



# Accelerate Business Transformation with Enterprise Private Cloud Solutions from NetApp and Mellanox

## EXECUTIVE SUMMARY

As organizations increasingly value operational simplicity and faster time to market, the hyperconverged infrastructure (HCI) market is growing as a result of rapid adoption. According to IDC, hyperconverged solutions will account for 60% of all server, storage, and network deployments by 2020<sup>1</sup>.

NetApp and Mellanox combine our strengths in an enterprise-scale hybrid cloud infrastructure solution that gives customers the flexibility to run a variety of workloads without compromising performance, scale, or efficiency. The joint NetApp HCI and Mellanox solution is fully cloud integrated, enabling customers to store their data on their premises, in a public cloud, or in a hybrid cloud environment. This innovative solution is the first fully cloud-integrated HCI solution to leverage the full potential of your data, on your premises or in a public or hybrid cloud.

## UNLEASH THE POWER OF HYBRID CLOUDS

Public clouds have set high expectations for agility, scale, and services. NetApp HCI is designed to deliver the public cloud consumption experience with simplicity, dynamic scale, and operational efficiency in a hybrid multicloud infrastructure.

NetApp HCI is designed to deliver seamless access and best-in-class services from on your premises, any third-party cloud provider, or a mix of these services. This flexibility allows organizations to optimize their resources around specific workloads and applications with a single solution; easily manage and run multiple applications with predictable performance; scale compute and storage resources independently so you never pay for more than you use; and deploy in minutes with a turnkey cloud infrastructure that eliminates the complex management of traditional three-tier architectures. With NetApp HCI you can realize the true promise of an enterprise-scale hybrid cloud infrastructure.

## HIGHLIGHTS

- Up to 3 times better performance at half the cost of leading competitors.
- Consolidate multiple workloads and reduce TCO by 59%.
- 33% lower TCO for 2,500 VMs against our nearest competitor.
- Increase compute efficiency by 22%.
- 92% less administrative time with nondisruptive scaling with no downtime.
- High availability in one rack unit with the unique half-width form factor of the Mellanox SN2010 Ethernet switch.
- Centralize and streamline management.



Storage Nodes

Compute Nodes

<sup>1</sup> IDC, Worldwide Datacenter 2017 predications, Nov 2016

## INCREASE OPERATIONAL EFFICIENCY

One of the biggest challenges in any data center is delivering predictable results, especially in the face of proliferating applications and workloads. NetApp HCI enables consolidation of all applications. With NetApp HCI, each volume is configured with minimum, maximum, and burst IOPS values. The maximum and burst values control allocation, enabling the system to deliver consistent performance to all workloads.

## ENTERPRISE-SCALE HYBRID CLOUD

The NetApp HCI node-based shared-nothing architecture delivers independent scaling of compute and storage resources. This approach enables you to dynamically scale up or down on demand, avoiding costly and inefficient overprovisioning, which simplifies capacity and performance planning. Start as small as six nodes and add exactly what you require to scale your infrastructure in a granular fashion to reduce TCO. Third-party analysis shows that NetApp HCI is the lowest-cost all-flash hybrid cloud infrastructure on the market today, reducing TCO by as much as 59%<sup>2</sup>.

NetApp HCI simplifies IT resource consumption with a common interface across private and public clouds. By taking advantage of the best services from any public cloud and delivering a user experience that doesn't depend on location, NetApp HCI enables a private cloud that essentially becomes another resource just like public clouds, using automation to eliminate the user errors associated with manual operations.

## ETHERNET STORAGE FABRIC

[Mellanox ConnectX® Ethernet](#) adapters deliver TCP, RDMA, NVMe over Fabrics (NVMe-oF), erasure coding, T10 DIF, and encryption. They reduce storage latency and free up CPU on the initiator and target, so both servers and storage have more CPU power for running applications and storage features.

[Mellanox Spectrum™ Ethernet](#) switches deliver the lowest latency, zero avoidable packet loss, and easy management, along with unique half-width form factors, making Spectrum switches ideal for accelerating flash storage in HCI clusters. The Mellanox Spectrum-based Ethernet switches are nonblocking and allow enough uplink ports to build a fully nonblocking fabric. The latency is the lowest of any generally



Mellanox Spectrum Ethernet Switch

available Ethernet switch (300 nanoseconds port to port), and the switch also incorporates an intelligent buffer designed to allocate buffer space to all ports equally. This means that storage I/O is treated fairly and ensures consistent performance to all workloads.

Together, the Mellanox adapter and switch create a storage fabric that can support any storage architecture at speeds from 10 to 100Gb per second and offers 3 times better performance than Fibre Channel at one-third the price. Supporting block and file storage, an Ethernet storage fabric (ESF) from Mellanox makes an ideal infrastructure to support a NetApp HCI solution. An end-to-end ESF solution from Mellanox achieves the ultimate performance and scale, and it has been tested together with NetApp HCI to ensure simple deployment and freedom from network bottlenecks.

## SOLUTION OVERVIEW

The NetApp HCI solution natively converges compute, storage, virtualization, and networking capable of supporting any enterprise workload at any scale.

Mellanox Ethernet infrastructure, including Spectrum switch, ConnectX adapters, and LinkX® cables helps to greatly reduce networking complexity, especially when the IT infrastructure scales up and enterprise-class reliability is required. Together, NetApp and Mellanox deliver end-to-end solutions for a hybrid cloud infrastructure.

## JOINT SOLUTION FEATURES

- Easy to deploy: A preconfigured networking kit and deployment guides make NetApp HCI easy to set up and configure.
- One platform for all: Consolidate on a single solution with predictable scalability.
- Delivers 3 times the storage performance compared to competing solutions<sup>3</sup>.
- Increase compute efficiency by 22%<sup>3</sup>.
- Simplify networking with the flexible and scalable Mellanox switch, with sufficient ports in the smallest and most convenient form factor

## USE CASES

### Hybrid Cloud

Accelerate delivery of your private cloud services with an enterprise-scale hybrid cloud infrastructure. [Learn More](#)

### End-User Computing

Realize your vision. Accelerate deployment. Deliver an optimum user experience with NetApp HCI and VMware Horizon. [Learn More](#)

### Workload Consolidation

Eliminate silos with a hybrid cloud infrastructure that lets you predictably run multiple applications. [Learn More](#)

<sup>2,3</sup> Evaluator Group, How Architecture Design Can Lower HCI TCO, December 2017

## BETTER TOGETHER

A Mellanox ESF end-to-end Ethernet infrastructure combined with a NetApp HCI solution enables a whole new breed of hybrid cloud infrastructure. Leverage the benefits of local on-premises centralized storage or in a public cloud or hybrid cloud environment, or any mix of these services.

No matter the specific workloads or variety of applications, the joint solution optimizes storage, compute, virtualization, and networking resources, making the solution suitable for enterprise to large hyperscale data centers to help companies remove data silos and meet data growth challenges today and well into tomorrow. Mellanox and NetApp employ the latest technologies to help you build next-generation simple but comprehensive data center solutions.

## WANT TO LEARN MORE?

NetApp enterprise-scale hybrid cloud infrastructure: <https://www.netapp.com/us/products/converged-systems/hyper-converged-infrastructure.aspx>

Mellanox end-to-end Ethernet connectivity: <http://www.mellanox.com/ethernet-storage-fabric/>



**NetApp HCI Appliance**

### About NetApp

NetApp is the data authority for hybrid cloud. We provide a full range of hybrid cloud data services that simplify management of applications and data across cloud and on-premises environments to accelerate digital transformation. Together with our partners, we empower global organizations to unleash the full potential of their data to expand customer touchpoints, foster greater innovation, and optimize their operations. For more information, visit [www.netapp.com](http://www.netapp.com). #DataDriven

### About Mellanox

Mellanox Technologies is a leading supplier of end-to-end InfiniBand and Ethernet interconnect solutions and services for servers and storage. Mellanox interconnect solutions increase data center efficiency by providing the highest throughput and lowest latency, delivering data faster to applications and unlocking system performance capability. Mellanox offers a choice of fast interconnect products: adapters, switches, software, cables and silicon that accelerate application runtime and maximize business results for a wide range of markets including high-performance computing, enterprise data centers, Web 2.0, cloud, storage and financial services.

To find out more, visit our website: [www.mellanox.com](http://www.mellanox.com)