



Competitive Snapshot

IBM eServer OpenPower Consolidation in Action

By Clay Ryder

The Sageza Group, Inc.
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sageza.com
info@sageza.com

The Sageza Group, Inc.
32108 Alvarado Blvd #354
Union City, CA 94587
650-390-0700 fax 650-649-2302
London +44 (0) 20-7900-2819
Milan +39 02-9544-1646

IBM eServer OpenPower: Consolidation in Action

ABSTRACT

Despite the best-laid plans of mice and IT staff, enterprise IT environments tend to grow in often unpredictable ways, and sometimes wild fits and starts. The reasons for this are not especially difficult to discern. The fact is that business computing evolves to meet the dynamic needs of businesses themselves, which seldom develop linearly. Sure, most companies go to work with MBA-approved business plans in hand and mission statements committed firmly to memory, but funny things happen on the way to the Fortune 1000. At the same time, IT itself never stands still. The continuing ascendancy of Moore's Law has meant that for the past two+ decades, CFOs the world over have been subject to the heartbreak of buying computing technologies whose value begins to plummet about the same time the POs finally clear. On one level, having easy access to top line technology is great news. On another, it means that business IT infrastructures tend to be patchworks of individual solutions whose performance and capabilities vary widely. The result of all this has been a growing interest in the subject of IT consolidation, whose original notion focused on reducing an enterprise's total number of servers by moving their functions to more powerful or larger servers.

However, there can be more to IT consolidation than mere server replacement. For example, IBM has focused on delivering a variety of IT consolidation solutions that extend to storage, applications, and datacenters themselves. The company's POWER-based eServer solutions have played a critical role in this effort in the past, but with the launch of new POWER5-based solutions and IBM's growing commitment to Linux, IBM's Power technology-based servers will become even more significant to the company's consolidation offerings. In this Sageza Competitive Snapshot, we will focus on IT consolidation issues, especially among mid-market and large enterprises. Additionally, we will examine several vendors' 64-bit IT Linux consolidation solutions and discuss their relative merits. Finally, we will examine IBM's newest POWER5-based eServer OpenPower, p5, and i5 products and consider how they enhance IBM's IT consolidation model in light of the business and technology needs of enterprise IT customers are seeking to make a strategic commitment to Linux.

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TABLE OF CONTENTS

- Getting a Handle on IT 1
- Calming Consolidation Fears 1
- Why Consolidate? 2
- Weighing Competing 64-bit Consolidation Offerings 2
 - Sun Microsystems 2
 - Hewlett Packard 3
 - Dell 3
 - IBM 3
- Server Consolidation: IBM's Approach 3
 - IBM's Systemic Total Solutions Approach 4
 - IBM's Virtualization Engine and Consolidation 4
 - Common Consolidation Opportunities 5
 - Legacy UNIX and Windows NT Solutions 5
 - Distributed or Branch Offices 5
 - The Ever-Present SMB 5
- What Does It All Mean? 5

Getting a Handle on IT

While the interest in and need for IT consolidation may be the end result of enterprise infrastructure evolution, what are some of the more granular related issues inspiring consolidation-minded businesses? The fact of the matter is that a decade-plus of innovation has offered enterprise customers an embarrassment of IT riches and options, including increasingly powerful desktops and servers, readily available broadband Internet connectivity, the Open Source movement, and the growing popularity and capability of Linux. However, history illustrates that for vendors and customers alike too many choices can result in a negative outcome. We argue that the essential value of enterprise IT solutions lies not in sheer variety, but in stability, predictability, and manageability. By comparison, enterprises that fail to consider IT solutions strategically often end up with tactically designed, hurriedly deployed, and widely distributed heterogeneous IT infrastructures that are complex, cumbersome, and difficult to manage. IT also tends to rely on expensive excesses of capacity to meet peak computing demands, which results in a poor utilization of costly corporate assets.

At the same time, other issues are further complicating this already complex scenario. The need to quantify the value of ebusiness solutions against their costs is being undermined by competitive pressures and lack of skilled IT staff. Ongoing global political and economic uncertainties have heightened virtually every company's perception of and concerns about security, privacy, and risk management. In other words, enterprises are coming to expect more or better performance from increasingly stressed IT infrastructures. As a result, overworked support staff often resort to tactical patches that may fix this week's problem but open the system to longer-term difficulties, breaking the cardinal rule of strategic enterprise computing: that IT solutions exist to help businesses, not hinder them.

Calming Consolidation Fears

So if IT consolidation is so great, everyone should be doing it, right? Well, not really. The fact is that businesses have tended to avoid traditional consolidation solutions for a number of understandable if not always rationally supported reasons. In fact, while the following concerns may seem real enough to those who bear them, they are essentially disconnected from the realities of modern IT consolidation solutions and practices.

- ◆ **Too expensive.** The argument here is that while consolidation may look good on paper, the overall costs of the effort will outweigh most, if not all, expected benefits. More to the point, since there is no such thing as a one-size-fits-all consolidation solution, whatever benefits a company might enjoy are unpredictable to the point of being unjustifiable. This flies in the face of the notable stability and robustness of currently available 64-bit solutions that make the results and value of consolidation efforts based on these technologies far more predictable than traditional solutions. In addition, the deployment of relatively inexpensive Open Source technology on the Linux operating system has a significant impact on the cost structure of any consolidation effort.
- ◆ **Too complicated.** This argument is born out of the difficulties many enterprises experience in managing their existing IT infrastructures and resources. If one cannot manage what one already has, what are the chances of effectively managing an even larger consolidated environment? Gun-shy enterprises would answer little to none. However, vendors today provide a wide variety of service and support offerings specifically designed to ease consolidated IT management and training issues. One of the simplest promises of consolidation is to decrease complexity to achieve better manageability. In particular, a migration to the Linux operating system as opposed to multiple

UNIX and Windows deployments offers a notable simplification in system management as well as the potential for even higher utilization levels of the hardware deployed.

- ◆ **Too dangerous.** This argument appeals to the fears of disaster. In a world where digital information is essential to the operation and survival of virtually every corporation, what happens if a consolidated data environment goes down? Even worse, what would the ramifications be if some portion of a consolidated information repository were unrecoverable? Confronted by such hypothetical risks, can IT consolidation efforts ever be justified? Some would say not, but we disagree. A number of contemporary enterprise IT capabilities, such as server partitioning and Capacity Upgrade on Demand (CUoD), make contemporary consolidation solutions far more resilient and scalable than many approaches, and offer new opportunities for leveraging IT resources and lowering costs along the way.

In other words, what we are discussing is not your Granddad's consolidation solution. While corporate decision makers may not fully understand these new technologies, their potential benefits outweigh the risks. That said, what does consolidation actually consist of? Traditional efforts tended to focused on server consolidation, which still constitutes the lion's share of many vendors' offerings, but what exactly is server consolidation? Simply put, server consolidation seeks to simplify complexity by reducing the total number of servers in a given infrastructure. This is accomplished by moving the data and/or processes from large numbers of aging or smaller servers, server farms, or storage devices onto fewer, larger/more powerful machines, or clustered systems.

Why Consolidate?

Consolidation is about IT optimization or getting the most from IT resources and data. From a practical standpoint, consolidation can enhance system performance, availability, and resiliency, and increase overall server utilization, all critical issues for enterprises that need to wring the maximum bang out of their IT bucks. Consolidation can also reduce overall complexity, which helps to simplify IT operations. In turn, such simplification can tangibly affect the bottom line by reducing associated costs, thus bolstering TCO. Perhaps most importantly, embarking on a consolidation effort helps businesses consider their IT infrastructures in an integrated, strategic manner. Over time, we believe that such an approach can help enterprises come to regard their IT infrastructures as valuable strategic business assets that provide critical support for greater company initiatives. Good enough, but is server consolidation all there is to this process?

Weighing Competing 64-bit Consolidation Offerings

A number of vendors have risen to address the challenges of IT consolidation. A handful offer important pieces of the puzzle, but their often tactical approach to a narrow IT issue fall short of the strategic view that consolidation offers. Customers should strive to achieve their consolidation goals without migration hassles and/or reliance upon external third parties to perpetuate the "consolidated" solution. The ideal solution offers customers a level of flexibility and scalability in their purchase that obviates the need for revisiting consolidation concerns in the near future.

Sun Microsystems

Sun Microsystems' approach to consolidation offerings has historically focused on migrating existing solutions to UltraSPARC-based servers, which in turn requires customers to migrate their applications and data stores to Solaris. Earlier this year, however, Sun did introduce a

new platform — its Opteron-based solutions — representing a shift in strategy and platform for the company. However, Sun's current Opteron offerings are focused on the low end of the market with only one- and two-way systems available at present. Another important consideration is that Sun cannot act as a single provider of consolidation solutions under one roof, as the company relies on Veritas as its primary software consolidation partner. Additionally, there does not seem to be a coherent strategy articulated for Linux in Sun's consolidation efforts. While Linux is available, the company prefers Solaris x86 and continues to maintain that the best environment for Linux applications is provided by Solaris 10. Overall, Sun's proven consolidation solutions remain UltraSPARC/Solaris-based; however, this could change if Sun's Opteron strategy resonates in the marketplace.

Hewlett Packard

Like Sun, Hewlett Packard's consolidation offerings demand migration to architecture-specific servers, specifically the Itanium processor. Market behavior suggests that HP's own UNIX customers (PA-RISC and Alpha) have been slow in their own migrations to IA-64. Though HP has had some success on the Linux-based server front, its efforts have focused primarily on the x86 (Proliant) offerings. HP's Adaptive Enterprise initiative addresses consolidation concerns, but the company's offerings rely on external software vendors including Microsoft, VMware, and others to complete their consolidation strategy. Overall, HP's consolidation offerings are most appropriate for NT migrations or for clients who have decided that a move to Itanium is in their best strategic interest.

Dell

Like HP, Dell has a consolidation strategy grounded in its own architecture-specific servers, namely the Xeon-based PowerEdge solutions. The company equally turns to major strategic partners, including Microsoft and VMware, for the software consolidation portion of its offering. Missing from Dell's consolidation strategy is a compelling Linux foundation, as the company has little established expertise with Linux. Also the company's position in the marketplace as the low-cost, low-margin, mainstream-only solutions vendor does leave open the potential that if its consolidation initiatives do not go mainstream in volume, the company might pull the plug, leaving customers holding the proverbial bag. Overall, Dell's consolidation offering may be more appropriate for NT migrations than UNIX-focused efforts.

IBM

IBM recently introduced its eServer OpenPower solution into the marketplace as an alternative to Sun and HP UNIX-based systems, as well as aging NT solutions. It offers a new class of affordable, entry-level offerings tuned specifically for Linux with a cost-effective Linux price/performance model. IBM's eServer OpenPower offers native virtualization capabilities unlike competing offerings. It is targeted at businesses looking for a migration route from aging platforms, and mid-size companies considering Open Source alternatives to traditional proprietary point solutions. Notably, IBM's offering is not simply an infrastructure play; its roadmap includes solutions aimed at verticals including banking and finance, insurance, petroleum exploration, EDA, and digital media, all fully embracing the Linux OS and Open Source community.

Server Consolidation: IBM's Approach

Though a number of vendors have broadened their solution sets to include more than simple server consolidation, IBM in particular has parsed IT consolidation into four options,

described on the company's Web site, that are designed to fit the discrete needs of a wide range of enterprise IT users. They are:

- ◆ **Physical Consolidation:** Physical (server) consolidation consists of migrating existing server and storage workloads of the same application or platform type onto fewer or larger systems of the same application type or platform.
- ◆ **Centralization:** The physical relocation of often widely dispersed IT assets, and in the process reducing the overall number of datacenters or data processing sites.
- ◆ **Data Integration:** Storage-focused data integration efforts focus on combining stored enterprise information assets in different formats into a similar format or platform.
- ◆ **Application Consolidation:** Attuned largely to performance, application consolidation co-locates multiple applications and data within a consolidated, unified environment for enhancing business integration or automation.

IBM's Systemic Total Solutions Approach

In IT environments where heterogeneous data and applications rule, it is easy to focus on the tactics for consolidation rather than a strategy that ensures the greatest long-term benefit. IBM takes an approach to consolidation that respects the real tactical challenges of moving data from one server to another while emphasizing the need to support and enhance the customer's greater business strategy. This approach helps define the value of the customer's IT solution in terms of business need, not just IT pain. In this spirit, IBM's On Demand offering integrates solutions and services that extend the flexibility, resilience, and robustness of enterprise IT infrastructures. Notably, IT consolidation is a key element of IBM's on demand strategy.

Sound consolidation strategies are built upon sound foundations. Underlying IBM's total solutions approach is Linux, an open-standards based platform offering significant flexibility and value to IT departments over traditional proprietary offerings. Linux possesses key attributes that make it attractive to IT administrators and is ideally suited for consolidation efforts: it is highly scalable, flexible and easily extensible. Linux is integrated across IBM's hardware, middleware, and software solutions, making it an ideal platform upon which IT consolidation strategies can reach fruition. By embracing Linux as the foundation for its consolidation offerings, IBM is uniquely positioned to address customers' consolidation needs as the company can leverage generations of its in-house UNIX, x86, and mainframe expertise.

IBM's Virtualization Engine and Consolidation

By definition, consolidation requires the need to access a variety of diverse IT resources. IBM is well versed in the mosaic of platforms, data, and applications that typify enterprise IT environments. Yet the consolidation challenge can fast be eclipsed by the underlying challenge of viewing, managing and accessing an increasingly varied assortment of enterprise data and applications.

IBM assimilated a number of its technologies into the IBM Virtualization Engine with the aim of optimizing IT resources while simplifying their access and management. It allows IT administrators to emulate any resource and access it at any point throughout the network. The Virtualization Engine is a key leverage point for achieving IBM's on demand vision. It is integrated across IBM's eServer and TotalStorage product lines, offering a single point of management for an expanding range of data, platforms, applications, and interfaces. Significantly, it offers expansion of capabilities and tools for facilitating the pooling and accessing of data/applications on non-IBM platforms.

Common Consolidation Opportunities

Businesses small and large across industries can discover efficiency gains through deployment of IBM's OpenPower consolidation offering. What follows are simple examples of where businesses could take advantage of OpenPower as a consolidation playing in their organizations.

Legacy UNIX and Windows NT Solutions

Consider customers with numerous legacy UNIX machines be they Sun, HP, Digital, or SGI, or Windows NT machines each running different infrastructure workloads. This scenario could be easily be consolidated on the eServer OpenPower 720 running Linux Open Source infrastructure applications (free of charge with Linux distribution) including SAMBA, Apache, and JBoss amongst others. By utilizing eServer OpenPower's low-cost Advanced Virtualization features, customers can consolidate many of their old infrastructure server farms onto a single eServer OpenPower 720. This not only results in simplified management and maintenance concerns for IT administrators but also offers a substantial savings in licensing fees, as well as decreased demand for electricity, cooling, and floor space.

Distributed or Branch Offices

Another common IT scenario is that of the remote or branch office. These customers run one or more business applications in a distributed, regional area such as retail branches that have many in-store servers, or insurance agencies, medical, legal, or other professional services that are a part of larger organizations. This class of customers can consolidate multiple store-level servers to regional headquarters servers, or to the corporate headquarters level using Linux on POWER offerings (e.g., BladeCenter, OpenPower, etc.) The Virtualization Engine, through its resource management capability, can help customers utilize their resources more efficiently by interconnecting terminals or retail desktops with centralized resources through high-speed network connections. In many cases, the burden for a local full- or part-time IT resource can be alleviated altogether, which translates into better cost performance for the IT infrastructure.

The Ever-Present SMB

Small businesses of today can avoid the costly growth scenarios of IT solutions that their larger brethren experienced. By consolidating their existing servers on OpenPower platform, SMBs will benefit from not only a simplified environment today, but also have the capacity for the IT solution to grow with their business in the future. SMBs can reap greater efficiencies as their business grows via IBM's consolidation offerings. Customers who operate small business applications in different small servers can consolidate these business application server farms into a small number of Linux on POWER servers. While reducing server sprawl, the Virtualization Engine can improve efficiency of IT management while reducing operational costs. This, along with decreased licensing costs for software, and the need for fewer resources in general, can be key factors contributing to the profitability of small businesses as they grow.

What Does It All Mean?

A short study of technology history, along with a peek at industry news, suggests that IT complexity is not going away. The continuing evolution of existing solutions, along with the ongoing emergence of new technologies, will ensure that computing performance and its attendant complications are likely to continue unabated. At the same time, IT management and optimization solutions, such as consolidation and Open Source options, offer enterprise

customers a clear path through this confusion. However, the size and nature of most enterprise IT environments requires more than simple traditional server consolidation.

Overall, IBM's Total Solutions approach to IT consolidation, along with the company's four deployment options, provides comprehensive solutions for optimizing enterprise IT environments and enhancing the overall business value of business processes including ERP and database applications. By assessing the current state of an enterprise's strategic aims along with its IT infrastructure, IBM can help customers fashion consolidated IT environments that help drive, rather than hinder, their business objectives. Additionally, IBM's consolidation offerings are considerably enhanced by the company's long-term commitment to Linux solutions and to the company's strategic on demand initiative. In particular, we believe these elements play key roles in driving the efficiency and cost-effectiveness of IBM's consolidation options.

IBM's new POWER5 solutions, the Virtualization Engine, and eServer OpenPower platform significantly enhance the company's consolidation offerings. The unyielding focus on delivering enterprise-class Linux expertise across a family of computing solutions is unique to Big Blue. This, combined with mainframe-inspired technologies such as the Virtualization Engine, and IBM's declaration to deliver these in a properly scaled solution that are relevant to the SMB market place, demonstrate the company's intention to ensure that IT consolidation offerings continue to evolve to meet the business needs of enterprise customers. Overall, enterprises seeking an ideal platform for IT consolidation efforts are well advised to consider IBM's Linux-based POWER solutions.