



# How Converged Infrastructure and Software-Defined Data Center Accelerate Hybrid Cloud Benefits

Converged Systems with Software-Defined Automation: A Path to Faster, Better and Cheaper Application Deployments

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# Executive Summary

IT leaders are facing significant hurdles as they try to transform their departments to meet current business demands. Not only must they modernize their operations, they must also be change agents for transforming their entire businesses.

Yet IT cannot make the move from slow-moving cost center to agile revenue producer without first addressing several critical challenges: Cost, sprawl, management and security. To combine IT agility with new levels of business responsiveness rapidly, a leapfrog approach to new hardware configurations and the benefits of integrated software infrastructure may be necessary.

IT departments in crisis should therefore consider the Software-Defined Data Center (SDDC) model deployed on converged or hyper-converged infrastructures. SDDC architectures help rapidly transform IT by enabling it to support end-users through a flexible IT-as-a-Service (ITaaS) model and leverage cost-saving and rapidly deployed Virtual Desktop Infrastructure (VDI) applications.

By exploiting the best of purpose-engineered and pre-configured hardware capabilities along with software-defined data center advances like network virtualization, IT organizations can realize a path to faster service delivery with less work and fewer specialized skills required. Combining converged infrastructure and software-defined technologies, IT organizations can further automate and accelerate workloads. VMware and VCE, for example, combine proven virtualization technology with converged and hyper-converged infrastructure solutions to hasten SDDC deployments while reducing complexity.

The SDDC model helps address the fundamental IT issues of cost, sprawl, management and security. It also enables IT to better establish itself in new economic terms -- as a revenue driver in companies large and small -- by improving alignment between IT and business units and creating new, IT-led revenue opportunities. The SDDC can become a powerful conduit for IT departments to become more strategic business partners within their organizations. Working as an ecosystem, VMware and VCE have pioneered the solution approach of providing deployment-ready SDDC components as a data-center-level solution.



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With converged infrastructure and software-defined data center increasingly working together – into what amounts to private cloud as a rapid and complete deployment experience – IT sets the stage for hybrid cloud choices later, and efficient support for more of their legacy applications and burgeoning data sets now.

Disclosure: VMware is a long-time sponsor of BriefingsDirect podcasts, EMC is a sponsor of BriefingsDirect content, and this white paper was made possible in part by travel expenses and market research underwritten by VMware and VCE.

## Introduction: The Scope of the Problem

Issues that have plagued the data center for years, such as resource constraints, provisioning applications and dealing with legacy systems, still stand in the way of IT reaching its goal of moving from cost center to strategic business partner. The fundamental shift required of today's IT organization is imperative in light of the common challenges most enterprises are grappling with:

- **Cost:** Maintaining, patching and refreshing old desktops or laptops is expensive and time-consuming;
- **Sprawl:** Supporting numerous platforms across geo-distributed data center infrastructure causes a disproportionate drain on scarce resources;
- **Management:** Getting a new hire or contractor up on a new physical machine and provisioned on networks can take days or weeks, which is far too long in today's world;
- **Security:** Older infrastructures are often vulnerable to increasingly sophisticated attacks.

Fortunately, a clearer and more attainable path to predictable and rapid cloud adoption is unfolding across the business landscape. By bringing together the best of modern enterprise architecture, IT supplier partner ecosystems, data center automation and optimized converged hardware systems, IT organizations have new options for low-risk and high performance cloud-based solutions. Application development teams have already improved access to capacity when they need it in this fashion, and they leverage this infrastructure to reduce application development cycles.

Now, converged and hyper-converged infrastructure will accelerate private and hybrid cloud adoption beyond development and proof of concept usage into broad deployment. For the cloud model to be an appealing environment for more enterprise mission-critical applications, the transition needs to be clear and simple. Costs associated with the transition must be predictable and attractive. The culture of IT also needs to be considered, where control and responsibility have been hallmarks of those who have succeeded in IT.



## Emerging Solutions

Enterprises have experimented with a variety of solutions to accomplish the desired fundamental objectives of increasing IT agility and flexibility while minimizing cost, simplifying management, and improving security of IT environments. Increasingly, enterprises are turning to SDDC architecture – the foundation for hybrid cloud environments – to run their mission-critical applications in the most efficient and cost-effective manner possible. Among these Tier 1 applications, VDI is a leading use case for SDDC on converged and hyper-converged infrastructures.

Convergence of hardware with the advanced management and control of software-defined is creating a bridge on many levels so that enterprises can move from their legacy applications and proprietary stacks to a services-oriented hybrid cloud, based on specific workloads now – and more and more workloads over time. By driving more intelligence into the software, abstracting the management from systems to fabric, and adding a high degree of automation, software-defined data centers are very appealing to IT operators. The problem arises of how to get there, how to make the transition to a new kind of management and operations of racks as well as data centers.

Enterprises on the fast path to such IT transformation should seek integrated and comprehensive infrastructure solutions that comprise all the proven critical components. VCE and VMware, for example, have developed a family of converged and hyper-converged blocks, racks and appliances with these businesses in mind. The combined SDDC and converged infrastructure tag team provides a path to proven virtualization, management and orchestration technology -- a transition plan to migrate data center operations to the right cloud model customized to each enterprise's unique profile of needs.



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## Converged and Hyper-Converged Infrastructure

IT infrastructure solutions providers have developed converged and hyper-converged infrastructure solutions to simplify IT operations and effectively deliver business-critical applications at scale and with high availability. Integrated systems are proving an excellent way to address easy and secure deployment, management and scaling of mission-critical applications. Converged and hyper-converged systems are designed to deliver vast data-center scaling and speedy workload deployment and are expected to rapidly extend from



greenfield apps and proof of concept deployments to such strategic purposes as support for private cloud, Big Data and analytics, and centralized and mass-deployed virtual desktops.

These new integrated solutions come in a variety of form factors:

- **Blocks:** Multiple components packaged into a single optimized IT solution for Tier 1 mission critical applications, Platform 3 apps, and cloud
- **Racks:** Hyper-converged architecture built to support simplified cloud and distributed Platform 2 and 2.5 applications that incrementally build into data center scale
- **Appliances:** Highly scalable units of integrated compute, networking and storage resources running on x86 hardware

Enterprises are adopting converged and hyper-converged systems for making a leap from traditional systems to more modern data center architectures and cloud. The role of convergence may be greater yet: It may well be the preferred path to business transformation for IT operators based on such intangibles as a sense of control, a measured pace of change in the role of IT, and even the very experience of comfort in the adoption of cloud models.

IDC estimates that by 2018, \$14.3 billion will have been spent on converged systems, representing 14.9 percent of total IT infrastructure spending. This number will have grown from \$10.2 billion (11.4 percent of total IT infrastructure spending) in 2015.

*[\[IDC: The Business Value of VCE Vblock Systems: Leveraging Convergence to Drive Business Agility\]](#)*

## Software-Defined Data Center Architecture Supported by Converged and Hyper-Converged Systems

**S**DDC architecture is designed to deliver vast data-center scaling, speedy workload deployment, easy centralized management of distributed data center resources, and secure support for private cloud, Big Data and analytics, and centralized and mass-deployed virtual desktops.

SDDC principles bring together the best of modern enterprise architecture, IT supplier partner ecosystems, data center automation and optimized hardware systems, offering IT organizations new options for low-risk and high-performance cloud solutions. Data center-wide virtualization and converged infrastructure are reinforcing each other to reduce infrastructure complexity while improving time to deployment at large scale for both existing workloads as well as new cloud requirements.

Importantly, as an added benefit, transitioning to SDDC architecture supported by integrated systems gives an enterprise the foundation for hybrid cloud. Properly architected converged infrastructure is the best path to software-defined data center benefits and hybrid cloud efficiencies, offering the fastest, safest and surest route to sustainable IT operations.



Furthermore, in addition to addressing the most common IT challenges around cost, sprawl, management and security, moving to an SDDC architecture supported by converged and hyper-converged infrastructure provides additional benefits:

- **Better alignment between IT and Business:** Converged and hyper-converged infrastructure can eliminate the need for business units to circumvent IT by deploying “shadow IT” solutions, which introduce cost and security issues.
- **Introduction of new revenue opportunities:** SDDC architecture gives IT a golden opportunity to actually produce revenue for the business. For instance, Gordon Memorial Hospital tapped their additional capacity on Vblock and its secure multi-tenancy from VMware in order to offer SaaS to other hospitals in their network for a fee.

Here’s a look at the components VCE and VMware are bringing together to enable SDDC and lay the foundation for hybrid cloud environments:

### *VCE Offerings*

- **Vblock® Systems:** Integrating compute, network, and storage technologies from Cisco, EMC, and VMware, Vblock Systems provide dynamic pools of resources that can be provisioned and managed to address changing demands and rapidly shifting business opportunities.
- **VxBlock™ Systems:** Engineered to similar specifications as Vblock Systems for the high levels of performance, capacity, availability and security, VxBlock systems feature factory-integrated VMware NSX network virtualization software.
- **VxRack™ Systems:** These hyper-converged offerings complement VCE converged infrastructure systems. They feature self-contained units of servers and networking and are designed for the rapid growth in next-generation applications—enabling support of a growing number of use cases that need less stringent availability and performance requirements.
- **VxRail™:** This fully integrated, preconfigured, and tested VMware hyper-converged infrastructure appliance facilitates rapid roll-out of VMs across many applications and use cases via existing VMware eco-system management solutions.

### *VMware Offerings*

- **Horizon:** Horizon provisions virtual or remote desktops and applications through a single VDI platform to help streamline management and more easily entitle end-users, and transforms static desktops into more secure, virtual workspaces that can be delivered on demand.
- **Horizon Air Hybrid-Mode:** Furthering the benefits of hybrid cloud, Horizon Air Hybrid-Mode offers a single pane of glass to simply and quickly deliver and manage virtual desktops and applications whether they are hosted in a private or public cloud environment.
- **NSX:** VMware’s network virtualization solution reduces the time to provision multi-tier networking and security services by abstracting virtual networks



from the underlying physical network, facilitating VDI deployments with less complexity, labor and risk.

- **vRealize Automation:** More consistent, automated delivery and management of IT services reduces time-consuming, manual processes and leverages existing infrastructure tools and processes to help provision and manage multi-tenant, multi-cloud infrastructure and applications.
- **AirWatch:** VMware's enterprise mobility management (EMM) platform provides end-to-end security and management from devices to data center.

## Advantages of VCE + VMware Joint Solutions

Converged systems combining the complementary strengths of VCE and VMware offer today's enterprises distinct advantages of SDDC architecture:

- **Speed & Agility:** Automation introduced in the management plane often reduces infrastructure provisioning time from weeks to minutes. VCE customers interviewed by IDC, for example, report reducing downtime by 96 percent, releasing new services 4.4 times faster over their prior rate for using legacy environments.
- **Accelerated Time to Value:** Factory integration promises faster deployment of datacenters – Customized systems are often built and shipped within 45 days of order.
- **Enhanced Management and Security:** Micro-segmentation secures the infrastructure with fewer resources at a lower cost. VCE users reported to IDC that in addition to the dramatic reduction in down time, they spent 41 percent less time managing the systems.
- **Lower TCO:** Converged and hyper-converged systems offer significant reductions in data center infrastructure costs as compared to traditional architectures, say users. These lower costs come first from cut costs for hardware, power and facilities, and software licenses. From a CapEx perspective, even if the hardware costs in deploying converged systems are neutral, significant downstream savings often come from lower support and maintenance costs, users report.
- **Strong ROI:** IDC calculated that over a five-year period, the organizations interviewed for their study will earn an average of \$6.20 for every \$1.00 invested in VCE's Vblock Systems. This is equivalent to \$13.07 million per year per organization, or \$156,932 per year per 100 users. IDC's five-year ROI analysis shows that VCE customers interviewed for this study will invest a discounted total of \$5.18 million in Vblock, including the costs of purchasing, maintaining, and supporting the converged solutions. IDC calculates that in return, these organizations will generate discounted business benefits worth \$32.01 million, resulting in an average ROI of 518% and breakeven time period of 7.5 months.

*[IDC: The Business Value of VCE Vblock Systems: Leveraging Convergence to Drive Business Agility]*



The agility of SDDC enhances enterprises' abilities to mobilize and adapt to new ways of doing business, promoting innovation and rapid response to changing market demands. Tight integration of hardware and software reduces IT complexity while offering efficiencies in application delivery and lifecycle management. As a result, the list of use cases that are appropriate for an SDDC environment extends far beyond VDI:

- **IT Automating IT:** Automate workflows, policy configurations, networking and security groups, especially in a VDI environment;
- **Developer Cloud:** Help eliminate Shadow IT by making it easy for business units to go through IT for self-service stand-up of new environments, applications and services;
- **Multi-Tenant Infrastructure:** Help uncover new revenue opportunities by segmenting and managing infrastructure capacity according to business needs and reducing reliance on dedicated, underutilized and siloed platforms;
- **Secure User Environments:** Help lock down critical environments with micro-segmentation and better monitor East-West traffic for VDI.



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## Conclusion

The current trajectory of traditional data center architectures is not sustainable as IT seeks to move from cost center to strategic business partner. The trend is clear: The era of each application supported by a discrete stack of under-utilized software on under-performing hardware is over, and a new era is upon us: All facets of IT infrastructure – server, network, storage – must operate together as an optimized fabric, with hardware designed to provide the experience of a highly available and hugely scaling cloud computing solution.

Fortunately, integrated systems plus the agility and automation of software-defined data center architecture make the difficult path from traditional IT to private cloud much more clear, understandable, predictable and comfortable. The right IT infrastructure choices can enable the agility and flexibility to successfully deploy, manage and secure the most business-critical applications while unlocking tremendous operating efficiencies and cost savings.

Converged offerings from VMware and VCE, such as VxBlock Systems, VxRack Systems and VxRail appliances, provide excellent examples of how virtualization software and optimized hardware come together to improve the overall experience of rapid cloud adoption. Properly architected converged infrastructure empowered by software-defined data center benefits is proving to be among the fastest, safest and surest routes to broad cloud efficiencies.







## About Interarbor Solutions, LLC

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Podcast episodes typically range from 10 to 45 minutes in length, and follow the format of a traditional IT industry analyst briefing — a deep and penetrating look at a market need, user problems and technology adoption solution approach. The discussion then forms the core of the BriefingsDirect™ media content spectrum.

### **Dana Gardner President & Principal Analyst**

Since 1999 Dana Gardner has emerged as a leading identifier of software productivity trends and new IT business value opportunities and is frequently quoted as a thought leader in top, news and IT industry publications such as The New York Times, The Wall Street Journal, The Boston Globe, Washington Post, Business Week, San Francisco, Reuters, Associated Press, MSNBC.com, CNN.com and more.



Gardner is well known as a creative thought leader on enterprise software solutions, strategies, partnerships, and markets. As a skilled multi-media communicator and evangelist, he has written dozens of industry reports on the business benefits of IT and Internet innovation for advancing general productivity, improving employee efficiency, and reducing total IT costs.

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