



Examining the MVDDS Business Case

By Mitch Shapiro



On February 12, 2003, the federal communications commission is scheduled to auction spectrum it hopes will fuel increased competition in the multi-channel video and broadband access markets. Yet there are still ample questions as to whether or not the auction represent a viable business opportunity and, if so, for whom?

The Commission intends to license 500 MHz of spectrum in each of 348 component economic areas (CEAs) defined by the U.S. Commerce Department, plus another six FCC-defined service areas in places like Puerto Rico and Guam. The spectrum is in the 12.2 to 12.7 GHz band, currently used by direct broadcast satellites (DBS).

The idea to license this spectrum for terrestrial use was initially proposed by Northpoint Technology, a company claiming to have a patented solution to the satellite interference problem, along with a reputation for being politically well connected. Northpoint and a network of "local affiliates" had hoped to receive licenses to cover

the whole country without any competitive bidding. The company is now challenging the FCC's auction decision through a legislative campaign and a court challenge, but victory on either front seems unlikely.

After many debates and some technical testing, the FCC last spring indicated it was convinced the spectrum could be used by terrestrial networks without unacceptable interference to DBS service. Not surprisingly, the satellite industry continues to challenge this finding, with some of its concerns reflected in a partial dissent to the FCC decision by Commissioner Kevin Martin.

To avoid going too far – both technically and politically – on the spectrum-sharing issue, the FCC limited terrestrial use of the spectrum to downstream transmissions. It did, however, provide for "flexibility for two-way services," as long as the upstream path uses a wireline connection or some other slice of spectrum.

The name given to the new service – multi-channel video distribution and data service (MVDDS) – reflects its suitability for one-way digital video and its less-straightforward potential to serve as the downstream path for a hybrid broadband service. As such, it seems best suited to serve the residential market. But even here, the hybrid and asymmetrical nature of its high-speed data (HSD) solution could prove a distinct competitive disadvantage in areas where cable modem and/or digital subscriber line (DSL) are available.

late into costs below a dollar per household. A Northpoint filing, however, estimated transmission costs for a sample market of around \$10 per home, based on coverage areas of 150 square miles per repeater.

Though the costs cited by Northpoint seem more in line with power limits set by the FCC, a pending MDSA filing asks the Commission to raise these limits in rural areas. The filing argues that higher limits are key to rural MVDDS economics and, at least with MDSA's technology, can be accommodated without interference problems. MVDDS operators also can request waivers of FCC power limits.

The extent to which MVDDS can cost-effectively overcome line-of-sight constraints will be key to its ability to avoid microwave multi-channel distribution service's (MMDS's) fate as a perennial also-ran. Describing the 12 GHz band as "near-line-of site," Kirkpatrick says MDSA has developed software and deployment techniques to help maximize service availability.

Kirkpatrick expects the cost of MVDDS subscriber equipment to be in the neighborhood of DBS equipment costs. The price paid by customers, however, could be significantly lower if MVDDS service providers mimic DBS operators' practice of heavily subsidizing receiver costs. In the past few years, DBS subscriber acquisition costs (SAC) have climbed above \$500, reflecting heavy operator subsidies of equipment costs, compounded by growth in multi-room installations requiring an extra receiver and increased labor.

A major question related to the MVDDS business case is how much spectrum will cost. Since auctions began, prices have spanned a wide range. As recently as January 2001, ten of 423 blocks of personal communications service (PCS) spectrum were bid above \$8 per MHz per Pop, with more than 10 percent above \$4.50, a median price near \$1.30 and the bottom 10 percent below 30 cents. At this price range, MVDDS would be dead on arrival.

But prices for spectrum with less-developed business models more akin to MVDDS have been well below this PCS range. For example, prices per MHz-Pop for 78-MHz blocks of MDS spectrum auctioned in early 1996 ranged from a high of nearly 20 cents to a low of less than a penny, a median price of roughly 11 cents, and nearly one in four below five cents. Three years later, all winning bids for 150-MHz and 1,150-MHz blocks of local multi-point dis-

MVDDS Per-Customer Spectrum Costs

Auction Price Per MHz-Pop	Auction Price Per Household*	Spectrum Cost per Customer (Penetration of Total Households in Service Area)			
		5%	10%	20%	30%
\$0.001	\$1.25	\$25	\$13	\$6	\$4
\$0.002	\$2.50	\$50	\$25	\$13	\$8
\$0.005	\$6.25	\$125	\$63	\$31	\$21
\$0.01	\$12.50	\$250	\$125	\$63	\$42
\$0.02	\$25.00	\$500	\$250	\$125	\$83
\$0.03	\$31.25	\$625	\$313	\$156	\$104
\$0.05	\$62.50	\$1,250	\$625	\$313	\$208
\$0.10	\$125.00	\$2,500	\$1,250	\$625	\$417
\$0.20	\$250.00	\$5,000	\$2,500	\$1,250	\$833

* assumes 2.5 persons per household and 500 MHz of spectrum

Source: Broadband Markets;

The latter point is not lost on some MVDDS advocates. Noting the availability and performance of cable modem service in his neighborhood, Kirk Kirkpatrick, president and CEO of MDS America (MDSA), acknowledges that MVDDS will be hard-pressed to compete in such areas. But he does see MVDDS having strong appeal for the tens of millions of homes that lack access to cable modem and DSL service. Kirkpatrick expects most initial broadband deployments to combine MVDDS with a dial-up return path, though the MDSA system also can accommodate an always-on wireless upstream.

MDSA is the North American licensee of MDS International, a French company with wireless video and data networks that are already sharing satellite spectrum in several countries, including commercial systems in New Zealand, Andorra, the United Arab Emirates and one being tested in Ireland, plus a demonstration site in France.

Kirkpatrick says an MDSA transmission system costing \$250,000 could cover an area as large as 15,000 square miles, which could trans-

tribution service (LMDS) spectrum were below four cents per MHz-Pop, with more than 75 percent below a half-cent and roughly half going for less than 0.2 cents per MHz-Pop.

To get an idea how the auction price could impact MVDDS business models, we might start with a price of five cents per MHz-Pop, which is well below the PCS range, toward the low end of the 1996 MDS range, but nearly 45 percent greater than the highest price paid in 1999 for LMDS spectrum. If we assume an average of 2.5 persons per household, this translates into \$62.50 per household for the 500 MHz of MVDDS spectrum. At 10 percent penetration, that's \$625 per customer.

If auction prices reached ten cents per MHz-Pop – close to the median point for the 1996 MDS auction – per-customer spectrum fees would climb to \$1,250 per customer at 10 percent penetration. But if they instead resembled the median price for the 1999 LMDS auction (roughly 0.2 cents per MHz-Pop), an MVDDS operator with 10 percent penetration would be paying only \$25 per customer for spectrum.

Though the specifics of an MVDDS business case could vary widely by market and by bidder, some hypothetical examples can provide a sense of how spectrum costs might impact investment payback. The table below does this for two scenarios, a relatively small

Other assumptions are:

- capital costs for transmission equipment of \$750,000 for the smaller market and \$3 million for the larger market;
- a \$500 SAC and 15 percent take rate in the smaller market, and a \$550 SAC and 10 percent penetration in the more competitive metro market;
- video ARPU (average revenue per unit) of \$45 per month in both markets (this compares to a \$49/mo. ARPU for Echostar, considered the most price-competitive player in the multi-channel video market) and;
- incremental HSD ARPU of \$25 per month in the small market that lacks broadband alternatives and \$15 per month in the metro market, where we assume an MVDDS broadband/dial-up hybrid service will need to offer a significant discount to compete with cable modem and DSL service.

Though operating cash flow margins for cable operators typically range from the high-30s to the mid-40s, we use a more conservative 25 percent in our MVDDS business case. This assumes an MVDDS operator does not take on the capital costs of building a centralized "head-end" facility for program origination and processing but instead outsources this service to an entity that provides programming to multiple CEAs on a regional or national basis. According

Spectrum Costs and the MVDDS Business Case

Homes Reached (000)	Capital Cost (\$000)	Capital Cost Per Home	Spectrum Cost Per MHz-Pop	Spectrum Cost Per Home	Sub Acq. Cost	Take Rate	Total Upfront Cost/Sub	Mo. ARPU Video	Mo. ARPU Data	Cash Flow Margin	Payback Period (mos.)
75	\$750	\$10.00	\$0.005	\$6.25	\$500	15%	\$608	\$45	\$25	25%	34.8
750	\$3,000	\$4.00	\$0.005	\$6.25	\$550	10%	\$653	\$45	\$15	25%	43.5
75	\$750	\$10.00	\$0.02	\$25.00	\$500	15%	\$733	\$45	\$25	25%	41.9
750	\$3,000	\$4.00	\$0.02	\$25.00	\$550	10%	\$840	\$45	\$15	25%	56.0
75	\$750	\$10.00	\$0.05	\$62.50	\$500	15%	\$983	\$45	\$25	25%	56.2
750	\$3,000	\$4.00	\$0.05	\$62.50	\$550	10%	\$1,215	\$45	\$15	25%	81.0
75	\$750	\$10.00	\$0.10	\$125	\$500	15%	\$1,400	\$45	\$25	25%	80.0
750	\$3,000	\$4.00	\$0.10	\$125	\$550	10%	\$1,840	\$45	\$15	25%	122.7

Source: *Broadband Markets*

CEA, with 75,000 homes, and a larger metro CEA containing 750,000 homes. We assume first that cable modem and/or DSL service is available to the majority of homes in the metro market but to only a small percentage of homes in the smaller market. And secondly that MVDDS data service is sold as an add-on downstream broadband service where price represents an incremental cost on top of a subscriber's dial-up Internet access costs.

to Michael Paolini, president of Wireless CATV Systems, a consulting firm active in MVDDS planning, a sound strategy for handling headend and programming costs is key to a successful MVDDS business case.

Our model compares a simple payback calculation for each market at four different spectrum prices: a half-cent, and two, five and ten cents per MHz-Pop. At the lowest price, the small-CEA and metro-CEA MVDDS operators

pay back their initial investment in less than 35 and 44 months, respectively. But if the winning bidder ends up paying a dime per MHz-Pop, MVDDS payback in our two hypothetical markets stretches to 80 months for the smaller market and nearly 123 months for the more competitive metro market.

Sizing Up Potential Bidders

Of course, virtually every component of a real-world MVDDS business case could vary considerably from our assumptions, especially when we factor in the identity of the winning bidders.

For example, though cable operators with at least a 35 percent share of total multi-channel video subscribers in a given CEA cannot hold an MVDDS license in that CEA, large MSOs (multiple system operators) below the 35 percent limit would arguably be among the best equipped entities to extract cash flow from an MVDDS license.

Among their advantages would be steep volume discounts on programming fees and in-place headends and local operations. Consider,

retaliation within their own wired service area.

Another potential source of bidders is the overbuild community. Though their numbers and access to capital have shrunk dramatically in the past few years, overbuilders could view MVDDS as a way to migrate to a more "success-based" investment strategy – especially in CEAs containing or near their existing headends.

Unlike cable operators, the nation's two DBS operators face no restrictions related to MVDDS eligibility. And assuming they are not able to reverse the FCC's ruling against their planned merger, both companies will have a tough time finding satellite capacity to deliver broadcast signals in all local markets, something they consider increasingly important to compete head-to-head with cable.

Though local broadcast channels would consume just a fraction of the licensed 500 MHz, a DBS operator could use the rest to deliver a more competitive broadband service and more locally targeted and high-definition programming than today's satellite platform can support.

Though its timing and capabilities are anything but ideal, some form of investment in MVDDS could make sense for a range of industry players, especially if only a few of them see it that way ...

for example, that programming costs typically amount to less than 25 percent of revenue for the top tier of cable operators, whereas small operators, lacking negotiating leverage with programmers, can spend more than 35 percent of revenue on programming fees. A small start-up MVDDS operator would likely face similarly high programming costs.

MVDDS could provide "eligible" cable operators a means to expand their subscriber base at relatively low fixed costs and total costs well below the \$2,500 to \$4,000 per subscriber they might pay to acquire existing cable systems. This could be especially attractive at a time when virtually all cable operators are struggling to grow their basic subscriber base and, like the entire telecom industry, face a tighter capital market.

On the other hand, cable operators might view an investment in a wireless system – especially one in which the provision of high-speed Internet access required a dial-up connection – as too poor a fit with their existing hybrid fiber/coax-based business. They also might be reluctant to invade the turf of their cable brethren if, for no other reason, than to avoid

Unlike cable and DBS, MVDDS licensees will not be subject to any must-carry requirements, so operators will be able to pick and choose the local programming they carry.

Because there are no near-term buildout requirements for MVDDS licenses, (which has a term of 10 years), and especially if bidding prices were low, a DBS operator might opt to acquire MVDDS spectrum even in markets where its only immediate goal was to forestall entry by a potential new competitor. At a half-cent, two cents and five cents per MHz-Pop, the cost of MVDDS licenses covering the entire U.S. would be approximately \$725 million, \$2.9 billion and \$7.3 billion, respectively. For roughly a third of these costs, either DBS operator could acquire spectrum covering only those markets in which it doesn't currently deliver local broadcast signals and where it would be most vulnerable to an MVDDS competitor that did offer local channels.

Some incumbent local exchange carriers (ILECs) could see value in MVDDS's ability to extend broadband services beyond their current DSL footprint. And because they already have a wire into the home, ILECs would be relatively

well positioned to deploy a hybrid HSD service employing MVDDS for downstream signals. This might be particularly appealing in rural markets, where DSL availability is sparse and its technical and economic challenges most severe.

ILECs also may see MVDDS-delivered video as a tool to help them compete with cable in the delivery of churn-reducing multi-service bundles. But telcos have tasted failure on the video front

in a post-consolidation world, where dominant players will likely serve large contiguous areas spanning multiple CEAs and DMAs.

With a growing number of municipalities and public utilities considering investments in broadband networks, some may view MVDDS as a faster-to-deploy and more success-based investment than a wired network. Its appeal might be strongest in rural areas lacking broadband

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before – including investments in MMDS. So even though MVDDS offers roughly 2.5 times the spectrum of a fully loaded MMDS system, most ILECs may approach the auction deadline still wary of wireless as a video and broadband platform, and too focused on other priorities.

Broadcast station owners could see MVDDS as a way to extract more value from their strong local brands and their local transmission, production and advertising facilities, all of which are migrating to digital, as well as a way to lessen their dependence on cable, which they increasingly view as a competitor for advertising dollars and a gatekeeper constraining their own digital expansion plans.

MVDDS could give broadcasters a platform to make the big and strategically important jump from free ad-supported single-channel analog TV to a digital multi-channel mix of ad-supported and subscription services.

With the FCC expected to relax broadcast ownership rules, local broadcast markets could be headed for a massive wave of consolidation, with the likely consolidators including media giants such as Disney, Viacom and Fox. As their nascent Internet-based movie-on-demand services suggest, these content powerhouses are eager to have more complete control over their distribution channels and capture a larger share of retail revenues. As such, they may view investments in local MVDDS facilities – perhaps including delivery of on-demand content to receivers with built-in digital video recorders – as a cost-effective way to gain direct control of a broadband pipe to the home.

The fact that the 348 CEA license areas do not neatly match the broadcast industry's 210 DMA-based coverage areas could present some complications for broadcast (and cable) MVDDS planners. But these seem manageable, especially

options, where multiple communities in one or more CEA might share the cost of MVDDS spectrum and equipment, while also seeking a waiver of power limits to reduce network costs. These "public" entities may also have access to low-cost capital not available to the private sector. At the same time, however, MVDDS's lack of a "built-in" return path could make it less attractive to local governments, whose interest in financing "third networks" is often tied to the benefits of two-way broadband communications.

MVDDS also could appeal to some Internet service providers (ISPs) as a way to expand their reach and service offerings, but its limit to downstream use – and today's tight capital markets – could limit that appeal. Another option would be for ISPs to work with MVDDS licensees to offer MVDDS downstream capability as a premium-priced upgrade to their dial-up service.

Investor-owned utilities might also be counted among the ranks of potential bidders, though their forays into retail communication services have been few and rarely successful, and they have more pressing issues on their plate. Northpoint may also be a bidder, though its original business plan was built around zero-cost spectrum.

Though its timing and capabilities are anything but ideal, some form of investment in MVDDS could make sense for a range of industry players, especially if only a few of them see it that way, which could mean lower spectrum costs and better returns for those that do. **FAT**

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