Hyper-Converged Infrastructure Portfolio Comparison

Choosing the right vendor on the path to Digital Transformation: Dell EMC vs. HPE
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Executive Summary

Digital transformation has become a business imperative as most aspects of economic engagement have become digital. Around the globe, businesses and government agencies are re-engineering their technology infrastructures to keep pace with customer demands, spur innovation and stay competitive in an ever-evolving digital economy.

A recent PwC survey noted that 45 percent of business and IT executives across 51 countries identified growing revenue via digital transformation as a top priority. Success in this fast-paced digital landscape requires businesses to transform their IT infrastructures to achieve new levels of flexibility and responsiveness. At the same time, business leaders must find a balance between funding core aspects of the business while investing in new business and technology innovations needed to compete in today’s dynamic environment.

Hyper-Converged Infrastructure (HCI) systems bundle multiple technology components together into single systems, enabling IT departments to spend less time managing separate data center components and more time proactively delivering value to the business. In this white paper, we compare the portfolio offerings of Dell EMC and HPE, and highlight significant benefits to be realized when partnering with the HCI market leader: Dell EMC.

Dell EMC provides a tightly integrated software ecosystem and the flexibility to run multiple workload types, providing solutions to a broader customer base than HPE.

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Why Hyper-Converged Infrastructure is a Relevant Technology

One of the most logical and efficient ways to modernize IT and drive incremental business value is by leveraging Hyper-Converged Infrastructure. Below are summaries of Converged Infrastructure and Hyper-Converged Infrastructure:

- **Converged Infrastructure (CI)** combines multiple hardware components – server, storage and networking – with management software that delivers orchestration, usually delivered as a single rack and sold as a single product. It is pre-configured based on the workloads you are supporting, so you can’t significantly alter the configuration after it is installed.

- **Hyper-Converged Infrastructure (HCI)** is a software-defined architecture with integrated compute, software-defined storage, virtualization, and (often) networking. Therefore the configuration is more flexible as it does not depend on the hardware as much as with CI.

While both have their merits, for the purpose of this document we will focus on HCI, as it represents one of the fastest-growing segments in IT today.

Different application workloads have different resource requirements. Standardizing on one class of IT infrastructure to support every potential application workload is not appropriate for most customers. In fact, it has now become routine for IT organizations to choose HCI systems as the infrastructure building block in hybrid cloud environments.

The reason why more organizations are incorporating HCI into the data center is that a growing number of workloads benefit from scaling out storage and compute using a foundational software-defined storage technology in a hyper-converged architecture. HCI reduces operational costs by unifying the management of storage and compute, lowering the total cost of acquisition, making HCI more accessible to organizations. This is why IDC\(^2\) shows that HCI represents the highest growth within the software-defined storage (SDS) market segment, growing at a 26.6 percent CAGR (2016 – 2021). By 2021, HCI will be a $7.15 billion market and represent 44.3 percent of the overall SDS market.

The flexibility to start small and scale up and out, has made HCI a compelling proposition for customers looking to reap the benefits of a software-defined data center architecture.

Key Criteria to Identify the Best HCI Vendor

Important considerations when selecting an HCI vendor:

- **Market Leadership** — Long-term strengths of the vendor to sustain product lifecycle and deliver solution excellence.

- **Product Portfolio Strength and Fit** — Appropriate solution for multiple and/or varied workload and business requirements.

- **Scope, Flexibility and Affordability of Support** — Ability to stand behind and help sustain the effectiveness of solutions in an ever-changing business climate.

- **Ease of Purchase** — Availability of financial terms and consumption models that are most strategic to customer business.

**Market Leadership**

IDC identifies Dell EMC as the number 1 vendor in the hyper-converged space with 30.6 percent share (Figure 1) while HPE lags behind at number 4 with only 3.6 percent share. Moreover, the trajectory of both vendors seems to be heading in opposite directions; while Dell EMC has been increasing its share the last six quarters, HPE has lost share every quarter over the last year (Figure 2). It is important to note that in the HCI space — where the overall market grew by 68 percent Y/Y — Dell EMC’s revenue grew faster than the market at 158 percent Y/Y while HPE had the slowest growth of the top five vendors with only 8.8 percent Y/Y (Table 1).

These market results clearly indicate customer preference and the vendor’s ability to deliver the outcomes needed when buying a HCI solution, and highlight critical factors IT organizations should consider: Technology, Services, Support and Financing.

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3 Source: IDC Quarterly Converged Systems Tracker – Final Historical 2017Q3
## HCI Market Share Q3, 2017 Comparisons

### Top 5 by Company Performance: 2017Q3 Vendor Revenue ($Millions)\(^4\)

<table>
<thead>
<tr>
<th>Company</th>
<th>Revenue ($ million)</th>
<th>Market Share</th>
<th>YoY Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dell EMC</td>
<td>$ 307</td>
<td>30.6%</td>
<td>158.3%</td>
</tr>
<tr>
<td>Nutanix</td>
<td>207</td>
<td>20.6%</td>
<td>61.1%</td>
</tr>
<tr>
<td>Cisco</td>
<td>66</td>
<td>6.6%</td>
<td>541.5%</td>
</tr>
<tr>
<td>HPE</td>
<td>36</td>
<td>3.6%</td>
<td>8.8%</td>
</tr>
<tr>
<td>Huawei</td>
<td>25</td>
<td>2.5%</td>
<td>407.7%</td>
</tr>
<tr>
<td>Others</td>
<td>362</td>
<td>36.1%</td>
<td>20.2%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$ 1,002</strong></td>
<td><strong>100.0%</strong></td>
<td><strong>68.0%</strong></td>
</tr>
</tbody>
</table>

*Table 1 – HCI Segment Revenue Growth*

### Product Portfolio Strength and Fit

Software-defined data centers (SDDC) can deliver cost savings, efficiency gains, consolidation, management improvements and automation. For an organization to reach the point where they can fully reap these rewards, they must make choices that, in most cases, include trade-offs. One of the most important decisions when deciding on a software-defined data center approach is balancing flexibility with simplicity.

In a SDDC, a single dedicated ecosystem (e.g. VMware) simplifies management, integration and orchestration across the software stack, resulting in lower operational costs. However, this approach requires workloads to be bound by the rules of a particular ecosystem. On the other hand, a flexible ecosystem that supports multiple hypervisors, or even bare-metal workloads,

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\(^4\) Source: IDC Quarterly Converged Systems Tracker – Final Historical 2017Q3
allows IT to support more types of workloads and applications without adding more complexity to the environment. This reduces set-up, integration and support costs. There is no “right” approach to this question of flexibility or simplicity; it all depends on customer needs and the type of workloads they intend to support. (See Figure 3.)

![Simple vs. Flexible Ecosystem](image)

**Figure 3 – Simple vs. Flexible Ecosystem**

Comparing the HCI portfolios of Dell EMC and HPE, we can identify two distinct HCI approaches:

- Dell EMC provides the choice of either a single-defined ecosystem or a flexible ecosystem. This allows customers to pick a solution that most closely matches their workload requirements.
- HPE provides only an integrated ecosystem approach. This limits options to customers.

**Hyper-Converged Systems Options**

HCI is rapidly becoming the foundation for modern data centers. The main drivers behind HCI adoption are:

- Efficient scalability
- Simplified operations with software-driven automation and lifecycle management
- Agility and economics similar to those of the public cloud, yet located on premises
Two primary solutions address varying customer needs within the HCI space:

- **HCI appliances** — Accelerate transformation of both compute and storage layers for customer data centers by delivering turnkey outcomes on all-flash, software-defined, scale-out architectures.

- **Rack-scale HCI systems** — Enable additional transformation for customers ready to fully modernize their data center by adopting software-defined networking as well as compute and storage in a fully integrated, turnkey fashion.

Dell EMC’s HCI portfolio provides customers with the choice to be fully integrated within the VMware virtualization stack or the flexibility to choose different virtualization environments and network integration. HPE offers only one approach with two different appliance types that are based on vSphere but not as tightly integrated across the VMware stack as Dell EMC. (See Figure 4).

**Hyper-Converged Portfolio Comparison**

![Hyper-Converged Portfolio Comparison Diagram](image)

**HCI Appliances**

Simple to set up and highly automated, HCI appliances deliver simplicity and speed at a relatively low cost of entry when compared to converged infrastructure or traditional SAN. HCI appliances are highly configurable and designed to start small and grow by simply adding appliances or nodes to the cluster. They provide a simpler and more complete experience, which is inclusive of ongoing lifecycle management and support.
Both Dell EMC and HPE have options for customers with these particular needs. However, the Dell EMC portfolio, with a broader set of technologies, can deliver more precise solutions to better support IT transformation goals. Whether your goal is to start small and scale up/scale out, or if you are a VMware shop and want to keep it that way, or you are considering multiple hypervisor options, Dell EMC has a solution.

HPE’s approach to HCI appliances is limited in terms of hypervisor compatibility, hardware configurations and scalability. As seen in table 4, if you compare hardware configurations, SDS technology, density and scalability available in the Dell EMC HCI appliance portfolio, there are significantly more options compared to HPE.

For example:

- Dell EMC VxRail appliances can scale to 64 nodes, while HPE can only scale to 32.
- Dell EMC VxRail and XC Series combined offer twelve different models, while HPE offers only three.
- Dell EMC XC Series offers multi-hypervisor capabilities, while HPE does not have a model that offers multi-hypervisor capabilities.

Most importantly, performance tests conducted in a lab environment indicate that VxRail, powered by Intel® Xeon® Scalable Processors, can process up to 50 percent more database transactions than HPE HC 380\(^5\) while HPE SimpliVity 380 performed 64 percent fewer orders per minute (OPMs) and 55 percent lower IOPS when compared to VxRail\(^6\).

This translates to significant differences in end-user response times:

- Orders per minute — Dell EMC VxRail P470F processed 43 percent more orders per minute than HPE SimpliVity 380\(^7\).
- Database access times — Dell EMC VxRail P470F delivered up to 81 percent faster response times than HPE SimpliVity 380\(^8\).

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\(^7\) Source: Dell EMC sponsored white paper – Principled Technologies: Handle more orders with faster response times, today and tomorrow http://www.principledtechnologies.com/Dell/VxRail_P470F_vs_HPE_SimpliVity_database_performance_0717_v2.pdf
## HCI Appliance Portfolio Comparison

<table>
<thead>
<tr>
<th>Components</th>
<th>Dell EMC VxRail&lt;sup&gt;8&lt;/sup&gt;</th>
<th>Dell EMC XC Series&lt;sup&gt;9&lt;/sup&gt;</th>
<th>HPE SimpliVity 380&lt;sup&gt;10&lt;/sup&gt;</th>
<th>HPE HC380&lt;sup&gt;11&lt;/sup&gt;</th>
</tr>
</thead>
</table>
| **HW Configuration Options** | 5 Models  
Form factor (1U & 2U)  
CPU (6–44 cores)  
Memory (64–1536GB)  
Storage (1.92–46TB) | 7 Models  
Form factor (1U & 2U)  
CPU (16–44 cores)  
Memory (64–1536GB)  
Storage (4TB–60TB) | 1 Model  
Form Factor (2U)  
CPU (16–44 cores)  
Memory (142–1467GB)  
Storage (6–40TB) | 2 Models  
Form Factor (4U & 2U)  
CPU (6–36 cores)  
Memory (128–1536GB)  
Storage (3.4–40TB) |
| **SDS software** | VMware vSAN | Nutanix | OmniStack | VSA |
| **Hypervisor Compatibility** | VMware vSphere | Multi-Hypervisor | VMware vSphere | VMware vSphere |
| **Density** | 1–4 nodes per chassis | 1 or 4 nodes per chassis | 1 node per chassis | 1 node per chassis |
| **Scalability** | 3–64 nodes in 1-node increments | 3–unlimited in 1-node increments | 1–32 nodes in 1-node increments | 2–16 nodes in 1-node increments |
| **Deduplication/Compression** | In-line | In-line | Hardware-enabled (PCIe) In-line | NA |

### Table 2 – HCI Appliance Comparison

#### HCI Racks

Rack-scale systems offer the same benefits as standalone HCI appliances but on a larger scale. Dell EMC rack-based HCI options include pre-integrated physical networking and a spine-and-leaf network fabric that provides unlimited network scalability and simplified operations. These platforms provide great potential for reducing operational costs as they can support both traditional and cloud-native workloads.

- **VxRack SDDC** powered by Intel® Xeon® Scalable Processors and VMware Cloud Foundation software, consists of hyper-converged rack-scale engineered systems, with integrated networking, to achieve the scalability and management requirements of traditional and modern workloads. Purposely designed to enable customers to quickly deploy Infrastructure-as-a-Service (IaaS) and/or private cloud architectures.

- **VxRack FLEX** powered by Intel® Xeon® Scalable Processors is a rack-scale hyper-converged system designed to support web-scale capabilities (thousands of nodes), enabling companies to start small and grow to data center scale in flexible, discrete increments. Powered by Dell EMC ScaleIO software-defined storage and integrated with Dell EMC PowerEdge Servers, this turnkey solution offers choice of hypervisor (including vSphere) or a bare-metal option, and supports a wide range of use cases.<sup>12</sup>

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8 [https://www.emc.com/collateral/specification-sheet/vxrail-4.0-spec-sheet.pdf](https://www.emc.com/collateral/specification-sheet/vxrail-4.0-spec-sheet.pdf)
Scope, Flexibility and Affordability of Support

With the convergence of hardware and software in HCI solutions, it is extremely important to have the right support coverage in order to avoid surprises. Traditional infrastructure vendors may offer software and hardware support separately, so we recommend working with a vendor that can support the entire solution and has strong ecosystem partnerships that support and optimize the solution for the entire lifecycle.

Dell EMC’s customer support services have been recognized by the Technology Services Industry Association (TSIA) for a focus on ensuring customers receive the best outcomes for their technology. The comprehensive portfolio of the ProSupport Enterprise Suite and ProDeploy Enterprise Suite simplifies the process of selecting the right level of service and support for IT solutions inclusive of hardware and software, with mission-critical Target Response Objectives (TROs)\(^\text{13}\).

While HPE offers similar support coverage, customers must navigate multiple hardware and software support options to build the right support and deployment package for their needs\(^\text{14}\). The Dell EMC approach of “bundling” the most commonly needed deployment and support features removes much of the uncertainty in selecting the right level of support while reducing maintenance costs.

Flexible Payment Programs

As part of their financing portfolios, both Dell EMC and HPE have flexible payment programs that allow businesses to pay as they consume storage, so they only pay for what they use, thus reducing up-front capital expenditures. Moreover, within the HCI appliance space, Dell EMC and HPE offer specific flexible payment programs aimed at facilitating the transition to HCI while limiting the financial risk associated with large IT investments.

Dell EMC Cloud Flex for HCI provides an option for customers interested in VxRail to start the transition to a modern data center with minimal financial risk, including no up-front costs, monthly payments that decrease over time and the ability to “flex down” by reducing the number of nodes after 12 months (see Table 3).


## HCI Financial Solutions Comparison

<table>
<thead>
<tr>
<th>Feature</th>
<th>Dell EMC Cloud Flex for HCI VxRail</th>
<th>Investment Solutions for HPE HC380</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>Cloud Flex for HCI is a financing solution that requires no up-front investment and has declining payments over time — with no obligation after the first twelve months.</td>
<td>Investment solutions for HPE HC380 provides options to make monthly payments based on a price per VM per month structure and to pay as you deploy and scale.</td>
</tr>
<tr>
<td><strong>Products included</strong></td>
<td>VxRail</td>
<td>HC380</td>
</tr>
<tr>
<td><strong>Terms</strong></td>
<td>Monthly payments 5-year agreement with a 1-year commitment</td>
<td>Monthly payments Multiple terms</td>
</tr>
<tr>
<td><strong>Flex down</strong></td>
<td>No penalty after 1-year</td>
<td>Penalty</td>
</tr>
<tr>
<td><strong>End of Term</strong></td>
<td>Customer can buy the asset or return</td>
<td>Customer owns asset</td>
</tr>
</tbody>
</table>

*Table 3 – Financial Solutions Comparison*

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15 There are more financial options for IT consumption, so this list is not exhaustive but it does include all specific financial offers for HCI.
Summary Observations and Recommendations

Hyper-Converged Infrastructure offers a compelling path for IT departments looking to transform their infrastructures for increased agility, simplicity, performance and scalability—as well as significant cost-efficiencies. Primarily:

- HCI allows IT departments to be flexible and nimble when dealing with mixed workload requirements and cloud-native applications.
- HCI allows customers to start small and scale according to their needs, reducing financial risk and enabling the ability to ramp according to business requirements.

Both Dell EMC and HPE offer HCI alternatives. However, Dell EMC offers a broader portfolio of options for single or flexible ecosystems, award-winning support services and more flexible payment plans.

Dell EMC’s portfolio includes HCI appliances and HCI racks with choice in hypervisor and network integration, while HPE only offers appliances that work with a single hypervisor and not an integrated network, significantly limiting options for customers to adapt to their workload needs and scale up and/or scale out.

- **HCI appliances** — Dell EMC VxRail Appliances, powered by Intel® Xeon® Scalable Processors and jointly developed with VMware, and the XC Series OEM relationship with Nutanix (top two software-defined storage vendors) set Dell EMC apart as HPE appliances rely on proprietary technology from SimpliVity. Moreover, in performance tests comparing VxRail Appliances against HC380 and SimpliVity, VxRail outperformed both HPE systems.

- **Rack-Scale HCI** — Dell EMC provides options to scale out within the VMware environment (VxRack SDDC) and with a multi-hypervisor environment (VxRack FLEX). HPE does not have a rack-scale option.

Dell EMC support services are internationally recognized for its focus on helping customers maximize the value of their technology. The Dell EMC Cloud Flex for HCI financing option, for example, makes it easier for customers to acquire and maintain the technology they need. HPE does not offer pay-as-you-go financing options for HCI.

For customers looking to transform data-processing capabilities and gain the responsiveness today’s digital economy requires, HCI systems are a top priority. On the path to digital transformation, it is critical to partner with a vendor that is the market leader, offers a broad portfolio of choices, has award-winning customer service and provides flexible financing plans, today and tomorrow. Dell EMC is that vendor.

To learn more about Dell EMC Hyper-Converged Infrastructure, visit [DellEMC.com/CI](http://DellEMC.com/CI)