



INTERNET RESEARCH GROUP

The Road to the Private Cloud

The Value CA Technologies

Tools Bring to Vblock™

Infrastructure Platforms

Internet Research Group

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About The Internet Research Group

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The Internet Research Group (IRG) provides market research and market strategy services to product and service vendors. IRG services combine the formidable and unique experience and perspective of the two principals: John Katsaros and Peter Christy, each an experienced industry veteran. The overarching mission of IRG is to help clients make faster and better decisions about product strategy, market entry, and market development. Katsaros and Christy published a book on high tech business strategy *Getting It Right the First Time* – Praeger, 2005 www.gettingitrightthefirsttime.com.

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1. Overview

Data center IT is evolving more rapidly today than ever before, catalyzed by the impact of server virtualization and the changes it enables; an evolution that has been described as “the road to the private cloud.” The vision is enticing and promises significant improvements in the cost of IT and the agility of the solution.

Not surprisingly, the devil is in the details, and how we deal with those details is important because it determines when we get the value and how much value is received. Efficient optimization of a dynamically-changing virtual environment requires a unique combination of automation, self-service, compliance, and capacity management tools. CA Technologies and VCE have teamed together to offer best-of-breed solutions for defining and publishing standardized IT offerings from the infrastructure level all the way up to the business service.

2. Vision of the Data Center of the Future

This is the vision:

- IT becomes an access portal, where automation has replaced staff-dependency on work plans.
- The data center is a “lights out” operation with racks of servers and storage.
- The IT staff works in an operations center, monitoring the operation of the highly-automated data center, scheduling the repair or replacement of failed equipment, and ordering and adding (or upgrading) equipment periodically.
- The CIO has transformed IT to be “service-oriented,” with most effort applied to forward-looking tasks and little to ongoing operations. By doing so, IT has become more integrated with the rest of the business.

We are moving toward “on demand” and “autonomic” computing (driven by user requests and automatic delivery, respectively). These ideas are not new; what’s new is the practicality of actually doing it.¹

Technically, cloud computing exists today in the form of services like Amazon Web Services (AWS) or Microsoft’s Azure. Many enterprises are moving in this direction, but converting legacy IT into this new vision is complicated, costly,

¹ In the discussion here we’ll use the term “Private Cloud” to talk about this vision, although the term cloud is used in many other ways.

and time-consuming. These complications and solutions are at the center of our story about CA Technologies partnering with VCE to offer IT management of private cloud solutions for Vblock platforms.

3. What Has Changed?

Autonomic/on-demand/utility computing didn't happen sooner because it was too technically difficult, given the systems and technology in use at the time. To implement utility computing in 2000 required automating the provisioning and administration of software all the way down to the hardware ("down to the bare metal"), across a diversity of software stacks and platforms, and various underpinning hardware architectures as well. It was just too complicated.

Fortunately for our current attempts, the world of computing has changed dramatically in the last ten years:

- **We only have to worry about one computer architecture (the x86).** Ten years ago, many other computer architectures played an important role in enterprise IT (e.g., IBM Power, HP Precision, Sun, SPARC). But over the last decade, Intel's process knowledge, manufacturing effectiveness, and the resulting economies of scale have prevailed, and made the much smaller production volumes of the proprietary system vendors no longer economically viable (it takes hundreds of millions of dollars to engineer and release a new microprocessor chip).
- **We don't have to worry about which software "stack" is used anymore.** The chances of two arbitrary applications being able to run on the same server were remote, and the cost of porting an application to a new stack (or even new version of the operating system) was high. The introduction of production quality virtualization solved this problem. Today most x86 workloads can share the same virtualized server.
- **The potential of automating data center operations is clear.** The mega-scale Web properties such as Google pioneered the creation of homogeneous, highly-automated data centers.² These Web sites demonstrated both that commodity (volume) technology could be used to build high-quality and high-availability systems, and that these systems could be managed with remarkably small operational teams. The potential of dramatically reducing IT OpEx, both through the simplification of a common architecture and virtualization, and then greater automation, is a very realistic goal.

² Many of these sites do not use virtualization, but they do have very homogeneous workloads and are similar to aspects of enterprise data centers.

4. Service-Oriented IT: Automation Is the Key

From a CIO's perspective, a key objective is to evolve his organization toward a service-oriented model, where manual, time-consuming processes are automated whenever possible (the provisioning of a new server). But process automation is difficult unless the underlying infrastructure and services are already preconfigured and integrated.

Another big chunk of the remaining complexity can be eliminated by creating a system fabric for the data center (the prescriptive use of a specific server model, specific storage devices, and specific network devices). The Vblock platforms from VCE are such a standardized fabric element.

5. VCE and Vblock Platforms

VCE is a joint venture between EMC, Cisco, VMware, and Intel. VCE was announced in the fall of 2009. It has evolved in the last two years into a significant business (>800 employees) with the mission of engineering and manufacturing integrated systems called Vblock platforms that include a Cisco UCS system, a matched EMC storage subsystem, a unified EMC/UCS management system, and VMware operating software. Vblock platforms are manufactured into fully integrated and assembled hardware and software systems, ready to deploy and use rapidly. The systems are engineered so that the integration work is completed and tested before entering the data center or end-user premise. VCE's aggressive goal is to ship a fully integrated system on the day that the key component (typically a VMware software version) is released.

Vblock platforms merge the management capabilities of a Cisco UCS system and the EMC storage subsystem into an integrated management subsystem. The Cisco UCS system – an innovative synthesis of server, networking, and management into a single system offering – can be configured to a particular hardware “profile” without having to execute any software on the server. The UCS management system presents a relatively simple system management offering, reducing administrative complexity and simplifying higher-level management tasks.

Vblock platforms bring a set of clear values to the market:

- A complete system module with precisely specified software and hardware components that have been carefully integrated, tested, and characterized.
- A higher level management interface.
- A building block for a standardized data center infrastructure.
- Accelerated time-to-use and value.

Vblock platforms are criticized by competitors as both expensive and prone to “vendor lock-in” (choices made for you that constrain your flexibility). The facts look quite different if the issue is time-to-value. In the end, few enterprises will achieve any business differentiation at the level of data center fabric choices. Using a standardized fabric is likely to be as good a choice as the customer’s technical team would have made (or better), and has the advantage that the choice is exactly the same as many other customers, and is already reflected in existing integrations with other software and management offerings. Even if the customer chooses to use a standard and uniform set of components (e.g., use the same Vblock platform components, but do the integration themselves), they have to repeat all of the engineering and manufacturing steps that VCE performs whether software or hardware components are upgraded. It is unlikely that any single customer can do repeated engineering and testing as well as VCE does, and it is clear that the effort is unlikely to be reflected in any business differentiation. Yes, using Vblock platforms constrains your component choices. Whether or not the price reflects a cost or a saving isn’t really clear unless you carefully examine the customer effort it replaces.

6. Integrated Management

In relatively few cases, Vblock platforms are used by themselves. In most cases, Vblock platforms are added to a pre-existing, at best, partially virtualized, data center, as part of the process of incrementally virtualizing the resources and moving toward on-demand cloud computing, in which case, it is highly likely that the customer already has a significant investment set of management tools. In most cases, it is easier to integrate Vblock platforms into a pre-existing data center computer fabric than it would be to use other virtualized systems, because Vblock platforms are standardized system products with well-defined, high-level management features. The ease of incorporating Vblock platforms into existing environments is another example of the lifecycle cost and time-to-value benefits of using integrated systems.

7. Integrated Applications

VCE's qualification, characterization, and integration efforts aren't limited to the core system components. VCE also works with a set of external partners (companies other than the VCE parents). In some cases, the effort is focused on the integration of additional functionality that a meaningful subset of VCE customers wants. CA Technologies falls into this category. The benefits of the integration are straightforward:

- The use of that software has been characterized and qualified.
- The integration to EMC Unified Infrastructure Manager (UIM) and VMware vCenter are understood and automated.
- The resulting configuration can be adapted for multiple customer needs, and not specific to just one.

VCE also works with large application suppliers such as SAP. The result is a tested and characterized integration (the performance of an integrated version of SAP on specific Vblock platforms is understood by the customer *a priori*). This risk reduction understandably makes a material difference in the willingness of the customer to move an important application onto new and virtualized hardware.

8. VCE Value Proposition

Vblock platforms make a significant contribution to complexity reduction above and beyond what comes with server virtualization. Vblock platforms enable the use of a standardized computer system ensemble where the standard is shared between multiple customers, compared to the diversity and individual complexity of today's data centers. This standardization delivers economies of scale in the engineering and testing of bigger pieces of the IT fabric (including "helper" software and key applications) as well as simplifying the installation and support of a customer, and the integration with other key pieces of management software.

9. CA Technologies and Vblock Platforms

The fact that CA Technologies has worked with VCE to integrate, test, and characterize CA Technologies management products has obvious value to a VCE customer that has an investment in CA Technologies management software.

In fact, the value of the partnership is much greater, which becomes clear if you understand a little about the history of CA Technologies. CA Technologies has over 30 years in providing management tools and systems for mainframes and enterprise data centers. In many ways, private cloud systems are very much like mainframes, especially in challenges and values of management. CA Technologies has historically taken a vendor-neutral position in the marketplace, striving to provide value to customers by helping them integrate, manage, and coordinate the various systems and system management tools that they have, rather than pressuring the customer to replace competitive offerings, or emphasizing a particular vendor's systems (HP and IBM both participate as management system vendors, but also sell systems).

10. CA Technologies

CA Technologies has a lot of institutional and customer experience with the management of mainframes and what it takes to coherently integrate the many management solutions used today in data centers. History strongly suggests that IT will have to solve the same problems on the road to the private cloud, and require whole product solutions in these areas.

- Planning and design functions
- Assurance functions
- Security functions
- Automation and integration functions
- An overall model for management

The common thread is automation. Automation is necessary in order to implement an on-demand environment and by doing so, to evolve to a service-oriented model of IT. Virtualization made broader virtualization practical by providing the automation of server provisioning, and building on the automation of application provisioning. But automating all of a data center is a much more complex task in the same sense that designing, manufacturing, and servicing a car is a lot more complicated than driving it and yet essential to an excellent driving experience.

11. CA Technologies Products

Within the suite of products that CA Technologies and VCE have integrated, the following functions are added to the Vblock platforms offering:

- **Planning and design capabilities:** The road to the private cloud is an ongoing journey for most customers characterized by the virtualization of additional applications and the growth in capacity of already virtualized applications. **CA Capacity Management Suite** ensures that adequate infrastructure capacity is reserved for sustained operation of business services. Configuring clusters, balancing VM's and hosts, optimizing installations, and determining where to place workloads are some of the uses for this product. Complimenting this product, **CA Virtual Placement Manager** uses patented analytics to allow an administrator to determine an accurate capacity for a given virtual server. It reduces the likelihood of VM sprawl and stall, and under-utilization of critical infrastructure resources.
- **Assurance functions:** In a legacy data center, applications are managed by a set of dedicated administrators whose responsibility includes monitoring the performance of the application and, in the case of performance issues, finding the cause of the performance problem and remediating it. In an automated data center, most of this assurance and remediation function must also be automated. Several CA Technologies products are available to address these concerns: **CA Service Operations Insight** monitors and manages services that reside on Vblock platforms in real time, and allows pinpointing of potential problems before they impact your business. **CA ecoMeter's** proprietary Management Information Base collects energy utilization data from Cisco UCS and power distribution units. **CA Spectrum** provides root-cause and impact analysis to ensure the health and reliability of the applications and services delivered on Vblock platforms. **CA eHealth** monitors performance by collecting key performance metrics from Vblock platforms. **CA eHealth Performance Manager**, a component of **CA eHealth**, analyzes the data, identifies performance issues, and then alerts the administrator before users and services are affected. Finally, **CA Business Service Insight** is used to measure performance against SLA's that are bound to contractual obligations.
- **Security functions:** While a given mainframe was often dedicated to some specific set of business functions, a private cloud necessarily serves many different tenants. For many reasons, ranging from basic business governance to regulatory compliance, it's essential that the data and applications of these clients stay separated and protected. **CA Access Control for Virtualized Environments** coordinates access to virtual machines and hypervisors on Vblock platforms. This protects the virtual environment from unauthorized access, audits user activities, and maintains compliance.

- **Automation and integration functions:** Automation is central to the construction of a private cloud. For today's VCE customers, the virtualized part of a data center (e.g., the Vblock platforms) exists within a legacy data center with non-virtualized assets that either haven't been virtualized yet or can't be virtualized in their current form (e.g., don't run on x86 servers). As introduced earlier, CA Technologies has developed comprehensive tool integration capabilities as part of their effort to integrate their many products, many of which originated from separate acquisitions. This integration capability and the technology underneath it are clear assets when it comes to integrating Vblock platforms and the virtualized applications that run on that system with the other hardware and applications. For example, many business processes are automated by a complex of cooperating applications that in many cases may well include non-virtualized elements. Similarly, as part of helping customers integrate and collectively orchestrate many different management functions they own, CA Technologies has developed comprehensive process automation capabilities as well. These automation tools play a fundamental role in the process of automating the data center operation: automating server and application provisioning is an essential element (what virtualization enables), but automating the entire data center operation also depends on automating many other aspects. **CA Process Automation** automates common management tasks on Vblock platforms. It enforces standards and compliance policies and reduces opportunities for human error, while **CA Service Catalog** provides end-users a self-service interface for requesting and managing their own virtual servers provisioned on Vblock platforms.
- **An overall model for complex data center management:** Because CA Technologies has chosen to be platform and tool agnostic, it has necessarily had to develop a model of data center management as a whole in order to have a coherent framework into which the various pieces can be inserted, interconnected, and collectively managed. This overarching system management model and the system design and consulting expertise built around it, are highly valuable to a customer who wants to insert Vblock platform-based virtualized systems within an existing data center.

12. CA Technologies Value Proposition

The road to the private cloud begins with the power of virtualization but ultimately encompasses the necessary solution of many more problems. The CA Technologies IT management solutions for private cloud that have been designed to work with the VCE offering and are co-marketed by CA Technologies and VCE, provide high value in making this journey:

- the integration of the VCE offering with the existing systems
- implementing and automating the joint operation of the VCE and existing systems
- enabling the ongoing migration of applications to the virtualized environment and the growth of already virtualized applications
- enabling creation of service offerings and the monitoring of virtualized services for adequate performance

The reward of a private cloud comes when the data center is fully automated for day-to-day operation, and can be configured as a service-delivery platform. The CA Technologies tools play a very important role in reaching this end and make a material difference in the “time to benefit” with the addition of a VCE system – the time from the delivery of the system to the point where it is delivering valuable business services to the customer.

13. Summary

One of the most important and highest impact trends in modern enterprise IT is the evolution from legacy data center organizations characterized by the concurrent, largely independent operation of multiple application “silos” to what is being called a “private cloud” – a much more uniform and highly-automated data center that can be used as the basis of conversion to a service-oriented organization and operational model.

VMware is leading this evolution with the engineering of the key software layers. Cisco and EMC are driving the evolution of server, networking, and storage subsystems. VCE – a joint venture of these companies along with Intel – has created completely integrated systems, including the integration and characterization of important applications. CA Technologies is providing important system management tools and technology in partnership with VCE that contribute significantly to the ability of their joint customers to automate their data center more completely (thereby improving operational economics as well as improving service quality) and that accelerate the time-to-value of an investment in Vblock platforms (the time at which the system can be productively used).