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Attorneys for The SCO Group, Inc.

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF UTAH

THE SCO GROUP, INC.

Plaintiff/Counterclaim-Defendant,

vs.

INTERNATIONAL BUSINESS MACHINES CORPORATION,

Defendant/Counterclaim-Plaintiff.

DECLARATION OF JEREMY O. EVANS IN SUPPORT OF SCO'S REPLY BRIEF IN FURTHER SUPPORT OF ITS SUPPLEMENTAL MEMORANDUM REGARDING DISCOVERY

Civil No. 2:03CV0294 DAK

Honorable Dale A. Kimball

Magistrate Judge Brooke Wells

CONFIDENTIAL INFORMATION- SUBJECT TO COURT ORDER THIS ENVELOPE SHALL NOT BE OPENED AND THE CONTENTS SHALL NOT BE DISPLAYED, COPIED OR REVEALED EXCEPT BY COURT ORDER OR BY THE WRITTEN AGREEMENT OF THE PARTIES

unsealed

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I, Jeremy O. Evans, declare:

1. I am a citizen of the United States, am over the age of 21, and am competent to testify to the matters set forth herein.

2. I am an attorney at law duly licensed to practice before all the Courts of the State of Utah, and an attorney with the firm of HATCH, JAMES & DODGE, P.C., counsel for the SCO Group, Inc. in the pending action.

3. Attached hereto and filed herewith as Exhibit 1 is a true and correct copy of the Attorneys' Planning Report and Scheduling Order, filed June 19, 2003.

4. Attached hereto and filed herewith as Exhibit 2 is a true and correct copy of an article entitled "Court Agrees with Compuware, Sanctions IBM", dated September 27, 2004.

5. Attached hereto and filed herewith as Exhibit 3 is a true and correct copy of the Order Regarding Plaintiff Compuware Corporation's Motion for Discovery Sanctions, dated September 15, 2004.

6. Attached hereto and filed herewith as Exhibit 4 is a true and correct copy of an article entitled "VERITAS Extends Storage management Offerings; Delivers New Innovations to IBM AIX Environments", dated October 5, 2004.

7. Attached hereto and filed herewith as Exhibit 5 is a true and correct copy of an article entitled "IBM attacks Unix rivals with Power5", dated July 13, 2004.

8. Attached hereto and filed herewith as Exhibit 6 is a true and correct copy of an article entitled "Kill Bill", dated June 7, 2004.

9. Attached hereto and filed herewith as Exhibit 7 is a true and correct copy of an article entitled "The Big Guys Latch Onto Linux", dated March 3, 2003.

10. Attached hereto and filed herewith as Exhibit 8 is a true and correct copy of an excerpt of an April 4, 2001 email sent by Helene Armitage of IBM to William J. Saulnier, with a subject of "Re: AIX 5L Announce Positioning re Itanium", and with Bates Nos. 181028449-50. This excerpt of the April 4, 2001 email is the complete portion of the email that has been produced to SCO in a legible form by IBM.

11. Attached hereto and filed herewith as Exhibit 9 is a true and correct copy of an April 2, 2001 email sent by David Bullis of IBM to Teri Hunt, with a subject of "*IBM Confidential: SCO Amendment 10 Draft", and with Bates No. 18103177.

12. Attached hereto and filed herewith as Exhibit 10 is a true and correct copy of a June 12, 2000 email sent by Ron Saint Pierre of IBM to Helene Armitage, with electronic carbon copies to Teri Hunt, Sharon Dobbs, and Terry McElroy, with a subject of "Approve additional ISVs for Monterey Beta Program", and with Bates No. 1710057360.

13. Attached hereto and filed herewith as Exhibit 11 is a true and correct copy of a May 23, 2000 email sent by David Hall of IBM to Kaena Freitas, with electronic carbon copies to Conway Wharton, David Mehaffy, Norma Maldonado, Sharon Dobbs, and Robert Ruyle, with a subject of "Questions on Origin #224 & #225", and with Bates Nos. 1710056775-78.

14. Attached hereto and filed herewith as Exhibit 12 is a true and correct copy of a May 7, 2001 email sent by Teri Hunt of IBM to Sharon Dobbs, with a subject of "*IBM Confidential: Fwd: Re: Fwd: Amendment 10", and with Bates Nos. 1710075078-79.

I declare under penalty of perjury that the foregoing is true and correct.

Dated this 7 day of October 2004.

By: _____
Jeremy O. Evans

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of Declaration of Jeremy O. Evans in Support of Plaintiff/Counterclaim Defendant SCO's Supplemental Memorandum Regarding Discovery was served on Defendant International Business Machines Corporation on this 19th day of August, 2004, by U.S. mail postage prepaid or by hand delivery to:

By U.S. mail, postage prepaid:

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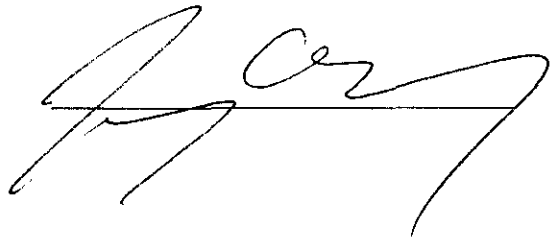

EXHIBITS TO DECLARATION OF JEREMY O. EVANS IN SUPPORT OF SCO'S REPLY BRIEF IN FURTHER SUPPORT OF ITS SUPPLEMENTAL MEMORANDUM REGARDING DISCOVERY

TABLE OF CONTENTS

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IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF UTAH, CENTRAL DIVSION

CALDERA SYSTEMS, INC., d/b/a THE SCO GROUP, Plaintiff, v. INTERNATIONAL BUSINESS MACHINES CORPORATION, Defendant.	**ATTORNEYS' PLANNING REPORT AND PROPOSED SCHEDULING ORDER** Case No. 2:03cv0294 Honorable Dale A. Kimball Magistrate David Nuffer

Plaintiff, Caldera Systems, Inc., d/b/a The SCO Group ("SCO"), and Defendant, International Business Machines Corporation ("IBM"), hereby jointly submit this Attorneys' Planning Report and Proposed Scheduling Order, pursuant to Fed. R. Civ. P. 26(f). The parties also jointly move the Court to enter this Proposed Scheduling Order as the Scheduling Order in this case.

1. **ATTORNEYS' MEETING:** Pursuant to Fed. R. Civ. P. 26(f), a telephonic meeting was held on June 4, 2003.

a. Plaintiff's counsel, Mark J. Heise and Brent O. Hatch, and Defendant's counsel David R. Marriott, Alan L. Sullivan, Todd M. Shaughnessy, and Peter Ligh were in attendance.

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b. The parties have discussed the nature and basis of their claims and defenses.

2. **INITIAL DISCLOSURE:** The parties will exchange the information required by Rule 26(a)(1) by September 4, 2003.

3. **DISCOVERY PLAN:** The parties jointly propose to the Court the following discovery plan:

a. The parties believe that discovery should proceed on all issues raised in this case, including plaintiff's claims for breach of contract, misappropriation of trade secrets, unfair competition and interference with contract and defendant's defenses to these claims.

b. The parties expect to utilize interrogatories, requests for production, requests for admission and oral depositions in conducting discovery. The parties agree that the Federal Rules of Civil Procedure should control the timing and scope of discovery except as provided below in subparagraph c.

c. The parties agree to forty (40) non-expert depositions per party. For purposes of calculating the number of depositions a side has taken, Rule 30(b)(6) depositions shall be counted based on the number of notices or subpoenas, not on the number of categories within a notice or subpoena or the number of designees offered in response thereto. The parties shall be allowed to exceed the time limitations for depositions for two witnesses of the opposing party; this enlargement would allow depositions to last up to two days.

d. The parties agree that all non-expert discovery in this matter will be completed no later than Wednesday, August 4, 2004, except as set forth below in subparagraph e.

e. The parties agree that Plaintiff will designate and submit the reports of its expert witnesses, if any, by August 25, 2004, and that Defendant will designate and submit the

reports of its expert witnesses by September 24, 2004. Within 14 days of the respective deadlines, the parties shall make their respective experts available for deposition. If additional fact discovery is made necessary by expert reports or depositions, it may take place until the October 22, 2004 discovery deadline set forth in subparagraph f below (except that there will not be depositions of people already deposed). If either party has supplemental expert reports arising out of fact discovery taken after the expert depositions, the supplemental reports shall be simultaneously exchanged on October 8, 2004. Expert depositions will be taken where they are located unless otherwise agreed. Moreover, all parties agree that there will be no discovery of drafts of expert reports or other communications with experts.

f. The parties agree that all discovery in this matter will be completed no later than October 22, 2004.

g. Papers may be served upon a designated attorney for each party, either by hand, by overnight mail, by facsimile, or by e-mail with a PDF attachment, as needed. When service is effected by any method other than by hand, three additional calendar days shall be added to the response time, if any, pursuant to Rule 6(e).

h. All deposition exhibits will be numbered sequentially, regardless of the identity of the deponent or the side introducing the exhibit. The same numbers will be used in pretrial motions and at trial.

i. Where practicable, documents will be produced electronically or via CD to avoid any unnecessary expense and effort. Originals will be made available for inspection upon request.

j. It is anticipated that many of the documents produced in this case will contain confidential information and the parties will promptly enter into an appropriate confidentiality agreement and submit a proposed protective order before the exchange of such documents.

k. Documents that a party claims as privileged, including all copies made, will be returned immediately upon the request of the disclosing party without the need to show the production was inadvertent.

l. As to any discovery dispute, designated lawyers for each side will try to resolve it by phone or electronic mail.

4. **OTHER ITEMS:**

a. The parties do not believe that a conference with the Court is necessary prior to entry of this Attorneys' Planning Report and Proposed Scheduling Order.

b. The parties request a final pretrial conference approximately one month before trial.

c. The parties agree and stipulate that the cut-off date for the joining of additional parties shall be October 1, 2003.

d. The parties agree and stipulate that the cut-off date for amending pleadings shall be October 1, 2003.

e. All dispositive motions must be filed on or before November 10, 2004.

f. The potential for settlement cannot be evaluated prior to completion of initial discovery.

g. The potential for resolution of this matter through the Court's alternative dispute resolution cannot be evaluated prior to completion of initial discovery.

h. A final list of witnesses and exhibits pursuant to Fed. R. Civ. P. 26(a)(3) is due by December 17, 2004 from both sides.

i. The parties should have thirty (30) days after service of the final list of witnesses and exhibits to list objections under Rule 26(a)(3).

j. An agreed upon form of pretrial order shall be submitted to the court by February 1, 2005.

k. A final pretrial conference shall be held at _____ __.m. on _____, 2005.

l. The estimated length of trial is five weeks.

FOR THE PLAINTIFF:

By: _____
HATCH, JAMES & DODGE, P.C.
Brent O. Hatch

and

BOIES, SCHILLER & FLEXNER LLP
David Boies
Stephen N. Zack
Mark J. Heise

FOR THE DEFENDANT:

By: _____
SNELL & WILMER L.L.P.
Alan L. Sullivan
Todd M. Shaughnessy

and

CRAVATH, SWAINE & MOORE LLP
Evan R. Chesler
Thomas G. Rafferty
David R. Marriott

The schedule proposed by the parties above is hereby adopted.

SO ORDERED this ____ day of _____, 2003.

BY THE COURT

_____
HONORABLE DAVID NUFFER

QUOTE.COM

PR Newswire

Court Agrees With Compuware, Sanctions IBM

27 September 2004, 09:00am ET

IBM to Bear Additional Discovery Costs for 'Gross Negligence'

DETROIT, Sept. 27 /PRNewswire-FirstCall/ -- Compuware Corporation (Nasdaq: CPWR) today announced that the U.S. District Court for Eastern Michigan has sanctioned IBM for "gross negligence" in the software piracy portion of Compuware's case against the technology giant.

Compuware originally brought suit against IBM in March of 2002 for theft of Compuware software. Additionally, the Compuware suit alleges that IBM is unfairly using its monopoly power in mainframe hardware and software products to compete unlawfully in the software tools markets.

As part of the normal discovery process, the court ordered IBM to produce source code for certain of its software products in July of 2002. In a variety of oral pleadings and sworn statements, IBM lawyers and employees claimed that the requested source code did not exist. On August 11, 2004 -- in direct contrast to these sworn statements and less than 90 days before the scheduled start of trail -- IBM delivered this source code to Compuware. According to IBM's lawyers, the source code was discovered "in a closet" in Australia.

"The costs for ... redepositions and for the expert to re-analyze the code is going to be borne by IBM," said Magistrate Judge Wallace Capel, Jr. in a September 1 hearing. "I do think it's negligence, gross negligence probably ... . IBM is going to pay for the cost for this motion. They're going to pay the cost for the re-depositions of those experts and for the cost of the analysis on it."

"I'm glad that the court saw through IBM's gamesmanship and attempt to saddle Compuware with additional costs and burdens. Obviously, the two years it took IBM to get this code out of the closet could provide an awful lot of time to do a number of things," said Thomas M. Costello, Jr., Compuware General Counsel. "We have a very strong case, and we are anxious for a jury to hear our claims."

Mentioned	Last	Change
CPWR	5.42	⬆0.14 (2.65%)

Compuware Corporation

Compuware Corporation (Nasdaq: CPWR) maximizes the value IT brings to the business by helping CIOs more effectively manage the business of IT. Compuware solutions accelerate the development, improve the quality and enhance the performance of critical business systems while enabling CIOs to align and govern the entire IT portfolio, increasing efficiency, cost control and employee productivity throughout the IT organization. Founded in 1973, Compuware serves the world's leading IT organizations, including more than 90 percent of the Fortune 100 companies. Learn more about Compuware at http://www.compuware.com/ .

For the Complete Order on Compuware's Motion

IBM 09 15 04 order re CW motion for discovery sanctions (PDF):
http://www.compuware.com/pressroom/resources/3950_ENG_HTML.asp

IBM 09_01_04_Hearing_Transcript (PDF):

http://www.compuware.com/pressroom/resources/3949_ENG_HTML.asp

Press Contact

Lisa Elkin, Vice President, Communications and Investor Relations, 313-227-7345

SOURCE Compuware Corporation
-0- 09/27/2004
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/Company News On-Call:

http://www.prnewswire.com/comp/112310.html/

/Web site:

http://www.compuware.com

/
(CPWR)

CO: Compuware Corporation; IBM
ST: Michigan
IN: CPR STW MLM
SU: LAW

TM-KN
-- DEM007 --
8453 09/27/2004 09:00 EDT

http://www.prnewswire.com

2

UNITED STATES DISTRICT COURT

EASTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

COMPUWARE CORPORATION,
a Michigan corporation,

v.

INTERNATIONAL BUSINESS MACHINES CORPORATION,
a New York corporation,

Defendant.

Case No. 02-70906

CASE A

Hon. George Caram Steeh

Magistrate Judge Wallace Capel, Jr.

[PROPOSED] ORDER REGARDING PLAINTIFF COMPUWARE CORPORATION'S MOTION FOR DISCOVERY SANCTIONS

This matter having come before the Court on Plaintiff Compuware Corporation's Motion for Discovery Sanctions ("Plaintiff's Motion"), the Court having reviewed the briefing and other submissions of the parties on Plaintiff's motion regarding IBM's August 2004 production of pre-Version 1 File Manager source code, revision control data and executable beta code (collectively "File Manager pre-Version 1 code"), having heard oral argument on September 1, 2004, the Court, based upon the aforementioned and for the reasons stated on the record, finds the following:

IT IS HEREBY ORDERED:

Plaintiff's Motion is HEREBY GRANTED IN PART AND DENIED IN PART, as follows:

1. Plaintiff's Motion is GRANTED to the extent that:

a. IBM shall pay to Compuware the reasonable costs incurred in bringing its motion in an amount to be determined by the Court based on supplemental declarations by the parties.

b. Discovery relating solely to the recently-produced File Manager pre-Version 1 code shall remain open until December 31, 2004. Compuware may take additional

reasonable depositions solely relating to that recently-produced File Manager pre-Version 1 code, and IBM shall reimburse Compuware for its reasonable costs for such additional depositions.

c. Compuware may submit supplemental expert reports relating to IBM's recently-produced File Manager pre-Version 1 code. IBM shall pay to Compuware the reasonable costs for Compuware's experts to analyze the recently-produced File Manager pre-Version 1 code, to submit any supplemental expert reports and to be deposed by IBM. IBM may submit expert reports responding to any supplemental reports submitted by Compuware.

d. The November 8, 2004, trial date is vacated. Trial will begin no earlier than February 2005, subject to Judge Steeh's calendar.

2. Plaintiff's Motion for default judgment relating to Compuware's First Claim for Relief for Copyright Infringement and Second Claim for Relief for Trade Secret Misappropriation is DENIED.

3. Plaintiff's Motion for preclusion of *File Manager pre-Version 1 code or any* evidence of the contents of the development thereof is DENIED. Plaintiff's request for a jury instruction relating to the absence of File Manager pre-Version 1 code is DENIED.

4. Plaintiff's Motion for an order enjoining the sale, licensing, marketing, installation or other distribution of IBM's File Manager is DENIED.

IT IS SO ORDERED.

September 15, 2004

United States Magistrate Judge
Wallace Capel, Jr.

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Tuesday, 5th October 2004

Media Release from Veritas Software

Media releases are provided as is by companies and have not been edited or checked for accuracy. Any queries should be directed to the company itself.

VERITAS Extends Storage Management Offerings; Delivers New Innovations To IBM AIX Environments

21/09/2004 10:15:25

For Immediate Release
VERITAS Extends Storage Management Offerings; Delivers New Innovations to IBM AIX Environments

Storage management solutions now span industry leading operating systems; maximizing choice and flexibility for customers while driving down costs

MOUNTAIN VIEW, Calif – September 21, 2004 – VERITAS Software Corporation (Nasdaq: VRTS) today extended its storage management offerings to include new features for IBM's UNIX operating system AIX. Today's AIX-based additions include 4.0 versions of VERITAS Storage Foundation™, VERITAS Storage Foundation for Oracle RAC, VERITAS Storage Foundation for Databases (DB2 and Oracle), VERITAS Storage Foundation Cluster File System, VERITAS Cluster Server, and VERITAS Volume Replicator software. VERITAS Storage Foundation 4.0 software now supports the most prevalent operating systems running across the enterprise today including: Microsoft Windows, Sun Solaris, Red Hat and SuSe Linux and IBM AIX. With today's releases, VERITAS is delivering unique first-to-market innovations for customers running AIX by offering a more scalable, available, high-performance and cost-effective solution.

According to Gartner's "Worldwide Server Market Ends 2003 With Strong Fourth Quarter", AIX was the fastest-growing UNIX operating system; in fact, AIX was the only UNIX operating system that grew revenue in 2003. With market-leading solutions for storage management, high availability and disaster recovery, VERITAS is enabling customers to maximize the price/performance, reliability, and manageability of their AIX environments.

"As data volumes grow, customers need to feel confident that they can effectively manage their storage environments while ensuring continuous availability of mission-critical data on multiple platforms," said Ray Paquet, Gartner Group. "Expanded platform support from software vendors who are providing heterogeneous solutions for storage management allow customers to maximize storage utilization and reduce overall costs."

Streamlined Manageability and Enhanced Performance Ensure Continuous Access to DB2 and Oracle VERITAS solutions offer unique benefits for customers running high-end databases across their IT environments. VERITAS Storage Foundation™ for Databases software provides performance and manageability that scales as customer IT environments and requirements evolve and expand. Customers running AIX can now provision or migrate their critical data over time to the appropriate class of storage based on pre-defined attributes and values – without changing the way data is accessed by users or applications. This allows customers to use their storage more efficiently and achieve the storage price/performance balance that meets their business objectives. Leveraging the autonomic capabilities of IBM DB2 to design and easily build scalable high performance systems, VERITAS Storage Foundation for DB2 is the only heterogeneous software solution that allows customers to fully leverage DB2's scalability in AIX environments. VERITAS Storage Foundation for Oracle RAC is the industry's only heterogeneous software solution that provides a high-performance and cost effective clustered file system for Oracle RAC on AIX. Customers benefit from easier installs and management of Oracle RAC on AIX.

Optimizing Availability and Disaster Recovery for Mission Critical Environments VERITAS Cluster Server protects mission critical applications and databases against downtime, whether planned or unplanned. VERITAS Cluster Server is the only solution that provides wide-area failover on AIX. This capability enables organizations to fail over an entire data center with a single click of a mouse ensuring business continuity of mission critical applications and databases. Two new first to market features for VERITAS Cluster Server are Fire Drill and Cluster Simulator. VERITAS Cluster Server Fire Drill is a feature that enables live disaster recovery testing without impacting the production

environment. VERITAS Cluster Server Simulator enables IT managers to simulate and test clusters without impacting their production environments and then to download successful cluster configurations directly into their live environments.

VERITAS Volume Replicator reliably, efficiently and consistently mirrors data to remote locations over any IP network connection. Using VERITAS Volume Replicator, customers running AIX can utilize a flexible storage independent solution to deliver true disaster recovery when data currency and availability are paramount.

Innovation Breakthrough: Portable Data Containers VERITAS delivers an innovative utility called Portable Data Containers, which dramatically simplifies the process of migrating data between the industry's leading operating systems. Additionally, customers can easily and quickly move their Oracle databases between leading operating systems. By unlocking data from the operating system using Portable Data Containers customers now achieve the highest levels of flexibility when it comes to choosing the most cost-effective computing solutions for their IT environments. Data migration can be achieved in three simple steps.

Using VERITAS Storage Foundation software data can be converted for migration between operating systems Deport the data container from the existing operating system Import the data container to the new operating system

"As customers deploy new applications and databases to support business critical services, VERITAS is continually working to provide customers with the advanced technology to simplify the management and improve the performance of complex storage systems," said Jose Iglesias, vice president, product management, VERITAS Software. "By extending our leading storage management software to four of the industry's leading operating systems our customers are now one step closer to maximizing utilization of their IT assets and reducing the overall cost associated with administering and managing their IT infrastructure."

About VERITAS Software VERITAS Software, one of the 10 largest software companies in the world, is a leading provider of software to enable utility computing. In a utility computing model IT resources are aligned with business needs, and business applications are delivered with optimal performance and availability on top of shared computing infrastructure, minimizing hardware and labor costs. With 2003 revenues of $1.75 billion, VERITAS delivers products for data protection, storage & server management, high availability and application performance management that are used by 99 percent of the Fortune 500. More information about VERITAS Software can be found at www.veritas.com.

###

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This story was printed from ZDNet Australia.

IBM attacks Unix rivals with Power5

Stephen Shankland, Special to ZDNet
July 13, 2004
URL: http://www.zdnet.com.au/news/0,39023165,39153163,00.htm

IBM is expected to announce a new generation of Unix servers on Tuesday, systems it believes powerful enough to let Big Blue topple rivals Sun Microsystems and Hewlett-Packard.

IBM will announce low-end and midrange models using the new Power5 processor: the dual-processor eServer p5 520, the four-processor p5 550 and the 16-processor p5 570. The systems, which boost performance and can run many operating systems simultaneously, will ship by August 31.

The products are strong, analysts say, and arrive at a time when Sun and Hewlett-Packard, the No. 1 and 2 Unix server sellers, are vulnerable. "Sun and HP have begun refreshes to technologies that are competitive, but they're not there yet," Forrester analyst Brad Day said.

Illuminata analyst Jonathan Eunice had a similar assessment. "IBM is at a very strong point in its product cycle right now. Its competitors are at a bit of an ebb because of their transitional issues," Eunice said, referring to Sun's embrace of Fujitsu's high-end Sparc64 processor and HP's switch from its PA-RISC chips to Intel's Itanium.

For the first time, the p5 systems use identical hardware as their i5 server brethren, which debuted in May. That convergence means a larger customer base supports IBM engineering resources and that three operating systems--IBM's AIX version of Unix, its I5/OS for mid-range machines, and Linux from either Red Hat or Novell--now can run at the same time on the same systems.

The higher-end Unix models are due by the end of the year, including a 64-processor model, said Ravi Arimilli, chief technology officer of eServer microprocessors and systems development and an IBM fellow. And if customers express an interest, a 128-processor machine could be built when systems using the smaller, faster Power5+ arrive in 2005, he added.

Prices begin at US$11,185 for a p5 520 with 1GB of memory, two 1.65GHz Power5 processors, two 36GB hard drives and a year of AIX support, said Jim McGaughan, director of IBM's server strategy and one of the founding members of the company's Unix server group.

A p5 550, with four 1.65GHz processors, 8GB of memory and two 73GB drives costs US$32,487, while a p5 570 with 16 1.9GHz processors, 32GB of high-speed DDR2 (double data rate 2) memory and two 73GB drives costs US$503,090. Annual AIX licenses add US$1,080 per processor per year for the 520 and 550 and US$1,950 per processor per year for the 570, McGaughan added.

The Unix server market is a sweet spot for server makers, nicely positioned between mainframe power and high price on the one hand and Microsoft Windows' broad software support but relative immaturity on the other. IBM missed out on the Unix boom of the 1990s, when lavish spending poured money into Sun's coffers.

With the Power4 generation and Sun's troubles, IBM has been gaining Unix share. In 2003, IBM's revenue grew 13 percent to US$4.1 billion, while Sun's shrank 16 percent to US$5.4 billion and HP's shrank 4 percent to US$5.3 billion, according to research firm Gartner.

IBM admits it was caught flat-footed by Sun's surge. "When I was appointed chief architect for Power, the game was simple. We had to get back into the game. Power4 was do-or-die mission. We had to get running fast because our market share was so small," Arimilli said.

Technology now and later

IBM has a simple future planned for the Power line: Power5 this year, a faster remake called Power5+ in 2005, Power6 in 2006, Power6+ in 2007, Power7 in 2008 and Power7+ in 2009, said Arimilli, who has just been named chief architect of the Power7 models.

Also coming with Power5 is simultaneous multithreading (SMT), an ability for a single processor to handle some of the work of two. The technology gives about a 30 percent performance boost, IBM said, but requires the new AIX version 5.3.

A US$4 million 16-processor p5 570 with 128GB of memory and IBM's DB2 database software achieved 809,000 transactions per minute on the widely watched Transaction Processing Performance Council's TPC-C test of database performance. That's the third-fastest result for a single system, trailing the No. 1 IBM p690 with 32 Power4 chips and the No. 2 HP Superdome with 64 Itanium 2 chips.

One of the major new features of the Power5 servers is "micro-partitioning," the ability to run as many as 10 operating systems on each processor. The feature makes it easier to replace multiple systems with a single centrally managed machine, especially because management software can automatically reallocate resources as work loads shift.

The new partitioning addresses a major weakness of the Power4 generation: the requirement that each partition have its own adapters for networking and storage systems.

"When we looked at Power4, at a certain point, it became cost-prohibitive to slice it up into logical partitions," said Robert Gamso, senior principal systems architect at appliance maker Whirlpool, a longtime IBM Unix server customer with about 100 systems.

IBM will improve flexibility of portioning will improve when the Power5+ in 2005, when one machine will be able to move a partition quickly to another. The feature is available today, but only using a relatively slow networked storage system; with the Power5+ systems it will happen "in a matter of a few seconds" using conventional Ethernet networking, Arimilli said.

A new Linux priority with Power5 meant a change to the IBM's typical approach of adapting the operating system to the processor. With Linux, the influence went the other direction after IBM found programmers unwilling to relinquish Linux's general-purpose but sometimes slower design, Arimilli said.

Linux led to about 20 additions to the Power5 design in areas such as how the chip addresses memory and locks computing resources that are in use, Arimilli said. The changes mean that Linux runs about 90 to 95 percent the speed of AIX instead of 80 percent, Arimilli said--though AIX gets a much smaller boost from the hardware changes as well.

"AIX is still superior, but as years go by, that gap will close," Arimilli said. And for now, "Linux on Power5 will have much better performance than Linux on other architectures."

Right now, Linux isn't well enough supported by software companies and others to make its worthwhile on Whirlpool's Power servers, though the company does use it on Intel-based systems, Gamso said. That could change: "Once the rest of the market catches up and all the ISVs (independent software vendors) are there, then it's viable," he said.

The competition

"Everyone has been on the defensive about a resurgent IBM for some years now," Eunice said, but competitors are fighting back. Sun is using a three-pronged chip strategy, while HP argues it will benefit from Intel's Itanium chips for higher-end servers.

Sun's first prong is a partnership with Fujitsu, which is bringing a dose of mainframe expertise to its

Sparc64 VI processor. Second is two "chip multithreading" designs that can run several instruction sequences simultaneously, midrange "Niagara" and higher-end "Rock." Third is pushing its Solaris version of Unix for Advanced Micro Devices' Opteron processors, newer members of the "x86" processors such as Intel's Pentium and Xeon.

Sun has been trying to sell large quantities of servers to preserve its customer base, even if it meant heavy discounts, but that emphasis is changing, said chief competitive officer Larry Singer. "The focus of the company is shifting very much to revenue growth and profitability," he said.

Sun also has an answer to micro-partitioning: N1 Grid Containers, a feature due to arrive by year-end in Solaris 10. These containers make a single version of the operating system appear to have multiple independent instances, and the technology works on x86 chips as well as Sparc chips from Sun and Fujitsu.

Don Jenkins, vice president of marketing for HP's Business Critical Server group, sees several Power5 problems. "The most difficult issue for Power5 is the fact it's proprietary and doesn't run Windows and is an inadequate Linux platform," he said. In addition, a customer buying Itanium servers can get them from multiple companies, whereas Power5 comes only from IBM.

"Proprietary" and "open" are relative terms, though. Itanium systems are available from several server makers, but the chip is only available from Intel. At the same time, Power servers come only from IBM, but many other companies sell variants of the Power chip for various other segments of the computing market.

And while HP currently can't split subdivide a processor so it can run several operating systems, that feature is coming, Jenkins said. "We are close to bringing out sub-CPU partitioning capability as well," he said.

Two factors likely will mean Itanium systems ultimately will outship Power servers, said Insight64 analyst Nathan Brookwood. The main reason: "Itanium systems can address not only the proprietary Unix market, but also the Windows market," he said. The other factor: "If you want a Power system, you're going to buy it from IBM. If you want an Itanium system, you can buy it from HP, NEC, Fujitsu, Hitachi, and others."

HP and Intel argued that Itanium would bring a radical new design to last 20 years--far beyond the RISC (reduced instruction set computing) chips such as IBM's Power and Sun's UltraSparc. But so far, that advantage hasn't shown up, Eunice said. "Nothing I have seen indicates the Power architecture is running out of steam."

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MARCH 3, 2003

SPECIAL REPORT – THE LINUX UPRISING/Online Extra

The Big Guys Latch Onto Linux

As the startups struggle or burn out, heavyweights such as IBM, Dell, Oracle, and HP are moving quickly to dominate this new market

It started inconspicuously in 1991 when a Finnish university student and computer programmer named Linus Torvalds designed his own operating system, as the basic software that runs a computer is called, on a lark. Back then he never dreamed that his Linux would challenge mighty Unix, a product of AT&T Bell Labs, and Windows, the mainstay of software king Microsoft (MSFT).

From the start, Torvalds had in mind an operating system free to all comers, as opposed to costly Unix and Windows software. And where Microsoft and the suppliers of Unix guarded their software's source code like a state secret, Torvalds stipulated that Linux would remain open for all to alter and improve, as long as they made their enhancements

available for others to build upon. So off the beaten path was this open-source program that it may have been the only piece of software ever to have its own mascot, a cartoon penguin named Tux.

In the years since, Linux has become an improbable success. By the fourth quarter of 2002, it powered 14% of the servers sold to run powerful corporate networks, up from 9% a year earlier, according to tech consultancy Gartner. Enhanced versions of Linux reaped $364 million in revenue in the period, up 90% from a year earlier. By some measures, Linux runs 25% of all corporate servers right now. In short, it's one of the few technology products that's booming in the midst of the lengthy and distressing tech malaise.

BEYOND THE STARTUPS. Perhaps that's because Linux has become a lot less revolutionary than it was just two years ago. Quirky startups -- worn down by the Quixotic quest to sell something that is, after all, free -- have fallen by the wayside. Those still soldiering on are demanding higher and higher fees either for support or (gasp) proprietary add-ons. Of the publicly traded Linux and open-source pure plays, only Red Hat (RHAT) has reported real profits -- and sporadic ones at that. "The willingness of IT managers to buy from a small upstart is significantly less than it used to be," says Martin Fink, general manager of Hewlett-Packard's Linux division.

Conveniently, when it comes to Linux, businesses don't have to buy from startups anymore: Linux's sudden success owes much to the fact that Dell (DELL), Oracle (ORCL), Hewlett-Packard (HPQ), and, most notably, IBM (IBM), have hitched themselves to the Linux bandwagon. All dedicate an increasing amount of brainpower, marketing dollars, and research money to the open-source effort -- a classic case of trying to give customers what they want. And while Linux startups have mostly struggled, these Big Four have collectively pocketed billions in revenues selling and servicing Linux products.

The biggest beneficiary of the bunch is IBM, which bagged $1 billion in Linux-based revenues in 2002 -- more than double what it got in 2001. Big Blue won't break out profits on that part of its business, but it boasts that its Linux operations are in the black. One step behind is HP. In the past four years, Carly Fiorina's troops have generated $2 billion in Linux revenue from sales of hardware, software, and consulting. By comparison, gross sales at Red Hat have yet to crack $90 million a year.

A LEG UP. Aside from scarfing up revenue, the Big Four appear to be

using Linux to punish Microsoft, as Goldman Sachs recently outlined in a report entitled "Fear the Penguin." Goldman analysts concluded that Linux will grab an increasing percentage of the key market for operating system software in corporate data centers -- and in so doing eventually will take a bite out of Microsoft.

Microsoft continues to add to its 49% market share of the total server market, but Linux has already started to lessen Redmond's sales potential, says Tony Alma, a senior analyst at Port Chester (N.Y.) software research shop D.H. Brown Associates. Alma argues that Linux has won over Unix users who might have wanted to switch from high-end systems on proprietary hardware to save money and who in the past would have considered Windows on Intel-based computers. "Now they can go to Linux on cheaper Intel boxes," says Alma.

That also gives IBM and HP, in particular, a leg up in the Unix wars, where Sun Microsystems (SUNW) had emerged as the winner. Long the leader in proprietary Unix sales, the Sunnyvale (Calif.) company has steadily lost market share in the lower-end Linux installations serviced by the big tech companies. Jonathan Schwartz, the executive vice-president of Sun's software group, argues that Linux remains a lesser player in high-performance, heavy-duty computing, where Sun's Solaris operating system shines.

"LOOKING TO MOVE." "Whether its free software doesn't matter all that much because customers want the answer to one question: Will my systems be available?" says Schwartz. He claims that Sun machines require less hand-holding than Linux machines and are far more reliable.

Many others say Linux-based machines are replacing Sun systems for less complex applications, cutting off the middle and lower end of Sun's

market and handing it to big systems integrators such as Accenture (ACN), IBM, or Cap Gemini Ernst & Young. "We have people who are looking to move a lot of custom Unix software applications off of expensive Hewlett-Packard and Sun Solaris servers and consolidate those functions on onto Linux and Intel servers," says John Parkinson, chief technology officer for the Americas at CGEY.

Not that Linux can afford to coast. For starters, its next iteration, version 2.5, shepherded by Torvalds himself, will have to be able to handle more complex computing tasks, such as harnessing more processors working in parallel and better handling of large, memory-intensive tasks. Thus, the disparate volunteers -- mostly unpaid -- who build open-source software will need to vastly improve their coordination to keep Linux' quality reputation intact.

SOURCE-CODE LAWSUIT? At the same time, the financial problems facing Linux companies could drive deep wedges into the open-source community. One of the larger Linux concerns, SCO Group, recently hired antitrust attorney David Boies, the man who fought Microsoft for the

federal government. SCO has said it may sue to defend the copyright of some of its proprietary code that allegedly has leaked into open-source software. Should it do that, the fallout could divide a movement that has come surprisingly far on good will and community spirit.

At the same time, Red Hat and other big open-source companies have attached increasingly restrictive conditions to the use of their software packages and the proprietary add-ons they control, according to tech consultancy IDC in Framingham, Mass. Such limits could cause info-tech managers to sour on Linux, since a primary reason many of them bought into open-source software was to avoid worrying about licensing issues.

Worse, the Linux specialists such as Red Hat and SuSE have upped prices on their high-level packages of Linux server software. These increases have pushed the initial purchase costs of Linux close to that of proprietary operating systems, including Windows. Recently, corporate tech departments have begun to view Linux less as a cheaper solution in terms of software purchases and more as one that gives them increased control over their software and lets them save money on hardware.

COLOSSUS COLLISION. This may leave Linux open to renewed competition from Sun, which has been cutting its hardware prices and selling a new software package including an enhanced operating system and network-management and -configuration tools that it claims will provide everything an IT department needs -- all from a single supplier. This would let companies avoid the time-consuming and costly integration of multiple programs that IBM and HP generally undertake for customers.

Linux must also continue to contend with Microsoft, which isn't going away. "Lots of companies will still choose Windows because it's easier to use than Linux," says D.H. Brown's Alma. "You don't have to put everything together from scratch." Indeed, Microsoft is increasingly aiming for the higher-end market, right next to Linux. Redmond's Windows Datacenter 2000 product is built specifically to run big computer networks, call centers, server farms, and do other tasks previously reserved for Unix systems.

These negatives aside, for the foreseeable future established purveyors of Linux stand to make big bucks in a tech market that remains frozen by fears of a new Gulf War and economic uncertainty. At the least, industry experts predict, Linux will continue to grow smartly. And it may influence the entire software world should the ad hoc method of developing new code prove useful for types of software beyond the operating system.

The Linux suppliers could also get a big push from an ongoing effort to move open-source desktop applications from the geekstream to the mainstream, something that's happening particularly quickly overseas, where foreign governments have grown weary of air-mailing bags of cash to Bill Gates. With that kind of wind at their backs, no wonder the Big

Four are cruising on the Linux highway.

By Alex Salkever, Technology editor for BusinessWeek Online

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9 of 49 DOCUMENTS

Forbes

June 7, 2004

SECTION: Pg. 86 Vol. 173 No. 12

LENGTH: 2942 words

HEADLINE: Kill Bill

BYLINE: Michael Maiello and Susan Kitchens

HIGHLIGHT:

Linux represents the biggest threat to Microsoft has ever faced. No wonder IBM is spending billions to promote it.

BODY:

Linux represents the biggest threat to Microsoft has ever faced. No wonder IBM is spending billions to promote it.

How is it that for eight months a team of up to a dozen IBM consultants has been toiling in the data centers and computer rooms of the Munich city government—free of charge? Having goaded Munich into embracing open-source software, IBMis helping it plan a migration of 14,000 computers off Microsoft Windows and onto the operating system known as Linux. Never mind that IBM doesn't sell Linux, which is distributed free. And never mind that Munich officials say they're not committed to buying IBMhardware or consulting services, despite all IBM's free help.

Though IBM did not invent Linux, does not distribute it and earns nary a penny on it, the computer giant (2003 sales: $89 billion) is spending billions in a crusade to make Linux the world's most popular operating system. All told, more than 12,000 IBMers today devote at least part of their time to Linux. IBM has invested millions in two leading Linux distributors, Red Hat and SuSe. It has spent millions more to cofound and fund the nonprofit organization that oversees Linux development. In developing nations IBMhas opened 20 Linux training centers, where it schmoozes government ministers and explains how Linux can create jobs for the young.

Back home Armonk, N.Y.-based IBM blasts Linux commercials on television; one spot likens Linux to an omniscient child prodigy who resembles Eminem. The maker has devoted 200 programmers to writing Linux code, only to share it free with the world. It conducts Linux feasibility studies for customers and even helps software makers rewrite their programs to run on Linux.

To hear IBMers tell it, all this effort is a matter of giving more choices to customers tired of the Microsoft monopoly. "No one wants to be monopolized and controlled. Customers have been dominated by a single vendor. Linux gives you a chance to unlock that," says James Stallings, general manager of IBM's Linux business. "We've got 50 more deals like Munich going right now."

But IBMhas a broader agenda—undermining Bill Gates' company. Here lies the next big battle in tech, pitting two erstwhile allies against each other in a fight to rule the computer industry in the years ahead. As big corporate customers seek to lash together worldwide networks and imbue them with more online commerce, a new $21 billion market for Web-linked software has emerged.

Microsoft wants to dominate this business and make it a Windows world. IBM has embraced Linux and in doing so has stoked the biggest threat ever to confront the Microsoft monopoly. While IBM's products run on Windows, it wants its customers to see how nicely they would run on Linux as well, using the free operating system as a lure. "Like getting free bread in a restaurant," says Irving Wladawsky-Berger, vice president of technology and strategy at IBM and a pivotal proselytizer of Linux inside the company. Ultimately, customers may not need Windows at all.

In the previous big battle in the computer industry, for control of the PCrevolution and the Internet craze it spawned,

IBMlost badly to Microsoft. It had anointed Microsoft as a future titan by picking it to provide the operating system software for the first IBMPersonal Computer, which debuted in 1981. Back in 1986, when Microsoft went public, it was worth less than $1 billion, compared with $93 billion for IBM.

In the ensuing years IBM struggled in PCs, lost a few billion dollars and watched a huge portion of the industry's profits flow to Microsoft. By the early 1990s IBM had spent more than $1 billion to develop its own PC operating system, OS/2. It realized too late that Microsoft's endorsement of OS/2 was hollow and that Windows would send OS/2 to the junk heap.

Some IBMers still view this as a betrayal. Recalls one ex-IBMer from the Linux group:"We had a saying at IBM that the ghost of OS/2 still haunts the halls."

Cut to today: Microsoft's market cap has roared past IBM's *(see chart),* to $280 billion, making Chairman Bill Gates the richest man in the world. IBM's market value is $146 billion. These days IBM probably makes no money from selling PCs—while Microsoft hauls in nearly $90 per machine just on the operating system, up from $10 in the pre-Windows days of DOS.

You couldn't blame some IBMers for seeing Linux as fitting retribution. "Today, because of Linux, people are buying IBM with Linux who would have bought Sun, or HP with Windows," says Wladawsky-Berger. "Is there schadenfreude?Of course. How can there not be?There are wounds from the past."Then he adds:"But it would be silly to gloat if we weren't getting revenues. Linux is helping us win business."

IBM's embrace of Linux attacks Microsoft at its very foundation. Windows provides 40% of sales and 65% of operating income for the software powerhouse. "IBM is trying to drive the value out of the operating system," says Martin Taylor, a general manager at Microsoft. "Idon't think it's a direct attack on Microsoft—but we are definitely a fairly big casualty."

Last year 828,000 servers were sold with Linux instead of Windows, denying Microsoft up to $1.7 billion in potential sales. The pain has just begun. Sales of Linux servers grew 48% last year to $3.3 billion, while Windows servers grew 11%to $15.5 billion. By 2008, predicts IDC, Linux server sales will reach $9.6 billion, versus $21.7 for Windows servers. Worse yet, while so far Linux has been confined to servers, now developers are pushing the free operating system as a way to run PCs, too.

Officially, IBMers insist that hurting Microsoft isn't the point. Wary of worrying customers who want to stick with Windows, IBM says it continues to support that platform and that its relationship with Microsoft is in fine shape. It's just that the Linux tsunami is overwhelming the globe, and IBM has no choice but to surf it. "If you become convinced that something is going to happen whether you like it or not, you are far better off embracing it," says Wladawsky-Berger.

But in fact IBM isn't simply riding this wave—it is adding to its momentum. And that has indeed strained IBM's relations with Microsoft, some Microsofties say. (Microsoft itself refuses to write Linux versions of its myriad applications programs.) Microsoft now claims stronger ties to hardware makers Dell and Hewlett-Packard, with whom it meets regularly.

"I don't think we've had those meetings with IBM in a while. We don't have the same level of partnership with IBM," says Microsoft's Taylor.Microsoft makes joint sales calls with Dell and HP "all the time, every day," but it "rarely" makes sales calls with IBM, says Kevin Johnson, a group vice president at Microsoft in Redmond,Wash.

That IBM is involved with Linux at all owes to Wladawsky-Berger, a wiry Ph.D. physicist who joined IBMin 1970. In the 1990s he put together IBM's successful Internet strategy. In 1999 his spider sense began to tingle again:He kept hearing about this thing called Linux.

Created in 1991 by a Finnish college student named Linus Torvalds, Linux was a rather primitive operating system popular among computer hobbyists. Wladawsky-Berger saw a key strength in Linux:its ability to run on any kind of hardware, unlike Windows, which runs only on machines that use x86 chips made by Intel or Advanced Micro Devices.

For IBM, which previously had to write software programs for four different operating systems inside IBM plus multiple versions of Windows as well as others, Linux could be a one-size-fits-all solution running on PCs, midrange servers or even mainframes. Customers, too, would gain from having software that runs on a unified operating system.

Another part of Linux's appeal was its unfinished nature. Over the years Microsoft has added layers on top of Windows,

things like its SQLServer database, crowding out rivals. Now it hawks its .NET ("dot-net") Web programs atop Windows. Because Linux lacked those pieces, Wladawsky-Berger reckoned it gave IBM a better chance to sell its alternative, Websphere, as well as its DB2 database.And IBM could generate hefty consulting fees installing and customizing Linux-based hardware and software for clients.

Wladawsky-Berger pitched Linux to Samuel Palmisano, then chief of IBM's server group. (Now IBM's chief executive, he declined to be interviewed for this story. An IBM spokeswoman also refused to double-check many of the facts in this story.) IBM granted $1 billion in 2001 for Wladawsky-Berger to build a Linux business. Inside IBM, programmers began racing to rewrite virtually every IBMapplication to run on Linux.On the hardware front IBM created teams to optimize its computers, including mainframes, to run Linux.

IBMGlobalServices trained 3,000 people in Linux and launched a practice to help customers migrate to Linux. IBMalso began using Linux in its own data centers. Linux now powers more than 3,400 servers inside IBM, including machines that run IBM's state-of-the-art 300-millimeter semiconductor factory in East Fishkill, N.Y. Now IBMis considering erasing Windows from its desktops and moving them to Linux, too.

IBMalso began working to improve Linux itself, joining the "Linux community" and submitting suggested improvements to Linux's progenitor, Linus Torvalds. In 2000 IBM helped found the Open Source Development Lab, a nonprofit organization that employs Torvalds and serves as ground zero for Linux development. OSDL's chief executive,Stuart Cohen, is a former IBMer. The chairman of OSDL's board, Ross Mauri, is an IBM executive.

Back then Linux lacked features that corporate customers need, like strong security and support for computers with multiple microprocessors. So IBM has created 45 Linux tech centers in 12 countries, where programmers crank out Linux code. These are not the hippie hackers who created the early versions of Linux.They are experienced engineers with backgrounds designing IBM's own operating systems, including AIX, its version of the Unix operating system.

IBM also has built close ties to the two leading Linux distributors, Red Hat and SuSe. IBM was an early investor in Red Hat, and last year it invested $50 million in Novell, which acquired SuSe, Red Hat's chief rival. Smart move:By supporting two distributors, IBM can keep either one from becoming the next Microsoft.

Next came application software developers. Linux cannot succeed unless a sea of applications can run on it. Toward that endIBM has been helping companies move their applications to Linux. Software maker PeopleSoft rewrote 170 applications to run on Linux and bundles them with IBM software and hardware—after receiving assistance from IBM. Consulting firm Sapient accepted marketing dollars and discounted machines from IBMto rewrite a set of its applications for Linux and sell them on IBM servers instead of on machines made bySun Microsystems. "IBMput an attractive deal on the table for us to switch," says Benoit Gaucherin, chief technology officer at Sapient in Cambridge, Mass.

IBM dangles similar incentives before hundreds of tiny systems integrators who tailor their software to accounting, health care, insurance, retail and other industries. These little guys get extra bonuses from IBMif they push solutions on Linux instead of other platforms.

Next stop:developing nations like Brazil, China, India and Russia. Visiting Russia in February, IBM's Stallings, the Linux czar, met government ministers who want to put Linux systems into 50,000 schools.In China officials want to use Linux in 12,000 post offices. Says Stallings, "Customers want an alternative to Windows. This movement is unstoppable. There is unbridled enthusiasm."

IBM seems to go to any length to push Linux into customer sites. Last year at the U.S. National Weather Service, IBM offered a free demo machine and a guarantee to keep its systems up-to-date, even writing software drivers for components IBM doesn't build, such as video cards. The result?The NWSspent $3 million to buy a thousand IBMdesktop machines running Linux, replacing 900 HPUnix workstations.

For online brokerage E-Trade, IBMoffered access to scientists in its prestigious research labs, including Paul Horn, the senior vice president who runs all of IBM Research. "IBMopened up the whole company to us,"says Joshua Levine, chief technology officer at E-Trade.This, even though E-Trade buys Linux servers from Dell and HP, not just from IBM.

IBM says the Linux crusade is boosting business. Last year IBM's Linux-related revenues grew 50% to more than $2 billion. Even IBM's supposedly moribund mainframe hardware business grew 7% to just over $3 billion, thanks to Linux, which shipped on 20% of the mainframe horsepower IBMdelivered last year.

Customers like Boscov's Department Store, a 41-outlet chain based in Reading, Pa., and Mobil Travel Guide have

moved applications off Windows servers and onto IBMmainframes running Linux. Though mainframe hardware is expensive, renting the use of these big machines with free Linux software can be cheaper than buying a network of Windows servers—25% to 30% cheaper, in the experience of Paul Mercurio, chief information officer at Mobil Travel Guide in Park Ridge, Ill.

Linux is also speedier and more reliable than Windows, say the techies at St. Jude Children's Research Hospital in Memphis, Tenn., an IBM customer, which last year switched some servers from Windows to Linux. In addition the hospital's center for biotech research last year yoked together 140 IBM servers, each with two Intel chips, to create a Linux über-machine that ranks as one of the 500 most powerful computers in the world, though it cost less than $1 million to build. The biotech center also wiped Windows off some old servers, switching to Linux.

Undermine Bill Gates? Who, me? Says Wladawsky-Berger, "All we're saying is let's create a more competitive environment and see what happens."

To Microsoft, IBM's championing of open-source operating systems may seem a bit hypocritical. If Microsoft is to be portrayed as an evil empire plotting to lock customers into proprietary software, it should be remembered that IBM's mainframe monopoly wrote the book on how to do that; it's why the federal government spent a decade prosecuting an antitrust case against IBM (dropped in 1982).

And there is nothing to prevent IBM from turning its Linux installations into a lock-'em-in business for other software."Companies are getting bamboozled into this IBM story," says WilliamF. Zachmann, a longtime IBM-watcher and the president of Canopus Research in Duxbury,Mass. "IBMsnookers them in by giving them a free operating system, then they pay IBM for overpriced hardware and consulting services."

If free software is so great, Zachmann asks, why is IBM still charging money for its Websphere software and DB2 database?Why did IBM take in $14.3 billion selling software last year? "IBM's Linux pitch is either stupid or insincere. I think it's a little bit of both. It's not a sensible strategy for IBMin the long run,"Zachmann says.

Indeed, all the billions IBM has pumped into Linux so far haven't bought it a dominant market position. IBMranks third among sellers of x86-based Linux computers, with a 20% share, versus 28% for HP and 22% for Dell, says market researcher IDC.Rivals gloat that IBM's snazzy Linux ads are driving business to them, not IBM. HP claims it did $2.5 billion in Linux-related sales last year (25% more than IBM) and has done it without alienating Microsoft. "IBM has taken a religious view. Their message is Linux, Linux, Linux. Microsoft understands HP is not running a religious jihad,"says Martin Fink, vice president of Linux at HP.

HP even uses Linux to steal away IBM customers. Charles Schwab & Co., a big IBM customer that runs IBM mainframes and an IBM "grid" computing system, last year replaced hundreds of IBMUnix servers with Linux machines from HP. "IBMwas not exactly thrilled," admits David Dibble, an executive vice president at the brokerage.

Nor has IBM's Linux crusade put much of a dent in Microsoft.Windows still ships in 70%of x86 servers versus 17%for Linux. The December 2003 quarter was Microsoft's best ever, with revenue topping $10 billion, up 19% from the year before. And Microsoft has $56 billion in cash.

Worse yet, by blowing on the embers of the open-source movement, IBM is helping create a wildfire that could burn down its own software business. Mimicking Linux, new companies are sprouting up to install low-cost, open-source alternatives to IBM's programs. There's MySQL, which creates databases, and JBoss, which makes Web server software.

"IBM only supports open source when it helps them steal market share from Microsoft," says Marc Fleury, founder and chief executive of Atlanta-based JBoss.

Wladawsky-Berger is betting that IBM can make money selling software and hardware around those free layers."More money will be made in services and less in acquiring the software itself," he says. "Make no mistake:This is a business." Could Linux shift the balance of power in the computer industry to IBM's favor? Wladawsky-Berger suggests Microsoft has made a blunder by fighting Linux instead of embracing it. "For five or ten years Microsoft will continue to do very well,"he says. "But perhaps they will become more of a legacy business, like our mainframes."

For 20 years Microsoft has out-earned, out-smarted and out-maneuvered IBM. At long last IBM may have found a way to get even. Twenty years ago IBM ruled the computer industry. But today Microsoft runs the show. It earns 30% more profit than IBMon one-third of IBM's revenue and has almost double its market value. With Linux, IBM hopes to get even.

GRAPHIC: Chart, It's Payback Time

LOAD-DATE: May 24, 2004

8

From: Helene Armitage on 04/04/2001 12:47 PM
To: Sharon Dobbs
cc:
From: Helene Armitage/Austin/IBM@IBMUS
Subject: Re: AIX 5L Announce Positioning re Itanium

SECTION WITHHELD ON THE BASIS OF ATTORNEY CLIENT OR WORK PRODUCT PRIVILEGE

----- Forwarded by Helene Armitage/Austin/IBM on 04/04/2001 12:47 PM -----

Helene Armitage
04/04/2001 12:27 PM

To: William J Saulnier/Austin/IBM
cc: Alice Guerra/Austin/IBM@IBMUS, Bill Casey/Austin/IBM@IBMUS, Ian Miller/Beaverton/IBM@IBMUS, Kristian Thyregod/Austin/IBM, Pamela Wickline/Austin/IBM, Per Larsen/Raleigh/IBM, Thomas Keith/Dallas/IBM@IBMUS, Sharon Dobbs, Michael Day/Austin/IBM, Hye-Young McCreary, Robert Amezcua/Raleigh/IBM, Bill Sandve
From: Helene Armitage/Austin/IBM@IBMUS
Subject: Re: *IBM Confidential: AIX 5L Announce Positioning re Itanium

Bill,
I'm concerned that your words define a delayed GA to 2H01 for the AIX product, and do not call the PRPQ GA, so I have taken a stronger hand in stating our delivery. (As you know, we need to GA this PRPQ to gain rights to SCO code we want for our base AIX product delivery - and every is rather tired of me remaining and harping on this point.)

I also think that we do have a very positive product to deliver to our OEMs and ISVs. The development team has made improvements in quality and stability that we can get into customer hands to upgrade what they currently have from our beta programs.

The product is not under-function for this target delivery - and is not different from the Power release. The fact that the HACMP LPP is not available will not be significant in this time frame. ISVs will be developing applications, HACMP is a deployment time LPP. We do have time to provide these LPPs for deployment. Let's not apologies for this product. In addition, we are working the compiler transition. We do have compilers for the product delivery, and we will re-release with compiler tools. Our compiler transition is an internal development hurdle. Not to worry in your positioning. The good news for ISVs is that we will transition their compilers before they release their first official products.

I know the fine lines we are walking here. I took a heavy hack at your thoughts in my updated attachment. My goal is to get help get us on the same page - that this is a useful delivery to those ISVs and OEMs that want to use and evaluate a high-end UNIX on Itanium. We will focus on tuning and market trajectory, and will every product vendor, but this product is stable and worth release.

Is there more that I can do to help? Or my team? Let us know.
Thanks much.
Helene

William J Saulnier
04/04/2001 10:18 AM

To: Per Larsen/Raleigh/IBM
cc: Kristian Thyregod/Austin/IBM, Bill Casey/Austin/IBM@IBMUS, Pamela Wickline/Austin/IBM, Alice Guerra/Austin/IBM@IBMUS, Thomas Keith/Dallas/IBM@IBMUS, Ian Miller/Beaverton/IBM@IBMUS@IBMUS, Helene Armitage/Austin/IBM
From: William J Saulnier/Austin/IBM@IBMUS
Subject: *IBM Confidential: AIX 5L Announce Positioning re Itanium

Pam,

Bill Casey and I are ready to discuss the attached proposal with Per (Kristian and Ian, if available) and need some time to do so today. Thirty minutes is OK - you can contact me via my mobile phone at 512-799-7945. email won't work for quick response. This is very important. Others please send me comments or call me to discuss.

I believe this proposal does the best possible job at announcing what we intend to do while allowing us some increased flexibility with regard to NUMA-Q directions. I suggest that Ian quickly develop migration plans for existing ptx customers which emphasize Linux, Windows and AIX 5L on POWER as appropriate. AIX 5L on Itanium can be totally omitted from this planning, if desired. These should be worked so as not to set off a negative public reaction which could unnecessarily impact our business. By the time anyone really notices (if they ever do) that we are migrating ptx customers to other OS options I believe the issue will be moot as far as any external reaction is concerned.

Thanks.

William (Bill) Saulnier
Program Director, UNIX Product Marketing
Phone: (512) 838-4039 T/L 678-4039; email: bsaul@us.ibm.com
Assistant: Alice Guerra (512) 838-2656 T/L 678-2656

**** Attachment AIX.ItaniumPositioning.040401.PRZ has been removed from this note on 04 April 2001 by Helene Armitage ****; **** Attachment Itanium.PRZ has been removed from this note on 04 April 2001 by Helene Armitage ****

9

From: CN=David Bullis/OU=Austin/O=IBM on behalf of David Bullis [CN=David Bullis/OU=Austin/O=IBM]
Sent: Monday, April 02, 2001 3:33 PM
To: Teri Hunt
Subject: *IBM Confidential: SCO Amendment 10 Draft


SCOAmend10
04-02-01.doc

Lotus Notes v5 Memo Note
Body:
Teri,

I need you to take over Amendment 10 from this point. There may not be anything else to draft. I think this is complete. Please get with Ron and Sharon and let them know you will be the contact for this and any future SCO amendments. I don't believe there will be very many more. The hard ones are complete. I'll send you the back up notes and if you need additional documents I'll be happy to provide them. Thanks for your assistance and let me know if you have any questions.

Regards, David
Technical Lead
Global Operating Systems Sourcing Council
Voice: (512) 823-8577, T/L 793-8577
Fax: (512) 823-8712, T/L 793-8712
e-mail: dbullis@us.ibm.com
---------- Forwarded by David Bullis/Austin/IBM on 04/02/2001 03:27 PM ----------

David Bullis
04/02/2001 03:24 PM
To: Ron Saint Pierre/Austin/IBM@IBMUS, Sharon Dobbs/Austin/IBM@IBMUS
cc: Norma Maldonado/Austin/IBM@IBMUS
From: David Bullis/Austin/IBM@IBMUS
Subject: *IBM Confidential: SCO Amendment 10 Draft

Here is what I have so far. Can you think of anything else to be added?

Regards, David
Technical Lead
Global Operating Systems Sourcing Council
Voice: (512) 823-8577, T/L 793-8577
Fax: (512) 823-8712, T/L 793-8712
e-mail: dbullis@us.ibm.com

Toronto's Approval (negative confirmation) 10

Ron Saint Pierre
06/12/2000 10:08 AM

To: Helene Armitage/Austin/IBM@IBMUS
cc: Teri Hunt/Austin/IBM@IBMUS, Sharon Dobbs/Austin/IBM@IBMUS, Terry McElroy/Toronto/IBM@IBMCA
From: Ron Saint Pierre/Austin/IBM@ibmus
Subject: Approve additional ISVs for Monterey Beta Program
Importance: Urgent

Helene, Sharon - please approve the following ISVs for inclusion in the Monterey Beta program. Some of these companies are nominated by IBM, some by Bull, and one by Intel. The nominating company provides first-level support.
Teri- the detailed company info from the Bull and Intel nominees is appended below.
Terry - your approval is assumed if I don't hear from you in 48 hours.

Nominated by IBM:
Storix
Compuware
Facet Corp.
Scriptics Corp.

Nominated by Bull:
Eastman Software
DST Innovis
BEA Software

Nominated by Intel:
Infosec Technologies Company

Company: BEA Software (4 or 5 SDV's) - Windows/64 and Monterey
Contact: Bob Carina - Porting Lab Director
Alternate: Mike McHue - Program Manager
Application: WebLogic Server, Tuxedo/Jolt
Phone: Bob - 908.580.3000
Mike - 415.364.4650
Fax: Bob - 908.580.3050
Mike - 415.394.8619
Email: Bob - rjc@bea.com
Mike - mike.mchugh@beasys.com
Address: 140 Allen Rd.,
Liberty Corner, NJ 07938

Company: DST Innovis
Contact: Craig Hanson - Chief Technical Officer
Alternate: Scott Eddy - Program Manager
Application: Intelecable
Phone: Craig - 916 636 6015
Scott - 916 636 4562
Fax: Craig - 916 636 6160
Scott 916 636 4603-
Email: Craig - craig_hanson@dstinnovis.com
Scott - scott_eddy@dstinnovis.com
Address: 5272 Robert J. Mathews Pkwy,
El Dorado Hills, CA 95762-5705

Company: Eastman Software
Contact: Dave Lakness - Chief Technical Officer
Alternate: Tanya Clark - Executive Assistant
Application: Sonora
Phone: Dave - 978 313 7000
Tanya - 978-313-7004
Fax: 978-313-7001

Email: Dave - david.lakness@eastmansoftware.com
Tanya - Tanya.Clark@EastmanSoftware.com
Address: 296 Concord Road
Billerica, MA 01821

Company	Infosec Technologies Company
Address	A12F, Corporate Square, 35 Finance Street Beijing 100032, P.R. China
Phone	(8160) 8809.1218
FAX	(8160) 8809.1219
Legal Contact	Zhuang Jun
Title	Vice President, CTO
Title	adamzhuang@263.net

Ron Saint Pierre (512) 838-1944
Manager, Monterey OEM/IHV Support and Diagnostics
Austin, Tx. 78758

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David Hall
05/23/2000 06:03 PM

To: Kaena Freitas/Austin/IBM@IBMUS
cc: Conway Wharton/Austin/IBM@IBMUS, David Mehaffy/Austin/IBM@IBMUS, Norma Maldonado/Austin/IBM@IBMUS, Sharon Dobbs/Austin/IBM@IBMUS, Robert Ruyle/Austin/IBM@IBMUS
From: David Hall/Austin/IBM@IBMUS
Subject: Questions on Origin #224 & #225

05/23/00

Kaena,
In this note from Conway, he is saying that the form that he requires for source code has not been filled out for Origin # 224. This is the
origin # for the Intel Assembler code. We should have this form filled out and Conway should be seeing # 224 in CMVC. Can you
get this form filled out and make sure that the origin # is being used in the Assembler code?

224, 225 -

On Origin # 225, Intels FAT32 , this origin # should also be showing up in CMVC. There is a note attached to this series of notes,
from Darda Chang saying that he was going to write everything himself. Is that note correct? or is it a very old note and does not
reflect what was eventually done? Anyway, if the code was used then the form has to be filled out and we should see this origin #
in CMVC. I would be very surprised if we are not using this code, because we spent a lot of time to get closure with Intel and
Microsoft to get the agreement with Intel to use this code.

C. David Hall- Manager
Monterey 64 User Space Development
Internet address: cdhall@us.ibm.com,
Phone: (512) 838-2088, tieline 678-2088
Fax: (512) 838-3882, tieline fax 678-3882,
Fax loc 8D004-905

---------- Forwarded by David Hall/Austin/IBM on 05/23/2000 06:01 PM ----------

CONWAY WHARTON
05/15/2000 03:39 PM

To: Norma Maldonado/Austin/IBM
cc: David Mehaffy/Austin/IBM@IBMUS, David Hall/Austin/IBM@IBMUS, Craig Schneider/Austin/IBM@IBMUS, Sharon Dobbs/Austin/IBM@IBMUS, Haig McNamee/Austin/IBM@IBMUS, David Bullis/Austin/IBM@IBMUS, Robert Ruyle/Austin/IBM@IBMUS
From: Conway Wharton/Austin/IBM@IBMUS
Subject: Re: For your SCO - Sanitizing scripts.....

Norma,

The main point is that there is no code in CMVC associated with these origins at this time. The form for 224 would need to be completed (mainly the owning department), but maybe this hasn't been done, since no code has been dropped.

Thanks, and may God bless you,

Conway <><
t/l 678-3192
Sametime ID cwharton@us.ibm.com
OEM Source Code Primary Contact
Department Page: http://w3.austin.ibm.com/:/projects/byus/public_html

Norma Maldonado 05/15/2000 12:59

To: Conway Wharton/Austin/IBM@IBMUS
cc: David Mehaffy/Austin/IBM@IBMUS, David Hall/Austin/IBM@IBMUS, Craig Schneider/Austin/IBM@IBMUS, Sharon Dobbs/Austin/IBM@IBMUS, Haig McNamee/Austin/IBM@IBMUS, David Bullis/Austin/IBM@IBMUS, Robert Ruyle/Austin/IBM@IBMUS
From: Norma Maldonado/Austin/IBM@IBMUS
Subject: Re: For your SCO - Sanitizing scripts.....

Conway, I will check with David Hall about who in our area should complete this template, BUT

Amendment 4 contains the following:

226: Intel's ACPI code
223: Intel's EFI code
215: Intel's OS Sample code
224: Intel's Assembler code

Amendment 6 contains the following:

225: File Allocation Table
232: Intel 82559 Ethernet Controller
231: Qlogic Device Drivers
227: ATI Device Drivers
233: UUID Reference Implementation

Let's you and I discuss further.
Thanks.

Regards,
Norma Maldonado, Monterey Project,
11400 Burnet Road IMAD 9586
Austin, TX 78758 USA
512-838-7957 fax 512-838-3882 tieline 678
norma@us.ibm.com
1-800-946-4646 or www.mobilecomm.com PIN 1404114

CONWAY WHARTON
05/15/2000 12:30 PM

To: Norma Maldonado/Austin/IBM
cc: David Mehaffy/Austin/IBM@IBMUS, David Hall/Austin/IBM@IBMUS, Craig Schneider/Austin/IBM@IBMUS, Sharon Dobbs/Austin/IBM@IBMUS, Haig McNamee/Austin/IBM@IBMUS
From: Conway Wharton/Austin/IBM@IBMUS
Subject: Re: For your SCO - Sanitizing scripts.....

Norma,

Neither of the two origins you have listed are in any previous ammendment, nor do they presently have any code in CMVC associated with them. For origin 224, and the form has never been completed, as far as I know, or at least I don't have an updated form. I've copied Craig, Haig and Sharon on this

to see if they have any further information (here is a copy of that form).

There are no files for origin 225, and I suspect there will never be, according to the following note:

From: Darda Chang/Austin/IBM@IBMUS
Subject: Re: Origin 225
Importance: Normal

I have no idea what this origin for. I intend to create all those EFI-related utilities from scratch unless someone can show me there is a faster way to implement them by using someone's source codes.

Thanks,

Darda

BTW, FYI, all of the above information is available through the website in my signature

Thanks, and may God bless you,

Conway <><
t/l 678-3192
Sametime ID cwharton@us.ibm.com
OEM Source Code Primary Contact
Department Page: http://w3.austin.ibm.com/:/projects/byus/public_html

Norma Maldonado 05/09/2000 12:01

To: David Mehaffy/Austin/IBM@IBMUS
cc: David Hall/Austin/IBM@IBMUS, Conway Wharton/Austin/IBM@IBMUS
From: Norma Maldonado/Austin/IBM@IBMUS
Subject: For your SCO - Sanitizing scripts.....

Dave, I am forwarding to you 2 lists from Conway Wharton that contain the following:
1) all files shipped to SCO until 5/3/00
2) all files which are not shipped to SCO either because they are proprietary or SCO does not have the license to receive these.

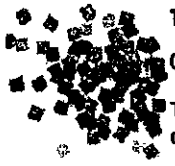
I added 2 items to the first list of files that I must confirm with Conway when he returns to the office.

If you have any questions, let me know.
I will be out of the office this afternoon, but will return tomorrow morning.

Regards,
Norma Maldonado, Monterey Project,
11400 Burnet Road IMAD 9586
Austin, TX 78758 USA
512-838-7957 fax 512-838-3882 tieline 678

norma@us.ibm.com
1-800-946-4646 or www.mobilecomm.com PIN 1404114

origin.224.lwp has been removed from this note on 25 May 2000 by Norma Maldonado
originsNS.lwp has been removed from this note on 25 May 2000 by Norma Maldonado
originsShip.lwp has been removed from this note on 25 May 2000 by Norma Maldonado



Teri Hunt
05/07/2001 07:38 AM
This document expires on 08/07/2001

To: Sharon Dobbs/Austin/IBM
cc:
From: Teri Hunt/Austin/IBM@IBMUS
Subject: *IBM Confidential: Fwd: Re: Fwd: Amendment 10
Importance: Urgent

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Sharon,

I'm not sure if David will be in or not today. I don't know if you were informed, but his brother passed away last week and he's been out a few days.

With that in mind, I didn't have the latest copy of Amendment 10 from David, so I was wondering if this is what I should work at adding the items to that you sent on Friday?

If this is the latest version, please just let me know and I will work this at least until David returns. Thank you!

Teri Hunt
Procurement Staff Professional
Software Procurement, US
Tie Line: 450-8917
Outside: (512) 670-9058 Fax: (512) 989-2688
E-MAIL ID: TERIJ@US.IBM.COM@INTERNET
LOTUS ID: TERI HUNT/AUSTIN/IBM@IBMUS

IBMMAIL ID: IBMMAIL(USIB2CT2)
Visit Our Home Page at http://procure.sby1.ibm.com
----- Forwarded by Teri Hunt/Austin/IBM on 05/07/2001 07:36 AM -----

David Bullis
05/04/2001 05:15 PM

To: Sharon Dobbs/Austin/IBM@IBMUS, Ron Saint Pierre/Austin/IBM@IBMUS, Teri Hunt/Austin/IBM@IBMUS
cc:
From: David Bullis/Austin/IBM@IBMUS
Subject: Fwd: Re: Fwd: *IBM Confidential: Amendment 10

Please review. I haven't looked at this yet.

Regards, David
Technical Lead
Global Operating Systems Sourcing Council
Voice: (512) 823-8577, T/L 793-8577
Fax: (512) 823-8712, T/L 793-8712
e-mail: dbullis@us.ibm.com
---------- Forwarded by David Bullis/Austin/IBM on 05/04/2001 05:17 PM ----------

Stephen Spill <steves@sco.COM> on 05/04/2001 05:12:56 AM

To: David Bullis/Austin/IBM@IBMUS
cc:
Subject: Fwd: Re: Fwd: *IBM Confidential: Amendment 10

>David,

sorry this didn't get back, I just noticed it hadn't been done.

The only two minor issues are that there was a mistake in the paragraph numbering and that there are no rights to sublicense source for NFB.

Once again apologies - life is somewhat hectic here - in these last few days of still being SCO

SteveS

Stephen Spill
Director of Marketing
Server Business Line
Caldera International

Phone 831 427 7741
Fax 831 427 7924
Cell 831 818 9643
Email steves@sco.com

 - Amend10apr232001.doc