

Introducing Dell SAS RAID Storage Manager

for Dell PowerEdge SC Servers and Dell Precision Workstations

Dell™ Serial Attached SCSI (SAS) RAID Storage Manager is a stand-alone storage management application that enables administrators to configure, monitor, and manage storage configurations on SAS controllers, physical drives, and virtual disks. This article discusses the application's key features for Dell PowerEdge™ SC servers and Dell Precision™ workstations.

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Dell Serial Attached SCSI (SAS) RAID Storage Manager (RSM) software provides administrators with versatile array configuration and management options, including online capacity expansion, RAID level migration, and random logical drive deletion without system shutdown. A wide assortment of caching policies for logical drives, variable stripe sizing, and adjustable task rates enable administrators to quickly and easily modify their storage arrays to meet enterprise requirements.

Dell SAS RSM is supported for the following operating systems:

- Microsoft® Windows® 2000
- 32- and 64-bit versions of Microsoft Windows XP
- 32- and 64-bit versions of Microsoft Windows Server® 2003
- Red Hat® Enterprise Linux® 4 and 5
- Novell® SUSE® Linux Enterprise Server 9 and 10

Installing Dell SAS RAID Storage Manager

Dell SAS RSM is preinstalled as a stand-alone application on Dell PowerEdge SC servers and Dell Precision workstations

that support the PowerEdge Expandable RAID Controller (PERC) 5/i and the SAS 5/iR adapter.

If administrators need to install or reinstall Dell SAS RSM on a system running a Windows OS, they can locate the executable file on the Dell OpenManage™ Server Assistant CD provided with the system or download the file from support.dell.com, then run it and complete the installation wizard. Once the installation completes, administrators can launch the application by selecting Start > Programs > Dell SAS RAID Storage Manager.

To install Dell SAS RSM on systems running a Linux OS, administrators should first copy the `SSM_Linux_Installer-versionnumber.tar.gz` file to a temporary directory, then un-tar this file using the following command:

```
tar -zxvf SSM_Linux_Installer-versionnumber.tar.gz
```

This command creates a new disk directory. Administrators should go to this new disk directory and enter the command `./install.sh`. In Red Hat Enterprise Linux, they can then launch the application by selecting Applications > System Tools > Dell SAS RAID Storage

Manager StartupUI; in Novell SUSE Linux Enterprise Server, they can do so by selecting Start > System > More Programs > Dell SAS RAID Storage Manager.

Understanding the Dell SAS RAID Storage Manager interface

When the login window appears after launching Dell SAS RSM, administrators enter their username and password and select either Full Access mode (which enables both viewing and changing configurations) or View Access mode (which enables only viewing and monitoring configurations) from the drop-down menu. If the computer is networked, administrators should enter the login information for the computer itself, not the network. Using Full Access mode requires the root administrator username and password.

After login, Dell SAS RSM automatically detects and displays the system's storage controllers, physical drives, and virtual disks. The application's main window includes three panels: a left panel showing the system devices, a right panel showing additional details about a particular device, and a bottom panel showing system event log entries.

The left panel presents either a physical or logical view of the system and devices, depending on the selected tab. The Physical tab shows the hierarchy of physical devices; storage controllers are enumerated with the disk drives and other devices attached to the ports. The Logical tab shows the hierarchy of controllers, virtual disks, and disk groups.

The right panel includes three tabs, with different tabs displayed depending on the type of device selected in the left panel and the login mode:

- **Properties:** This tab displays information about the selected device. For example, if a controller is selected, this tab shows information such as the controller name, nonvolatile RAM (NVRAM) size, and number of device ports.
- **Operations:** This tab lists the operations that can be performed on the selected device. Dell SAS RSM only displays this tab in Full Access mode.
- **Graphical View:** This tab displays a color-coded view of the selected device's storage capacity (see Figure 1). Dell SAS RSM only displays this tab for physical drives and virtual disks.

The bottom panel displays the system event log entries, including the ID number, an error level indicating event severity, the date and time, and a brief description.

Managing virtual disks

The Dell SAS RSM Configuration Wizard enables administrators to create new virtual disk configurations on the PERC 5/i and the SAS 5/iR without rebooting the systems. It includes three modes for the PERC 5/i:

- **Auto Configuration:** Of the three modes, this one provides the quickest and simplest way to create a new storage configuration. Using the available physical disks, the wizard creates the optimal virtual disk with minimal administrator intervention.
- **Guided Configuration:** This mode creates a new storage configuration based on a series of queries. The wizard uses the information provided by the administrator to create an optimal storage configuration using the available physical disks.
- **Manual Configuration:** This mode is the most flexible of the three, but is designed for advanced users with in-depth knowledge of storage configurations.

Saving and adding virtual disk configurations

In addition to creating new configurations, administrators can import existing configurations to help prevent virtual disks from being lost when migrating physical disks or to help simplify configuration of a new controller. They can use Dell SAS RSM to save an existing configuration to disk by performing the following steps:

1. Select a controller in the left panel of the application's main window, then select Operations > Advanced Operations > Configuration > Save Configuration in the menu bar.
2. In the Save dialog box, enter a name for the configuration file, then click the Save button.

Administrators can import a saved configuration as follows:

1. Select a controller in the left panel of the application's main window, then select Operations > Advanced Operations > Configuration > Add Saved Configuration in the menu bar.
2. A message box displays a warning that unstable conditions may arise from differences in physical devices in two configurations. Click the Yes button.

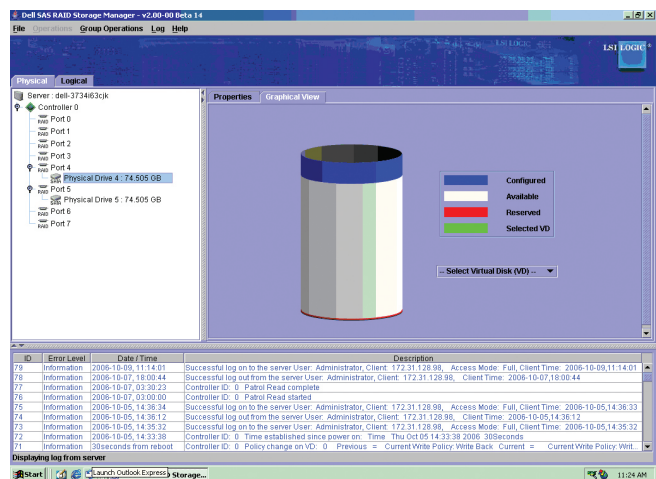


Figure 1. Viewing physical disk storage in the Dell SAS RAID Storage Manager Graphical View tab

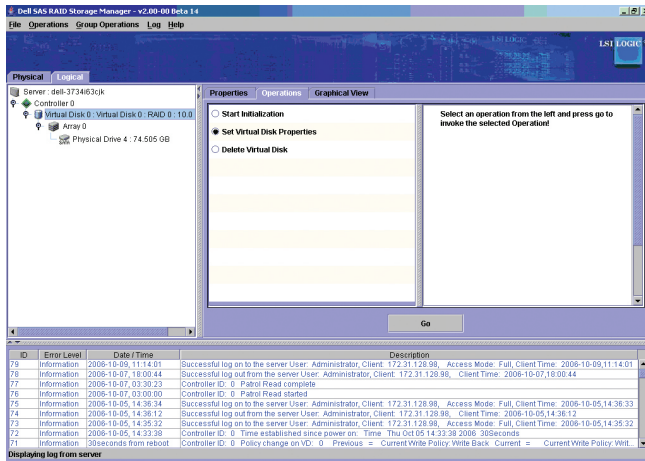


Figure 2. Changing virtual disk properties in the Dell SAS RAID Storage Manager Operations tab

3. In the Open dialog box, select the configuration file, click the Open button, and select “Apply.”
4. When prompted, confirm the new configuration.

Note: When adding a saved configuration to a replacement controller, administrators should ensure that the number and size of the physical disks connected to the controller are exactly the same as they were when the configuration was saved.

Changing virtual disk properties and configurations

Administrators can modify properties (such as the read, write, I/O, and access policies) for virtual disks configured on the PERC 5/i by selecting the virtual disk in the left panel, then clicking the Operations tab and selecting “Set Virtual Disk Properties” (see Figure 2).

To change virtual disk configurations, administrators can use the Dell SAS RSM Reconstruction Wizard, which allows changes to the RAID level and virtual disk without data loss. (This feature is only available for virtual disks configured on the PERC 5/i.) For example, administrators can change the RAID level of a preconfigured RAID-0 virtual disk as follows:

1. Select a virtual disk in the left panel of the application’s main window, then select Operations > Advanced Operations > Reconstruction Wizard in the menu bar.
2. Click the Next button.
3. Select a different RAID level from the drop-down menu in the lower right corner of the window, then click the Finish button.

Administrators can monitor the reconstruction progress by selecting Group Operations > Show Progress in the menu bar.

Identifying disk errors with Patrol Read

Dell SAS RSM uses the Patrol Read controller feature to identify disk errors. Patrol Read can be run on disks configured in virtual

disk arrays or as hot spares, and is designed to correct disk errors and restore data integrity.

Dell SAS RSM enables administrators to set the Patrol Read mode to Auto, Manual, or Disable. Auto mode initiates Patrol Read based on the schedule enforced by the controller, Manual mode enables administrators to start or stop Patrol Read manually, and Disable mode prevents Patrol Read from executing.

Monitoring system activity and performance

Dell SAS RSM monitors the activity and performance of controllers and the storage devices connected to them:

- **Controllers:** Controller status is displayed in the left panel of the application’s main window. If a controller fails, a small red circle appears to the right of the controller icon. To display complete controller information, administrators can select the controller in the left panel and click the Properties tab in the right panel.
- **Disk drives:** Disk drive status is displayed in the left panel of the application’s main window. To display a graphical view of the disk drive, administrators can select the drive in the left panel and click the Graphical View tab in the right panel.
- **Processes:** Dell SAS RSM allows administrators to monitor the progress of rebuilds, consistency checks, and other processes by selecting Group Operations > Show Progress in the menu bar.

Upgrading controller firmware

Dell SAS RSM enables administrators to easily upgrade PERC 5/i controller firmware without rebooting the system. Administrators can perform a firmware upgrade as follows:

1. Download the latest firmware packages from support.dell.com.
2. In the left panel of the application’s main window, select the appropriate PERC 5/i.
3. In the right panel, click the Operations tab and select “Flash Firmware,” then click the Go button.
4. Browse for the .ROM update file and click the OK button.
5. When prompted to confirm the upgrade, click the Yes button.

Enhancing SAS storage management

Dell SAS RAID Storage Manager, which comes preinstalled on Dell PowerEdge SC servers and Dell Precision workstations, enables administrators to configure, monitor, and manage storage configurations on SAS controllers. Dell SAS RSM tools can enhance flexibility when managing storage devices in enterprise environments. [↪](#)

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