

## HRG Assessment: IBM's eServers

In the fall of 2000 IBM reintroduced its full line of servers as the eServer series. In addition to Linux compatibility, eServers now promise a lower Total Cost of Ownership (TCO) for traditionally expensive systems, and incorporate the following significant new features:

- New tools for managing e-business--capacity and performance growth on demand, system availability, management, solution compatibility and financing.
- Application flexibility--fully tested solutions can be deployed on the platform which best meets customer need for performance, availability and cost.
- Innovative technology--deploy Linux applications on xSeries Intel servers, iSeries, pSeries or on zSeries mainframes depending on customer requirements.

In addition to running their traditional operating systems, eServers run Linux across the entire line "from x to z." Recently the Linux community has applauded IBM's efforts. Microsoft has launched a massive disinformation campaign against the open source community.

With the introduction of the eServer series IBM demonstrates that:

- It is possible to diminish the risks of adopting Linux;
- Servers are entering the realm of commodities, leaving the availability of middleware and customer service as crucial differentiating factors among hardware vendors;
- To be competitive, any new server technology must lower the TCO of running enterprise level, business-critical applications

The eServer series and the tools that go with it, represent, in HRG's opinion, the push that IBM needs to reassert its leadership in the server market.

*In the past six months IBM has taken what some critics call a radical turn, not only by embracing Linux and the open-source community, but also by upgrading their servers so that the entire line is scalable and provides a lower Total Cost of Ownership (TCO) for their customers. Is this the right direction for the financial future of IBM? Can a company, which in the past, has relied on the strength of proprietary systems to differentiate their products' benefit from becoming a major catalyst to the obsolescence of those same systems? Harvard Research Group (HRG) believes that with the release of the eServer line, IBM is set to win far more than it will lose.*

## eServers and Linux

Linux, last year, grew faster than Microsoft Windows and all other types of UNIX combined. IBM has eagerly embraced the inevitable, choosing to control its fate rather than succumb to it. All eSeries servers can now run the Linux operating system. Table 1 outlines the new names and Linux capabilities of each line of eServers.

**Table 1. eSeries Servers Names and Linux Capabilities**

<b>Old Name</b>	<b>New Name</b>	<b>Linux Capabilities</b>
S390	zSeries	Runs Linux native in LPAR or as z/VM guest
AS400	iSeries	Runs i/OS with Linux Guest
RS6000	pSeries	Runs Linux Native
Netfinity, NUMA-Q	xSeries	Runs Linux Native

### Things to consider

Linux is an open-source operating system. Thousands of Linux compatible software packages can be found on the web, free, or at a very minimal cost. Software vendors fear the erosion of margins as customers turn to cheaper, or free, Linux alternatives. For companies, such as Oracle and SAP, that make complex enterprise-wide packages, software margins are not much of an issue when the majority of revenue generated is from installation and consulting services. It is the plug-and-play software vendors, whose packages require no additional product installation and maintenance services, that have the most to fear from the proliferation of Linux. This is in large part why Microsoft is actively casting doubt on the commercial readiness of Linux.

Linux based software is inexpensive, in many cases free, and compatible with more hardware platforms than any operating system ever developed. Using Linux, IT departments can now easily and inexpensively run application solution software across a range of previously incompatible hardware platforms. Ultimately this new-found openness will serve to facilitate migration from one platform to another. The costs of switching, and porting applications from installed platforms to new hardware platforms will be significantly reduced. Linux has transformed the server market from closed and proprietary into a truly open marketplace where any company is a potential customer regardless of its installed hardware technology. Linux may well signal the final phase in the evolution of the server from a unique and proprietary system, to a commodity. With server prices expected to fall significantly in the race to win and retain customers, IBM will undoubtedly see significant cuts in profits from hardware, which HRG believes can be offset by an increase in more profitable professional services revenue.

## **The Benefits of Linux**

The wide spread use of Linux is driving the IT community toward the definition of a common set of industry-wide standards. In a prescient move, IBM is already actively involved in defining these standards. Additionally, IBM heads up the Linux Standards Base (LSB) - a Linux standards body, and is a member of UDDI (Universal Description, Discovery and Integration). IBM's significant Linux expertise and rich IT history are likely to secure a significant long term role for IBM in defining and proliferating these standards.

Linux has opened the door for IBM to enter markets that previously were not easily accessible, given the entrenched view that IBM has traditionally been a proprietary systems vendor. IBM is actively working with major universities who have already enthusiastically embraced Linux. The significance of IBM's acceptance by the Linux community at large should not be underestimated. The reason for this broad-reaching acceptance, says IBM, is that they are "...part of the Linux community, playing by the rules, and genuinely contributing to, and not manipulating, its development." IBM has earned the respect of the Linux community, and it is playing a leading role in the community's standards setting activities.

IBM's adoption of Linux is a clear sign that IBM is determined to meet the IT challenges of the future. If Linux and other open operating systems become the standard, IBM is well positioned to manage most competitive onslaughts against its more traditional legacy products, while other vendors scramble to figure out a Linux and open systems strategy that makes sense. In a world where companies are wary of entering into proprietary relationships with vendors, customers appreciate IBM's new openness and flexibility.

## **The Linux Community Gains**

eServers provide the Linux community with access to IBM's highly available and highly secure servers. True commercial strength security can only be realized on IBM's z/OS (formerly OS/390) and does not presently extend to the Linux applications running on a Linux partition. Additionally, open source users can take advantage of the zSeries's z/VM operating system that runs within a Logical Partition, or runs native on the zSeries hardware. IBM's z/VM enables multiple operating systems to run side by side on one incredibly powerful server. The amount of server space given to each "OS" or partition is very flexible. With z/VM, customers can run from one to hundreds of Linux images on one platform, allowing system resources to be shared easily, streamlining management, and providing for scalability. IBM has even gone so far as to set up free access to a mainframe for anyone working with the Linux operating system. Over the web, one thousand users at a time can work with one of the most powerful mainframes on the market.

## **eServers: Differentiating themselves in a Commodity Marketplace**

With the increasing demand for heterogeneous servers to be compatible, regardless of manufacturer or operating system, the ability of companies to convince customers to adopt proprietary systems is waning. In the past, platform migration and application porting costs served as a huge deterrent to switching platforms. Now, thanks in large part to Linux and open systems initiatives the cost to customers for changing vendors will be minimal. The resultant increase in competition for the hearts and minds of IT professionals will lead to increasing price and performance improvements, much to the detriment of already declining hardware profit margins. In this increasingly competitive environment, it will be difficult for traditional server manufacturers to maintain a reasonable profit margin, while retaining and defending their base of installed customers. Middleware based application integration, and enhanced customer service / customer relationship management are but two of the ways in which computer hardware manufacturers will need to differentiate among themselves in the future. IBM is well ahead of the pack in its early adoption of this customer-centric strategy, with the release of their new eServers, in concert with a full range of middleware tools and e-commerce services.

## **WebSphere**

IBM has developed WebSphere, an open standards-based middleware product. WebSphere is scalable and compatible across the entire eServer line. IBM is betting that WebSphere products will do well in the e-commerce solutions space. WebSphere has already, by some estimates, captured a 30% market share. In addition to WebSphere, IBM is working on Oceano, a server infrastructure and middleware product that will host a large number of customers on Linux servers, as well as dynamically assigning system resources to accommodate fluctuating workloads.

## **Services**

IBM has always had a reputation for superb customer service. With technology rapidly evolving, customers are demanding more responsiveness and attention from IBM than ever before. IBM services for its eServers include:

- Financial packages to lighten the up front purchase price. Due to over \$40 billion in assets, IBM can offer very attractive rates compared to its nearest competitors.
- Consulting units, which help with up front consultation and design, and provide support all the way through to implementation, and ongoing system maintenance.
- On-line technical training programs to help customers stay trained and current.

HRG believes that IBM is continually enhancing its middleware and customer services capabilities in order to secure a market position as the server vendor of choice.

## **Focusing on the Cutting Edge**

Even with recent enhancements to its middleware and service offerings, IBM realizes that it needs to keep significant research efforts focused on the eServer platform itself in order to remain competitive. For the remainder of 2001, IBM has key research initiatives in place to develop increasingly faster servers that are more energy efficient, more able to self-manage workloads, and soon, self-heal. In addition, IBM has continued to update and make innovations to Logical Partitioning (LPAR) capabilities which are currently available only on the zSeries and iSeries. Still, as hardware revenues shrink, IBM's middleware and service organizations must make up the difference. What we are witnessing is the beginning of a significant trend.

## **eServers Delivering a lower (TCO)**

Hardware purchasing decisions are based on much more than price and performance. HRG has done extensive research and interviewed over 500 IT professionals to develop a methodology by which to calculate an accurate Total Cost of Ownership (TCO). Procurement, installation, operations, and downtime all need to be included in a comprehensive TCO. Operational costs can represent from 50% to 80% of the TCO, depending on configuration size, complexity and planned system life span. For this reason, human resources, training, maintenance, and overhead costs are significant in controlling TCO.

The IBM eServer has a number of features designed to help customers control some of these operational issues. The purchase price of one zSeries is not an insignificant amount for any IT budget. However, as can readily be seen from a TCO perspective, one zSeries server can be an economical choice. One zSeries can:

- Replace a large server farm (between 500 and 1000 boxes) simplifying management, and reducing human resource and maintenance requirements.
- Take up less square footage, saving space and overhead costs for utilities.
- Provide a choice of less expensive open source software, while eliminating the costs of linking Windows and Unix boxes together.
- Minimize downtime by incorporating the robust availability of zSeries server hardware.

These savings over a system's normal 3-5 year capitalization can be quite significant, and more than offset the initial purchase price of the server.

## The Competition

What is IBM's competition saying about them, and what offerings are out there to compete with this new server line? As discussed earlier, there is increasingly little differentiation among computer hardware platforms. In the future, customers will differentiate among competing vendors by assessing their openness, their ease of implementation, their proactive service and support, their ability to play well with others, and their TCO. One example of this is IBM's service processor, particularly the remote hardware controller on x-series, an important differentiator for the x-series family in terms of TCO and managing remote Linux installations from a single operational center.

Many hardware vendors seem to believe that IBM has gone overboard in its promotion and support of Linux. With the powerful media blitz around the eServer and IBM's relationship with Linux, it has been difficult for other vendors to get their message out to potential customers. There is also general industry skepticism about Linux being robust enough to properly run on a high-end zSeries server. The competition has also pointed out that although IBM has a nice story to tell, they do not know if customers are really using IBM's boxes to run Linux applications. Many of IBM's direct competitors have plans and products for Linux, middleware, and enhanced customer service that are at varying stages of development and maturity.

Many articles cite Sun Microsystems as being slow to join the open source party, but Sun claims that they have written more Linux code than any other server vendor, and that most Linux applications run seamlessly on Solaris. An example of this is the Star Office personal productivity suite that Sun has given to the open source community. Both IBM and Sun have servers that can perform dynamic partitioning. A big difference between the two vendors is that IBM's Logical Partitioning (LPAR) allows CPUs to dynamically maximize use of the total system allowing for great flexibility. Sun's physical partitions can be adjusted manually by adding or subtracting an entire CPU. On the other hand, Sun has partitioning across its entire line of UNIX servers where IBM has currently developed LPAR only for the zSeries and iSeries. Still, IBM plans to introduce the pSeries "Regatta" server this fall, which will most likely outshine Sun's present partitioning capabilities in the UNIX environment. Like Sun, Unisys Corp, HP, and soon Compaq will offer physical, but not logical, partitioning. IBM has set itself apart as the vendor with the most sophisticated level of partitioning in the industry.

All vendors must cater to the open source community to some extent. Sun, IBM and HP have each focused on implementing a Linux strategy. HP has also brought Bruce Parends, one of the founding fathers of Linux, on board. Dell, more of a fulfillment vendor, sells servers with Linux pre-installed on workstations and low-end servers. Compaq announced plans to incorporate Linux into their general product strategy as far back as the fall of 1999. IBM has created a web portal for the open source community ([www.ibm.com/linux](http://www.ibm.com/linux)) where developers can post their source code, have the ability to kick off open source projects via the website, and have a repository for white papers,

technical articles, etc. Compaq wants to develop a similar portal that can be used by the open source community but whose functions are not known at this date. As for middleware and customer service, all competitors understand their importance and have competitive products and services in this space. IBM claims that WebSphere is the fastest growing application server platform, but BEA is still on top, controlling more than a third of the market. It will be some time before the dust clears and the most successful e-commerce applications are verified through implementation and use.

One of IBM's greatest critics is Microsoft. Although not a producer of servers, Microsoft is definitely focused on destroying the Linux momentum and thus, has nothing good to say about IBM's current strategy. If Linux continues to grow, it will be interesting to see how the Windows "Empire" responds. Unfortunately for Microsoft, there does not seem to be any middle ground, where many server vendors can afford to take a more moderate approach.

## **IBM Reasserting Its Leadership**

The '50s and '60s marked the Golden Years of IBM. In 1954 IBM introduced the first operating system, developed by Gene Amdahl. In 1964 System 360 was launched as the first of a family of compatible computers. In the 1970's and 1980's, many changes occurred in IBM that may have been responsible for the growing pains of the '90s. IBM switched from leasing to selling its hardware, its growth strategies were focused on the mainframe while the demand for desktop technology surged, and its staff loyalty was severely tested by the first layoffs in company history. It was in the '90s that books entitled: *Big Blues: The Unmaking of IBM*, and *Broken Promises: An Unconventional View of What Went Wrong at IBM*, were being read by executives all over the world. By 1996, IBM's stock had taken a major dive. Obviously it was time for IBM to reevaluate its product line and ways of doing business.

It is now 2001. With the introduction of the eServer line, IBM has made up for a lot of lost ground. At a time when it is absolutely necessary to cater to open source computing, IBM has joined the race. By introducing a full line of servers that support Linux, as well as aggressively participating in open source development, IBM has raised the bar in terms of financial and human resources dedicated to eServer development. Very soon, IBM servers will be compatible across all server lines, a feature that in the past only Sun could claim. IBM is continuing to assert its leadership in the area of customer service. Finally, IBM has introduced a new area of expertise into its repertoire: WebSphere. Now that servers are no longer proprietary in nature, IBM has recognized the need for superior middleware to attract customers and keep them loyal. Finally IBM has made it clear through its eLiza initiative that it will not only continue to develop the most advanced partitioning capabilities in the market, but it will also attempt to create self-managing systems of the future. What the competition will do next is anyone's guess, but IBM is moving forward without regard for its competitor's decisions.

## Conclusion

The server and software market continue to change at a dizzying pace. Although a server's processing power, availability, and scalability still remain important features to consider, a server's Operating System has lost its stature in the decision making process. Gone are the days when a company was "stuck" with one proprietary system with no cost-effective way to migrate to a new platform. As Operating Systems have become compatible across platforms, which OS customers choose and which server it runs on has become much less relevant. The critical decision making criteria today is whether the server vendor has quality customer service and a selection of flexible middleware products available. In the process, pricing across server lines will become much more competitive, affecting the bottom line of the hardware vendors.

Regardless of what happens to software and hardware margins, as open source continues to gain popularity, there is one thing that all server vendors are counting on: IT budgets remaining stable. As long as IT departments have money to spend, IBM and its competitors will work to serve their needs and earn their patronage. IBM has certainly taken a bold step to ensure that it has the products in place for those who might demand the latest e-commerce tools, and for those who require products compatible with legacy systems. In the final tally, what IBM loses in introducing the eServer series is merely a past entrenched in proprietary operating systems. What IBM may win is:

- Customers from new markets in the e-commerce space;
- The continued loyalty of its present installed base;
- Restoration of its position as the leader of server and software technology.

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