

PeerPaper Report

HOW IT ORGANIZATIONS BENEFIT FROM DISAGGREGATED HYPER-CONVERGED INFRASTRUCTURE (DHCI)

Based on Real User Reviews of NetApp HCI

2020



ABSTRACT

What is the best way to build cloud-ready infrastructure on-premises? According to members of IT Central Station, disaggregated Hyper-Converged Infrastructure (dHCI) offers an effective solution. This paper offers insights into the benefits of the dHCI approach to private clouds and comparable on-premises infrastructure. It is based on real user reviews from IT Central Station of the NetApp HCI solution, which enables a dHCI architecture. Highlights include higher performance, elastic, cloud-native infrastructure, flexibility, consolidated workloads, cloud data services, and support for multiple platforms.

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INTRODUCTION

IT managers are under pressure to build cloud-ready infrastructure on-premises. Private clouds have to be high-performing and agile. They need to scale easily. Infrastructure managers also expect automated management features. Disaggregated Hyper-Converged Infrastructure (dHCI) is best-suited to these challenges. By combining independent compute and storage nodes, it enables cloud-ready

on-premises infrastructure for a range of workloads. This paper offers insights into the benefits of dHCI for IT organizations. It is based on real user reviews from IT Central Station of the NetApp HCI solution, which enables the dHCI architecture. Highlights include higher performance, elastic, cloud-native infrastructure, flexibility, consolidated workloads, cloud data services, and support for multiple platforms.

Defining dHCI

To understand the significance of dHCI, it's first necessary to grasp the evolution of converged infrastructures over the last few years. Briefly, Converged Infrastructure (CI) first emerged as an alternative to traditional infrastructure. While infrastructure had long been an ad-hoc affair, with customized deployments of compute, storage and networks, CI simplified things with pre-validated configurations and the ability to connect compute and storage through a single network switch. Figure 1 depicts the evolution of CI to HCI and dHCI.

HCI took CI a step further, adding software-defined architecture and a unified point of management. HCI aggregates compute and storage into uniform, combined server/storage appliances. The user can scale the system incrementally by adding appliances. dHCI separates compute and storage — disaggregating them. With dHCI, it is possible to scale compute and storage separately. As a result, infrastructure grows dynamically, according to the user's business needs.

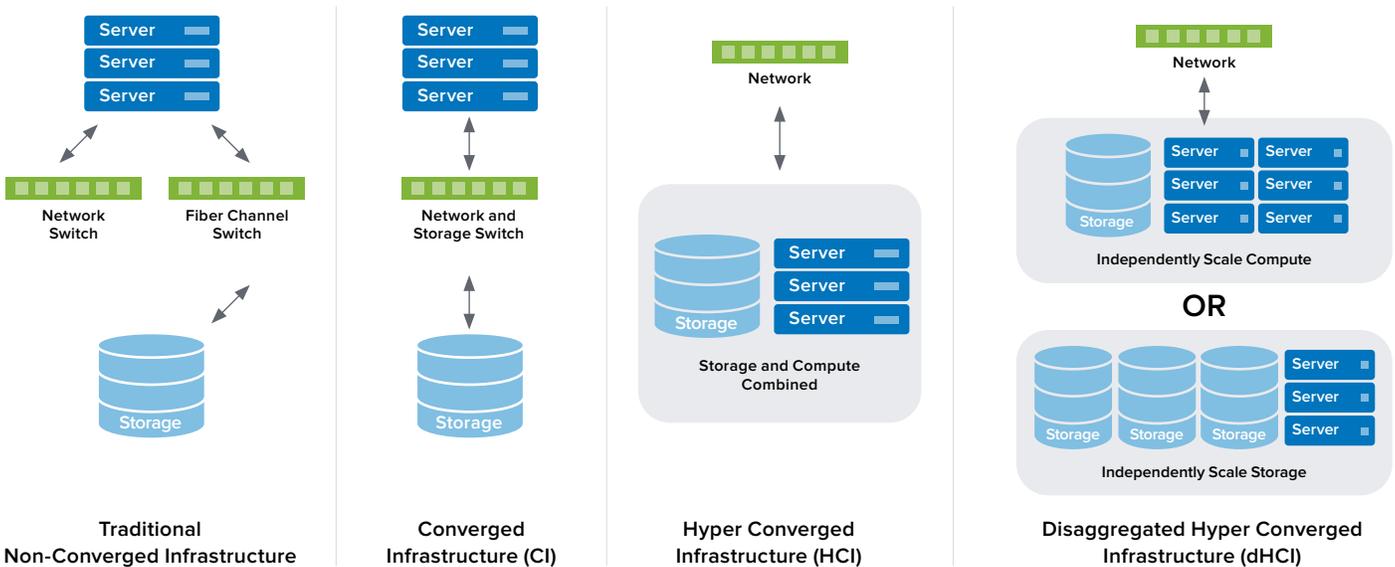
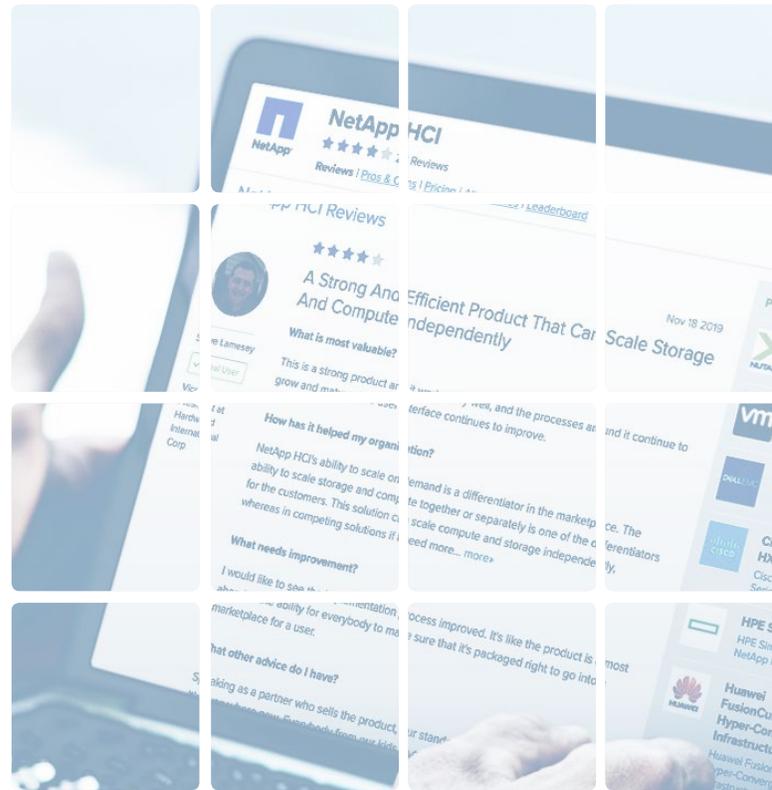


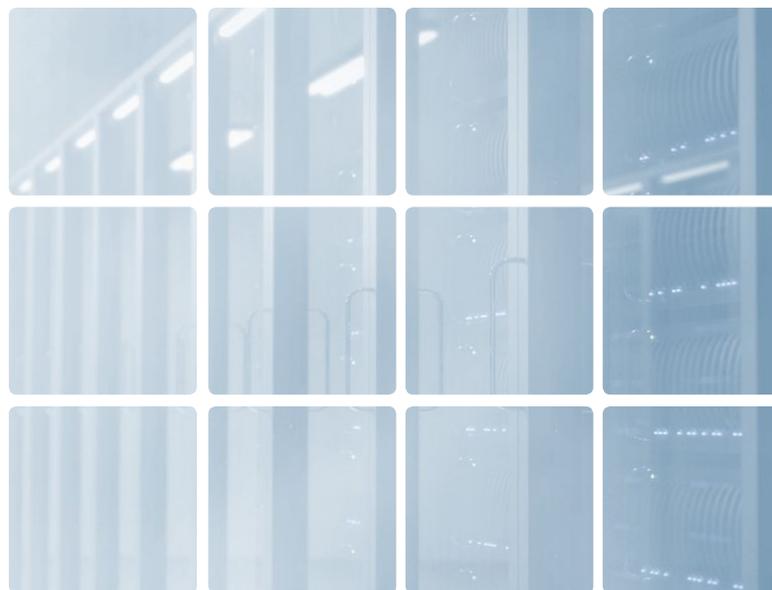
Figure 1 - Traditional infrastructure vs. CI, HCI and dHCI

Why Independent Compute and Storage Matter in a Multi-Cloud World

The increasingly common use of multi-cloud architecture results in the need for dynamic scaling of compute and storage resources. As workloads and data shift between cloud environments, infrastructure managers like having the ability to keep up with rapid changes in compute and storage requirements. IT Central Station members praised dHCI in this context.

A Pre-Sales Solution Architect at a tech services company with over 1,000 employees remarked, “This solution’s ability to scale compute and storage [independently](#) affects capacity, performance, and operational planning in our customers’ organizations. The best thing about the product is this is the only appliance in the market that separates control of storage from compute. There is nobody in another OEM (Original Equipment Manufacturer) on the market that can do that currently. It is absolutely unique because you can individually choose the minimum and maximum burst on IOPS (Input/Output Operations Per Second). Nobody lets you do that independently like this appliance does.”

Stability, resiliency, and scalability, which are all features of dHCI, are also important for multi-cloud management. As a Storage Operations Manager at a media company with over 1,000



employees explained, “It’s pretty stable because you can [independently add and remove](#) storage nodes and our compute nodes. It’s very resilient and scalable. That’s what we look for. We love the fact that we can add storage independently, or compute, and we don’t have to buy an entire storage solution when we have to increase

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We love the fact that we can add storage independently, or compute, and we don’t have to buy an entire storage solution when we have to increase capacity.

capacity.” A Solutions Architect at a small tech services company added, “The [scalability](#) is great because it can scale independently. It’s the best in its class when it comes to scalability.” His usage varies between 300 and several thousand users.

Benefits of dHCI to the IT Organization

IT Central Station members highlighted several benefits of dHCI to the IT organization. These included performance, flexibility, and multi-platform support. They also valued the NetApp dHCI solution for its ability to consolidate workloads and provide an elastic, cloud-native infrastructure.



Performance

An Engineering Team member at a financial services firm with more than 10,000 employees shared that his organization benefited from dHCI's guaranteed minimum [performance](#). A Senior MIS Manager at a transportation company with over 500 employees also found that dHCI "allowed me to provide the production engineering group with the [performance they needed](#), pull my people out of chasing their performance and allow them to move the product on."

A System Engineer framed dHCI performance gain in terms of predictability. He said, "NetApp HCI solves predictability challenges with industry-leading [performance capabilities](#) that allow the granular control of every application." In his experience, NetApp HCI's performance settings eliminated resource contention and variable application performance. Each node guaranteed

performance of around 50K IOPS per node.

A Storage Lead at a manufacturing company with more than 10,000 employees similarly shared, "Because NetApp usually marries capacity, [performance](#), and upgrade planning together, there's not a whole lot that I need to worry about at this point. But I do know when I need to have high performance, I will use the HCI (for those

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NetApp HCI solves predictability challenges with industry leading performance capabilities that allow the granular control of every application

few that I need it for). It gives me a chance to have certain workloads on high performance for people who complain about performance. If they think it is their storage, I can put it on there.

It allows me to move a VM set and require extra performance. I can easily move them onto it and have it just run.”

[Application performance](#) also improved for a System Consultant at a small tech services company. dHCI’s full-flash SDS solution performed better than the single disks they had employed previously. He said, “IOPS have increased significantly so that when many users come in to test at the center we don’t have any performance complaints anymore.” A Storage Engineer at a healthcare company with more than 10,000 employees simply stated, “All of our customers are [very happy with the performance.](#)”

Flexibility

HCI has proven popular in IT departments because of its inherent flexibility. dHCI takes this characteristic of HCI even further. The Senior MIS Manager offered an anecdote to illustrate how this works. He said, “We had a long-running project that didn’t have the horsepower behind it that it needed, and the vendor couldn’t spec the horsepower that it did need. Rather than continuing to chase performance, I took a chance on a quantum leap and put the [NetApp] HCI box in to provide the [flexibility](#), but also the power, that it needed, and it has worked out.”

He also commented, “It’s simple, flexible, powerful. We’ve been able to move most of our workload to it. We’ve seen increased performance across the board.” The System Engineer further put the matter into perspective, noting, “The relentless pace of business change means [you need maximum flexibility](#) to adapt to any workload.... NetApp HCI offers a highly configurable design that enables cloud-native application development and agile operations for virtualized environments.”

“HCI definitely [improved how flexible we scale](#), and our entrance into the cloud,” said the healthcare Storage Engineer. He also felt the features of the solution were very rich, sharing that “it’s helped us flexibly move and shift our

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workloads around, back and forth.” For a Systems Platform Engineer at an insurance company with over 1,000 employees, flexibility manifested in the opportunity to [do less work](#). He said, “This solution’s ability to scale on-demand affects provisioning because it auto-provisions itself. This solution’s ability to scale compute and storage independently makes things easier for us because it does most of the stuff automatically, and we don’t really have to touch it all that often.”

Support for multiple platforms

IT organizations can benefit from dHCI when they are able to use the technology to support multiple platforms. That way, the infrastructure can keep up with rapidly shifting requirements from diverse stakeholders. The System Consultant shared an example: “The use case is for a demo center,

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...the software around it also has got to be the best across all different storage environments.

and then we load different kinds of workloads like Docker, Citrix VDI, F5 Load Balancers, Virtualizers, all [the virtual platforms](#), and virtual appliances. Customers would come to our demo center to take a look to see if they have an

interest in HCI and then we would show them a showcase.”

A Director at a small tech services company is starting to use dHCI to get “more and more into the [Kubernetes](#) side of it and get the ability to move entire applications all over the place.” He observed that “the software around it also has got to be the best across [all different storage environments](#).”

The ability to consolidate workloads

IT Central Station members shared that dHCI helped their IT organizations become more efficient and economical through the consolidation of workloads. Figure 2 offers a simple representation of dHCI in support of multiple platforms and as an enabler of consolidated workloads. The Senior MIS Manager said, “In terms of helping us with storage persistence across private and hybrid clouds, we do store data internally and in Azure. It has allowed us to [consolidate a number of workloads](#) into a single unit and have that unit also working with Azure.” An added benefit arose for this user: “It’s allowed me to consolidate our infrastructure,

saving electricity in the server room, and even saving heat, so I was able to use this project toward our environmental objectives.”

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HCI has enabled us to consolidate workloads and break down silos...

“HCI has enabled us to [consolidate workloads and break down silos](#),” said the System Consultant. He noted that “We used to have many down servers, a lot of kinds of servers that had no different portal solutions. Now, we consolidate all these kinds of virtual appliances in the same process. It saves us time and money to deploy the other servers.” The healthcare Storage Engineer similarly found that dHCI “has enabled us to [consolidate workflows](#) and break down silos.”

Elastic infrastructure

Preparing for an unpredictable future is an essential element of IT management. The goal is generally to create an environment that can adapt easily to unknown future needs. dHCI earned high marks in this regard from IT Central Station

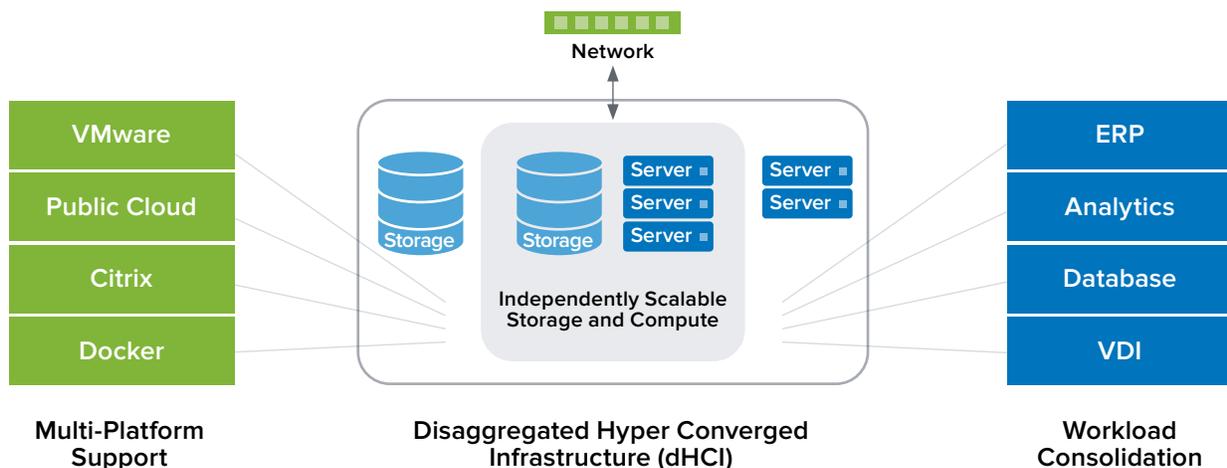


Figure 2 - dHCI supports multiple platforms and enables consolidated workloads

members. “I would rate the solution a nine out of ten,” said a SAN Engineer at a financial services firm with over 1,000 employees, adding, “It is a cost-effective solution and [it is the future](#) as well.”

An IT Specialist at a small tech vendor remarked, “Looking at the future, it will be one of our favorite tools. We will keep growing, and it’s something that we want to take along with us [for the long-term](#). We do plan to use HCI to leverage microservices from all of our clouds in the future.” A Storage Engineer at a university with more than 5,000 employees explained, “It gives us some [flexibility for the future](#) if we do decide to go into the public cloud. We are actually considering Microsoft Azure for a lot of stuff going forward. It’s kind of like an injection point into the cloud as well.”

Support for cloud data services

IT managers today are either working with data in the cloud or considering implementing cloud data

services in the future. For this reason, support for cloud data services emerges as a source of benefit to IT organizations from dHCI. As the

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It has reduced our hypervisor footprint by around 20%.

media company Storage Operations Manager put it, “Our primary use case is for container storage. We use HCI’s [cloud data services](#). It affects the management of the infrastructure by making it one single pane of glass to provision and a single pane of glass to monitor. It makes my use easier. The hope is that it will make the use of compute resources more efficient by 50%.”

The healthcare Storage Engineer described that his team is using NetApp HCI’s [cloud data services](#) because “it offers the ability to scale on demand which is important to the burst capability of scaling up and scaling down. It has reduced our hypervisor footprint by around 20%.”

CONCLUSION

Disaggregated Hyper-Converged Infrastructure offers IT managers the performance and flexibility they need to deploy private clouds and offer cloud-ready infrastructure on-premises. As exemplified by the disaggregated NetApp HCI solution, the technology benefits IT organizations by enabling support for multiple platforms along with workload consolidation. It also provides a degree of elasticity, which is essential for keeping up with fast-moving changes to business requirements in a private cloud environment.

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