



30 Years Ago: How Hayes Modems, Bulletin Boards Presaged the Web

By Chris Preimesberger | Posted 2013-09-12



30 Years Ago: How Hayes Modems, Bulletin Boards Presaged the Web

Long before there were Websites, chat rooms, email accounts and social networks, there were computer bulletin boards. Bulletin board systems were a precursor to the modern form of the World Wide Web and social networks in the way they allowed people to share information and ideas.

This was 30 years ago, and it still would be years before Sir Timothy Berners-Lee came up with the concept of the World

Wide Web and Vint Cerf and others helped put together the components of the Internet that we now know and love.

Telecommunication via text—photos and graphics took far too long to transmit over 1,200-baud modems—was all about bulletin boards. Some of the more well-known bulletin boards were The Source, The Well and PCMagNet (which eventually morphed into ZDNet, now owned by CBS Interactive). While email prevailed inside corporate LANs, bulletin board services were the way most people exchanged messages and information before Web-based email systems sprung up.

"I'd say there was a confluence of two things [that eventually led to the Internet and World Wide Web]," Tom Geller, a longtime IT journalist and video producer who used bulletin boards in the 1980s, told *eWEEK*.

"The technology for what we know as the Internet absolutely came from ARPA [Advanced Research Projects Agency], the government and universities—official channels like that. The social world of today's Internet? I'd say its parents are the old bulletin board systems," Geller said.

"Those sort of came together and were married in commercial services like AOL [America Online]. That's where people outside of the ivory tower were getting in touch with the technology that was really worldwide," he said.

A bulletin board system, or BBS, is a computer system running software that allows users to connect and log into the system using a terminal program. Once logged in, a user can perform functions such as uploading and downloading software and data, reading news and bulletins, and exchanging messages with other users, either through email, public message boards or sometimes via direct chatting. Many BBSes also offered online games, which allowed users to compete with each other, and BBSes with multiple phone lines often provided chat rooms, allowing users to interact with each other.

Originally BBSes were accessed only over a phone line using a modem. But by the early 1990s some BBSes allowed access via a Telnet, packet-switched network or packet radio connection.

Ward Christensen, who retired last year after 44 years at IBM as a technical sales specialist, coined the term "bulletin board system" as a reference to the traditional cork-and-pin bulletin board often found in entrances of supermarkets, schools, libraries or other public areas where people can post messages, advertisements or community news.

After Christensen and colleague Randy Suess computerized this method of communications, the name of the first BBS system was born: Computerized Bulletin Board System, or CBBS. During their zenith days from the late 1970s to the mid-1990s, most BBSes were run as a hobby free of charge by the system operator (or "sysop").

30 Years Ago: How Hayes Modems, Bulletin Boards Presaged the Web

Other BBSes charged users a subscription fee for access or were operated by a business as a means of supporting their customers.

The Hayes dial-up modem, which sported the first standardized command set, was at the center of all this early networking activity.

The Hayes command set is a specific command language originally developed for the Hayes Smartmodem 300-byte-per-second (baud) modem in 1981, the year IBM finally came out with a PC—on its third try—that caught on in the market.

The Hayes command set consists of a series of short text strings that combine to produce complete commands for operations such as dialing, hanging up and changing the parameters of the connection. The vast majority of dial-up modems use the Hayes command set in numerous variations.

"Hayes' modem created standards for addressing modems that were widely adopted almost immediately," said Wayne Rash, a veteran IT journalist who writes for *eWEEK* and other publications. The Virginia-based Rash was a bulletin board moderator for several years in the 1980s.

"You basically set a string of characters that started with capital 'A' and capital 'T' and something that followed that. AT stood for attention to the modem, and DT stood for dial tone. And then you'd put a [phone] number in. The modem then would dutifully dial that phone number, wait until it heard another modem tone, then it would make the connection."

Then you'd hear the familiar buzzing and beeping sounds that all modems produced when they tried to make the connection. Those sounds have all but become a distant echo of times gone by—and they probably aren't missed by many former users who remember failing multiple times to get their modems to connect.

The personal computers that connected to the modem via phone lines were in their infancy. The Apple II was out in 1980, but it wasn't a connectable device. IBM's PC didn't go to market until 1981, and it, too, wasn't connected. The Macintosh, with the first graphical user interface, wasn't available until 1984.

CP/M was the computer operating system that was a precursor to IBM's DOS, recalled Brian Greiner, a Toronto-based software designer who served as a "sysop" back in the early days of personal computerdom.

"You basically had to build your own computer from pieces," Greiner said. "There were few prebuilt computers then; the Tandy TRS-80 was one I remember. This was an era of 8-bit microprocessors. 64K—64,000 bytes—was considered a lot of RAM [random access memory], just to put things in context. Computers had more promise than actuality. People were in love with the magic."

With such little memory and storage capacity, the first PCs were only able to send text. Photos and graphics, which commonly run in the megabytes of digital weight, were out of the question; they could literally take days to transmit, Rash said.

But once people got their computers running, they wanted to connect and share information—even if it was just "hello, how's the weather there." One of the first bulletin board networks, Greiner recalled, was UUCPNet, which was run by a handful of universities.

30 Years Ago: How Hayes Modems, Bulletin Boards Presaged the Web

"Looking back on it, there was a basic need for people to talk," Greiner said, "and get to know people, for whatever reason—sort of like Twitter."

Bulletin boards then became very popular, and very quickly, remembers Bill Machrone, former technical editor and editor in chief of *PC Magazine* in the 1980s and early '90s.

"We had a very popular utilities column, and our charter was to write a little piece of code in Assembler, a utility that did something useful—like display all of your files by size, say, or 'undelete.' Something that DOS or the operating system couldn't do," Machrone said.

"When we first started, people were so hungry for this [code] that when they got their magazine, they would sit down and retype this code character for character into their machines, and then run the thing. Invariably, there

would be mistyping of the code, and we'd get letters and calls asking why our 'stupid' code didn't work. Of course, it was mostly coding errors that were at fault. That was laborious for us, and there was no good way to handle fixes. So we decided to start a bulletin board so that people could just dial in and download the utility."

Not long after the magazine turned on the BBS using a Hayes modem, "the phone line was jammed 24/7," Machrone said. "Then we added a second line, and a third, and so on. Every time we did that, the lines were jammed. It was a wild ride; the utilities were so popular. Eventually we had 36 lines in New York City and 16 more in San Francisco."

This all peaked in the 1985-86 timeframe, Machrone said. This was the birth of PCMagNet, which eventually morphed into ZDNet, which was bought by C/net and is now an online service belonging to C/net's owner, CBS Interactive.

During this time, all the long-distance calls were being handled by AT&T for the regional Baby Bells, and calls were expensive—unlike the free and low-cost calling to which we're accustomed today.

One day Machrone, who was running PCMagNet, got a call from a man at AT&T Long Line Services, who asked him bluntly: "What the hell do you think you're doing and what kind of stupid prank did you pull?" What had happened was we had essentially crashed the 714 area code [in Orange County, Calif.]. Everybody had gotten their magazine that day, and there was a particularly tasty utility in it. They all got home from work that day, everybody signed onto their modems and tried to dial us—all at the same time.

"The traffic blew the switch—it was too much for the switch. AT&T threatened to turn off our numbers; we bought some time with them and then eventually moved our network onto CompuServe, with our own block of numbers.

"Eventually, we and PC Week [now eWEEK] built their own online division in Boston," Machrone said.