

Best Budget N Routers

Want a fast home network for less than \$100? We put four value-priced 802.11n contenders to the test.

by John Brandon

Screaming-fast wireless gear usually comes at a premium. For example, the latest dual-band wireless routers, which offer the ultimate in performance by being able to broadcast a signal in the 2.4-GHz and 5-GHz bands, cost upwards of \$250. But if you want good speed without the expense, single-band 802.11n routers deliver enough performance for high-def movie streaming, network backups, and multiplayer gaming sessions—as well as very good range—without the expense.

To take full advantage of 802.11n, you'll want a notebook with that capability built in. However, built-in N usually provides limited throughput of about 40 to 50 Mbps, whereas the matching PC Card or ExpressCard adapter for a given router can provide up to 100 Mbps. That's because of how the driver and card are tweaked for peak performance. Cards cost about \$50 (finding a "budget" card is rare), so expect your N upgrade to cost around \$150. We evaluated each router using the Ixia IxChariot performance test and the router's matching adapter. So which budget router is best? Read on to find out.

① **Belkin N Wireless Router F5D8233-4**

\$89.99

www.belkin.com

★★★★☆

Supported Protocols: 802.11b/g/n; **VPN**

Support: IPsec pass-through, PPTP; **Ports:**

Four Ethernet, one WAN; **Size:** 7.3 x 6.5 x 1.5

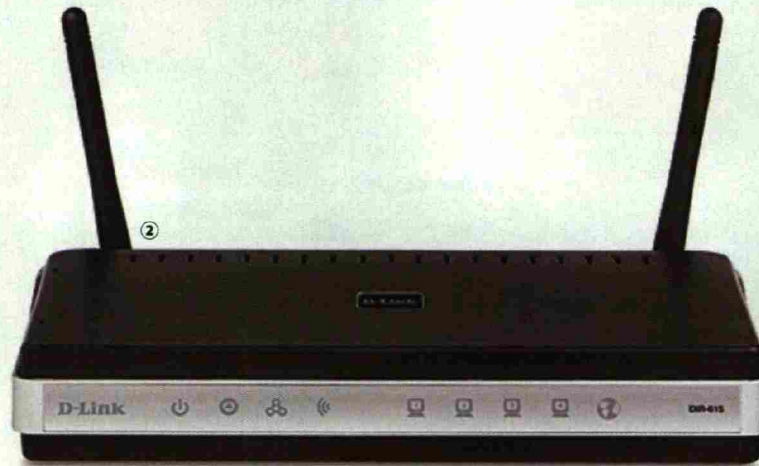
inches; **Weight:** 11.2 pounds

PROS

Decent speed
 Very good range
 Low price

CONS

No Gigabit Ethernet
 Setup could be easier



Priced right between the D-Link and Linksys budget routers, the Belkin N Wireless F5D8233-4 has two antennas compared with the three-antenna Belkin N1 Vision, which costs \$90 more.

The setup program lags behind the wizards included with the new D-Link and Linksys routers, asking users to enter information that we'd rather the router just figure out. The design is also not as sleek and small as the Linksys clamshell design. And the Belkin unit lacks Gigabit Ethernet ports, so your network file transfers will run a little slow.

The N Wireless also lacks 256-bit security encryption found on some budget routers. It still maintains a speed of about 80 Mbps from 5 feet and 20 Mbps from 200 feet, and at 500 feet its data rate of 8 Mbps was second only to the Netgear RangeMax Next WNR834B.

We tested a high-def movie stream to an Apple TV and noticed a little stuttering, especially compared with the D-Link DIR-615. While music streaming and VoIP calls were smooth as long as no one else was using the router, the N Wireless had a few dropped frames when streaming video and audio delays on a Skype call when we were downloading a large file.

For \$89.99, the Belkin N Wireless router doesn't offer the fastest throughput, but it does provide lots of coverage, and Belkin tech support is excellent.

② **D-Link DIR-615 Wireless N Router**

\$79

www.d-link.com

★★★★★

Supported Protocols: 802.11g/n; **VPN Support:**

VPN Pass-through, Multi-sessions PPTP, L2TP,

IPsec; **Ports:** Four Ethernet, one WAN; **Size:** 7.6

x 4.6 x 1.2 inches; **Weight:** 11.2 ounces

PROS

Low price
 Fast performance
 Extra features

CONS

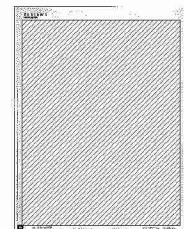
Can't connect beyond about 300 feet
 No Gigabit Ethernet ports

D-Link dropped one antenna and the 100-Mbps Gigabit Ethernet feature from its flagship DIR-655 router for this budget model, but you'll hardly notice. This router supports WPA and WPA2 encryption standards, has a parental access feature to block Internet use for kids during certain hours of the day, and has an inconspicuous black design. The CD installer worked fast and had us up and running in 5 minutes.

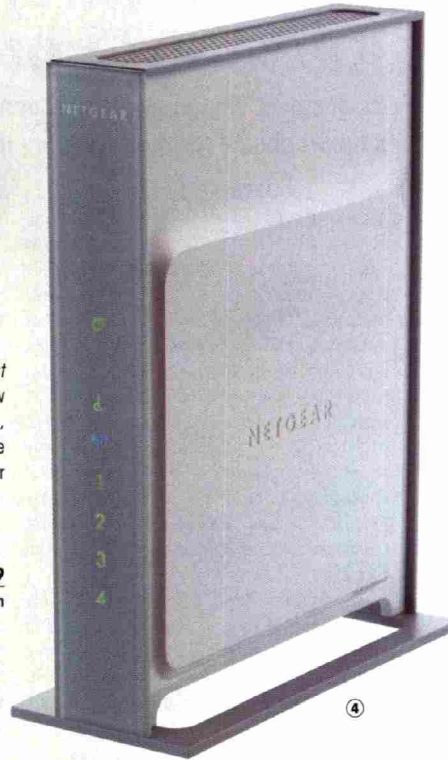
From 15 feet, the DIR-615 offered a blazing speed of 90 Mbps. At 200 feet, the router ran at only 8 Mbps. With only two antennas, the DIR-615 barely connected beyond 300 feet, which is about one level of a typical suburban home. Does it matter? Not at this price. We still tapped into the DIR-615 from several rooms away and from the basement (but not from outside).

The D-Link DIR-615 handled video and music streaming smoothly (on the Netgear Digital Entertainer HD, we watched an episode of *Lost* without any glitches) and had the best VoIP call handling of the budget models we tested.

With no Gigabit ports, your wired connection will take longer to transfer files than with a premium router, but you can always use Wi-Fi instead. The real draw is the low price: The DIR-615 is the most



REVIEWS
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inexpensive N router you'll find and has minimal trade-offs.

③ **Linksys Ultra RangePlus Wireless N WRT160N** **\$99**

★★★★☆ www.linksys.com
Supported Protocols: 802.11g/n; **VPN Support:** VPN Pass-through; **Ports:** Four Ethernet, one WAN; **Size:** 8.0 x 6.3 x 1.3 inches; **Weight:** 13.4 ounces

PROS
 Excellent setup wizard
 Good performance
 Fresh design

CONS
 More expensive than other budget N routers
 No Gigabit Ethernet ports
 Less range than expected

The Linksys WRT160N certainly doesn't look like a budget router. Its sleek new design—a black clamshell with no exterior antennas—should fit in nicely with your home decor and doesn't look as geeky as previous Linksys models. Setup was a breeze with an overhauled installer; accessing and configuring the router took just a few clicks. A new Linksys EasyLink Advisor program tells you when connections have been disrupted and how to expand your network. On our tests, the WRT160N matched the speed of the D-Link DIR-615 almost exactly, hitting 100 Mbps from 5 feet, 6 Mbps from 200 feet, and just 1 Mbps at 400 feet. With only two internal antennas, the WRT160N doesn't offer as much range as the Belkin N Wireless or Netgear RangeMax Next WNR834B.

We encountered some audio delays with the WRT160N when we tested the router with a Netgear

Skype Wi-Fi phone, although an episode of *Lost* streamed accurately to an Apple TV with only a few paused frames. Good encryption options (WPA, WPA2) and online help videos at Linksys.com are a plus, but the D-Link DIR-615 is still \$20 cheaper and works just as well.

④ **Netgear RangeMax Next WNR834B** **\$99**

★★★★☆ www.netgear.com
Supported Protocols: 802.11b/g/n; **VPN Support:** VPN pass-through; **Ports:** Four Ethernet, one WAN; **Size:** 8.9 x 6.8 x 1.5 inches; **Weight:** 1.2 pounds

PROS
 Whole-house coverage
 Fastest budget router
 Lots of extras

CONS
 Some problems with VoIP and video streaming

One way to nab a good budget 802.11n router is to buy a formerly high-end model that has come down in price. Even if it is dated, we like the design of the WNR834B, which sits vertically. The Smart Wizard setup had us surfing the Web in just a few minutes (although both the D-Link and Linksys wizards were easier).

The WNR834B cast a wide 1,000-foot Wi-Fi net, beating all the other budget 802.11n routers we tested and covering a large suburban home easily with its three internal antennas. The Netgear also sped along nicely at 100 Mbps from 15 feet—the fastest in our roundup—and maintained a strong 40 Mbps signal at 200 feet. Other highlights include Steady-Stream technology, for making sure games

and VoIP calls run smoothly, and WPA2 security.

Unlike the D-Link DIR-615, the WNR834B didn't provide very good voice quality when we used a Netgear Skype Wi-Fi phone, and video streaming to the Netgear Digital Entertainer HD was also a struggle; an episode of *Lost* paused a few times. While we wish it handled VoIP and multimedia applications better, the Netgear WNR834B offers very good throughput and range for the price. ■

Editors' Note
 Although some of the routers here can cost more depending on the retail channel you choose, our prices are based on being able to find at least three reputable online vendors who offer the product at the quoted price or for less.

N ROUTER TEST RESULTS

	Belkin F5D8233-4	D-Link DIR-615	Linksys WRT160N	Netgear WNR834B
5 feet	●●●●●●●● 80 Mbps	●●●●●●●●●● 100 Mbps	●●●●●●●●●● 100 Mbps	●●●●●●●●●● 110 Mbps
15 feet	●●●●●●●● 75 Mbps	●●●●●●●●●● 90 Mbps	●●●●●●●●●● 98 Mbps	●●●●●●●●●● 100 Mbps
100 feet	●●● 25 Mbps	●●●●● 45 Mbps	●●● 28 Mbps	●●●●● 65 Mbps
200 feet	●● 20 Mbps	● 8 Mbps	● 6 Mbps	●●●● 40 Mbps