

Intel® Matrix Storage Manager

Degraded or failed RAID 1 Volume

When a hard drive member of a RAID 1 volume fails or is disconnected, the RAID 1 volume is reported as "Degraded." If either of these scenarios occurs, data mirroring is lost and the system can only use the functional member.

To re-establish data mirroring and restore data redundancy, refer to the applicable procedure below:

Missing Hard Drive Member

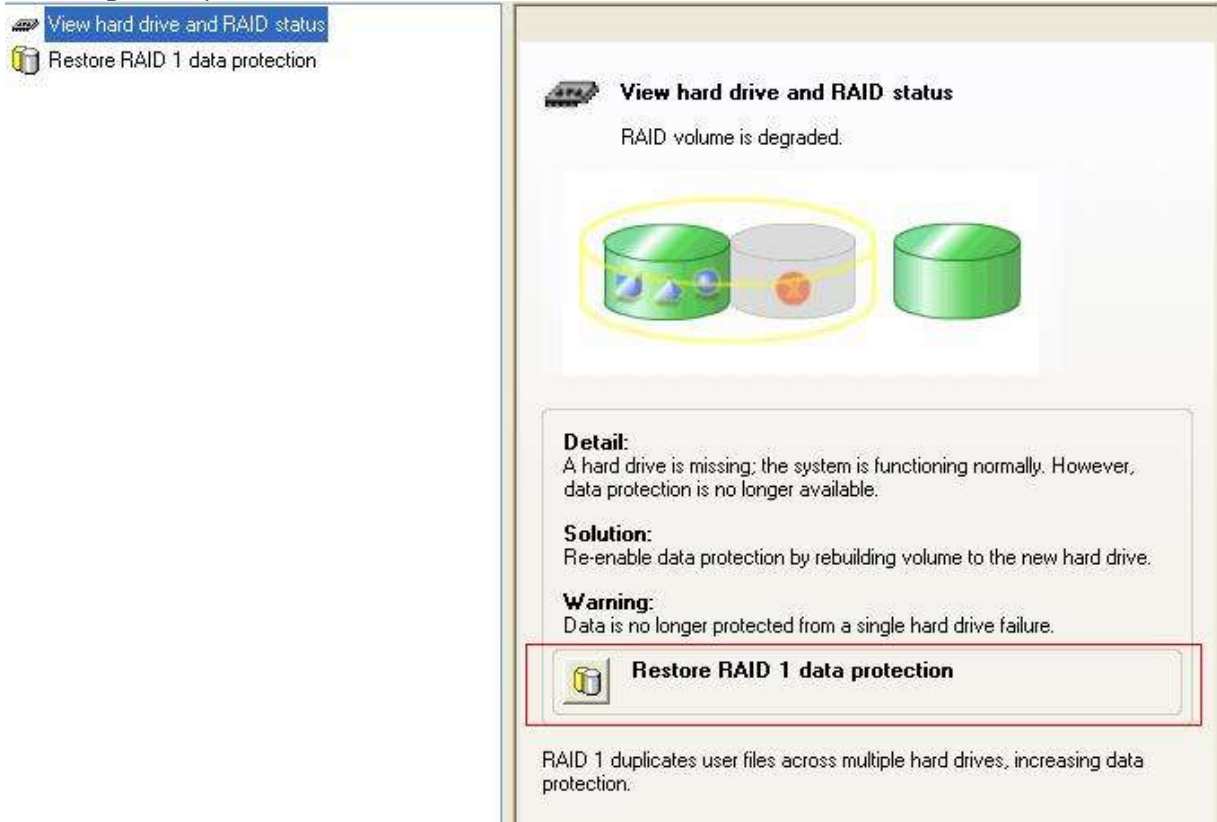
1. Make sure the system is powered off.
2. Reconnect the missing hard drive.
3. Restart the system. The rebuild will occur automatically.

Failed Hard Drive Member

There are 3 methods available.

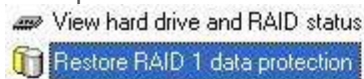
Using Basic Mode of the Intel® Matrix Storage Console

1. Make sure the system is powered off.
2. Replace the failed hard drive with a new one that is of equal or greater capacity.
3. Power on the system.
4. After the operating system is running, select the **Intel Matrix Storage Console** from the Start Menu or click the **Intel Matrix Storage Manager** tray icon.
5. Click on the icon in front of **Restore RAID 1 data protection** as displayed in the following example:



The screenshot displays the Intel Matrix Storage Manager interface. On the left, a tray icon for "View hard drive and RAID status" is highlighted, and below it is the "Restore RAID 1 data protection" option. The main window shows the RAID status as "RAID volume is degraded." A diagram illustrates three hard drives: two green drives on the left and one grey drive on the right, with a yellow circle around the two green drives. Below the diagram, the "Detail" section states: "A hard drive is missing; the system is functioning normally. However, data protection is no longer available." The "Solution" section states: "Re-enable data protection by rebuilding volume to the new hard drive." The "Warning" section states: "Data is no longer protected from a single hard drive failure." At the bottom, a red-bordered button labeled "Restore RAID 1 data protection" is highlighted. A footer note states: "RAID 1 duplicates user files across multiple hard drives, increasing data protection."

- Click on the icon in front of **Rebuild RAID& volume now** as displayed in the following example:



- Select **Yes** to confirm.

Using Advanced Mode of the Intel Matrix Storage Console

- Make sure the system is powered off.
- Replace the failed hard drive with a new one that is of equal or greater capacity.
- Power on the system.
- After the operating system is running, select the **Intel Matrix Storage Console** from the Start Menu or click the **Intel Matrix Storage Manager** tray icon.
- Click on the **View** menu and select **Advanced Mode**.
- Right-click on the non-RAID hard drive in the device tree and select **Rebuild to this Hard Drive** as shown in the following example:



Using the Intel® Matrix Storage Manager option ROM

- Make sure the system is powered off.
- Replace the failed hard drive with a new one that is of equal or greater capacity.
- Power on the system.
- When the Intel Matrix Storage Manager option ROM status screen appears during POST,

- press the **Ctrl** and **i** keys at the same time to enter the Intel Matrix Storage Manager option ROM user interface.
5. A dialog titled "Degraded RAID 1 Detected" will be displayed that asks you to "Select the port of the destination disk for rebuilding." Use the up or down arrow keys to select the new hard drive and press the **Enter** key.
 6. Select option **4: Exit** and press the **Enter** key.
 7. Press the **Y** key to confirm.
 8. After the operating system is running, select the **Intel Matrix Storage Console** from the Start Menu or click the **Intel Matrix Storage Manager** tray icon.
 9. From the View menu, select **Advanced Mode** to display a detailed view of the Intel Matrix Storage Console.
 10. From the Volumes view in the device pane, select the RAID 1 volume. The status will display "Rebuilding % complete." After the rebuild is complete, the status will display "Normal."

Intel® Matrix Storage Manager

RAID 5 Volume Recovery

When one hard drive member of a RAID 5 volume has failed or is disconnected, the RAID 5 volume is reported as "Degraded." When two or more hard drive members have failed or are disconnected, the volume is reported as **Failed.**

If one of these scenarios occurs, refer to the appropriate procedure below to recover.

Degraded RAID 5 Volume

Missing Member

1. Make sure the system is powered off.
2. Reconnect the missing hard drive.
3. Power on the system. The rebuild will occur automatically.

Failed Member

1. Make sure the system is powered off.
2. Replace the failed hard drive with new hard drive that is of equal or greater capacity.
3. Power on the system.
4. After the operating system is running, select the **Intel® Matrix Storage Console** from the Start Menu or click on the **Intel® Matrix Storage Manager** tray icon.
5. Click on the **View** menu and select **Advanced Mode**.
6. Right-click on the non-RAID hard drive in the device tree and select **Rebuild to this Hard Drive**.

Failed RAID 5 Volume

Failed Members

Note: When more than one hard drive member of a RAID 5 volume has failed, the RAID 5 volume cannot be recovered and any data on the RAID 5 volume is lost. A complete reinstallation of your system will be necessary. The following procedure only describes how to delete the failed RAID 5 volume.

1. Make sure the system is powered off.
2. Replace the failed hard drives with new hard drives that are of equal or greater capacity.
3. Power on the system. During the system startup, the Intel Matrix Storage Manager option ROM user interface will display the RAID 5 volume status as "Failed," prompting you to press

Ctrl-I to enter the user interface.

4. Press **Ctrl-I** to enter the "Main Menu."
5. Select option **2. Delete RAID Volume** in the main menu.
6. In the "Delete Volume Menu," use the up and down arrow keys to select the failed RAID 5 volume.
7. Press the **Delete** key to delete the volume.
8. Press **Y** to confirm the deletion.
9. Create a new RAID 5 volume.
10. You will then need to reinstall the operating system on the new volume and reconfigure your system.

Intel® Matrix Storage Manager

System Won't Boot to Degraded RAID 1 Volume

Issue

The system will not boot to a degraded RAID 1 volume.

Cause

After a failed hard drive member of a RAID 1 volume has been replaced with a new hard drive, some system BIOS' will give the new hard drive higher priority in the boot order. The system will then attempt to boot to the new hard drive instead of the RAID 1 volume.

Solution

Note: The instructions below are specific to motherboards manufactured by Intel with a supported Intel chipset. Always follow the instructions that are provided with your motherboard. The specific instructions on non-Intel manufactured motherboards may be similar. Check your system motherboard manual or documentation for more details.

1. Enter the BIOS Setup program by pressing the <DELETE> key after the Power-On-Self-Test (POST) memory test begins.
2. Select the Boot menu, and then the Boot Device Priority menu.
3. If the RAID volume is not listed in the Boot Device Priority list, press <ESC>, and then select the Hard Disk Drives menu.
4. Select the RAID volume as a boot device using the Up Arrow or Down Arrow keys and press <Enter>.
5. Select the Boot menu and verify that the RAID volume is now listed in the Boot Device Priority list.
6. Save the BIOS settings and exit the BIOS setup program.
7. The system should now boot to the degraded RAID 1 volume.