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6 Ways Hyperconverged Solutions Make Your Business Future Ready

Introduction

If 2020 has taught us anything about IT today, it is that organizations need agile, future ready infrastructures that are prepared for the unexpected. Seemingly overnight, the global COVID-19 pandemic has forced IT teams to address the demands of a dramatically growing remote workforce and deal with resultant issues around business resiliency, high availability, performance, productivity, and security.

IT teams need certainty and predictability.

Infrastructure matters, perhaps now more than ever. The changes necessitated by the pandemic are accelerating and impacting many of the trends that were already driving IT, including a more distributed and mobile workforce; a shift to hybrid cloud models; explosive growth of big data analytics and the Internet of Things (IoT); rapid expansion of automation, machine learning and artificial intelligence (AI), and the rise of DevOps.

During this period of rapid business transition and transformation, IT teams need certainty and predictability. They can't take chances on unfamiliar approaches and unproven models. IT teams must be able to quickly empower, scale and secure remote workers, leveraging solutions such as virtual desktop infrastructure (VDI). They must reduce IT complexity, burst to the cloud, support exponential data growth, maximize high availability, minimize complexity and ensure data protection and disaster recovery.

VMware's solutions for hyperconverged infrastructure—specifically VMware vSphere™ and VMware vSAN™ for "core" HCI and VMware Cloud Foundation™ for full-stack HCI—provide IT teams with a uniquely efficient, safe and agile path to the future, without forcing them to abandon tools and technologies already in place. HCI lets organizations modernize at their own pace, responding and adapting to new challenges while accelerating future-looking digital transformation initiatives.

This e-book discusses IT issues at a time when business as usual is now a new normal. We explore what it means to be future ready and the benefits of hyperconverged infrastructure. We examine six vital capabilities to demand from your infrastructure: remote workforce enablement, cloud and app modernization, reduced complexity, business resiliency, data protection and disaster recovery, and future ready security. Finally, we look at the benefits of VMware HCI solutions in responding and adapting to this rapidly changing world while accelerating digital-first initiatives.

Chapter 1: Why Future Ready, Why Now?

In a three-week period early in the COVID-19 pandemic, the percentage of U.S. employees working from home more than doubled from 31% to 65%, according to research from Gallup.[8] At the same time, a majority of employers said they would let employees work remotely more often in the future, leading Gallup to conclude that remote work could become the "next normal."

The sudden shift to remote work and work-from-home profoundly impacts IT. Workers must be supported and onboarded remotely, with secure, uninterrupted access to critical business applications, data and collaboration tools. IT teams have to provide support and services while their own personnel also work remotely.

At the same time, other initiatives that have been driving IT—notably those related to digital transformation—cannot be put on the back burner. IT teams still have to move forward with big data analytics and the IoT; cloud modernization; support for DevOps with automation, machine learning and AI; and improvements in business resiliency, cybersecurity, data protection and disaster recovery.

The changes wrought by COVID-19 provide a warning that no business or IT leader can take anything for granted when it comes to preparing the organization for the future. From an IT perspective, that means investing in agile solutions that can quickly adapt wherever and whenever necessary, using on-premises infrastructure seamlessly with public cloud services.

In a three-week period early in the COVID-19 pandemic, the percentage of U.S. employees working from home more than doubled from 31% to 65%[8].

8 *"A Leader's Guide to Developing a Work-From-Home Strategy,"* Gallup, May 1, 2020

The Future Ready Journey

The idea of future ready IT is nothing new. Most businesses would love to avoid costly migrations and forklift upgrades of servers, storage and networks every few years. That's why IT was already moving toward highly virtualized software-defined data centers and hyperconverged solutions well before the pandemic disrupted operations. According to a study conducted prior to COVID-19, the market for HCI was already projected to grow at an annual rate of more than 28% through 2025.[9]

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This level of growth reflects a growing reality that IT must evolve to modern solutions that mitigate risk and leverage the benefits of hybrid cloud.

In today's environment, the concept of future ready takes on a new meaning and new urgency. COVID-19 has accelerated the need for IT to take action quickly. Every business in every industry is facing difficult questions about priorities, including:

- How is the organization protecting employees, customers and businesses?
- What areas of the business should be adapted, evolved and changed?
- How does the organization build a stronger, more secure, more resilient business in the future?
- How can technology be used to build for the future?

9 "*Hyper-Converged Infrastructure Market: Global Forecast to 2025*," MarketsandMarkets, June 2020

In this new context, IT teams can deliver long-term strategic value to the business by approaching future ready IT as a three-part journey:

1. **Responding to immediate challenges** when time is of the essence and urgent action is required to help those in most need. This includes rapidly enabling a distributed workforce by using automation, self-service onboarding and built-in security; expanding data centers with cloud solutions using consistent and familiar infrastructure tools and technology; modernizing disaster recovery processes to limit risk of downtime; and expanding access to external resources to support DevOps, especially across newly distributed remote teams.

2. **Adapting to the new normal** by challenging old assumptions and adopting more efficient ways of operating. This includes evolving to hybrid VDI as a strategic imperative to accelerate, scale and secure the remote workforce; deploying a modern hybrid cloud infrastructure for sustained cost savings, seamless cloud migration and on-demand elastic scalability; assessing the application portfolio for modernization, migration and retirement; and building a catalog of enterprise-grade open source containers to accelerate development cycles.

3. **Accelerating digital-first initiatives** by seeking new opportunities to use IT to drive systemic and structural changes for the better in areas such as health, education and the way we work. This includes embracing new models for worker engagement as part of a long-term strategy to sustain remote work; expanding multicloud strategies to enable use of services from any cloud provider; driving automation throughout the path to production for the rapid delivery of new business services; and containerizing and updating applications to enhance security and compliance.

How Modern Infrastructure Empowers Future Ready IT

In modernizing using a future ready model, there are certain things IT teams should seek to achieve and certain things to avoid.

In terms of achievement, IT should strive to be more cost-effective, efficient, automated, agile and secure, with measurable improvements in areas such as business resiliency, continuity, availability and disaster recovery. Empower agile development and DevOps teams, and use multiple cloud environments to support different workloads, elastic scalability and cloud bursting. Leverage proven solutions to achieve a rapid return to stability, growth and innovation.

In terms of avoidance, it is important not to take on unnecessary risk and uncertainty at a time when extenuating circumstances can spiral out of control. Avoid solutions that require replacing investments that are already in place, not just in technologies but also in people and their knowledge, experience and skill sets. Avoid solutions that are complex and difficult to install and manage, particularly in empowering remote workers or migrating business-critical applications to the cloud. Avoid gaps in business continuity, cybersecurity, availability and regulatory compliance.

Hyperconverged infrastructure, specifically vSAN and VMware Cloud Foundation, provide a simple, more cost-efficient and less risky path to future ready IT. With vSAN and VMware Cloud Foundation, IT teams can move to a future ready model that uses consistent technology from the data center to the edge to multiple clouds.

Future ready advantages of HCI include:

- **Supporting application modernization and agile development** by managing both containers and virtual machines on a single, scalable platform.
- **Supporting full-stack agility and security between on-premises, public cloud and edge environments** with an automated management platform that leverages proven virtualization tools and includes intrinsic security protections.
- **Accelerating the expansion of remote workforces** by providing a flexible and secure platform for VDI that is simple to manage and virtually unlimited in scale.
- **Enabling hybrid-powered multicloud strategies** so IT can deploy legacy applications and modern cloud-native applications in whatever environment makes the most sense.

What are the business benefits of taking this approach to future ready IT, focused on responding, adapting and accelerating? How do HCI solutions make the journey seamless, smooth and successful at all stages? What are the opportunities for IT to be more efficient and service-centric?

Read on for the answers to these and other important questions.

Chapter 2: 6 Reasons to Choose HCI for Future Ready IT

Empower your remote workforce. Leverage modern cloud architectures. Reduce IT complexity. Lower costs. Increase agility. Improve business resiliency. Lower risks in availability, performance, security and regulatory compliance. Respond, adapt and accelerate to meet unexpected challenges now and in the future.

HCI-powered, future ready IT can do all of that and more for your organization. Here are six ways HCI solutions are helping to transform businesses across all industries.

No. 1: VDI and Remote Workforce Enablement

Perhaps the most immediate concern in responding to COVID-19 is empowering a workforce that is often new to remote work and even newer to the concept of working from home. The fact that this shift happened without warning and proper planning added to the burden on IT teams, many of which were not prepared to equip, secure and empower new remote workers at the scale and speed required.

Traditional architectures are a roadblock to efficient deployment of virtual desktops and applications. They are slow, siloed, expensive, complex and difficult to scale and secure. HCI, however, provides an efficient path to VDI, helping IT quickly enable and scale a remote workforce and adapt to evolving workforce environments caused by the pandemic.

Looking to the future, VDI solutions based on vSAN and VMware Cloud Foundation provide a wide range of benefits for business and IT leaders to consider, particularly if they want to embrace remote work as the next normal while changing corporate cultures and supporting digital transformation.

HCI advantages for remote workface enablement include:

- **Technology** that is simple to adopt, manage and scale. By using a solution that is integrated into the hypervisor, IT teams can take advantage of familiar tools in VMware vSphere®, such as VMware Instant Clone Technology, to provide just-in-time desktops. IT also benefits through seamless integration with VMware's stack for desktop-to-infrastructure management.
- **Future ready hardware.** IT can use the latest advances in all-flash storage, such as NVMe, and access new solutions without having to re-platform and replace previous investments or go through forklift upgrades and migrations every few years.
- **Ability to scale up and scale out.** IT can scale up virtual desktops by adding drives and scale out by adding hosts—both in a nondisruptive manner that simplifies and optimizes performance for VDI environments. Instead of having to add an entire storage array to enable users with more desktops, administrators can simply add more disks, flash storage or another host.
- **Performance.** Performance is critical for remote workforce enablement as more people require video, whiteboarding and other collaborative tools where bandwidth and latency can be an issue. HCI gives IT teams greater control, enabling them to centrally managing compute, storage and network resources to tailor performance based on user and application requirements.
- **Cybersecurity.** Phishing emails related to COVID-19 have increased 300%, according to Forbes.[8] HCI-powered VDI solutions provide inherent security protections because users often don't have local storage and can't blur the line between personal and business apps. IT can be more efficient in patching, maintaining and upgrading desktop images. VMware HCI solutions provide added protection because intrinsic security features, such as encryption, are built into every layer. (See No. 6 below.)

8 "*Cybersecurity During COVID-19: What You Need to Know to Protect Yourself*," Forbes, May 23, 2020

No. 2: Modern Applications on Modern Cloud Architectures

Cloud is critical to any future ready IT initiative. Organizations need cloud agility and elastic scalability to respond quickly to changing market conditions. They need to incorporate cloud-native capabilities in new applications as well as legacy ones, and they need to take advantage of cloud economics for many workloads.

However, the reality is that many business-critical applications are not ideally suited to the public cloud because of issues around a format that requires refactoring in order to migrate as well as issues around performance, security, business continuity and other considerations. According to IDC, up to 50% of public cloud workloads will likely be repatriated to private clouds or on-premises infrastructures.[9]

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Repatriation can be expensive, time-consuming and risky if moving across dissimilar environments. Organizations can avoid cost, effort and potential disruption by using a hybrid cloud model that delivers a consistent infrastructure and operations from the core data center to the edge to the cloud. With VMware Cloud Foundation, the same software-defined infrastructure stack in private cloud deployments is also the core technology of VMware-based public clouds; applications can run on this common infrastructure no matter where that infrastructure exists.

Having a consistent hybrid cloud infrastructure model offers a range of business advantages, including the ability to extend on-premises infrastructure with burst capacity to the cloud quickly—typically in less than two hours. Capacity can be scaled in minutes using familiar tools, skill sets and processes, easing the burden on IT admins.

Extensive use of automation is also a benefit of software-defined HCI solutions, enabling IT to spend more time on innovation and less time on administration, while also reducing reliance on different specialists for servers, storage and networks.

9 "*IDC: Increased Services, Pullback from Public Clouds Huge IT Disrupters*," CRN, Feb. 7, 2019

In addition, HCI solutions let organizations migrate applications to the cloud or back at their own pace, while still taking advantage of modern, agile cloud-native software development tools such as microservices and containers. On one common hybrid cloud platform, IT can manage both containerized and VM workloads using the same automated and orchestrated infrastructure.

Consolidating VMs and containers supports a more logical and less resource-intensive way to modernize applications without the need to containerize and rearchitect all legacy apps. This makes it faster and easier to build new capabilities and services for cloud-native apps as well as business-critical legacy apps.

No. 3: Reduced IT Complexity and Cost Savings

Future ready HCI infrastructure eliminates many of the challenges inherent in traditional siloed architectures with their separate compute, storage and network resources and amalgam of tools, policies, skill sets and manual processes.

Legacy models are complex, with costly redundant resourcing and increased risk in maintaining governance and policies in different parts of the stack. This siloed model is the opposite of future ready, making it difficult to manage both traditional and cloud-native apps and integrate with more automated and orchestrated cloud services.

HCI modernizes that model by combining virtualized compute, storage and network components so that they work in relation to each other and are deployed and operated through a single management interface. This accelerates service delivery with reduced risk and greater staff efficiency. TCO efficiencies include:

- Lower Capex related to data center adjustments such as consolidation, evacuation or extension.
- Lower Opex due to automation in performance management, optimized capacity utilization, proactive planning and reduced mean time to resolution.

- Investment protection by eliminating the costs and risks of replacing infrastructure, while leveraging familiar management tools and a consistent operating model throughout modernization.
- Eliminating over-buying, minimizing the data center footprint and power and cooling costs, and reducing the need for administrative work and specialists in servers, storage and networking.

In comparing the costs of an HCI model versus a traditional three-tiered model, a study by the Taneja Group concluded that VMware Cloud Foundation can deliver a 28% reduction in total cost of ownership thanks to built-in automation, scalability and efficiency.[10]

No. 4: Business Resiliency and High Availability

Just 12% of more than 1,500 respondents believe their businesses are highly prepared for the impact of coronavirus, while 26% believe that the virus will have little or no impact on their business, according to a recent survey by Gartner, Inc.[11]

This lack of confidence shows that many organizations approach risk management in an outdated and ineffective manner," said Matt Shinkman, vice president in the Gartner Risk and Audit practice. "The best-prepared organizations will manage the disruption caused by the coronavirus far better than their less-prepared peers."[11]

HCI solutions provide the foundation to support agile business continuity scenarios, including:

- Superior virtual desktop performance at scale to empower the shift to remote work.
- Agility through a cloud operating model on premises, managed with familiar VMware tools.
- Pay-as-you-grow affordability with granular scaling, including burst capacity to the public cloud.
- Resiliency in the event of local or sitewide outages through highly available infrastructure and

10 "*When Comparing Cloud Alternatives, for the Best TCO Leverage VMware Cloud Foundation,*" Taneja Group, April 2019
11 Gartner Press Release, *Gartner Business Continuity Survey Shows Just 12 Percent of Organizations Are Highly Prepared for Coronavirus*, March 10, 2020, https://www.gartner.com/en/newsroom/press-releases/2020-03-10-gartner-business-continuity-survey-shows-just-twelve-percernt-of-organizations-are-highly-prepared-for-coronavirsu

disaster recovery capabilities.

VMware Cloud Foundation delivers highly available infrastructure because it is built on highly available components—i.e., VMware vSphere® High Availability, VMware vSphere® Fault Tolerance. and VMware vSphere® Distributed Resource Scheduler™—which work together to keep virtualized workloads running.

vSAN provides a distributed, scale-out architecture with enterprise-level availability, scalability and performance. vSAN may be deployed in both standard and stretched clusters for higher availability, and vSAN stretched clusters can be paired with disaster recovery solutions to provide a highly resilient environment. Since vSAN must ensure availability of data under a variety of planned and unplanned conditions, it automatically manages the placement of data in compliance with the assigned storage policies of a VM.

No. 5: Data Protection and Disaster Recovery

With more people working remotely, including IT support teams and admins, businesses are at increased risk for gaps in data protection and disaster recovery. According to research by Evaluator Group, IT organizations that had developed and tested worst-case disaster recovery scenarios were in the best place to manage through the pandemic.[12]

This puts organizations with HCI solutions in a better position to mitigate data protection and disaster recovery risks through a variety of factors, including high-availability features, intrinsic security protection, the availability of active-active stretched clusters and the ability to achieve fast, automated recovery from physical infrastructure outages.

VMware HCI customers can take advantage of automation, replication, orchestration and stretched clusters to maximize data protection and achieve significant reductions in both recovery time objectives (RTOs) and recovery point objectives (RPOs).

12 "*Enterprise IT Responds to COVID-19 – Research Study*," Evaluator Group, April 13, 2020

vSAN applies the concept of fault domains to protect an environment from downtime in the event of site failure, including active-active clusters stretched across metro areas. vSAN allows for storage redundancy within a site and across sites at the same time. This helps deliver effective, affordable protection against entire site outages, as well as host outages within a site. vSAN also ensures strict security compliance in DR events through data-at-rest encryption and FIPS 140-2 certification.

Other data protection and DR capabilities available in VMware HCI solutions include:

- **VMware vSphere® Replication™,** an asynchronous replication solution that copies data from a user's primary site to secondary sites. It is fully integrated with VMware HCI through the hypervisor, enabling customers to protect VMs regardless of the underlying storage solution, with an RPO ranging from 5 minutes to 24 hours.
- **VMware Site Recovery Manager™Air™,** which automates and orchestrates the failover process to a secondary site in case of main site failure. SRM also supports nondisruptive testing and detailed reporting, to help ensure businesses meet protection plan targets and DR compliance requirements.
- **VMware Site Recovery™,** offering disaster recovery as a service for VMware Cloud on Amazon Web Services (AWS). VMware Site Recovery delivers on-demand protection with all the benefits of vSphere Replication and SRM, including nondisruptive testing and reporting, without the need to maintain a secondary data center.

No. 6: Intrinsic Security

Intrinsic security protections help IT teams manage policies and automate key capabilities such as encryption, multifactor authentication, micro-segmentation, policy management, identity management, governance and compliance. This is critical for supporting remote workers, whether they are using VDI solutions or standard desktop or mobile devices.

HCI solutions from VMware offer layered security as follows:

- **At the compute layer,** vSphere provides comprehensive built-in security for protecting data, infrastructure and access. The solution delivers operationally simple, policy-driven security and provides VM-level encryption to protect unauthorized data access both at rest and in motion.
- **At the network layer,** NSX delivers micro-segmentation and granular security to the individual workload. Security policies travel with the workloads, independent of where workloads are located in the network topology.
- **At the storage layer,** vSAN offers data-at-rest encryption at the cluster level. vSAN Storage Encryption is built for compliance requirements and offers simple key management, with support for all compliant key managers such as CloudLink, HyTrust, SafeNet, Vormetric and others.
- **At the management layer,** VMware vRealize® Suite drives governance, risk management and compliance and provides deep visibility into the infrastructure—with the ability to use self-driving operations to detect and correct problems as they arise.
- **In VDI use cases,** VMware Horizon® enables applications to be secured by hosting them within the data center, where visibility into application access and protection for applications keeps sensitive data safe.

HCI solutions provide the future ready foundation for organizations to achieve all of the capabilities discussed in this chapter. But not all HCI solutions can help IT teams maximize these benefits and evolve seamlessly to a future ready IT infrastructure. What should you look for in a solution?
Please turn to the next chapter.

Chapter 3: Take the Next Step: Respond, Adapt and Accelerate

Most IT teams are actively addressing the need to enable work from home for many employees, accelerated by COVID-19. Research by Evaluator Group concludes that most IT teams are presently in respond mode, trying to make sure that the required hardware resources, security/data protection and cloud services needed to facilitate remote worker productivity are all available.[8] "The emphasis is on 'keeping the lights on' and doing what is critical to maintain core business operations," according to Evaluator Group.

But even in "respond" mode today, IT teams have to look ahead to the future. Many of the changes taking place today are likely to require permanent adjustments in technology, processes and corporate cultures. As noted in Chapter 1, while IT teams are responding to current challenges, they also have to be looking at future ready solutions that will enable them to adapt to a new way of working and accelerate digital-first initiatives.

The right future-proofing strategy breaks down IT silos, improves IT responsiveness to business needs, stretches valuable capex and opex dollars, facilitates new initiatives and embeds higher and deeper levels of intelligence into all decision-making. That's where capabilities delivered by hybrid cloud and modern applications become invaluable, and where hyperconvergence offers advantages that can't be matched by legacy siloed infrastructure models or public-cloud-only environments.

HCI converges compute and storage resources on industry-standard x86 servers and uses software to abstract and pool cluster resources with unified management software. Hyperconverged infrastructure transforms data centers by simplifying operations through automation, which lowers TCO by leveraging industry-standard servers and scaling incrementally.

8 Ibid. footnote 7

HCI solutions from VMware, specifically vSAN and VMware Cloud Foundation, modernize data centers by bringing together previously isolated infrastructure silos and managing them as a single entity. HCI brings cloud-like capabilities back to an on-premises environment in a holistic, software-defined and integrated platform for reduced complexity, controlled costs, increased agility and cloud readiness. Future ready benefits include:

- **Supporting modern applications**—managing both VM and new cloud-native architectures on a single platform.
- **Enabling hybrid cloud**—creating a cloud-ready data center infrastructure that can be easily extended to tap into on-demand and scalable public cloud services.
- **Simplifying lifecycle management**—providing lifecycle management of all compute, network and storage resources from a single management console.
- **Reducing risk**—linking policies to workloads instead of infrastructure so policies are consistent regardless of deployment location.
- **Modernizing at your own pace**—enabling the ability to migrate applications without refactoring, take advantage of existing investments, future-proof your architecture and eliminate the need for forklift upgrades.

VMware's Future Ready Advantages

When it comes to delivering these future ready benefits, HCI solutions from VMware have inherent advantages versus competitive products because VMware is already the foundation for virtualization, cloud enablement and data center modernization across a wide range of apps and workloads.

As noted by Taneja Group:

"When it comes to the starting point for your hybrid cloud journey, VMware is the logical on-premises choice. A majority of enterprises (65%+) today have adopted vSphere as one of their primary virtualization technologies and tend to run many if not most of their business-critical applications on the platform. These customers benefit from a proven, enterprise-caliber hybrid cloud solution that provides full application compatibility and workload portability between on-premises and public cloud environments."[9]

VMware offers multiple HCI options, with vSAN providing core HCI capabilities. VMware Cloud Foundation is the foundation for the hybrid cloud because its core software-defined infrastructure stack leveraged in private cloud is also the underpinning technology for VMware-based public clouds such as VMware Cloud™ on AWS and other VMware Cloud Provider Program Partners, as well as VMware Cloud™ on Dell EMC.

9 Ibid. footnote 5

Chapter 4: Conclusion

The infrastructure decisions IT teams make today will go a long way toward defining how capable their organizations will be in responding, adapting and accelerating to both the short-term impact of COVID-19 and the longer term changes in where and how people work.

Hyperconverged infrastructure in general, and VMware HCI solutions in particular, have a proven track record in enabling IT to modernize efficiently and at their own pace, leveraging flexible software-defined models that reduce complexity, lower costs and strengthen cybersecurity.

HCI is proving to be especially valuable in the current environment because it provides a safe path to VDI in supporting remote work, and because it dramatically reduces risk through modern features for business continuity, data protection and disaster recovery.

When it comes to evolving to a future ready business, vSAN and VMware Cloud Foundation offer inherent advantages that other solutions can't match. These include reduced complexity, a consistent platform, automation, intrinsic security and embedded protections for business continuity and resiliency.

To learn more about how to make your business future ready with VMware's data center modernization solutions, please visit VMware and review the following resources:

VMware Cloud Foundation Hands-on Lab >

VMware HCI Assessment >

IN HELPING ORGANIZATIONS RESPOND, ADAPT AND ACCELERATE IT, VMWARE OFFERS THE FOLLOWING BENEFITS:

- A consistent platform from data center to edge to cloud.
- Containers and VMs on the same platform.
- Accelerated remote workforce deployment through VDI.
- A future ready, highly automated software-defined architecture.
- Scale up and scale out design, with no need for forklift upgrades.
- Intrinsic security capabilities.
- Advanced features for high availability, data protection and DR.
- A broad ecosystem of partners to maximize customer choice.

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