

# VPN-Enabled Wireless Routers

## Secure your wireless networks

**W**ireless networks are becoming increasingly popular. You can deploy them easily, they're competitively priced, and they provide a level of mobility not possible with wired alternatives. However, wireless networks can be extremely difficult to control and secure because they're so easy to use and are a relatively immature technology, which means that end users often lack wireless network knowledge or experience.

Several wireless standards are in use today. The most popular is the 11Mbps 802.11b standard. Another standard in use is the 54Mbps 802.11a standard. 802.11b and 802.11a are incompatible and use different parts of the radio spectrum. The recently ratified 802.11g standard incorporates elements from both the 802.11b and 802.11a standards and is backward-compatible with 802.11b.

Most wireless networks operate in infrastructure mode, which lets wireless stations communicate with an Access Point (AP) and coordinates communications between the wireless stations and the AP. Many APs can function as a gateway or router to transfer data between wired and wireless networks.

The 802.11a, 802.11b, and 802.11g wireless standards support the Wired Equivalent Privacy (WEP) standard, which prevents eavesdroppers from sniffing traffic sent over the airwaves. WEP uses shared secrets 40, 128, or 168 bits in length (depending on the vendor and standard) that you must configure on each wireless device. A symmetric key derived from the shared secret encrypts

and decrypts network packets sent over the airwaves. WEP has flaws that an intruder can exploit to crack the symmetric key used in the encryption process. The intruder could then attack your wireless network, even from a considerable distance away from your company's building. To overcome WEP's shortcomings, you can use 802.1x key management (a standard not without problems of its own), PPTP, Layer Two Tunneling Protocol (L2TP), and IP Security (IPSec) to build VPNs to provide authentication and traffic encryption.

You can configure VPNs to secure wireless networks in several ways. A typical configuration consists of logically placing all wireless stations outside of the corporate network and establishing a PPTP connection from each station through a firewall to a RRAS server that sits in a demilitarized zone (DMZ). The RRAS server lets traffic flow between clients with an established VPN connection to the corporate network. Clients can't establish a connection until the wireless station successfully authenticates itself to the VPN server, usually when a user enters a

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## VPN-enabled wireless routers act as a gateway between wireless and wired networks.

username and password. After a connection is established, all data that flows over the connection is encrypted. Another common configuration option is to have each wireless station use IPSec to establish a connection to an AP. This configuration typically relies on a secret string of characters for authentication and on connection management to generate and refresh encryption keys.

The VPN-enabled wireless routers listed in this issue's Buyer's Guide act as a gateway between wireless and wired networks. Some products have added firewall functionality such as Stateful Packet Inspection (SPI) and Network Address Translation (NAT). Other products are intended for you to use as DSL or cable gateways and can function as a DHCP server in small office/home office (SOHO) environments. All listed routers support a VPN protocol (i.e., IPSec, PPTP, or L2TP). VPN support falls into two categories: pass-through and active. Pass-through support means that the router will pass VPN traffic unhindered to or from a wireless station. Active support means that the router can establish a VPN connection between itself and a wireless station, between itself and other gateways or routers, or both.

InstantDoc ID 38487

### EDITOR'S NOTE

The Buyer's Guide summarizes vendor-submitted information. To find out about future Buyer's Guide topics or to learn how to include your product in an upcoming Buyer's Guide, go to <http://www.winnetmag.com/buyersguide>.

Contact Information	Product Name	Price	Description
<b>3Com</b> 408-326-5000 800-638-3266 <a href="http://www.3com.com">http://www.3com.com</a>	3Com OfficeConnect Wireless Cable/DSL Gateway	\$177	Router connects to an existing cable or DSL modem through an Ethernet cable and acts as a wireless AP to provide simultaneous Internet access to as many as 32 wireless users; Wi-Fi (the 802.11b wireless standard)-certified
<b>Belkin</b> 310-898-1100 800-223-5546 <a href="http://www.belkin.com">http://www.belkin.com</a>	Wireless Cable/DSL Gateway Router	\$149.99	802.11b router lets PC and Macintosh users wirelessly share a broadband Internet connection; features Easy Install Wizard software that automatically detects Internet settings and sets up the router for the user; advanced features include a NAT firewall, SPI, and IPSec pass-through, which permits the user to work from home by using VPN and DMZ hosting
<b>Buffalo Technology</b> 800-456-9799 <a href="http://www.buffalotech.com/wireless">http://www.buffalotech.com/wireless</a>	AirStation 54Mbps Wireless Broadband Router (WBR-G54) and the AirStation Broadband Router Access Point (WBR-B11)	\$199 for the WBR-G54 and \$189 for the WBR-B11	Router supports 802.11b, 802.11g, and 802.11a; provides free upgrades to 802.11g when ratified; supports PPTP, IPSec, WEP, IEEE 802.1x, and Remote Authentication Dial-In User Service (RADIUS); features VPN extensions to wireless stations; can establish a VPN connection to another router and between router and wireless stations
<b>Efficient Networks</b> 972-852-1000 888-937-5273 <a href="http://www.speedstream.com">http://www.speedstream.com</a>	SpeedStream Wireless DSL/Cable Router	\$150	802.11b router includes four high-speed wired Ethernet ports and built-in print server; features integrated firewall, 128-bit WEP encryption, VPN support, and multiple session pass-through support for PPTP, IPSec, and L2TP
<b>Linksys</b> 949-261-1288 800-546-5797 <a href="http://www.linksys.com">http://www.linksys.com</a>	BEW11SX4	\$130	Cable/DSL router with four-port switch that features L2TP, IPSec, VPN, and built-in 802.11b AP; works with other Linksys wireless VPN routers and other VPN software or servers; features Triple DES (3DES), 802.1x authentication, Universal Plug and Play (UPnP), time-filtering capability, and URL blocking
<b>Micronica</b> <a href="mailto:micronica@micronica.com.au">micronica@micronica.com.au</a> <a href="http://micronica.com.au">http://micronica.com.au</a>	Micronica SOHOmate WIP-400	\$273	802.11b wireless Internet sharer, router, and firewall; supports VPN; includes built-in four-port hub, print server, and wireless AP
<b>Microsoft</b> <a href="http://www.microsoft.com/hardware/broadband/networking">http://www.microsoft.com/hardware/broadband/networking</a>	Wireless Base Station MN-500	\$139	SOHO broadband router with integrated 802.11b wireless AP and 4-port Ethernet switch; supports built-in firewall, 128-bit WEP encryption and NAT; VPN support includes PPTP and L2TP from wireless stations to hosts and IPSec and VPN pass-through
<b>MikroTik</b> <a href="mailto:sales@mikrotik.com">sales@mikrotik.com</a> <a href="http://www.mikrotik.com">http://www.mikrotik.com</a>	MikroTik RouterOS	\$120	Software that turns a standard PC into a network router; uses the Linux kernel but doesn't require Linux knowledge; supports 802.11a and 802.11b, VPN, and PPTP; extends VPN to wireless stations; you can establish a VPN connection to another router and between the MikroTik router and wireless stations; supports RADIUS, Password Authentication Protocol (PAP), Challenge Handshake Authentication Protocol (CHAP), and Microsoft CHAP 2.0
<b>NETGEAR</b> 408-907-8000 888-638-4327 <a href="http://www.netgear.com">http://www.netgear.com</a>	Cable/DSL ProSafe Wireless VPN Security Firewall (FVM318)	\$1049	Eight-port SPI firewall features routing capability and a built-in 802.11b wireless AP; provides IPSec-based encryption over the WLAN; supports as many as 32 tunnels and IPSec-based VPNs by using 3DES and Advanced Encryption Standard (AES); supports as many as 70 tunnels across the WAN; includes WLAN VPN client software

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<b>NETGEAR</b> cont.	ProSafe Dual-mode Wireless Firewall Router (FWAB114)	\$455	Four-port SPI firewall router features built-in 802.11a and 802.11b wireless APs; supports as many as five IPSec-based WAN VPN tunnels; can support as many as 96 (32 11Mbps and 64 54Mbps) simultaneous wireless users and a total of 253 LAN users without requiring an upgrade
<b>Netopia</b> 510-420-7400 <a href="http://www.netopia.com">http://www.netopia.com</a>	Cayman 3347W ADSL Smart Gateway w/4-port Switch	Contact vendor for pricing	An all-in-one device with an integrated ADSL modem, 802.11b wireless LAN, and four-port switch; includes NAT firewall, 128-bit WEP encryption, VPN pass-through support over PPTP, and L2TP; IPSec securely connects telecommuters
	Cayman 3387W Cable/DSL Gateway w/4-port 10/100 Switch	Contact vendor for pricing	Router switch securely connects wireless network to high-speed broadband network; features built-in firewall and VPN features; safely connects users to corporate network by using PPTP, L2TP, or IPSec pass-through; features optional IPSec VPN termination with DES and 3DES encryption; wireless security includes 128-bit WEP encryption
	Cayman 3547W ADSL	\$333	ADSL broadband gateway with four switch ports and 802.11b wireless support; includes stateful firewall and advanced VPN security; lets telecommuters connect to corporate networks through PPTP, L2TP, and IPSec pass-through; features optional IPSec VPN termination with DES and 3DES encryption
<b>SMC Networks</b> 949-679-8000 800-762-4968 <a href="http://www.smc.com">http://www.smc.com</a>	Barricade Plus Wireless Cable/DSL Broadband Router (SMC7004WFW)	\$279.99	Platform-independent multifunctional router that combines a three-port dual-speed switch, wireless AP, and SPI firewall; features built-in VPN support
	Barricade Turbo 11/22Mbps Auto-Sensing Wireless Cable/DSL Broadband Router (SMC2404WBR)	\$279.99	Combines a three-port, 10/100Mbps Auto MDI/MDIX switch, 11/22Mbps autosensing wireless AP, SPI firewall security, and VPN pass-through support; supports 64-, 128-, and 256-bit WEP and media access control (MAC) address filtering
	Barricade 4-Port 11Mbps Wireless Cable/DSL Broadband Router (SMC7004AWBR)	\$179.99	Router combines three-port 10/100Mbps switch, 802.11b wireless AP, firewall security, built-in print server, and VPN pass-through support; supports 64- to 128-bit WEP encryption and MAC filtering
	Barricade Wireless Cable/DSL Broadband Router (SMC7004VWBR)	\$129.99	Combines four-port 10/100Mbps dual-speed switch, 802.11b wireless AP, SPI firewall security, network management capability, and VPN pass-through support; supports 64- to 128-bit WEP and MAC address filtering
<b>TRENDware</b> 310-891-1100 888-326-6061 <a href="http://www.trendware.com">http://www.trendware.com</a>	TEW-311BRP	\$149	Internet router combines IEEE 802.11b wireless AP and four-port 10/100Mbps Ethernet switch; can share broadband high-speed Internet connection with Ethernet stations and wireless clients; features PPTP and IPSec pass-through support; lets you establish VPN connection to other routers