

Raids, what are they, what do the various raid levels mean? RAID stands for Redundant Array of Independent Disks. In general any raid is better than no raid (except for raid 0 which only offers performance increase). You can think of a raid as a way to make your hard drive more reliable and therefor reduce the likelihood that you will loose your data or system. A raid automatically in real time backs up your hard drive. For most personal users the way they backup there system and data is to think about it and then never do anything. The result is calling a friend or paying someone to try and recover data from a crashed hard drive. One other option is to back up you data to an external device. This is ok but the data is only as current as your last backup and it requires actual effort by the users...so it is actually not done..most times.



To make it simple a raid is a set of hard drives (as few as two) that back each other up constantly. When one drive fails the other takes over the load and keeps the system running and your data safe. Raids can be used on all operating systems and have been around for a long time. Now for some technical stuff... There are various levels of raid, some are better than others for various reasons. In general the lower the raid level the less robust the raid is and the greater chance of a failure. I will summarize for you, if you want more data you can go here for greater detail about the various raid levels [Wikipedia Raids](#) .

So....here it is.

**Raid 0 Striping** - The simplest raid, data in a RAID 0 system are split up in blocks that get written across all the drives in the array. By using multiple disks (at least 2) at the same time, RAID 0 offers superior I/O performance. This performance can be enhanced further by using multiple controllers, ideally one controller per disk. Raid 0 will NOT maintain data if one disk fails...this is an important point

**Raid 1 Mirroring** - This is a good option as it will actually write data twice, once on each drive. This is an invisible way to backup your data in real time. If one drive dies the other has all of your data on it. If a disk fails, you just replace the failed disk, the raid will then copy the data to the replacement disk. That's the good news...the bad news is that if you put 2, one gig of hard drives in your system you will only have 1 gig of storage available. In addition usually raid 1 is not hot swappable, this means you have to power the system off to put replace the bad hard drive.

**Raid 3 - Parity on separate disk** - On RAID 3 systems, datablocks are subdivided (striped) and written in parallel on two or more drives. An additional drive stores parity information. You need at least 3 disks for a RAID 3 array. This type of raid is good for storing large volumes of data but if you have a lot of small files or disk I/O

**Raid 5** - Raid 3 but data are transferred to disks by independent read and write operations. This means that the I/O is not an issue and this is a common and secure raid level.

**Raid 10** - This is a mix of raid 1 and raid 0 - It has the advantages (and disadvantages) of RAID 1 and RAID 0. It provides security by mirroring all data on a secondary set of disks while using striping across each set of disks to speed up data transfers.

There are other raid levels but this should give you the idea.

Many motherboards today come with raid built in. Even discount motherboards such as this one [\\$79 at Tiger Direct](#) have raid 0, 1, and 10 built in. With hard drives being so large and so cheap having a raid 1 system is really a smart thing to do if you are at all concerned about your system and maintaining it. These kinds of raids are easy to set up and offer constant backup of your data. Never again will you lose that important data and maybe you will even sleep better at night. As Ron Popeil would say "just set it and forget it!".