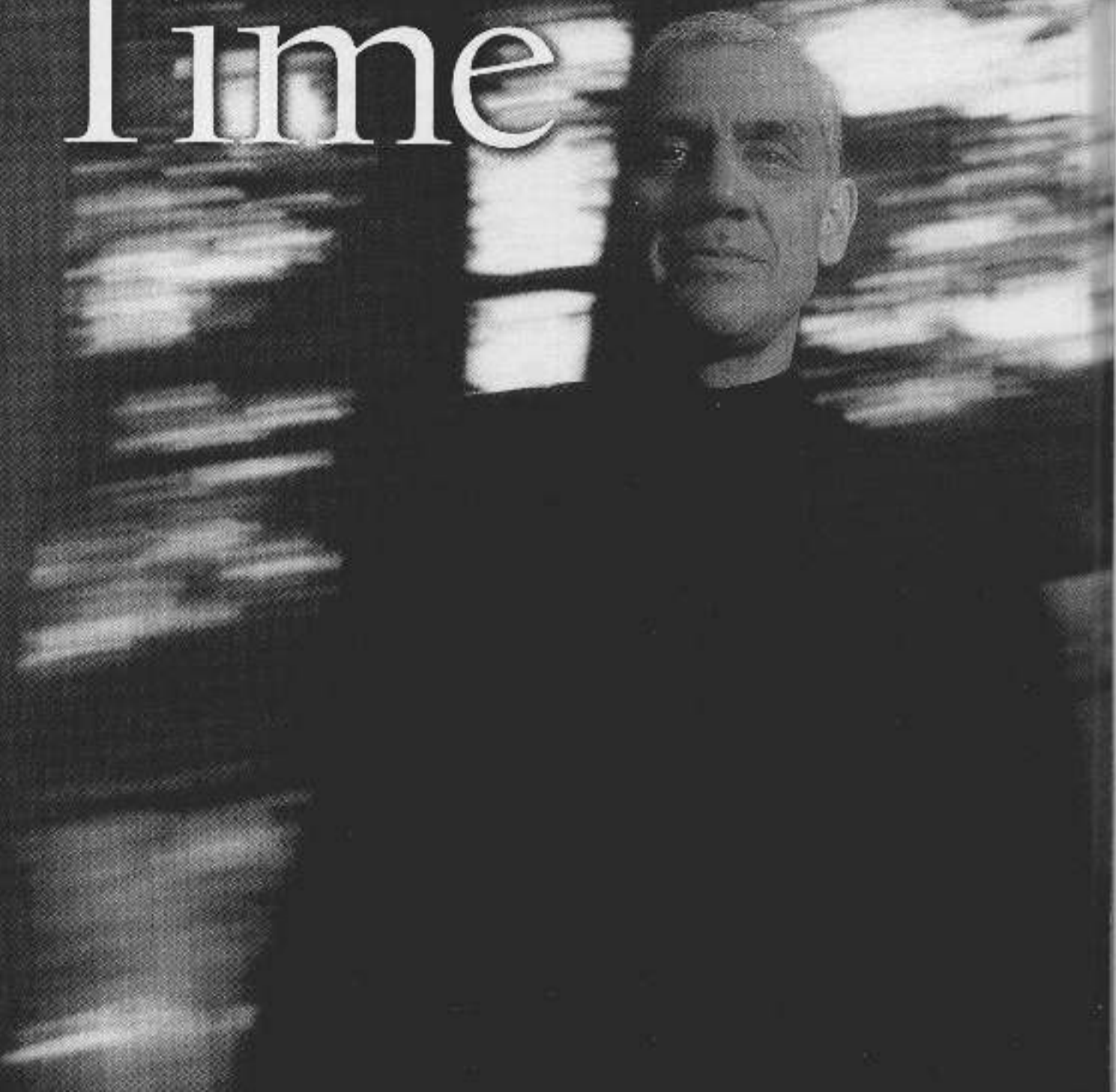


Vinod's Time



Why Vinod Khosla may be the best venture capitalist on the planet. BY OM MALIK

ON AUGUST 26, 1999, Vinod Khosla became the king of Silicon Valley. On that day, Cerent, a tiny and largely unknown optical networking startup in Petaluma, California, conceived by Mr. Khosla in 1996, was snapped up by Cisco Systems for \$8 billion. Cerent had revenue of less than \$50 million, but it made a microwave-sized box that could transfer four million phone calls per second from old copper

telephone lines onto faster fiber-optic cables. Mr. Khosla, a general partner with the venture capital firm Kleiner Perkins Caufield & Byers (KP), had invested about \$8 million for a 30 percent stake in Cerent; an \$8 billion valuation meant that his investment had grown 300 times to \$2.4 billion overnight. Cerent astonished Mr. Khosla's VC peers because, even in the heady days of the dot-com company mania, none of them had ever gotten so much money for such a closely held business. In the weeks that followed, wherever venture hot polloi congregated, the conversation always veered toward the "Cerent deal" and Mr. Khosla.

At a time when the entire VC industry is somewhat discredited, Mr. Khosla's reputation remains unscathed and his companies continue to outperform others in their sectors. At the moment, a combination of luck and persistence have made Mr. Khosla perhaps the best VC on the planet.

His enviable reputation is based on having created more multibillion-dollar companies than any other VC save John Doerr, his better-known KP colleague. Cerent was not his first great success: one of his early Internet bets, Excite, was acquired by At Home for \$5.7 billion in May 1999, and in June 1999 his \$2 million investment in Internet-router maker Juniper Networks was worth \$2 billion. What's more, he has continued to repeat his success since Cerent: in November 1999, Redback Networks acquired Cerent's glimmer-twin, Siara Systems, in which Mr. Khosla had also invested, for \$4.3 billion. In the 24 years he has spent in the United States he has helped to create 40 companies,

which have produced a total of \$150 billion in market value. Directly or indirectly, his efforts have created six jobs for every day he has lived in the United States. His return on investments (a term he abhors because it implies a preoccupation with buying and selling) is enough to put him in the top one percentile of VCs. Mr. Doerr, Arthur Rock of Arthur Rock & Company, and Donald Valentine of Sequoia Capital are the only other VCs that match his record. Mr. Rock's bets on Intel and Apple Computer and Mr. Valentine's \$2.5 million

investment in Cisco Systems have made them part of Silicon Valley legend. Many believe Mr. Khosla is to venture capital what Michael Jordan is to basketball or Garry Kasparov to chess.

The explanation for Mr. Khosla's current mystique is that his most famous deals have been in the decidedly technical areas of networking and telecommunications; he largely spurned the dot-com revolution of the mid-'90s. In other words, Mr. Khosla has been wrong less often, and less spectacularly, than his peers. And while many networking companies have seen the same decline in share price common to the entire high-technology industry, Mr. Khosla's posse has suffered less than its competitors. For instance, Juniper Networks, which he funded, is down 49 percent from its 52-week high, whereas optical networking gear maker Sycamore Networks is off 81 percent from its high of \$189 to \$35 a share. Falling stock prices and inflated market capitalizations notwithstanding, his companies continue to win market share and gain revenue.

Mr. Khosla's very involvement with a startup lends it the credibility of imminent success. Ahmed Afroz, the president, cofounder, and CEO of IP Unity, a telecommunications software company in which Mr. Khosla has recently invested, says that his arrival has made recruiting new employees a breeze. Jagdeep Singh, the cofounder of OnFiber Communications and Lighters Networks, adds that Mr. Khosla can open any and all doors—for partnerships, funding, and new business—within the telecommunications industry.

Despite Mr. Khosla's many accomplishments—

Photography by William Mercer McLeod

Vinod Khosla

cofounding Sun Microsystems or funding Nexgen, the company that provided the guts of the chip that Advanced Micro Devices is using to humble Intel—he has another, more cheerless reputation in Silicon Valley. Rumored to be arrogant, demanding, and imperial, he is said to be impossible to work with. It is whispered that the reason Mr. Khosla must work as a VC is that he is (to use the most charitable word) difficult.

It is a subject that, predictably enough, annoys him. He admits to being demanding and forceful. "Sometimes people say I'm pushy, or whatever. I think too many VCs end up just trying to be popular and I'm not afraid to do unpopular things that are in the entrepreneur's interest," Mr. Khosla says. "I ask new entrepreneurs to go talk to companies and people who have worked with me before."

"Nobody will ever say that I ever did anything that was not in the entrepreneur's interest—but they will say I pushed them through some things that felt really uncomfortable at times. I have never once voted against a management team—not once in 15 years," Mr. Khosla adds. He offers the fact that entrepreneurs choose to work with him again and again as proof of his usefulness to them.

Yet at the same time, he is a father who makes a point of having dinner with his family 25 times a month, obsesses over every single achievement of his four kids, and commands fierce loyalty from those who work with him. And he is the first one to admit that he is romantically involved with each of his companies. Mr. Khosla falls hard for the companies he funds.

A PASSAGE FROM INDIA

Visiting Mr. Khosla in his austere digs at KP's offices gives some measure of the man. As fit and thin as a yogi (he is a keen skier and swimmer), he is the picture of calm. He has no nervous hand movements and never fidgets. He dresses in a kind of uniform: black trousers and a plain white shirt. His pepper-gray hair is cropped short. Mr. Khosla looks like a genetic experiment aimed at eliminating the extraneous and inefficient from human DNA.

His eyes, however, belie his calm mien. Darkly circled, they dart around the room processing information. They suggest something of his drive and the determination necessary to lift a young Indian boy to the apex of Silicon Valley venture capital.

His life is like a classic Bollywood (India's Hollywood) three-act plot. In the first act, the protagonist begins his journey toward success and quickly achieves some early recognition. In Act 2 he struggles and retreats. In Act 3, he rises again like a phoenix and enjoys fame and fortune.

Mr. Khosla was born 46 years ago in Poona, India, on January 28. The eldest son of an Indian army officer, he spent his early years on cantonments and still carries the disciplined and

highly ethical approach to life that characterizes the officer class.

His father wanted him to join the military, but he had other plans. At age 14, Mr. Khosla recalls reading about the birth of Intel in a magazine. Other Indian boys wanted to be government babus (bureaucrats), film stars, or cricket players; Mr. Khosla daydreamed about founding his own business.

"I knew I could start my own company, but nobody in my family had ever been in business," Mr. Khosla recalls. "Frankly, the only people I knew when I was growing up were army people. You know how the army is. You don't even meet anybody in business."

For an Indian whose ambition was to emulate Bill Noyce and Gordon Moore, the only option was to attend the illustrious Indian Institute of Technology in New Delhi. Getting into one of the six Indian Institutes of Technology is a trial that only 2,500—less than 1 percent of the more than 100,000 students who seek admission—make it through each year. Established in the 1940s by the socialist prime minister Jawaharlal Nehru to educate engineers for public-works projects, IIT has historically produced some of the smartest technologists in the

world, including Sycamore Networks' cofounder and chairman Desh Deshpande, 12 Technologies' Sanjiv Sidhu, and US Airways head honcho Rakesh Gangwal.

None has been as successful as Mr. Khosla, who in 1976 at age 21 landed in America with no assets except admission to Carnegie Mellon University's Biomedical Engineering masters program. In 1978, he moved out west to Stanford School of Business. Two years later, at age 25, he started Daisy Systems, his first startup, and one of the first companies to go after the computer-aided design software market.

Daisy Systems was one of the most successful IPOs of 1984, but Mr. Khosla hadn't stuck around that long. He had left Daisy in 1981 to work on a business plan for what eventually became Sun Microsystems.

That year, Austrian-born Andreas Bechtolsheim (see "Death to ATM," July 1996, www.redherring.com/mag/33/atm.html), an electrical engineering graduate student at Stanford University, was building workstations out of spare parts scrounged from Silicon Valley supply shops and selling them for a few thousand dollars to fellow students and faculty.

SUN RISE

While others waxed eloquent about Mr. Bechtolsheim's muscle machine, Mr. Khosla was captivated by the commercial potential of this box. He had already written a business plan for a new type of computer company: a workstation maker that would use open systems, and eventually develop its own chip, in order to combat dominant minicomputer makers like Apollo Computer. Mr. Bechtolsheim's box fit the bill.



Mr. Khosla teamed up with Stanford School of Business classmate Scott McNealy, Mr. Bechtolsheim, and Bill Joy, a Unix guru at the University of California at Berkeley. Thus in 1982 was born Sun Microsystems. Mr. Khosla, like his three partners, was 27.

Sun also brought Mr. Khosla into Mr. Doerr's domain. Mr. Doerr, a KP general partner, became an early champion of the new hardware venture, confident that Sun would be yet another scalp on a belt that already included Tandem Computer, Compaq Computer, Genentech, Cypress Semiconductor, and Symantec. Mr. Doerr's faith was rewarded—within five years Sun racked up annual sales of \$1 billion.

The success of Sun brought fame and fortune. Mr. Khosla was, successively, chairman and CEO. The popular business press could not get enough of him and his partners. Their cars and lifestyles were notorious in Silicon Valley. But within two years of its founding, Mr. Khosla left Sun. It is said that the board pushed him out in 1984. Those who know Mr. Khosla best say he was devastated.

To this day the circumstances of Mr. Khosla's departure are shrouded by the reticence of all concerned. None of Sun's other cofounders wished to discuss the matter. All Mr. Khosla will say: "I was going to go do something else." Mr. Khosla says there were no disagreements, and points out that all four Sun cofounders still "are best of friends."

For a man who could put together great teams and come up with winning ideas, Mr. Khosla was perceived as too prickly to be a great manager. A typical anecdote: despite Sun's early and phenomenal success, Mr. Khosla wanted to buy only cheap Bic ballpoints to save on costs. Why, people wondered, was a CEO micromanaging such details?

Roger McNamee, founding partner of Integral Capital Partners and someone who has known Mr. Khosla since 1986, confirms—with some qualifications—that Mr. Khosla can be difficult. "He has a personality which not everyone can get along with," says Mr. McNamee. "But if you know him then you know he is direct and honest, and has a value system which is rare in the Valley," he adds.

Raj Singh, one of the founders of the networking company Fiberlane Communications, which eventually became Cerent and Stara Systems (see "The Big Switch," October 30, www.redherring.com/mag/84/cyras.html), recalls that Mr. Khosla was always throwing ideas at him and the company's other executives. "It got intense, but he never forced any decisions," recalls Mr. Singh, who describes Mr. Khosla as "tough, very tough, but extremely fair."

The truth, perhaps, is that Mr. Khosla's forcefulness can be easily interpreted as arrogance and meddling. "I pre-

fer brutal honesty to hypocritical politeness any time," he says, "because fundamentally every time you're hypocritically polite in a situation where it matters, the outcome is going to be impacted. You hurt the company."

"If I tell a team they're doing great when I think they're screwing up, then I'm hurting the team," Mr. Khosla says, explaining how he has always confronted entrepreneurs. "I have strong opinions and if you talk to Jagdeep he will tell you I strongly disagreed with his decision to sell Lightera. But I first handed him my signed document, and then I told him, 'now let me spend all my time convincing you not to do it,'" he says. Ciena bought Lightera for \$450 million in March 1999.

Mr. Singh confirmed Mr. Khosla's version of events. "When we brought Vinod into the [Lightera] deal, his reputation was that he was too controlling and always wanted to be in the driver's seat, and we were worried about that," he says. "In six months I changed my opinion," adds Mr. Singh, whose latest startup, OnFiber, has the backing of KP and Mr. Khosla.

"Silicon Valley is very vicious and a certain tint is given to a person," says Mr. Afroz of IP Unity. He was also worried about Mr. Khosla, but changed his mind after one meeting. "I have never met [anyone] more ethical and honest than him," he adds.

Carl Russo, the president and CEO of Cerent, describes Mr. Khosla as an architect. "He pushes, he stretches the team to the maximum, and that creates tension which might piss some people off, but in the end he is trying to build a great company," Mr. Russo says. Nor is Mr. Khosla without a kind of heavy-handed, if cruel, sense of humor—on April Fools'

Day in 1996, he informed Excite cofounder Joe Kraus that the search engine company's IPO had been cancelled, hours before the stock was to start trading. Thirty minutes later he called Mr. Kraus and let him in on the joke. This was, perhaps, more amusing to Mr. Khosla and his associates than to Mr. Kraus.

COMPANY RETREAT

Mr. Khosla's first years away from Sun were anything but happy. He was like Achilles sulking in his tent during the siege of Troy. When he left Sun, Mr. Doerr had persuaded him to join KP—but Mr. Khosla would only commit to working part-time.

For the next two years Mr. Khosla spent most of his time enjoying his wealth. He safaried in Africa, scuba dived, skydived, and studied architecture and design. He spent time at home with his wife and three sheep dogs, and grew grapes in the three-acre orchard on his spread in Portola Valley, a small town nestled in the beautiful Santa Cruz hills near Palo Alto, California. But at KP, he could not resist playing the

'I'M NOT AFRAID TO DO UNPOPULAR THINGS IN THE ENTREPRENEUR'S INTEREST.'

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Vinod Khosla

uniquely American sport of building new companies.

Yet none of his early investments at KP were outstanding successes—and three were among the most famous failures in Silicon Valley history: DynaBook, a laptop maker; Go Computing, a software company that was working on a Palm-type operating system for handheld computers; and iDO, a video game device maker. While Go proved to be too far ahead of its time, DynaBook imploded. On July 26, 1990, Mr. Khosla and Mr. Doerr received a front-page drubbing in an article in the *Wall Street Journal*. This was a great public failure for KP, and Mr. Khosla soon became a VC recluse. The third investment, iDO, proposed to build a gaming device that would become the standard means to connect to what was then called the “information superhighway” from home. But despite being founded by gaming legend and Electronics Arts cofounder Trip Hawkins, iDO failed to deliver on its promise; it has since managed to limp along as a PC games developer, but only barely (see “iDO’s New Trip,” May 1996, www.redherring.com/mag/3t/trip.html).

“Sure, Go did not work out, but there were other deals which people forget,” argues Mr. Khosla. He singles out PictureTel, which “in the early 1990s was as hot as I2 and Arias are today.” (Other winners from that era include Nexgen and Kalpana Networks.) Still, to those around him, it was obvious that Mr. Khosla was not happy. “He was not changing the world,” recalls Mr. McNamee.

TAKING FLIGHT

“Microsoft’s control had slowed the pace of innovation,” Mr. Khosla says. He was disheartened—and essentially retired from Silicon Valley. In 1992 he moved his family back to India, working sporadically for KP over the next three years. “I wanted my kids to know their parents, grandparents, cousins, and their culture. So we spent three years there before they got so old that their schools would be disrupted,” he says, somewhat wistfully.

“Every time I would go back it was 20 hours of flying each way, and I’d pick a topic and pick a book and by the time I got to India, I would be an expert in it,” he jokes. Nevertheless, 40 hours of flying every six weeks meant he did a lot of reading. That airborne thinking and reading (about arcane topics like synchronous optical networks [SONets]) led to what was his first Internet epiphany, in 1993. “In India, I was trying to send email through IIT Delhi’s Education Research Net, and dialing into it was so hard. It was so difficult and it was then I realized the importance of communications,” he recalls. Communications, or rather the need for infinite bandwidth and efficient networks, became his big idea.

Today, on the eve of the broadband networks, Mr. Khosla’s idea seems obvious. But in the early ‘90s, as an insight, it was anything but intuitive. While other technologists and

VCs were focused on interactive TV, he became convinced that Internet traffic would explode and there would be huge demand for bandwidth. He foresaw that demand would overwhelm the telephone companies’ existing networks. For him, this meant funding new companies to develop new technologies. Since 1995, he has brought this big idea to life in a very calculated and detailed manner, and always 24 months or so ahead of the market.

“It wasn’t luck—he went ahead and thought this through and came out ahead of the curve,” says Mr. McNamee. “He was so early and so right about the way the [networking, industry] shook out.”

Others agree with Mr. McNamee’s judgment of Mr. Khosla’s prescience. “He is like a chess player who is thinking four or five moves ahead,” says Henry Nothhaft, vice chairman of XO Communications, a company created after Concentric Networks, a Khosla-backed venture, merged with Nextlink Communications. Mr. Nothhaft remembers that Mr. Khosla urged Concentric not to commit to any long-term deals to buy bandwidth. “He knew the prices were going to fall and in the end it was this lack of long-term commitments which made Concentric an attractive acquisition for Nextlink.”

In 1995, after investing in companies like Excite (then known as Architext; see “Inside Architext,” March 1995, www.redherring.com/mag/19/inside.html) and Concentric, Mr. Khosla was ready to assault the communications mountain. But all the pieces didn’t fall into place until he met (through Mr. Bechtolsheim) Pradeep Sindhu, an engineer at the Xerox Palo Alto Research Center, and funded what would

become Juniper Networks.

Mr. Sindhu, cofounder of Juniper, came to Mr. Khosla with an arcane algorithm that could be used to build a better router than Cisco was selling at the time. It was his way to trump the asynchronous-transfer mode networks with IP. Mr. Khosla suggested Mr. Sindhu develop an “Internet router” instead of the plain vanilla router mostly used within corporate networks because “that is where the world was going.” He gave Mr. Sindhu a check for \$275,000—arguably the best investment anyone has ever made in Silicon Valley.

So far, Juniper has lived up to Mr. Khosla’s hopes. Juniper also suggested another opportunity: merging IP with the more established SONet technology. Fiberlane, his next company, founded in 1996, focused on this opportunity. Other Khosla-funded optical networking companies include Corvis, which in 1997 started developing an optical switch targeting the long-haul or backbone networks; and Zaffire, a metro and regional optical networking gear maker.

Mr. Khosla’s deals in data networking spurred other investments (see “Full Coverage,” facing page). For instance, he

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FULL COVERAGE

Vinod Khosla and KP's investments cover every aspect of the new IP networks.

HARDWARE	THE IP NETWORK	SERVICES
Extreme Networks, Versipal Networks	Enterprise	Corio, Asera, BroadBand Office
Redback Networks, Sierra Systems (sold to Redback), CoSine	Broadband access	Corio, Asera, BroadBand Office
New Access (now Zeffire), Redback Networks, Sierra Systems	IP network edge	Corcon, New Access, Redback Networks, Sierra Systems, BroadBand Office
SS8 Networks, IPWise, IP Unity, Sigma Systems	Telecom software	N/A
Cerent (sold to Cisco), ONI Systems, New Access	Metro transport	Corcon, OnFiber, Concentric Networks (merged with NextLink to form XO Comm), BroadBand Office
Cerent, ONI Systems	Regional transport	Qwest (on the board of directors), Corcon, OnFiber
Juniper Networks	IP network core	Qwest, Corcon
Corvis, Lightera (sold to Ciena)	Backbone transport	Qwest
Kymate, Isilon, Silicon Spice (sold to Broadcom), Ciena	Components	N/A

knew that the bandwidth his new gear would create would eventually have to be used for something—either by corporate users or consumers—and he ended up funding application service provider Corio in September 1998. Like other ASPs, Corio promised to be a heavy user of bandwidth. At the same time, it became clear that while data and its new applications might be the future of telecommunications, it was voice traffic that generated the most revenue. He quickly moved into telecom software companies like SS8 Networks and IP Unity that are developing different types of software to replace the traditional cumbersome voice switch, and allow service providers to offer customers enhanced features like call-waiting and call-forwarding using IP networks.

His other investments have been in optical components. The electronics—or semiconductors—in optical gear cannot keep up with the high speeds becoming prevalent in optical networks, and need to be replaced by optical components. This explains why in the past nine months Mr. Khosla has invested in companies like Kymate, Isilon, and Cerix that are trying to develop new components to be used in optical hardware. "You have to look ahead, and when I look ahead there is a lot of fundamental technology that needs to be done in optical components," Mr. Khosla says.

The ability to look ahead is the secret to Mr. Khosla's success. It requires him to stand apart from the VC herd—something that VCs hate to do—and it has its risks. Looking ahead led him to invest in DynaBook, Go, and iDO—companies that now seem before their time. "To be ahead of the market you can't be a follower. You can't be following what is hot. You have to have your own belief system," he says. "But to me risk is a religion, and I think if you want to go after the big mar-

ket, you need to take it. When we did Nexgen it was seen as a crazy idea to go up against Intel. [But] it fundamentally changed the pricing, performance, and dynamics of the microprocessor market," says Mr. Khosla.

Mr. Khosla reserves particular disdain for the armada of recently funded, recently public optical networking companies. "What you see going on right now is greed—and I know it sounds harsh. You will see a similar situation in the optical space as in the dot-com space," he says.

His disdain has of late seemed justified. The Cerent deal started a dash to fund and take optical equipment companies public. The absence of applications that use the pipes the telecommunications companies have built has created a bandwidth glut, knocking the wind out of most recently public networking companies.

For this reason, he has not funded any optical gear makers in the past year, focusing instead on software and components. A wise move considering that during the last six months, even Mr. Khosla's blessings have not prevented companies like Redback Networks and Corvis from getting a severe drubbing in the stock market.

Mr. Khosla predicts that about 10 percent of the new networking gear makers will survive, and the remainder will meet an ignominious fate. He hopes his teams will win—one reason why KP still retains a large stake in these companies.

Thus, while the rest of the world fixates on optical networking companies, Mr. Khosla is busy building the next generation of software companies, with names like Asera, Centrata, Zaplet, and Zambel. As he once bet on new technologies that could make the networks more efficient, now it is time to overhaul software to make large corporations more efficient. It is too soon to hand out the report card on this trend.

Mr. Khosla's talents for looking ahead, turning arcane technology into profitable businesses, taking risks on entrepreneurs, and sternly upbraiding them for their failings, have made him a much-respected, if not much-loved, figure in Silicon Valley. One final anecdote suggests this concatenation of talents: in 1995, when he first met the founders of Excite, the 20-somethings had developed a technology to search corporate databases. Mr. Khosla told them they were on the wrong track altogether, that they should be thinking bigger. His suggestion: adapt their search engine for the Internet. He then handed them a \$5,000 check on trust and told them to buy a hard drive big enough to test his theory. ☛

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