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This award means a product offers outstanding value for money.

## On test 802.11n routers



Asus  
**DSL-N13**  
£106 inc VAT



Belkin **N+ Wireless Modem Router**  
£62 inc VAT



BT  
**Home Hub 2.0**  
£88 inc VAT



Buffalo  
**AirStation Wireless-N Nfinity Giga**  
£71 inc VAT



D-Link  
**DIR-855 Xtreme N Dual Band Router**  
£106 inc VAT



D-Link  
**DSL-2740B**  
£46 inc VAT



Edimax  
**BR-6754N**  
£56 inc VAT



Linksys  
**WRT610N**  
£144 inc VAT



# Easy life

The latest 802.11n routers give you a faster network with better reception and more advanced features – and they're cheap too.



**A WIRELESS NETWORK** is the essential accessory for today's PCs. If your home doesn't have one, your digital activity will be limited to wherever you have cabled network points. And if you already have a WiFi network but you're still using an old 802.11b or g wireless router, you'll be missing out on the speed and range that the new Draft n standard can provide, along with the latest router features, such as improved security and the ability to share storage devices across your network.

As well as connecting together all the PCs you own, along with your friends' and colleagues' when they're round your place, a wireless network also lets any number of devices share your broadband Internet connection, no matter where they are in the building. You can relax on the sofa while surfing the web on your laptop, play online games in any room of the house, and connect WiFi-enabled gadgets such as your Wii console to the Internet. It's the simplest way to transfer files between computers, and makes it easy to stream music and video from PCs to media players.

### Choosing a router

There are two types of wireless router. Some have an integrated ADSL modem, so you can connect them directly to a telephone socket to access your broadband Internet connection. Others have a WAN Ethernet port that connects to a separate modem, and this is the type you'll need if you have cable Internet (only available from Virgin Media in the UK), since you'll need to continue using the special modem originally supplied. If you're on ADSL but you want to keep using the modem supplied by your ISP, you can buy a non-ADSL router and connect its WAN port to one of the LAN ports of the modem with a CAT5 crossover cable. In general, though, you'll get better results replacing the ADSL modem with a new ADSL router.

Once your router is set up and connected to an ADSL or cable broadband socket, it's easy to get on to your wireless network. Any PC with a wire-

less adapter installed, whether built in or added as a USB dongle, will show the name of your network when you click the network icon in the system tray at the bottom right of your Windows Desktop.

The only limiting factor is reception: since wireless data is sent and received using radio waves, network speed depends on how close the computer is to the router, and what obstacles, such as walls and floors, are in the way. Generally speaking, an 802.11n router placed reasonably centrally in a home will reach all the rooms quite comfortably, unless your house is huge or has unusually thick internal walls. You should also be able to wander some way into the garden.

It's not just Windows PCs that can use WiFi. You can just as easily connect an Apple Mac – there's no difference in the kit or settings required – and the current generation of games consoles, both set-top and portable, all support WiFi, though in some cases you'll need an optional adapter. Many smartphones, PDAs, MP3 players and even digital photo frames can also connect. Your network should be secured, which means you'll need to enter a key code into each device before it's allowed to connect. This only has to be set up once.

The 802.11n standard for wireless networking is the fastest yet seen. It's still referred to as a 'draft' standard, after a long delay in official ratification, but all devices sold as compatible today will work with the final standard when it appears. All the routers on test here support 802.11n, and they have some handy extra features too. To get the maximum speed on any PC(s) that are close enough to connect with a cable, some support Gigabit Ethernet, which, with speeds of up to 1000Mbit/sec – equating to about 100 megabytes per second – is about the fastest way PCs can communicate. Gigabit Ethernet support is increasingly common in new PCs and laptops.

For wireless connections, 802.11n offers theoretical speeds up to 300Mbit/sec. This is a big improvement over the previous 802.11g standard, which went up to 56Mbit. In practice, you won't see anything like these speeds outside a test lab, ▶



## BT Home Hub 2.0

THE HOME HUB 2.0 is now available as part of BT's Total Broadband packages or as a standalone product. If you have a BT account, some unique features are enabled. For example, with a BT Broadband Talk package you can use your router to make and receive Internet calls using VoIP.

The back of the device has four 10/100 Ethernet ports, an RJ11 port for your broadband connection, and a socket to connect a standard telephone. The router is securely configured when you take it out of the box, with the wireless access key provided on a reference card. The Home Hub can be set to switch into a power saving mode at certain times of day if you know when you won't need it.

The Home Hub user interface is clean and friendly. Common options are easily accessible, with the full configuration options in an Advanced section. Here there are parental controls and a firewall, but no QoS. If you connect storage or a printer to the router's USB port, it gets its own IP address and can be accessed via the network.

BT didn't supply a matching WiFi adapter, so we could only test with the built-in adapter in our Centrino laptop. At short distances performance didn't match other routers, but the Home Hub was good at longer range. At 15 metres it managed 39Mbit/sec, and at 25 metres exceeded 12Mbit.

The Home Hub 2.0 is an excellent bonus for BT broadband users, and worth considering for others.

### Draft-n ADSL router

CENTRINO WIFI at 1m **43** 15m **39** 25m **12** Mbit/sec  
OWN ADAPTOR n/a

Asus  
**DSL-N13**



Performance doesn't match the high price.

£106 inc VAT

Draft 802.11n • 4x 10/100 Ethernet • 1x WAN (ADSL2+)

• 2x USB 2.0 • WPS •

UPnP

SIZE 215x50x60mm

WARRANTY 1 year

PART CODE DSL-N13

SEE IT [www.asus.com](http://www.asus.com)

BUY IT [www.scan.co.uk](http://www.scan.co.uk)

FEATURES ★★★★★

PERFORMANCE ★★

VALUE ★★

BT  
**Home Hub 2.0**



Smart and easy to use, with good range, only lacking QoS.

£88 inc VAT

Draft 802.11n • 4x 10/100 Ethernet • 1x WAN (ADSL2+) • UPnP

DIMENSIONS

182x174x88mm

WARRANTY 1 year

SEE IT [www.homehub.bt.com](http://www.homehub.bt.com)

BUY IT [shop.bt.com](http://shop.bt.com)

FEATURES ★★★★★

PERFORMANCE ★★★★★

VALUE ★★



## Asus DSL-N13

THIS ROUTER WAS simple to install thanks to the EZSetup software included on CD. By default, the software generates a network name and a 128-bit WEP security key for you, although these can be customised. The web interface provides more comprehensive features, despite its sparse design.

Although the DSL-N13 doesn't have extras like Gigabit Ethernet or dual frequency, it contains embedded software to share USB printers and storage. You can also run an FTP server directly from the router, with settings provided in the web interface to create users and set up shared folders.

The N13's web interface offers additional control over your network. You can easily customise Quality of Service (QoS) settings to prioritise certain types of network traffic, either from a list of presets or your own profile, and set up parental controls to block certain applications at specific times of day.

Unfortunately, the DSL-N13 was let down by mediocre performance. With our Centrino laptop, it managed a respectable 50Mbit/sec at a distance of 1 metre, but this dropped to just 4Mbit at 25 metres. With Asus' own USB N11 adapter (around £37), the DSL-N13 managed a superb 74.46Mbit/sec at close range, but dropped to a poor 5.16Mbit/sec at 25m. Other routers offer more bang for the buck, unless you the printer and storage sharing features are a priority for you.

### Draft-n ADSL modem

CENTRINO WIFI at 1m **50** 15m **11** 25m **4** Mbit/sec  
OWN ADAPTOR at 1m **74** 15m **12** 25m **5** Mbit/sec



## Edimax BR-6754N



THE BR6754-N IS a cable router with Gigabit Ethernet wired ports. It doesn't have any USB ports to attach devices, but offers an above average number of features in its

built-in software. For example, it supports a range of Dynamic DNS services to allow a static host-name to be assigned to your IP address. You can also configure the router to always assign a certain IP address to a specific machine, such as a media server, without disabling DHCP (the usual method of automatic IP assignment) for other computers.

The web configuration interface is straightforward, with simple descriptions of each menu item, which is helpful if you're the sort of person who doesn't like to read manuals (like us). The firewall also works as a parental control feature, allowing you to block specific web pages and applications for individual computers on the network.

The most impressive aspect of the BR6754-N was its performance. Using Edimax's wireless USB adapter, the router delivered a swift 73Mbit/sec at a distance of one metre. At 25 metres the router still achieved a whopping 23.67Mbit. When we switched to testing with our Centrino laptop, the BR6754-N still performed superbly, reaching 33.44Mbit/sec at 15 metres and managing a reasonable 9.45Mbit at 25 metres. At £57, the Edimax is a great router at a fantastic price.

### Draft-n wireless router

CENTRINO WIFI at 1m **48** 15m **33** 25m **9** Mbit/sec  
OWN ADAPTOR at 1m **73** 15m **40** 25m **25** Mbit/sec

Linksys  
**WRT610N**



Sleek design and great performance justify the relatively high price.

£144 inc VAT

Draft 802.11n • 4x Gigabit Ethernet • 1x WAN (ADSL2+) • 1x USB 2.0 • WPS • UPnP • QoS

SIZE 225x120x35mm

WARRANTY 1 year

PART CODE WRT610N-UK

SEE IT [www.linksys.com](http://www.linksys.com)

BUY IT [www.scan.co.uk](http://www.scan.co.uk)

FEATURES ★★★★★

PERFORMANCE ★★★★★

VALUE ★★

Edimax  
**BR-6754N**



Great interface, decent features and superb performance.

£56 inc VAT

Draft 802.11n • 4x Gigabit Ethernet • WPS • UPnP • QoS

SIZE 29x192x115mm

WARRANTY 1 year

PART CODE EDM-6574N

SEE IT [www.edimax.com](http://www.edimax.com)

BUY IT [www.microwarehouse.co.uk](http://www.microwarehouse.co.uk)

FEATURES ★★★★★

PERFORMANCE ★★★★★

VALUE ★★★★★



## Linksys WRT610N



THE WRT610N WAS one of the most aesthetically appealing routers on test, sporting a glossy finish, with the aerials hidden from view inside its slim plastic chassis. Status

LEDs at the front glow blue or green.

Features include dual band, WPS, and a USB port to connect external storage, either a hard disk or a flash memory drive. This allows the Linksys to act as a NAS (network attached storage) device, FTP server or media streamer. The storage can be accessed as a normal Windows file share, and the router's software provides all the options you need to set up access permissions and choose shared directories.

The WRT610N broadcasts two wireless networks at 2.4GHz and 5GHz frequencies simultaneously. You can choose to use either of these for 802.11n traffic, keeping the other free for devices that support older WiFi standards.

When transferring data using a Linksys branded WiFi adapter, the WRT610N was capable of 44.6Mbit/sec at one metre, an excellent result, and even at a distance of 25 metres it still delivered an incredible 25.23Mbit. With our Centrino laptop, it managed a speedy 26.87Mbit/sec at 15 metres and 9.37Mbit at 25 metres. Although pricey, the WRT610N is a great ADSL router, especially if you use it with Linksys adapters.

### Draft-n ADSL router

CENTRINO WIFI at 1m **46** 15m **27** 25m **9** Mbit/sec  
OWN ADAPTOR at 1m **44** 15m **42** 25m **25** Mbit/sec

and the further the PC is from the router, the slower the network will get.

We tested each router by transferring a 700MB file at the standard 2.4GHz wavelength (some routers now offer a choice of frequency bands, as we'll discuss later) from a laptop at three distances: one metre away in clear view of the router, 15 metres with a thin wall between, and 25 metres away at the other side of a house with three walls in the way, to challenge the router's signal output. Each router was tested twice, using both the built-in 802.11n adapter in our Intel Centrino laptop and an 802.11n adapter of the same brand as the router. Using a router and adapter from the same manufacturer often gets better speeds.

### Setup and security

It doesn't take long to set up a router. After plugging it in, you'll need to configure a few settings to ensure devices can connect securely to your network. All routers provide a firewall to prevent unauthorised attempts to access your network over the Internet, and you should ensure this is switched on. You should also secure your wireless network, otherwise any computer within range will be able to make use of your broadband connection, not to mention access any shared folders on the PCs on your network. Not only does that avoid the risk of 'drive-by' hijacking, where people park outside your house and either use your Internet connection without your permission or snoop into

your computers looking for personal data, it also avoids your neighbours accidentally connecting to your network instead of their own. A Computer Buyer staffer ran his network unsecured for a while, and found no less than nine other users connected to it one evening. For similar reasons, you should change the password used to access your router's configuration pages, which by default will be blank or something like 1234.

There are different types of wireless security, which vary in protection strength. The most basic form is WEP, which involves creating a single passkey that's shared between all clients (connected devices) on a network. WEP is better than no protection at all, but it's been proved very easy

to crack. A more modern form of wireless security is WPA-PSK. This encryption method uses a passphrase between eight and 63 characters in length. This phrase is used to generate a new key each time data is sent over the network, making it tougher for an intruder to find the key. Your router software will also let you choose a WPA-PSK encryption method, either TKIP or AES. The more commonly used is TKIP, but AES is generally more secure, so select this if it's available.

A neat feature of modern routers is support for WiFi Protected Setup (WPS). Configuring a router for the first time and assigning a passkey to restrict access to your wireless LAN can be tricky for the uninitiated. By pressing a button or entering



## D-Link DIR-855 Xtreme N Dual Band Router

THE FIRST ASPECT of the DIR-855 you'll notice is the bright OLED screen built into the front. This shows you the status of your network at a glance, without having to go into the web interface.

Every feature can be customised, and most are easy to adjust, thanks to extensive documentation. However, there are no presets for QoS, which makes prioritising your network traffic a chore.

The DIR-855 can simultaneously broadcast wireless networks on two bands, which can be configured independently. You can set up 'guest zones' with different security options, so trusted clients have full access while others can connect with restrictions. There's also a parental control feature to block websites. Gigabit Ethernet ports are provided, along with a USB port to serve shared storage. This can be accessed by client machines with D-Link's device drivers installed.

Performance was respectable, though not the fastest. With D-Link's own DWA-160 WiFi adapter, using the 2.4GHz network at a range of 1 metre the DIR-855 managed a blistering 60.17 Mbit/sec. Impressive, but in practice you'd never use WiFi at that range, and the speed fell to a more modest 24.88Mbit at 15 metres. Speeds were much lower with our standard Centrino laptop adapter, giving only 4.84Mbit/sec at 25 metres.

### Draft-n wireless router

CENTRINO WIFI at 1m **44** 15m **15** 25m **5** Mbit/sec  
OWN ADAPTOR at 1m **60** 15m **25** 25m **11** Mbit/sec

D-Link  
**DSL-2740B**



Great price, but not the best features or performance.

**£46** inc VAT  
Draft 802.11n • 4x 10/100 Ethernet • 1x WAN (ADSL2+) • UPnP  
SIZE 32x220x150mm  
WARRANTY 11 years  
PART CODE DSL-2740B  
SEE IT [www.dlink.co.uk](http://www.dlink.co.uk)  
BUY IT [www.broadbandbuyer.co.uk](http://www.broadbandbuyer.co.uk)  
FEATURES ★★  
PERFORMANCE ★★  
VALUE ★★

D-Link **DIR-855 Xtreme N Dual Band Router**



A dual band model with fair performance and a handy screen.

**£106** inc VAT  
Draft 802.11n • 4x Gigabit Ethernet • 1x WAN • 1x USB 2.0 • WPS • UPnP  
SIZE 40x200x120mm  
WARRANTY 11 years  
PART CODE DIR-855  
SEE IT [www.dlink.co.uk](http://www.dlink.co.uk)  
BUY IT [www.scan.co.uk](http://www.scan.co.uk)  
FEATURES ★★  
PERFORMANCE ★★  
VALUE ★★



## D-Link DSL-2740B

THE DSL-2740B HAS been around slightly longer than other routers on test, and lacks new features such as dual band. However, it's still a good 802.11n ADSL router. The built-in web interface offers some advanced features, such as port triggering - useful if you want to use computers on your network to host various services accessible over the Internet. The DSL-2740B also supports two dynamic DNS services, D-Link's own and DynDNS.org. Many users won't need these options, but for some they'll be a big draw.

Unlike with the DIR-855, the QoS engine provides a list of presets to choose from, as well as allowing you to create separate rule sets for wired and WiFi connections. The router also contains an SPI firewall to lock down Internet access for a specific machine or restrict incoming connections to your network to trusted sources only.

The advanced security options were backed up with fair performance and range. With our Centrino laptop, a decent speed of 47.74Mbit/sec at close range dropped rapidly to a disappointing 13.9Mbit/sec at 15 metres. With D-Link's own DGA 160 Wireless USB adapter, speeds saw a slight improvement. 52.67Mbit/sec was very respectable at 1 metre, as was 20.87Mbit at 15 metres. We found the DSL-2740B on sale for just £45.89 including VAT, an attractive price if you don't need top features and performance.

### Draft-n ADSL router

CENTRINO WIFI at 1m **48** 15m **14** 25m **5** Mbit/sec  
OWN ADAPTOR at 1m **52** 15m **21** 25m **9** Mbit/sec

## Belkin N+ Wireless Modem Router

ONE REASON WHY the N+ is cheaper than some of the other routers is that it doesn't support dual band. It makes up for this with ease of use and good performance. The front of the device sports bright blue status LEDs, with a status bar indicating the quality of your Internet connection.

You can share USB storage devices with the Belkin N+, and access storage using the Belkin Storage Manger, which automatically creates a network share for you. There's no option to set up USB printers or configure an FTP server in the web interface, but it works for simple sharing.

The router's interface displays every setting on the left-hand side, making it easy to find the options you need. Like the BT Home Hub 2.0, the Belkin has a wireless power saving feature. It also supports multiple wireless networks (on the same 2.4GHz band), one for trusted users and another for guests, who may be redirected to a 'hotel style' login page.

Performance in our tests with both Belkin's own brand adapter and our Centrino laptop was better than that of the D-Link DSL-2740B, managing 10.87Mbit/sec at 25 metres. The N+ is still far from being the fastest router on test, but with an excellent feature set, including Gigabit Ethernet, it's well worth a look.

### Draft-n ADSL router

CENTRINO WIFI at 1m **46** 15m **18** 25m **8** Mbit/sec  
OWN ADAPTOR at 1m **53** 15m **23** 25m **11** Mbit/sec

Buffalo **Wireless-N Nfinity Giga**



Great performance, though you can't run on both bands at once.

**£71** inc VAT  
Draft 802.11n • 4x Gigabit Ethernet • 1x WAN • WPS • AOSS • UPnP  
SIZE 190x150x38mm  
WARRANTY 2 years  
PART CODE WZR-AGL300NH  
SEE IT [www.buffalo-technology.com](http://www.buffalo-technology.com)  
BUY IT [www.amazon.co.uk](http://www.amazon.co.uk)  
FEATURES ★★  
PERFORMANCE ★★  
VALUE ★★

Belkin **N+ Wireless Modem Router**



Good value if you're not bothered about dual band operation.

**£62** inc VAT  
Draft 802.11n • 4x Gigabit Ethernet • 1x WAN (ADSL 2+) • 1x USB 2.0 • WPS • UPnP • QoS  
SIZE 191x137x35mm  
WARRANTY 1 year  
PART CODE F5D8235UK4  
SEE IT [www.belkin.com](http://www.belkin.com)  
BUY IT [www.dabs.com](http://www.dabs.com)  
FEATURES ★★  
PERFORMANCE ★★  
VALUE ★★



## Buffalo AirStation Wireless-N Nfinity Giga



THIS CABLE ROUTER is an upgrade from Buffalo's older Nfinity model. It supports dual band, but unlike the other dual band routers on test it can only run at either 2.4GHz or 5GHz, not both. That means the 5GHz option is no use unless all your devices support it.

The Giga is as easy to set up as its predecessor using Buffalo's AOSS software. Press the large AOSS button, select AOSS in the client software, and the AirStation is online in less than a minute. It doesn't get more complicated than that, and you don't need to look at the unintuitive web interface. This has all the necessary security settings, but despite helpful descriptions, locating them is far from straightforward.

The Nfinity offers basic QoS and support for dynamic DNS. Its biggest strength is its performance. Although we noticed a big drop at 25 metres to 7.12Mbit/sec with our Centrino laptop, with a Buffalo AirStation USB adapter the Nfinity reached 44.29Mbit/sec at 15 metres from our PC, and managed 25.25Mbit/sec at 25 metres.

The Nfinity is one of the cheapest dual band routers, keeping in mind that you can't run both frequencies at once. With Gigabit Ethernet too, it's a good choice for a fast network.

### Draft-n wireless router

CENTRINO WIFI at 1m **57** 15m **17** 25m **7** Mbit/sec  
OWN ADAPTOR at 1m **62** 15m **44** 25m **25** Mbit/sec

a code, WPS automatically binds a router and network adapter together securely, without making you decide between encryption methods or repeatedly enter long strings of characters.

If you're planning to connect various different devices to your network, you'll need to check what types of security they understand: older kit may not support the latest methods. An additional barrier that works with any WiFi device is to limit connections to a specified list of MAC addresses. Nothing to do with Apple, the MAC is a unique set of letters and numbers that identifies a particular device by its network adapter. You can see how to find a PC's MAC address in [Windows.tinyurl.com/6l6j9b](http://Windows.tinyurl.com/6l6j9b); for other devices, see the manual.

### Extra features

Some routers include support for dynamic DNS services, which allow external access to computers on your network over the Internet using the same hostname every time. Normally, your ISP will assign you an IP address each time you reconnect, so it'll change periodically; this means you can't tell someone else the IP address at which they can reach your network. Using a service such as DynDNS ([www.dyndns.com](http://www.dyndns.com)) gets over this.

An increasingly common feature of Draft-n routers is support for wireless networks on two different frequency bands. With these dual band models, you can run a wireless network over both the standard 2.4GHz frequency and the less con-

gested 5GHz wavelength. Devices such as wireless keyboards, speakers and audio/video senders operate in the same frequency range as 2.4GHz WiFi, which can cause interference. Such problems are less likely in the 5GHz band. Each of the devices you want to connect will also need to support dual band to take advantage, but any that don't can still connect simultaneously at 2.4GHz.

One benefit of having two wireless networks broadcasting simultaneously is that you can apply different security rules to each. You might set up your 2.4GHz network with no security or the relatively weak WEP encryption, catering for a wider range of devices and making it easier for guests to connect to the Internet, but limit it to basic web

access, while your 5GHz network was fully secured for use with your own computers and allowed unfettered access to your shared folders and storage.

A lot of routers now come with USB 2.0 ports, so that you can plug a printer or external hard disk directly into the router, making this device accessible to any computer on the network. This is better than sharing a disk or printer connected to a PC, because you don't have to leave that PC switched on in order for others to connect.

If the router also has an FTP server built in, you'll be able to access your files from anywhere in the world, or make your server accessible securely to other trusted users. **OB**