RAID 1 (Mirror Disk)

RAID level 1 is disk mirroring. With disk mirroring, you use identically sized volumes on two different drives to create a redundant data set. Here, the drives are written with identical sets of information and, if one of the drives fails, you can still obtain the data from the other drive (mirror disk).

Disk mirroring offers about the same fault tolerance as disk striping with parity. Because mirrored disks don’t need to write parity information, they can offer better write performance in most circumstances. However, disk striping with parity usually offers better read performance because read operations are spread out over multiple drives.

The major drawback to disk mirroring (RAID 1) is that it effectively cuts the amount of storage space in half. For example, to mirror a 5-GB drive, you need another 5-GB drive. That means you use 10 GB of space to store 5 GB of information.

As with disk striping, you’ll often want the mirrored disks to be on separate disk controllers. This provides increased protection against failure of the disk controller. If one of the disk controllers fails, the disk on other controller is still available. Technically, when you use two separate disk controllers to duplicate data, you’re using a technique known as disk duplexing. Figure 12-5 shows the difference between the two techniques. Where disk mirroring (RAID 1) typically uses a single drive controller, disk duplexing uses two drive controllers.

Although disk mirroring (RAID 1) typically uses a single drive controller to create a redundant data set, disk duplexing uses two drive controllers. Other than this, the two techniques are essentially the same.

If one of the mirrored drives in a set fails, disk operations can continue. Here, when users read and write data, the data is written to the remaining disk. You’ll need to break the mirror before you can fix it.



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