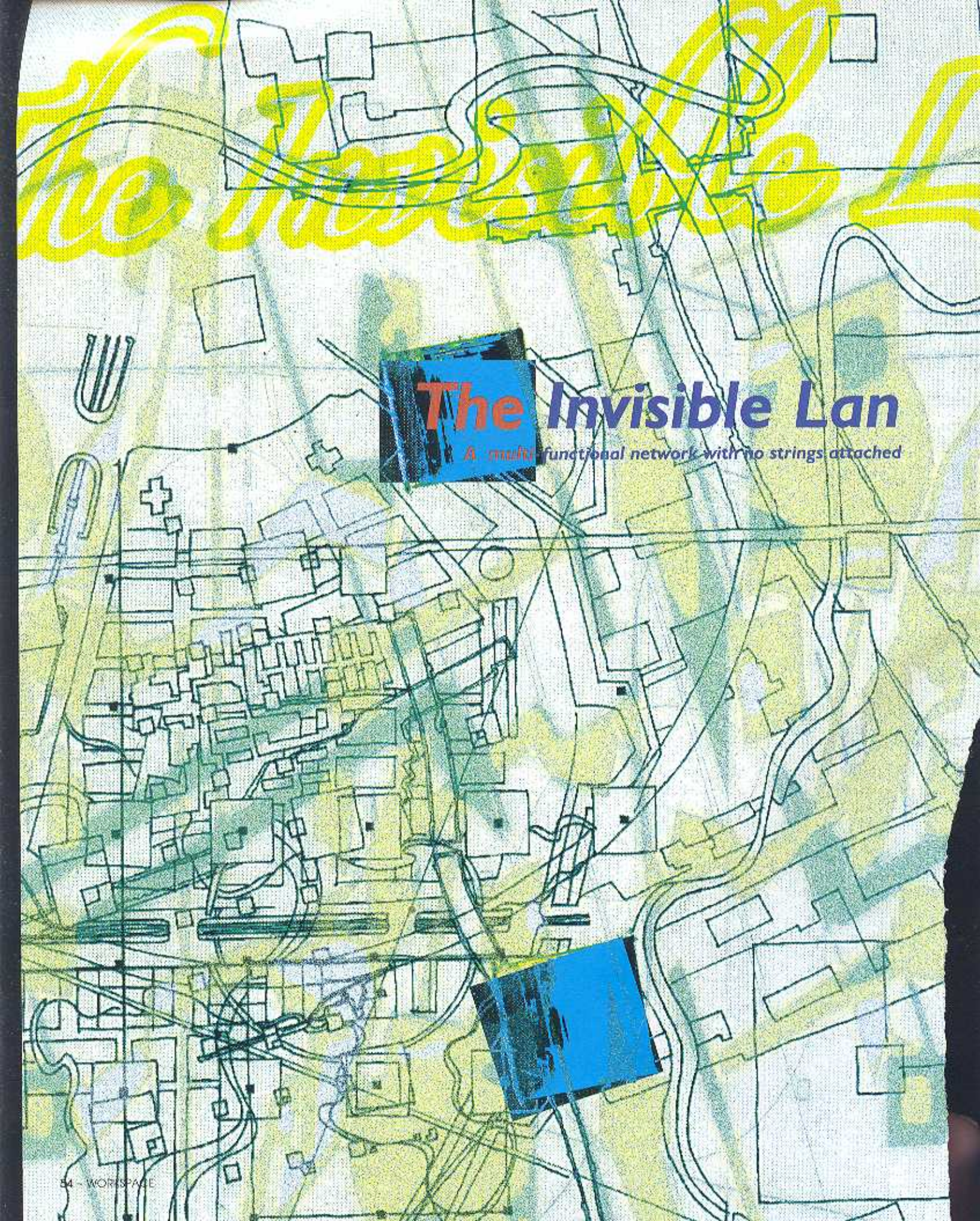
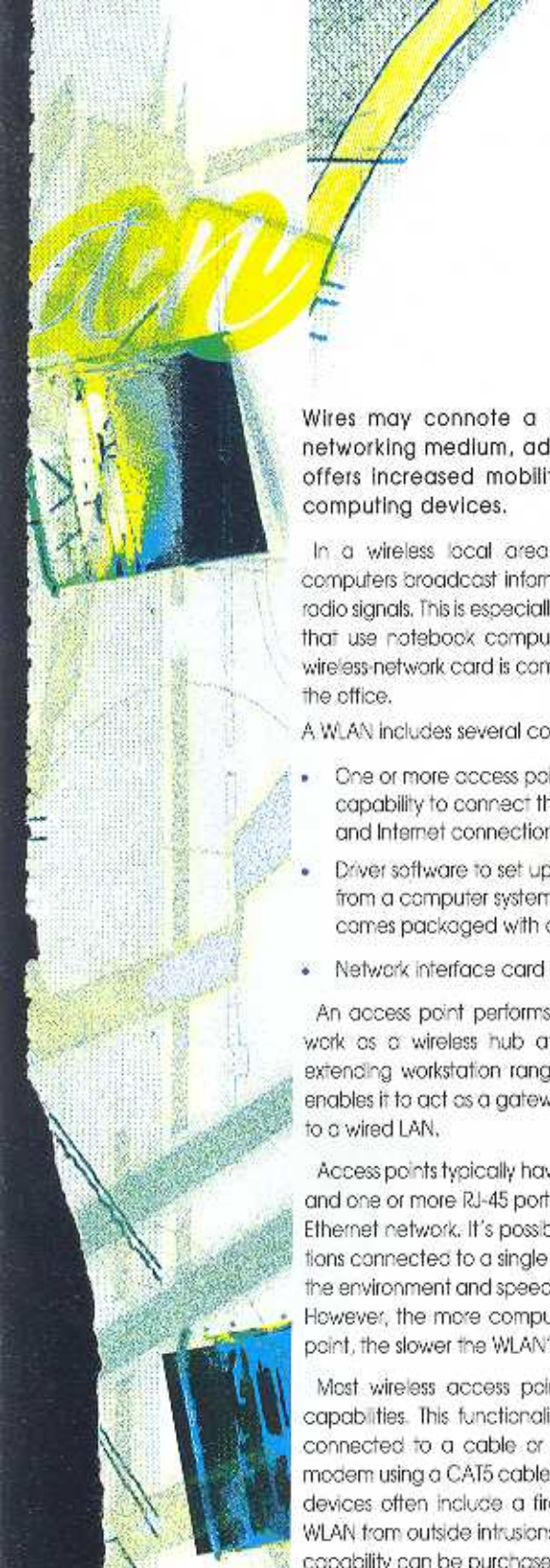


The Invisible Lan

A multifunctional network with no strings attached



Wires may connote a busy office full of the latest equipment, but they can be an inefficient networking medium, adding nothing to the aesthetic appearance of an office. A wireless network offers increased mobility, aiding in the sharing of Internet access and files, printers, and other computing devices.

In a wireless local area network (WLAN), multiple computers broadcast information to one another using radio signals. This is especially convenient for workspaces that use notebook computers, as a notebook with a wireless-network card is completely portable throughout the office.

A WLAN includes several components:

- One or more access points, ideally with router capability to connect the WLAN to a wired LAN and Internet connection
- Driver software to set up and control the WLAN from a computer system. This software usually comes packaged with an access point
- Network interface card (NIC)

An access point performs two basic functions: It can work as a wireless hub at the center of the WLAN, extending workstation range, while its router capability enables it to act as a gateway for connecting the WLAN to a wired LAN.

Access points typically have transceivers with antennas and one or more RJ-45 ports for connecting to a regular Ethernet network. It's possible to have multiple workstations connected to a single access point, depending on the environment and speed expected from the network. However, the more computers attached to an access point, the slower the WLAN's transmission speed.

Most wireless access points include router and hub capabilities. This functionality enables the WLAN to be connected to a cable or Digital Subscriber Line (DSL) modem using a CAT5 cable with RJ-45 connectors. These devices often include a firewall that helps protect the WLAN from outside intrusions. An access point with router capability can be purchased in a store that carries computer equipment, or through the Internet. In some cases a router is offered free as part of a cable or DSL service promotion. The average price for a router is $80, though cheaper and more expensive models are available. Brands include the Linksys Wireless-G Broadband Router, the NetGear WG602v2, and the ZyAIR G-2000/802.11g wireless 4-port router.

As with wired networks, WLANs require that each workstation be connected to the network by a NIC. In a wireless network, however, the NIC does not have an RJ-45 port, but rather a transmitter-receiver called a transceiver. This device comes bundled with a built-in antenna. The antenna sends and receives radio signals to and from other devices on the WLAN. A NIC may be needed not only for wireless access on notebook computers, but for desktop computers as well. A Peripheral Component Interconnect (PCI) is a NIC for desktops that plugs into an empty PCI slot inside the computer. Some notebook computers come with NICs already installed. If a NIC needs to be purchased separately, it generally costs between $45 and $100. NIC models include the Linksys WPC54G, the NetGear WG311, and the Belkin High-Speed Mode Wireless G Notebook Network Card. (Sold for around $90, the Belkin model is priced at the higher end of the scale, but averages slightly better speed than most other competing models.)

When establishing a wireless network, there are a few transmission issues to take into account: Interior office barriers such as wooden partitions, high metal desks, and glass structures can interfere with or even block signals. Usually the solution is either to move the access point/router away from the barrier, or, where possible, to relocate the interfering object itself. A wireless network is not difficult to set up—instructions come with most NIC and routers for easy self-installation. Internal or contractor assistance in configuring the network is also available. Considering that most WLAN users also want high-speed Internet access through their network, in many cases companies that offer cable and phone companies that offer DSL will provide free equipment and installation as part of an online service package. However, router-enabled access points offered by cable companies may not always be available in heavily industrialized neighborhoods with few homes. Cable is generally considered to operate at a higher speed than DSL, but DSL is usually available for workstations that exist within 18,000 feet or so of a phone company switching office.

WRITTEN BY Russell Shaw

Illustration by Brendan Murdock