Overview

Nimble Storage Adaptive Flash Arrays

Nimble Storage Adaptive Flash Arrays from Nimble Storage, a Hewlett Packard Enterprise company, are the industry's only predictive hybrid flash arrays[1] delivering radical simplicity with consistently good performance within a scalable, cloud-ready platform. This is achieved by combining a flash-optimized architecture with InfoSight Predictive Analytics—giving you fast, reliable access to data with proven, measured availability of greater than 99.9999%[2].

Nimble Storage CS1000 and CS1000H Adaptive Flash Arrays are the hybrid entry point to the Nimble Predictive Cloud platform, providing value and simplicity for mixed, mainstream workloads. They combine a flash-optimized architecture, scalability and resiliency at an economical price point. The arrays allow you to start small and scale up to 294 TB raw capacity with the CS1000. Since they are backed by our Timeless Storage guarantee[3], there is no need to pay for optional software, and forklift upgrades can become a thing of the past.

Designed to radically simplify operations, Nimble Storage Adaptive Flash Arrays feature InfoSight Predictive Analytics, predict and prevent issues across the infrastructure stack. Even the most complex issues are rapidly resolved because InfoSight has already collected the necessary information to solve the problem, removing the need for complex troubleshooting. As a result, traditional level 1 and 2 support staff is completely automated by InfoSight. The Nimble Storage support organization is entirely comprised of level 3 experts who answer calls in less than a minute on average.

NOTE: For more information about the entire Nimble Storage product portfolio, go to **http://www.nimblestorage.com**. Nimble Storage products are not available in some markets.

Nimble Storage CS1000 Adaptive Flash Array[4]
(Base array, 4U; 21 bays hold carriers with Large Form Factor HDDs,
3 bays hold Dual Flash Carriers with Small Form Factor SSDs)

NOTE:
[1] Based on publicly available information as of May 2017.
[2] Based on actual customer data collected by the Nimble Storage support organization as of March 2017.
Refer to the whitepaper **Redefining the Standard for System Availability** for additional details (registration required).
[3] Refer to **https://www.nimblestorage.com/satisfaction-guarantee/** for details.
Subject to Nimble Storage General Terms and Conditions available at **http://www.nimblestorage.com/docs**.
[4] Nimble Storage CS1000H Adaptive Flash Array (not shown) has 22 bays holding LFF Hard drives and
2 bays holding Dual Flash Carriers with SFF Solid State Drives.

Flash Performance for Mixed, Mainstream Workloads

- Speed and efficiency for mixed workloads. Purpose-built flash architecture delivers sub-millisecond response times with greater efficiency than other hybrid arrays.

Overview

- Scale-to-fit. Scale up seamlessly to grow the performance and capacity of the array. Scale across multiple arrays non-disruptively in a cluster still managed as one.
- Adaptive service levels. Assign and change the service level of any volume at the click of a button ("Auto Flash", "All Flash", or "Minimal Flash").
- Cloud-ready. Flexibility to create a multicloud environment with Nimble Cloud Volumes.

InfoSight Predictive Analytics

- Proactive resolution. InfoSight automatically predicts and resolves 86% of problems[5] before you even know there is an issue.
- Solves storage and non-storage problems. By collecting and correlating sensors across the infrastructure stack, InfoSight uncovers problems spanning from storage to VMs. In fact, 54% of the problems InfoSight resolves are outside of storage[6].
- Prevents known issues with infrastructure that learns. If a problem is detected in one system, InfoSight begins to predict the issue and inoculate other systems. Every system gets smarter and more reliable through collective installed base insights.
- The support you've always wanted. Automation and proactive resolution put the focus on prevention, streamlining the process, and connecting you directly to support expertise. No more answering routine support questions, sending log files, or attempting to recreate issues.

Unparalleled Hybrid Efficiency

- Flash-optimized write performance. Defy expectations and write to disk at flash speeds through write serialization to get flash-like performance from very cost-efficient, high-density hard disk drives.
- Flash-optimized read performance. Dynamic flash caching accelerates reads even as workloads change to leverages flash capacity more efficiently[7] than other tiered hybrid systems.
- Always-on data reduction. Variable-block compression, zero pattern elimination, thin provisioning, and zero-copy clones deliver up to 2-3X space savings without performance penalty[8].

Absolute Resiliency

- Greater than 99.9999% measured availability[Error! Bookmark not defined.]. Predictive analytics and fault-tolerant design achieve over six-nines of proven availability, validated across the installed base.
- Triple+ Parity RAID. Tolerates three simultaneous drive failures plus additional protection from intra-drive parity.
- SmartSecure encryption. Application-granular, FIPS-certified encryption and data shredding provide end-to-end security for data at rest and on-the-wire when replicated offsite.
- Integrated data protection. An ideal foundation for comprehensive data protection through application-consistent snapshots and replication as well as integration with leading backup software solutions.

NOTE:

[5] Based on actual customer data collected by the Nimble Storage support organization as of March 2017. Refer to the whitepaper **Redefining the Standard for System Availability** for additional details (registration required).

[6] Based on actual customer data collected by the Nimble Storage support organization as of March 2017. Refer to the Nimble Labs Research Report **Can Machine Learning Prevent Application Downtime?**

[7] Response times based on actual customer data collected by the Nimble Storage Support organization as of March 2017. Efficiency comparisons based on a combination of technologies including write serialization, dynamic flash caching of reads, and the use of 3D NAND flash.

[8] The Nimble Operating System (NOS) is built to optimize the use of system resources including the CPU and memory. This enables the arrays to provide Always-on data reduction without affecting the storage performance that is delivered.

Nimble Storage Adaptive Flash Array models

	Nimble Storage CS1000H	Nimble Storage CS1000
Number of controllers	2	
Number of drives	(11) LFF Hard Drives[4]	(21) LFF Hard Drives

Overview

Raw capacity in base array[1]	11 TB	21 TB	42 TB
Usable capacity in base array[1]	7 TB	16 TB	33 TB
Effective capacity in base array[1, 2]	13 TB	32 TB	66 TB
Flash Capacity[3]	480 GB or 960 GB depending on configuration	1.44 TB	2.88 TB
Expansion Shelves	Up to (6) Expansion Shelves[5]		
RAID level	Triple+ Parity RAID		
On-board connectivity	(4) 1 GbE/10 GbE ports, (2) per controller		
Additional host connectivity	(4) 1 GbE iSCSI, or (4) 1/10GbE iSCSI (10GBASE-T), or (4) 1/10GbE iSCSI (Optical), or (4) 8/16Gb Fibre Channel; depending on configuration		

Expansion Shelves for Nimble Storage Adaptive Flash Arrays

	CS Expansion Shelf with 21 TB	CS Expansion Shelf with 42 TB
Number of drives	(21) drives	
Raw capacity in expansion shelf[1]	21 TB	42 TB
Usable capacity in expansion shelf[1]	16 TB	33 TB
Effective capacity in expansion shelf[1, 2]	32 TB	66 TB
Flash Capacity[3]	720 GB	1200 GB
RAID level	Triple+ Parity RAID	

NOTE: Specifications are subject to change without notice.
[1] For storage capacity, 1 GiB = 230 bytes and 1 TiB = 1,024 GiB.
[2] Assuming 2:1 data reduction with compression.
[3] Flash Capacity is provided by Solid State Drives, upgradable with Flash Upgrade Kits.
[4] Included in base array, upgradable to (22) drives.
[5] Requires upgrade to (22) drives in the CS1000H base array before connecting expansion shelves.

Host OS Support

Microsoft® Windows® Server, including Microsoft® Hyper-V™ | VMware vSphere™ | Ubuntu
SUSE® Linux Enterprise | SUSE® Linux Virtualization | Red Hat® Enterprise Linux® | Red Hat® Enterprise Virtualization
CentOS | Oracle® Linux® (UEK and RHEL compatible kernels) | Oracle® Solaris Citrix® | IBM® AIX®

For the latest information on supported operating systems refer to Single Point of Connectivity Knowledge (SPOCK) for HPE Storage products, including Nimble Storage: **http://www.hpe.com/storage/spock**

Service and Support and Warranty Information

Warranty

Nimble Storage arrays come with the following warranties:

- 1 year, parts-only warranty for hardware components
- 90 day, software updates for defects

Additionally, Nimble Storage will provide phone support for replacing a defective part. Additional support coverage is required for Nimble Storage arrays.

NOTE: Warranty is provided Nimble Storage, an HPE company.

Service and Support

Support is required for all Nimble Storage arrays. Support SKUs provide three years of 24x7 telephone and email support for the arrays with a choice of Next Business Day (NBD) or 4-hour parts delivery*, access to Nimble Storage's InfoSight Predictive Analytics platform and software updates.

NOTE: Support contract is mandatory for all Nimble Storage products.

Installation Service

New Array Installation (USA/Canada only)
On-site installation of a new Nimble Storage array in a data center.

New Remote Installation
Remote installation of a new Nimble Storage array in a data center.

Upgrade Kit or Expansion Shelf Installation (USA/Canada only)
On-site installation of upgrades kits or expansion shelves for an existing Nimble Storage array.

NOTE: Installation services are optional for all Nimble Storage products.

***NOTE:** Available in select markets; for areas not currently covered, Nimble Storage offers on-site spare parts/kits for purchase

Configuration Information

Nimble Storage Adaptive Flash Arrays

All Nimble Storage Adaptive Flash Arrays come in a 4U form-factor chassis with

- (2) controllers with fans and NVDIMM,
- (4) 1GbE/10GbE network ports, i.e. (2) per controller, for iSCSI or management traffic and
- (2) power supplies and (2) C13/C14 power cords.

Additional host connectivity per controller is indicated in the product descriptions below.
Flash Cache upgrades and expansion shelves are available for integration in the field.

Nimble Storage CS1000H Adaptive Flash Array

The Nimble Storage CS1000H Adaptive Flash Arrays come with (11) LFF Hard Drives included as standard and supports (2) Dual Flash Carriers with SFF Solid State Drives. The configurations below include two SFF SSDs and accept one optional Flash Upgrade Kit to increase the Flash Cache. Additional drives can be installed into the array as field upgrade, bringing the total drive count to (22) 1 TB drives, and by connecting up to (6) expansion shelves to the base array.

Base Array

Nimble Storage CS1000H 2x1GbE 11x1TB HDD 2x240GB Flash Array **Q2Q14A**
Includes base with the following

- Disk configuration: (11) 1 TB HDDs
- Flash configuration: (2) 240 GB SSDs
- Additional connectivity: (2) 1GbE iSCSI ports per controller

Requires Nimble Storage CS1000H 11TB 480GB Flash 3yr NBD Support or
Nimble Storage CS1000H 11TB 480GB Flash 3yr 4hr Support

Nimble Storage CS1000H 2x10GbE 11x1TB HDD 2x480GB Flash Array **Q2Q15A**
Includes base with the following

- Disk configuration: (11) 1 TB HDDs
- Flash configuration: (2) 480 GB SSDs
- Additional connectivity: (2) 10GbE Optical iSCSI ports per controller

Requires Nimble Storage CS1000H 11TB 960GB Flash 3yr NBD Support or
Nimble Storage CS1000H 11TB 960GB Flash 3yr 4hr Support

Nimble Storage CS1000H 2x10GbE 11x1TB HDD 2x240GB Flash Array **Q2Q16A**
Includes base with the following

- Disk configuration: (11) 1 TB HDDs
- Flash configuration: (2) 240 GB SSDs
- Additional connectivity: (2) 10GbE Optical iSCSI ports per controller

Requires Nimble Storage CS1000H 11TB 480GB Flash 3yr NBD Support or
Nimble Storage CS1000H 11TB 480GB Flash 3yr 4hr Support

Nimble Storage CS1000H 2x10GBASE-T 11x1TB HDD 2x480GB Flash Array **Q2Q17A**
Includes base with the following

- Disk configuration: (11) 1 TB HDDs
- Flash configuration: (2) 480 GB SSDs
- Additional connectivity: (2) 10GbE iSCSI (10GBASE-T) ports per controller

Requires Nimble Storage CS1000H 11TB 960GB Flash 3yr NBD Support or
Nimble Storage CS1000H 11TB 960GB Flash 3yr 4hr Support

Nimble Storage CS1000H 2x10GBASE-T 11x1TB HDD 2x240GB Flash Array **Q2Q18A**
Includes base with the following

- Disk configuration: (11) 1 TB HDDs
- Flash configuration: (2) 240 GB SSDs
- Additional connectivity: (2) 10GbE iSCSI (10GBASE-T) ports per controller

Requires Nimble Storage CS1000H 11TB 480GB Flash 3yr NBD Support or
Nimble Storage CS1000H 11TB 480GB Flash 3yr 4hr Support

Configuration Information

	Nimble Storage CS1000H 2x16Gb FC 11x1TB HDD 2x480GB Flash Array Includes base with the following • Disk configuration: (11) 1 TB HDDs • Flash configuration: (2) 480 GB SSDs • Additional connectivity: (2) 8/16Gb FC ports per controller Requires Nimble Storage CS1000H 11TB 960GB Flash 3yr NBD Support or Nimble Storage CS1000H 11TB 960GB Flash 3yr 4hr Support	**Q2Q19A**
Upgrades (optional)	**Nimble Storage CS1000H 11x1TB HDD Upgrade Kit** Adds another (11) 1 TB drives to the CS1000H base array. Requires at least 960 GB Flash Cache in the base array, and Nimble Storage CS1000H HDD Upgrade Kit 3yr NBD Support or Nimble Storage CS1000H HDD Upgrade Kit 3yr 4hr Support	**Q2Q20A**
	Nimble Storage CS1000H 2x240GB Flash Upgrade Kit Adds (2) 240 GB SSD as Flash Cache to an existing CS1000H base array. Requires Nimble Storage CS1000H Flash Upgrade Kit 3yr NBD Support or Nimble Storage CS1000H Flash Upgrade Kit 3yr 4hr Support	**Q2Q21A**
	Nimble Storage CS1000H 2x480GB Flash Upgrade Kit Adds (2) 480 GB SSD as Flash Cache to an existing CS1000H base array. Requires Nimble Storage CS1000H Flash Upgrade Kit 3yr NBD Support or Nimble Storage CS1000H Flash Upgrade Kit 3yr 4hr Support	**Q2Q22A**
Support options (mandatory)	Nimble Storage CS1000H 11TB 480GB Flash 3yr NBD Support	Q2Q64A
	Nimble Storage CS1000H 11TB 960GB Flash 3yr NBD Support	Q2Q65A
	Nimble Storage CS1000H 11TB 480GB Flash 3yr 4hr Support	Q2Q66A
	Nimble Storage CS1000H 11TB 960GB Flash 3yr 4hr Support	Q2Q67A
	Nimble Storage CS1000H HDD Upgrade Kit 3yr NBD Support	Q2Q68A
	Nimble Storage CS1000H HDD Upgrade Kit 3yr 4hr Support	Q2Q69A
	Nimble Storage CS1000H Flash Upgrade Kit 3yr NBD Support	Q2Q70A
	Nimble Storage CS1000H Flash Upgrade Kit 3yr 4hr Support	Q2Q71A

Configuration Information

Nimble Storage CS1000 Adaptive Flash Array

All Nimble Storage CS1000 Adaptive Flash Arrays come with (21) LFF Hard Drives included as standard and supports (3) Dual Flash Carriers with SFF Solid State Drives. The configurations below include three SFF SSDs and accept one optional Flash Upgrade Kit to increase the Flash Cache. Additional capacity can be added by connecting up to (6) expansion shelves to the base array.

Base Array

Nimble Storage CS1000 2x10GbE 21x1TB HDD 3x480GB Flash Array **Q2Q23A**

Includes base with the following
- Disk configuration: (21) 1 TB HDDs
- Flash configuration: (3) 480 GB SSDs
- Additional connectivity: (2) 10GbE Optical iSCSI ports per controller

Requires Nimble Storage CS1000 21TB 3yr NBD Support or
Nimble Storage CS1000 21TB 3yr 4hr Support

Nimble Storage CS1000 2x1GbE 21x1TB HDD 3x480GB Flash Array **Q2Q24A**

Includes base with the following
- Disk configuration: (21) 1 TB HDDs
- Flash configuration: (3) 480 GB SSDs
- Additional connectivity: (2) 1GbE iSCSI ports per controller

Requires Nimble Storage CS1000 21TB 3yr NBD Support or
Nimble Storage CS1000 21TB 3yr 4hr Support

Nimble Storage CS1000 2x10GBASE-T 21x1TB HDD 3x480GB Flash Array **Q2Q25A**

Includes base with the following
- Disk configuration: (21) 1 TB HDDs
- Flash configuration: (3) 480 GB SSDs
- Additional connectivity: (2) 10GbE iSCSI (10GBASE-T) ports per controller

Requires Nimble Storage CS1000 21TB 3yr NBD Support or
Nimble Storage CS1000 21TB 3yr 4hr Support

Nimble Storage CS1000 2x16Gb FC 21x1TB HDD 3x480GB Flash Array **Q2Q26A**

Includes base with the following
- Disk configuration: (21) 1 TB HDDs
- Flash configuration: (3) 480 GB SSDs
- Additional connectivity: (2) 8/16Gb FC ports per controller

Requires Nimble Storage CS1000 21TB 3yr NBD Support or
Nimble Storage CS1000 21TB 3yr 4hr Support

Nimble Storage CS1000 2x16Gb FC 21x2TB HDD 3x960GB Flash Array **Q2Q27A**

Includes base with the following
- Disk configuration: (21) 2 TB HDDs
- Flash configuration: (3) 960 GB SSDs
- Additional connectivity: (2) 8/16Gb FC ports per controller

Requires Nimble Storage CS1000 42TB 3yr NBD Support or
Nimble Storage CS1000 42TB 3yr 4hr Support

Nimble Storage CS1000 2x10GbE 21x2TB HDD 3x960GB Flash Array **Q2Q28A**

Includes base with the following
- Disk configuration: (21) 2 TB HDDs
- Flash configuration: (3) 960 GB SSDs
- Additional connectivity: (2) 10GbE Optical iSCSI ports per controller

Requires Nimble Storage CS1000 42TB 3yr NBD Support or
Nimble Storage CS1000 42TB 3yr 4hr Support

Nimble Storage CS1000 2x10GBASE-T 21x2TB HDD 3x960GB Flash Array **Q2Q29A**

Includes base with the following
- Disk configuration: (21) 2 TB HDDs
- Flash configuration: (3) 960 GB SSDs
- Additional connectivity: (2) 10GbE iSCSI (10GBASE-T) ports per controller

Configuration Information

	Requires Nimble Storage CS1000 42TB 3yr NBD Support or Nimble Storage CS1000 42TB 3yr 4hr Support	
Upgrades (optional)	**Nimble Storage CS1000 3x240GB Flash Upgrade Kit** Includes (3) 240 GB SSD for CS1000, requires Nimble Storage CS1000 Flash Upgrade Kit 3yr NBD Support or Nimble Storage CS1000 Flash Upgrade Kit 3yr 4hr Support	**Q2Q30A**
	Nimble Storage CS1000 3x480GB Flash Upgrade Kit Includes (3) 480 GB SSD for CS1000, requires Nimble Storage CS1000 Flash Upgrade Kit 3yr NBD Support or Nimble Storage CS1000 Flash Upgrade Kit 3yr 4hr Support	**Q2Q31A**
Support (mandatory)	Nimble Storage CS1000 21TB 3yr NBD Support	Q2Q72A
	Nimble Storage CS1000 21TB 3yr 4hr Support	Q2Q73A
	Nimble Storage CS1000 42TB 3yr NBD Support	Q2Q74A
	Nimble Storage CS1000 42TB 3yr 4hr Support	Q2Q75A
	Nimble Storage CS1000 Flash Upgrade Kit 3yr NBD Support	Q2Q76A
	Nimble Storage CS1000 Flash Upgrade Kit 3yr 4hr Support	Q2Q77A

Configuration Information

Options for Nimble Storage Adaptive Flash Arrays

Additional capacity can be added to an existing Nimble Storage Adaptive Flash Array by connecting expansion shelves. Nimble Storage CS Expansion Shelves come with (2) C13/C14 power cords and (2) 1m 12Gb/s SAS cables.

NOTE: The CS1000H base array needs to be upgraded to (22) drives and the required amount of Flash Capacity before expansion shelves can be connected to the array.

Expansion Shelves	**Nimble Storage CS 21x1TB HDD 3x240GB Flash Expansion Shelf** Capacity expansion shelf with 21TB raw capacity and Flash Cache, requires Nimble Storage CS 21TB Expansion Shelf 3yr NBD Support or Nimble Storage CS 21TB Expansion Shelf 3yr 4hr Support	**Q2Q32A**
	Nimble Storage CS 21x2TB HDD 2x480GB and 1x240GB Flash Expansion Shelf Capacity expansion shelf with 42TB raw capacity and Flash Cache, requires Nimble Storage CS 42TB Expansion Shelf 3yr NBD Support or Nimble Storage CS 42TB Expansion Shelf 3yr 4hr Support	**Q2Q33A**
Support (mandatory)	Nimble Storage CS 21TB Expansion Shelf 3yr NBD Support	Q2Q78A
	Nimble Storage CS 21TB Expansion Shelf 3yr 4hr Support	Q2Q80A
	Nimble Storage CS 42TB Expansion Shelf 3yr NBD Support	Q2Q79A
	Nimble Storage CS 42TB Expansion Shelf 3yr 4hr Support	Q2Q81A

Configuration Information

Installation Services

Installation services accelerate the installation and startup: Nimble Storage Pro Installation Services provide rapid planning, installation, and validation of Nimble Storage arrays into your environment

NOTE: On-site installation services are only available in the USA and Canada; installation services are optional.

Nimble Storage Upgrade Kit/Expansion Shelf Installation Service	Q2R14A
Nimble Storage New Array Installation Service	Q2R15A
Nimble Storage New Array Remote Installation Service	Q2R16A
Nimble Storage Additional Array Installation Service	Q2R17A

Racks

Nimble Storage arrays and expansion shelves are compatible with industry standard 4-post EIA 19 inch racks with square mounting holes, including HPE 36U, 42U and 47U Enterprise Shock Racks.

For more information on the HPE rack offerings, please see the following URL:
http://h18004.www1.hpe.com/products/servers/platforms/rackandpower.html.
For more information on rack options, see:
http://www.hpe.com/products/rackoptions.
For more information on PDUs, see:
http://h18004.www1.hpe.com/products/servers/proliantstorage/power-protection/pdu.html

Additional power cords

Nimble Storage arrays and expansion shelves come with (2) C13/C14 power cords included as standard. A pair of additional power cords (country/region specific) are required when connecting base arrays or expansion shelves to office power outlets.

Country/Region	Description	
Australia/New Zealand	HPE PWR CRD, 2.5m, 10A, C13—AU/NZ	AF569A
Europe (France, Germany, Spain)	HPE PWR CRD, 1.83m, 10A, C13—European	AF568A
Japan	HPE PWR CRD, 2m, 12A, C13—Japan	AF572A
Israel	HPE PWR CRD, 1.83m, 10A, C13—Israel	AF564A
India	HPE PWR CRD, 2m, 6A, C13—India	AF562A
Italy	HPE PWR CRD, 1.83m, 10A, C13—IT/CL	AF571A
South Korea	HPE PWR CRD, 1.83m, 10A, C13—Korea	AF560A
South Africa	HPE PWR CRD, 2.5m, 10A, C13—South Africa	AF567A
Taiwan	HPE PWR CRD, 1.83m, 13A, C13—Taiwan	AF561A
U.S./Canada	HPE PWR CRD, 1.83m, 10A, C13—U.S.	AF556A
United Kingdom/Hong Kong/Singapore	HPE PWR CRD, 1.83m, 10A, C13—UK	AF570A

Technical Specifications

Physical Dimensions	Width in/mm	Depth in/mm	Height in/mm/U	Weight lb/kg
Nimble Storage CS1000H	17.5/445	26.5/673	7/175/4	90/41
Nimble Storage CS1000H 11TB HDD Upgrade Kit	15/381	21/533	15/381	15/7
Nimble Storage CS1000	17.5/445	26.5/673	7/175/4	105/48
Nimble Storage CS1000 Expansion Shelves	17.5/445	26.5/673	7/175/4	90/41
Nimble Storage CS Series Flash Upgrade Kits	12/305	12/305	7/175	3/2

Power Requirements	Nimble Storage CS1000H	Nimble Storage CS1000
Input Voltage		
AC PCM option	100 to 240 VAC (50 to 60 Hz)	
Max power requirements (Watts/kVA)	500 W / 0.56 kVA	600 W / 0.56 kVA
Thermal (BTU)	1638 BTU	1965 BTU

Environmental Specifications[4]

Operating Temperature	10 - 35° C (50 - 95° F) Reduce rating by 1° F for each 1000 ft altitude (1.8° C/1,000 m)
Shipping Temperature	0° C - 40° C (32° F - 104° F) Maximum rate of change is 20°C/hr (36°F/hr)
Operating Altitude (ft/m) max.	10,000 ft / 3,048 m
Shipping Altitude (ft/m) max.	40,000ft/ 12,192 m
Humidity	8 - 90%, non-condensing
Shipping Humidity	5 - 95%, non-condensing
Operating Vibration	0.25 G, Sine 5 - 200 Hz (approx. 15 min/axis); 0.4 GRMS, Random 5 - 200 Hz (approx. 60 min/axis)
Non-operating Vibration	0.5 G, Sine 5 - 200 Hz (approx. 15 min/axis); 0.98 GRMS, Random 5 - 500Hz (approximate 30 min/axis)
Operating Shock	20 G, 2.5ms, half-sine, one shock on each side
Non-operating Shock	20 G, 10ms, square wave, one shock on each side

Technical Specifications

Electromagnetic Compatibility	Subpart B of Part 15 of FCC Rules for Class A digital devices ICES-003, Issue 6, dated January 2016 (Class A) VCCI V-3: April 2014 (Class A) EN 55022:2010 CISPR 22:2008 AS/NZS CISPR 22:2009 +A1:2010 EN55032:2012 CISPR 32:2012 EN 55024:2010 CISPR 24:2010 +A1:2015 TCVN 7189:2009 NBTC TS 3001-2555 TP TC 020/2011

Acoustics Sound pressure level measured per ISO 7779 specs during normal operating fan	Fan Speed (RPM)	Standard Speed (3540 RPM)	Full Speed (13000 RPM)
	Front	65.5	72.0
	Back	71.2	75.8
	Left	65.6	69.0
	Right	65.6	70.7

Safety	EN60950-1:2005 (Second Edition); Am1:2009 + Am2:2013 IEC 60950-1:2005 (Second Edition); Am1:2009 + Am2:2013 EN60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013 UL/IEC 60960-1 2nd Ed. Am1 + Am2 CNS14336-1 ('99) CNS13438 ('95) NOM-019-SCFI-1998 NBTC TS 4001-2550 TP TC 004/2011 IS 13252 (PART 1):2010 +A1:2013 + A2:2-15 SANS IEC 60950-1

NOTE: [4] Specifications are subject to change without notice.

Certifications / Markings		
	UL	NOM
	cUL	MoEc
	CE	NBTC SDoC
	FCC Class A	CITC/CoC*
	IC Class A	EAC
	VCCI Class A	BIS
	RCM	LOA (S. Africa)
	BSMI Class A	RoHS 2011/65/EU, EN50581:2012
	KC	WEEE
	CCC Exemption	

Summary of Changes

Date	Version History	Action	Description of Change
12-Jun-2017	From Version 1 to 2	Changed	Detail on included power cords and SAS cables
5-Jun-2017	Version 1	Created	Created first version, including CS1000 and CS1000H

Sign up for updates

Hewlett Packard Enterprise

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