Workflow Systems Dell OMSA
OMSA Storage Services Quickstart Guide

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1. INTRODUCTION

This doc will describe how to do some basic tasks with Dell Storage Services.

Dell Storage Services is part of the Dell Open Manage Server Administrator (OMSA) and replaces Array Manager as the primary means for managing a Dell PERC or CERC RAID. OMSA Storage Services differ from AM in the following ways.

- Storage Services does not replace Windows Disk Administrator under Windows 2000.
- Storage Services uses the same UI as the rest of OMSA and is no longer an MMC application.
- Storage Services offers a few more features that were unavailable in Array Manager.

In this document we will be covering the following basic tasks.

- Starting Storage Services and navigating.
- Diagnosing and repairing a failed drive.
- Creating a new RAID volume.
- Expanding / Converting an existing RAID volume.

- Looking at and forwarding the RAID controller's event logs.

OMSA Storage Services support the following RAID controllers

- Perc 2/DC, Perc3/DC Dell PE6400
- Perc 2/Si Dell PE2400
- Perc 3/Di Dell PE4400, PE2500, PE4600, PE2650
- Perc 4/Di Dell PE2600
- Perc 4e/Di Dell PE2800, PE2850
- Perc 5i Dell PE2900, PE2950
- Cerc SATA 6 Dell PE700, PE800, PE830

Further detailed documentation:

The Dell guide for OMSA Storage Services can be found on support.dell.com, or on TechPlanet.

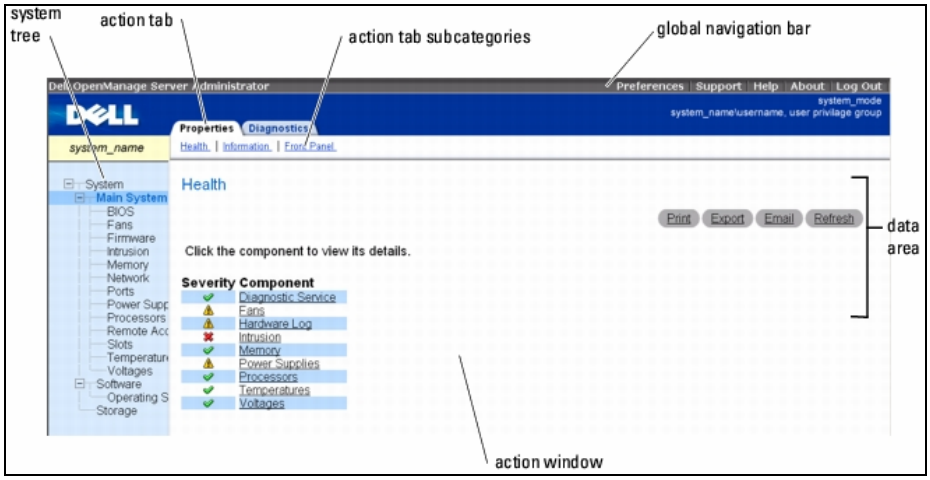
2. NAVIGATING OMSA STORAGE

1) To start Storage Services open Internet Explorer and connect to OMSA

   https://TheServerName**:1311**

   If you are running this locally you can enter **https://127.0.0.1:1311**

2) Log in with any Administrative account user credentials. You should see something similar to the following

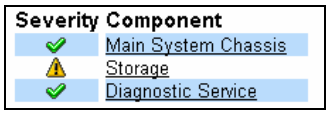


3) Select **Storage > Perc/Cerc**. From here you have all the abilities of controlling the RAID that you had through Array Manager.

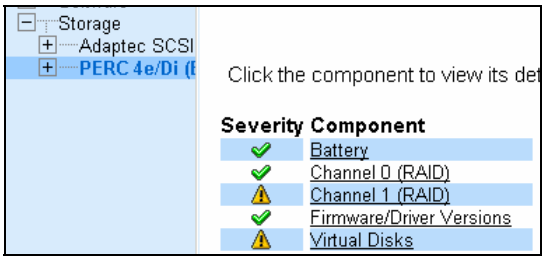
3. REPAIRING A FAILED DISK

1) When a failed disk occurs you should have notification on the front of the Server of a failure.

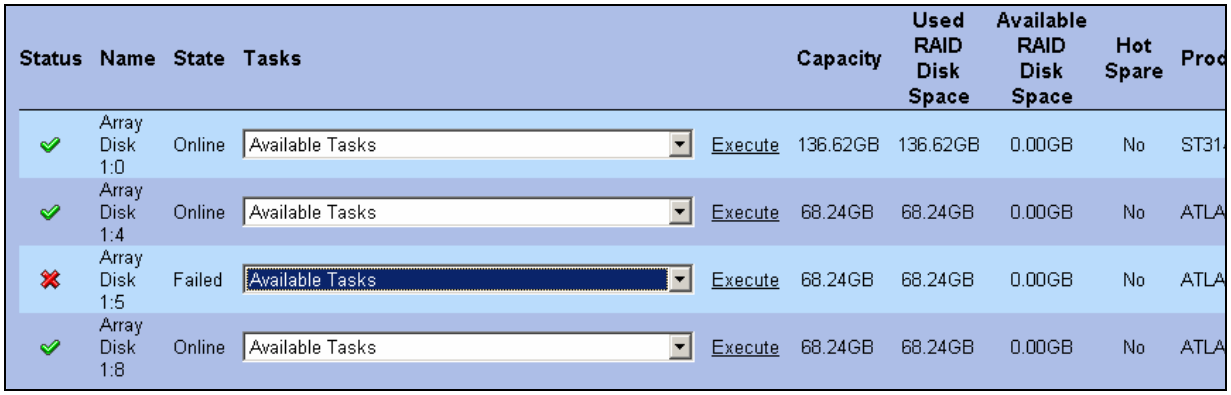
2) Starting OMSA dig into (select) the warning / error notifications until you get to the problem area.



3) At the Perc level select the Hardware Channel vs. Virtual Disk option to continue digging.



4) Eventually you will dig down to the disk area.



Status	Name	State	Tasks		Capacity	Used RAID Disk Space	Available RAID Disk Space	Hot Spare	Prod
✓	Array Disk 1:0	Online	Available Tasks	Execute	136.62GB	136.62GB	0.00GB	No	ST31
✓	Array Disk 1:4	Online	Available Tasks	Execute	68.24GB	68.24GB	0.00GB	No	ATLA
✗	Array Disk 1:5	Failed	Available Tasks	Execute	68.24GB	68.24GB	0.00GB	No	ATLA
✓	Array Disk 1:8	Online	Available Tasks	Execute	68.24GB	68.24GB	0.00GB	No	ATLA

5) Note the failed Disk #. In the above case it 1:5. Document the Disks Product ID for future reference. You will note that the Capacity will show 0GB. We need to find the capacity before we continue.

6) Determining the failed disk capacity: Select **Virtual Disk** from the System Tree and dig through to the failed Array. Normally the failed Disk will by in a Multi-Disk RAID Array. All the disks in the array should be of the same size. The failed disk should be of the same capacity.

   If you Disk is not part of an existing RAID set (ie. JBOD) then google the Disk Product ID as noted from above.

7) Verify there isn't a double fault in the Virtual Disk. If more then one disk shows failed then this can be indicative of another problem. Download the logs and escalate for support.

8) Determine the Dell tag number: This can be found by selecting **System > Summary** and finding the **Chassis Service Tag #**.

9) Call Dell for a drive replacement.

10) When a new disk arrives don't simply pull out the failed disk. If the disk was intermittent and has come back online we must take it offline. In **Perc > Channel > Backplane > Array** under **Available Tasks** select **Offline** and hit **Execute**. The failed disk should be Flashing Amber in the front of the unit.

11) Remove the Offline disk (flashing amber) and install the new disk.

12) In the **Perc > Channel > Backplane > Array** hit **Refresh**. You should see the new disk show as Rebuilding.

4. CREATING A NEW RAID VOLUME

Note! Creating RAID sets from OMSA Storage Services in Windows will **Force an initialize** of your disks. If you want to maintain the data on the disks without an initialize "some" Perc controllers will allow you to do this through the BIOS.

4.1 Create the RAID Set

1) Install the new disks into your Server. Select **System > Storage > Perc/Cerc > Virtual Disk > Channel (0 or 1) > Backplane > Array Disks**. The new disks should show up as **Ready**. Note the **Channel:DiskNumber** of the new disks.

2) Select **System > Storage > Perc/Cerc > Virtual DIsks**.

3) Select the **Go To Create Virtual Disk Wizard** link and select the **Go To Advanced Wizard**.

4) Choose the following options then hit **Finish**.

RAID Level	If 1 disk	RAID 0
	If 2 disk	RAID 1
	If >=3 disk	RAID 5
Select each of the new disks you've added.		
Name	DataX (where X=1,2,...)	
Size	Accept the default.	
Stripe Size	**128KB (changed from default for performance)**	
Read Policy	Read Ahead	
Write Policy	Write Back	
Cache Policy	Cache I/O	

5) You will now see your new Virtual Disk being created. Hit Refresh to see the % status of the initialization process. **Note** you do NOT need to wait for the initialization to complete before continuing on.

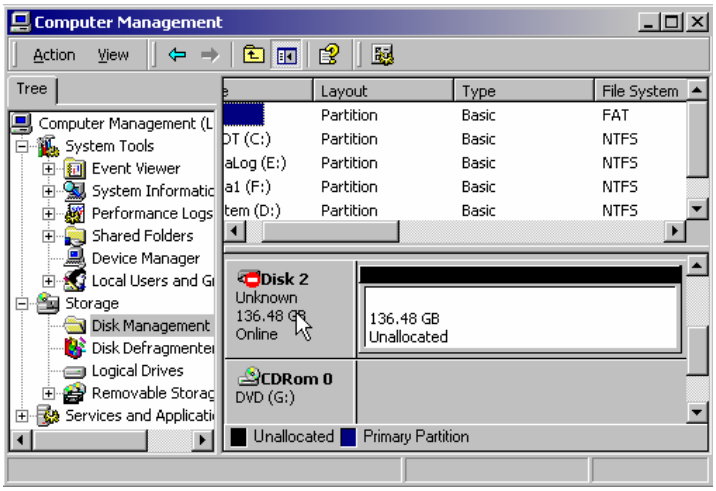
4.2 Add the new RAID set to Windows

In Windows Disk Management it is possible to have 2 or more logical disks bound together as one single large volume it is not recommended since the disks will be forced into Dynamc Disk mode. Dynamic Disk mode will prevent Ghost from using your RAID as a Destination, and also puts all your eggs in one basket. If 1 disk fails, you will lose access to everything.

We recommend that each Disk being presented to Disk Management (other then System Disk) be configured as a single Volume, Basic Disk.

1) **Reboot** the computer so Windows can see the new Virtual Disk. **Note**, you do NOT need to wait for the LUN Initialization process to complete before doing this.

2) Go into **Start > Programs > Administrative Tools > Computer Management > Disk Management**. Hit **Cancel** to the "Welcome to the Write Signature Wizard" message. You should see:



3) Right click the Unknown disk and select **Write Signature**. Hit **OK** to the confirmation window.

4) Right-click the un-partitioned space on the new Disk and select **Create Partition…**. The Create Partition wizard appears. Click **Next**.

5) Select **Primary Partition**, click **Next** (partition size = entire volume), and then click **Next**.

6) Select the following for each Disk other then the System Disk:

Drive Letter	1st disk: J: 2nd disk: G: 3rd disk: K: ...
File System	NTFS
Allocation Unit Size	default
Volume Label	1st disk (J:): Data1 2nd disk (G:): Data2 3rd disk (K:): Data3 ....
Format Type	Quick Format

7) Click **Next**, **Finish** to complete creating a partition.

8) Close the Computer Management Console if no additional disks need be configured.

9) Create a folder **\Backup** on **J:**. This is for Ghost Backups if none exists.

5. EXPANDING/CONVERTING AN EXISTING RAID

You can take an existing RAID5 set and expand it by adding more disks in real-time. The Windows OS on the other hand will not automatically expand with the new space. You must add another logical drive, or convert the disk to Dynamic and expand in which case you will no longer be able to access the disk from Ghost or other DOS based utility tools.

Note: Though the expansion is "possible" many Perc controllers (including the Perc 4(e)/Di (PE2600, 2650, 2800, 2850) will practically lock up the system during the rebuild phase of many hours. It is far more recommended to delete the partition and virtual disk that you wanted expanded and start from scratch.

1) With the Server powered up add the new disk(s).

2) Go to **System > Storage > Perc > Channel X > Backplane > Array Disks**. Verify that the new disk you've added show up as **Ready**.

3) Go to **System > Storage > Perc > Virtual Disks**.

4) For the RAID set you want to expand, under Available Tasks choose **Reconfigure > Execute**. This will start a wizard.

5) Assigned disks are grayed out, available disks have an open checkbox. Select the available Array Disk and hit **Continue**.

6) Select the appropriate raid level and choose **Continue** and select **Finish** to the confirmation prompt. The updated RAID set will now show as reconstructing and show a % progress.

The process will take about 6 hours for a 4x 73GB RAID5 set on a PE2800. The process will also hugely impact the system performance during the rebuild time. There is no way out of this and a reboot will force you to sit at the command prompt until the rebuild is complete.

6. CONVERTING A SINGLE OS DISK TO A MIRROR

This is important if you are doing upgrades where you may have broken the mirror as a backup and have configured the upgrade disk as a JBOD. Once the upgrade is complete you will add back the original disk and turn it into a Mirror of the new OS disk.

1) Go to **System > Storage > Perc > Virtual Disks**.

2) For the Virtual Disk (normally virtual disk 0 but in rare occasions may not be) under Available Tasks select **Reconfigure > Execute**.

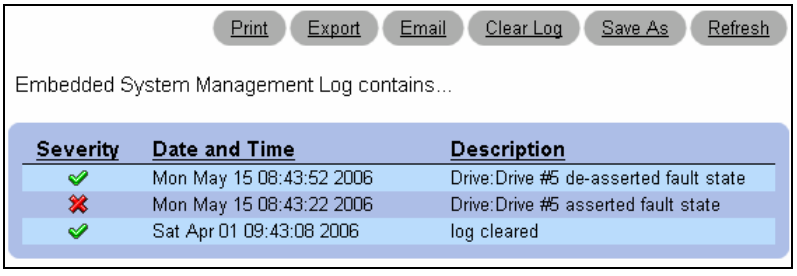
3) Select an **available disk** you wish to add and hit **Continue**.

4) Select **RAID1** and hit **Continue** and select **Finish** at the confirmation prompt.

The updated RAID set will now show as reconstructing and show a % progress. The process will take about 1 hour for a 2x 73GB RAID1 set on a PE2800. The process will also impact the system performance during the rebuild time but the system should still be largely function. There is no way out of this and a reboot will force you to sit at the command prompt until the rebuild is complete.

7. GETTING EVENT LOGS

1) From OMSA select **System** at the root level, select the **Logs** tab and **Hardware** sub tab. You should see something similar to the following. This is a high level overview of your problem report.



2) Select the **Alert** sub tab. This will give a more in-depth server-wide problem report listing.

3) From the **Alert** window select **Date and Time** field 1st to sort descending, then select the **Category** field to sort by device type. Scroll down to **Storage Services** category. This is all your RAID related log reports.

Severity	ID	Date and Time	Category	Description
⚠	2049	Mon May 15 08:43:29 2006	Storage Service	Array disk rem
⚠	2123	Mon May 15 08:43:45 2006	Storage Service	Redundancy lo
⚠	2057	Mon May 15 08:43:45 2006	Storage Service	Virtual disk de
✓	2052	Mon May 15 08:43:45 2006	Storage Service	Array disk inse
✓	2065	Mon May 15 08:44:00 2006	Storage Service	Array disk Reb
✓	1000	Tue May 02 09:58:22 2006	Instrumentation Service	Server Adminis

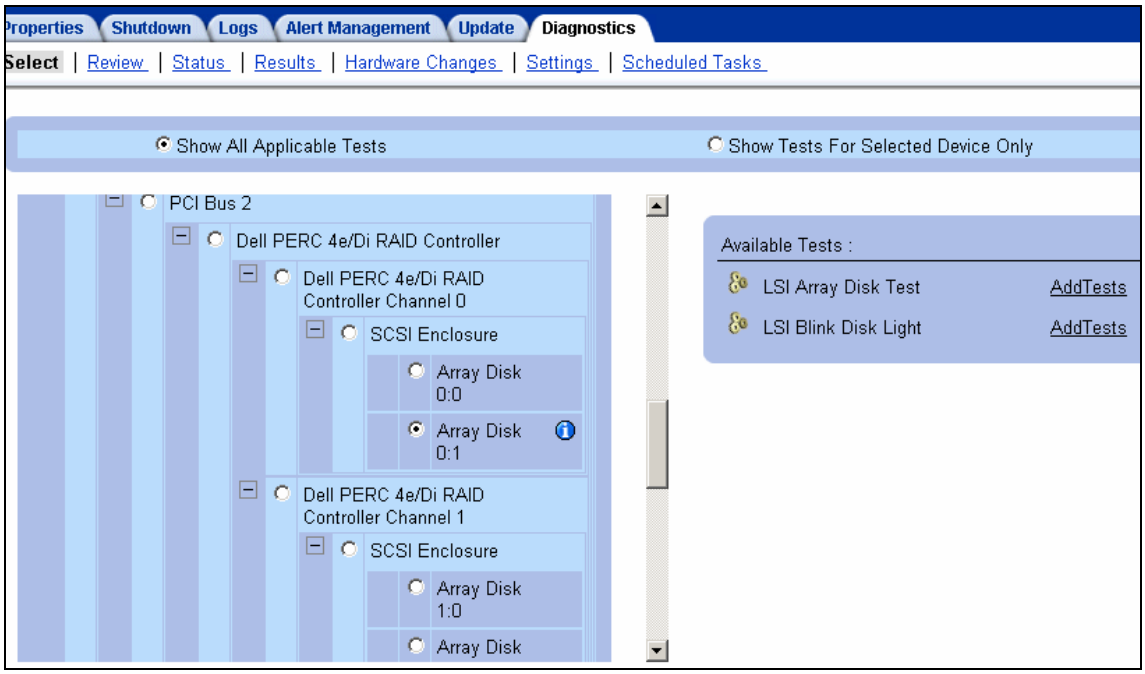
4) Some useful options in this view are:

- **Export:** Opens Notepad and dumps the event log into it.
- **Save As:** Saves the log as a ZIP file that can be sent to other people.

8. TESTING A SUSPECT DISK

If you suspect a disk of being problematic you can run some online diagnostics tests.

1) Select **System > Diagnostics** and choose the **Select** subcategory.



2) **Select** a disk to test, then select the desired **AddTests** in the Available Test section.

3) Select the **Review** subcategory. If you are satisfied with your current tests selection select **Execute Tests**.

4) Select the **Status** subcategory. You should see how far the testing has progressed.

Status	Request ID	Time of Submission	Device Name	Test Name	% Complete	Location	Passes	Run Time	Abort	Suspend	Pro
⇨	1	May 15, 2006 1:08:14 PM PDT	Array Disk 1:4	LSI Array Disk Test	5%	Channel 1, Target ID 4, Lun 0	1/1	-	Abort		View

A 73GB SCSI disk on a PE2800 will take about 15min to complete.

5) Once the test is complete select the **Results** subcategory and select **View** under **Details**..

9. APPENDIX

9.1 Disk Location Table

An example of the disk numbering layout is displayed below.

