Off Wall Street
Consulting Group, Inc.

P.O. Box 2647
Cambridge, MA 02238

tel: 617.868.7880
fax: 617.868.4933
internet: research@offwallstreet.com

New Rec: MRV Communications (MRVC $50.75) May 29, 2000

Position: Sell Target: $22.50 Timing: 2 (1=aggressive; 5=cautious)

$000	Q1 00	Q2 00e	Q3 00e	Q4 00e	F2000e	F2001e
REVS	65,072	70,500	73,500	76,000	285,072	315,500
EPS $	(0.21)	(0.18)	(0.21)	(0.20)	(0.80)	(0.77)
Y/Y%	nm	nm	nm	nm	nm	nm
PE					nm	nm
PSR					7.2x	6.5x
Cons Rev		70,800	75,400	79,200	290,472	na
Cons EPS*	0.03	0.06	0.09	0.14	0.32*	na

* "Street" estimates, though provided are meaningless, since they eliminate about 50% of R&D spending related to non-revenue producing businesses and all non-cash items.

Shares Out: 40.5 M Market Cap: $2.06 B FYE: Dec.

Summary: MRV's current CEO has been in the CEO position since 1990. By the end of 1996, the company had no retained earnings. At that time paid in capital was about $50 M and the retained earnings balance showed a deficit of ($8 M). In 1997 the company made $22 M on a doubling of sales to about $186 M. In 1998, however, the losses resumed, and by the end of 1999, after losing $23 M in 1998 and $13 M in 1999, the retained earnings deficit had increased to a negative

($18 M). Paid in capital was $191 M and long term debt was $90 M. The company's balance sheet deteriorated further in Q1 2000, with the retained earnings deficit increasing to a negative ($24 M). Despite this, investors were embracing MRV, as MRVC shares soared to as high as $195 in Q1 00.

MRV has long promised that it has networking and fiber optic technology that would translate into a successful enterprise. Financial results indicate that this has never happened. Yet, investors still find the hopeful predictions of management credible, even after 10 years of mostly disappointing results.

We first wrote about MRV in November 1997, when the shares were $28 and the market value was $720 M. At that time MRV was downplaying its fiber optics business but was touting its gigabit ethernet switches. Then, and for the next year, we explained how the company seemed to be exaggerating its technological prowess, as well as its financial results. In August 1998 the share price collapsed to below $7 when management pre announced a poor Q3 98. We closed our position with a 76% gain.

Is it "déjà vu all over again"? Now, with MRVC shares trading at $50.75 and with a market capitalization of $2 billion, investors appear to be either too new to the company or too forgetful to remember its track record. Management again appears to be exaggerating its prospects.

Many investors are going along with management's contention that the company should be valued on a sum of the parts basis, the parts being networking products, fiber optic components, and venture stage investments. Management releases few details about its products or its business segment results, but instead entices investors with rosy industry comparisons and with the promise of a variety of IPOs to unlock supposed value.

However, an analysis of MRV's business segments reveals little in the way of innovative technology, in our opinion. Poor financial results in networking belie management's claims that it has cutting edge technology. The company's "optical access" products are mainly commoditized transceivers, receivers and LEDs. Revenue growth through 2000 in fiber optics is expected to be minimal. Instead, the company is looking to acquisitions and start-ups to generate shareholder value.

Management claims that MRV has become an optical incubator appear to be exaggerated. Only one company, Zaffire, of which MRV currently owns about 23%, appears to have enough substance to perhaps come public. Several of the so-called "start-ups" appear to be old Nbase-Xyplex products with new names. To date, MRV has invested less than $8 M in new companies, most of which appear to have been started by former employees. These "start-ups" appear to be more designed as spurs to MRV's share price rather than as real stand alone companies.

We think MRV will have great difficulty executing its consolidation/spin-off strategy. The capital markets are not as friendly as they were recently.

Management's notion that it will IPO its fiber optics business with the new name "Luminent" is peculiar, since this segment is what has attracted investors to MRVC shares. Spinning off the "core" business does not create shareholder value especially when the remaining "stub" networking business is not perceived as having much value. This problem occurred with 3Com's IPO of Palm. Similarly, we think MRVC investors are unlikely to want to own MRVC shares if the IPO ever takes place. MRV's proposition is even less appealing because, unlike 3Com/Palm, MRV/Luminent are not even separate businesses, but rather are just segments of a vertically integrated manufacturing and marketing company that will continue to be controlled and managed by MRV management.

Below, we present our own "sum of the parts" analysis. We conclude that even on a sum of the parts basis, in the unlikely event that the value of the parts can be separately realized, MRVC might be worth about $900 M, or $22.50 per share. On a sales and earnings basis, which we think is a more realistic way to value the shares, we think the company is worth substantially less.

The trigger to the first leg of the decline in MRVC shares could be the company's failure to do an IPO of Luminent as promised in the next 90 days. The second leg of the decline could come when investors begin to value MRVC on actual sales and earnings, and not on sum of parts. We expect actual sales in the $300 M range, and at 2x revenue MRVC would be worth only $600 M, or $15 per share. Even that could be too high, because the company should be losing money. After the recent FOCI acquisition cash is about $70 M, and debt about $90 M. The company burned about $18 M in cash in Q1, over $9 M from operations and over $9 M from investing, leaving it only about four more quarters of money at that rate of burn. On May 26, MRV announced another acquisition, CES in Switzerland, with terms undisclosed, and another start-up, iTouch Communications. We do not discuss these brand new developments in this report, but they will also require funding.

Indeed, it is even conceivable that MRVC shares could return to the $7 level of late 1998. After all, the Q1 2000 balance sheet is worse than that of Dec. 1998. Cash at $126 M is down by $25 M versus Dec. 1998, while debt is the same at $90 M, and the retained earnings deficit has increased from negative ($5 M) to negative ($24) M. 1999 sales were less than 10% above 1998, and F2000 sales are projected to about flat with 1999.

Discussion:

1. For many years MRV has relied upon acquisitions to boost its revenues and product offerings. However, instead of acquiring market leaders, MRV has focused on acquiring lagging companies and using purchase accounting and restructuring charges to show occasional positive earnings in a quarter, though it actually lost money in both 1998 and in 1999. The failure of management's approach is evident in the company's recent announcement that it would exit the LAN switching business, the business it touted in 1996 as its core offering, but which provided only one year of reported profitability, which was 1997.

2. Financial results for Q1 00 reflect MRV's currently deteriorating financial condition. Revenues declined over $10 million on a sequential and on a Y/Y basis. The "exit" from the LAN networking business provided a convenient excuse for the revenue decline, but operations still lost $5.6 million. The loss is especially alarming in light of the $20 million in charges taken in Q4 99 when cost of goods sold included a $13.8 million write-down to inventory and an additional $7 million charge appears in SG&A.

The inventory charge of $13.8 M was announced on February 22, 2000 and was made retroactive to 1999. Of course, in Q1 MRV was selling the inventory that it had written down retrospectively in 1999. Despite this windfall that should have benefited gross margins in Q1, gross margins remain low, at 34.3%, significantly below other networking companies such as Cabletron and 3Com.

Management's unwillingness to provide any segment information about enterprise and LAN networking equipment leads us to think revenues and profits are weak in both segments.

After serious deliberation and debate, we are going to award MRV management our Q2 2000 "Big Chutzpah" award for creative financial reporting in Q1 2000. In addition to having the gross margin benefit from current sales of the inventory that had been written down retroactively in 1999, MRV also asks investors to believe that the company was actually profitable in Q1, despite reporting a loss of ($0.21). Of course "street" analysts go along with this reporting "spin".

Included in the 10-Q is a new note to the financial statements, note 9, titled "Pro forma Statement of Operations", unaudited of course. To calculate pro forma earnings management excludes amortization of intangibles of $1M and "recognized" research and development expenses, net of tax, related to "development stage enterprises" of $5.64 M. Doing so yields EPS of $0.03, though no detailed explanation or allocation by company of the development company expenses is provided.

This might trouble some investors. MRV wants them to accept the idea that it is a high tech company, yet only spends 9% of sales on R&D for its current product lines. Then, it wants them to think that it spends another 9% of sales of sales on development stage companies that produce no revenue. It provides no detail about how it determines how R&D is allocated. Then, it wants investors to ignore the expenses related to new product development in looking at current earnings, although all companies spend money on new product development in the regular course of business.

MRV wants investors to reward the company a high valuation because of its start-ups, but MRV also wants to claim it is still profitable, and asks us to ignore start-up expenses.

In the 10Q, R&D is actually reported on two lines: R&D from operations and R&D from consolidated development stage enterprises. R&D from development companies is 49% of total R&D expense. This manner of reporting may be misleading, is not audited, and could be subject to manipulation. We think that "development stage" companies share MRV office space and perhaps even personnel and that the allocation of costs may be fungible. If we accept R&D expenses, as presented, R&D from operations actually declined by $1.2 million Y/Y to $6.06 million. Yet continuing operations include MRV's supposedly high tech fiber optics division. The reported declining and low level of R&D spending on its core business, if accurate, raises doubts about MRV's status as a technology leader.

Internet equipment leader?

	12/98	3/99	6/99	9/99	12/99	3/00
Networking	53,352	55,839	57,494	53,795	55,287	45,172*
Fiber optics	14,406	14,277	15,757	17,459	18,616	19,900*
Total revenues	74,883	70,116	73,251	71,254	73,903	65,072
Cost of goods sold	53,186	46,366	47,595	44,653	58,828	42,736
Gross profit	21,697	23,750	25,656	26,601	15,075	22,336
Gross profit %	29.0%	33.9%	35.0%	37.3%	20.4%	34.3%
Total R&D	8,480	8,465	8,572	8,476	9,806	11,891
SG&A	16,978	15,845	15,892	16,532	23,488	16,028
Restructuring	3,101	0	0	0	0	0
Total expenses	28,559	24,310	24,464	25,008	33,294	27,919
Operating income	(6,862)	(560)	1,192	1,593	(18,219)	(5,583)

* Actual breakdown was not given. Based upon "street" estimates.

3. The "street" has convinced investors to overlook the combined financial results and to instead focus on the value of MRV's fiber optics business. This argument worked through Q4 as the fiber optics continued to record healthy growth. However, concurrent with Q1 2000 earnings management stopped providing the revenue and operating income split between "networking" and "optical access" leading us to think that the fiber optics business is also experiencing problems.

Revenue breakdown:

	12/98	3//99	6/99	9/99	12/99	3/00
Revenue						
Networking	53,352	55,839	57,494	53,795	55,287	45,172*
Y/Y	41.3%	12.0%	6.3%	5.9%	3.6%	-19.1%
Fiber optics	14,406	14,277	15,757	17,459	18,616	19,900*
Y/Y	35.3%	30.3%	35.1%	47.8%	29.2%	39.4%
Operating profit						
Networking	(4,502)	(2,657)	(1,113)	(586)	(20,642)	N/A
Y/Y						N/A
Fiber optics	(2,360)	2,097	2,305	2,179	2,423	N/A
Y/Y		89.1%	119.6%	133.4%	N.M	N/A

* Information not released. As per "street" research.

Bulls also overlook MRV's current cash burn. In Q1, Operating activities consumed $9.354 million. Investments in "partner" companies consumed another $9.7 million. After the recently completed FOCI acquisition, we estimate that MRV has about $74 million, or two years of cash to support operating activities at Q1's burn rate, and enough for just one year at Q1's total burn rate. Recently completed acquisitions may also require additional working capital and could eventually limit MRV's ability to continue to invest in "partner" companies to "create value".

4. Even bulls see limited value in the networking business. The street agues that the networking business is worth 2x revenue, yet this estimate is probably still too high. MRV "exited" rather than sold, its LAN switching business. In the face of weak margins and declining revenues we think this business is worth only 1x 2000 revenues, or $184 million

MRV's continuing networking business is not growing. A "street" analyst claimed that LAN switching was about $65 million of F1999 networking revenues of $222 million, leaving $157 million from "continuing" enterprise networking. The same analyst has recently lowered F2000 networking revenue from $248 million to $184 million. That calculates to an average of $46 million for the remaining three quarters of 2000, about flat with reported Q1 results.

Current networking products are predominantly legacy NBase, Fibronics, and Xyplex products that are not cutting edge technology. Despite its exit from LAN switching, MRV continues to sell its LAN products. "New" NBase-Xyplex products such as the "Red-C Open Subscriber System" are essentially old Xyplex products with new names. One industry source who had evaluated the product described the Red-C OSS as unimpressive. The same basic product was first marketed as a Xyplex RAS, then as a broadband RAS, and now as the "RedC". The same source described the product as inferior to other products on the market.

The sales pitch behind NBASE-Xyplex's Linux router is also questionable. The argument in favor of a Linux-based router is that the customer would be able to write custom applications for the product. However, this "feature" has not been and is unlikely to be embraced by carriers, who would have to support the custom applications. MRV's embrace of Linux, and the timing of the product announcement, appears more an attempt to capture some the stock market's enthusiasm for RedHat rather than to sell products.

5. Bulls do see value in the MRV's optical products and claim that this business should be valued at 66x F2000 revenues, or about $7 billion, based on comparable valuations. As we discuss, below, we think such comparisons to market leaders are foolish and misleading. MRV's products are low end products that are rapidly being commoditized. We think 4x F2000 revenues, or $428 M is a generous valuation.

While discussing Q1 2000 results, MRV's CEO suggested its fiber business is "hot" when he commented that that there was currently, "a shortage of laser diodes for Optical Networks". However, as discussed above, at the same time he said that MRV would stop reporting networking and fiber optic revenue separately. Furthermore, management indicated that fiber optics would show only slight sequential growth in 2000, but that the business would grow more in 2001. This guidance is in contrast to optical component companies like JDSU, SDLI and ETEK who continue to report strong sales and earnings.

The cautious guidance on the fiber business is also in contrast to a February 10, 2000 press release announcing a 50,000 square foot expansion to its "photonic facility" in Chatsworth, CA. While the added square footage may be impressive, actual PP&E is not. MRVC's 1999 10-K shows machinery & equipment at $12.6 million, only a $2.5 million increase over the prior year. Net PP&E decreased $2.4 M from Q4 99 to Q1 00.

If MRV's fiber optic components are so unique, why aren't they driving higher sales of MRV's own networking products? Inter-company sales accounted for approximately 12% of fiber optic sales in 1998, and this percentage fell to 6% in 1999.

MRV compares itself to companies like JDS-Uniphase, claiming that both companies are in the optical components business. Yet "optical components" is a catch-all phrase. Our discussions with industry sources reveal that MRV's optical products are predominantly commodity components that contain little of the technology that established optical companies have been acquiring.

MRV's current fiber optic products sales mix is said to be 30% discrete devices for cable, PCS and instrumentation markets, 40% data networking products for long reach single mode applications, and 30% fiber to the curb solutions. Yet a review of MRV's major product lines shows little impressive technology. Products are primarily lasers, LEDs, transceivers, transmitters and receivers. Industry sources indicate that while several of these products may have been "unique" several years ago, these products have rapidly been commoditized. Major component manufacturers such as Lucent, AMP, and Sumitomo now dominate these markets, and competition is increasingly focused on price.

MRV's specialty has been its longer reach products. But MRV has been losing this distinction as companies like Infineon and Lucent are now producing long reach products. Combined with the trend to "single-sourcing" suppliers, we think MRV is at an ever-increasing disadvantage.

6. Calls to the "manufacturer's sales representatives" listed on MRV's website result in more questions than answers. CJR Associates, Inc. in Rockaway, New Jersey is listed on the MRV website, under the "Luminent" section as "N. American Lucent/ATT Rep." However, our calls to CJR revealed that the company does not currently, and never had, a relationship with MRV. CJR explained that an agreement had been drafted but it was never signed. They did not understand why they were listed on MRV's website.

A second call to another representative listed on the MRV website resulted in another dead end. The company said that it had been a manufacture's rep. for MRV, but that it ended the relationship after persistent quality control problems with MRV products threatened its own reputation.

The phone of a third "representative" has been constantly busy, even during off-hours. The company, "S&S Technologies" is listed as being in Tempe, AZ, but does not have a listed phone number. The fourth rep turned out to be real, but was strangely hostile when we asked about MRV products and customers.

7. Smaller component manufacturers like MRV have certainly benefited from the tight conditions in the components markets, but major optoelectronic component capacity expansion is now coming on line. Alcatel announced it will invest $100 million to expand its manufacturing facilities. Alcatel is specifically increasing capacity for source lasers for DWDM, CATV and related communication products. The "Optronics 2000" program is scheduled to be completed during the summer of 2000.

Nortel Networks is also significantly increasing capacity. The company announced it would invest $400 M to triple capacity in 2000, with a significant proportion of the expansion aimed at optical systems and components including DWDM lasers, high-bandwidth receivers and high-speed electronic circuits.

Lucent recently announced over $70 M in additional optoelectronic capacity expansion. After recently completing a $30 M expansion to its current operations that quadrupled output, the company announced a $40 M expansion to recently acquired Ortel's capacity. The new investment will increase Ortel's output by at least 16 times.

8. In response, MRV has recently embarked on a major acquisition splurge claiming that it will become the next JDS-Uniphase. To this end, MRV's "optical access" business has adopted a new name, "Luminent", and has acquired several fiber optic companies. MRV management hopes to take this business public via an IPO in the near future. We think current MRVC shareholders are expecting the IPO to "unlock" shareholder value.

There are several problems with this logic. First, Luminent is a late-comer to consolidating the fiber optic industry. Market leaders such as JDS-Uniphase, Corning, ADC and others have been acquiring companies for over two years and have pushed valuations out of MRV's reach. As a result, MRV is left in the unattractive position of acquiring third-tier companies at high prices. This strategy is further dependant on MRVC's stock maintaining its lofty valuation. With the recent decrease in the stock price this strategy may already losing its feasibility.

9. MRV does not want investors to focus only on its current optical component business but also on its efforts in "Metro Optical Networks". "Metro optical" is

reminiscent of the "gigabit Ethernet" craze in 1998. As our long time readers know, MRV positioned itself as a gigabit Ethernet leader in much in the same way that it now positions itself as a leader in optical networking. This is a convenient market to talk about because the market has not really developed yet. To date, optical networking and DWDM have proved to be technologies for the long haul market. The problem has been the cost of deploying DWDM in short-haul markets. Market observers explain that the high cost of the equipment does not justify its deployment, and that it is cheaper for carriers who have fiber to simply light another fiber strand.

10. MRV's first "optical" acquisition was Fiber Optic Communications International (FOCI) which closed April 24, 2000. MRV issued 2.33 million shares and paid $48.6 million in cash, for a total purchase price of $161 million, or 6X F1999 revenues. This purchase price may overstate the value of FOCI considering the significant stock component to the purchase price, and the immediate registration rights requested by the sellers. Bulls argue this company is worth 66x revenues, or 1.8 billion! Little information about this company is available. MRV positions FOCI as a "passive" fiber optic company. Combining the active components of MRV with the passive components of FOCI is supposed to be the first step in creating the next JDS-Uniphase. However, our discussions with FOCI reveal that MRV-FOCI is no JDS-Uniphase.

FOCI is essentially a "nuts and bolts" type of company that supplies companies such as MRV. In fact, MRV was a significant customer prior to the acquisition. About 30% of FOCI's revenues are comprised of low-end products like patch cords, connectors and splitters, while another 20% includes polishing machines and various parts and consumables. The bulk of FOCI's business appears to be products such as couplers, attenuators and isolators and product assembly. Instead of a true "passive" company MRV appears to have bought an electronics/assembly company.

11. MRV announced two additional "optical" acquisitions in conjunction with the Q1 2000 earnings release. Optronics International and Quantum Optech will be acquired for 2 million shares and 570,000 warrants. At a recent share price of $50 the two companies are valued at $100 million. Management claims the two companies will add about $5 million in revenues to F2000, placing the purchase price at about 20x revenue. Again, little information is available about these two companies. Quantum Optech appears to be a small subsidiary of Taiwan-based ADI Group, a company whose primary business is manufacturing displays. The two acquisitions will add about 48,000 square feet of manufacturing facilities.

Optronics International, also based in Taiwan, lists three main categories of products on its website: 1) Visible lasers (635 ~ 650nm) and modules that are used in laser pointers, scanners, and DVD pick-up heads; 2) Communication lasers (1310 ~ 1550nm), PIN detectors, modules and transceivers for use in ATM telecommunication and Ethernet data communication; and 3) High power lasers (630 ~ 2000nm): for use in solid-state laser pumping, medical surgery, photodynamic therapy and industrial laser soldering. No revenue breakdown has been offered between these various product lines, but it is clear that a significant component of Optronics' business is not related to optical communications. Optronics' communications products appear to be similar to MRV's existing product lines, providing little added value to MRV's product mix.

12. MRV recently completed the acquisition of Jolt, Ltd. for 830,000 shares, valuing the company at $51.2 M. Jolt's products are point-to-point diffuse lasers for wireless networking. The technology is similar to a remote control infrared signal. Jolt is not a new company with proprietary technology**.** "Fiberless optics" solutions have been available and touted for over 13 years but the technology has never really caught on. The problem with the technology is that it is not fast enough and is an order of magnitude slower than fiber-based solutions. Second, the technology is reliable for only short distances of about 1.5 miles. Environmental factors such as pigeons and fog interfere with data transmission. Jolt is said to have sold 3,000 units, but our research shows that most installations are for temporary networks and that Jolt's products are soon replaced with microwave or standard networking gear. MRV management compares Jolt to Terabeam, a company that has received the attention of George Gilder's group. We think the low price paid for Jolt and the limited actual commercial applications are indicative of the low value of this technology.

13. Given the mediocre actual results and the poor near term prospects of the current businesses, MRV management insists that the company has become an "internet incubator" and should be valued on the potential of its investments. During the Q1 2000 earnings release, MRV lists six "development stage enterprises". In addition, MRV listed the carrying value of its "VC" investments, as if to impress investors. At first glance, the surge from $4.2 M in Q4 99 to $24.3 M in Q1 00 in "investments in partner companies" makes it appear as if MRV is actually investing. However, closer inspection reveals a surprisingly low level of actual investment activity.

MRV's Investments

	12/99		3/00	
Investment in partner companies	4,232	100%	24,258	100%
less:				
Zaffire	3,000	71%	3,000	12%
Red C Optical Networks	0	0%	16,500	68%
Charlotte, Hyperchannel, Zuma, Other	1,232	29%	4,758	20%

The 1999 10-K shows that MRV invested $950,000 in Zaffire in July 1998, and later exercised warrants to invest an additional $2.05 million, for a total investment of $3 million, or 71% of MRV's portfolio as of 12/31/99. In the March 2000 10-Q, MRV purchased a 35% stake in RedC Optical Networks for $16.5 million by issuing 75,000 shares of MRVC stock worth $11.5 million and $5 million in cash. Despite its catchy name, "RedC Optical" was a division of El-Op Electro-Optics, which announced an agreement to be acquired by Elbit Systems in December 1999. Elbit's current share price of $13 values El-Op at about $160 million. Instead of investing in a "start-up" as MRV claims, the transaction is a purchase of a subsidiary of Elbit Systems.

We can find no references to "RedC Optical" except in connection with MRV's announced investment. The RedC "investment" extends the long history between MRV and Elbit. Noam Lotan was a director of Elbit U.K. from 1987 to 1990. MRV acquired Fibronics from Elbit in 1996.

Together, Zaffire and RedC comprise $19.5 million or 80% of MRV's "VC" investments, leaving a meager $4.8 million invested in other start-ups. Is this investment portfolio worth billions, as the "street" claims? Hardly. A review of MRV's start-up companies reflects MRV's rich promotional heritage and poor value for investors.

14. Zaffire, formerly New Access Communications, has generated the most media attention for MRV. The company was founded by Near Margalit, the son of Shlomo Margalit, MRV's Chairman and Chief Technical Officer. Zaffire claims to be developing a DWDM device for metro networks, and lists Kleiner Perkins, Broadband Office, Williams Cos., and Juniper Networks as investors. However, by our calculations the most recent venture round places a modest $37 million valuation on the company.

MRV initially acquired 60% of Zaffire for $3 million, putting the initial value at $5 million. In MRV's latest earnings release, its ownership stake had been lowered to 23%. An additional press release stated that Zaffire has raised a total of $26 million.

Zaffire valuation:

Date		Investment	%	Post-Money Valuation
7/98	MRV Comm	$950	19%	$5,000
7/98-7/99	MRV Comm	$2,050	41%	
		$3,000	60%	$5,000
3/00	Second round	$23,000	62%	$37,277
	Resulting Holdings			
	MRV		23%	$8,576
	Management		15%	$5,717
	New investors		62%	$22,984
	Total		100%	$37,277

Zaffire recently announced its first product, the Z3000 for metro networks. Zaffire claims that by designing its own components it has been able to dramatically decrease price. Zaffire is also demonstrating its MRV roots by claiming its amplifier can extend the reach of the box to 400km and can reach more customers with each unit. The third advantage cited is its small size and low power consumption. Zaffire says it is in beta testing with Williams and Broadband Office, as well as being in interoperability tests with Juniper Networks.

While Zaffire appears to have the right venture and industry partners to bring the company public, Zaffire's success is far from assured. Other larger competitors are developing similar products and carriers generally prefer to buy from one vendor.

Nevertheless, the “street” argues Zaffire could come public at a $3-$5 billion market cap. Considering current market conditions, Zaffire may not be able to come public at all. Venture capital sources reveal that Zaffire is currently attempting another financing round that would value the company at $750 million. If successful, MRV’s 23% stake would be worth at $172 M pre-tax and $130 million after-tax, assuming a 25% tax rate.

15. MRV’s next major investment is in Hyperchannel, a U.K. based IT reseller. Hyperchannel has raised $24 million in funding and lists Goldman Sachs and GE Capital as investors. Hyperchannel’s business model appears to position the company between distributor and value added reseller**.** We note that this is a razor-thin margin business. Leading VARS such as Ingram Micro and Tech Data have gross margins of about 5% and operating margins of less than 1%. Industry sources further indicate that the internet is fueling direct relationships between customers and vendors, eliminating resellers entirely.

Though similar “B2B” business models were popular with investors in late 1999 and early 2000, the model is currently out of favor, and similar pending IPOs have been withdrawn. We doubt Hyperchannel will be able to come public in the near future. MRV claims Hyperchannel generated a lowly $8 million in revenue in 1999, again attesting to the early and experimental nature of the business.

As a valuation yardstick, we point to Intraware (ITRA), an internet software reseller currently priced at $10.25 per share, or a $250 million market capitalization, or 2.5x fiscal 1999 revenues. If we assume Hyperchannel could triple revenues in 2000 to $24 million, a comparable valuation multiple would value the company at $60 million. MRV’s 42% stake would be worth $25 million pretax, or $19 million after tax.

16. Charlotte’s Web Networks is developing a terabit router named Aranea 1. The company was founded by former Nbase employee Eyal Dagen in 1998 and MRV was the original backer. Noam Lotan compares Charlotte’s Web Networks to higher profile terabit router companies such as Avici, Ironbridge, Nexabit, Cerent and Juniper. This comparison has led the street analysts to claim that the company is worth $2 billion. However, we think the only value of this company is as a talking point for MRV. Industry sources indicate that there are few potential customers for terabit routers, and that Charlotte’s box is not discussed as a competing product by customers or competitors. Without evidence from potential customers that this company has a viable product it is impossible to award the company a high valuation. Though MRV claims that the Aranea 1 is being tested by a “major” U.S. carrier, MRV is suspiciously reluctant to reveal the customer’s name.

One competitor questioned if Charlotte even had sufficient resources to build a competitive product. He explained that the software for terabit routers is complex and that at his company it took 40 engineers working for over two years to write the necessary code. Last year, Charlotte had only 5 engineers. From the released specifications, the Aranea 1 appears to be an enterprise class product, and not carrier class. In addition, Charlotte has not announced any additional investors besides MRV. Whereas competitors have announced beta customers, Charlotte has not.

Charlotte's Networks has announced that it plans to attend the Supercomm 2000 show in Atlanta, but its exhibit will be inside MRV's booth. While this might be a convenient place for MRV to promote its "incubator" business model, we doubt this is an effective location to attract potential customers.

17. Because Wall Street has rewarded MRV for its investments in Zaffire and Hyperchannel, management has continued to issue press releases and form more companies. Zuma Networks appears to be little more than several press releases issued from within MRV. Despite claims that it was formed in 1998, Zuma Networks is still located at MRV's offices in Chatsworth, CA. Zuma's website also remains incomplete. MRV and Zuma management appear to be the only "investors" despite Zuma's self-proclaimed leading-edge technology. Zuma Networks is not currently shipping a product. Zuma constantly compares itself to Extreme and Foundry Networks, yet sources dismiss the comparison**.** A contact at Extreme called Zuma "slideware", and pointed out that MRV is using inaccurate information about Extreme, and that MRV uses a two-year old Extreme product in their comparisons. The lack of industry recognition speaks volumes against management's credibility.

Press releases describing Zuma point to its engineers who where "pioneers in LAN switching", clearly a reference to their NBase heritage. Yet if these engineers have designed a valuable networking product, why not keep their work within MRV-NBase? Leading networking companies such as Cisco and Lucent seek acquisitions to leverage their existing sales channel. MRV's approach to marketing a Zuma product suggests that there is either little value to MRV's channel and support structure, or Zuma is just a promotion, or both.

18. On April 17, 2000 MRV announced another "start-up", Optical Crossing, that will put together a team to develop all-optical switch components. If MRV can really develop this technology, why not do so within Luminent? Without products to announce, the press release seems like pure hype.

19. Insiders are selling. Even while management gushes about MRVC's prospects, management has also been selling stock. The top three officers proved especially astute in their March sales, selling above $150 per share. Though the current price is about 1/3 of the recent high, we note that Shlomo Margalit sold 125,000 shares at $35 in December.

	Date	Shares	Price
Shlomo Margalit	3/2/2000	25,000	152.66
	12/8/1999	125,000	35.25
Noam Lotan	3/2/2000	25,000	152.66
	12/8/1999	65,000	35.25
Edmund Glazer	3/2/2000	20,000	150.3

20. Putting the pieces together. Our own sum of the parts analysis.

$000

Company	Value
Networking products	$184
Fiber optic components	428
Jolt Ltd	51
Zaffire	130
Hyperchannel	19
Other	100
Total	$912

How should MRVC's shares be valued? The "street" uses a sum of the parts approach, mainly because declining revenues and widening losses undermine usual valuation approaches. However, even following this approach, we calculate that MRVC shares are worth about $25. We agree with the "street" and see little value in the networking operations. However, rather than value this division at 2x revenues we think 1x revenues is more appropriate given the questionable value of MRV's networking products. Though the "street" compares MRV's fiber optic business to market leaders, the commoditized nature of its products deserves a lower valuation. We think a 4X multiple of 2000 revenue is generous. While management has promised a public offering of this division, we question management's ability to convince new investors to embrace the Luminent story and to think that it is anything more than a repackaging of the current MRV business.

MRV's start-ups appear to be of questionable value. Only one, Zaffire, seems to have the potential to actually come public, However, public investors have not rewarded parent companies on a 1:1 basis for retained interests in investments that have come public. We think this further limits the risk to selling MRVC shares. Even if Zaffire can achieve a $1.5 billion public valuation, twice the price being asked for the company today, MRV's stake would be worth $260 million on an after tax basis. Hyperchannel may have been a valuable company three months ago, but investors currently shun low margin B2B companies with questionable models. Likewise, Charlotte's Web and Zuma appear to be carve-outs of MRV-NBase's failing network division, and appear late to market. Yet we'll give MRV $100 million in value for the possibility that another investment works. Adding it all up, we come to a value of $912 million.

For our estimate of MRV's share count, we start with shares outstanding as of March 31, 2000 of 28.7 M. We then add the 3.3M shares underlying the convertible debt, 2.8 million in the money warrants and options, and the 5.7 M shares issued in conjunction with recent acquisitions for a total share count of 40.5 million. That calculates to a price target of $22.50 per share.

21. "Plus ca change, plus c'est la meme chose." Nevertheless, for the time being, we won't add a further discount to our $22.50 price target for management's track record of hyperbole and of creating high expectations that have been unmet. We'll just call that the "confidence" factor, because it adds to our confidence that our analysis is accurate. We remind our readers that we wrote extensively on MRV in 1997 and in 1998. Here are a couple of quotes from past reports that may have relevance to today's situation. In July 1998 we wrote: "The company's claim of 34 quarters of consecutive earnings growth lacks credibility. The company has recently borrowed more money, so that it can make more acquisitions, so that it can take more "one time" charges, so that it can continue to make the misleading claim that it is improving its operating earnings before these charges. MRV management is attempting to master this game. However, the stock price action is telling us that fewer investors are being taken in by MRV's accounting chicanery." And in August, with the share price below $7, we wrote: "The MRV "34 quarters of consecutive earnings increase" fiction promoted by the company and its bankers went on for some time before the company finally ran out of tricks used to mislead naive investors into believing that the company actually earned money. This allowed short sellers to benefit handsomely. Our analysis of these financial manipulations and the company's products and fundamental business prospects has been right on target. An understanding of the shenanigans used at MRV to prop up its share price should help investors spot other similar manipulations in the future." We should make an exception for those investors with short memories.

22. Financial projections: ,000

Income Statement	3/00	6/00E	9/00E	12/00E
Revenue	65,072	70,500	73,500	76,000
Cost of goods sold	42,736	46,530	49,245	50,920
Gross profit	22,336	23,970	24,255	25,080
Total R&D	11,891	12,000	12,500	13,000
SG&A	16,028	17,000	18,000	18,000
Total expenses	27,919	29,000	30,500	31,000
Operating income	(5,583)	(5,030)	(6,245)	(5,920)
Other income	(775)	(763)	(1,080)	(1,095)
Income taxes	(494)	0	0	0
Net income	(5,864)	(5,793)	(7,325)	(7,015)
EPS	(0.21)	(0.18)	(0.21)	(0.20)
Shares	28425	32,914	35,581	35,781

Percent	3/00	6/00E	9/00E	12/00E
Revenues	100.0%	100.0%	100.0%	100.0%
Cost of goods sold	65.7%	66.0%	67.0%	67.0%
Gross profit	34.3%	34.0%	33.0%	33.0%
R&D	18.3%	17.0%	17.0%	17.1%
SG&A	24.6%	24.1%	24.5%	23.7%
Total expenses	42.9%	41.1%	41.5%	40.8%
Operating income	-8.6%	-7.1%	-8.5%	-7.8%
Other Income	-1.2%	-1.1%	-1.5%	-1.4%
Taxes	-0.8%	0.0%	0.0%	0.0%
Net income	-9.0%	-8.2%	-10.0%	-9.2%

Y/Y	3/00	6/00E	9/00E	12/00E
Revenues	-7.2%	-3.8%	3.2%	2.8%
Cost of goods sold	-7.8%	-2.2%	10.3%	-13.4%
Gross profit	-6.0%	-6.6%	-8.8%	66.4%
R&D	40.5%	40.0%	47.5%	32.6%
SG&A	1.2%	7.0%	8.9%	-23.4%
Total expenses	14.8%	18.5%	22.0%	-6.9%
Operating income	NM	NM	NM	NM
Other income	NM	NM	NM	NM
Taxes	NM	NM	NM	NM
Net Income	NM	NM	NM	NM
EPS	NM	NM	NM	NM

Income Statement	3/01E	6/01E	9/01E	12/01E
Revenue	77,000	79,000	79,500	80,000
Cost of goods sold	51,590	52,930	53,265	53,600
Gross profit	25,410	26,070	26,235	26,400
Total R&D	13,200	13,500	13,500	13,500
SG&A	18,200	18,500	18,500	18,500
Total expenses	31,400	32,000	32,000	32,000
Operating income	(5,990)	(5,930)	(5,765)	(5,600)
Other income	(1,109)	(1,123)	(1,137)	(1,151)
Income taxes	0	0	0	0
Net income	(7,099)	(7,053)	(6,902)	(6,751)
EPS	(0.20)	(0.19)	(0.19)	(0.18)
Shares	35,981	36,181	36,381	36,581

Percent	3/01E	6/01E	9/01E	12/01E
Revenues	100.0%	100.0%	100.0%	100.0%
Cost of goods sold	67.0%	67.0%	67.0%	67.0%
Gross profit	33.0%	33.0%	33.0%	33.0%
R&D	17.1%	17.1%	17.0%	16.9%
SG&A	23.6%	23.4%	23.3%	23.1%
Total expenses	40.8%	40.5%	40.3%	40.0%
Operating income	-7.8%	-7.5%	-7.3%	-7.0%
Other Income	-1.4%	-1.4%	-1.4%	-1.4%
Taxes	0.0%	0.0%	0.0%	0.0%
Net income	-9.2%	-8.9%	-8.7%	-8.4%

Y/Y	3/01E	6/01E	9/01E	12/01E
Revenues	18.3%	12.1%	8.2%	5.3%
Cost of goods sold	20.7%	13.8%	8.2%	5.3%
Gross profit	13.8%	8.8%	8.2%	5.3%
R&D	11.0%	12.5%	8.0%	3.8%
SG&A	13.6%	8.8%	2.8%	2.8%
Total expenses	12.5%	10.3%	4.9%	3.2%
Operating income	NM	NM	NM	NM
Other income	NM	NM	NM	NM
Taxes	NM	NM	NM	NM
Net Income	NM	NM	NM	NM
EPS	NM	NM	NM	NM

Income Statement	1999	2000E	2001E
Revenue	288,524	285,072	315,500
Cost of goods sold	197,442	189,431	211,385
Gross Profit	91,082	95,641	104,115
Total R&D	35,319	49,391	53,700
SG&A	71,757	69,028	73,700
Total expenses	107,076	118,419	127,400
Operating income	(15,994)	(22,778)	(23,285)
Other income	932	(3,713)	(4,519)
Income taxes	(2,153)	0	0
Net income	(12,909)	(26,491)	(27,804)
EPS	(0.42)	(0.80)	(0.77)
Shares	30,553	33,175	36,275

Percent	1999	2000E	2001E
Revenues	100.0%	100.0%	100.0%
Cost of goods sold	68.4%	66.5%	67.0%
Gross profit	31.6%	33.5%	33.0%
R&D	12.2%	17.3%	17.0%
SG&A	24.9%	24.2%	23.4%
Total expenses	37.1%	41.5%	40.4%
Operating income	-5.5%	-8.0%	-7.4%
Other Income	0.3%	-1.3%	-1.4%
Taxes	-0.7%	0.0%	0.0%
Net income	-4.5%	-9.3%	-8.8%

Y/Y	1999	2000E	2001E
Revenues	9.3%	-1.2%	10.7%
Cost of goods sold	21.7%	-4.1%	11.6%
Gross profit	-10.5%	5.0%	8.9%
R&D	36.8%	39.8%	8.7%
SG&A	27.4%	-3.8%	6.8%
Total expenses	-17.0%	10.6%	7.6%
Operating income	-41.4%	42.4%	2.2%
Other income	-83.9%	-498.4%	21.7%
Taxes	NM	NM	NM
Net Income	NM	NM	NM
EPS	NM	NM	NM