

# Using Dell OpenManage for Easy Integration and Management of SAS and SATA Storage Hardware

Leveraging advances in Serial Attached SCSI (SAS) technology, Dell™ OpenManage™ software can help simplify the configuration and management of SAS and Serial ATA (SATA) storage hardware. This article discusses how Dell OpenManage Server Administrator Storage Management tools can help administrators increase the bandwidth, capacity, and data integrity of the enterprise storage infrastructure quickly and cost-effectively.

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**S**erial Attached SCSI (SAS) technology is designed to enable increased bandwidth and provide the capacity to manage more storage enclosures and more physical disks than is possible using a SCSI configuration. Dell OpenManage Server Administrator Storage Management provides features that allow organizations to take advantage of SAS technology while exploiting the cost-effectiveness of Serial ATA (SATA) storage hardware.

This article discusses key SAS features enabled by Dell OpenManage Server Administrator Storage Management. Administrators can access these features either through the Storage Management graphical user interface (GUI), which includes wizards and detailed online help, or through a comprehensive command-line interface (CLI) that enables scripting. Administrators can perform Storage Management tasks from the CLI using the `omreport storage` and `omconfig storage` commands.

## Enhancing storage administration and scalability

The Dell PowerEdge™ Expandable RAID Controller 5/E (PERC 5/E) and the Dell PowerVault™ MD1000 storage enclosure help simplify storage administration and improve scalability for direct attach storage because they are designed to access more storage than is possible using a SCSI configuration. The PowerVault MD1000 storage enclosure can contain SAS or SATA physical disks, enabling organizations to leverage the benefits of both types of hardware and increase storage capacity flexibly in cost-effective increments as business requirements evolve.<sup>1</sup>

## Creating virtual disks

Dell OpenManage Server Administrator Storage Management software enables organizations to create virtual disks using SAS or SATA physical disks. The GUI facilitates this process through an Express Wizard and an Advanced

<sup>1</sup> For details on supported configurations, refer to the *Dell OpenManage Server Administrator Compatibility Guide* at [support.dell.com/support/edocs/software/svradmin](http://support.dell.com/support/edocs/software/svradmin).

Wizard. The Express Wizard calculates an appropriate virtual disk configuration, enabling novice administrators to create a virtual disk with a few mouse clicks. Experienced administrators can use the Advanced Wizard to specify advanced virtual disk properties such as the cache policy and the selection of physical disks (see Figure 1).

A virtual disk can comprise either SAS or SATA physical disks but not both. If both types of disks are attached to the PERC 5/E or PERC 5/i controller, the Advanced Wizard asks the administrator to choose SAS or SATA.

### Accessing virtual disk configurations

SAS offers flexible virtual disk management when moving physical disks from one enclosure to another or to a different controller. Virtual disks residing on physical disks that have been moved are recognized as a foreign configuration by the controller. Storage Management enables administrators to import a foreign configuration so that virtual disks are not lost when the physical disks on which the virtual disks reside are moved.

To be imported, the foreign configuration must contain a virtual disk that is in either Ready or Degraded state. That is, all of the virtual disk data must be present, but if the virtual disk is configured as a redundant RAID level, the additional redundant data does not need to be present.

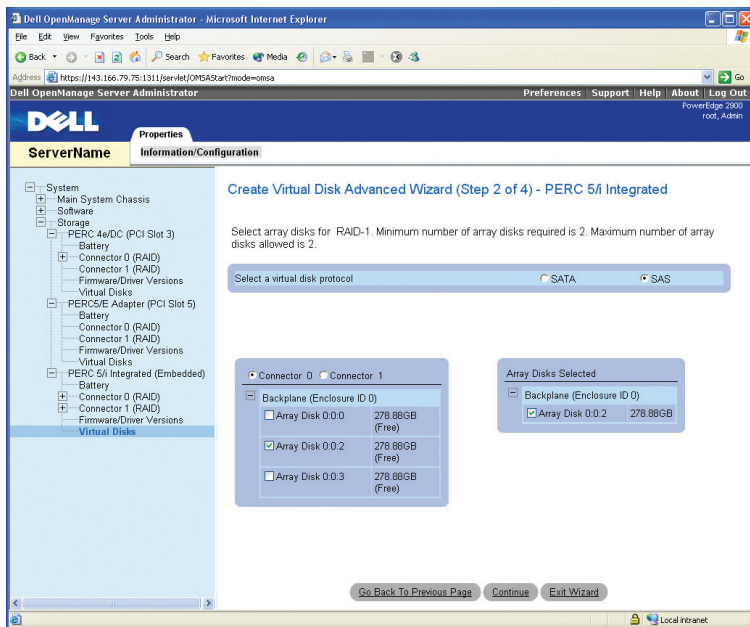


Figure 1. Using the Advanced Wizard to specify virtual disk properties

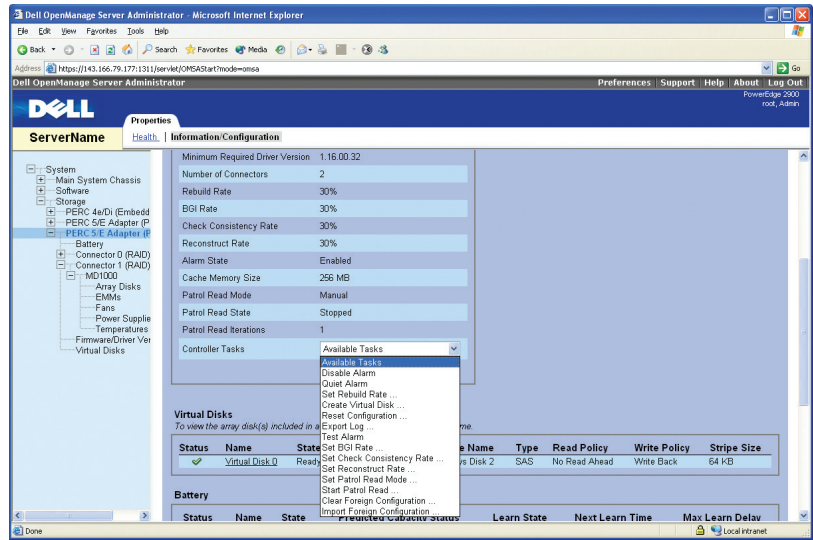


Figure 2. Importing or clearing foreign configurations

For example, if the foreign configuration contains only one side of a mirror in a RAID-1 virtual disk, then the virtual disk is in Degraded state and can be imported. In contrast, if the foreign configuration contains only one physical disk that was originally part of a RAID-5 configuration using three physical disks, then the RAID-5 virtual disk has failed and cannot be imported.

In addition to virtual disks, a foreign configuration may consist of a physical disk that was assigned as a hot spare on the previous controller. The Import Foreign Configuration task imports the new physical disk as a hot spare.

If a physical disk contains all or some portion of a foreign configuration, then Storage Management displays the physical disk state as Foreign. Storage Management displays the Import Foreign Configuration task when the controller has detected a foreign configuration (see Figure 2). Alternatively, administrators can use the Clear Foreign Configuration task to delete the foreign configuration rather than import it.


### Identifying disk errors

Dell OpenManage Server Administrator Storage Management's Patrol Read feature identifies disk errors to help avoid disk failures and data loss or corruption. Patrol Read runs on disks that are configured in a virtual disk array or as hot spares.

Patrol Read is designed to correct disk errors and restore the integrity of the data. Storage Management enables administrators to set the Patrol Read mode to Auto, Manual, or Disable. In Auto mode, the controller initiates

Patrol Read according to a schedule enforced by the controller. Manual mode enables administrators to start and stop Patrol Read using the Start or Stop task. Disable mode disables Patrol Read.

### **Advancing integrated, cost-effective storage management**

By providing an integrated approach to storage management, the Dell OpenManage suite helps enterprises capitalize on the scalability and cost-effectiveness of SAS and SATA disk arrays. In particular, Dell OpenManage Server Administrator Storage Management tools can help administrators increase the bandwidth, capacity, and data integrity of the enterprise storage infrastructure with ease and flexibility. 

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#### **FOR MORE INFORMATION**

***Dell OpenManage Server Administrator Storage Management User's Guide and Dell OpenManage Server Administrator Compatibility Guide:***

[support.dell.com/support/edocs/software/svradmin](http://support.dell.com/support/edocs/software/svradmin)

***Dell PERC 5/E and PERC 5/i:***

[support.dell.com/support/edocs/storage/RAID](http://support.dell.com/support/edocs/storage/RAID)

***Dell PowerVault MD1000 storage enclosure:***

[support.dell.com/support/edocs/systems/md1000](http://support.dell.com/support/edocs/systems/md1000)