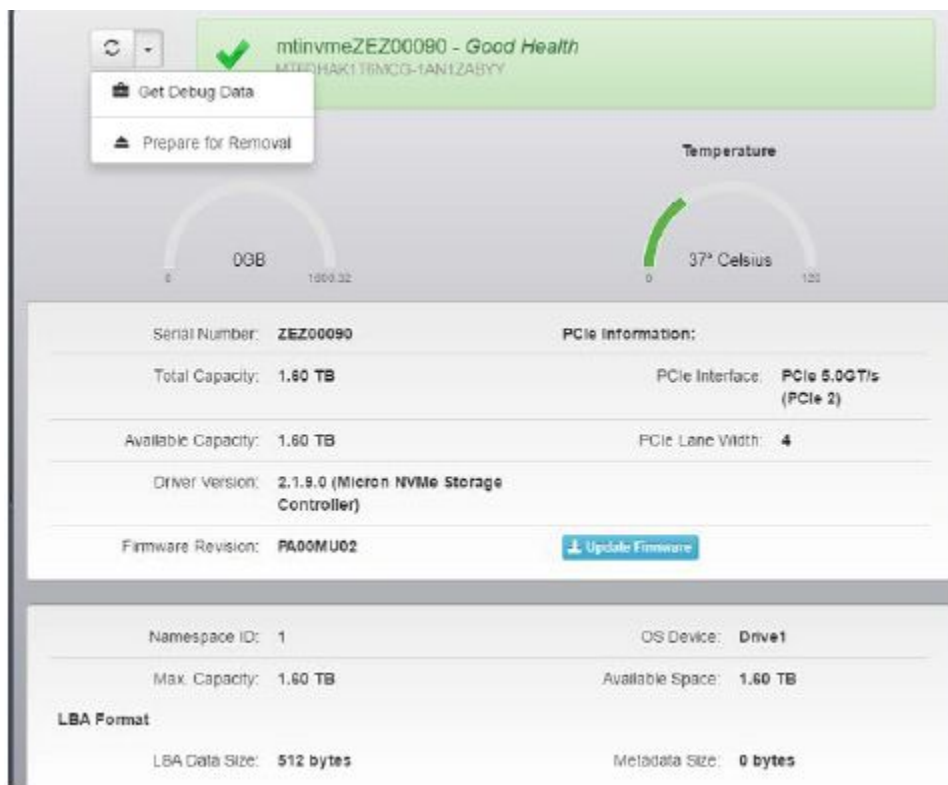
### Removing a Drive (PCIe Drives Only)

This section describes how to use Storage Executive to prepare a drive for physical removal from the system.

Note: This option is available only with hot-swappable PCIe drives.

1. Click on the **Drive Details** menu and select a drive.
2. Click the drop-down menu at the top of the screen and select **Prepare for Removal**.

**Figure 9: Prepare for Removal**





## Displaying SMART Attributes

This section describes how to display the Self-Monitoring, Analysis, and Reporting Technology (SMART) attributes of a Micron SSD. SMART is a monitoring framework used to detect and report various indicators of consistency and anticipate failures.

1. Click on the **SMART** menu and select a drive.
2. The standard SMART attributes and attribute IDs for the selected drive appear.

For a customer-specific list of SMART attribute details, see the Client SSD SMART Attribute Reference Technical Note (TN-FD-22) available on [micron.com](http://micron.com), or contact your Micron customer representative.

If a drive exceeds a SMART attribute threshold, the status appears on the Drive Details screen. See Figure 6 (page 14).

**Figure 10: SMART Attributes**



ID	Description	Attribute Data	Units
1	Raw Read Error Rate	1069	Errors/Page
5	Reallocated NAND Block Count	125	NAND Blocks
9	Power On Hours Count	1395	Hours
12	Power Cycle Count	98	Power Cycles
170	Reserved Block Count	125	Bad Blocks
171	Program Fail Count	0	NAND Page Program Failures
172	Erase Fail Count	0	NAND Block Erase Failures
173	Block Wear-Leveling Count	5	Erases
174	Unexpected Power Loss Count	64	Unexpected Power Loss events
180	Unused Reserved Block Count	27027	Blocks
183	SATA Interface Downshift	1	Downshifts
184	Error Correction Count	0	Correction Events
187	Reported Uncorrectable Errors	0	ECC Correction Failures
188	Command Time Out Count	38	Count
194	Enclosure Temperature	27	Current Temperature (C)
		39	Highest Lifetime Temperature (C)
195	Cumulative Corrected ECC	0	Errors
196	Reallocation Event Count	60	Events
197	Current Pending ECC Count	0	ECC Counts
198	SMART Off-line Scan Uncorrectable Errors	0	Errors
199	Ultra-DMA CRC Error Count	0	Errors
202	Percentage Lifetime Remaining	100	% Lifetime Remaining
206	Write Error Rate	0	Program Fails/MB
210	RAIN Success Recover Page Count	0	TUs successfully recovered by RAIN
246	Cumulative Host Sectors Written	14180393871	512 Byte Sectors
247	Host Program Page Count	445812237	NAND Page
248	FTL Program Page Count	32440210	NAND Page

3. Click the **Refresh** button to refresh the drive's SMART details.

## Performing a Firmware Update

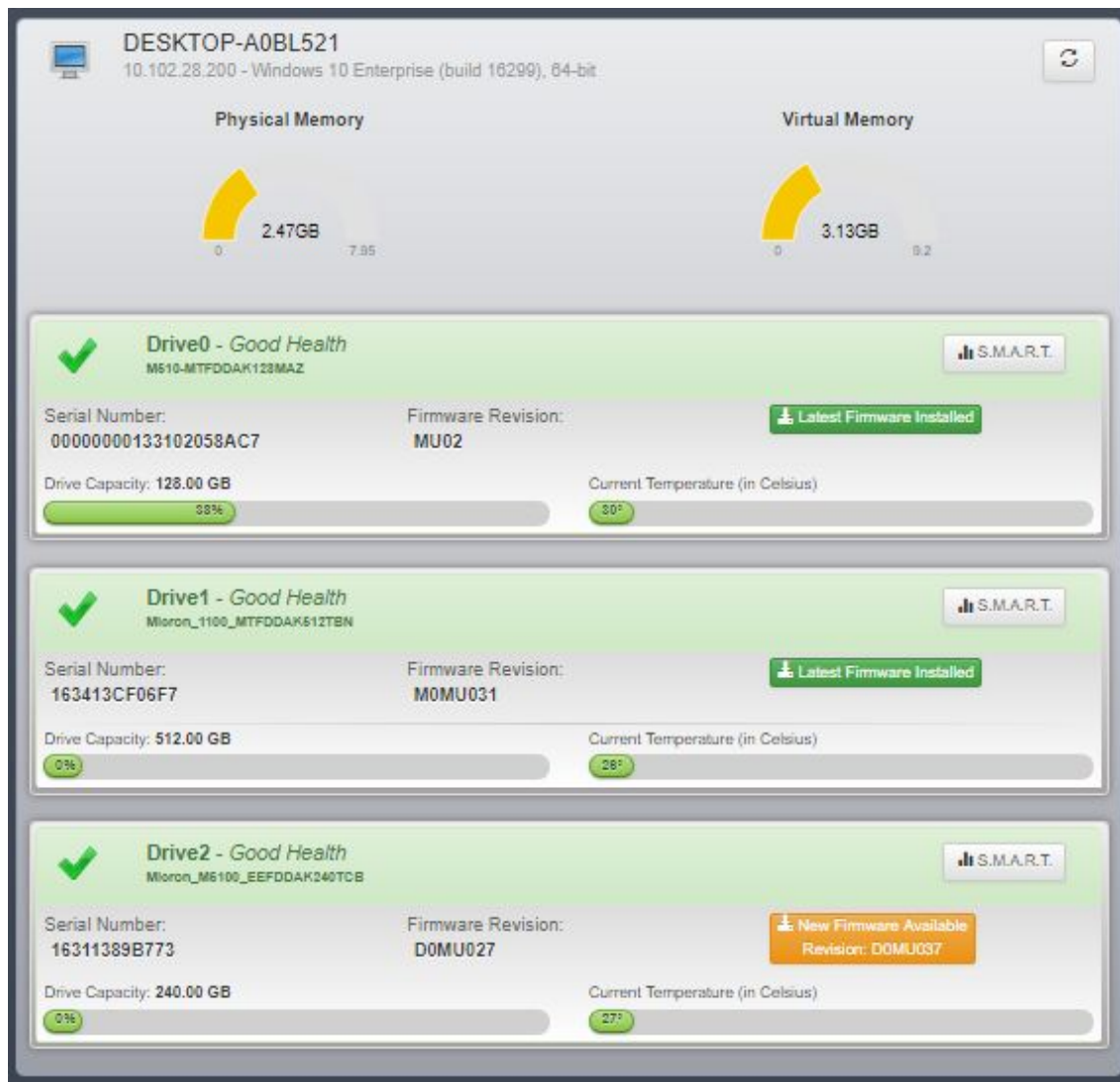
This section describes how to check for and perform firmware updates on supported drives.

### Checking for Firmware Updates

To see if a firmware update is available, view the drive information on the System Information screen (Figure 11).

If your system has Internet access and is *not* behind a proxy server, Storage Executive detects and automatically displays the status of a drive's firmware version: Latest Firmware Installed, New Firmware Available, Update Firmware, or Firmware Not Available. For some drives, a Check Firmware button is available to manually check the status. For standard hard drives or third-party SSDs, firmware update is not available.

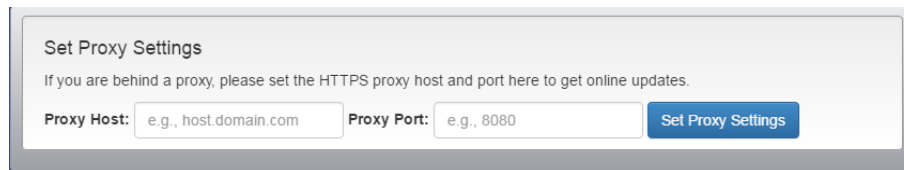
**Figure 11: System Information—Firmware Update Availability**



### Systems Behind a Proxy Server

If your system is behind a proxy server, set the proxy server information (on the System Information screen or the Firmware Update screen) to enable firmware update checks:

**Figure 12: Set Proxy Settings**



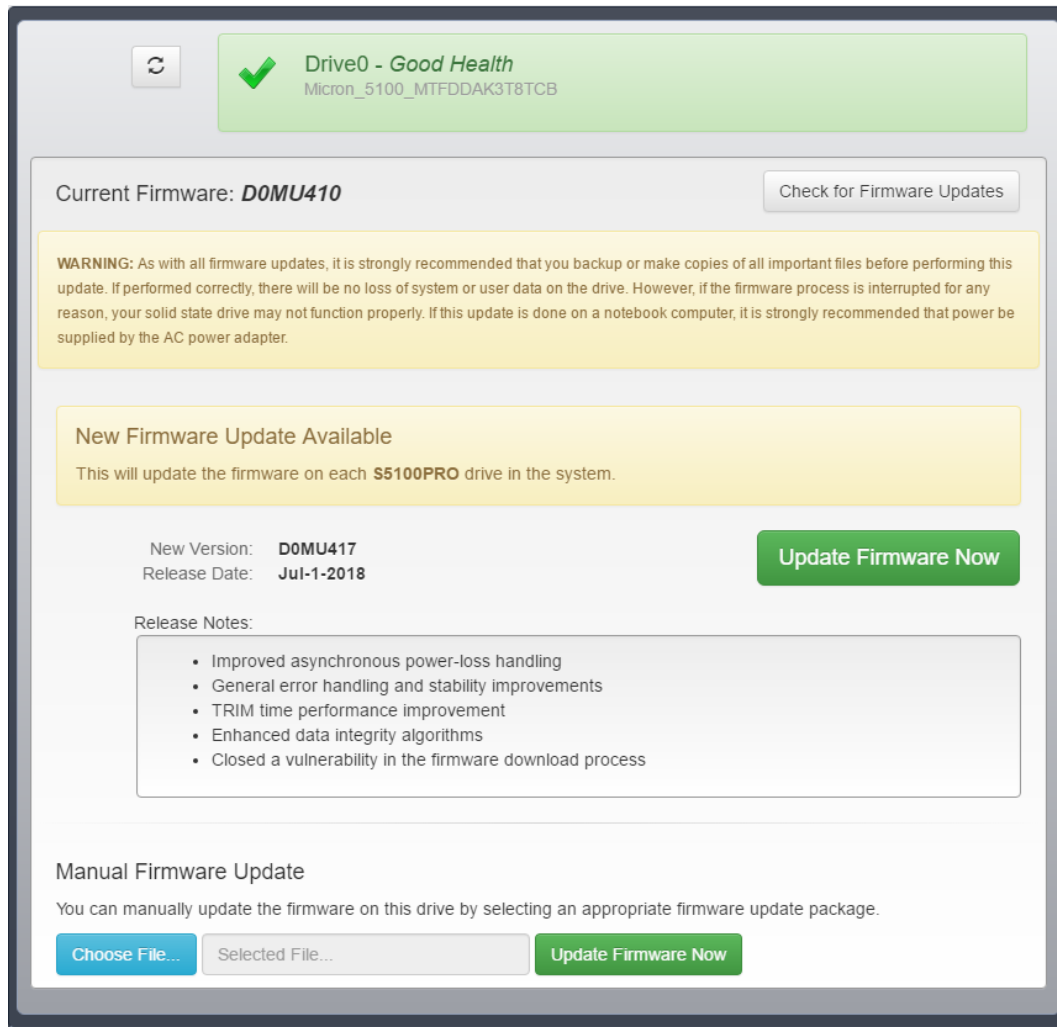
The image shows a 'Set Proxy Settings' dialog box. It has a title bar at the top. Below the title bar, the text reads: 'Set Proxy Settings' followed by 'If you are behind a proxy, please set the HTTPS proxy host and port here to get online updates.' Below this text, there are two input fields: 'Proxy Host:' with a placeholder 'e.g., host.domain.com' and 'Proxy Port:' with a placeholder 'e.g., 8080'. To the right of these fields is a blue button labeled 'Set Proxy Settings'.

### Updating Firmware

Before performing a firmware update, save all work and close any applications that may be running. All drives in the system of the same model type are updated when you perform this operation.

1. Click the **Firmware Updates** menu and select a drive.
2. Review the information on the screen.

**Figure 13: Update Firmware**



### 3. Click **Update Firmware Now**.

During the update, Storage Executive runs in an ISO environment. A reboot occurs automatically after the firmware is installed (Windows systems only).

### 4. After the firmware is updated, verify the new version by viewing the drive's details on the System Information screen.

## Manually Updating Firmware

1. Download the latest firmware from [micron.com](http://micron.com).
2. Click the **Choose File** option and locate the firmware package file.
3. Click **Update Firmware Now**.

## Erasing a Drive

This section explains how to remove all data from a drive by performing a sanitize, Format drive or physical security ID (PSID) revert operation.

### Performing a Sanitize Drive Operation

The sanitize drive operation is supported on all drives except for encrypted drives (those with TCG-enabled/password-protected). These drives must use the PSID revert operation to remove data. See Performing a PSID Revert Operation (page 26).

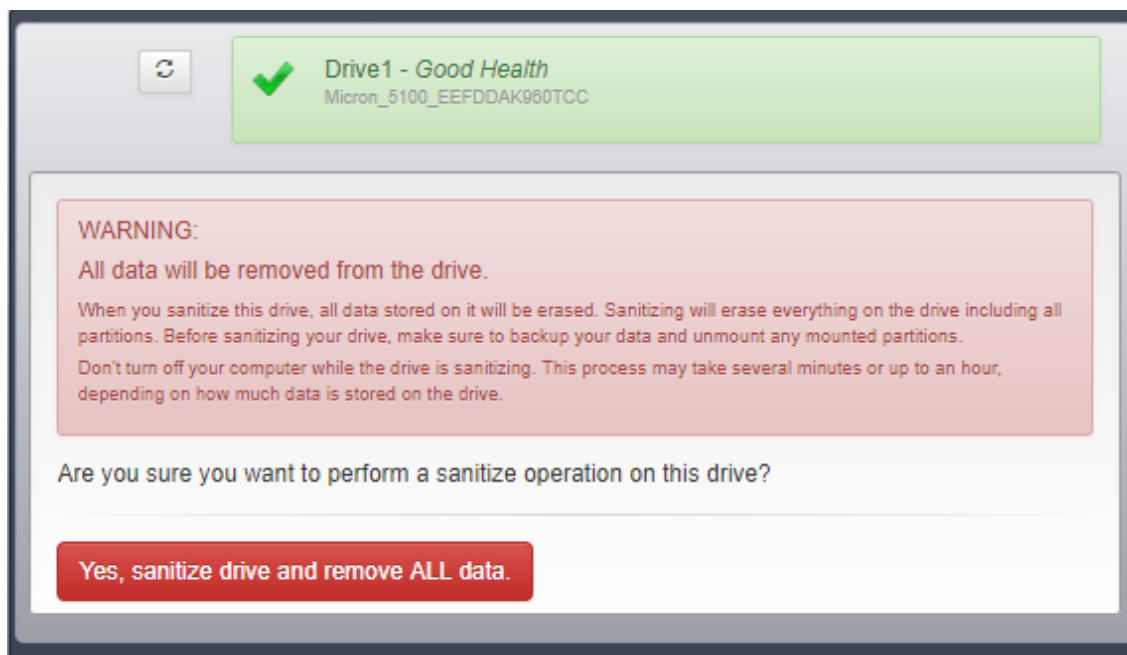
Also note:

- This operation runs on systems in AHCI mode. If your system is in IDE mode, change to AHCI mode and then proceed.
- This operation cannot be performed on mounted drives. Unmount the drive before proceeding. See Unmounting Drives and Drive Partitions.
- This operation cannot be performed on drives connected behind a RAID controller.

**CAUTION:** This operation completely removes all data from a drive. If possible, back up important data to alternate storage media before performing the operation.

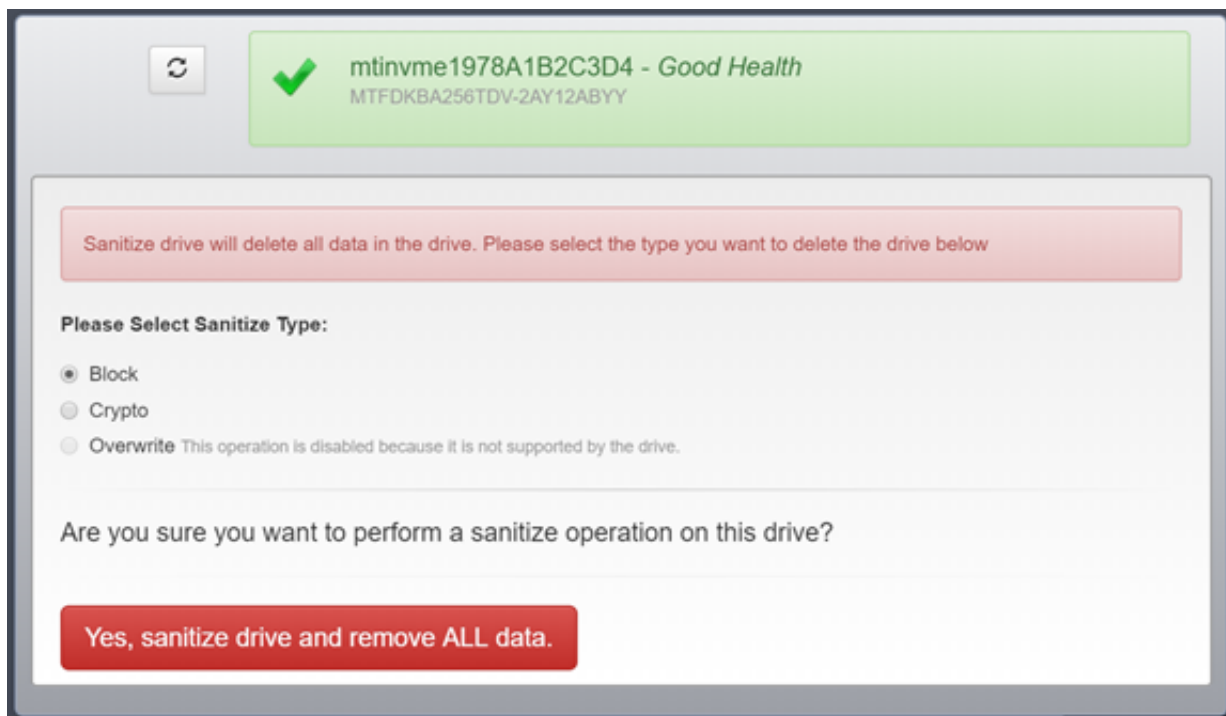
1. Click the **Sanitize Drive** menu and select a drive.
2. Review the information on the screen.

**Figure 14: Sanitize Drive for non-NVMe drives**



For NVMe drive Block Erase, Crypto Erase, or Overwrite can be selected.

**Figure 15: Sanitize Drive for NVMe drives**



3. If the drive is mounted or contains mounted partitions, an option to take the drive offline and unmount all partitions appears. Click this option to continue with the operation.
  4. Click Yes, sanitize drive and remove ALL data to perform the operation.
  5. The operation starts. On Windows systems (boot drives only), the system reboots during the sanitize drive process. No reboot occurs on Linux systems or on non-boot drives in Windows systems.
- When complete, all data from the drive is removed.

### Performing a Format Drive Operation

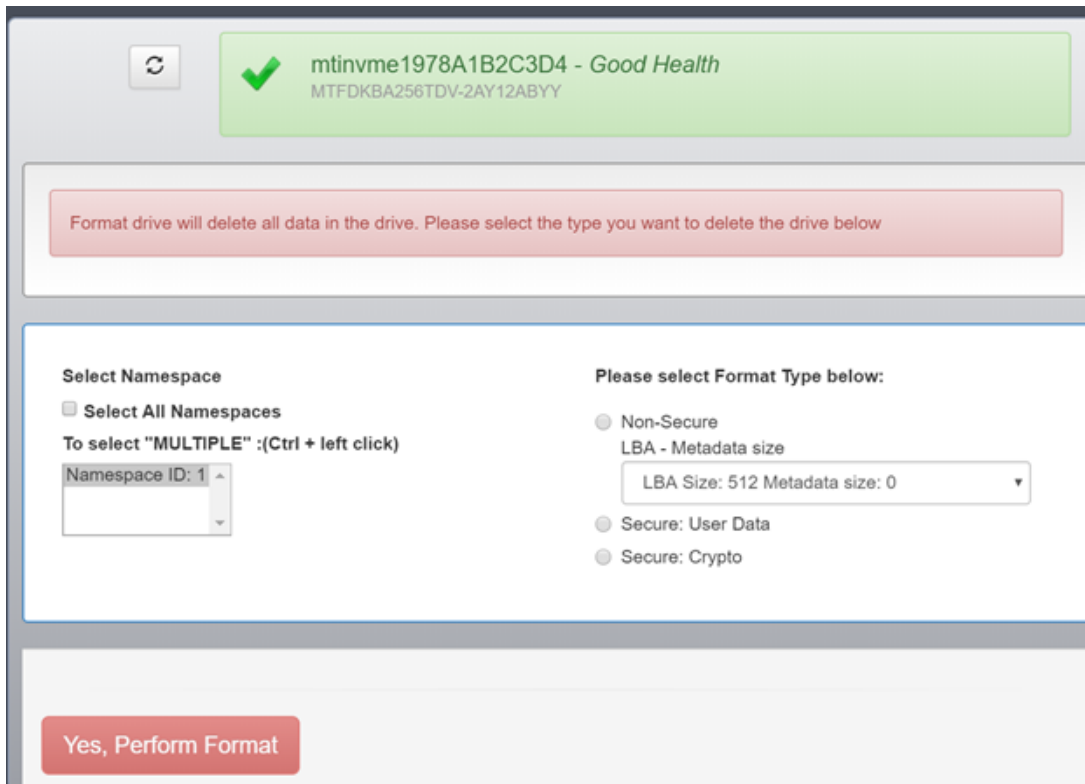
The Format operation is used to low level format the NVM media. This may destroy all data and metadata associated with the specified namespace(s). This is used when the host wants to change the LBA data size and/or metadata size.

The format operation is supported on all drives except for encrypted drives (those with TCG-enabled/password-protected). These drives must use the PSID revert operation to remove data. See Performing a PSID Revert Operation (page 26).

This operation cannot be performed on mounted drives. Unmount the drive before proceeding. See Unmounting Drives and Drive Partitions.

1. Click the Format Drive menu and select a drive.
2. Select the namespace(s) and Format type to perform format operation
3. Review the information on the screen.

**Figure 16: Format Drive for NVMe drives**



4. Click Yes, Perform format to perform format operation on drive and remove all data.
5. The operation starts. When complete, all data from the drive is removed.



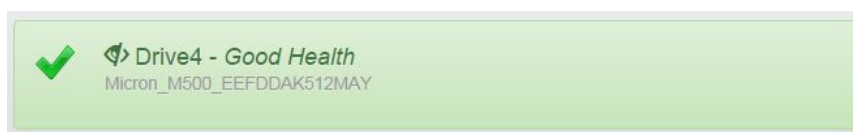
### Performing a PSID Revert Operation

The PSID revert operation removes all data from an encrypted drive (one with TCG enabled/password-protected). It can also be used in the event you have an encrypted drive for which you have lost the authentication code to return the drive to its factory default state.

TCG is automatically enabled on drives that are initialized in systems running Windows 8 or later, or it can be enabled with third-party software utilities. For more information on TCG, refer to <http://www.trustedcomputinggroup.org/>.

To determine if TCG is enabled on your drive, view the Drive Details screen. Drives with TCG enabled appear with the following icon next to the drive number:

**Figure 15: TCG-Enabled Drive**



### Before You Begin

#### Obtaining the PSID Code

The drive's PSID code is required to run this operation. The PSID code is located on the front label of the drive (Figure 16). Obtain this code before proceeding.

**Figure 16: PSID Code**



#### Unmounting Drives and Drive Partitions

A PSID revert operation cannot be performed on mounted drives or drives with mounted partitions.

To unmount a drive in Linux, issue the **umount** command.

To unmount a drive in Windows:

1. Open an administrator command prompt.
2. Run the following command: **compmgmt.msc**
3. Select **Disk Management**.
4. Right-click on the target drive and select **Offline**.

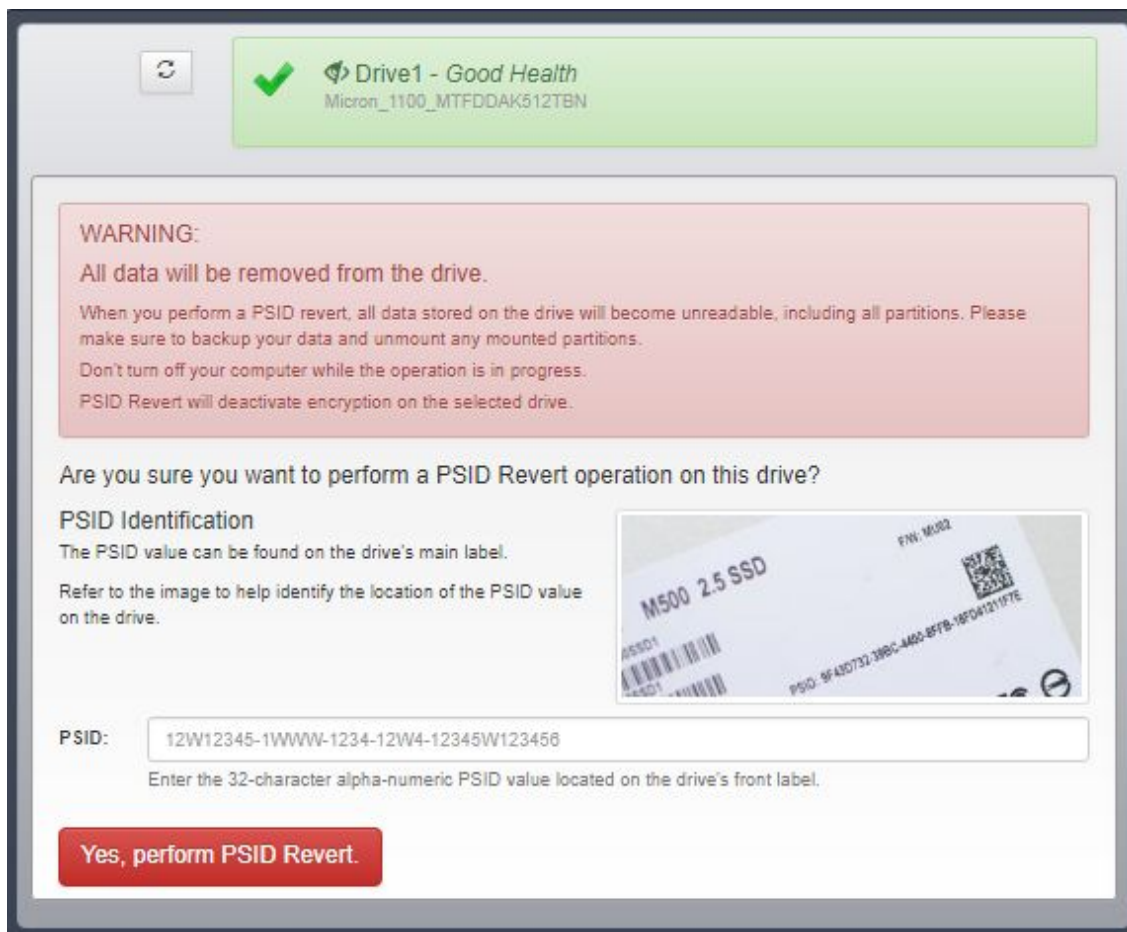
### Running PSID Revert

These instructions apply to both Windows and Linux systems. However, some configuration is required on Linux systems before performing this operation. See [Configuring Linux Systems to Perform a PSID Revert Operation](#) (page 27).

**CAUTION:** This operation completely removes all data from the drive and returns the drive to its factory default state. If possible, back up important data to alternate media before performing the operation.

1. Click the **PSID Revert** menu and select a drive.
2. Review the information on the screen.

**Figure 17: PSID Revert**



Drive1 - Good Health  
Micron\_1100\_MTFDDAK512TBN

**WARNING:**  
All data will be removed from the drive.

When you perform a PSID revert, all data stored on the drive will become unreadable, including all partitions. Please make sure to backup your data and unmount any mounted partitions.  
Don't turn off your computer while the operation is in progress.  
PSID Revert will deactivate encryption on the selected drive.

Are you sure you want to perform a PSID Revert operation on this drive?

**PSID Identification**  
The PSID value can be found on the drive's main label.  
Refer to the image to help identify the location of the PSID value on the drive.

PSID: 12W12345-1WWW-1234-12W4-12345W123456  
Enter the 32-character alpha-numeric PSID value located on the drive's front label.

**Yes, perform PSID Revert.**

3. In the PSID field, enter the 32 character PSID code found on the front label of the drive.
4. Click **Yes, perform PSID Revert** to perform the operation.

The operation begins and takes a few seconds to complete. When complete, a confirmation message appears and all data is removed from the drive.

## Configuring Linux Systems to Perform a PSID Revert Operation

TCG commands must be enabled on a Linux system to run the PSID revert operation. By default, all TCG commands are disabled (blocked) by a Linux kernel. To enable TCG commands, an additional kernel boot parameter (`libata.allow_tpm=1`) must be added. The steps to add a kernel boot parameter vary by Linux distribution. The following are generic steps for adding a kernel boot parameter using the boot loader GRUB:

1. As a root user, make a back-up copy of the `grub.conf` file:  
`cp/boot/grub/grub.conf /boot/grub/grub.conf.backup`
2. As a root user open: `/boot/grub/grub.conf`
3. Go to the kernel boot line (the line that begins with "kernel /vmlinuz").  
Some Linux distributions with multiple boot options have multiple kernel boot lines. In this case, you must determine the boot option that you would like to use for performing the PSID revert operation and edit that menu option.
4. Append the following option to the line: `libata.allow_tpm=1`
5. Save changes to `/boot/grub/grub.conf`.
6. Reboot the system.
7. Perform the PSID revert operation following the instructions in Performing a PSID Revert Operation (page 25).
8. As a root user, reinstate the backup copy of the `grub.conf` file:  
`mv/boot/grub/grub.conf.back /boot/grub/grub.conf`
9. Reboot the system.

### Enabling or Disabling Momentum Cache

Momentum Cache is an intelligent software driver that dynamically leverages unused system resources to enhance burst performance. This feature runs on supported drives containing a boot volume in Windows systems only. It is recommended to enable Momentum Cache on your system's boot drive.

For more information on Momentum Cache, see the Enhancing Burst Performance with Momentum Cache Technical Note (TN-FD-32) available on [micron.com](http://micron.com).

Before enabling or disabling this feature, save all work and shut down any running applications.

1. Click the **Momentum Cache** menu.
2. Review the information on the screen.

**Figure 18: Momentum Cache**



3. Click the button next to a drive to enable or disable the Momentum Cache feature.
4. Confirm the operation when prompted.
5. The system reboots after the operation completes.

## Setting Over-Provisioning Capacity

Over-provisioning allocates a percentage of a drive's free space to improve performance and endurance. The over-provisioning space becomes available exclusively to the drive's controller, enabling the controller to use the space for various management functions. This leaves less usable capacity, but results in improved performance and endurance.

### Requirements:

- Over-provisioning can be enabled on supported drives with NTFS file systems only.
- A drive must have a partition to enable over-provisioning (the over-provisioning capacity is set on the last accessible partition).

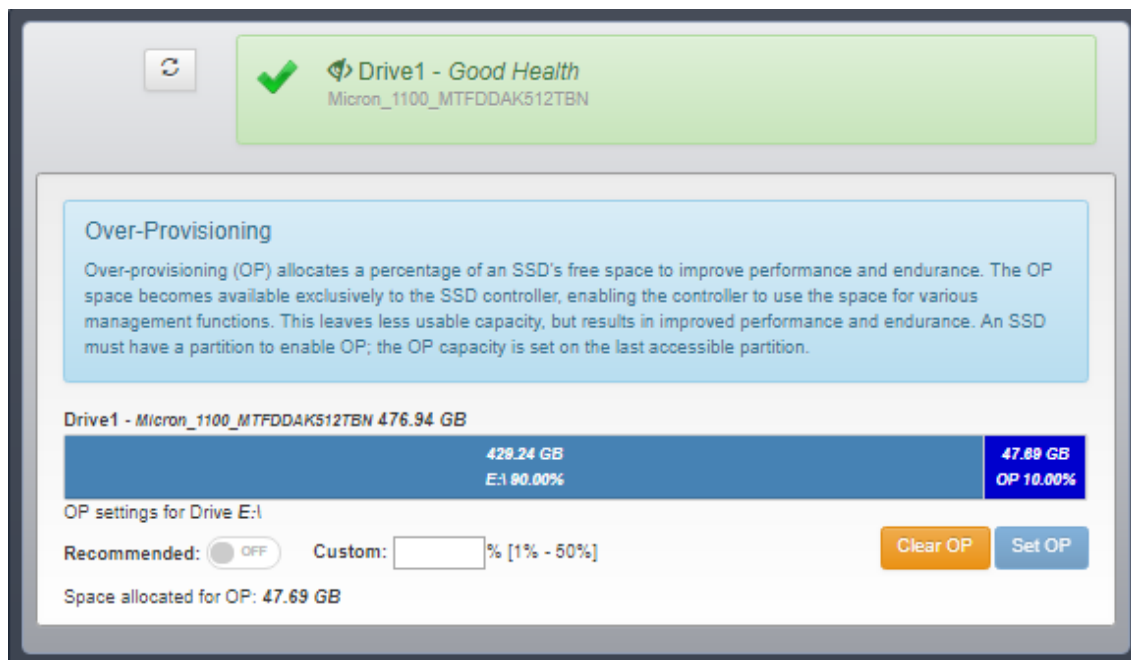
### Restrictions:

- Over-provisioning can be set on a RAW partition; however, it is not recommended as damage to data can occur.
- Over-provisioning cannot be set on SAS drives.
- Over-provisioning cannot be set on drives with the following configurations: USB-attached, write-protect enabled, offline status, dynamic status, or security locked.

## Enabling Over-Provisioning

1. Click the **Over-Provisioning** menu and select a drive.
2. Click **Initiate Over-Provisioning**.

**Figure 19: Over-Provisioning**



3. To enable Storage Executive to automatically allocate the recommended amount of over-provisioning capacity, click the button next to **Recommended**. The amount of over-provisioning capacity appears in the **Custom** field.

To allocate your own amount of over-provisioning capacity, do not select the button. Simply enter the percentage amount (from 1–50%) in the **Custom** field.

4. Click **Set OP**.
5. Confirm the operation when prompted.

The over provisioning capacity is set immediately. No reboot is required.

### Disabling Over-Provisioning

1. Click the **Over-Provisioning** menu and select a drive.
2. Click **Initiate Over-Provisioning**.
3. Click **Clear OP**.

## Setting Flex Capacity

The Flex Capacity feature allows you to change the capacity of a drive to help improve drive endurance. This feature changes the user allocated space, which limits the amount of data that can be stored on the drive. The capacity you set appears as the drive's new capacity in the OS; the remaining capacity becomes available to the drive for the purpose of performing background activities, which can help extend drive life.

The new capacity can be as low as 1GB but cannot exceed the native maximum capacity of the drive.

This feature is available on supported drives only.

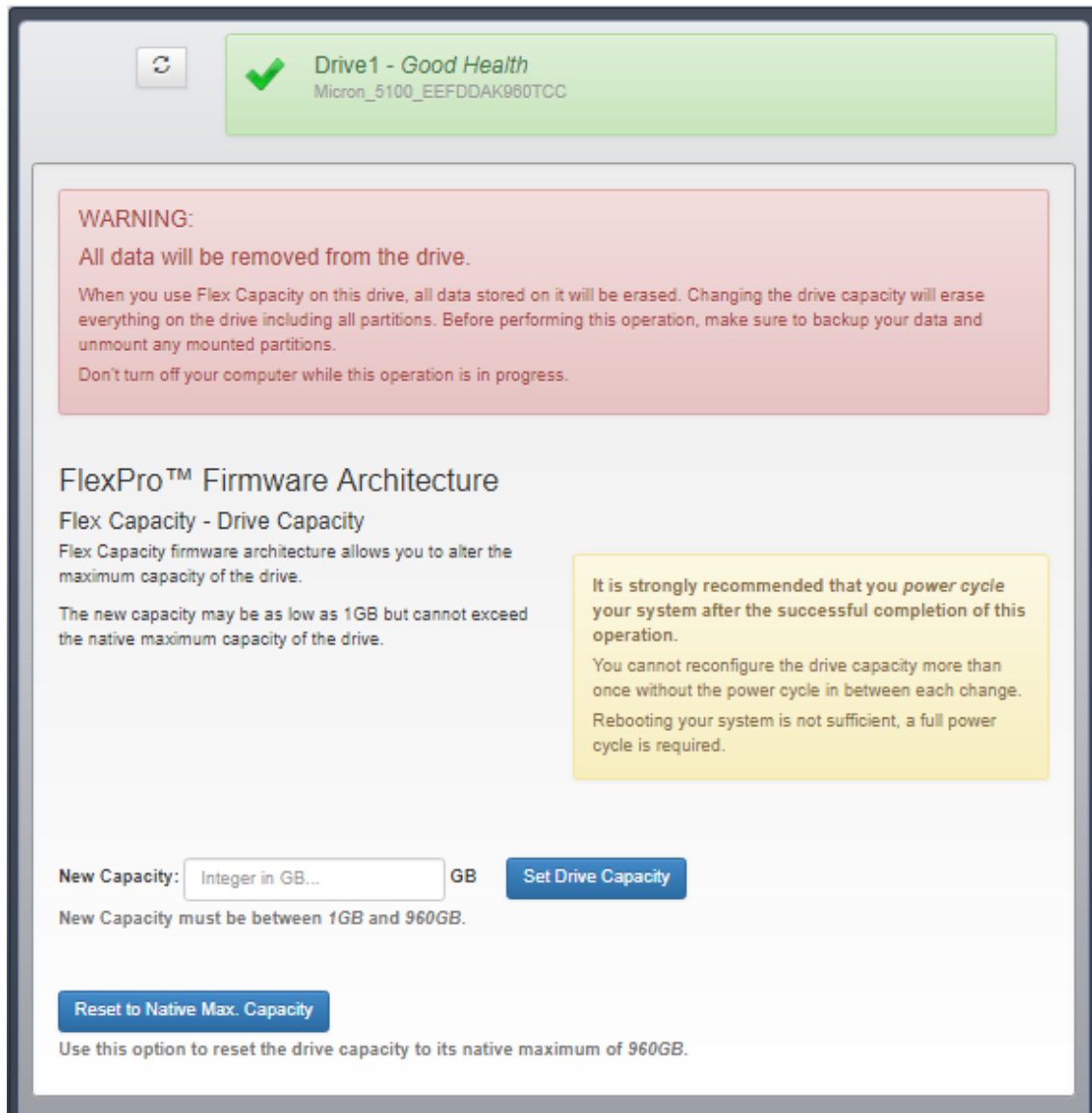
**Important:**

- All data is removed from the drive when you set the Flex Capacity.
- Before performing this operation, backup your data and unmount any mounted partitions.
- Do not turn off the system while the operation is in progress.

## Setting Capacity

1. Click the **Flex Capacity** menu.

**Figure 20: Setting Drive Capacity**



Drive1 - Good Health  
Micron\_5100\_EEFDDAK980TCC

**WARNING:**  
All data will be removed from the drive.

When you use Flex Capacity on this drive, all data stored on it will be erased. Changing the drive capacity will erase everything on the drive including all partitions. Before performing this operation, make sure to backup your data and unmount any mounted partitions.

Don't turn off your computer while this operation is in progress.

### FlexPro™ Firmware Architecture

#### Flex Capacity - Drive Capacity

Flex Capacity firmware architecture allows you to alter the maximum capacity of the drive.

The new capacity may be as low as 1GB but cannot exceed the native maximum capacity of the drive.

It is strongly recommended that you *power cycle* your system after the successful completion of this operation.

You cannot reconfigure the drive capacity more than once without the power cycle in between each change. Rebooting your system is not sufficient, a full power cycle is required.

New Capacity:  GB **Set Drive Capacity**

New Capacity must be between 1GB and 960GB.

**Reset to Native Max. Capacity**

Use this option to reset the drive capacity to its native maximum of 960GB.

2. Enter the new maximum capacity for the drive in the New Capacity field.
3. Click **Set Drive Capacity**.
4. After the operation completes, power cycle the system. (A reboot is not sufficient; a full power cycle is required.)

## Returning to Native Drive Capacity

1. Click the Flex Capacity menu.
2. Click **Reset to Native Max. Capacity**.



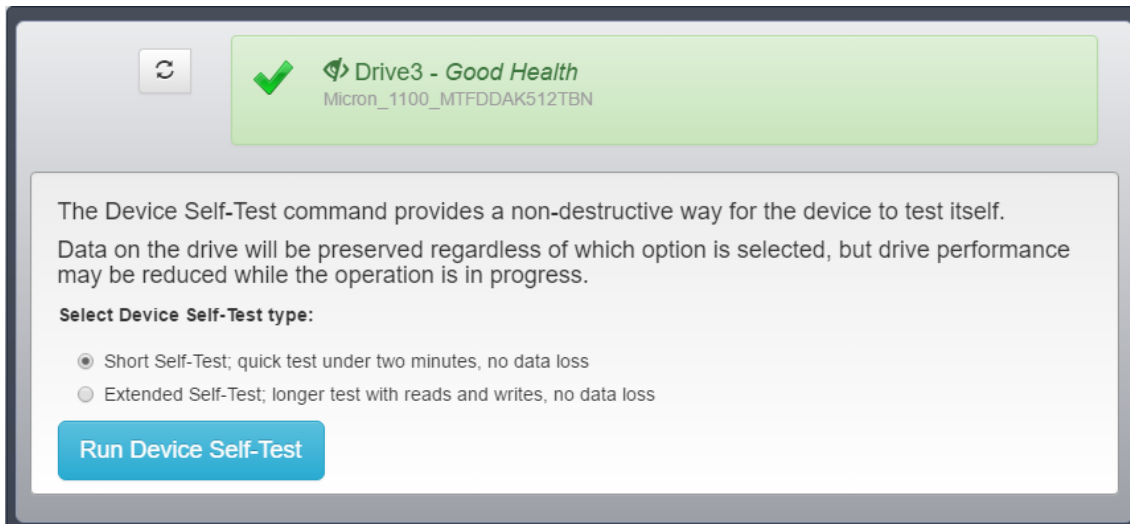
## Running Device Self-Test

The Device Self-Test feature allows you to test the health of the drive. The drive remains operational during testing and all data on the drive is preserved; however, performance may be reduced during the test operation.

This feature is available on supported drives only.

1. Click the **Device Self-Test** menu.

**Figure 21: Running the Device Self-Test**



2. Select the type of test to run:
  - **Short Self-Test:** performs a quick test of the drive.
  - **Extended Self-Test:** performs a more in-depth test of the drive, consisting of reads and writes.
3. Click **Run Self Test**.
4. The test progress appears. When complete, the results of the test appear under the drive name.

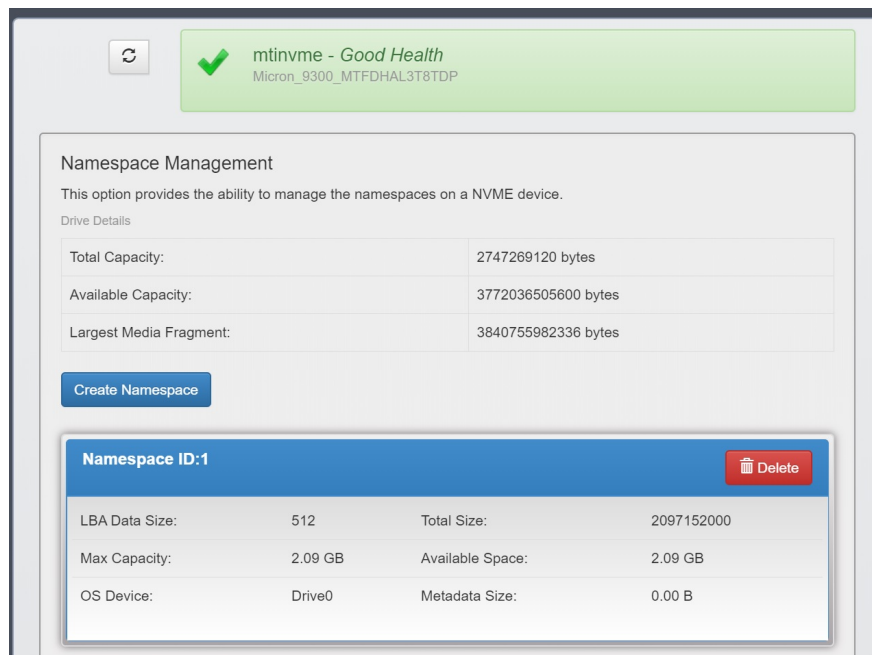
## Managing Namespaces

The Namespace Management feature allows you to create or delete namespaces on a supported NVMe drive. A namespace is a collection of logical blocks with addresses that range from 0 to the size of the namespace. A namespace appears as a standard-block device on which file systems and applications can be deployed without any modification.

### Creating a Namespace

1. Click the **Namespace Management** menu and select a drive.
2. Click **Create Namespace**.

**Figure 22: Namespace Management**



3. In the **Namespace Type** field, select **TLC** or **SLC**.

If you select **TLC**, provide the namespace size in **LBs**. If you select **SLC**, provide the namespace size in terms of percentage. Valid percentages are: 10, 20, 30, 40, 50, 100.

4. Click **Create**.

### Deleting a Namespace

1. Click the **Namespace Management** menu and select a drive.
2. Click **Delete Namespace** next to the namespace to be deleted.
3. Confirm the operation when prompted.

## Revision History

### Rev. Q – 6/20

- Added Format Namespace feature

### Rev. P – 12/16

- Added 2100AI, 2100AT SSDs
- Added Namespace Management feature

### Rev. O – 10/19

- Updated for release 5.05
- Added 5300, 7300 Series SSDs
- Removed P1 SSD

### Rev. N – 7/19

- Added P1, 1300, 9300 Series SSDs

### Rev. M – 4/19

- Updated OS support information

### Rev. L – 11/18

- Updated for release 3.63
- Added 2200 Series
- Updated OS support information

### Rev. K – 10/18

- Updated for release 3.60
- Updated operating system requirements

### Rev. J – 8/18

- Updated for release 3.58
- Added Device Self-Test feature
- Updated Firmware Update feature

### Rev. I – 4/18

- Updated for release 3.56
- Added 5210 and 5200 Series

### Rev. H – 10/17

- Updated for release 3.49
- Added 9200 Series
- Updated Flex Capacity information
- Updated OS support information

**Rev. G – 12/16**

- Updated for release 3.38
- Added 1100 and 5100 series support
- Added RAID controller support
- Added FlexCap feature
- Updated Installing and Starting Storage Executive section

**Rev. F – 8/16**

- Updated for release 3.34
- Added NVMe support
- Revised Viewing and Saving Drive Details and Performing a Firmware Update sections
- Added Viewing Drive Performance and Optimization section
- Added Removing a Drive section

**Rev. E – 4/16**

- Updated for release 3.30

**Rev. D – 10/15**

- Updated for release 3.24
- Added support for M500IT and SAS drives, over-provisioning, and live firmware updates

**Rev. C – 5/15**

- Updated for release 3.20
- Added support for P400m, Momentum Cache, SMART threshold exceeded drive status

**Rev. B – 2/15**

- Updated for release 3.17

**Rev. A – 1/15**

- Initial release; version 3.15

8000 S. Federal Way, P.O. Box 6, Boise, ID 83707-0006, Tel: 208-368-4000  
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