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# Is Your Hybrid Cloud Journey on Track?

*Digital transformation is a strategic imperative to modernize technology in response to new business realities. Businesses increasingly view hybrid cloud as a critical component of this transformation to enable greater agility, efficiency, and productivity. IT organizations need the right technology approaches and partnerships to make their cloud transition as effective and successful as possible.*

Changes in the business environment continue to accelerate. The concept of “work” has long since ceased to denote a specific time or place, and interactions with employees, partners, and customers are as likely as not to occur outside of the workplace. Business goes on at any time of day or night, on any device, largely beyond the conventional, IT-controlled environment.

Likewise, data sharing across geographical and organizational boundaries has become the norm. Public cloud services increasingly market themselves directly to line-of-business users, sidestepping IT to create systems of convenience that operate alongside of the systems of record. In addition, 93 percent of organizations are adopting services from multiple cloud providers,<sup>1</sup> adding to the complexity of the environment.

In parallel, the quest for greater efficiency is driving digitization across the business. Paper-based processes are being replaced by digital ones, transactions and other interactions are more likely to be performed online, and print and broadcast media have been largely supplanted by social networks and other online resources.

As IT comes to grips with these transformative processes, cloud strategy plays a critical role. If data is the new oil, then cloud technologies are the infrastructure that allows that oil to be produced, refined, distributed, and consumed. To maximize the value of cloud technologies, IT organizations must adopt a range of strategic precepts that include the following:

- **Embrace the reality of multiple clouds** to integrate disparate services, applying flexible approaches to infrastructure that eliminate operational and data silos.
- **Automate routine tasks** to enhance the operational efficiency of both business and technical tasks, including enablement of self-serve IT that empowers users and frees up IT personnel for high-value work.

## In this Paper

- Businesses increasingly view hybrid cloud as a critical component of their digital transformation
- IT organizations planning to implement hybrid cloud architectures must address a common set of requirements
- Dell Technologies Cloud provides consistent hybrid cloud infrastructure and operations suited to your requirements

- **Increase agility and responsiveness to change**, accelerating the pace of IT to match increasingly dynamic business needs and emerging technologies.

### Hybrid Cloud Is the New Baseline for Delivering IT

Traditionally, deploying new applications and services generally involved building out new infrastructure, which carried with it the need for large capital outlays and long horizons for planning, acquisition, and deployment. Those constraints are simply incompatible with today's business environment, which demands the ability to turn on a dime and rapidly respond to changing requirements (including elastic capacity).

The emergence of public cloud services provided a pay-for-use model that enabled faster time to deployment and capacity on demand, without the CAPEX requirements of conventional on-premise deployments. Even as public cloud redefined the ways mainstream organizations deploy applications and services, however, significant limitations remained. Concerns about properties such as security, latency, and data locality created constraints on what workloads were candidates for cloud deployment. Costs can be an issue as well, with monthly fees potentially becoming prohibitive if data volumes become too large.

As the technology developed to make it more viable for mainstream organizations to build private clouds within their own data centers, many chose that path to gain some of the agility of public clouds with better security and control. While private clouds offer some elasticity for workloads, the very nature of being on-premise ultimately limits their capacity. Another



trade-off is that private clouds lack the access to emerging technologies and services that public cloud subscribers benefit from without additional cost or effort.

### Unifying Multiple Clouds with a Consistent Hybrid Cloud approach

Hybrid cloud combines public and private cloud approaches to capture the benefits of both. In this model, a private cloud operates on-premises and interconnects to one or more public cloud services. But a consistent hybrid cloud goes further to deliver consistent infrastructure and operations that unify edge, private, and public clouds. The result is a highly flexible infrastructure that offers the simplicity, low CAPEX, and open-ended scalability of public clouds with the security, performance, and reliability of private clouds. IT organizations planning to implement hybrid cloud architectures must address a common set of requirements, including the following:

- **Architecture and design.** Expertise is needed to design, implement, and maintain on-premise cloud infrastructure using discrete hardware and software building blocks.
- **Workload mobility.** Friction must be minimized when moving workloads among clouds, without requiring software modifications to take advantage of the hybrid environment.
- **Automation and management.** Deployment, configuration, and provisioning of resources in the cloud must be automated, to seamlessly respond to dynamic workload requirements.

“A consistent hybrid cloud goes further to deliver consistent infrastructure and operations that unify edge, private, and public clouds.”

## IT Transformation with Dell Technologies Cloud

Dell Technologies Cloud is a consistent hybrid cloud solution jointly engineered by Dell Technologies and VMware. It enables organizations to readily meet those requirements while reducing effort and risk. At a high level, the platform consists of VMware Cloud Foundation and the Dell EMC infrastructure, and most significantly the VxRail hyperconverged infrastructure (HCI) appliance, which has automated lifecycle management.

**Note:** *The Dell Technologies Cloud platform, built on VxRail, is also available as VMware Cloud on Dell EMC, a data-center-as-a-service (DCaaS) offering managed by VMware.*

Because Dell Technologies Cloud Platform is engineered as a turnkey appliance by Dell Technologies and VMware, it dramatically simplifies deployment while providing assurances that the infrastructure is highly integrated and optimized. It also includes a comprehensive set of software-defined services for compute, networking, storage, and security. Together, these aspects of the solution help to minimize the effort, time, and specialized expertise needed to implement hybrid cloud.

The extension from the public cloud to the data center is transparent from the perspective of enterprise applications and workloads. The same containers or virtual machines can pass freely between public and private clouds, running anywhere. Substantial migration efforts or re-platforming of applications is not required. At the same time, data locality can be restricted for regulatory or privacy reasons; for example, especially sensitive data could be limited to on-premise infrastructure.

“IT organizations are relieved from low-value tasks involved in selecting, assembling, configuring, and validating components.”

The Dell Technologies Cloud Platform environment is highly automated, based on deep integration between VMware’s ubiquitous and robust cloud-management tools with the lifecycle management capabilities of VxRail HCI System Software. This single set of capabilities extends service management, governance, security, automation, and orchestration across multiple clouds. Visibility and control across the entire multi-cloud environment eliminates operational silos and drives up ROI by helping deliver the full value of all infrastructure resources.

## Turnkey Hybrid Cloud Infrastructure: The VxRail HCI Appliance

VxRail helps organizations accelerate digital transformation with fully integrated, pre-configured, and pre-tested turnkey appliances that are designed for fast, seamless adoption. Engineered as a single entity, the components that go into the appliance are pre-verified to work together seamlessly, reducing risk and enhancing stability and reliability compared with build-your-own approaches. Because VxRail was jointly engineered by VMware and Dell Technologies, that pre-validation extends to the integration of VMware Cloud Foundation with the appliance.

IT organizations that implement VxRail appliances are relieved from low-value tasks involved in selecting, assembling, configuring, and validating components as they build their own infrastructure from scratch. That freedom allows them instead to focus on strategic tasks that more directly contribute to IT transformation and innovation. Likewise, the system’s consistent, dependable ongoing operation in production increases operating efficiency and reduces OPEX throughout the life of the solution.

## Robust and Flexible System Options

Based on 14th generation PowerEdge servers, VxRail appliances provide high throughput and low latency operation for the most demanding cloud workloads, including big data analytics, graphics-intensive

virtual desktop infrastructure, and high-performance computing. That hardware foundation also opens VxRail to millions of flexible configuration options, including all-flash based on NVMe or SATA SSDs, choice among Intel® Xeon® Scalable processors, high memory options, up to 25 GbE networking, and NVIDIA Tesla GPUs.

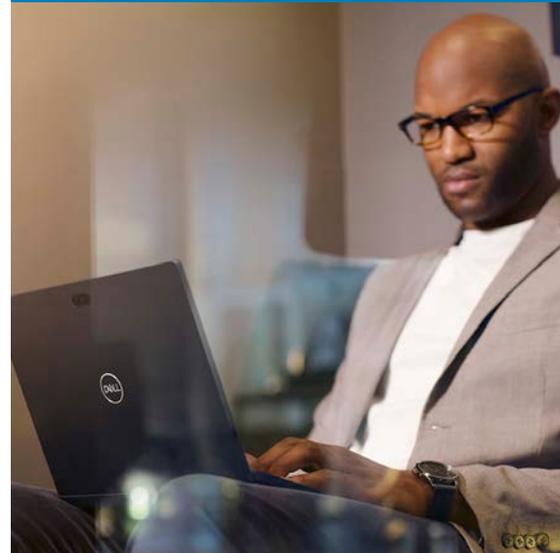
Storage and compute capacity can be scaled up or out non-disruptively on a cost-effective, pay-as-you-grow basis. Modular units can be added transparently, with support for three to 64 nodes in a cluster. Multiple generations of hardware can co-exist in the same cluster, helping future-proof IT investments.

### **Enterprise-Grade Data Services and Management**

To accommodate nearly any appliance or workload that a business may choose to deploy on VxRail appliances, the platform offers enterprise-class data services such as HCI-native at-rest data encryption, replication, backup, and file services. All-flash models also support compression, deduplication, and erasure coding.

Automated deployment and lifecycle management of the infrastructure including networking are provided by VxRail Manager software. That utility is operationally integrated with VMware vCenter, so that day-to-day management of the virtualized environment can be unified with the VMware management environment. Additional management and automation can be provided by pre-validated, optional software such as VMware vRealize Operations and VMware vRealize Automation.

“Unified operation and management across diverse geographies and infrastructures enables centralized administration.”



### **Robust, Built-In Data Protection and Security**

VxRail appliances offer integrated protections for mission-critical use in the data center, including automated scripts for hardening storage, virtualization, and networking infrastructure. VxRail provides vSAN encryption at the cluster level for security and compliance usages, with simple key management facilities. The platform also supports two-factor authentication based on CAC smart cards and SecurID hard or soft tokens. Optionally, the Data Protection Suite for VMware delivers extended features that include backup and recovery, continuous data protection, monitoring and analysis, and search.

### **Best-in-Class Hybrid Cloud Software: VMware Cloud Foundation**

VMware Cloud Foundation enables interoperability among multiple clouds and delivers a common experience. Unified operation and management across diverse geographies and infrastructures enables centralized administration of applications and workloads wherever they reside, eliminating functional silos while increasing the agility, elasticity, and responsiveness of IT. Thoroughly integrated and optimized for VxRail HCI appliances, VMware Cloud Foundation accelerates the path to the hybrid cloud.

### **Defining Resources in Software to Enhance Agility and Flexibility**

VMware Cloud Foundation is based on VMware's vision for the software-defined data center. This vision decouples processing,

storage, and networking from the underlying hardware and defines them in software, so that all resources can be dynamically spun up on demand. Automation makes operations far more responsive than in conventional environments, and administration can be handled with dramatically reduced effort and cost. VMware Cloud Foundation is based on industry-standard VMware software building blocks, including the following:

- **Compute virtualization: VMware vSphere** is built atop a bare-metal hypervisor that delivers high performance by running directly on the hardware, without an intervening host operating system.
- **Software-defined storage: VMware vSAN** pools storage from multiple hosts into a shared managed data store from which it provisions virtual disks as needed.
- **Network virtualization: VMware NSX** abstracts networking resources from throughout the environment and applies them by spinning up virtual networks on demand.
- **Cloud management: VMware vRealize Suite** provides robust management capabilities including automation, self-service IT, and programmatic control over infrastructure.

### Streamlining the Path to Hybrid Cloud

The core value proposition of VMware Cloud Foundation includes reducing the complexity for businesses to implement private and hybrid cloud architectures. The solution significantly reduces the time and expense commitments required, which could otherwise be prohibitive for resource-constrained businesses. Particularly through its pre-integration with VxRail HCI appliances, it removes the significant impediments associated with scarce technical expertise required to implement and support other hybrid cloud platforms.

Key benefits to businesses from the implementation of VMware Cloud Foundation as part of Dell Technologies Cloud include the following:

- **Accelerated and simplified implementation** of hybrid cloud, using a comprehensive set of components based on industry-standard virtualization.



- **Operational efficiency** delivered by built-in automation and powerful, intuitive administration that includes lifecycle management based on user policy.
- **Flexibility and stability** across almost any workload, regardless of performance, scalability, or latency requirements, using either virtual machines or containers.
- **Distributed security** applied at the per-workload level, independent of the underlying hardware, that moves with the workload wherever it goes around the environment.

### Conclusion

As organizations chart their courses to digital transformation, hybrid cloud emerges as a clear enabler for the future. Dell Technologies Cloud provides consistent hybrid cloud infrastructure and operations that is ideally suited to the technical and resource requirements of businesses. Combining industry-leading Dell EMC VxRail HCI and VMware Cloud Foundation, this solution enables rapid adoption, automated efficiency, and robust security that powers next-generation infrastructure.

*Learn more about hybrid cloud solutions from Dell Technologies at [DellTechnologies.com/Cloud](https://www.delltechnologies.com/Cloud)*

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### Sources

<sup>1</sup> IDC White Paper, sponsored by Cisco, June 2018. "Adopting Multicloud—A Fact-based Blueprint for Reducing Enterprise Business Risks." <https://www.cisco.com/c/dam/en/us/solutions/collateral/trends/cloud/adopting-multicloud-idc-white-paper.pdf>.