

Bulletproof backup on a budget

Craig Simms tests seven new dual-bay NAS boxes, which can give you redundant backup capabilities for less.



With hard drives ever-increasing in capacity, the need for the big, four-bay plus NAS boxes of old is reducing for many. Why swallow the cost of a four-drive RAID 5 unit when RAID 1 will do?

But let's back that truck up for those new to network attached storage, or NAS. At its most simple, a NAS device is a small fileserver that sits on your network, providing storage to multiple people at once, with a level of protection against hard drive failure.

This means RAID – or Redundant Array of Inexpensive Disks. Your options are limited with only two bays, and in most circumstances this means RAID 1, or mirroring. Pop in two hard drives, and everything copied to one drive is automatically copied to the second. If one fails, the second takes over and you replace the dead one as quickly as possible. This does mean you only get half the usable storage you pay

“...you could get a 24 bay, dual 10-gigabit Ethernet unit if, say, you owned the world's biggest collection of Linux ISOs.”

for, but it's worth the peace of mind.

If you want the capacity of both disks to be usable, you can usually set them up as individual disks or spanned disks (once one drive fills up, the NAS starts writing to the second, but presents these as a single volume). This is known as “just a bunch of disks”, or JBOD. Lose a disk here, and you'll only lose the data on that disk.

There's also RAID 0, also known as striping, but it's a considerable risk. The technique spreads data equally across both disks, and is designed to increase data throughput rather than offer any redundancy. As such, if one disk dies, you lose all your data.

BUYING HARD DRIVES

Many NAS come barebones – that is, without hard drives included. While you can buy ordinary hard drives, we'd suggest you stick to the NAS specific variants, as they're optimised for 24/7 use and the kind of access patterns seen on NAS. This means sticking to either Western Digital's Red drives, or Seagate's NAS series.

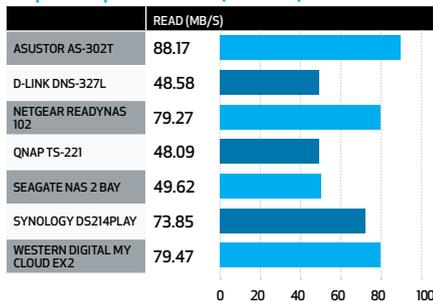
WHAT SHOULD I BUY?

The dual bay NAS market varies heavily in specs, from lower end ARM chips all the way to quad core Intel chips. You'll need to keep an eye on RAM as well. As a general guide, we'd say try to at least snag a dual core Atom box with 1GB RAM, but if you've got modest needs, the 512MB ARM boxes will mostly fill the role just fine.

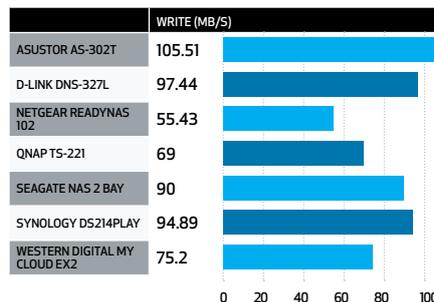
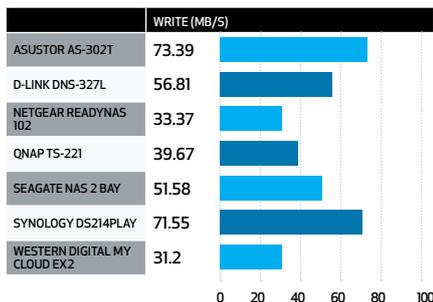
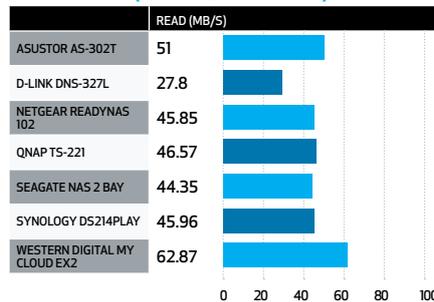
Of course it's not just about hardware. Most NAS these days come with apps to extend their functionality. While many include things like web and SQL servers from the get go, depending on the vendor you can get photo browsers, video and audio streamers, cloud storage integration, download tools, even old console emulators. Heck, some high end NAS can even run Minecraft servers. We've listed available apps in the specs box for each review unless there's simply

LABS BENCHMARK RESULTS

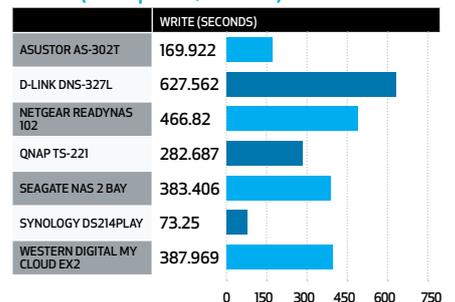
Sequential performance (2GB file)



Simultaneous (2GB file, dual stream)

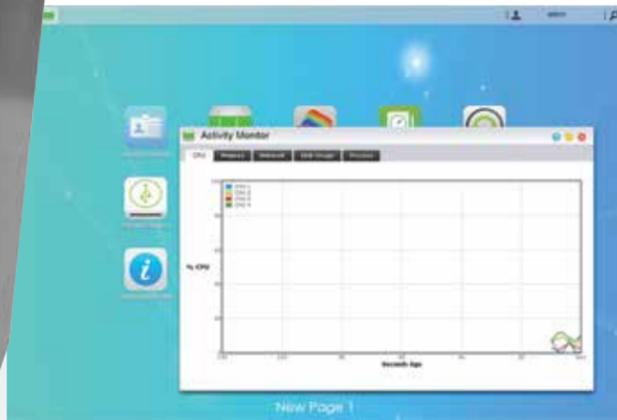


FC Test (“Win” profile, seconds)





CRITICAL SPECS: Intel Atom 1.6GHz, 1GB RAM, Gigabit Ethernet, 2x USB 3.0, 2x USB 2.0, HDMI, headphone jack.



\$389 DISKLESS | WWW.ASUSTOR.COM/APPS?LAN=EN&TYPE=&MODEL=2XX,3XX | WWW.ASUSTOR.COM

Asustor AS-302T

Despite the name, Asustor isn't an anime robot from the 80s.

Rather than just being a standard NAS, Asustor's AS-302T integrates an HDMI port and headphone jack. Install the Asustor Portal app, set the appropriate resolution, plug in a mouse and keyboard, hook the NAS up to your TV and you get an easy-to-use interface that runs apps like Chrome and XBMC. While you can buy a remote separately, its functions are quite limited.

Asustor has a massive number of apps for its NAS, including the Snes9x emulator, Sick Beard, SABnzbd and Couchpotato. The OS itself ships in a slimmed down state, with services like the iTunes and UPnP AV servers downloadable separately. It does do all the standard things out of the box though, with Rsync, FTP, USB and Amazon S3 backup capability; iSCSI, SSH, WebDAV and AD support; FTP, SMB, AFP and NFS file access.

The EZ-Router app will

talk with UPnP routers to ensure internet access to your NAS should you require it, while the support for multiple DDNS services should help this along. Multiple apps are available for you to interact with your NAS through your mobile phone, from file to NAS management.

The front of the unit features a USB 3.0 port attached to a customisable one-touch backup button, while the rear has another USB 3.0 port, the aforementioned HDMI and headphone jack, and two USB 2.0 ports. The USB ports support file sharing, printers, WiFi/bluetooth adapters, UPS management and optical drives.

If you've got the cash, this NAS makes a great choice.

Verdict

Asustor puts in an amazingly strong showing for its price bracket. Recommended.



CRITICAL SPECS: Marvell 1.2GHz, 512MB RAM, Gigabit Ethernet, USB 3.0 port



\$149 DISKLESS | AJAXPLORER, AMULE, AUDIO STREAMER, BLOG, JOOMLA, PHOTO CENTER, PHPPB, PHPMYADMIN, TRANSMISSION, SQUEEZECENTER. | WWW.DLINK.COM.AU

D-Link DNS-327L

This entry level NAS needs a little more work.

Coming in all-white, D-Link's NAS first requires you to attach handles to your drives before inserting them. It was also the loudest of all the NAS on test, with disk access magnified and obvious.

The interface feels very old compared to its competitors, with a fresh coat of paint required. Still, it's serviceable, and the help panel on the right hand side is welcome. Weirdly unlike every other NAS, there's no online check for firmware updates, or iSCSI support.

It includes the standard capabilities – DDNS, UPnP streaming, Time Machine and iTunes support, access to your files over FTP, SMB, AFP and NFS. There's an FTP/HTTP download manager, a scheduled torrent downloader, and it will integrate with Amazon S3 and Google Drive.

By default D-Link ships with a file manager, photo browser, music player and an app for security cameras. Like the WD My Cloud EX2,

additional apps are fairly limited, but cover the basics. One, simply called "Blog", is actually a Wordpress install.

There's only a single USB 3.0 port, with D-Link offering both USB storage sharing and printer compatibility.

Performance was a little odd. While the read speeds didn't reach the heights of other NAS, write speeds managed to be significantly faster than the likes of WD and Netgear. At the same price though, the Netgear has more features, a more robust construction, is quieter, and has better small file write performance. WD also puts in a stronger showing once you take drive bundling into account – so there are better budget options about.

Verdict

The DNS-327L may be affordable, but it takes too many shortcuts compared to its competitors.



CRITICAL SPECS: Marvell Armada 1.2GHz, 512MB RAM, Gigabit Ethernet, USB 2.0, 2x USB 3.0, eSATA



\$149 DISKLESS | APPS.READYNAS.COM | WWW.NETGEAR.COM

Netgear ReadyNAS 102

Are you ready for NAS?

Netgear presents us with a simpler, perhaps slightly outdated interface for its ReadyNAS 102. It still very much gets the job done, and is by and large easy to navigate.

The usual suspects are all here in terms of protocol support and features: AFP, NFS, SMB, FTP, SSH, iSCSI, UPnP streaming, iTunes and Time Machine support. Cloud backup is available using Netgear's own ReadyNAS vault service, as well as Dropbox. Local backup can be performed over attached external storage, while the unit will also support FTP, NFS or Rsync backup.

Online access is available through web and app by setting up a ReadyCloud account, although if you want to reach the NAS admin page you'll need to be on the local network.

The longevity of the ReadyNAS brand has meant a reasonable collection of apps have appeared over time, including Sickbeard,

Couchpotato and SABNZBD, although it's long been outstripped by the likes of Asustor, Synology and QNAP. Vexingly, you also cannot do anything else in the ReadyNAS UI while installing an app on the system.

While not the most featured NAS around, the fact remains the ReadyNAS 102 is a good performer at a low price. If you've already got hard drives to throw in, it makes a good, cheap choice – but if you're looking to buy new, you might want to consider the WD My Cloud EX instead with bundled hard drives.

Verdict

A solid, basic offering from Netgear. Expansion in capability would give it an extra boost.



A strong showing from Asustor.

too many, in which case we've provided a URL. We recommend checking these out before making a purchase – what's out there may just change your mind.

WANT TO GO BIGGER?

Many of the vendors on test here have more powerful NAS boxes available, right up to quad core units with 2GB of RAM. Generally this will mean not only better transfer performance, but it should be able to handle multiple transfers better, run NAS apps more effectively, and rebuild arrays faster after you've had a disk failure. The latter is important – the less time you have with the chance of losing another drive, the better.

Of course these things can go as deep as your wallet and lust for data transfer allows; you could get a 24 bay, dual 10 gigabit Ethernet unit if, say, you owned the world's biggest collection of Linux ISOs. Many NAS bays also support 2.5-inch drives, meaning you could kit them out with SSDs if you're fortunate enough to be able to run such a beast. Ultimately a NAS purchase should be customised around your needs.

HOW WE TESTED

Three tests were used: a 2GB file was sent to and from the NAS; the same 2GB file was sent as two streams simultaneously to and from the NAS; and FC Test was used to simulate copying a series of smaller files, to represent a more common backup task. Since each of these NAS are vastly different in specs, the benchmarks shouldn't be used so much for comparison as an indication of each unit's capability. Each NAS was tested with a pair of 4TB Western Digital Red Drive Pros in RAID 1.

CRITICAL SPECS:
Marvell 2GHz, 1GB RAM, Gigabit Ethernet, 2x USB 3.0, USB 2.0, 2x eSATA.



\$379 DISKLESS | WWW.QNAP.COM/1/EN/APP_CENTER/ | WWW.QNAP.COM

QNAP TS-221

Thorough features, but needs more performance.

The QNAP TS-221 provides a USB 2.0 port on the front with a configurable one-touch copy button, while on the back are two USB 3.0 ports and just as many eSATA.

Firmware can be installed by browsing to start.qnap.com and signing up for a QNAPcloud account, which also gets you a DDNS subdomain. Unfortunately the process ultimately couldn't find our NAS, so we installed manually through the QFinder app.

QNAP's firmware is always impressive, complete with a full desktop, drag and drop and a neat little stats dashboard. It supports the standard options – DDNS, iSCSI, FTP, SMB, DLNA, iTunes, Time Machine, NFS, AFP – but supplements this with SSH, TFTP/SFTP, RADIUS, active directory support and more. Backup options cover Amazon S3, ElephantDrive, Symform, Rsync, and USB drive. USB ports can also be used for Wi-Fi, printers, and UPS.

On the media side, the QNAP offers both regular and TwonkyMedia DLNA, and can transcode videos for streaming to mobile devices, to a resolution of your choosing.

There's an army of apps, and it's worth checking out the link in the specs box to see exactly what's available. QNAP also provides mobile apps for almost any function you can think of, although Android gets a greater range than iOS.

Performance is confusing – while you're paying for a range of features and great interface, the TS-221 lagged competitors significantly in our 2GB transfer tests, only making up ground in the small file transfer test. For only \$10 more, consider the Asustor AS-302T.

Verdict

Fantastic features from QNAP, but we'd want something higher performing for the price.



CRITICAL SPECS:
ARM 1.2GHz, 512MB RAM, Gigabit Ethernet, 2x USB 3.0



\$299 DISKLESS, \$429 2TB, \$499 4TB, \$699 8TB, \$1099 10TB | ANTIVIRUS, BITTORRENT SYNC, ELEPHANTDRIVE, OWN CLOUD, SURVEILLANCE MANAGER, WORDPRESS | WWW.SEAGATE.COM

Seagate NAS (2-Bay)

The big black box.

Seagate's interface is modern, minimal and slick. It makes for something that's user friendly, incredibly readable and mostly easy to use.

Not so user friendly is getting you to enter the NAS MAC address when you turn it on for the first time. Apps are also very limited, although as Seagate has seen fit to divide available apps into categories, this suggests it expects to eventually expand the selection in the future.

Internet access is possible with a mynas.seagate.com URL. Refreshingly, you don't need to sign up to any online account – just choose your URL in the NAS interface and you're away. This is complemented with an app called Sdrive, available for OS X, Windows, iOS and Android, to access your files wherever you may be.

Weirdly, you have to activate the NAS through either the OS X or Windows app first, or you'll be limited to access on the local

network. A downloading app is available for torrents and URL-based downloads, but is quite simple and doesn't support scheduling.

It does support SMB, AFP, NFS, FTP, WebDAV, iSCSI, Time Machine backups, iTunes and DLNA streaming, and you can access the box over SSH. Backup is available to another Seagate NAS, through Rsync, Amazon S3, Box, FTP, SMB, NFS, WebDAV or USB hard drive. The USB port can also be used for a printer if you wish to share one on either of the two USB 3.0 ports.

It outperformed Western Digital on the write, while vice versa was true on the reads, pulling near equal on the small file transfer test.

Verdict

While more polish would be good, we can see where Seagate is heading. A decent effort.



CRITICAL SPECS: Intel Atom 1.6GHz, 1GB RAM, Gigabit Ethernet, USB 2.0, 2x USB 3.0, SD card, eSATA



\$419 DISKLESS | WWW.SYNOLOGY.COM/EN-US/DSM/APP_PACKAGES/ALL_APP | WWW.SYNOLOGY.COM

Synology DS214play

The always polished Synology delivers again.

With a full-blown desktop, app menu, and widgets for at-a-glance status updates, Synology's interface is both slick and powerful, with more features than is possible to fit in this review. If you feel the need to expand capabilities even further, there's a plethora of apps available that you can peruse at the URL in the specs link above.

The "play" indicates files containing H.264, MP4 Part 2, MPEG 2, and VC-1 codecs can be transcoded for multiple devices (like Chromecast, AppleTV, iOS, Android and so on) up to 1080p in resolution. A large variety of other codecs are also covered, although will only transcode up to 720p.

The unit can backup to Amazon S3, Azure, HiCloud, SFR Stockage, external USB, another Synology NAS or Rsync server. Its Download Station allows for scheduled Bittorrent, FTP, HTTP, NZB and eMule downloads, while the Cloud Sync app allows

for integration with Google Drive, Dropbox, OneDrive, Box and more.

A Security Advisor app advises on weaknesses, while EZ-Internet ensures access from the internet if required. Combined with a MyDS account, you should be able to access anything pretty much anywhere.

The unit is coated with a rubberised plastic that is high grip, and slightly unpleasant to the touch. Annoyingly the front cover pops off rather than being hinged, but as a positive the drive sleds are toolless. The fronts has a USB 2.0 port and SD card slot, while the back has two USB 3.0 ports and eSATA. USB support is extensive, covering storage, Wi-Fi, Bluetooth, printers, and even DTV dongles.

Verdict

You pay for the Synology name and features, but it's a polished, highly featured experience.



CRITICAL SPECS:
1.2GHz, 512MB RAM, Gigabit Ethernet, 2x USB 3.0 ports



\$299 DISKLESS, \$399 4TB, \$599 6TB, \$699 8TB | HTTP/FTP/TORRENT DOWNLOAD, AMULE, DROPBOX, DVBLINK, GIT, ICECAST, JOOMLA, NZBGET, PHPBB, PHPMYADMIN, SQUEEZECENTER, TRANSMISSION, WORDPRESS. | WWW.WDC.COM

Western Digital My Cloud EX2

Sunshine in the clouds.

The My Cloud EX2 has a clear, well thought out interface. Even user management is easy, with the initial setup asking you to "invite" others to use your "personal cloud" through a username and email address, immediately after you set up your own WD My Cloud account.

This account can be used with the WD My Photos app (which views photos on the NAS, or backs them up from your mobile) and WD My Cloud app (file access, including uploading new files), to access your NAS from anywhere. Daftly, you can't view the web interface or your files remotely through WD's My Cloud site itself – after login it just gives you links for the aforementioned apps.

iTunes, DLNA and Time Machine support are baked in, there's iSCSI and ISO mounting support, and you can access your folder shares over SMB, FTP, WebDAV, NFS or straight up

web interface. Backup is available to ElephantDrive, Amazon S3 and other My Cloud EX2 units; to and from USB drives; and from digital cameras. USB drives can be shared.

Annoyingly there's no power button, but you do get two USB 3.0 ports for your money. Performance is decent for the price – but for units without disks, the ReadyNAS 102's significantly cheaper entry point is hard to ignore. Where WD shines is its bundled units, with the included WD Red drives making the My Cloud EX2 a much more compelling choice. ■

Verdict

WD offers performance for a good price, giving enough features for the entry level to moderate user.

