

# **IT RESOURCE CONSOLIDATION: ENABLING MAXIMUM BUSINESS VALUE**

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**ENTERPRISE MANAGEMENT  
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## IT RESOURCE CONSOLIDATION

**I**T resource consolidation projects have become a favored way for IT to reduce expenditures while increasing overall service levels to the business. Historically, consolidation projects were conducted in an extremely granular, custom manner and lacked a strategic element. For example, a large computer manufacturer realized a \$750,000 net savings from a resource consolidation project in the early 2000s, only to realize that the process would need to be repeated over and over as business needs changed.

The industry has responded to these needs by introducing a set of technologies that, while in the early stages of their development cycle, can be leveraged today to reduce the risk and increase the repeatability of resource consolidation initiatives. Examples of these technologies include Citrix Systems' Access Infrastructure, Microsoft's combination of Windows, Active Directory and Exchange into an easy-to-manage platform, and HP's "Adaptive Enterprise," which is being instantiated in the form of low TCO servers and storage platforms.

In addition to substantial "hard" advantages such as reduced costs, resource consolidation (now becoming known as resource management) technologies have a number of significant "soft" advantages. These include decreased business risk, users that are happier and more productive, and a simplification of regulatory compliance initiatives. All of these benefits lend themselves to helping IT justify itself to the business as a profit center rather than a cost center—a key component in the ongoing alignment of IT and business.

There are a number of visionaries in the resource management market, and three of them—Citrix, HP, and Microsoft—have joined together in an innovative marketing initiative aimed at helping their customers leverage resource management technologies to their fullest. The combination of these companies and technologies could very well set a standard approach for solving strategic and tactical resource management problems—and many of those technologies are available and being implemented today.

EMA recommends that IT executives and management take a hard look at the resource management products offered by these three vendors, particularly in light of their new initiatives. Deployment of these technologies yields substantial business benefits to enterprises today and tomorrow, and companies that incorporate these products in their overall strategy will be more efficient and competitive.

### REAL-WORLD IT CHALLENGES AND RISKS

Today's hyper-competitive, value-oriented economy demands efficiency from all aspects of business, and IT is clearly no exception. Budgets continue to be stretched to the absolute limit, and we are all being forced to do more with less. IT managers are being required to maintain a laser focus on reducing costs and increasing productivity, and one tactic used is resource consolidation. A well-planned and managed resource consolidation project reduces the infrastructure required to support business services, resulting in improved resource optimization and potentially large net savings. These savings may then be invested in new projects that benefit the business or to improve the organization's bottom line.

In addition to the hard financial advantages discussed above, resource consolidation also enables significant "soft" returns to the business, including increased business agility and responsiveness and the ability to improve overall user experience and satisfaction. Taken as a whole, a successfully implemented resource consolidation project significantly improves IT's image and reputation within the company.

Another key concern today is regulatory compliance. A variety of new regulations, including HIPAA, Sarbanes-Oxley, and Gramm-Leach-Bliley in the U.S., plus BASEL 2 in Europe, apply to organizations of virtually any size, in virtually any market. Stiff penalties that include fines in the millions



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of dollars and incarceration, coupled with high visibility indictments, have raised the awareness of these issues to the executive level, leading to demands upon IT to help guarantee compliance. For example, key requirements for many regulations include documenting and enforcing data ownership, maintaining audit trails of changes made to that data, and ensuring that data integrity is maintained. Resource consolidation, by its very nature, simplifies this process by reducing the number of physical locations in which data are stored, secured and tracked.

Traditionally, IT resource consolidation was comprised of highly elemental and granular projects aimed at reducing the number of communications circuits or servers that were required to support certain business functions in the interest of saving money. Consolidation initiatives were managed as distinct projects that were not generally repeatable as they were too labor-intensive.

For example, a large computer hardware manufacturer embarked upon a large server consolidation project in the early 2000s aimed solely at cutting costs. Based upon capacity planning technology provided by a point vendor, the goal of the project was to “right size” the servers and applications that served business applications. While this initiative was deemed a success (it saved close to a million dollars, while the cost of the project was approximately \$250,000), the infrastructure supporting these applications was still too rigid and difficult to change when business demand fluctuated. Further, the risk to the business was very high, as the architecture of business-critical applications was monumentally changed every time a consolidation occurred.

EMA research has shown that, if executed incorrectly, the costs of application downtime can far eclipse the benefits realized by a resource consolidation project. High-volume e-commerce Web sites, for example, risk up to \$1 million per hour from key application downtime; average losses of \$50,000 to \$100,000 per hour are not uncommon in medium to large companies.

### **TODAY'S IT RESOURCE CONSOLIDATION “STATE OF THE ART”**

The Leukemia and Lymphoma Society's resource consolidation success story, described in detail in the next section, describes how \$1 million per year is being saved as a direct result of consolidation efforts. This type of consolidation project is compelling for a number of reasons.

First, lower expenditures allow IT organizations to recover funds previously spent on maintaining and supporting

multiple data centers and apply them to new projects that benefit the business—this is the most compelling, “hard” justification for consolidation. In addition, there are a number of excellent “soft” reasons for such a project, including the fact that once complete, these new projects allow IT to work on more interesting tasks than day-to-day administration, as overall administrative overhead and complexity decrease.

Additionally, the increased performance and improved technology that result from this type of project increase the efficiency and productivity of everyone who uses the system—an across-the-board optimization of business efficiencies. Lastly, resource consolidation aids in regulatory compliance initiatives by simplifying the processes required to ensure compliance, decreasing overall risk while decreasing compliance costs.

All of these advantages net out to increased competitiveness and business agility. The net result of a properly executed consolidation strategy is swifter adaptability to changing business conditions, and this adaptability has greater potential long-term benefits than short-term cost savings.

In the case of a major investment company that EMA interviewed, their resource consolidation project was at once tactical and strategic. The tactical benefits were obvious – nearly a 50 percent reduction in the number of servers and drastically reduced IT support expenditures, not to mention an improved ability to comply with regulations. Further, by wisely investing in an overall IT architecture that innately supports future technological advances without requiring a complete re-design, the company is positioned to take advantage of new technologies as they emerge.

The next section describes the resource consolidation effort undertaken by the Leukemia and Lymphoma Society, which is a charitable organization that will reap enough from its project to build a new research center in five years with the savings.

#### **LEUKEMIA AND LYMPHOMA SOCIETY**

The Leukemia & Lymphoma Society (LLS, at [www.lls.org](http://www.lls.org)), based in White Plains, New York, is the world's largest voluntary health organization dedicated to funding blood cancer research, education and patient services. The Society's mission is to cure leukemia, lymphoma, Hodgkin's disease and myeloma, and to improve the quality of life of patients and their families. Since its founding in 1949, the Society has provided more than \$358 million for research specifically targeting blood cancers.



## IT RESOURCE CONSOLIDATION

EMA spoke with Steve Lucas, LLS' CIO, about the organization's experience with resource consolidation. LLS has 100 offices throughout the United States, and 70 of those offices had their own dedicated servers that hosted a total of 1,500 databases. According to Lucas, "It was an absolute mess—we had data and applications scattered everywhere, with no way to manage it all. On any given day, we would have one or two of our servers down, and we spent a tremendous amount of time just troubleshooting and maintaining servers."

LLS was driven to consolidate by the need to combine all 1,500 databases in a single, centralized database that the entire organization could access and update, anytime, anywhere. Another major consideration was cost – LLS calculated that centralizing IT resources by moving to a Citrix Access Infrastructure could save the organization five million dollars over a five year period—enough to fully fund a new research center!

**"When we realized that we could save \$5 million from resource consolidation over five years, which is enough to fully fund a new research center, the project became very easy to sell." – Steve Lucas, CIO, Leukemia and Lymphoma Society**

Today, Lucas reports that his job is much easier—his team can deploy application and database changes "almost instantaneously;" the overall quality of service provided to their branches has increased significantly; and costs have dropped dramatically—not to mention that the organization is well on the way toward its goal of building another research center with the savings!

### EMA'S PERSPECTIVE

#### THE FUTURE OF IT CONSOLIDATION—IT RESOURCE MANAGEMENT

Instead of the labor-intensive, high-risk consolidation projects of the past, strategic, architectural approaches to resource management are now coming to market. These approaches will become a part of an IT organization's best practices, easily and rapidly adapting to changing business demands without necessitating a complete re-architecture of the infrastructure every few years (and hence avoiding most of the risk described above).

Today, every industry leader that provides IT hardware and software is working diligently toward this vision. While each vendor has its own name for it, including variations of "adaptive," "dynamic," and "on-demand," they all share many similarities, including the ability to pool and virtualize resources, define business services and their resource requirements, and then automatically provision

and de-provision resources based on specific IT policies.

Tremendous strides toward these goals are already being made, although one key technology is missing in order for all of this to work: heterogeneous, vendor-agnostic integration. IT buyers are not going to invest in proprietary, single-vendor solutions any longer – the framework legacy of the past, in which millions of dollars were spent on proprietary management architectures, is gone. Replacing them are emerging interoperability standards that will provide public interfaces between vendors. An example of these standards is Data Center Markup Language (DCML), which was recently adopted by the OASIS standards organization. If embraced by the vendor community, DCML could become the standard for management of devices across the data center, regardless of vendor or type.

Regardless of standards, the real long-term benefits will come from the strategic side of the equation – by wisely choosing vendors that have a good chance of executing on their long-term visions, such as Citrix, Microsoft, and HP, whose emerging alliance is discussed in the sidebar. Companies such as the investment firm described below have been able to position themselves to leverage advances in these technologies as they emerge without a complete re-architecture of their IT infrastructure.

Historically, IT resource consolidation was often considered negatively by those in IT – after all, consolidation sometimes resulted in enough operational savings that jobs got consolidated in the process! Largely, those days are past us – IT organizations are running very lean and mean today (perhaps too lean and mean in some cases), and consolidation has taken on a more strategic meaning. Instead of considering consolidation in a granular, application-by-application basis, enterprises are increasingly looking for ways to automate the process, weaving it into overall IT strategy and best practices.

Consider this: an IT system that is designed and deployed in a flexible, adaptive IT environment, where the actual "fabric" of the IT infrastructure can expand and contract dynamically, will not need to be consolidated as it will always be running at peak efficiency. This is the core of the various "adaptive," "on-demand" and "dynamic" visions – IT's ability to automatically utilize its resources, at maximum efficiency, with resources being allocated and de-allocated based on business priority and value, with a minimal amount of manual intervention.

EMA believes that these visions are still a number of years from full actualization – Microsoft, for example,



## INCREASING IT EFFICIENCIES THROUGH RESOURCE CONSOLIDATION

### RESOURCE MANAGEMENT VISIONARIES

There are a number of companies that have shown vision and the capacity for innovation in the resource management market, including BMC, Citrix, HP Adaptive Enterprise, IBM and Microsoft. Three of these companies—Citrix Access Infrastructure, HP and Microsoft— have joined in a marketing initiative aimed at showing customers how they can benefit from deploying their consolidation technologies. This initiative is a natural step for the companies to take, given that all three have traditionally worked closely with one another.

The balance of this section will describe the individual resource consolidation capabilities of the three vendors described above, followed by an analysis of what the combination of the three could yield.

### CITRIX

Citrix software has traditionally provided a key set of resource consolidation technologies, and the company continues to add to its portfolio. The very nature of the Citrix Access Infrastructure enables the consolidation of IT resources through centralization of the IT function, and once standardized on Citrix, companies may then leverage other consolidation technologies such as storage area networks and dense computing platforms such as blade servers.

The Citrix MetaFrame Access Suite, which comprises Citrix MetaFrame Presentation Server, MetaFrame Secure Access Manager, MetaFrame Password Manager, and MetaFrame Conferencing Manager, allows IT resource consolidation by centralizing front- and back-office applications on a single platform.

The traditional advantages of the Citrix platform fit nicely with a resource consolidation strategy. Since business applications are installed, processed, managed and supported on MetaFrame Presentation Servers physically located in the data center, centralization of server resources becomes very easy. From the user perspective, this consolidation results in increased application performance and security, as only an encrypted and compressed presentation layer is transferred between the user's PC and the data center. User workstations, may be simplified, as only the Citrix client application or a Web browser is required in order to provide access to full Citrix functionality. This has allowed many Citrix customers to delay workstation upgrades indefinitely or to replace them with maintenance-free "thin client" devices that cost 60 percent of the price of a new PC (and need to be replaced only when they fail).

The Citrix Access Infrastructure enables significant resource consolidation by supporting the centralization of servers and IT staff and reducing the support and maintenance overhead of user workstations, while increasing overall application performance and security.

### HP

HP has not traditionally been considered a resource management leader—after all, it is primarily a hardware company, and it would seem counter-intuitive for a hardware company to advocate consolidation and increased utilization of existing resources, when it could be selling even more hardware. The company has taken a leap of faith with its Adaptive Enterprise initiative, which promises to provide a set of hardware and software solutions that will allow its customers to more easily adapt to changing business conditions.

HP's Adaptive Enterprise vision is a combination of many technologies, including hardware (high-performance, high-density blade servers and storage) and software (provisioning, performance and availability monitoring, security, IT policy, and automation) that, in concert, will allow IT to rapidly and dynamically allocate (and de-allocate) resources as business needs warrant.

While the company is several years away from fully delivering on this vision, many of the components are available today. For example, their combination of provisioning, monitoring, and automation capabilities with IT policy allows HP blade servers and storage to be quickly and efficiently deployed, and just as quickly reassigned to other tasks. If a surge in demand for a critical business service occurs, IT can respond quickly to satisfy the business requirement, and when the demand has decreased, can just as quickly return those resources to their previous duties.

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The combination of HP's Adaptive Enterprise and Citrix' Access Infrastructure is a natural – many companies already run their Citrix infrastructure on HP equipment, and Citrix and HP have traditionally worked closely to ensure that their technologies mesh well. HP's Adaptive Enterprise will allow IT administrators to rapidly add Citrix MetaFrame server capacity as needed, managing them in concert with other critical systems using the same infrastructure.

### **MICROSOFT**

Microsoft and Citrix have had a longstanding and profitable partnership, and it is impossible to speak about consolidation using Citrix without also including Microsoft in the mix. Microsoft's server platforms have steadily increased in functionality and stability, and today nearly every enterprise depends on Windows servers to provide some or all of their back-office functionality. The combination of the Windows server platform with Microsoft Active Directory and Microsoft Exchange lowers the total cost of servers running Microsoft software by tightly integrating security and messaging into the Windows platform.

Microsoft has shown itself to be a visionary in the resource consolidation space by reducing the overall management overhead of its products, particularly when compared with competitive operating systems. The company has also shown vision in its Dynamic Systems Initiative (DSI), which is a five- to 10-year strategy to lower the total cost of applications throughout their life cycle. DSI uses an innovative underlying extensible data model known as systems definition model (SDM) that can store all aspects of an application's characteristics including (but not limited to) configuration, performance, and dependency data, all in one place. The SDM then follows the application through its life cycle, becoming the definitive record that contains the "DNA" of an application.

### **THE FUTURE OF THE CITRIX-HP-MICROSOFT INITIATIVE**

All three of these companies have resource management visions that attracting interest in the marketplace, and all three have shown past ability to execute on their visions. Given this record of accomplishment, particularly in light of the fact that all three have traditionally worked well with one another, this initiative has the potential to become a key approach for solving resource management challenges.

readily admits that many aspects of its Dynamic Systems Initiative will not be fully delivered until the latter part of this decade – but components of the architectures are available today. It is a natural conclusion that forward-looking, progressive firms that invest in these foundational infrastructure will also be the first to reap the benefits going forward, as they will be the furthest up the IT evolutionary ladder.

An often overlooked yet substantial market for resource management and the dynamic systems that will follow is that of external service providers, also known as outsourcers. Since these vendors will most likely to be among the first to embrace a true "IT as utility" model in which computing resources are made available to customers "by the drink," it is natural that they would become early adopters of these technologies. Cases in point are HP Services and IBM Global Services, which are both among the first to implement resource management technologies developed by their parent companies.

It is certain that the recently announced three-way partnership between Citrix, HP and Microsoft will advance the resource management state-of-the-art. The idea of industry giants collaborating to further their own vision (and provide added value to their customers) is not a new one, but to be truly successful, even more industry visionaries will need to join in. For example, IBM and HP each have visions that at present are very competitive. It is EMA's opinion that for these visions to succeed in the market, all of the vendors that plan to provide these solutions must also integrate with one another. If they can do this, then the entire industry will benefit from their leadership.

### **EARLY ADOPTERS OF NEXT-GENERATION RESOURCE MANAGEMENT TECHNOLOGIES**

In the process of researching this paper, EMA interviewed two early adopters of the technologies that are on the market today from Citrix, HP, and Microsoft, combining them into a precursor of the IT resource management



infrastructure described above. The first, a major investment firm, consolidated a classic client/server distributed architecture into a Citrix/Microsoft-based design that enhanced overall system availability and performance while easing compliance with regulations. The second, a major retailer, consolidated its infrastructure using Citrix, HP, and Microsoft to replace a cost-inefficient distributed environment with a centralized front- and back-office solution, reducing its total number of servers by nearly 75% while improving system performance and availability.

#### **LEADING INVESTMENT FIRM**

EMA interviewed the Chief Information Officer (CIO) of a 35-year-old leading investment firm that had faced a number of significant IT challenges over the past few years. According to the CIO, when he started with the firm in 2000 the company's IT infrastructure was "very 1992—a classic distributed client/server architecture with PCs establishing connectivity to the home office data center through dial-up, synchronizing data over the wire." The company, which serves over 3,000 end users, also acts as a service provider to sister companies, and at the time, all of these companies had their own back-office infrastructure, making management across the company extremely difficult.

The CIO, who had used Citrix software at a previous company, immediately saw the advantages of applying access infrastructure principles to his new company. He started by centralizing the company's back-office systems, replacing the previous multi-server, multi-location, multi-system "mess" (as he described it) with a centralized back-office system at their headquarters location, with a disaster recovery site hosted by Sungard. This resulted in a 45 percent reduction in servers, from 132 to 71.

The company standardized on the Citrix platform around the same time, allowing them to serve their 3,000 users with a Citrix MetaFrame Presentation Server "farm" comprised of 12 HP ProLiant servers. Since all of the company's users access their applications through the Citrix environment, former requirements for dial-in and remote data synchronization were replaced with a simplified access infrastructure where remote users connect via the Internet and office users connect over the corporate network. Application performance increased, as all data is accessed from within the data center, while the complexity and quantity of support issues on desktop PCs were drastically reduced.

In addition to the increased IT efficiencies that the company derived from the Citrix access infrastructure, the CIO reports that regulatory requirements have been much easier to comply with, since all data resides in a centralized, secure facility and all communications between the Citrix server and client devices are encrypted. He stated that, as part of regulatory requirements, the company must prove the effectiveness of its disaster recovery (DR) capabilities on a regular basis, and the Citrix architecture drastically simplified the process of designing, implementing, and maintaining a DR solution.

Recently, when Hurricane Frances roared up the Eastern seaboard, the company was forced to do a "real" test of its DR strategy, relying upon their DR systems for 10 days before, during, and after the hurricane. While acknowledging that the switch was not without its wrinkles, the CIO did indicate that the Citrix architecture streamlined the entire process, and his 3,000+ users never even knew that they had switched to a backup data center.

The CIO indicated that he is extremely pleased with the consolidation that his Citrix deployment has enabled, stating that it has dramatically reduced costs while increasing employee productivity, easing regulatory compliance burdens and reducing overall complexity. This is a perfect example of why many other companies are considering similar consolidation projects.

#### **LARGE RETAILER**

EMA also spoke with the Architecture Manager of a large retailer based in the Midwest United States about his resource consolidation experiences using Citrix, Microsoft and HP. His team is involved in a project in which they are consolidating mostly back-office systems; they have been a Citrix customer since the late 1990s and have been enjoying the benefits of the Citrix access infrastructure for a number of years.

The retailer, which has approximately 160 stores, recognized that its previous architecture, which required a file and email server in each store, was inefficient and required an enormous amount of maintenance and troubleshooting. Thanks to the Citrix infrastructure and a migration from Novell to Microsoft, the company was able to easily migrate its old client/server architecture to be fully centralized, reducing the number of servers from 152 (one in each store at the time) to 40 located in the data center. Another benefit of server centralization was that the



company was able to migrate from local file servers (provided by the store servers) to a central network-attached storage (NAS) solution by HP, giving the company even more scalability than a simple server consolidation project would have made possible.

## CONCLUSION

It is vital to understand that many fundamental resource management technologies are real and available, and IT organizations throughout the world are implementing them today. The benefits of investing in these visions are manifold; significant reductions in IT expenditures and increased overall IT efficiencies, decreased risk, and increased levels of regulatory compliance all result in large positive contributions to their company's bottom line.

It is worth reminding those in IT that their best chances for not only surviving but thriving in today's economy is to find, propose, and implement projects that provide a significant ROI to the business while providing outstanding service to IT's consumers. Taking a business service approach raises the awareness of the business benefits that IT provides to the enterprise. IT needs to evolve its reputation from that of a cost center to that of a profit center – and resource consolidation projects not only make CxOs and employees happy – they also delight shareholders and investors.

EMA interviewed three different IT managers from three vastly different companies in three distinct market verticals that have each reported a significant return on their investment that they derived directly from resource consolidation and management technologies. If your company has not yet advanced up the IT maturity scale enough to leverage these technologies, you should – your competitors are probably already ahead of you!

## About Citrix

Citrix Systems, Inc. (Nasdaq:CTXS) is the global leader in access infrastructure solutions and the most trusted name in secure access for enterprises and individuals. Nearly 50 million people in more than 120,000 organizations around the world use Citrix every day. Our software gives people secure and well-managed access to business information wherever it lives-on demand. Citrix customers include 100% of the *Fortune* 100 companies, 99% of the *Fortune* 500, and 92% of the *Fortune* Global 500. Based in Fort Lauderdale, Florida, Citrix has offices in 22 countries, and approximately 7,000 channel and alliance partners in more than 100 countries. For more information visit <http://www.citrix.com>.

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