



Cisco UCS and BMC BladeLogic

» BMC Software enables stateless computing with Cisco Unified Computing System and BladeLogic

BEFORE

- » Increased server capacity needs meant BMC was faced with adding more data center floor space - at a cost of millions
- » Widely varying server configurations required IT to spend 80% of their time supporting older hardware
- » Encountered frequent IP address and worldwide name conflicts when deploying virtual machines

AFTER

- » Private cloud supports greater volume with fewer servers – enabling future expansion without investing in more floor space
- » Dramatically reduced configuration time through streamlined hardware and automated and self-service provisioning
- » BMC BladeLogic prevents IP and worldwide name reuse, monitoring every UCS instance from a single pane of glass.
- » Anticipates a 10% productivity gain immediately, and short-term hardware savings of \$200,000

With more than 17,000 servers spanning four globally-dispersed data centers, BMC Software's development environment is literally the backbone of the business. As a leading developer of IT management software, BMC actively develops, markets, and supports hundreds of products, each requiring development and staging configurations that differ dramatically from each other. Complexity doesn't end there, however – a production environment runs ERP, messaging, CRM, and other critical business applications, which are also supported by a separate disaster recovery facility.

The result is a highly complex computing environment that demands an incredible amount of flexibility, while ensuring standardization in the environment. As development teams explore new ideas or require additional capacity, or business units require compute resources to support new initiatives, systems (servers, network and storage) must be provisioned quickly and cost effectively to stay on schedule and support revenue growth.

Recognizing the constant demand for compute resources (and subsequent operating and maintenance costs), Mahendra Durai, Vice President of IT Infrastructure & Operations at BMC Software decided to fund a proof of concept initiative, looking for cost-effective solutions that offered enhanced flexibility, efficiency, and ease of use over many of the rack and blade servers already in BMC's data centers.

"Optimizing real estate capacity, eliminating cables and cutting power consumption to keep power, heating and cooling costs down were all top priorities," Durai said. "From day one, though, this project had to be about much more than that. As we advance the strategic role of our private cloud, our hardware infrastructure must be able to address the dizzying speed of change in the environment as our entire infrastructure becomes a service."

GEOGRAPHY

More than 17,000 servers spanning four globally-dispersed data centers

SOLUTIONS

Cisco Unified Computing System (UCS)
BMC BladeLogic for Cisco UCS

CHOOSING THE RIGHT BLADE

Durai tapped Chuck Hoekstra, Lead Systems Engineer at BMC Software, to help lead the effort. While BMC had made every effort possible to standardize on hardware vendors and platforms, “you could still pick 10 servers at random in the data center and when you look at the internal components, they would be different, from their motherboard to their network cards, how they connect, and what storage they use,” Hoekstra said. So many different configurations meant the IT department was not optimal in supporting and managing disparate server configurations. “We recognized that we were at a crossroads – we could spend 80% of our time supporting older hardware, or we could build a much more pliable infrastructure and reallocate that time to advancing the effectiveness of our IS&T organization.”

Less than a year prior, BMC announced a strategic relationship with Cisco that would package BMC BladeLogic with Cisco’s Unified Computing System, a hardware solution designed to unite network, computing, and virtualization resources into one chassis. “Given that we were internally leveraging the benefits of the Bladelogic solution in our enterprise, the promise of storage virtualization and ‘stateless computing’ caught our interest. Moreover, the Cisco solution offered us improved memory, disk space and I/O connectivity compared to the solutions that were currently being used,” Durai said.

Running “high horsepower” applications like Microsoft Exchange Server or SQL Server on a blade server meant adding costly customizations, often interfacing the blade to a fiber channel switch or pass-through, and a storage area network (SAN). To be even remotely cost effective, each blade in the chassis would have to leverage the switch or SAN. In BMC’s dynamic, highly virtualized computing environment (like most IT organizations today) very few projects are likely to require the same fixed set of resources.

These realizations made the Cisco UCS a compelling “must-use” for Durai and Hoekstra. According to Hoekstra, they discovered that the Cisco UCS provides all the advantages of the low-profile blade server form factor, without the need to invest in a host of custom hardware add-ons for each one-off project that requires a server. “In our main data center, if we work very hard we can squeeze 12 traditional rack-mounted servers and their supporting components into a rack before we ran out of space,” Hoekstra said. “With Cisco UCS, we are able to get sixteen blades into a rack, and still fit six to eight more traditional rack servers on top of that – without a spike in power and cooling needs. Cisco UCS lets us pretty much double the density of our racks.”

Hoekstra is quick to point out that Cisco UCS is not unique in its ability to increase rack density; it’s the combination of its small footprint, coupled with its all-inclusive networking and virtualization solutions and lightweight power consumption that make it extremely efficient. “The optimal use of power and the reduction in heat output from these servers ensures that we don’t create any hotspots in the datacenter, while being able to fill a rack” he said. “The Cisco UCS also allows us to reduce our expense in network and storage hardware, but most importantly the improved automation capabilities provided by the BladeLogic Solution for the UCS allows for reduced configuration time, which is extremely important for both the provisioning administrator as well as the end user.”

The results speak for themselves. “If we focus heavily on deploying Cisco UCS, we can actually reverse the organic growth of rack space and power consumption in our data centers. Three years down the line, we will be using less rack space and less power than we were using last April,” Hoekstra said. “From the perspective of data center square footage alone, deploying Cisco UCS saves us a million dollars in short-term expansion costs right off the bat.”

CLOUD CONTROL

Although getting more from every square foot of rack space was a stated goal of the proof-of-concept project, Durai and Hoekstra agreed from the start that improving the capabilities of BMC’s private cloud strategy would be given equal weight in the selection criteria.

To this end, the combination of Cisco’s UCS and BMC BladeLogic’s configuration speed and flexibility were as much a selling point for BMC IT as its form factor and robust feature set. The lights out data centers at BMC only use “smart hands” – employees who do “racking and stacking” and minimal level 1 support tasks. In this type of a support model, the UCS improved productivity and efficiency. Configuration challenges that typically happen in the coordina-

tion of the first time installs are dramatically reduced. Hoekstra says it was not uncommon to go back and forth 3 or 4 times to get things right on a typical physical server. "And it would be even 10 times harder on a standard blade server. These are now things of the past," Hoekstra said.

BMC has found the Cisco UCS "amazingly easy" to bring online and configure remotely. "I can literally ship a UCS to our data center, tell the technician which cables route to which ports of the fabric interconnect, and it's done," Hoekstra said. "It automatically picks up the settings I configured into the fabric interconnect's domain, whereas a standard blade chassis would require repeating your custom configuration for each and every server."

Out of the box, Cisco's UCS Manager software allowed BMC administrators to set important configuration settings for each of the blades. BMC BladeLogic for Cisco UCS expands on that basic functionality, bringing a host of unrivaled configuration and management options to the UCS platform. "BladeLogic allowed us to manage UCS chassis in multiple datacenters from a single pane of glass," Hoekstra said. "Cisco's UCS Manager let us manage one chassis in Phoenix and another in Houston, but we had to use two instances of the software to do so. BladeLogic changes that - a single instance manages every UCS chassis we deploy, globally, end of story."

Cisco UCS Manager also allowed BMC to set up MAC pools and worldwide name pools quickly straight from the box. But BMC BladeLogic for Cisco UCS takes it a step further, keeping track of which MAC addresses and worldwide names BMC has used from its central pool and automatically preventing reuse - preventing IP conflicts that leave end users stranded. In a dynamic data center environment where thousands of virtual machines are being provisioned, operated, relocated, and de-provisioned at any given time, this has proven to be invaluable to BMC's own virtual operation.

"BMC BladeLogic allows our administrators to select an OS to deploy, choose a blade to deploy it to, and run compliance reports, post-provision jobs, and remediation jobs - it really is a 'Swiss Army Knife' for IT administrators," Hoekstra said. "By provisioning from BMC BladeLogic, the server is automatically added to the BladeLogic environment for future management, patching, and compliance." For BMC, this meant workflows that once took hours and required multiple administrators and tools could now be simplified and automated using BladeLogic. "We shaved hours off our server builds," said Hoekstra, "and we can delegate a lot more to our lower cost tier 1 support." The ease-of-use benefits extend far beyond just BMC's IT organization. "Services in our private cloud are ordered directly from a service catalog, through our BMC Remedy service desk," Durai explains. "Our employees can literally point and click to order a server. In minutes, it is up and running and they are in full control," Durai said. "BMC BladeLogic for Cisco UCS keeps us from 'shooting ourselves in the foot,' accidentally knocking another VM offline due to duplicate naming or addresses. Anyone who manages this amount of virtual complexity is nodding their head with me right now; they know how huge this feature really is."

"Just the ability to expand and contract capacity dynamically should yield a 10% productivity gain right out of the gate, compared to a conventional server environment," Durai said. "We'll also reduce procurement of new servers by an additional 10% this year alone - saving at least \$200,000."

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MAHENDRA DURAI
VICE PRESIDENT, I.T. INFRASTRUCTURE & OPERATIONS
BMC SOFTWARE

UNIFYING ON UCS

"We started with a proof of concept," Durai said, "and we were able to see the benefits almost immediately. Provisioning components is drastically easier. We can now automate network and storage provisioning without customization. We're literally managing our software factory and production environments as private clouds. And Cisco UCS with BMC BladeLogic has been the true enabler of all of this."

Will BMC expand its investment in Cisco UCS? "Absolutely, we already have started to roll out more UCS" Durai said. "Cisco UCS allows us to not only provide our infrastructure as a service to our end users internally, but to do so at costs that dramatically undercut what the same services cost just a year ago. So yes, I'd say we're just getting started."

ABOUT CISCO UCS

The Cisco Unified Computing System™ is a next-generation data center platform that unites compute, network, storage access, and virtualization into a cohesive system—designed to reduce total cost of ownership (TCO) and increase business agility. The system integrates a low-latency, lossless 10 Gigabit Ethernet unified network fabric with enterprise-class, x86-architecture servers. The system is an integrated, scalable, multichassis platform in which all resources participate in a unified management domain.

BUSINESS RUNS ON I.T. I.T. RUNS ON BMC SOFTWARE.

Business thrives when IT runs smarter, faster, and stronger. That's why the most demanding IT organizations in the world rely on BMC Software across both distributed and mainframe environments. Recognized as the leader in Business Service Management, BMC provides a comprehensive and unified platform that helps IT organizations cut cost, reduce risk, and drive business profit. For the four fiscal quarters ended March 31, 2010, BMC revenue was approximately \$1.91 billion. Visit www.bmc.com for more information.

