The only real benefit of JBOD is that it allows you to combine drives of different sizes without losing capacity. In other RAID models, drive capacity will be boiled down to the lowest common denominator; for example, a RAID 5 array of three 3TB drives and one 1TB drive would actually treat all the drives as if they were 1TB.

2 RAID 0. Also known as striping. This gives you the full capacity of all the drives in the array, and provides performance benefits by writing across the drives in parallel. For example, a two-drive RAID 0 array would write half of a file on one drive and half on the other, and it would write on both in parallel, theoretically reducing the write and read to times to as little as half. Before you say "Yay, I want that!", RAID 0 actually makes your data more susceptible to faults. If *either* hard drive dies, you will lose all your data.

3 RAID 1. Mirroring. Used mostly in two-drive arrays, all the data written to one drive is automatically mirrored on the other. That means if one of the drives dies, you don't lose any data. The cost is you lose the capacity of one drive. For example, two mirrored 3TB drives will only provide 3TB capacity, not 6TB.

4 RAID 5. Distributed parity. This is only useful for arrays of three or more drives. With RAID 5, parity information used for data recovery is spread across all the drives in the array. The upshot is that any one drive in the array can die and you won't lose any data. You can simply swap out the failed drive to rebuild the array. The downside is you lose the capacity of one drive; so four 3TB drives will make a RAID 5 array of 9TB instead of 12TB. Write speed is also a little slower, since the NAS has to do the maths to calculate parity and then write that extra parity information to the hard drive.

Our current preference, if you can afford it, is a four-drive array with RAID 5. It provides a good balance between data security and capacity. If you have a two drive array, it's up to you: do you want to sacrifice half of your capacity for data reliability, or do you want maximum capacity and are willing to take the risk of hardware failure?

TWO BAY NAS DEVICES

So you're not looking for much. Just a couple of bays to provide network services for backup and perhaps disk mirroring. Two-bay NAS devices have become inexpensive, easy to use and widely available, and are a great way to get started.
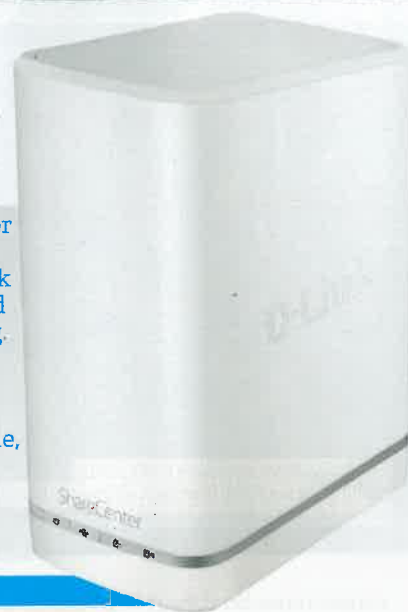
$149 (DISKLESS) | WWW.DLINK.COM.AU

D-LINK
SHARECENTER CLOUD STORAGE DNS-327L

A low cost, simple NAS.

Barely larger than the two drives it houses and made of super-light plastic, D-Link's ShareCenter DNS-327L is proof of the commoditisation of the NAS. It's a shamelessly inexpensive device that can bring NASs to mass market.

The hardware is simple. The top pops open for the insertion of two SATA hard drives, and there's a single USB 3.0 port and Gigabit Ethernet port at the back. Installation of the drives is easy — you just slide them into place, but later removal is less easy (as the cut on my hand can attest).

The USB port can be used to connect an external hard drive, which can be configured for backup or for additional media services. Aside from the initial rocket-like disk spin-up, the DNS-327L is very quiet.

The firmware and management is a mixed bag. Some elements, like initial drive setup, is capable, with substantial help text for beginners. Drive encryption is supported, and you can create and manage volumes

very quickly. User management is comprehensive and includes quotas and complex group management.

But there are some elements that come across as a little arcane: Multimedia shares, the FTP server and add-on management. There isn't a lot of flexibility with keeping NASs simple and add-ons; unlike QNAP, Thecus and WD, you don't really have a huge range of modules to choose from.

Given the low cost of the SharCenter, we were concerned that the performance of the NAS might be a little anemic, and for the small file test it was. But it performed very well for large file transfers — certainly good enough for most users' needs.

Verdict

A low-cost, basic NAS that's very simple to set up.

★★★½☆

$170 (DISKLESS) | WWW.NETGEAR.COM.AU

NETGEAR
READYNAS RN102

A low cost NAS for when you just want the basics.

Where QNAP, Synology and Thecus have pursued modularity as a virtue, Netgear has decided to walk down a path closer to WD, Seagate and D-Link. This is not a box that works as every type of server you can imagine; instead it's a focussed consumer experience, built around keeping things simple and just doing the things that most people want to do. There *are* extra apps you can install, but nothing on the scale that QNAP or Thecus can offer.

It's a box of heavy metal, a little larger than it really needs to be but mechanically simple to install. The drives were in and the NAS was up and running in minutes. Admin is easy through the Netgear admin page. It's a little stark, but Netgear keeps most management tasks simple and direct. Volume management, user administration, automated backup (there are three USB ports for external drives), media services and most of

the other core features are very simple and direct, many boiling down to simple check-box operations.

The pre-installed features are the ones you'd find most commonly on a NAS: DLNA services, Windows file services, iTunes, FTP, syncing, backup. We particularly like the built-in antivirus scanner, a tool that will monitor all files stored for net nasties.

The performance of the Netgear was disappointing. The slowest of all the devices we tested, Netgear clearly hasn't put much effort into optimising its drive and server performance.

Verdict

It's easy to set up and manage, but offers sluggish performance and limited modularity.

★★★½☆

$259 (DISKLESS) | WWW.QNAP.COM

QNAP
TS-220

If you love having a million options at your disposal, this is your product.

The QNAP TS-220 runs the same QTS 4.0 OS as the TS-470 reviewed later, albeit on a 1.6GHz ARM processor with 512MB of RAM (compared to 3.3GHz Core i3/2GB for the TS-470). This OS is a marvel of versatility and features, while remaining easy enough for a beginner to grasp. Among the things included in the default build are DLNA and Windows file services, mobile access to media via the QNAP app for iOS and Android, automated backup, peer to peer downloading, tools to record and manage surveillance cameras and even a TV tuner streaming tool that allows you to plug a USB TV tuner into one of the USB ports and view and manage the stream from a web browser.

But that's just what's in the box. There are hundreds of additional apps you can download, including business apps, content creation, P2P, telephony and more. The processor in this low cost NAS is modest, however, so you might not be

able to run all the tools that you might like.

The device has a similar aesthetic to Thecus' and D-Link's two-bay NASs. The Gigabit Ethernet port is complemented by two rear USB 3.0 ports and a front USB 2.0 port, as well as a pair of eSATA ports. Drive installation doesn't seem to require screws, but it looks like they're highly recommended (it makes removing the drive easier).

As with the TS-470 Pro, with the TS-220 you're not just buying a fixed-task box; you're buying a platform. No platform is more modular or boasts more features than QNAP's, and if you like to tinker or think you might want something with a few more features, the TS-220 is a winner.

Verdict

Excellent modular firmware that's easy to use and has tons of features. Pity about the screws.

★★★★½