Solid state drives to the rescue!

A *solid state drive* (SSD) uses integrated circuits to store data in electronic memory rather than on magnetic spinning disks.

Some people use the term *solid state disk,* which I'll excuse because SSDs function as replacements for spinning disks. But because an SSD does not contain a disk, those folks are technically incorrect. Pointing out their inaccuracy is a sure way to lose them as friends, so I suggest you smile quietly to yourself and let it be.

SSDs are based on a type of memory technology called *flash memory,* which has been around since the 1980s but has only recently become affordable as an alternative to spinning disks. An SSD is dramatically faster than a spinning disk because there are no mechanical components involved when accessing data: There is no read/write head to move and no spinning platter to wait for. An SSD can read and write data at electronic speeds, not at mechanical speeds. (Because of the lack of moving parts, SSDs are also more reliable than spinning disks.)

This performance benefit comes at a price, though. SSD storage typically costs from two to five times as much as HDD storage, depending on the type of drive you need.

An important point to realize about SSDs is that they're designed to mimic traditional spinning disk storage. So, SSDs use the same electronic connections as spinning disks, which means you can use SSDs interchangeably with HDDs. Whenever I mention *disks* or *disk storage* in this book, you can assume that I mean either SSD or HDD storage.

It's a RAID!

I mention in Chapter 10 that individual disk drives are usually combined in groups using a technique called *RAID,* which stands for *redundant array of inexpensive disks.* In fact, RAID arrays are a universal requirement for disk storage for two reasons:

» RAID allows you to combine several disk drives into a single unit that has a total capacity that exceeds the capacity of the individual disks that make up the array.

» RAID provides an important safety precaution that enables your data to survive the loss of one of the disks in the array. (In some cases, a RAID array can survive the loss of two or even more disks.)