# Web Watcher

By Glenn Fleishman

## Who owns—and who pays for—the Net?

**There are two questions** that nearly everyone asks when they first see the Internet in action: Who owns it? Who pays for it?

The short answers are that nobody owns it, and it's paid for by everyone who uses it, even if indirectly. Want a longer answer? Follow along on the diagram below.

Let's say Joe Shlabotnik, living in Seattle, wants to buy some lizard pellets at the best price, so he needs to get to Netscape to use a search engine to find pellets. He needs to make a connection from his personal computer out into that entity collectively called the Internet, and onto the servers run by Netscape.
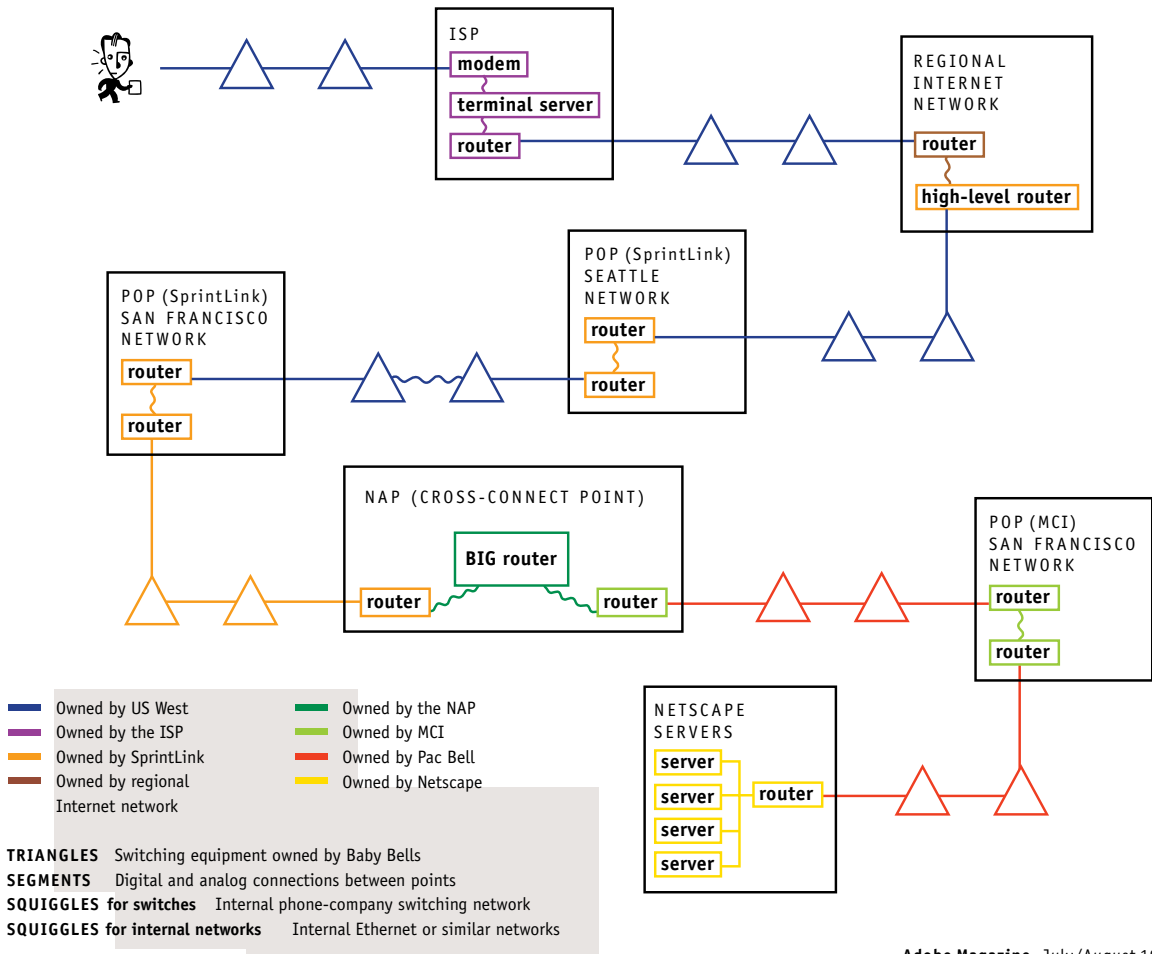
Joe first dials out on his modem, a device that uses a regular phone line to carry digital information in analog form. The line that Joe uses is owned by US West. At the nearest US West "switch," Joe's signal is turned into digital data to go over US West's network, then back to analog at another switch.

At the network office of Joe's Internet service provider (ISP), another modem converts the analog signal from Joe's modem back into digital form—and Joe's requests stay digital from this point on. A terminal server feeds the data from the modem into the ISP's internal network.

The signal Joe has sent contains an "ad-dress," and acts as its own postman—it "knows" that the ISP's internal network doesn't contain the delivery address. Joe's request has to go out from the ISP's network through a router, up to the next level: the ISP's regional Internet network provider. Regional networking companies often have feeds to several national networks, and sell bandwidth to larger businesses, educational institutions, Web developers, and big Web sites.

The ISP's router sends the data over high-speed leased digital lines through US West's switching network to a router at the regional Internet network's office. The regional network isn't the final destination



**Legend:**

- Owned by US West
- Owned by the ISP
- Owned by SprintLink
- Owned by regional Internet network
- Owned by the NAP
- Owned by MCI
- Owned by Pac Bell
- Owned by Netscape

**TRIANGLES** Switching equipment owned by Baby Bells
**SEGMENTS** Digital and analog connections between points
**SQUIGGLES for switches** Internal phone-company switching network
**SQUIGGLES for internal networks** Internal Ethernet or similar networks

for the request, either, so it needs to go up yet another level, to a national network. There are about 20 national networks, many run by long-distance companies.

The request goes from the regional network to a local network office or "point of presence" (POP) run by the national company. The national company in turn passes the request through perhaps dozens of additional routers, through a switch in California owned by Pac Bell, and then to the national network's local POP in San Francisco.

Now, it turns out that Netscape uses MCI's network for access out to the Net, while Joe's ISP uses Sprint's SprintLink service. Is Joe doomed? No. Here's the real power of the Net. In the San Francisco Bay area, as in a number of other locations nationwide, several equipment rooms exist solely for the purpose of letting networks exchange data. So Joe's request goes from SprintLink's local San Francisco POP to this Network Access Point (NAP) or cross-connect point, where it goes through a *huge* router and onto MCI's network.

Next, the request goes to MCI's local POP, where it finally finds the router that's directly connected to Netscape. The request goes over that router through Pac Bell switches, and winds up at Netscape. Joe's request is fed to the server, and the response is returned via the same route, but in reverse.

All this happens in a few hundred milliseconds, even if the file itself takes seconds or minutes to retrieve.

**Who is paying for what in this process?**
Everyone pays somebody in order to use either a portion of the Internet "system" or all of it—with the exception of the "Baby Bells," which I'll get to in a minute.

Individuals like Joe Shlabotnik, and small companies, pay fees to their local phone companies for telephone service, and pay local ISPs to take their signals and transport them to and from the rest of the Internet.

Local ISPs and larger businesses pay midlevel or regional Internet networks to take their traffic and send it up the line to the national networks. (Companies and service providers sometimes also contract directly with national networks.)

The rooms that serve as cross-connection points are run by individual telephone companies (or, in some cases, by the regional networks), which collect fees from the participants in the rooms.

The Baby Bells make money a different way: by charging for every last segment of the path taken by Joe's signal. Although these fees are usually fixed—you pay a set amount per month for a T1 line between two locations, for instance—there are a great many of these connections in any Internet pathway, and the Baby Bells are making money off each connection.

When you look at the Internet system as a whole, even though everyone is paying something, nobody's really in charge—I like to call it an "anarcho-syndicate." Nevertheless, it's a system that works, because all parties cooperate to the extent necessary to keep things going. There's no indication that's going to change anytime soon. ◗

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