

White Paper

Innovate, Integrate, and Accelerate Virtualization

with Vblock Infrastructure Packages

By Mark Bowker

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Contents

Introduction	3
Top IT Challenges and Priorities	3
Consolidated Infrastructure.....	6
A New Consumption Model	7
What Matters in a Converged Environment?.....	7
Cisco, EMC, and VMware.....	8
Vblock Infrastructure Packages	8
Unique Service Structure.....	9
Priority Alignment between Top IT and Business Initiatives	9
The Bigger Truth	10

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Introduction

Virtualization across the data center is creating the need for tighter integration of servers, networking, and storage. As a result, data center solutions are more frequently being delivered and consumed as a single unit. [Cisco](#), [EMC](#), and [VMware](#) together are making significant investments in such solutions to enable IT to extend the value of virtualization for business applications in order to further improve IT efficiency and agility, and accelerate the transformation of IT into “IT as a service.”

There is tremendous value in an integrated solution such as the integrated Vblock Infrastructure Packages from Cisco, EMC, and VMware. They offer some of the best technologies available today and have the potential to save IT operations a tremendous amount of time integrating and testing disparate infrastructure solutions. The Vblock Infrastructure Packages provide:

- Improved time to market for business application workloads.
- End-to-end management to improve IT responsiveness.
- Lower security and compliance risks.
- Backup, recovery, and disaster recovery solutions designed for a highly virtualized environment.

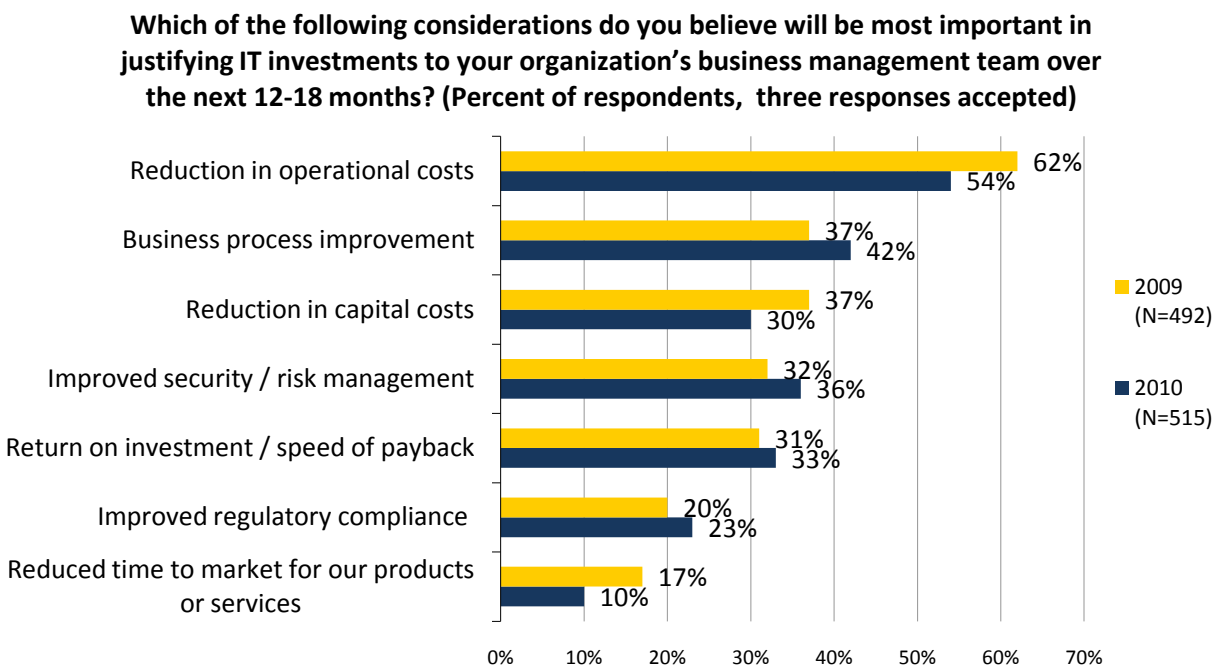
ESG research shows that expanding the use of server virtualization is a top priority. Therefore, IT operations must be ready to accommodate the growth and scale of business production workloads while maintaining performance and reliability. IT will need visibility into the infrastructure in order to ensure the proper placement of workloads, to efficiently troubleshoot, and to proactively respond to performance issues. How can IT leverage these new solutions to further drive efficiency, streamline operational processes, and improve service to application owners?

Top IT Challenges and Priorities

Getting Back to Business

As Figure 1 demonstrates, IT priorities in 2009 were heavily weighted toward reducing operational and capital costs; virtualization certainly has enabled organizations to realize substantial economies.

Figure 1. Most Important Considerations for Justifying 2010 IT Investments, 2009 vs. 2010



Source: Enterprise Strategy Group, 2010.

Even EMC's own IT department discovered that virtualization and other efficiency initiatives can deliver dramatic results: between 2004 and 2009, EMC IT embarked upon a four-phase initiative (encompassing server virtualization, expansion of storage tiers, and other data center efficiency initiatives) resulting in more than \$85M in data center, storage, server, energy, and space savings in addition to a 170% improvement in storage administrator productivity.¹

Figure 1 also demonstrates a shift in priorities in 2010. When asked what considerations they expect to be most important in justifying IT investments to their business management teams over the next 12-18 months, IT decision makers indicate that, while cost reduction is still in the lead, its importance has diminished as factors such as business process improvement and compliance and risk management gained ground. IT expects business managers to resume their interest in efforts that move the business forward, not just those that reduce costs.

As IT organizations transition business production applications—such as expanded Windows workloads, SAP, and multi-tier database applications—they need to be able to rapidly respond to requests and demonstrate improved service levels. They must engage skeptical application administrators and line of business application owners who will not agree until they are fully assured that virtualization will not impact availability or performance. These are the same constituents that want improved provisioning, easier access to IT resources, simplified maintenance, disaster protection, and faster recovery times.

The Vblock Infrastructure Packages can help as they:

- Simplify the IT environment and streamline operations.
- Enable IT to scale capacity up and down as business needs change.
- Speed time to deployment with pre-integrated, workload-tested solutions.
- Free IT resources for higher value tasks.

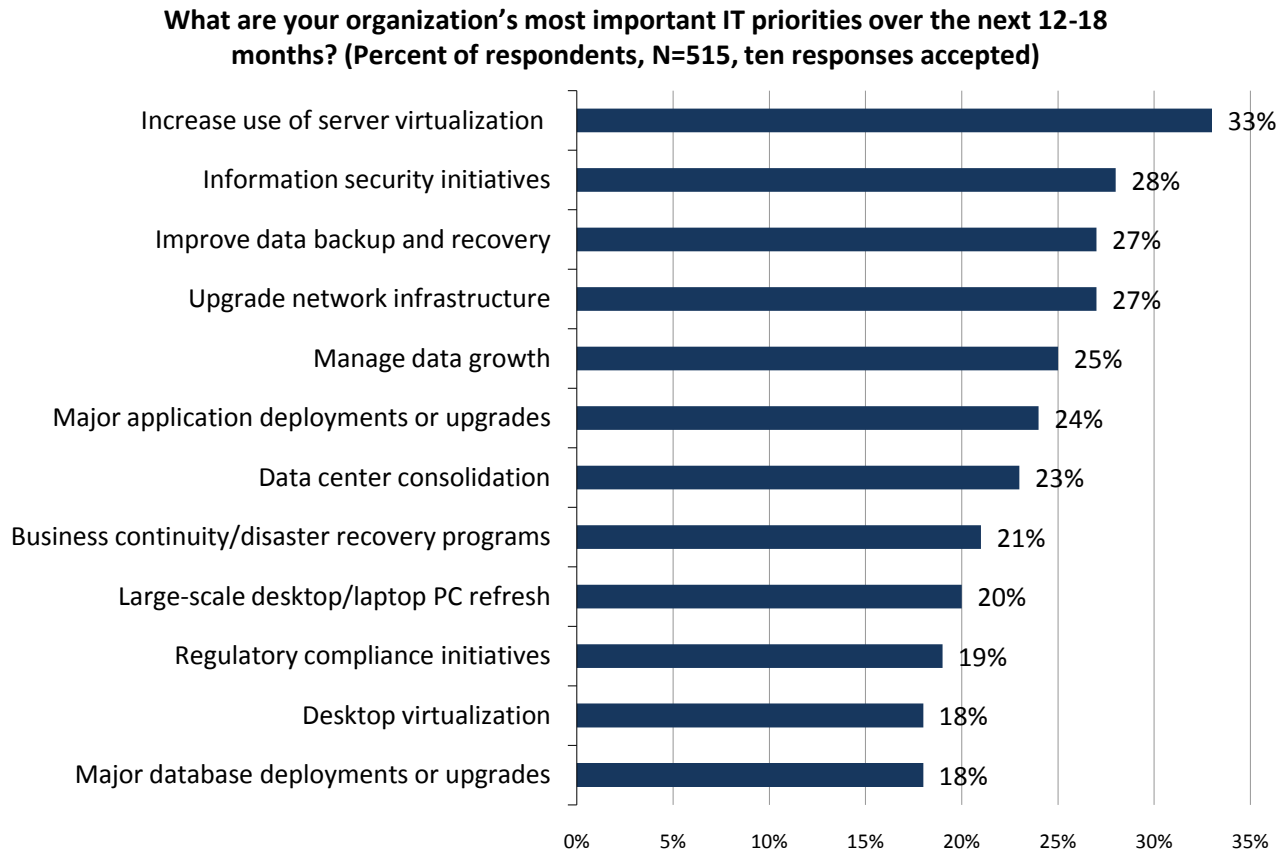
Virtualization Priorities

Recognizing the value of virtualization, organizations are looking to expand on earlier success. Consolidation, data protection, business continuity, and improved operational processes are all top of mind. According to ESG's research, increased use of server virtualization tops the IT priority list (see Figure 2).² Other top priorities include security and data protection, network upgrades, data growth, and major application deployments/upgrades.

¹ Source: ESG Lab Audit Report, [EMC IT – A Blueprint for Data Center Efficiency](#), April 2009.

² Source: ESG Research Report, [2010 IT Spending Intentions Survey](#), January 2010.

Figure 2. Most Important IT Priorities in 2010

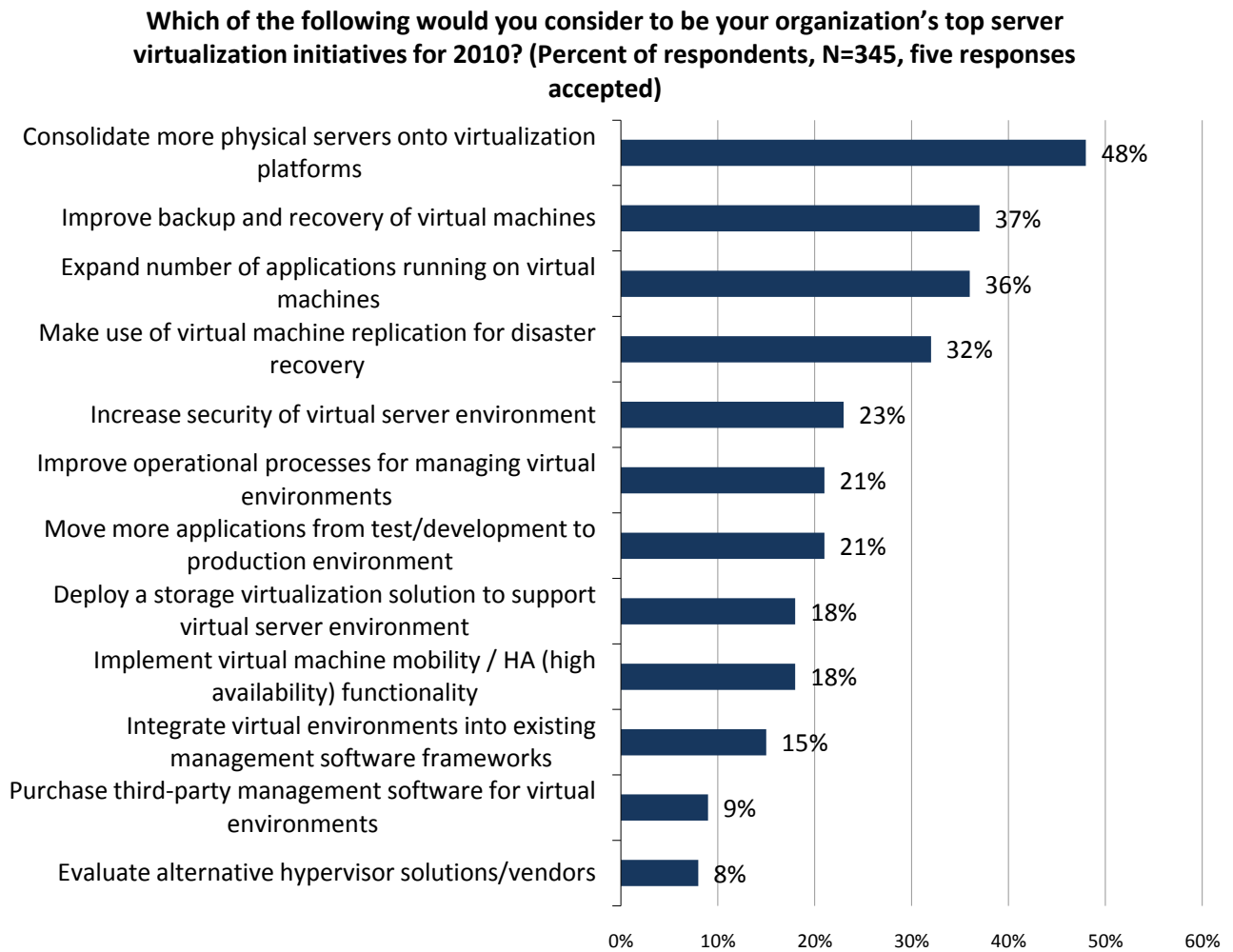


Source: Enterprise Strategy Group, 2010.

The good news is that Cisco, EMC, and VMware all have existing solutions in these areas; when all are integrated into a single unit, customers benefit from simplified access and accelerated deployment with large-scale solutions that will further their objectives. These companies also are well positioned to help businesses mitigate security risks and meet compliance mandates.

There is an opportunity for consolidated infrastructures to address top server initiatives as depicted in Figure 3: 48% of respondents cited “consolidating more physical servers onto virtualization platforms” as a top initiative. In addition, 36% said they want to expand the number of applications running on virtual machines, indicating that they are pleased with the results so far and want to broaden deployment to increase the benefits.

Figure 3. Top Server Virtualization Initiatives in 2010



Source: Enterprise Strategy Group, 2010.

Here again, the Vblock Infrastructure Packages are of interest to data center managers because of their ability to scale to a large number of virtual machines, improve IT service levels, automate routine IT tasks, and help ensure governance risk and compliance mandates are met.

Consolidated Infrastructure

Consolidated infrastructure platforms are new and, for some, raise concerns. Many users have integrated components from different vendors to maintain a best-of-breed approach; they have concerns about vendor lock-in. Others are too busy with daily operations to take a strategic approach especially as they are not likely to replace all their systems with new platforms.

A consolidated infrastructure approach has several advantages in the long run, resulting in:

- The potential for improved application performance.
- Efficient asset utilization.
- Streamlined provisioning of resources.
- A single support model.
- Ease of management.
- Improved security and compliance.

For small data centers and remote offices, the platform itself could underlie and enable a simplified IT deployment and management model. As these models are deployed, the consolidated infrastructure platforms are likely to emerge as key enablers of environments that are federated across multiple data centers.

A converged architecture is extremely valuable for service providers offering data services for multiple companies on shared infrastructure. Security and isolation in multi-tenant deployments is paramount; customers must be confident that their data is secure and protected.

A Vblock deployment allows the service provider to “right size” capital expenditures instead of building systems for the worst-case scenario. This, along with efficient management and automation, will enable service providers to offer infrastructure-as-a-service while minimizing costs. Vblock’s flexibility and agility are critical for this type of business—companies sharing the same infrastructure must be able to scale capacity and performance according to business needs without interference from other customers. Providers must be able to guarantee performance, availability, data protection, and security as well as auditability for compliance. Service levels must be guaranteed to application owners and there must be transparent consumption of resources.

A New Consumption Model

The consumption model is changing: servers, networks, and storage can be purchased as a single consumable unit to accelerate time to market, keep pace with rapid scalability, and streamline IT operations by removing the need to bolt the pieces together and perform real time integration. New consumption models focus on reference architectures and application blueprints to confidently migrate existing applications to a reliable virtualized platform.

Cisco, EMC, and VMware are able to deliver all this with their Vblock Infrastructure Packages.

- Collaborative IT management and automation with end-to-end visibility, predictive performance analysis and automation.
- Unified protocol delivery offers flexible connectivity. Advanced software applications provide the high-availability and disaster recovery customers expect.
- VMware and Cisco also have extensive security and high availability features built in, and are working towards the ability to federate between local data centers and service providers.
- Additional network infrastructure convergence, especially using Fibre Channel over Ethernet, will streamline and simplify network access.

Together, these providers offer a flexible multi-tenancy solution which can rapidly provision resources for customers, decommission them when they are no longer needed, and move them in and out of the resource pool.

What Matters in a Converged Environment?

Regardless of deployment model, the test of a consolidated infrastructure is whether it provides the things application administrators and IT operations care about. While application owners are more focused on test/development and QA issues, IT operations is more focused on efficiency and cost reduction. Both organizations will benefit from the converged environment in terms of process improvement, enhanced management, and improved service levels.

Consolidated infrastructure must deliver:

- **The same types of security, compliance, and protection required with a silo-based architecture.** Data must be recoverable in case of disaster and security must be built in at every level. In the case of multi-tenant shared infrastructures, isolation is critical so that applications and data cannot be improperly accessed and the needs of multiple clients sharing devices don’t interfere with each other.
- **Confidence that the infrastructure will perform.** Best-of-breed partnering makes a big difference; well-known companies such as VMware, Cisco, and EMC

deliver years of experience building infrastructure solutions. Jointly delivered services also offer greater efficiency, replacing silo-based support with cooperative efforts.

- **Accelerated time to deployment.**

A deployment model that bundles server, network, and storage resources can help companies provision without the procurement delays and piece-part integration problems of standard deployments. Speedy launches of new applications through a consolidated infrastructure can mean faster ROI, eliminating productivity delays. This type of operating agility is more valuable to most companies than reducing capital expenses.

- **Simplified capacity planning.**

Users can scale up and down dynamically whether the infrastructure is onsite or remotely delivered by a service provider. This makes the business more agile and able to respond to changing circumstances without maintaining unused resources waiting for peak time. IT can size for average workloads and accommodate capacity spikes with policy-based automation. For test/dev and QA resources, capacity can be provisioned quickly, utilized, and then returned to the resource pool.

Cisco, EMC, and VMware

Cisco, EMC, and VMware have extended their long-term partnerships with the Virtual Computing Environment (VCE) coalition and Vblock Infrastructure Packages. This represents an unprecedented level of collaboration in development, services, and partner enablement that reduces the risk of deploying a virtualized infrastructure. Vblocks deliver a complete IT infrastructure that integrates best-of-breed virtualization, networking, compute, storage, security, and management technologies. Most importantly, the three companies have invested in an industry first: the collaborative delivery of seamless customer support with end-to-end vendor accountability.

All three companies deliver industry-leading technologies. Together, they offer unique synergies that simplify the deployment and management of infrastructure and applications.

Vblock Infrastructure Packages

Vblocks are production-ready, SLA-driven infrastructure packages. Though self-contained, they may also use external shared services and can be clustered for higher availability or aggregated for scalability. They support a broad range of operating systems and all applications that work in a VMware environment also work in a Vblock environment. Validated applications include SAP, VMware View, Oracle RAC, Microsoft Exchange 2007 and SharePoint, and Web applications.

Cisco provides its Unified Computing System (UCS), Nexus 1000v virtual switching, and Multilayer Directional Switches (MDS). The UCS seamlessly integrates with the Nexus series of switches, enabling applications to be deployed in minutes and providing flexibility and agility for the business. The UCS architecture combines compute, network, and storage access—in addition to virtualization—into a scalable, modular system that is centrally managed by the Cisco UCS manager. The Nexus 1000v Series provides intelligent software switching for VMware vSphere environments; operating inside the VMware ESX hypervisor, these virtual switches provide policy-based virtual machine connectivity and mobile VM security and network policy.

EMC provides industry-leading storage systems, all with built-in RSA security features. The Symmetrix VMAX storage system comes with Vblock 2 and provides a high-end storage architecture that seamlessly scales performance, capacity, and connectivity on demand. FAST automated storage tiering helps to minimize costs while meeting service levels. The CLARiiON CX4 midrange storage system comes with Vblock 1, offering high-capacity network storage and automated storage tiering. Multi-protocol EMC Unified Storage will be included in Vblock 0.

VMware provides its vSphere infrastructure virtualization platform with centralized tools for monitoring and management across the virtual infrastructure. This includes role-based access and privileges, an audit trail of configuration changes and reports, and real-time performance monitoring and analysis. All physical hosts and virtual machines are centrally managed with vCenter for better control and simpler, less costly management.

Unique Service Structure

The lengths to which these companies have gone in building joint support services are impressive. An extensive ecosystem of channel partners and system integrators is available to speed deployment. VCE professional services can help organizations define their cloud strategies to align with business needs. A joint virtual support center with combined expertise provides fast response and technical assistance and connects customers to a virtual team of VCE experts. Lastly, a joint venture called Acadia was formed to build, operate, and transfer Vblock infrastructures for organizations interested in accelerating their deployments.

All three companies are investing in building a unique, integrated, seamless support experience using collaborative tools, people, and processes. It includes intercompany collaboration tools, joint problem re-creation labs, extensively trained VCE support engineers, and cooperative engineering agreements. To ensure accountability, the companies designed common metrics that are monitored regularly with executive visibility, as well as a documented problem resolution and escalation process. This simplified support process delivers fast time to resolution, lower impact on business operations, high availability, reliability, and productivity.

Priority Alignment between Top IT and Business Initiatives

The IT transformation is well under way. While server virtualization has dominated technology headlines recently, it must be complemented by and integrated with network and storage infrastructure that further leverages its value. Ever-tighter alignment between IT capabilities and business objectives is an ongoing process. Virtualization and other efficiency initiatives have begun to reduce costs and improve agility.

Server administrators have become virtualization administrators as they take on tasks related to networking and storage. While that works fine for applications that are owned by IT, as virtualization moves to the mission-critical business applications like SAP and Oracle, administrators need more and more expertise across a variety of IT disciplines. As a result, the data center of the future is likely to employ more of a “data center engineer” who will understand how to work across the different tiers of the architecture. Vblocks will be of tremendous value and enable IT staff to focus on adding value to the business instead of having to spend most of their time integrating and managing different parts of the infrastructure.

The service-oriented Vblock Infrastructure Packages support budgeting and cost control initiatives as well. Equipment is shared and centrally managed, increasing utilization of resources and reducing TCO. By providing increased transparency of the infrastructure, these packages enable IT to track usage and implement departmental chargeback if desired. This type of activity-based cost structure can help business managers and IT better understand the true costs of infrastructure services by application or activity and help them build better cost/benefit analyses.

The Bigger Truth

Without complete “infrastructure virtualization,” IT will remain less than the sum of its parts. To manage data growth, reduce power consumption, and improve efficiency, many organizations have taken the fast track to virtualization. These organizations are likely to see greater benefits from pre-integrated solutions—as are organizations launching “green field” data center build-outs (e.g., service providers with infrastructure-as-a-service (IaaS) offerings). As virtualization efforts shift from a focus on IT applications to mission-critical business applications, these Vblock Infrastructure packages will speed deployment and time to value.

This innovative, integrated solution from the VCE coalition will help dissolve barriers and accelerate virtualization deployments. By delivering their products, services, and support as a unified team, Cisco, EMC, and VMware provide financial, operational, and strategic value. As businesses recognize the benefits of virtualization, they want to extend them into the applications that the business is actually investing in, not just those administered by IT. An integrated, tested, proven solution offers the agility and services to support mission critical business applications in a virtual infrastructure. Here, the plumbing does matter—the fact that each part of this infrastructure is provided by a world-class organization with world-class service builds the confidence application owners sorely need.

Key benefits of this type of deployment are consolidation and efficiency that streamline resource use and decrease costs. However, this efficiency push does not diminish the importance of redundancy in components across the stack. Less is best, but in order to maintain high availability, redundancy must be a part of the equation.

The Vblock architecture offers an intelligent, efficient allocation of resources for new or existing applications. Rather than building resource pools on their own—an undertaking of dubious merit, given the difficulty and expense—IT organizations can take advantage of industry expertise in a pre-integrated solution with security, availability, scalability, performance, data protection, compliance, and audibility built-in. Extensive commitments to joint service and support from Cisco, EMC, and VMware provide a safety net of incomparable value.



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