

How the Internet will replace broadcasting

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Five-hundred cable channels. Scheduled pay-per-view events. Interactive TV on demand. Who cares? Try an *unlimited* number of channels. Whatever you want, whenever you want it. From anywhere on the planet. For free. Internet broadcasting will bring real-time audio and video—radio and TV—to modest desktop machines over ordinary phone lines. Not download-for-20-minutes-and-play-later clips, but audio and video streaming through the wires in real time.

Internet broadcasting is overcoming technical obstacles like the narrow bandwidth of phone lines, the limits of compressing multimedia data, and the vagaries of Internet packet transmission.

The selection of multimedia available over the Internet is surprisingly varied, considering that *some* of the technologies that support it are only about a year old. You can listen to live and recorded news and sports from huge networks like ABC, CBS, ESPN, and NPR. You can watch live news video feeds from NBC. You can tap into music from major recording companies and fledgling bands. And, as with all things Internet, you can find home-grown, impossible-to-categorize sights and sounds with all the immediacy of real time.

Strike Up the Bandwidth

Pumping full-motion video over the Internet is not a fun task. Do the math. A 1024- by 768-pixel display (good for a monitor, lame for a movie) with three colors at 8 bits apiece, running at 30 frames per second, means at least 566,000 Kbps hurtling down the wire. Real-time audio is simple by comparison. CD-quality sound generally consists of 16-bit samples, 44,100 samples per second, for a mere 706 Kbps. Digitized phone-quality speech is only 64 Kbps (8-bit samples, 8000 samples per second).