

# Network storage

Dedicated network storage devices can be accessed by multiple computers, regardless of whether other PCs are switched on. We explain how they can be used

**W**ith so many households equipped with more than one computer, it should come as no surprise that home networking is more popular than ever. As computer users work with several machines, there will inevitably come a time when one computer is in use and a file that is needed is stored on another machine's hard drive. With shared folders configured (see page 40), it is possible to access files on a networked computer and open them on another PC. But, unfortunately, this is only possible if the computer that houses the file in question is switched on.

This is one of the major stumbling blocks of shared folders, but one that can be bypassed easily through the use of a network storage device. Such devices can take a variety of forms, but by far the most common is NAS (Network



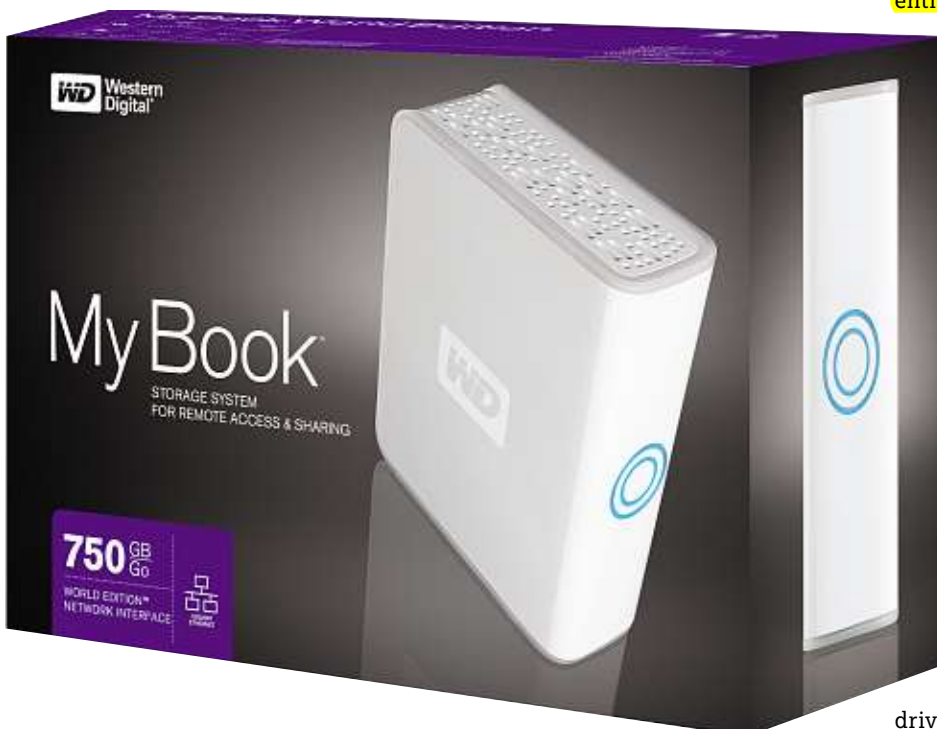
▲ A wireless network storage enclosure can transform a hard drive into a network drive with remote access

Attached Storage). NAS drives often look like any other external hard drive that can be connected to a computer via USB, but there is one key difference. Such drives are connected to a router using either a standard network cable or using a wireless connection and, as such, are entirely independent of any of the PCs on network. They act like miniature computers in their own right, and are therefore not reliant on other PCs for power or access rights.

## Always available

There are a number of network hard drives that function in very much the same way as a standard hard drive, with the added benefit of being accessible from any networked computer. As well as boosting the amount of storage space that is available, network drives are always available. The data they contain can be accessed without the need for a particular computer – other than the one being used to access data – to be switched on. This can help to save a great deal of time as there is no need to wait for a computer to boot up, and also save money as the drives use much less electricity than a computer. The drive themselves are not particularly expensive, although they do tend to cost more than standard hard drives of a similar capacity.

But there are also a range of network drives that boast additional features such as extra USB ports. Iomega's StorCenter 750GB Gigabit Ethernet drive (about £230 from



▲ Western Digital produces network storage devices as part of its My Book range of external drives



[www.iomega-europe.com](http://www.iomega-europe.com)) features two front-mounted USB ports that can be used to connect additional storage in the form of USB hard drive, or to connect a printer that can then be used by any computer on the network. In addition to a USB port to allow for storage expansion, Western Digital's My Book World Edition (about £100, [www.wdc.com](http://www.wdc.com)) can be accessed from anywhere in the world from a computer with an internet connection, thanks to the inclusion of special software.

▲ LinkStation Pro Duo uses RAID technology to either improve drive performance or reduce the risk of data loss

data is still available on the other. RAID 5 is a combination of these two techniques and requires at least three drives. Data is stored on two or more of the drives for enhanced performance, while the final drive helps protect against data loss. Buffalo Technology ([www.buffalo-technology.com](http://www.buffalo-technology.com)) produce the LinkStation and TerraStation ranges of network drives that employ various variants of RAID.

Not all network drives need to be physically connected to a router in order to be accessed by computers on the network. D-Link's DSM-G600 ([www.d-link.com](http://www.d-link.com)) is a wireless network storage enclosure. Simply insert a standard hard drive, and optionally connect up to two USB drives, and the data can be accessed without the need for network cables. By using such an enclosure, it is not necessary to place the network drive right next to the router; it can be placed anywhere in the home as long as it is within reach of a power socket.

### Ensure data security

Regardless what a network drive is used for – be it additional general storage or as a backup device – performance or data security may be of greater importance. Network drives that feature two or more hard drives within them can make use of RAID technology (Redundant Array of Inexpensive Drives or Redundant Array of Independent Disks). RAID can be used in a variety of ways.

RAID 0, also known as striping, splits data that is stored across two or more drives, helping to improve access times. RAID 1, also known as mirroring, duplicates the contents of one drive to another. While this does not improve performance, it does mean that if one drive fails,

Network drives come in a variety of forms, and whatever you are looking for, it is likely there is something suitable available. Just like standard hard drives, NAS devices are available in a wide range of capacities, so no matter what you intend to store on them, there is going to be one that is large enough. Whether you are looking for additional storage for a growing digital music collection, or a backup device, there is a network drive at the right price and capacity for you. In addition, the extra features offered by some network drives can really help to highlight the benefits of setting up a network in the first place.

Easy expansion of storage space via USB means that running out of space is unlikely to be an issue, and the option of transforming a standard printer into a device that can be accessed via the network is very appealing. Some NAS drives feature useful media server software, allowing you to stream your music, photos or videos over the network independently from a 'host' PC. Meanwhile, security features such as RAID and automatic data synchronisation help to reduce the risk of losing valuable files.

On top of that, network storage devices are easy to set up and configure (as we will see over the page). And, since the price of such hardware has dropped in recent years, owning a network drive is something that is now an option for more people than ever.

## Jargon buster

- ▶ **Boot** The process a PC goes through after it is switched on performing a quick self-test, loading Windows and so on.
- ▶ **Broadband** A fast internet connection, such as ADSL.
- ▶ **GB** Gigabyte. Measurement of storage capacity usually for hard disks.
- ▶ **Hard disk** A high-capacity disk fitted in almost all PCs and used to store applications and files.
- ▶ **Media server** Software whose job it is to share media with other computers and devices over a network.
- ▶ **RAID** A system for storing data efficiently and automatically backing up computer hard disks.
- ▶ **Router** A device used to connect more than one computer together and/or to the internet as an alternative to a modem.
- ▶ **Universal Serial Bus (USB)** A standard that allows quick and easy connection of external peripherals such as storage devices to your PC.

For more Jargon Buster definitions see page 97 or visit [www.computeractive.co.uk](http://www.computeractive.co.uk)



▲ TerraStation network drives boast capacities up to 4Tb. Some can even act as a multimedia streaming device

## Wide area network storage

If you want to be able to access files from any computer with an internet connection, online storage may be what you need.

There are a number of ways to store files online. You could, for example, use the large amount of storage space offered by webmail services such as Google Mail (<http://mail.google.com/>) as a kind of remote hard drive; simply attach files to emails in order to upload them. Also, many ISPs provide a small amount of web space for their broadband customers. Again, this can be used to store any files, not just those that make up a website.

There are also a number of dedicated online storage services available, including Microsoft's SkyDrive (<http://skydrive>.



▲ Humyo can synchronise data from your computer

live.com), which includes 5GB of storage space free of charge. Another free service is Humyo ([www.humyo.com](http://www.humyo.com)), which offers 30GB of free space, but 100GB is available for £29.99 per year. Xdrive ([www.xdrive.com](http://www.xdrive.com)) offers 5GB of free space, but 50GB is also available for about £5 a month.

# Set up a network storage device

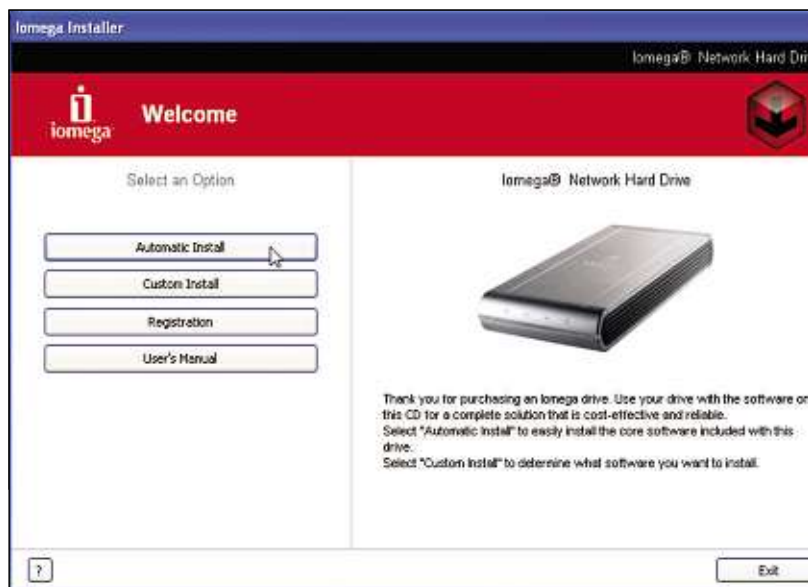
Set up and configuring a network storage system that all your computers can access

**N**etwork-attached storage (NAS) can be extremely useful, particularly if you want to be able to access files from all the computers on your network independently of any single PC. NAS devices can also be used for big backup jobs, and many have built-in print servers and media-streaming capabilities so you can produce printed documents from all your computers, as well as store and share your music and movie libraries.

In an ideal world, installing such a device on your network would be as simple as plugging it into your router. Unfortunately, setup can be complicated. In this workshop, we'll be showing you how to install a NAS device and provide you with some tips on configuring your setup. We'll be using an Iomega 320GB Home Network Hard Drive (£100 from Play.com, <http://tinyurl.com/6bkdxg>), but similar instructions will apply for many other models.

## Step 1

To use a NAS device, you'll need to have already set up a home network, as described on pages 22-25. Your network needs to have a router at its heart (or, at the very least, a network switch). Some NAS devices feature wireless connectivity built in, but it's usually better to use a wired link to the router if possible, as this will provide better stability and faster data transfer rates. Most NAS devices will come with a network (Ethernet) cable in the box. Simply attach one end to a spare port on your router and connect the other end to the corresponding network socket on the NAS unit as shown. Plug in the power supply and switch the device on.

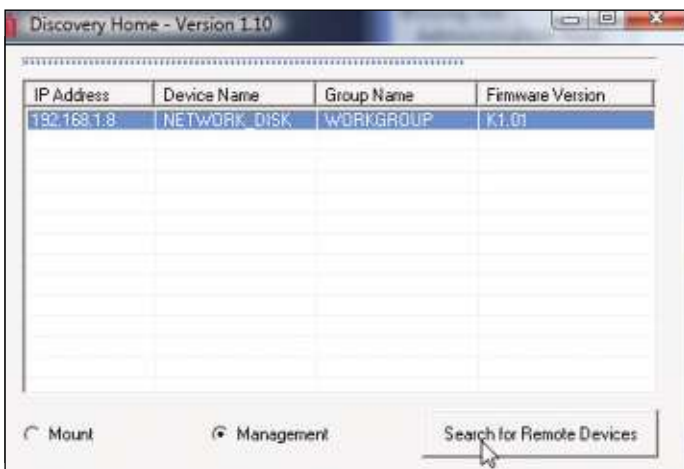


## Step 2

Before you can use your new network drive, you'll need to install a special utility so that your PC recognises the NAS device. Boot up one of the PCs on your network. Your NAS device should have been supplied with a disc of software. Insert this into your PC. If Autorun doesn't start the CD automatically, go to Start > My Computer, or just 'Computer' in Vista and double-click on the drive letter for your CD drive. In the case of our Iomega Home Network Hard Drive, we need to choose the 'Automatic Install' option and follow the on-screen prompts to install the Discovery Tool software. Precise wording may be different with other models, but the principal will usually be the same.

## Step 3

Once the software installation is complete, you will need to launch the new utility; the installation procedure may give you the option to run the new software automatically once it has finished, or you may need to double-click on a new desktop icon. Either way, when you launch the utility, you may encounter an over-cautious warning from your firewall – here we've had a message from Windows Firewall asking us if we want to block our Iomega Discovery Home application. Click 'Unblock' to allow the utility to work correctly. If you use a firewall other than the one built into Windows, you may receive a different type of warning, or you may need to configure it manually to allow your NAS device's utility to run. Refer to your firewall's help files for advice on how to allow applications.

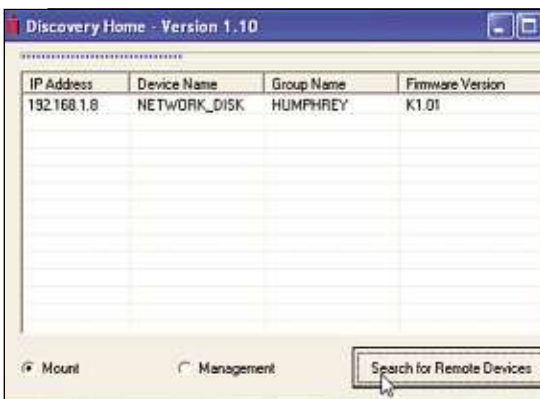
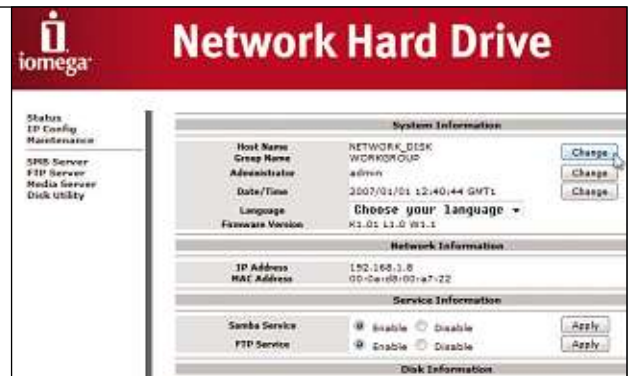


## Step 4

The main function of the utility you've installed is to locate your network disk and mount it as a drive letter on your PC. Before you start using it, you may need to configure the device. With Iomega Home Network Hard Drive, the configuration tools can be accessed through the Discovery Home tool we've just installed. Put a check next to where it says 'Management', then click the 'Search for Remote Devices' button. The tool will scour your network for NAS drives and list them in the main window along with its IP address, name and Workgroup name. Click on the device when it appears to launch the configuration utility. You may be prompted to enter a password. The default login details will be provided in your NAS device's user manual.

## Step 5

The initial page of your configuration utility will look something like this. The most important thing to check here is the Workgroup setting. Your NAS device will need to belong to the same workgroup as the rest of your network. To find out what the name of your network's Workgroup is, go to Start, right-click on My Computer (or just 'Computer' in Windows Vista) and select Properties. On a Windows XP PC, click the Computer Name tab in the box that appears to see the Workgroup name. On a Vista PC, scroll down the System window that opens to view the Workgroup name. If necessary, you should change the Workgroup setting for your NAS device to match. In the Iomega Home Network Hard Drive's utility, this simply involves clicking the 'Change' button next to the 'Group name' setting, entering the new Workgroup name and clicking OK. Check the workshop on page 40 for more on Workgroups.



## Step 6

As for mounting your new NAS device as a drive that's accessible to your PC, the procedure may vary slightly depending on the make and model of your drive. With our Iomega device, launch the discovery utility as per Step 3, put a check next to where it says 'Mount', then click the 'Search for Remote Devices' button. As before, the tool will look for NAS drives and list them in the main window. Click on the drive when it appears to mount it. You may be asked for a username and password at this point. Enter the default login details provided in your instruction booklet and click Mount. In the next window that appears, select a drive letter for the device and choose a folder to mount from the drop-down menu. Click Set > OK. Again, precise instructions may vary depending on the device used. Bear in mind that you may also need to install the utility and set up the drive on all the other PCs on your network.