



# User Guide

*Resource Manager Standard  
Edition*

*Software Version 1.1*

*Document D018-000126-000*

*Revision 02*

*January 2022*

**Western Digital.**

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## Revision History

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Date	Revision	Comment
June 2021	01	Initial release
January 2022	02	Updated for version 1.1 release

## Notices

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## Points of Contact

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For further assistance with a Western Digital product, contact Western Digital Datacenter Platforms technical support. Please be prepared to provide the following information, as applicable: part number (P/N), serial number (S/N), product name and/or model number, software version, and a brief description of the issue.

**Email:**

[support@wdc.com](mailto:support@wdc.com)

**Website:**

<https://portal.wdc.com/Support/s/>

**UK Import Representation Contact**

**Western Digital UK Limited** PO Box 471, Leatherhead, KT22 2LU, UK

**Telephone:** +44 1372 366000

**EU Import Representation Contact**

**Western Digital EU Limited** PO Box 13379, Swords, Co Dublin, Ireland

# Overview

## In This Chapter:

- Resource Manager Standard Edition  
Overview.....2
- Supported Platforms.....8
- Required Firmware.....8
- Compatible Operating Systems..... 8
- Compatible Browsers..... 8
- Required Software.....9

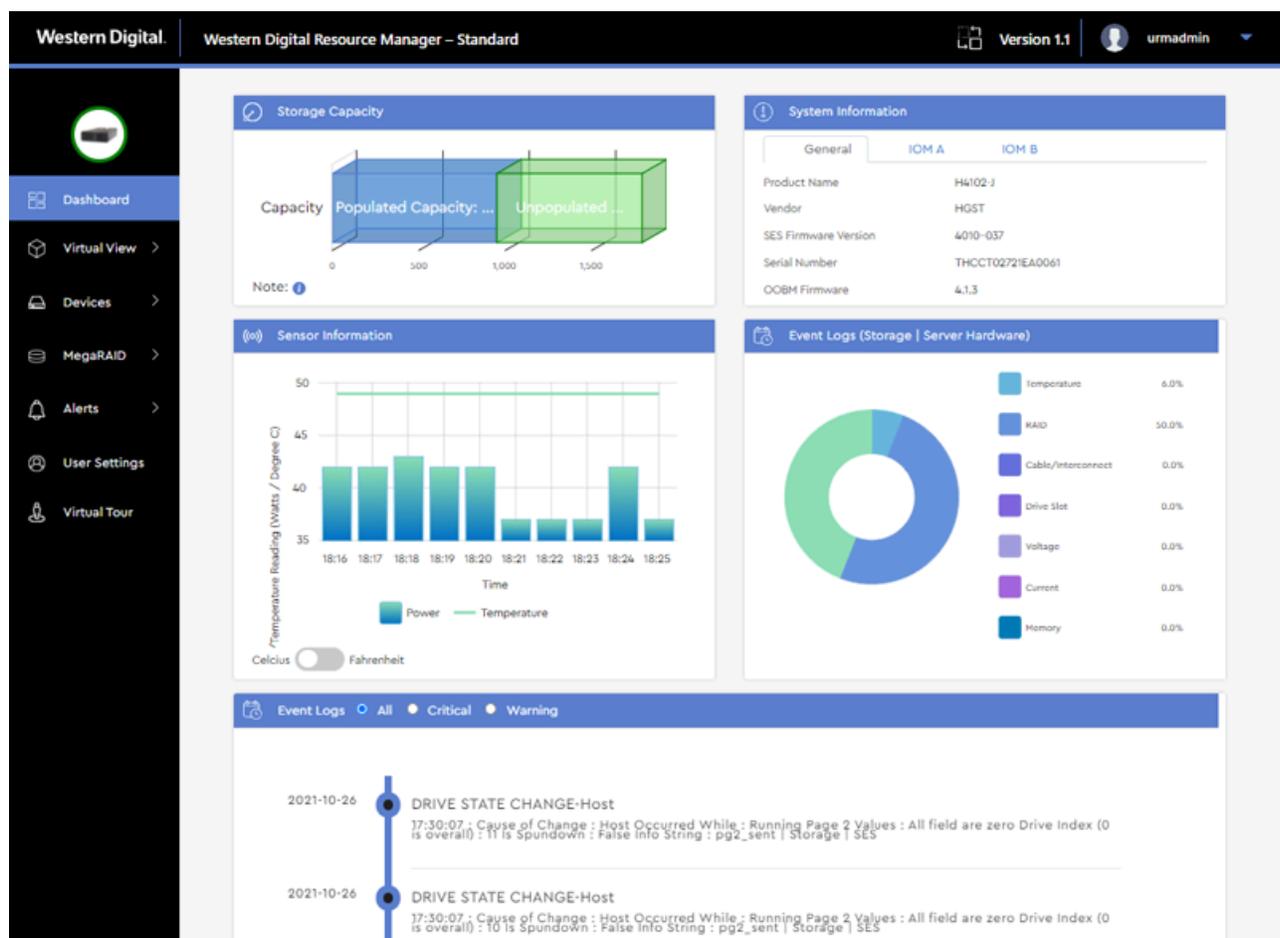


# 1.1 Resource Manager Standard Edition Overview

Resource Manager Standard Edition is an in-band monitoring and management application for Western Digital hybrid storage platforms. It runs on the host operating system (Windows® or Linux®), using a RESTful interface to present a real-time status of the platform's storage health and management controls to the browser in the form of an intuitive GUI.

## Dashboard

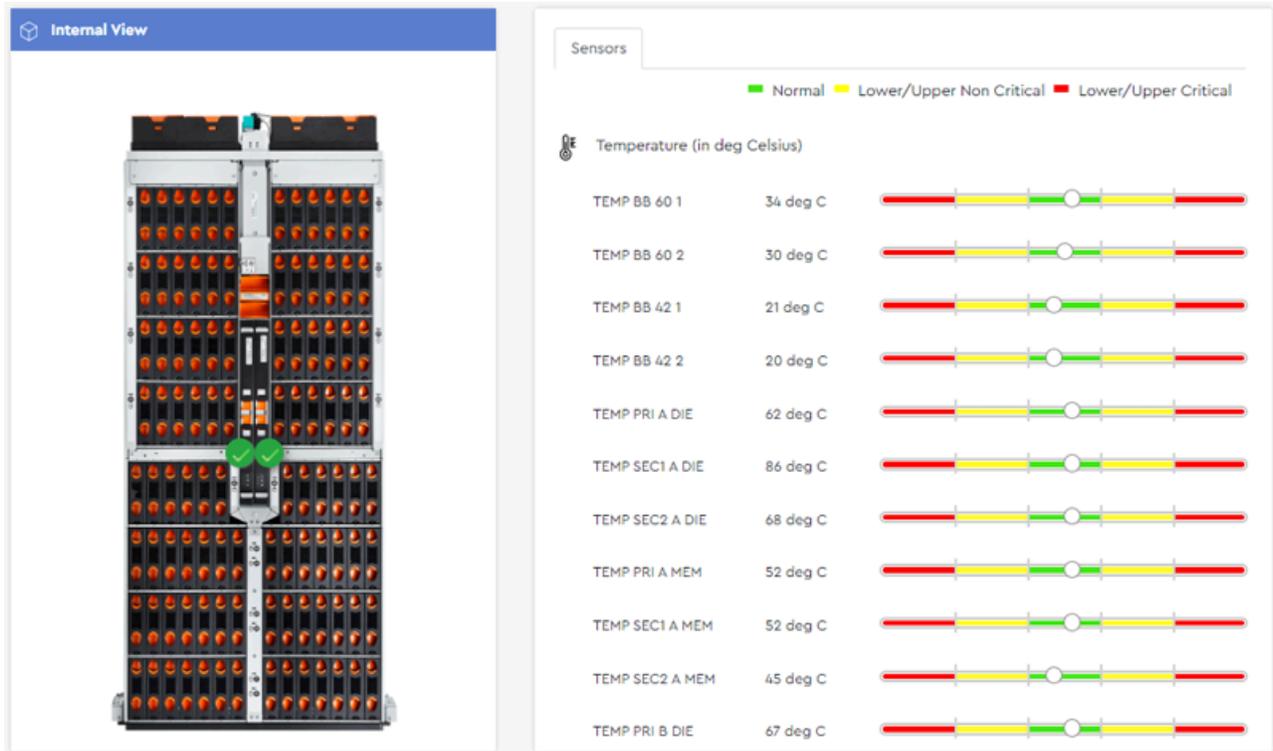
The dashboard is a consolidated monitoring page displaying the most critical enclosure data, such as populated/unpopulated storage capacity, system information, IOM information, BMC firmware version<sup>1</sup>, the last 10 minutes of sensor readings, and events. For more information, see [Dashboard \(page 36\)](#).



1. Ultrastar Serv60+8 only

### Virtual View

The **Virtual View** section provides real-time health status and sensor information for the components visible or accessible from different perspectives, such as drives, system fans, IOMs, and PSUs. Front and rear views also provide enclosure LED management controls. For more information, see [Virtual View \(page 41\)](#).



### Devices

The **Devices** section provides information about the enclosure's sensors and major components, as well as management controls for drives, zoning, and IOM(s). If drives are managed through an HBA, or a MegaRAID controller in JBOD mode, the **Devices** section also provides drive LED management controls. For more information, see *Devices (page 51)*.

The screenshot displays the 'Drive Zones' management interface. On the left, a diagram shows a server enclosure with drives arranged in a grid, color-coded by zone. A legend below the diagram identifies six zones: PORT 0 (blue), PORT 1 (green), PORT 2 (orange), PORT 3 (grey), PORT 4 (light green), and PORT 5 (pink). On the right, the configuration panel shows the 'Current Status' as 'Disabled' and 'Zoning Configuration' set to 'Configuration 1'. Under 'Configuration 1', there is an 'Enable' toggle. Below this, 'zone A' is expanded to show a 'Color Code' section with a 'port0' dropdown menu. A list of drive slots is shown below, with slots 0-16 represented by colored buttons: slot0 (blue), slot1 (green), slot2 (orange), slot3 (grey), slot4 (light green), slot5 (pink), slot6 (purple), slot7 (dark blue), slot8 (dark green), slot9 (dark orange), slot10 (dark grey), slot11 (dark light green), slot12 (dark pink), slot13 (dark purple), slot14 (dark blue), slot15 (dark green), and slot16 (dark orange). Below the slot list, zones B, C, D, E, and F are listed but not expanded.

### MegaRAID

The **MegaRAID** section provides information about all MegaRAID controllers detected in the host, and management controls for drive identification LEDs, grouping drives, assigning RAID levels, and allocating capacity to logical drives. For more information, see *MegaRAID (page 90)*.

**Logical Drives**

Controller ID: AVAGO MegaRAID SAS 9480-8i8e

Drive Group	RAID Level	Physical Drives	Logical Drives	Capacity	Utilization	Action
DG0	RAID 1	2	1	5,458 TB	23%	...
DG1	RAID 1	2	2	10,914 TB	64%	...
DG2	RAID 1	2	1	5,458 TB	73%	...

Slot ID	Device ID	Drive Type	Interface	Serial number	Capacity
0	14	HDD	SAS	V8GBKSSR	5,458 TB
1	17	HDD	SAS	V8GAVMGR	5,458 TB

**Logical drive**

- LD Name: VD3
- Capacity: 1,229 TB
- Stripe Size: 9
- Policy: RA | WT | DIO

Unconfigured Capacity: 4.2287595

## Alerts

The **Alerts** section provides information and controls for setting up email notifications, configuring SMTP settings, checking event logs, and downloading SES firmware and system log files. For more information, see [Alerts \(page 124\)](#).

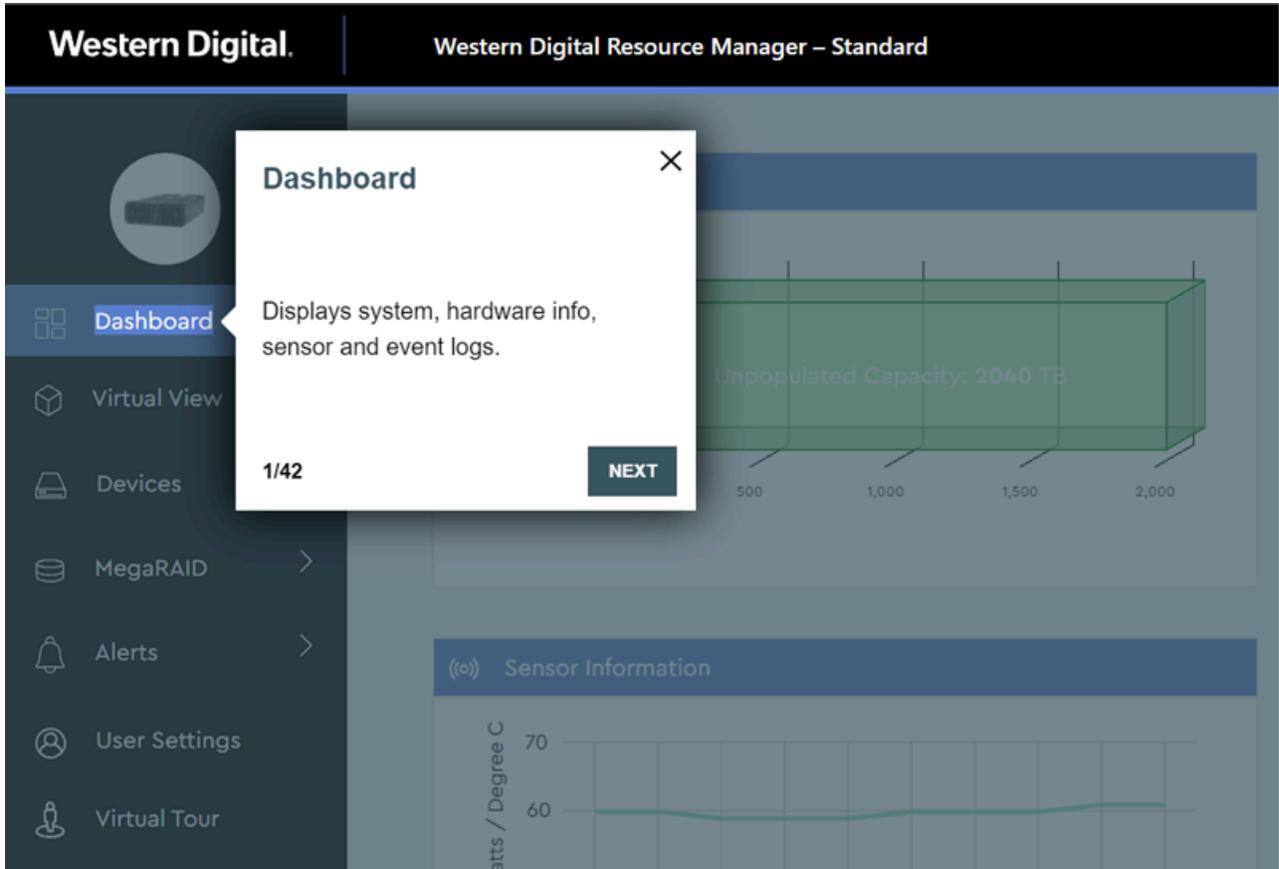
## User Settings

The **User Settings** section allows configuration of user accounts and details such as IDs, roles, email addresses, and passwords. For more information, see [User Settings \(page 126\)](#).

Serial Number	User ID	User Role	Mail	User Created Time	Last Logged Time
1	urmadmin	admin	admin@wdc.com	10/08/2021, 22:51:21	10/12/2021, 02:08:28
2	test1	user	firstname.lastname@company.com	10/12/2021, 02:09:31	N/A
3	test2	user	firstname.lastname@company.com	10/12/2021, 02:10:24	N/A

## Virtual Tour

The **Virtual Tour** section guides users through the Resource Manager Standard Edition graphical interface, providing tooltip explanations of menu options and page sections. For more information, see [Virtual Tour \(page 133\)](#).



## 1.2 Supported Platforms

The Resource Manager Standard Edition application supports storage management of the following platforms.

- Ultrastar® Data102
- Ultrastar Data60
- Ultrastar Serv60+8



**Note:** For supported hardware components, please refer to your platform's *Compatibility Matrix* and the Resource Manager Standard Edition *Release Notes*. Unless otherwise noted, the Resource Manager Standard Edition is compatible with each platform's supported components.

## 1.3 Required Firmware

Supported enclosures require the following firmware versions for compatibility with the Resource Manager Standard Edition application.

Firmware	Version
SEP	3010-007 or later
OOBM	3.1.11 or later

## 1.4 Compatible Operating Systems

The server must be running one of the following operating systems in order to host the Resource Manager Standard Edition application.

Operating System	Version
Red Hat® Enterprise Linux® (RHEL)	7.6, 8.0, 8.2, 8.3
CentOS	7.6, 8.0, 8.2, 8.3
SUSE Linux Enterprise Server (SLES)	12 (sp3), 15 (sp1)
Ubuntu	16.04, 18.04, 20.04
Debian	10.9
Oracle® Linux	8.2
Windows Server®	2016, 2019

## 1.5 Compatible Browsers

The host server requires one of the following browsers to run the Resource Manager Standard Edition application.

Browser	Version
Chrome	83.0.4103.97 or newer

Browser	Version
Firefox	68.9.0esr (64-bit) or newer

## 1.6 Required Software

The following software (listed versions or later) must be installed on the host server for it to run the Resource Manager Standard Edition application.

Software	Version	Applicable OSs & Platforms
Apache HTTP Server™	2.4.46	Linux only
Internet Information Services (IIS)	10	Windows only
URL Rewrite	2.1	Windows only
Python®	3.6	Windows & Linux
Python Modules:		Windows & Linux
pip	9.0.1	
Flask	1.1.2	
Flask-Cors	3.0.8	
Flask-RESTful	0.3.9	
pymongo	3.11.0	
requests	2.18.4	
PyJWT	2.0.1	
json2html	1.3.0	
waitress	2.0.0	
Paste	3.5.0	
Python Modules:		Windows only
pywin32	300	
psutil	5.8.0	
MongoDB™	4.4	Windows & Linux
WDDCS Tool <sup>2</sup>	2.1.4.0	Windows & Linux
ipmiutil	3.17	Windows & Linux for Ultrastar Serv60+8
sg_utils	1.42	Windows & Linux

### Linux Installation Notes



**Important:** If `python3.6` is already installed, but the `python3 --version` command returns a version number different from `3.6.x`, do the following to activate the `python3.6.x` version: Run the `which python3.6` command to get the location path where `python3.6` is installed. Copy the path from the command output and use it to set the symbolic links in `/usr/bin/`.

2. Included with Resource Manager installation

### Windows Installation Notes

**i** **Important:** `Python36`, `Python36\Scripts`, `ipmiutil` (Ultrastar Serv60+8 only), and `sg3_util` will not be added to the system PATH environment variable by default; please add them manually.

**i** **Important:** After installing `pywin32` using `pip install`, from a command prompt, change directory to `Python\Python36\Scripts\`; the exact path may vary depending on the location where Python is installed on your operating system. Then run the following command:

```
python pywin32_postinstall.py -install
```

# Installation

## In This Chapter:

- Downloading Resource Manager Standard Edition..... 12
- Installing Resource Manager Standard Edition for Linux..... 19
- Installing Resource Manager Standard Edition for Windows..... 20



## 2.1 Downloading Resource Manager Standard Edition

This procedure provides instructions for downloading the Resource Manager Standard Edition application from the Western Digital Business Support Center.

**Step 1:** Open a web browser and go to: <https://portal.wdc.com/s/>.

The login page for the **Western Digital Business Support Center** will be displayed:

**Figure 8:** Login Page

Sign Into  
**BUSINESS SUPPORT CENTER**

Western Digital.

Email Address  
email@company.com

Password  
.....

Login

Need an account?  
[Request access now.](#)

[Forgot Password?](#)

**WHAT'S INSIDE**

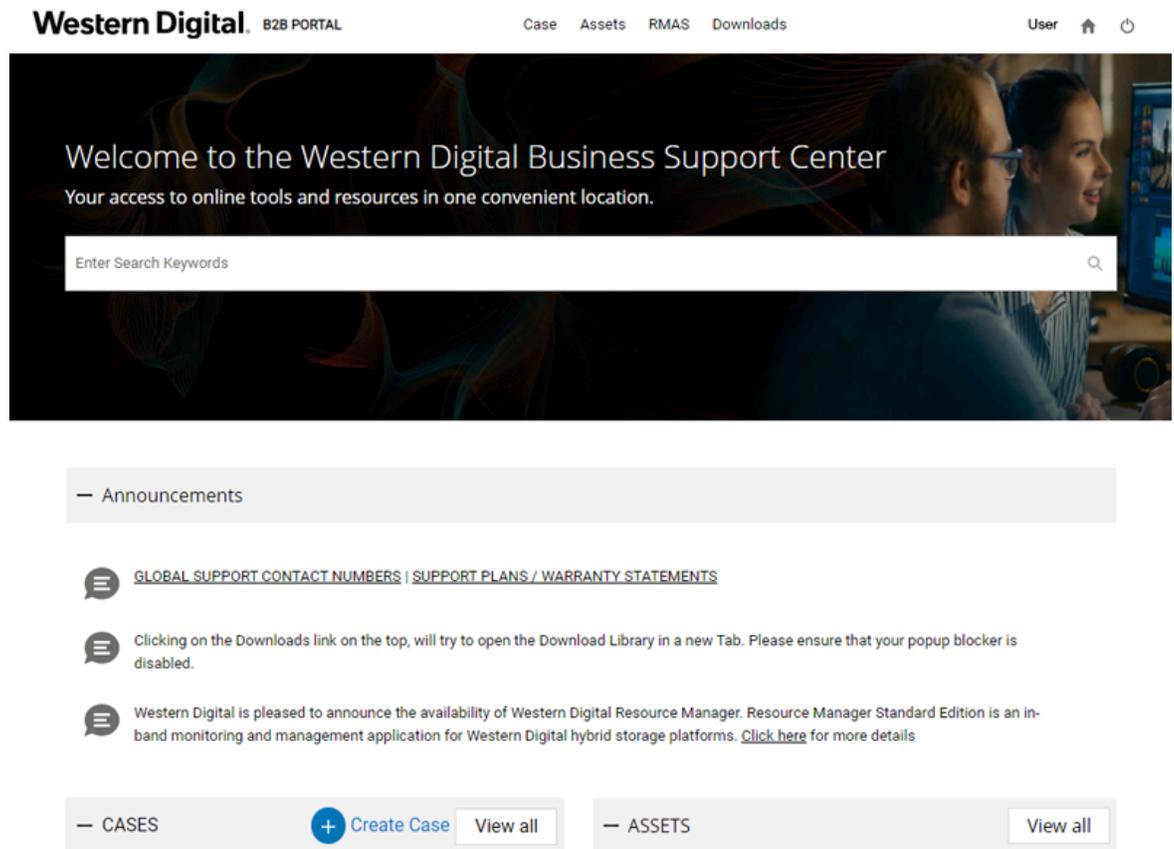
- Marketing Center**  
Access Your Marketing Projects and Submit Claims for Processing.
- Enterprise Support**  
Wealth of useful support features at your fingertips from documents to downloads, Knowledge Base, Asset Registration, RMA & Case Management.
- Warranty & RMA**  
Warranty & RMA Center gives you fast access to a wide range of tools & resources to address your Warranty & RMA needs.
- Distribution Operations**  
Access Pricing and Rebate Tools  
Submit POS/Inventory Reports.
- Publishing Content**  
COMING SOON!!!
- Loyalty Programs**  
COMING SOON!!!

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**Step 2:** Type a valid email address and password into the **Email Address** and **Password** fields. Then click the **Login** button.

The **Western Digital Business Support Center** page will be displayed:

**Figure 9:** Business Support Center



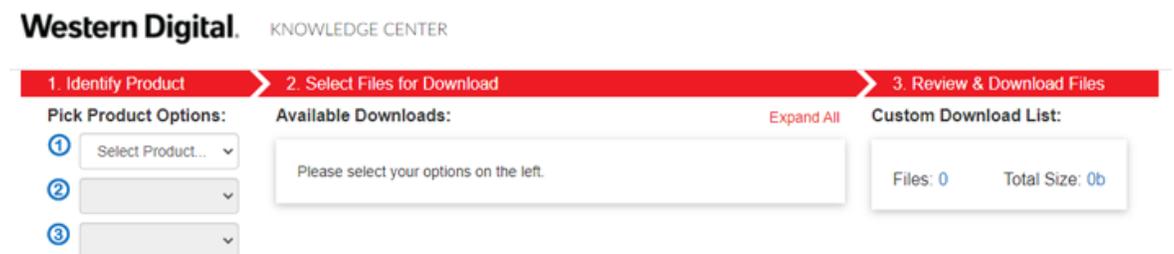
**Step 3:** Click **Downloads** at the top of the page:

**Figure 10:** Downloads Link



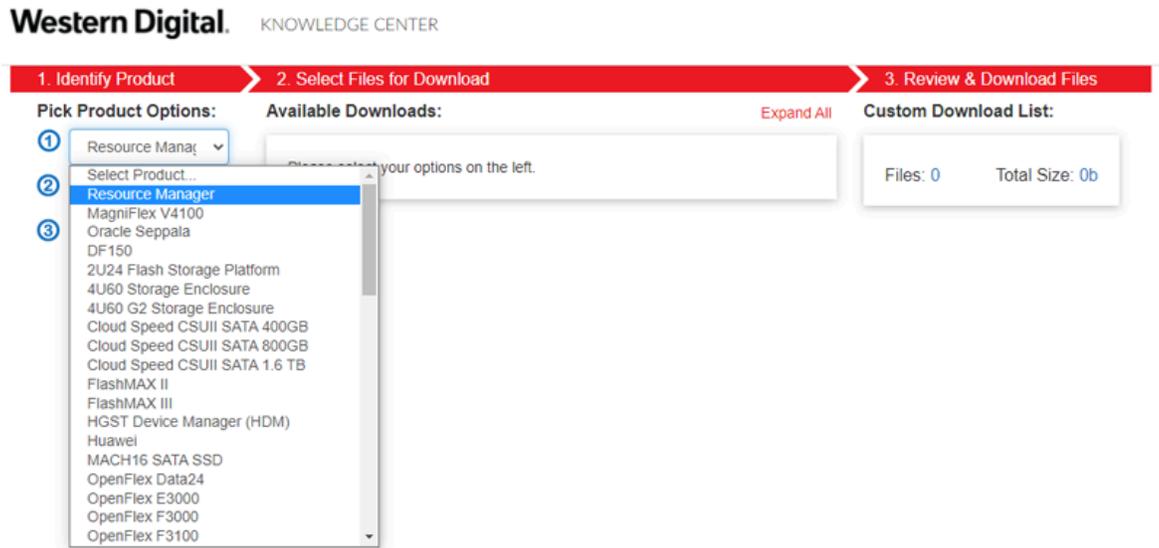
The **Western Digital Knowledge Center** page will be displayed:

**Figure 11:** Knowledge Center



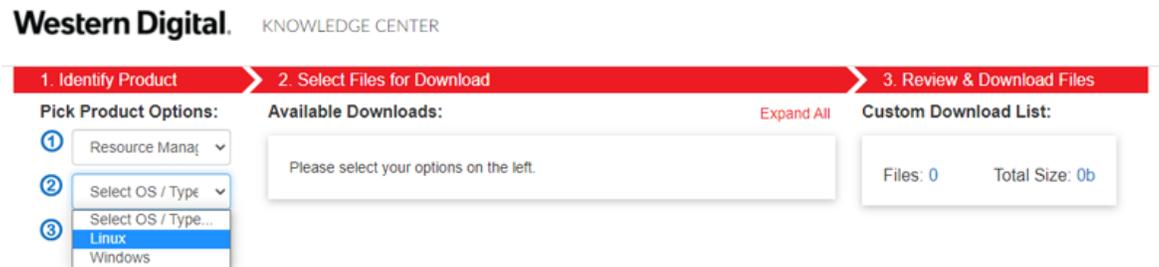
**Step 4:** From the **Identify Product** section, use the first drop-down list to select the **Resource Manager** option:

**Figure 12:** Identify Product



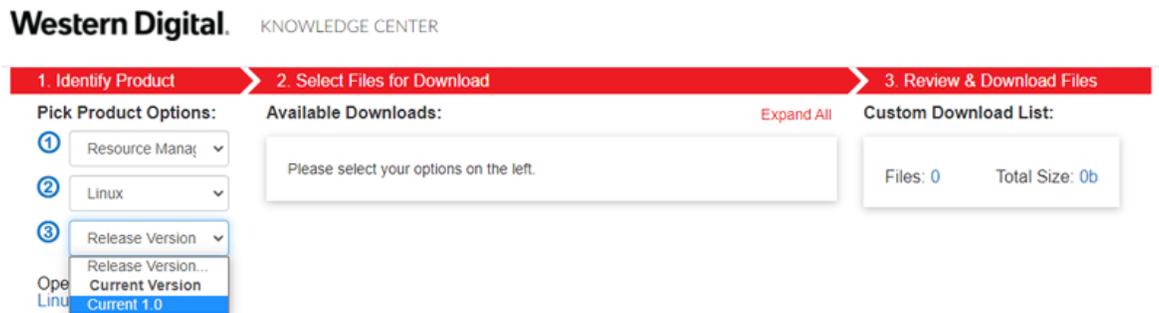
**Step 5:** Use the second drop-down list to select your operating system:

**Figure 13:** Operating System



**Step 6:** Use the third drop-down list to select the current version of the Resource Manager Standard Edition:

**Figure 14:** Software Version



When selections have been made for all three drop-down lists in the **Identify Product** section, the **Select Files for Download** section will be enabled:

**Figure 15:** Select Files for Download

**Western Digital.** KNOWLEDGE CENTER

1. Identify Product    2. Select Files for Download    3. Review & Download Files

**Pick Product Options:**

① Resource Manag

② Linux

③ Current 1.0

Operating System / Type:  
Linux

Version:  
Current 1.0

**Available Downloads:** Expand All

- ▣ Documentation
- ▣ Software Binaries

**Custom Download List:**

Files: 0    Total Size: 0b

**Step 7:** In the **Select Files for Download** section, click the **+** symbols to expand the **Documentation** and **Software Binaries** menus:

**Figure 16:** Documentation and Software Binaries

**Western Digital.** KNOWLEDGE CENTER

1. Identify Product    2. Select Files for Download    3. Review & Download Files

**Pick Product Options:**

① Resource Manag

② Linux

③ Current 1.0

Operating System / Type:  
Linux

Version:  
Current 1.0

**Available Downloads:** Collapse All

- ▣ Documentation
 

File Name	Size	Released	
md5sums.txt	0b	27 May 2021	
ResourceManagerStandardDatasheet_01.pr	0b	27 May 2021	⊕
ResourceManagerStandardReleaseNotes_0	0b	27 May 2021	⊕
ResourceManagerStandardUserGuide_01.p	0b	27 May 2021	⊕
- ▣ Software Binaries
 

File Name	Size	Released	
Resource Manager-StandardEdition-WDC-Data102.tgz	22.91MB	27 May 2021	⊕
Resource Manager-StandardEdition-WDC-Data60.tgz	22.37MB	27 May 2021	⊕
Resource Manager-StandardEdition-WDC-Serv60+8.tgz	19.45MB	27 May 2021	⊕

**Custom Download List:**

Files: 0    Total Size: 0b



**Note:** The files listed in the **Software Binaries** section will be specific to the operating system and software version selected in the previous steps.

**Step 8:** In the **Software Binaries** section, click the checkbox to select the appropriate binary file(s) for your platform(s). If needed, hover over each file to read the full filename.

**Figure 17:** Select Binary File(s)

**Western Digital.** KNOWLEDGE CENTER

1. Identify Product    2. Select Files for Download    3. Review & Download Files

**Pick Product Options:**

① Resource Manag

② Linux

③ Current 1.0

Operating System / Type:  
Linux

Version:  
Current 1.0

**Available Downloads:** Collapse All

Documentation			
<input type="checkbox"/>	File Name	Size	Released
<input type="checkbox"/>	md5sums.txt	0b	27 May 2021
<input type="checkbox"/>	ResourceManagerStandardDatasheet_01.pr	0b	27 May 2021
<input type="checkbox"/>	ResourceManagerStandardReleaseNotes_0	0b	27 May 2021
<input type="checkbox"/>	ResourceManagerStandardUserGuide_01.p	0b	27 May 2021
Software Binaries			
<input type="checkbox"/>	File Name	Size	Released
<input checked="" type="checkbox"/>	Resource Manager-StandardEdition-WDC-Data102.tgz	22.91MB	27 May 2021
<input checked="" type="checkbox"/>	Resource Manager-StandardEdition-WDC-Data60.tgz	22.37MB	27 May 2021
<input checked="" type="checkbox"/>	Resource Manager-StandardEdition-WDC-Serv60+8.tgz	19.45MB	27 May 2021

**Custom Download List:**

Resource Manager... 22.91MB

Resource Manager... 22.37MB

Resource Manager... 19.45MB

Files: 3 Total Size: 64.73MB

Zip  Tar

RESET    DOWNLOAD ALL

**File Options for Linux:**

- For Ultrastar Data102: Resource Manager-StandardEdition-WDC-Data102.tgz
- For Ultrastar Data60: Resource Manager-StandardEdition-WDC-Data60.tgz
- For Ultrastar Serv60+8: Resource Manager-StandardEdition-WDC-Serv60+8.tgz

**File Options for Windows:**

- For Ultrastar Data102: Resource Manager-StandardEdition-WDC-Data102.exe
- For Ultrastar Data60: Resource Manager-StandardEdition-WDC-Data60.exe
- For Ultrastar Serv60+8: Resource Manager-StandardEdition-WDC-Serv60+8.exe

**Step 9:** In addition, click the checkbox to select the `md5sums.txt` file from the **Documentation** section. This file contains an MD5 checksum for each available binary file, which may be used to verify that a downloaded file matches the original and was not corrupted during the download process.

Figure 18: MD5 Checksums

**Western Digital.** KNOWLEDGE CENTER

1. Identify Product    2. Select Files for Download    3. Review & Download Files

**Pick Product Options:**

① Resource Manag

② Linux

③ Current 1.0

Operating System / Type:  
Linux

Version:  
Current 1.0

**Available Downloads:** Collapse All

<input type="checkbox"/>	File Name	Size	Released	
<b>Documentation</b>				
<input checked="" type="checkbox"/>	md5sums.txt	0b	27 May 2021	ⓘ
<input type="checkbox"/>	ResourceManagerStandardDatasheet_01.pr	0b	27 May 2021	ⓘ
<input type="checkbox"/>	ResourceManagerStandardReleaseNotes_0	0b	27 May 2021	ⓘ
<input type="checkbox"/>	ResourceManagerStandardUserGuide_01.p	0b	27 May 2021	ⓘ
<b>Software Binaries</b>				
<input type="checkbox"/>	File Name	Size	Released	
<input checked="" type="checkbox"/>	Resource Manager-StandardEdition-WDC-Data102.tgz	22.91MB	27 May 2021	ⓘ
<input checked="" type="checkbox"/>	Resource Manager-StandardEdition-WDC-Data60.tgz	22.37MB	27 May 2021	ⓘ
<input checked="" type="checkbox"/>	Resource Manager-StandardEdition-WDC-Serv60+8.tgz	19.45MB	27 May 2021	ⓘ

**Custom Download List:**

Resource Manager... 22.91MB

Resource Manager... 22.37MB

Resource Manager... 19.45MB

md5sums.txt 0b

Files: 4 Total Size: 64.73MB

Zip  Tar

RESET    DOWNLOAD ALL

**Step 10:** In the **Review and Download Files** section, review your selections. There will be one entry for each selected file.

- a. To remove an unwanted file, click its red **x**.
- b. If more than one file was selected, **Zip** and **Tar** radio buttons will be visible. Use these radio buttons to select the desired archive file format.

**Step 11:** Click the **DOWNLOAD ALL** button to download the archive file.

**Step 12:** Unzip/extract the archive file to the desired directory on the host server.

The following example shows the unzipped/extracted file structure and contents of all binary file options:

```
.
├── Linux
│   ├── WDC-Data102
│   │   ├── inbandmgmt.zip
│   │   ├── usmd.service
│   │   ├── usm_gui.zip
│   │   ├── WDC-Data102-installer.sh
│   │   ├── WDC-Data102-uninstall.sh
│   │   ├── wddcs-x86_64-2.1.4.0.deb
│   │   ├── wddcs-x86_64-2.1.4.0.rpm
│   │   └── WD-ResourceManager-License.txt
│   ├── WDC-Data60
│   │   ├── inbandmgmt.zip
│   │   ├── usmd.service
│   │   ├── usm_gui.zip
│   │   ├── WDC-Data60-installer.sh
│   │   ├── WDC-Data60-uninstall.sh
│   │   ├── wddcs-x86_64-2.1.4.0.deb
│   │   ├── wddcs-x86_64-2.1.4.0.rpm
│   │   └── WD-ResourceManager-License.txt
│   └── WDC-Serv60+8
│       ├── inbandmgmt.zip
│       ├── usmd.service
│       ├── usm_gui.zip
│       ├── WDC-Serv60+8-installer.sh
│       ├── WDC-Serv60+8-uninstall.sh
│       ├── wddcs-x86_64-2.1.4.0.deb
│       ├── wddcs-x86_64-2.1.4.0.rpm
│       └── WD-ResourceManager-License.txt
├── Windows
│   ├── WDC-Data102
│   │   ├── Resource Manager-StandardEdition-WDC-Data102.exe
│   │   └── WDC-Data60
│   │       ├── Resource Manager-StandardEdition-WDC-Data60.exe
│   │       └── WDC-Serv60+8
│   │           ├── Resource Manager-StandardEdition-WDC-Serv60-8.exe
```

## 2.2 Installing Resource Manager Standard Edition for Linux

This procedure provides instructions for installing the Resource Manager Standard Edition application on a Linux operating system.

### Before you begin:

- **Ensure all required software has been installed.** See [Required Software \(page 9\)](#) for details.
- Complete the instructions for [Downloading Resource Manager Standard Edition \(page 12\)](#).
- Resource Manager Standard Edition uses HTTP ports 80 and 8080 on the host operating system. If a firewall is enabled on the host, ensure that these TCP ports are open before installing the product.
- All commands in this procedure should be executed with sudo privileges.

**Step 1:** From a command terminal on the host server, navigate to the appropriate unzipped/extracted directory for your platform:

- Linux/WDC-Data102/
- Linux/WDC-Data60/
- Linux/WDC-Serv60+8/

**Step 2:** Run the installation script for your platform:

```
# ./WDC-Data102-installer.sh
```

```
# ./WDC-Data60-installer.sh
```

```
# ./WDC-Serv60+8-installer.sh
```

**Step 3:** After the installation is finished, use the `systemctl` command with the `status` option to check the status of the web server and verify that the application is running:

```
# systemctl status usmd
usmd.service - Western Digital Resource Manager Web Application HTTP server
(running in port 8080)
   Loaded: loaded (/etc/systemd/system/usmd.service; static; vendor preset:
   enabled)
   Active: active (running) since Thu 2020-12-31 11:28:26 IST; 1h 18min ago
 Main PID: 35459 (python3)
    Tasks: 7 (limit: 7372)
   CGroup: /system.slice/usmd.service
           |-- 2650 /bin/sh -c wdds /dev/sg2 show handles
           |-- 2651 wddcs /dev/sg2 show handles
           |--19819 /usr/bin/python3 /opt/usm/inbandmgmt/middleware/main.py
```

**Result:** The Resource Manager Standard Edition application is now installed.

**What to do next:** Proceed to [Accessing Resource Manager Standard Edition \(page 32\)](#).

## 2.3 Installing Resource Manager Standard Edition for Windows

This procedure provides instructions for installing Resource Manager Standard Edition on a Windows operating system.

### Before you begin:

- **Ensure all required software has been installed. See [Required Software \(page 9\)](#) for details.**
- Complete the instructions for [Downloading Resource Manager Standard Edition \(page 12\)](#).
- Resource Manager Standard Edition uses HTTP ports 80 and 8080 on the host operating system. If a firewall is enabled on the host, ensure that these TCP ports are open before installing the product.

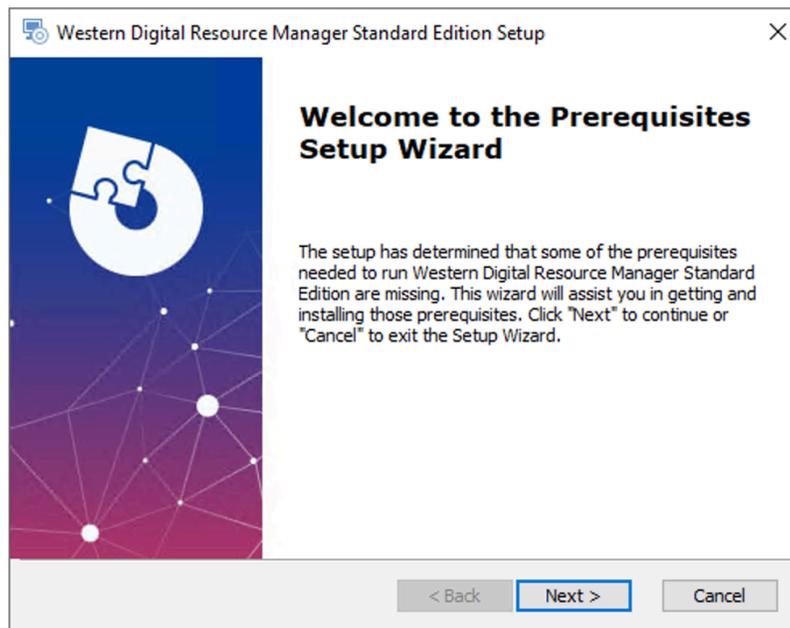
**Step 1:** On the host server, navigate to the appropriate unzipped/extracted directory for your platform:

- Windows\WDC-Data102\
- Windows\WDC-Data60\
- Windows\WDC-Serv60+8\

**Step 2:** Open the Resource Manager Standard Edition application file for your platform:

- Resource Manager-StandardEdition-WDC-Data102.exe
- Resource Manager-StandardEdition-WDC-Data60.exe
- Resource Manager-StandardEdition-WDC-Serv60-8.exe

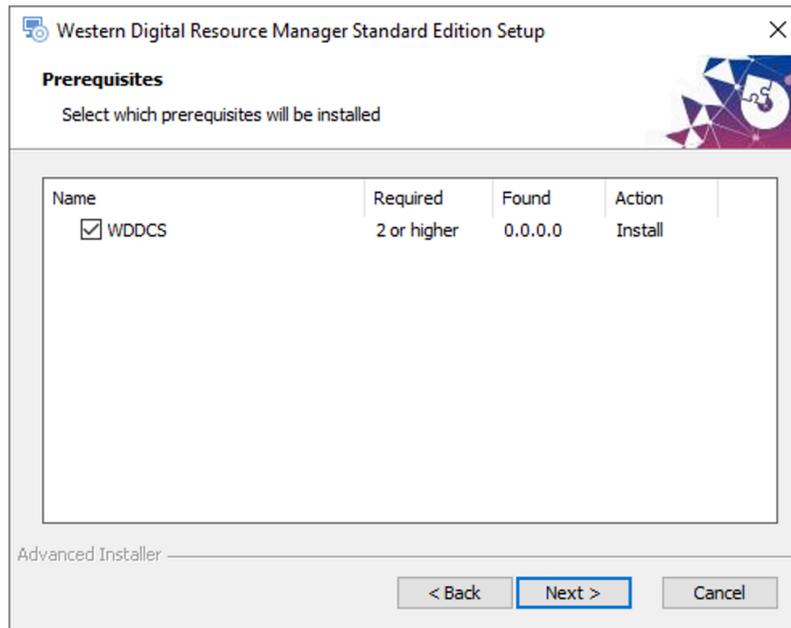
This will launch the Resource Manager Standard Edition setup wizard. The setup wizard will check for installed prerequisite WD software and lead the user through one of three different paths, depending on what it finds.



**Step 3:** Click **Next >**.

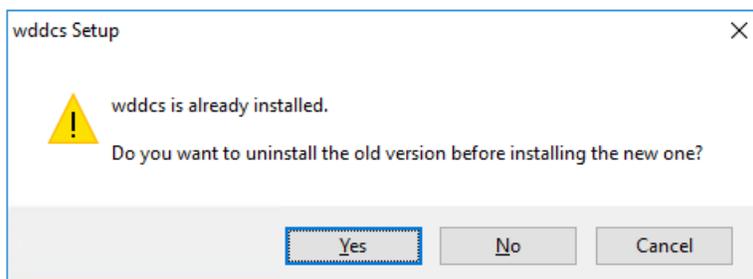
## 2.3 Installing Resource Manager Standard Edition for Windows

The **Prerequisites** window will be displayed, listing the required software and version, the version currently installed (if applicable), and the required action:



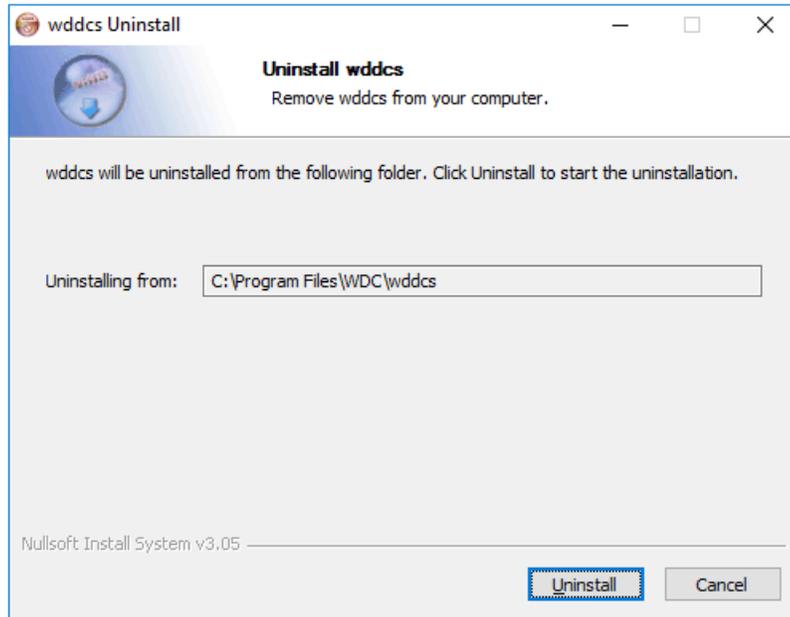
- **Path 1:** If a current version of the WDDCS Tool is installed, click to remove the checkmark next to **WDDCS**. Then click **Next >**. The Resource Manager Standard Edition setup wizard will be displayed to begin the installation process. Proceed to [Installing Resource Manager Standard Edition \(page 28\)](#) for further instructions.
- **Path 2:** If the WDDCS Tool is not installed, click **Next >**. The **wddcs Setup** wizard will be launched to install the current version. Proceed to [Installing the WDDCS Tool \(page 25\)](#) for further instructions.
- **Path 3:** If an old version of the WDDCS Tool is installed, click **Next >**. The **wddcs Setup** wizard will be launched to uninstall the old version and install the current version. Proceed to [Uninstalling the WDDCS Tool \(page 21\)](#) for further instructions.

### Uninstalling the WDDCS Tool



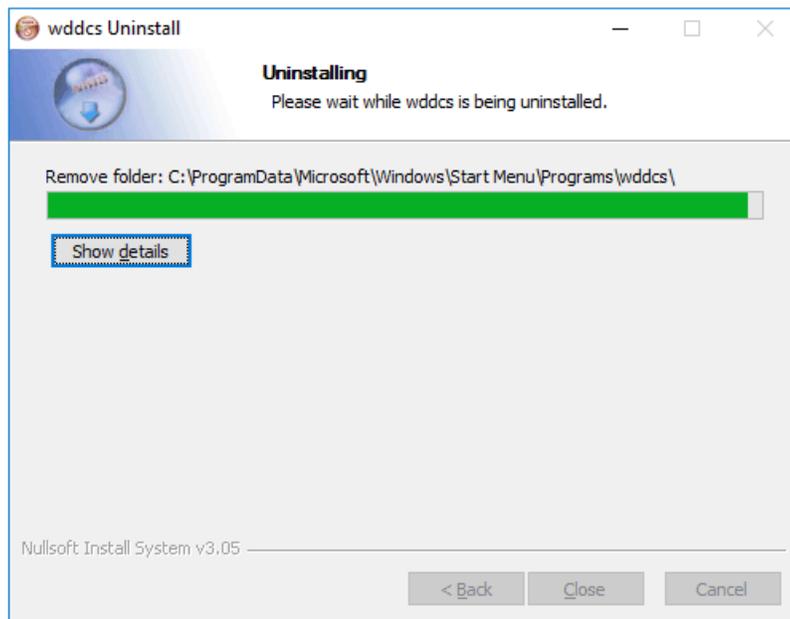
**Step 4:** Click **Yes** to confirm the uninstallation.

The **Uninstall wddcs** window will be displayed, showing from which directory the old version will be uninstalled.

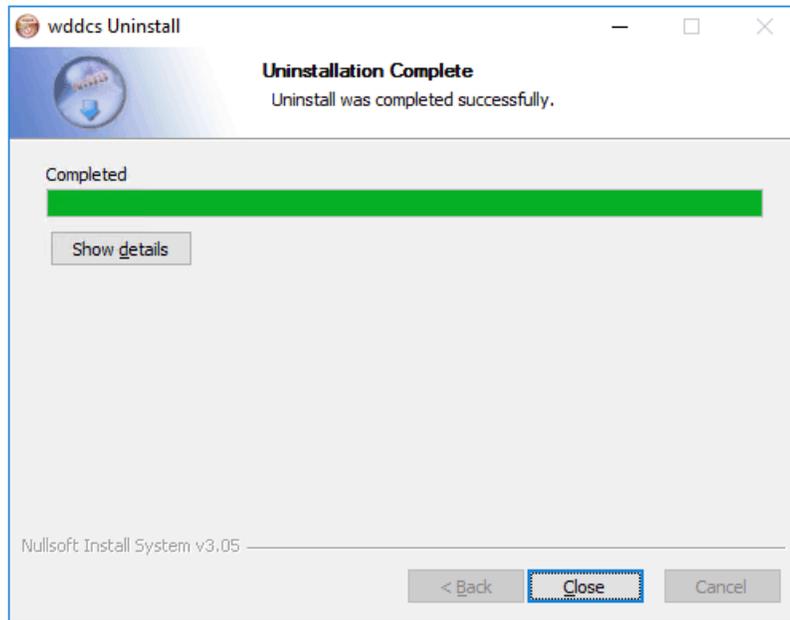


**Step 5:** Click **Uninstall**.

The **wddcs Uninstall** window will update, showing that the WDDCS Tool is being uninstalled:

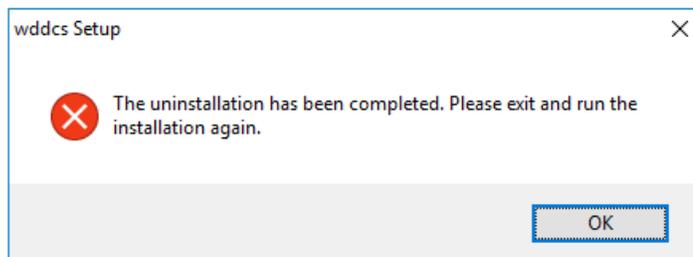


After a few seconds, the **wddcs Uninstall** window will update again, showing that the uninstallation is complete:



**Step 6:** Click **Close**.

The **wddcs Setup** window will reappear, prompting the user to exit and run the installation again:



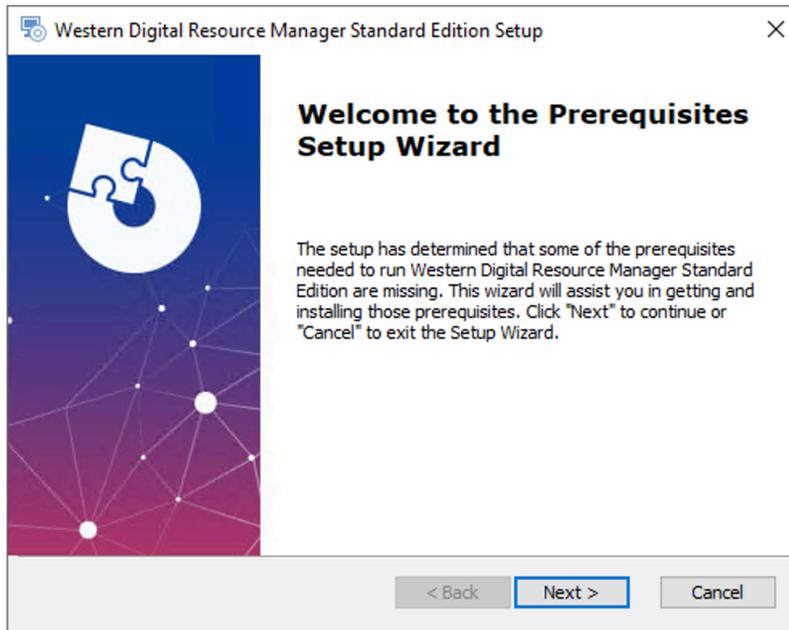
**Step 7:** Click **OK** to exit the **wddcs Setup** window.

**Step 8:** Close all setup windows for the Resource Manager Standard Edition.

**Step 9:** Reopen the Resource Manager Standard Edition application (.exe) file again.

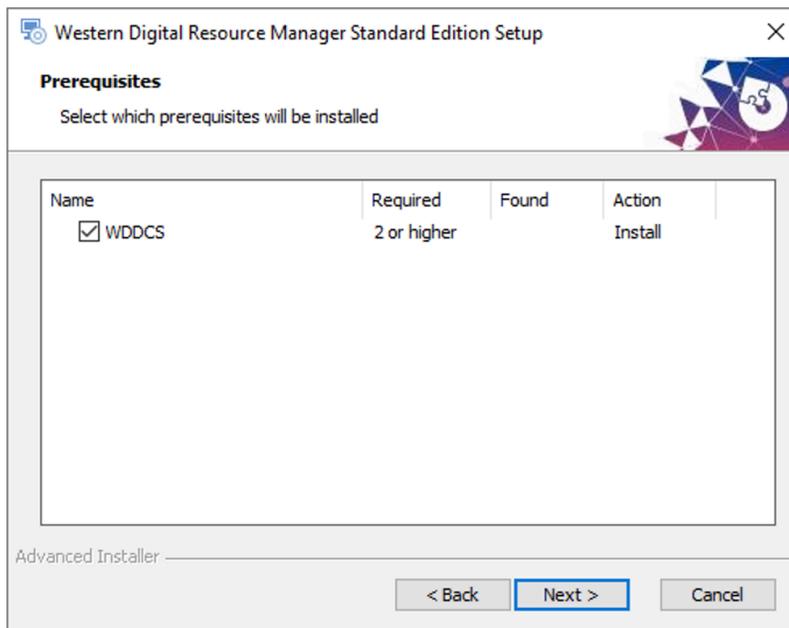
The welcome prerequisites window will be displayed:

## 2.3 Installing Resource Manager Standard Edition for Windows



**Step 10:** Click **Next >**.

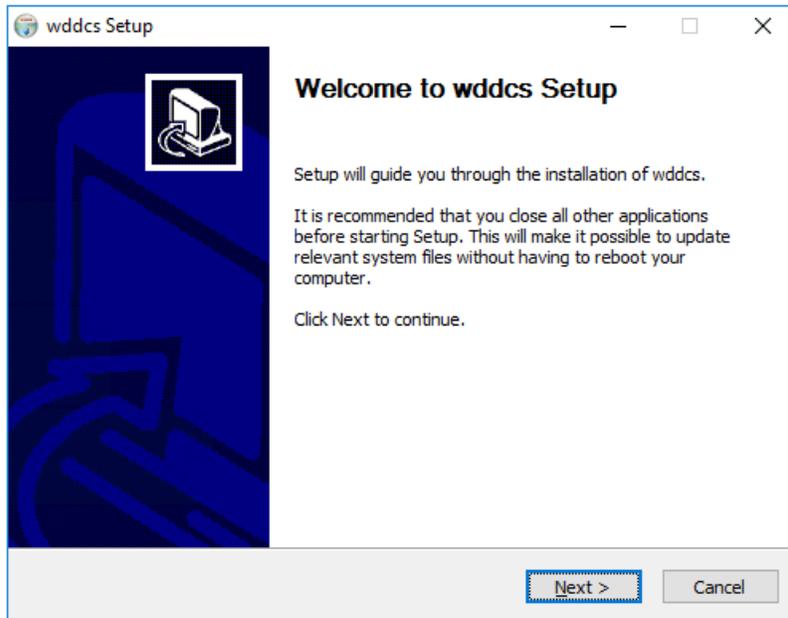
The **Prerequisites** window will update, showing the required version of the WDDCS Tool to be installed:



**Step 11:** Click **Next >**.

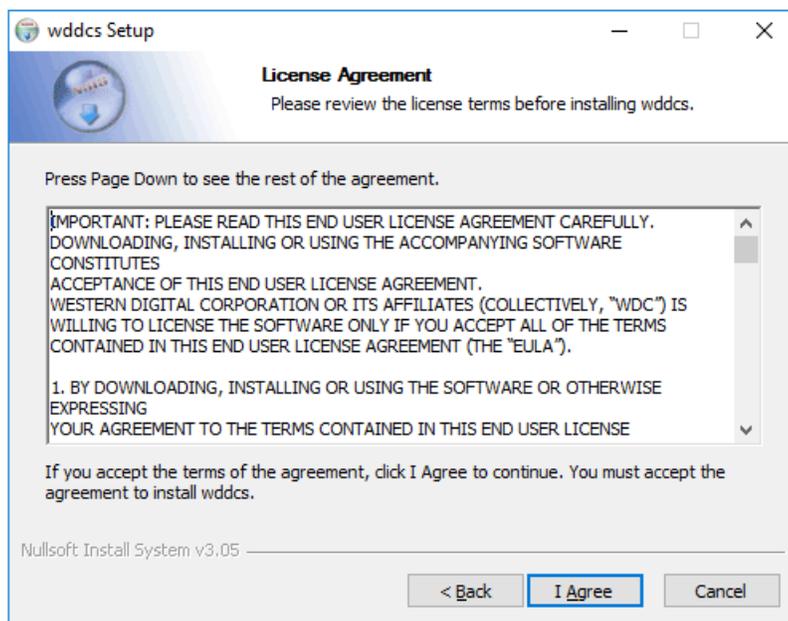
The **wddcs Setup** wizard will be launched.

### Installing the WDDCS Tool



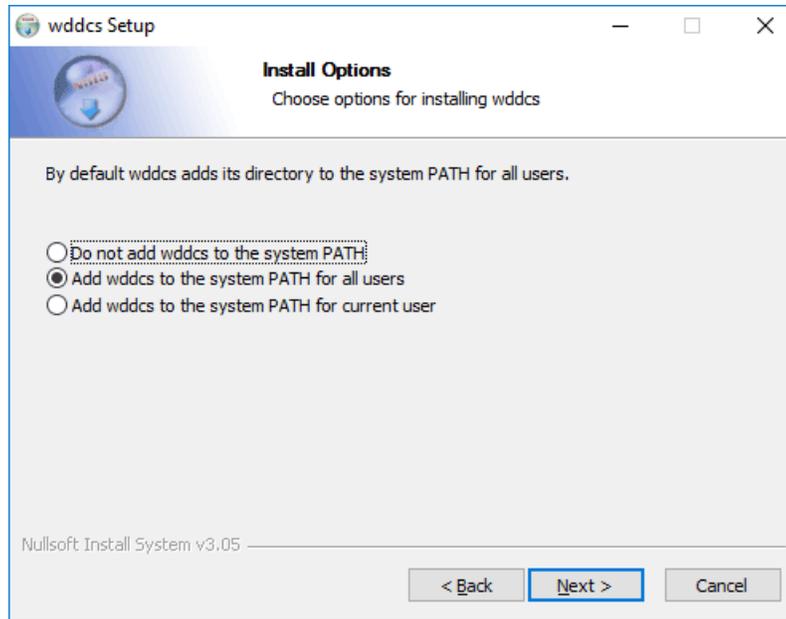
**Step 12:** Click **Next >**.

The **wddcs Setup** window will update, showing the WDDCS Tool **License Agreement**:



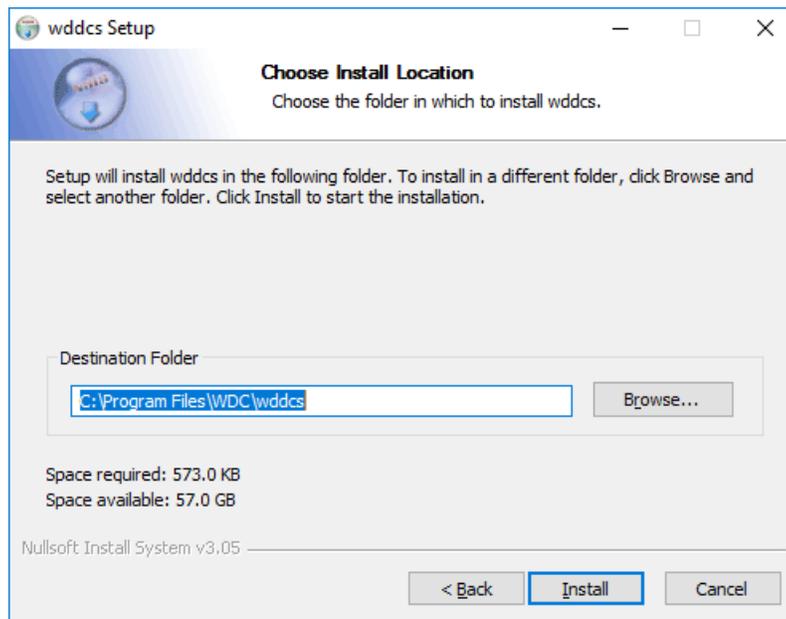
**Step 13:** Read through the license agreement and click **I Agree**.

The **wddcs Setup** window will update, prompting the user to choose a system PATH option. The **Add wddcs to the system PATH for all users** option is selected by default:



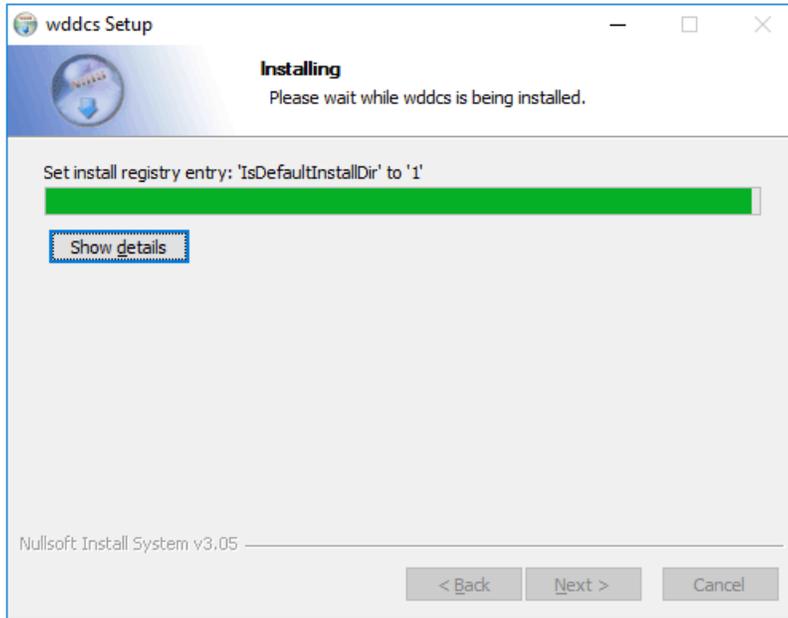
**Step 14:** Click **Next >**.

The **wddcs Setup** window will update, prompting the user to accept the default installation directory or choose another:

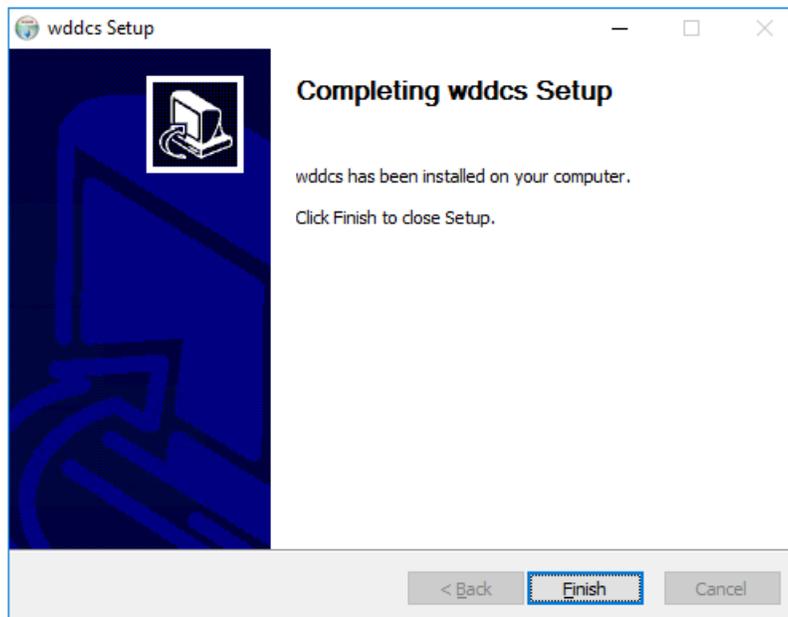


**Step 15:** Click **Install**.

The **wddcs Setup** window will update, showing the installation progress:



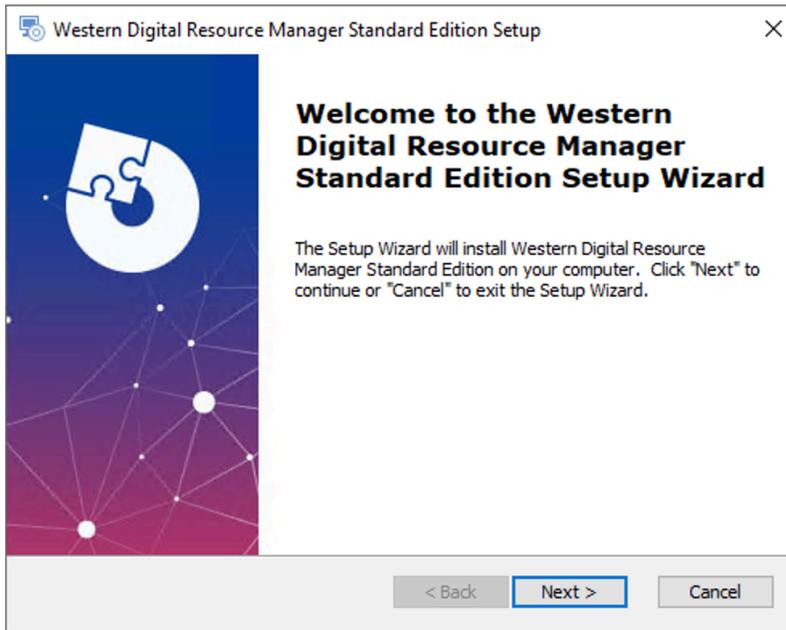
After a few seconds, the **wddcs Setup** window will update again, showing that the installation is complete:



**Step 16:** Click **Finish**.

The Resource Manager Standard Edition setup wizard will be displayed again.

### Installing Resource Manager Standard Edition



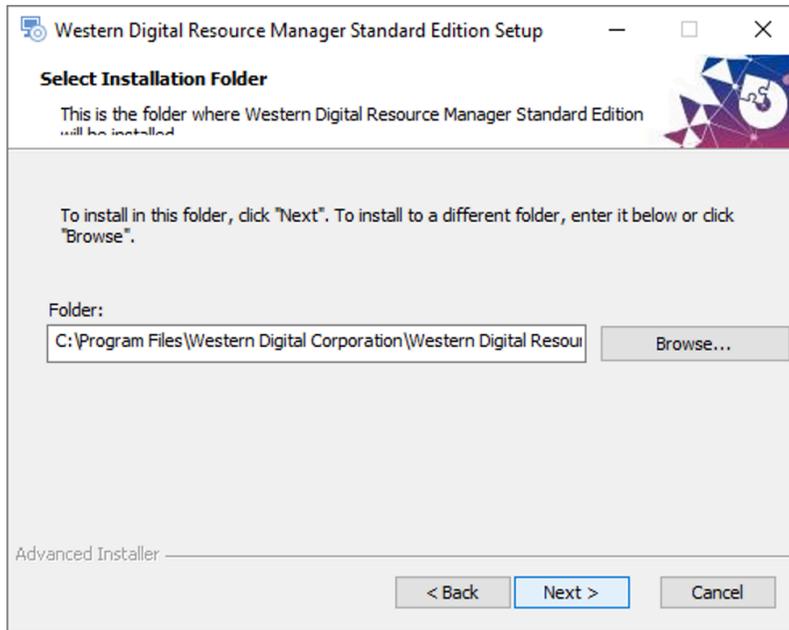
**Step 17:** Click **Next >**.

The Resource Manager Standard Edition **End-User License Agreement** window will be displayed.



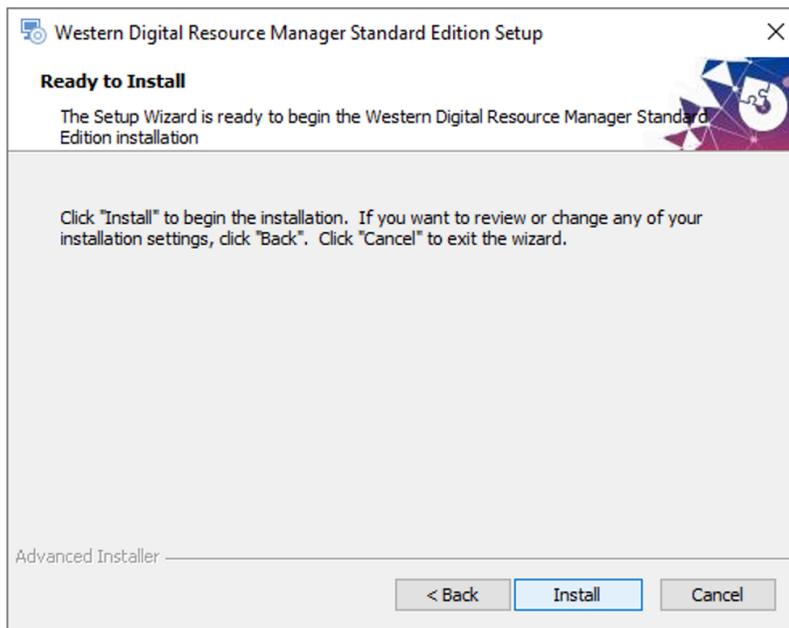
**Step 18:** Read through the end-user license agreement, click the radio button for **I accept the terms in the License Agreement**, and click **Next >**.

The **Select Installation Folder** window will be displayed:



**Step 19:** Either keep the default installation folder or click **Browse...** to select a different installation folder. Then click **Next >**.

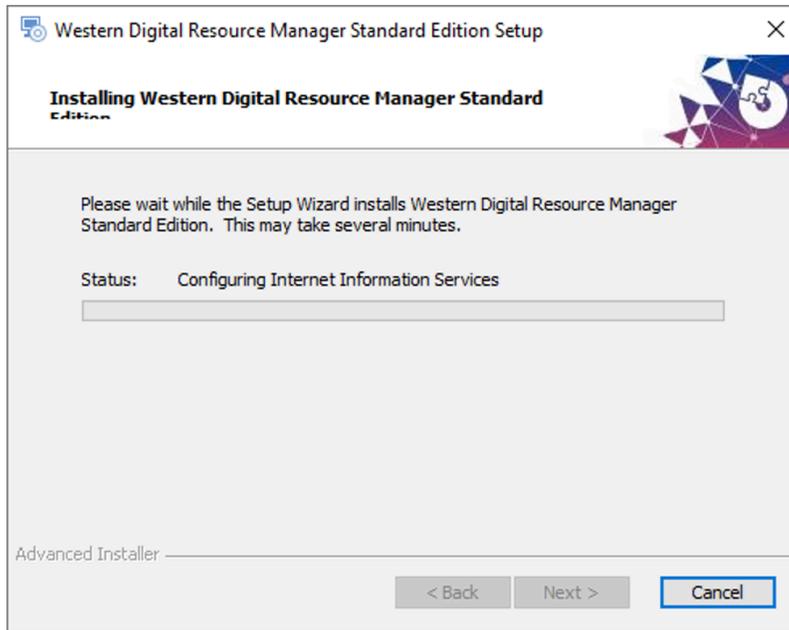
The **Ready To Install** window will be displayed:



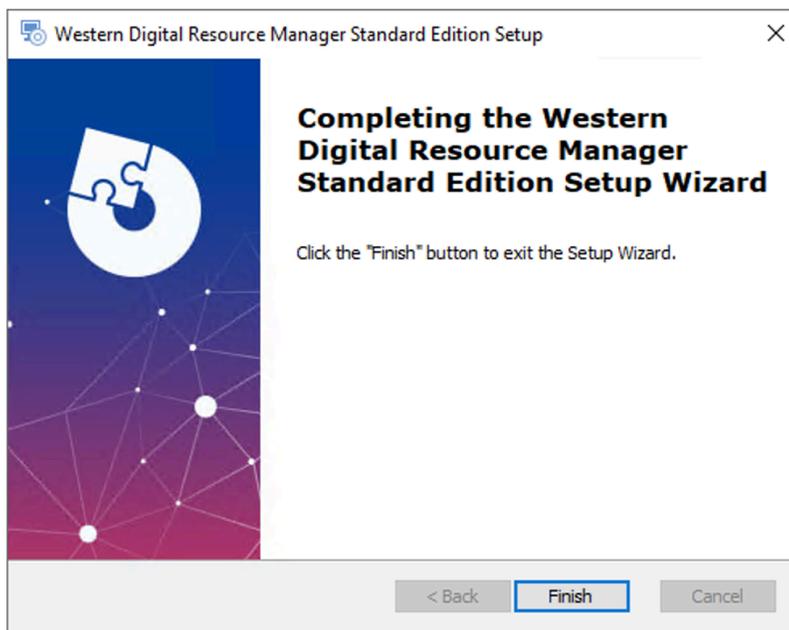
**Step 20:** Click **Install**.

The **Installing Western Digital Resource Manager Standard Edition** window will be displayed, showing the status of the installation:

## 2.3 Installing Resource Manager Standard Edition for Windows



When the installation is complete, the setup wizard will proceed to a completion window:



**Step 21:** Click **Finish** to exit the setup wizard.

**Result:** The Resource Manager Standard Edition application is now installed.

**What to do next:** Proceed to [Accessing Resource Manager Standard Edition](#) (page 32).

# Management

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- Virtual View..... 41
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- MegaRAID..... 90
- Alerts..... 124
- User Settings..... 126
- Virtual Tour..... 133

## 3.1 Accessing Resource Manager Standard Edition

This procedure provides instructions for logging in to the Resource Manager Standard Edition application.

**Step 1:** Open a browser and navigate to the appropriate address for your operating system:

- For Linux - `http://<server_ip>/#/`
- For Windows - `http://<server_ip>/unifiedapp/`



**Note:** In these examples, `<server_ip>` is the IP address of the server hosting the Resource Manager Standard Edition software.

The login page will appear:

**Figure 40:** Login Page

Western Digital  
Resource Manager – Standard.  
Monitoring and Management Capabilities for Western Digital platforms.

Western Digital  
WESTERN DIGITAL RESOURCE MANAGER – STANDARD

Sign In

User ID  
Enter User ID

Password  
Enter Password

Show Password

Sign In

© 2021-22 Western Digital Corporation  
Build Version - v 1.1.8.2

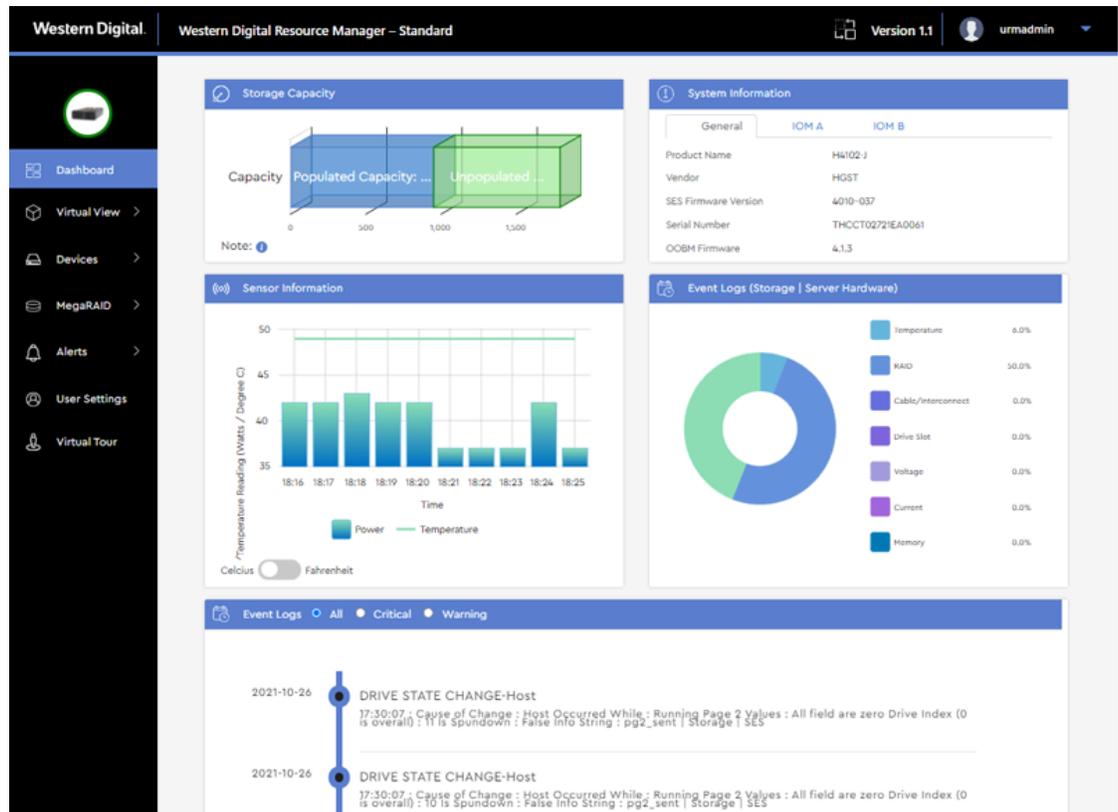
**Step 2:** Enter a valid username and password into the **User ID** and **Password** fields. Then click the **Sign In** button.



**Note:** The default username/password is `urmadmin/admin@123`.

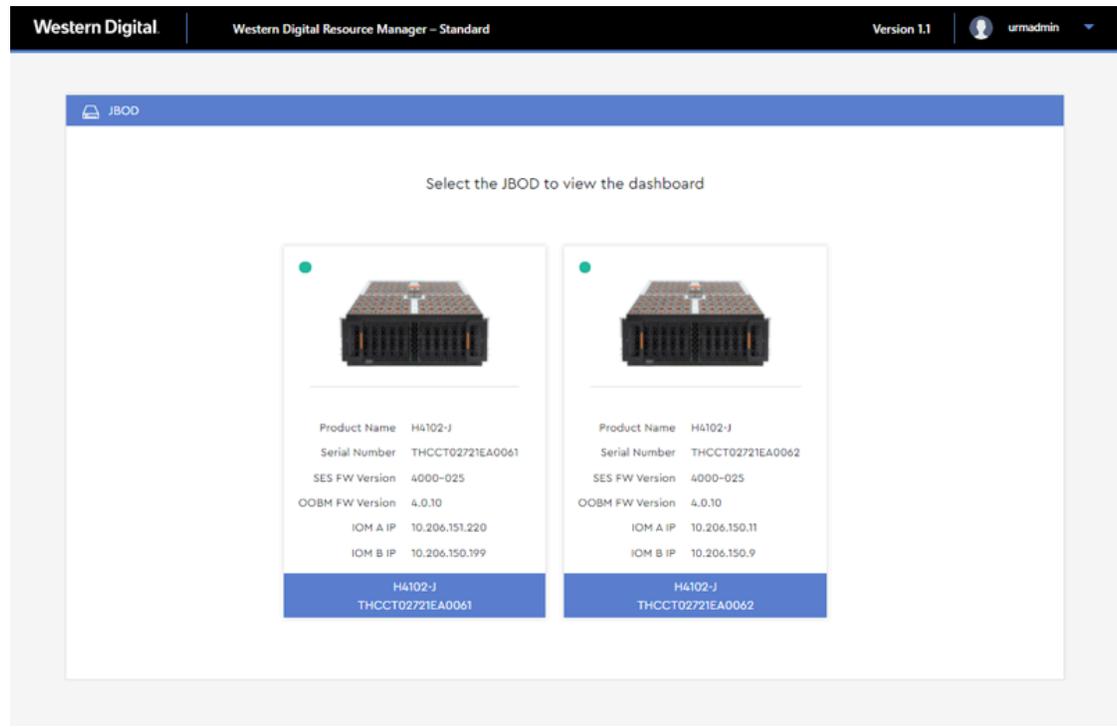
- a. If the host server is connected to a **single** enclosure, that enclosure's dashboard will appear:

**Figure 41:** Enclosure Dashboard



- b. If the host server is connected to **multiple** enclosures, the **JBOD** selection page will appear:

**Figure 42:** JBOD Selection Page



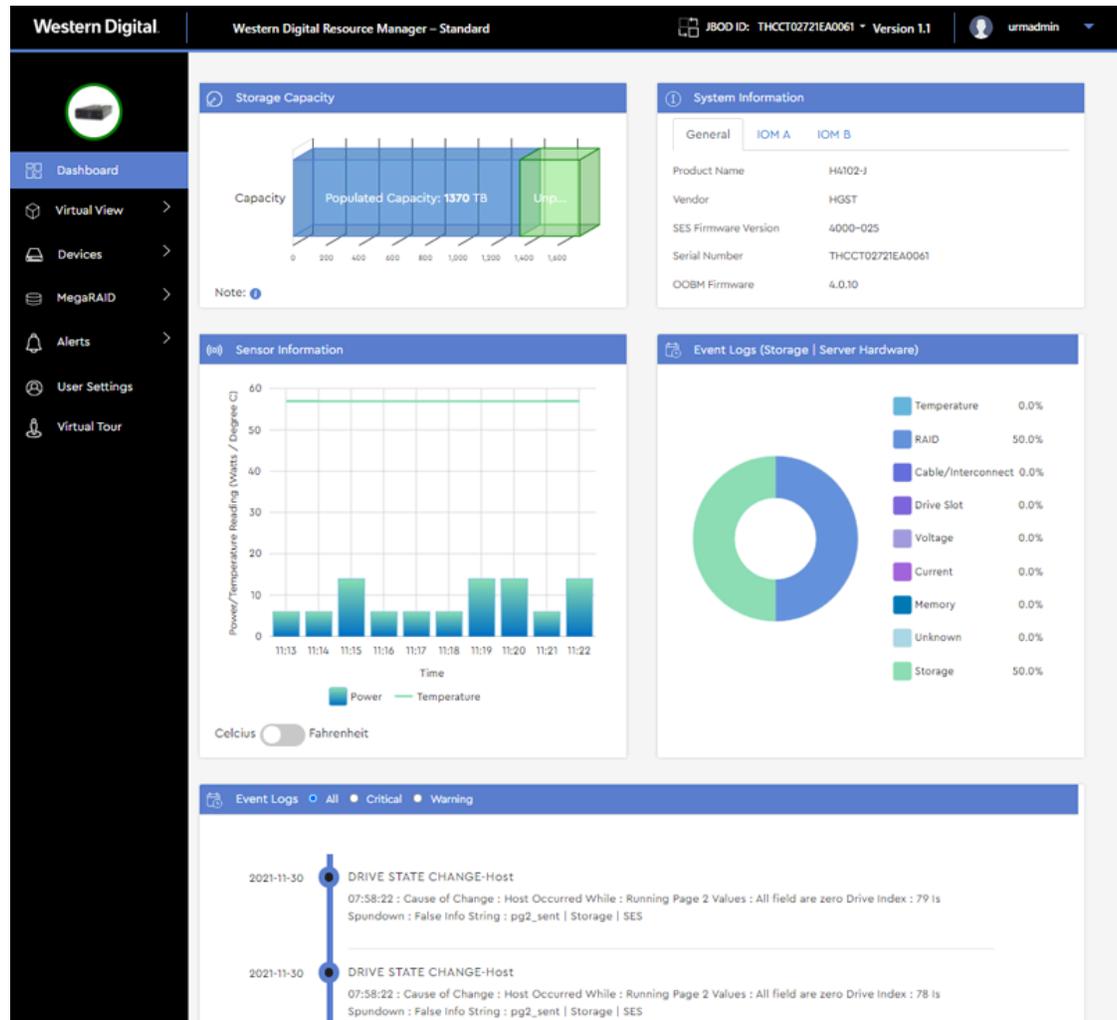
**Note:** The colored dot in the upper-left corner of each JBOD section indicates the health of the enclosure. The dot will also provide a tooltip explanation of the health status when hovered over:

- **Green** – OK
- **Orange** – WARNING
- **Red** – CRITICAL

- c. Click to select the desired enclosure from the available options. Then click the **Go to Dashboard** button.

That enclosure's dashboard will appear:

**Figure 43:** Enclosure Dashboard

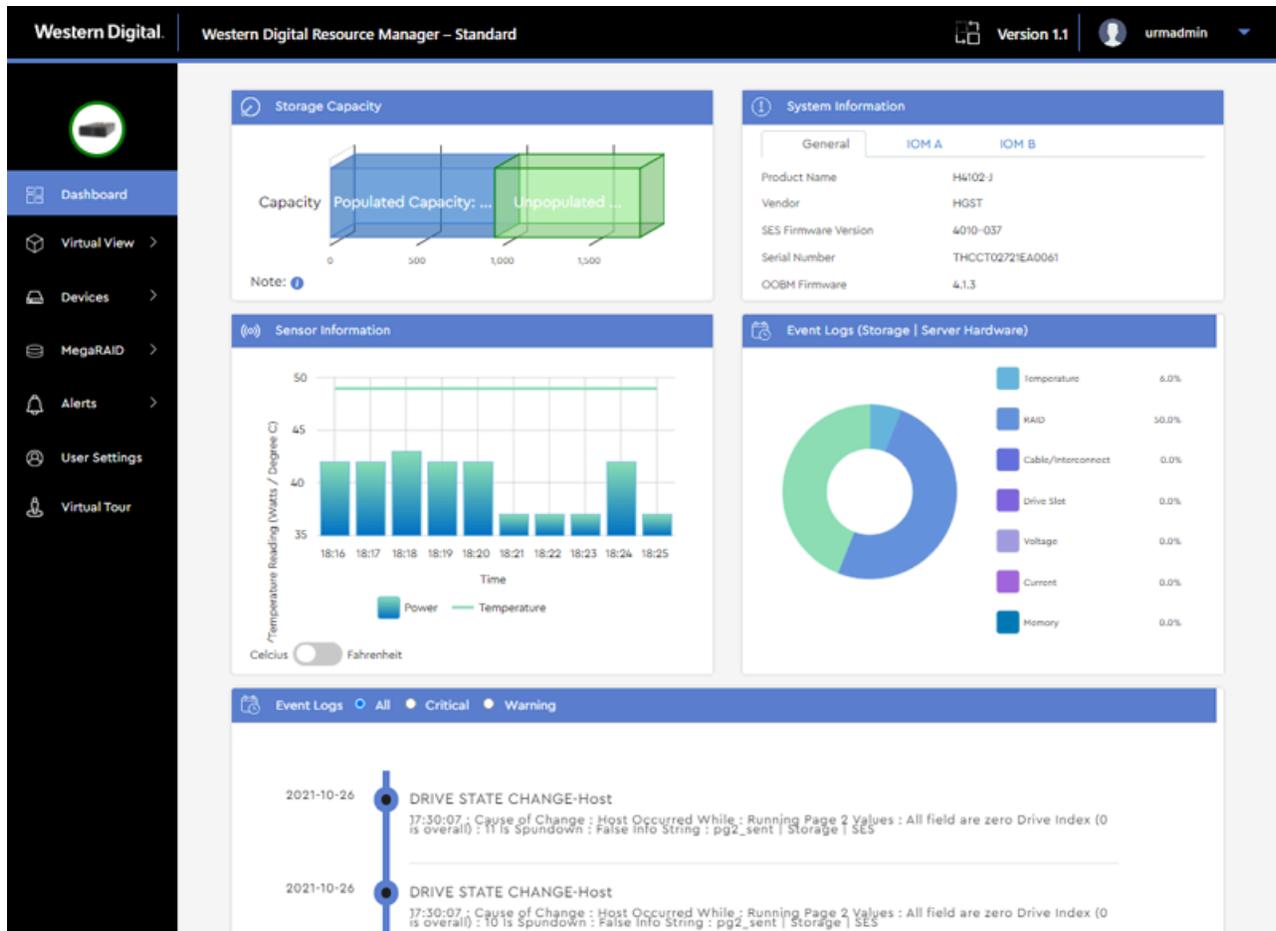


**Result:** You are now logged in to the desired enclosure using the Resource Manager Standard Edition application.

**What to do next:** Proceed with management of the enclosure.

## 3.2 Dashboard

The **Dashboard** is a consolidated monitoring page displaying the most critical enclosure data, such as populated/unpopulated storage capacity, system information (serial number, SEP & OOBM FW versions), IOM information (MAC & IP addresses), BMC firmware version<sup>3</sup>, and the last 10 minutes of sensor readings (refreshed approximately every 60 seconds). Events are displayed in a categorized pie chart as well as a chronological list, filterable by severity.



**Note:** If the enclosure is connected to a non-RAID HBA, the **Storage Capacity** section displays unpopulated capacity based on the highest capacity drive model supported by the platform, while populated capacity is based on the capacity of the drives installed. For example, the Ultrastar Data60 supports up to sixty (60) 20TB drives<sup>4</sup>, for a total of 1200TB of unpopulated capacity. If thirty (30) slots are populated with 20TB drives, the populated capacity would

3. Ultrastar Serv60+8 only

4. One terabyte (TB) is equal to one trillion bytes. Actual user capacity may be less due to operating environment.



be 600TB, and the unpopulated capacity would also be 600TB. Hovering over the graph will produce a tooltip that shows the number of populated and unpopulated drive slots. If the enclosure is connected to a MegaRAID controller, the populated capacity will be the total capacity of all Logical Drives; unpopulated capacity will be the remaining Physical Drives capacity available for configuring a RAID.



**Note:** The **Storage Capacity** section displays capacity for drive slots managed by the expanders; the eight (8) slots in the center channel of the Ultrastar Serv60+8 are not included.



**Note:** For Ultrastar Serv60+8, to receive proper event time stamps, please configure NTP or set proper Date and Time using the BMC.

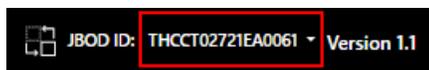
### 3.2.1 Switching Enclosures Using Drop-Down List

When the host server is connected to multiple enclosures, selecting a specific enclosure can be accomplished during or after login. This procedure provides instructions for selecting a different enclosure after login, using the drop-down list.

**Before you begin:** Follow the instructions in [Accessing Resource Manager Standard Edition \(page 32\)](#) to log into the Resource Manager Standard Edition application.

**Step 1:** At the top of the dashboard, click the drop-down list next to the current enclosure's ID:

**Figure 45:** Enclosure ID Drop-Down List



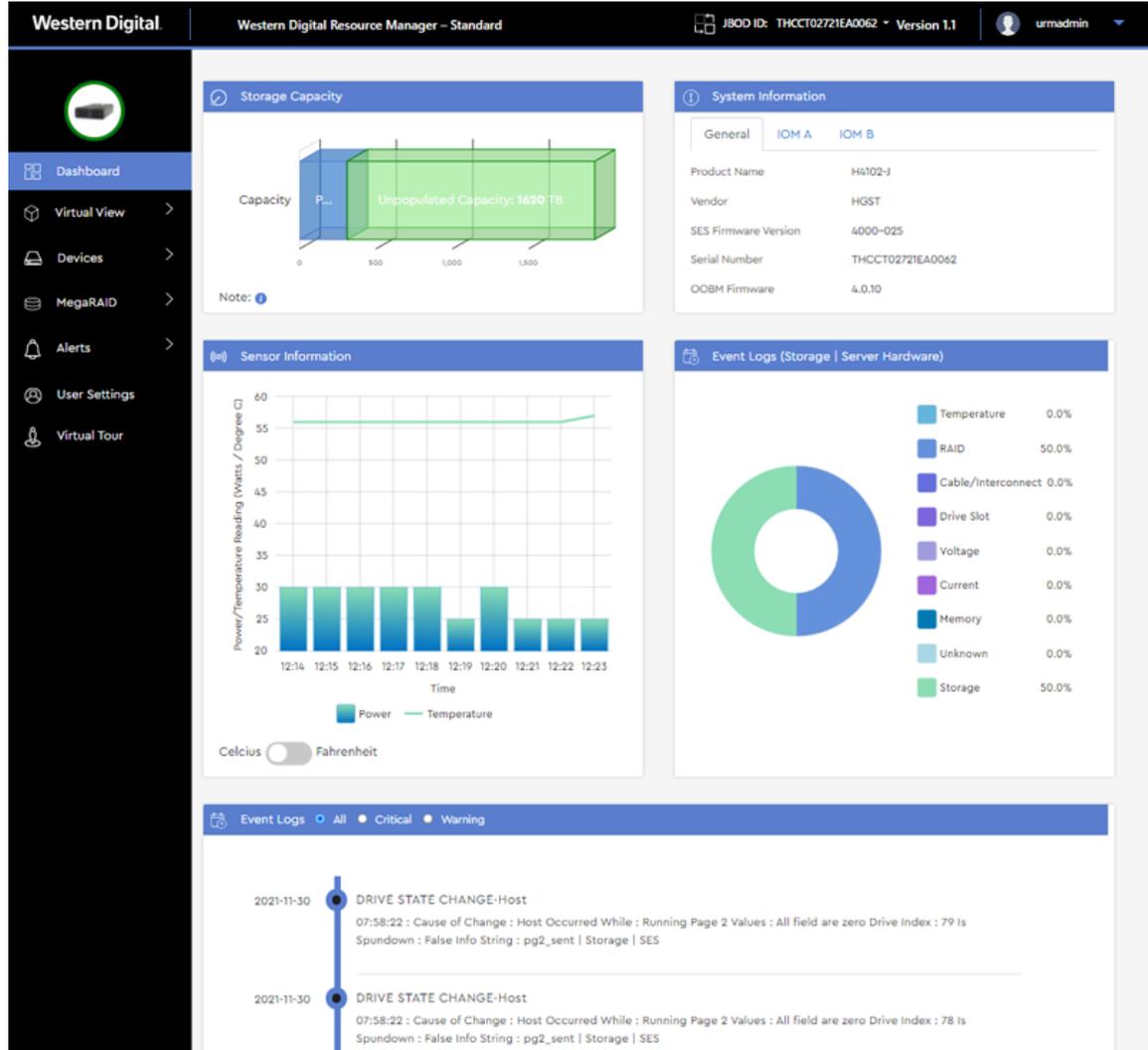
The enclosures attached to the host will be presented in a list format, with the currently-selected enclosure highlighted:

**Figure 46:** Enclosure Options



**Step 2:** Click to select another enclosure from the list. That enclosure's dashboard will appear:

Figure 47: Other Enclosure's Dashboard



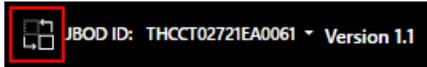
**Result:** A different enclosure has now been selected using the drop-down list.

### 3.2.2 Switching Enclosures Using Icon

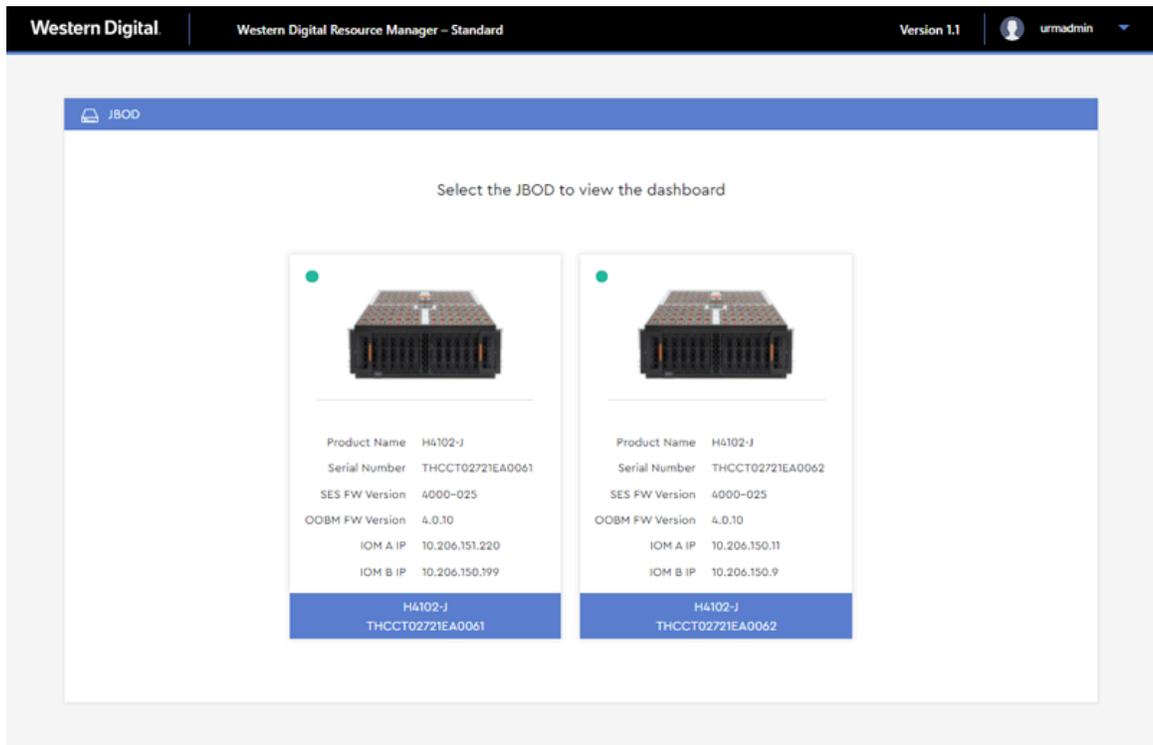
When the host server is connected to multiple enclosures, selecting a specific enclosure can be done during or after login. This procedure provides instructions for selecting a different enclosure after login using the change-enclosure icon.

**Before you begin:** Follow the instructions in [Accessing Resource Manager Standard Edition](#) (page 32) to log into the Resource Manager Standard Edition application.

**Step 1:** At the top of the dashboard, click the change-enclosure icon:

**Figure 48:** Change-Enclosure Icon

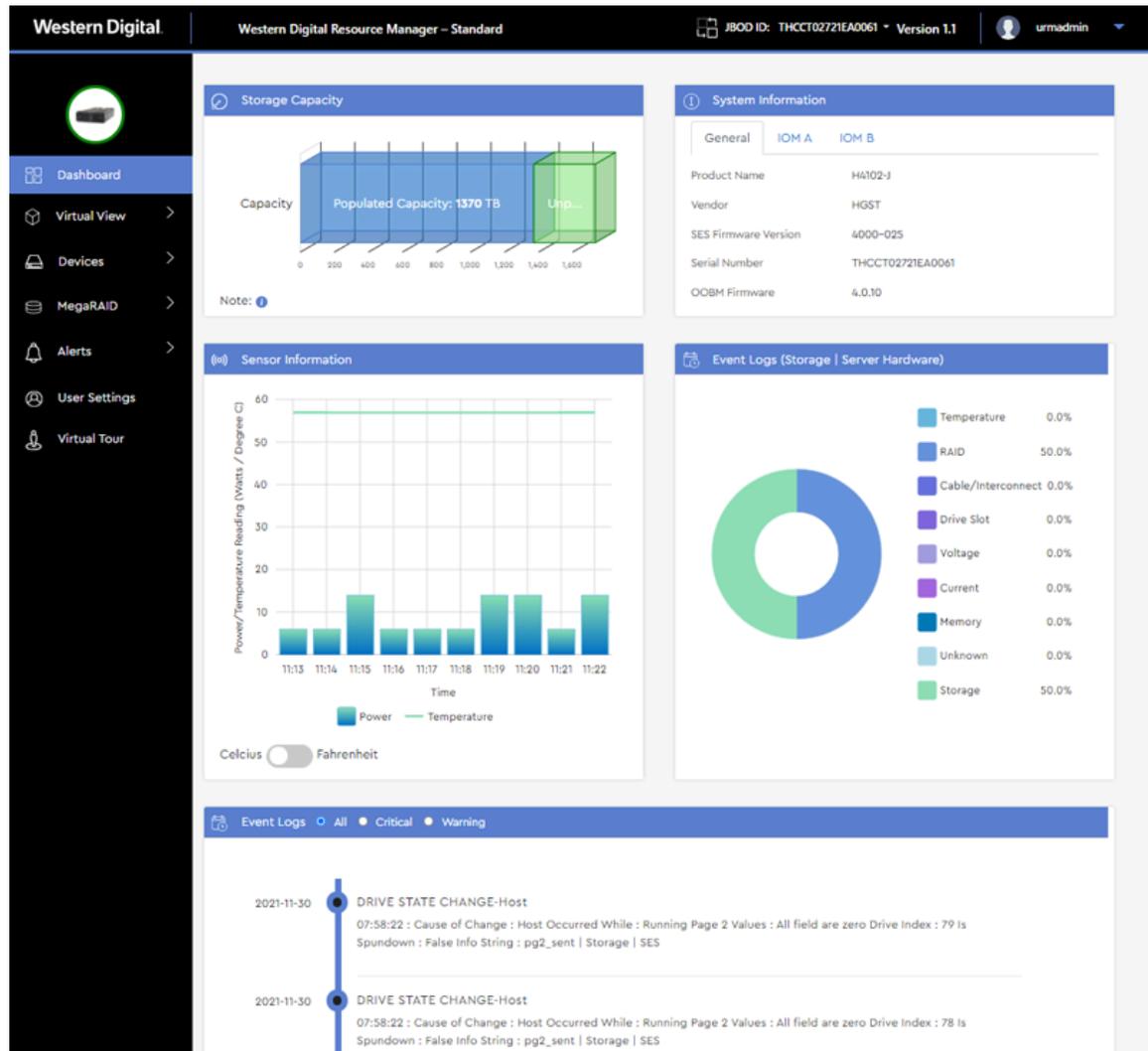
The JBOD selection page will appear (the same one used during login):

**Figure 49:** JBOD Selection Page

**Step 2:** Click to select a different enclosure from the available options. Then click the **Go to Dashboard** button.

That enclosure's dashboard will appear:

Figure 50: Other Enclosure's Dashboard



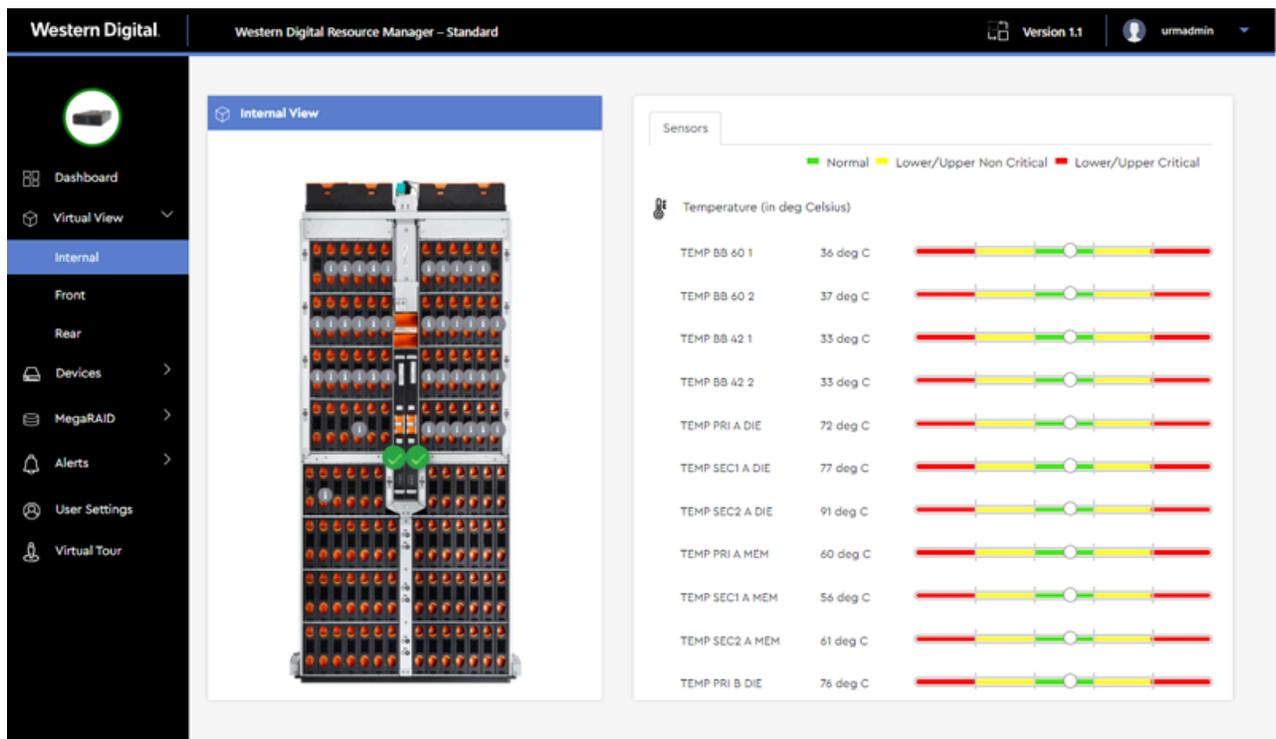
**Result:** A different enclosure has now been selected using the change-enclosure icon.

## 3.3 Virtual View

The **Virtual View** section provides real-time health status and sensor information for the components visible or accessible from different perspectives, such as drives, system fans, IOMs, and PSUs. Front and rear views also provide enclosure LED management controls.

### 3.3.1 Internal View

The **Internal View** displays IOM health status and temperature readings of baseboard and expander sensors.

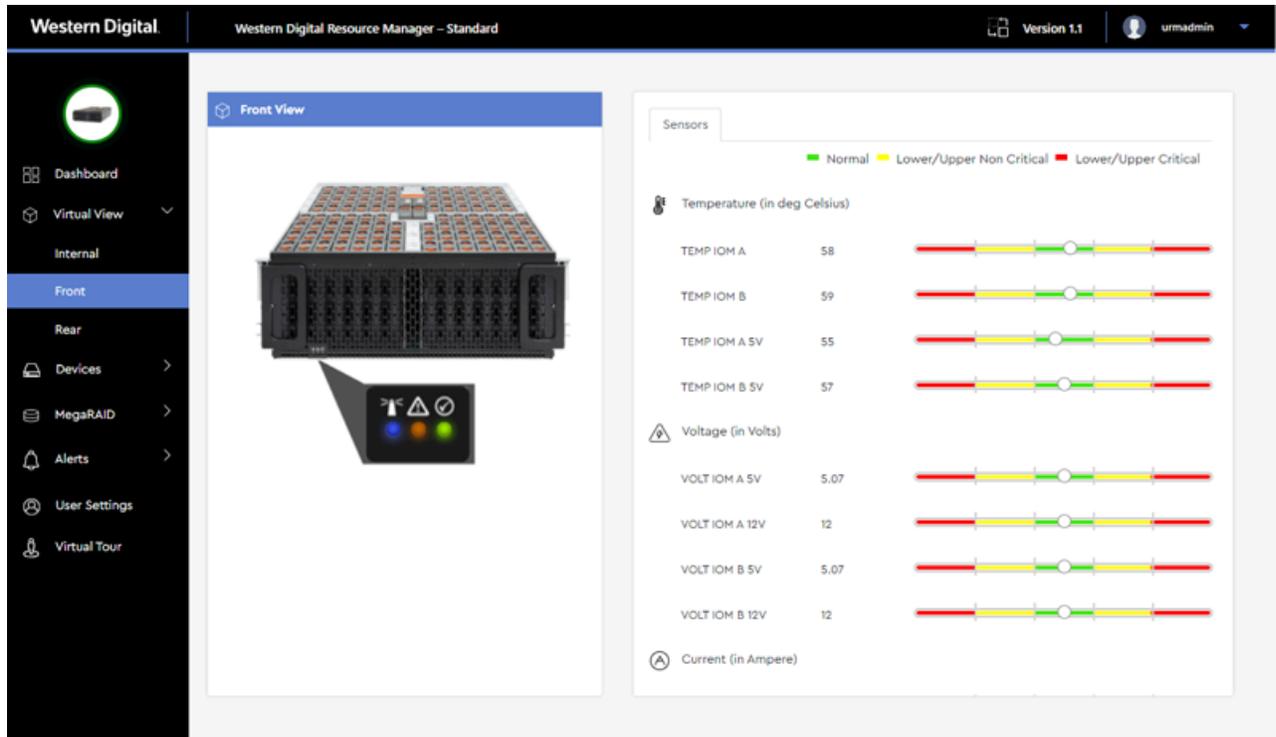


### 3.3.2 Front View

The **Front View** displays the temperature, voltage, and current readings of IOM sensors, as well as enclosure identification, fault, and power status LEDs.



**Note:** The enclosure identification LED image also functions as a control; it can be used to toggle on/off the enclosure's physical identification LED.



### 3.3.2.1 Enabling / Disabling Enclosure Identification LEDs (Front)

This procedure provides instructions for enabling (illuminating) and/or disabling the enclosure's identification LEDs from the **Front** virtual view page.

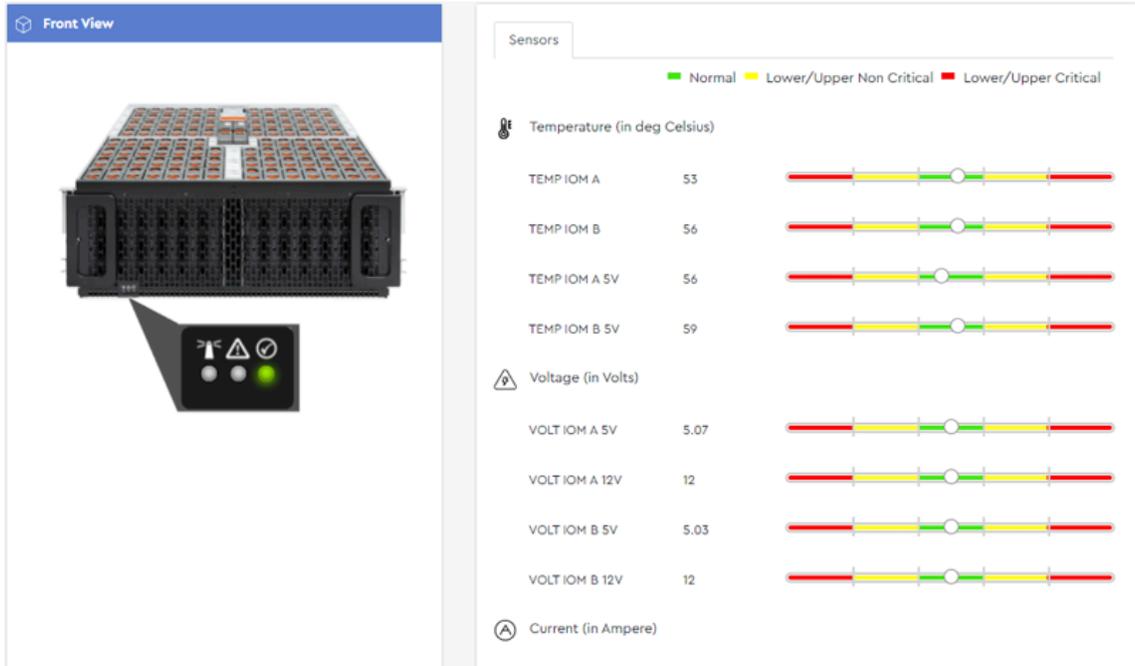
**Before you begin:** Follow the instructions in [Accessing Resource Manager Standard Edition](#) (page 32) to log into the Resource Manager Standard Edition application.

#### Enabling the Enclosure's Identification LEDs

**Step 1:** From the navigation bar, select **Virtual View** > **Front**.

The **Front** virtual view page will be displayed:

**Figure 53:** Front View



**Step 2:** The **Front View** image on the left will display the status of the enclosure's Identification, Fault, and Power LEDs.

**Figure 54:** Front View LEDs



**Step 3:** Hovering your cursor over the Identification LED will produce a tooltip, indicating its current status and that it can be clicked to enable the LED.

**Figure 55:** Identification LED Tooltip

**Step 4:** As instructed, click the Identification LED.

The blue LED will illuminate to show that the physical enclosure LEDs (both front and rear) have been enabled.

**Figure 56:** Identification LEDs Enabled**Disabling the Enclosure's Identification LEDs**

**Step 5:** Click the blue Identification LED to disable it.

The LED will turn off to show that the physical enclosure LEDs (front and rear) have been disabled.

**Figure 57:** Identification LEDs Disabled

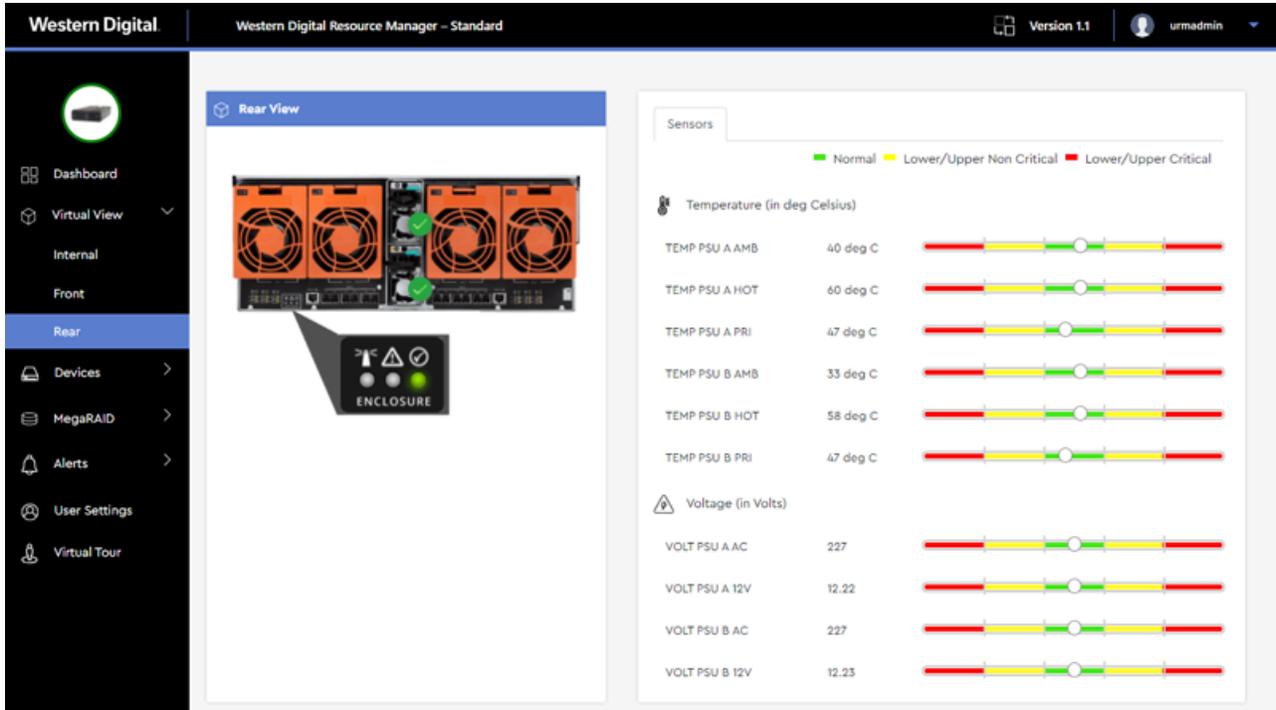
**Result:** The enclosure's identification LEDs have now been enabled and/or disabled.

### 3.3.3 Rear View

The **Rear View** displays PSU health status and temperature, voltage, and current readings of PSU sensors, as well as enclosure identification, fault, and power status LEDs.



**Note:** The enclosure identification LED image also functions as a control; it can be used to toggle on/off the enclosure's physical identification LED.



The screenshot shows the Western Digital Resource Manager Standard Edition interface. The top navigation bar includes the Western Digital logo, the application name, and the user 'uradmin'. The left sidebar contains navigation options: Dashboard, Virtual View (selected), Internal, Front, Rear (selected), Devices, MegaRAID, Alerts, User Settings, and Virtual Tour. The main content area is titled 'Rear View' and shows a 3D model of the server enclosure. A callout box over the enclosure shows three LEDs: a white one (off), a green one (on), and a red one (off). The 'Sensors' panel on the right displays the following data:

Sensors		
Temperature (in deg Celsius)		
	Value	Status
TEMP PSU A AMB	40 deg C	Normal
TEMP PSU A HOT	60 deg C	Lower/Upper Non Critical
TEMP PSU A PRI	47 deg C	Normal
TEMP PSU B AMB	33 deg C	Normal
TEMP PSU B HOT	58 deg C	Lower/Upper Non Critical
TEMP PSU B PRI	47 deg C	Normal
Voltage (in Volts)		
VOLT PSU A AC	227	Normal
VOLT PSU A 12V	12.22	Normal
VOLT PSU B AC	227	Normal
VOLT PSU B 12V	12.23	Normal

### 3.3.3.1 Enabling / Disabling Enclosure Identification LEDs (Rear)

This procedure provides instructions for enabling (illuminating) and/or disabling the enclosure's identification LEDs from the **Rear** virtual view page.

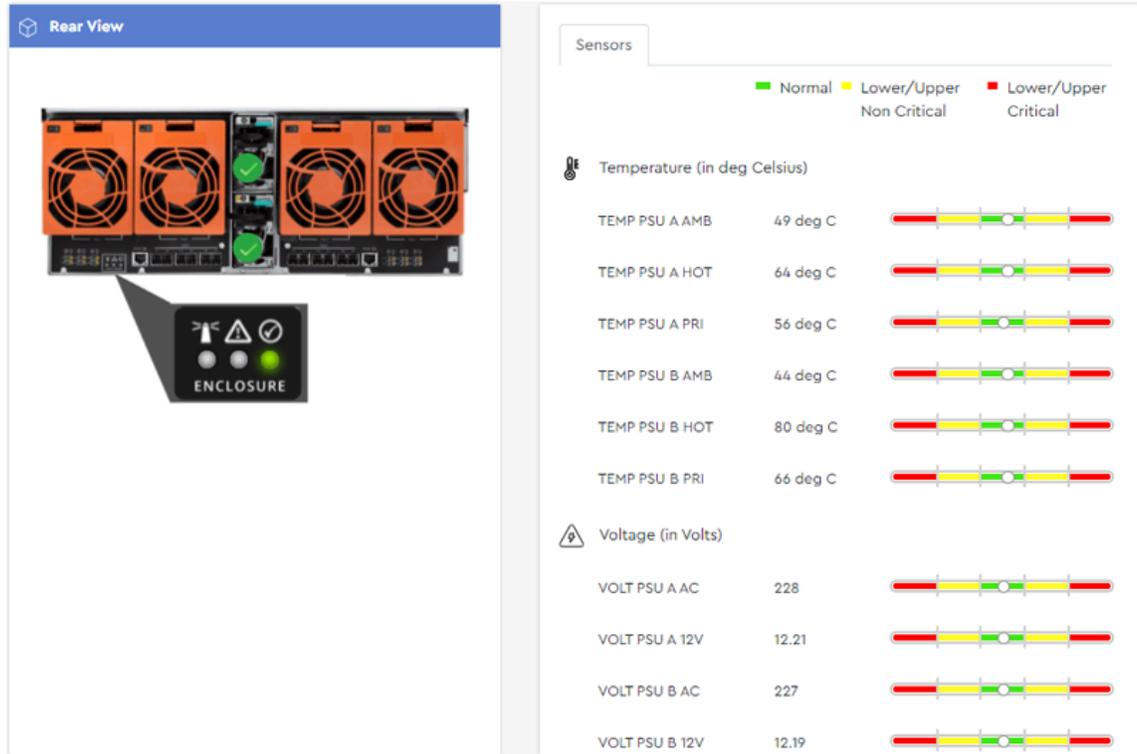
**Before you begin:** Follow the instructions in [Accessing Resource Manager Standard Edition](#) (page 32) to log into the Resource Manager Standard Edition application.

#### Enabling the Enclosure's Identification LEDs

**Step 1:** From the navigation bar, select **Virtual View** > **Rear**.

The **Rear** virtual view page will be displayed:

**Figure 59:** Rear View



**Step 2:** The **Rear View** image on the left will display the status of the enclosure's Identification, Fault, and Power LEDs.

**Figure 60:** Rear View LEDs



**Step 3:** Hovering your cursor over the Identification LED will produce a tooltip, indicating its current status and that it can be clicked to enable the LED.

**Figure 61:** Identification LED Tooltip

**Step 4:** As instructed, click the Identification LED.

The blue LED will illuminate to show that the physical enclosure LEDs (both front and rear) have been enabled.

**Figure 62:** Identification LEDs Enabled

#### Disabling the Enclosure's Identification LEDs

**Step 5:** Click the blue Identification LED to disable it.

The LED will turn off to show that the physical enclosure LEDs (front and rear) have been disabled.

**Figure 63:** Identification LEDs Disabled



**Result:** The enclosure's identification LEDs have now been enabled and/or disabled.

## 3.4 Devices

The **Devices** section provides information about the enclosure's sensors and major components, as well as management controls for drives, zoning, and IOM(s). If drives are managed through an HBA, or a MegaRAID controller in JBOD mode, the **Devices** section also provides drive LED management controls.

### 3.4.1 Drives

The **Drives** page provides an at-a-glance status of all drives in the enclosure, as well as general information, sensor data, and performance statistics for any specific drive.

The screenshot shows the Western Digital Resource Manager Standard Edition interface. The top navigation bar includes the Western Digital logo, the product name 'Western Digital Resource Manager – Standard', the version 'Version 1.1', and the user 'urmadmin'. The left sidebar contains navigation options: Dashboard, Virtual View, Devices, Drives (selected), Zoning, IOM, Sensors, MegaRAID, Alerts, User Settings, and Virtual Tour. The main content area is titled 'Drives' and features a central image of a drive rack. To the right, there is an 'Important Note' and a 'Generic Information' table for a selected drive. Below the table are two charts: 'Temperature (in deg celsius)' and 'General Statistics and Performance'.

Generic Information		Actions	
Drive slot No	0		
Date of manufacture	N/A		
Serial Number	N/A		
Cycle Count	N/A		
Device Name	N/A		
Accumulated start-stop cycles	N/A		
Specified load-unload count over device lifetime	N/A		



**Note:** If a MegaRAID controller is detected in the host, drive details will **not** be available in this section of the Resource Manager Standard Edition. Instead, see [Physical Drives \(page 120\)](#) in the **MegaRAID** section.

#### 3.4.1.1 Enabling / Disabling a Drive Identification LED (HBA)

This procedure provides instructions for enabling (illuminating) and/or disabling a drive's identification LED when the drive is managed through an HBA, or when the drive is managed through a MegaRAID controller in JBOD mode.

**Before you begin:** Follow the instructions in [Accessing Resource Manager Standard Edition \(page 32\)](#) to log into the Resource Manager Standard Edition application.



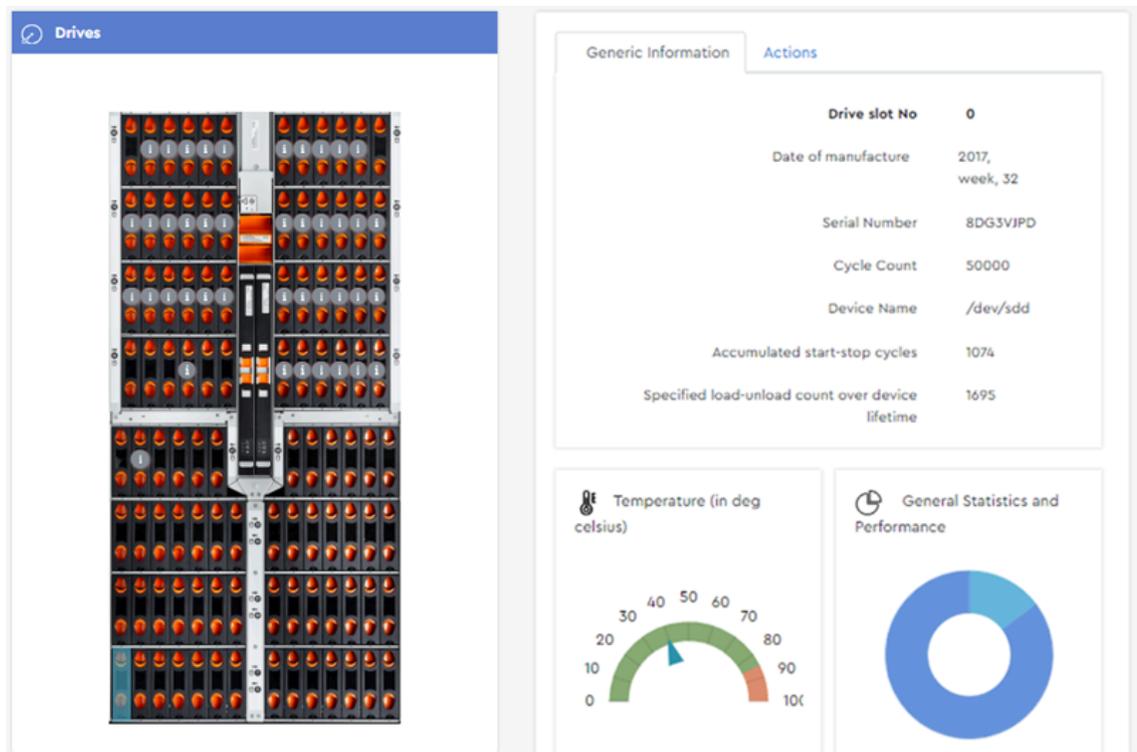
**Note:** To enable/disable a drive's LED through a MegaRAID controller in RAID mode, see [Enabling / Disabling a Drive Identification LED \(MegaRAID\)](#) (page 120).

### Enabling a Drive Identification LED

**Step 1:** From the navigation bar, select **Devices** > **Drives**.

The **Drives** page will be displayed:

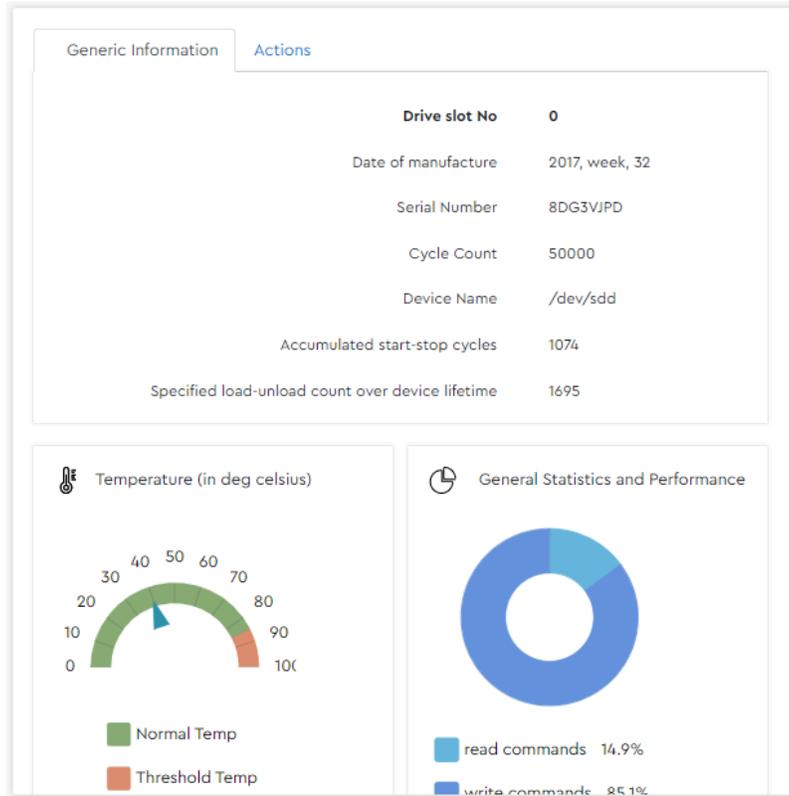
**Figure 65:** Drives Page



**Step 2:** From the **Drives** image on the left, click to select a drive slot.

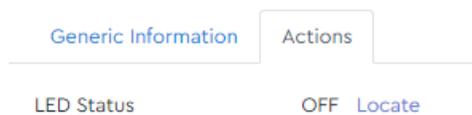
The **Generic Information** tab will display the available information about the drive installed in the selected slot:

**Figure 66:** Generic Information Tab



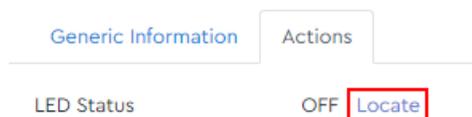
**Step 3:** Click the **Actions** tab.  
The **Actions** tab will be displayed:

**Figure 67:** Actions Tab

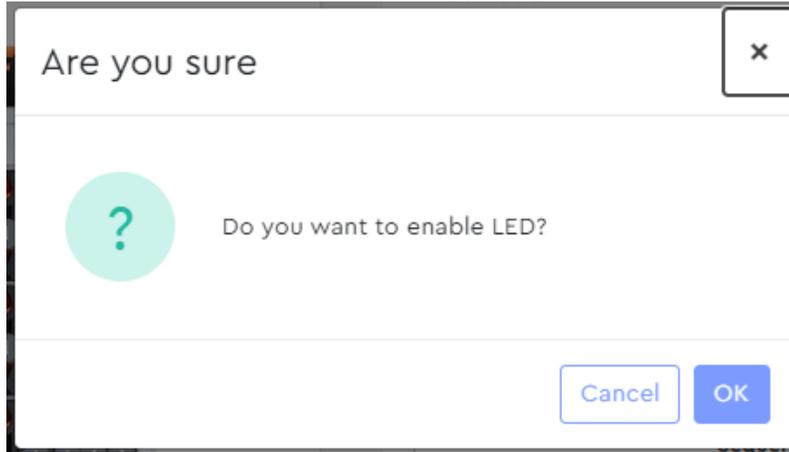


**Step 4:** In the **LED Status** section, click the **Locate** link.

**Figure 68:** Locate Link



A dialogue box will appear, prompting the user to confirm enabling the drive's identification LED:

**Figure 69:** Confirm Enabling LED

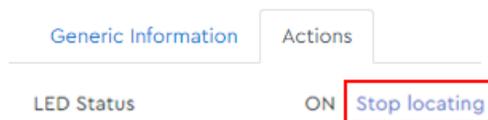
**Step 5:** Click the **OK** button.

A success notification will appear at the top of the page:

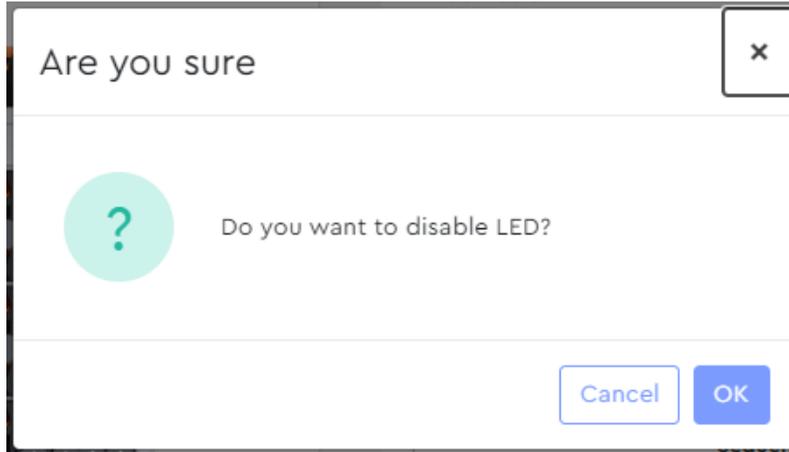
**Figure 70:** Success Notification

### Disabling a Drive Identification LED

**Step 6:** In the **LED Status** section, click the **Stop Locating** link.

**Figure 71:** Stop Locating Link

A dialogue box will appear, prompting the user to confirm disabling the drive's identification LED:

**Figure 72:** Confirm Disabling LED

**Step 7:** Click the **OK** button.

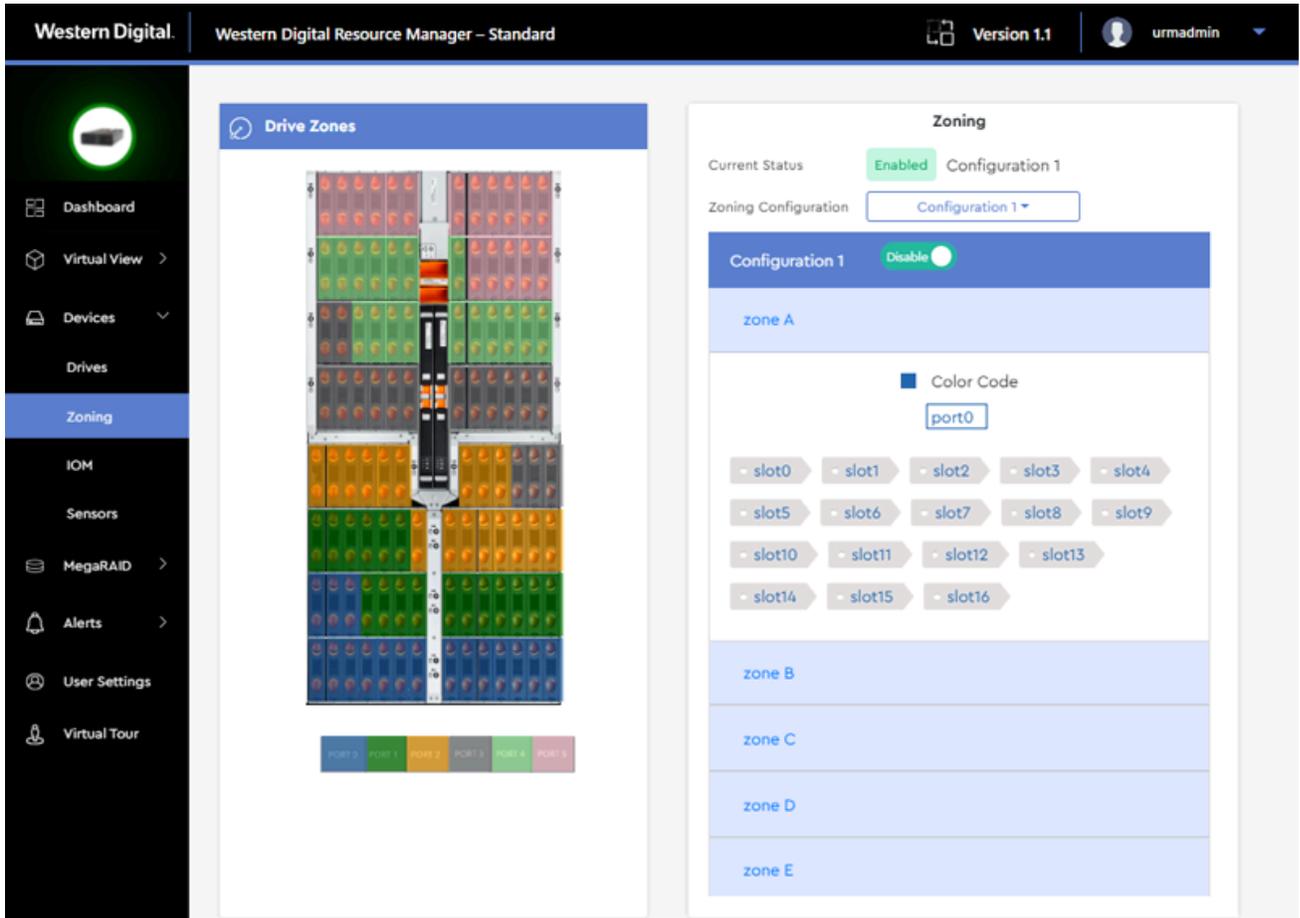
A success notification will appear at the top of the page:

**Figure 73:** Success Notification

**Result:** The selected drive's identification LED has now been enabled and/or disabled.

### 3.4.2 Zoning

The **Zoning** page provides controls for configuring drive zones. Select a predefined zoning configuration, or group specific drives to create your own.



### 3.4.2.1 Selecting a Predefined Zoning Configuration

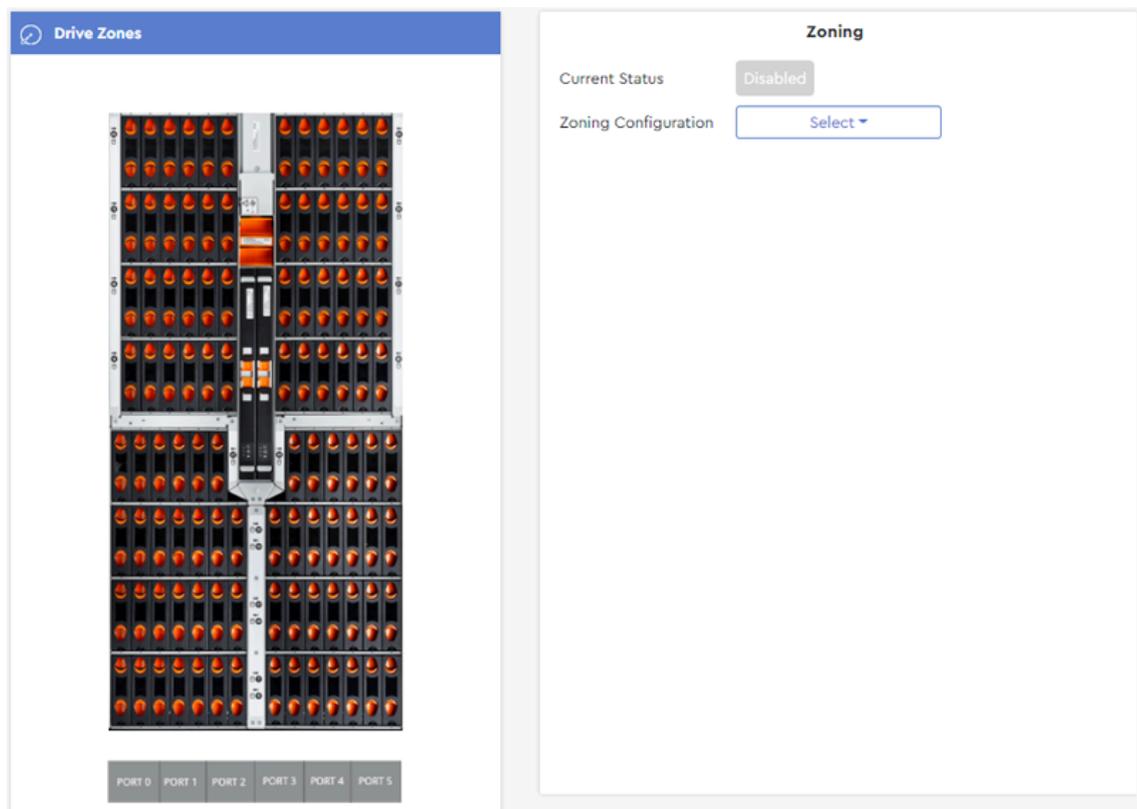
This procedure provides instructions for selecting and enabling a predefined drive zoning configuration using the Resource Manager Standard Edition application.

**Before you begin:** Follow the instructions in [Accessing Resource Manager Standard Edition](#) (page 32) to log into the Resource Manager Standard Edition application.

**Step 1:** From the navigation bar, select **Devices > Zoning**.

The zoning page will be displayed:

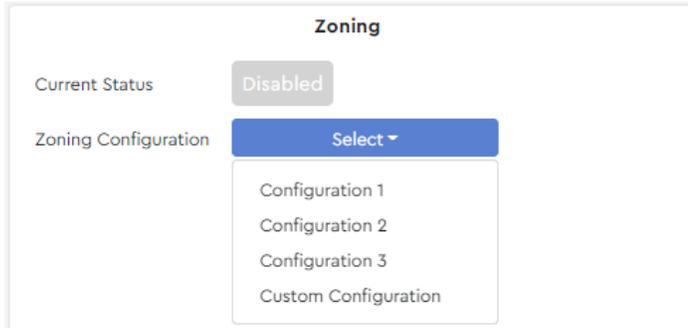
**Figure 75:** Zoning Page



**Note:** The enclosure image on the zoning page will depend on your platform model. This example shows the Ultrastar Data102.

**Step 2:** From the **Zoning Configuration** drop-down list, select **Configuration 1, 2, or 3:**

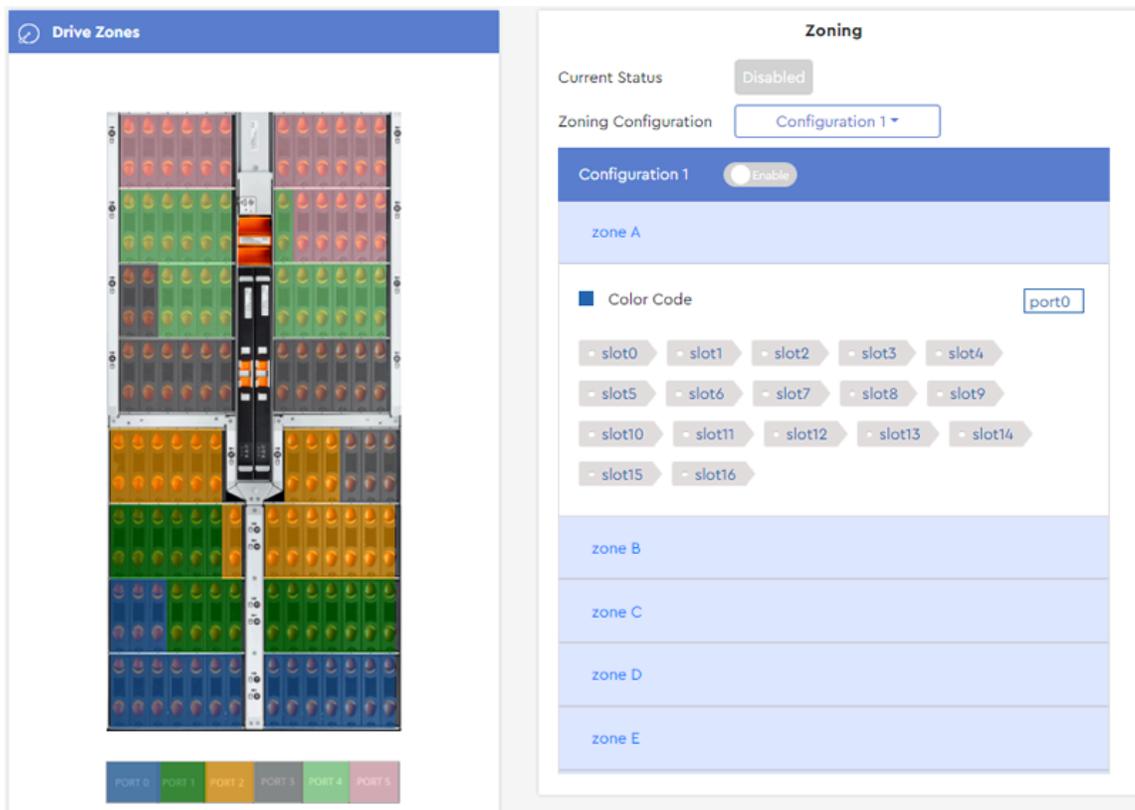
**Figure 76:** Zoning Configuration Drop-Down List



**Note:** See the *Predefined Zoning Configurations* section of your platform's *User Guide* for a detailed explanation of each predefined zoning configuration.

The **Zoning** section will display the details for the selected configuration:

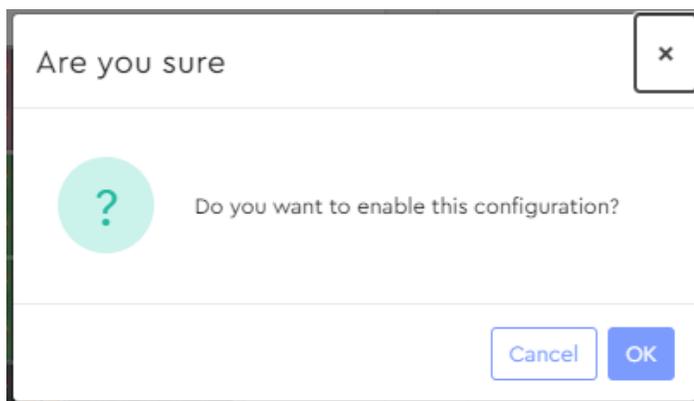
**Figure 77:** Configuration Details



**Step 3:** Click the toggle switch next to the configuration name to enable the configuration.

**Figure 78:** Configuration Toggle Switch

A dialogue box will appear, prompting the user to confirm the configuration:

**Figure 79:** Confirm Configuration Dialogue Box

**Step 4:** Click the **OK** button to enable the configuration.

**Result:** The selected zoning configuration is now enabled.

### 3.4.2.2 Creating a Custom Zoning Configuration

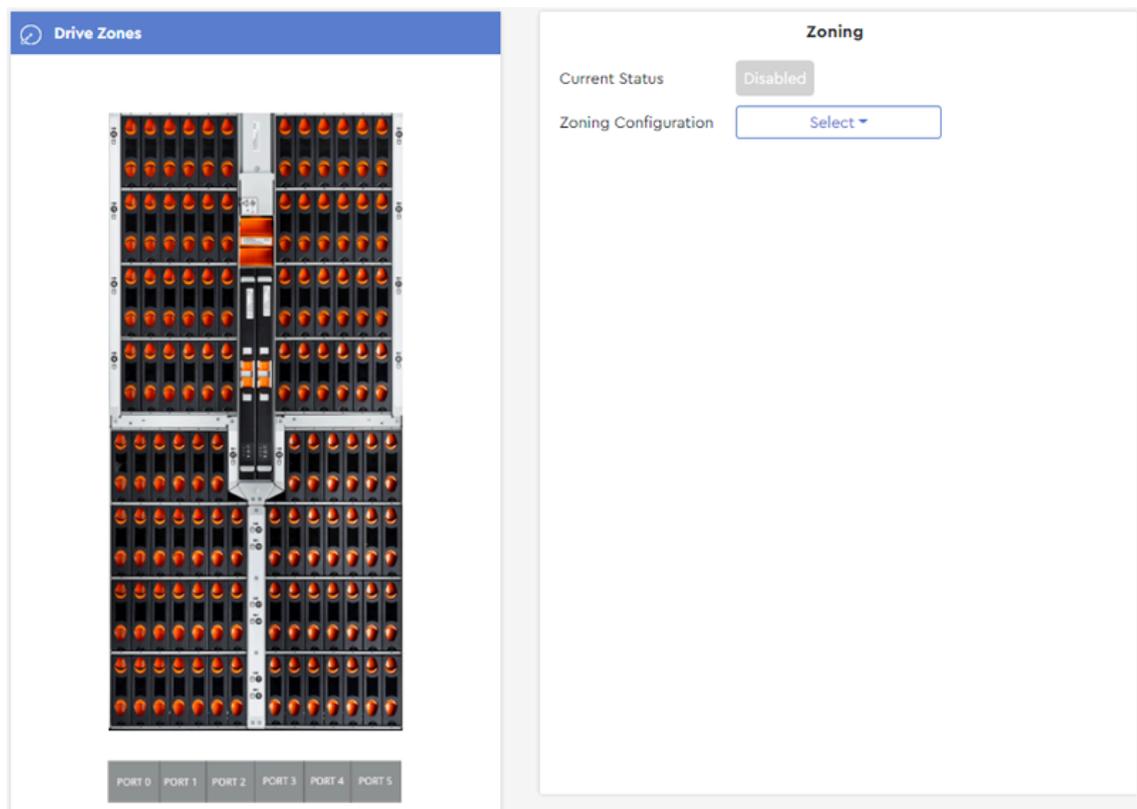
This procedure provides instructions for creating and enabling a custom drive zoning configuration using the Resource Manager Standard Edition application.

**Before you begin:** Follow the instructions in [Accessing Resource Manager Standard Edition](#) (page 32) to log into the Resource Manager Standard Edition application.

**Step 1:** From the navigation bar, select **Devices > Zoning**.

The zoning page will be displayed:

**Figure 80:** Zoning Page



**Note:** The enclosure image on the zoning page will depend on your platform model. This example shows the Ultrastar Data102.

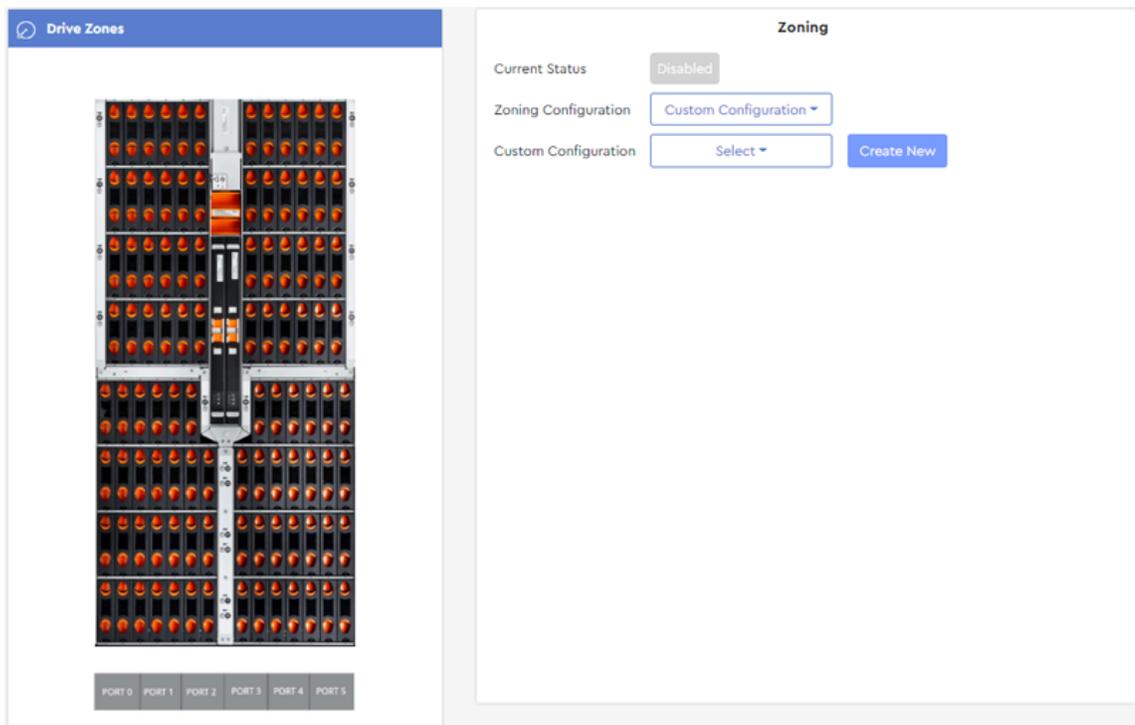
**Step 2:** From the **Zoning Configuration** drop-down list, select **Custom Configuration**:

**Figure 81:** Zoning Configuration Drop-Down List



A **Custom Configuration** section will appear:

**Figure 82:** Custom Configuration Section

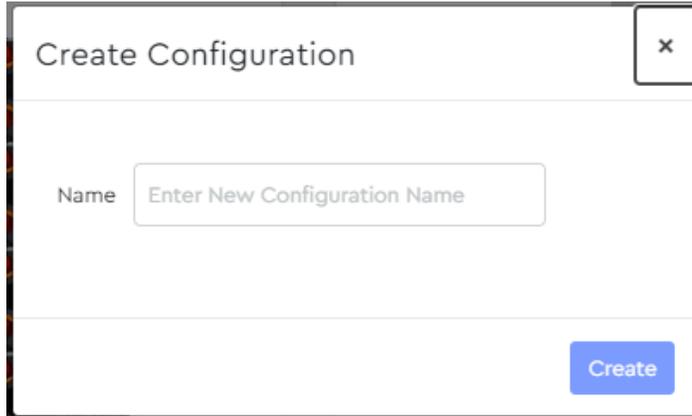


**Step 3:** Click the **Create New** button:

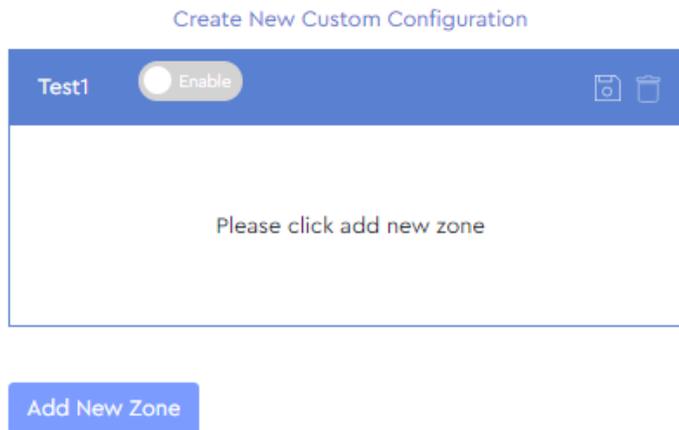
**Figure 83:** Create New Button



A **Create Configuration** dialogue box will appear:

**Figure 84:** Create Configuration Dialogue BoxA screenshot of a 'Create Configuration' dialog box. The title bar reads 'Create Configuration' with a close button (X) in the top right corner. Below the title bar, there is a 'Name' label followed by a text input field containing the placeholder text 'Enter New Configuration Name'. At the bottom right of the dialog, there is a blue 'Create' button.

**Step 4:** Type a name for the new configuration into the **Name** field, and click the **Create** button. A new section will appear, with controls for adding zones to the new configuration:

**Figure 85:** New ConfigurationA screenshot of a 'Create New Custom Configuration' interface. The title is 'Create New Custom Configuration'. Below the title, there is a blue header bar with 'Test1' on the left, an 'Enable' toggle switch in the middle, and icons for a folder and trash on the right. The main content area is white and contains the text 'Please click add new zone'. Below this area, there is a blue 'Add New Zone' button.

**Step 5:** As prompted, click the **Add New Zone** button. A **New Zone** section will be added to the configuration:

**Figure 86:** New Zone

Create New Custom Configuration

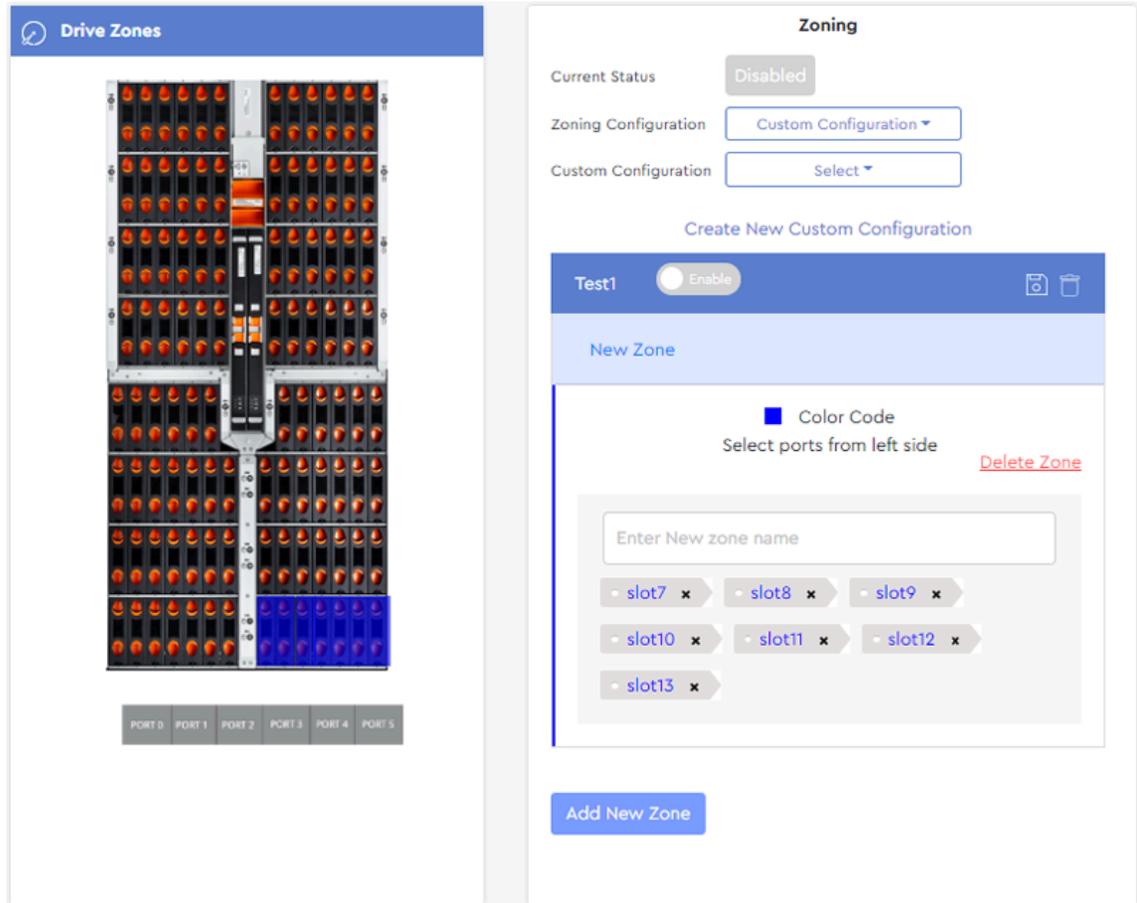
Test1  Enable  

New Zone

Color Code  
Select ports from left side [Delete Zone](#)

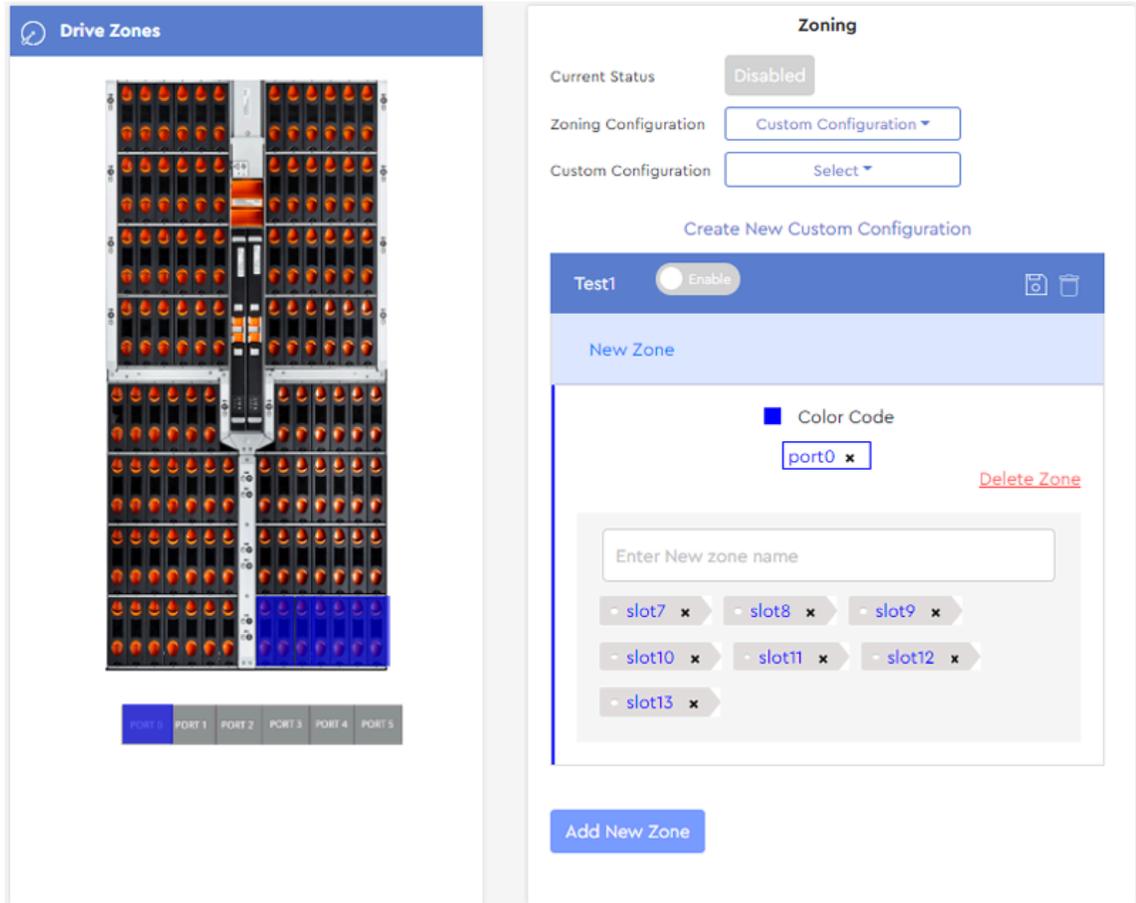
Select slots from left side

**Step 6:** From the **Drive Zones** section on the left, click the drive slots to be included in this zone. The slots will be colored to match the pre-selected color for the zone:

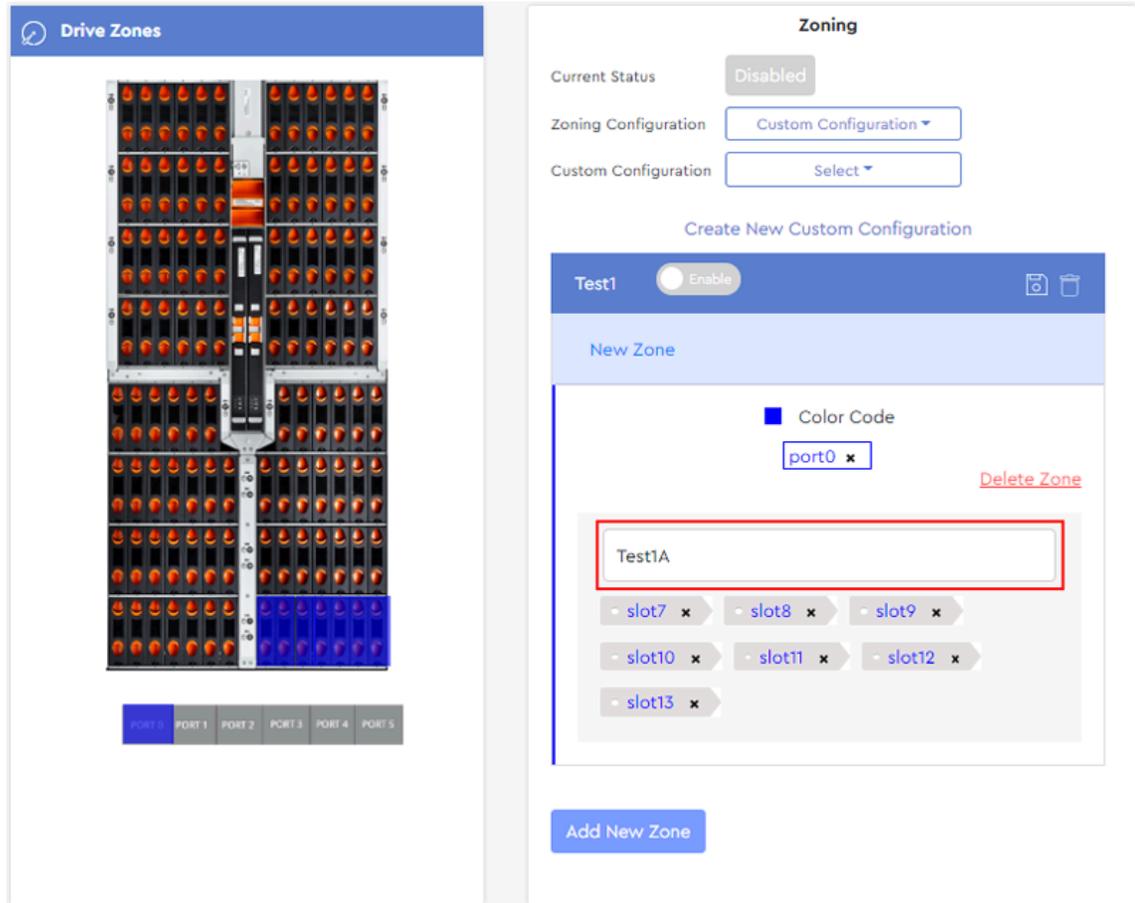
**Figure 87:** Color-Coded Drive Slots

**Step 7:** At the bottom of the **Drive Zones** section, click a port to assign it to this zone. The port will be color-coded to match the drive slots:

**Figure 88:** Color-Coded Port



**Step 8:** Type a name for this new zone into the text field labeled **Enter New zone name:**

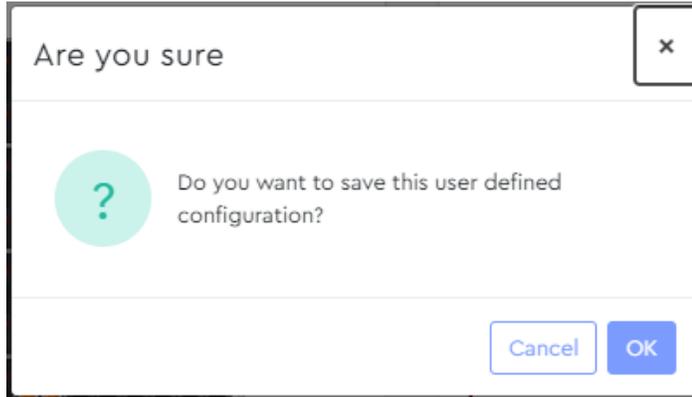
**Figure 89:** Zone Name

**Step 9:** If needed, repeat these instructions beginning at step 5 (*page 62*) to create additional zones with associated drive slots and ports.

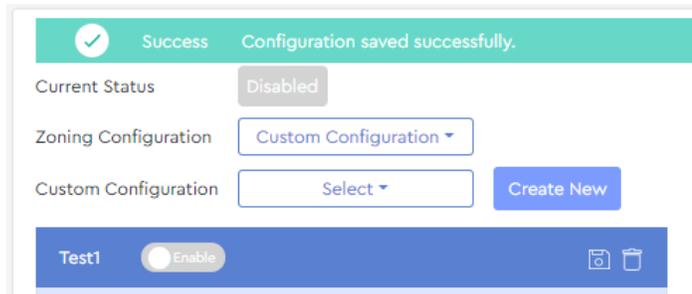
**Step 10:** When all zones for the new configuration have been created, save the configuration by clicking the **Save** icon in the configuration header:

**Figure 90:** Save Icon

A dialogue box will appear, prompting the user to confirm saving the configuration:

**Figure 91:** Save Configuration Dialogue Box

- Step 11:** Click the **OK** button to save the configuration.  
A success notification will appear at the top of the page:

**Figure 92:** Success Message

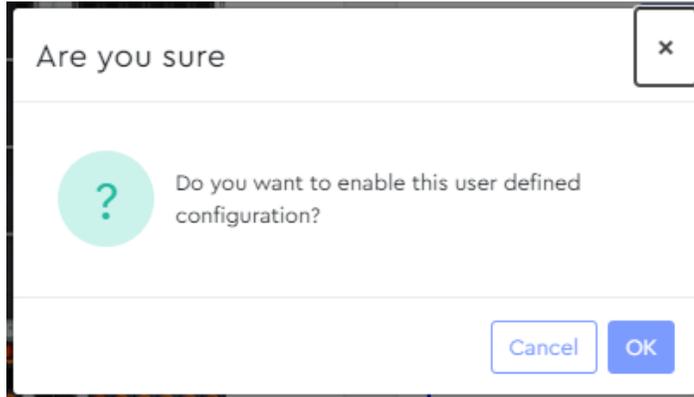
**Note:** The new configuration will now be a selectable option from the **Custom Configuration** drop-down list.

### Enabling the Custom Zoning Configuration

- Step 12:** To enable the newly-created zoning configuration, click the toggle switch next to the configuration name:

**Figure 93:** Configuration Toggle Switch

A dialogue box will appear, prompting the user to confirm enabling the configuration:

**Figure 94:** Enable Configuration Dialogue Box

**Step 13:** Click the **OK** button to enable the zoning configuration.

**Result:** The custom zoning configuration is now created and enabled.

### 3.4.2.3 Selecting a Custom Zoning Configuration

This procedure provides instructions for selecting and enabling a **previously-created** custom zoning configuration using the Resource Manager Standard Edition application. To create a new custom zoning configuration, see [Creating a Custom Zoning Configuration](#) (page 60).

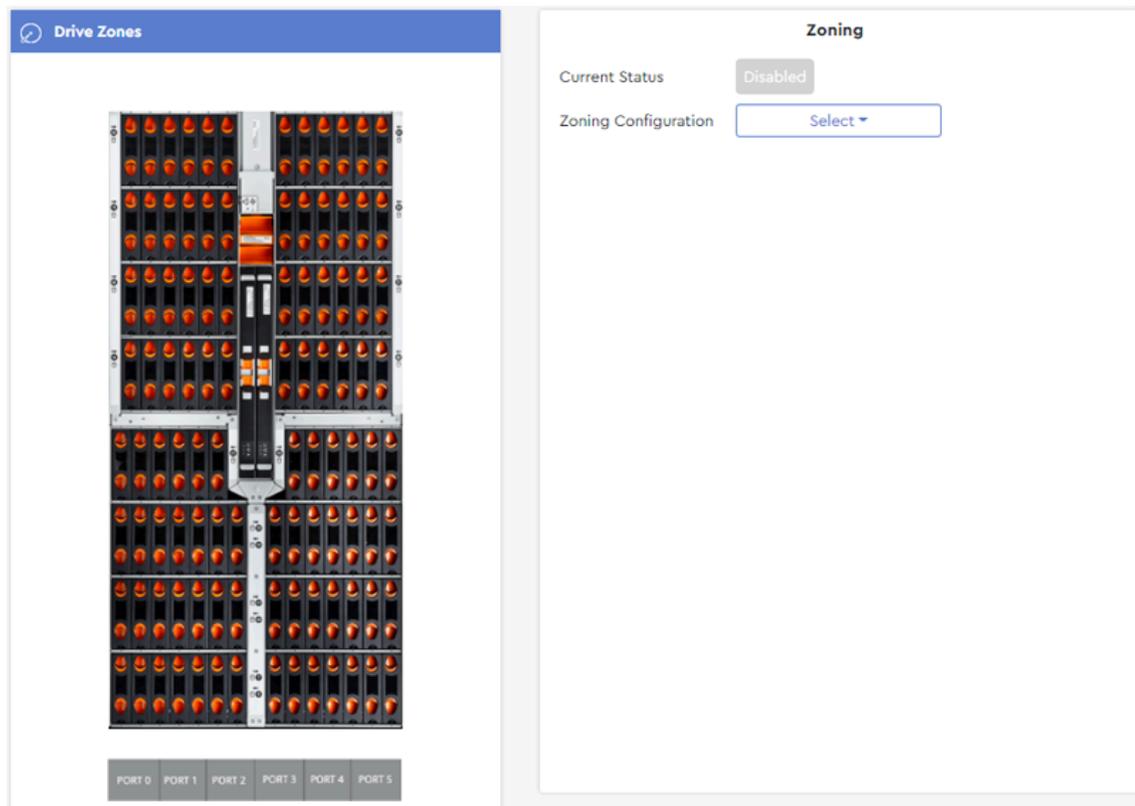
#### Before you begin:

1. Follow the instructions in [Accessing Resource Manager Standard Edition](#) (page 32) to log into the Resource Manager Standard Edition application.
2. Follow the instructions in [Creating a Custom Zoning Configuration](#) (page 60).

**Step 1:** From the navigation bar, select **Devices > Zoning**.

The zoning page will be displayed:

**Figure 95:** Zoning Page

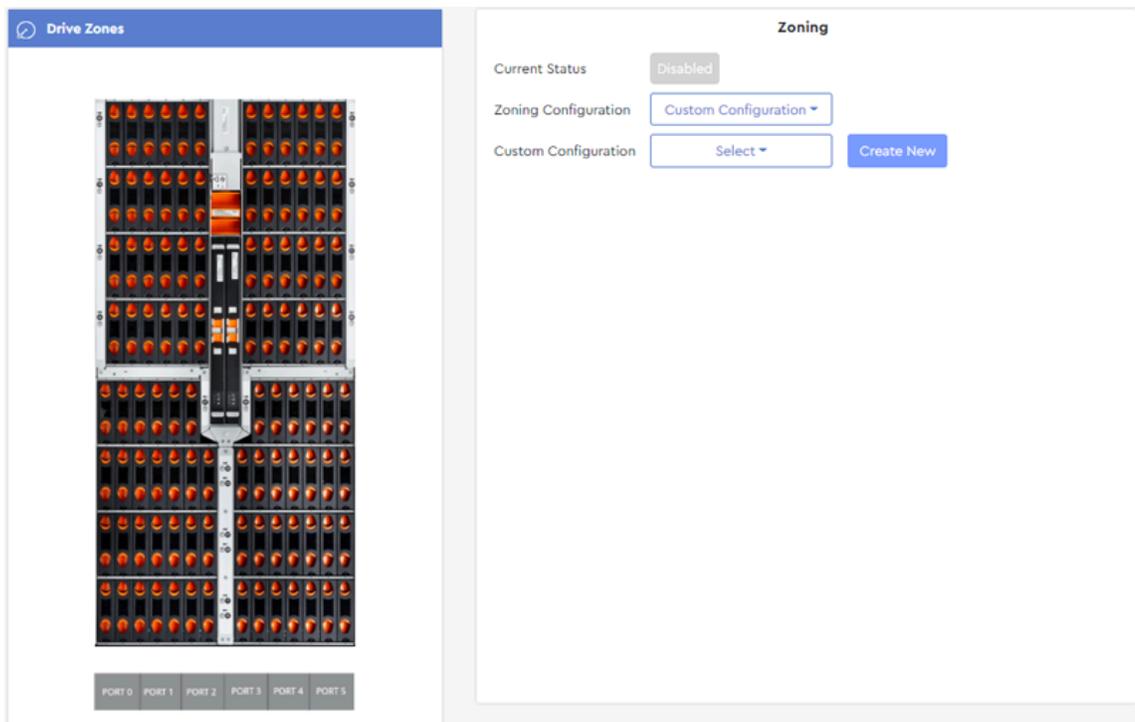


**Note:** The enclosure image on the zoning page will depend on your platform model. This example shows the Ultrastar Data102.

**Step 2:** From the **Zoning Configuration** drop-down list, select **Custom Configuration**:

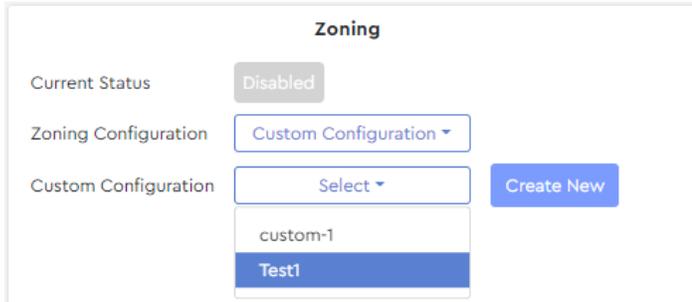
**Figure 96:** Zoning Configuration Drop-Down List

A **Custom Configuration** section will appear:

**Figure 97:** Custom Configuration Section

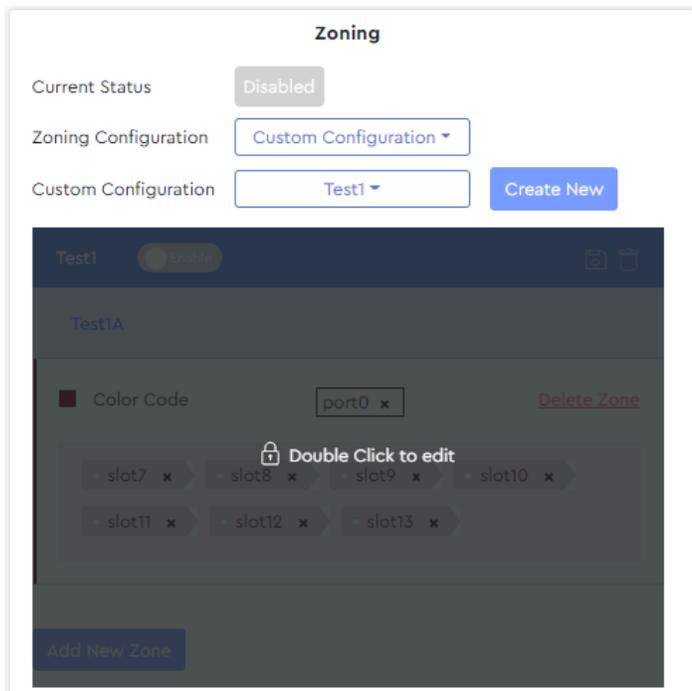
**Step 3:** From the **Custom Configuration** drop-down list, select the previously-created custom configuration:

**Figure 98:** Custom Configuration Drop-Down List

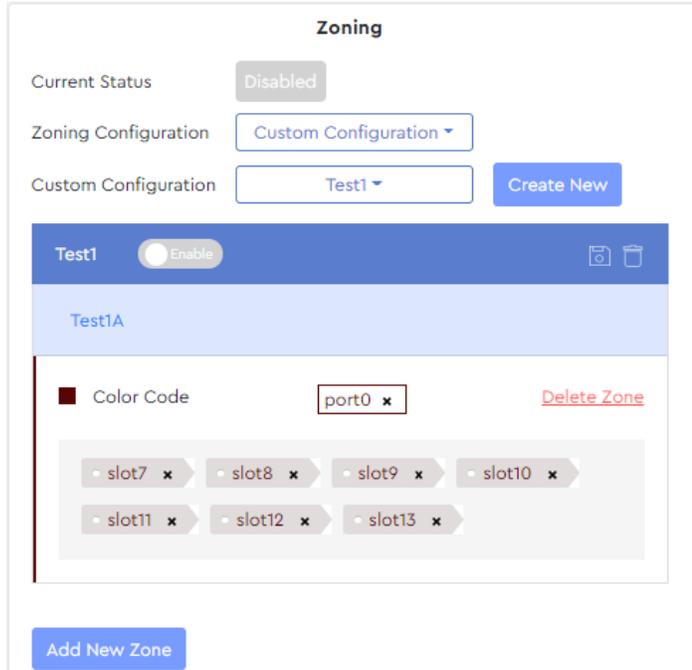


The custom configuration will appear in a new section, locked for editing:

**Figure 99:** Custom Configuration, Locked



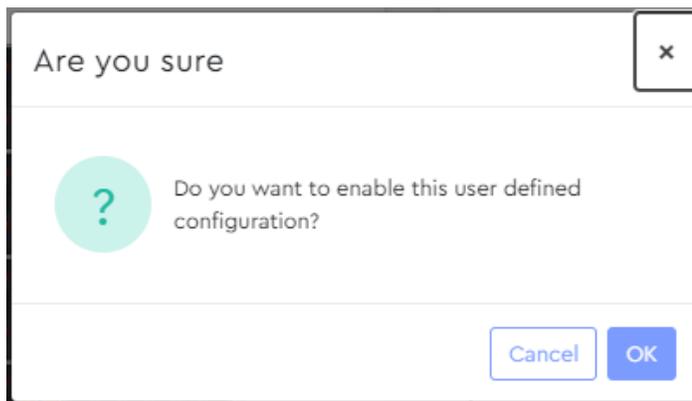
**Step 4:** Double-click the configuration to unlock it:

**Figure 100:** Custom Configuration, Unlocked

**Step 5:** Click the toggle switch next to the configuration name to enable the configuration:

**Figure 101:** Configuration Toggle Switch

A dialogue box will appear, prompting the user to confirm the configuration:

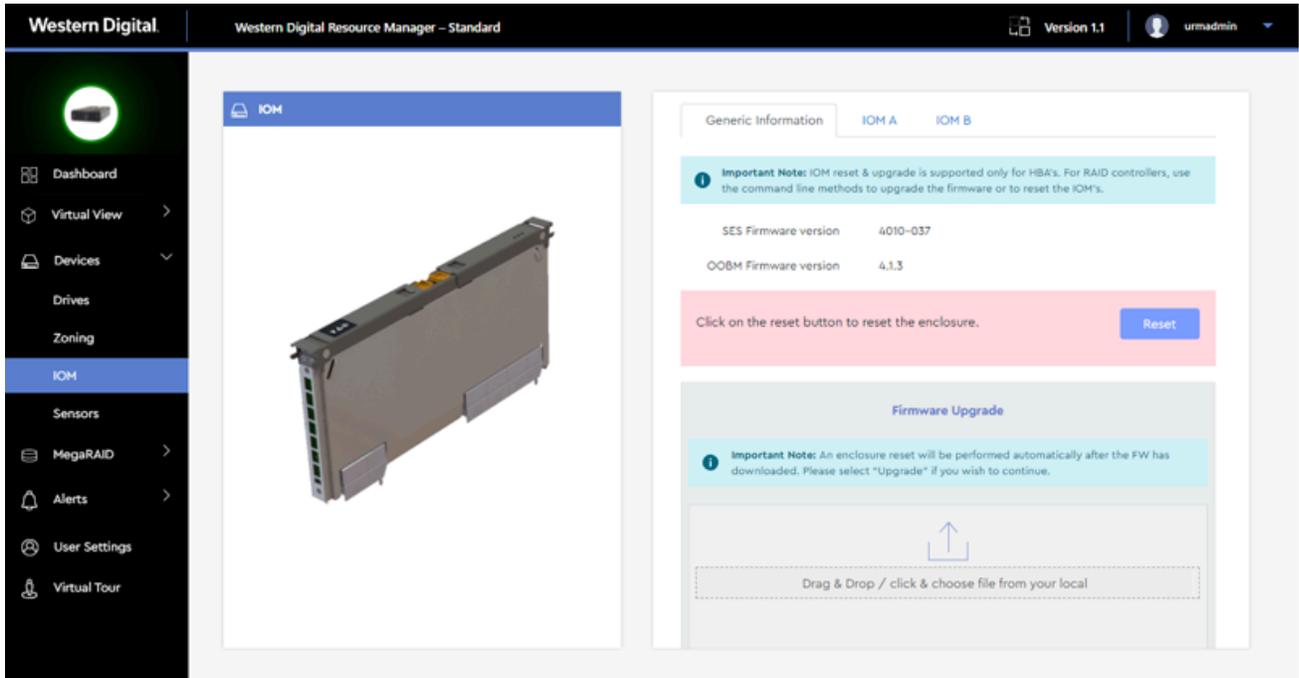
**Figure 102:** Enable Configuration Dialogue Box

**Step 6:** Click the **OK** button to enable the configuration.

**Result:** The selected zoning configuration is now enabled.

### 3.4.3 IOM

The **IOM** page provides controls for upgrading firmware, resetting the enclosure and/or IOMs, setting the enclosure nickname, and configuring OOBM settings.



### 3.4.3.1 Upgrading Enclosure Firmware

This procedure provides instructions for upgrading enclosure firmware using the Resource Manager Standard Edition application.

#### Before you begin:

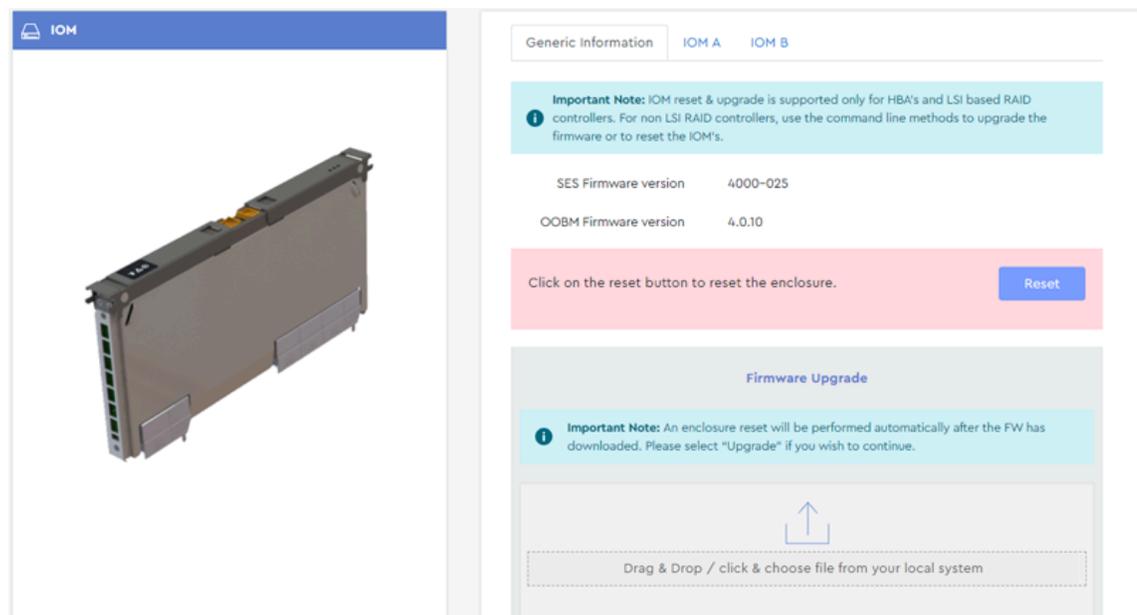
1. Follow the instructions in your platform's *User Guide* to download new firmware from the support portal and unzip/extract the files to the host server.
2. Follow the instructions in [Accessing Resource Manager Standard Edition \(page 32\)](#) to log into the Resource Manager Standard Edition application.

**i** **Important:** IOM reset & upgrade is supported only for HBAs and LSI-based RAID controllers. For non LSI RAID controllers, use command line methods to upgrade the firmware or to reset the IOM's.

**Step 1:** From the navigation bar, select **Devices > IOM**.

The **IOM** page will be displayed:

**Figure 104:** IOM Page

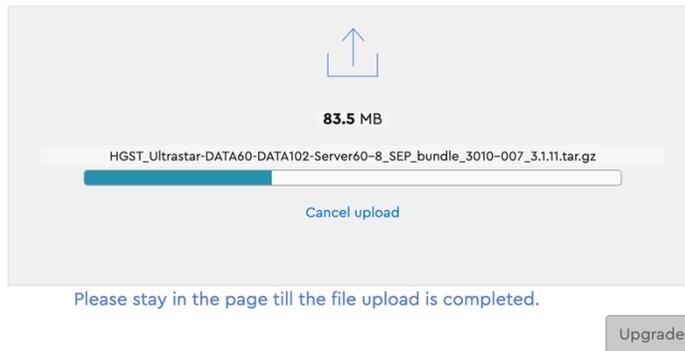


**Step 2:** On the **Generic Information** tab, take note of the current **OOBM Firmware version** and **SES Firmware version**. These will be used to verify a successful firmware upgrade at the end of this procedure.

**Step 3:** Drag and drop the previously unzipped/extracted firmware file onto the **Drag & Drop** area.

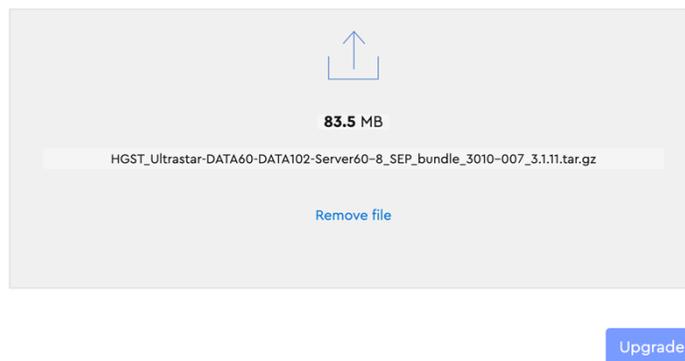
- a. Alternately, click **Drag & Drop**. This will open your operating system's file explorer. Then navigate to the appropriate directory on the host and select the previously unzipped/extracted firmware file.

An upload status will be displayed, showing the upload progress:

**Figure 105:** Firmware Upload

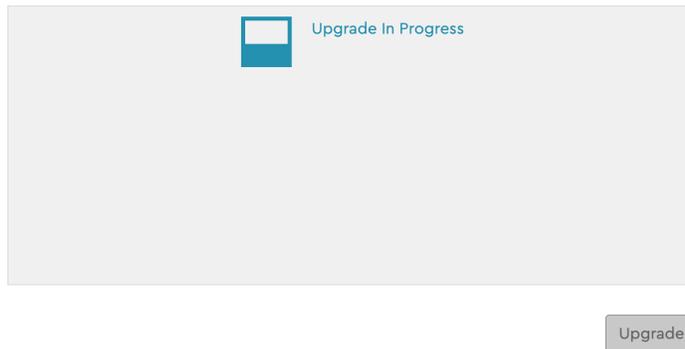
**Caution:** An enclosure reset will be performed automatically after this step!

**Step 4:** When the firmware file is done uploading, click the **Upgrade** button.

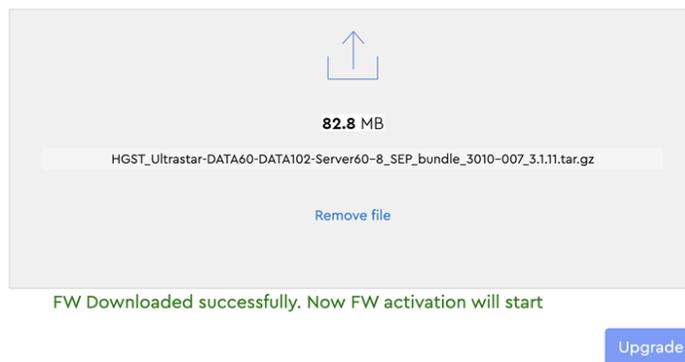
**Figure 106:** Firmware Upgrade

**Important:** Due to the firmware image being a .tar.gz file, the enclosure has to unpack and load the firmware onto the respective ICs, which may take up to 15 minutes. Once the **Upgrade** button has been clicked, wait 20 minutes to ensure the enclosure has time to perform this process.

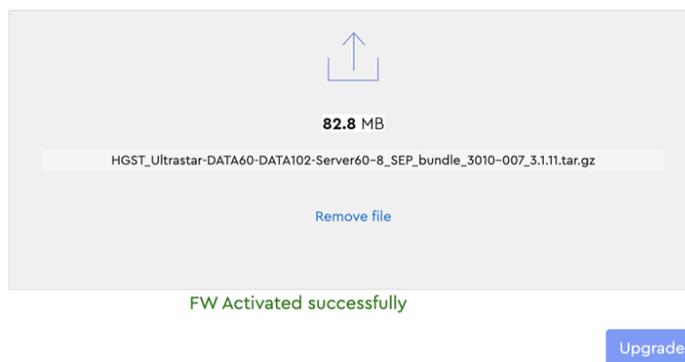
The user is notified that a firmware upgrade is in progress:

**Figure 107:** Upgrade in Progress

When the upgrade is complete, the user is notified that the firmware will be activated:

**Figure 108:** Upgrade Complete, FW Activation Starting

When the activation is complete, the user is notified that the activation was successful:

**Figure 109:** Activation Complete

**Step 5:** On the **Generic Information** tab, compare the upgraded **OOBM Firmware version** and **SES Firmware Version** to the versions noted prior to the upgrade, and verify that the upgrade was successful.

**Result:** The enclosure firmware is now upgraded.

### 3.4.3.2 Resetting the Enclosure

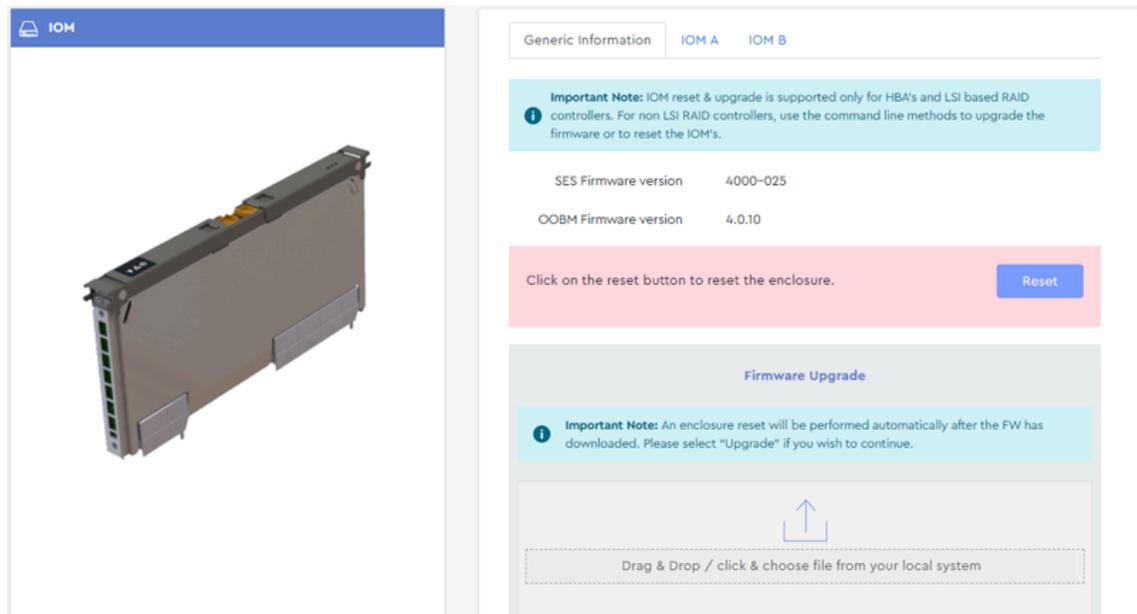
This procedure provides instructions for resetting the enclosure using the Resource Manager Standard Edition application.

**Before you begin:** Follow the instructions in [Accessing Resource Manager Standard Edition](#) (page 32) to log into the Resource Manager Standard Edition application.

**Step 1:** From the navigation bar, select **Devices > IOM**.

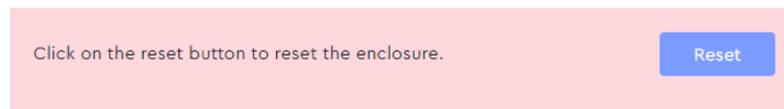
The **IOM** page will be displayed:

**Figure 110:** IOM Page

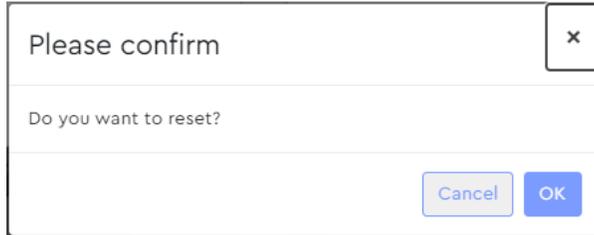


**Step 2:** On the **Generic Information** tab, click the **Reset** button to reset the enclosure:

**Figure 111:** Reset Button

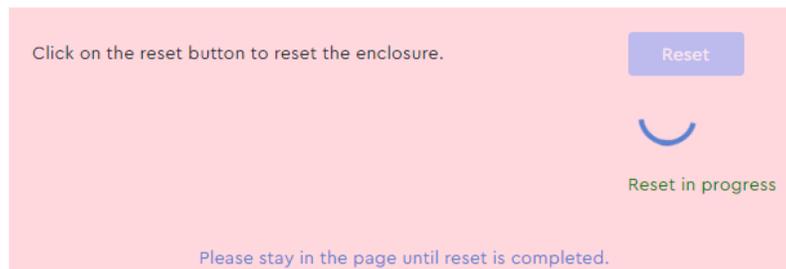


A dialogue box will appear, prompting the user to confirm the reset:

**Figure 112:** Confirm Reset Dialogue Box

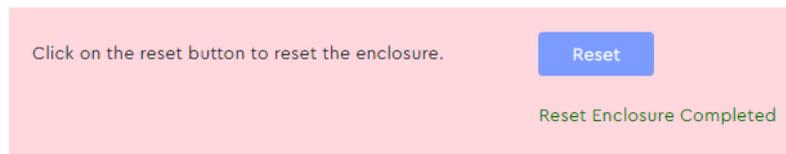
**Step 3:** Click the **OK** button.

The user will be notified that an enclosure reset is in-progress:

**Figure 113:** Reset in Progress

**Note:** Do not navigate away from this page until the enclosure reset is completed.

The user will be notified when the enclosure reset is completed:

**Figure 114:** Reset Completed

**Result:** The enclosure has now been reset.

### 3.4.3.3 Resetting the IOM(s)

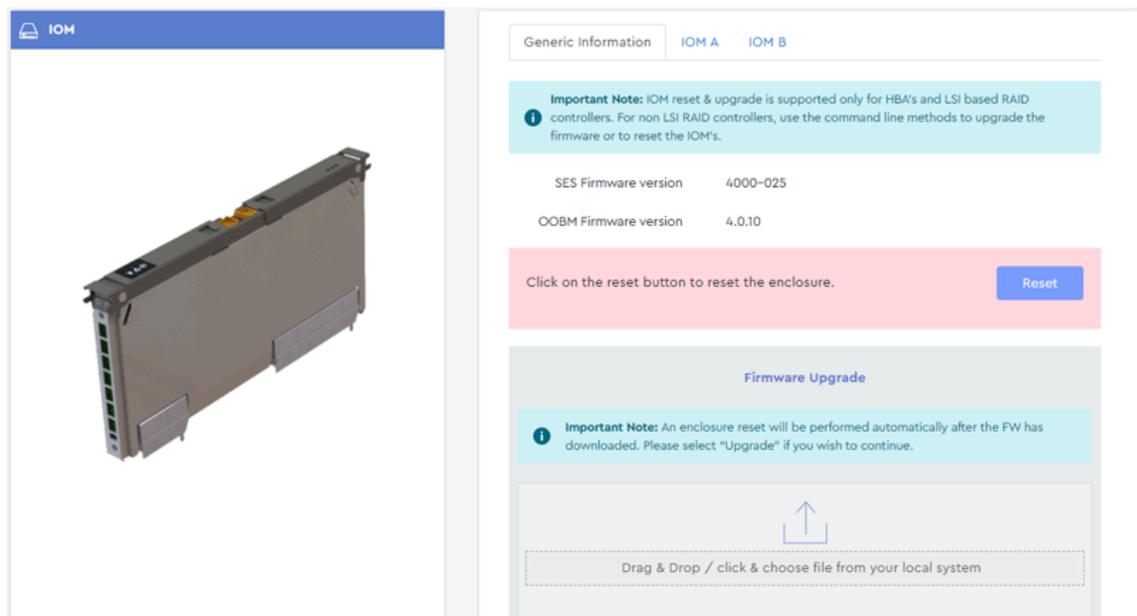
This procedure provides instructions for resetting the IOM(s) using the Resource Manager Standard Edition application.

**Before you begin:** Follow the instructions in [Accessing Resource Manager Standard Edition](#) (page 32) to log into the Resource Manager Standard Edition application.

**Step 1:** From the navigation bar, select **Devices > IOM**.

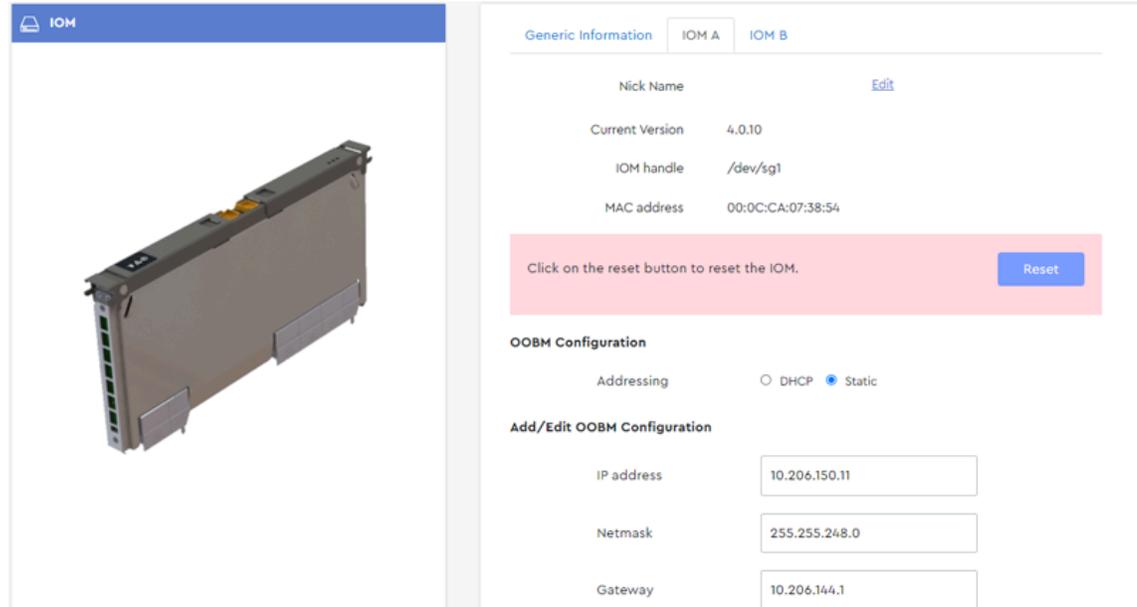
The **IOM** page will be displayed:

**Figure 115:** IOM Page

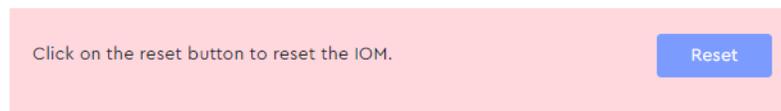


**Step 2:** Click the **IOM A** or **IOM B** tab.

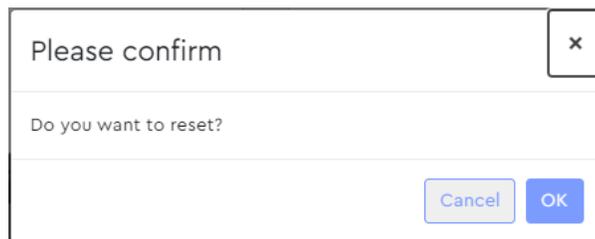
The page for that IOM will be displayed:

**Figure 116:** IOM A

**Step 3:** Click the **Reset** button to reset the IOM.

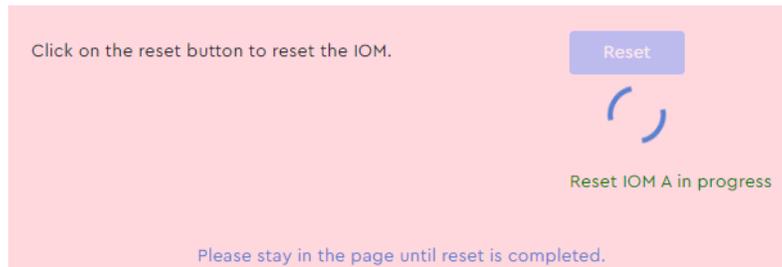
**Figure 117:** Reset IOM

A dialogue box will appear, prompting the user to confirm the reset:

**Figure 118:** Confirm Reset Dialogue Box

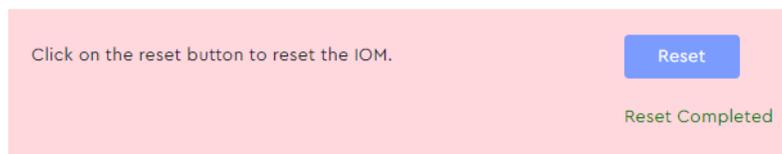
**Step 4:** Click the **OK** button.

The user will be notified that an IOM reset is in-progress:

**Figure 119:** Reset in Progress

**Note:** Do not navigate away from this page until the IOM reset is completed.

When the IOM reset is completed, the user will be notified:

**Figure 120:** Reset Completed

**Result:** The IOM(s) have now been reset.

### 3.4.3.4 Setting the Enclosure Nickname

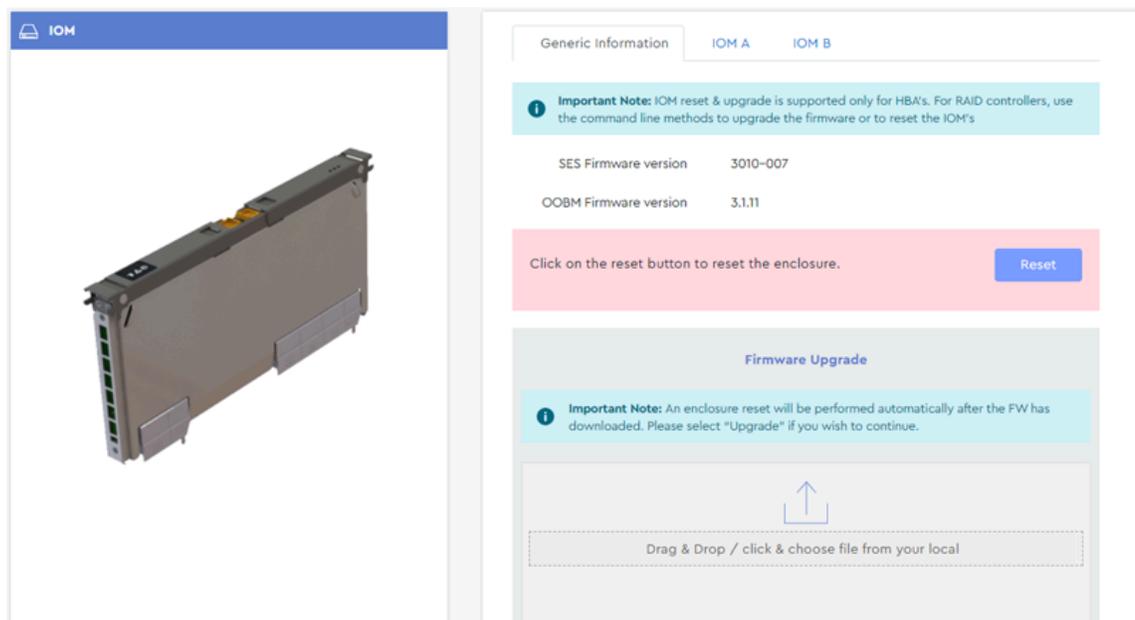
This procedure provides instructions for setting the enclosure nickname using the Resource Manager Standard Edition application.

**Before you begin:** Follow the instructions in [Accessing Resource Manager Standard Edition \(page 32\)](#) to log into the Resource Manager Standard Edition application.

**Step 1:** From the navigation bar, select **Devices > IOM**.

The IOM page will be displayed:

**Figure 121:** IOM Page



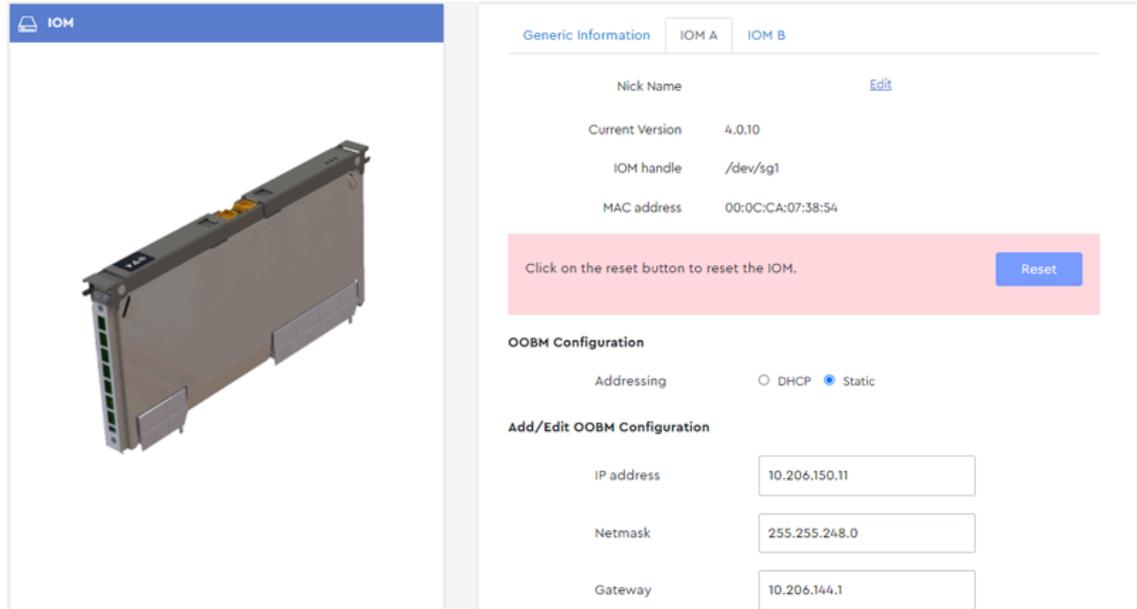
**Step 2:** Click the **IOM A** or **IOM B** tab.



**Note:** The enclosure nickname is accessible from either IOM.

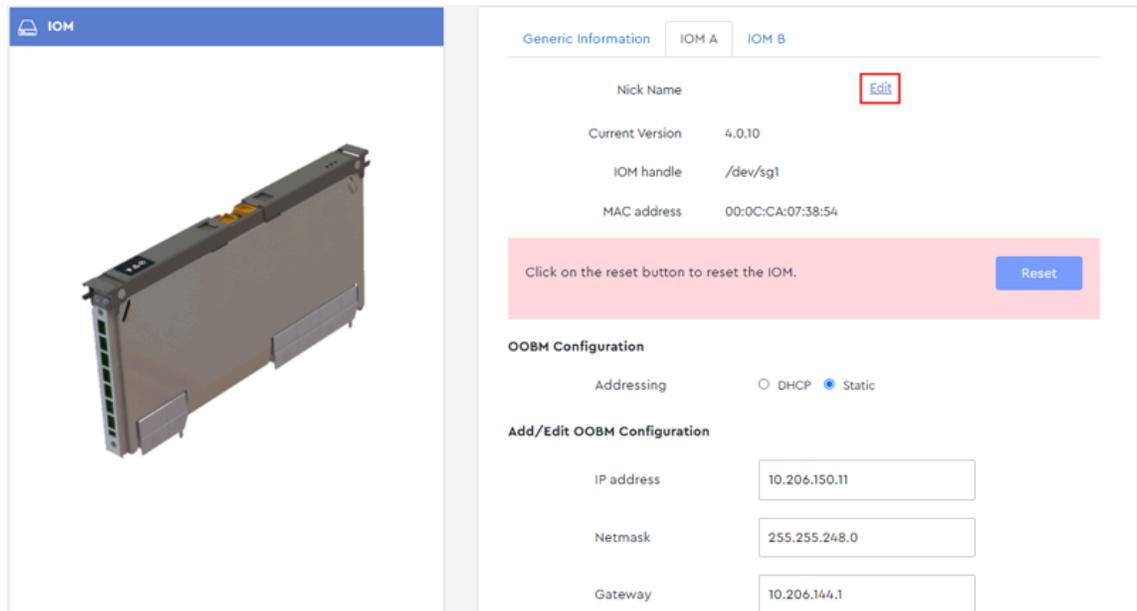
The page for that IOM will be displayed:

Figure 122: IOM A



Step 3: Click **Edit** next to the **Nick Name** field:

Figure 123: Edit Nickname



This turns the enclosure nickname into an editable field:

**Figure 124:** Nickname FieldA screenshot of a web form titled "Nickname Field". It features a label "Nick Name" on the left, followed by an empty text input field. To the right of the input field are two blue links: "Save" and "Cancel".

**Step 4:** Enter the desired name for the enclosure into the **Nick Name** field. Then click **Save**.  
When the nickname has been saved, the user will be notified:

**Figure 125:** Nickname SetA screenshot of a confirmation message. It shows the label "Nick Name" followed by the text "Test10". To the right of "Test10" is a blue link labeled "Edit". Further to the right is a green message that says "Nickname set success".

**Result:** The enclosure nickname has now been set.

### 3.4.3.5 Configuring OOBM Settings

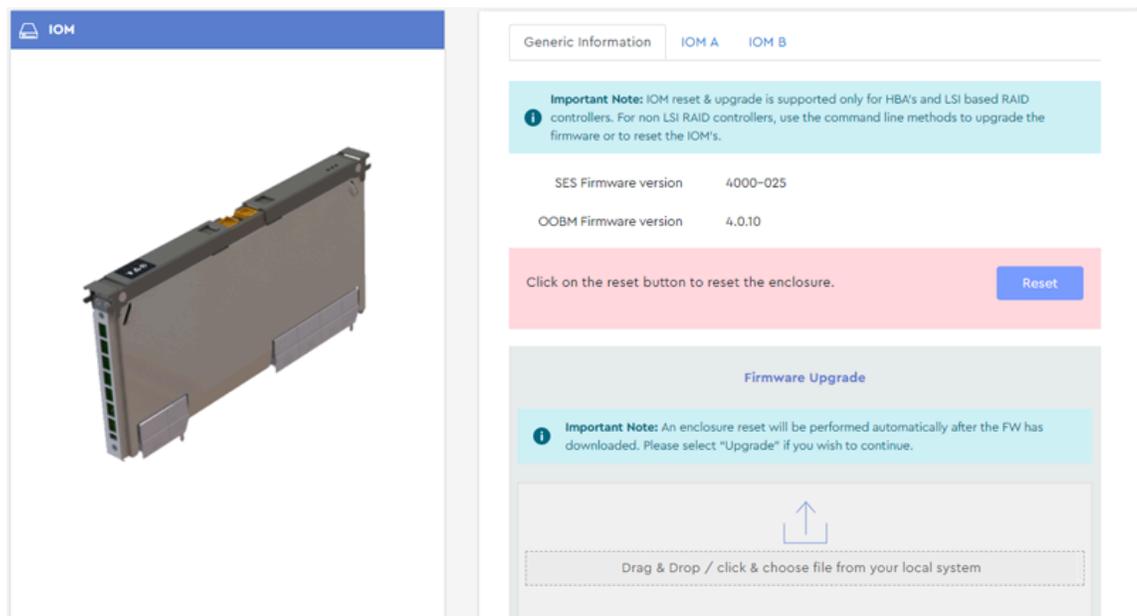
This procedure provides instructions for configuring the Out-of-Band Management settings using the Resource Manager Standard Edition application.

**Before you begin:** Follow the instructions in [Accessing Resource Manager Standard Edition](#) (page 32) to log into the Resource Manager Standard Edition application.

**Step 1:** From the navigation bar, select **Devices > IOM**.

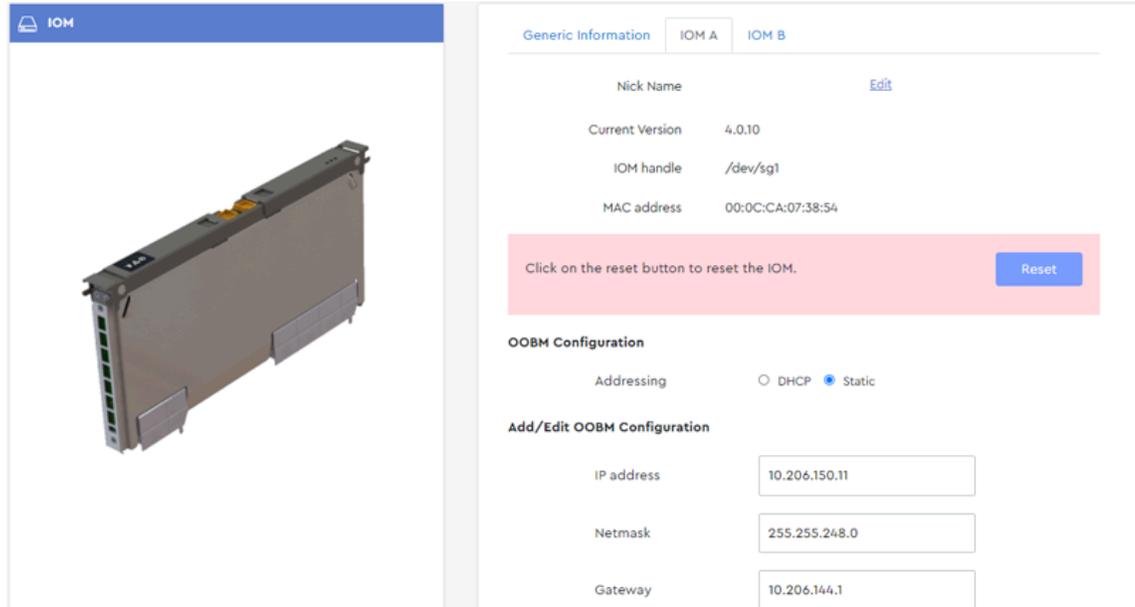
The IOM page will be displayed:

**Figure 126:** IOM Page



**Step 2:** Click the **IOM A** or **IOM B** tab.

The page for that IOM will be displayed:

**Figure 127:** IOM A


**IOM**

Generic Information | IOM A | IOM B

Nick Name [Edit](#)

Current Version 4.0.10

IOM handle /dev/sg1

MAC address 00:0C:CA:07:38:54

Click on the reset button to reset the IOM. [Reset](#)

**OOBM Configuration**

Addressing  DHCP  Static

**Add/Edit OOBM Configuration**

IP address

Netmask

Gateway

**Step 3:** In the **OOBM Configuration** section, select the radio button for either **DHCP** or **Static**.

**Step 4:** If you selected **Static**, enter the desired IP address, netmask, and gateway into the **IP address**, **Netmask**, and **Gateway** fields in the **Add/Edit OOBM Configuration** section.

**Step 5:** Click the **Save** button.

The user will be notified when the OOBM configuration details have been updated:

**Figure 128:** OOBM Configuration Set

**Result:** The OOBM configuration details have now been set.

### 3.4.4 Sensors

The **Sensors** page provides health status, readings, and limits for all non-discrete sensors in the enclosure.

The screenshot shows the Western Digital Resource Manager interface. The top navigation bar includes the Western Digital logo, the product name 'Western Digital Resource Manager - Standard', the version 'Version 1.1', and the user 'urmadmin'. The left sidebar contains navigation options: Dashboard, Virtual View, Devices, Drives, Zoning, IOM, Sensors (highlighted), MegaRAID, Alerts, User Settings, and Virtual Tour. The main content area is titled 'Sensors' and features a filter menu with 'Fan' selected, along with icons for Thermal, Voltage, Current, and Discrete sensors. Below the filter is a table with the following data:

#	Status	Sensor ID	Sensor Type	Reading (RPM)	Lower NonCritical	Upper NonCritical	Lower Critical	Upper Critical
1	✓	FAN ENCL 1	Cooling	3020.00	N/A	N/A	N/A	N/A
2	✓	FAN ENCL 2	Cooling	2960.00	N/A	N/A	N/A	N/A
3	✓	FAN ENCL 3	Cooling	3020.00	N/A	N/A	N/A	N/A
4	✓	FAN ENCL 4	Cooling	2930.00	N/A	N/A	N/A	N/A
5	✓	FAN IOM 1	Cooling	19650.00	N/A	N/A	N/A	N/A
6	✓	FAN IOM 2	Cooling	17050.00	N/A	N/A	N/A	N/A
7	✓	FAN PSU A	Cooling	20470.00	N/A	N/A	N/A	N/A
8	✓	FAN PSU B	Cooling	20470.00	N/A	N/A	N/A	N/A

### 3.4.4.1 Checking Sensors

This procedure provides instructions for checking enclosure sensors using the **Sensors** page of the Resource Manager Standard Edition application. To check sensors using the internal, front, and rear virtual views, see *Virtual View (page 47)*.

**Before you begin:** Follow the instructions in *Accessing Resource Manager Standard Edition (page 32)* to log into the Resource Manager Standard Edition application.

**Step 1:** From the navigation bar, select **Devices > Sensors**.

The **Sensors** page will be displayed:

**Figure 130:** Sensors Page

#	Status	Sensor ID	Sensor Type	Reading (RPM)	Lower NonCritical	Upper NonCritical	Lower Critical	Upper Critical
1	✓	FAN ENCL 1	Cooling	3020.00	N/A	N/A	N/A	N/A
2	✓	FAN ENCL 2	Cooling	2960.00	N/A	N/A	N/A	N/A
3	✓	FAN ENCL 3	Cooling	3020.00	N/A	N/A	N/A	N/A
4	✓	FAN ENCL 4	Cooling	2950.00	N/A	N/A	N/A	N/A
5	✓	FAN IOM 1	Cooling	19650.00	N/A	N/A	N/A	N/A
6	✓	FAN IOM 2	Cooling	17050.00	N/A	N/A	N/A	N/A
7	✓	FAN PSU A	Cooling	20470.00	N/A	N/A	N/A	N/A
8	✓	FAN PSU B	Cooling	20470.00	N/A	N/A	N/A	N/A

Enclosure sensor information is organized into the following tabs by sensor type:

- **Fan** – cooling sensors for enclosure fans, IOM fans, and PSU fans
- **Thermal** – temperature sensors for drive slots, IOMs, baseboard(s), primary and secondary expanders, and PSUs
- **Voltage** – voltage sensors for PSUs and IOMs
- **Current** – current sensors for PSUs and IOMs
- **Discrete** – discrete power supply sensors for PSUs and enclosure cover (door)

**Step 2:** Click the tab for the desired sensor type. The following image shows the **Voltage** tab.

#	Status	Sensor ID	Sensor Type	Reading (Volt)	Lower NonCritical	Upper NonCritical	Lower Critical	Upper Critical
1	✓	VOLT PSU A AC	Voltage sensor	228.00	13.5 %	13.5 % (above nominal voltage)	16.5 % (below nominal voltage)	16.5 %
2	✓	VOLT PSU A 12V	Voltage sensor	12.19	7.5 %	5.0 % (above nominal voltage)	10.0 % (below nominal voltage)	10.0 %
3	✓	VOLT PSU B AC	Voltage sensor	227.00	13.5 %	13.5 % (above nominal voltage)	16.5 % (below nominal voltage)	16.5 %
4	✓	VOLT PSU B 12V	Voltage sensor	12.21	7.5 %	5.0 % (above nominal voltage)	10.0 % (below nominal voltage)	10.0 %
5	✓	VOLT IOM A 5V	Voltage sensor	5.07	7.5 %	5.0 % (above nominal voltage)	10.0 % (below nominal voltage)	10.0 %
6	✓	VOLT IOM A 12V	Voltage sensor	12.00	7.5 %	5.0 % (above nominal voltage)	10.0 % (below nominal voltage)	10.0 %
7	✓	VOLT IOM B 5V	Voltage sensor	5.07	7.5 %	5.0 % (above nominal voltage)	10.0 % (below nominal voltage)	10.0 %
8	✓	VOLT IOM B 12V	Voltage sensor	12.00	7.5 %	5.0 % (above nominal voltage)	10.0 % (below nominal voltage)	10.0 %

**Step 3:** Review the information for the desired sensor(s). Each listing contains the sensor's current reading, upper and lower non-critical limits, upper and lower critical limits, and a status based on the current reading in comparison to the limits.

**Step 4:** Repeat these steps as needed to check other sensors.

**Result:** Checking enclosure sensors using the **Sensors** page is now complete.

## 3.5 MegaRAID

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The **MegaRAID** section provides information about all MegaRAID controllers detected in the host, and management controls for drive identification LEDs, grouping drives, assigning RAID levels, and allocating capacity to logical drives.



**Note:** The **MegaRAID** section will only be visible (accessible) in the navigation bar if Resource Manager Standard Edition detects a MegaRAID controller installed in the host.

### 3.5.1 Controller

The **Controller** page displays information for the selected MegaRAID controller, as well as controls for switching between JBOD & RAID modes, enabling the controller alarm, resetting firmware, upgrading firmware, and enabling/disabling SES monitoring.

The screenshot shows the Western Digital Resource Manager interface for the MegaRAID Controller. The top navigation bar includes the Western Digital logo, the product name 'Western Digital Resource Manager - Standard', the JBOD ID 'THCCT02721EA0062', the version 'Version 1.1', and the user 'uradmin'. The left sidebar contains navigation options: Dashboard, Virtual View, Devices, MegaRAID (expanded to show Controller, RAID Configuration, Logical Drives, Physical Drives, Alerts, User Settings, and Virtual Tour). The main content area is titled 'MegaRAID Controller' and features a 'Mode' selector (JBOD/RAID) and a 'Controller ID' dropdown (AVAGO MegaRAID SAS 9480-8i8e). A 'Capacity' section shows 'used 0 TB' and 'Total 472.949 TB' with a progress bar for 'Free Space'. Below are three columns: 'Controller Settings' (Health: OK, Controller ID: 2, Current Mode: RAID, FW Package Ver: 51.19.0-4170, Alarm: ON, SES Monitoring: OFF), 'Controller Information' (Serial No: SP72522295, Vendor ID: 0x1000, Flash Size: 16 MB, Sub Vendor ID: 0x1000, Device ID: 0x14, Driver Version: 07.715.02.00, Host Interface: PCIE), and 'Advanced Properties' (NVRAM Present: Yes, NVRAM Size: 128 KB, BIOS Version: 7.19.00.0\_0x07130200, Cache Vault: N/A). A 'Firmware Reset' section has a 'Reset' button. A 'Firmware Upgrade' section shows 'FW Package Ver: 51.19.0-4170' and an 'Important Note' that a controller reset will occur after the update. A file upload area includes '+ Choose', 'Upload', and 'Cancel' buttons, with instructions to drag and drop or click '+ choose' to upload a file.



**Note:** Under the **Advanced Properties** section, *N/A* next to **Cache Vault** indicates that the cache vault is not connected.



**Caution:** Switching between RAID/JBOD modes requires a host reboot and may result in data loss. Please clear all existing configurations before switching modes.

### 3.5.1.1 Upgrading MegaRAID Controller Firmware

This procedure provides instructions for upgrading MegaRAID controller firmware using the Resource Manager Standard Edition application.

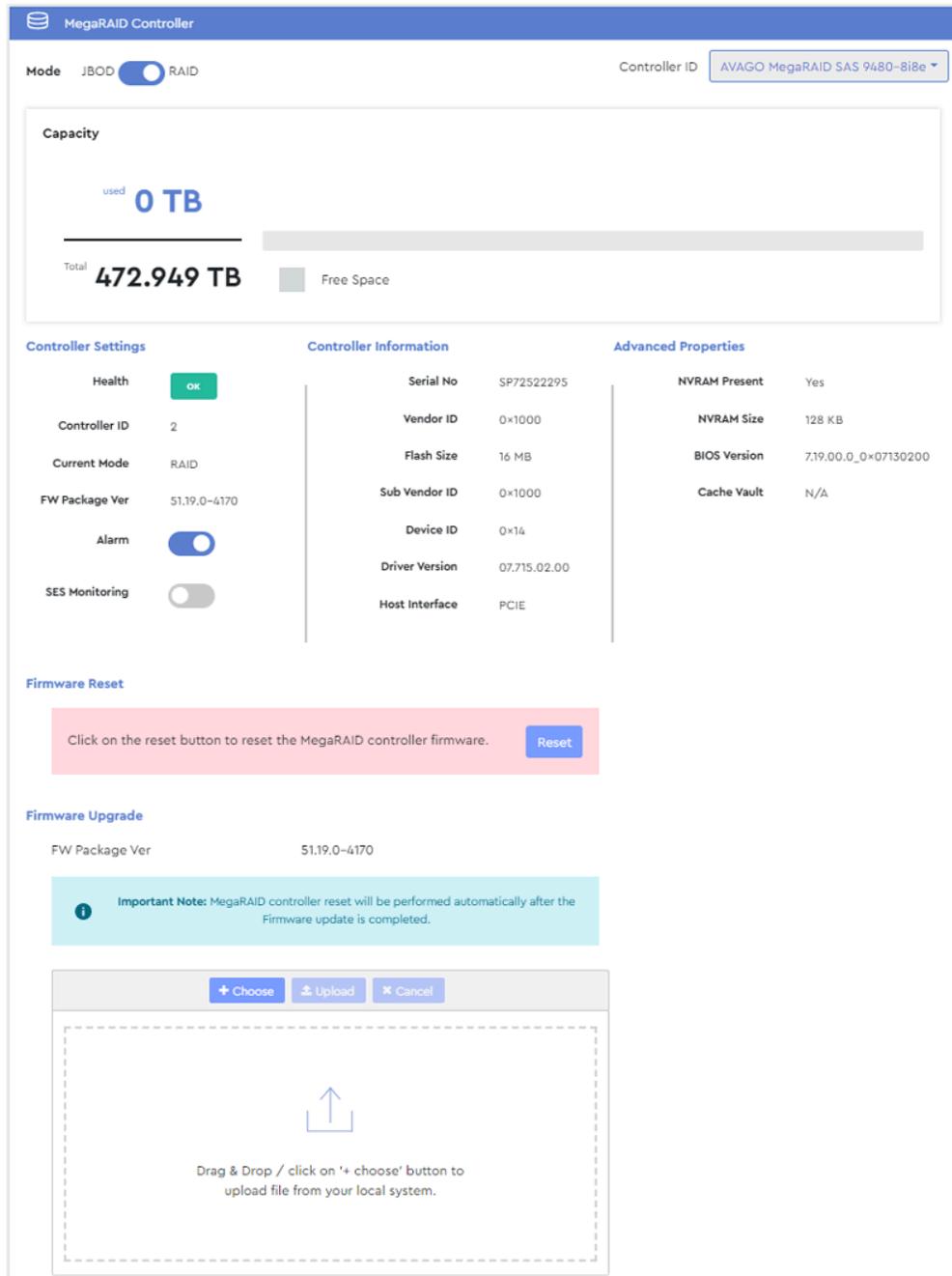
**Before you begin:**

1. Follow the controller manufacturer's instructions to download new MegaRAID firmware and unzip/extract the files to the host server.
2. Follow the instructions in [Accessing Resource Manager Standard Edition \(page 32\)](#) to log into the Resource Manager Standard Edition application.

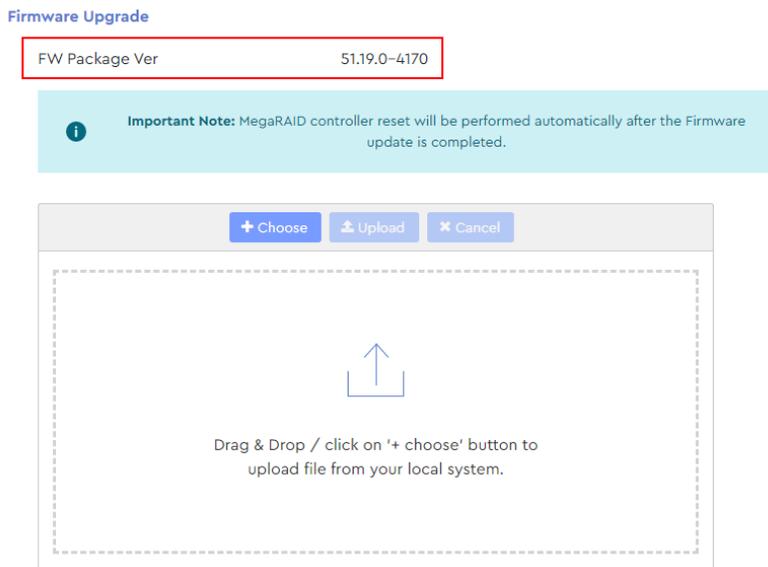
**Step 1:** From the navigation bar, select **Devices > MegaRAID > Controller**.

The **MegaRAID Controller** page will be displayed:

**Figure 133:** MegaRAID Controller Page



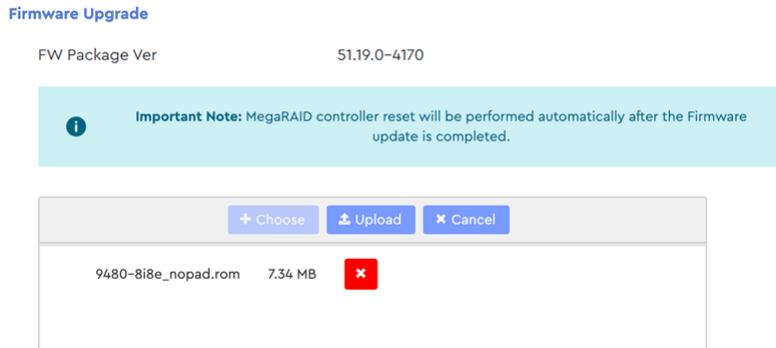
**Step 2:** In the **Firmware Upgrade** section, take note of the **FW Package Ver**. It will be used to verify a successful firmware upgrade at the end of this procedure.

**Figure 134:** Firmware Package Version

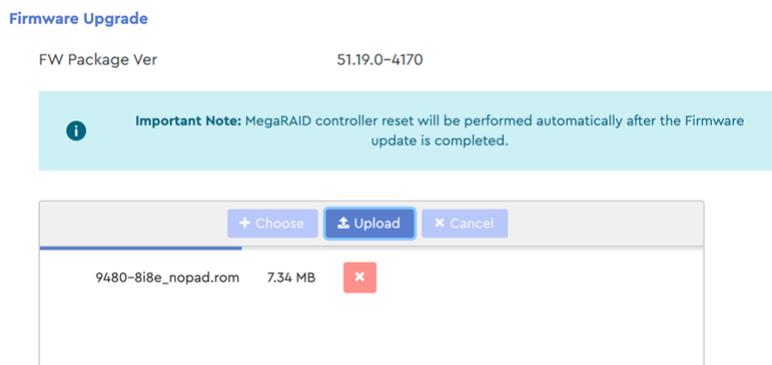
- Step 3:** Drag and drop the previously unzipped/extracted firmware file onto the **Drag & Drop** area.
- Alternately, click the **Choose** button. This will open the operating system's file explorer and allow you to navigate to the appropriate directory and select the previously unzipped/extracted firmware file.

**Figure 135:** Choose Button

The firmware filename will appear in the upload area:

**Figure 136:** Firmware Filename

- Step 4:** Click the **Upload** button.  
A progress bar will appear in the upload area:

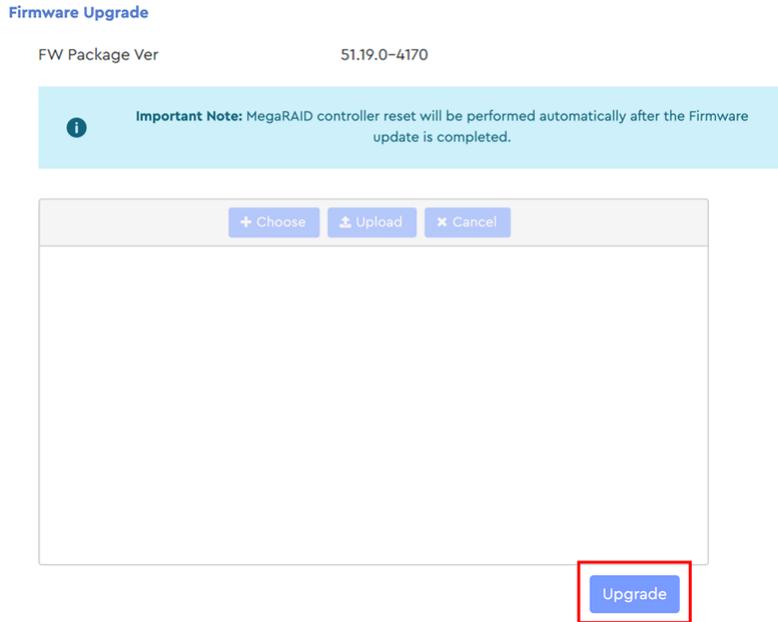
**Figure 137:** Upload Progress

- Step 5:** When the firmware file is done uploading, a success notification will appear:

**Figure 138:** Upload Success

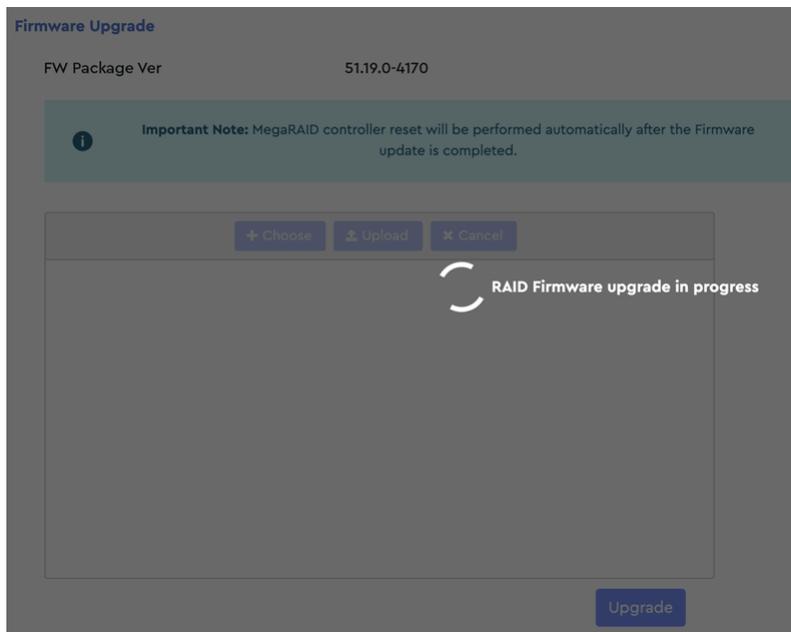
- Step 6:** As instructed in the success message, click the **Upgrade** button:

**Figure 139:** Upgrade Button



The page will be overlaid with a progress message:

**Figure 140:** Upgrade In Progress



When the upgrade is complete, another success message will be displayed:

**Figure 141:** Upgrade Success

Success

Firmware successfully upgraded.

**Step 7:** In the **Firmware Upgrade** section, check the **Current Firmware Version** to ensure that the firmware was upgraded.

**Result:** The MegaRAID controller firmware is now upgraded.

## 3.5.2 RAID Configuration

The **RAID Configuration** page displays settings and controls for configuring a RAID.

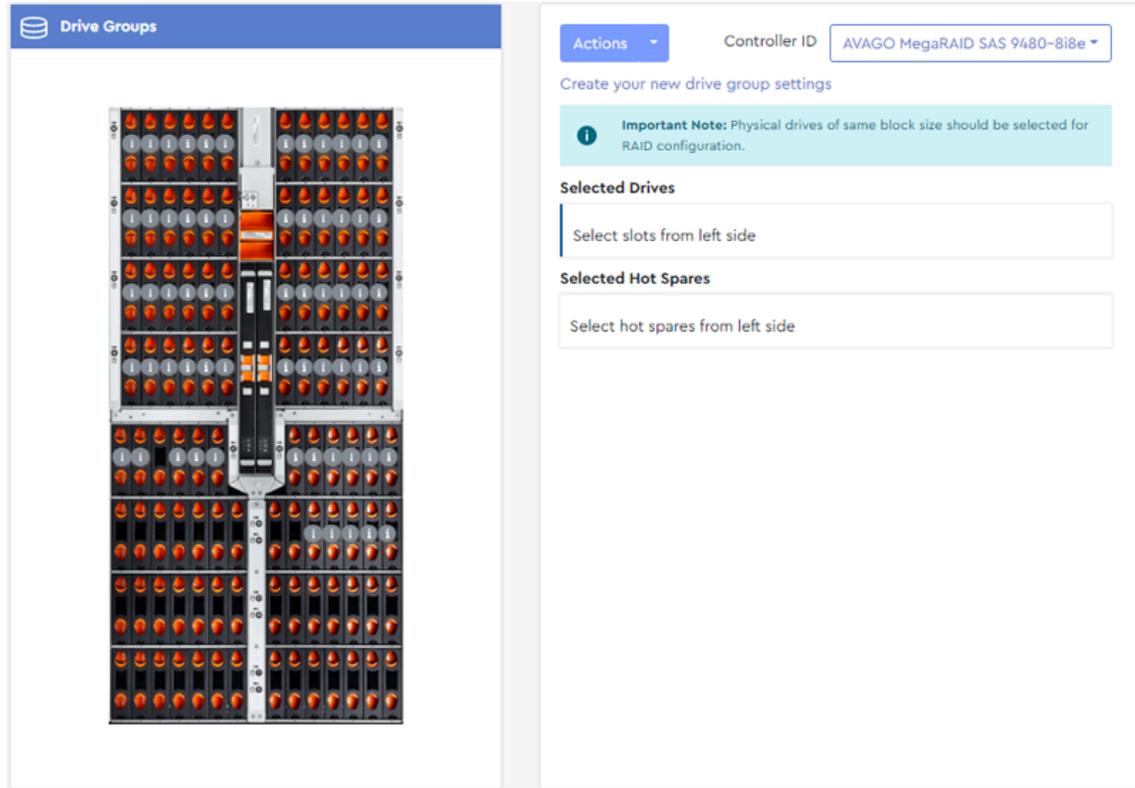
### 3.5.2.1 Creating a RAID Configuration

This procedure provides instructions for configuring a RAID using the Resource Manager Standard Edition application.

**Before you begin:** Follow the instructions in [Accessing Resource Manager Standard Edition](#) (page 32) to log into the Resource Manager Standard Edition application.

**Step 1:** From the navigation bar, select **MegaRAID > RAID Configuration**.

The **RAID Configuration** page will be displayed:

**Figure 143:** RAID Configuration Page

**Step 2:** If a RAID controller is not currently selected, use the **Controller ID** drop-down list to select a RAID controller.

**Step 3:** In the **Selected Drives** section, click the field labeled **Select slots from left side**.

The drive group will be assigned a color, displayed on the left side of the field:

**Figure 144:** Selected Drives Field

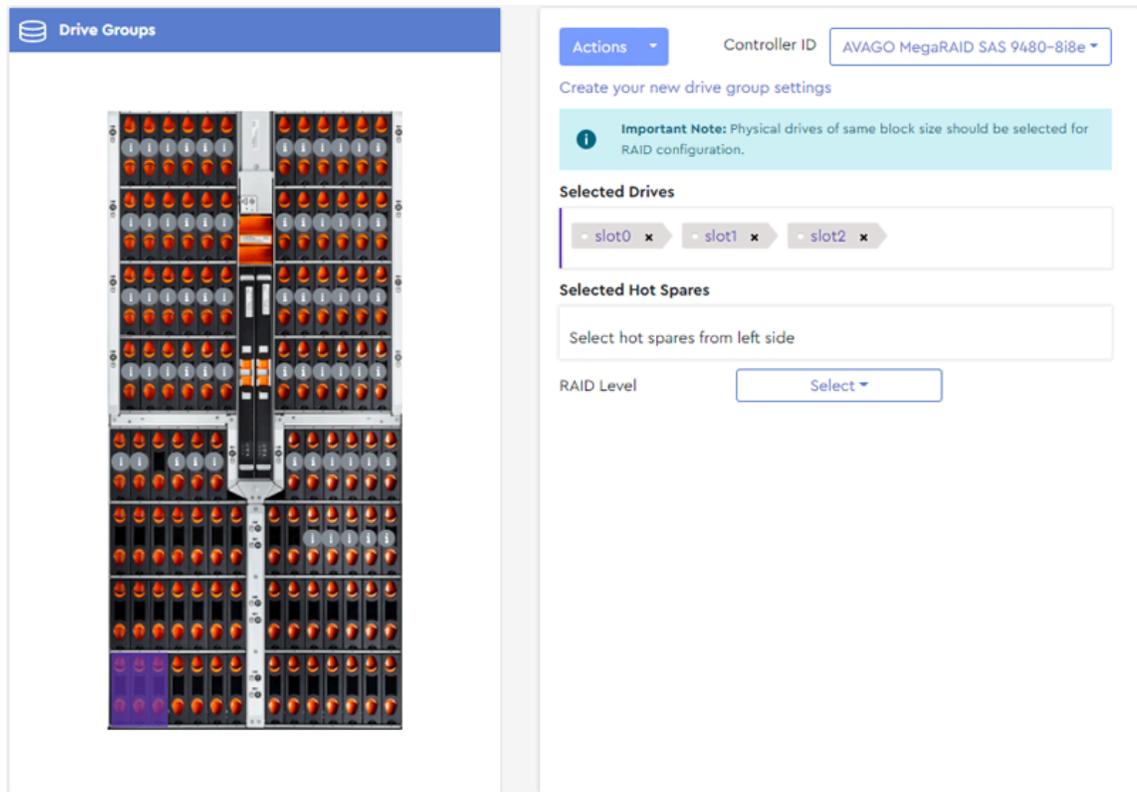
**Step 4:** From the **Drive Groups** image on the left, click to select which drive slots will be included in the drive group.

**Important:** As noted on the RAID Configuration page, all drives in a drive group must have the same block size (512B or 4K). Hovering over a drive slot will produce a tooltip that includes the block size for the drive installed in that slot.

**Note:** The maximum number of physical drives in a RAID10 drive group is sixteen (16). For all other RAID levels, the maximum number of physical drives in a drive group is thirty-two (32).

The drive slots will be color-coded, and the slot numbers will appear in the **Selected Drives** field:

**Figure 145:** Selected Drives



- a. To remove any drive slot from the drive group, click its **x**:

**Figure 146:** Remove Selected Drives



- Step 5:** In the **Selected Hot Spares** section, click the field labeled **Select hot spares from left side**. The **Selected Hot Spares** field will be highlighted:

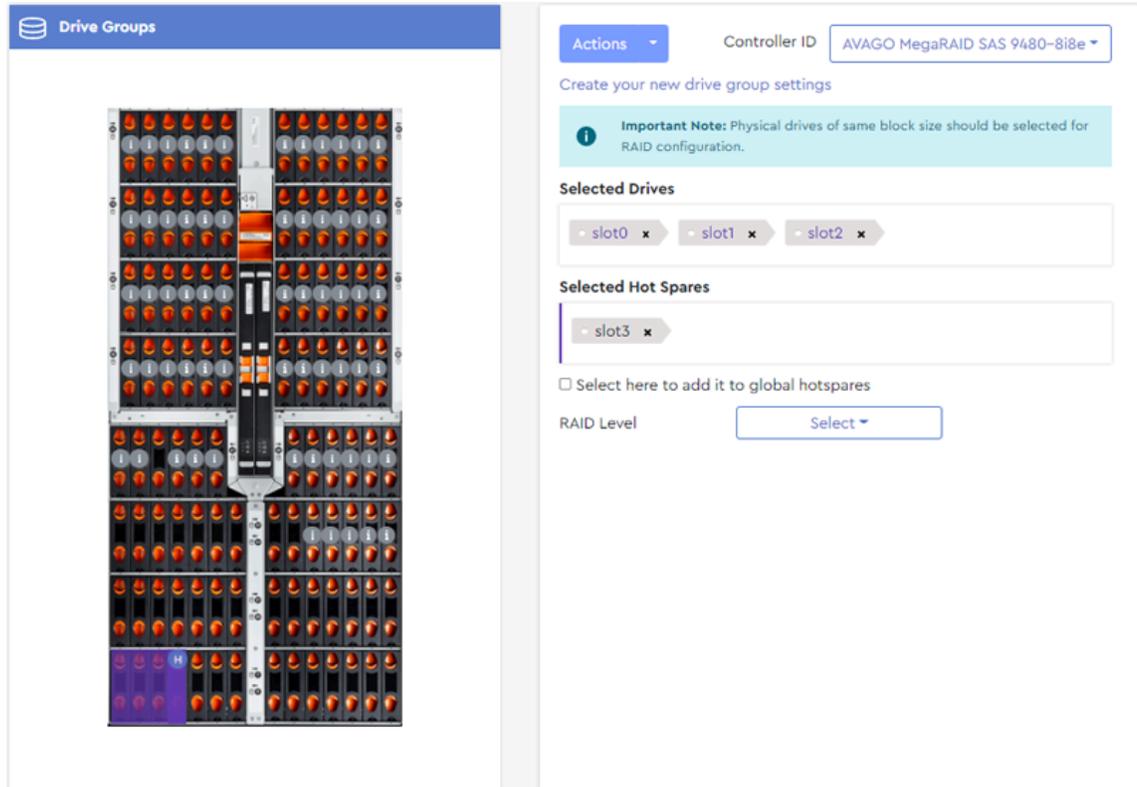
**Figure 147:** Selected Hot Spares Field



- Step 6:** From the **Drive Groups** image on the left, click to select which drive slots will function as hot spares for the drive group.

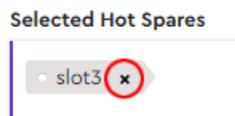
The drives slots will be color-coded, and the slot numbers will appear in the **Selected Hot Spares** field:

**Figure 148:** Selected Hot Spares



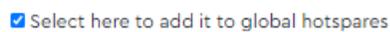
- a. To remove a drive slot from the hot spares group, click its **x**:

**Figure 149:** Remove Selected Hot Spares



- b. By default, the selected drive will be a dedicated hot spare for this drive group. To make the selected drive a global hot spare, click the checkbox:

**Figure 150:** Add To Global Hot Spares



**Step 7:** From the **RAID Level** drop-down list, select the RAID level for this drive group.

**Figure 151:** Select RAID Level

RAID Level Select ▼

RAID 0

RAID 5

RAID 6



**Note:** Only valid options will be displayed in the drop-down list.

When a RAID level is selected, a **Logical Drive Settings** section will appear, displaying information about the RAID and controls for additional configuration:

**Figure 152:** Logical Drive Settings

Logical drive settings

Logical Drives ⓘ

Unused Capacity  
49.113TB

Add Drive

Logical Drive ⓘ

Capacity

Logical Drive name

Stripe size

**Step 8:** In the **Logical Drive** field, select the **quantity** of logical drives to be created from the available capacity of the physical drive group.



**Note:** By default, the total unused capacity will be divided equally among the selected quantity of logical drives. The maximum quantity of logical drives is sixteen (16) per drive group.

**Figure 153:** Logical Drive Field

Logical Drive

**Step 9:** If needed, use the **Capacity** field to reduce the capacity allocated to each logical drive.

**Figure 154:** Capacity Field

A screenshot of a web interface showing a 'Capacity' label on the left and a text input field on the right. The input field contains the numerical value '49.113282'.

**Step 10:** From the **Stripe Size** drop-down list, select the stripe size for this RAID.

**Figure 155:** Stripe Size

A screenshot of a web interface showing a 'Stripe size' drop-down menu. The menu is open, displaying a list of options: 256KB (selected), 64KB, 128KB, 512KB, and 1024KB. The background shows other settings like 'Policy' and 'Initialization'.



**Note:** Only valid options will be displayed in the drop-down list.

**Step 11:** In the **Policy** section, select a category from the left column, and choose the associated policy from the list in the right column.

**Figure 156:** Initialization

A screenshot of a web interface showing the 'Initialization' policy selection screen. On the left, there is a list of policy categories: 'Initialization No Initialization' (selected), 'Read Policy Read Ahead', 'Write Policy Write Back', 'IO Policy Direct IO', and 'Disk Cache Policy Disabled'. On the right, there is a description of the 'Initialization' policy and two radio button options: 'No Initialization' (selected) and 'Fast Initialization'. The 'No Initialization' option is selected, and its description states: 'The new configuration is not initialized, and the existing data on the drives is not Over written.' The 'Fast Initialization' option is unselected, and its description states: 'The Firmware erases the first and last 8 MB of the data area of the virtual drive by writing 0x00 to wipe out any remains of Master boot record (MBR) or partition tables. This operation is extremely fast, so the virtual drive is almost instantly accessible to the user.'

**Figure 157:** Read Policy

<p><b>Initialization</b> No Initialization</p>	<p>A controller attribute indicating the current Read Policy mode</p> <p><input type="radio"/> No Read Ahead</p> <p>In No Read Ahead mode, read ahead capability is disabled.</p> <p><input checked="" type="radio"/> Read Ahead</p> <p>Read ahead capability allows the controller to read sequentially ahead of requested data and to store the additional data in cache memory, anticipating that the data will be needed soon. This process speeds up reads for sequential data, but there is little improvement occurs when accessing random data.</p>
<p><b>Read Policy</b> Read Ahead</p>	
<p><b>Write Policy</b> Write Back</p>	
<p><b>IO Policy</b> Direct IO</p>	
<p><b>Disk Cache Policy</b> Disabled</p>	

**Figure 158:** Write Policy

<p><b>Initialization</b> No Initialization</p>	<p>A controller attribute indicating the current Write Policy mode</p> <p><input type="radio"/> Write Through</p> <p>This mode provides for cache data protection upon power failure. <b>Note: It may result in slower performance.</b></p> <p><input checked="" type="radio"/> Write Back</p> <p>This option provides a good balance between data protection and performance as the controller switches between Write back and write through depending on Energy Pack status. <b>Note: Write Back caching is enabled when the battery backup unit is installed and charged. Write Through is enabled when battery is not installed / charge is low / battery fails / during battery relearn cycle.</b></p> <p><input type="radio"/> Always Write Back</p> <p>This mode provides optimal performance. <b>Note: Data loss will occur if there is power failure along with cache Energy Pack is not installed, or the Energy Pack has failed or discharged.</b></p>
<p><b>Read Policy</b> Read Ahead</p>	
<p><b>Write Policy</b> Write Back</p>	
<p><b>IO Policy</b> Direct IO</p>	
<p><b>Disk Cache Policy</b> Disabled</p>	

**Figure 159:** IO Policy

<p><b>Initialization</b> No Initialization</p>	<p>The IO policy applies to reads on a specific virtual drive. It does not affect the read ahead cache.</p> <p><input checked="" type="radio"/> Direct IO</p> <p>In Direct I/O mode, reads are not buffered in cache memory. Data is transferred to the cache and the host concurrently. If the same data block is read again, it comes from cache memory. This option is the default setting.</p> <p><input type="radio"/> Cached IO</p> <p>In Cached I/O mode, all reads are buffered in cache memory.</p>
<p><b>Read Policy</b> Read Ahead</p>	
<p><b>Write Policy</b> Write Back</p>	
<p><b>IO Policy</b> Direct IO</p>	
<p><b>Disk Cache Policy</b> Disabled</p>	

**Figure 160:** Disk Cache Policy

<p><b>Initialization</b> No Initialization</p>	<p>Specify the drive cache policy.</p> <p><input type="radio"/> Unchanged</p> <p>Leave the current drive cache policy as is.</p> <p><input type="radio"/> Enabled</p> <p>Enable the drive cache.</p> <p><input checked="" type="radio"/> Disabled</p> <p>Disable the drive cache.</p>
<p><b>Read Policy</b> Read Ahead</p>	
<p><b>Write Policy</b> Write Back</p>	
<p><b>IO Policy</b> Direct IO</p>	
<p><b>Disk Cache Policy</b> Disabled</p>	

**Step 12:** After all RAID configuration selections have been made, click the **Add Drive** button.

**Figure 161:** Add Drive Button

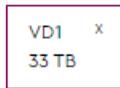
Add Drive

The details of the RAID configuration will be replaced by a colored square, representing the logical drive:

**Figure 162:** Logical Drive

Logical drive settings

Logical Drives



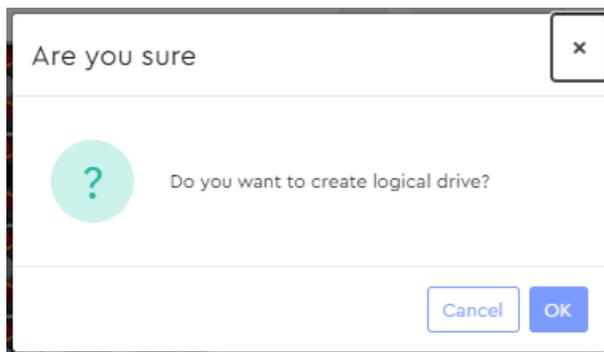
- a. To edit the details of the logical drive, click the square.
- b. To delete the logical drive, click the **x** in the upper-right corner.

**Step 13:** Click the **Create Drive Group** button at the bottom of the **Logical Drive Settings** section.

**Figure 163:** Create Drive Group Button

Create Drive Group

A dialogue box will appear, prompting the user to confirm creating the logical drive:

**Figure 164:** Confirm Creating Logical Drive

**Step 14:** Click the **OK** button.

A success notification will appear at the top of the page:

**Figure 165:** Success Notification

**Result:** The RAID is now created and will appear as a drive group in [Logical Drives](#) (page 115).

### 3.5.2.2 Clearing All RAID Configurations

This procedure provides instructions for clearing **all** RAID configurations from a MegaRAID controller.

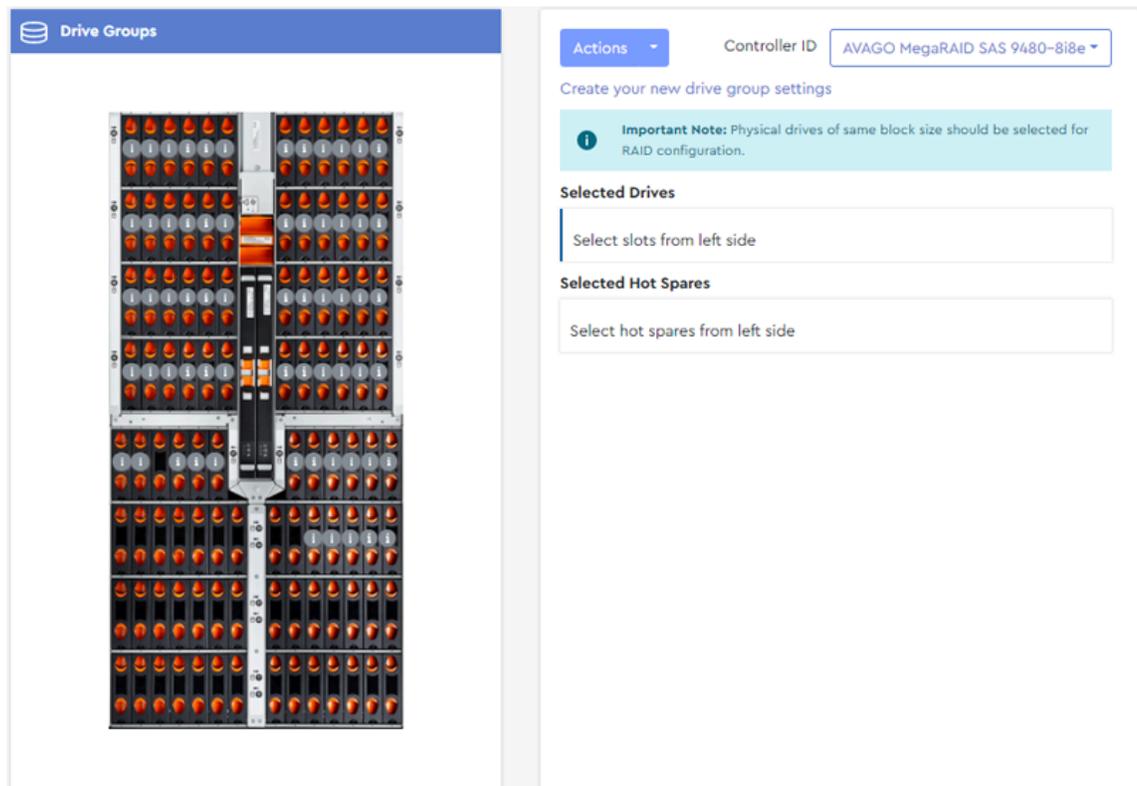
**Before you begin:** Follow the instructions in [Accessing Resource Manager Standard Edition](#) (page 32) to log into the Resource Manager Standard Edition application.



**Note:** To delete only **one** configuration, see [Deleting a Logical Drive](#) (page 115).

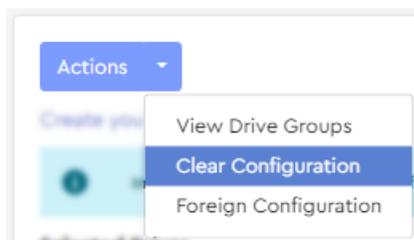
- Step 1:** From the navigation bar, select **MegaRAID > RAID Configuration**.  
The **RAID Configuration** page will be displayed:

**Figure 166:** RAID Configuration Page

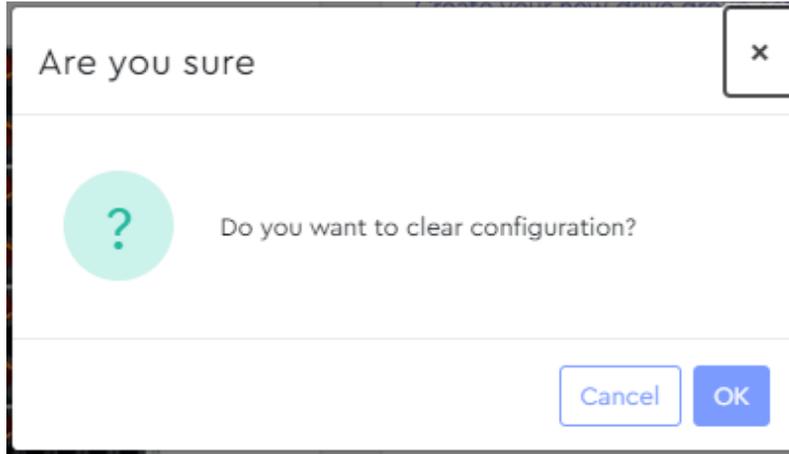


- Step 2:** If a RAID controller is not currently selected, use the **Controller ID** drop-down list to select a RAID controller.
- Step 3:** From the **Actions** drop-down list, select the **Clear Configuration** option.

**Figure 167:** Clear Configuration



A dialogue box will be displayed, prompting the user to confirm clearing all RAID configurations:

**Figure 168:** Confirm Clearing All Configurations

**Step 4:** Click the **OK** button.

A success notification will appear at the top of the page:

**Figure 169:** Success Notification

**Result:** All RAID configurations have now been cleared.

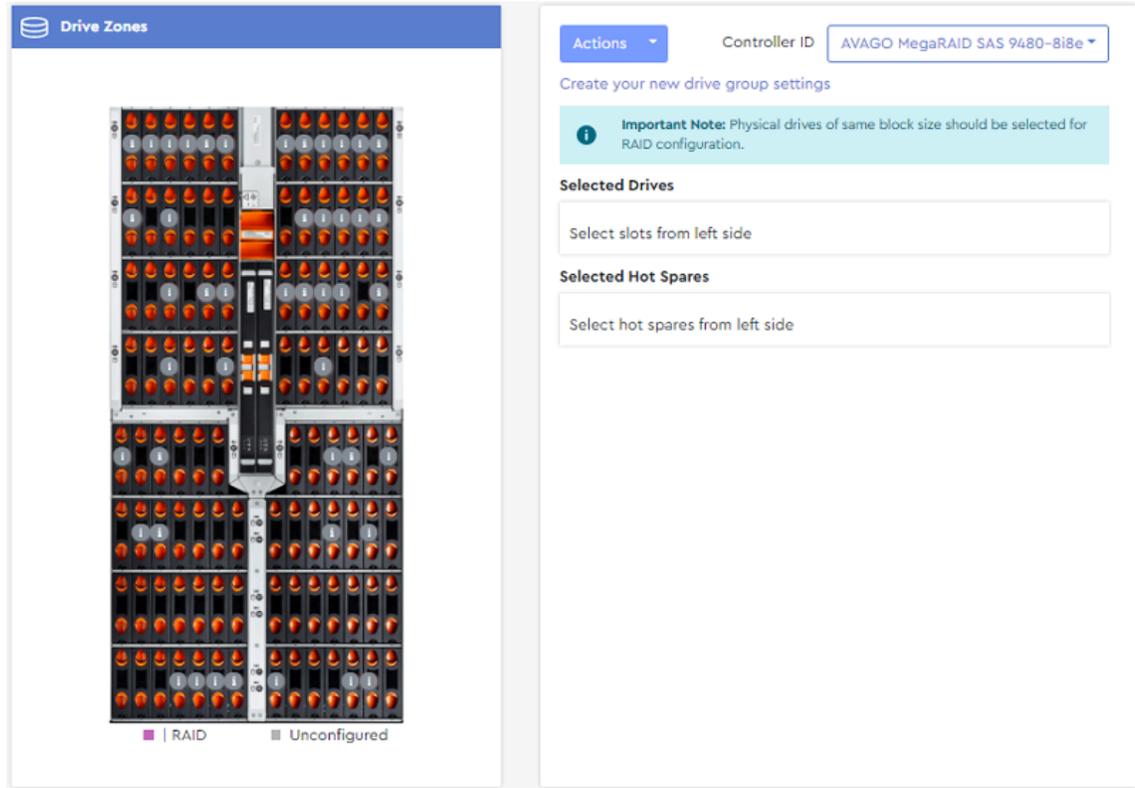
### 3.5.2.3 Importing Foreign Configurations

This procedure provides instructions for importing foreign RAID configurations—configurations that already exist on replacement drives.

**Before you begin:** Follow the instructions in [Accessing Resource Manager Standard Edition \(page 32\)](#) to log into the Resource Manager Standard Edition application.

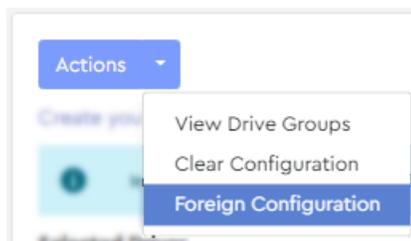
**Step 1:** From the navigation bar, select **MegaRAID > RAID Configuration**.

The **RAID Configuration** page will be displayed:

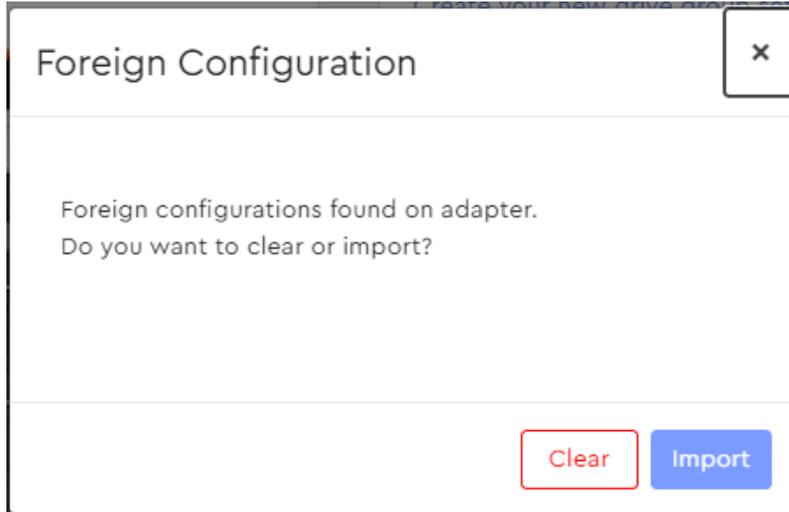
**Figure 170:** RAID Configuration Page

**Step 2:** If a RAID controller is not currently selected, use the **Controller ID** drop-down list to select a RAID controller.

**Step 3:** From the **Actions** drop-down list, select the **Foreign Configuration** option.

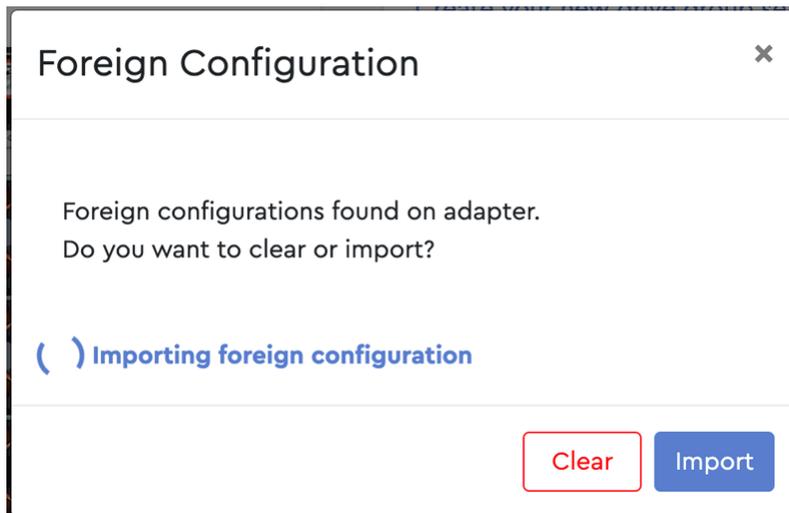
**Figure 171:** Foreign Configuration

A dialogue box will be displayed, prompting the user to either clear or import all foreign configurations:

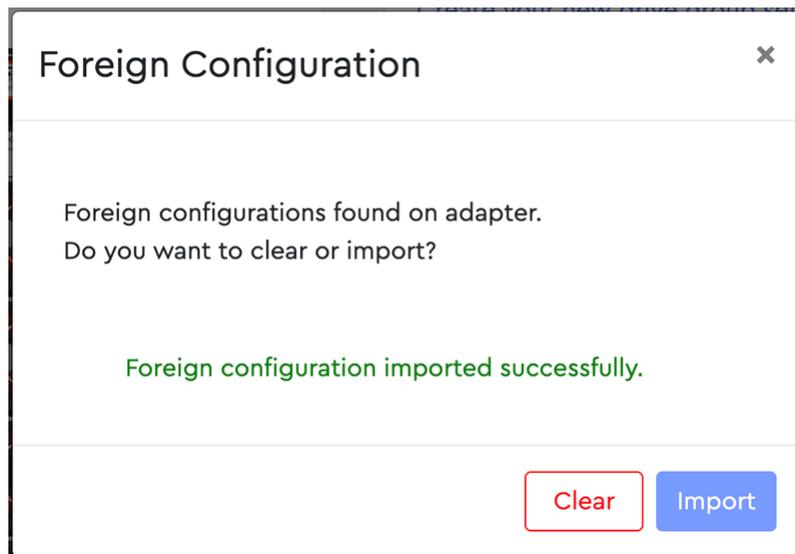
**Figure 172:** Clear or Import All Foreign Configurations

**Step 4:** Click the **Import** button.

The dialogue box notifies the user that importing has started:

**Figure 173:** Importing Foreign Configurations

When the import is finished, a success message will be displayed:

**Figure 174:** Import Success

**Result:** The foreign configurations have now been imported.

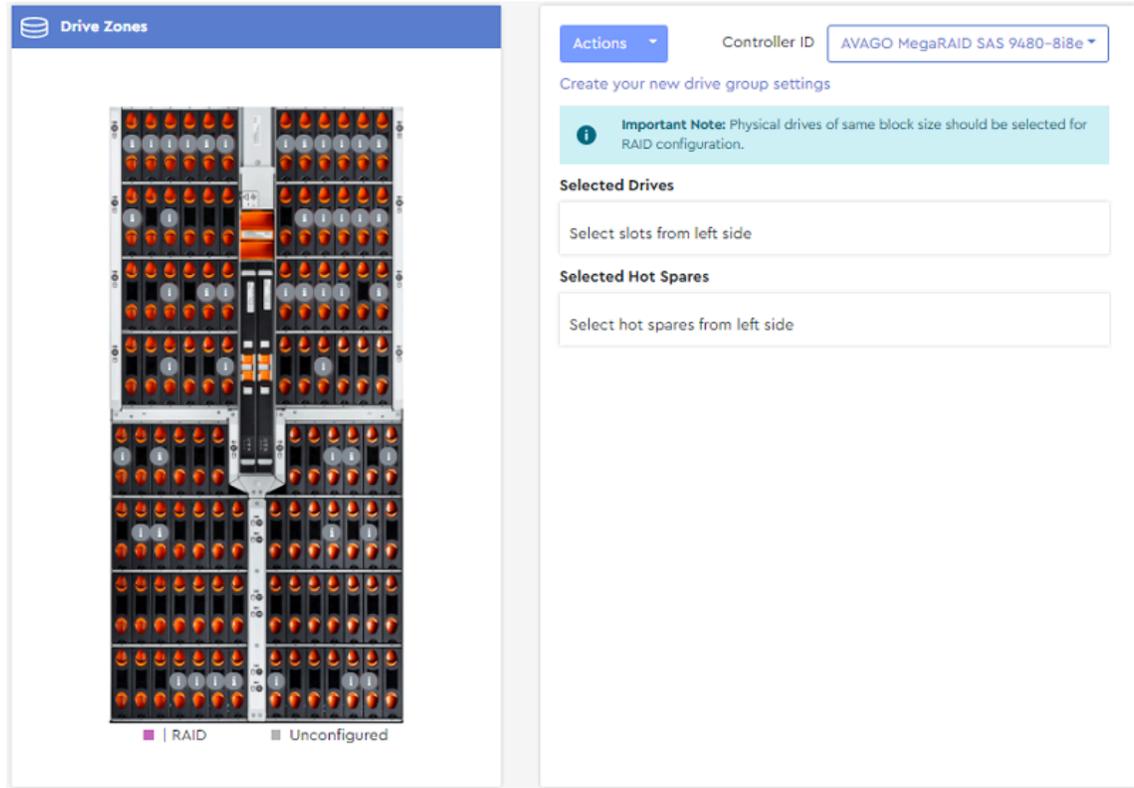
#### 3.5.2.4 Clearing Foreign Configurations

This procedure provides instructions for clearing foreign RAID configurations—configurations that already exist on replacement drives.

**Before you begin:** Follow the instructions in [Accessing Resource Manager Standard Edition \(page 32\)](#) to log into the Resource Manager Standard Edition application.

- Step 1:** From the navigation bar, select **MegaRAID > RAID Configuration**.  
The **RAID Configuration** page will be displayed:

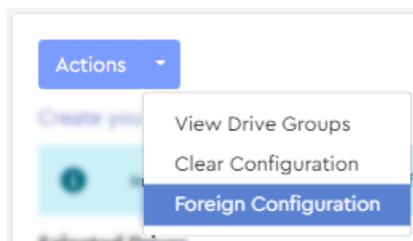
**Figure 175:** RAID Configuration Page



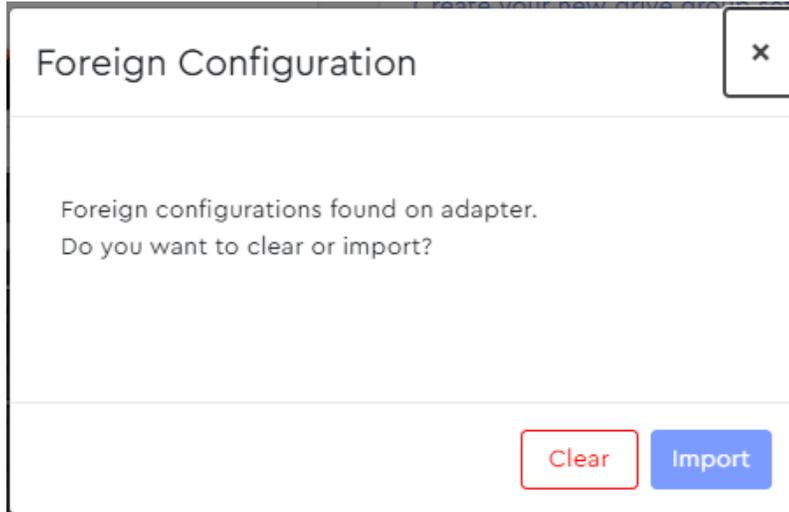
**Step 2:** If a RAID controller is not currently selected, use the **Controller ID** drop-down list to select a RAID controller.

**Step 3:** From the **Actions** drop-down list, select the **Foreign Configuration** option.

**Figure 176:** Foreign Configuration

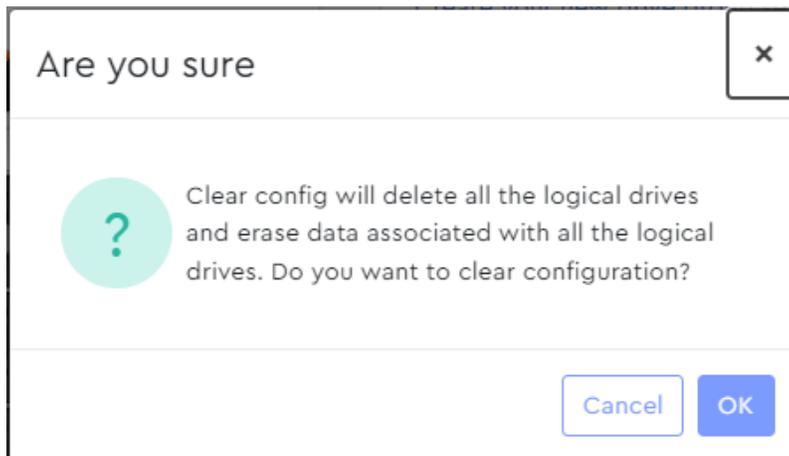


A dialogue box will be displayed, prompting the user to either clear or import all foreign configurations:

**Figure 177:** Clear or Import All Foreign Configurations

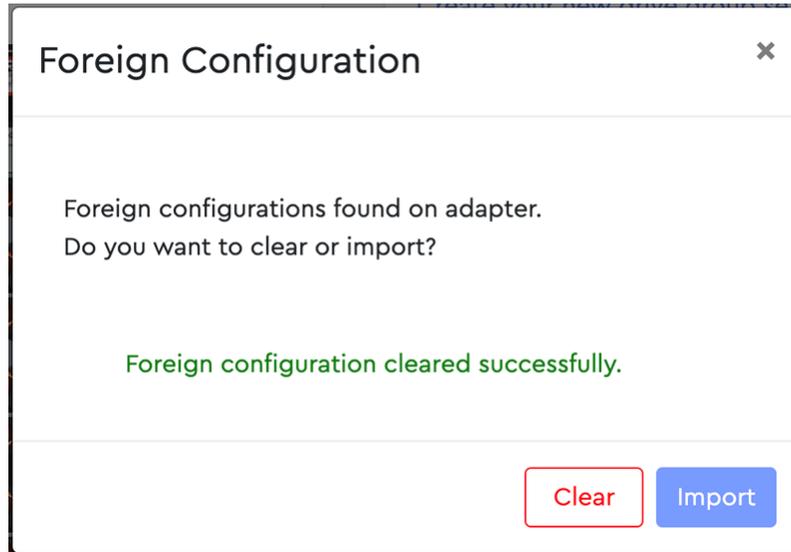
**Step 4:** Click the **Clear** button.

The dialogue box prompts the user to confirm the request:

**Figure 178:** Confirm Clear

**Step 5:** Click the **OK** button.

When the foreign configurations have been cleared, a success message will be displayed:

**Figure 179:** Clear Success

**Result:** The foreign configurations have now been cleared.

### 3.5.3 Logical Drives

The **Logical Drives** page displays information about the logical drives being managed through the selected MegaRAID controller.

The screenshot displays the Western Digital Resource Manager Standard Edition interface. The main content area shows a server rack with drive status indicators. The configuration panel on the right shows the following data:

Drive Group	RAID Level	Physical Drives	Logical Drives	Capacity	Utilization	Action
DG0	RAID 5	3	9	18,192 TB	49%	...
DG1	RAID 0	2	1	10,916 TB	100%	...

Slot ID	Device ID	Drive Type	Interface	Serial number	Capacity
19	35	HDD	SAS	V8GBKPTR	5.458 TB
18	102	HDD	SAS	V8GB0DSR	5.458 TB

LD Name	Capacity	Stripe Size	Policy
VD1	10,916 TB	256KB	RA   WT   DIO

#### 3.5.3.1 Deleting a Logical Drive

This procedure provides instructions for deleting a logical drive (including its RAID configuration) from a MegaRAID controller.

**Before you begin:** Follow the instructions in [Accessing Resource Manager Standard Edition](#) (page 32) to log into the Resource Manager Standard Edition application.



**Note:** To delete **all** RAID configurations, see [Clearing All RAID Configurations](#) (page 106).

**Step 1:** From the navigation bar, select **MegaRAID > Logical Drives**.

The **Logical Drives** page will be displayed:

Figure 181: Logical Drives Page

The screenshot displays the 'Logical Drives' management interface. On the left, a server rack is shown with drive groups color-coded: DG0 (blue), DG1 (teal), DG2 (green), DG3 (orange), DG4 (dark green), and DG5 (light green). A legend below the rack identifies each group as RAID 1. On the right, a table lists the drive groups with their RAID levels, physical and logical drive counts, capacities, and utilization. The controller ID is AVAGO MegaRAID SAS 9480-8i8e. A 'Configure' button is visible at the top left of the table area.

Configure		Controller ID				
		AVAGO MegaRAID SAS 9480-8i8e				
Total Logical drives: 6		Total Global hot spare: 0				
Drive Group	RAID Level	Physical Drives	Logical Drives	Capacity	Utilization	Action
> DG0	RAID 1	2	1	7.277 TB	100%	...
> DG1	RAID 1	2	1	7.277 TB	100%	...
> DG2	RAID 1	2	1	10.914 TB	100%	...
> DG3	RAID 1	2	1	10.914 TB	100%	...
> DG4	RAID 1	2	1	10.914 TB	100%	...
> DG5	RAID 1	2	1	7.277 TB	100%	...

Logical drive

**Step 2:** From the right column, select a drive group to expand its details:

**Figure 182:** Drive Group Details

Configure Controller ID AVAGO MegaRAID SAS 9480-8i8e

Total Logical drives: 6 Total Global hot spare: 0

Drive Group	RAID Level	Physical Drives	Logical Drives	Capacity	Utilization	Action
▼ DG0	RAID 1	2	1	7.277 TB	100%	...
> DG1	RAID 1	2	1	7.277 TB	100%	...
> DG2	RAID 1	2	1	10.914 TB	100%	...
> DG3	RAID 1	2	1	10.914 TB	100%	...
> DG4	RAID 1	2	1	10.914 TB	100%	...
> DG5	RAID 1	2	1	7.277 TB	100%	...

Slot ID	Device ID	Drive Type	Interface	Serial number	Capacity
49	6	HDD	SAS	VAG1D6ZD	7.277 TB
48	21	HDD	SAS	VAG1V2KL	7.277 TB

Logical drive

- LD Name V D1
- Capacity 7.274 TB
- Stripe Size 256KB
- Policy RA | WB | DIO

At the bottom of the column, the logical drives for that group will be displayed:

**Figure 183:** Logical Drive Details

The screenshot displays the 'Logical Drive Details' page for an AVAGO MegaRAID SAS 9480-8i8e controller. It shows a summary of logical drives and a detailed view of a specific logical drive (LD Name: VD1).

Drive Group	RAID Level	Physical Drives	Logical Drives	Capacity	Utilization	Action
DG0	RAID 1	2	1	7.277 TB	100%	...
DG1	RAID 1	2	1	7.277 TB	100%	...
DG2	RAID 1	2	1	10.914 TB	100%	...
DG3	RAID 1	2	1	10.914 TB	100%	...
DG4	RAID 1	2	1	10.914 TB	100%	...
DG5	RAID 1	2	1	7.277 TB	100%	...

Slot ID	Device ID	Drive Type	Interface	Serial number	Capacity
49	6	HDD	SAS	VAG1D6ZD	7.277 TB
48	21	HDD	SAS	VAG1V2KL	7.277 TB

LD Name	Capacity	Stripe Size	Policy
VD1	7.274 TB	256KB	RA   WB   DIO

**Step 3:** Click the ellipsis (...) for the logical drive, and select the **Delete** option.  
A dialogue box will appear, prompting the user to confirm deleting the logical drive:

**Figure 184:** Confirm Deleting Logical Drive

The screenshot shows a confirmation dialog box with the following content:

Are you sure

Do you want to delete the current logical drive?

Buttons: Cancel, Delete

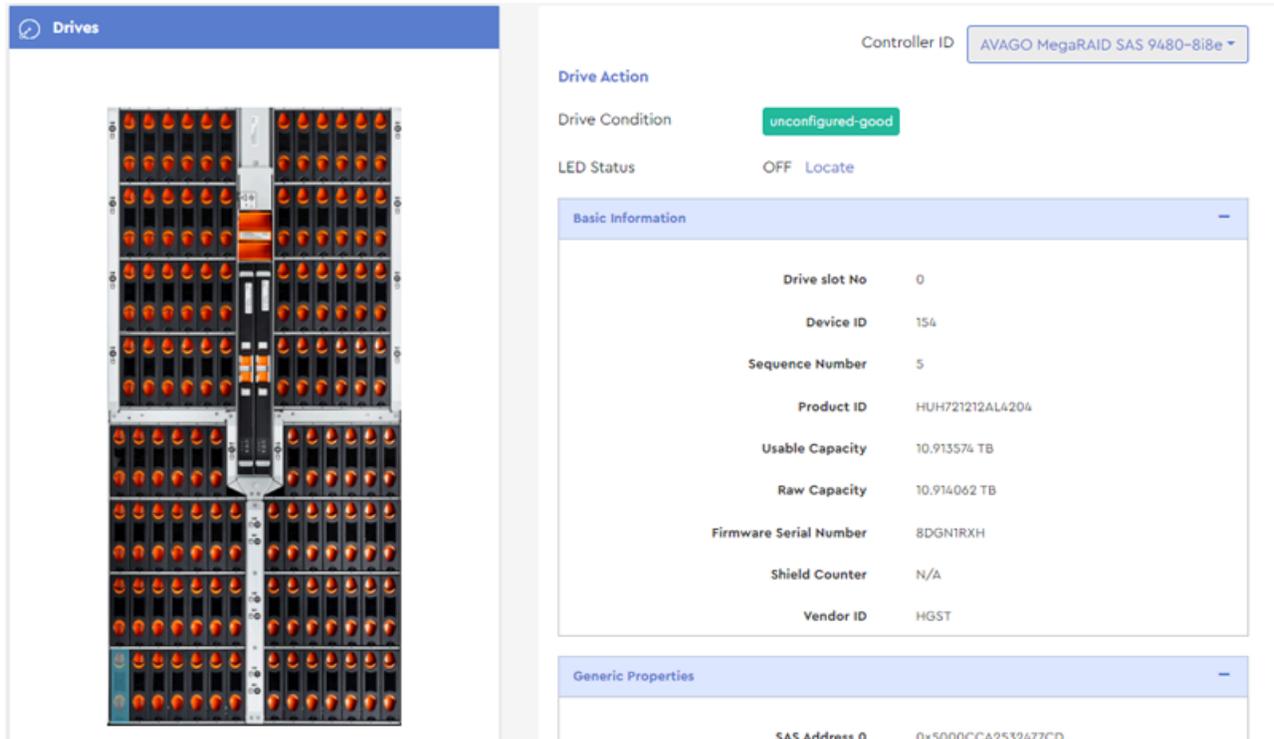
**Step 4:** Click the **Delete** button.  
A success notification will appear at the top of the page:

**Figure 185:** Success Notification

**Result:** The logical drive (along with its RAID configuration) has now been deleted.

### 3.5.4 Physical Drives

The **Physical Drives** page displays detailed information about the physical drives being managed through the selected MegaRAID controller.



The screenshot displays the 'Drives' management interface. On the left, a server rack is shown with drive bays. On the right, the details for a selected drive are shown. The Controller ID is AVAGO MegaRAID SAS 9480-8i8e. The Drive Action is 'unconfigured-good'. The Drive Condition is 'unconfigured-good'. The LED Status is 'OFF' with a 'Locate' button. The Basic Information section includes:

Drive slot No	0
Device ID	154
Sequence Number	5
Product ID	HUH721212AL4204
Usable Capacity	10.913574 TB
Raw Capacity	10.914062 TB
Firmware Serial Number	BDGN1RXH
Shield Counter	N/A
Vendor ID	HGST

The Generic Properties section includes:

SAS Address 0	0x5000CC62539477CD
---------------	--------------------

#### 3.5.4.1 Enabling / Disabling a Drive Identification LED (MegaRAID)

This procedure provides instructions for enabling (illuminating) and/or disabling a drive's identification LED when the drive is managed through a MegaRAID controller in RAID mode.

**Before you begin:** Follow the instructions in [Accessing Resource Manager Standard Edition](#) (page 32) to log into the Resource Manager Standard Edition application.



**Note:** To enable/disable a drive's LED through a MegaRAID controller in JBOD mode, or through an HBA, see [Enabling / Disabling a Drive Identification LED \(HBA\)](#) (page 51).

#### Enabling a Drive Identification LED

**Step 1:** From the navigation bar, select **MegaRAID > Physical Drives**.

The **Physical Drives** page will be displayed:

**Figure 187:** Physical Drives Page

Basic Information	
Drive slot No	0
Device ID	154
Sequence Number	5
Product ID	HUH721212AL4204
Usable Capacity	10.913574 TB
Raw Capacity	10.914062 TB
Firmware Serial Number	8DGN1RXH
Shield Counter	N/A
Vendor ID	HGST

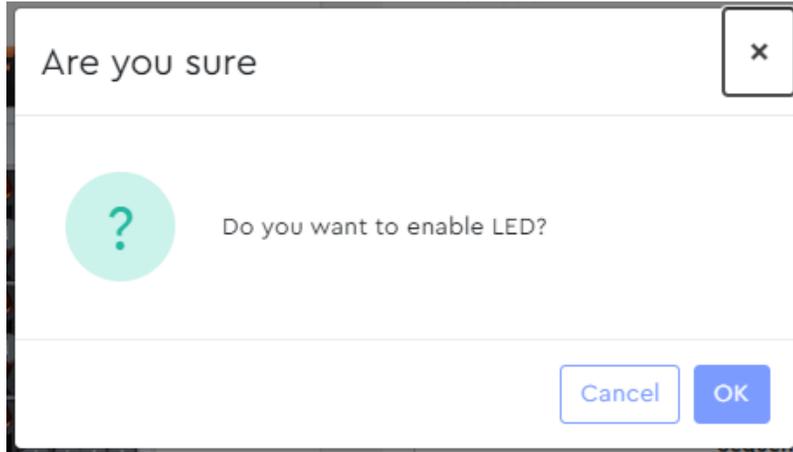
  

Generic Properties	
SAS Address 0	0x5000CC429532A7CD

- Step 2:** If a RAID controller is not currently selected, use the **Controller ID** drop-down list to select a RAID controller.
- Step 3:** From the **Drives** image on the left, click to select a drive slot.  
The **Drive Action** section will display the available information about the drive installed in the selected slot.
- Step 4:** In the **LED Status** section, click the **Locate** link.

**Figure 188:** Locate Link

A dialogue box will appear, prompting the user to confirm enabling the drive's identification LED:

**Figure 189:** Confirm Enabling LED

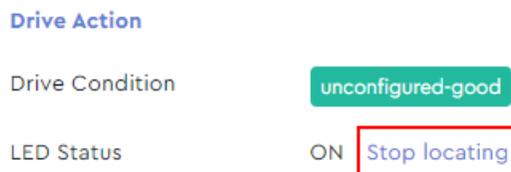
**Step 5:** Click the **OK** button.

A success notification will appear at the top of the page:

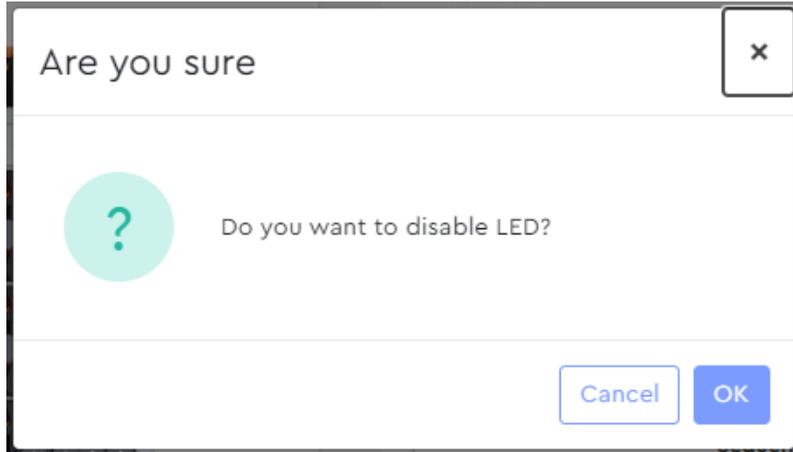
**Figure 190:** Success Notification

### Disabling a Drive Identification LED

**Step 6:** In the **LED Status** section, click the **Stop Locating** link.

**Figure 191:** Stop Locating Link

A dialogue box will appear, prompting the user to confirm disabling the drive's identification LED:

**Figure 192:** Confirm Disabling LED

**Step 7:** Click the **OK** button.

A success notification will appear at the top of the page:

**Figure 193:** Success Notification

**Result:** The selected drive's identification LED has now been enabled and/or disabled.

## 3.6 Alerts

The **Alerts** section provides information and controls for setting up email notifications, configuring SMTP settings, checking event logs, and downloading SES firmware and system log files.

### 3.6.1 Configuring Email Notifications

This procedure provides instructions for setting up email notifications for enclosure events using the Resource Manager Standard Edition application.

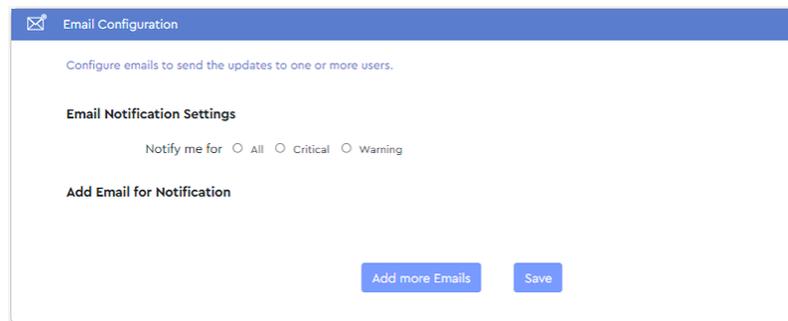
#### Before you begin:

1. Follow the instructions in [Accessing Resource Manager Standard Edition \(page 32\)](#) to log into the Resource Manager Standard Edition application.

**Step 1:** From the navigation bar, select **Alerts > Email configuration**.

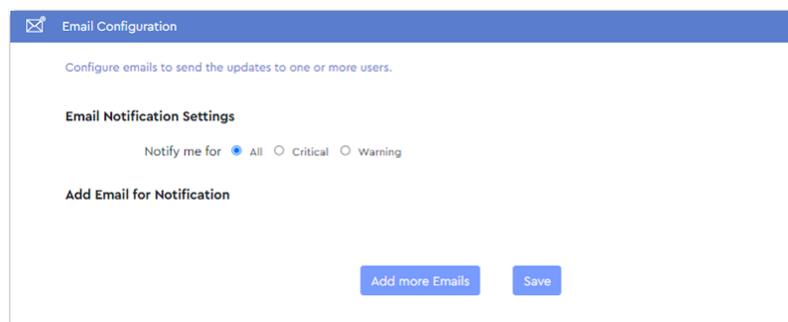
The **Email Configuration** page will be displayed:

**Figure 194:** Email Configuration Page



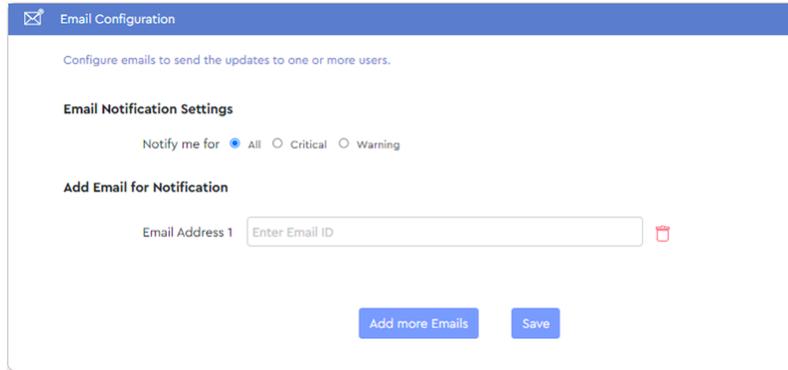
**Step 2:** In the **Email Notification Settings** section, click the radio button to be notified for **All**, **Critical**, or **Warning** events.

**Figure 195:** Email Notification Settings



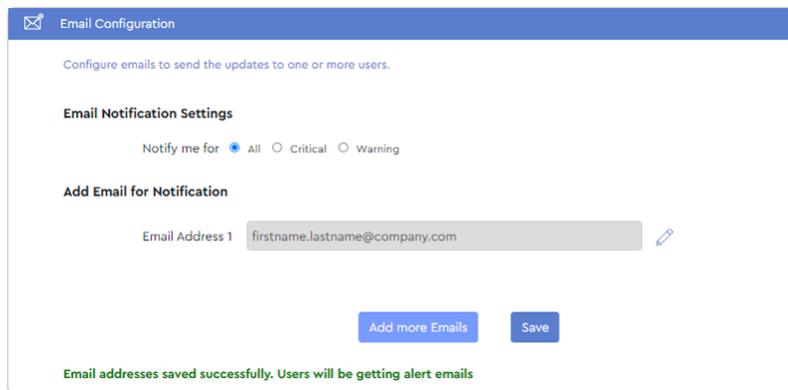
**Step 3:** In the **Add Email for Notification** section, click the **Add more Emails** button.

An email address field will appear:

**Figure 196:** Email Address Field

The screenshot shows the 'Email Configuration' page. At the top, there is a blue header with an envelope icon and the text 'Email Configuration'. Below the header, there is a sub-header 'Email Notification Settings' with the instruction 'Configure emails to send the updates to one or more users.' Underneath, there are radio buttons for 'Notify me for' with options 'All' (selected), 'Critical', and 'Warning'. The 'Add Email for Notification' section contains a text input field labeled 'Email Address 1' with the placeholder text 'Enter Email ID' and a red trash icon to its right. At the bottom of the form, there are two blue buttons: 'Add more Emails' and 'Save'.

- Step 4:** Type a valid email address into the field and click the **Save** button. A confirmation message will be displayed at the bottom of the **Email Configuration** page:

**Figure 197:** Email Address Saved

The screenshot shows the 'Email Configuration' page after saving an email address. The 'Email Address 1' field now contains the text 'firstname.lastname@company.com' and has a blue edit icon to its right. At the bottom of the form, there are two blue buttons: 'Add more Emails' and 'Save'. A green confirmation message is displayed at the bottom of the page: 'Email addresses saved successfully. Users will be getting alert emails'.

- Step 5:** Repeat these steps as needed to send alerts to additional email addresses.  
**Result:** Email notifications for enclosure events have now been configured.

## 3.7 User Settings

The **User Settings** section allows configuration of user accounts and details such as IDs, roles, email addresses, and passwords.

### 3.7.1 Adding an Account

This procedure provides instructions for adding a user or admin account with the Resource Manager Standard Edition application.

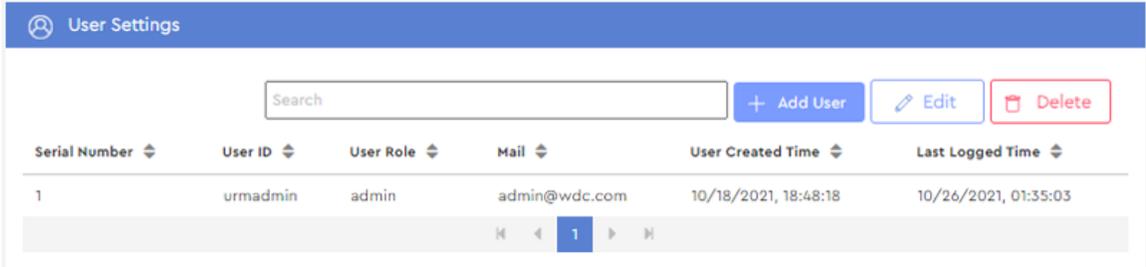
#### Before you begin:

1. Follow the instructions in [Accessing Resource Manager Standard Edition \(page 32\)](#) to log into the Resource Manager Standard Edition application.

**Step 1:** From the navigation bar, select **User Settings**.

The **User Settings** page will be displayed:

**Figure 198:** User Settings Page



The screenshot shows the 'User Settings' page with a search bar and three action buttons: '+ Add User', 'Edit', and 'Delete'. Below these is a table with the following data:

Serial Number	User ID	User Role	Mail	User Created Time	Last Logged Time
1	urmadmin	admin	admin@wdc.com	10/18/2021, 18:48:18	10/26/2021, 01:35:03

**Step 2:** Click the **Add User** button:

**Figure 199:** Add User Button



The user settings for the new account will be displayed:

**Figure 200:** Add User Account

**User Settings**

Use this section to add new user or edit existing user

User ID:

Password:   Show Password

Email Address:

User Role:  User  Admin

**Step 3:** Complete all the fields to assign a **User ID**, **Password**, **Email Address**, and **User Role** for the account.

**Step 4:** Click the **Save** button.

The user will be notified that the account was created:

User created successfully.

**Step 5:** Click the **Back** button to return to the **User Settings** page, and verify that the new account appears in the accounts list.

**Figure 202:** Accounts List

**User Settings**

Search

Serial Number	User ID	User Role	Mail	User Created Time	Last Logged Time
1	urmadmin	admin	admin@wdc.com	10/18/2021, 18:48:18	10/26/2021, 01:35:03
2	test1	user	firstname.lastname@company.com	10/26/2021, 01:36:06	N/A

1

**Result:** The user account has now been added.

## 3.7.2 Editing an Account

This procedure provides instructions for editing a user or admin account with the Resource Manager Standard Edition application.

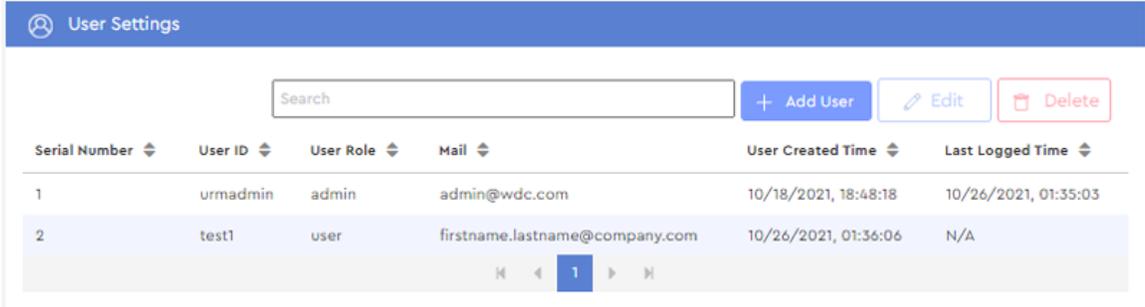
### Before you begin:

1. Follow the instructions in [Accessing Resource Manager Standard Edition](#) (page 32) to log into the Resource Manager Standard Edition application.

**Step 1:** From the navigation bar, select **User Settings**.

The **User Settings** page will be displayed:

**Figure 203:** User Settings Page



The screenshot shows the 'User Settings' page with a search bar, '+ Add User', 'Edit', and 'Delete' buttons. Below is a table with columns: Serial Number, User ID, User Role, Mail, User Created Time, and Last Logged Time.

Serial Number	User ID	User Role	Mail	User Created Time	Last Logged Time
1	urmadmin	admin	admin@wdc.com	10/18/2021, 18:48:18	10/26/2021, 01:35:03
2	test1	user	firstname.lastname@company.com	10/26/2021, 01:36:06	N/A

**Step 2:** Click the row of an existing account to select it. Then click the **Edit** button:

**Figure 204:** Edit Button



**Note:** The first account (urmadmin) is a default account and cannot be edited or deleted.

The user settings for that account will be displayed:

**Figure 205:** Edit User Settings

The screenshot shows the 'User Settings' page. At the top, there is a blue header with a user icon and the text 'User Settings'. Below the header, there is a sub-header that reads 'Use this section to edit existing user'. The main content area contains three form fields: 'User ID' with the value 'test1', 'Email Address' with the value 'firstname.lastname@company.com', and 'User Role' with radio buttons for 'User' (selected) and 'Admin'. Below these fields is a blue link labeled 'Change Password'. At the bottom of the form are two buttons: 'Save' and 'Back'.

**Step 3:** Enter a new **Email Address**, change the account to either **User** or **Admin** privileges, or click **Change Password** to modify the account password.

- a. If you clicked **Change Password**, a **Change Password** dialogue box will be displayed:

The screenshot shows a 'Change Password' dialogue box. It has a title bar that says 'Change Password'. Below the title bar, there is a 'Password' label followed by a text input field containing the placeholder text 'Enter new Password'. To the right of the input field is a checkbox labeled 'Show Password'. At the bottom right of the dialogue box are two buttons: 'Cancel' and 'Change Password'.

- b. Enter a new password into the **Password** field and click the **Change Password** button. The user will be notified that the password was successfully changed:

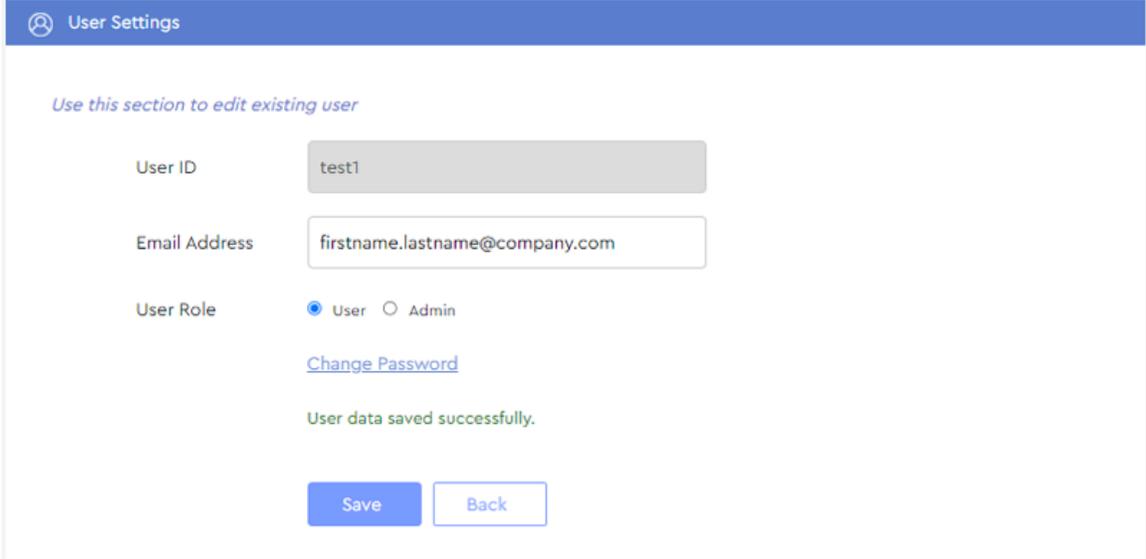
**Figure 207:** Password Changed Successfully

The screenshot shows the 'Change Password' dialogue box after a successful password change. The 'Password' input field now contains a series of dots. Below the input field, there is a green message that reads 'Password successfully changed.'. The 'Cancel' and 'Change Password' buttons are still present at the bottom right.

- c. Click outside of the **Change Password** dialogue box to return to **User Settings**.

**Step 4:** When all modifications have been made, click the **Save** button.

The user will be notified that the edits were saved:

**Figure 208:** User Data Saved

The screenshot shows a web interface for editing a user. At the top, there is a blue header with a user icon and the text "User Settings". Below the header, a message reads "Use this section to edit existing user". The form contains three fields: "User ID" with the value "test1", "Email Address" with the value "firstname.lastname@company.com", and "User Role" with radio buttons for "User" (selected) and "Admin". Below the form, there is a blue link "Change Password" and a green message "User data saved successfully.". At the bottom, there are two buttons: "Save" (blue) and "Back" (white with blue border).

**Step 5:** Click the **Back** button to return to the **User Settings** page, showing the list of accounts.

**Result:** The user account has now been edited.

### 3.7.3 Deleting an Account

This procedure provides instructions for deleting a user or admin account with the Resource Manager Standard Edition application.

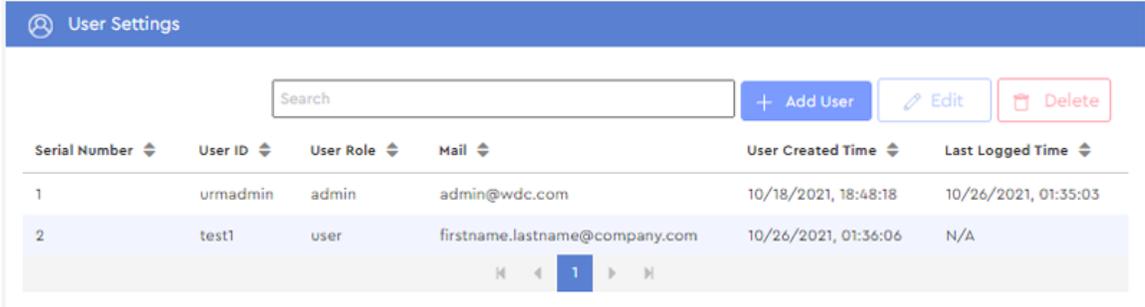
#### Before you begin:

1. Follow the instructions in [Accessing Resource Manager Standard Edition](#) (page 32) to log into the Resource Manager Standard Edition application.

**Step 1:** From the navigation bar, select **User Settings**.

The **User Settings** page will be displayed:

**Figure 209:** User Settings Page



The screenshot shows the 'User Settings' page with a search bar, '+ Add User', 'Edit', and 'Delete' buttons. Below is a table of users:

Serial Number	User ID	User Role	Mail	User Created Time	Last Logged Time
1	urmadmin	admin	admin@wdc.com	10/18/2021, 18:48:18	10/26/2021, 01:35:03
2	test1	user	firstname.lastname@company.com	10/26/2021, 01:36:06	N/A

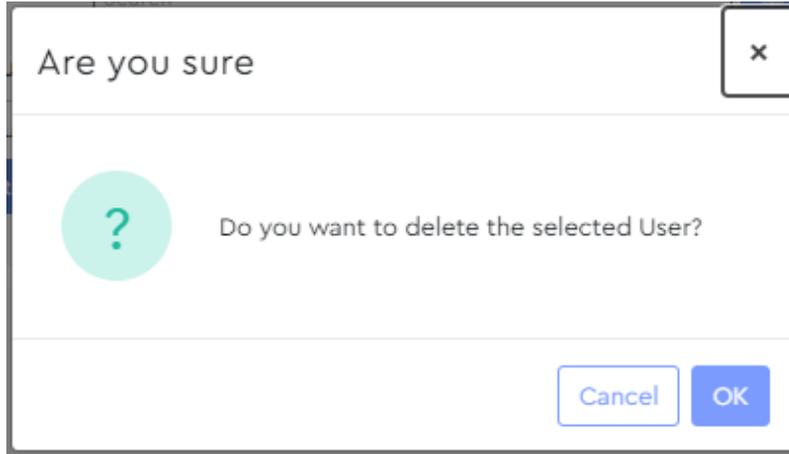
**Step 2:** Click the row of an existing account to select it. Then click the **Delete** button:

**Figure 210:** Delete Button



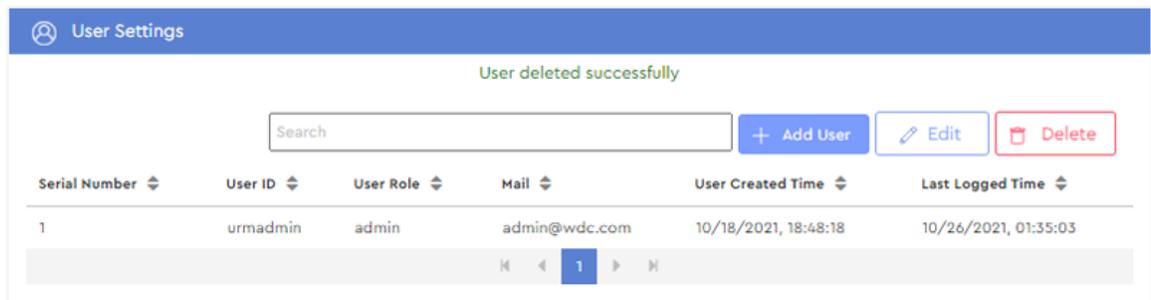
**Note:** The first account (urmadmin) is a default account and cannot be edited or deleted.

A dialogue box will appear, prompting the user to confirm the deletion:

**Figure 211:** Confirm Deletion Dialogue Box

**Step 3:** Click the **OK** button.

The account will be deleted from the **User Settings** page, and the user will be notified of the successful deletion:

**Figure 212:** Successful Deletion

**Result:** The user account has now been deleted.

## 3.8 Virtual Tour

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The **Virtual Tour** section guides users through the Resource Manager Standard Edition graphical interface, providing tooltip explanations of menu options and page sections.

### 3.8.1 Taking a Virtual Tour

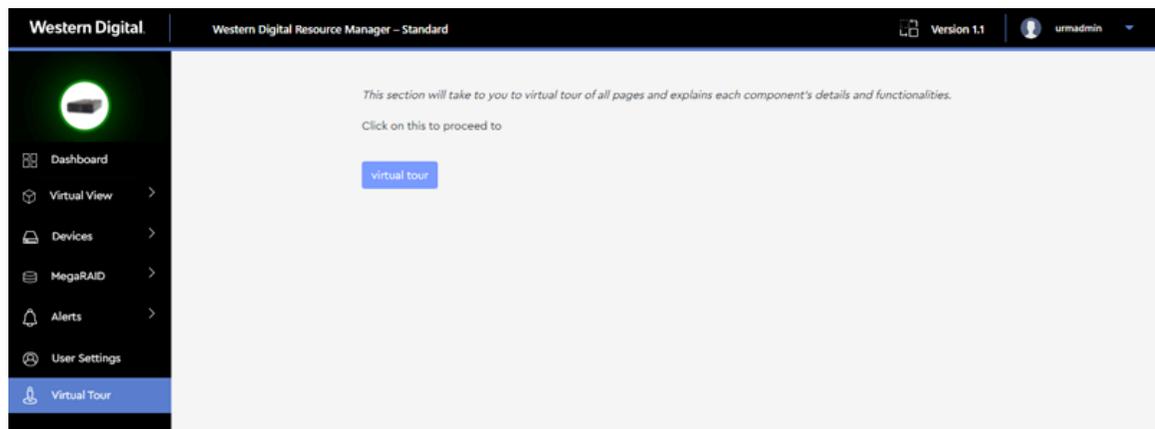
This procedure provides instructions for taking a virtual tour of the Resource Manager Standard Edition graphical user interface (GUI).

#### Before you begin:

1. Follow the instructions in [Accessing Resource Manager Standard Edition \(page 32\)](#) to log into the Resource Manager Standard Edition application.

**Step 1:** From the navigation bar, select **Virtual Tour**.

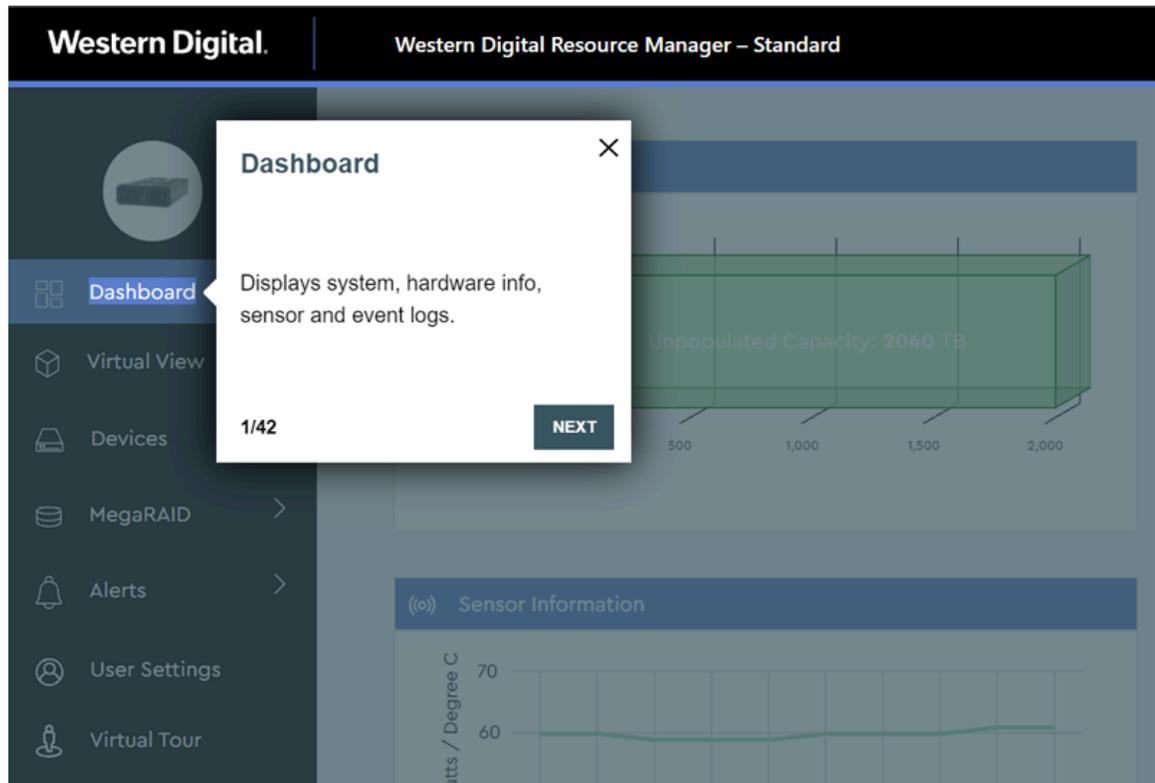
The **Virtual Tour** page will be displayed:



**Step 2:** Click the **Virtual Tour** button.

A message is displayed, explaining the function of a section of the GUI.

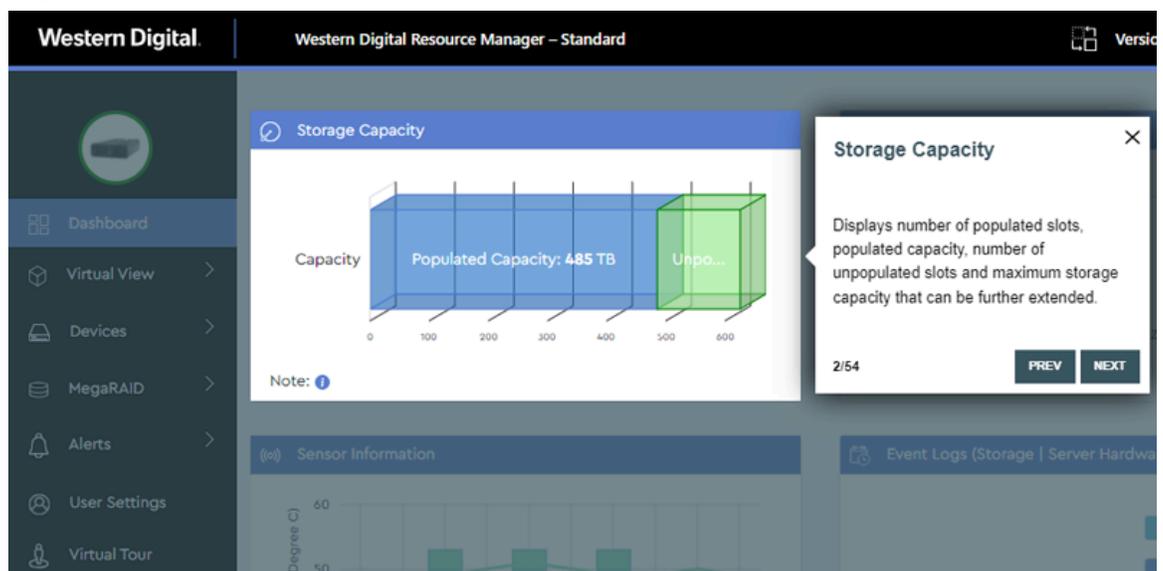
**Figure 214:** Explanation Message



**Step 3:** Click the **NEXT** button to move forward through each explanation of the Resource Manager Standard Edition application.

**Step 4:** Click the **PREV** button to go back to a previous explanation.

**Figure 215:** PREV and NEXT Buttons





**Note:** To exit the virtual tour at any time, click the **X** in the upper-right corner of any message box.

**Result:** The virtual tour is now complete.