Overview

HPE Nimble Storage All Flash Arrays

Experience the Power of Predictive

HPE Nimble Storage All Flash Arrays combine a flash-efficient architecture with HPE InfoSight predictive analytics to achieve fast, reliable access to data and 99.9999% guaranteed availability[1]. Radically simple to deploy and use, the arrays are cloud-ready – providing data mobility to the cloud through HPE Cloud Volumes. Your storage investment made today will support you well into the future, thanks to our technology and business-model innovations.HPE Nimble Storage All Flash Arrays include all-inclusive licensing, easy upgrades, and flexible payment options – while also being future-proofed for new technologies, such as NVMe and SCM.

What's new

Now HPE Nimble Storage All Flash Arrays are NEBS certified.

A new all-flash array platform that is up to 65% faster and twice the scalability of previous all-flash arrays. HPE Nimble Storage All Flash Arrays are guaranteed provide more effective capacity per terabyte of raw storage than competitive all-flash arrays[2].

The new platform is future-proofed with an architecture for NVMe and Storage Class Memory (SCM). The arrays are designed to be upgraded with SCM for greater performance in the future. These all-flash arrays reflect Hewlett Packard Enterprise commitment to deliver business value today and tomorrow as demonstrated by our **timeless storage**.

NOTE: For more information about the entire HPE Nimble Storage product portfolio, go to:
https://www.hpe.com/us/en/storage/nimble.html.

HPE Nimble Storage All Flash Array
(Base array, 4U; all 24 bays hold Dual Flash Carriers with Small Form Factor SSDs)

NOTE: [1] For details on the HPE Nimble Storage 6-nines guarantee, refer to
https://www.hpe.com/h20195/v2/Getdocument.aspx?docname=a00018503enw.
NOTE: [2] For details on the HPE Store More Guarantee for HPE Nimble Storage, refer to
http://h20195.www2.hpe.com/V2/GetDocument.aspx?docname=a00039975enw

Standard Features

HPE InfoSight predictive analytics
- Automatically predicts and resolves 86% of problems before you even know there is an issue[3].
- Transforms the support experience through cloud-based predictive analytics and Level 3-only support.
- Sees across the infrastructure stack and resolves problems beyond storage.
- Simplifies planning with prescriptive forecasts into capacity, performance, and bandwidth needs.
- Makes infrastructure smarter and more reliable by learning from the installed base.

NOTE: [3] Based on actual customer data collected by the HPE Nimble Storage Support organization. See also **https://www.hpe.com/h20195/v2/Getdocument.aspx?docname=a00018503ENW**.

Radical Simplicity
- Simple to deploy. Simple to use. Simple to manage.
- Cloud-ready. Deploy flash on-premises or in the cloud with common data services and mobility between all-flash, adaptive flash, and HPE Cloud Volumes.
- Timeless storage means no worries today or tomorrow. Flash arrays are future-proofed for NVMe and SCM and come with a satisfaction guarantee, all-inclusive software licensing, flat support pricing, no forklift upgrades, and an option to receive a free faster controller upgrade after three years.
- Radically easy to integrate with many ecosystems. Deep integration with VMware, MS applications, Oracle, Veeam, and others.

Fast and Reliable
- Scale-to-fit: Scale-up performance and capacity independently and non-disruptively. Scale-out to 4 arrays managed as one.
- Up to 5X or more, data reduction from variable block inline deduplication and compression.
- Backup and DR from all-flash to adaptive flash arrays at one-third the cost.
- Data reduction, snapshots, and Triple+ Parity RAID with no performance impact.
- Sub-millisecond response time for performance-sensitive enterprise workloads.

Absolute Resiliency
- 99.9999% (six-nines) guaranteed availability[1].
- Triple+ Parity RAID tolerates 3 simultaneous drive failures plus additional protection through intra-drive parity.
- App-granular, FIPS-certified encryption provides data at rest and over-the-wire protection. Secure data shredding is built-in.
- Native application-consistent snapshots and replication plus integration with leading backup software.
- Redundant, hot-swap components including controllers, power supplies, SSDs, and IO cards.

NEBS Level 3 Certified
- HPE Nimble Storage All Flash Arrays are NEBS (Network Equipment Building System) level 3 certified
- Ideal for network equipment providers and communication service providers requiring NEBS certified All Flash storage arrays for their telecom infrastructure
- NEBS Level 3 certified for the following Nimble Storage Adaptive Flash Arrays (AF20, AF20Q, AF40, and AF60)

Standard Features

HPE Nimble Storage All Flash Array models						
AF-Series Arrays	AF20Q	AF20	AF40	AF60	AF80	Scale-out[1] 4X AF80
Raw capacity (TB/TiB)[2, 5]	6–46/5–42	11–46/10–42	11–184/10–167	11–553/10–502	23–553/21–502	2212/2008
Usable capacity (TB/TiB)[2]	3–25/2–23	8–33/7–30	8–136/7–124	8–407/7–370	17–407/15–370	1628/1480
Effective capacity (TB/TiB)[2, 3]	14–128/13–116	40–168/36–153	40–682/36–620	40–2037/36–1853	82–2037/75–1853	8148/7412
Max. # of expansion shelves	1	1	1	2	2	8
RAID level Triple+ Parity						
Onboard iSCSI/Mgmt. 1 Gb/10 Gb ports per array[4]	4	4	4	4	4	16
Optional iSCSI 1 Gb ports per array	4, 8, 12, 16	4, 8, 12, 16	4, 8, 12, 16, 20, 24	4, 8, 12, 16, 20, 24	4, 8, 12, 16, 20, 24	96
Optional iSCSI 10 Gb ports per array	4, 8, 12, 16	4, 8, 12, 16				
	4, 8, 12, 16	4, 8, 12, 16	4, 8, 12, 16, 20, 24	4, 8, 12, 16, 20, 24	4, 8, 12, 16, 20, 24	96
Optional FC 8 Gb/16 Gb ports per array	4, 8, 12, 16	4, 8, 12, 16				
	4, 8, 12, 16	4, 8, 12, 16	4, 8, 12, 16, 20, 24	4, 8, 12, 16, 20, 24	4, 8, 12, 16, 20, 24	96
Max. power requirement (watts/kVA)	600/0.667	650/0.722	800/0.889	850/0.944	1200/1.333	4800/5.332
Thermal (BTU)	1968	2132	2624	2788	3936	15744

NOTE: Specifications are subject to change without notice.

[1] Scale-out configuration consists of 4x AF80 arrays, each with two all-flash shelves.

[2] Raw, usable, and effective capacities are shown in TB (10^{12} bytes) and TiB (2^{40} bytes).

[3] Effective capacity is the capacity of the base array and maximum number of expansion shelves. Assumes data reduction of five to one from deduplication and compression.

[4] Each array controller has 2 x 10GbaseT ports built in. Optional ports are 1GbaseT, 10GbaseT, 10GbE SFP+, or 8/16Gb FC.

[5] The Total Max Raw Capacity per system is limited by the architecture of the system and is not to be exceeded, even if it may be possible to configure a system that exceeds this limit.

Standard Features

SSD Expansion Shelves for All Flash Arrays

Raw capacity (TB/TiB)[1,3]	6–368/5–334
Usable capacity (TB/TiB)[1]	4–272/3–248
Effective capacity (TB/TiB)[1,2]	20–1,364/18–1,240

NOTE: Specifications are subject to change without notice.

[1] Raw, usable, and effective capacities are shown in TB (10^{12} bytes) and TiB (2^{40} bytes).

[2] Effective capacity is the capacity of the base array and maximum number of expansion shelves. Assumes data reduction of five to one (5:1) from deduplication and compression.

[3] The Total Max Raw Capacity per system is limited by the architecture of the system and is not to be exceeded, even if it may be possible to configure a system that exceeds this limit.

Host OS Support

Microsoft® Windows® Server, including Microsoft® Hyper-V™ | VMware vSphere™ | HP-UX® | 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® XenServer | IBM® AIX®

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

Optional File Controller(s)

Add optimized, secure, and reliable file services to your Nimble Storage Array with one or more pre-configured HPE Storage File Controllers. Augmenting a Nimble Storage Array with a file controller or highly-available file controller cluster creates a unified block/file solution that maximizes your total storage investment. Each HPE Storage File Controller is built on HPE ProLiant DNA and Microsoft Windows Storage Server 2016, and can serve thousands of concurrent users and multiple diverse workloads while providing a straightforward and familiar management experience for IT generalists or storage administrators.

For more information, visit **https://h20195.www2.hpe.com/v2/GetDocument.aspx?docname=a00047729enw**

Service and Support

Warranty
HPE Nimble Storage arrays come with the following warranties:
- 1 year; parts-only warranty for hardware components, including SSDs
- 90 day, software updates for defects

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

NOTE: For hardware warranty claims, defective part must be received before replacement parts are shipped.

NOTE: Warranty is provided by HPE Nimble Storage.

NOTE: Link to **HPE Global Limited Warranty and Technical Support**.

Service and Support
Support is required for all HPE Nimble Storage arrays. Support SKUs provide up to five years of 24x7 telephone and email support for the arrays and hardware components (Including
SSDs reaching the write wear limit) with a choice of Next Business Day (NBD) parts exchange, 4-hour parts delivery, or 4 hour onsite support, access to the HPE InfoSight predictive analytics platform and software updates.

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

Installation Service
HPE Nimble Storage Array Start-up service
On-site installation of a new HPE Nimble Storage array in a data center with up to six (6) shelves.
HPE Nimble Storage Upgrade service
On-site installation of upgrades kits or expansion shelves for an existing HPE Nimble Storage array.

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

Parts and Materials
Hewlett Packard Enterprise will provide HPE-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements.

Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by Hewlett Packard Enterprise due to malfunction.

Configuration Information

Step 1 – Choose Base configuration

All HPE Nimble Storage All Flash Arrays come in a 4U form-factor chassis with
- (2) controllers with fans and NVDIMM, and
- (4) 1GbE/10GbE network ports, i.e. (2) per controller for iSCSI or management traffic, and
- (2) power supplies and
- All-inclusive software including HPE InfoSight predictive analytics

Additional host connectivity per controller is indicated in the product descriptions below.
Flash capacity upgrades, network upgrades and expansion shelves will be available for integration in the field.

HPE Nimble Storage AF-Series Adaptive Flash Arrays – Base Configuration Base Array

SKU Description	SKU
HPE Nimble Storage AF20Q All Flash Dual Controller 10GBASE-T 2-port Configure-to-order Base Array	Q8H73A
HPE Nimble Storage AF20 All Flash Dual Controller 10GBASE-T 2-port Configure-to-order Base Array	Q8H74A
HPE Nimble Storage AF40 All Flash Dual Controller 10GBASE-T 2-port Configure-to-order Base Array	Q8H41A
HPE Nimble Storage AF60 All Flash Dual Controller 10GBASE-T 2-port Configure-to-order Base Array	Q8H42A
HPE Nimble Storage AF80 All Flash Dual Controller 10GBASE-T 2-port Configure-to-order Base Array	Q8H43A

Step 2 – Choose Head SSD Capacity

All HPE Nimble Storage All Flash Arrays come with one or two of the following SSD capacity options. Additional capacity can be added by connecting up to (2) flash expansion shelves to the base array – depending on the model.

NOTE: R2 and non-R2 SKUs are functionally equivalent. The OCA quote tool will guide to the appropriate SKU option when configuring a model.

Table below shows All Flash Array compatibilities with SSD Options.

Head SSD Capacity Options

AF20Q	AF20	AF40	AF60	AF80	Any two different capacities of the following options can be selected:	
					SKU Description	SKU
Yes	No	No	No	No	HPE Nimble Storage AF20Q All Flash Array R2 5.76TB (12x480GB) FIO Flash Bundle	Q8H78A
Yes	No	No	No	No	HPE Nimble Storage AF20Q All Flash Array R2 11.52TB (12x960GB) FIO Flash Bundle	Q8H79A
No	Yes	No	No	No	HPE Nimble Storage AF20 All Flash Array 5.76TB (24x240GB) FIO Flash Bundle	Q8B70B
No	Yes	No	No	No	HPE Nimble Storage AF20 All Flash Array R2 11.52TB (24x480GB) FIO Flash Bundle	Q8B72B
No	Yes	No	No	No	HPE Nimble Storage AF20 All Flash Array R2 23TB (24x960GB) FIO Flash Bundle	Q8B74B
No	Yes	No	No	No	HPE Nimble Storage AF20 All Flash Array 46TB (24x1.92TB) FIO Flash Bundle	Q8B58B
No	No	No	Yes	Yes	HPE Nimble Storage AF60/80 All Flash Array 11.52TB (24x480GB) FIO Flash Bundle	Q8H46A
No	No	Yes	No	No	HPE Nimble Storage AF40 All Flash Array R2 11.52TB (24x480GB) FIO Flash Bundle	Q8H47A
No	No	No	Yes	Yes	HPE Nimble Storage AF60/80 All Flash Array 23TB (24x960GB) FIO Flash Bundle	Q8G43B
No	No	Yes	No	No	HPE Nimble Storage AF40 All Flash Array R2 23TB (24x960GB) FIO Flash Bundle	Q8G44B
No	No	Yes	Yes	Yes	HPE Nimble Storage AF40/60/80 All Flash Array 46TB (24x1.92TB) FIO Flash Bundle	Q8G61B
No	No	Yes	Yes	Yes	HPE Nimble Storage AF40/60/80 All Flash Array 92TB (24x3.84TB) FIO Flash Bundle	Q8G62B

Configuration Information

No	No	Yes	Yes	Yes	HPE Nimble Storage AF40/60/80 All Flash Array 184TB (24x7.68TB) FIO Flash Bundle	R4H65A

Head SSD Capacity Options					
	AF20Q	**AF20**	**AF40**	**AF60**	**AF80**
Platform RAM installed (GB) per controller	32GB	32GB	64GB	160GB	320GB
Platform Min SSD capacity (RAW)= (Head SSD+ expansion) capacity (TB)	6TB	11TB	11TB	11TB	23TB
Platform Max SSD capacity (RAW)= (Head SSD+ expansion) capacity (TB)	46TB	46TB	184TB	553TB	1106 TB

Step 3 – Choose Head Networking Option

Up to three (3) of the following options can be selected. Please refer to configuration guidelines for specific support of networking options on AF-Series arrays. The AF20 and AF20Q arrays support up to two (2) head networking options.
NOTE: The following minimum ports are recommended for best performance:

- AF20: at least 2-ports
- AF40: at least 4-ports
- AF60: at least 8-ports
- AF80: at least 8-ports

NOTE: Max One (1) Storage Class Memory kit (R0P46A) per AF60/AF80 array
NOTE: All 10GbE, 16Gb FC and 32Gb FC cards include SFP+ optical transceivers
NOTE: Each Head networking option includes two (2x) cards which are evenly populated in the two controllers.

Head Networking Options:

AF20Q	AF20	AF40	AF60	AF80	SKU Description	SKU
Yes	Yes	Yes	Yes	Yes	HPE Nimble Storage 2x1GbE 2-port FIO Adapter Kit	Q8B84B
Yes	Yes	Yes	Yes	Yes	HPE Nimble Storage 2x10GbE 2-port FIO Adapter Kit	Q8B88B
Yes	Yes	Yes	Yes	Yes	HPE Nimble Storage 2x10GBASE-T 2-port FIO Adapter Kit	Q8B86B
Yes	Yes	Yes	Yes	Yes	HPE Nimble Storage 2x16Gb Fibre Channel 2-port FIO Adapter Kit	Q8B90B
Yes	Yes	Yes	Yes	Yes	HPE Nimble Storage 2x32Gb 2-port Fibre Channel FIO Adapter Kit	R4G78A
Yes	Yes	Yes	Yes	Yes	HPE Nimble Storage 2x16Gb Fibre Channel 4-port FIO Adapter Kit	Q8C03B
Yes	Yes	Yes	Yes	Yes	HPE Nimble Storage 2x10GbE 4-port FIO Adapter Kit	Q8C17B
Yes	Yes	Yes	Yes	Yes	HPE Nimble Storage 2x10GBASE-T 4-port FIO Adapter Kit	Q8C20B
Yes	Yes	Yes	Yes	Yes	HPE Nimble Storage 2x1GbE 4-port FIO Adapter Kit	Q8C09B
No	No	No	Yes	Yes	HPE Nimble Storage 1.5TB Storage Class Memory FIO Adapter Kit	R0P46A

Step 4 – Optional All-Flash Shelves

The All-Flash shelves are optional; Min 0, Max 2.

AF20Q	AF20	AF40	AF60	AF80		
Yes*	Yes	Yes	Yes	Yes	HPE Nimble Storage AF All Flash AFS3 Configure-to-order Expansion Shelf	Q8B53B
N/A	N/A	N/A	N/A	N/A	HPE NS 2x3m SAS AFS3 Shelf FIO Cable Kit	R0N80A
1*	1	1	2	2	Maximum number of AFS3 shelves (per platform basis.)	

NOTE: *AF20Q must be fully populated in the head before an AFS3 shelf can be added as an upgrade.
NOTE: *Quantity one (1) R0N80A cable kit required per AFS3 Expansion Shelf (Q8B53B).

Configuration Information

Step 5 – Add All-Flash Packs to AFS3 Expansion Shelves
Min 1, Max 2 when AFS3 Expansion Shelf (Q8B53B) is selected.

AF20Q	AF20	AF40	AF60	AF80	SKU Description	SKU
Yes	Yes	Yes	Yes	Yes	HPE Nimble Storage AF All Flash AFS3 Expansion Shelf 5.76TB (24x240GB) FIO Flash Bundle	Q8C29B
Yes	Yes	Yes	Yes	Yes	HPE Nimble Storage AF All Flash AFS3 Expansion Shelf 11.52TB (24x480GB) FIO Flash Bundle	Q8C30B
Yes	Yes	Yes	Yes	Yes	HPE Nimble Storage AF All Flash AFS3 Expansion Shelf 23TB (24x960GB) FIO Flash Bundle	Q8C31B
No	No	Yes	Yes	Yes	HPE Nimble Storage AF All Flash AFS3 Expansion Shelf 46TB (24x1.92TB) FIO Flash Bundle	Q8G49B
No	No	Yes	Yes	Yes	HPE Nimble Storage AF All Flash AFS3 Expansion Shelf 92TB (24x3.84TB) FIO Flash Bundle	Q8G50B
No	No	Yes	Yes	Yes	HPE Nimble Storage AF All Flash Array AFS3 Expansion Shelf 184TB (24x7.68TB) FIO Flash Bundle	R4H67A

NOTE: Maximum capacity of "SSD Capacity Bundles" and "All Flash Expansion Shelf Chassis:"
AF20Q = 46TB
  - AF20 = 46TB
  - AF40 = 184TB
  - AF60 = 553TB
  - AF80 = 1106TB

Step 6 – Add Support (Mandatory)
Support recommendations are designed to help you enhance technology operations, lower risk and make it easier for you to seek the right balance between affordability and service-level commitments. Depending on your individual support needs, choose from three levels of care that cover the entire lifecycle to better address your needs from 1, 3, 4 and 5 year durations for service levels ranging from Next Business Day parts exchange to 4 hour onsite response.

NS 1/3/4/5Y FC NBD Parts Exchange Support   HT7A1A1/3/4/5

NOTE: Minimum support required 1 year Next Business Day Parts Exchange.

NS 1/3/4/5Y FC NBD Parts Exchange w DMR Support   HT7A2A1/3/4/5

NS 1/3/4/5Y FC 4H Parts Exchange Support   HT6Z0A1/3/4/5

NS 1/3/4/5Y FC 4H Parts Exchange w DMR Support   HT6Z1A1/3/4/5

NS 1/3/4/5Y FC 4H Onsite Exchange Support   HT6Z2A1/3/4/5

NS 1/3/4/5Y FC 4H Onsite Exchange w DMR Support   HT6Z3A1/3/4/5

NS 1/3/4/5Y FC NBD Onsite Exchange Support   HT6Z4A1/3/4/5

NOTE: Support level available in Japan only.

NS 1/3/4/5Y FC NBD Onsite Exchange w DMR Support   HT6Z5A1/3/4/5

NOTE: Support level available in Japan only.

Controller Refresh
The Controller Refresh program provides customers with a new controller after three years provided they meet the terms of the Controller Refresh program. To add Controller Refresh it needs to be configured with the initial Nimble array order. For more details on the Controller Refresh program, please see the **timeless storage** brochure.

HPE NS 5Y FC NBD PExch L2 CtrlRfr Supp   HT7H6A5

HPE NS 5Y FC NBD PExchDMR L2CtrlRfr Supp   HT7H7A5

HPE NS 5Y NBD Ons L2 CtrlRfr Supp   HT7J2A5

NOTE: Support level available in Japan only.

Configuration Information

SKU Description	SKU
HPE NS 5Y NBD OnsDMRL2CtrlRfr Supp	HT7J3A5
NOTE: Support level available in Japan only.	
HPE NS 5Y FC 4H PExch L2 CtrlRfr Supp	HT7H8A5
HPE NS 5Y FC 4H PExch DMR L2CtrlRfr Supp	HT7H9A5
HPE NS 5Y FC 4H Onsite L2 CtrlRfr Supp	HT7J0A5
HPE NS 5Y FC 4H OnsiteDMR L2CtrlRfr Supp	HT7J1A5
HPE NS 3Y NBD PExch L2 CtrlRfr PP Supp	HU2K6A3
HPE NS 3Y NBD PExchDMR L2CtrlRfr PP Supp	HU2K7A3
HPE NS 3Y 4H PExch L2 CtrlRfr PP Supp	HU2K8A3
HPE NS 3Y 4H PExchDMR L2CtrlRfr PP Supp	HU2K9A3
HPE NS 3Y 4H Onsite L2 CtrlRfr PP Supp	HU2L0A3
HPE NS 3Y 4H OnsiteDMR L2CtrlRfr PP Supp	HU2L1A3
HPE NS 3Y NBD Onsite Controller Refresh Level 2 PP SVC	HU2L2A3
NOTE: ** Support level available in Japan only.	
HPE NS 3Y NBD Onsite with DMR Controller Refresh Level 2 PP SVC	HU2L3A3
NOTE: ** Support level available in Japan only.	
NOTE: Controller Refresh is available as 3-year or 5-year support offerings	

Installation Services

Installation Services are intended to guide you from start to finish and to help make your installation a success. Our engagement includes the following phases:

Array Installation

- Inventory and verify HPE Nimble Storage equipment against the sales order
- Physically rack and cable all HPE Nimble Storage equipment, including connecting network
- cables provided by the customer
- Conduct power-on tests and verify operation
- Add the array to an existing HPE Nimble Storage Group, if applicable
- Configure array's basic management, monitoring, & reporting capabilities
- Configure array for additional data networks / SAN connectivity as needed
- Upgrade the array to the latest recommended HPE Nimble OS version

NOTE: Installation services are optional.

HPE Nimble Storage Array Start-up service	HA114A1#5MR
HPE Nimble Storage Array Upgrade service	HA124A1#5MS

Configuration Information

Racks
HPE 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 48U Enterprise Shock Racks. HPE recommends HPE racks with a depth of 1200mm to best accommodate the length of the Nimble Storage chassis; the HPE 1200mm rack provides ample room for cabling and ease of serviceability. HPE racks with a depth of 1075mm can be used but may have limited space for cabling and component access. If a 3rd party rack with a depth less than 1075mm is used, the rear doors cannot be fully closed.

Recommended Racks:

HPE G2 Enterprise Series Racks
- HPE 48U 600mmx1200mm G2 Enterprise Rack
- HPE 48U 800mmx1200mm G2 Enterprise Rack
- HPE 42U 600mmx1200mm G2 Enterprise Rack
- HPE 42U 800mmx1200mm G2 Enterprise Rack

HPE G2 Advanced Series Racks
- HPE 48U 600mmx1200mm G2 Advanced Rack
- HPE 48U 800mmx1200mm G2 Advanced Rack
- HPE 42U 600mmx1200mm G2 Advanced Rack
- HPE 42U 800mmx1200mm G2 Advanced Rack
- HPE 36U 600mmx1200mm G2 Advanced Rack
- HPE 36U 800mmx1200mm G2 Advanced Rack

NOTE: For more information on the HPE rack offerings, please see the following
URL**: https://www.hpe.com/info/rackandpower**
NOTE: For more information on rack options, see:**http://www.hpe.com/products/rackoptions**
NOTE: For more information on PDUs, see: **http://www.hpe.com/servers/pdu**

Step 7: Required and additional power cords
HPE Nimble Storage Arrays and expansion shelves do not ship with any power cords by default and require a minimum of 2 power cords per system. Please ensure these are selected at time of quoting. A pair of power cords are required when connecting base arrays (C19/C14 or C19/C20) or expansion shelves (C13/C14) to Rack-Mounted Power Distribution Units (PDU). A pair of country/region specific power cords are required when connecting base arrays or expansion shelves to standard office wall power outlets.

SKU Description	SKU
HPE Nimble Storage NEMA 5-15P to C19 125V 15Amp 2.5m US FIO Power Cord	R0P83A
HPE Nimble Storage IEC 60320 C14 to C19 250V 15Amp 1.8m FIO Power Cord	R0P84A
HPE Nimble Storage AS3112 to C19 250V 16Amp 1.8m AU FIO Power Cord	Q8J02A
HPE Nimble Storage Schuko to C19 250V 16Amp 1.8m EU FIO Power Cord	Q8J03A
HPE Nimble Storage BS 1363 UK10 to C19 250V 16Amp 1.8m UK FIO Power Cord	Q8J04A
HPE Nimble Storage NEMA L5-20P to C19 125V 20Amp 2.5m US FIO Power Cord	Q8J05A
HPE Nimble Storage GB2099 to C19 250V 16Amp 1.8m CN FIO Power Cord	Q8J06A
HPE Nimble Storage KSC8305 to C19 250V 16Amp 1.8m KR FIO Power Cord	Q8J07A
HPE Nimble Storage JIS8303 to C19 125V 15Amp 1.8m TW/JP FIO Power Cord	Q8J08A
HPE Nimble Storage JIS8303 6-30 to C19 250V 15Amp 1.8m JP FIO Power Cord	Q8J09A
HPE Nimble Storage IS1293 to LS-60 250V 16Amp 1.8m IN FIO Power Cord	Q8J10A
HPE Nimble Storage SAN164-1 to C19 250V 16Amp 1.8m ZA FIO Power Cord	Q8J11A
HPE Nimble Storage SI32 to C19 250V 16Amp 1.8m IL FIO Power Cord	Q8J12A
HPE Nimble Storage CEI 23-16 to C19 250V 16Amp 1.8m IT FIO Power Cord	Q8J13A
HPE Nimble Storage C19 to C20 250V 16Amp 1.8m PDU Base Array FIO Power Cord	Q8J14A
HPE Nimble Storage AS 3112 to C13 250V 10Amp 1.8m AU FIO Power Cord	Q8J15A

Configuration Information

SKU Description	SKU
HPE Nimble Storage Schuko to C13 250V 10Amp 1.8m EU FIO Power Cord	Q8J16A
HPE Nimble Storage BS1363 UK10 to C13 250V 10Amp 1.8m UK FIO Power Cord	Q8J17A
HPE Nimble Storage NEMA 5-15P to C13 125V 10Amp 1.8m US FIO Power Cord	Q8J18A
HPE Nimble Storage GB2099 to C13 250V 10Amp 1.8m CN FIO Power Cord	Q8J19A
HPE Nimble Storage KSC8305 to C13 250V 10Amp 1.8m KR FIO Power Cord	Q8J20A
HPE Nimble Storage JIS8303 to C13 125V 12Amp 1.8m TW/JP FIO Power Cord	Q8J21A
HPE Nimble Storage JIS8303 to C13 250V 15Amp 2.5m JP FIO Power Cord	Q8J22A
HPE Nimble Storage IS1293 to C13 250V 10Amp 1.8m IN FIO Power Cord	Q8J23A
HPE Nimble Storage SANS164-1 to C13 250V 10Amp 1.8m ZA FIO Power Cord	Q8J24A
HPE Nimble Storage SI32 to C13 250V 10Amp 1.8m IL FIO Power Cord	Q8J25A
HPE Nimble Storage CEI23-16 to C13 250V 10Amp 1.8m IT FIO Power Cord	Q8J26A
HPE Nimble Storage C13 to C14 250V 10Amp 1.8m Universal FIO Power Cord	Q8J27A

Field Upgrade Options
The following product options are to upgrade currently installed All Flash Arrays.

SSD Capacity Upgrade on Head Max three of the following:

AF20Q	AF20	AF40	AF60	AF80	SKU Description	SKU
Yes	No	No	No	No	HPE Nimble Storage AF20Q All Flash Array R2 5.76TB (12x480GB) Flash Field Upgrade	Q8H83A
Yes	No	No	No	No	HPE Nimble Storage AF20Q All Flash Array R2 11.52TB (12x960GB) Flash Field Upgrade	Q8H84A
Any one of the following:						
No	Yes	No	No	No	HPE Nimble Storage AF All Flash Array 5.76TB (24x240GB) Flash Field Upgrade	Q8D08B
No	Yes	No	No	No	HPE Nimble Storage AF20 All Flash Array 11.52TB (24x480GB) Flash Field Upgrade	Q8D09B
No	Yes	No	No	No	HPE Nimble Storage AF20 All Flash Array 23TB (24x960GB) Flash Field Upgrade	Q8D10B
No	No	Yes	Yes	Yes	HPE Nimble Storage AF40/60/80 All Flash Array 11.52TB (24x480GB) Flash Field Upgrade	Q8H56A
No	No	Yes	Yes	Yes	HPE Nimble Storage AF40/60/80 All Flash Array 23TB (24x960GB) Flash Field Upgrade	Q8H57A
No	No	Yes	Yes	Yes	HPE Nimble Storage AF40/60/80 All Flash Array 46TB (24x1.92TB) Flash Field Upgrade	Q8G63B
No	No	Yes	Yes	Yes	HPE Nimble Storage AF40/60/80 All Flash Array 92TB (24x3.84TB) Flash Field Upgrade	Q8C98B
No	No	No	Yes	Yes	HPE Nimble Storage AF60/80 All Flash Array 184TB (24x7.68TB) Flash Field Upgrade	R4H66A

Configuration Information

Head Network Add / Upgrade Options						
AF20Q	**AF20**	**AF40**	**AF60**	**AF80**	Only one of the following options can be selected	
					SKU Description	**SKU**
Yes	Yes	Yes	Yes	Yes	HPE Nimble Storage 2x10GBASE-T 2-port Adapter Field Upgrade	Q8C62B
Yes	Yes	Yes	Yes	Yes	HPE Nimble Storage 2x10GbE 2-port Adapter Field Upgrade	Q8C63B
Yes	Yes	Yes	Yes	Yes	HPE Nimble Storage 2x1GbE 2-port Adapter Field Upgrade	Q8C64B
Yes	Yes	Yes	Yes	Yes	HPE Nimble Storage 2x16Gb Fibre Channel 2-port Adapter Field Upgrade	Q8C65B
Yes	Yes	Yes	Yes	Yes	HPE Nimble Storage 2x32Gb 2-port Fibre Channel Adapter Field Upgrade	R4G79A
Yes	Yes	Yes	Yes	Yes	HPE Nimble Storage 2x16Gb Fibre Channel 4-port Adapter Field Upgrade	Q8C66B
Yes	Yes	Yes	Yes	Yes	HPE Nimble Storage 2x1GbE 4-port Adapter Field Upgrade	Q8C67B
Yes	Yes	Yes	Yes	Yes	HPE Nimble Storage 2x10GbE 4-port Adapter Field Upgrade	Q8C68B
Yes	Yes	Yes	Yes	Yes	HPE Nimble Storage 2x10GBASE-T 4-port Adapter Field Upgrade	Q8C69B
No	No	No	Yes	Yes	HPE Nimble Storage 1.5TB Storage Class Memory Adapter Field Upgrade	R0P48A

Upgrades for All-Flash Shelves (3rd Gen, for AFA only)						
AF20Q	**AF20**	**AF40**	**AF60**	**AF80**	Only one of the following options can be selected	
Yes	Yes	Yes	Yes	Yes	HPE Nimble Storage AF All Flash Array AFS3 Shelf 5.76TB (24x240GB) Flash Field Upgrade	Q8C54B
Yes	Yes	Yes	Yes	Yes	HPE Nimble Storage AF All Flash Array AFS3 Shelf 11.52TB (24x480GB) Flash Field Upgrade	Q8C55B
Yes	Yes	Yes	Yes	Yes	HPE Nimble Storage AF All Flash Array AFS3 Shelf 23TB (24x960GB) Flash Field Upgrade	Q8C56B
No	No	Yes	Yes	Yes	HPE Nimble Storage AF All Flash Array AFS3 Shelf 46TB (24x1.92TB) Flash Field Upgrade	Q8G51B
No	No	Yes	Yes	Yes	HPE Nimble Storage AF All Flash Array AFS3 Shelf 92TB (24x3.84TB) Flash Field Upgrade	Q8C58B
No	No	No	Yes	Yes	HPE Nimble Storage AF All Flash Array AFS3 Expansion Shelf 184TB (24x7.68TB) Flash Field Upgrade	R4H68A

NOTE: Maximum capacity of "SSD Capacity Bundles" and "All Flash Expansion Shelf Chassis:"
- AF20Q = 46TB
- AF20 = 46TB
- AF40 = 184TB
- AF60 = 553TB
- AF80 = 1106TB

DC Power Supply unit (PSU)						
AF20Q	**AF20**	**AF40**	**AF60**	**AF80**		
Yes	Yes	Yes	Yes	Yes	HPE Nimble Storage AF/HF 3000W Dual DC Power Supply Kit	R0R06A

NOTE: The DC PSU kit includes two (2) DC PSUs; one (1) DC PSU kit per array or shelf should be ordered for systems to be installed in environments utilizing DC power infrastructure
NOTE: If NEBS compliance is required, the DC PSU kit should only be ordered with new arrays (which include DC grounding posts)

Technical Specifications

Physical Dimensions	Width in/mm	Depth in/mm	Height in/mm/U	Weight lb/kg
HPE Nimble Storage AF20Q/20/40/60/80	17.3/439	35/890	6.92/175.8/4	115/52

Power Requirements	AF20Q	AF20	AF40	AF60	AF80	AFS3
Input Voltage, frequency (1200W AC PSU w/C14 connector)	100-120V, 50-60Hz, 11A 200-240V, 50-60Hz, 7A			N/A		100-120V 200-240V
Input Voltage, frequency (3000W AC PSU w/C20 connector)	100-120V, 50-60Hz, 12A 200-240V, 50-60Hz, 7A				200-240V, 50-60Hz, 13A	N/A
Input Voltage, frequency (3000W DC PSU)	-48/-72 VDC, 40A					
Max power requirements (Watts/kVA)	600 W / 0.667 kVA	650 W 0.772 kVA	800 W 0.889 kVA	850 W 0.994 kVA	1200 W 1.333 kVA	350W 0.389 kVA
Thermal (BTU)	1968 BTU	2132 BTU	2624 BTU	2788 BTU	3936 BTU	1147 BTU

NOTE: AF80 is not support with 100-120V.

Environmental Specifications[1]

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

NOTE: [1] Specifications are subject to change without notice.

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

Technical Specifications

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

Certifications / Markings

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

Summary of Changes

Date	Version History	Action	Description of Change
04-May-2020	Version 23	Changed	Standard Features and Configuration Information sections were revised
02-Mar-2020	Version 22	Changed	Configuration Information section was updated.
04-Nov-2019	Version 21	Changed	Technical Specifications section was updated.
07-Oct-2019	Version 20	Changed	Configuration Information section was updated.
03-Sep-2019	Version 19	Changed	Configuration Information section was updated.
05-Aug-2019	Version 18	Added	Overview and Configuration Information were updated.
01-Jul-2019	Version 17	Changed	Configuration Information and Technical Specifications were updated.
03-Jun-2019	Version 16	Changed	Technical Specifications section was updated.
02-Apr-2019	Version 15	Changed	Configuration Information section was updated.
04-Mar-2019	Version 14	Changed	Configuration Information section was updated.
04-Feb-2019	Version 13	Changed	Overview and Configuration Information sections were updated.
07-Jan-2019	Version 12	Changed	Overview and Configuration Information sections were updated
5-Nov-2018	Version 11	Changed	Overview, Service and Support and Warranty Information and Configuration Information sections were revised
01-Oct-2018	Version 10	Changed	Overview and Configuration Information sections were revised.
13-Aug-2018	Version 9	Changed	Configuration Information section was revised.
06-Aug-2018	Version 8	Changed	Configuration Information section was updated.
04-Jun-2018	Version 7	Changed	Raw capacity for the AF20 array was revised.
14-May-2018	Version 6	Changed	Overview section was revised.
07-May-2018	Version 5	Changed	Overview, Configuration Information, and Technical Specifications were revised.
13-Nov-2017	Version 4	Changed	Overview and Configuration Information were revised.
06-Nov-2017	Version 3	Changed	Changes made to the entire document including the new Branding changes.
12-Jun-2017	Version 2	Changed	Detail on included power cords and SAS cables.
05-Jun-2017	Version 1	New	New QuickSpecs.

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