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# Power to the people

If Wifi has been letting you down, networking over the mains is a more reliable and faster alternative. Paul Monckton puts the latest powerline devices through their paces

**W**irelessly surfing the internet on your laptop is all well and good, but when the PC upstairs struggles to maintain a decent connection with your router in the hall, or perhaps can't even see your network at all, wireless technology suddenly loses its appeal.

Thankfully, powerline networking solves this problem and, unlike wireless, it's incredibly simple to install. The small adapters plug directly into a standard three-pin wall socket and use your existing mains wiring to transfer data between them. There's no need for trailing wires between rooms and, by plugging one into your router and

another into your PC upstairs, you'll have a constant connection to your local network.

Until now powerline performance has been limited, but with the new crop of 200Mbps/sec adapters on the market the convenience of networking over the mains now also comes with the performance of a traditional wired network.

In this group test we take a look at seven of the latest devices. Since you need at least two adapters to create a powerline network, the prices stated in each review are for two units. Some come as a complete starter kit containing two adapters, while others require you to buy two individual packs.

## ON TEST

- 98 D-Link DHP-301  
Devolvo Dlan 200 AV
  - 99 Lindy 200M PLC Bridge  
Netgear HDX 101
  - 100 Panasonic BL-PA100KT  
Solwise NET-PL-200AV
  - 101 Zyxel PLA-400
- 101 Performance results  
How we tested
- 102 Table of features  
Maximise your powerline performance
- 104 Powerline standards explained  
Editor's Choice

**'The convenience of networking over the mains now comes with the performance of a traditional wired network'**



# D-Link DHP-301

**Price** £129.99 **Contact** D-Link 020 8955 9000 [www.dlink.co.uk](http://www.dlink.co.uk)



**D**-Link's starter kit comprises a pair of DHP-300 adapters based on the DS2 Powerline HD standard. Similar in size to the Netgear HDX101, D-Link's adapters are much smaller than Lindy's enormous block, but still bigger than those from Devolo and Solwise. The plug pins are raised from the main unit, making it more easily pluggable than the HDX101, but you may still find power switches get in the way.

D-Link's experience with end-user software and documentation shows in its simple, user-friendly installation routines. The software allows you to set up

a network ID and password to prevent snooping or having your data bleed through into another home.

You can also use the software to configure your own QoS (quality of service) priorities to give your most crucial traffic first dibs on your bandwidth. You could use it to ensure that your streaming video won't be interrupted should you attempt to transfer a big file. These options are for advanced users and require some understanding of TCP and UDP port numbers.

The final section in the software utility allows you to reset the adapters or upgrade their firmware to the latest version. You must first download the firmware from D-Link manually.

In relatively noise-free environments, the adapters delivered average performance, but suffered heavily when distance and noise were brought into the equation. We noted a drop from 32.2Mbps/sec to 7.2Mbps/sec.

Of the products in this group test, the DHP-301 is most similar to the Netgear HDX101. While the HDX101 may have the edge on performance, the DHP-301 offers better software backup in terms of encryption and has a superior physical design.

It won't interoperate with Homeplug AV devices (see Powerline standards box, page 104), but if you're happy to keep all your powerline network connections in the D-Link camp the DHP-301 offers good value for money.

## Verdict

**Pros** Good performance on noise-free connections; user-configurable QoS

**Cons** Incompatible with Homeplug AV; poor performance over noisy connections

**Features** ★★★★★

**Performance** ★★★★★

**Value for money** ★★★★★

**Overall** Over shorter distances with clean mains connections, the DHP-301 is a good performer

★★★★★

# Devolo Dlan 200 AV

**Price** £154.99 **Contact** Devolo 01865 244 141 [www.devolo.co.uk](http://www.devolo.co.uk)



**D**evolo's Dlan 200 AV is the smallest powerline adapter in the group test, which is an advantage for a wall-plug device. Its three pins are raised from the main body of the device, keeping it clear of power switches that can be trapped by products, such as Netgear's HDX101, that rest flush up against the socket.

Build-quality is impressive. The case's smooth finish is easy to wipe clean and it is surrounded by air vents to keep it cool. It's the least obtrusive of the bunch.

The Dlan 200 AV uses the Homeplug AV standard to achieve its maximum signalling rate of 200Mbps/sec.

Supplied with the adapter is a software CD containing a selection of utilities to help you get your network operating securely and monitor performance. You can also rename the adapters according to their location, to help manage your network.

A couple of bonus utilities are included. Easyclean is designed to tidy up your internet history, cookies and temporary files. Easyshare is a file-sharing application incorporating chat and file transfer windows for communication over your Lan.

The Dlan 200 AV offers no user control over QoS settings, but it has pre-programmed priorities to ensure that typical home-use scenarios run trouble free.

For example, Voice over IP (VoIP) traffic and multimedia streaming are prioritised over TCP file transfers.

In our basic low-noise test, the Dlan 200 AV's performance was unimpressive, but in our noisier scenario it performed better than all the products that aren't based on the Homeplug AV standard. Our tests all used TCP transfers though, and the Dlan 200 AV is optimised for UDP transfers.

The Dlan 200 AV is easy to use, well built and unobtrusive in the home. If you want to spend less, consider the desktop version, which delivers identical performance in a bigger package.



## Verdict

**Pros** Compact design; good resistance to noise; good software

**Cons** Faster products available;

expensive

**Features** ★★★★★

**Performance** ★★★★★

**Value for money** ★★★★★

**Overall** Well-made and well-designed product that's very easy to install and use

★★★★★

# Lindy 200M PLC Bridge

Price £145.98 Contact Lindy 01642 754 000 www.lindy.com/uk



There's a distinct difference between products that are designed to attract home users and those that are not. The rather bland Lindy 200M PLC Bridge clearly falls into the latter camp.

Physically, the adapters are bigger than others and look as if they could do with a design makeover. Apart from a blue label, they're an unobtrusive white, and solidly built in a standard wall-plug style.

The software installation is also a little rough around the edges. It's neither slick nor user-friendly but it gets the job done. Inserting the CD fires up a

browser window containing a text-only page with options to view a quick installation guide, install the software utility or read the user manual.

The utility is much like any other – a table of connected adapters is displayed with transmit and receive data rates and user-definable names. The configuration can be secured by a password and separate network ID and encryption keys can be set to protect your network.

No QoS options are provided, but system diagnostics are available to help with technical support queries. There's also a direct link to the Universal Powerline Association's home page, but that's unlikely to help.

Lindy offers no starter kit for the 200M PLC Bridge, so you'll have to buy two at full price – a price that is relatively high when compared with the competition.

In operation, the Lindy adapters took a while to get going. Initially, no connection appeared to exist between local and remote devices, but patience paid off and, once a connection had been established, we achieved impressive performance in our first test scenario with relatively little noise. The 200M PLC Bridge came a close second to Netgear's HDX101 in this test, both of these pulling a long way ahead of the rest. Performance suffered under noisy conditions though, and the Lindy was the slowest of the Homeplug AV products, sitting in the middle of the overall performance graph.

## Verdict

**Pros** Excellent performance under good conditions; robust construction  
**Cons** Large; lacklustre performance under noisy conditions; unfriendly software

**Features** ★★★★★  
**Performance** ★★★★★  
**Value for money** ★★★★★

**Overall** Not the most attractive for home use and a little expensive, but a good performer

★★★★★

# Netgear HDX101

Price £123.99 Contact Netgear 01344 458 200 www.netgear.co.uk



The HDX101 is one of three adapters in this round-up to use a standard other than Homeplug AV. Featuring a chip designed by Spanish company DS2, the Netgear also offers signalling rates of up to 200Mbps/sec.

Packaged in a casing similar in dimensions to the D-Link DHP-300, the HDX101 is a simple wall-plug type adapter made of solid two-tone white/grey plastic and fitted with the usual trio of LED indicators.

Two design features distinguish it from the rest of the pack. The Ethernet socket is on the side of the unit

rather than the bottom and the rear of the adapter fits flush with the wall socket. Both these features can cause problems as the network port can easily be obscured by other big mains adapters and the flush fit leaves no room for your mains socket's power switch to move. To turn it off remove the adapter.

Netgear's software is easy to install and automatically checks for updates online. Once installed, the configuration utility is a little more complex than an absolute beginner might be comfortable with, but relatively straightforward if you're not put off by MAC addresses and terms such as TCP and UDP.

From here you are given an overview of your powerline network, showing all connected adapters with their user-assignable names and the connection speeds they have achieved. A column marked Quality is a simple indicator of the level of performance you're likely to get, for example 'HD Video' or 'DVD Video'. You can then take steps to improve performance by unplugging noisy devices that may be interfering with the signal.

The QoS option lets you set up your own rules for prioritising network traffic according to your needs.

Our test results showed excellent performance for the HDX101 under optimal conditions – indeed it was fastest of all in our first test scenario. However, adding noise caused speed to plummet to the slowest overall result.

## Verdict

**Pros** Excellent performance over clean connections; software support  
**Cons** Incompatible with Homeplug AV; poor performance under noisy conditions

**Features** ★★★★★  
**Performance** ★★★★★  
**Value for money** ★★★★★

**Overall** An excellent performer under ideal conditions, but not so good over noisy connections

★★★★★

# Panasonic BL-PA100KT

Price £119 Contact Panasonic 0844 844 3856 www.panasonic.co.uk



The BL-PA100KT from Panasonic is different from most in several ways. It's a standalone unit that connects to the mains via a standard cable. More importantly, it uses Panasonic's own proprietary chipset for network communication.

It looks different from the other products. While the Zyxel PLA-400 also uses a silver standalone unit, the Panasonic device stands vertically and has big multicoloured status LEDs that glow with different colours, providing diagnostic and network speed information.

Panasonic also takes a no-software approach to configuring the devices. The BL-PA100KT is designated either as a Master or as one of up to 15 Terminals.

The starter kit comes with a pair of preconfigured and pre-registered adapters; the Master is labelled with a big sticker. When in use, Master status is designated by its own illuminated LED.

On the top of each adapter is a setup button that is used to register the adapter on the network. To register the adapter, you must press the setup buttons on both the Master and your Terminal for about a second. Once registration has been successful, an indicator lights up blue and an encrypted connection is automatically established. Using this method there's no need to install any PC software to set up encryption. However, communication between other nodes can be disrupted for up to 10 seconds during this process.

Rated at a maximum signalling rate of 190Mbps/sec, the BL-PA100KT appears to be slower than its rivals and our tests backed this up. Although it was very close to its nearest rivals, it scored the lowest speed score in our low-noise test and slightly below average in our high-noise test. Its performance was significantly better under noisy conditions than the D-Link and Netgear products.

The BL-PA100KT is easy to use, but Panasonic's decision to use its own standard limits its appeal.

## Verdict

**Pros** Design; usability; price

**Cons** Proprietary system; lacklustre performance

**Features** ★★★★★

**Performance** ★★★★★

**Value for money** ★★★★★

**Overall** Excellent design and superb ease of use but isn't Homeplug AV compatible

★★★★★

# Solwise NET-PL-200AV

Price £121.12 Contact Solwise 0845 458 4558 www.solwise.co.uk



1.1 without telling you what it is and once the utility is installed it's difficult to locate, being listed as a generic Homeplug AV utility.

It's also baffling to use. None of these utilities is suitable for novice users, but the Homeplug AV utility is a struggle even for those who know what they're doing. A little explanatory text and a help menu would make a big difference.

There's a tab marked Encryption, which allows you to enter a private network name, but there's nowhere to enter a password, nor are there QoS options. A Network Information tab shows you device MAC addresses with coded and raw data rates so you can evaluate your network performance.

Unlike every other adapter in the group test, the Solwise device is dark blue. In many cases this won't make any difference, but against domestic skirting boards, which are more often than not white, it looks like an unsightly lump. If you can hide it away behind a table or TV it's less of a problem.

The Homeplug AV standard allows interoperability with Homeplug AV devices from other vendors and, while the Solwise can be beaten over short connections, nothing can touch it with troublesome loads.

It's not available as a twin pack, but a pair of NET-PL-200AVs will cost less than most rival starter kits.

The NET-PL-200AV adapters from Solwise deliver solid performance over clean connections and are resilient enough to maintain high transfer rates over noisy links.

Solwise's device is an average performer when connected over a short run. However, lengthen the distance and introduce some troublesome noise from energy-saving lamps and battery chargers, and this adapter manages better performance than any other.

The supplied software utility isn't very user-friendly. It asks you if you want to install the .Net framework

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EDITOR'S CHOICE

## Verdict

**Pros** Price; good performance in noisy environments

**Cons** Poor software support; ugly blue casing; lack of QoS options

**Features** ★★★★★

**Performance** ★★★★★

**Value for money** ★★★★★

**Overall** Unintuitive software, but an excellent performer in a noisy environment

★★★★★

# Zyxel PLA-400

Price £129.99 Contact Zyxel 01344 303 044 www.zyxel.co.uk



still a significant gap in performance between it and the adapters from Lindy and Netgear. In our high-noise scenario it was one of the least affected, being beaten only by the Solwise NET-PL-200AV.

Unlike the Panasonic model it has a user-friendly install CD. But once installed, it's much like any other. No user-configurable QoS options are present, but the Homeplug AV standard has preconfigured QoS parameters built in. This simplifies configuration while ensuring that the most common domestic setups, such as media streaming and VoIP, will run glitch-free concurrently with TCP file transfers.

The PLA-400 also sets up a securely encrypted network automatically, so there's no need for most users to delve into the configuration software. It is, however, a useful troubleshooting tool that will come in handy when attempting to determine the cause of network problems.

The PLA-400 supports up to 16 simultaneous adapters, which is more than enough for the average home user. Support for up to 64 devices is promised with future firmware upgrades.

With its Homeplug AV compatibility and two-year warranty, the PLA-400 is a great choice for anyone for whom wall-plug units are inconvenient, or who wants to keep the status LEDs visible for monitoring.

**Z**yxel's PLA-400 is a desktop Homeplug AV product that has a trailing power lead to the mains socket rather than plugging directly into it.

This means the adapter can sit on your desktop with its indicator lights blinking away where you can see them. It also means you should have no problems with the physical plugging in of the device, as it uses a regular plug rather than an all-in-one wall-plug adapter.

The PLA-400 is also resilient to noisy mains connections. In our low-noise scenario it turned in a convincing third-place performance, although there's

## Verdict

**Pros** Good performance in noisy conditions; automatic security  
**Cons** Potentially untidy mains cable; no user QoS settings

**Features** ★★★★★  
**Performance** ★★★★★  
**Value for money** ★★★★★

**Overall** A solid performer with the flexibility of a detachable mains lead

★★★★★

## Lab results

We found a big discrepancy between some brands' ability to perform in low- and high-noise situations, so choose according to your particular needs

### Low-noise test product (Mbits/sec)

Bigger is better



### High-noise test (Mbits/sec)

Bigger is better



## How we tested

To compare the performance of the adapters, we set up two scenarios. The first was designed to be a relatively easy test (low noise, short distance between nodes) and the second to be difficult (high-noise, long distance).

In the low-noise test we plugged a set of adapters into each of a pair of adjacent wall sockets.

Most of the other electrical devices in the house, apart from the PCs, were turned off, so interference and distance were kept to a minimum. In the high-noise test we deliberately made things hard for the devices.

We plugged adapters into sockets at opposite ends of the house, using multi-socket adapters loaded up with battery and mobile phone chargers and lamps fitted with the biggest energy-saving light bulbs we could find.

In each scenario we tested TCP throughput using Passmark Performance Test 6 ([www.passmark.com](http://www.passmark.com)). We ran each test for 200 seconds and, because results could be quite variable, we repeated each test six times before taking an average.

## Powerline networking devices

			
<b>MANUFACTURER</b>	<b>D-LINK</b>	<b>DEVOLO</b>	<b>LINDY</b>
Product name	DHP-301	Dlan 200 AV	200M PLC Bridge
Price (per pair)	£129.99	£154.99	£145.98
Sales telephone	020 8955 9000	01865 244 141	01642 754 000
URL	www.dlink.co.uk	www.devolo.co.uk	www.lindy.com/uk
<b>SPECS</b>			
Transmission standard	Powerline HD	Homeplug AV	Homeplug AV
Product type	Wall-plug	Wall-plug	Wall-plug
Colour	White/black	White	White/blue
Maximum bandwidth (Mbits/sec)	200	200	200
Ethernet interface speed (Mbits/sec)	100	100	100
Ethernet cables included	✓	✓	✓
Password protection	✗	✓	✓
Network encryption	✓	✓	✓
QoS management	✓	Preconfigured	Preconfigured
LED indicators	✓	✓	✓
Line quality indicator	✗	✗	✗
Power consumption (per adapter)	Not specified	5.5 watts	<10 watts
Power-save mode	✗	✓	✗
Dimensions in mm (wxdxh)	72x40x100	65x40x80	70x115x75
Weight	192g	165g	240g
Warranty	2yrs	3yrs	2yrs
<b>SCORES</b>			
Features	★★★★☆	★★★★☆	★★★★☆
Performance	★★★★☆	★★★★☆	★★★★☆
Value for money	★★★★☆	★★★★☆	★★★★☆
<b>OVERALL</b>	★★★★☆	★★★★☆	★★★★☆

## Maximise your powerline performance

As with wireless products, powerline devices are categorised according to performance. In both cases, the performance quoted is a theoretical maximum that is never matched by real-world data transfer speeds. Protocol overheads and physical installation conditions force actual performance down to significantly lower levels.

The most common Powerline products run at 14Mbits/sec, 85Mbits/sec and, most recently, 200Mbits/sec. It is the 200Mbits/sec devices that are being touted as suitable for Triple Play applications (voice, video and data) and provide the bandwidth required for streaming high-definition content.

Typical speeds for a 14Mbits/sec system are about 4-6Mbits/sec for TCP transfers.

To get a real 14Mbits/sec throughput, you'll need a 'Turbo' 85Mbits/sec adapter, which uses an enhanced version of the original standard.

With 200Mbits/sec adapters, like the ones in this group test, PC-to-PC file transfer rates of around 40Mbits/sec are not uncommon using TCP, while streaming media, which uses the UDP protocol, can reach speeds of about 70Mbits/sec.

This could take the form of a home media server or Nas (network-attached storage) box streaming to a remote AV receiver or TV.

If you're a PC user, you'll probably want to use your network for both sorts of traffic, but you wouldn't want your TV viewing experience interrupted whenever you copied a big file over the network. This is where Quality of Service (QoS) settings come into play. Sometimes, these settings are exposed to the end user – allowing for precise control over which protocols and ports take precedence. In other cases, such as with the Homeplug AV products, QoS priorities are built into the standard itself, with network devices automatically prioritised according to Type of Service (ToS) information encoded into network packets.

### Maximising performance

Powerline adapters have a limited range, determined partly by the physical distance between the adapters. However, far more important is the quality of the connection, as noise can have a serious impact on network performance.

As our test results demonstrate, plugging in a few noisy devices can have a detrimental effect. The worst offenders are rarely big items such as

		 <small>Personal Computer World</small> <small>EDITOR'S CHOICE</small>	 <small>Personal Computer World</small> <small>RECOMMENDED</small>
NETGEAR	PANASONIC	SOLWISE	ZYXEL
HDX101	BL-PA100KT	NET-PL-200AV	PLA-400
£123.99	£119	£121.12	£129.99
01344 458 200	0844 844 3856	0845 458 4558	01344 303 044
www.netgear.co.uk	www.panasonic.co.uk	www.solwise.co.uk	www.zyxel.co.uk
DS2	Panasonic	Homeplug AV	Homeplug AV
Wall-plug	Cable	Wall-plug	Cable
White	Silver	Blue	Silver
200	190	200	200
100	100	100	100
✓	✓	✓	✓
x	x	✓	✓
✓	✓	✓	✓
✓	x	Preconfigured	Preconfigured
✓	✓	✓	✓
x	✓	x	x
6.3 watts	4 watts	6 watts	Not specified
x	x	x	x
72x40x98	40x120x70	80x65x58	112x106x28.5
200g	235g	170g	186g
1yr	1yr	1yr	2yrs
★★★★★	★★★★★	★★★★★	★★★★★
★★★★★	★★★★★	★★★★★	★★★★★
★★★★★	★★★★★	★★★★★	★★★★★
★★★★★	★★★★★	★★★★★	★★★★★



**Plug powerline adapters directly into wall sockets to minimise noise**

fridge freezers and heaters, it's usually smaller power supplies such as battery and mobile phone chargers that can really start to mess things up, as can energy-saving light bulbs.

We found adapters using the Homeplug AV standard were much

more resilient to noise than their competitors, so if you frequently have batteries on charge in the house while you're trying to save the environment with energy-saving lights, we'd recommend a Homeplug AV product.

To minimise noise, it's always best to plug your powerline adapters directly into the wall socket, not into multi-socket adapters and certainly not into surge protectors. If possible, charge up your batteries as far away from your network nodes as you can. Many powerline adapters come with diagnostic tools that will show you the signalling rate achieved. You can use these tools to monitor performance as you move things around and discover which of your other appliances may be causing disruption.

If other powerline adapters using an incompatible standard are connected at the same time, these will be seen by yours as additional noise on the network and will reduce performance.

Adapters using different versions of the Homeplug standard are designed to peacefully coexist with each other, but introducing an entirely different standard to the network will usually cause problems.

Other products take a different approach, for example Netgear's DS2-based HDX101 adapter has settings in the supplied utility software that allow you to configure it to recognise other, slower Netgear adapters on the same network to avoid problems. Alternatively, if you have only HDX101 adapters installed you can claim the full bandwidth exclusively for the high-speed devices.

# Powerline standards explained

Today, there are many different and incompatible flavours of powerline adapter available.

Unlike current wireless technology, which incorporates a degree of backward-compatibility with older systems through standardisation, the leading powerline technologies are currently competing rather than co-operating.

This is arguably less of a problem for powerline networks – mobile wireless devices need to be able to connect to any network they encounter while they are on the move, whereas powerline networks are usually confined to a single location and are used by devices that stay put.

However, advances in powerline technology will see mains network capability integrated into PCs, TVs and media players and these will all need to talk to each other. If you have an existing mains network based on different technology, it's not going to work with any of these new devices.

The Homeplug Powerline Alliance ([www.homeplug.org](http://www.homeplug.org)) is currently the dominant force in setting standards for mains networking. The initial version 1.0 specification provided signalling rates of 14Mbps/sec. Many

vendors built on this standard to produce so-called Turbo models, capable of speeds of up to 85Mbps/sec. The latest standard, driving the bulk of this group test, is the Homeplug AV standard, designed to run at up to 200Mbps/sec.

Even though these standards are created by the same body, the different specifications won't communicate with each other. They will, however, happily coexist on the same mains supply, forming separate networks that can be connected by bridging. A simple way to do this is to plug one of each type of adapter into adjacent sockets and connect them together with an Ethernet cable.

Although both adopters of Homeplug standards, for the products in this group test D-Link and Netgear have selected a chipset designed by Design of Systems on Silicon (DS2), a member of the Universal Powerline Association (UPA).

The UPA is open to all and works towards open standards, although DS2's chips are currently incompatible with the Homeplug AV standard. Panasonic's HD-PLC system uses Panasonic's own chipset to achieve similar performance, but it won't work with any other powerline specifications.

## Editor's Choice

Editor's Choice Solwise NET-PL-200AV

Recommended Devolo Dlan 200AV • Zyxel PLA-400



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EDITOR'S CHOICE

Solwise NET-PL-200AV



Personal  
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RECOMMENDED

Devolo Dlan 200AV



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RECOMMENDED

Zyxel PLA-400

There's plenty to consider when buying powerline kit – usability, performance, compatibility and price are all crucial.

For two reasons, we recommend sticking to the Homeplug Powerline Alliance's Homeplug AV specification for home use.

First, the number of available Homeplug AV products currently far outnumbers those based on other designs, so by going with this specification your chances of interoperability are much greater.

Furthermore, the number of Homeplug AV devices seems set to increase dramatically, now that Intel is once again part of the alliance and promising Homeplug AV functionality as part of its chipsets.

The second reason is that, in our tests, Homeplug AV adapters fared considerably better in the presence of electrical noise – achieving much higher throughputs.

Lindy's 200M PLC Bridge is bulkier than the rest and, although a solid performer, is too costly to be our product of choice. This leaves three products – the Devolo Dlan 200 AV, the NET-PL-200AV from Solwise and Zyxel's PLA-400.

All these products have different strengths. Devolo's superb build quality and excellent software make for a compelling package worthy of a Recommended award. However, it's priced a little higher than competitors that performed better in our tests. If you like the Devolo package, you can save money by buying the slightly older, desktop version of the product, which offers identical performance.

The PLA-400 from Zyxel also picks up a Recommended award. The price is about average, but you get the flexibility of a desktop device that allows you to put the status

indicators in a more convenient location without being constrained by your wall sockets. The use of a standard plug ensures that you'll be able to use it in even cramped conditions. Performance is also pretty good, being only narrowly beaten by the Solwise NET-PL-200AV.

In the NET-PL-200AV, Solwise has managed to combine top-level performance with a very competitive price. Costing less than all but Panasonic's BL-PA100KT, it delivers solid performance under standard conditions but comes into its own over difficult, noisy wiring, where it clearly outperforms the rest of the field. The Solwise NET-PL-200AV therefore picks up our Editor's Choice award. It may have slightly unfriendly software and a lack of QoS options, but novices will be able to plug in and get going right away, leaving only more advanced users to deal with the management utility. **PCW**