

CASE STUDY

North American Financial Services Company Achieves Rapid Business Growth Through Server Virtualization Using BMC Capacity Management

Sponsored by: BMC

Eric Hatcher

Randy Perry

June 2008

EXECUTIVE SUMMARY

A large North American financial services company has achieved years of double-digit sales and revenue growth. To sustain its commitment to customer service while keeping IT costs in check, the organization deployed the BMC Capacity Management solution (including BMC Performance Assurance and Solution Labs Inc. Performance Surveyor) to monitor the servers assigned to its paying customers, which make up the organization's top 3 tiers of accounts. The BMC solution gives the organization sweeping abilities to monitor its system capacity, detect errors before they expand into potentially fatal problems, and maintain maximum uptime. Now, the organization resolves errors in minutes rather than hours, has cut its downtime in half, and has seen a 268% return on investment with an average of \$4 million in benefits annually.

In the past, when the organization's system appeared to lack enough capacity, the IT department would just add more servers, which rarely solved the problem. Often, the real issue was something other than the amount of system memory. With the BMC solution in place, IT can see not only how much memory is available but also what other issues are causing system degradation. By no longer simply throwing servers at the problem, IT has been able to avoid unnecessary spending on boxes. In fact, next year, the organization will not add any server boxes — not only because it will have maximized usage of its current infrastructure but also because it is turning to virtualization, adding the virtual equivalent of 150 servers next year.

The value proposition of BMC Capacity Management is clear. In this case study, payback from the investment occurred within 20 months, and the North American financial services company can expect a \$2.2 million return annually per 100 IT staff.

INTRODUCTION

The North American financial services company offers services in personal, commercial, private client, and investment banking. The organization employs more than 30,000 people in North America.

CHALLENGES

Supporting Business Growth

As a diversified financial services provider, the organization has many business arms — including online banking, personal finance consulting, credit cards, and mortgage — each tasked with over 30% growth rates annually.

To support this rapid growth, IT operations needed to add, on average, 200 servers per year to the existing heterogeneous server infrastructure (five operating systems for its application servers, including Windows and four flavors of Unix) and either leverage existing IT resources or grow the IT staff.

However, while these multiple approaches were effective in supporting the overall business growth, IT costs were growing rapidly. What's more, the organization's overall server utilization rate was 15–20%, which was very inefficient by traditional IT metrics.

To help grow the business efficiently while maintaining IT service levels and containing costs, the IT department had to plan for — and manage — capacity more effectively. That's why, in 2005, the organization embarked on a virtualization program.

Supporting the Virtualization Initiative

According to an IT manager at the company, IT was "flying blind" as it looked at consolidation and virtualization scenarios. The IT organization relied on system administrators to provide periodic snapshots of capacity, but these snapshots offered only a glimpse into one moment in time. This fragmented reporting and monitoring forced IT to guess at the capacity patterns rather than actually see them. Moreover, it was not able to predict peaks of utilization that could lead to performance degradation and even server shutdowns. Therefore, as a preventative measure, the IT department simply overprovisioned capacity, making efficient growth more difficult. If the servers did shut down, the IT staff spent extensive troubleshooting efforts isolating the servers that were the source of system outages, causing hours of downtime for many users and impacting business revenue.

THE SOLUTION

BMC Capacity Management

The BMC solution ensures that the capacity of the IT infrastructure matches the evolving demands of the business in a cost-effective, timely, and accurate manner. Using advanced analytical techniques, the solution analyzes current and historical performance to predict future resource capacity needs while optimizing IT resources to deliver higher service availability and performance.

In a single solution, BMC Capacity Management provides all the tools to plan, implement, and manage a consolidated, virtualized server environment. The solution supports green IT initiatives by helping to consolidate workloads and reduce requirements for additional capital expenditures. This is accomplished through extensive performance analysis reporting, in-depth modeling, support for best-practice capacity management processes, and out-of-the-box integration with other business service management (BSM) solutions from BMC Software.

THE ORGANIZATION SELECTS THE BMC CAPACITY MANAGEMENT SOLUTION

The organization selected BMC Capacity Management because of its comprehensive capabilities and also because it worked well with the organization's existing management environment. There was particular value in workload analysis, predictive modeling capabilities, and multiplatform support (including support for virtualization platforms).

Prior to implementing the BMC solution, the organization knew which hardware was deployed and where it was located but had no systemwide view of capacity. Using the BMC Capacity Management solution, the IT team is now able to identify which servers to virtualize by tracking usage across the entire server environment. As a result, IT now has a holistic view of how much capacity applications are using and can shift demand to servers with capacity and lower overhead. What's more, the solution's modeling capabilities allow IT staff to build "what if" scenarios to determine how to address adding users, adding capacity, changing server configuration, or adding new workloads.

With BMC Capacity Management, the organization's IT staff can track its systems, view data on server capacity (down to the second), identify peak usage times, and develop accurate reports over time — all of which aid greatly in its decision-making process.

Implementation

The organization rolled out an initial deployment of BMC Capacity Management across 150 servers. This initial rollout took two years because IT phased in the integration and performed numerous quality tests on the servers. Each server required, on average, only four hours for the initial BMC Solution setup. Therefore, the actual deployment itself required only two to three months for all 150 servers.

Today, the BMC solution supports approximately 800 servers and is used to monitor capacity for its paid users — the Platinum, Gold, and Silver accounts. Prior to the BMC solution implementation, the organization's growth rate would have required approximately 200 new servers per year. Now IT is able to use the BMC solution's advanced analysis and virtualization planning capabilities to effectively virtualize underutilized server resources, accommodate both current and future capacity requirements, and defer further server purchases.

Benefits

Qualitative Benefits

The BMC Capacity Management solution effectively enables IT to support the organization's growing business. With the BMC solution in place, IT can better support the increasing number of applications by adding the exact amount of capacity needed, thus eliminating overspending on server hardware. BMC Capacity Management also helps predict future capacity needs by enabling IT to model hypothetical situations so the team can now see how its expected client growth rates and changes to the system will affect the servers' performance.

The graphing capabilities in BMC Performance Assurance and reports from Solution Labs Inc. Performance Surveyor help IT maintain *ITIL Level 4* certification status by providing quarterly server health and growth requirement reports, annual growth plans, and three-year forecasts for financial planning.

Quantitative Benefits

Greater control over server capacity, coupled with the ability to more accurately monitor server performance, enables the organization to better forecast the demands that are placed on its systems as the business grows. As such, the organization realizes significant quantifiable benefits through cost savings and consolidation. Now the IT team not only can plan for service requirements, growth requirements, and expectations of the line of business but also can efficiently support increased demand without having to grow its costs at the same rate.

What's more, in addition to reducing the IT cost to deliver application services, the BMC solution reduced server unplanned downtime and improved IT staff productivity.

Reducing IT Costs Through Capacity Management

Commensurate with business growth, demand for server capacity is growing at the rate of 30% annually. However, through virtualization, the actual growth of server hardware has been — and is expected to be — zero over the next two to three years.

As such, the organization's goal is for server growth to remain flat over the next one to three years. This goal is based on IT's ability to maximize the utilization of newer, more powerful servers and replace older servers as part of the natural replacement cycle. In other words, the organization plans to put more applications on fewer, more powerful machines. Virtualization will help reduce hardware and maintenance costs while enabling quicker application deployments. As a result, the organization will increase IT flexibility and responsiveness to dynamic business changes. The organization will launch new applications on the virtualized servers, thus avoiding hardware setup and configuration or additional memory requirements associated with the deployment of new applications.

As a result of these efforts, the organization reduced its initial costs by an average of \$39,072 per year over the past seven years. Due to the deployment limitations discussed previously, the initial implementation rate was modest, but over time, as the organization moved closer to full deployment, the per-year benefits increased. As the BMC Capacity Management solution is utilized more, IDC estimates that the solution will save the organization even more — \$417,411 per year over the next three years.

Unplanned Downtime Reduction

Unplanned downtime is always a critical issue facing any modern financial services provider. Although BMC was selected based on its ability to support virtualization, the organization has also used the solution to recognize significant benefits from reducing service outages.

As a result of the BMC deployment, the organization is able to discover the specific servers that are causing system outages and memory leaks. BMC allows the IT organization to detect memory leaks over a period of time, evaluate their significance and impact, and determine which leaks are critical enough to require the system to be stop-started. Because BMC's analysis capabilities go down to the process level, IT personnel can determine whether the service or the server is the cause of the problem. Before BMC, there was no way to know which server would crash because it ran out of memory, and constant reboots became a disruptive part of everyday life.

Now, the organization can graph the memory leak, which process is causing it, and when the server would fail. What's more, IT is able to notify the affected business unit in advance, thus avoiding adverse user impact. Finally, IT now has a stop-start feature that enables it to rethink memory usage moving forward.

Before deploying the BMC Capacity Management solution, IT experienced 40–50 issues per quarter. Now, IT estimates that it avoids an average of 10 crashes per quarter with each outage lasting one to three hours.

In addition to solving these memory issues, BMC also helps IT reduce mean time to repair (MTTR). Prior to the deployment of the BMC Capacity Management solution, some capacity issues could last for months due to IT's inability to identify the problem or its cause. A prolonged, tricky problem with multiple issues would take months to detect and fix. Moreover, since many of the problems were related to applications, not capacity or performance, simply upgrading hardware did not resolve the problem. Now, IT can quickly identify the cause — whether it is the CPU, I/O, memory, network, application, or operating system — and resolve simple issues within 10 minutes (with more complicated problems usually taking no more than eight hours).

Based on a reduction in the number and duration of crashes per quarter, the organization saved an annual average of \$3.9 million over the past seven years in total downtime costs. With the deployment completed, the downtime benefits per year will increase. Over the next three years, the organization can expect to save an average of \$6.2 million per year.

IT Productivity Increase

The organization has four analysts who perform capacity planning on its servers. These analysts are also responsible for deploying, upgrading, and maintaining the IT infrastructure. Currently, the four analysts spend one-third of their time dealing with infrastructure and two-thirds of their time engaged in capacity planning. This productivity ratio has improved from half of the time spent on maintenance and half on capacity planning over the past two years through a combination of better policies and practices combined with the learning curve. IT's goal is for analysts to spend only 20% of their time maintaining the environment, using the BMC solution to further automate reporting across their production environment. At a \$100,000 annual loaded salary for each analyst, the organization has realized an average of \$28,095 per year in IT productivity over the past seven years and will see an average of \$68,712 in annual IT productivity over the next three years.

BMC BUSINESS VALUE AND RETURN ON INVESTMENT

To quantify the business benefits of the BMC solution, IDC has developed an ROI methodology that measures the costs and the sum of the benefits over a seven-year period. It is important to note that the three-year calculations in the previous sections present forward-looking estimates, while the ROI analysis focuses on concrete data from the time of the BMC deployment.

IDC's methodology calculates ROI in a three-step process:

1. Ascertain the investment made in the purchase and implementation of the solution and the associated training and maintenance costs.
2. Measure the benefits associated with reduced IT costs, increased system uptime, and IT staff productivity.
3. Calculate the payback period and ROI for the deployed solution. From the results of the interviews, IDC was able to calculate the average payback period and rate of return from investing in BMC Capacity Management, as well as the net present value of the savings.

Initial costs include not only the purchase of the software but also database licenses, infrastructure servers, training, consulting, and the building of a lab to pretest the entire environment.

Table 1 details the organization's capacity management costs.

TABLE 1		
The Organization's Capacity Management Costs (\$)		
Investments	Initial	Annual
Hardware/software	1,000,000	330,000
Setup/infrastructure	720,000	528,000
Training	100,000	5,000
Consulting	120,000	
Total	1,940,000	863,000

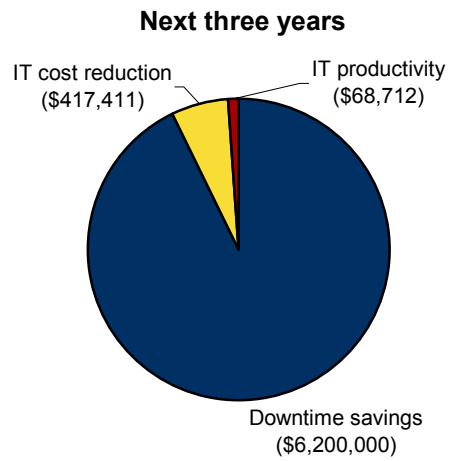
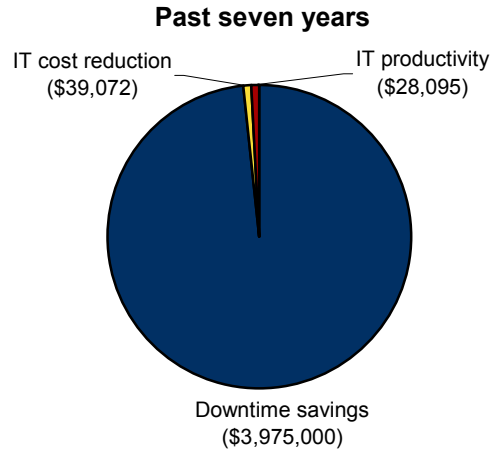
Source: IDC, 2008

Figure 1 displays the annual benefits realized by the organization. The first pie chart displays the proportions of benefits realized in the past seven years, and the second pie chart is based on future projections.

While the majority of the total benefits come from the reduction in downtime, the organization also enjoys lower IT costs with higher productivity.

FIGURE 1

Average Annual Capacity Management Benefits



Source: IDC, 2008

Table 2 shows the seven-year cost of investment, benefits, payback period, and ROI that resulted from the analysis.

TABLE 2**ROI Analysis for Deploying BMC Capacity Management**

Metric	Value
Seven-year cost of investment	\$7,981,000
Annual benefits	\$4,042,167
Net present value of seven-year savings	\$19,341,025
Payback period (months)	19.9
Seven-year ROI	268%

Source: IDC, 2008, based on data provided by the financial services organization

FUTURE PLANS

The organization intends to continue using the BMC Capacity Management solution to support virtualization and deliver even more efficient services. Its goal is to achieve 80% CPU utilization throughout the server environment, eventually extending the higher reliability and services to all the business units and 1,000+ servers. The organization will continue to rely on BMC to factor in enough redundancy to provide failover contingency at an efficient rate.

Improvements in technology will be pursued, especially solutions that optimize the data available through the BMC solution.

The IT group has high expectations for future improvement, with one manager saying, "We can identify 50% of our environment as a candidate for consolidation. That means that we have a 50% potential to improve."

Copyright Notice

External Publication of IDC Information and Data — Any IDC information that is to be used in advertising, press releases, or promotional materials requires prior written approval from the appropriate IDC Vice President or Country Manager. A draft of the proposed document should accompany any such request. IDC reserves the right to deny approval of external usage for any reason.

Copyright 2008 IDC. Reproduction without written permission is completely forbidden.