

# Making the Case for Full-Stack HCI

Run your business more efficiently  
with a modern IT infrastructure.

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### Executive Summary

To stay competitive, organizations are increasingly dependent on their applications to deliver new innovations. Whether those are innovations in product or service offerings or new ways to run the business more efficiently, what’s needed is a modern IT infrastructure.

One of the most promising approaches to modernize IT is a hyperconverged (HCI) system that delivers full-stack integration of both the hardware hyperconverged infrastructure layer and the VMware cloud software stack. In bringing together the compute, storage, network and security layers of the stack, organizations can better support their applications—from traditional apps to modern, from developers to end users—with a fully automated hybrid cloud. Discover how you can benefit from full-stack HCI to modernize your IT infrastructure and more efficiently drive your business.

### Making the Case for Full-Stack HCI

Organizations today are competing in increasingly demanding markets. Consumers have heightened expectations of products and services, often wanting access to these directly from their mobile devices. Retailers must offer fresh, frequently updated products to retain the interest of their customers. Manufacturers need to ship products efficiently and quickly, investing heavily in areas such as “the last mile” of delivery. For both retailers and manufacturers, innovation is critical, and must occur without compromising “business-as-usual” operational performance.

To meet these increasing demands, infrastructure strategies must provide better agility, scale, and performance. Legacy three-tier IT infrastructures introduce potential roadblocks to achieving these new levels of innovation; they’re not well suited for evolution to cloud environments. Modern IT organizations need the ability to deliver applications that can run anywhere, on any device, and be developed with cloud native tools to accelerate agile development methodologies.

The foundation of such modernization is a HCI system that delivers full-stack integration of both the hyperconverged infrastructure layer and the cloud software stack, providing a seamless hybrid cloud experience with automated lifecycle management for the full hardware and software stack.

#### MEET NEW MARKET DEMANDS WITH FULL-STACK HCI

Innovation is critical. Your modern IT infrastructure should not compromise performance in order to deliver flexibility and scale.

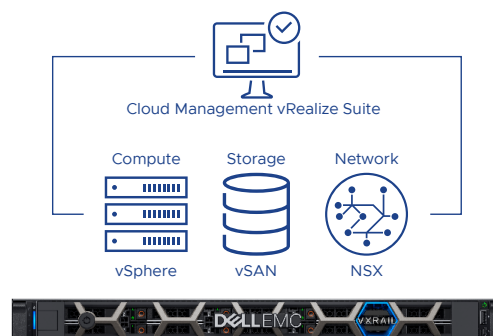


FIGURE 1: Full-Stack HCI

## IMPROVE YOUR CUSTOMER EXPERIENCE

Transforming your data center can unlock greater agility, lower costs, and improve scalability.

Organizations are often prompted to consider full-stack HCI when faced with a number of business-level pain points, such as enabling a disparate or growing workforce, developing modern applications, and scaling traditional applications that run core business functions. For each of these corporate and developer requirements, IT infrastructure teams must rapidly deploy elastic compute, storage, and networking resources to support business growth.

The best way to illustrate the value of full-stack HCI is through the following real-world use cases that demonstrate how traditional enterprise applications, cloud native applications, end-user computing (EUC), and virtual desktop infrastructure (VDI) benefit from elastic, agile, scalable hyperconverged infrastructure.

### Use Case 1: Traditional Enterprise Applications as the Backbone of Your Business

The backbone of any organization are the systems of record that provide customer relationship management (CRM), enterprise resource planning (ERP), and analytics to drive business intelligence. Enterprise database and analytics have very specific performance and availability requirements, but traditional three-tier architectures significantly limit the agility, scalability, and efficiency of these applications.

To improve their competitive position, organizations must look to strategically transform their data center infrastructure to provide faster, more engaging customer experiences. Many industry leaders have taken a two-phase approach to this transformation. In the first stage, they have abstracted and automated the storage and networking layers of bare-metal servers. For even greater agility, utilization, and lower capital and operational costs, they take an additional step to transition to a full-stack hyperconverged infrastructure. This is the strategy behind a fully integrated hyperconverged infrastructure, which can help organizations transition to an on-premises cloud model based on consistent infrastructure and consistent operations.

For traditional enterprise applications, public cloud migration may not be an option or is cost-prohibitive. This dilemma leads many customers to move to standardized infrastructure and deliver full-stack HCI using a cloud operating model for better efficiency, agility, and time to market.

Customers that have deployed enterprise applications on full-stack HCI see tremendous improvements in deployment, configuration and service provisioning that can modernize traditional applications, helping drive better outcomes for the business. By extending the benefits of a full-stack HCI to a deeply integrated hybrid cloud that delivers a cloud operating model for on-premises services, IT organizations can meet the needs of the business at lower overall costs. In fact, a recent IDC study<sup>1</sup> found that using a consistent hybrid cloud platform achieved savings of up to 47 percent over a 5-year period compared with a native public cloud, underscoring how consistent hybrid cloud platforms enable benefits of cloud at scale without additional management and overhead costs.

<sup>1</sup> IDC White Paper, sponsored by Dell EMC. "[Benefits of the Consistent Hybrid Cloud: A Total Cost of Ownership Analysis of the Dell Technologies Cloud.](#)" April 2019. Results based on U.S. costs of the Dell Technologies Cloud deploying common cloud environment workloads over a 5-year period vs. a leading native public cloud service provider. Actual results will vary.

### VMware Cloud Foundation on Dell EMC VxRail delivers comprehensive transformation

VMware Cloud Foundation™ on VxRail, the Dell Technologies Cloud Platform, provides the complete transformation of database and business analytics systems to unlock unprecedented agility, scale and performance. VxRail is the only jointly engineered HCI system with deep VMware Cloud Foundation integration, delivering a simple and direct path to the hybrid cloud with one complete, automated platform. This full-stack HCI platform delivers a seamless experience with automated installation, configuration and lifecycle management for increased operational efficiency and reduced risk. Deep integration between VMware Cloud Foundation and VxRail also enables workload portability across public and private clouds, simplifying and reducing the cost of large-scale application mobility between enterprise sites. VxRail is the only jointly engineered HCI system with deep VCF integration that delivers automated lifecycle management to streamline operations and reduce TCO by 47 percent.<sup>1</sup>

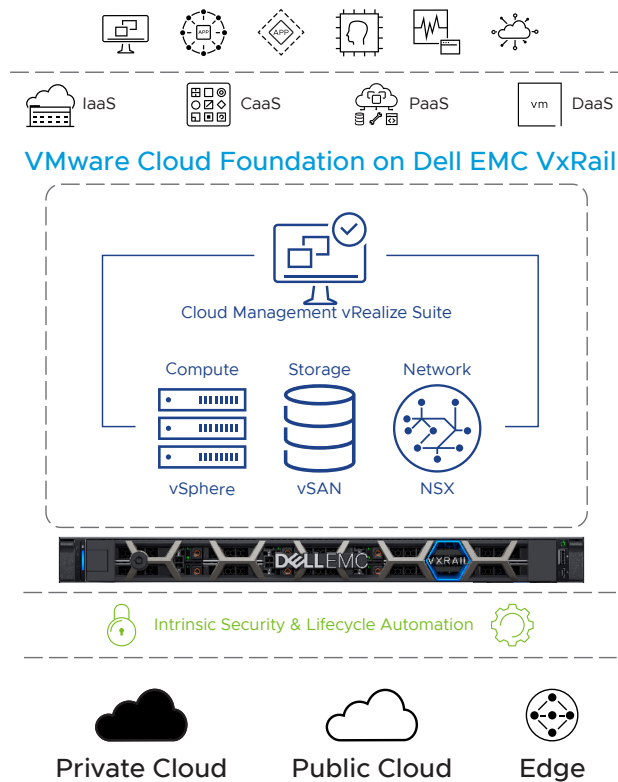


FIGURE 2: VMware Cloud Foundation on Dell EMC VxRail

**BETTER TOOLS AT DEVELOPERS' FINGERTIPS**

Time-pressured development teams can be tempted to go rogue in their search for proper tools. Full-stack HCI brings these tools into the infrastructure with automation and orchestration for both cloud native and traditional workloads.

**Use Case 2: Making Cloud Native Applications Easier to Develop and Deploy**

Organizations are accelerating the use and deployment of modern cloud native applications within their development environments, but quickly realize that existing infrastructure does not provide the needed agility and elasticity to meet business needs. The core requirement of the platform and development teams is to build, manage and run new container-based applications and services that operationalize Kubernetes orchestration as part of a broader modernization strategy.

The challenge in trying to build these applications using bare-metal infrastructure is the lack of integration and automation functionality that can streamline the deployment, configuration and management of enterprise-grade Kubernetes. These shortcomings result in complex installations, lengthy deployment cycles, and errors due to lack of standardization, automation and security.

Because IT operations teams are under significant pressure to support a growing number of developers who are expanding their footprint of Kubernetes clusters across geographically dispersed locations, they often find themselves in a very difficult position, with few viable options. This typically results in a non-optimal developer experience, as platform teams end up building yet more silos without the proper IT security and governance. Without the proper tools available from their IT teams, the platform teams often view public cloud as the “easy button” to deploy these services. For many reasons, this approach could result in risking data security or ultimately cost more.

**A developer-ready solution from VMware and Dell Technologies**

VMware Tanzu™ directly addresses this challenge by creating a hardened, production-ready, enterprise-grade Kubernetes platform that combines the latest stable Kubernetes release with all of the workflows, registries and libraries needed to rapidly install, deploy and manage complex Kubernetes environments.



FIGURE 3: Dell Technologies Cloud Platform

To support these strategic initiatives, IT infrastructure teams need to simplify the deployment of enterprise-grade Kubernetes with automation and a full-stack HCI architecture. VMware Cloud Foundation on VxRail with Tanzu enables teams to deploy an integrated cloud platform that integrates an embedded Kubernetes runtime with a complete set of libraries, registries and APIs that are automatically deployed with VMware Cloud Foundation. This integration makes it easy for application teams to utilize VMware Tanzu tools to rapidly develop new applications from services that support container-based applications.

By integrating VMware Tanzu with VMware Cloud Foundation on Dell EMC VxRail, the Kubernetes clusters natively integrate all of the VMware Tanzu primitives with the full-stack HCI, along with storage, networking, compute, security and management, following VMware best practices. VMware Cloud Foundation and Dell EMC VxRail integrate the VMware Tanzu software stack, delivering a full-stack HCI solution for cloud native and traditional workloads that supports automated Tanzu workload deployments, orchestration and end-to-end lifecycle management to ensure VxRail clusters are in continuously validated states. This approach preserves investments in existing enterprise architectures while solving for the cloud native skill gap by enabling VMware administrators to become Kubernetes administrators.

#### STREAMLINE OPERATIONS AND IMPROVE ROI

Full-stack HCI is ideal for virtual desktop and application workloads, as it provides a highly scalable architecture and maximizes performance.

### Use Case 3: Run Virtual Apps and Desktops at Scale with Full-Stack HCI

To improve efficiency in their virtual desktop environment and better support the needs of different lines of business, many organizations are looking for strategies to help them scale more quickly and easily. Their goal is to run virtual apps and desktops at scale with the efficiency of cloud.

Desktop and application virtualization require a number of data center infrastructure layers across storage, networking, and compute, from the hypervisor to the desktop connection broker. The initial deployment and configuration of these systems can be very time-consuming due to all the manual steps required. Equally problematic is that outdated infrastructure is not equipped to take advantage of many of the features and capabilities of virtual desktops and applications.

When infrastructure can be deployed and configured quickly, the organization can streamline operations and innovate faster to support the business. Full-stack HCI is a natural way to address the challenges with deploying enterprise-grade VDI at scale, because it delivers the complete infrastructure stack managed from a single control plane. Ideal for virtual desktop and application workloads, full-stack HCI provides a highly scalable architecture that delivers high IOPs and exceptional performance to maximize desktop performance.

#### VMware Cloud Foundation on Dell EMC VxRail delivers a more powerful VDI solution

VMware Horizon® 7 is a robust, feature-rich platform for virtual desktops and applications, designed to deliver Windows and online services to any cloud. With Horizon, VMware extends the power of virtualization—from data centers to devices—to deliver desktops and applications with great user experiences, closed-loop manageability, and hybrid cloud flexibility and interoperability.

When integrated with a full-stack HCI solution like VMware Cloud Foundation on VxRail, VMware Horizon 7 combines market-leading desktop and application virtualization capabilities with the enterprise capabilities of the VMware Cloud Foundation for a simple, secure, and scalable solution. It delivers quick time-to-value with automated install and configuration—not only of the hardware and the full VMware SDDC stack—but also of Horizon and key supporting technologies, such as App Volumes, Dynamic Environment Manager, and Unified Access Gateway. All these technologies are managed and updated through a single control plane. Furthermore, the solution delivers quick time-to-value with automated install and configuration of VMware SDDC, Horizon, and the key technologies mentioned previously. Additionally, VMware Cloud Foundation's lifecycle management capability simplifies Day 2 operations with automated updates to the underlying SDDC software. The automated full-stack VxRail lifecycle management functionality is fully integrated into VMware SDDC manager, enabling a seamless upgrade of all hardware and software components through the SDDC manager interface.

**SIMPLIFY MANAGEMENT OF VDI DEPLOYMENTS**

Horizon on VMware Cloud Foundation on VxRail provides integrated life cycle management and automation, enabling organizations to easily grow and scale on demand.

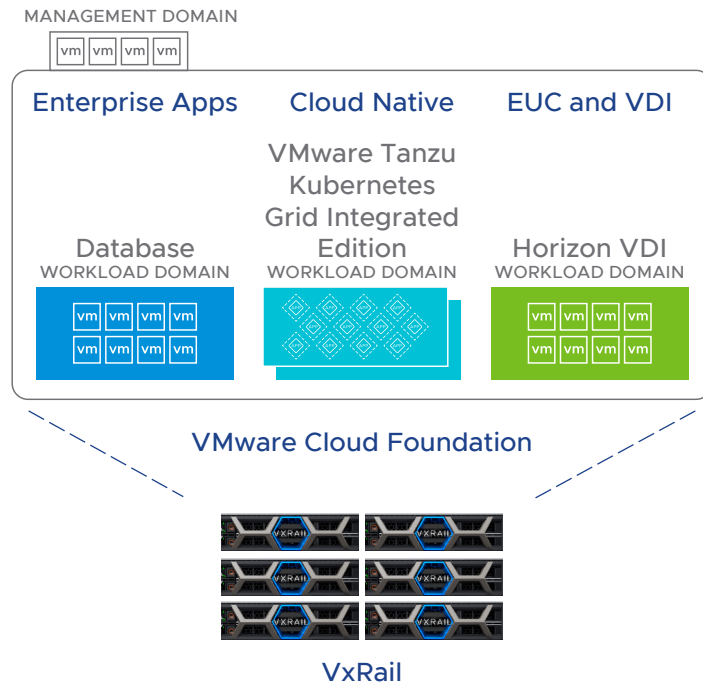


FIGURE 4: Simplify management of VDI deployments

**Deliver best-in-class VDI lifecycle automation from hardware to SDDC**

Horizon on VMware Cloud Foundation on VxRail brings modern, highly scalable HCI infrastructure with integrated lifecycle management and automation of Horizon VDI. It gives administrators throughout the enterprise the ability to deploy traditional applications, cloud native apps, and VDI across several workload domains under common management. By automating installation (Day 0) and configuration (Day 1) activities, Horizon allows organizations to focus on running the business rather than managing infrastructure.

Key benefits include:

1. **Streamlined growth and scalability** – With the building block nature of hyperconverged infrastructure, combined with automated installation and configuration of Horizon 7, this full-stack HCI solution makes it easy for organizations to grow and scale on demand.
2. **Improved security** – With VMware Cloud Foundation on VxRail and Horizon 7 working together, threats can be countered from the endpoint to the data center. Security threats can be quarantined by VMware NSX® network micro-segmentation to restrict east-west traffic, eliminating unauthorized access between desktops and adjacent workloads.
3. **Simplified management** – Full-stack integration between VxRail and VMware Cloud Foundation simplifies the planning, design and lifecycle management of VDI environments. To provide visibility into the health and performance of the Horizon environment, VMware Cloud Foundation leverages vRealize Operations to easily monitor the entire stack, from the data center to end users. Horizon virtual desktops and applications on VMware Cloud Foundation deliver highly scalable hyperconverged infrastructure with integrated lifecycle management and automation. Desktop virtualization success is ensured with contextual, personalized workspaces and integrated infrastructure management tools.



“VMware solution is well-tested and purpose-built for multi-cloud operation. Following the success of the first phase, we are very confident in the success of our next-gen transformation.”

DONALD MAK  
DIRECTOR OF IT-INFRASTRUCTURE  
AND OPERATIONS  
CHOW SANG SANG

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### Case Study: Chow Sang Sang Drives Retail Growth in Hong Kong

Chow Sang Sang is a premier jewelry retailer in Greater China with a retail network of more than 600 stores. To stay at the forefront of its industry, Chow Sang Sang operates a dynamic ecommerce strategy across multiple channels such as tmall, Jingdong Mall, and [vipshop.com](http://vipshop.com), in addition to its award-winning eshop, [chowsangsang.com](http://chowsangsang.com). In 2018, the company's ecommerce business in Mainland China accounted for more than 15 percent of its China sales.

While the company's online business created a significant new revenue stream, it also presented complex challenges for IT operations. In one example, their system was overloaded due to heightened demand, causing an outage and lost revenues. It became clear that the traditional apps that ran their core business functions needed a highly available and scalable infrastructure to support spikes in demand—a need best-suited to full-stack HCI.

“We want a reliable solution that orchestrates all components from the application layer all the way to the infrastructure layer,” said William Poon, Chief Information Officer at Chow Sang Sang. The VMware solution for a software-defined data center, VMware Cloud Foundation, perfectly met this need, delivering the ideal architecture for private, public, and hybrid clouds.

Today, Chow Sang Sang runs on the pre-tested and fully integrated Dell EMC VxRail. It no longer needs to worry about compatibility, reliability, and performance issues. Its new infrastructure is 100 percent ready for the company's future cloud strategies, including data analytics and machine learning. End-to-end solution delivery from VMware was also a critical factor in the project's success.

“VMware provides a complete solution from project planning, equipment acquisition and implementation to support,” Poon said. “This greatly reduces our workload and saves time that would otherwise be spent dealing with multiple vendors and suppliers. With VMware, we have a single point of contact for all technical issues.”

### Conclusion

Organizations on the journey to digital modernization utilize full-stack HCI as a way to fuel higher degrees of productivity and bring new innovations to market faster with greater economic returns. Additionally, the ability to deliver consistent infrastructure for both traditional enterprise and cloud native applications, while using virtual desktop infrastructure to streamline operations and deliver consistent operations, results in a better user experience.

VMware Cloud Foundation with Dell EMC VxRail, the foundation for the Dell Technologies Cloud Platform, provides a single automated, turnkey experience, greatly reducing risk and increasing IT operational efficiency. With this strategic infrastructure in place, IT organizations can focus on delivering better business outcomes, while rapidly deploying new services and future-proofing infrastructure for the path to hybrid cloud.

### Additional Resources

Find out more about VMware full-stack HCI with these resources.

[Chow Sang Sang Transforms IT Services to Run at the Speed of Business with VMware](#)  
[VMware Cloud Foundation on VxRail Solution Overview](#)  
[HCI Assessment](#)



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