A+ Core 1 and Core 2 CertMaster Perform 15.0

4.2.12 Troubleshoot RAID Failure

Redundant Array of Independent Disks (RAID) is configured to protect data against the failure of a single disk. Data is either mirrored to a second drive or recorded with parity information across multiple drives to enable recovery from a device failure. RAID can be implemented using hardware controllers or operating system features. The redundant storage is presented as a volume, which can be partitioned and formatted in the OS as one or more drives. There are two main scenarios for **RAID failure**:

1. **Device Failure**: If one of the devices in the array fails, the volume will be listed as "degraded," but the data will still be accessible, and it should continue to function as a boot device if configured to do so.

> (i) RAID 0 has no redundancy. If one of the disks fails, the volume will stop working. RAID 0 is used in scenarios where speed is prioritized over reliability.

2. **Array Failure**: Most desktop-level RAID solutions can tolerate the loss of only one disk, so it should be replaced as soon as possible. If the array supports hot swapping, the new disk can be inserted into the computer or disk chassis. The array can then be rebuilt using the RAID configuration utility (for hardware RAID) or an OS utility (for software RAID). The rebuilding process will likely severely affect performance as the controller writes multiple gigabytes of data to the new disk.

RAID errors using the configuration utility. This volume is missing one of its disks
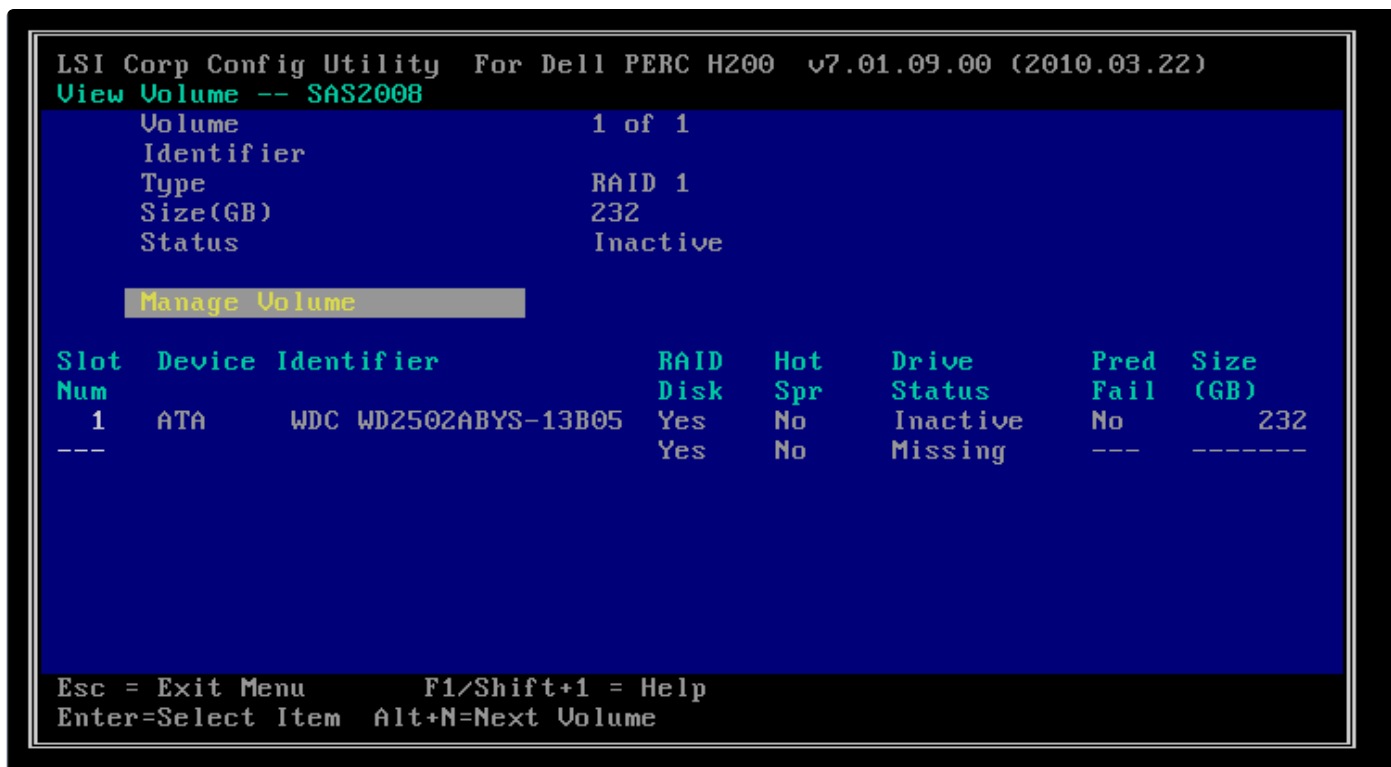
▼ Description

The details are as follows: Volume: 1 of 1 Identifier: Type: RAID 1 Size (G B): 232 Status: Inactive Manage volume is highlighted. A table below lists the slot number, device, identifier, RAID Disk, Hot Spr, Drive Status, Pred Fail, and Size in GB. Below the screen is mentioned, Esc equals Exit menu. Enter equals Select Item. F1 or Shift plus 1 equals help. Alt plus N equals Volume.

ⓘ   When hot swapping, ensure you do not remove a healthy disk, as this could cause the array to fail. Disk failure is usually indicated by a red LED. Always back up data beforehand.

Troubleshooting Steps

- **Unavailable Volume or "array missing":** If the volume is not available, either more disks have failed than the array can tolerate, or the controller has failed. If the boot volume is affected, the OS will not start. Use the latest backup or file recovery solutions if too many disks have failed.
- **Controller Failure:** If the controller fails, data on the volume should be recoverable, though there may be file corruption if a write operation was interrupted. Install a new controller or import the disks into another system.

- **Boot Process Issues:** Use the RAID configuration utility to verify the status. If you cannot access the utility, the controller likely failed.

Boot message indicating a problem with the RAID volume. Press Ctrl+C to start the utility and troubleshoot

```
                                            F10 = System Services
                                          F11 = BIOS Boot Manager
                                                 F12 = PXE Boot
One 2.40 GHz Quad-core Processor, Bus Speed:4.80 GT/s, L2/L3 Cache:1 MB/8 MB

System Memory Size: 4.0 GB, System Memory Speed: 1067 MHz


Broadcom NetXtreme II Ethernet Boot Agent v5.0.5
Copyright (C) 2000-2009 Broadcom Corporation
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Press Ctrl-S to Configure Device (MAC Address - 842B2B19E291)



Dell PERC H200/6Gbps SAS HBA BIOS
MPT2BIOS-7.01.09.00 (2010.03.22)
Copyright 2000-2009 LSI Corporation.

Integrated RAID exception detected:
    Volume (Hd1:079) is currently in state INACTIVE/OPTIMAL
Enter the Dell PERC H200/HBA Configuration Utility to investigate!

Press Ctrl-C to start Dell PERC H200/HBA Configuration Utility..
```

▼ Description

> The screen reads, F10 equals System Services. F11 equals BIOS Boot manager. F12 equals PXE Boot. It lists the bus speed, system memory size, system memory speed. The instruction at the bottom reads, Press Ctrl plus C to start Dell PERC H200 slash HBA configuration utility.