Datasheet

NetApp HCI

Enterprise-scale hybrid cloud infrastructure

Key Benefits

Reduce Consumption Costs

- Consolidate multiple workloads and reduce TCO by 59%
- Pay less as you grow more
- Remove or reduce infrastructure capex
- Avoid the hypervisor licensing tax

Flexible

- Hybrid cloud, one infrastructure
- Dynamically scale up and/or down
- Leverage existing investments and redeploy

Simple

- Easy to deploy with NetApp® Hybrid Cloud Control manageability suite
- Common experience across public and private clouds
- Integrated with data fabric powered by NetApp
- 92% less administrative time with nondisruptive scaling and no downtime
- Centralize and streamline management

Accelerate New Services

Public cloud providers offer a simple, fast, and efficient model to consume required IT services and help optimize budgets. However, organizations still need the other half of the hybrid model: creating, securing, and deploying services for on-premises environments based on business, compliance, and operational requirements. These requirements are leading IT organizations to demand equivalent cloud-native IT services for on-premises data centers. Public clouds automate management and lifecycle, and they simplify how users consume IT. Although hyperconverged infrastructures originally sufficed, their design neglects the ability to span and scale a choice of resources across the data center and multiple public clouds. NetApp HCI delivers an elastic hybrid cloud infrastructure that enables customers to start anywhere, run anywhere, and manage everywhere.

Streamline Infrastructure and Maximize Your Clouds

Empower your organization to move faster while reducing costs with NetApp HCI. Easily manage and run multiple applications with the predictable performance that your enterprise and customers demand. 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. Integration into the data fabric delivered by NetApp means that you can unleash the full potential of your applications, with the data services they require, across any cloud.

Break free from the limits of today's hyperconverged infrastructure solutions that are complex, can't consolidate all of your workloads, force you to scale in ways that strand resources, and throttle the performance required by next-generation applications. Realize the true promise of an enterprise-scale hybrid cloud infrastructure solution with NetApp HCI.

■ NetApp®

Increase Operational Efficiency and Customer Satisfaction

One of the biggest challenges in any data center is to deliver predictable results, especially in the face of proliferating applications and workloads. Any time that multiple applications share the same infrastructure, the potential exists for one application to interfere with the performance of another. NetApp HCI solves predictability challenges with unique performance guarantees that provide granular control of every application, eliminating resource contention, delivering 3 times the storage performance[1], and increasing compute efficiency by 22%[1].

One of the most effective ways for enterprise customers to take advantage of the NetApp HCI performance guarantees is by consolidating all of their applications, including ones that previously required separate silos. In NetApp HCI, each volume is configured with minimum, maximum, and burst IOPS values. The minimum IOPS setting guarantees performance, independent of what other applications on the system are doing. The maximum and burst values control allocation, enabling the system to deliver consistent performance to all workloads.

Dynamically Scale on Demand to Lower TCO

Data centers don't scale linearly because business needs are constantly changing, and each application requires different things from the infrastructure. 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 and simplifying capacity and performance planning. Start as small as four nodes and add exactly what you require to scale your infrastructure in a granular fashion over time to reduce TCO. Third-party analysis shows that NetApp HCI is the lowest-cost all-flash HCI on the market today, reducing TCO by as much as 59%[1].

Most companies don't want to throw away their existing data center investments when purchasing new equipment. NetApp HCI has an open and flexible architecture that lets you use your existing virtualization infrastructure, licenses, and external compute to lower initial acquisition costs and repurpose existing operations.

Simplify and Automate to Empower Your Business

NetApp HCI streamlines installation through an intuitive deployment engine that has automated more than 400 inputs to fewer than 30 to get you running in about 45 minutes. In addition, a robust suite of APIs enables seamless integration into higher-level management, orchestration, backup, and disaster recovery tools. And with the NetApp Hybrid Cloud Control management suite, you can manage, monitor, and upgrade your entire infrastructure throughout its lifecycle through a single pane of glass.

NetApp HCI offers a choice of centralized management through VMware, Red Hat, and OpenStack to give you control through tools you already use, so that you can focus your resources on higher priorities that drive business growth. NetApp HCI delivers a true hybrid multicloud experience.

Unleash the Power of Your Data to Achieve a New Competitive Advantage

Leading businesses across every industry are building data fabrics to strategically address today's complex IT challenges: modernizing and simplifying IT to accelerate business-critical applications, building private cloud to gain speed and agility, and fueling data-driven innovation on their choice of clouds. Organizations that are doing any of these things with NetApp are on their way to building their unique data fabric. The data fabric is NetApp's strategy for simplifying and integrating the orchestration of data services for enterprise and cloud-native applications in any combination across hybrid multicloud environments. The data fabric enables companies to respond and innovate more quickly because their data is accessible from both on-premises and public cloud environments. Integration with the data fabric allows NetApp HCI to provide data services, including file services, through NetApp ONTAP® Select, object services through NetApp StorageGRID®, replication services through NetApp SnapMirror®, data visibility through NetApp OnCommand® Insight, and backup and recovery services through NetApp Cloud Backup.

NetApp HCI: Multicloud Enterprise Scale

NetApp HCI is composed of industry-leading technologies that are integrated to deliver a hybrid cloud infrastructure that addresses enterprise-class multicloud agility, scale, and services. It brings together Intel core processing for system-critical applications, networking for hyperconverged infrastructures, and the industry's highest user density for virtualized desktops and applications from NVIDIA's GPUs. All parts of the infrastructure are fully architected and managed as a single appliance, through a single pane of glass.

- NetApp's innovative three-dimensional quality of service offers predictable performance across all of your applications.
- Independent compute and storage resources allow you to scale flexibly when and how you need to.
- Simplified deployment and ongoing management give your IT department an automated infrastructure from day 0 to day 1,500 and beyond.
- You have freedom of choice. Whether you use VMware or Red Hat private cloud stack, or connect containerized workloads to your public cloud vendor, NetApp HCI delivers an agile foundation for your private and hybrid cloud infrastructure.

As your business adopts a hybrid multicloud approach, you'll need to create your own perfect world, with some data stored in the public cloud and other data stored on your premises. NetApp HCI is architected to deliver cloud-native capabilities that extend from the data center into the public cloud vendor. Leverage the full potential of your data, whether on your premises or in the public cloud, through integration with your data fabric.

Start Your Transformation Today

Our data experts are available to help you plan and implement your seamless transition to NetApp HCI and gain advantages from day 1. You can use NetApp Services or NetApp Services Certified Partners; you can do it yourself by using our proven tools and processes; or you can combine these approaches.

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[1] Evaluator Group, How Architecture Design Can Lower Hyperconverged Infrastructure Total Cost of Ownership, December 2017.

NetApp HCI is backed by world-class support, with a single point of contact for both hardware and software. Support includes 24/7/365 worldwide availability, with 4-hour on-site response for critical system issues.

For more information, visit www.netapp.com.

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. #DataDriven

Figure 3) H610S storage node.

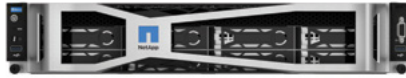Figure 1) H410C/S compute and storage node.

Figure 2) H610C compute node with graphic acceleration.

Figure 4) H615C compute node with graphic acceleration option.

NetApp HCI Specifications

Key Specification

Compute Nodes	H410C	H610C[1]	H615C
Rack Units	2 RU, half-width	2 RU	1 RU
CPU/GPU	2 Intel Xeon Gold 5122, 4 cores, 3.6GHz 2 Intel Xeon Silver 4110, 8 cores, 2.1GHz 2 Intel Xeon Gold 5120, 14 cores, 2.2GHz 2 Intel Xeon Gold 6138, 20 cores, 2.0GHz	2 Intel Xeon Gold 6130, 16 cores, 2.1GHz 2 NVIDIA Tesla M10 GPU cards	2x Intel Silver 4214, 12 cores, 2.2 GHz 2x Intel Gold 5222, 4 cores, 3.8 GHz 2x Intel Gold 6242, 16 core, 2.8 GHz 2x Intel Gold 6252, 24 core, 2.1GHz 2x Intel Gold 6240Y SpeedSelect, 18/14/8 cores 2.6/2.8/3.1 GHz plus 3x NVIDIA Tesla T4 GPU cards
Cores for VMs	8-40	32	8-48
Memory	384GB-1TB	512GB	384GB-1.5TB
Hypervisor		VMware vSphere 6.5 and 6.7; Red Hat OpenStack/OpenShift	
Base Networking	4x 10/25GbE (SFP 28)[2], 2x 1GbE RJ45	2x 10/25GbE (SFP 28)[2], 2x 1GbE RJ45	2x 10/25GbE (SFP 28)[2]
Out-of-Band Management (optional)		1x 1GbE RJ45	

Storage Nodes	H410S	H610S	
Rack Units	2 RU, half-width	1 RU	
SSD	6x Encrypting or nonencrypting	12x Encrypting or nonencrypting	
Drive Capacity	480GB, 960GB, 1.92TB	960GB, 1.92TB, 3.84TB	
Effective Capacity[3]	5.5TB-44TB	20TB-80TB	
Performance per Node	50,000 IOPS or 100,000 IOPS	100,000 IOPS	
Base Networking	2 x 10/25GbE iSCSI (SFP28) 2 x 1/10GbE Mgmt. (RJ45)	2 x 10/25GbE iSCSI (SFP28) 2 x 1/10GbE Mgmt. (RJ45)	
Out-of-Band Management (optional)	1 x 1GbE RJ45	1 x 1GbE RJ45	

Power and Dimension

Chassis	H410 2U 4-Node Enclosure	H610C	H610S	H615C
Rack Units	2 RU	2 RU	1 RU	1 RU
Power Input	220-240V AC 1+1 redundant	200-240V AC 1+1 redundant	100-240V AC 1+1 redundant -48-60V DC 1+1 redundant	100-240V AC 1+1 redundant -48-60V DC 1+1 redundant
Maximum Wattage/Current (per power supply)	2200W / 12-11A (fully populated enclosure)	819-1024W / 4.1-5.2A (200V)	450W / 2.2A (200V) / 4.5A (100V)	616-805W / 3-3.9A (200V) / 6.2-8A (100V)
Node Physical Dimensions	3.92cm / 1.54in H 19.625cm / 7.73in W 58.755cm / 23.13in D 4.17kg / 9.2lbs	8.80cm / 3.46in H 44cm / 17.3in W 79.8cm / 31.4in D 25kg / 55.1lbs	4.4cm / 1.73in H 44cm / 17.3in W 81cm / 31.9in D 18kg / 39.7lbs	4.4cm / 1.73in H 44cm / 17.3in W 81cm / 31.9in D 15.51-16.65kg / 34.20-36.71lbs
Enclosure Physical Dimensions Weight	8.80cm / 3.46in H 44.70cm / 17.60in W 73.00cm / 28.74in D 19.50kg / 43.0lbs (empty incl. rails) 36.2kg / 79.8lbs (fully populated)	8.80cm / 3.46in H 44cm / 17.3in W 79.8cm / 31.4in D 25kg / 55.1lbs	4.4cm / 1.73in H 44cm / 17.3in W 81cm / 31.9in D 18kg / 39.7lbs	4.4cm / 1.73in H 44cm / 17.3in W 81cm / 31.9in D 15.51-16.65kg / 34.20-36.71lbs

Environmentals	H410C	H610C	H610S	H615C
Operating Temperature, Altitude, and Relative Humidity	10°C to 35°C / 50°F to 95°F at <= 914.40m (at <= 3,000ft) elevation; 1°C derating per 1,000; 8% to 90% relative humidity, noncondensing	10°C to 35°C / 50°F to 95°F at <= 914.40m (at <= 3,000ft) elevation; 1°C derating per 1,000ft; 20% to 85% relative humidity, noncondensing		10°C to 35°C / 50°F to 95°F at <= 914.40m (at <= 3,000ft) elevation; 1°C derating per 1,000ft; 20% to 85% relative humidity, noncondensing. (Note: configurations containing Tesla T4 GPUs: 10°C to 30°C).
Nonoperating Temperature and Relative Humidity	-40°C to 70°C (-40°F to 158°F); 5% to 95% relative humidity, noncondensing	-40°C to 70°C (-40°F to 158°F); 10% to 90% relative humidity, noncondensing		
Heat Dissipation	Typical BTU/hr - 2,730* Worst Case BTU/hr - 6,142* *fully populated enclosure	Typical BTU/hr — 2,795 Worst Case BTU/hr — 3,494	Typical BTU/hr — 1,228 Worst Case BTU/hr — 1,535	Typical BTU/hr — 2,102 Worst Case BTU/hr — 2,747
Standards and Certifications	Safety: IEC/EN 60950 (all national deviations), UL/CSA 60950, IEC/EN 60825, ACMA (Australia, New Zealand), BIS (India), BSMI (Taiwan), CE, EAC (Russia), IRAM (Argentina), Morocco, Mexico, NRCS (South Africa), Saudi Arabia, Kenya, Uganda, SONCAP (Nigeria), TBS (Tanzania), UKRSepro (Ukraine). FIPS-1424	Safety: IEC/EN 60950 (all national deviations), UL/CSA 60950, IEC/EN 62368 (all national deviations), UL/CSA 62368, IEC/EN 60825, ACMA (Australia, New Zealand), BIS (India), BSMI (Taiwan), CE, EAC (Russia), IRAM (Argentina), Morocco, Mexico, NRCS (South Africa), Saudi Arabia, Kenya, Uganda, SONCAP (Nigeria), TBS (Tanzania), UKRSepro (Ukraine).	Safety: IEC/EN 60950 (all national deviations), UL/CSA 60950, IEC/EN 60825, ACMA (Australia, New Zealand), BIS (India), BSMI (Taiwan), CE, EAC (Russia), IRAM (Argentina), Morocco, Mexico, NRCS (South Africa), Saudi Arabia, Kenya, Uganda, SONCAP (Nigeria), TBS (Tanzania), UKRSepro (Ukraine). FIPS-1424	Safety: IEC/EN 60950 (all national deviations), UL/CSA 60950, IEC/EN 60825, ACMA (Australia, New Zealand), BIS (India), BSMI (Taiwan), CE, EAC (Russia), IRAM (Argentina), Morocco, Mexico, NRCS (South Africa), Saudi Arabia, Kenya, Uganda, SONCAP (Nigeria), TBS (Tanzania), UKRSepro (Ukraine). Energy Star

Emissions/Immunity: FCC Part 15 Class A, ICES-03, CE, KCC, VCCI, AS/NZS CISPR 22, CISPR 32, EN55032, EN55024, EN61000-3-2, EN61000-3-3, BSMI

Compliance	RoHS-compliant

System Environment Specifications

	H410C	H610C	H610S	H615C
Operating Vibration		0.2Grms, 5-350Hz random vibration 15 minutes per axis 3 mutually orthogonal axes	0.21Grms, 5-500Hz random vibration 15 minutes per axis 3 mutually orthogonal axes	0.2Grms, 5-350Hz random vibration 15 minutes per axis 3 mutually orthogonal axes
Nonoperating Vibration	0.77Grms, 5-500Hz random vibration 30 minutes per axis 3 mutually orthogonal axes	0.77Grms, 5-500Hz random vibration 30 minutes per axis 3 mutually orthogonal axes	1.04Grms, 10-500Hz random vibration 60 minutes per axis 3 mutually orthogonal axes	0.77Grms, 5-500Hz random vibration 30 minutes per axis 3 mutually orthogonal axes
Operating Shock		3G/11ms half sine input profile 3 mutually orthogonal axes (positive and negative directions) 3 shock pulse per direction	5G/11ms half sine input profile 3 mutually orthogonal axes (positive and negative directions) 100 shock pulse per direction	3G/11ms half sine input profile 3 mutually orthogonal axes (positive and negative directions) 3 shock pulse per direction
Nonoperating Shock		20G/7ms half sine input profile 3 mutually orthogonal axes (positive and negative directions) 3 shock pulse per direction	20G/11ms half sine input profile 3 mutually orthogonal axes (positive and negative directions) 3 shock pulse per direction	20G/7ms half sine input profile 3 mutually orthogonal axes (positive and negative directions) 3 shock pulse per direction

[1] NetApp HCI H610C/H615C with GPU requires NVIDIA Software License.

[2] Cables and transceivers not included.

[3] NetApp HCI effective capacity calculation accounts for NetApp Element® software, NetApp SolidFire Helix® data protection, system overhead, and global efficiency, including compression, deduplication, and thin provisioning. Element software customers typically achieve an effective capacity range of 5 to 10 times the (usable) capacity, depending on application workloads.

[4] NetApp HCI supports the FIPS 140-2 level 1 standard. Third-party validation is in progress.

Mellanox H-Series Switch-SN2010	Half-width open Ethernet switch with Mellanox Onyx. 18x SFP28 and 4x QSFP ports delivering up to 1.7Tb/s aggregate throughput
Power Specifications	2 power supplies (AC), P2C airflow, typical power with passive cables (ATIS): 57W Input voltage range:100-240VAC
Physical	Dimensions: 1.72in (43.8mm) H x 7.87in (200mm) W x 20in (508mm) D Weight: 4.54kg (10lb). Railkit purchased separately.
Features	Mellanox Neo management application, monitoring and telemetry, network virtualization, layer 2 and layer 3 support, management and automation
Security	UC APL, FIPS 140-2, Storm Control (ACLs L2-L4 and user defined), 802.1X – Port-Based Network Access Control, SSH server strict mode – NIST 800-181A, CoPP (IP filter), port isolation