

Drobo[™] User Interface

Easiest RAID Array Management Ever!

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Introduction

Storage has traditionally been difficult to understand and manage, especially for those of us who are not in the storage industry. Tasks such as pooling drives, scaling capacity, and protecting against data loss are complex for businesses and individuals alike. In addition, the explosion of rich media and unstructured data requires more sophisticated digital storage. Plus, legacy solutions can also be too complex or too limited for today's needs, especially if users are also demanding a fast and reliable storage system.

Drobo™ products deliver breakthrough ease-of-use, affordability and value through our patented BeyondRAID™ and hybrid storage technologies. Now businesses and professionals will have the best storage experience ever.

Drobo BeyondRAID technologies enable a unique combination of simplicity and storage sophistication in stark contrast to legacy storage systems. Drobo's are part of a new breed of storage systems focused at small to medium sized business users. Advantages include: data safety and real-time capacity expansion, with an overall design that addresses diverse workload needs such as media, virtualization, and cloud-attached storage. Drobo's provide an easier way for a non-IT person to deploy and manage a performance storage system without the enterprise price tag.

Hybrid storage is a Drobo technology that automates the provisioning, deployment and performance acceleration for a fast tier of solid state drive (SSD) storage in the Drobo B1200i array. Users can now take advantage of traditional hard disk drive (HDD) capacity plus SSD acceleration across all of their applications. This process happens automatically and transparently as soon as SSD drives are added to the deployed Drobo. Because, Drobo is aware of the differences between streaming and transactional data, it enables instantaneous and intelligent data tiering to increase performance by directing transactional data to the SSDs.

Industrial design is one of the many benefits of this very cool looking product family. It's award winning designs successfully marry style and usability. Whether your Drobo is simply sitting on your desk or traveling with you to the Galapagos Islands for a shoot, you can rest assured that your Drobo is up to the challenge.

Drobo's user interface isn't limited to its desktop application, it also extends to the front bezel. Because Drobo's are purchased with data protection in the mind, the user interface has been simplified to focus on this use case. In addition, Drobo was designed for users that aren't storage experts and so the user interface is very intuitive to use.

Four white papers describe why Drobo provides user's with a truly modern storage experience:

1. **BeyondRAID** breaks down the barriers of a traditional RAID implementation to greatly simplify storage deployment and management, and it protects both data and files
2. **Hybrid Storage** is enabled by BeyondRAID. It delivers automatic storage optimization based on the type (or "tier") of the data or files stored
3. **Industrial Design** highlights that it is possible to combine functionality, style, usability, manufacturing quality, and a lot more into a very cool looking product line
4. **User Interface** makes pooling drives in a single chassis easier than previously possible

This white paper explains User Interface and its associated benefits.

Traffic Light Easy

A Drobo's primary management interface are the lights on the front bezel. Just looking at a Drobo quickly tells you if it's healthy and how much unused storage capacity remains.

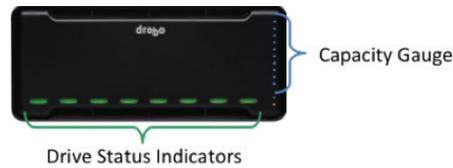


Figure 1. Shows drive status indicators and capacity gauge on the front of an 8-bay Drobo. All Drobos have this feature, although the implementation does differ between models.

Individual drive status indicators provide realtime information about the drives and if any action needs to be taken. For example, if a drive happens to fail, that drive's light will blink red. An empty drive bay illuminates a yellow light if the Drobo is running low on available storage capacity, indicating that another disk drive should be inserted in that bay.

As your Drobo fills with data, the capacity gauge (indicated by the blue lights) starts to illuminate, ten in all. For example, two blue lights will be lit if 20% of the overall capacity is used, as more capacity is consumed more lights will be lit. Refer to the BeyondRAID white paper for more information about the Drobo capacity gauge.

Drobos are carefully designed from the ground up and are made of high-quality materials. Even in server closets, it's a bezel you will actually want to use! The high-intensity indicator lights shine through the bezel, so whether the bezel is on or off, Drobo's primary form of management (lights) is front and center. The lights can be dimmed for comfort in an office or home environment.

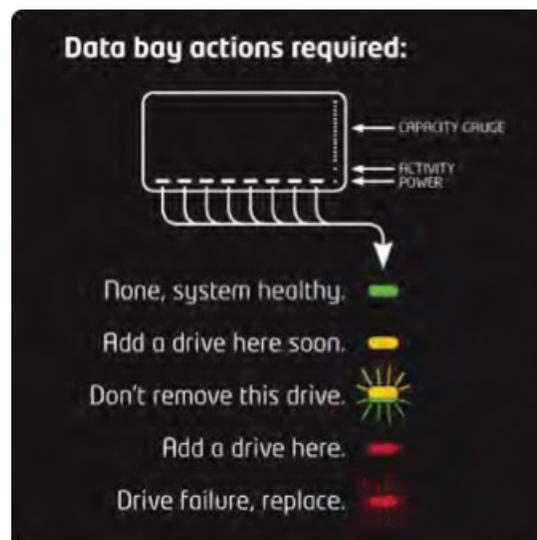


Figure 2. Because Drobo is so easy to use, the instructions fit inside the front cover. After setup, the lights shining through the front bezel inform users about any actions that need to be taken.

Advanced Management That's Easy To Use

The Drobo Dashboard is actually the setup, management, and administration screen. Since the indicator lights on the front bezel are the primary management interface, the dashboard's goal is to display the front of every Drobo in a single window. All direct and network connected Drobos, automatically appear in the Drobo Dashboard for easy, multi-device administration.

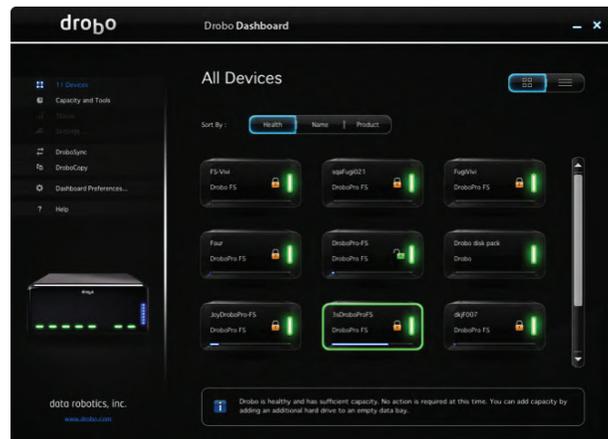


Figure 3. All Drobos automatically appear in the Drobo Dashboard. If the lights change on the Drobo, they are also changed in the dashboard. This feature works for all DAS, NAS, and SAN devices.

Drobo Health

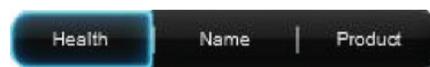


Figure 4. These buttons on the main dashboard screen provides access to additional status screens that display a Drobo's health, name, or product type. If there are multiple Drobos, they will all be listed.

Health – This button displays Drobo devices by their health; red displayed first, followed by yellow, and then green. This is the default view.

- **Red** - indicates a Drobo device has used more than 95% of its available disk capacity and when additional capacity is needed, it also indicates that a disk drive needs to be replaced. A flashing red light indicates that a drive is bad and immediately needs to be replaced.
- **Yellow** - indicates a Drobo device has used more than 85% of its available disk capacity, but less than 95%. It's recommending the user add more disk capacity by either adding a drive into an empty bay or by replacing the smallest drive with a larger one with more raw capacity.
- **Green** - indicates a Drobo device has used less than 85% of its available disk capacity and the data is protected.

Name – This button lists Drobo devices alphabetically by their assigned names, direct attached Drobo devices are listed first (assumes multiple drives).

Product – This button lists Drobo devices alphabetically by their model numbers or product names, direct attached Drobo devices are listed first (assumes multiple drives).

To select a Drobo device, just click on it once.

Navigation Menu

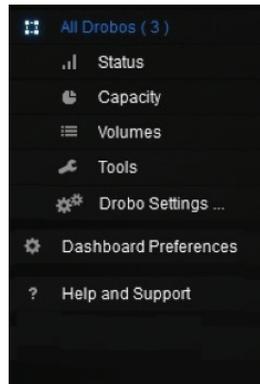


Figure 5. The Navigation menu appears on the left side of the dashboard screen. Options and commands in this menu only apply to the currently selected Drobo device.

- **All Drobos (#)** – Opens the All Drobos page, where # is the number of Drobo devices connected.
- **Status** – Opens the Status page, where the status information for the selected Drobo device can be viewed; such as performance load, drive information, device serial number and more.
- **Capacity** – Opens the Capacity page, where Drobo storage capacity usage can be viewed.
- **Volumes** – Opens the Volumes page, which enables Drobo device volume management.
- **Tools** – Opens the Tools page, which provides access to tools that restart a Drobo device or check for software updates.
- **Drobo Settings** – Opens a sub-menu to modify settings, such as General, Admin, and Network.
- **Dashboard Preferences** – Opens the Dashboard Preferences page, which enables the modification of automatic software updates and email settings. (Email settings enable the receipt of email alerts when status changes on a Drobo device.)

All Drobos

When launching the Drobo Dashboard application the All Drobos page opens first. After a few seconds, Drobo “discovers” all Drobo devices currently connected and displays them on this page. If there are no Drobo devices connected or powered on, a “No Drobos Detected” message displays.

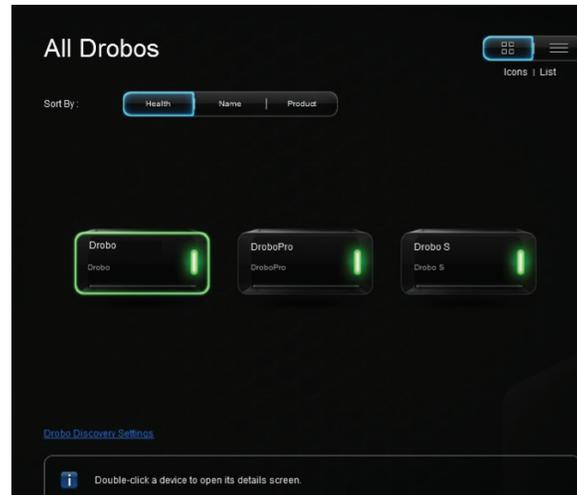


Figure 6. This All Drobos dashboard screen has discovered the user has three Drobos connected.

Checking Drobo Status

The Drobo Dashboard Status page provides in-depth information on the system and drive status of your Drobo. From this screen, select one of the options in the drop-down list.

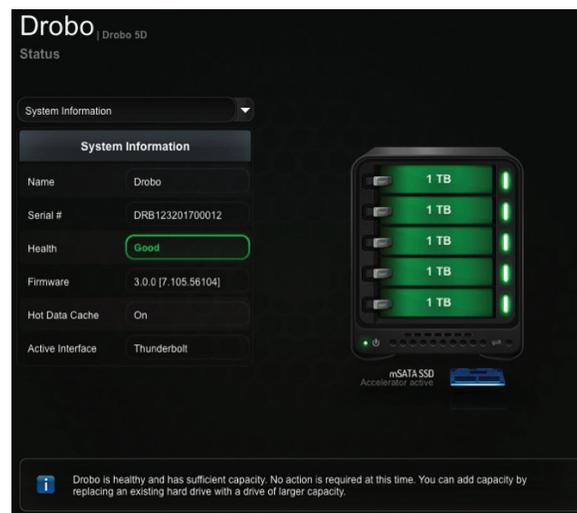


Figure 7. This Drobo Status dashboard screen illustrates important device information for a Drobo 5D.

Viewing Capacity Usage

The **Capacity Usage** page displays a capacity breakdown bar, this provides more detailed information about how disk space is being used. The following information is displayed:

- **Available for data** - The total protected capacity available on which to store data.
- **Reserved for expansion** - Capacity reserved for future use when one hard drive is larger than the others. This capacity becomes available when a larger capacity hard drive is added or by replacing a smaller drive with a larger one.
- **Used for protection** - Capacity used by Drobo to protect data in the event of hard drive failure.
- **Overhead** - Capacity used by Drobo to manage the hard drives.

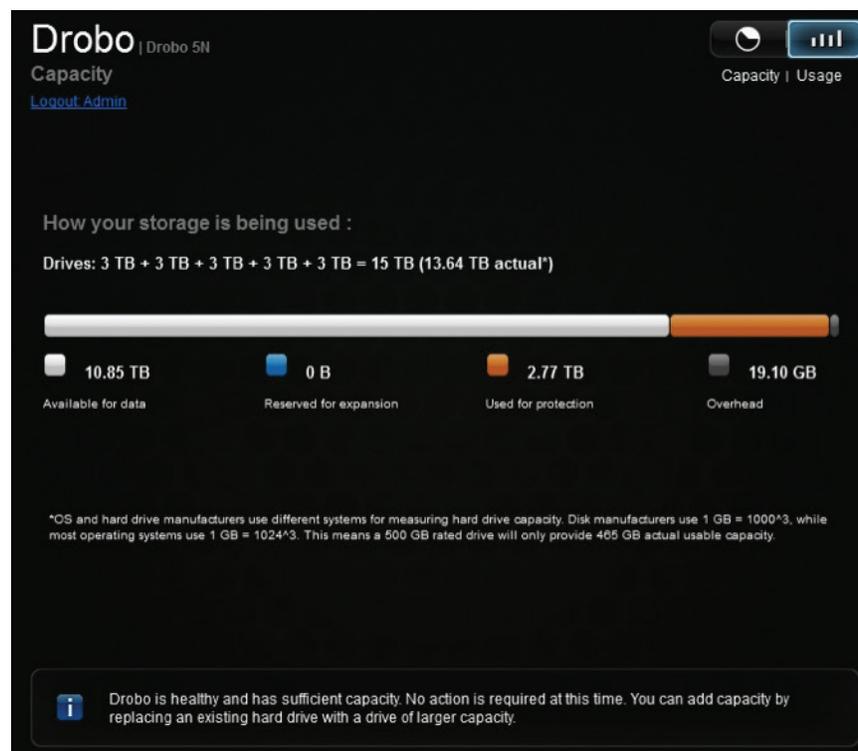


Figure 8. This Drobo Capacity Usage dashboard screen illustrates how 15TB of raw storage capacity is allocated on a Drobo 5N after it's formatted.

Managing Volumes

On DAS and NAS-based Drobos volume management is mostly handled for the user, whereas business class Drobos provide users with a variety of volume configuration options. Although volumes can be created regardless of which port is connected, it must be connected via an iSCSI data port to be able to format and mount the volumes.

Drobo Dashboard automates the creation of volumes for a Windows or Mac operating system running on a host computer (server). To take advantage of this, the Drobo Dashboard must be installed on the host server that is connected to the Drobo via one of its iSCSI data ports (either directly or through the SAN).

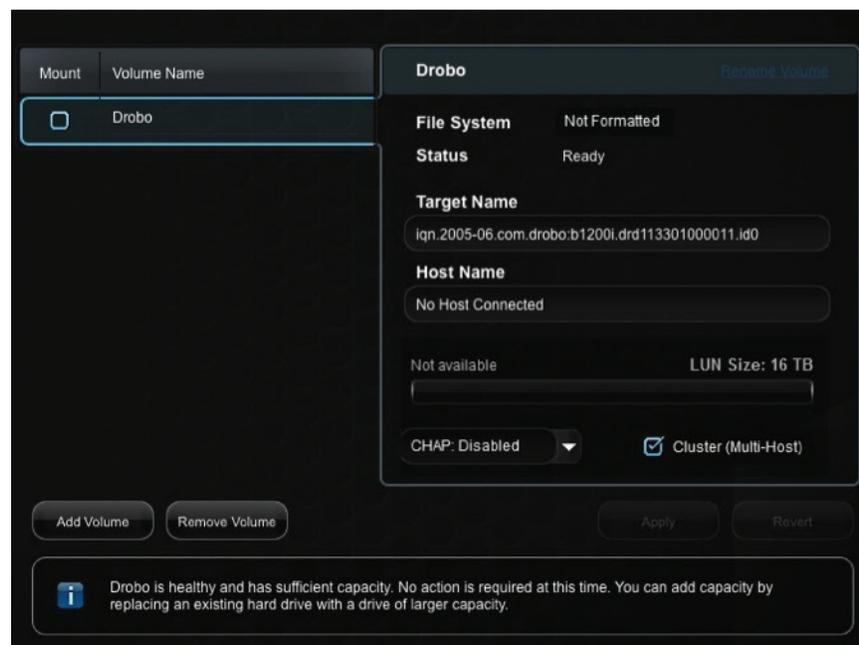


Figure 9. This screen illustrates how to add, remove, or mount a Drobo B1200i volume.

Once a volume has been created it can then be sized by simply sliding a pointer along a capacity bar (see below), then give the volume a name. Drobo makes complicated storage management tasks such as this one, easy and quick.

Drobo Settings

Enabling or Disabling Dual Disk Redundancy

Drobo's are purchased for Single Disk Redundancy at a minimum, this option protects your valuable data in the event of a single drive failure. Should this happen, users can still access their data but in an unprotected state. For more protection, the dashboard makes it easy for a user to configure the unit for Dual Disk Redundancy which protects against two simultaneous drive failures. Although it provides additional protection, it requires more disk space.

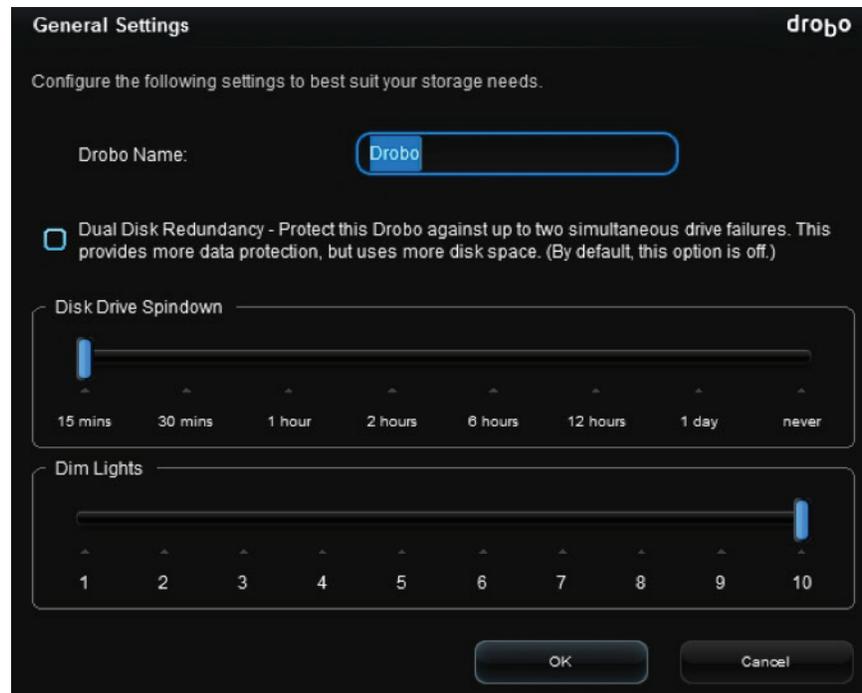
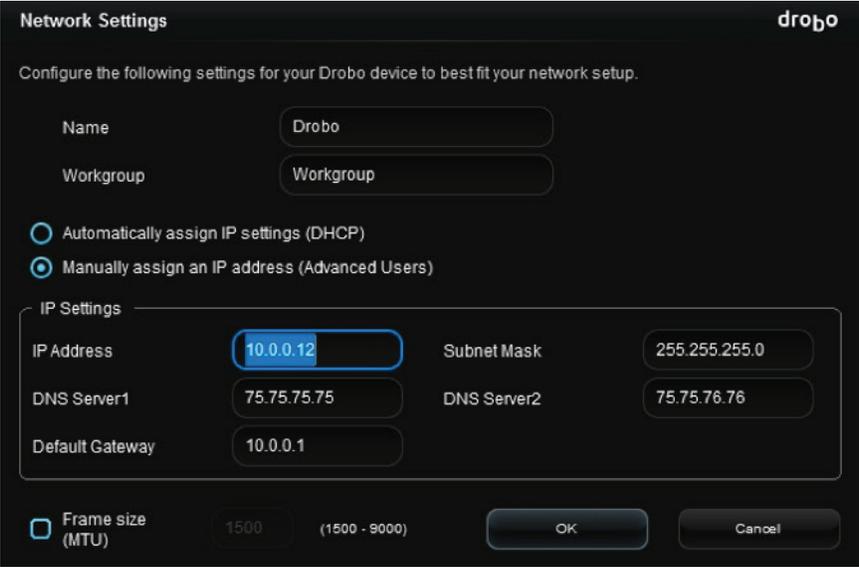


Figure 10. This Drobo dashboard General Settings screen illustrates how to establish Dual Disk Redundancy on a Drobo 5D. Other administration settings include when to spin down drives to save power and an option to dim the lights on the front bezel for less glare in a home or office environment.

Configuring Network Settings and IP Addresses

Although Drobo uses DHCP to automatically assign IP addresses to a NAS-based Drobo device connected to a network (this is the default), you can choose to manually assign IP addresses to your device's port(s) by configuring network settings.



The screenshot displays the 'Network Settings' window for a Drobo device. The interface is dark-themed with white text. At the top, it says 'Configure the following settings for your Drobo device to best fit your network setup.' Below this, there are input fields for 'Name' (containing 'Drobo') and 'Workgroup' (containing 'Workgroup'). Two radio buttons are present: 'Automatically assign IP settings (DHCP)' (unselected) and 'Manually assign an IP address (Advanced Users)' (selected). Under the 'IP Settings' section, there are input fields for 'IP Address' (10.0.0.12), 'Subnet Mask' (255.255.255.0), 'DNS Server1' (75.75.75.75), 'DNS Server2' (75.75.76.76), and 'Default Gateway' (10.0.0.1). At the bottom, there is a checkbox for 'Frame size (MTU)' (unchecked) with a value of 1500 and a range of (1500 - 9000). 'OK' and 'Cancel' buttons are located at the bottom right.

Figure 11. Shows how to manually set an IP address for a port by selecting the manually assign an IP address option to enable the network settings to be modified.

Automatic iSCSI Configuration

In a traditional RAID environment connecting a server to iSCSI storage can be challenging. Whereas the Drobo dashboard makes it easy; first, enter the storage IP address, then choose a LUN to attach to, provide security credentials (if assigned), and finally format the newly attached volume. With the Drobo Dashboard on Windows or Mac OS, attaching to a Drobo iSCSI volume is as easy as checking a box.

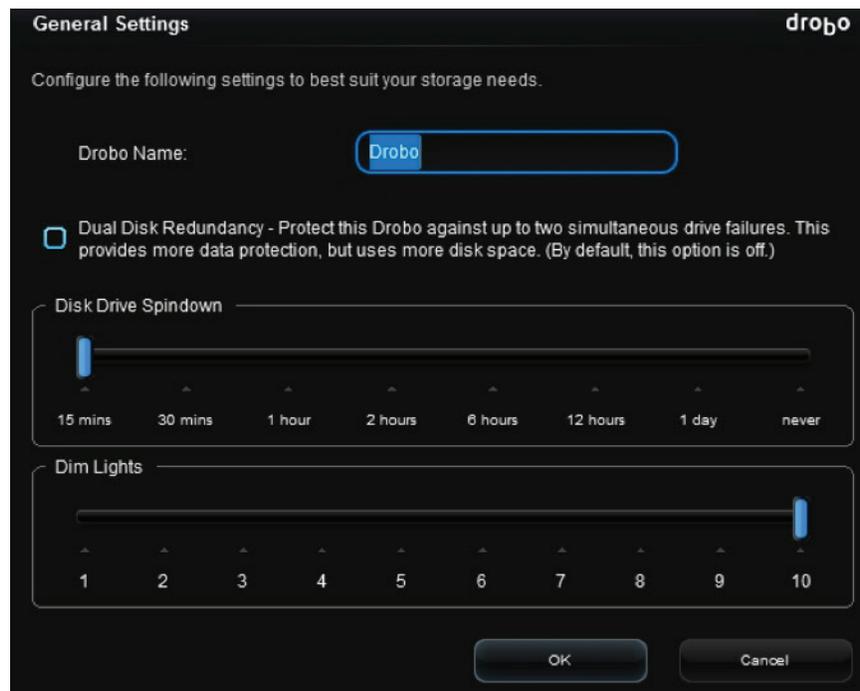


Figure 12. To mount an iSCSI volume, just check the box and the host initiator is performed automatically.

Using the dashboard, mounting an iSCSI volume, configuring the iSCSI initiator on Windows or Mac, is fully automatic, there's no need for manual configuration. Even CHAP authentication is enforced.

Dashboard Preferences

Setting Up or Modifying Email Alerts

Enabling email alerts keeps you informed on the status of all your Drobo devices, as well as potential issues, such as the need to increase capacity. Once email alerts have been set up, they can be modified whenever needed.

Figure 13. This dashboard screen shot shows just how easy it is to create email alerts. When something important happens you always know the health of your storage array, no matter where in the world you're located.

Summary

The Drobo user interface starts with the unit's front bezel, just by looking at the unit a user can immediately determine if all the drives are good, or if one has failed or developing problems and likely to fail. In addition, Drobo informs its user about capacity usage and whether or not more disk capacity should be added.

If the unit is in a location that's not easily assessable, these capabilities will also be displayed on the Drobo dashboard which can be used on any Mac or Windows-based PC or laptop. The Drobo dashboard will also help users configure single or dual drive redundancy, update the firmware, and more. With Drobo, users don't have to be PhD's in storage to build and maintain a healthy storage array.

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