



## CHAPTER 6

# Hardware Maintenance Tasks—MARS 100E, 100, 200, GCM, and GC

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The MARS Appliance requires little maintenance. To perform maintenance tasks, you can use the CLI or the web interface as needed. Some hardware maintenance tasks require physical access to the MARS Appliance.

- [Replacing the Lithium Cell CMOS Battery, page 6-1](#)
- [Hard Drive Troubleshooting and Replacement, page 6-1](#)

## Replacing the Lithium Cell CMOS Battery

This section pertains only to the MARS 100, 100E, 200, GCM, and GC appliances.

The lithium battery on the appliance board can power the system real-time clock for up to 10 years in the absence of power. When the battery starts to weaken, it loses voltage, and the appliance settings stored in CMOS RAM (for example, the date and time) may be wrong.

If the system battery of the MARS Appliance fails contact Technical Support for replacement procedures.



**Warning**

**There is the danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.** Statement 1015

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## Hard Drive Troubleshooting and Replacement

This section comprises the following subsections:

- [Hard Drive Status Lights, page 6-2](#)

- [Partition Checking, page 6-2](#)
- [Hotswapping Hard Drives, page 6-2](#)
- [RAID Procedures for MARS Appliances 100E, 100, 200, GCM, and GC, page 6-3](#)
- [Procedures for the MARS RAID Utility, page 6-10](#)
- [Hotswap CLI Example, page 6-9](#)

**Note**


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The term HDD is sometimes used throughout this section in place of hard disk drive, disk, or hard drive.

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## Hard Drive Status Lights

Depending on the model of the appliance, each hard drive has two status lights under or next to the drive. The following states can be determined based on the status lights:

- A steady green light indicates that the drive is functioning normally.
- A blinking orange light indicates that the drive is performing I/O operations.
- No light indicates that the disk has no power.

## Partition Checking

The appliance automatically runs checks on different partitions of the hard drive after the system has been re-booted 25 to 30 times, or if the appliance has not been re-booted in 180 days.

## Hotswapping Hard Drives

If a hard drive fails in the MARS 50, 100, 100e, 200, GC, or GCm appliance models, the MARS administrator receives an e-mail notification. The notification identifies the slot number of the failed hard drive.

## Overview of MARS RAID 10 Subsystem

This section pertains only to the MARS 100, 100E, 200, GCM, and GC appliances.

The following MARS Appliances are equipped with a Parallel IDE/ATA Redundant Array of Inexpensive Disks (RAID) controller card:

- CS-MARS-100E-K9
- CS-MARS-100-K9
- CS-MARS-200-K9
- CS-MARS-GCM-K9
- CS-MARS-GC-K9

All other MARS appliances running software version 4.X or prior have software RAID controllers.

The MARS RAID controller cards operate the hard drives in a RAID 10 configuration, also called RAID 1+0 because it combines the data handling techniques of RAID 1 and RAID 0. For additional information on RAID concepts and terminology, access the following URL:

<http://en.wikipedia.org/wiki/RAID>

### RAID 0 Data Striping

In a MARS RAID 10 configuration, half the total number of drives are arrayed as a single logical drive, wherein a data block is distributed across all of the physical drives in the logical drive using RAID 0 striping techniques. Data striping results in better performance for a data intensive application such as MARS, because hard drive random access times are minimized when data is read and written simultaneously from more than one physical hard drive.

### RAID 1 Mirroring and Subunits

The remaining drives in the MARS RAID 10 array mirror the RAID 0 virtual drive. Each physical drive in the RAID 0 array is mirrored by an identical physical drive using RAID 1 techniques. Data written to one of the drives within the RAID 0 array is simultaneously written to its dedicated RAID 1 partner, thereby providing fault tolerance through data redundancy.

A RAID 1 pair is termed a subunit. For example, an 8-drive Local Controller 200 has 4 RAID 1 subunits (8 drives in total), a 6-drive Local Controller 100 has 3 subunits (6 drives in total).

A subunit always comprises the same two hard drive slots. For instance, a MARS 110 or GC2 will always have the same pairings in a subunit, Slots 0 and 1, physical hard drive pairings

### Rebuilding a Degraded Array

Either drive in a subunit can serve in place of its partner should either drive become degraded (unavailable, physically inoperative, or data corrupted). A physical drive degraded but still physically operative can be rebuilt from the data of its undegraded partner and rejoin the array. An inoperative physical drive can be replaced with an operative one which is then rebuilt to join the array.

When any physical drive of the RAID 10 array is degraded, the entire array is considered degraded. While the array still functions, it is not working to its optimal throughput or redundancy capacity.

In a degraded RAID 10 array, data destined for degraded physical drives are written to available space on other subunits until the degraded drives are rebuilt or replaced. Degraded drives are rebuilt in sequence, one rebuilding process must complete before the next process can begin. Between 90 minutes and 2 hours are required to rebuild a MARS subunit. The more data to rebuild, the more time is consumed.

### Hotswapping and Field-Replaceable Hard Drives

A physical hard drive can be hotswapped, that is, replaced without rebooting the MARS appliance. Use the **hotswap** CLI command before removing or inserting a new hard drive.



#### Note

To match original performance, hotswapped hard drives should be the same make, model and size as the original hard drives.

## RAID Procedures for MARS Appliances 100E, 100, 200, GCM, and GC

This section pertains only to the MARS 100E, 100, 200, GCM, and GC appliances.

### The raidstatus CLI command

The raidstatus CLI command reports the current status of the RAID 10 array. [Example 6-1](#) displays the output of the raidstatus command executed on a Local Controller 200. [Table 6-1](#) describes the relevant output fields.

**Example 6-1 Example of raidstatus CLI Command Output**

```
[PNADMIN]$ raidstatus

CONTROLLER: C0
-----
DRIVER:      1.02.00.037
MODEL:       7506-8
FW:          FE7X 1.05.00.068
BIOS:        BE7X 1.08.00.048
MONITOR:     ME7X 1.01.00.040
SERIAL #:    L14104A5090383
PCB:         REV4
PCHIP:       1.30-66
ACHIP:       3.20

# OF UNITS: 1
UNIT 0: RAID 10 931.54 GB ( 1953580032 BLOCKS): REBUILDING (75%)

# OF PORTS: 8
PORT 0: WDC WD2500JB-19GVA0 WD-WCAL73129135 232.88 GB (488397168 BLOCKS)
: OK(UNIT 0)
PORT 1: WDC WD2500JB-19GVA0 WD-WCAL73291174 232.88 GB (488397168 BLOCKS)
: OK(UNIT 0)
PORT 2: WDC WD2500JB-19GVA0 WD-WCAL73157538 232.88 GB (488397168 BLOCKS)
: OK(NO UNIT)
PORT 3: WDC WD2500JB-98GVA0 WD-WMAL72243570 232.88 GB (488397168 BLOCKS)
: OK(UNIT 0)
PORT 4: WDC WD2500JB-00GVA0 WD-WCAL73883655 232.88 GB (488397168 BLOCKS)
: OK(UNIT 0)
PORT 5: WDC WD2500JB-19GVA0 WD-WCAL73290905 232.88 GB (488397168 BLOCKS)
: OK(UNIT 0)
PORT 6: WDC WD2500JB-98GVA0 WD-WCAL73693347 232.88 GB (488397168 BLOCKS)
: OK(UNIT 0)
PORT 7: WDC WD2500JB-98GVA0 WD-WMAL72244432 232.88 GB (488397168 BLOCKS)
: OK(UNIT 0)
UNIT /C0/U0
-----
STATUS:      REBUILDING
UNIT TYPE:   RAID 10
STRIPE SIZE: 64K
SIZE:        931.54 GB (1953580032 BLOCKS)
# OF SUBUNITS: 4

SUBUNIT 0:   RAID 1: OK

SUBUNIT 0:   CBOD: OK
PHYSICAL PORT: 7
LOGICAL PORT: 0

SUBUNIT 1:   CBOD: OK
PHYSICAL PORT: 4
LOGICAL PORT: 1

SUBUNIT 1:   RAID 1: REBUILDING (1%)

SUBUNIT 0:   CBOD: DEGRADED
PHYSICAL PORT: 6
LOGICAL PORT: 0

SUBUNIT 1:   CBOD: OK
PHYSICAL PORT: 3
LOGICAL PORT: 1
```

```
SUBUNIT 2: RAID 1: DEGRADED
```

```
SUBUNIT 0: CBOD: OK
PHYSICAL PORT: 5
LOGICAL PORT: 0
```

```
SUBUNIT 1: CBOD: OK
PHYSICAL PORT: 0
LOGICAL PORT: 1
SUBUNIT 3: RAID 1: OK
```

```
SUBUNIT 0: CBOD: OK
PHYSICAL PORT: 1
LOGICAL PORT: 0
```

```
SUBUNIT 1: CBOD: OK
PHYSICAL PORT: 0
LOGICAL PORT: 1
```

**Table 6-1** Explanation of Output Fields for `raidstatus CLI Command`

Output Field	Description
FW: FE7X 1.05.00.068	Indicates version of controller card firmware.
STATUS: REBUILDING	<p>Current status of entire array.</p> <ul style="list-style-type: none"> <li>• <b>OK</b>—The array and subunits are in good order and operating at optimal efficiency.</li> <li>• <b>Rebuilding</b>—A subunit is being rebuilt. Array efficiency is not yet optimal.</li> <li>• <b>Degraded</b>—At least one physical disk in the array cannot be accessed.</li> </ul>
# OF UNITS: 1 UNIT 0: RAID 10 931.54 GB (1953580032 BLOCKS): REBUILDING (75%)	<p><b>Units</b>—Indicates the number of virtual drives the entire RAID configuration represents. In this case, the array acts as one virtual hard drive or unit.</p> <p><b>Unit</b>—Identifies the RAID level, array size, and array status statistics of the specified unit. The total array size does not include the RAID overhead bytes. The status may be as follows:</p> <ul style="list-style-type: none"> <li>• <b>OK</b>—The array and subunits are in good order and operating at optimal efficiency.</li> <li>• <b>Rebuilding</b>—A subunit is being rebuilt. Array efficiency is not yet optimal.</li> <li>• <b>Degraded</b>—At least one physical disk in the array cannot be accessed. Troubleshooting is advised to prevent possible data loss.</li> </ul>
# OF PORTS: 8	Indicates the number of hard drives in the array.

**Table 6-1** Explanation of Output Fields for `raidstatus` CLI Command (continued)

Output Field	Description
PORT 0: WDC WD2500JB-19GVA0 WD-WCAL73129135 232.88 GB (488397168 BLOCKS) : OK (UNIT 0)	Indicates the model, serial number, size, and operational status of a hard drive related to the port. If a hard drive is not present or cannot be accessed, this output does not appear for that port.  <a href="#">Table 6-2</a> lists how hard drive bays map to the port numbers.
SUBUNIT 1: RAID 1: REBUILDING (1%)  SUBUNIT 0: CBOD: DEGRADED PHYSICAL PORT: 6 LOGICAL PORT: 0  SUBUNIT 1: CBOD: OK PHYSICAL PORT: 3 LOGICAL PORT: 1	A MARS RAID 10 configuration comprises multiple RAID 1 subunits, each RAID 1 subunit configured with two drives. The MARS 100 and 100e appliances have subunits numbered 0,1, and 2. MARS 200 appliances and Global Controllers have subunits 0,1,2, and 3.  The two drives in each RAID 1 subunits have unique physical port numbers.  The RAID 1 subunit status values are as follows: <ul style="list-style-type: none"> <li>• <b>OK</b>—The subunit is in good order and operating at optimal efficiency.</li> <li>• <b>Rebuilding</b>—The subunit is being rebuilt, efficiency is not yet optimal.</li> <li>• <b>Degraded</b>—At least one physical disk in the array cannot be accessed.</li> </ul> <p>The rebuild processes can take between 90 minutes and two hours to complete, depending on the amount of data on the disk. Subunits are rebuilt one subunit at a time. The percentage complete indicator tells you which subunit is currently being rebuilt.</p> <p>The <b>Physical Port</b> number appears as N/A when the associated drive bay is empty.</p> <p>Individual drive status is shown in the <b>CBOD:</b> field. CDBOD status can be OK or DEGRADED.</p>

## Correlating Hard Drive Slots to RAIDSTATUS Command Physical Port Numbers

This section pertains only to the MARS 100E, 100, 200, GCM, and GC appliances.

[Figure 6-1](#) shows how the hard drive slot numbers are ordered in MARS LC-200, GC, or GCM. Hard drive slot numbers increase from left to right, and from top to bottom. [Figure 6-2](#) shows slot numbering for the Local Controller 100 and 100E.

The MARS CLI identifies hard drives by port numbers or physical port numbers, which are logical designations assigned by the operating system. [Table 6-2](#) shows how the hard drive slots in the chassis correspond to the port and physical port numbers as reported in the CLI.



### Note

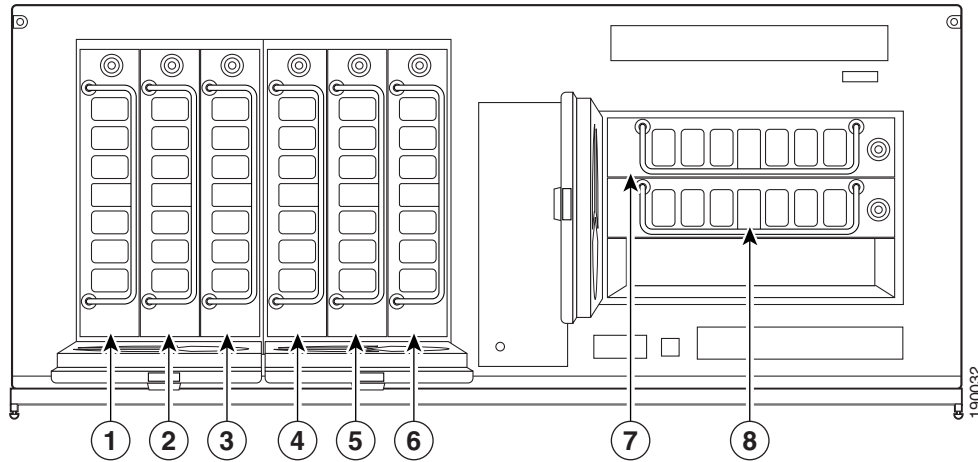
A port number is the same as a physical port number.

**Table 6-2 Mapping Hard Drive Slot Number to CLI Physical Port Number**

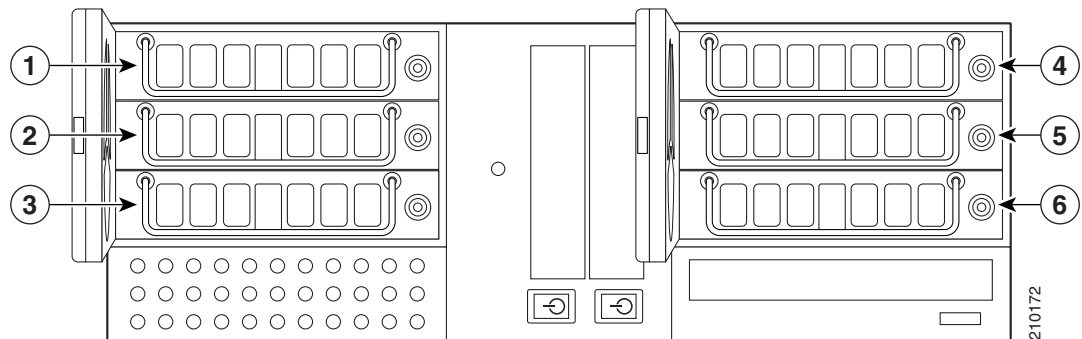
MARS Appliance	Storage Capacity <sup>1</sup>	Hard Drive Slot to Port Number
MARS 100E, 100	<ul style="list-style-type: none"> <li>750 GB</li> <li>RAID 10</li> <li>6 x 250 GB Drives</li> <li>Hot-swappable</li> </ul>	Slot 6 is Port 0 Slot 5 is Port 1 Slot 4 is Port 2 Slot 3 is Port 3 Slot 2 is Port 4 Slot 1 is Port 5
MARS 200, GCM, GC	<ul style="list-style-type: none"> <li>1 TB</li> <li>RAID 10</li> <li>8 x 250 GB Drives</li> <li>Hot-swappable</li> </ul>	Slot 8 is Port 0 Slot 7 is Port 1 Slot 6 is Port 2 Slot 5 is Port 3 Slot 4 is Port 4 Slot 3 is Port 5 Slot 2 is Port 6 Slot 1 is Port 7

1. The stated storage capacity is the sum of the rated capacity of all the hard drives and does not reflect bytes reserved for the RAID overhead on each drive.

**Figure 6-1 Hard Drive Slot Numbering for MARS Local Controller 200 and Global Controllers**



**Figure 6-2 Hard Drive Slot Numbering for the Local Controller 100 and 100E**



## Hotswap Procedure To Remove and Add a Hard Drive

This section pertains only to the MARS 100E, 100, 200, GCM, and GC appliances.

Use the **hotswap {add | remove} disk** CLI command before you remove and before you insert a hard drive.



### Note

The **hotswap** command specifies the hard drive slot number in the chassis. The **raidstatus** CLI command refers to port numbers and physical port numbers. See [Table 6-2](#) to map hard drive slot numbers to port numbers (a port number is the same as a physical port number).

**Step 1** Establish a console connection with MARS.

**Step 2** At the CLI prompt, enter **hotswap remove disk**, where *disk* is the hard drive slot number of the hard drive to remove.

A message informs you that it is safe to remove the hard drive.



### Note

Make sure that you remove the correct physical hard drive. If you remove the wrong one accidentally then reinsert it, that drive will register as a degraded drive.

**Step 3** Unlock the MARS drive bay door with the supplied key.



### Note

A ring with two keys is supplied in the MARS 100, 100e, 200, and Global Controller accessory kits, one key is for the hard drives and one is for the drive bay doors.

**Step 4** Unlock the drive you want to replace with the supplied key.

**Step 5** Pull out the hard drive.

**Step 6** At the CLI prompt, enter **hotswap add disk**. Be sure to use the same slot number (*disk*) as in [Step 2](#).

A message informs you that the hard drive (disk) is added successfully (to the logical array).

**Step 7** Insert the new Cisco field-replaceable hard drive unit.

**Step 8** Lock the hard drive into place.

**Step 9** Close and lock the drive bay door.

**Step 10** From the CLI, enter **raidstatus**.

The subunit with the slot number of the replaced hard drive should indicate that the RAID subunit is rebuilding, though the physical port number indicates the drive is degraded. This process can last from 90 minutes and 2 hours depending on the amount of data.



### Note

Verify the system has completed rebuilding the new hard drive before you hotswap another hard drive. The RAID subsystem rebuilds only one disk at a time. If the hotswapped drive does not rebuild after a couple of hours, rebuild the array with the RAID Controller utility, as explained in the section, [“Rebuilding an Array with the RAID Utility.”](#)

This ends the [Hotswap Procedure To Remove and Add a Hard Drive](#).

## Hotswap CLI Example

This section pertains only to the MARS 100E, 100, 200, GCM, and GC appliances.

The following CLI output example hotswaps a hard drive in drive slot 6 (port 2) of a MARS 200. Physical port 2 remains degraded until RAID subunit 2 is rebuilt.

### Example 6-2 Hotswap Procedure, CLI Output Example

```
[pnadmin]$ hotswap remove 6
removing port /c0/p2 ... Done.
Disk 6 can now be safely removed from the system.

pnadmin]$ hotswap add 6
rescanning controller /c0 for units and drives ...Done.
Rebuild started on unit /c0/u0
Disk 6 has been added to the system successfully.

[pnadmin]$ raidstatus
Controller: c0
-----
Driver: 1.02.00.037
Model: 7506-8
FW: FE7X 1.05.00.068
BIOS: BE7X 1.08.00.048
Monitor: ME7X 1.01.00.040
Serial #: L14104A5090383
PCB: Rev4
PCHIP: 1.30-66
ACHIP: 3.20

# of units: 1
Unit 0: RAID 10 931.54 GB ( 1953580032 blocks): REBUILDING (64%)

# of ports: 8
Port 0: WDC WD2500JB-19GVA0 WD-WCAL73129135 232.88 GB (488397168 blocks)
: OK(unit 0)
Port 1: WDC WD2500JB-19GVA0 WD-WCAL73291174 232.88 GB (488397168 blocks)
: OK(unit 0)
Port 2: WDC WD2500JB-19GVA0 WD-WCAL73157538 232.88 GB (488397168 blocks)
: OK(unit 0)
Port 3: WDC WD2500JB-98GVA0 WD-WMAL72243570 232.88 GB (488397168 blocks)
: OK(unit 0)
Port 4: WDC WD2500JB-00GVA0 WD-WCAL73883655 232.88 GB (488397168 blocks)
: OK(unit 0)
Port 5: WDC WD2500JB-19GVA0 WD-WCAL73290905 232.88 GB (488397168 blocks)
: OK(unit 0)
Port 6: WDC WD2500JB-98GVA0 WD-WCAL73693347 232.88 GB (488397168 blocks)
: OK(unit 0)
Port 7: WDC WD2500JB-98GVA0 WD-WMAL72244432 232.88 GB (488397168 blocks)
: OK(unit 0)
Unit /c0/u0
-----
Status: REBUILDING
Unit Type: RAID 10
Stripe Size: 64k
Size: 931.54 GB (1953580032 blocks)
# of subunits: 4

Subunit 0: RAID 1: OK
```

```

Subunit 0:    CBOD: OK
Physical Port: 7
Logical Port: 0

Subunit 1:    CBOD: OK
Physical Port: 4
Logical Port: 1

Subunit 1:    RAID 1: OK

Subunit 0:    CBOD: OK
Physical Port: 6
Logical Port: 0

Subunit 1:    CBOD: OK
Physical Port: 3
Logical Port: 1

Subunit 2:    RAID 1: REBUILDING (6%)

Subunit 0:    CBOD: OK
Physical Port: 5
Logical Port: 0

Subunit 1:    CBOD: DEGRADED
Physical Port: 2
Logical Port: 1

Subunit 3:    RAID 1: OK

Subunit 0:    CBOD: OK
Physical Port: 1
Logical Port: 0

Subunit 1:    CBOD: OK
Physical Port: 0
Logical Port: 1

```

## Procedures for the MARS RAID Utility

This section pertains only to the MARS 100E, 100, 200, GCM, and GC appliances.

MARS Appliances equipped with a hardware RAID controller can configure the RAID 10 array with the 3ware Disk Array Configuration Utility, referred to as the RAID Utility in this document.

To access the RAID Utility you must have a direct console connection to MARS with an attached keyboard and external monitor.

Press **Alt-3** when the **\*\*\* <Press Alt-3 to access 3ware Configuration Screen \*\*\*>** message appears at the beginning of the bootup process. [Table 6-3](#) briefly describes only those tasks that are relevant to the MARS RAID 10 hard drive arrays.

**Table 6-3 RAID Utility Tasks and Procedures**

Task Scenario	Procedure
If the <b>hotswap</b> command fails when replacing a drive, rebuild the array with the RAID utility.	<a href="#">Rebuilding an Array with the RAID Utility</a>
If the <b>hotswap</b> command fails <i>and</i> the RAID utility rebuild fails, add the replacement drive with the RAID Utility.	<a href="#">Add a Replacement Drive to the Array with the RAID Utility</a>
If during a reboot, MARS cannot find available drives, rebuild the array with the RAID Utility.	<a href="#">Delete and Create the RAID 10 Array</a>

**Caution**

Creating a disk array overwrites all data on those disks.

**Rebuilding an Array with the RAID Utility**

Perform this procedure when the **raidstatus** command indicates that MARS has not completed rebuilding a subunit of the RAID array after two hours. This procedure assumes the replacement hard drive is free of physical defects that prevent its operation.

**Step 1** Establish a direct console connection to MARS with a keyboard and an external monitor.

**Note**

You can access the RAID utility only with a direct console connection.

**Step 2** Reboot the MARS Appliance. Press **Alt-3** to access the RAID utility when the following message appears:

\*\*\* <Press Alt-3 to access 3ware Configuration Screen \*\*\*>

The 3ware Disk Array Configuration utility (RAID Utility) home screen appears.

**Step 3** Read the help bar at the bottom of the screen for instructions on how to use the interface.

**Step 4** Select **Array Unit 0**. The status of the array is Degraded if one of the drives in an array is degraded. A selected item is marked with an asterisk in the leftmost column.

**Step 5** Select **Rebuild Array** then press **F8** to complete.

**Tip**

Within the RAID utility, you can use the following keystrokes to highlight the corresponding GUI button:

Alt-C—Create Array  
 Alt-D—Delete Array  
 Alt-M—Maintain Array  
 Alt-R—Rebuild Array

**Step 6** Press **Y** to confirm. MARS exits the RAID utility and resumes the bootup process.

**Step 7** At the CLI prompt, verify with the **raidstatus** command that the RAID array subunit is rebuilding. If the subunit does not rebuild within two hours, delete the array and add the replacement drive with the RAID utility as described in the section “[Add a Replacement Drive to the Array with the RAID Utility](#).”

This ends the [Rebuilding an Array with the RAID Utility](#) procedure.

---

### Add a Replacement Drive to the Array with the RAID Utility

This section pertains only to the MARS 100E, 100, 200, GCM, and GC appliances.

Perform this procedure when a hotswap attempt and the RAID Utility Rebuild procedure have failed.

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**Step 1** Insert the replacement drive into the hard drive slot.

**Step 2** Establish a direct console connection to MARS with a keyboard and an external monitor.



**Note** You can access the RAID Utility only with a direct console connection.

---

**Step 3** Reboot the MARS Appliance. Press **Alt-3** to access the RAID utility when the following message appears:

\*\*\* <Press Alt-3 to access 3ware Configuration Screen \*\*\*>

The 3ware Disk Array Configuration utility (RAID Utility) home screen appears.

**Step 4** Read the help bar at the bottom of the screen for instructions on how to use the RAID Utility interface.

**Step 5** Select **Array Unit 0**—position the cursor over the text and press Enter.

A selected item is marked with an asterisk in the leftmost column.

**Step 6** Select **Delete Array**, and press Enter.

A screen appears listing the ports and the hard drives of the array that will be deleted.



**Tip** Within the RAID utility, you can use the following keystrokes to highlight the corresponding GUI button:

Alt-C—Create Array  
 Alt-D—Delete Array  
 Alt-M—Maintain Array  
 Alt-R—Rebuild Array

---



**Note** When an array is deleted, the data is lost.

---

**Step 7** Select **OK** and press Enter.

The “Available Drives:” screen appears listing all hard drives available to include in an array. The replacement drive should appear in this list.

**Step 8** Select all the drives—position the cursor over the text and press Enter.

**Step 9** Select **Create Array** and press Enter.

The RAID configuration options appear.

**Step 10** Select the following RAID options:

- RAID Configuration—**10**
- Write Cache Status—**disable**

- Stripe Size—**64 KB**

**Step 11** Select **OK** then press Enter.

The “Disk Arrays:” screen appears listing all the ports and drives in Array Unit 0.

**Step 12** Press **F8** to complete.

**Step 13** Press **Y** to confirm.

MARS exits the RAID utility and resumes the bootup process.

**Step 14** At the MARS CLI prompt, use the **raidstatus** command to verify the following conditions:

- The full complement of ports are reported
- All RAID 0 subunits are shown as OK or REBUILDING
- All RAID 1 subunits are OK

A degraded physical port at this stage can indicate a defective hard drive, and improperly inserted hard drive, a loose hard drive cable connection, or a defective RAID controller card.

An array that has not completed rebuilding in two hours could indicate a defective RAID controller card.

This ends the [Add a Replacement Drive to the Array with the RAID Utility](#) procedure.

### Delete and Create the RAID 10 Array

This section pertains only to the MARS 100E, 100, 200, GCM, and GC appliances.

Perform this procedure if MARS indicates that it cannot find the hard drives, you are reimaging MARS with a DVD, or the RAID Utility failed to add a replacement drive.

**Step 1** Establish a direct console connection to MARS with a keyboard and an external monitor.



**Note** You cannot access the RAID utility with any other type of console connection.

**Step 2** Shutdown the MARS Appliance with the **shutdown** CLI command.

**Step 3** Powerup the MARS Appliance. Press **Alt-3** to access the RAID utility when the following message appears:

\*\*\* <Press Alt-3 to access 3ware Configuration Screen \*\*\*>

The 3ware Disk Array Configuration utility home screen appears.

**Step 4** Read the help bar at the bottom of the screen for instructions on how to use the RAID Utility interface.

**Step 5** Select **Array Unit 0**.

A selected item is marked with an asterisk in the leftmost column.

**Step 6** Select **Delete Array**.

A message appears listing the ports of the array that will be deleted.

**Tip**

Within the RAID utility, you can use the following keystrokes to highlight the corresponding GUI button:

- Alt-C—Create Array
- Alt-D—Delete Array
- Alt-M—Maintain Array
- Alt-R—Rebuild Array

**Note**

When an array is deleted, the data is lost.

- Step 7** Select **OK** and press Enter.  
The “Available Drives” screen appears listing all drives available for inclusion in an array.
- Step 8** Select all of the drives. To select a drive, move the cursor over a drive and press Enter.  
An asterisk in the leftmost column indicates the drive is selected.
- Step 9** Select **Create Array** and press Enter.  
The RAID configuration options appear.
- Step 10** Select the following RAID options:
- RAID Configuration—**10**
  - Write Cache Status—**disable**
  - Stripe Size—**64 KB**
- Step 11** Select **OK** then press Enter.  
The “Disk Arrays:” screen appears listing all the drives in Array Unit 0.
- Step 12** If you are reimaging with a DVD, insert the DVD now.
- Step 13** Press **F8** to complete.
- Step 14** Press **Y** to confirm.  
MARS exits the RAID utility and resumes the bootup or reconfiguration process.
- Step 15** At the MARS CLI prompt, use the **raidstatus** command to verify the following conditions:
- The full complement of ports are reported
  - All RAID 0 subunits are shown as OK or REBUILDING
  - All RAID 1 subunits are OK
- A degraded physical port at this stage can indicate a defective hard drive, and improperly inserted hard drive, a loose hard drive cable connection, or a defective RAID controller card.  
An array that has not completed rebuilding in two hours could indicate a defective RAID controller card.  
This ends the [Delete and Create the RAID 10 Array](#) procedure.