

NetWitness[®] Platform XDR

Version 12.1.0.0

Hard Disk Drive Replacement Guide

Contact Information

NetWitness Community at <https://community.netwitness.com> contains a knowledge base that answers common questions and provides solutions to known problems, product documentation, community discussions, and case management.

Trademarks

RSA Conference Logo, RSA, and other trademarks, are trademarks of RSA Security LLC or its affiliates ("RSA"). For a list of RSA trademarks, go to <https://www.rsa.com/en-us/company/rsa-trademarks>. Other trademarks are trademarks of their respective owners.

License Agreement

This software and the associated documentation are proprietary and confidential to RSA Security LLC or its affiliates and are furnished under license, and may be used and copied only in accordance with the terms of such license and with the inclusion of the copyright notice below. This software and the documentation, and any copies thereof, may not be provided or otherwise made available to any other person. No title to or ownership of the software or documentation or any intellectual property rights thereto is hereby transferred. Any unauthorized use or reproduction of this software and the documentation may be subject to civil and/or criminal liability. This software is subject to change without notice and should not be construed as a commitment by RSA.

Third-Party Licenses

This product may include software developed by parties other than RSA. The text of the license agreements applicable to third-party software in this product may be viewed on the product documentation page on NetWitness Community. By using this product, a user of this product agrees to be fully bound by terms of the license agreements.

Note on Encryption Technologies

This product may contain encryption technology. Many countries prohibit or restrict the use, import, or export of encryption technologies, and current use, import, and export regulations should be followed when using, importing or exporting this product.

Distribution

Use, copying, and distribution of any RSA Security LLC or its affiliates ("RSA") software described in this publication requires an applicable software license.

RSA believes the information in this publication is accurate as of its publication date. The information is subject to change without notice.

THE INFORMATION IN THIS PUBLICATION IS PROVIDED "AS IS." RSA MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND WITH RESPECT TO THE INFORMATION IN THIS PUBLICATION, AND SPECIFICALLY DISCLAIMS IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

© 2020 RSA Security LLC or its affiliates. All Rights Reserved.

November 2022

Contents

About this Document	4
Replace a Hard Disk Drive	5
Series 6 Host Front View Close Up of Inserted Hard Disk Drives	5
Series 6 Hybrid Host Front View	5
PowerVault Front View Showing Drive Numbers.	6
15-Drive DAC Front View	6
Check to See if Percli is Installed	6
Install Percli	7
Determine the State of the Drives	7
Flash the Failed Drive	8
Replace Drives Using Automatic Rebuilds	10
Verify that the Drive is Fixed	10
Automatic Rebuild Rate Configuration	11
Take a Disk Offline and Start a Rebuild Manually	12
Add a Hot Spare Drive	13
Delete a Hot Spare Drive	13
Visually Identify a Self-Encrypted Drive (SED)	14
Replace a Self-Encrypted Drive (SED)	15
Troubleshooting Hard Disk Drive Replacements	16
Revision History	17

About this Document

This document describes how to replace Hard Disk Drives (HDD) on physical hosts or storage devices using NetWitness Platform 10.6.6 and 11.2 and later. The instructions in this document are for hardware only.

The NetWitness Platform online documentation for specific software versions is available on NetWitness Community at <https://community.netwitness.com/t5/netwitness-platform/ct-p/netwitness-documentation>.

Note: When viewing a printed guide, be aware that a newer version of the guide may be available online at NetWitness Community in NetWitness Platform under Hardware Setup Guides: <https://community.netwitness.com/t5/netwitness-platform-hardware/tkb-p/netwitness-hardware-documentation>.

Replace a Hard Disk Drive

This topic describes the HDD (hard disk drive) replacement procedure for an NetWitness® Platform Series 4s, Series 5, or Series 6 physical host (appliance) and DAC or PowerVault storage, including SED drives.

Note: All HDDs in a physical host, DAC, or PowerVault are hot swappable. Therefore these hard drives can be inserted or replaced while the device is powered on.

Series 6 Host Front View Close Up of Inserted Hard Disk Drives



The drive numbers are listed on the front of the Series 6 host.

Note: The front view of the Series 4S and Series 5 hosts are similar.

Series 6 Hybrid Host Front View



The drive numbers are not listed on the front of the Series 6 Hybrid host, but you can use the `locate` command to flash the drive's LED to locate the physical drive. See [Flash the Failed Drive](#).

PowerVault Front View Showing Drive Numbers.



The PowerVault drive locations are listed on a table to the right on the front of the PowerVault. The drive numbers are also labeled in this diagram. You can use the `locate` command to flash the drive's LED to locate the physical drive. See [Flash the Failed Drive](#).

15-Drive DAC Front View



The drive numbers are not listed on the front of the DAC, but you can use the `locate` command to flash the drive's LED to locate the physical drive. See [Flash the Failed Drive](#).

Check to See if Perccli is Installed

To be able to complete the procedures in the guide, you must use the PERC Command Line Interface (`perccli`) tool, which gets RAID information using `perccli64`. Depending on your version of NetWitness® Platform, `perccli` may already be installed. If you are on NetWitness Platform version 10.6.6, you may need to install `perccli`. On version 11.3.x.x, `perccli` should already be installed.

1. Change directory to saTools:

```
[root@HOST admin]# cd /opt/rsa/saTools
```

2. To determine if the `perccli` tool is installed, run the following command:

```
[root@HOST saTools]# rpm -qa |grep perc
```

Example output from 10.6.6: `perccli-1.11.03-1.noarch`

Example output from 11.3.x.x: `perccli-007.0318.0000.0000-1.noarch`

3. If the `perccli` is not installed, install `perccli`.

Install Perccli

Install Perccli if it is not already installed. For more information about the PERC Command Line Interface (perccli) tool, see the [Dell EMC PowerEdge RAID Controller CLI Reference Guide](#).

1. Change the directory for the perccli installation:

```
[root@HOST ~]# cd /opt/rsa/saTools/NwDiskFw/
```

2. Install the perccli tool:

```
[root@HOST NwDiskFw]# yum install perccli-<version>.noarch.rpm
```

Where <version> is the perccli version available.

Example input: `yum install perccli-1.11.03-1.noarch.rpm`

Determine the State of the Drives

Confirm if the disk is unconfigured or failed. Use `nwraidtool.py` and examine logical disk information. If the disk is in a failed state, see [Replace Drives Using Automatic Rebuilds](#).

To do this, run the following commands:

1. Change the directory to saTools:

```
[root@HOST NwDiskFw]# cd /opt/rsa/saTools
```

2. Run the NW RAID tool:

```
[root@HOST saTools]# ./nwraidtool.py
```

Example output (This is a partial output. When you run this command, the output is much longer):

```
nwraidtool.py a tool to get RAID information using perccli64
Usage: nwraidtool.py [OPTION]...

Options:
-a, display all RAID data (may want to be used with Bash option ">
[filename].out")
-b, display brief RAID data
-r, display RAID data for support to process RMA
-h, display this help menu
```

Example of a brief RAID data display output using the `./nwraidtool.py -b | more` command:

```

EID:SlT DID State DG          Size Intf Med SED PI SeSz Model          Sp
-----
65:0      21 Onln  2 10.691 TB SAS  HDD N   N  512B HUH721212AL5200  U
65:1      33 Onln  2 10.691 TB SAS  HDD N   N  512B HUH721212AL5200  U
65:2       4 Onln  2 10.691 TB SAS  HDD N   N  512B HUH721212AL5200  U
65:3      15 Onln  3 10.691 TB SAS  HDD N   N  512B HUH721212AL5200  U
65:4      57 Onln  3 10.691 TB SAS  HDD N   N  512B HUH721212AL5200  U
65:5      61 Onln  3 10.691 TB SAS  HDD N   N  512B HUH721212AL5200  U
65:6       5 Onln  3 10.691 TB SAS  HDD N   N  512B HUH721212AL5200  U
65:7      11 Onln  3 10.691 TB SAS  HDD N   N  512B HUH721212AL5200  U
65:8      51 Onln  3 10.691 TB SAS  HDD N   N  512B HUH721212AL5200  U
65:9       2 Onln  3 10.691 TB SAS  HDD N   N  512B HUH721212AL5200  U
65:10     1 Onln  3 10.691 TB SAS  HDD N   N  512B HUH721212AL5200  U
65:11     0 Onln  3 10.691 TB SAS  HDD N   N  512B HUH721212AL5200  U
74:0      55 Onln  0 10.691 TB SAS  HDD N   N  512B HUH721212AL5200  U
74:1      29 Onln  0 10.691 TB SAS  HDD N   N  512B HUH721212AL5200  U
74:2      14 Onln  0 10.691 TB SAS  HDD N   N  512B HUH721212AL5200  U
74:3      26 Onln  1 10.691 TB SAS  HDD N   N  512B HUH721212AL5200  U
74:4      54 Onln  1 10.691 TB SAS  HDD N   N  512B HUH721212AL5200  U
74:5      60 Onln  1 10.691 TB SAS  HDD N   N  512B HUH721212AL5200  U
74:6      44 Onln  1 10.691 TB SAS  HDD N   N  512B HUH721212AL5200  U
74:7      17 Onln  1 10.691 TB SAS  HDD N   N  512B HUH721212AL5200  U
74:8      59 Onln  1 10.691 TB SAS  HDD N   N  512B HUH721212AL5200  U
74:9      53 Onln  1 10.691 TB SAS  HDD N   N  512B HUH721212AL5200  U
74:10     58 Onln  1 10.691 TB SAS  HDD N   N  512B HUH721212AL5200  U
74:11     56 Onln  1 10.691 TB SAS  HDD N   N  512B HUH721212AL5200  U
-----
EID-Enclosure Device ID|SlT-Slot No.|DID-Device ID|DG-DriveGroup
DHS-Dedicated Hot Spare|UGood-Unconfigured Good|GHS-Global Hotspare
UBad-Unconfigured Bad|Onln-Online|Offln-Offline|Intf-Interface
Med-Media Type|SED-Self Encryptive Drive|PI-Protection Info
SeSz-Sector Size|Sp-Spun|U-Up|D-Down/PowerSave|T-Transition|F-Foreign
UGUnsp-Unsupported|UGShld-UnConfigured shielded|HSPShld-Hotspare shielded
CFShld-Configured shielded|Cpybck-CopyBack|CBSHld-Copyback Shielded

```

Flash the Failed Drive

Note: The following commands are examples, you need to provide your own values for `cx`, `ex`, and `sx`. In these commands, `cx` specifies the controller where `x` is the controller index, `ex` is the enclosure ID, and `sx` is the drive slot ID of the controller.

1. **Identify the disk location.** Use the `show` command to view the information for a hard disk drive and type in your values for `cx`, `ex`, and `sx`. In the following examples, `C0` is controller 0, `e32` is enclosure 32, and `s1` is slot 1.

```
[root@HOST NwDiskFw]# /opt/MegaRAID/perccli/perccli64 /cx
[/ex]/sx show
```

Input example: `/opt/MegaRAID/perccli/perccli64 /c0/e32/s1 show`

Example output (This is a partial output. When you run this command, the output is much longer):

```
Controller = 0
```



```
Status = Success
Description = Show Drive Information Succeeded.
Drive Information :
=====
-----
EID:SlT DID State DG Size Intf Med SED PI SeSz Model Sp
-----
32:1 1 Onln 0 931.0 GB SAS HDD N N 512B ST1000NX0453 U
-----
EID-Enclosure Device ID|SlT-Slot No.|DID-Device ID|DG-DriveGroup
DHS-Dedicated Hot Spare|UGood-Unconfigured Good|GHS-Global Hotspare
UBad-Unconfigured Bad|Onln-Online|Offln-Offline|Intf-Interface
Med-Media Type|SED-Self Encryptive Drive|PI-Protection Info
SeSz-Sector Size|Sp-Spun|U-Up|D-Down|T-Transition|F-Foreign
UGUnsp-Unsupported|UGShld-UnConfigured shielded|HSPShld-Hotspare shielded
CFShld-Configured shielded
```

2. **Flash the Drive.** Start flashing a drive's LED to locate the physical drive:

```
[root@HOST NwDiskFw]# /opt/MegaRAID/perccli/perccli64 /cx
[/ex]/sx start locate
```

Input example: /opt/MegaRAID/perccli/perccli64 /c0/e32/s1 start locate

Example output:

```
Controller = 0
Status = Success
Description = Start Drive Locate Succeeded.
```

3. **Stop Flashing the Drive.** After the physical drive is located, stop flashing the drive's LED. Enter the following command to stop a locate operation and deactivate the drive's LED:

```
[root@HOST NwDiskFw]# /opt/MegaRAID/perccli/perccli64 /cx
[/ex]/sx stop locate
```

Input example: /opt/MegaRAID/perccli/perccli64 /c0/e32/s1 stop locate

Example output:

```
Controller = 0
Status = Success
Description = Stop Drive Locate Succeeded
```

Replace Drives Using Automatic Rebuilds

On the S6 hosts, failed physical disks are detected and the rebuild automatically starts when new disks are inserted into the same slot. This happens when the following conditions are true:

- The newly inserted drive is the same capacity as or larger than the failed drive.
- It is placed in the same drive bay as the failed drive it is replacing.

On drives with SED enabled, you must provide the passphrase only when importing an encrypted foreign configuration. If the drive has no foreign configuration, it should start the rebuild normally.

Note: Automatic rebuilds only occur on drives that are reporting a failed state or have hot spares. If the drive is reporting as missing or has smart errors but is not necessarily in a failed state and does not have a hot spare assigned, you must rebuild the drive manually. Automatic rebuilds occur only when the controller 'autorebuild' property is set to 'on'. To confirm if the autorebuild property value on controller x is set to 'on', run the following command.

```
/opt/MegaRAID/perccli/perccli64 /cx show all | egrep 'Auto Rebuild'
```

```
[root@S6LogDecoder perccli]# /opt/MegaRAID/perccli/perccli64 /c0 show all | egrep 'Auto Rebuild'
Auto Rebuild = On
[root@S6LogDecoder perccli]#
```

If the 'autorebuild' property is 'off', turn it on using the following command.

```
/opt/MegaRAID/perccli/perccli64 /cx set autorebuild=on
```

```
[root@S6LogDecoder perccli]# /opt/MegaRAID/perccli/perccli64 /c0 set autorebuild=on
CLI Version = 007.1623.0000.0000 May 17, 2021
Operating system = Linux 3.10.0-1160.66.1.el7.x86_64
Controller = 0
Status = Success
Description = None
```

```
Controller Properties :
```

```
=====
```

```
-----
Ctrl_Prop  Value
-----
```

```
AutoRebuild ON
-----
```

Verify that the Drive is Fixed

Rerun `./nwraidtool.py` to verify that the status of all of the drives are all online (Onln).

Automatic Rebuild Rate Configuration

The RAID Controller is configured by default to detect new drives and rebuild the contents of the drive automatically.

Check to make sure the rebuild rate setting is not too low. The ***Rebuild rate*** is the percentage of the compute cycles dedicated to rebuilding failed drives. A rebuild rate of 100% means that the system gives priority to rebuilding the failed drives.

The rebuild rate can be configured between 0% and 100%. At 0% the rebuild is done only if the system is not doing anything else. At 100% the rebuild has a higher priority than any other system activity. Using 0% or 100% is not recommended. **The default rebuild rate is 30%.**

If a drive is in a failed state, it is not necessary to force the drive offline before replacing it. If the drive is reported as missing or reporting smart errors but is not necessarily in a failed state yet, then you would want to take the drive offline before replacing it.

Take a Disk Offline and Start a Rebuild Manually

Note: The following commands are examples, you need to provide your own values for `cx`, `ex`, and `sx`. In these commands, `cx` specifies the controller where `x` is the controller index, `ex` is the enclosure ID, and `sx` is the drive slot ID of the controller.

1. Take the disk offline.

```
[root@HOST NwDiskFw]# /opt/MegaRAID/perccli/perccli64 /cx/ex/sx  
set offline
```

Input example: `/opt/MegaRAID/perccli/perccli64 /c1/e64/s12 set offline`

2. (Optional) If you want to wait before issuing the `start rebuild` command and you do not want automatic rebuild starting, then you can issue this command before starting the rebuild:

```
[root@HOST NwDiskFw]# /opt/MegaRAID/perccli/perccli64 /cx set  
autorebuild=off
```

3. Start the rebuild and show the progress.

```
[root@HOST NwDiskFw]# /opt/MegaRAID/perccli/perccli64 /cx/ex/sx  
start rebuild
```

Input example: `/opt/MegaRAID/perccli/perccli64 /c1/e64/s12 start rebuild`

4. When complete, set automatic rebuild back to on:

```
[root@HOST NwDiskFw]# /opt/MegaRAID/perccli/perccli64 /cx set  
autorebuild=on
```

For more information, see the PowerEdge RAID Controller H840 documentation:

<https://www.dell.com/support/home/us/en/04/product-support/product/poweredge-rc-h840/docs>

Add a Hot Spare Drive

Note: The following commands are examples, you need to provide your own values for `cx`, `ex`, and `sx`. In these commands, `cx` specifies the controller where `x` is the controller index, `ex` is the enclosure ID, and `sx` is the drive slot ID of the controller.

To add a hot spare drive:

```
[root@HOST NwDiskFw]# /opt/MegaRAID/perccli/perccli64 /cx[/ex]/sx  
add hotsparedrive
```

Input example:

```
/opt/MegaRAID/perccli/perccli64 /c1/e50/s11 add hotsparedrive
```

Output example:

```
Adapter 1 (PERC H830 Adapter) enclosures found: 1  
Adapter 1 (PERC H830 Adapter) enclosure 50 slots found: 12  
Encl Slot State P.Fail.Count Raw Size Inquiry Data  
50 0 (U) 0 7.277 TB SEAGATE ST8000NM0135 PSE4ZA1AX0AY  
50 1 (U) 0 7.277 TB SEAGATE ST8000NM0135 PSE4ZA1ATEFD  
50 2 (U) 0 7.277 TB SEAGATE ST8000NM0135 PSE4ZA1AR9Y7  
50 3 (U) 0 7.277 TB SEAGATE ST8000NM0135 PSE4ZA1ATDLL  
50 4 (U) 0 7.277 TB SEAGATE ST8000NM0135 PSE4ZA1AR68E  
50 5 (U) 0 7.277 TB SEAGATE ST8000NM0135 PSE4ZA1ATECC  
50 6 (U) 0 7.277 TB SEAGATE ST8000NM0135 PSE4ZA1AR9XX  
50 7 (U) 0 7.277 TB SEAGATE ST8000NM0135 PSE4ZA1ATDPJ  
50 8 (U) 0 7.277 TB SEAGATE ST8000NM0135 PSE4ZA1ATDWM  
50 9 (U) 0 7.277 TB SEAGATE ST8000NM0135 PSE4ZA1ATDME  
50 10 (U) 0 7.277 TB SEAGATE ST8000NM0135 PSE4ZA1AR7XV  
50 11 (GI) 0 7.277 TB SEAGATE ST8000NM0135 PSE4ZA1AR681 Hotspare Information
```

Delete a Hot Spare Drive

To delete a hot spare drive:

```
[root@HOST NwDiskFw]# /opt/MegaRAID/perccli/perccli64 /cx[/ex]/sx  
delete hotsparedrive
```

Input example:

```
/opt/MegaRAID/perccli/perccli64 /c1/e50/s11 delete hotsparedrive
```

Visually Identify a Self-Encrypted Drive (SED)

Self-encrypted drives have "SED" on the label as shown in the S6 Hybrid drive below.



On the front of the host, you can see a lock icon on the hard disk drive label as shown below.



Replace a Self-Encrypted Drive (SED)

If a secured disk is detected during boot or discovery of a new drive, the PERC controller uses the stored key to unlock the drive to allow data access. In the case of foreign configurations or drive migration where the drive requires a different passphrase than the one stored locally, the user is required to enter the passphrase for that drive, after which the drive is re-keyed with the local key.

To find out which drive is in an unconfigured/bad state run `nwr RAIDtool.py`, note the adapter #, Enclosure ID and slot #. This information replaces the `cx`, `ex`, and `sx` values in all the commands listed.

```
Drive Information :
=====
-----
EID:SlT DID State DG      Size Intf Med SED PI SeSz Model      Sp
-----
64:0      0 Onln  0 2.182 TB SAS  HDD Y  N  512B ST2400MM0149  U
64:1      1 Onln  0 2.182 TB SAS  HDD Y  N  512B ST2400MM0149  U
64:2      2 Onln  1 7.276 TB SAS  HDD Y  N  512B ST8000NM0135  U
64:3      3 Onln  1 7.276 TB SAS  HDD Y  N  512B ST8000NM0135  U
64:4      4 Onln  2 7.276 TB SAS  HDD Y  N  512B ST8000NM0135  U
64:5      5 Onln  2 7.276 TB SAS  HDD Y  N  512B ST8000NM0135  U
64:6      6 Onln  2 7.276 TB SAS  HDD Y  N  512B ST8000NM0135  U
64:7      7 Onln  2 7.276 TB SAS  HDD Y  N  512B ST8000NM0135  U
64:8      8 Onln  3 7.276 TB SAS  HDD Y  N  512B ST8000NM0135  U
64:9      9 Onln  3 7.276 TB SAS  HDD Y  N  512B ST8000NM0135  U
64:10     10 Onln  3 7.276 TB SAS  HDD Y  N  512B ST8000NM0135  U
64:11     11 Onln  3 7.276 TB SAS  HDD Y  N  512B ST8000NM0135  U
64:12     12 Onln  4 1.745 TB SAS  SSD Y  N  512B PX05SVQ192B  U
64:13     13 Onln  4 1.745 TB SAS  SSD Y  N  512B PX05SVQ192B  U
-----
EID-Enclosure Device ID|SlT-Slot No.|DID-Device ID|DG-DriveGroup
DHS-Dedicated Hot Spare|UGood-Unconfigured Good|GHS-Global Hotspare
UBad-Unconfigured Bad|Onln-Online|Offln-Offline|Intf-Interface
Med-Media Type|SED-Self Encryptive Drive|PI-Protection Info
SeSz-Sector Size|Sp-Spun|U-Up|D-Down/PowerSave|T-Transition|F-Foreign
UGUnsp-Unsupported|UGShld-UnConfigured shielded|HSPShld-Hotspare shielded
CFShld-Configured shielded|Cpybck-CopyBack|CBShld-Copyback Shielded
```

Note: The following commands are examples, you need to provide your own values for `cx`, `ex`, and `sx`. In these commands, `cx` specifies the controller where `x` is the controller index, `ex` is the enclosure ID, and `sx` is the drive slot ID of the controller

For automatic replacement of SEDs, see [Replace Drives Using Automatic Rebuilds](#). For manual SED replacement, see [Take a Disk Offline and Start a Rebuild Manually](#).

Troubleshooting Hard Disk Drive Replacements

Problem	Possible Solutions
<p>Automatic rebuild (autorebuild) does not start after the new drives are inserted.</p>	<ol style="list-style-type: none"> 1. Check to see if they have foreign configurations on them, clear the foreign configuration, and reinsert the drives. 2. If the automatic rebuild still does not start, you can add the drive as a hot spare, which should start the rebuild. <pre data-bbox="699 674 1321 793">[root@HOST NwDiskFw]# /opt/MegaRAID/perccli/perccli64 /cx [/ex]/sx add hotsparedrive</pre> See Add a Hot Spare Drive.
<p>Automatic rebuild (autorebuild) does not start after the new drives are inserted.</p>	<p>Re-enabling autorebuild may help in starting the rebuild again.</p> <pre data-bbox="656 936 1273 1121">[root@HOST NwDiskFw]# /opt/MegaRAID/perccli/perccli64 /cx set autorebuild=off [root@HOST NwDiskFw]# /opt/MegaRAID/perccli/perccli64 /cx set autorebuild=on</pre>

Note: Automatic rebuilds only occur on drives that are reporting a failed state or have hot spares. If the drive is reporting as missing or has smart errors but is not necessarily in a failed state and does not have a hot spare assigned, you must rebuild the drive manually.

Revision History

Date	Description
January 7, 2020	Revised the Hard Disk Drive Replacement Guide to use the PERC Command Line Interface (perccli) tool. Also included troubleshooting as well as self-encrypted (SED) drive information.
January 20, 2020	Fixed the command for changing the directory to saTools from <code>pwd /opt/rsa/saTools</code> to <code>cd /opt/rsa/saTools</code> in step 1 of the "Determine the State of the Drives" procedure.