



## Datasheet

# NetApp HCI

## Enterprise-scale hyper converged cloud infrastructure

### Key Benefits

#### Predictable

- Consolidate multiple workloads
- Deliver granular performance control
- Increase operational efficiency

#### Flexible

- Dynamically scale on demand
- Leverage existing investments
- Decrease TCO

#### Simple

- Automate routine tasks
- Deploy in minutes
- Centralize and streamline management

### Ready for Next?

Make NetApp® HCI the cornerstone of your private cloud strategy with a hyper converged solution capable of transforming and empowering your organization so you can move faster, drive operational efficiency, and reduce costs. Easily 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 power of your applications, with the data services they require, across any infrastructure or cloud.

Break free from the limits of today's infrastructure solutions that are complex, can't consolidate all 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 hyper converged cloud infrastructure solution with NetApp HCI.

### Increase Customer Satisfaction and Operational Efficiency

One of the biggest challenges in any data center is delivering predictable results, especially in the face of proliferating applications and workloads. Anytime 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 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 provides a guarantee for 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 demands different requirements 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 leverage your existing virtualization infrastructure, licenses, and external compute to lower initial acquisition costs and repurpose existing operations.

### Simplify and Automate to Empower Your Business

A common goal of IT organizations is to automate all routine tasks, eliminating the risk of user errors associated with manual operations. NetApp HCI streamlines installation through an intuitive deployment engine that has automated more than 400 inputs to fewer than 30 to get you up and running in about 45 minutes. Simple centralized management through VMware gives you control of NetApp HCI through tools you already use, allowing you to 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.

### 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 NetApp Data Fabric is NetApp's vision for the future of data management, and NetApp HCI is an integral part of it. The Data Fabric enables customers 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 (formerly AltaVault™).

### NetApp HCI. Enterprise-Scale.

NetApp HCI is an enterprise-scale hyper converged cloud infrastructure. NetApp HCI comes in a 2RU chassis with four node expansion slots.

The minimum configuration for NetApp HCI is:

- Two 2RU four node chassis
- Four storage nodes
- Two compute nodes
- Two open bays for expansion nodes

Once the minimum configuration is met, storage and compute nodes and sizes can be mixed and matched.

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.

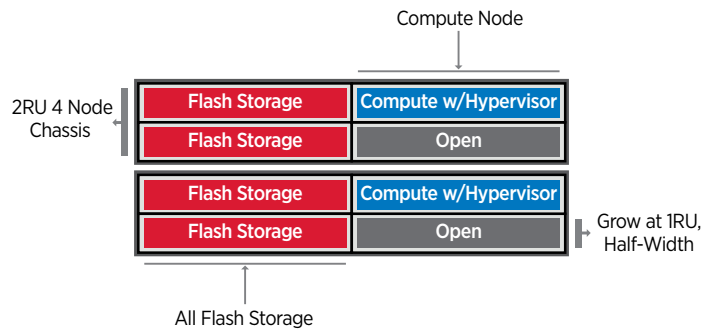


Figure 1) NetApp HCI minimum configuration

For more information visit [www.netapp.com](http://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](http://www.netapp.com). #DataDriven

\*Evaluator Group, [How Architecture Design Can Lower HCI TCO](#), December 2017

## NetApp HCI Specifications

### Storage Nodes

|                                   | <b>SMALL<br/>H300S</b>                       | <b>MEDIUM<br/>H500S</b>                 | <b>LARGE<br/>H700S</b> |
|-----------------------------------|--|---|------------------------|
| SSD                               | 6 x 480 GB                                   | 6 x 960 GB<br>Encrypting/Non-Encrypting | 6 x 1.92 TB            |
| Effective Block Capacity*         | 5.5 TB - 11 TB                               | 11 TB - 22 TB                           | 22 TB - 44 TB          |
| Performance per Node              | 50,000 IOPS                                  | 50,000 IOPS                             | 100,000 IOPS           |
| Storage OS                        | NetApp SolidFire® Element® OS                |   |                        |
| Base Networking                   | 2 x 10/25 GbE (SFP 28)**<br>2 x 1 GbE RJ45** |   |                        |
| Out-of-Band Management (Optional) | 1 x 1 GbE RJ45                               |   |                        |

### Compute Node

|                                   | <b>SMALL<br/>H300E</b>                       | <b>MEDIUM<br/>H500E</b>               | <b>LARGE<br/>H700E</b>                |
|-----------------------------------|--|---------------------------------------|---------------------------------------|
| CPU                               | 2x Intel E5-2620v4, 8 cores, 2.1 GHz         | 2x Intel E5-2650v4, 12 cores, 2.2 GHz | 2x Intel E5-2695v4, 18 cores, 2.1 GHz |
| Cores for VM's                    | 16   | 24                                    | 36                                    |
| Memory                            | 384 GB                                       | 512 GB                                | 768 GB                                |
| Hypervisor                        | VMware vSphere                               |                                       |                                       |
| Base Networking                   | 4 x 10/25 GbE (SFP 28)**<br>2 x 1 GbE RJ45** |                                       |                                       |
| Out-of-Band Management (Optional) | 1 x 1 GbE RJ45                               |                                       |                                       |

### Power & Dimensions (per Chassis)

|                                    |   |                       |                    |
|------------------------------------|---|-----------------------|--------------------|
| Rack Units                         | 2 RU  |                       |                    |
| Nodes                              | 1 RU, half-width - mix and match four NetApp HCI nodes per chassis                              |                       |                    |
| Power Input                        | 110V AC or 220V AC 1+1 redundant  | 240V AC 1+1 redundant | 240V 1+1 redundant |
| Max Watts/Current Per Power Supply | 1100W/110V/10A  | 2200W/240V/12-11A     | 2200W/240V/12-11A  |
| Node Physical Dimensions           | 39.20 mm / 1.54 in H<br>196.25 mm / 7.73 in W<br>587.55 mm / 23.13 in D<br>- 3.60 kg / 8.0 lbs  |                       |                    |
| Chassis Physical Dimensions        | 8.80 cm / 3.46 in H<br>44.70 cm / 17.60 in W<br>73.00 cm / 28.74 in D<br>- 24.70 kg / 54.45 lbs |                       |                    |

### Environmentals

|  |   |  |  |
|--|---|--|--|
| 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 — small 2,730; medium 3,412; large 4,129<br>Worst Case BTU/hr — small 3,856; medium 4,982; large 6,142                           |  |  |
| Standards and Certifications                           | FCC, UL, IEC 60950-1, CE, VCCI, KCC, SABS LOA (South Africa), BSMI, SONCAP, KEBS, KSA, TBS, UNGS, FIPS 140-2***                                 |  |  |

\* NetApp HCI effective capacity calculation accounts for NetApp SolidFire Helix® data protection, system overhead, and global efficiencies including compression, deduplication, and thin provisioning. SolidFire 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 Specifications, Continued

### Expansion Storage Nodes

These expansion nodes provide additional capacity and/or NVMe in a 1U chassis. Expansion storage nodes can be added to any NetApp HCI minimum configuration.

|                            | H-610S-1  | H-610S-2                                   | H-610S-4                                   |
|----------------------------|---|--|--|
|                            | 1U storage node*  |  |  |
| Drive Capacity             | (12) 960GB  | (12) 1.92TB                                | (12) 3.84TB                                |
| System Memory / Read Cache | 256GB   | 384GB                                      | 704GB                                      |
| Raw Capacity               | 11.52TB   | 23.04TB                                    | 46.08TB                                    |
| Effective Capacity**       | 19.64TB   | 39.28TB                                    | 78.57TB                                    |
| Performance Per Node       | 100,000 IOPS  |  |  |
| Networking                 | Data – (2) 10/25GbE iSCSI SFP28<br>Management – (2) 1GbE RJ45 |  |  |
| Power (Watts)              | 353.1W to 385.7W,<br>depending on I/O load                    | 393.1W to 425.7W,<br>depending on I/O load | 423.1W to 455.7W,<br>depending on /IO load |
| Weight                     | 18.37 kg (40.5 lbs)   |  |  |

\* Available as encrypted or unencrypted platform. Unencrypted model numbers are H610S-1-NE-P, H610S-2-NE-P, and H610S-4-NE-P.

Two 1.5 meter C13 to C14 power cords included per node. Although NetApp provides one power cord type-2 and length with shipment, customers can procure the power cords of their choice from outside vendors.

\*\* SolidFire effective capacity calculation accounts for Helix® data protection, system overhead, and global efficiencies including compression, deduplication, and thin provisioning. SolidFire customers typically achieve an effective capacity range of 5x to 10x the usable capacity, depending on application workloads. Effective capacity based on 4:1 storage efficiency ratios with the maximum number of SSDs installed. Actual ratio may be 10:1 or higher, depending on workloads and use cases.