



STANFORD

GRADUATE SCHOOL OF BUSINESS

CASE NUMBER: E-149
VERSION: MAY 7, 2003

VMware

INTRODUCTION

Diane Greene, co-founder and CEO of VMware, had accomplished a major feat the week of July 4th, 2002: After an eight-month search, she completed the last of three major hires to fill out the company's executive team. She had hired Kirk Bowman, a former Inktomi executive, to the position of Executive Vice President of Worldwide Field Operations. She had recently hired two other executives: Paul Auvil as Chief Financial Officer and Don DeSoto as Executive Vice President of Marketing. All three are seasoned managers who have nearly a half-century of work experience between them and have held positions such as CFO and Senior Vice President at large, public companies. In their respective job search activities, each of them had been considered for CEO or COO positions in other companies.

With a solid customer base, consistently growing revenue, and a potential IPO on the horizon, it was important that Greene have the right managers in place to take the company to the next level. VMware's executive team now consisted of Greene, CEO, Dr. Kieran Harty, Executive Vice President of Engineering, Betsy Sutter, VP of Human Resources, and the three recent hires—Bowman, Auvil and DeSoto. Mendel Rosenblum, Chief Scientist and co-founder, was also actively involved in setting the strategic and tactical direction of the company.

The task ahead for Greene was significant: integrate three high-powered executives from diverse backgrounds and cultures into a management team and company; add a strong sales culture to an "engineering" company; introduce structure and process for future growth into a relatively informal, familial setting; and hand off many of the functions that she herself had been intimately involved in to others.

Jamie Earle prepared this case under the supervision of Mark Leslie, Lecturer in Business, as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

This case was made possible by the generous support of Michael Mader and Mariam Naficy.

Copyright © 2003 by the Board of Trustees of the Leland Stanford Junior University. All rights reserved. To order copies or request permission to reproduce materials, e-mail the Case Writing Office at: cwo@gsb.stanford.edu or write: Case Writing Office, Stanford Graduate School of Business, 518 Memorial Way, Stanford University, Stanford, CA 94305-5015. No part of this publication may be reproduced, stored in a retrieval system, used in a spreadsheet, or transmitted in any form or by any means — electronic, mechanical, photocopying, recording, or otherwise — without the permission of the Stanford Graduate School of Business.

ABOUT VMWARE

VMware was founded in 1998 to bring mainframe-class virtual machine technology to industry-standard computers. The company's software—primarily for the Intel x86 architecture¹—serves as a layer of abstraction between a computer's software and hardware layers and allows users to run multiple operating systems (OSs) on the same machine. The company offers three main products: i) **VMware Workstation** (desktop software that allows users to partition a single workstation); ii) **VMware GSX Server** (server software that allows users to consolidate and partition server resources to allow cost effective and rapid, stable application deployment); and iii) **VMware ESX Server** (a turbo-charged version of GSX server that enhances scalability and resource management capabilities).

While the VMware Workstation product is listed at a price of \$299, the GSX and ESX Server products range from \$2,500 to \$30,000. A typical enterprise sale is composed of 70 to 80 percent up-front licensing, five to 10 percent up-front implementation and service, and 15 to 20 percent ongoing support and maintenance.

VMware has more than one million registered users and 5,000 corporate customers in 100 countries. The company employs nearly 300 people, has enjoyed consecutive revenue growth quarter-to-quarter since first product shipment, and is profitable. VMware is privately held and has undergone one seed funding round and one corporate round (bypassing a traditional venture capital round in between).

VMware sells its products through a multitude of channels, including the Web, direct sales, value-added resellers (VARs), and original equipment manufacturers (OEMs). The company has joint marketing and technology partnerships with all of the major Intel vendors, including IBM, Hewlett-Packard, Dell, Intel, and Microsoft.

VMware understood the need for IP protection around its inventions from day one and began working with an in-house patent attorney a couple of months after the company's founding. VMware has two granted patents and several more pending.

¹ x86 is the generic name for the series of Intel microprocessor families.

WHAT IS A VIRTUAL MACHINE?

A *virtual machine* typically refers to a piece of software that sits between a computer's software and its OS and hardware, and serves as an abstraction layer between software and hardware components. The virtual machine virtualizes the hardware resources, essentially decoupling the hardware from the software or, as in any virtualization, decoupling the logical from the physical. The virtual machine essentially intercepts software instructions that normally would go to a computer's hardware, and then either passes them through or performs emulation depending on the specific instruction. The software simulates hardware devices such as input/output, buses, memory controllers, and so on. (See Exhibit 1.)

Virtual machine technology got its start in the mid-1960s, when engineers from IBM developed a way to partition the resources of a mainframe computer in order to study the effectiveness of certain new features without impacting the rest of the computer.

In the years following, software engineers have found many applications for the concept. One of the most common, since the VMware product launch, is the ability to run multiple OSs on the same platform (such as multiple instances of Windows or Windows on Linux). This enables companies to continue to run legacy software applications (that were initially optimized for older OS versions) with new OSs. A second application is the ability to create “sandbox” testing environments—defined sections of computing environments whose access to resources, such as memory and operating system services, is limited so developers can test their software without compromising the rest of the system. Finally, information technology (IT) managers and Chief Information Officers (CIOs) can apply newer applications of the concept to the enterprise or data center to achieve better utilization of processor resources and hardware through server consolidation and virtualization, as well as to provide rapid provisioning and cost effective high availability. Essentially, virtual machines make it possible to manage hardware independently from software so that software services can be deployed on a pool of machines without detailed management of which software maps to which machine and operating system. The company believes that, ultimately, virtual machines will be a fundamental building block for the new “utility data centers”² that the major hardware and software vendors are developing.

Today, companies such as IBM, Sun Microsystems and Hewlett-Packard use the virtual machine concept in their proprietary computer system architectures. Offerings that include the concept vary widely, from ones that offer hardware-based, static solutions running on only certain platforms, to ones that offer more software-based, dynamic solutions developed for multiple platforms. They also vary by type of machine: mainframe, workstation or server.

THE MARKET

Although virtual machine technology has been around for decades, it cannot be measured as a discrete market. The term “virtual machine” is used to describe technologies that can differ

² “Utility data centers” is the generic term used by technology vendors to indicate the ability of IT resources, such as servers and storage capacity, to be used (and paid for) on an as-needed basis. The term also implies the ability to manage those resources from a single, central point, such as a Web page.

widely, which means it's difficult to determine which lie within the market's boundary. Furthermore, most development of this type takes place inside large corporations, which makes it difficult to break out spending, valuation and revenue metrics.

That said, IDC recently informally sized the market for Intel computing virtualization software as being \$600 million by 2006. One can gain a more in-depth understanding of VMware's market and revenue opportunity by looking at "surrogate" data such as installed base and shipments of products for which VMware's software was developed. According to research firm, IDC, the installed base for the x86 architecture (both desktop and server systems) is 534 million units as of mid-2002.³ Furthermore, according to IDC, shipments of Intel servers totaled 3.7 million units in 2001. According to IDC Senior Analyst, John Humphreys, that number grew by 6-8% in 2002.

Humphreys describes VMware's market opportunity:

One of the things we see happening is that fewer and fewer high-end systems are being purchased as companies want to add computing power modularly. They are buying it in smaller and smaller chunks as they need it. They are buying what they need when they need it. As you distribute all this computing capacity throughout the organization, the trick is managing it. That's where we see the opportunity for automation and virtualization. By aggregating systems and distributing workloads, customers can reduce both their operating and capital costs.

THE COMPETITIVE ENVIRONMENT

The competitive environment for pure-play virtual machine solutions is relatively small, and has thus far been dominated by VMware. While large corporations such as IBM incorporate their own flavor of virtual machine technology into their proprietary products, many (including IBM) use VMware products on their Intel-based, industry standard hardware. Also, a small handful of startups exist to address various segments of the market. The two most known examples are Connectix and SWsoft. Analysts have noted that these players' products have limited functionality, and address only a sub-segment of VMware's market.

Gartner Research, another research firm, comments:

Other software-partitioning products for Intel architectures are becoming available. Examples include SWsoft's Virtuozzo, which allows many Linux systems to be run on a single server under one primary Linux kernel, and Connectix's Virtual PC, which at present is available only as a desktop product.⁴

Jeff Byrne, VMware's VP of Corporate Strategy, explains the company's take on the competitive landscape: "The net impact [of having competitors] has been positive. It helps to validate the market. The other, less obvious, impact is that it's motivated us internally to sharpen up our

³ "Worldwide Installed Base Forecast and Analysis," IDC, July 2002

⁴ "Logical and Software Partitioning in Server Consolidation," Gartner Research Note, May 7, 2002

offerings, and to reevaluate what we're doing. Every time Connectix announces something, that's motivation for us."

FOUNDING THE COMPANY

Stanford Computer Science professor, Dr. Mendel Rosenblum, and his two PhD candidate students, Edouard Bugnion and Scott Devine, conceived of VMware in mid-1997 as a result of their work in building scalable operating systems. Explains Rosenblum:

I was talking to various high-technology companies about some of the techniques that we were using to build scalable OSs. I was talking with Sequent Computer about building an OS that had security and fault tolerance and one of the guys there said: "That's nice, but we don't have that many OS engineers to work on the project. And we want Windows to run on our machine but we wouldn't be able to convince Microsoft [to help]."

On his way back to California following the Sequent meeting, it occurred to Rosenblum that the solution to Sequent's problem would not be to obtain Microsoft's help but rather to find a way to run an operating system that is secure and fault-tolerant, but also one on which users could run Windows applications. And, he thought, the best way to do that would be to use the virtual machine concept.

We were working in stealth mode at Stanford—partly because it's a little embarrassing to be working on virtual machine technology 20 years after everybody else. We submitted a paper on Disco⁵ to a premier conference on OSs and a couple weeks later, I got an email from the committee program chair asking to release my name (it's supposed to be blind reviewing). I immediately got an email from Microsoft asking for a copy of the paper.

During this time, Diane Greene was winding down her involvement with an online advertising company for whom she was doing consulting work.

Greene had more than 20 years of experience in the high-technology industry. She served in management positions at Silicon Graphics, Tandem, and Sybase. She also founded and served as CEO of Vxtreme, a streaming video company that sold to Microsoft in 1997. She was a serial entrepreneur. She was also married to Rosenblum.

Interest in the Disco paper from high-technology companies provided a stimulus for Bugnion and Devine, who became interested in starting a company around the virtual machine concept. Greene and Rosenblum also began brainstorming what a potential company might look like. They wanted to build a product that would allow users to run multiple operating systems on a single piece of hardware through consolidation and virtualization. Despite the excitement of starting something new, Rosenblum had other concerns: "I was coming up for tenure [at Stanford] and needed to publish papers. It wasn't great timing."

⁵ Disco is the name of the virtual machine project that Dr. Rosenblum undertook at Stanford prior to founding VMware.

Despite his full plate, Rosenblum pushed ahead with the project. Bugnion and Devine were exploring how the group could work with a hardware manufacturer to bring their product to market and gain customer acceptance quickly. The two set up a meeting with a senior-level executive at DEC that Bugnion had met when he interned for the company over a prior summer. Rosenblum went with them. The executive was elusive about his interest in the group's project, but offered the three jobs on the spot by the end of the meeting. This made Rosenblum realize two things: i) his team had stumbled onto something valuable; and ii) they would not be able to develop a server-based product without the help and support of a major hardware manufacturer. He also realized that there would be little incentive for such a manufacturer to be cooperative without exerting significant control over the project.

Leading with the Desktop

Upon returning to Stanford, Bugnion and Devine expressed interest in working with DEC. Greene and Rosenblum found the plan to be acceptable but not appropriate as a base on which to build a company—it would be more like a high-end consulting contract for Bugnion and Devine. The group discussed other ideas that would form a more solid foundation for a software company.

The group came up with an alternative idea: Why not build a similar version of the product for a personal computer? The advantage: “We wouldn’t have to depend on anybody. It would be totally up to us,” explains Rosenblum.

Bugnion and Devine agreed that it would be wise to go to market with a desktop product rather than a server one. Even though it was clear to the group that the server market was where the financial rewards were, the only way to approach that market was through the hardware manufacturers. The group wanted the opportunity to achieve traction and it became clear what they needed to do: build a robust product on the desktop, sell it through a low-cost channel, obtain market validation through customer and revenue growth and become an attractive partner such that the hardware manufacturers would derive value from partnering with VMware.

Excited about the prospect of building a company from the ground up, the four proceeded to design their first product and lay the groundwork for a company.

Getting off the Ground

By late 1997, the group decided to go ahead with the business. In addition to developing the technology, it would also need to address the requirements to create a business plan, develop an operating budget, get incorporated, hire a team, and raise money.

Greene officially joined the effort as President. She hired a corporate attorney from Wilson Sonsini Goodrich & Rosati to incorporate the company and put together a pre-seed round of funding, with money from each founder and his or her immediate family members. In total, the group raised approximately \$300,000, with Greene contributing close to \$200,000. She had sold

some of the Microsoft stock she had received from her first startup, VXtreme, which was purchased by Microsoft, to contribute initial funds.

The group decided to bring in a fifth person to the founding team: Dr. Edward Wang. Wang knew Rosenblum and Greene from the computer science PhD program at U.C. Berkeley, and had worked with Greene at VXtreme. The two knew Wang to be a strong systems builder, and, as Rosenblum put it: “He is a person who has delivered product before.”

VMware incorporated and began official operations in January 1998.

Bootstrapping

Early on, the company survived on little money. Explains Greene: “We were so frugal. I worked for free for the first year and for \$50,000 the second year. Mendel was free as well that first year. The grad students worked for grad student salaries. We waited until we were 12 people before I got help in the way of an office manager.”

The company also worked from “virtual” offices. Rosenblum comments:

Ed [Bugnion] had a three-bedroom apartment over in Menlo Park. He had this housemate who was French and having trouble getting her visa, so she was stuck in France. We set up the company—the technical part of it anyway—in that spare bedroom. And Diane just used a spare bedroom in our house as her office. We had company meetings at our house or a restaurant, usually coincident with some office space that we would be evaluating as our next home. The bubble was just getting going at that time and office space was both expensive and difficult to find. We wanted something in the Palo Alto/Menlo Park area, didn’t care much about the appearance and, so, scoured the area for low-end prime location property.

Diane recalls some of VMware’s first technology purchases, one of which was computers from a little known startup called VA Research (later to be VA Linux, one of the hottest IPOs of 1999). “We had to get a cashier’s check to buy our first computers from VA Research. Larry Augustin sold us our first computers. We put them in our car and drove them over to Ed’s place. Also, our first company printer doubled as our fax machine and copier.” In April 1998, the company moved into real—if meager—offices. “We needed more space so we could start building up the team. There was space available in Town and Country shopping center. It was a two-room suite above the Japanese restaurant and the village cheese shop. We were there for two months and then moved to a space behind the car wash, also in Town and Country. That space had been nicknamed the “Crack House” by Healtheon, the previous tenants. We rented a pickup truck and all helped in the move, carrying computers and furniture up and down the back fire escape. We just didn’t spend money—about \$15,000 per month in the beginning. We were always able to get the right size office space for what we needed, and then upgrade to something bigger. We didn’t get stuck with some horrible lease.” At the Crack House, we initially rented only the first floor and then were able to take over the second when we added our first marketing person. It was a huge commitment when we moved to our current Porter Drive home, something like \$200,000

per year for three years. We finally reasoned that we had secured a rent that would allow us to sublet if worse came to worse. We were always big on worst case scenarios and seeing a way to cover them.”

LAUNCHING THE BETA PRODUCT

In early 1999, VMware launched its demonstration product and Web site. An early article in USA Today features some of the “hot products” from the Demo 99 conference, and writes about VMware:

VMware has created operating system magic using its Virtual Platform technology to run multiple operating systems at the same time on a single computer. If that's not enough, they then crashed one of the guest operating systems, closed it down and recovered to a point before the crash. Now that's the way a computer should work.⁶

The following month, the company launched its beta product, to be sold exclusively over the Web. Explains Byrne:

We went with the Web to avoid building a large sales force. At the time, we didn't know of any other small software company who had looked to focus all initial sales and marketing through the Web. The underlying tools were lacking. We took the unusual step of making a full, unencumbered evaluation copy free for a 30-day trial simply by registering an email address on our website. We were fortunate that our product was small and installed easily, otherwise it would not have been a workable strategy. In general, our early users were sophisticated developer-types who favored open source. We wanted to make the evaluation and purchase of the software as simple and straightforward as possible—no haggling or corporate approval. Going this route would allow us to get important early feedback on the stability and features in the product; it would allow us to work with our customers from day one. We offered the workstation product at a \$299 commercial price and \$99 for hobbyists. Even at this price point, though, we still had some doubts.

VMware launched its beta product on a Saturday and experienced such an onslaught of visitors downloading the product, that “...it brought the site to its knees within a few hours.” There were 1,000 downloads per day. The company used this beta period to collect user feedback on bugs and improvements. It was able to collect feedback from 500 users. By the time VMware went “live” with its 1.0 product and Web store in May, the company had 60,000 registered users.

By July, 100,000 customers had downloaded the evaluation copy of the product, and the credit card payments closely tracked the company's daily expenses. “It was gratifying to see all the people who had tried the product coming back to purchase it.” Today, the company has grown that number to more than one million.

⁶ “Hot Products from Demo 99,” *USA Today*, February 18, 1999

In late 2000 VMware announced its server products, the GSX and ESX servers, and launched them both in 2001. The company began targeting large enterprises and data centers. During that time, it also continued to release new versions of the original workstation product.

INDUSTRY AND MARKET CONTEXT

There are several industry and market trends that both helped and hindered—but mostly helped—the company throughout its history.

The first such trend is the Linux wave, which gained momentum in late 1998. The IPOs of Red Hat Software and VA Linux, both in 1999, marked the height of this wave, followed by the appearance of Linus Torvalds on the cover of *Upside* magazine in early 2000. People loved Linux because it was designed as a free or low-cost OSs comparable to UNIX. It also has the reputation of being fast and efficient. Its availability, openness and low cost have attracted a large community of users, and have made the OS a popular alternative to UNIX. Because one of VMware's initial visions was to allow Windows to run on Linux, the company's products gained popularity partly as a result of this wave.

In addition to threatening UNIX, Linux has also impacted Microsoft. With its open source, low cost and myriad engineers backing the popular OS, it was possible that Linux could gain the requisite momentum to threaten Microsoft's power in the industry.

The second trend is a move toward hardware consolidation and virtualization, which is still taking place today. As enterprises seek to achieve more efficient use of their hardware and extend the life of their software, they are increasingly looking for ways to get more out of their technology assets. One trend is to reduce the number of low-end servers in the enterprise and partition the resources of the high-end servers to achieve higher utilization at lower cost. A second is to set up “sandbox” development and testing environments more quickly without compromising the network. A third trend in large enterprises and data centers is to “virtualize” servers with an abstraction software layer in order to achieve control over hardware components, higher utilization of networked resources and fault tolerance. These trends have helped VMware gain traction in enterprises and data centers, as the company is able to meet pre-existing demand and demonstrate that its products pay for themselves almost immediately through reduced total cost of ownership.

Finally, a fourth trend is the rise of Intel hardware for servers. This has put the industry on a steep curve for improvements in processing speed and power, and has made hardware inexpensive at high volumes.

The market and economic environment has also served as a backdrop through VMware's history, from the dotcom and stock market boom in 1998-2000, through to its bust and bottom in 2000 and 2001. Today, despite the prolonged difficult technology market, VMware has been able to grow sales quarter over quarter, achieve profitability and preserve its cash for future initiatives.

FUNDRAISING

In January 1999, the company raised a seed round of funding of approximately \$3 million. Investors included a number of well known Silicon Valley technologists including MIPS founder and current Stanford President John Hennessey, Sun Microsystems co-founder Andy Bechtolsheim, Scopus Technology co-founder Ori Sasson, and Stanford Professor David Cheriton.

Greene describes the company's fundraising history: "The initial seed round was raised from people that we knew well. They visited us once and then invested. Three of the seed investors had also invested in VXtreme. We met with VCs on and off through the first three years of the company and somehow were never able to find a way to take an investment."

"Early on, I felt that VCs could add a large amount of value, but we were an old-fashioned software company that didn't want to spend much money and this was with the backdrop of the [dotcom] bubble going on."

"Just before we launched the first product, we had secured a term sheet from a major company in our industry but we were uncomfortable with some of the IP concessions that were required. Then the launch of the product was so successful in funding our operations that we passed. I'd always had a rule that we needed a three-month runway in case things went bad; in the 1998-2000 climate, three months seemed like plenty of time to raise money. Then, in 2000, the company was getting sizable enough and showing enough promise that it seemed like we should have at least a one-year runway."

The company continued to talk to VCs and corporations and ended up closing a round for \$26 million in 2000, led by Dell Ventures and including Veritas, JP Morgan, Goldman Sachs and Azure Capital.⁷ None of the investors took a board seat or held board observer rights.

RECRUITING THE BOARD

One of the reasons VMware's management wanted a VC to invest in the company was to secure a strong board of directors. VC suitors also pointed this out to the company. However, the company and potential VCs just couldn't agree on an appropriate growth trajectory for the company, with VCs wanting to expand quickly and VMware wanting to take a more conservative approach. So, management decided to try to recruit a top-quality board on its own.

Larry Sonsini, Chairman and Managing Partner at Wilson Sonsini Goodrich & Rosati, was the first outsider to join VMware's board. Over the next two years, Greene continued to fill out the board by recruiting Paul Levy, co-founder, Chairman and former CEO of Rational Software, Mark Leslie, Director and former CEO of Veritas, Timothy Marnier, General Partner at

⁷ It should be noted that, while some of the participants were VC firms, the financing was considered a corporate round and was led by Dell's venture arm.

Greenwood Capital and former CFO of Chip Technology, and Steve Luczo, CEO and Chairman of Seagate Software.

Larry Sonsini, Chairman and Managing Partner, Wilson Sonsini Goodrich & Rosati

Sonsini joined Greene and Rosenblum on the board of directors in June 1999, shortly after the company began shipping product. Greene realized she would need partnerships with the major players in the “Wintel” industry, and thought that, among other things, Sonsini’s advice would be invaluable. She arranged a meeting with Sonsini through the WSGR lawyer with whom she had been working, and recalls liking him instantly.

When I first walked in [to his office] and said ‘I’d like you to join my board,’ he said ‘I’m busy getting off boards. I can’t join any new ones.’ I said ‘That’s fine. Let’s still talk.’ I figured I’d just have the meeting and maybe learn something from him. We had an interesting conversation. It was Friday, and he said he’d get back to me on Monday. He left me this voicemail Monday morning that said ‘I’m inclined to join your board.’ He didn’t say ‘I will;’ he said ‘I’m inclined...’ I called him up and said ‘That’s great you’re *inclined* to join our board. Does that mean you’re *on* our board?’

Sonsini recalls why he was interested in joining VMware’s board:

[Greene’s] objective...is to build the next great software company and she started to think ahead looking out a year of what kinds of disciplines she needed. Having laid that all out and knowing that what I do is help build companies, it was a natural adjunct to ask me to get involved at the board level. I like the fact that a woman was starting a software company and had the dream to build a big company. There haven’t been that many in the industry, although I have been involved with a lot of them that have, such as Sandy Kurtzig and Carol Bartz. The second thing I like is the technology. I think that what [VMware is] doing is going to be increasingly valuable. Third, I like the business plan the way [Greene] is building it. [The company] didn’t need to run off and get venture capital, for example. They had a lot of early momentum.

Paul Levy, Co-Founder, Chairman and Former CEO, Rational Software

Greene met Levy through a mutual friend, Ori Sasson, founder and former CEO of customer service software company, Scopus Technology. Levy had just stepped down from the CEO position at Rational Software, and was looking to join a board of directors.

Greene and Levy did not have a meeting of the minds during their first encounter. Levy wanted to grow VMware and take the company public more quickly than Greene thought was appropriate. The two agreed to have a second meeting, and Greene recalls having “...an incredibly good conversation. Paul agreed to join the board and we were feeling quite fortunate.” Levy joined VMware’s board in July 1999.

Levy co-founded and ran Rational Software, a software development tools company, until April 1999, when he resigned. He also co-founded Catapult, an application service provider that was spawned out of Rational, which Levy later sold back to Rational (the company announced in December 2002 that it would be acquired by IBM).

Mark Leslie, Director and former CEO, Veritas

Greene sent a second letter to Mark Leslie. She explains:

I'd always thought that Veritas has the closest business model to VMware of any major enterprise software company. I started asking people about Mark and got very positive responses. It didn't matter who I talked to. Mark just sounded like a really down-to-earth person with immense accomplishments.

Larry offered to call and ask Mark onto the board. Mark suggested Fred van den Bosch [Veritas's EVP of Product Strategy and New Product Initiatives], but it was Mark's experience and know-how I was after. I was from a technical background and felt that Mark's position as CEO and Chairman, and—while he was also a technical visionary—his sales background would prove invaluable and highly complementary. Fred was too similar to Mendel and me; we didn't need more like ourselves. I wrote Mark a three-page letter, saying: 'I don't think you're ever going to have a company where you can exploit your experience more than at VMware.' He called and said 'Okay, let's have lunch.' I invited him to the next board meeting. He didn't come to [that one], but he came to the next one.

Explains Leslie:

I was intrigued when I got Diane's letter. I checked it out with our technology people. I investigated the company and felt that there were many parallels to the development of Veritas. I liked their board (Larry and Paul at the time), liked Diane, liked the culture of the company (very reminiscent of the early days at Veritas), liked the market, and liked the rich technology. I also liked their capital situation—financed without traditional VC, plenty of money in the bank, and it seemed like the company could move to break-even without raising more.

Leslie joined VMware's board in August 2000.

Leslie has served on Veritas's board of directors since 1988, and became the company's founding CEO in 1990, about a year after it restarted as a software company. He grew the company from 12 employees and no revenue to 5,500 employees and to \$1.6 billion in revenue annually over the 11 years that he led the company. In January of 2001, he hired his replacement and, at the end of that year, relinquished the title of Chairman to the new CEO. Leslie remains an active board member at Veritas and also serves on the boards of Avaya Corporation and Webex Corporation, as well as several private high-technology companies.

Tim Marnier, General Partner, Greenwood Capital and former CFO, Chip Technology

In mid-2001, Leslie suggested approaching Marnier to join the board. Leslie explains:

Tim is a world class CFO. All boards of directors, particularly as they move toward being a public company, should have a balanced board of directors, which includes a strong financial expert. Interestingly, the Sarbanes-Oxly⁸ act now requires such an expert on audit committees of public companies. I've known Tim for about 20 years, and have worked with him in the past.

Marnier serves as General Partner and Chief Operating Officer at Greenwood Capital and focuses on managing the firm's internal operations, including people, processes, and systems. Before joining Greenwood, he served as CFO of Chip Technology. Marnier also sits on the boards of Polycom, Silicon Image and GRIC Communications, and has been an advisor to MIPS Technology, Inktomi, and Real Networks.

Steve Luczo, CEO and Chairman of Seagate Software

Greene approached Steve Luczo about joining the board in May 2002. She explains:

In a brainstorming session, both Mark and Larry recommended we bring in Steve. I said: "Why do we need another storage person?" It took us a while to get in touch. I did some research on him, then, finally, met with him. We had a great meeting and I thought: "What was I thinking? This guy would be invaluable to the company and great to work with." Then I went into recruit mode.

Luczo recalls spending several hours with Greene during their first meeting, discussing Greene's management philosophy, the company's technology and product roadmap, and, finally, what she was looking for in a board member.

I thought Diane was fabulous. Our meeting confirmed what Larry and Mark had told me about her. I was intrigued about what the company was doing and how I could contribute. Given the amount and nature of the intellectual property, and what the company's technology and products can do...I think it's a company that has the potential to be among the top 10 most important software companies.

Luczo has been CEO and a director of Seagate since 1998. Prior to that, he served as COO of the company. In addition to VMware's board, Luczo sits on the boards of Veritas and e2open as well as All-Stars Helping Kids and the Sharks Foundation.

⁸ The Sarbanes-Oxley Act, signed into law by President Bush in July 2002, is aimed at eliminating corporate accounting fraud and deceptive management practices by requiring top corporate officers and managers to certify companies' financial reports and make financial disclosures, and by requiring financial and law professionals to restructure their operations to avoid conflicts of interest in the assistance they provide their corporate clients.

Evolution of the Board of Directors

The role of the board has evolved over time. Explains Leslie:

Board meetings were originally very, very informal. The company was small and simple as well. As a matter of fact, if you were a casual observer passing through, I am not even sure you would know it was a board meeting that was happening. As the company has grown, and as we have filled out both the board and the executive team, we have seen the board meetings become longer, cover more information, and have richer discussions on strategic issues. However, the board is still quite informal and focuses well on the key issues.

In addition to overseeing management, many board members also take on the responsibility of self-monitoring: making sure *the board* is adding value and working effectively. In mid-2001, it became apparent that Levy, the second outside member to join, had other responsibilities on his plate that caused his level of commitment to VMware to suffer. He had co-founded Catapulte and was busy with the birth of his first child. Leslie suggested the need to confront the issue of Levy's lack of active participation in the company. Leslie explains:

Paul was an excellent director, and we valued his participation. He had joined the company before me, but he and I had both been in Silicon Valley since the early 80s and had bumped into each other a few times along the way. I liked him a lot. However, his attendance at meetings had become a problem. He was sometimes unavailable, sometimes canceling at the last minute. It had become very difficult to schedule and keep board meeting dates firm. I suggested to Diane that we needed to address this issue. Our first choice was to keep him on the board and get his commitment to attend meetings and work on behalf of the company. However, if we could not get his commitment, then we should ask him to resign so we could fill the slot with a person that could devote the needed time. So we asked Diane to discuss this situation with him.

Paul had independently reached the same conclusion as Mark—that he just did not have the time for an outside director role. Much to Greene's disappointment, he resigned in July 2001.

Two years later, another member's circumstances changed following his joining the board. Following his tenure at Chip Technology, Tim Marnier joined the venture capital firm, Greenwood Capital as General Partner and Chief Operating Officer. Although he joined as a full partner, he continued to participate on the boards of directors whose seats he held prior to joining Greenwood, including that of VMware.

Explains Leslie: "When Tim joined the board, he did so as an angel investor and a 'free-lance mentor capitalist.' He joined a venture firm shortly thereafter and his ability to mentor declined. Also, he now has a small conflict of interest: As a partner in his firm, should he be spending professional time with a company in which the firm is not invested?"

BUILDING THE TEAM

“Building a world-class executive team had been a priority from day one but, for two reasons, the company was fairly lopsided,” explains Greene.

We had a world-class engineering organization and some very smart people on the business side but not an organization that could match the R&D side of the house. The two reasons were i) the company’s products are highly technical and without server customers, it was non-obvious to a business person what the opportunity was, and ii) the bubble was going on and any business person worth her salt had a high likelihood of making millions in a few months by just signing on to one of a myriad of hot soon-to-be IPOs. Now that the bubble was subsiding and VMware was getting substantive traction in enterprises with both the desktop and server products, it was time to re-focus on the business-side executive team.

The Existing Team

The existing executive team included Greene, Rosenblum and Dr. Kieran Harty, Executive Vice President of Engineering, Betsy Sutter VP of HR, Jeff Byrne, VP of Corporate Strategy, and Tom Jurewicz, VP of Finance. Dr. Harty rounded out the team with 15 years of engineering and management experience. He had served as Vice President of R&D at Inprise Corporation and Chief Scientist at TIBCO. He also has a doctorate in Computer Science from Stanford. He explains what attracted him to VMware:

I joined the company in June of 1999. [I got to know the company] through my former advisor at Stanford. I knew Mendel because he had been on my thesis committee. Initially I was kind of skeptical about the company. It was the peak of the dotcom [era], and [the company] seemed to have a bit of a Linux focus to it. But what intrigued me was that the people were very good. And the possibilities on the server side were actually what brought me here.

Harty has led R&D since joining the company, and has led the transition from producing a workstation product to a server one.

In the summer of 2000, with sales growing and the server product due to launch in early 2001, the company was pushed by a number of forces to consider an IPO. VMware conducted a bake-off and secured Goldman Sachs as the lead, with Credit Suisse First Boston as co-lead and JP Morgan as the third underwriter on the IPO banking team. The company’s next step was to bring in a CFO. Greene explains:

We conducted a somewhat hurried search with a recruiter that was in the process of retiring due to his dotcom windfall. We hired a very smart but somewhat big-company CFO. The company was still small—that required everyone to roll up their sleeves and it was unclear what the role of the new CFO would be. Compounding the problem was the increasing realization that an IPO was not likely to make sense soon, owing to the falling market. We

parted ways amicably and the finances of the company remained under Tom's able leadership.

By spring 2001, VMware's sales were picking up enough that it was clear that the company needed a seasoned sales executive to build out channel sales beyond the Web site. The company conducted a retained search, but was frustrated at the lack of suitable candidates.

The bubble had ended and it seemed like every able sales executive was taking a breather, waiting for the storm to blow over. They had certainly made plenty of money in the past few years. After about 18 interviews in the fall of 2001, I hired the most qualified candidate as VP of Sales. He was able to bring a more professional focus to the sales force but did not show the ability to scale in line with the opportunity. After many preliminary discussions of the problem, in May I told him I was launching a new retained search to replace him.

In order to find the kind of candidates she was looking for, Greene enlisted the help of her directors, industry contacts and investment banking professionals (whom she knew had contacts with a number of senior-level executive types who might be good candidates for some of the positions she was looking to fill). She also engaged an Executive Search consultant, Mel Connet (GSB '85), to help her build a team. Connet had helped Greene do a CEO search for VXTreme.

Using an executive search firm is a weighty proposition for a company. Even though the search firm finds, screens and recruits the actual candidates, it is still a large job for company management, who must commit to the search, interview candidates, make offers and then help the candidate integrate and thrive within the company. It is also expensive. According to Connet, a typical CEO-level search can cost a company \$100,000-\$150,000, whereas a senior executive one can run \$50,000-\$100,000. He comments on the process:

The way we approach every project is to spend a fair amount of time up-front to understand what the business situation is, the needs of the organization and the culture of the company. Diane was looking to build out the business team with very senior-level people. Part of our strategy was to focus on candidates that, in most young companies, probably would hold out for a CEO position. The proposition was: 'Maybe it makes better sense not to have the top job, but to be part of a team that has the prospects of being very successful.'

Kirk Bowman, Executive Vice President of Worldwide Field Operations

Connet conducted the search for the company's EVP of Worldwide Field Operations. After a two-month search, Connet introduced Kirk Bowman to Greene and the rest of the VMware team. Bowman had more than 15 years of sales experience, and had previously served as SVP and General Manager of Worldwide Field Operations at Inktomi Corp.

What was particularly attractive to the VMware team was Bowman's experience selling to enterprise customers. With the company's focus on selling to the enterprise and with its push toward its server products, management was looking for someone with Bowman's credentials.

Greene's take on the search for Bowman:

Kirk is very substantive. I knew this because we talked in depth about Inktomi and he also asked really good questions. I also went overboard on the reference checking. It was a good search because, very quickly, there were just two people we were considering and I didn't have to do that many interviews. Mel's group did tons of interviews, but I hardly had to do any. I just got these little thumbnails. It was a very successful approach to a search.

Bowman discusses his job search:

I had taken about a year off after Inktomi and had begun looking at companies in the Bay Area to run. I was looking primarily at pre-public CEO opportunities. I spent six months, was introduced to over 50 opportunities, and did more due diligence on a quarter of the opportunities.

I had heard Mark Leslie speak at a dinner. I remember that he captured one of the key criteria I was looking for in an opportunity: the importance of real, defensible, and deep intellectual property. When I was out looking at opportunities, what struck me in the majority of cases was that the IP content was low. Business plans often consisted of carving off some small piece of a large market and then running really fast to beat the large incumbents—no real innovation. Sure, some will survive. Some might even be successful. But I didn't like the odds.

My introduction to VMware was through Jeff Byrne. Jeff had called me to do a reference check on a product management candidate he was interviewing. He was interested in hearing about this person, and I was interested in hearing about VMware. Then Mel called me. Even though it wasn't the position I was looking for, I was intrigued by the company and decided to take a further look. I thought about taking another summer off while performing some consulting for VMware. Diane seemed amenable to considering this type of arrangement. After really looking under the covers at VMware, I realized this company was something special and offered a unique opportunity to help build a lasting and important company. So, I joined the company.

Paul Auvil, Chief Financial Officer

At the same time Connet was searching for an EVP of Worldwide Field Operations, Greene was working on bringing in Paul Auvil as the company's full-time CFO. Auvil had been the CFO of Vitria, a maker of enterprise application integration software, and had helped the company grow from startup to large company, including helping take the company public. He was introduced to Greene through a mutual contact at Credit Suisse First Boston.

After a couple of false starts with hires in the CFO role, Greene wanted to make sure the company put the right person in this critical position. Auvil initially joined the team as a

consultant, which gave both him and VMware's managers a chance to do their respective homework. Greene's take:

I brought Paul in as a consultant and we worked together for over six months. Several of us here got first-hand experience working with him. After that much time, you don't make a mistake on someone because you have that much time to critically evaluate someone. There's just no better way.

Auvil explains:

I had looked at joining another larger public company, but realized I actually like the early phase of a company. There are a lot of interesting problems that have to be solved: both tactical—how you get systems in place, what should the revenue and accounting policies be, etc., but also some of the really interesting strategic questions were still evolving.

I used my relationships with investment bankers and analysts I knew, and asked all of them to name five private companies that are really interesting. If you put all the lists together, there were really only two or three that came up consistently. VMware was one and Google was another. I already had a connection here through the bankers.

I wanted to work for a company that had very high quality, accomplished business people on the board. I think there's a false sense of security when you look and say: Kleiner Perkins, Mayfield or Benchmark invested in that company; it must be good. But what the company really needs at this stage are people that have very relevant operating experience.

Don DeSoto, EVP of Marketing

Finally, VMware hired Don DeSoto, EVP of Marketing. DeSoto had been Vice President and General Manager of Access Solutions Corporation's storage I/O business, which served both OEM and channel customers. There, he had had responsibility for engineering, product marketing and OEM sales. He had also served as VP of sales and marketing at Apex Graphics, and in various management positions at General Electric.

VMware was interested in DeSoto because of his partnership and marketing experience. However, after hiring him, Greene knew she had made a big mistake. DeSoto's on-the-job performance turned out neither to stack up to Greene's expectations nor to equal that of the engineering organization. Most importantly, he lacked the ability to adapt quickly to a highly complex and fast-changing environment. Greene explains:

We have always been focused and clear on where we are going, but the variables are constantly changing so we need to adapt constantly. Our partners' trust and relationships are extremely important to us and I couldn't risk any missteps.

I had known Don a long time but had never worked with him. I did, however, like him a lot. Then all of a sudden he got interested in joining VMware, so we got into the process.

He was leaving [his current company] on a sabbatical for five weeks and he needed to tell [his former employer that he would be leaving] before he left. He basically needed an offer from me. I told him I needed references. When I called [the references], they were out of town. When I finally got the chance to talk to one, he wasn't the real reference I wanted to talk to. It was sort of bizarre.

Bringing Everyone Together

There is a lot of risk in bringing in a senior level executive. Says Connet: "The primary risk is the same with any executive hire. They can probably do the job. The risk is in the culture and chemistry."

Now that Greene had her executive team in place, it was up to her to bring them together. How should she accomplish this? How should she handle problems with Don DeSoto? What actions should she take to make sure she has a committed, motivated board of directors?

IPO ON THE HORIZON

Having postponed plans to go public in 2001, Greene considered when might be the right time to file for an IPO. Sure, the market was in the doldrums, but the company continued on a successful path. By mid-2002, VMware had nearly doubled its revenue for the third year in a row and the company was turning a small profit.

NEXT STEPS?

What other steps should Greene take to shore up VMware, prepare to go public, fend off encroaching competitors, balance a precarious set of high-powered strategic relationships, and become a dominant player in the marketplace?

Exhibit 1 VMware Architecture Diagram

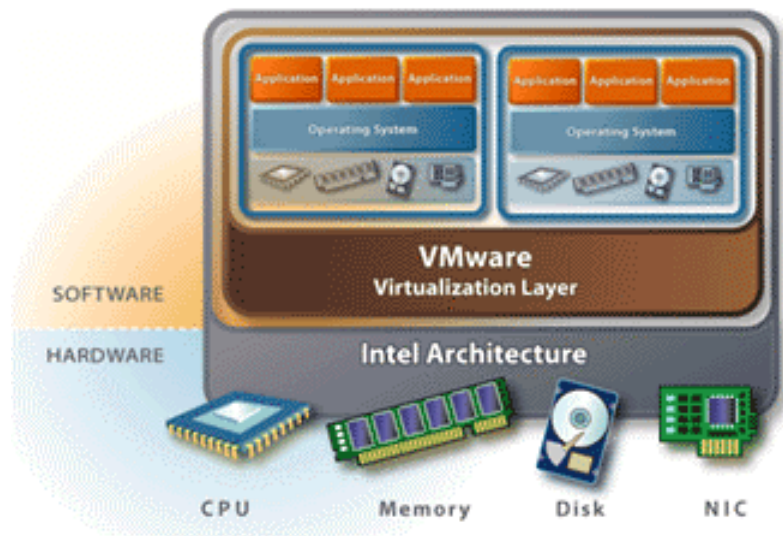


Exhibit 2

Executive-Level Organizational Chart

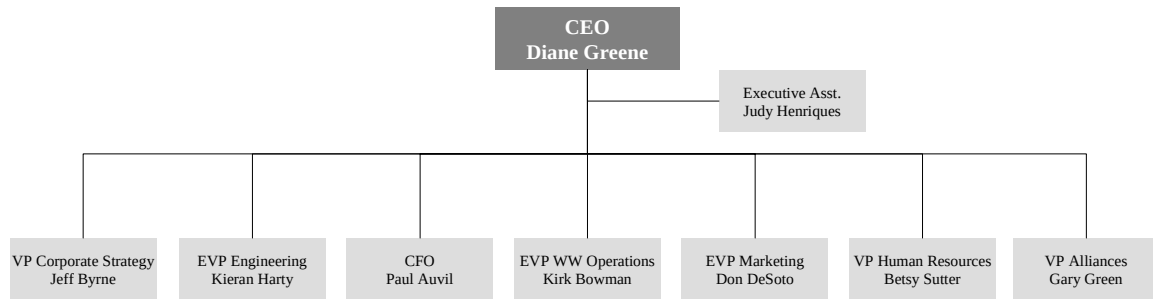


Exhibit 3 Executive and Board Timeline

Year	1998				1999				2000				2001				2002				
Quarter	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
Executives																					
CEO	Greene																				
CTO	Rosenblum																				
Engineering					Harty																
Finance					Jurewicz																
Finance											CFO								Auvil		
Sales																	VP Sales		Bowman		
Strategy					Byrne																
Business Development/Marketing																	Desoto				
Board																					
Sonsini					Sonsini																
Levy					Levy																
Leslie									Leslie												
Marnier													Marnier								
Luczo																	Luczo				

Exhibit 4
Server Industry Structure, 2003

