

# User's Guide

## Micron's Plug-In for VMware® ESXCLI

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### Introduction

This guide describes how to install and use Micron's plug-in for VMware® ESXCLI to monitor and manage supported Micron solid state drives (SSDs). The plug-in works with VMware vSphere® ESXi™ 6.0 to perform the following tasks:

- View current drive status, capacity, temperature, and firmware version
- Remotely update firmware
- Erase a non-encrypted drive
- Overprovision a drive
- Retrieve debug data
- View SMART data
- Run a SMART self-test



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## About Micron's Plug-In for VMware ESXCLI

Micron's plug-in for VMware ESXCLI provides a method for remotely managing and monitoring Micron SSDs. With the plug-in you can perform management tasks such as a firmware update or drive erase. You can also monitor drive properties such as model number, serial number, capacity, and SMART data.

ESXCLI is a command line tool for VMware vSphere ESXi 6.0 that enables ESXi to provide a dynamic set of commands to users. The tool provides modular architecture for various components called *namespaces* running in the VMkernel. All commands contain metadata that describes the input, output, and other properties for that command. Using the metadata, the tool builds a set of commands that a user can execute. It presents the commands to the user on a local or remote prompt.

vSphere supports several command-line interfaces (CLIs) for managing a virtual infrastructure, including a set of ESXi shell commands, VMware vSphere® PowerCLI™ commands, and vSphere Command-Line Interface (vCLI) commands for management of VMware vCenter™ services. You can run commands locally, from an administration server, or from scripts. Choose the CLI best suited for your needs, and write scripts to automate your management tasks.

### Micron CIM Provider

Micron's plug-in comes bundled with a common information model (CIM) provider. The CIM provider enables low-level remote querying and management of Micron drives, enabling the plug-in to detect drives and perform management tasks.

### Micron Namespaces

Micron's plug-in uses namespaces. A namespace collects a number of applications together, and the applications collect a number of commands together.

The **micron** namespace is a nested namespace structure containing commands to manage and monitor Micron drives in VMware vSphere infrastructures. The following operations are supported:

- Retrieve drive details
- Retrieve SMART data
- Retrieve debug data
- Update drive firmware
- Erase a drive
- Overprovision a drive
- Run a SMART self-test
- Configure plug-in settings
- Troubleshoot (assistance plug-in)

The **micron** namespace consists of two sections:

- **VIB:** Contains commands to interface with the Micron plug-in. vSphere Installation Bundle (VIB) is a collection of files packaged into a single archive to facilitate distribution, similar to a tarball or .zip archive.
- **DEVICE:** Retrieves drive information and SMART data and performs drive operations.

Each namespace contains commands, as described in the following table.

**Table 1: Micron Namespace and Commands**

Name-space	Commands	Description
VIB	<b>esxcli micron vib about</b>	Retrieves information about the plug-in.
	<b>esxcli micron vib enable</b>	Enables the plug-in and sets the <b>CIMVmw_micron-esxcli-pluginProviderEnabled</b> setting and the <b>sfcdb-watchdog</b> service.
	<b>esxcli micron vib settings</b>	Configures the plug-in.
	<b>esxcli micron vib restart</b>	Restarts the <b>sfcdb-watchdog</b> service.
	<b>esxcli micron vib validate</b>	Verifies if the plug-in is working.
DEVICE	<b>esxcli micron device online</b>	Places an NVMe device into online mode.
	<b>esxcli micron device offline</b>	Places an NVMe device into offline mode.
	<b>esxcli micron device info</b>	Retrieves drive information and SMART data.
	<b>esxcli micron device erase</b>	Erases a Micron drive.
	<b>esxcli micron device dumpidd</b>	Retrieves and displays the identify device data for the drive.
	<b>esxcli micron device firmware</b>	Reports and updates firmware on a Micron drive.
	<b>esxcli micron device overprovisioning</b>	Changes the overprovisioning of SATA and SAS drives by setting the max addressable LBAs.
	<b>esxcli micron device debugdata</b>	Obtains debug data for the drive.
	<b>esxcli micron device smartselftest</b>	Runs the SMART self-test on a SATA or SAS drive based on the self-test type value indicated.

## Running the Plug-In

Enter the following command to run the plug-in and view available namespaces:

```
$ esxcli micron
```

**Figure 1: Running the Plug-In and Viewing Namespaces**

```
[root@dedwood-07:~] esxcli micron
Usage: esxcli micron {cmd} [cmd options]

Available Namespaces:
  device      Get device information, erase drives, and update firmware
  vib         Manage the Micron ESXCLI Plugin

[root@dedwood-07:~] □
```

## Installation

### Requirements

Requirement	Description
Micron SSD	Supported SSD, as shown on the <a href="#">VMware Virtual SAN hardware compatibility list</a>
RAID controller	Set to pass-thru (non-RAID mode)
Operating system	VMware vSphere ESXi 6.0 or higher

### Prerequisites

Before you begin the installation:

- Enable access to the ESXCLI shell.
- Make sure the host acceptance level is set to **PartnerSupported**.

#### Enabling Access to the ESXCLI Shell

An ESXi system includes a direct console for starting and stopping the system and for performing maintenance and troubleshooting tasks. This direct console includes the ESXi shell. You must enable access to the ESXi shell from the direct console of each system.

Enabling the ESXi shell means making it accessible as a local console, available either directly or over an out-of-band network. Enable access to the local ESXi shell or access to the ESXi shell with SSH. The ESXi shell is disabled by default. You can enable the ESXi shell for troubleshooting from the direct console, from the vSphere client, or from the VMware vSphere® Web Client.

See ESXi Shell Access in the [VMware vSphere 6.0 Documentation Center](#) for more information.

#### Setting the Host Acceptance Level

VMware ESXi controls if a software package or VIB is allowed on the vSphere host using the value in the **host acceptance** setting. Four values can be specified: VMWareCertified, VMwareAccepted, PartnerSupported, CommunitySupported.

The host acceptance level must be set to **PartnerSupported**. Follow the steps below to check the level, and if necessary, set it to this value.

1. To check the value, enter the following command:

```
$ esxcli software acceptance get  
VMwareCertified
```

2. To set the value:

```
$ esxcli software acceptance set --level=PartnerSupported
```

3. To verify the change:

```
$ esxcli software acceptance get
```

## Installing the Plug-In

1. Download Micron's plug-in for VMware ESXCLI from [micron.com/virtualization](http://micron.com/virtualization) and make sure it resides in a location accessible by the vSphere host.
2. Enter the following command to start the installation:

```
$ localcli software vib install --viburl=<vib-file>
```

Note: The installation process restarts the **hostd** service to enable the micron namespace in ESXCLI. A **hostd** restart will terminate the current ESXCLI process; therefore, **localcli** must be used to perform an update as it is not affected by a restart of **hostd**.

## Viewing the Installed Version

To view the currently installed version of the plug-in, enter the following command:

```
$ esxcli micron vib about
```

Figure 2: Viewing Current Version

```
[root@dedwood-07:~] esxcli micron vib about
Name                               Version                               Vendor  Acceptance Level  Install Date
-----                               -
micron-esxcli-plugin               1.0.4-0                               micron  PartnerSupported  2016-02-09
[root@dedwood-07:~] █
```

## Updating the Plug-In

To upgrade the plug-in, download the latest version from [micron.com/virtualization](http://micron.com/virtualization) and install it using the prescribed VMware VIB upgrade process:

```
$ localcli software vib update --viburl=<vib-file>
```

## Uninstalling the Plug-In

To uninstall the plug-in, enter the following command:

```
$ localcli software vib remove -n micron-esxcli-plugin
```

### Issuing Commands

This section describes how to perform common commands or commands that require detailed information. For a complete list of commands, see the Command Reference section.

The ESXCLI plug-in requires a user name and password to issue a command. You can configure the plug-in so that the user name and password are stored in the host when you initially run the plug-in, enabling you to enter multiple commands, or you can enter the username and password individually with each command.

### Storing the Username and Password

The user must be local and have full permissions to the CIM provider.

Note: Passwords for each user are encoded and stored in a hidden file in the current user's directory (~/.micron). However, the username and password are lost upon host restart; therefore, the username and password must be set after each restart of the host.

Storing the username and password is optional. If for any reason you do not want to store the username and password (for security concerns, for instance), you can manually enter the username and password on an individual command basis, as described in the next section.

Set user name:

```
esxcli micron vib settings username set --username=<username>
```

Set password:

```
esxcli micron vib settings password set --password=<password>
```

### Entering the Username and Password With Each Command

Append the following to each command:

```
--username=<username> --password=<password>
```



## Viewing Drive Details

The plug-in references drives using their SCSI device ID. The SCSI ID format typically begins with either `naa` or `t10` and is often followed by a string of letters and numbers.

To detect all supported Micron drives and associated device IDs, enter the following command:

```
esxcli micron device info list
```

**Figure 3: Viewing all Drives**

```
[root@dedwood-07:~] esxcli micron device info list

Device ID          Model
=====          =====
naa.500a075110824b69 MICRON_M510DC_MTFDDAK960MBP
naa.500a07510e35a191 Micron_M500DC_MTFDDAK240MBB
naa.500a07510e35a413 Micron_M500DC_MTFDDAK240MBB
naa.5000c500301541d3 MICRON_S650DC-800SED

[root@dedwood-07:~] █
```

To detect all supported Micron drives and view additional details for each drive, enter the following command:

```
esxcli micron device info all
```

**Figure 4: Viewing all Drives with Details**

```
[root@dedwood-07:~] esxcli micron device info all

Device ID          : naa.500a075110824b69
Model No           : MICRON_M510DC_MTFDDAK960MBP
Serial No          : 152810824869
FW-Rev             : 0013
Total Size         : 894.25 GB
Drive Status       : Drive is in good health.
SATA Link Speed    : Gen3 (6.0 Gbps)
Temp(C)           : 24 18 27 - current min max

Device ID          : naa.500a07510e35a191
Model No           : Micron_M500DC_MTFDDAK240MBB
Serial No          : 14290E35A191
FW-Rev             : 0144
Total Size         : 223.57 GB
Drive Status       : Drive is in good health.
SATA Link Speed    : Gen3 (6.0 Gbps)
Temp(C)           : 21 17 36 - current min max

Device ID          : naa.500a07510e35a413
Model No           : Micron_M500DC_MTFDDAK240MBB
Serial No          : 14290E35A413
FW-Rev             : 0144
Total Size         : 223.57 GB
Drive Status       : Drive is in good health.
SATA Link Speed    : Gen3 (6.0 Gbps)
Temp(C)           : 20 17 37 - current min max

Device ID          : naa.5000c500301541d3
Model No           : MICRON_S650DC-800SED
```

To view a specific drive's details including SMART data, enter the following command:

```
esxcli micron device info get --device=<id>
```

Alternatively, you can enter the short command option:

```
esxcli micron device info get -d=<id>
```

**Figure 5: Viewing a Specific Drive**

```
[root@dedwood-07:~] esxcli micron device info get -d naa.500a07510e35a413
Device ID           : naa.500a07510e35a413
Model No           : Micron_M500DC_MTFDDAK240MBB
Serial No          : 14290E35A413
FW-Rev             : 0144
Total Size         : 223.57 GB
Drive Status       : Drive is in good health.
DevfsPath          : /vmfs/devices/disks/naa.500a07510e35a413
TCG Status         : 0
TCGSSC             : 0
Sanitize Supported : 1
SATA Link Speed    : Gen3 (6.0 Gbps)
Native Max Address : 468862127
SMART Attributes
ID  Attribute Name          Attribute  Data
1   Raw Read Error Rate    0          Errors/Page
5   Retired NAND Blocks    0          NAND Blocks
9   Power On Hours Count   6322      Hours
12  Power Cycle Count      7          Cycles
170 Reserved block count  44         Blocks
171 Program Fail Count   0          NAND Page Program Failures
172 Erase Fail Count     0          NAND Block Erase Failures
```

To view a drive's details in JSON format, which can be imported into different integration uses (for example, spreadsheet applications, monitoring utilities, etc.), enter the following command:

```
esxcli micron device info get --device=<id> --json >/scratch/sample.json
```

Alternatively, you can enter the short command option:

```
esxcli micron device info get -d=<id> -j >/scratch/sample.json
```

The JSON output can be saved by copying and pasting the console output into a text editor or by redirecting `stdout` to a file.

### Obtaining Debug Data

This command obtains debug data for the drive. The data is stored in the location specified.

After the data downloads, compress (.zip) and copy the file from the ESX host to another system and then email it to the support email address specified in the command output.

Enter the following:

```
esxcli micron device debugdata -d|--device=<id>-f|--debugdir=<debugdatadirectory>
```

### Updating Firmware

#### Checking Firmware Update Availability

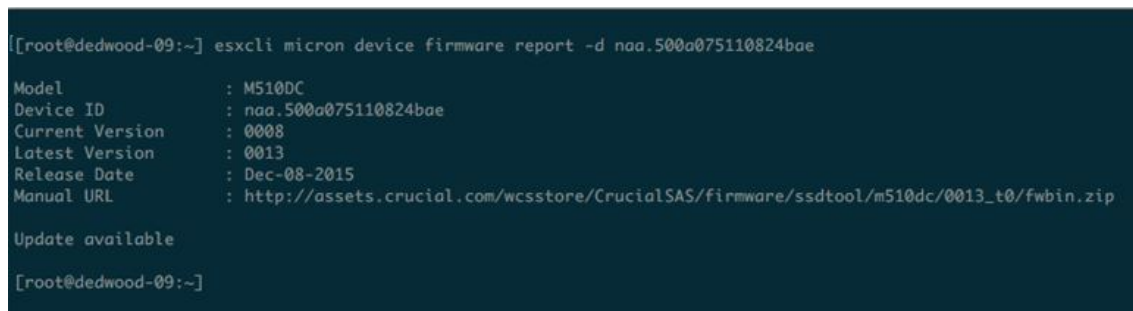
If the host has Internet access, enter the following command to see if a firmware update is available for a drive:

```
esxcli micron device firmware report --device=<id>
```

Alternatively, you can enter the short command option:

```
esxcli micron device firmware report -d=<id>
```

### Figure 6: Checking for Firmware Update



```
[root@dedwood-09:~] esxcli micron device firmware report -d naa.500a075110824bae
Model                : M510DC
Device ID            : naa.500a075110824bae
Current Version      : 0008
Latest Version       : 0013
Release Date         : Dec-08-2015
Manual URL           : http://assets.crucial.com/wcsstore/CrucialSAS/firmware/ssdtool/m510dc/0013_t0/fwbin.zip

Update available

[root@dedwood-09:~]
```

If the host is behind a proxy server, configure the Micron plug-in to use the desired proxy server by entering the following command:

```
esxcli micron vib settings proxy set -x|--proxy=<id>
```

### Performing a Firmware Update

Before performing a firmware update, it is recommended to place the host in maintenance mode to minimize potential issues. Only the drive specified on the command line will be updated when you perform this operation.

Important: As a safeguard against accidental device loss during a firmware update, specify the **--agree** command line argument.

Enter the following command to update the firmware on a Micron drive:

```
esxcli micron device firmware update --device=<id> --agree
```

Alternatively, you can enter the short command option:

```
esxcli micron device firmware update -d=<id> --agree
```

If the host does not have Internet access, download the firmware update (.zip bundle) from [micron.com](http://micron.com) and manually install the firmware by running the following command:

```
esxcli micron device firmware update --device=<id> --path=<path to firmware> --agree
```

Alternatively, you can enter the short command option:

```
esxcli micron device firmware update -d<id> -p=<path to firmware> --agree
```

### Verifying a Firmware Update

After the firmware is updated, verify the new version by entering the following command:

```
esxcli micron device info get --device=<id>
```

Alternatively, you can enter the short command option:

```
esxcli micron device info get -d=<id>
```

### Erasing a Drive

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

This command:

- Is supported on all drives except for encrypted drives (those with TCG-enabled/password protected)
- Can only be performed on unmounted drives. Unmount the drive before proceeding. See [VMware Knowledge Base](#) for the best practices on unmounting storage devices in ESXi environments.

Important: As a safeguard against accidental erasure, specify the **-agree** command line argument.

Enter the following command to start the erase operation:

```
esxcli micron device erase --device=<id> --agree
```

Alternatively, you can enter the short command option:

```
esxcli micron device erase -d=<id> --agree
```

### Overprovisioning a Drive

This command changes the overprovisioning level of a SATA or SAS drive by setting the max addressable LBAs value.

Enter the following:

```
esxcli micron device overprovisioning -d|--device=<id>-s|--op-size=<sizeInGB>
```

### Running a SMART Self-Test

This command runs a SMART self-test on a SATA or SAS drive. The type of SMART self-test is determined by the self-test type value entered in the command:

- Self-test type 0 - Short Self-Test
- Self-test type 1 - Extended Self-Test
- Self-test type 2 - Conveyance Self-Test
- Self-test type 3 - Short Self-Test in captive mode
- Self-test type 4 - Extended Self-Test in captive mode
- Self-test type 5 - Conveyance Self-Test in captive mode

Enter the following:

```
esxcli micron device smartselftest -d|--device=<id>-t|--selftest-type=<selftesttype>
```

## Viewing SMART Attributes

The ESXCLI plug-in contains three commands for displaying SMART values for Micron SATA drives: SMART, SMART -V and SMARTLOG.

### SMART

This command lists the SMART values along with their descriptions and units:

```
esxcli micron device info smart
```

**Figure 7: SMART Attribute Command**

```
[root@localhost:~] esxcli micron device info smart
Device ID: naa.500a075116cb2ec9
ID      Attribute      Data
1       Raw Read Error Rate      0      Errors/Page
5       Retired NAND Blocks      0      NAND Blocks
9       Power On Hours Count     277    Hours
12      Power Cycle Count        57     Cycles
170     Reserved block count     0      Blocks
171     Program Fail Count       0      NAND Page Program Failures
172     Erase Fail Count         0      NAND Block Erase Failures
173     Average Block-Erase Count 1      Erases
174     Unexpected Power Loss Count 24    Unexpected Power Loss events
183     SATA Interface Downshift 0      Downshifts
184     Error Correction Count   0      Correction Events
187     Reported Uncorrectable Errors 0      ECC Correction Failures
188     Command Timeouts        49     Outstanding Commands Since Last Reset
194     Enclosure Temperature   27 17 35  Temperature (C) <Current Min Max>
195     Cumulative Corrected ECC 0      Corrected ECC
196     Reallocation Event Count 0      Events
197     Current Pending Sector Count 0      512 Byte Sectors
198     SMART Off-line Scan Uncorrectable Errors 0      Errors
199     Ultra-DMA CRC Error Count 0      Errors
202     Percentage Lifetime Used 0      % Lifetime Used
206     Write Error Rate         0      Program Fails/MB
246     Cumulative Host Write Sector Count 88279 512 Byte Sectors
247     Host Program Page Count 2916   NAND Page
248     FTL Program Page Count  1166341 NAND Page
180     Unused reserved block count 108309 Blocks
210     RAIN Successful Recovery Page Count 0      TUs successfully recovered by RAIN
```

### SMART -V

This command displays all SMART values and information, including flag, value, worst, raw data and threshold:

```
esxcli micron device info smart -v
```

**Figure 8: Verbose SMART Attribute Command**

```
[root@localhost:~] esxcli micron device info smart -v
Device ID: naa.500a075116cb2ec9
ID      DESCRIPTION      FLAG  VALUE  WORST  RAW_DATA  THRESHOLD
1       Raw Read Error Rate      47    100    100    0          50
5       Retired NAND Blocks      50    100    100    0          1
9       Power On Hours Count     50    100    100    277        1
12      Power Cycle Count        50    100    100    57         1
170     Reserved block count     51    100    100    0          10
171     Program Fail Count       50    100    100    0          0
172     Erase Fail Count         50    100    100    0          1
173     Average Block-Erase Count 50    100    100    1          0
174     Unexpected Power Loss Count 50    100    100    24         0
183     SATA Interface Downshift 50    100    100    0          0
184     Error Correction Count   50    100    100    0          0
187     Reported Uncorrectable Errors 50    100    100    0          0
188     Command Timeouts        50    100    100    49         0
194     Enclosure Temperature   34 73 65 27 17 35 <Current Min Max> 0
195     Cumulative Corrected ECC 50    100    100    0          0
196     Reallocation Event Count 50    100    100    0          0
197     Current Pending Sector Count 50    100    100    0          0
198     SMART Off-line Scan Uncorrectable Errors 48    100    100    0          0
199     Ultra-DMA CRC Error Count 50    100    100    0          0
202     Percentage Lifetime Used 48    100    100    0          1
206     Write Error Rate         14    100    100    0          0
246     Cumulative Host Write Sector Count 50    100    100    88279     0
247     Host Program Page Count  50    100    100    2916     0
248     FTL Program Page Count  50    100    100    1166399  0
180     Unused reserved block count 51    0      0      108309   0
210     RAIN Successful Recovery Page Count 50    100    100    0          0
```

### SMARTLOG

This command displays the SMART log for a Micron SATA drive based on the log type:

- Log type 0 — SMART log directory
- Log type 1 — Summary error log
- Log type 2 — Comprehensive SMART error log
- Log type 3 — Extended comprehensive SMART error log
- Log type 6 — SMART self-test log
- Log type 7 — Extended SMART self-test log

```
esxcli micron device info smartlog -d|--device=<id> -m|--smartlogtype=<logtype>
```

The ESXCLI plug-in parses and displays the SMART log for all log types except log type 3 (extended comprehensive SMART error log). For this log type, the plug-in retrieves the binary log file and provides you with the file location on the system. For all other log types, no log file is provided. The parsed data displays on the screen.

## Command Reference

### VIB

The **VIB** namespace enables you to view and set configuration details for the plug-in, including username and password authorization settings for accessing the Micron CIM provider. It contains the following commands:

- ABOUT
- ENABLE
- SETTINGS
- RESTART
- VALIDATE

#### ABOUT

Description	Gets information about the plug-in.
Syntax	<code>esxcli micron vib about</code>

#### ENABLE

Description	Enables the plug-in (sets the <b>CIMvmw_micron-esxcli-pluginProviderEnabled</b> setting and re-starts the <b>sfcbd-watchdog service</b> ).  This should only be used if the CIM is manually disabled or if it did not enable correctly.
Syntax	<code>esxcli micron vib enable</code>

#### SETTINGS

Description	Contains subcommands to retrieve and configure the plug-in settings.
-------------	--

Subcommand	<b>username</b> <ul style="list-style-type: none"> <li>• <b>get</b>: Retrieves the username configuration for the plug-in.</li> <li>• <b>set</b>: Sets the username and permissions for querying the Micron CIM provider.</li> </ul>
Syntax	<code>esxcli micron vib settings username get</code> <code>esxcli micron vib settings username set --username=&lt;id&gt;</code>

Subcommand	<b>password</b> <ul style="list-style-type: none"> <li>• <b>set</b>: Sets the password to use with the specified user account.  Note: Passwords for each user are encoded and stored in a hidden file in the current user's directory (~/.micron). However, note that this password is lost upon host restart.</li> <li>• <b>check</b>: Verifies if a password has been set.</li> </ul>
Syntax	<code>esxcli micron vib settings password set --password=&lt;id&gt;</code> <code>esxcli micron vib settings password check</code>

Subcommand	<b>proxy</b> <ul style="list-style-type: none"> <li>• <b>set</b>: Sets the proxy to use for connecting to Micron web services for checking and updating firmware packages.</li> </ul>
------------	---





Syntax	<pre>esxcli micron vib settings proxy get esxcli micron vib settings proxy set -x --proxy=&lt;id&gt;</pre>
--------	--

### RESTART

Description	Restarts the <b>sfcw-watchdog</b> service.
Syntax	<pre>esxcli micron vib restart</pre>

### VALIDATE

Description	Validates that the plug-in is working properly.
Syntax	<pre>esxcli micron vib validate</pre>

## DEVICE

The **DEVICE** namespace enables you to view and set configuration details for a supported Micron drive as well as set overprovisioning or perform an erase or firmware update. It contains these commands:

- ONLINE
- OFFLINE
- INFO
- ERASE
- DUMPIDD
- FIRMWARE
- OVERPROVISIONING
- DEBUGDATA
- SMARTSELFTST

### ONLINE

Description	Places an NVMe device into online mode.
Syntax	<code>esxcli micron device online -d --device=&lt;id&gt;</code>

### OFFLINE

Description	Places an NVMe device into offline mode.
Syntax	<code>esxcli micron device offline -d --device=&lt;id&gt;</code>

### INFO

Description	Contains subcommands to retrieve drive information and SMART data. You can retrieve information for all drives in the host or a specific drive.
-------------	---

Subcommand	<b>list</b>
Description	Displays device IDs and model numbers for all drives in the host.
Syntax	<code>esxcli micron device info list</code>

Subcommand	<b>all</b>
Description	Displays additional details for all drives in the host, such as drive health and SMART data.
Syntax	<code>esxcli micron device info all</code>

Subcommand	<b>get</b>
Description	Displays drive information and SMART data for a specific drive.
Syntax	<code>esxcli micron device info get -d --device=&lt;id&gt;</code>

Subcommand	<b>smart</b>
Description	Displays SMART values for a Micron SATA drive.
Syntax	<code>esxcli micron device info smart</code>

Subcommand	<b>smart -v</b>
Description	Displays all SMART values and information for a Micron SATA drive.

Syntax	<code>esxcli micron device info smart -v</code>
--------	---

Subcommand	<b>smartlog</b>
Description	Displays the SMART log for a Micron SATA drive based on the log type: Log type 0 - SMART Log directory Log type 1 - Summary error log Log type 2 - Comprehensive SMART error log Log type 3 - Extended comprehensive SMART error log Log type 6 - SMART self-test log Log type 7 - Extended SMART self-test log
Syntax	<code>esxcli micron device info smartlog -d --device=&lt;id&gt; -m --smartlog-type=&lt;logtype&gt;</code>

Subcommand	<b>driver</b>
Description	Displays driver information for a specific drive.
Syntax	<code>esxcli micron device info driver -d --device=&lt;id&gt;</code>

### ERASE

Description	Performs a complete erase on the specified drive.  Important: As a safeguard against accidental erasure, specify the <b>-agree</b> command line argument.
Syntax	<code>esxcli micron device erase -d --device=&lt;id&gt; --agree</code>

### DUMPIDD

Description	Retrieves and displays the identify device data for a drive.  Note: This command parses and displays the drive identify data on the console in human-readable form. The identify binary data is stored in the file specified.
Syntax	<code>esxcli micron device dumpidd -d --device=&lt;id&gt; -b --filepath=&lt;identifydatafilepath&gt;</code>

### FIRMWARE

Description	Contains subcommands for reporting firmware version and updating firmware.
-------------	--

Subcommand	<b>report</b>
Description	Reports firmware details on the specified drive.
Syntax	<code>esxcli micron device firmware report -d --device=&lt;id&gt;</code>

Subcommand	<b>update</b>
Description	Updates firmware on the specified drive, either automatically or manually depending on the syntax.
Syntax (automatic)	<code>esxcli micron device firmware update -d --device=&lt;id&gt; --agree</code>
Syntax (manual)	<code>esxcli micron device firmware update -d --device=&lt;id&gt; -p --path &lt;path to firmware&gt; --agree</code>

## OVERPROVISIONING

Description	Changes the overprovisioning level of a SATA or SAS drive by setting the max addressible LBAs.
Syntax	<code>esxcli micron device overprovisioning -d --device=&lt;id&gt; -s --op-size=&lt;sizeInGB&gt;</code>

## DEBUGDATA

Description	Obtains debug data for the drive.
Syntax	<code>esxcli micron device debugdata-d --device=&lt;id&gt;-f --debugdir=&lt;debug-datadirectory&gt;</code>

## SMARTSELFTEST

Description	<p>Runs the SMART self-test on a SATA or SAS drive by the value indicated:</p> <ul style="list-style-type: none"> <li>Self-test type 0 - Short Self Test</li> <li>Self-test type 1 - Extended Self Test</li> <li>Self-test type 2 - Conveyance Self Test</li> <li>Self-test type 3 - Short Self-Test in captive mode</li> <li>Self-test type 4 - Extended Self-Test in captive mode</li> <li>Self-test type 5 - Conveyance Self-Test in captive mode</li> </ul>
Syntax	<code>esxcli micron device smartselftest-d --device=&lt;id&gt;-t --selftest-type=&lt;selftesttype&gt;</code>

## Troubleshooting

### Command Times Out

Certain long-running operations like ERASE or SMARTSELFTEST may timeout because they can take longer than the default `intSockTimeout` value in `etc/sfcb/sfcb.cfg`.

To prevent this, increase the `intSockTimeout` value in the `sfcb` config file from the default value of 600 to a higher timeout value (for example, 2000).

### ESXCLI Micron Namespace Not Appearing After Installation

Upon boot of the operating system, ESXi launches the `hostd` service and the `hostd` service loads the ESXCLI configuration. When installing a software VIB containing a partner-developed custom ESXCLI namespace, the new namespace should become available after the `hostd` service is restarted.

Important: To prevent any potential service interruptions for other host services, the restart of the `hostd` service is postponed. Restart the `hostd` service on the ESXi host in accordance with VMware best practices. Note: Until restart, all ESXCLI Micron namespace commands are available by replacing `localcli` with `esxcli`.

### vSphere Advanced Settings for Micron VIB Not Being Created During Installation

To validate vSphere CIM-related advanced settings:

```
esxcfg-advcfg
```

To enable or disable the CIM service:

```
esxcfg-advcfg -g /UserVars/CIMEnabled [Integer]
```

Default values:

- CIMEnabled: 1
- CIMLogLevel: 3
- CIMWatchdogInterval: 60
- CIMvmw\_pciProviderEnabled: 1
- CIMvmw\_iodmProviderProviderEnabled: 1
- CIMvmw\_hdrProviderEnabled: 1
- CIMvmw\_kmoduleProviderEnabled: 1
- CIMvmw\_viProviderEnabled: 1
- CIMvmw\_hhrcwrapperProviderEnabled: 1
- CIMvmw\_swmgtProviderEnabled: 1
- CIMvmw\_sfcbInteropProviderEnabled: 1
- CIMvmw\_hhrcwrapperProviderPollingInterval: 20

**## Example when advanced setting for VIB is assigned successfully**

```
$ esxcfg-advcfg -g /UserVars/CIMvmw_micron-esxcli-pluginProviderEnabled
```

Value of `CIMvmw_micron-esxcli-pluginProviderEnabled` is 1.

**## To ADD `CIMvmw_micron-esxcli-pluginProviderEnabled` setting**

```
$ /sbin/esxcfg-advcfg -A CIMvmw_micron-esxcli-pluginProviderEnabled -T int -E "Enable or Disable the CIMvmw_micron-esxcli-pluginProviderEnabled" -F 1 -N 0 -M 1
```

**# If option successfully added**

```
$ /opt/micron/bin] /sbin/esxcfg-advcfg -A CIMvmw_micron-esxcli-pluginProviderEnabled -T int -E "Enable or Disable the CIMvmw_micron-esxcli-pluginProviderEnabled" -F 1 -N 0 -M 1
```

**# If option already exists**

```
$ /opt/micron/bin] /sbin/esxcfg-advcfg -A CIMvmw_micron-esxcli-pluginProviderEnabled -T int -E "Enable or Disable the CIMvmw_micron-esxcli-pluginProviderEnabled" -F 1 -N 0 -M 1
```

Option with the name CIMvmw\_micron-esxcli-pluginProviderEnabled already exists.

**## Make sure provider is enabled**

```
$ /opt/micron/bin]esxcfg-advcfg --set 1 /UserVars/CIMvmw_micron-esxcli-pluginProviderEnabled
```

Value of CIMvmw\_micron-esxcli-pluginProviderEnabled is 1

**## Restart SFCB to pick up the settings**

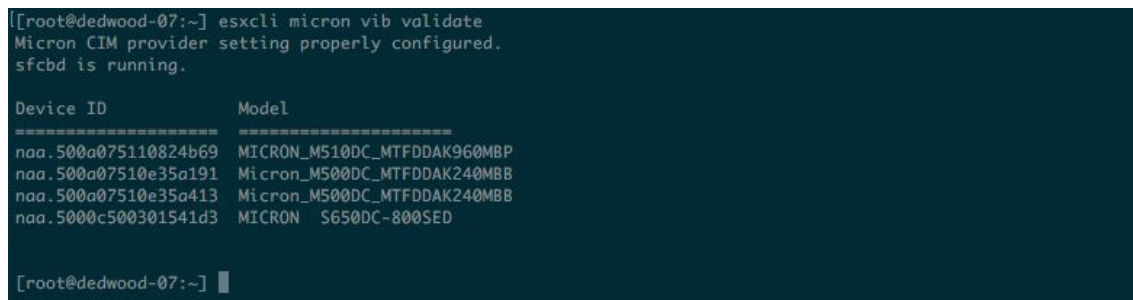
```
$ /etc/init.d/sfcdb-watchdog restart
```

### Validation of the Micron Plug-in Commands

```
esxcfg micron vib enable
```

```
esxcli micron vib validate
```

**Figure 9: Running the Validate Command**



```
[root@dedwood-07:~] esxcli micron vib validate
Micron CIM provider setting properly configured.
sfcdb is running.

Device ID          Model
-----
naa.500a075110824b69 MICRON_M510DC_MTFDDAK960MBP
naa.500a07510e35a191 Micron_M500DC_MTFDDAK240MBB
naa.500a07510e35a413 Micron_M500DC_MTFDDAK240MBB
naa.5000c500301541d3 MICRON_S650DC-800SED

[root@dedwood-07:~] █
```

### Helpful Tasks and Related Commands

This section outlines some commands that may be useful to know when working with the plug-in.

Note: Running these **sfcdb** commands will stop/start other CIM providers running on the system.

#### Obtain Micron Plug-In Installation Details

```
esxcli software vib get
```

#### Manage the VMware SFCB (CIMOM) Service

Stopping the service:

```
/etc/init.d/sfcdb-watchdog stop
```

Starting the service:

```
/etc/init.d/sfcdb-watchdog start
```

Restarting the service:

```
/etc/init.d/sfcdb-watchdog restart
```

#### Enable Micron CIM Provider

```
/sbin/esxcfg-advcfg -A CIMvmw_micron-device-providerProviderEnabled -T int -E "Enable or Disable the CIMvmw_micron-device-providerProviderEnabled" -F 1 -N 0 -M 1
```

#### Validate Micron CIM Provider

```
esxcfg-advcfg --set 1  
/UserVars/CIMvmw_providerProviderEnabled
```

#### Retrieve Device Information from VMware vSphere ESXi

```
esxcli storage core device list
```

## Running the Plug-In From VMware PowerCLI

1. Connect to the host:

```
Connect-VIServer -server <hostname> -user <username> -password <password>
```

2. Set a local shell variable to the ESXCLI on the host:

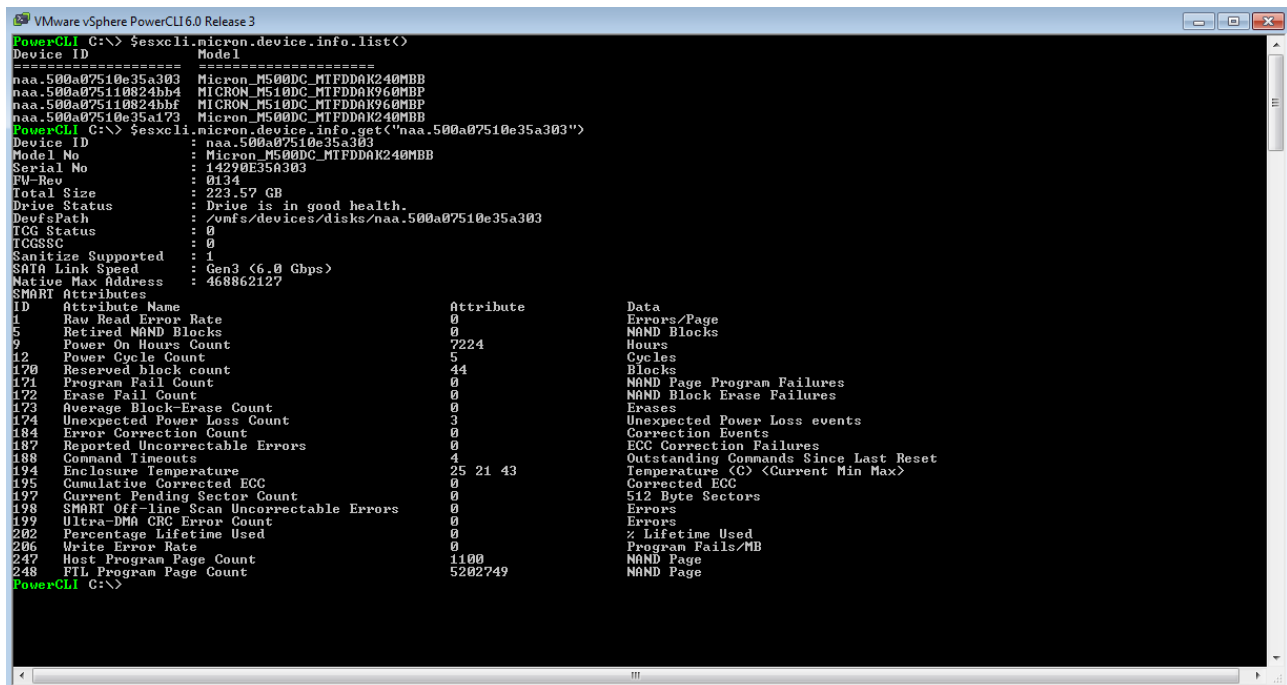
```
$esxcli = Get-EsxCLI -VMHost <hostname>
```

3. Use the local shell variable to execute ESXCLI commands. For example:

```
$esxcli.micron.vib.settings.username.set("username")
$esxcli.micron.vib.settings.password.set("password")
$esxcli.micron.device.info.list()
$esxcli.micron.device.firmware.report("device id")
$esxcli.micron.device.erase($true, "device id")
```

Note: With PowerCLI, the order of method arguments matters, and required arguments come first. To see the order of the arguments, type the command without "()" and the arguments will be displayed in the value row. For commands that require user agreement, the syntax for supplying boolean is \$true and \$false.

Figure 10: Running Plug-In From PowerCLI



```
VMware vSphere PowerCLI 6.0 Release 3
PowerCLI C:\> $esxcli.micron.device.info.list()
Device ID      Model
=====
naa.500a07510e35a303 Micron_M500DC_MTFDDAK240MBB
naa.500a075110824bb4 MICRON_M510DC_MTFDDAK960MBF
naa.500a075110824bb4 MICRON_M510DC_MTFDDAK960MBF
naa.500a07510e35a123 Micron_M500DC_MTFDDAK240MBB
PowerCLI C:\> $esxcli.micron.device.info.get("naa.500a07510e35a303")
Device ID      : naa.500a07510e35a303
Model No       : Micron_M500DC_MTFDDAK240MBB
Serial No      : 14290E35A303
FW-Rev         : 0134
Total Size     : 223.57 GB
Drive Status   : Drive is in good health.
DevsPath       : /vmfs/devices/disks/naa.500a07510e35a303
TCG Status     : 0
TCGSSC        : 0
Sanitize Supported : 1
SATA Link Speed : Gen3 <6.0 Gbps>
Native Max Address : 468862127
SMART Attributes
ID      Attribute Name      Attribute      Data
1      Raw Read Error Rate 0              Errors/Page
5      Retired NAND Blocks 0              NAND Blocks
9      Power On Hours Count 7224           Hours
12     Power Cycle Count   5              Cycles
170    Reserved block count 44             Blocks
171    Program Fail Count  0              NAND Page Program Failures
172    Erase Fail Count    0              NAND Block Erase Failures
173    Average Block-Erase Count 0              Erases
174    Unexpected Power Loss Count 3              Unexpected Power Loss events
184    Error Correction Count 0              Correction Events
187    Reported Uncorrectable Errors 0              ECC Correction Failures
188    Command Timouts    4              Outstanding Commands Since Last Reset
194    Enclosure Temperature 25 21 43      Temperature (C) <Current Min Max>
195    Cumulative Corrected ECC 0              Corrected ECC
197    Current Pending Sector Count 0              512 Byte Sectors
198    SMART Off-Line Scan Uncorrectable Errors 0              Errors
199    Ultra-DMA CRC Error Count 0              Errors
202    Percentage Lifetime Used 0              % Lifetime Used
206    Write Error Rate    0              Program Fails/MB
247    Host Program Page Count 1100           NAND Page
248    FITL Program Page Count 5202749       NAND Page
PowerCLI C:\>
```



## Running the Plug-In From vSphere Command-Line Interface

1. Download vSphere Command-Line Interface (vCLI) 6.0:  
<https://my.vmware.com/group/vmware/details?downloadGroup=VCLI600&productId=491>
2. Windows systems: Add `esxcli.exe` from the `/bin` directory of where you installed vCLI to your path, if desired.
3. vCLI 6.0 requires a trust relationship with the host when running ESXCLI commands remotely. Meet this requirement one of three ways: use a cert file, use a credential store, or use the `--thumbprint` option.

Below is an example of how to use the `--thumbprint` option. To use the cert file or credential store, see the VMware documentation at [https://kb.vmware.com/self-service/microsites/search.do?language=en\\_US&cmd=displayKC&externalId=2108416](https://kb.vmware.com/self-service/microsites/search.do?language=en_US&cmd=displayKC&externalId=2108416)

### Using the `--thumbprint` option:

- a. Run the following command: `$esxcli --server <hostname>`
- b. Observe an error similar to the following: *Connect to <hostname> failed. Server SHA-1 thumbprint: <thumbprint> (not trusted).*
- c. Use the thumbprint with the `--thumbprint` option followed with the desired ESXCLI command. For example:

```
$esxcli --server <hostname> --username <username> --password <password> --thumbprint <thumbprint> micron device info list
```

```
$esxcli --server <hostname> --username <username> --password <password> --thumbprint <thumbprint> micron device firmware report -d <device id>
```

**Figure 11: Running Plug-In From vCLI with `--thumbprint` Option**

```
C:\Program Files (x86)\VMware\VMware vSphere CLI\bin>esxcli --server dedwood-08
Connect to dedwood-08 failed. Server SHA-1 thumbprint: 42:D6:B2:06:F9:97:2B:3F:2E:AC:03:5F:6F:2D:D6:F4:59:83:2D:CE (not trusted).

C:\Program Files (x86)\VMware\VMware vSphere CLI\bin>esxcli --server dedwood-08 --username root --password pass!Q@W#E --thumbprint
42:D6:B2:06:F9:97:2B:3F:2E:AC:03:5F:6F:2D:D6:F4:59:83:2D:CE micron device info list

Device ID                Model
-----
naa.500a07510e35a303     Micron_M500DC_MTFDDAK240MBB
naa.500a075110824bb4     MICRON_MS10DC_MTFDDAK960MBP
naa.500a075110824bbf     MICRON_MS10DC_MTFDDAK960MBP
naa.500a07510e35a173     Micron_M500DC_MTFDDAK240MBB

C:\Program Files (x86)\VMware\VMware vSphere CLI\bin>
```



## Revision History

### Rev. E – 7/17

- Added Device SMARTLOG and DUMPIDD commands.

### Rev. D – 6/17

- Added Device OVERPROVISIONING, DEBUG DATA and SMART SELF-TEST commands.

### Rev. C – 7/16

- Added Device ONLINE and Device OFFLINE commands.

### Rev. B – 3/16

- Added two sections: Running the Plug-In From VMware PowerCLI and Running the Plug-In From vSphere 6.0 CLI

### Rev. A – 2/16

- Initial release

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