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A Mainstream Giant Goes Countercultural; I.B.M.'s Embrace of Linux Is a Bet That It Is the Software of the Future

By STEVE LOHR (NYT) 2317 words

A huge company with deep pockets, I.B.M. can afford to dabble in promising technologies. And that is what the International Business Machines Corporation seemed to be doing throughout much of last year with Linux, an increasingly popular version of the Unix operating system that is available free on the Internet.

I.B.M. dispatched emissaries to speak with members of the Linux community, a worldwide network of programmers who develop and debug the code. I.B.M. met with academics, consultants, economists and venture capitalists to plumb the Linux phenomenon. It made small investments in a couple of Linux start-ups, and offered Linux on one line of its computers.

But last fall, Big Blue suddenly got serious about Linux.

At the end of October, fresh from a global tour, Sam Palmisano, a senior vice president, reported that the Internet companies he spoke with told him that the preferred language of the young programmers they were hiring was Linux.

At about the same time, Irving Wladawsky-Berger, an I.B.M. executive with longstanding ties to the nation's supercomputing centers, was hearing that Linux was generating a lot of excitement in these leading-edge research institutions. And he had been sending e-mail to the company's other top technology executives about the rise of Linux.

"In the technical community and in the marketplace," Mr. Wladawsky-Berger recently recalled, "the signs were clear that something profound was going on."

Less than two months later, a few days before Christmas, I.B.M. had fashioned -- and Louis V. Gerstner Jr., the chairman, had approved -- an ambitious Linux strategy. The company that personifies mainstream corporate computing had itself done something profound: embrace Linux, a symbol of software's counterculture, as the operating system of the future for the Internet.

I.B.M., it was decreed, would embark on a costly program to make all its hardware and software work seamlessly with Linux. So quickly did the company mobilize that even now, hundreds of engineers across the company are already engaged in the Linux campaign, and I.B.M. says its army of Linux engineers will number in the thousands within a few years.

To be sure, other major companies in the industry, including Hewlett-Packard, Dell Computer and Oracle, also have Linux efforts. "But I.B.M. has tightly focused on Linux more than any other big company," observed Dan Kusnetzky, director of operating systems research at the International Data Corporation.

I.B.M.'s Linux strategy represents more than a bold, and risky, step in the field of software. The move is a textbook example of I.B.M.'s management style under Mr. Gerstner, who has worked to overhaul the company and its culture since he arrived in 1993.

In the pre-Gerstner days, decision making at I.B.M. was once described as "swimming through peanut butter." But these days, after a brief period of intense scrutiny -- during which the company's technical experts play a key role -- choices are made decisively and with remarkable swiftness, given that I.B.M. is a sprawling, $80-billion-a-year corporation.

In this most recent example, Mr. Palmisano, 48, who is regarded as a leading candidate to someday succeed Mr. Gerstner, is the senior executive who pushed most emphatically for the Linux initiative -- and has the most riding on its outcome. "This is Sam's bet," Mr. Wladawsky-Berger said.

The first step toward I.B.M.'s Linux strategy came in a Saturday morning telephone call on Oct. 30 that Nick Bowen received at his home in Newtown, Conn. The caller was his boss, Paul Horn, the head of the I.B.M. Watson labs. He told Mr. Bowen, a 39-year-old senior researcher, that he would lead an 11-person team to make recommendations on how I.B.M. -- the entire company -- should adapt to Linux. The investigation must be rigorous and exhaustive, Mr. Horn told him -- and finished in seven weeks.

The Bowen report, submitted to top management on Dec. 20, presented a plan for using Linux to undermine the software advantage enjoyed by I.B.M.'s two key rivals, Microsoft and Sun Microsystems. Microsoft's Windows NT and Sun's Solaris are the leading operating systems used today on server computers, the data-serving machines that are the engines of corporate networks and the Internet.

To combat Sun and Microsoft, the report recommended, I.B.M. should retool all its server operating systems, from the mainframe OS/390 to AIX, I.B.M.'s version of Unix, to run Linux smoothly. The same should be true of all I.B.M.'s database, Web applications and messaging software, the report said. And I.B.M., the Bowen team concluded, should push Linux as the operating system of choice for the Internet -- more robust and reliable than Windows NT and eventually overtaking Solaris, Sun's flavor of Unix, as the industry standard for Unix.

The goal would be to win the hearts and minds of perhaps the most influential audience in computing -- the software developers who write the applications that bring the Web to life and make Internet commerce actually work.

"Today, Microsoft and Sun dominate the application development seats," the report stated. "We recommend that I.B.M. aggressively pursue a Linux-based application development platform. Doing

so would disrupt the Sun-Microsoft stranglehold."

The Linux strategy would "provide our server business with a single, homogeneous server platform," from desktops to mainframes, giving I.B.M. a "level playing field" in software and allowing it to compete with Sun and Microsoft for "mindshare in key software growth segments and in universities."

The report, known as a "corporate assessment" inside I.B.M, ran just over 10 pages. In the pre-Gerstner days, such reports to top management could be 100 pages in length. But today's I.B.M. executives are familiar with the Gerstner edict: If you cannot say it in 10 pages, you are not focused on the right thing.

It was only at the beginning of last October that Mr. Palmisano took over I.B.M.'s server business. And he started at once to scout for "major initiatives" to help revive the growth of I.B.M.'s big server computers -- mainframes, minicomputers and AIX Unix machines. He closely followed the activities of the Bowen assessment team, he read early drafts of the group's report and he liked the finished document: a coherent, top-to-bottom software strategy for I.B.M.

Moving quickly, he said, was imperative. "The Internet has taught us all the importance of moving early, the advantage of being a first-mover," Mr. Palmisano said in an interview. "We want to be riding that Linux momentum at the front, not trailing it and defending the past. I.B.M. understands, believe me, what it means to be defending the past."

When Mr. Bowen met on Dec. 20 with Mr. Palmisano and Nick Donofrio, senior vice president for technology, at I.B.M.'s headquarters in Armonk, N.Y., he noted a nontechnical recommendation in the report: put one person in charge of the Linux effort companywide. "I'm already working on that," Mr. Bowen recalls Mr. Palmisano saying.

And when Mr. Palmisano met with Mr. Gerstner two days later, the chairman not only approved the plan but also agreed with his choice of who should be the company's Linux czar: Mr. Wladawsky-Berger. At the time, Mr. Wladawsky-Berger was general manager of the Internet division, responsible for making sure Internet technology and an Internet mindset was spread broadly throughout the company.

That job, Mr. Gerstner and Mr. Palmisano agreed, was done; I.B.M. "got" the Internet. Now, it was time for Mr. Wladawsky-Berger to move onto the next, hearts-and-minds challenge. So the staff of the Internet unit went elsewhere in the company, the division was folded and Mr. Wladawsky-Berger assumed the title vice president of technology and strategy in the computer-server group, headed by Mr. Palmisano.

They are a contrasting pair. Tall and physically imposing, Mr. Palmisano is regarded as a brilliant executive and hard-charging salesman. Previously, he ran the company's fast-growing global services group, where he had a special talent for bringing in big computer services deals, which can span several years and total billions of dollars. Mr. Palmisano's nickname at I.B.M. is "the closer."

Mr. Wladawsky-Berger is six years older and about a head shorter than his boss. Raised in Cuba, he fled with his parents, Eastern European immigrants who owned a store in Havana, when Castro came to power in 1959. He holds a Ph.D. in physics from the University of Chicago, speaks with a lilting Spanish accent and could easily be mistaken for a college professor.

After his postgraduate studies, Mr. Wladawsky-Berger joined I.B.M.'s Watson labs in 1970 as a researcher, but he had a taste for business side of the company as well. He led the drive to transform I.B.M.'s traditional mainframes by retooling them with low-cost microprocessors, the chips best known as the engines of personal computers.

"The Linux issue," Mr. Wladawsky-Berger explained, "is whether this is a fundamentally disruptive technology, like the microprocessor and the Internet. We're betting that it is."

I.B.M.'s Linux effort is a long-term strategy, not one likely to affect its quarterly earnings any time soon. And the strategy appeals to I.B.M., in part, because it has lost its operating system battles with Microsoft and Sun. Its effort in personal computer software, OS/2, was quickly crushed by Microsoft's market-dominating Windows. And I.B.M.'s AIX version of Unix has become an also-ran behind Sun's more popular Solaris.

So I.B.M. would love to drive the profit out of the operating systems business of its rivals -- just as Microsoft did to Netscape, the browser pioneer, by giving browsing software away free. "The operating systems wars of today are the equivalent of the browser wars of a few years ago," said Scott Hebner, an I.B.M. software executive. "The operating system is not where the value is."

Yet I.B.M.'s strategy can succeed only if Linux, which is distributed free, does become a genuine alternative to Windows or Solaris, thereby putting real pressure on their prices. And Linux has a long way to go. Today, it is used mainly for simpler tasks, like serving up Web pages, instead of for industrial-strength computing chores like financial transaction systems that must handle complex tasks, 24 hours a day, without crashing. Even I.B.M., which plans eventually to use Linux as its unifying Unix platform (shelving AIX), says Linux's true ascendance may not come for five years or so -- until Linux is built up to become more powerful and reliable.

Throughout the software field, the excitement surrounding Linux has less to do with the technology itself than with the fact that it is the leading example of so-called open-source software -- software that is distributed free, with its underlying source code openly published, and is developed, debugged and improved by an international community of programmers.

"It's the Web phenomenon coming to software development that is intriguing," said Larry Smarr, director of the National Center for Supercomputing Applications in Urbana-Champaign, Ill. "We now have the potential for collaborative, decentralized software authorship on large complex systems."

Still, it is unclear whether the open-source approach can solve the kind of complex software problems that have consumed countless programming hours and billions of dollars at Sun and Microsoft. And for I.B.M., there is a question of whether the Linux community, which works mostly on personal computers, will have much to contribute to the company's Linux efforts on mainframes and minicomputers.

"Linux on non-PC platforms is a nonstarter," said Greg Papadopoulos, chief technology officer for Sun Microsystems. "The ecosystem of open source is not going to be working for I.B.M. on other platforms."

But Mr. Wladawsky-Berger says he will side with the recommendations of I.B.M.'s best technical minds. "Not only did they say, 'Irving, this is doable,' " he observed. "They said, 'Irving, do it.' "

Certainly, veterans of the open-source counterculture seemed to have welcomed Big Blue into the fold. "It should accelerate the pace of adoption of Linux," said Eric Raymond, an evangelist of the open-source movement.

"Sure, there's some irony here, since I.B.M. used to be the enemy," Mr. Raymond said. "But everybody in the community is happy about I.B.M. wanting to play with us."

CAPTIONS: Photo: Sam Palmisano, left, and Irving Wladawsky-Berger lead I.B.M.'s Linux push. (Joyce Dopkeen/The New York Times)(pg. C1)

Chart: "A Software Evolution"
I.B.M.'s software model has evolved from all homegrown to open-source Linux, a free operating system developed by a worldwide community of programmers. I.B.M. is retooling all its software to run seamlessly with Linux, which is based on source code written by Linus Torvalds, a Finnish programmer, in 1991.

MILESTONES IN OPERATING SYSTEM SOFTWARE AT I.B.M.

1960
I.B.M.'s pioneering 360 mainframe fed information to so-called dumb terminals. Today's mainframes can be the engines behind corporate e-commerce networks.

1970
I.B.M.'s minicomputers, the company's first departure from mainframes, were intended for use by small businesses.

1980
DOS
The I.B.M. PC, running DOS, established the industry standard. Microsoft became the dominant supplier of DOS-based operating system software.

1990
AIX
I.B.M. introduced work stations running AIX, the company's version of the Unix operating system, which was created in 1969 at AT&T.

2000
LINUX -- NETFINITY 7000 SERVER
I.B.M. plans to have Linux work smoothly on all its server computers, from PC's to mainframes. Such machines are the data-serving hubs that power modern computer networks.
(Source: I.B.M.)(pg. C1)

Chart: "Betting on Linux"
Linux, the popular version of the Unix operating system that is available free on the Internet, is gaining ground.

Share of server-client (nonmainframe) network operating software shipments
New unit shipments 1998

Total: 4.4 million

1999
Total: 5.4 million

WINDOWS NT
New unit shipments 1998: 38%
1999: 38%
Growth of total unit shipments '98 to '99: +23.6%

LINUX
New unit shipments 1998: 16%
1999: 25%
Growth of total unit shipments '98 to '99: +93.2%

NETWARE
New unit shipments 1998: 23%
1999: 19%
Growth of total unit shipments '98 to '99: +5.9%

UNIX
New unit shipments 1998: 19%
1999: 15%
Growth of total unit shipments '98 to '99: +1.4%

OTHER
New unit shipments 1998: 4%
1999: 3%
Growth of total unit shipments '98 to '99: -25.5%
(Source: International Data Corporationments)(pg. C11)