



User Guide

Nytr[™] WarpDrive[®] and Nytr XP6000 Application Acceleration Card Management Utility

NWD-BFH6-1200
NWD-BFH8-1600
NWD-BFH8-3200
NWD-BLP4-400
NWD-BLP4-800
NWD-BLP4-1600
NWD-WLP4-200
NWD-WLP4-400
XP6209-4A1024
XP6209-4B2048
XP6210-4A2048
XP6210-4B2048
XP6302-8B1536
XP6302-8B2048

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Version 2.6	December 2014	Added XP6302 devices support related information.
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Version 2.2	March 2014	Updated the entire document with the latest output examples. Updated Section 3, Hardware and Software Compatibility. Updated the definition of cap (one of three discrete over-provisioning levels) in Section 6.6, Format Nytro WarpDrive Card Command. Updated Section 6.4, Health Reporting Command. Added information about the -all option in the CLI mode.
Version 2.1	December 2013	Updated the entire document with the latest output examples.
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Version 1.3	November 2011	Updated changes in Sample Output 2.
Version 1.2	April 2011	Updated changes in the utility.
Version 1.1	November 2010	Updated changes in the utility.
Version 1.0	March 2010	Initial release.

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Nytro™ WarpDrive® and Nytro XP6000 Application Acceleration Card Management Utility User Guide

1.0 Introduction

Use the Seagate® Nytro™ WarpDrive® and Nytro XP6000 Application Acceleration Card management utility tools to update, format, and check the status of your Nytro WarpDrive and XP6000 cards. To obtain the management utility, contact Seagate online support and services, at <http://www.seagate.com/about/contact-us/technical-support/>.

For a complete list of the features supported, refer to the *Nytro XP6000 Series Application Acceleration Cards Product Brief and Nytro XP6000 Application Acceleration Card User Guide*.

2.0 Applicable Products

The following products use the Seagate Nytro WarpDrive and Nytro XP6000 management utility tools.

DEVICE NAMES	MODEL NAMES	USABLE CAPACITY
Nytro WarpDrive 6301	NWD-BFH6-1200	1200 GB
Nytro WarpDrive 6301	NWD-BFH8-1600	1600 GB
Nytro WarpDrive 6301	NWD-BFH8-3200	3200 GB
Nytro WarpDrive 6203	NWD-WLP4-200	200 GB
Nytro WarpDrive 6203	NWD-WLP4-400	400 GB
Nytro WarpDrive 6203	NWD-BLP4-400	400 GB
Nytro WarpDrive 6203	NWD-BLP4-800	800 GB
Nytro WarpDrive 6203	NWD-BLP4-1600	1600 GB
Nytro XP6209	XP6209-4A1024	930 GB
Nytro XP6209	XP6209-4B2048	1796 GB
Nytro XP6210	XP6210-4A2048	1860 GB
Nytro XP6210	XP6210-4B2048	1860 GB
Nytro XP6302	XP6302-8B1536	1300 GB
Nytro XP6302	XP6302-8B2048	1750 GB

3.0 Hardware and Software Compatibility

The Nytro WarpDrive management utility (DDCLI) is compatible with the following hardware and software.

- Proprietary I/O protocol device

The utility supports only Nytro WarpDrive controller cards that are based on the Fusion-MPT™ architecture and implemented according to the Message Passing Interface (MPI) v2.0 specification.

- Hardware platforms:
 - x86 or compatible
 - x64/AMD®64

■ Devices:

- On-board OEM SATA SSD devices
 - Operating systems:
- Microsoft® Windows®
 - Windows Server® 2012 R2 x64
 - Windows Server 2008 R2 SP1 x64
 - Windows Server 2008 R2 SP2 x64 and x32
 - Windows 8 R2 x64 and 32
 - Windows 7 SP1 x64 and x32
 - Windows Server 2003 R2 SP2 x64 and x32
 - Windows Vista® SP2 x64 and x32
 - Solaris®
 - x86
 - 10 and 11
- SUSE® Linux® Enterprise Server (SLES™) x64 and x32
 - 10 SP0 to SP4
 - 11 SP0 to SP3
- CentOS® x64 and x32
 - 5.3 to 5.10
 - 6.0 to 6.5

(RPM binary is available only from CentOS 6.3, for other versions, use Red Hat® Enterprise Linux (RHEL) RPMs)
- Ubuntu® x64 and x32
 - 10.04, 11.1, and 12.04
- Debian® x64 and x32
 - 6.0.5 and 6.0.7

NOTE Use the same driver.

- Fedora® x64 and x32
 - 17 and 18
- RHEL x64 and x32
 - 5.0 to 5.10
 - 6.0 to 6.5
- Oracle® Enterprise Linux (OEL™) x64 and x32
 - 5.4 to 5.9
 - 6.0 to 6.5
- VMware® x64
 - 4.0U4ESX
 - 4.0U4 ESX i
 - 4.1U2ESX
 - 4.1U2ESX i
 - 5.0 U1(ESXi)
 - 5.1/5.5, ESXi
- FreeBSD® x64 and x32
 - 7.2 and 7.4
 - 8.2 and 8.3
 - 9
- Oracle VM (OVM) Server x64 and x32
 - 3.0

- Operating system architectures:
 - Windows – x86, x64
 - Linux – x86, x86_64
 - Solaris – x86 (or compatible), SPARC
 - FreeBSD – AMD64, i386
 - Oracle Enterprise Linux – x86, x86_64
- Other software:
 - Nytro WarpDrive firmware – MPI v2.0

NOTE Seagate supports VMware installation bundles (VIBs) in VMware 5 only. ESX4.x/ESXi4.x require a manual installation of the binary executable.

4.0 DDCLI Utility Version Information

You can determine the Nytro WarpDrive management utility version within the DDCLI utility. The following menu interface output shows that the DDCLI utility version is 112.00.07.00.

```
*****
Seagate WarpDrive Management Utility
Version 112.00.07.00 (2014.09.01)
Copyright (c) 2014 Seagate Technologies LLC. All Rights Reserved.
*****
```

ID	WarpDrive	Package Version	PCI Address
1	XP6302-8B2048	12.00.09.00	00:07:00:00

Select the WarpDrive [1-1 or 0:Quit]: **1**

1. List WarpDrive Information
2. Update Flash Package
3. Display WarpDrive Health
4. Locate WarpDrive
5. Format WarpDrive
6. Show Vital Product Data
7. Extract SMART Logs

Select Operation [1-7 or 0:Quit]:

5.0 Interfaces

The Nytro WarpDrive management utility supports a command line interface (CLI) and a text menu interface.

5.1 Command Line Interface

To bring up the utility in the CLI mode, use either of the following commands.

```
ddcli < -c controller# > [command] [parameters]
```

or

```
ddcli -listall
```

Adhere to the following CLI guidelines:

- All commands, except the `-listall` command, are run with the `-c` option.
- The commands that require the `-c` option cannot run without a parameter. Only the `-listall` command can run without a parameter.

5.2 Text Menu Interface

To bring up the utility in the Text Menu mode, use the `ddcli` command without any options. The utility displays the following top-level menu, which shows a list of Nytro WarpDrive cards in the system.

NOTE In the following sections, *red italic text* indicates input that you make in the Text Menu interface.

ID	WarpDrive	Package Version	PCI Address
1	XP6302-8B2048	12.00.09.00	00:07:00:00

Select the WarpDrive [1-1 or 0:Quit]: *1*

After one of the Nytro WarpDrive cards in the top-level menu is selected, the utility displays the following menu.

1. List WarpDrive information
2. Update Flash Package
3. Display WarpDrive Health
4. Locate WarpDrive
5. Format WarpDrive
6. Show Vital Product Data
7. Extract SMART Logs

Select the operation [1-7 or 0:Quit]:

6.0 Commands

The following table lists all of the user commands supported by the Nytro WarpDrive management utility. The following sections provide detailed descriptions of the commands.

Table 1 List of Commands

COMMAND	DESCRIPTION
-help	Display help for command line usage (not available in menu mode).
-listall	List all Nytro WarpDrive cards in the system (not available in menu mode).
-list	List all information for the selected Nytro WarpDrive card.
-updatepkg	Update Nytro WarpDrive card components with the Flash package.
-health	Display the health of the selected Nytro WarpDrive card.
-locate	Locate the selected Nytro WarpDrive card in the system. Use this command to start blinking the LED.
-showvpd	Show controller vital product data (VPD) information.
-format	Format the selected Nytro WarpDrive card.
-c	Select a Nytro WarpDrive card with the correct ID number (ID numbers range from 1 to 256).
-getsmartlog	Extract SMART™ logs.

6.1 List All Command

The `-listall` command lists all of the Nytro WarpDrive cards in the system along with the following information:

- Nytro WarpDrive card index
- Nytro WarpDrive card name or controller name
- Nytro WarpDrive card Flash package version
- PCI address

The `-listall` command runs without any command line parameters. You need not specify the `-c` option on the command line.

6.1.1 Text Menu Option

The following top-level menu lists the Nytro WarpDrive cards in the system and prompts you to select a Nytro WarpDrive card on which to perform an operation.

```
# ddcli

ID      WarpDrive      Package Version      PCI Address
--      -
1       XP6302-8B2048      12.00.09.00         00:07:00:00

Select the WarpDrive [1-1 or 0:Quit]: 1
```

6.1.2 Command Line Usage

Enter the following command in the CLI to run the `-listall` command.

Command Syntax

```
# ddcli -listall
```

Command Example

```
# ddcli -listall
```

Sample Output

When the `-listall` command runs, the utility returns the following text.

```
ID      WarpDrive      Package Version      PCI Address
--      -
1       XP6302-8B2048      12.00.09.00         00:07:00:00
```

6.2 List Command

The `-list` command lists the information of a selected Nytro WarpDrive card. In CLI mode, select a controller by including its Nytro WarpDrive card index.

The following information is displayed with the `-list` command:

- Nytro WarpDrive card index
- Nytro WarpDrive card name or controller name
- Nytro WarpDrive card Flash package version
- PCI address
- SAS address
- Physical device information, such as capacity, firmware revision, and so on.

6.2.1 Text Menu Option

The following top-level menu lists the Nytro WarpDrive cards in the system and prompts you to select a Nytro WarpDrive card on which to perform an operation.

```
# ddcli

*****
Seagate WarpDrive Management Utility
Version 112.00.07.00 (2014.09.01)
Copyright (c) 2014 Seagate Technologies LLC. All Rights Reserved.
*****

ID      WarpDrive      Package Version      PCI Address
--      -
1       XP6302-8B2048    12.00.09.00         00:07:00:00

Select the WarpDrive [1-1 or 0:Quit]: 1

1.      List WarpDrive Information
2.      Update Flash Package
3.      Display WarpDrive Health
4.      Locate WarpDrive
5.      Format WarpDrive
6.      Show Vital Product Data
7.      Extract SMART Logs

Select Operation [1-7 or 0:Quit]: 1

WarpDrive Selected is XP6302-4B2048
-----
WarpDrive Information
-----
WarpDrive ID           : 1
PCI Address            : 00:07:00:00
PCI Slot Number        : 0x03
PCI SubSystem DeviceId : 0x150F
PCI SubSystem VendorId : 0x1000
SAS Address            : 500605B 012345678
Package Version        : 12.00.09.00
Firmware Version       : 112.00.03.00
Legacy BIOS Version    : 110.00.00.00
UEFI BSD Version       : 07.18.05.03
Chip Name              : Nytro WarpDrive
Board Name             : XP6302-4B2048
Board Assembly Number  : N/A
Board Tracer Number    : N/A
RAID Support           : YES

1.      List WarpDrive Information
2.      Update Flash Package
3.      Display WarpDrive Health
4.      Locate WarpDrive
5.      Format WarpDrive
6.      Show Vital Product Data
7.      Extract SMART Logs
```

6.2.2 Command Line Usage

Enter the following command in the CLI to run the `-list` command.

Command Syntax

```
# ddcli -c <Nytro WarpDrive number> -list
```

Command Example

```
# ddcli -c 1 -list
```

Sample Output

When the `-list` command runs as entered in the previous example, the utility returns the following text.

```
*****
Seagate WarpDrive Management Utility
Version 112.00.07.00 (2014.09.01)
Copyright (c) 2014 Seagate Technologies LLC. All Rights Reserved.
*****
WarpDrive Selected is XP6302-8B2048

-----
WarpDrive Information
-----

WarpDrive ID           : 1
PCI Address            : 00:07:00:00
PCI Slot Number       : 0x03
PCI SubSystem DeviceId : 0x150F
PCI SubSystem VendorId : 0x1000
SAS Address           : 500605B 012345678
Package Version       : 12.00.09.00
Firmware Version      : 112.00.03.00
Legacy BIOS Version   : 110.00.00.00
UEFI BSD Version      : 07.18.05.03
Chip Name             : Nytro WarpDrive
Board Name            : XP6302-8B2048
Board Assembly Number : N/A
Board Tracer Number   : N/A
RAID Support          : YES
```

Seagate WarpDrive Management Utility: Execution completed successfully.

6.3 Update Flash Package Command

The `-updatepkg` command updates the selected Nytro WarpDrive card with the specified firmware package. This command supports upgrades of only the Nytro WarpDrive firmware package. If the current firmware package version on the selected Nytro WarpDrive card is higher than the specified firmware package version, the command returns an error.

6.3.1 Text Menu Option

The following top-level menu lists the Nytro WarpDrive cards in the system and prompts you to select a Nytro WarpDrive card on which to perform an operation.

```
# ddcli
*****
Seagate WarpDrive Management Utility
Version 112.00.07.00 (2014.09.01)
Copyright (c) 2014 Seagate Technologies LLC. All Rights Reserved.
*****

ID      WarpDrive      Package Version      PCI Address
--      -
1       XP6302-8B2048      12.00.09.00          00:07:00:00

Select the WarpDrive [1-1 or 0:Quit]: 1

1.      List WarpDrive Information
2.      Update Flash Package
3.      Display WarpDrive Health
4.      Locate WarpDrive
5.      Format WarpDrive
6.      Show Vital Product Data
7.      Extract SMART Logs

Select Operation [1-7 or 0:Quit]: 2
Enter Flash Package File: XP6302-4B2048_12.00.09.00.bin
```

6.3.2 Command Line Usage

Enter the following line of text in the CLI to run the `-updatepkg` command. The path is optional. If you do not specify a path, the `ddcli` utility uses the current directory to locate the firmware file.

Command Syntax

```
# ddcli -c <Nytro WarpDrive number> -updatepkg [optional:path]<firmware file name>
```

Command Example

```
# ddcli -c 1 -updatepkg XP6302-4B2048_12.00.09.00.bin
```

The following example uses the `/home/user` directory to find the firmware file, `XP6302-4B2048_112.00.03.00.bin`, which is located in the same directory as the `ddcli` utility.

```
# ddcli -c 1 -updatepkg /home/user/XP6302-4B2048_12.00.09.00.bin
```

6.3.3 Error Handling

The following statements are true with regard to error handling:

- If a Nytro WarpDrive controller firmware update fails, the `-updatepkg` command terminates.
- If a firmware download fails on any of the Nytro WarpDrive card components, the process terminates.

6.4 Health Reporting Command

The `-health` command shows the overall health status of a selected Nytro WarpDrive card and its components. If any alert exists, this command shows the component causing the alert along with further information. The `-health` command `Overall Health` output includes the following states:

- **GOOD.** The Nytro WarpDrive card is operating correctly. All operations are supported.
- **WARNING.** The Nytro WarpDrive card is approaching failure. This output appears because of a decreased `Life Left` value or an increased `Temperature` value outside the set threshold.
- **ERROR.** The Nytro WarpDrive card is not operating. No operations can be performed.

The `Life Left` field in the output of the `-health` command appears as a percentage, which is between 0 percent and 100 percent. If the value is 0 percent, it indicates that the WarpDrive card warranty has expired.

6.4.1 Text Menu Option

The following top-level menu lists the Nytro WarpDrive cards in the system and prompts you to select a Nytro WarpDrive card on which to perform an operation.

```
# ddcli
*****
Seagate WarpDrive Management Utility
Version 112.00.07.00 (2014.09.01)
Copyright (c) 2014 Seagate Technologies LLC. All Rights Reserved.
*****

ID      WarpDrive      Package Version      PCI Address
--      -
1       XP6302-8B2048      12.00.09.00          00:07:00:00
1
Select the WarpDrive [1-1 or 0:Quit]: 1

1.      List WarpDrive Information
2.      Update Flash Package
3.      Display WarpDrive Health
4.      Locate WarpDrive
5.      Format WarpDrive
6.      Show Vital Product Data
7.      Extract SMART Logs

Select Operation [1-7 or 0:Quit]: 3
```

6.4.2 Command Line Usage

Enter the following command in the CLI to run the `-health` command.

Command Syntax 1

```
# ddcli -c <Nytro WarpDrive number> -health [-fua | -all]
```

Command Example 1

```
# ddcli -c 1 -health
```

Sample Output 1.

When the `-health` command runs, as entered in the previous example, the utility returns the following text.

```
*****
Seagate WarpDrive Management Utility
Version 112.00.07.00 (2014.09.01)
Copyright (c) 2014 Seagate Technologies LLC. All Rights Reserved.
*****

ID      WarpDrive      Package Version      PCI Address
--      -
1       XP6302-8B2048      12.00.09.00          00:07:00:00

Select the WarpDrive [1-1 or 0:Quit]: 1

1. List WarpDrive Information
2. Update Flash Package
3. Display WarpDrive Health
4. Locate WarpDrive
5. Format WarpDrive
6. Show Vital Product Data
7. Extract SMART Logs

Select Operation [1-7 or 0:Quit]: 3

Read SMART attributes forcibly from Nytro Flash module? (Yes/No): No

Display All attributes? (Yes/No): No
-----
Nytro WarpDrive XP6302-8B2048 Health
-----

Backup Rail Monitor           : GOOD

SSD Drive SMART Data Slot #: 4: Drive Serial Number 1

----- Current (since last Power Cycle) -----
Current Temperature           38          (degree C)

----- Cumulative -----
Retired Block Count           0
Power-On Hours                 18.6
Uncorrectable RAISE Errors     0
Maximum Lifetime Temperature   40          (degree C)
SSD Life Left (PE Cycles)      100         (%)
Total Writes From Host         0
Total Reads To Host            0

SSD Drive SMART Data Slot #: 5: Drive Serial Number 2

----- Current (since last Power Cycle) -----
Current Temperature           38          (degree C)
```

```

----- Cumulative -----
Retired Block Count                0
Power-On Hours                     18.5
Uncorrectable RAISE Errors         0
Maximum Lifetime Temperature       40      (degree C)
SSD Life Left (PE Cycles)          100      (%)
Total Writes From Host             0
Total Reads To Host                0

```

SSD Drive SMART Data Slot #: 6: Drive Serial Number 3

```

----- Current (since last Power Cycle) -----
Current Temperature                 38      (degree C)

```

```

----- Cumulative -----
Retired Block Count                0
Power-On Hours                     18.4
Uncorrectable RAISE Errors         0
Maximum Lifetime Temperature       40      (degree C)
SSD Life Left (PE Cycles)          100      (%)
Total Writes From Host             0
Total Reads To Host                0

```

SSD Drive SMART Data Slot #: 7: Drive Serial Number 4

```

----- Current (since last Power Cycle) -----
Current Temperature                 38      (degree C)

```

```

----- Cumulative -----
Retired Block Count                0
Power-On Hours                     18.3
Uncorrectable RAISE Errors         0
Maximum Lifetime Temperature       39      (degree C)
SSD Life Left (PE Cycles)          100      (%)
Total Writes From Host             0
Total Reads To Host                0

```

```

Warranty Remaining      : 100 %
Temperature             : 38 degree C

```

```

Overall Health          : GOOD

```

1. List WarpDrive Information
2. Update Flash Package
3. Display WarpDrive Health
4. Locate WarpDrive
5. Format WarpDrive
6. Show Vital Product Data
7. Extract SMART Logs

The Health command has an additional option `-all` in the CLI mode.

Command Syntax 2

```
# ddcli -c c# -health -all
```

Command Example 2

```
# ddcli -c 1 -health -all
```

Sample Output 2

When the `-health -all` command runs, as entered in the previous example, the utility returns the following text.

```
*****
Seagate WarpDrive Management Utility
Version 112.00.07.00 (2014.09.01)
Copyright (c) 2014 Seagate Technologies LLC. All Rights Reserved.
*****
```

ID	WarpDrive	Package Version	PCI Address
1	XP6302-8B2048	12.00.09.00	00:07:00:00

Select the WarpDrive [1-1 or 0:Quit]: **1**

1. List WarpDrive Information
2. Update Flash Package
3. Display WarpDrive Health
4. Locate WarpDrive
5. Format WarpDrive
6. Show Vital Product Data
7. Extract SMART Logs

Select Operation [1-7 or 0:Quit]: **3**

Read SMART attributes forcibly from DFF? (Yes/No): **No**

Display All attributes? (Yes/No): **Yes**

Nytro WarpDrive XP6302-8B2048 Health

Backup Rail Monitor : GOOD

SSD Drive SMART Data Slot #: 4: Drive Serial Number 1

----- Current (since last Power Cycle) -----

Bytes Read	0	
Soft Read Error Rate	NA	
Wear Range Delta	0	(%)
Uncorrectable RAISE Errors	0	
Current Temperature	38	(degree C)
Uncorrectable ECC Errors	0	
SATA R-Errors (CRC) Error Count	0	

----- Cumulative -----

Retired Block Count	0	
Power-On Hours	18.6	
Device Power Cycle Count	2	
Gigabytes Erased	48	(Gigabytes)
Reserved (over-provisioned) Blocks	16000	
Program Fail Count	0	
Erase Fail Count 1	0	
Unexpected Power Loss Count	4	
I/O Error Detection Code Rate	0	
Uncorrectable RAISE Errors	0	
Maximum Lifetime Temperature	40	(degree C)
Cached SMART Data Age	00:01:40	(Hours:Minutes:Seconds)
SSD Life Left (PE Cycles)	100	(%)
Total Writes From Host	0	

Total Reads To Host	0	
Write Amplification	NA	
Reserved Blocks Remaining	100	(%)
Trim Count	0	

SSD Drive SMART Data Slot #: 5: Drive Serial Number 2

----- Current (since last Power Cycle) -----

Bytes Read	0	
Soft Read Error Rate	NA	
Wear Range Delta	0	(%)
Uncorrectable RAISE Errors	0	
Current Temperature	38	(degree C)
Uncorrectable ECC Errors	0	
SATA R-Errors (CRC) Error Count	0	

----- Cumulative -----

Retired Block Count	0	
Power-On Hours	18.5	
Device Power Cycle Count	2	
Gigabytes Erased	48	(Gigabytes)
Reserved (over-provisioned) Blocks	16000	
Program Fail Count	0	
Erase Fail Count 1	0	
Unexpected Power Loss Count	4	
I/O Error Detection Code Rate	0	
Uncorrectable RAISE Errors	0	
Maximum Lifetime Temperature	40	(degree C)
Cached SMART Data Age	00:01:40	(Hours:Minutes:Seconds)
SSD Life Left (PE Cycles)	100	(%)
Total Writes From Host	0	
Total Reads To Host	0	
Write Amplification	NA	
Reserved Blocks Remaining	100	(%)
Trim Count	0	

SSD Drive SMART Data Slot #: 6: Drive Serial Number 3

----- Current (since last Power Cycle) -----

Bytes Read	0	
Soft Read Error Rate	NA	
Wear Range Delta	0	(%)
Uncorrectable RAISE Errors	0	
Current Temperature	38	(degree C)
Uncorrectable ECC Errors	0	
SATA R-Errors (CRC) Error Count	0	

----- Cumulative -----

Retired Block Count	0	
Power-On Hours	18.5	
Device Power Cycle Count	2	
Gigabytes Erased	48	(Gigabytes)
Reserved (over-provisioned) Blocks	16000	
Program Fail Count	0	
Erase Fail Count 1	0	
Unexpected Power Loss Count	4	
I/O Error Detection Code Rate	0	
Uncorrectable RAISE Errors	0	
Maximum Lifetime Temperature	40	(degree C)
Cached SMART Data Age	00:01:40	(Hours:Minutes:Seconds)
SSD Life Left (PE Cycles)	100	(%)

```

Total Writes From Host          0
Total Reads To Host            0
Write Amplification             NA
Reserved Blocks Remaining      100      (%)
Trim Count                     0
SSD Drive SMART Data Slot #: 7: Drive Serial Number 4

```

```

----- Current (since last Power Cycle) -----
Bytes Read                     0
Soft Read Error Rate           NA
Wear Range Delta               0      (%)
Uncorrectable RAISE Errors     0
Current Temperature            38      (degree C)
Uncorrectable ECC Errors       0
SATA R-Errors (CRC) Error Count 0

```

```

----- Cumulative -----
Retired Block Count            0
Power-On Hours                 18.4
Device Power Cycle Count       2
Gigabytes Erased               48      (Gigabytes)
Reserved (over-provisioned) Blocks 16000
Program Fail Count             0
Erase Fail Count 1             0
Unexpected Power Loss Count    4
I/O Error Detection Code Rate  0
Uncorrectable RAISE Errors     0
Maximum Lifetime Temperature  39      (degree C)
Cached SMART Data Age         00:01:40 (Hours:Minutes:Seconds)
SSD Life Left (PE Cycles)      100      (%)
Total Writes From Host         0
Total Reads To Host            0
Write Amplification            NA
Reserved Blocks Remaining      100      (%)
Trim Count                     0

```

```

Warranty Remaining      : 100 %
Temperature             : 38 degree C

```

```

Overall Health          : GOOD

```

1. List WarpDrive Information
2. Update Flash Package
3. Display WarpDrive Health
4. Locate WarpDrive
5. Format WarpDrive
6. Show Vital Product Data
7. Extract SMART Logs

6.5 Locate Nytro WarpDrive Card Command

The `-locate` command turns on the Status LED of the selected Nytro WarpDrive card. Use this command to start blinking the LED on the specified Nytro WarpDrive card to locate the selected card. You can view the LEDs on the rear of the system chassis. The Status LED turns off after 60 seconds. Refer to the *Seagate Nytro WarpDrive Application Acceleration Cards User Guide* for the exact LED locations.

6.5.1 Text Menu Option

The following top-level menu lists the Nytro WarpDrive cards in the system and prompts you to select a Nytro WarpDrive card on which to perform an operation.

```
# ddcli

*****
Seagate WarpDrive Management Utility
Version 112.00.07.00 (2014.09.01)
Copyright (c) 2014 Seagate Technologies LLC. All Rights Reserved.
*****

ID      WarpDrive      Package Version      PCI Address
--      -
1       XP6302-8B2048      12.00.09.00          00:07:00:00

Select the WarpDrive [1-1 or 0:Quit]: 1

1.      List WarpDrive Information
2.      Update Flash Package
3.      Display WarpDrive Health
4.      Locate WarpDrive
5.      Format WarpDrive
6.      Show Vital Product Data
7.      Extract SMART Logs

Select Operation [1-7 or 0:Quit]: 4
Enter Operation [1:on]: 1
```

6.5.2 Command Line Usage

Enter the following line of text in the CLI to run the `-locate` command.

Command Syntax

```
# ddcli -c <Nytro WarpDrive number> -locate on
```

Command Example

```
# ddcli -c 1 -locate on
```

Sample Output

```
*****
Seagate WarpDrive Management Utility
Version 112.00.07.00 (2014.09.01)
Copyright (c) 2014 Seagate Technologies LLC. All Rights Reserved.
*****

Seagate WarpDrive Management Utility: Execution completed successfully.
```

6.6 Format Nytro WarpDrive Card Command

The `-format` command formats a Nytro WarpDrive card. This command performs the following actions:

- Deletes the existing RAID volume (if present).
- Sends ATA commands to format all of the connected SSD drives.
 - Optionally modifies the over-provisioning level.
- Reads manufacturing page 4 to get the value of `MaxPhysDisks`.
- If the number of drives discovered is not equal to the value of `MaxPhysDisks`, prints the error and exits.
- Creates the RAID volume.

The `-format` command deletes the logical block address (LBA) tables and the current encryption key internal to the SSD drive. A new encryption key is randomly generated. The media, however, is not erased by default.

The `-format` command can modify the over-provisioning level of any Nytro WarpDrive device. If `-slot` is not specified or if the Nytro WarpDrive card operates in single volume mode (single, virtual device), over-provisioning is performed on all flash modules. Specify one of three discrete over-provisioning levels:

- `perf`: Choose this over-provisioning level for maximum performance at the expense of some capacity.
- `nom`: This over-provisioning point is optimized for performance and capacity. This level is the default.
- `cap`: Choose this option to maximize capacity at the expense of performance.

The `-s` command removes the user prompt to continue with the `-format` command.

The `-format` command takes no more than two minutes to complete, depending on the number of drive modules.

ATTENTION The `-format` command erases all of the data present on the Nytro WarpDrive card drives.

6.6.1 Text Menu Option

The following top-level menu lists the Nytro WarpDrive cards in the system and prompts you to select a Nytro WarpDrive card on which to perform an operation.

```
# ddcli
*****
Seagate WarpDrive Management Utility
Version 112.00.07.00 (2014.09.01)
Copyright (c) 2014 Seagate Technologies LLC. All Rights Reserved.
*****

ID      WarpDrive      Package Version      PCI Address
--      -
1       XP6302-8B2048      12.00.09.00          00:07:00:00

Select the WarpDrive [1-1 or 0:Quit]: 1

1.      List WarpDrive Information
2.      Update Flash Package
3.      Display WarpDrive Health
4.      Locate WarpDrive
5.      Format WarpDrive
6.      Show Vital Product Data
7.      Extract SMART Logs

Select Operation [1-7 or 0:Quit]: 5

Perform Over-provisioning? (Yes/No): No
```

```

WARNING: Formatting will result in loss of all data on the selected WarpDrive
device. Type YES if you would like to continue, or any other key to abort the
request: yes
Seagate WarpDrive Management Utility: Preparing WarpDrive for format.
Seagate WarpDrive Management Utility: Please wait. Format of WarpDrive is in
progress.....
Seagate WarpDrive Management Utility: WarpDrive format successfully completed.

```

6.6.2 Command Line Usage

Enter the following command in the CLI to run the `-format` command.

Command Syntax

```
# ddcli -c <Nytro WarpDrive number> -format [-slot <ssd_slot>]
[-op <-level <perf | nom | cap>> ] [ -s ]
```

Command Example

```
# ddcli -c 1 -format
```

Sample Output

```

*****
Seagate WarpDrive Management Utility
Version 112.00.07.00 (2014.09.01)
Copyright (c) 2014 Seagate Technologies LLC. All Rights Reserved.
*****
WARNING: Formatting will result in loss of all data on the selected WarpDrive
device. Type YES if you would like to continue, or any other key to abort the
request: yes
Seagate WarpDrive Management Utility: Preparing WarpDrive for format.
Seagate WarpDrive Management Utility: Please wait. Format of WarpDrive is in
progress.....
Seagate WarpDrive Management Utility: WarpDrive format successfully completed.

Seagate WarpDrive Management Utility: Execution completed successfully.

```

6.7 Show Controller Vital Product Data Information

The `-showvpd` command displays Vital Product Data (VPD) information.

6.7.1 Text Menu Option

The following top-level menu lists the Nytro WarpDrive cards in the system and prompts you to select a Nytro WarpDrive card on which to perform an operation.

```

# ddcli

*****
Seagate WarpDrive Management Utility
Version 112.00.07.00 (2014.09.01)
Copyright (c) 2014 Seagate Technologies LLC. All Rights Reserved.
*****

ID      WarpDrive      Package Version      PCI Address
--      -
1       XP6302-8B2048      12.00.09.00          00:07:00:00

Select the WarpDrive [1-1 or 0:Quit]: 1

```

1. List WarpDrive Information
2. Update Flash Package
3. Display WarpDrive Health
4. Locate WarpDrive
5. Format WarpDrive
6. Show Vital Product Data
7. Extract SMART Logs

Select Operation [1-7 or 0:Quit]: 6

```
-----
                          VPD Information
-----
Product Name   : XP6302-8B2048
V0             : 03-25927-03B
V1             : SP34401640
V2             : 131114
V3             : 01
V4             : 4E
V5             : -----
V6             : --
V7             : P
RV             : 0xcb
-----
```

6.7.2 Command Line Usage

Enter the following command in the CLI to run the `-showvpd` command.

Command Syntax

```
# ddcli>ddcli.exe -c 1 -showvpd
```

Sample Output

```
*****
Seagate WarpDrive Management Utility
Version 112.00.07.00 (2014.09.01)
Copyright (c) 2014 Seagate Technologies LLC. All Rights Reserved.
*****
-----
                          VPD Information
-----
Product Name   : XP6302-8B2048
V0             : 03-25927-03B
V1             : SP34401640
V2             : 131114
V3             : 01
V4             : 4E
V5             : -----
V6             : --
V7             : P
RV             : 0xcb
-----

Seagate WarpDrive Management Utility: Execution completed successfully.
```

6.8 Extract SMART Logs Command

The `-getsmartlog` command extracts additional SMART logs that can assist in issue debug and resolution. This command extracts two specific SMART logs for a single device or all devices if the `-slot` option is not used.

6.8.1 Text Menu Option

The following top-level menu lists the Nytro WarpDrive cards in the system and prompts you to select a Nytro WarpDrive card on which to perform an operation.

```
# ddcli
*****
Seagate WarpDrive Management Utility
Version 112.00.07.00 (2014.09.01)
Copyright (c) 2014 Seagate Technologies LLC. All Rights Reserved.
*****

ID      WarpDrive      Package Version      PCI Address
--      -
1       XP6302-8B2048      12.00.09.00          00:07:00:00

Select the WarpDrive [1-1 or 0:Quit]: 1

1.      List WarpDrive Information
2.      Update Flash Package
3.      Display WarpDrive Health
4.      Locate WarpDrive
5.      Format WarpDrive
6.      Show Vital Product Data
7.      Extract SMART Logs

Select Operation [1-7 or 0:Quit]: 7

Get Log for single or all SSDs[ Enter 1:All or 0:Single]: 0
Enter SSD Slot number: 5
Enter Log File Path: /root
Successfully collected SSD Event Logs for Cage = 01 Location = Lower
Successfully collected System Event Logs for Cage = 01 Location = Lower
```

6.8.2 Command Line Usage

Enter the following line of text in the CLI to run the `-getsmartlog` command.

Command Syntax

```
# ddcli <-c controller # > -getsmartlog[-slot <ssd_slot>] -path <path name>
```

Command Example

```
# ddcli -c 1 -getsmartlog -slot 4 -path /root
```

Sample Output

```
*****
Seagate WarpDrive Management Utility
Version 112.00.07.00 (2014.09.01)
Copyright (c) 2014 Seagate Technologies LLC. All Rights Reserved.
*****
Successfully collected SSD Event Logs for Cage = 01 Location = Lower
Successfully collected System Event Logs for Cage = 01 Location = Lower

Seagate WarpDrive Management Utility: Execution completed successfully.
```

7.0 Exception Handling

The following table lists all of the input validation errors.

Table 2 Error Messages

ERROR MESSAGE
Seagate WarpDrive Management Utility: Invalid command format specified on the command line.
Seagate WarpDrive Management Utility: Invalid argument: %s.
Seagate WarpDrive Management Utility: Invalid entry.
Seagate WarpDrive Management Utility: Incorrect number of command line parameters.
Seagate WarpDrive Management Utility: File doesn't exists or not a regular file. Name: %s.
Seagate WarpDrive Management Utility: No controllers found.
Seagate WarpDrive Management Utility: Failed getting controller information.
Seagate WarpDrive Management Utility: Insufficient memory.
Seagate WarpDrive Management Utility: Feature not supported in this release.
Seagate WarpDrive Management Utility: Error executing command %s.
Seagate WarpDrive Management Utility: Command terminated %s.
Seagate WarpDrive Management Utility: Format failed for Cage=%d Location=%s component.
Seagate WarpDrive Management Utility: Only %d out of %d components found.
Seagate WarpDrive Management Utility: Controller with index %d not found...!
Seagate WarpDrive Management Utility: WarpDrive is not in a proper state.
Seagate WarpDrive Management Utility: Preparing WarpDrive for format.
Seagate WarpDrive Management Utility: Couldn't prepare WarpDrive for format.
Seagate WarpDrive Management Utility: Format failed for component at "Cage=%d Location=%s".
Seagate WarpDrive Management Utility: WarpDrive could not be brought in usable state.
Seagate WarpDrive Management Utility: Invalid package signature.
Seagate WarpDrive Management Utility: Checksum error.
Seagate WarpDrive Management Utility: Package type not supported. Type: 0x%x
Seagate WarpDrive Management Utility: Invalid file size.
Seagate WarpDrive Management Utility: Package does not contain required image.
Seagate WarpDrive Management Utility: Package type does not match controller.
Seagate WarpDrive Management Utility: Failed to get current package version from WarpDrive.

Table 2 Error Messages (Continued)

ERROR MESSAGE
Seagate WarpDrive Management Utility: Cannot downgrade package version xx.xx.xx.xx to xx.xx.xx.xx.
Seagate WarpDrive Management Utility: Failed to Flash image. Type: 0x%x
Seagate WarpDrive Management Utility: Flash upgrade not allowed for component at "Cage: %d, Location: %s".
Seagate WarpDrive Management Utility: Failed to update component at "Cage: %d, Location: %s".



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