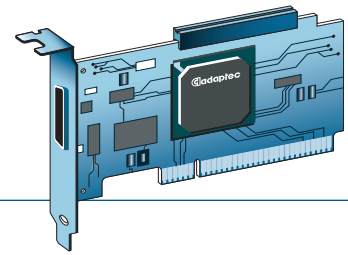


TOP TEN TIPS When Buying a RAID Controller



New RAID levels, technologies and interfaces make choosing a RAID controller more than just a choice between price and performance. These top tips provide valuable insight to help ensure that you get exactly the right controller to suit your specific data protection needs.

1. Choose the correct bus interface for your needs – forward- or backward-compatibility

Choosing a RAID controller currently means choosing between a PCIe bus interface and a PCI-X interface; and it's important to make the selection that will suit your needs. PCI-X has the advantage of being backwardly compatible with the older PCI interface. But it is parallel and half-duplex bidirectional, and the bus runs only as fast as the slowest device. PCIe is the new forward-looking standard, and is intended to cope with the performance and scalability demands for at least the next decade. PCIe has the advantages of being serial, full-duplex bidirectional, and devices are able to independently negotiate the bus speed.

2. Find an easy-to-use Management Interface

A complex interface will make it harder for you to get the protection you want, be troublesome to set up initially, and more difficult to use if you do need to recover your data. In addition, having as many different interfaces as controllers you purchase can make life even more confusing. Make protecting your data easy by using controllers with one simple interface.

3. Which RAID level?

Choosing which RAID level you need is getting increasingly complex, as new RAID levels are introduced. Ensuring that you have the correct level for your needs is vital; get an expert opinion about which RAID levels you will get with your controller. To choose the RAID level that's right for you, begin by considering the factors below. Each of these factors becomes a trade-off for another.

- Cost of disk storage
- Data protection or data availability required (low, medium, high)
- Performance requirements (low, medium, high)

4. RAID level migration

What if your data is already protected by RAID, but your requirements have since changed, and you would now benefit from a different RAID level? If you have to move it to a new server, is it worth updating your RAID level at the same time? This is possible, and with some RAID controllers straightforward. So consider how complex the process is to migrate your data from your current RAID to your new one and consider whether RAID level migration is something you need.

5. How much more data capacity will you need?

When calculating the size of your new server, do you base your data requirements on your existing volume of data, or try to estimate how much storage space you will need by the time you retire your server? One way of getting around the issue of buying all your future requirements now, is expanding the capacity as you go. This can be done by adding larger disks to your server, but different RAID controllers will deal with additional capacity in different ways, some a lot simpler and smoother than others, so be sure that you know how your potential solutions will deal with this.

6. A limitation of SATA

If you are looking at expanding the capacity of your server with JBODs, there is a more straightforward infrastructure than SATA – even if you want to use SATA disks. The SATA infrastructure allows for Port Multipliers, but they have drawbacks – they can't be daisy-chained, limiting their flexibility and expandability; they only support one active host connection at a time, significantly degrading effective throughput and allowing for potential misidentification of drives. SATA drives can be used in Serial Attached SCSI (SAS) infrastructures – the infrastructure that allows for up to 128 drives – and with one RAID controller, the cost-per-drive of the controller is significantly cheaper.

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7. Getting locked in to your Operating System

Operating Systems are constantly being upgraded, and the original reasons for choosing one OS over another may not be the same in a year's time. Additionally, you may have different OSes on different systems today. Your choice of RAID controller shouldn't restrict either your choice of OS, or restrict the speed at which you can obtain an OS upgrade.

8. Reliability of the RAID code

One factor in your choice of RAID controller may be to consider of the reliability of the RAID code. Is it used in many other servers? Has it been around for long and thoroughly tested in the field? If you need to rely on the data on your server for seven years, has the RAID code that's storing it been around that long?

9. Hardware or software RAID?

The difference between hardware and software RAID isn't just the price. With hardware RAID, the calculations are carried out by the RAID controller, with software RAID they take place on the server's CPU. So, if the RAID calculations are fairly simple, say RAID 1 or RAID 10, and the server is fairly powerful, using software RAID shouldn't be much of a problem. But with more complex RAID level calculations (RAID 5EE or RAID 6 for example), using hardware RAID can be beneficial because the RAID performance is not compromised by the server's workload, nor are applications on the server compromised by the RAID workload. With hardware RAID, the RAID functionality is also independent of the OS, and the simple HBA drivers required for a hardware RAID controller are usually available as part of the OS distribution. Also, if it has a battery, hardware RAID can run in write-back mode, adding another level of data protection.

10. Ensure the products you purchase have the support you need

Your controller should work straight out of the box. But what if your combined system has problems? Who do you turn to? Some controller manufacturers offer technical help – even if the issue isn't obviously with the controller.

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