Datasheet

# NetApp HCI

## Enterprise-scale hybrid cloud infrastructure

### Key Benefits

**Reduce Consumption Costs**

- Consolidate multiple workloads and reduce TCO by 59%
- Up to 3X better performance at half the cost over leading HCI competitors
- Increase compute efficiency by 22%

**Flexible**

- Pay less as you grow more
- Dynamically scale up and/or down
- Leverage existing investments and redeploy
- Integrated with NetApp® Data Fabric

**Simple**

- Common experience across public and private clouds
- Mix and match best-in-class public cloud services
- 92% less administrative time with nondisruptive scaling and no downtime
- Centralize and streamline management

### Accelerate New Services

Public clouds have set a high bar for IT expectations for agility, scale, and services. Regardless of location and infrastructure, customers' consumption experience with public cloud providers is driving their decisions about and spending on IT today. Along with the ability to consume services across a choice of public and private clouds, customers must consolidate enterprise workloads without performance impact, deploying from a private cloud platform with service catalogs. Public clouds automate management and lifecycle, and they simplify how users consume IT. Although hyper converged 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 a next-generation solution, including a hybrid multicloud experience that enables you to start anywhere, run anywhere, and manage everywhere.

### Accelerate New Services

NetApp HCI is designed to deliver a public cloud consumption experience with simplicity, dynamic scale, and operational efficiency to hybrid multiclouds. Now infrastructure and cloud architects can seamlessly access best-in-class services from their premises, from any third-party cloud provider, and mix and match these services to optimize resources for specific workloads and applications.

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 use more than you need. And deploy in minutes with a turnkey cloud infrastructure that eliminates the complex management of traditional three-tier architectures. Integration into the NetApp Data Fabric 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 hyper converged infrastructure solutions that are complex, are not able to 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.

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## Increase Operational Efficiency and Customer Satisfaction

One of the biggest challenges in any data center is delivering 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 three times the storage performance*, and increasing compute efficiency by 22%*.

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. NetApp HCI has a node-based shared-nothing architecture that 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 six 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%*.

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

IT organizations across the board are seeking an experience that mirrors public cloud: a common interface across private and public clouds, a simple IT resource consumption model that takes advantage of the best services from any public cloud, and that depends on automation to eliminate user errors associated with manual operations.

NetApp HCI delivers a user experience that transcends location, so that a private cloud essentially becomes another resource just like public clouds, with a common services interface. 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. Simple centralized management through VMware and Red Hat gives you control of NetApp HCI through tools you already use, so that you can focus valuable resources on higher priorities that drive business growth. In addition, a robust suite of APIs enables seamless integration into higher-level management, orchestration, backup, and disaster recovery tools. NetApp HCI delivers a true hybrid multicloud experience.

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

Enterprises are under tremendous pressure to harness today's wealth of data and apply it to create new value across the entire organization—all with limited time, skills, and budget. 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 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 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 hyper converged infrastructures, and the industry's highest user density for virtualized desktops and applications from NVIDIA's graphical processing units. All parts of the infrastructure are fully architected and managed as an appliance, enabling unique efficiencies.

First, our innovative three-dimensional quality of service (QoS) offers predictable performance across all of your applications.

Second, independent compute and storage resources allow you to scale flexibly when and how you need to.

Third, simplified deployment and ongoing management give your IT department an automated infrastructure from day 0 to day 1,500 and beyond.

Fourth, and the most critical to your business, integration with the NetApp Data Fabric enables you to leverage the full potential of your data, whether on the premises or in a public or hybrid cloud.

## 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.

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.

*Evaluator Group, How Architecture Design Can Lower HCI TCO, December 2017.

Figure 1) H410C/S compute and storage node.

Figure 2) H610C graphic compute node.

Figure 3) H610S storage node.

## NetApp HCI Specifications

### Key Specification

| **Compute Nodes** | **H410C** | **H610C**** |
|---|---|---|
| Rack Units | 4 per 2 RU chassis | 2 RU |
| CPU | 2x Intel Xeon Gold 5122, 4 cores, 3.6GHz<br>2x Intel Xeon Silver 4110, 8 cores, 2.1GHz<br>2x Intel Xeon Gold 5120, 14 cores, 2.2GHz<br>2x Intel Xeon Gold 6138, 20 cores, 2.0GHz | 2x Intel Xeon Gold 6130, 16 cores, 2.1GHz<br>2x NVIDIA Tesla M10 GPU cards |
| Cores for VM's | 8 - 40 | 32 |
| Memory | 384GB - 1TB | 512GB |
| Hypervisor | VMware vSphere 6.0, 6.5, & 6.7 | |
| Base Networking | 4x10/25GbE (SFP 28)**, 2 x 1GbE RJ45 | 2x10/25GbE (SFP 28)**, 2 x 1GbE RJ45 |
| Out-of-Band Management (optional) | 1x 1GbE RJ45 | |
| **Storage Nodes** | **H410S** | **H610S** |
| Rack Units | 4 per 2 RU chassis | 1 RU |
| SSD | 6x Encrypting or non-encrypting | 12x Encrypting or non-encrypting |
| Drive Capacity | 480GB, 960GB, 1.92TB | 960GB, 1.92TB, 3.84TB |
| Effective Capacity* | 5.5TB - 44TB | 20TB - 80TB |
| Performance per Node | 50,000 IOPS – 100,000 IOPS | 100,000 IOPS |
| Base Networking | 2x 10/25GbE iSCSI SFP28, 2 x 1GbE RJ45 | 2x 10/25GbE iSCSI SFP28, 2 x 1GbE RJ45 |
| Out-of-Band Management (optional) | 1x 1GbE RJ45 | 1x 1GbE RJ45 |

| **Power and Dimension** | | | |
|---|---|---|---|
| Chassis | **H410x 2U 4 Node Enclosure** | **H610C** | **H610S** |
| Rack Units | 2 RU | 2 RU | 1 RU |
| Power Input | 220-240V AC 1+1 redundant | 220-240V AC 1+1 redundant | 110-240V AC 1+1 redundant<br>-48-60V DC 1+1 redundant |
| Maximum Wattage/Current (per power supply) | 1900W / 8-9A (fully populated enclosure) | 900W / 4.4-3.6A | 460W / 2A (230V) - 3.8A (120V) |
| Node Physical Dimensions | 3.92cm / 1.54in H<br>19.625cm / 7.73in W<br>58.755cm / 23.13in D<br>4.17kg / 9.2lbs | 8.80cm / 3.46in H<br>44cm / 17.3in W<br>79.8cm / 31.4in D<br>25kg / 55.1lbs | 4.4cm / 1.73in H<br>44cm / 17.3in W<br>81cm / 31.9in D<br>18kg / 39.7lbs |
| Chassis Physical Dimensions | 8.80cm / 3.46in H<br>44.70cm / 17.60in W<br>73.00cm / 28.74in D<br>24.70kg / 54.45lbs | 8.80cm / 3.46in H<br>44.70cm / 17.60in W<br>73.00cm / 28.74in D<br>24.70kg / 54.45lbs | 44cm / 17.32in H<br>4.32cm / 1.70in H<br>78cm / 30.70 in H<br>18.37kg / 40.5lbs |
| Enclosure Physical Dimensions<br>Weight | 8.80cm / 3.46in H<br>44.70cm / 17.60in W<br>73.00cm / 28.74in D<br>19.50kg / 43.0lbs (empty incl. rails)<br>36.2kg / 79.8lbs (fully populated) | | |

## NetApp HCI Specifications, Continued

| Environmentals | H410C/S | H610C | H610S |
|---|---|---|---|
| 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 1,000ft; 8% to 90% relative humidity, noncondensing | | |
| Nonoperating Temperature and Relative Humidity | -40°C to 70°C (-40°F to 158°F) | | |
| Heat Dissipation | Typical BTU/hr — 2,730*<br>Worst Case BTU/hr - 6,350*<br>*fully populated enclosure | Typical BTU/hr — 2,362<br>Worst Case BTU/hr — 2,953 | Typical BTU/hr — 1250<br>Worst Case BTU/hr — 1,500 |
| Standards and Certifications | Safety: EN 60950, CE, CSA 60950, UL 60950, CB IEC60950-1 (all national deviations), EN60825-1, IRAM, EAC, BSMI, SONCAP, NRCS LOA (South Africa), BIS FIPS-142*** | Safety: EN 60950-1 & EN 62368-1, CE, CSA 62368-1, UL 62368-1, CB IEC60950-1 (all national deviations) & CB IEC62368-1, EN60825-1, S-Mark (Argentina), EAC, BSMI, SONCAP, NRCS LOA (South Africa), BIS (India) | Safety: EN 60950, CE, CSA 60950, UL 60950, CB IEC60950-1 (all national deviations), EN60825-1, IRAM, EAC, BSMI, SONCAP, NRCS LOA (South Africa), BIS FIPS-142*** |
| | 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 | |
|---|---|
| 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 1,000ft; 8% to 90% relative humidity, noncondensing |
| Nonoperating Temperature | -40° C to 70° C (-40° F to 158° F) |
| Operating Vibration | 0.4 GRMS, Random 5 – 200 Hz (60 min/axis); 0.25 G, Sine 5 – 200 Hz (15 min/axis) |
| Nonoperating Vibration | 0.98 GRMS, Random 5 – 500Hz (30 min/axis); 0.5 G, Sine 5 – 200 Hz (15 min/axis) |
| Operating Shock | 20 G, 2.5ms, half-sine, one shock on each side |
| Nonoperating Shock | 20 G, 10ms, square wave, one shock on each side |
| Heat Dissipation | Typical BTU/hr — Small 2,730; Medium 3,412; Large 4,129<br>Worst Case BTU/hr — Small 3,856; Medium 4,982; Large 6,142 |
| Certifications | FCC, UL, IEC 60950-1, CE, VCCI, KCC, SABS LOA (South Africa), BSMI, SONCAP, KEBS, KSA, TBS, UNGS, FIPS 140-2[3 |

* NetApp HCI effective capacity calculation accounts for NetApp Element® software Helix® data protection, system over-head, 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.
** Cables and transceivers not included.
*** NetApp HCI supports the FIPS 140-2 level 1 standard. Third-party validation is in progress.
**** NetApp HCI H610C GPU requires NVIDIA Software License

| Mellanox Switch-SN2010 | 18 ports of 10/25GbE and 4 split able ports of 40/100GbE in a half width delivers up to 1.7Tb/s aggregate throughput |
|---|---|
| Power Specifications | Typical power with passive cables (ATIS): 57W<br>Input voltage range:100-240VAC |
| Physical | Dimensions: 1.72in (43.8mm) H x 7.87in (200mm) W x 20in (508mm) D<br>Weight: 4.54kg (10lb) |
| Security | UC APL, FIPS 140-2, Storm Control (ACLs L2-L4 & user defined), 802.1X – Port Based Network Access Control, SSH server strict mode – NIST 800-181A, CoPP (IP filter), Port isolation |

## 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