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IPTV is expensive, so why not try something more direct? This product shows everything the technology has to offer, and also highlights the reasons why most ISPs aren't investing in it yet.

by [Gerry Blackwell](#)

[February 17, 2006]



IPTV is a tough nut to crack for small and medium-size ISPs. It requires a big capital investment and the acquisitions of lots of new skills. Entertainment is a whole different industry, a whole different world. But there is one relatively easy way in: start by offering video on demand (VOD) services rather than full-bore, 100 channel IPTV.

MatrixStream Technologies Inc., a San Mateo, California company, has a complete end-to-end solution for VOD that it claims will let service providers offer high-definition video on demand over networks with limited bandwidth and no quality of service (QoS) provisions. MatrixStream says its technology will work over WiMAX wireless networks too.

The price tag? Less than \$250,000 for a system capable of supporting 10,000 viewers—and service providers shouldn't have to upgrade their network infrastructure.

"We have all the jigsaw pieces," says Aaron Keogh, MatrixStream's director of business development. "With other [solutions], you have to go out and assemble the pieces. It takes a while to integrate them and it costs a lot more."

MatrixStream's MatrixCast platform includes dedicated video servers running the company's IMX middleware management system and, optionally, third-party digital rights management (DRM) software. The servers support the company's patent-pending MatrixCast IP

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protocol, part of the secret sauce that enables standard (SD) and high definition (HD) over best-effort networks. The solution also includes a set-top box (STB) with an 80 GB hard drive incorporating the MatrixCast technology, and PC and media PC software viewers.

"With our system," Keogh says, "it's plug and play. We're the Vonage of IPTV. [Service providers] can plug it in to any broadband connection and it works."

Batteries not included

Not included, but probably required if not already in place: a storage area network for content, network load balancers, and, most importantly, DRM software, without which content providers likely won't let you use their material. The MatrixCast platform will also support full-bore IPTV with the addition of head end infrastructure and video decoders for each channel, but the company doesn't sell broadcast equipment.

It can, however, provide some VOD content and even IPTV channels—enough, Keogh says, for a service provider to get started. "We're not primarily a content provider, we're an equipment maker," he says. Still, the VOD content includes 10,000 movies (we're guessing, based on a demo sampling, that it's not A-list material), 12,000 adult titles, K-to-12 educational programming, and "extreme sports" material.

MatrixStream also has access to over 300 IPTV channels, though no mainstream network or cable channels. They include news, sports, shopping, religious, educational and foreign language fare.

The real differentiator for the MatrixStream solution? The way it makes optimal use of available resources to deliver high-quality video over limited bandwidth. In private networks—where an ISP is delivering video to its own subscribers—MatrixCast can deliver "broadcast-quality" video over 300 to 400 Kbps connections, DVD-quality over 750 Kbps to 1 Mbps links, 720p high definition over 2 Mbps and 1080p HD over 6 Mbps. "We're the only supplier with a 1080p set top box," Keogh notes.

A provider could also offer service to other ISPs' customers. "When you go out over a public network," Keogh explains, "you basically have to multiply [the bandwidth requirement] by four or five times." So other ISPs' customers would need 1.5 Mbps connections to receive broadcast quality, 3 Mbps for DVD quality, 8 to 10 Mbps for 720p HD and 20 Mbps for 1080p HD. At 20 Mbps or even 10 Mbps, we're into VDSL (very high bit-rate DSL) range, and there are few VDSL implementations as yet.

Beta t-e-s-t-i-n-g

I tested a beta version of MatrixStream's PC viewer, accessing demo material from a company server. My [Rogers Yahoo Hi-Speed Internet connection](#) from Canadian provider Rogers Cable is nominally 3 Mbps, but typically measures about 300 Kbps when tested with throughput speedometers on the public Internet.

Some of the high bit rate material from MatrixStream was initially

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very impressive—very clear images with lots of detail—but the connection understandably could not support smooth playback of these streams. Even the material optimized for connections like mine, though, was far from broadcast quality. They showed heavy pixelization, color blocking, often poorly synchronized audio and occasionally jerky motion.

That said, it was beta software and the signal was presumably coming from the west coast, about 3,000 miles away.

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