LINUXCARE

Electronic Press Kit
August 2000

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About Linuxcare

Founded in August 1998, Linuxcare, Inc. is committed to maximizing its customers' success throughout the enterprise by providing world-class technical services for the Linux operating system. Linuxcare envisions a world where open-source software becomes the sine qua non of the information economy. Currently, the greatest obstacle to widespread Linux adoption in the enterprise is a perceived lack of commercial support. To address this need, Linuxcare has amassed an unparalleled talent pool of Linux experts and has built a state-of-the-art e-services infrastructure.

The following packet of information is designed to provide further information regarding the company's unique business model and service offerings, talented team, customer success stories and other information on Linuxcare. You may navigate through this information using the buttons to the right.

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Services

Linuxcare Offers the Following Services:

Linuxcare offers the following categories of services:

- Professional Services—Linux and open-source consulting, development, deployment and Custom Solution Program
- Technical Support—24x7 email, Web and telephone support for all major Linux distributions
- Linuxcare University—educational programs and materials for Linux and open-source technologies
- Linuxcare Labs—vendor-neutral product testing and certification

Linuxcare Professional Services

Whether customers require Liniux software development, open-source strategy consulting, or complete end-to-end Linux project management, Linuxcare Professional Services provides the solution to their open-source technology needs. Linuxcare leads the industry in designing and deploying Linux-based solutions for the enterprise. Linuxcare's team of experts plays a pivotal role in the development of building blocks for open-source software and is proficient in UNIX, Windows, Mac OS, OS/2 and Novell technology, so customers can successfully complete their Linux migration and integration projects. Linuxcare Professional Services offers four centers of expertise:

- Open-source strategy consulting
- Linux & open-source development
- Open-source deployment
- Custom solution program

Linuxcare Technical Support

Linuxcare offers all levels of around-the-clock support from Linux experts recognized throughout the industry for their technical depth and ingenuity. Linuxcare's Technical Support is tailored to meet a range of needs with options that include hourly support purchased from the Linuxcare Web site, bundled-hour support packages and full-scale service level agreements. All options offer 24-hour, 7-day-a-week support of all major Linux distributions and platforms.

Linuxcare University

Linuxcare University is the premier provider of educational programs and materials for Linux and open-source technologies. As part of the Linuxcare family of services, Linuxcare University course offerings benefit from Linuxcare's focus on open-source solutions—from technical support to professional services to product certification and testing. Linuxcare University offers Linux courses at hundreds of authorized training centers worldwide, and the courseware is expressly designed to prepare students to meet Linux Professional Institute (LPI) certification standards.

Linuxcare Labs

Linuxcare Labs is the first independent testing authority to inaugurate a comprehensive program for certifying hardware and software for use with the Linux operating system. Linuxcare Labs offers a vendor-neutral testing methodology that embraces open standards and prevents platform fragmentation. Compatibility testing by Linuxcare Labs assures customers that the systems and components they purchase are fully supported under the major Linux distributions. Successful testing by Linuxcare Labs certifies that all components of the product exhibit full functionality under the Linux kernel. Numerous Linux systems from Dell Computer Corporation, Compaq Computer Corporation and Cubix Corporation have earned the mark. Additionally, Linuxcare Labs certifies Linux-related books for Macmillan Computer Publishing.

www.linuxcare.com

The Linuxcare Website is the leading online destination for Linux automated services, free open-source information resources, and self-service technical support. Automated Web-based hardware testing, such as the Linuxcare Labs eTest™, enables vendors to publish compatibility and certification information about Linux-based products. The Linuxcare Knowledgebase—one aspect of Linuxcare Intellect™, the Linuxcare knowledge management infrastructure—indexes a vast store of Linux information to answer questions about open-source technology. The Linuxcare Website additionally includes open-source project sites, a collaborative support environment powered by ExpertsExchange, user-driven product ratings, a comprehensive database of Linux software, online incident tracking, frequently asked questions (FAQs), and Kernel Traffic--the highly-regarded digest of postings to the Linux Kernel mailing list and other important open-source development projects.

Linuxcare's Breakthrough Support Infrastructure

Linuxcare has deployed cutting-edge systems to afford an unparalleled level of accurate and timely responses to customer needs. For example, services such as installation, diagnostics and

maintenance can be delivered remotely on the Internet, rather than requiring on-site staffing. This Internet-based infrastructure allows for communication with and application and service delivery to Linuxcare's employees, customers, and partners.

Multivendor Support

Linuxcare supports all major Linux distributions and all key hardware platforms. Supported hardware platforms include Alpha, Intel, M68K, MIPS, PA-RISC, PowerPC, SPARC and StrongARM. Supported Linux distributions include:

- Caldera
- Corel
- Debian
- Etlinux
- EZLinux
- LASER5
- Linux-Mandrake
- LinuxPPC
- Macmillan Linux
- MkLinux
- Red Flag
- Red Hat
- RT-Linux
- Slackware Linux
- Stampede
- Storm
- SuSE
- TurboLinux
- UltraLinux
- Vine Linux
- Yellow Dog

Support for Open-Source Development

Linuxcare takes an active role in open-source initiatives, dedicating time and resources to projects that make using the Linux operating system even more beneficial and successful. The Linuxcare staff has been intimately involved with the development of the Linux kernel, maintenance of the Debian distribution, the development of Samba and porting of Linux to alternative microprocessor platforms. Additionally, Linuxcare is a charter Platinum Level sponsor of the Linux Professional Institute, a charter member of the Free Standards Group and a Sponsoring Corporate Member of Linux International.

Comprehensive Linuxcare Services Through-out the Software Lifecycle

Linuxcare provides a comprehensive suite of services throughout the Linux technology lifecycle. This enables enterprise customers to rely on Linuxcare resources whether they are evaluating Linux for the first time, purchasing Linux hardware or software solutions, setting up, using, and maintaining Linux solutions, or fixing problems when they arise

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Executive Biographies

Linuxcare rose out of the Linux and open-source community through the efforts and vision of the three co-founders. Today, the powerful Office of the CEO is shared by a technology service expert, an open-source authority and leading-business professionals. Vision and solid business experience are combined to provide unmatched open-source service to Linuxcare's enterprise customers.

Office of the CEO

Pat Lambs
Chair, Office of the CEO

Pat Lambs brings to Linuxcare over 30 years of experience and substantial accomplishments in customer support and consulting services management. Most recently, Lambs capped a five-year career at Ascent Logic Corporation as executive vice president and COO, where she managed 120 employees in sales, services, marketing and engineering. Previously, Lambs acted in various senior management roles at Digital Equipment Corporation (DEC) for 18 years, where she was responsible for turning around the ailing Network and Systems Integration business and building it into DEC's largest and most profitable U.S.-based Professional Services Consulting Center. Also at DEC, Lambs developed and implemented a program that generated substantial revenues for 42 services that had previously been given away. Lambs began her technology career at Applied Logic Corporation, where she designed and taught customer courses in communications systems and diagnostic programs for DEC equipment. Lambs attended Temple University where she studied computer science.

Arthur Tyde, III
Co-founder and Executive Vice President

Arthur Tyde has worked extensively with corporate information systems in a wide variety of client/server and mainframe environments. Driven by a vision to create a business that would enable the widespread adoption of Linux as a dominant computing platform, Tyde—then president of the Bay Area Linux Users Group—co-founded Linuxcare, where he helped lead the company from a small, consulting start-up to a leading Linux support provider among the Global 1000 and industry OEMs. Prior to

Linuxcare, Tyde held senior consulting and management positions at The Gap Inc., IBM and the California State Automobile Association. As an enterprise support professional, Tyde has specialized in the demanding discipline of disaster planning and recovery. For example, while information systems director at the multi-office law firm of Melvin M. Belli, Sr., he led the reconstruction of the San Francisco data center following the 1989 Loma Prieta earthquake. Tyde earned his bachelor's from Michigan State University.

Ted Schlein
Linuxcare Board Chair

Ted Schlein is a partner at Kleiner Perkins Caufield & Byers (KPCB) with a focus on enterprise applications, infrastructure and services and application service providers. Among others, Schlein serves on the boards of Angara E-Commerce Services, Corio, Extensity and Iron Planet. He came to KPCB with significant experience in enterprise software business management at Symantec Corporation. He holds a B.S. in economics from the University of Pennsylvania.

Paul Vais
Linuxcare Board Member

Paul Vais is a managing director with Patricof & Co. Ventures, Inc. Vais joined the firm in 1997 to focus on information technology-related investments in software, electronics and Internet infrastructure. Previously, he was a vice president with Enterprise Partners Venture Capital, based in Los Angeles. Vais began his career in engineering and operations, accumulating 14 years experience in high tech companies. He held senior-level positions at NeXT Computer, Inc., where his responsibilities included systems engineering, European operations and worldwide marketing, and at Apollo Computer, a pioneer in the engineering workstation market. He holds an A.B. degree in computer science from the University of California at Berkeley.

Senior Executives

Christian A. Paul
Chief Financial Officer

Christian Paul brings 17 years of finance and business management experience to Linuxcare. Paul was most recently vice president and CFO of Cloudscape, Inc., a leading provider of Java-based data management systems. There he was responsible for operations and finance, as well as building relationships with the company's shareholders and directors. Paul has previous background with the growing market for Linux software; he led Cloudscape through an

$100 million merger with Informix, Inc. which provides its enterprise database software on the Linux platform. Prior to Cloudscape, Paul was vice president and CFO of ICVERIFY, where he directed the finance and administration functions of the rapidly growing e-commerce company and was responsible for raising equity financing. Prior to that, Paul served as vice president and Chief Financial Officer of Integral Systems Inc. Paul began his career at Ernst & Young. He has a master's degree in Accounting and Taxation from the University of Cape Town, and is also a chartered accountant.

David L. Sifry
Co-founder and Chief Technical Officer

David Sifry is an industry-recognized expert on open-source development and the Linux operating system. As an open-source developer, Sifry has contributed code to such projects as GNU Emacs, Majordomo, packetrace, jitterbug and the Linux kernel itself. In addition, he managed the development of SecureVPS, an open-source virtual private networking server for Linux. His activities in the Linux community include service as vice-president of the Bay Area Linux Users Group (BALUG). Before co-founding Linuxcare, Sifry worked as a technical consultant for such companies as Advanced Portfolio Technologies, Bindco, Metcal and the Netherlands Office of Science and Technology. Additionally, Sifry held the position of senior software engineer at Mitsubishi Electric Corp., in Kobe, Japan, where he worked on large-scale industrial control systems software and trained foreign workers new to Japan. During college, Sifry was founder and president of Net Intelligence, a company that developed code included in a Macintosh personal information manager and a number of games. Sifry holds a bachelor's in computer science from Johns Hopkins University.

David LaDuke
Co-founder and Vice President of Marketing

David LaDuke has held senior-level marketing and consulting positions at many technology companies including Apple, I/PRO, Netscape, NeXT, Oracle and Silicon Graphics. Prior to co-founding Linuxcare, LaDuke founded his own successful consulting business, providing market research, strategy development and communications services to information technology companies. Before that, he managed vertical market marketing at NeXT Computer and desktop publishing marketing at Apple Computer. LaDuke received an M.B.A. from the Tuck Graduate School of Business at Dartmouth College with a concentration in marketing, and a bachelor's and master's degree with honors from Columbia University.

Thomas W. Phillips
Vice President of Worldwide Sales

Tom Phillips joined Linuxcare after a successful 25-year career in technology sales. Most recently, Phillips served as vice president, North American Sales for Baystone Software/Remedy Corporation where he built and managed a sales team that consistently performed above revenue objectives. Previously, Phillips spent 12 years at Sterling Software, attaining the position of vice president, North American Sales where he managed a staff of 61 and grew revenues 460 percent in a four-year period. In addition, Phillips held senior sales positions at Compugraphic Corporation, Pacific Telesis and Wayfarer Communications/Vantive Corporation. Phillips started his career at Xerox Corporation where he was responsible for major accounts sales. Phillips earned a degree in sales and marketing from California State University.

Bob Walters
Vice President of Business Development

Bob Walters brings to Linuxcare extensive senior management experience at leading technology firms, a firm grasp of the open-source model and a track record of building strategic industry alliances and managing successful acquisitions. Prior to joining Linuxcare, he was vice president of corporate strategy at Informix Corporation where he directed development of the firm's evolving business model and market positioning. The primary author of the OLAP and data warehouse strategies at Informix, Walters also played a key role in acquiring his previous employer, Red Brick Systems, a multi-million dollar vendor of data warehouse software. Before his tenure at Informix, he held executive positions at Dynasty Technologies and at several start-up companies in the high technology sector. Walters graduated with honors in systems engineering from the U.S. Naval Academy in Annapolis, MD. He was a Guggenheim Fellow at Princeton University, where his research focused on developing real-time embedded digital flight controls.

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LINUXCARE ADOPTS MOTIVE TECHNOLOGY TO CREATE FIRST E-SERVICE SOLUTION FOR LINUX

New Offering Dramatically Increases Quality of Service, Lowers Cost of Linux Technical Support

SAN JOSE, Calif., LinuxWorld Expo., Aug. 15, 2000—Linuxcare, Inc., a recognized leader in providing comprehensive professional services and solutions for Linux and open-source technologies, and Motive Communications, Inc., a leading provider of online-customer care solutions, today announced the development of the first automated, highly scalable e-service solution for Linux. Specifically, Linuxcare has licensed Motive's e-service software to power a state-of-the-art Internet-based service offering, allowing Linuxcare to deliver personalized and automated services to its customers. The initial target customers for this service will be hardware OEMs, ISPs, and ASPs.

With more than 1.3 million servers shipped in 1999, Linux is the fastest growing platform of choice for e-businesses and the need for Linux support has increased with its popularity. Previously, Linux companies were limited to providing service via call centers and Internet capabilities such as chat rooms, newsgroups and community forums. Linuxcare extends these capabilities by combining its Linux technical expertise with Motive's software, which uniquely gathers context—including user identification, problem diagnosis, and computing device details—to guide customers to highly-targeted self-service answers and solutions or, if necessary, technical support engineers (TSEs). The context, which also includes a history of previous resolutions, allows the TSE to diagnose and resolve problems much faster, resulting in dramatically improved customer service. Additionally, Motive's infrastructure will provide the scalability needed to meet the demands of the rapidly growing Linux market, so Linuxcare can provide the same high quality of support regardless of the volume of requests.

"The availability of quality customer service and authoritative technical support are critical to the continued increase in adoption rates we are seeing for Linux-powered platforms," said Tony Adams,

senior analyst of Dataquest IT Services' Product Support Group, a wholly owned subsidiary of Gartner. "Automated diagnosis and resolution of problems is a key initiative facilitating support effectiveness. It delivers more value to customers than has previously been possible through traditional means of support."

Also as part of the agreement, Linuxcare will certify Motive's client-based software for major Linux distributions including Caldera, Debian GNU, SuSE and TurboLinux. (Motive is already certified on Red Hat.) Linuxcare will also port key components of its extensive knowledgebase of frequently asked questions (FAQs), known problems and solutions to the Motive content model.

"By integrating Motive's infrastructure into our e-service offering, Linuxcare gains a competitive advantage in the Linux and open-source support marketplace," said Bob Walters, vice president of business development for Linuxcare. "Motive's industry-leading software will improve efficiency by allowing for remote diagnostics and automated service, while Linuxcare's technical expertise and knowledgebase will provide the critical information customers need to quickly and proactively diagnose and repair problems with their Linux systems. The results are a dramatically improved experience for the customer, significantly reduced service costs, and increased sales."

"Motive has enjoyed strong success in offering a complete online customer care solution that addresses a broad range of service requests and computing platforms," noted Pat Motola, vice president of business development for Motive Communications. "Our support for Linux, along with the relationships we are developing with industry leaders like Linuxcare, will extend our e-service solution into a number of markets including dedicated servers, e-business applications, and eventually Internet-connected devices."

About Linuxcare, Inc.

Linuxcare, Inc. is a recognized leader in providing comprehensive professional services and solutions for Linux and open-source technologies. Linuxcare helps original equipment manufacturers (OEMs), independent software vendors (ISVs), Internet infrastructure vendors and Global 2000 companies maximize their success in putting Linux and open-source solutions to work. The company, with funding from Kleiner Perkins and corporate partners such as ITOCHU, Motorola, Oracle and Sun, hosts http://www.linuxcare.com, a leading technical resource for Linux and open-source solutions. Founded in 1998, Linuxcare is headquartered in San Francisco with offices around the world. The company can be reached at +1-415-354-4878.

About Motive Communications, Inc.

Motive Communications powers online customer care by offering software solutions that automatically connect online users to a company's answers and experts when they have problems. These products are used to build unique e-service networks that help companies foster customer loyalty, drive revenue, supercharge service capacity and increase market share. Motive's software solutions are used by leading companies in many industries including all.com, Compaq, Dell, EDS, Gateway, General Electric Information Systems, Great Plains Software, Hewlett-Packard Company, Intuit, Kmart, Merrill Lynch, Peregrine, pcsupport.com, SAIC and Target Corporation. Motive was founded in May 1997 and is backed by $43M in funding from leading venture capital firms and private investors. Motive can be reached at (512) 339-8335 or on its Web site at http://www.motive.com. Motive employment opportunities can be found at http://jobs.motive.com.

SUN MICROSYSTEMS AND LINUXCARE TEAM TO DELIVER LINUX SUPPORT FOR SUN STOREDGE T3 ARRAY

Linux Customers Can Now Build High-Availability Storage Solutions with Industry's First Open-Source Failover Storage Software

SAN JOSE, Calif., LinuxWorld Expo, Aug. 15, 2000—At the LinuxWorld Conference today, Sun Microsystems, Inc. (Nasdaq: SUNW) and Linuxcare, a recognized leader in providing comprehensive professional services and solutions for Linux and open-source technologies, announced that Sun's new Sun StorEdge™ disk array is now available on the Linux platform. Sun and Linuxcare will demonstrate Linux running on the Sun StorEdge T3 array in the Sun booth, #1240, and in the Linuxcare booth, #1308, at the San Jose Convention Center.

The failover storage software is open-sourced and available free from Linuxcare to those using Intel servers (http://open-projects.linuxcare.com/T3/). It is the industry's first high-availability Linux support and failover storage software for storage systems.

The Sun StorEdge T3 array is ideal for Linux environments because it offers a modular design that can quickly scale from entry-level workgroup levels to high-end enterprise environments. Additionally, as Linux bulks up to increasing workloads within business environments, high-availability Linux systems are crucial to maintain an always-on e-business. Linux customers can use the failover storage software to create highly available storage systems using two or more Sun StorEdge T3 arrays. If one array goes
offline, operations can immediately switch to the online array, thus avoiding costly downtime.

"Linuxcare was able to take advantage of our coding expertise and our relationships with the open-source community to help Sun ensure the competitiveness of the Sun StorEdge T3 array and other network storage products," said David L. Sifry, co-founder and CTO of
Linuxcare. "We are proud to host and maintain the Sun StorEdge T3 project and look forward to helping Sun incorporate the Linux community's ideas into future updates of the software."

"We chose to work with Linuxcare because of its well-known Linux development and service expertise and because we wanted to stay with the open-source philosophy of the Linux community," said Denise Shiffman, vice president of marketing, Sun Network Storage. "When we announced the Sun StorEdge T3

array last month, we unveiled an off-platform plan for the product. We're delivering on this off-platform promise by offering Linux customers the opportunity to protect their data with a highly reliable, available and scalable disk array that integrates seamlessly into their Linux environments."

Sun StorEdge T3 Array Addresses Scalability, Reliability and Availability Needs of Linux Customers

As a result of working with Linuxcare, the Sun StorEdge T3 family of network storage arrays delivers the industry's most scalable high-availability storage solutions for entry-level workgroup to high-end enterprise environments on the Linux platform. The system's capacity ranges from 162 gigabytes (GB) to 88 terabytes (TB) and scales capacity, performance and availability in a linear and predictable fashion. As capacity increases, performance increases by a predictable amount, and availability scales as additional data paths and redundancy are added. This provides for higher performance as capacity grows.

The Sun StorEdge T3 array has many features that are compatible with any network. The fibre channel interface provides better data throughput than the SCSI interconnects on which competitive products are based. The onboard cache results in faster I/O service time and therefore better performance. The Sun StorEdge T3 array will easily fit into a SAN environment, making it a solid storage area network.

Pricing and Availability

The Sun StorEdge T3 arrays for the workgroup and the enterprise are now shipping. List pricing for a 162 GB Sun StorEdge T3 array for the workgroup starts at $32,500. The Sun StorEdge T3 array for the enterprise is list priced at $91,450 for a 327 GB configuration, while a 2.6 TB configuration is list priced at $465,900. Pricing and availability are subject to change without notice.

The Linux failover storage software will be available free of charge at the Linuxcare website (http://open-projects.linuxcare.com/T3/) starting on August 15, 2000.

About Sun Network Storage

Sun Network Storage was formed by Sun Microsystems in July 1998 and is a recognized multi-billion dollar industry leader in the UNIX(R) and open systems storage market. Sun is changing the rules in network storage by delivering software and hardware written to an open network architecture. Sun's commitment to standards enables timely availability of new technology, investment protection for existing technology, and a thriving partner community. The comprehensive Sun StorEdge family of products enables customers to match storage to the application while providing scalable capacity and performance in a "pay-as-you-grow" architecture.

About Sun Microsystems, Inc.

Since its inception in 1982, a singular vision – "The Network Is The Computer™" -- has propelled Sun Microsystems, Inc. (Nasdaq: SUNW), to its position as a

leading provider of industrial-strength hardware, software and services that power the Internet and allow companies worldwide to dot-com their businesses. With $15.7 billion in annual revenues, Sun can be found in more than 170 countries and on the World Wide Web at http://sun.com.

About Linuxcare, Inc.

Linuxcare, Inc. is a recognized leader in providing comprehensive professional services and solutions for Linux and open-source technologies. Linuxcare helps original equipment manufacturers (OEMs), independent software vendors (ISVs), Internet infrastructure vendors and Global 2000 companies maximize their success in putting Linux and open-source solutions to work. The company, with funding from Kleiner Perkins and corporate partners such as ITOCHU, Motorola, Oracle, and Sun, hosts http://www.linuxcare.com, a leading technical resource for Linux and open-source solutions. Founded in 1998, Linuxcare is headquartered in San Francisco with offices around the world. The company can be reached at +1-415-354-4878.

LINUXCARE GIVES SEAL OF APPROVAL TO HP NETSERVER SYSTEMS AND BUSINESS DESKTOP PCs

HP Customers Receive Assurance of Linux Compatibility From Linuxcare Labs

SAN JOSE, Calif., LinuxWorld Expo, Aug. 14, 2000—Linuxcare, Inc., a recognized leader in providing comprehensive professional services and solutions for Linux and open-source technologies, today announced the Linuxcare Labs Certified designation for several HP NetServer systems and HP Business Desktop PCs. Linuxcare Labs' vendor-neutral testing and certification methodologies, where products are tested across major commercial Linux distributions, served HP's needs by providing comprehensive testing and certification for Linux.

HP NetServer systems provide the highly-reliable, "always on" infrastructure that powers small, medium and enterprise-level businesses. Linuxcare Labs is certifying all current HP NetServer systems on the following Linux distributions: Caldera eServer, Debian, Red Hat, SuSE Linux, and TurboLinux Server. These certifications make HP a leading manufacturer supporting Linux across the entire PC server platform.

Linuxcare also has certified all recent HP business desktop PC platforms—Brio, Vectra, Kayak – as well as HP's newest product family, the e-PC. Linuxcare Labs certified these HP PCs across the following Linux distributions: Caldera eDesktop, Red Hat, SuSE Linux and TurboLinux Workstation.

Linuxcare will be testing and certifying additional products for HP in the coming months. All Linuxcare Labs certifications are posted at http://www.linuxcare.com/labs/.

"HP is committed to serving the needs of business customers who require Linux business solutions," said Richard Archuleta, general manager for HP's Network Server Division. "Linuxcare Labs offers a certification program with strong Linux expertise and a comprehensive knowledgebase. With increased Linux certifications, HP now provides our customers with a high degree of choice when deploying Linux on HP NetServer systems."

"HP NetServer systems' leading-edge technology and full feature set offer a great opportunity to apply our deep Linux expertise and hardware testing experience," said Douglas Mackbee, Linuxcare Labs General Manager. "We are impressed with the overall quality and reliability of the systems being tested in our Labs, and

these certifications will give businesses of all sizes confidence when deploying HP NetServer systems running Linux."

Linuxcare's work for HP furthers the importance of Linux certification as Global 1000 companies introduce Linux-based solutions into their organizations. As Linux grows in its use and viability, Linuxcare Labs certification serves a crucial role in legitimizing the operating system's movement into widespread business acceptance while also contributing to the open standards effort within the Linux community. Certification by Linuxcare Labs gives Linux users the assurance that the systems they purchase are fully supported under major Linux distributions. Linuxcare Labs has previously completed system certification projects for Compaq Computer, Dell Computer, IBM and PFU (Panasonic-Fujitsu-Uchida), among others.

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LINUXCARE COMPLETES THIRD FUNDING ROUND, INDUSTRY LEADERS INVEST US$30 MILLION

Dell, Motorola and Sun Reinvest in the Future of Linux

SAN FRANCISCO, Aug. 1, 2000—Linuxcare, Inc., a recognized leader in providing comprehensive professional services and solutions for Linux and open-source technologies, has raised US$30 million in its third funding round, led by Lehman Brothers Venture Capital. Linuxcare's Series C round will fuel development and expansion of its four-pronged services, support, education and certification business model.

With this funding round, Linuxcare's corporate partners Dell Ventures, the strategic investment arm of Dell Computer Corp., Motorola, Inc. [NYSE:MOT] and Sun Microsystems, Inc. [NASDAQ:SUNW] all increased their existing investments.

ITOCHU International, Inc. (http://www.itochu.com), the North American subsidiary of ITOCHU Corp.—a diversified trading company with offices in over 80 countries and currently the tenth largest company in the world—has signed on as one of Linuxcare's newest corporate investors.

"The Global 2000 companies are rapidly moving toward the use of Linux and open-source products in their mission-critical environments," said Tom Banahan, managing director, Lehman Brothers Venture Capital. "Linuxcare continues to demonstrate the growth, innovation and technical expertise required to meet the evolving needs of open-source technology customers. Lehman Brothers is excited to partner with the Linuxcare team."

Since its second round of equity financing, announced Dec. 14, 1999, Linuxcare has been steadily expanding its service offerings. The third-round financing will be used for working capital and continued expansion of the company's solution offerings.

Linuxcare's venture firm partners, Kleiner Perkins Caufield & Byers and Patricof & Co., are joined in this round by Charter Growth Capital and an affiliated entity of Sands Brothers & Co., Ltd., in addition to Lehman Brothers.

"Our world-class partners underscore that a services-based business is the right model for building a successful Linux company," said Chris Paul, CFO, Linuxcare.

"We are pleased to see these industry leaders returning to support us in this round, and welcome our new investors."

About Linuxcare, Inc.

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COMPAQ AND LINUXCARE BOOST LINUX INSTALLATION ON ALPHA SERVERS WITH LINUX JUMPSTART! CD

New CD Enables Quick and Easy Setup of Popular Linux Distributions, Doubles as Reboot/Rescue Disk

SAN FRANCISCO, Aug. 2, 2000—Linuxcare, Inc., a recognized leader in providing comprehensive professional services and solutions for Linux and open-source technologies, has teamed with Compaq Computer Corporation through the Compaq Solutions Alliance program (http://www.compaq.com/csa) to vastly simplify Linux installation on Alpha servers with the introduction of Linux Jumpstart! CD.

The new CD quickly configures the server to boot Linux on most Alpha-based systems. Traditional installation of Linux on Alpha hardware has required detailed knowledge of commands to prepare the system. Linuxcare developed the Linux Jumpstart! CD for Compaq customers to automatically install most Linux distributions on an Alpha server via an intuitive graphical user interface (GUI). Designed to be used by novices and advanced users, the CD allows the administrator to select their level of involvement in the setup process. In addition, the CD can be used to rescue and reboot a damaged system.

"As companies consider where Linux fits best in their enterprises and in their development strategies, the new Linux Jumpstart! CD removes installation headaches as a factor in the decision-making process," said Carl Ramsey, world wide director, Compaq Solutions Alliance. "Linuxcare is the right partner for this project because it demonstrated the expertise and distribution neutrality necessary to satisfy the diverse needs of our customers."

Upon start-up, the CD prompts the user to select an installation mode ranging from "Express" for quick and easy set-up to "Step-by-Step" and "Advanced" for systems administrators that prefer more options. The Linux Jumpstart! CD automatically partitions the hard drive and sets up environmental variables needed to boot the operating system. Used as a rescue utility, the CD provides the tools required for an advanced user to see and change what is on their hard drive, boot a Linux kernel directly from the CD and perform other basic administrative functions. Available immediately from Compaq free of charge at http://www.linuxalpha.compaq.com/jumpstart/, the Linux Jumpstart! CD has been initially tested on DS10, DS20, XP1000 Alpha systems with popular Linux distributions, including Debian and Red Hat.

About Linuxcare, Inc.

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Fujitsu Siemens Computers and Linuxcare Strike Global Alliance

Linuxcare to Provide Open-Source Consulting and Distribution-Neutral Linux Technical Support Services to Customers and Partners of Fujitsu Siemens Computers

PADERBORN, Germany and SAN FRANCISCO, July 27, 2000—Fujitsu Siemens Computers, the new IT force in Europe with the world's most complete portfolio of best-in-class IT products, and Linuxcare, Inc., a leader in providing comprehensive services for Linux and open-source software, today announced an alliance to deliver Linux and open-source consulting and technical support services to customers and partners of Fujitsu Siemens Computers worldwide.

The agreement calls for Fujitsu Siemens Computers and Linuxcare to collaborate on several levels including consulting for open-source projects and providing multilingual technical support for customers and partners in certain geographic regions. As part of the deal, the two companies will develop Linux porting capabilities, such as driver development and application porting services, for Fujitsu Siemens Computers servers and workstations. Linuxcare will also provide project support for their customers and partners for optimization of Linux on IA-64 microprocessors.

"Linux is a strategic business segment for Fujitsu Siemens Computers," said Joseph Reger, VP Strategic Marketing at Fujitsu Siemens Computers. "We have a range of successful partnerships in the Linux segment and together with our partners we are able to offer and support best-in-class Linux solutions. Our customers will benefit from Linuxcare's extensive knowledge and experience and their ability to support projects regardless of which Linux distribution they are using."

The agreement represents Linuxcare's second contract with a Fujitsu Limited-related company. Last year Amdahl, a subsidiary of Fujitsu Limited, signed a deal with Linuxcare to provide technical support to Amdahl in the US. Fujitsu Siemens Computers, the joint-venture between Fujitsu Limited and Siemens AG, has a strong presence in Europe and the Middle East and boasts 1,000 of the largest enterprises in Europe and relationships with more than 2,000 leading value-added resellers, distributors and retailers across the globe.

"Fujitsu Siemens Computers is a market leader in Europe and has an impressive product portfolio," said Thomas Phillips, VP worldwide sales at Linuxcare. "By leveraging Linuxcare's deep expertise, Fujitsu Siemens Computers will be able to

extend the level of service it offers for Linux to its enterprise customers worldwide."

About Linuxcare, Inc.

Linuxcare, Inc. is a recognized leader in providing comprehensive professional services and solutions for Linux and open-source technologies. Linuxcare helps OEMs, ISVs, Internet infrastructure vendors and Global 2000 companies maximize their success in putting Linux and open-source solutions to work. The company, with funding from Kleiner Perkins and corporate partners such as Dell, Sun, Oracle and Motorola, hosts http://www.linuxcare.com, a leading technical resource for Linux and open-source solutions. Founded in 1998, Linuxcare is headquartered in San Francisco with offices around the world. The company can be reached at +1-415-354-4878.

About Fujitsu Siemens Computers

Fujitsu Siemens Computers, the new IT force in Europe, was formed through a joint venture between Fujitsu Computers (Europe) Limited and Siemens Computer Systems, and commenced operations on 1st October 1999. The company is jointly owned by Fujitsu Limited and Siemens AG, and has its headquarters in Amsterdam, The Netherlands. With extensive European manufacturing facilities, customer-focused companies in 25 European countries, and more than 7,200 experienced employees, Fujitsu Siemens Computers is aiming to be the number one computer company in its home market, Europe.

Fujitsu Siemens Computers provides the world's most complete portfolio of best-in-class IT products including notebooks, PC and workstations, Intel- and UNIX-based Servers, mainframes and Enterprise storage solutions. Its world-leading technology creates solutions to business problems and enhances individuals' lifestyle. Developed and manufactured in Europe, the product portfolio benefits from the technologies and worldwide sourcing networks of the parent companies.

In addition to an enviable customer base which includes most of the top 1,000 largest enterprises in Europe, the company's assets include: relationships with more than 2,000 of the leading VARs, distributors and retailers with over 100,000 outlets serving millions of customers; a sales organization with more than 2,500 sales professionals; and the combined strengths of the parent companies--with a global network of service and integration partners as well as more than 80,000 specialists dedicated to the product portfolio. Home page: www.fujitsu-siemens.com

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Customers

Compaq:
"Linuxcare's ability to service, support and train software developers on all of the Linux distributions enables them to provide world-class support to our customers."
–Steve Jenkins, Compaq's vice president of Alpha technology business development

Densa Techno Tokyo, Japan:
"Linuxcare provides a breakthrough, scalable, and adaptive service model that creates a dynamic environment in which open-source-deployed solutions will thrive."
-Ikuichi Takeyama, president, Densa Techno Tokyo

Hewlett-Packard Open-Source Solutions:
"Linuxcare's Custom Solution Service enables Hewlett-Packard to differentiate itself in the Linux market by offering custom Linux solutions. We are confident that the long-term relationship with Linuxcare will continue to help bring innovative programs to HP's Linux and open-source customers."
-Mike Balma, director of Open-Source Solutions for Hewlett-Packard

Hewlett-Packard Software Services:
"By leveraging Linuxcare's expertise, we are adding to the comprehensive proactive and reactive technical support we already provide our customers who choose Linux as part of their enterprise solution."
-Mike Rigodanzo, vice president and general manager of Hewlett-Packard's Software Services division

Hitachi Ltd:
"We are confident that Linuxcare's infrastructure and distribution-neutral technical support expertise will allow us to provide our customers the best Linux solutions available."
-Minoru Shibamiya, executive general manager of software development division, Hitachi, Ltd.

Amazon.com's Alexa Internet Relies on Linuxcare

"Red Hat told me it just doesn't work…We had a difficult problem and Linuxcare solved it."

-Jad DeFanti
Senior Systems Administrator, Alexa Internet

If you ever use the "Related Links" function on your Web browser, Linuxcare is helping make sure that your questions get answered quickly.

Alexa Internet-recently acquired by Amazon.com-provides the "Related Links" capability that is integrated into the latest Netscape and Microsoft browsers. Alexa depends on Linuxcare to support the Linux® systems that are at the core of their service.

Alexa is able to offer this service because it maintains a constantly updated archive of the entire Internet. "Whenever a user goes to a Web page, our service can determine sites that are related by sifting through our Archive of the Web, which is currently 18 terabytes of data. We access the archive data on our Linux systems via NFS," explains Jad DeFanti, Alexa's Senior Systems Administrator.

Linux Chosen for Price/Performance

Alexa knew it needed a cost-effective solution for storing its continually growing Archive of the Web. Every day, Alexa's Sun Solaris servers crawl the Web, copy new Web pages, and then offload the contents to Alexa's Linux systems that store the Archive. The Archive is currently stored on 47 systems running Red Hat Linux 5.2. Alexa expects the Archive will require up to 100 Linux systems by the end of the year.

"Since this was going to be a commodity purchase for us, we wanted to find the cheapest, fastest solution offering the largest amount of storage." says DeFanti. "The Linux operating system offered the most inexpensive platform for our needs."

Challenges of Being on the Cutting Edge of Linux

Though Linux offered a practical solution for anticipated large-scale deployment, Alexa was pushing new boundaries with the scope of their application.

"I relied on my 12 years of UNIX experience to deploy the Linux systems," explains DeFanti. "However, soon after they were deployed, we had several roblems with NFS. The existing NFS that comes with Red Hat Linux 5.2 was severely crippled in its ability to deliver data to our processing software. We had to restart the NFS server process every 15 minutes."

Alexa tried several avenues to solve the problem. “I perused newsgroups, talked to in-house engineers, and tried working with Red Hat directly,” says DeFanti. “Red Hat told me it just doesn’t work. They said the version of NFS that comes with the Red Hat distribution doesn’t interact well with other systems.” Though it seemed like a dead-end, DeFanti refused to give up.

Linuxcare Succeeds Through Diligence and Expertise

DeFanti had heard about Linuxcare from Alexa president and CEO Brewster Kahle, so he decided to give them a call. Linuxcare’s Jim Dennis and Gaylen Brown met with DeFanti and discussed the problem and possible solutions. Linuxcare researched the problem and discovered that there was a better implementation of NFS for Linux.

“Linuxcare had the expertise and did all of the due diligence work, including verifying what Linux kernel we needed, logging on to our systems, helping us build and integrate this better version of NFS, and distributing it to all of our other Linux systems,” he says. “They were quite helpful. We had a difficult problem and Linuxcare solved it. There’s no one else who could solve it for us.”

Linuxcare Fills a Void in the Linux World

DeFanti explains how important Linuxcare is for enterprises that are deploying Linux in mission-critical applications. “Linuxcare provides something that’s missing. When you work with other operating systems, you always have someone to call. When you purchase a vendor’s products, in exchange, you expect they will help you. This is noticeably absent in the Linux world. You have to rely on newsgroups, ideas from your engineers, and the rumor mill. There has been no formal channel that’s helpful in supporting Linux. Linuxcare fills that void.”

Companies like Alexa Internet are relying on Linux for applications that run their business. “Linuxcare’s support has made a significant impact on our ability to provide the service that’s at the core of what we do,” says DeFanti. “With our entire Archive of the Web residing on Linux servers, it’s crucial for us to have a resource to address Linux problems. Linuxcare lets me get back to work and focus on what I’m supposed to do.”

Linuxcare’s proven support, consulting, product certification, and training services are sure to make it easier for companies to feel secure they have a trusted partner to support their Linux deployments. “Linuxcare’s support encourages us to go full speed ahead with buying more Linux systems. They made us feel comfortable with our decision to use Linux,” he says. “As we continue our rapid investment in the Linux platform, I feel confident that Linuxcare can help us going forward to support these systems.”

KPMG

"We would definitely work with Linuxcare again. They have great knowledge, are highly focused, and very responsive."

-Supreet Manchanda, Lead Partner, KMPG

Linuxcare contributed valuable Linux expertise to KPMG, a leading provider of Internet-based solutions, during the rapid-paced development, testing, and launch of the Linux-based NetAid Website. NetAid— a project backed by the United Nations, Cisco, KPMG, and others—is leveraging the global reach of the Internet for an educational and fundraising campaign dedicated to fighting extreme poverty.

NetAid launched on October 9, 1999, with three overlapping concerts in London, New York, and Geneva featuring artists such as Sheryl Crow, Jewel, Puff Daddy, Sting, David Bowie, Celine Dion, and Bono of U2. The NetAid Website's streaming capability was ten times greater than any prior Webcast, with 125,000 simultaneous live streams—accommodating a viewing capacity of more than ten million people over the ten-hour course of the concerts.

Linuxcare Helps Tune Servers for Peak Performance

KPMG's Manchanda says they explored several avenues to come to a solution, one of which was developing a parallel team to help solve a problem that could have become a show stopper. "We called Linuxcare. One of the authors of Apache, Brian Behlendorf, referred us to Linuxcare and we had also heard good things about Linuxcare," says Manchanda. "Our question was who can get us the right answers the fastest? We discovered that Linuxcare was very responsive and had the deep Linux expertise to help us solve our problems fast. Working as a parallel team focused on a piece of the problem allowed all of us to become successful."

Working closely with KPMG's development team, Linuxcare evaluated software- and hardware-based solutions and stress-tested NetAid's Web servers to simulate performance under peak demand. Linuxcare Guru Andrew Tridgell worked with the team to evaluate and tune a hardware-based SSL solution, including a reconfigured Apache server, enabling NetAid to achieve the desired aggregate throughput of 1,000 transactions per second. This was completed ahead of deadline and under budget.

A Project on a Tight Time Schedule

KPMG was asked to design and build the NetAid Website, including the look and feel, navigation, content management, e-commerce donation system, and back-end payment processing system. The KPMG development team had only 90 days to build this complex site that had to be able to Webcast the event worldwide and handle a capacity of 60 million hits per hour.

Linux Chosen for Customizability

With the short timeframe and the site's expected capabilities, KPMG knew they needed flexible, powerful, and reliable technology. "We chose the Linux operating system as the foundation for the site because it's highly customizable," explains Supreet Manchanda, Lead Partner for KPMG.

"A key advantage of open-source is that you have the flexibility to create your own version that is ideal for your specific needs. For security and speed reasons, we needed to build a Linux kernel designed specifically for NetAid. We were also under a tight deadline and didn't know how many servers we would need, so we needed to get a lot of software licenses deployed fast. Linux was free and readily available."

Design Challenges

With any project of this magnitude and schedule, there were bound to be design challenges along the way. An initial challenge that the development team faced was performance. The software-based Secure Socket Layer (SSL) running on the Linux Apache Web servers was only able to process about 20 transactions per second per system. SSL ensures the security of information transmitted over the Internet. The NetAid team needed much higher throughput per system to serve the expected capacity of their worldwide audience. KPMG had to find some deep Linux expertise to help solve this problem, and they needed it fast.

Collaborative Process Between Linuxcare and KPMG

KPMG was very pleased with how Linuxcare's engineers collaborated with KPMG's development team. In many ways, it mirrored the collaborative and cooperative nature of open-source software development and reflected KPMG's culture and "get it done" attitude.

"Linuxcare fit in well with the KPMG team. The two teams set up relationships quickly. Together they tested various solutions, compared notes, and then implemented the best combination of solutions. They were able to quickly feed off each other's results. It was a very productive, iterative process between the two expert teams," says Manchanda. "We would definitely work with Linuxcare again. They have great knowledge, are highly focused, and very responsive."

Linuxcare Selected for Ongoing Support

NetAid's launch is just the beginning of a long-term online campaign to fight poverty. The Website will include tools for learning about the activities of UN agencies and independent organizations, donating time or money to charitable causes, and joining a range of UN agencies and nongovernmental groups. Linuxcare has been chosen to provide ongoing support for the NetAid Website.

"NetAid is a great cause, and we're proud to have been able to help KPMG build a compelling global Web presence," says David Sifry, chief technical officer of Linuxcare. "NetAid and Linux both represent empowerment, and we're honored to be associated with both."

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Analysts who cover Linuxcare

U.S.

Firm	Analyst
Giga Information Group	Stacey Quandt
International Data Corporation	Dan Kusnetzky
GartnerGroup	George Weiss
Dataquest	Tony Adams

Europe

Firm	Analyst
Forrester Research, Amsterdam	Charles Homs

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Linux Comes of Age

An Industry Briefing Paper by Linuxcare, Inc.
August, 1999

The recent IPO of Red Hat, Inc. has put a spotlight on Linux and the open-source movement. The story of how Linux has morphed from a graduate school project by a young Finnish hacker named Linus Torvalds to a promising Windows NT challenger is well known. However, despite voluminous news coverage about Linux, the underlying causes and implications of this "overnight success eight years in the making" have not been well examined. This paper is an attempt to cut through the hype, focus on the ROI in Linux, and initiate a serious discussion about the economic models that make the market for open-source software a viable long-term business proposition.

Drivers for Linux's Growth

Grass-roots technologies such as Linux arrive slowly, but by the time they are noticed by the mainstream, they are deeply entrenched in the market. Linux has established a solid and loyal customer base and is forecast to continue its impressive growth:

- According to International Data Corporation (IDC), Linux has more than 10 million users and accounted for more than 17% of all computer server operating system shipments in 1998. This represented 212% growth compared to 1997.
- IDC projects that Linux will grow faster than all other operating systems combined through 2003.
- Dataquest forecasts that Linux will account for 24% of the nearly $16 billion worldwide server appliance market by 2003.

This growth is driven by Linux's core advantages. Linux is:

- Free—no per-user licensing costs
- Widely available—on systems ranging from embedded controllers to room-sized clusters with the performance of supercomputers
- Stable—continuous uptime of one or more years is not uncommon for Linux installations

- Secure—primarily as a result of open peer review throughout its development
- Flexible-—because source code is available and may be modified to fit customer needs
- Low risk—because its future development is not dependent upon a single corporation
- Internet-ready—Linux was designed from the ground up as a network operating system
- Open—-based on published standards and built for interoperability

Where Does Linux Fit?

Linux currently excels in the following application categories:

- File and print serving in heterogeneous environments (Samba, Netatalk, NFS)
- Web serving (Apache)
- Email and news server (Sendmail, NNTP, list servers)
- Network infrastructure (DNS/DHCP, LDAP)
- Network security (firewalling, IP masquerading, NAT)
- Inexpensive parallel supercomputing (Beowulf)

Fitting Linux into the puzzle of existing IT systems and technologies requires an examination of where it demonstrates superior return on investment. Linux yields dramatic cost savings over a NetWare or Windows NT solution for departmental file and printer serving. Linuxcare's estimates indicate that an NT solution is fifteen times more expensive than a Linux solution. Given Linux's excellent remote administration features, these savings can compound in the form of lower ongoing savings on maintenance costs.

LINUXCARE VS. ALTERNATIVES FOR DEPARTMENTAL FILE / PRINT SHARING

Number of users: 1,000	Netware 5	NT 4.0	Linux
Software			
Operating System (OS) license per server	$1,195	$4,000	$99
OS per seat client license	$54	$128	$0
Total software costs including total servers and total seats	$58,780	$144,000	$99
Engineering			
Engineering time per server (hours)	16	16	20
Engineering cost per hour	$125	$125	$250
Total engineering costs	$2,000	$2,000	$5,000
Hardware			
Number of servers required	4	4	1
Hardware per unit cost	$6,000	$6,000	$6,000
Hardware maintenance/support	$250	$250	$250
Total hardware costs including all servers	$25,000	$25,000	$6,250
Number of users per server	250	250	1000
Estimates			
Hardware cost	$25,000	$25,000	$6,250
Software and license cost	$58,780	$144,000	$99
Engineering cost	$2,000	$2,000	$5,000
Total cost	**$85,784**	**$171,004**	**$11,350**

Source: Linuxcare. Figures based on published prices for Novell Net Ware and Microsoft Wndows NT, August 1999.

However, it is important to note that Linux has weaknesses which limit its current prospects on the desktop and in the high-end server space:

- Lack of consistent GUI
- Lack of scalability past eight processors
- Limited support for databases greater than a terabyte in size
- Virtually no groupware applications
- Lack of mainstream productivity applications
- Extreme high-end features (e.g., journaling file systems) in development phase
- Industry standards for skills certification in development phase

These limitations are being addressed and are not expected to be long-term obstacles to growth. However, they underscore the fact that Linux today best fits a limited—though important—set of customer requirements.

In the next year, Linux is forecast to take on more of a mission-critical role in the enterprise. A recent survey of 600 IT professionals conducted by Miller-Freeman revealed that respondents planned to deploy Linux in the areas of:

- Web application development, administration and deployment (e.g., IBM Websphere)

- Network management (e.g., CA Unicenter)
- Enterprise applications (e.g., SAP)
- Custom applications
- Databases

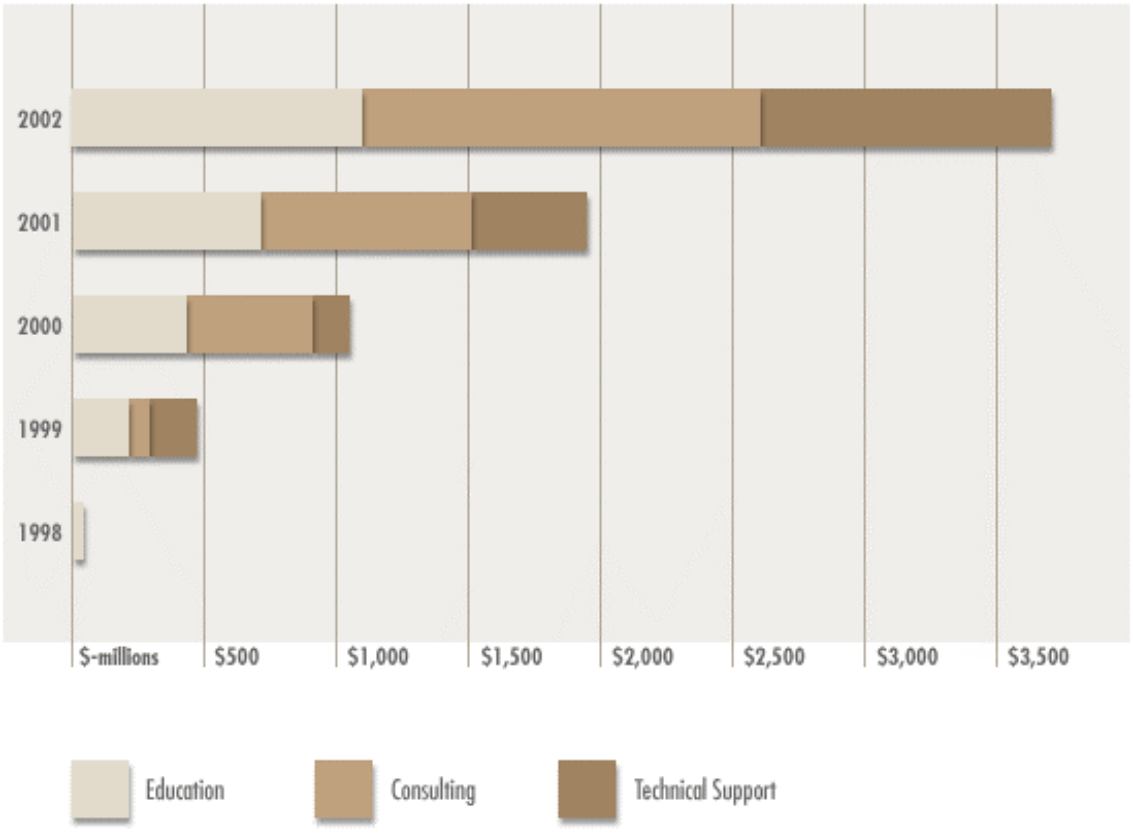
This is corroborated by a review of Linuxcare's support logs which reveals the growing role that Linux is taking in the enterprise.

What's Missing: Service and Support

As Linux penetrates the enterprise market, the issue of service and support becomes more and more crucial. The Miller-Freeman IT Survey concluded that the largest roadblock to implementing Linux and open-source -based solutions is the perceived lack of commercial support and service, cited by 32.9% of the respondents. The same study revealed that 79.1% considered service and support to be an important component of the Linux buying decision.

It's clear the service opportunity will be a major driver of growth in the Linux market. Technology analyst firms have not yet developed a forecast for the Linux services market. To estimate the size of the growing market for Linux technical

LINUX SERVICES MARKET FORECAST



services, Linuxcare used server shipment and system software support market forecasts from IDC and applied the services revenue mix derived from Oracle Corporation as reported in their most recent 10Qs.
The growth prospects are impressive, with an estimated CAGR for Linux technical support of 63% from 1999 to 2002, for Linux consulting services 108%, and for Linux education services 151%. This is clearly a dynamic market with excellent prospects for vendors that can best serve customer support and training requirements.

Business Models for the Open-Source Era

Customer demand and superior solutions are at the heart of every growing market, but given the fact that Linux is essentially free, what business models make sense? A growing number of companies are approaching the Linux and open-source opportunities, each with different business models.

BUSINESS MODELS FOR THE OPEN SOURCE ERA

		Examples
"Brand First"	Brand unique builds of Linux; add value based on regional focus, add-ons and ease of use.	Red Hat, SuSE, TurboLinux, Caldera
"Fee-on-Free"	Add value on top of a freely available Open Source software tool. Sell the enhanced versions to customers willing to pay for added features and support.	Cygnus Solutions, Sendmail, Scriptics, ActiveState
"Smart Services"	A "support-only strategy with no bets waged on outcome of battle between different brands or builds." Provide a broad offering of enterprise-scale support.	Linuxcare
Linux Hardware Solutions	Provide hardware optimized to run Linux.	VA Research, Penguin Computing
Software Documentation and Education	Publish and distribute professional documentation.	O'Reilly & Associates

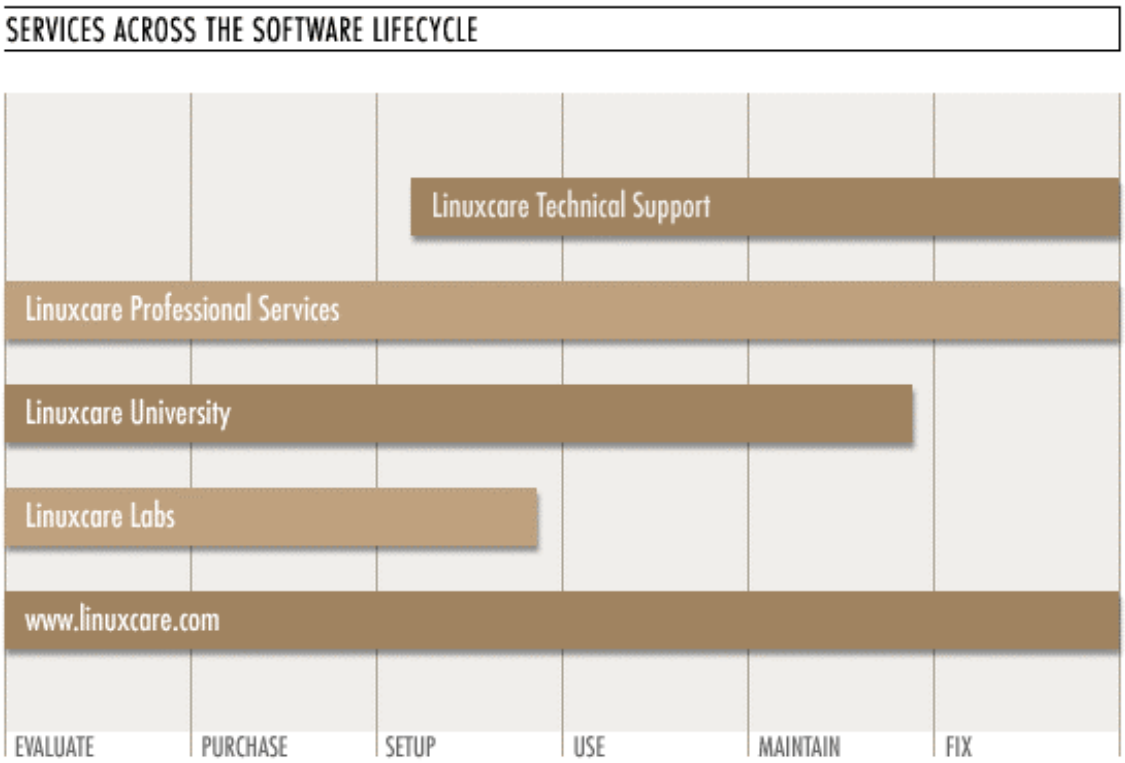
In a recent Industry Report, Hambrecht and Quist describes five business models that provide a useful framework for understanding the open-source market:

open-source technology is unique in that source code is equally available to all. This creates an environment in which vendors must specialize in a particular aspect of customer value.

Linuxcare's exclusive focus on providing breakthrough technical services for enterprise Linux environments is built on two core strengths. First, Linuxcare has assembled an unparalleled team of Linux technology experts, including active contributors to the Linux code base. Second, Linuxcare has built an infrastructure that enables operational excellence in the areas of technical support, professional services, Linux training and product certification--the services most in demand by enterprises considering or deploying Linux solutions. Linuxcare provides these services to enterprises regardless of which distribution(s) of Linux they are using.

Linuxcare has built a comprehensive suite of services spanning the software lifecycle, supporting customers whether they are evaluating Linux for the first time; purchasing Linux hardware or software solutions; setting up, using, and maintaining Linux solutions, or fixing problems when they arise.

Linuxcare Services Across the Lifecycle



Linuxcare's deep technical expertise and leading-edge support infrastructure has drawn prominent customers. Dell Computer chose Linuxcare for Linux technical support for the systems it ships with Red Hat Linux. With equal access to source code, it makes business sense to select vendors that specialize in the area that best fits customer requirements—-in this case, responsive, expert technical support.

Perhaps it is best to conclude with the words of a customer, Jad DeFanti, Senior Systems Administrator at Alexa Internet, a division of Amazon.com:

"When you work with other operating systems, you always have someone to call. When you purchase a vendor's products, in exchange, you expect they will help you. This is noticeably absent in the Linux world. You have to rely on newsgroups, ideas from your engineers, and the rumor mill. There has been no formal channel that's helpful in supporting Linux. Linuxcare fills that void."

Footnotes

1. *Client and Embedded Operating Enviornments: Linux Operating System Market Overview*, William Peterson, Dan Kusnetzky, Jean Bozman, IDC, March 1999, p. 10.
2. *Study: Linux will account for a quarter of server sales*, CNET News.com, July 19, 1999.
3. See: http://www.loki.chpc.utah.edu/index.html
4. Nugent Telecommunications survey of ISP's at http://www.nuge.com/~uptime
5. *The Commercialization of Linux: The IT Manager's View*, June 1999, p.21
6. lbid.,p. 5.
7. IDC projects the 2001 System Software Support Market to be $10.7 billion. The forecast above implies Linux support will comprise 17.7% of the total 2001 global systems support market. Consulting and Education forecasts in 2002 are derived from the services mix of Oracle Corporation, as reported in their most recent IOQ, 9 months ending Feb 28, 1999. 1998 market revenues are based on Linuxcare estimates of services vendor revenues.
8. *A Revolution from Within: open-source Business Models in Infrastructure Software*, Inustry Report by Christopher J. Galvin, Hambrecht & Quist Equity Research, April 23, 1999.
9. Alexa Internet case study prepared by Linuxcare, Inc., August 1999.

Demystifying Open-Source

How Open-Source Software Development Works

An Industry Briefing Paper by Linuxcare, Inc.
October, 1999

Introduction

Open-source software development and distribution is fundamentally different from that of traditional proprietary software. This paper will answer the following questions:

1. What is open-source software
2. How is open-source different from proprietary software?
3. How does the open-source development process work?
4. How is Linux developed, distributed, and supported?

1. What is Open-Source Software?

Open-source refers to software distributed under a legal license, such as the GNU General Public License (GPL), that permits free distribution and require open availability of the source code. All the essential portions of the Linux operating system its heart, or kernel, and most of the utilities that make up the operating system are published under the GPL.

- Open-source licenses, such as the GPL, guarantee anyone the right to read, redistribute, modify and use the software freely.
- Under many open-source licenses, including the GPL, modifications of existing software must be distributed under the same license as the original software. The source code to any changes or improvements must be made available to the public.
- Most open-source software is not developed by one single vendor, but by a distributed group of programmers. Typically, open-source software development is guided by project maintainers who address technical or end-user requirements rather than vendor agendas.
- Nobody "owns" open-source software, which is freely available for download over the Internet. Linux distribution vendors such as Red Hat, Caldera, SuSE, and others package existing open-source software and provide a more convenient way for their customers to obtain the software.
- The GPL is one example of an open-source license. Other examples include the BSD license, the MIT X License, the Artistic License, and the IBM Public License. All accomplish the same basic objectives: free distribution and openly available source code. All open-source licenses meet the open-source Definition, which is described at http://opensource.org/osd.html.

What are Some Examples of Open-Source Software?

Many of the leading Internet and networking software programs are open-source software:

- Linux, the Web's leading operating system (running 31% of Web servers, versus 24% for Windows and 17% for Solaris)1
- Apache, the leading Web server (running 55% of the Web sites on the Internet)2
- Sendmail, the leading Internet mail server(running more than 75% of email servers on the Internet)3
- BIND, the leading Domain Name Server (DNS) platform
- Samba, a cross-platform networking server
- Perl, a scripting language
- Mozilla, the browser from Netscape/AOL
- MySQL, a database

The open-source model unties the knot between the product vendor and support services. Because source code is available to all, vendors are able to focus on a part of the value chain and build competitive services without fear of proprietary lock-outs.

2. How is Open-source Different From Proprietary Software?

With traditional proprietary software, the purchaser obtains only executable code-the ones and zeros that computers understand, but that are unreadable by humans. The company that develops the software holds the worldwide monopoly on its source code, and becomes the only place where the code can be modified, updated, or fixed. With open-source software, the source code is freely available, giving developers the ability to isolate and fix bugs and to customize the software to their needs.

A common illustration equates using proprietary software with driving a car with the hood permanently welded shut. Under this scenario, if the engine were to break down, the owner would have to return the car to the manufacturer for repair. Without access to the engine, neither the owner nor the car dealer would be able to fix the problem. open-source software is like a car with a hood that opens. Car owners can fix problems themselves, or choose a repair service that best fits their needs. In the proprietary software model, the best company to provide support is the company that manufactures the software. The manufacturer is the only company that truly understands the source code, has access to it, and can modify or fix it when it breaks.

In the open-source software model, there is no single manufacturer. open-source software is developed by distributed teams of programmers around the world. So there is no exclusive source for expertise, modifications, or bug fixes. Distribution vendors such as Caldera, Red Hat, SuSE, and TurboLinux are not primarily manufacturers, but rather packagers and distributors of free software developed by others.

The open-source model unties the knot between the product vendor and support services. Because source code is available to all, vendors are able to focus on a part of the value chain and build competitive services without fear of proprietary lock-outs. Therefore, the best provider of shrink-wrapped Linux products is the vendor that best understands packaging, distribution, point-of-sale promotion, and branding. The best provider of Linux customer services is the vendor that specializes in service, building deep technical expertise and superior service delivery systems.

The bottom line is that the open-source software development model, by creating-and protecting-an open playing field, encourages vendor specialization and fosters honest competition, ultimately giving the customer more choice, flexibility, and control.

The best known open-source projects such as Linux have more contributors and testers than a traditional software company could afford to deploy on a project.

What are the Advantages of Open-Source Software Versus Proprietary Software?

- **Stability** - Open-source software is often more reliable and stable than proprietary software. This is because open-source projects have large numbers of contributors and follow an iterative development, debugging, and testing cycle.
- **Cost** - Open-source software is free, resulting in immediate savings on licensing fees and upgrading costs. The larger the project, the greater the savings. For example, there is no charge for additional client connections to an open-source database.
- **Security** - In the proprietary software model, developers compete to discover and exploit or publicize security holes. The open-source peer review process redirects developer competition toward preventing security breaches in the first place. Additionally, there are no hidden APIs that can be exploited.
- **Flexibility** - Open-source code can be modified to fit customer requirements. Drivers can be developed or modified without reverse-engineering unpublished APIs.
- **Choice of vendors** - In the open-source model, vendors compete purely on the basis of their ability to add value to a shared platform, not on the basis of proprietary secrets.
- **Reduced risk** - The open-source development model effectively spreads risks over a large pool of programming talent. And it provides a hedge against obsolescence-for example, if a company that develops open-source software goes out of business, the code could thereafter be maintained in perpetuity by other developers. Cisco Systems recently decided to release print spooler software under an open-source license to reduce its dependency on in-house programming staff.

3. How Does the Open-source Development Process Work?

To understand the open-source software development process it is important to acknowledge the roles of the various participants who take part in creating the code.

Project Maintainer/Developer

- Has a personal need or "itch" for which there is no working code available
- Determines the software license
- Writes the first code release and puts it up on the Internet
- Sets up a Web site, mailing lists, and version control services (e.g. VCS)
- Builds and leads the development team, usually from volunteers
- Approves official releases

Development Team

- Adds features, fixes bugs, creates patches and writes documentation

Users/Debuggers

- Find bugs, point out design flaws, and request new features

After the project maintainer posts the first release, both users and the development team submit ideas to the project mailing lists. Patches come in from developers to the project maintainer. The maintainer incorporates improvements and releases a new version to the development team and users. As momentum builds, more people get involved, and the software evolves. Developers are rewarded by the immediately visible recognition of their contributions to the product. Linux is probably the best-known example of a successful open-source development project. Improvements and bug fixes developed and submitted by companies such as Linuxcare are included in Linux releases based on technical merit alone.

4. How is Linux Developed, Distributed and Supported?

What is Linux?

Linux typically refers to the operating system built around the Linux kernel, a wide variety of GNU libraries and utilities, and many different open-source projects. The Linux kernel is a small, though central, part of the overall operating system. The overall operating system comprises:

- The Linux kernel, which handles process scheduling, memory management, symmetric multi-processing (SMP), device drivers, etc.
- GNU C libraries (libc5, glibc6), the base API for the GNU system
- GNU utilities, the shells, file utilities, compilers, linkers, etc.
- X Windows, which handles graphical display
- GNOME or KDE, which handles graphical user interface
- Many other programs and utilities

An Overview of Linux

Who owns Linux?

No one person or corporation owns Linux. It is created and distributed by a community of highly technical and committed contributors all over the world. Each of the components of Linux is an open-source project that is managed by a different project maintainer.

How is the Linux kernel developed and updated?

The Linux kernel is developed and updated following the open-source development model discussed previously. Linus Torvalds is the project maintainer, with final authority over what goes into the kernel. Because of the complexity of the project, he is aided by a group of appointed project maintainers who are responsible for various components of the code.

A large number of developers worldwide contribute to improvements to Linux. Any developer can submit a patch that includes source code changes to the kernel mailing list. The patch is reviewed by Linus and his project maintainers. They decide whether or not to include it in the next release based on technical merit, not commercial reasons. Thus, there is no single company directing the development path of the Linux kernel.

What is the difference between the development and stable release?

There are two separate code trees for Linux: the stable version and the development version. The stable version, which gets updated every few months, only includes code that is time-tested and proven. This is what is released to end users and businesses. Production releases have even version numbers, e.g., 2.0, 2.2, 2.4, etc. The development version is where developers can experiment with advanced technology and try new ideas. When there is a lot of activity, a new development kernel release can come out as often as three times a day. The open-source philosophy is "release early and release often." This has proven to be an efficient way to discover and eliminate problems before they become deeply rooted. New features are worked out in the development kernel first and then are included in the stable kernel. Development releases have odd version numbers, e.g., 2.1, 2.3.x, etc.

What does a Linux distribution vendor do?

A Linux distribution includes the Linux kernel plus utilities, programming tools, window managers, and other software that make up a full operating system. Distribution companies such as Caldera, Red Hat, SuSE, TurboLinux, and nonprofit organizations such as Debian, download the latest open-source packages from the Internet, quality-assure them, add utilities such as installation programs, and package them on a CD-ROM with a manual. The underlying code in each distribution is exactly the same. Slight differences may occur in the following:

- Hardware installation programs
- Default X-windows configuration
- Graphical systems management tools

- Proprietary software packages (very few)

In the vast majority of cases, Linux applications are compatible with all distributions of Linux, which accounts for the aphorism "Linux is Linux is Linux." When a new Linux kernel is released, it is put up on the main Linux kernel site, www.kernel.org. The distribution companies then package it and provide it as an update on their Web sites. Distribution vendors take the kernel as is, with all changes and fixes that are contributed by members of the development community. Each distribution company releases new distributions about twice a year. The open-source development model discourages distribution vendors from forking the Linux code base into incompatible code streams. The GPL specifies that additions, modifications, and extensions to Linux are distributed in source code form whenever executables are made available. If a distribution company were to acquire development expertise and attempt to build unique features into Linux, its innovations would be released back to the development community. Truly valuable changes would then be included in the next release of Linux and/or freely adopted by other distribution vendors, eliminating any competitive advantage. Currently, the vast majority of fixes, patches, and additions to Linux are contributed by independent developers. Each one of these modifications improves the stability and functionality of Linux. Competitive pressures mean that Linux distribution vendors really have no choice as to which patches and fixes are included in their upcoming versions. Rather, the decision is made for them by the Linux project maintainers, who have final say over what goes into a new Linux release. Therefore, improvements and bug fixes developed and submitted by companies such as Linuxcare are included in Linux releases based on technical merit alone.

How Does the Linux Industry Work?

The Linux industry consists of software developers, distribution vendors, application vendors (ISVs), hardware vendors, and services vendors.

Who Develops Linux Code?

Tens of thousands of independent programmers contribute code to project maintainers for inclusion in Linux.

Who Packages Linux Software and Sells It?

Distribution companies such as Caldera, Red Hat, SuSE, and TurboLinux, as well as nonprofit organizations such as Debian, package Linux on a CD-ROM with a manual and sell it via retail, VAR, and direct channels.

Who Develops Applications for Linux?

Software development firms such as Corel, Sun (StarOffice), Oracle, SAP, and many others, including independent programmers, develop applications that run on Linux.

Who Bundles Linux with their Hardware?

Companies such as Dell, IBM, and VA Linux Systems sell Linux pre-installed on their computer systems.

Who Provides Support, Service and Training for Linux?

Linuxcare is the only company dedicated exclusively to providing enterprise-class technical support, training, certification, and professional services for the Linux platform. Linuxcare provides these services to companies across the Linux industry: developers, software vendors, distribution companies, hardware OEMs, and enterprise customers. It should be noted that while distribution companies offer support options exclusively for their Linux distribution, most outsource support. For example, Red Hat outsources support to Collective Technologies and The Sutherland Group; Caldera outsources support to Multi-User Solutions; TurboLinux outsources support to Linuxcare.

The Linux Industry Additional Resources

1. The open-source Definition, http://www.opensource.org/osd.html.
2. The Cathedral and the Bazaar, an examination of the open-source development process, http://www.tuxedo.org/~esr/writings/cathedral-bazaar/cathedral-bazaar.html
3. The Magic Cauldron, a discussion of open-source business models, http://www.tuxedo.org/~esr/writings/magic-cauldron/
4. A compilation of open-source resources,
5. http://www.opensource.org/
6. A Revolution from Within: open-source Business Models in Infrastructure Software, Industry Report by Christopher J. Galvin, Hambrecht & Quist Equity Research, April 23, 1999.

Footnotes

1. The Internet Operating System Counter,
2. www.leb.net/hzo/ioscount/index.html
3. The Netcraft Web Server Survey, http://www.netcraft.com/survey
4. Sendmail, Inc. study; see http://www.sendmail.com/company/index.html
5. The Magic Cauldron, http://www.tuxedo.org/~esr/writings/magic-cauldron/

Realizing the Benefits of Custom Linux

A Business Briefing Paper by Linuxcare, Inc.
February, 2000

Open-source software has revolutionized the software industry, causing fundamental changes in the traditional value propositions of software delivery, service and support. The reason for this is simple: open-source code is widely available, free, and open to modification, rendering shrinkwrap software-based business models obsolete. These same factors, combined with the Internet's emergence as a means for geographically dispersed software developers to collaborate online, have resulted in the robust, stable and high-performance operating system known as Linux, and in leading Internet applications such as the Apache Web Server and the SendMail mail server. Original Equipment Manufacturers (OEMs), Independent Software Vendors (ISVs), and Internet and Application Service Providers (ISPs and ASPs) are attracted by the benefits of open-source software, and in particular the Linux operating system, but face considerable challenges building and delivering solutions with open-source foundations.

Linuxcare addresses these challenges with a unique service that delivers the value of custom Linux solutions to vendors and their customers today and over time.

From Product to Solution

The New Economy is driving a shift in value from the general to the specific, from what is built to how it meets customer needs, from product to solution. Because the quantity of products available and the ability to acquire them has exploded, differentiation and time to market are the critical success factors for suppliers. The rewards of mass standardization have been replaced with the appeal of mass customization and the need to innovate rapidly. Just as Henry Ford's once ubiquitous black car was an emblem of the manufacturing age, the personal computer of today represents the flexibility, customization and speed of our era, and the winner is the supplier who can build them on demand to individual specifications and deliver it in hours. This scenario is played out daily in Round Rock, Texas, where Dell Computer generates more than $30 million in sales each day. Rather than attempting to forecast sales and build up large inventories, Dell provides made-to-order solutions built on demand. This approach significantly reduces their costs and at the same time provides a highly desirable service. The result? An annual growth rate in shipments of over 50%, and the highest sales of any PC manufacturer in the US for 1999.

Open-Source and Coopetition

Some of the stars of this new era of mass customization are open-source software packages like the Linux operating system and the Apache Web server. These open-source packages are being commercially adopted at astounding rates: Linux shipments of server operating system licenses grew over 93% from 1998 to 1999, outstripping both Netware and all UNIX flavors combined2;while deployed Apache Web servers increased from 1.1 million in 1998 to 5.2 million in 1999

The reasons for this rapid growth are found in the fundamentals of open-source. This model leverages the skills and talents of a worldwide developer community to write and test code that is then freely available to all, requiring only that any improvements or modifications be contributed back to the original code base. The resulting software is stable, feature rich, and free. Using these strong foundations, suppliers are freed to focus on building market-specific solutions that showcase their added value. The software industry is increasingly finding success in using cooperative networks, partnerships, and joint ventures that emulate the open-source model to advance individual solutions. An example of this is Cisco Systems' decision to open the source code to its distributed print spooling application, thereby diffusing the risks of ongoing code maintenance and leveraging a pool of programmer talent beyond its own employees4. This rise in "coopetition" and the resulting shared norms and trust among suppliers is a significant factor in the New Economy, driving rapid innovation and collapsing time to market.

Open-source goes beyond the obvious advantages of providing a stable, feature-rich foundation to revolutionize the value proposition for software. Because the base software components are free and open, the value in the marketplace shifts to how they are used to provide a complete solution.

In Mountain View, CA, upstart Cobalt Networks is making history. By taking advantage of the flexibility, stability, and availability of the Apache web server, the Linux operating system, and Samba code for Windows networking interoperability, Cobalt was able to introduce seven new market-specific servers for sale in 55 different countries within a single year. This drove the net revenues of their market-specific Internet server appliances up from $3.5 million in 1998 to $22.8 million in 1999. The alternatives to open-source were either costly licenses from traditional software vendors, or years of development time. Either of these choices would have dissolved Cobalt's market advantages of cost-effectiveness and time to market.

To Market, To Market

OEMs, ISVs, and Internet service providers, ISPs and ASPs, have been encouraged to more broadly adopt open-source components by successes like Cobalt's and the proven technical capabilities of open-source code. In particular, the Linux operating system is experiencing dramatic growth, with 1999 server market share at 24.6%, according to IDC of Framingham, MA. IDC's figures were based solely on commercial distributions sold, and noted its appeal as a combination of low

acquisition costs and the ability to tune the operating system to specific needs. These advantages have made Linux the fastest-growing operating system, and a rising presence in mission-critical business areas such as network management, enterprise applications, database environments, Web serving, and Web-based applications.

Capitalizing on this growth, vendors like Caldera, Red Hat, SuSE Linux and TurboLinux are packaging and selling distributions of Linux. In general, distributions add value to the freely available software by delivering Linux packages on CDs along with installation programs, generic default configurations for various types of systems, and manuals. As in the traditional delivery model of proprietary operating systems, the consolidated product is tested, and supported with follow-on services and updates. This is a level of added value that recapitulates the well-known retail shrink-wrap model, and is appropriate for consumers in an early stage of market development. But it does not unlock the real benefits of open-source software—customizability, rapid innovation, flexibility, and tight fit-to-purpose.

Where Has All The Value Gone?

OEMs, ISVs, ISPs and ASPs understand, through hard experience, the complexity involved in taking a generic operating system and employing it in their specific solutions. It takes expertise and infrastructure to customize the operating system environment, test and certify solution configurations, tune the software for optimal performance, and maintain and support it for their customer base over time. Traditional packaged software models, whether applied to proprietary software or to Linux distributions, do not address these issues. In the case of Linux, they limit the true benefits that can be derived from the open-source code and one of the key reasons suppliers want to pro-vide a Linux-based solution: the ability to utilize the exact combination of software packages that is optimized and personalized for that solution.

The ever-increasing pressures of rapid time to market and excellence of execution demand a different approach. The answer is a customized Linux solution. Far from a “one-size-fits-all” monolith, the custom Linux solution is tailored specifically to meet an OEM, ISV or Internet service vendor’s needs, un-burdened by extraneous components. Custom Linux solutions are tested and certified on the target hardware platforms, and kept up-to-date with only the fixes and enhancements relevant to the solution. These fixes and updates, unchained to any third-party vendor’s update schedule, are synchronized to the vendor’s product release cycle. This model directly endows the benefits of the open-source model to the overall solution, providing a powerful, performance-enhanced foundation that is entirely standards-based. Additionally, this model provides the vendor with the opportunity to brand the solution harmoniously, including the initial startup screen, the login window, the desktop, windows, menus, icons, help screens and applications, providing a seamless user experience that emphasizes the solution vendor’s unique value.

A Linuxcare Custom Solution Program

In the face of the time and expenses it takes to internally build the infrastructure and expertise needed to deliver and maintain a tailored operating system, OEMs, ISVs, ISPs and ASPs are turning to Linuxcare. A Linuxcare custom solution jump-starts entry into the Linux market by tailoring a solution to specific platform requirements. The offering is a subscription service that supports and maintains a custom Linux solution. Linuxcare experts work directly with the vendor to define business and technical objectives for a specific solution, and provide the Linux software, certification, and support needed to go to market rapidly and with confidence.

The Linuxcare Custom Solution Program includes a custom Linux operating system that is tailored to be more efficient, more flexible, and run faster than a standard distribution applied to the same environment. In sample configurations the performance of the Apache Web server has been increased five-fold and disk throughput has been doubled by Linuxcare customizations. In addition to optimizing the software for speed, a specific hardware platform and peripherals, system overhead and security are improved by removing extraneous drivers and services, and setup and maintenance processes are automated for ease and flexibility.

All software delivered through the Program is fully compliant with open standards and will meet the Linux Standards Base (LSB) reference specifications as they are ratified. This commitment to standards underscores Linuxcare's intent to provide custom Linux solutions that interoperate fully with Linux distributions from a wide range of vendors, preventing any possible fragmentation of the Linux operating system.

The Linuxcare Custom Solution integrates relevant updates as they become available in the source base, and tests them for the specific solution. These updates can be delivered to customers immediately or synchronized with the vendor's product release or revision cycles. OEMs, ISVs, ISPs and ASPs can respond to market and business needs immediately instead of being dependent on the release schedules of a packaged distribution supplier. And because the custom distribution can be deeply branded to the vendor's solution, end user awareness is appropriately focused on the vendor company and its products and partners.

Custom Solution Program Offering

CUSTOM SOLUTION PROGRAM OFFERING	
ASSESSMENT	Assess the partner's Linux needs and determine best course of action
CUSTOMIZATION	Gather customer requirements and build a customized, optimized distribution
INSTALLATION	Install custom Linux on partner's system
CERTIFICATION	Test and certify customized Linux system
SUPPORT	Deliver support package that works best for the partner's business model
MAINTENANCE	Provide ongoing software updates
TRAINING	Train partner's support staff, developers, sales staff, and/or end users
APPLICATION PORTING	Port necessary applications
OTHER SERVICES	Based on need, partner may select other services from Linuxcare price list at a discount

Included ● Optional

Also included in the Linuxcare Custom Solution Program is preferred access to the world-class support of Linuxcare. Linuxcare is the leading provider of Linux services, focusing expertise in four areas: Technical Support, providing comprehensive 24x7 support; Professional Services for consulting, development, as well as Linux integration and migration projects; Linuxcare University, offering a full range of courseware for all leading Linux distributions; and Linuxcare Labs, the first independent testing authority for vendor-neutral product certification and benchmarking. Linuxcare Labs tests and certifies each solution bringing extensive expertise and knowledge to the validation process.

Linuxcare has developed significant technology to gather, filter, organize, validate and deliver accumulated knowledge of Linux and open-source software throughout the company and to customers. Extending the infrastructure and enriching the knowledgebase is fundamental to the Linuxcare mission of providing support, expertise, and solutions to customers in real time. Because the focus is on supporting the broadest range of Linux solutions, Linuxcare continues to enhance its cumulative knowledge and the expertise available through its people and support systems.

Linuxcare is also highly qualified and well-positioned to identify synergies in the solution sets of OEMs, ISVs, ISPs and ASPs, and to enable the rapid deployment and long-term support of joint solutions. Facilitating partnerships opens new opportunities for all participants, and delivers uniquely capable solutions to market, fostering growth for vendors and end users alike.

Support for the Revolution

Linuxcare has always been a services company, with single-minded dedication to providing comprehensive support of the Linux operating system, open-source applications and the principles of collaborative, community-based software development. The company has an unparalleled talent pool of Linux experts, and a unique infrastructure for leveraging accumulated knowledge across the company. By applying its extensive expertise to the delivery, maintenance, and support of solution-specific Linux distributions, Linuxcare provides vendors and their end users with all the benefits of an optimized open-source system delivered today and maintained for the future. And because the solutions will be fully Linux Standards base (LSB) compliant, these efforts contribute to the rich-ness and vitality of both Linux and the open-source community.

Linuxcare understands the true value of software, which is found in the solution enabled by the software, and in how that solution meets users' needs. In short, the software is only a part of the answer. The real value lies in how well and how completely the solution meets customer needs, now and over time. The Linuxcare Custom Solution Program empowers OEMs, ISVs, ISPs and ASPs to deliver unique, targeted Linux solutions rapidly and with confidence. By enabling the shift in value from product to solution, and by empowering vendors to deliver highly customized but fully standards-based solutions to their customers, Linuxcare is fueling the engine of the New Economy and delivering support for the open-source revolution.

FOOTNOTES

1 Source: IDC (January 2000); Dataquest (January 2000)
2 Source: IDC (January 2000)
3 Source: Netcraft (www.netcraft.com)
4 Source: The Magic Cauldron, Erik S. Raymond, June 1999,
www.tuxedo.org/~esr/writings/magic-cauldron/e to market
Reduced risk and cost

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Community

Linuxcare's beginnings are rooted in the open-source and Linux community. As such, the company supports the community from which it was born. The company employs top Linux and open-source talent. These experts, called "gurus," not only help to develop Linuxcare's customer solutions, but also often remain actively involved with outside open-source projects.

Linuxcare Gurus Who's Who

Kernel Hackers

- **Alex deVries** - Contributed to the Linux for SGI Indy project, and produced the first Linux distribution for SGI called Rough Cuts shipped by Red Hat in 1998.
- **Paul Mackerras** - Released a port of the Linux kernel for his PCI-based Power Macintosh 7500 in September 1996, pre-dating the release of Apple's MKLinux for the PCI Power Macs. He has currently taken a leading role in updating the port to support more devices and newer models of the Power Macs and clones.
- **Stephen Rothwell**- Maintains and supports Linux-based firewalls and Web servers for NEC customers. In his spare time, Rothwell develops and maintains an Advanced Power Management driver for Linux licensed under the GPL.
- **Paul "Rusty" Russell** - Wrote, maintains, and develops the Linux kernel firewalling code and is listed as one of the "Top 50 People in Linux" by *Linux Magazine*.
- **Jes Sorensen**- Took over the role of Linux/m68k port maintainer, and Linux code for CERN, including device drivers for Gigabit Ethernet and HIPPI. He also has worked for the Linux/IA64 (Trillian) Project.
- **Matthew Wilcox** - Contributed to GNU binutils, GNU texinfo, the Linux kernel and glibc; Wilcox also worked on the project to port Linux to Hewlett-Packard's PA-RISC line of computers.

Open -Source Developers

- **Rasmus Lerdorf** - Created the PHP scripting language and is also a member of the Apache-core team and has contributed to a number of Apache-related projects.
- **Christopher Mann** - Helped administer ftp.cdrom.com, still the primary download location for Red Hat, Slackware and FreeBSD; Rewrote the ftp.cdrom.com's eCommerce shopping software, eventually resulting in the release of OpenCart under the GPL, and set up FreeBSD Mall.
- **Phil Schwan** - Worked closely with Dr. Peter Braam of Carnegie-Mellon University on the design and implementation of Intermezzo, a distributed file system for Linux.
- **David Sifry** - Has contributed code to such projects as GNU Emacs, Majordomo, packetrace, jitterbug and to the Linux kernel itself. In addition, he managed the development of SecureVPS, an open-source virtual private networking server for Linux.
- **Andrew Tridgell** - Original author and current team leader for the Samba software package, which provides a complete implementation of the network file system protocols used by Windows NT.
- **David Welton** - Involved with Debian GNU/Linux as a developer, maintaining several packages including a few IRC clients, the Guile Scheme environment, and the SCM Scheme interpreter. Welton has also contributed bits of code to Apache, Netatalk, Strace, Ltrace, Gdtclft and other free software projects.

Consulting Gurus

- **Christopher Beard** - Founded The Puffin Group in September 1998 and served as its president and CEO; Co-founder of the project to port Linux to Hewlett-Packard's PA-RISC family of high-end UNIX servers.
- **Joseph Cheek** - Principally behind the Linux Knowledge Base at linuxkb.cheek.com; Authored many publications on networking and Linux topics.
- **James T. Dennis** - Has been using Linux since kernel version 0.99 PL 10 in 1992 and maintains the monthly "Answer Guy" Q&A feature in the *Linux Gazette*.
- **David Mandala** - Was CTO at Online Partners, a leading developer of Web-based communities, where he and his team were instrumental in designing and implementing the first member-to-member paging technology on the Internet.
- **Seth Schoen** - Worked for AtreNet LLC where he performed computer security and system administration consulting. He has also produced a prototype for the ControlBox, a Web-based home automation project. Schoen is a past officer of the U.C. Berkeley Linux Users Group and involved with the Consortium of All Bay Area Linux (CABAL).
- **Dan Shearer** - Started working with Linux with the mcc distribution in 1992 and has participated in many open-source projects since. He has been a technical adviser to Linux International and is co-developing an Internet Draft specifying a new document markup standard.

Community/Education Gurus

- **Zachary Brown** - Author of *Kernel Traffic*, the weekly digest of the Linux kernel mailing list.
- **Dr. A. R. "Tom" Peters** - Has been one of the initiators of the Linux Professional Institute (LPI), and, as director of Program Development, is responsible for the content of the Linux certification exams. At Linuxcare, Peters writes, develops, and teaches courseware for Linuxcare University.
- **Dan York** - One of the founders of the Linux Professional Institute certification initiative. He continues to serve as the Chair of the LPI Board of Directors.

Community Projects

Linux International

Linuxcare is a Sponsoring Corporate Member of Linux International and Dave Sifry, Linuxcare co-founder and CTO, serves on the Linux International Board of Directors.

Linux Professional Institute

Linuxcare is a charter platinum level sponsor of Linux Professional Institute (LPI), having donated $50k to the community driven organizations efforts at providing distribution-neutral certification for Linux engineers. Further, Linuxcare sponsors Dan York, chairman of the LPI Board of Directors.

Free Standards Group

Linuxcare is a charter member of the Free Standards Group (FSG), which was organized to accelerate the use and acceptance of open-source technologies through the application, development and promotion of interoperability standards. The FSG is comprised of the Linux Standard Base (LSB) and the Linux Internationalisation Initiative (LI18NUX). Linuxcare employee Henry Hall serves as a representative to the FSG, while Chris Yeoh is developing a test suite to determine a distribution's LSB compliance.

Bay Area Linux User Group

Linuxcare is an active supporter of the BALUG, which was founded by Linuxcare co-founder and executive vice president, Art Tyde.

Linux Gazette

Linuxcare is a sponsor of this monthly online magazine, which features articles contributed by the community such as "The Answer Guy," a column authored by Linuxcare employee Jim Dennis.

Samba.org

Linuxcare employee Andrew Tridgell is best known to the Linux world for his work as the original author and current team leader of the Samba project, the open-source effort to bridge the networking gap between UNIX and Windows.

Linuxppc.org

Linuxcare employee Paul MacKerras is best known as the maintainer of Linux PowerPC, a port of Linux to the Power Macintosh, and also as the maintainer of the Linux PPP kernel driver.

Advanced Power Management

Linuxcare employee Stephen Frederick Rothwell has been involved with Linux since its first public release in 1991. He maintains the Advanced Power Management driver, which he developed with support from NEC, and has made numerous smaller kernel contributions as well.

Kernel Traffic

Linuxcare employee Zack Brown has what some may call the luckiest job in the world - following kernel development. With his popular series, Kernel Traffic, and the open-source Kernal Cousin project, including KC wine, KC gimp-devel, KC Samba and KC debian-hurd. Brown and a host of volunteers have devoted countless hours to keeping the community informed on what's new in open-source development.

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