The Linux Line

September 2002

This month in The Linux Line: The importance of open standards, Linux Standard Base, and the newly announced LSB certification program; two smaller configurations of the xSeries 440 server promise significant benefits in a pay-as-you-grow approach for business customers; the general manager and CEO of IBM in Greater China assesses the state of Linux in China and the challenges ahead; IBM software strategist Steve Mills delivers an update on IBM's plans for Linux in the larger scheme of software and support; and more.

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WHY OPEN STANDARDS MATTER

A well-defined set of standards for Linux is he answer to fears that Linux could go the way of UNIX and splinter, paving the way for a fall from grace. That answer comes in the form of the Linux Standard Base, or LSB, released by the Free Standards Group, which has also announced an LSB certification program. Leslie Proctor, president of Proctor Resources, explains the significance of this certification program as well as the merits of LSB. PAGE 2

NEW SERVER MODELS, NEW AFFORDABILITY

Waste or waste not? IT planners seeking to avoid spending piles of money for capacity that will go unused are marching toward unique building-block opportunities presented in the @server xSeries 440, with its pay-as-you-grow approach. A senior analyst at DH Brown and Associates talks about the benefits of two smaller configurations recently announced and their potential impact on enterprise Linux acceptance. PAGE 4

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The Linux Line talks to Benoit Degreve, IBM Global Linux Services Executive, about IBM's new agreement with Red Hat, what the enhanced teaming means for IGS customers, and how the agreement fits into IBM's dual-distribution strategy. PAGE 17

DID YOU KNOW?

IBM won an "editor's choice" award from Linux Journal for @server xSeries, chosen as best Web server. At LinuxWorld, IBM won in the "best network/server application" category for WebSphere Commerce 5.4. And at LinuxWorld China 2002, IBM China won for "best enterprise supporting Linux." PAGE 36

Why Open Standards Matter

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SUMMARY: A WELL-DEFINED SET OF STANDARDS FOR LINUX IS THE ANSWER TO FEARS THAT LINUX COULD GO THE WAY OF UNIX AND SPLINTER, PAVING THE WAY FOR A FALL FROM GRACE. THAT ANSWER COMES IN THE FORM OF THE LINUX STANDARD BASE, OR LSB, RELEASED BY THE FREE STANDARDS GROUP, WHICH HAS ALSO ANNOUNCED AN LSB CERTIFICATION PROGRAM. LESLIE PROCTOR, PRESIDENT OF PROCTOR RESOURCES, EXPLAINS THE SIGNIFICANCE OF THIS CERTIFICATION PROGRAM AS WELL AS MERITS OF LSB.

Linux is the fastest growing operating system in the world and has been developed faster than any operating system in history, according to analysts at Aberdeen (www.aberdeen.com). That growth has been fueled, in part, by the open source nature of Linux, which attracts talented developers from every corner of the globe. But the open source nature has also given fuel to fears that Linux will splinter, leaving it in the same fix as Unix is. The solution? A well defined set of standards for Linux.

The Free Standards Group has taken on this mission, and has released the Linux Standard Base, or LSB, which standardizes the core functionality of Linux. The LSB was released early this year and within six months, the Free Standards Group announced an LSB Certification program. Six weeks later, the first Linux distributions became certified, with more to come.

Why is this development significant? What does it mean to developers and users of Linux and to the Linux marketplace?

Standards for Linux impacts developers, Independent Software Vendors(ISVs) and end users of all levels. The LSB eases one of the biggest issues for Linux users – compatibility. LSB certification means that any certified software will work with any LSB Certified distribution – making deployment on any system, large or small, much easier.

Standards are very important for ISVs and other software developers. By making their software LSB Certified they can know that their software will work with any LSB Certified Linux distribution. This shortens development time and allows ISVs and software developers to spend time adding functionality to their software, rather than needing to concentrate on compatibility. Standards make Linux a very attractive option, which will mean that more and more programs will be developed for or ported to Linux. More functionality and choice of commercial off the shelf (COTS) programs mean a greater market share for Linux, increasing its already meteoric growth.

The rapid pace with which the first Linux distributions became LSB Certified demonstrates that the Linux industry is behind the standards. Furthermore, a number of leading IT executives have begun insisting that any Linux-based application or distribution they deploy be LSB Certified.

Linux users who prefer the interfaces of one Linux distribution don't need to worry. Their favorite bells and whistles won't change. LSB standardizes the core functionality of Linux, which means that, on the base level, one distribution will behave the same as other Linux distributions without sacrificing individual features.

Think of it this way – every car in the world has four wheels, a steering wheel, axles and

an engine. That's what the LSB standardized, metaphorically speaking. But there's a big difference between a Volkswagen Beetle and a Suburban.

Technically, the LSB and the Linux Internationalization Initiative (Li18nux), another IBM-backed project of the Free Standards Group, have taken lessons from other standards, incorporating the best of what already exists and enhancing it for Linux. Both offer more than just a written standard. They include test suites, development tools and a sample implementation, all designed to make it easy to develop against the standard. The LSB and Li18nux are technically sound standards that make a stable base for all Linux distributions and applications to build on.

About Leslie Proctor: Leslie Proctor, who has written about Linux and Open Source for a number of publications, has been part of the open source community for several years, working with organizations like the Free Standards Group, the GNOME Foundation and Open Source Development Lab (OSDL). She is president of Proctor Resources.

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SUMMARY: WASTE OR WASTE NOT? IT PLANNERS SEEKING TO AVOID SPENDING PILES OF MONEY FOR CAPACITY THAT WILL GO UNUSED ARE MARCHING TOWARD UNIQUE BUILDING-BLOCK OPPORTUNITIES PRESENTED IN THE @server XSERIES™ 440, WITH ITS PAY-AS-YOU-GROW APPROACH. A SENIOR ANALYST AT DH BROWN AND ASSOCIATES TALKS ABOUT THE SIGNIFICANT FEATURES OF THE NEW ENTRY-LEVEL CONFIGURATIONS AND THEIR POTENTIAL IMPACT ON ENTERPRISE LINUX ACCEPTANCE.

The IBM® enterprise-class x440 server delivers on the promise of scalability with a new, even more affordable, entry design recently announced, which is suited for medium-sized businesses that need performance and availability without the high-end cost. Companies get to start out with two-way configurations and as needed embark on a path of up to 16-way SMP. The new server offering allows business customers to buy a two-way or four-way Intel Xeon Processor-based system. Then, when and as needed, the path for upgrade can be made to 8- and 16-way configurations by switching from Xeon Processor to Xeon Processor MP.

Commenting on the August announcement, "What we're talking about essentially are two smaller configurations," says Jay Bretzmann, director of xSeries server marketing at IBM, of the eSeries x440processor. Also, customers get the advantages of X-Architecture™ technology enjoyed by larger corporations.

THE PROCESSOR ADVANTAGE

Joseph Zhou, senior analyst with DH Brown and Associates, who has been tracking x440 server developments over the year, says "The real value is from the processors being supported on this new x440 model."

This time, the X440 model uses Intel's powerful 2.4GHz Xeon processor, rather than the Xeon MP chips used in the larger system, and at lower cost. Significant savings are achievable in the new model's processors.

In March, of this year, the @server x440 made its debut as a four-way or eight-way system, powered by Intel Xeon MP processors, seen as Intel's most significant development for scalable industry-standard servers.
http://dhbrown.com/cffiles/Document/Search/Results.cfm?DOC=105002208&ABSTRACT=IBM&SEARCH=TRUE

Zhou points to the new entry's price difference. "The 2.4 GHz Intel Xeon processor costs less than one-third the price of the 1.6 GHz Xeon MP processors, according to current IBM Web prices," says Zhou. "This provides significant hardware savings for customers using the x440 with two- or four-way configurations."

Zhou at the same time says the significance of the entry model design is not in cost alone. There is another key factor underlying the processor shift. "The 2.4 GHz Intel Xeon processor has also demonstrated greater performance capability than the 1.6 GHz Xeon MP processor, according to industry-standard benchmark results, even though the Xeon MP processor has greater SMP scalability," he states.

The Intel Xeon processors, at present, give IBM strong market advantage. Zhou says, "Being the only platform currently in the market supporting the Intel Xeon processors up to 4-way configurations, this new x440 model offers unmatched performance potential compared to other 4-way Intel-based servers available today."

INTEL-BASED PLATFORM FOR LINUX

Since Unisys does not support Linux on the ES7000, the IBM x440 is the most scalable Intel-based server platform for Linux. (Zhou pegs the entry price for an IBM x440 as under $20K, while he pegs the entry price for a Unisys ES7000/230 at more than $100K.)

And as Linux continues to prove to be a viable alternative to more costly platforms in enterprise computing, Zhou thinks that the x440 is to play a role in speeding Linux acceptance in the enterprise even further:

"As Linux is moving up from the edge of the IT infrastructure, software vendors are aggressively adding Linux support for their products. Especially for database applications, support for Linux has been not only as comprehensive as for other operating environment, but has also proven to be a viable alternative to more costly solutions. The x440 has enabled more scalable Linux database solutions, accelerating the Linux acceptance in enterprise computing."

To be sure, the Linux push at IBM is also tied to Intel architecture. In the June issue of The Linux Line, Rich Michos, IBM Vice President of Linux Servers, was asked why the battle for Linux on Intel is so important to IBM, and how IBM plans to win on this strategically important architecture.
http://www-1.ibm.com/linux/news/michos.shtml

"The Intel platform is the fastest-growing hardware platform in the server business," he says. "This comes at a time when Linux has moved out of the universities, away from just doing file, print and other basic infrastructure work, and into the enterprise. Linux is showing growth that's about four times that of Windows®, and its adoption rate far surpasses that of any other operating environment.

We also believe that as the proliferation of Intel architecture and Linux continues, Intel/Linux will draw more applications, and increasing the number of applications will further propel volumes. All the while, the relative performance of Intel/Linux will continue to improve vs. the other alternatives. So in the end, Linux on Intel is a big winner."

The entry x440 server supports Red Hat Linux Advanced Server and SuSE Linux 8.0.

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STEVE MILLS SURVEYS IBM'S LINUX SOFTWARE EFFORT

The Linux Line talks to Steve Mills about the Linux impetus as a part of IBM's total software strategy and where key company and customer opportunities are seen.

STEVE MILLS IS SENIOR VICE PRESIDENT AND GROUP EXECUTIVE OF IBM® SOFTWARE, AND IS RESPONSIBLE FOR SHAPING IBM'S OVERALL SOFTWARE STRATEGY. WE ASKED HIM TO SURVEY THE STATUS OF IBM LINUX MIDDLEWARE PRODUCTS; IBM'S EFFORTS TO INCREASE THE AVAILABILITY OF THIRD-PARTY LINUX APPLICATIONS; IBM'S PROGRESS IN SYNCHRONIZING LINUX RELEASES WITH THOSE OF OTHER IBM SUPPORTED PLATFORMS; AND TO SHARE HIS INSIGHTS INTO IBM LINUX/SOFTWARE STRATEGY GOING FORWARD. HERE'S WHAT HE HAD TO SAY.

LL: Thank you again for joining us to update us about the Software Group and Linux. What is the IBM software strategy for Linux?

Mills: We view Linux as an important platform in the context of what we're doing around middleware, since middleware is a collection of technologies that are designed to help link applications together and support their scalability and reliability and overall robustness. We deliver middleware on a variety of platforms to support customers' business needs for integration. Linux is an important platform in that context. Businesses see Linux as delivering a good value proposition. The economics of Linux, the reliability and improving scalability of Linux makes it very attractive. Of course, the fact that Linux can run on multiple systems is a particularly strong tie-in to the whole idea of cross-platform integration and flexibility.

LL: Does IBM software for Linux receive the same level of support as IBM software for other operating systems?

Mills: Yes, we have Linux as a first-class platform for delivery. We have quite a large portfolio. What most people don't realize is IBM has the largest software portfolio in terms of the number of products that we have of any software company in the industry. So it's a fairly daunting challenge to cover every platform with every single product. We do look at the marketplace and what the marketplace is interested in at a particular point in time in terms of how we deal with the challenges of porting everything across. Again, we see Linux as a first-class platform and there isn't anything that we deliver at any other workstation system that we're not prepared to put on Linux, and literally hundreds of our software products exist on Linux today.

LL: In the past, IBM's announcements of Linux product availability have occasionally not coincided with the UNIX® and Windows® product announcements. Is that going to be eventually synched up?

Mills: Well, this has been the case with all new platforms that we've added to our portfolio. Again, the challenge of trying to put our software out on a wide variety of platforms puts a lot of pressure on the team to get a great deal of work done in a short period of time. In the case of all systems, you need to make sure that all the pre-req's and co-req products are there on the system. Of course, as we all know, there are multiple Linux distributions in the marketplace today, so getting a clean map of everything, all the pre-req's against the latest version from multiple distributors, has been a challenge for us.

We're hopeful that the UnitedLinux initiative will make it much easier for IBM to serve the Linux community and the Linux platform more effectively. SCO Group (Caldera), SuSE and SRA (Turbolinux) will all be using UnitedLinux code. Our products will support Red Hat and UnitedLinux. By streamlining the number of Linux distributions we are supporting, IBM will be able to announce Linux software offerings simultaneously with those on other IBM platforms.

LL: Many people in the industry say that applications are key to Linux. What is the software group doing to encourage Linux applications? Do you see any signs of momentum there yet?

Mills: We see tremendous momentum in the application arena. Understand that we're not an application company, we're a middleware company. The motivation for the application providers is customers requesting Linux as the deployment environment. As you might imagine, you get a little bit of chicken and egg going on where the customer says, "I'm willing to install a Linux-based system provided the applications I want are there." And the application providers say, "I'm willing to move my application over onto Linux if the customers are ready to buy."

Our challenge is the challenge of the intermediary, the broker of those two connections, assisting the software vendors, the application providers, in porting their applications across. We provide help and assistance, resources as well as financial assistance, to assist application providers in moving to Linux. And we have an open offer to any customer who's interested in deploying Linux that we will go work with the application provider to help get them on to the Linux platform.

ISVs recognize that integration is the largest single challenge, so they are recognizing that open standards software is the best way to provide solutions that work across multiple platforms. With Linux, developers and ISVs can write their Linux applications once and then run them on many different platforms.

The best proof point is the number of Linux-enabled ISV applications that run on our middleware, which increased 75% last year to over 3,000 offerings. We are working with key ISVs including ACCPAC, Axiom, eOneGroup, Marcole, Presence Online, Relavis, Sage, SAP, SAS, and Selectica. In June, JD Edwards (announced a new Linux-based CRM application for the finance industry for large and mid-sized firms. The solution includes IBM DB2® database and WebSphere® Application Server software for Linux running on the IBM @server xSeries™.
http://www-3.ibm.com/software/is/mp/linux/ed/)

This activity on the ISV side generates activity with customers, which, as I said, eventually pulls in more applications. Earlier this the year, BBDO INTERACTIVE, a subsidiary of the third largest advertising agency worldwide, chose Linux to develop and host websites and applications for its clients. BBDO is deploying SteelEye's LifeKeeper clustering software and IBM DB2 Enterprise Edition for Linux on IBM @server xSeries servers.
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In August at LinuxWorld San Francisco, we announced that Air New Zealand signed a strategic outsourcing agreement with IBM Global Services, consolidating some 150 Compaq servers with a single mainframe, IBM's flagship @server zSeries™, running Linux and IBM WebSphere Application Server, DB2 Database, and Tivoli software running on Linux.

Wolfermans, a gourmet baked goods company, chose IBM's Integrated Platform for Linux to help power its growing internet business. With eOneGroup, an IBM Business Partner, Wolfermans is using the IBM Linux cluster to power its online e-commerce site. The solution consists of the IBM @server x330 and WebSphere and DB2 software. These and other recent wins are examples of the momentum we've seen on the application side.

http://www-916.ibm.com/press/prnews.nsf/jan/8450F8A7BCC7E2F985256C0F006BEB60

LL: IBM recently announced that it will extend the Tivoli® Access Manager, Risk Manager and Identity Manager to Linux. Could you tell us something about these products and when they're going to be available on Linux?

Mills: Of course, these are important products for us in the security arena. Tivoli Access Manager, previously known as the Policy Director, is our critical flagship product for centrally managing security policies, identities and so on. This is a product that has become quite popular in the marketplace. We're in the process of moving the code over onto Linux as we speak. We expect to be delivering this capability this year, to the customers that asked us for a Linux-based version.

Tivoli Risk Manager helps companies manage threats across their enterprises by featuring new Web, host and network Intrusion Detection System (IDS) sensors for Linux that monitor Web server access logs, system log files and network intrusion traffic. Plus, IT administrators get a comprehensive real-time view of enterprise security on a single console. And with the IBM Tivoli Identity Manager companies can apply policy-based management and provisioning to a much wider variety of operating systems.

All these products will be available this year.

LL: What plans can you share about Domino™ and Linux going forward?

Mills: Well, we do have support for Linux today with our Lotus® Domino™ product. While the marketplace has not really shifted yet in terms of significant customer requests for running Domino for Linux, we're seeing more and more interest in this both on Intel-based systems and zSeries™ as well.

One of the things that we had to do for Linux, of course, was to make sure that we had optimized Domino from a performance standpoint for the Linux environment. That's pretty straightforward for Intel servers, but required more work for the mainframe environment. However, we will have capability for Domino for Linux on zSeries in the future.

LL: Do you see a significant role for Linux and IBM software on the desktop in the near future?

Mills: Well, I think this is an interesting question that's still open to understanding what customers want and whether they're going to get serious about looking to Linux as an alternative desktop. Clearly, Linux is not going to replace the popular, full-function, productivity desktops that many users require today, where they're very comfortable with the Windows desktop and Microsoft Office® and a variety of third-party products that run in that environment. I don't see the shifts occurring at that end of the market.

Where I see the shifts occurring are in what you would consider to be fixed function desktop environments. As you go into manufacturing, for example, for production control or look at the retail store systems, there are literally millions and millions of client devices that don't require all of the various products that have been popularized in the Windows space where the operating system provides just the basic support for fixed application function in stores and branch locations and plant floors and so on. Frankly, that's a pretty sizeable market so there are opportunities there. More work needs to be done to both ensure that the right products run in that environment and then obviously, the choice is going to be the customer's whether to choose a Linux implementation in those arenas versus choosing Windows.

There is a market there today for that type of technology. I think those opportunities are very logical for Linux looking ahead to the future.

LL: Not long ago IBM released a Java™-based development environment to the open source community called Eclipse. The idea was to provide all OS platforms an open source standard for developer tool integration, much as Apache has become the de facto standard for Web servers. IBM hoped to partner with many of those whose tools were integrated into Eclipse. How's this been going?

Mills: Eclipse has been going extremely well with well over 100 companies participating in the Eclipse initiative. At the end of the second quarter, we had over one million downloads of the Eclipse workbench technology to developers around the world. There's tremendous interest in the capabilities there. It's been well received by the press and consultants as well as the vendors. They see it as being valuable infrastructure to provide common workbench capabilities for improved tool interoperability and tool connection.

The effort was really about trying to forge a set of standards in the tools arena that has never emerged. The history of the tools business is that it's typically isolated, individual platforms. Tool providers focused on how they delivered tools that were very unique and distinct to a specific operating system environment and then often struggled with the portability of those tools to other environments. We think that there's a way in which to improve tool portability through standardization and give the developer more mix and match options for the specific kind of workbench that they want to deploy. Since appli-

cation programmers, programmers of all kinds, often have their own specialized tool sets that they like to use, this ability to mix and match opens up more possibilities of platform portability and improved market adoption of tools that can deliver across platform application deployment facilities.

Linux is an important part of this effort because Linux is that next new platform that's come along. Eclipse is not uniquely targeted at Linux, but has a strong association with Linux and we think there's a tremendous long-term potential for the tool providers to rally around the Eclipse effort and deliver superior application development environment on Linux, taking advantage of what we've put into open source and other elements of the Eclipse initiative.

LL: WebSphere Application Developer, the Eclipse relevant part of WebSphere, is just a part of the larger WebSphere Linux family. Would you briefly give us the status and review of the Linux enabled WebSphere product line for our audience?

Mills: Of course. We view Linux, as we do all the platforms, as representing a major opportunity for us, as well as the customer. Our approach here with middleware, as I stated earlier, is very much a cross-platform approach. The idea is to have as rich an environment available on Linux as any of the other platforms because we are hopeful that Linux becomes a long-term preferred UNIX® platform in the marketplace. So putting our middleware products onto Linux is a key part of encouraging the market at large to adopt Linux as one of the key platforms that customers deploy applications on.

WebSphere is one of our flagship products from the perspective of supporting transactions, Web-based applications, and back-end integration. That includes the WebSphere application development environment which takes advantage of our visual building tools in both the Java arena as well as in the C, C++ arena and more recently XML, for building applications that exploit WebSphere on a variety of platforms.

We think there's a great value proposition in Linux and we think that value proposition is going to continue to improve as we march our way across the future releases of Linux that deliver greater levels of scalability, improved platform support, and therefore more options for customers for cross-platform application deployment, the key value proposition for WebSphere.

LL: You mentioned WebSphere's transaction processing abilities. It turns out that DB2 had some very good results on the TPC Benchmark-H (TPC-H) earlier this year. Could you give us an update on DB2 and any plans for DB2 on Linux going forward?

Mills: We do focus on benchmarking and product performance. The H benchmark is an important one. There are a couple others that we also participate in. We have a great product in DB2 and we're capable of getting it to perform extremely well on all the platforms that we run on.

Again, the Linux opportunities here for DB2 we think are significant going forward, particularly as we look out to the improving performance of the Linux kernel. We're doing a lot of work in our technology center, focused on how does the existing 2.4 level of the kernel continue to evolve and deliver better performance, improving SMP performance throughout this year and into next year. Then, of course, the 2.5 development initiative taking place today will result in a deliverable, the 2.6 level of the kernel, in the future. We think that the SMP performance there has potential to push us into the sweet spot of the commercial market as you start to get above the SMP barrier and get into some of the larger systems. That's particularly important for large, scalable applications, ERP, supply chain, and customer relationship managers. We think customers are going to see those key applications as deployable on Linux because Linux, on the chosen platform, is going to scale well in terms of SMP performance.

Part of that is having the middleware technologies there concurrently and also having them scale well. We have scaled DB2 to very large configurations with many, many terabytes of data, very high levels of transactional throughput. As Linux scales, DB2 will be scaling with it as DB2 scales today on all platforms that it runs on, up to the limit of platform support.

LL: The next big commitment that IBM has made to information technology, and it's been made at the highest corporate levels, is the commitment to Grid computing with the Globus open source software and its foundation. What effect will Grid have on IBM's middleware strategy?

Mills: One of the things that we're going to be exploring here over the course of the next year is the way in which Grid technologies apply to commercial applications. I think we have a very clear picture of how to use Grid technologies in numerically intensive computing environments; how to share resources on a Grid and take advantage of available compute capacity has become reasonably well known for scientific applications. The next question is, how does that apply to commercial applications, which are typically not processor bound; they're I/O bound applications? They're sensitive to the I/O throughput capabilities of the system and they're sensitive to changing workload characteristics.

In addition, more work needs to be done to see how the Grid structures can be used to improve headroom. How can additional resources be scheduled into an environment in order to take advantage of available capacity, to serve peak load needs? How will customers utilize the Grid technologies operationally in their commercial environments? What additional tools and capabilities do they need to help them with the scheduling of application function for commercial applications? These are pieces of work that are going on right now with the Grid team under Tom Hawk [General Manager, Grid Computing] and looking to some early pilots with the customers that want to start to take advantage of the technology in the commercial space.

We're doing significant work around WebSphere and the Globus standard spaced interfaces to find out how WebSphere adds value to these kinds of Grid topologies. WebSphere has scheduling services. WebSphere is a product that's partitionable and

distributable across clusters of systems. That kind of capability we think fits very well with the overall Grid topology.

LL: Is there anything else that you'd like to say to our audience about Linux and what it means to the IT industry?

Mills: I think, as we at IBM recognize, Linux represents tremendous opportunity. Not just merely for us from the perspective of our business, but from the customer perspective of the possibility of having a more consistent operating system environment that can run across a variety of processors. IBM has been leading the way here. We have not only been taking advantage of what the industry at large has been doing on Intel Architecture with our xSeries™ offerings, but on our pSeries™, iSeries™, and zSeries™ platforms as well. These things, I think, have sparked the imagination of our customers that it may be possible in the future to leverage an operating environment that has far greater consistency than anything we've seen in the past, and therefore gives them portability options that they've never had before.

The legacy of applications that are locked to one platform and can never move around gets positively affected by Linux and what Linux has to offer —the ability to start small on a small system and grow up to ever larger systems. To move across different hardware architectures that deliver either greater levels of scale or greater levels of reliability and availability is a very powerful value proposition. It's obviously capturing the imagination of our customers around the world who are, as we see from the results every quarter, deploying an ever larger number of applications on Linux. This is one of the most exciting technology-driven changes occurring in our industry today and I think that the value proposition for customers is tremendous. We as a company are clearly at the forefront of leading this effort to try to deliver on this value, for us and for our shareholders to take advantage of the business opportunity that's there. This is a tremendous effort and one that has the entire IBM company mobilized to see it succeed.

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STATE OF LINUX IN CHINA

The Linux Line talks to Henry Chow about Linux in Greater China, IBM's role in the adoption of Linux, and the challenges of Linux in China that lie ahead.

HENRY CHOW IS GENERAL MANAGER AND CEO OF IBM® IN GREATER CHINA. WE RECENTLY CAUGHT UP WITH HIM TO TALK ABOUT THE PROGRESS OF LINUX IN GREATER CHINA, THE EFFECT THE WORLD TRADE AGREEMENT MAY HAVE ON LINUX ADOPTION IN THE PEOPLE'S REPUBLIC, AND THE ROLE IBM IS PLAYING THERE. HERE'S WHAT HE HAD TO SAY.

LL: Henry, late in December 2001, the Beijing Municipal Government selected several vendors to provide operating systems, office automation, and anti-virus software for government PCs. A Linux vendor, Redflag, was selected in this competition, while Microsoft was not. Is it overstating the matter to say that this was a milestone event for China, perhaps a turning point?

Chow: I guess you could call this a milestone, but I wouldn't call it a turning point yet. I think this is the first time that a local Linux vendor, together with a Linux ISV, won a bid to provide applications for the Beijing Government. A lot of people thought that would be a natural Microsoft solution, but Beijing chose to use local, domestic suppliers and Linux instead.

I think there are several implications there. The first is that the effort a lot of people, including IBM, have been putting in to promote Linux is starting to produce results. Now, at government department level they're saying "Linux is something I can use. It's something I can build my entire office automation solution on." It also means that the ISV community will begin to really implement applications on Linux, instead of just watching from the sidelines.

LL: Has the Peoples' Republic of China's entry into the World Trade Organization last year had any effect on the Linux marketplace there?

Chow: I think it has an effect in two areas. First, I think the WTO is going to drive the economy of China to grow even faster, and that will drive enterprises to require more and more enterprise solutions. China is developing a Five-Year Plan to grow the software industry, and we anticipate that they may encourage the software industry to move to the Linux environment as the environment for the future. That is going to positive for us, and that will be a key driver for Linux.

The other effect of the WTO agreement is the reduction of import duties. Reducing import barriers will drive growth for the whole IT industry, and that in turn will be a positive driver for Linux.

LL: Late in May, the China Center of Information Industry Development (CCID) awarded IBM China seven awards in the first China Linux products in Enterprise Application Award Contest, including "Best Enterprise Supporting Linux." Could you share your comments and your insights about this with us?

Chow: I think this is an honor for us, because this is the first time that the CCID, one of

the most popular and authorized organizations in PRC for IT Consulting, Research and Media Publishing has presented awards for Linux, and IBM got seven awards. These included Best Server Awards for the IBM iSeries™ and z800 Linux servers, in their respective classes. It turns out that most of the significant Linux case studies are about IBM customers who are adopting Linux, so it's really natural that we won the Best Enterprise Supporting Linux.

I think the reasons for this success really goes far back, to around two years ago, when we were the first ones to stand up and talk about Linux. In fact, we made the Asia Pacific announcement about IBM embracing Linux in Beijing. We talked about IBM spending $1 billion on Linux. We talked about putting up a Linux Technical Center in Shanghai. So for all of this to happen, we first had to do the work of promotion, of building, and of establishing a very strong image for IBM in the Chinese community. We are seen as the champion behind this open movement, and the fact that other vendors are beginning to join the Linux race eighteen months after we openly embraced it is a testimony to IBM's leadership in this area.

LL: In general, what investments has IBM made in greater China to increase Linux adoption?

Chow: As you are aware, IBM initially pledged a $1 billion investment in Linux, and we have been participating in that investment, but that's not the whole story. We have also leveraged our strengths. As I said in the beginning, we announced Linux for Asia in China. And we built an ISV community around Linux. Initially we had difficulties in finding ISVs that were willing to go to Linux. And the first ones to adopt were usually smaller companies that wanted to exploit the opportunity to establish themselves in a new market, but now we have some 40 ISVs developing applications for Linux.

We are leveraging the very, very strong University Relations Program that we have. This year, IBM has donated around $100 million of equipment and software to the 23 top universities, and we convinced the top universities to teach Linux in the college. We trained the teachers. We provided certification programs. We encouraged the students to pass tests on Linux. All these are the investments we put in the area of Linux. Lastly, we are probably the first organization to field a sales team whose job is to sell Linux, whose job is to work with ISVs to promote Linux. So those are some of the investments we put in place.

LL: What customers are buying in greater China, and what sectors have been the most active, and which do you think will be the most important in the coming months?

Chow: If you look at our revenue accomplishment, we made our target last year. This year we're going to double last year's number, and my anticipation is that going into next year we'll continue to have very, very strong growth. And when I say strong growth, I mean in excess of 50%.

Linux successes mainly fall into three areas. The first area is clusters, an entry-level form of high-performance computers. We have been very successful in selling Linux clusters

to the petroleum industry, and Linux clusters are finding their way into the universities as an entry form of high-performance computers as well.

The second area where we see our customers buying Linux, especially Linux on zSeries™, is in the area of server consolidation. That category is led by customers in the banking industry, many of whom for various reasons, have hundreds or thousands of servers around. We have been able to convince these customers that they can have a much, much lower cost of ownership by consolidating the servers onto Linux platforms. So we have started a number of banks down this road. In fact, if you look at our Linux customer portfolio today, more than half will be server consolidations in the banking sector.

Finally, Linux is finding success in the distributed enterprise, with thousands of servers, where customers may adopt Linux simply because it's a lower cost alternative. A good example is The China Post where they piloted Linux in the Heilongjiang Province to computerize their record keeping and data collecting procedures. The first deployment will involve around 1,000 post offices. There is a chance that this same application could be replicated to all the post offices in China, which could make it the biggest postal network in the world. So these are some examples of where China's strongest interest has been.

LL: Is there anything else you'd like to say to our audience about the Linux opportunity and challenges in greater China?

Chow: First I'll talk about the challenges. I think the challenges of Linux in China are much like the challenges faced by Linux around the world, but perhaps are even more critical to some extent. The need for both independent software developers and the need for IBM to support many distributions have been a challenge. The fact that the enterprise is now gravitating toward one or two Linux distributions, specifically UnitedLinux and Red Hat, is very positive and I expect to see the same trend in China.

The second challenge is the Chinese language. There is a need for the independent software developer community to invest more in localizing application software for the Chinese environment.

I think the final challenge is one is that we need to see more adoption by ISVs who have big goals, and a vision for new markets. Then the rest will follow. I think those are the challenges we face.

But in the long run, the opportunity is great. I really believe China could become one of the leading Linux countries. I think that the government will want to support it, because customers like to have multiple alternatives. This is a country that has grown up on UNIX® and Microsoft®, and Linux is seen as a welcome addition.

Finally, simply because of economic reasons, Linux is now starting to get traction in the client area. If you simply take the number of personal computers that will be sold in China, and multiply that times the license fees, it's not hard to see how Linux could

change the economic equation of the IT industry in China. So I think these are the positive drivers that will take Linux to a higher level in China in the coming year. Our goal is to keep IBM in the forefront, so that when customers thinks of Linux they will think of IBM.

LL: Thanks for taking the time to talk to us.

IBM AND RED HAT EXTEND THEIR RELATIONSHIP

The Linux Line talks to Benoit Degreve about IBM's new relationship with Red Hat.

LAST MARCH, IBM ANNOUNCED AN AGREEMENT WITH SUSE TO JOINTLY OFFER A FULL RANGE OF SERVICES FOR THE ENTERPRISE ACROSS THE FULL SPECTRUM OF IBM ESERVER PLATFORMS. AT THE TIME, THIS WAS THE MOST COMPREHENSIVE WORLDWIDE AGREEMENT IBM GLOBAL SERVICES (IGS) HAS EVER MADE WITH A LINUX DISTRIBUTION PARTNER. SUSE HAS GONE ON TO BECOME LEAD INTEGRATOR OF UNITEDLINUX, A MULTI-VENDOR CONSORTIUM TO DEVELOP A UNIFORM PLATFORM FOR THE DEPLOYMENT OF LINUX-BASED MIDDLEWARE AND END-USER APPLICATIONS.

TODAY, IN FULFILLMENT OF IBM'S DUAL-DISTRIBUTION STRATEGY, IBM IS ANNOUNCING A SIMILAR BROAD-BASED AGREEMENT WITH RED HAT. IN ADDITION TO THIS POWERFUL SERVICES TEAMING AGREEMENT, IBM IS ANNOUNCING SIGNIFICANT ENHANCEMENTS TO THEIR ESERVER ENABLEMENT WITH RED HAT'S ADVANCED SERVER OPERATING SYSTEM. TO FIND OUT WHAT THESE AGREEMENTS MEANS TO IBM AND HOW IBM PLANS TO IMPLEMENT THEM, WE TALKED TO BENOIT DEGREVE, IBM GLOBAL LINUX SERVICES EXECUTIVE. HERE'S WHAT HE HAD TO SAY.

LL: Benoit, thanks for talking to us. What does the new IGS agreement cover? What does it enable IBM and Red Hat to do?

Degreve: It allows IGS and Red Hat to jointly provide customers with a tightly integrated solution combining the leading edge technology of Red Hat Advanced Server, with enterprise support from IGS. Customers can deploy Red Hat Linux with confidence. We shall collaborate across the full spectrum of services, including implementation, business consulting and web hosting. Together we offer customers the industry's broadest range of solutions, combining IGS's broad expertise with Red Hat's in-depth knowledge of Linux.

Specifically, IBM will now be able to offer Support Line services for Red Hat Linux, backed up by Red Hat Support. IBM will also be able to sub-contract to Red Hat services consultants, and vice-versa. And to better facilitate turnkey deployments, IGS will be able to assist customers in acquiring the Advanced Server operating system from Red Hat.

LL: Red Hat Linux is already enabled on our z, i, and pSeries platforms. What's new about this agreement?

Degreve: Earlier this year, Red Hat announced Red Hat Advanced Server as its platform of choice for enterprise customers and the ISV community. The initial version of Red Hat Advanced Server was only enabled on Intel-based platforms from IBM. Next year, Red Hat will extend this offering to IBM's other eServer platforms in version 3.0 of Advanced Server. The Java-based Web services platform will also be expanded to Red Hat Advanced Server on all eServers, beginning with the xSeries platform later this year.

All of our platforms will now have essentially the same code base which should facilitate the porting of application code among the ISV community and our customers. Eventually, we will have coverage across the world, with enablement of the ten "Group One" languages.

LL: Do these announcements signal a weaker IBM commitment to UnitedLinux?

Degreve: No, absolutely not. These agreements signal a stronger commitment to Linux customers worldwide. No matter what language, country, or distributor preference, IBM can deliver with support from both UnitedLinux and Red Hat.

LL: Thanks for taking the time to talk to us.

Related readings

Red Hat
http://redhat.com/

SuSE
http://www.suse.com/index_us.html

UnitedLinux
http://unitedlinux.com./

RELATED READINGS:

http://www.ibm.com/linux/linuxline/sep02/resource.shtml

DROPLETS

Cross-platform, Rich GUI Internet applications with Droplets™ Deploy C++ or Java based applications on Linux to desktops, wireless devices and terminals while maintaining one code base. Droplets™ enables the full GUI capabilities of rich client software, directly from the desktop, handheld or Web portal, while maintaining the business logic on servers.

Free UI Server & SDK evaluation:
http://droplets.com/contact/index.asp?area=Software+Development+Kit

SOURCEFORGE.NET TO RUN ON IBM'S DB2® DATABASE SOFTWARE

IBM® announced services, software and Business Partner programs that further extend IBM's two-year lead in the Linux marketplace. Open Source Development Network, Inc., a subsidiary of VA Software, will port SourceForge.net, the largest open source development site on the Web, to run exclusively on IBM's DB2® database software and WebSphere® Internet infrastructure software and tools for Linux. SourceForge.net has more than 45,000 open source projects and over 460,000 online users.

After an evaluation of open source and commercial databases, including Postgres, MySQL, Oracle, and DB2, OSDN selected DB2 to accommodate its planned future growth of SourceForge.net. The SourceForge.net site has seen phenomenal growth since its inception, with 220% growth in traffic in the last year and thousands of users working on projects ranging from Python to Freenet. DB2 is the most scalable database running on Linux today, from handhelds to clusters to mainframes. Also, DB2 provides the broadest platform and open standards support in the industry.

VA Software and IBM have also entered into a commercial relationship to jointly market and sell the next generation of SourceForge Enterprise Edition with full support for IBM DB2 database software, WebSphere Internet infrastructure software and Tivoli® management software, as well as @server xSeries™ systems.

IBM services, software and programs announcement
http://www-916.ibm.com/press/prnews.nsf/print/AF3667E85E4000A985256C1400555B0F

CALDERA TO CHANGE NAME TO THE SCO GROUP

Caldera International, Inc. has announced that it will change its name to The SCO Group upon shareholder approval, reemphasizing the company's dedication to Linux, SCO OpenServer and SCO UnixWare products, and capturing brand recognition of the SCO name.

Press release
http://ir.caldera.com/ReleaseDetail.cfm?ReleaseID=88781

SAPIENT SELECTS IBM LINUX-BASED HARDWARE AND SOFTWARE FOR JAVA™ SCALABILITY LAB

Sapient, a leading business and technology consultancy, announced that IBM is the new sponsor of Sapient's Enterprise Java Scalability Lab. The lab will use IBM Linux-based hardware and software to demonstrate best practices for designing, building and deploying high-performance J2EE applications that maximize the business value of Sapient's advanced technology solutions.

Sapient will use IBM's WebSphere software, DB2 database software and @server xSeries systems to showcase solutions for financial services, insurance, automotive and travel industries. The IBM hardware and software in the lab will support Sapient's design and delivery of a wide range of Linux-based solutions.

Press release
http://www.sapient.com/about/press_releases.htm?id=139&pr=20020819&contact1=2&contact2=44&contact3=

UNITEDLINUX ANNOUNCES BETA RELEASE

Linux Industry leaders Caldera International, Inc., Conectiva S.A., SuSELinux AG, and Turbolinux, Inc., have announced that UnitedLinux will be available as a closed beta product to partners of the four founding companies. It is expected to be publicly available in open beta by the end of Q3 2002.

The UnitedLinux product is the result of an industry initiative to streamline Linux development and certification around a global, uniform distribution of Linux designed for the business user. UnitedLinux will leverage the collective resources of the founding companies, with the end result designed to provide an unprecedented Linux business infrastructure and product.

UnitedLinux beta announcement
http://www.unitedlinux.com/en/press/press_releases/beta_release.html

OFFERING: ADD SKILLS TO YOUR BUSINESS & LINK LINUX KNOWLEDGE TO IBM MIDDLEWARE PRODUCTS

Partners, take advantage of extending your Linux skills today! If you currently:

- have an eligible IBM middleware certification, achieve an eligible Linux certification and get reimbursed up to $3,000 USD
- have an eligible Linux certification and want to add IBM middleware skills, achieve an eligible middleware certification and be reimbursed up to $3,000 USD
- are invested in competitive middleware skills and want to focus on both IBM middleware and Linux, get twice the reimbursement up to $6,000 USD when you achieve both an eligible IBM middleware and Linux certification.

The Linux We Pay reimbursement benefits are in addition to the standard We Pay

Offerings reimbursement levels. Maximum reimbursement applies to courses and tests taken between January 1, 2002 and November 30, 2002, when certification is achieved by November 30.

For the Linux We Pay Offering only, we are waiving the 60 day from certification claim submission deadline for certifications achieved prior to September 1, to allow you to submit claims dating back to January 1, 2002. Reimbursements for certifications achieved effective September 1 and later are subject to the standard 60 day reimbursement submission policy. Claims must be received 60 days after achieving certification or postmarked by November 30, 2002, whichever is sooner.

To understand the detailed terms and conditions of the offering and to determine your eligibility for the Linux We Pay offering, (you must be a member of the IBM PartnerWorld for Software program and have purchased a current Value Package), visit http://www.ibm.com/partnerworld/software/zone (enter userid and password) Education > We Pay Offerings > Linux We Pay Offerings 2002.

Partner opportunities and initiatives
http://www.ibm.com/partnerworld/linux

SWSOFT ANNOUNCES HSPCOMPLETE 2.0

SWsoft, Inc., a leader in hosting automation and enterprise server software, announced the GA of HSPcomplete 2.0 full business lifecycle hosting automation solution. HSPcomplete 2.0 provides a fully automated infrastructure and a full set of management and reseller user tools that enables hosting providers to support thousands of customers on a single network, integrating a flexible billing system and generating new revenue through reseller and virtual private server (VPS) products.

The culmination of three years' work, "Our vision of a complete hosting automation system is now realized," said Serguei Beloussov, CEO of SWsoft. "Hosting businesses will now follow the trends of developed manufacturing factories that produce goods in high volume with high efficiency. We enable a fully automated robotic production line for hosting that uses technology to free the hosting worker from the drudgery of manual tasks, like billing, accounting, etc. "

Press release
http://www.sw-soft.com/en/news/id,1284
HSPcomplete overview
http://www.hspcomplete.com

RELATED READINGS:

http://www.ibm.com/linux/linuxline/sep02/resource.shtml

7-ELEVEN LOWERS COSTS WITH IBM AND TRUSTIX LINUX SOLUTIONS

Trustix, Inc. has announced that 7-Eleven has deployed the Trustix Linux Solutions (TLS) suite on IBM® Intel-based servers. Trustix is an emerging force in the adoption of Linux technology in the enterprise. The 7-Eleven initial deployment is running the Trustix Mail Server with AntiVirus scanning on an IBM @server xSeries™ to scan e-mail for viruses before distributing it internally to all staff and employees throughout the 7-Eleven computer network.

Since 1927, 7-Eleven has been a leader in convenience retailing. Today, more than 21,000 stores worldwide make customers say, "Oh Thank Heaven for 7-Eleven!" 7-Eleven was interested in lowering technology ownership costs and management complexity by migrating applications to the Linux platform.

Press release
http://www.trustix.com/info/press/trupress2002-08-14-1.php

MEDICAL INSIGHT WITH AALBORG HOSPITAL SPUR IMAGING GIANT STEPS

In cooperation with "The Digital North Jutland", Denmark's Aalborg Hospital, Aalborg University and Medical Insight A/S have developed an application that insures all examinations done by the department of radiotherapy can be viewed by physicians, nurses and patients anywhere at the hospital.

Medical Insight A/S has specialized in solutions to control and distribute patient pictures and data for the health sector The Medical Insights solution, EasyViz, is user-friendly and provides physicians and nurses with access to all types of patient information by a simple click. EasyViz provides radiotherapists and clinical staff fast and easy access to patient data anywhere at the hospital.

Medical Insight developed the solution to meet the growing amount of patient data in different formats, and to make an efficient use of human resources at Danish hospitals. Saving time on more trivial tasks enables more time for nursing. The EasyViz concept from Medical Insight consists of thin clients/workstations connected to a central server. This design minimizes educational, support and maintenance requirements for Aalborg Hospital.

The EasyViz solution is based on a central graphical server, accessible anywhere in the company via regular internet or intranet channels with terminals as ultra thin clients, mobile clients or existing PCs.

Aalborg Hospital's scalable Linux solution enables the hospital to take a giant jump into the use of digital imaging technology.

The department of radiotherapy at Aalborg Hospital uses high resolution pictures, calling for a large amount of calculations and uptime. IBM's x440 servers together with an IntelliStation®-based Linux cluster divides the calculation job into smaller jobs, which

increases the speed and thereby cuts response time. Users now have access to both 3- and 4-dimensional pictures.

Data is retrieved and administered centrally on IBM® xSeries™ servers with DB2®, with the option to outsource the solution. In turn, problems like the lack of IT experts at the Danish hospitals are avoided.

Medical Insight chose IBM Life Sciences as an organization with extensive involvement in biotechnology and health care, combined with IT competence. The partnership between Medical Insight and IBM Life sciences shows how IBM Life Sciences works with independent service vendors to deliver solutions for the health sector.

A traditional solution with digital imaging (PACS) at hospitals worldwide is normally a very costly project, which takes years. The Easyviz-solution is installed over a 6-month period in a number of clinical departments.

The solution reduces the costs for Aalborg Hospital through:

- Process optimization, because files and scans do not have to be transported back and forward.
- Easy and fast access to integrated patient data, which include standard information, diagnoses, pictures.
- Better use of the competency of the physicians and nurses, to improve the speed for trivial jobs and the quality of nursing.
- Centralization and perhaps outsourcing of IT and maintenance.

Overview on IBM Life Sciences
http://www-3.ibm.com/solutions/lifesciences/

INTERNETWEEK: ECLIPSE PROFILED

With a headline reading "The Most Important Open-Source Project You've (Probably) Never Heard Of, "InternetWeek.com profiles the open-source Eclipse project, which is providing a common platform, user interface, and plug-in framework for integrating development tools. The article explains why Eclipse is seen as valuable for enterprise developers.

InternetWeek article
http://www.internetwk.com/webDev/INW20020820S0009

ISV HELP FOR LINUX APPLICATIONS

Are you an Independent Software Vendor (ISV) or Solution Developer interested in porting or enabling a Linux application to IBM's @server platforms? If so, then view the IBM @server Linux solution network for Linux home page, designed to meet your needs as the first stop for solution developers and all others interested in porting or enabling their Linux solutions on @server platforms. You'll see links to various platforms containing information specific to the iSeries™, pSeries™, xSeries™, and zSeries™ Linux porting programs, as well as a link to the continually updated Roadmap for Linux @server Enablements and Marketing document. You will also see quotes on the site from other ISVs to help you in your decision to embrace the @server platform.

IBM @server Solution Network for Linux
http://ibm.com/servers/enable/linux/.

INTRODUCING IBM® @server XSERIES™ 335, 305 AND 205

With the announcement of the x335, x305 and x205 servers, the xSeries family of rackable servers now delivers new performance and technologies from top to bottom. The latest Intel Xeon and Pentium 4 processors, ultra-dense form factors and great affordability confirm the xSeries family of rackable servers as the industry leader.

IBM introduces 2-way Xeon performance in the 1U x335, complementing the scalability of the x440 and x360 and the affordable availability of the x345. Ideal for Web applications, the x335 incorporates Xeon processors, fast PC2100 memory, Dual Gigabit Ethernet and Ultra320 SCSI for new levels of rack-dense performance.

xSeries 335, 305 and 205
http://www.pc.ibm.com/us/eserver/xseries/innovations/index.html

IBM @server XSERIES 440:
NEW ENTRY MODELS DRIVE PRICES DOWN FOR SCALABLE ENTERPRISE NODES

Powered by Enterprise X-Architecture technologies, new entry xSeries 440 models drive down prices while delivering standout scalability, flexibility, and OnForever availability. Inspired by the same technologies used in IBM mainframes, they are ready to handle your most demanding, mission-critical applications.

Entry xSeries 440 model
http://www.ibmlink.ibm.com/usalets&parms=H_102-205

IBM @server CLUSTER ANNOUNCEMENT

IBM announced the IBM @server Cluster 1350, offering higher performance and greater scalability. The Cluster 1350 brings together the best of IBM and third-party technology using advanced IBM xSeries Intel processor-based server nodes, Red Hat Linux, proven cluster management software and optional high-speed interconnects.

Cluster 1350 overview
http://www-1.ibm.com/servers/eserver/clusters/news/features/annc_812.html

SPECIAL TEAM DEPLOYED FOR SOLARIS-TO-LINUX MIGRATION

IBM has a new program to help customers transition from the Sun Solaris platform to the Linux operating system on IBM machines. IBM is deploying a special team dedicated to help customers move from Sun Solaris to Linux on IBM @servers. As part of the company's three-pronged program, IBM will update its most popular Intel-based server for Linux applications, and it announced a new-generation Linux cluster system designed to increase price/performance advantages for customers.

Solaris-to-Linux migration program kickoff
http://www.ibm.com/news/us/2002/08/12.html

IBM TIVOLI® STORAGE MANAGER: GREATER LINUX SUPPORT TO INTEL SERVERS

The latest version of IBM Tivoli Storage Manager server software is now available on Intel-based Linux systems. By extending IBM Tivoli Storage Manager's support for Linux from file systems and applications to include Tivoli Storage Manager servers, organizations using Linux environments can benefit from the same award-winning data protection as organizations using Tivoli Storage Manager servers on other platforms. This announcement underscores IBM's commitment to providing robust, reliable software solutions for the mid-market through to the large enterprise.

IDC states that Intel-based servers accounted for 88 percent of the total number of servers shipped and 36 percent of total server revenue in 2001. This is up from 85 percent and 35 percent, respectively, in 2000. IBM Tivoli recognizes this trend toward Intel servers and is providing Intel Linux customers with one of the most complete centralized data protection applications.

Press release
http://www.tivoli.com/news/press/pressreleases/en/2002/0813-linux-tsm.html

PUSHING THE LIMITS: I/O SERVERS IN LARGE LINUX CLUSTERS

Raymond Paden, IBM, I/O architect and project manager, presents a detailed walk-through of I/O subsystems for Linux cluster. Many enterprises involved in high-performance computing (HPC) are purchasing large numbers of Linux nodes and integrating them into clusters.

Paden was asked to develop a disk I/O subsystem for a Linux cluster. It needed to scale from a single frame of 32 nodes to as many as 5,000 nodes where each node is an IBM @server xSeries™ Model 330 (two IA32 CPUs with 1 GB of memory). Disk I/O for a 32-node system is a trivial matter, but 5,000 nodes pushes the limits of existing technology, he writes.

I/O servers in large Linux clusters
http://www.eservercomputing.com/ibmunix/articles/index.asp?id=292

RELATED READINGS:

http://www.ibm.com/linux/linuxline/sep02/resource.shtml

CUSTOMER WINS BUILD ON IBM® LINUX LEADERSHIP

IBM announced that ten new customers are moving to Linux with the help of IBM and its Business Partners. These leaders in their industries are the latest of more than 4,600 IBM customer engagements around Linux. "It is significant that customers of every size and from every industry are turning to IBM, our Business Partners, and Linux for a variety of mission-critical applications and total Linux solutions," said Steve Solazzo, general manager, Linux at IBM. "The overwhelming trend toward Linux throughout the business world validates IBM's decision over two years ago to embrace Linux and is further evidence of Linux's compelling value proposition."

Moves to Linux with IBM
http://www-916.ibm.com/press/prnews.nsf/jan/8450F8A7BCC7E2F985256C0F006BEB60

WEBSPHERE® APPLICATION SERVER VERSION 4.0, ADVANCED EDITION FOR LINUX ON ZSERIES™

IBM WebSphere Application Server Advanced Edition for Linux on zSeries Version 4.0 enables administrative and reliability features of zSeries and familiarity of Linux for Java™ applications:

- Industry-leading integrated support for open standards Web services
- Full J2EE Version 1.2.1 certification
- Broadest cross-platform support
- Unparalleled connectivity
- Superior performance
- Enhanced security
- Unmatched scalability

The following URL describes the minimum product levels you should have installed before opening a problem report with the WebSphere® Application Server support team.

Because other products frequently ship fixes, updates, and new releases, we cannot test every possible configuration. In general, you can install and run with updates to supported products if those updates are forward-compatible.

Supported prerequisites and APIs
http://www-3.ibm.com/software/webservers/appserv/doc/v40/prereqs/ae_v403.htm

IBM MOVES KEY APPLICATIONS TO LINUX

IBM announced that it has moved key applications to Linux including the application that monitors server performance for its Lotus® Notes® e-mail system, supporting more than 300,000 IBM employees worldwide.

These Linux initiatives are being deployed as part of the IBM Global Services supported environment with IBM. "Linux's multitasking capabilities have provided IBM with reduced systems administration costs and four times the throughput, as measured by the number of application probes it can support on a single server," said Phil Thompson, vice

president, Business Transformation & CIO, IBM. "Moving the Lotus Notes Management system from Windows NT® to Linux has allowed IBM to use 75% fewer monitoring servers for the same workload and to reuse previously deployed IBM @server xSeries™ servers."

Press release
http://www-916.ibm.com/press/prnews.nsf/jan/7FC8FFA0B51473A985256C150070E521

IBM @server XSERIES BENCHMARKS

The latest benchmarks with results by server are available for viewing. The page also provides links to relevant Redbooks™ and white papers.

xSeries benchmarks
http://www.pc.ibm.com/ww/eserver/xseries/benchmarks/series.html

SERVER AND CONNECTIVITY BREAKTHROUGH FOR RACK ECOSYSTEM PROBLEMS

IBM has introduced the rack-based IBM @server x345, and a new server interconnect technology designed to dramatically reduce the proliferation of cables that add complexity and cost to high-density server environments.

IBM's Advanced Connectivity Technology (ACT) helps lower costs by delivering a powerful way to manage servers as well as providing an easy-to-use, cost effective method of connecting rack-mounted servers.

IBM ACT also saves critical rack space in high-density environments by consuming up to 90 percent less rack space than traditional KVM (keyboard, video, mouse) switching solutions. The new technology, supported by all xSeries servers, will be important to the increasing number of customers making the transition to smaller rack-dense server environments.

Redefining these environments, the IBM @server x345 delivers Intel Xeon performance. It is the first rack-mounted 2U Intel processor based server to have six Ultra 320 hotswap hard drive bays and five PCI expansion slots.

IBM @server x345
http://www-916.ibm.com/press/prnews.nsf/jan/DDDCDEDFD3F57DA985256BFE00485CA1

CASE FOR CONSOLIDATION

Consider ways to reduce complexity by consolidating to an iSeries server, or two, and populating it with Integrated xSeries servers (IXS) or attaching xSeries servers via the Integrated xSeries Adapter (IXA), multiple Domino instances and a few Linux partitions. Benefits can be huge.

Consolidation
http://www-106.ibm.com/developerworks/nlredirects/r-e125b.html

RELATED READINGS:

http://www.ibm.com/linux/linuxline/sep02/resource.shtml

SEPTEMBER 19, 11 A.M. (EST)-LINUX TELECOM TELE-SEMINAR—LINUX SERVICE PROVIDER SOLUTIONS-90 MINUTES

To win customers and generate revenue in today's competitive telecom industry, you need to get new services to market fast and before the competition. Service Provider solutions from IBM and Linux can give you the edge you need.

Our solutions built specifically for the telecom industry enable you to quickly create and deploy new revenue-generating services for a competitive advantage. And you can learn all about them at our Linux tele-seminar. Hosted by Hernan Vega, VP Network Equipment Provider Sales and Business Development for IBM®, the tele-seminar will feature:

- Integrated Linux Platform for Service Providers, an IBM offering that includes a version of Linux enhanced specifically for the telecom industry and Intel/IBM NEBS III compliant servers. The Integrated Linux platform enables quick and easy deployment of standards-based solutions by streamlining the integration of new applications into the network, regardless of network infrastructure or device.

- The Linux Service Provider Lab, a world-class facility where service providers can test Linux-based applications in a real-world environment.

- The Open Source Development Lab, the first independent, nonprofit lab for developers adding enterprise capabilities to Linux.

- Success stories of how other service providers have used IBM and Linux for competitive advantage.

To register
http://isource.ibm.com/cgi-bin/goto?on=c5035register

Join us for two live IBM Webcasts on Linux and your business! Low costs. High reliability. Improved flexibility. Over 4,600 companies are already reaping these benefits and more with Linux solutions from IBM and its ISV partners. They're using Linux without sacrificing performance, application choice, scalability or enterprise-level support. Learn how companies like yours are improving their e-business infrastructure and mission-critical applications with Linux solutions from IBM and its partners.

Webcast: Infrastructure Solutions for Linux: Ready for Your Business Tuesday, September 24th at 1:00p.m.EST, 12:00p.m.CST, 10:00a.m.PST

Register online today http://webevents.broadcast.com/ibm/swg/092402

WebcastApplication Solutions for Linux: Ready for Your Business Thursday, September 26th at 1:00p.m.EST, 12:00p.m.CST, 10:00a.m.PST

Register online today http://webevents.broadcast.com/ibm/swg/092602

JOIN US FOR TWO LIVE IBM WEBCASTS ON LINUX AND YOUR BUSINESS!

Low costs. High reliability. Improved flexibility. Over 4,600 companies are already reaping these benefits and more with Linux solutions from IBM and its ISV partners. They're using Linux without sacrificing performance, application choice, scalability or enterprise-level support. Learn how companies like yours are improving their e-business infrastructure and mission-critical applications with Linux solutions from IBM and its partners.

Webcast: Infrastructure Solutions for Linux: Ready for Your Business
Tuesday, September 24th at 1:00p.m.EST, 12:00p.m.CST, 10:00a.m.PST
Register online today http://webevents.broadcast.com/ibm/swg/092402

WebcastApplication Solutions for Linux: Ready for Your Business
Thursday, September 26th at 1:00p.m.EST, 12:00p.m.CST, 10:00a.m.PST
Register online today http://webevents.broadcast.com/ibm/swg/092602

SEPTEMBER 26, NOON (EST)-LINUX TELECOM TELE-SEMINAR-TEAMING FOR SUCCESS AS A SERVICE PROVIDER-90 MINUTES

Register now and join us on September 26 from 11:00 a.m.-12:30 p.m. CDT for our live Webcast "Teaming for Success as a Service Provider."

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OCTOBER 7-10- Z/VM™, VSE AND LINUX ON IBM ZSERIES™ TECHNICAL CONFERENCE

Attention Linux Mainframers! This conference is for those of you who want to capitalize on mainframe innovations and the infrastructure of a world-class Linux environment. Mark your calendar now. Increase your z/VM, VSE and Linux on IBM zSeries skills to keep pace with change. Attend a wide range of elective sessions and Linux for IBM zSeries hands-on labs. Meet with IBM developers, industry experts, and your peers at the Product Expo. Immerse yourself in an environment geared for building and enhancing your skills.

For more details and to register
http://www-3.ibm.com/services/learning/conf/us/vmvse/

OCTOBER 14 –OCTOBER 18-IBM @server PSERIES AND LINUX TECHNICAL UNIVERSITY0

Don't miss the IBM @server pSeries™ and Linux Technical University being held at the Wyndham Anatole Hotel in Dallas, and our special speakers from GURU Labs! Take Linux skills to the next level. This conference features implementation specifics, configuration issues, and technology details that increase efficiency and transform system capability. View the latest Linux technical advances. Take advantage of added content on Linux with sessions devoted to: rebuilding the Linux kernel; Linux for UNIX® professionals; kernel recompile; Red Hat installation; clustering; XML Well-Formed Documents and Validation; and beyond.

For more details and to register
http://www-3.ibm.com/services/learning/conf/us/pseries/

RELATED READINGS:

http://www.ibm.com/linux/linuxline/sep02/resource.shtml

WRITING LINUX DEVICE DRIVERS -QLX90-$2,700

This five-day course is designed for those who want to go beyond daily Linux activities to advanced topics. Get detailed information of the workings of the Linux kernel that are essential to support device drivers, such as file system structures, memory management, timing functions, kernel building and debugging. Also, learn about those aspects of various hardware devices that come into play with the device drivers, such as interrupt handling for both block and character devices.

For more details and to enroll, click here.
http://www-3.ibm.com/servlet/com.ibm.ls.lsow.servlets.CourseDescriptionServlet?coursecode=QLX90

EMBEDDED & REAL TIME LINUX-QLX91-$2,795

This five-day course is designed for those who want to go beyond daily Linux activities to advanced topics. Get substantial practice with the key steps in developing an embedded Linux product. Learn how to configure a small Linux kernel, develop code within the kernel, such as for new system functionality or device drivers, and how to measure and obtain realtime performance with Linux.

For more details on this course, click here.
http://www-3.ibm.com/servlet/com.ibm.ls.lsow.servlets.CourseDescriptionServlet?coursecode=QLX91

LINUX INTERNALS OVERVIEW -QLX95-$2,700

The five-day course is designed for those who want to go beyond daily Linux activities to advanced topics. Learn, in detail, how the Linux operating system kernel functions. Learn how to determine the activities of the kernel by examining source code and header files, tracing the relationship of kernel structures, such as linked lists and tables, and following the flow of various algorithms.

For more details and to enroll, click here.
http://www-3.ibm.com/servlet/com.ibm.ls.lsow.servlets.CourseDescriptionServlet?coursecode=QLX95

VM BASICS FOR LINUX -ZV050-$945

This is a two-day course. Develop the skills you need to perform a basic Input/Output (I/O) configuration, initial installation, and configure your z/VM™ system for the support of Linux guest operating systems. Become familiar with the initial installation, configuring your system for the support of Linux guest operating systems, using the Control Program (CP) configurability support facility, and managing the TCP/IP feature of z/VM. Learn how to tailor the CP system directory, system configuration files, define the I/O Configuration Dataset, and tailor the TCP/IP feature of z/VM. Who should take this course? OS/390® system programmers new to z/VM or Enterprise Systems Architecture/Virtual Machine (ESA/VM) and responsible for implementing Linux systems running on a z/VM system.

For more details and to enroll, click here.
http://www-3.ibm.com/servlet/com.ibm.ls.lsow.servlets.CourseDescriptionServlet?coursecode=ZV050

Z/VM & LINUX CONNECTIVITY AND MANAGEMENT-ZV100

This three-day course covers implementation and configuration of z/VM TCP/IP and Linux TCP/IP communications and managing this environment. Advanced z/VM topics include the implementation of advanced functions in TCP/IP as well as Hipersockets, Guest LANs, Routing (static vs. dynamic), MPROUTE Server, QIDO and OSA connectivity options. Hands-on labs are used to reinforce the topics discussed in lecture.

For more details and to enroll, click here.
http://www-3.ibm.com/servlet/com.ibm.ls.lsow.servlets.CourseDescriptionServlet?coursecode=ZV100

NEW CLASSES!

The following are two new classes available in the IBM® @server Series family.

NEW CLASS: IBM @server XSERIES™ ADVANCED SYSTEMS—EFFECTIVE PROBLEM DETERMINATION & RESOLUTION-REI25

This four-day course is available in classroom format worldwide for IBM customers, employees, business partners, service providers who provide IBM-authorized warranty service on IBM @server xSeries products and technicians for other vendors. This hands-on class will prepare you for the warranty-authorization test for xSeries 4-way and above servers. All may also benefit from this course. Topics: Architecture and Enterprise X-Architecture; xSeries 4-way and above products and options; IBM Server Architecture Design and Management; Support References.

IBM PC Institute instructor-led classes are planned/scheduled at a country level.

NEW CLASS: IBM @server XSERIES 255 M/T 8685—EFFECTIVE PROBLEM DETERMINATION & RESOLUTION-REI24

This one-day course, available worldwide, provides enhanced, hands-on skills for effective problem determination on the IBM @server xSeries 255 Server for service professionals who provide IBM-authorized warranty service on xSeries products and technicians for other vendors. Topics: visual tours; xSeries 255 architecture; configuration functions and NOS components; boot options, systems management and troubleshooting; problem determination.

IBM PC Institute instructor-led classes are planned and scheduled at a country level.

For staying current with instructor-led class schedules available in specific countries

http://isource.ibm.com/cgi-bin/goto?on=naa5eb0820b

For country-specific costs associated with classroom and CD-ROM courses, (CD-ROM costs also are set at a country level), contact a PCI country coordinator http://isource.ibm.com/cgi-bin/goto?on=naa5eb0820c

NEW LINUX E-LEARNING COURSE: LINUX BASICS AND INSTALLATION -QLXA2-$1,325

Great reviews from students...real hands-on, live labs...live instructor chats...your pace at your place! Interested in Linux but not experienced? Can't come to a live classroom course? This new e-learning Internet course, Linux Basics and Installation is for you. It's the self-paced, Internet version of QLX02--Linux Power User, and teaches basic Linux user skills through reading assignments, multimedia presentations, interactive realtime instructor chats (from 9 a.m.-5 p.m. ET., Mon-Fri.) and quizzes with instructor feedback. It enables you to perform the hands-on labs on a remote, live Linux machine and is available 24 hours a day. (24-hour-a day labs must be scheduled in advance online.)

For Linux Basics and Installation course details and to enroll
http://www-3.ibm.com/services/learning/spotlight/linux/qlxa2.html

FREE LINUX DEMO FROM E-LEARNING LINUX SOLUTIONS

Experience the Linux e-Learning Environment for yourself at any time at your own desk. Take 10 minutes to go through this demonstration to see an example of how you can train in your own office on Linux, experience hands-on Linux Labs on a remote Linux server and learn Linux Basics and Fundamentals at your own pace. With travel restrictions and not being able to leave work, many people are looking toward Internet training to address their skill needs.

IBM is announcing this innovative new e-learning course, Linux Basics and Installation Taught via the Internet (QLXA2), and soon will offer Linux System Administration taught via the Internet (QLXA3) and Linux TCP/IP Administration taught via the Internet(QLXA7). These e-learning courses are 30 hours each, self-paced, and teach Linux skills through reading assignments, multimedia presentations, interactive real-time chats with an instructor, and quizzes with instructor feedback. True convenience!

Click here for more
http://www.cgselearning.com/marketing/linux/

To learn more about Linux training via the Internet
http://www-3.ibm.com/services/learning/spotlight/linux/

GETTING STARTED WITH FREEVSD

Free sandboxes! Freelance Linuxer Joe "Zonker" Brockmeier introduces you to freeVSD, a virtual server environment for Linux that allows you to create up to 250 Web development sandboxes for experimentation and production without the overhead (and without

the expense!) of a VMware-like solution.

To access this article
http://www-106.ibm.com/developerworks/library/l-freevsd.html

CONCURRENCY FOR GROWN-UPS

Concurrency—multi-process—is a widely misunderstood topic just begging for a refresher by server guru Cameron Laird. This month, he introduces the basic concurrency concepts you need to conduct your business in the server closets safely, including performance issues, common concurrency misunderstandings, and making sure you're actually using the SMP capabilities of your Linux machine.

For the complete article on concurrency
http://www-106.ibm.com/developerworks/library/l-sc5.html

TUNING RED HAT FOR MAXIMUM PERFORMANCE

Squeeze the most out of Red Hat! Systems professional Tom Syroid shows you the ins and outs of taking a stock, as-installed Red Hat system and turning it into a finely tuned, stable setup customized to your specific needs. But you'll also learn that performance goes hand in hand with security.

To access this tutorial
http://www-106.ibm.com/developerworks/education/r-redhat.html

IBM® WINS TOP LINUX AWARDS

IBM has taken first place to win a number of recent prestigious awards given for excellence in Linux support and solutions.

LINUX JOURNAL AWARD GOES TO IBM

Linux Journal's Editors' Choice Awards, recognizing outstanding product developments and achievements in the Linux market, are nominated by a panel of more than 50 distinguished Linux experts and then sent to the Linux Journal editors to chose winners. IBM @server for xSeries™ won as best Web Server.

For the complete announcement of Linux Journal winners
http://www.linuxjournal.com/article.php?sid=6260

IBM WINS OPEN SOURCE PRODUCT EXCELLENCE AWARD-LINUXWORLD

IDG World Expo, the leading producer of world-class tradeshows, conferences and events for IT markets, presented the Open Source Product Excellence Awards in conjunction with the UniForum Association at LinuxWorld Conference & Expo. IBM was selected in a number of categories as finalists and won in one category: Best Network/Server Application.

Winner:
· Best Network/Server Application, IBM: WebSphere® Commerce 5.4

Finalists:
· Best Development Tools: IBM WebSphere Studio
· Best Storage: IBM TotalStorage™
· Best System Integration: IBM DB2®
· Best Security: IBM Tivoli®

LinuxWorld announcement
http://events.linuxworldexpo.com/linuxworldexpo/v31/press.cvn?id=11&p_id=12

IBM WINS ENTERPRISE AWARD ANNOUNCED AT LINUXWORLD CHINA

At the recently concluded LinuxWorld China 2002 Seminar, IBM China received these awards: Best Enterprise Supporting Linux; Best Linux Customer Service Company and Best Linux Solution Provider.

The awards are based on the result of public voting through the LinuxWorld China Website. IBM, Turbolinux, Redflag, AMD, HP, SCO Group (Caldera) and CS&S shared some awards, but IBM won the exclusive award as the Best Enterprise Supporting Linux. This is the second time this year that IBM won such an award; IBM also was awarded by the China Center of Information Industry Development (CCID) in May.