Overview

HPE Alletra 5000

Built from the DNA of the HPE Nimble Storage Adaptive Flash Array, HPE Alletra 5000 delivers simple, reliable and cost-efficient hybrid storage - adaptively designed for both mixed primary and secondary workloads.   Bring the cloud experience to your on-prem storage with cloud management via the HPE GreenLake Edge to Cloud Platform - simplifying operations across the lifecycle, from deployment to provisioning to upgrades. Eliminate app disruptions and firefighting with the data-driven insights and intelligence of HPE InfoSight, the industry's most advanced AI Ops for infrastructure. Ensure absolute resiliency with guaranteed 6x9s data availability, Triple+ Parity RAID and simple hybrid cloud data protection. Harness the flash performance and disk economics enabled by HPE Alletra 5000's ultra-efficient architecture - delivering fast, consistent performance and industry-leading data efficiency for your workloads. And choose to consume everything as a service via HPE GreenLake - enabling you to shift from owning and maintaining data infrastructure to simply accessing and utilizing it.

What's new

- HPE Alletra 5010H-lower entry point for the HPE Alletra 5000 family
- Simplify and automate on premises storage management with the speed and agility of a cloud operational experience
- Accelerate apps with up to 25% higher performance vs. previous generation array

HPE Alletra 5000 Flash Array
(Base array, 4U; 21 bays hold carriers with Large Form Factor HDDs; 3 bays hold Dual Flash Carriers with Small Form Factor SSDs)

Standard Features

AI-driven, powered by HPE InfoSight

- Put your storage on auto-pilot thanks to industry-leading AI Ops for infrastructure that drives autonomous operations and helps ensure your apps are always on and always fast.
- Automatically predicts and resolves 86% of problems before you even know there is an issue.
- Transforms the support experience through predictive automation 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.

Built for Cloud

- Get started in minutes with streamlined device deployment. Simply rack the infrastructure, plug in the power cords, and connect the network cables. In a few clicks, the new system is configured and available in your fleet, ready to serve data for application workloads.
- Automate and optimize app deployment with intent-based provisioning. Select the storage tier and workload type, specify the capacity and protection policy, and let AI-driven intelligence automatically optimize your SLAs by recommending the best-suited system across your fleet for your new workload.
- 100% cloud-managed infrastructure means you can globally monitor and manage your entire fleet of block storage from a single SaaS-based cloud console that's accessible from any location, on any device - so managing hundreds of systems across geographies is as simple as managing one.
- Thanks to SaaS-based delivery, new data services instantly become available to you. Data plane software upgrades are non-disruptive and intelligently matched to a given system.

Ultra Efficient

- Get the optimal flash price performance for your general-purpose workloads with a unique, ultra-efficient architecture that is built from the ground up to optimize flash with the highest efficiency.
- Write to cost-optimized disk at flash speeds through write serialization - defying the physics of mechanical spindles.
- Dynamic flash caching accelerates sub millisecond reads even as workloads change in real time.
- Assign and change the service level of any volume at the click of a button ("Auto Flash", "All Flash", or "Minimal Flash").
- Increase storage efficiency and reduce costs with always-on data reduction that delivers up to 5X space savings without performance penalty
- Easily scale without disruption by growing capacity and performance of a running system independently and non-disruptively. Scale out to four arrays with transparent volume mobility between arrays, achieving linear performance and capacity scaling.
- Get Triple+ Parity RAID as standard with zero performance impact - tolerates three simultaneous drive failures as well as providing additional protection through intra-drive parity.

As a service

- Consume HPE Alletra 5000 your way with a choice of capex/subscription or pay-per-use models.
- Flexible as-a-service consumption model with HPE GreenLake enables you to avoid over- and under-provisioning concerns, CAPEX budget constraints, and complex procurement cycles.
- Scale on-demand and as necessary, with buffer capacity for unexpected workloads or usage demands.
- Shift from heavy upfront costs to a transparent and predictable monthly subscription.
- Consuming as a service can shorten project deployment times, free up capital and IT resources, align spending with business needs, and boost financial flexibility and operational speed.

Standard Features

HPE Alletra 5000 models					
HPE Alletra 5000 Flash array[1],	5010H	5010	5030	5050	Scale-out 4X 5050
Raw capacity (TB/TiB)[2, 5]	22-212/ 20-193	42-210/ 38-191	42-504/ 38-458	42-1260/ 38-1146	5040/4584
Usable capacity (TB/TiB)[2]	14-163/ 13-149	33-169/ 30-153	33-406/ 30-369	33-1016/ 30-924	4065/ 3697
Effective capacity[3]	72-818/ 65-744	165-845/ 150-768	165-2030/ 150-1846	165-5080/ 150-4621	20324/ 18484
Max. # of expansion shelves	4	4	6	6	24
Flash capacity (TB/TiB)[2, 5]	1.4-28/ 1.3-25	1.4-28/ 1.3-25	1.4-48/ 1.3-43	1.4-156/ 1.3-142	624/567
Onboard iSCSI/Mgmt. 1 Gb/10 Gb ports per array[4, 6]	4	4	4	4	16
Optional iSCSI 1 Gb ports per array[6]	4, 8, 12, 16	4, 8, 12, 16	4, 8, 12, 16, 20, 24	4, 8, 12, 16, 20, 24	96
Optional iSCSI 10 Gb ports per array[6]	4, 8, 12, 16	4, 8, 12, 16	4, 8, 12, 16, 20, 24	4, 8, 12, 16, 20, 24	96
Optional iSCSI 25 Gb ports per array[6]	4, 8	4, 8	4, 8, 12	4, 8, 12	48
Optional FC 16Gb (8Gb) ports per array[6]	4, 8, 12, 16	4, 8, 12, 16	4, 8, 12, 16, 20, 24	4, 8, 12, 16, 20, 24	96
Optional FC 32Gb (16Gb) ports per array[6]	4, 8, 12, 16	4, 8, 12, 16	4, 8, 12, 16, 20, 24	4, 8, 12, 16, 20, 24	96
Max. power requirement (watts/kVA)	650/ 0.722	750/ 0.833	850/ 0.944	900/ 1.000	3600/ 4.000
Thermal (BTU)	2132	2460	2788	2952	11,808

Notes:

– Specifications are subject to change without notice.

o [1] HPE Alletra 5010, 5030 and 5050 arrays support scale up to any model within the family.

o [2] Raw, usable, and effective capacities are shown in TB (10^{12} bytes) and TiB (2^{40} bytes). Usable and effective capacities take into account space used for parity, spares, SSD cache, and system overhead.

o [3] 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. Deduplication currently supported on all models;

o [4] Each array controller has 2 x 10GbaseT ports built in. Optional ports are 1GbaseT, 10GbaseT, 10GbE

Standard Features

SFP+, 25GbE SFP28, 16Gb (8Gb) FC, and 32Gb (16Gb) FC.

o [5] The Total Max Raw Capacity/Flash 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.

o [6] Array port counts shown include both active and standby controllers; active ports are half value shown.

Expansion Shelves for HPE Alletra 5000

ES3 Expansion Shelf for Adaptive	
Raw capacity (TB/TiB)[1, 3]	42-210/-190
Usable capacity (TB/TiB)[1]	33-169/-154
Effective capacity (TB/TiB)[1 2]	-337/-308
Flash capacity (TB/TiB)[1]	1.44-108/-98
Max. power requirement (Watts/kVA)	500/0.56
Thermal (BTU)	1638

Notes:

– Specifications are subject to change without notice.

o [1] Raw, usable, and effective capacities are shown in TB (10^{12} bytes) and TiB (2^{40} bytes). Usable and effective capacities take into account space used for parity, spares, SSD cache, and system overhead.

o [2] Scale-out configuration consists of 4X 5050 Adaptive Flash arrays, each with maximum supported capacity.

o [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® | IBM® AIX®
Notes: For the latest information on supported operating systems refer to Single Point of Connectivity Knowledge (SPOCK) for HPE Storage products, including HPE Alletra 5000:
http://www.hpe.com/storage/spock

Service and Support

Warranty

HPE Alletra 5000 arrays come with the following warranties:

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

Additionally, HPE Alletra 5000 will provide phone support for replacing a defective part. Additional support coverage is required for HPE Alletra 5000 Arrays.

Notes:

– For hardware warranty claims, defective part must be received before replacement parts are shipped

– Warranty is provided by HPE Alletra 5000

– Link to **HPE Global Limited Warranty and Technical Support**

Service and Support

Support is required for all HPE Alletra 5000 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, Next Business Day (NBD) onsite support,4-hour parts exchange, or 4-hour onsite support, access to the HPE InfoSight predictive analytics platform and software updates.

HPE Pointnext Tech Care is the new operational service experience for HPE products. Tech Care goes beyond traditional support by providing access to product specific experts, an AI driven digital experience, and general technical guidance to not only reduce risk but constantly search for ways to do things better. HPE Pointnext Tech Care has been reimagined from the ground up to support a customer-centric, AI-driven, and digitally enabled customer experience to move your business forward.

Notes: Support contract is mandatory for all HPE Alletra 5000 products

Data Services Support with HPE Alletra 5000

A valid subscription enables the following enterprise-level support:

- 24x7 telephone and email support for all entitled services available through HPE Data Services
- Direct connection to expert-level support within minutes
- Guidance through troubleshooting and configuration of available service and interoperability within your cloud and/or onpremises environment.

Installation Services

- Installation Services are intended to guide you from start to finish and to help make your installation a success. Our engage includes
- Inventory and verify HPE Alletra 5000 equipment against the sales order met
- Physically rack and cable all HPE Alletra 5000 equipment, including connecting network cables provided by the customer
- Conduct power-on tests and verify operation
- Add the array to an existing HPE Alletra 5000 or 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 Alletra 5000 or HPE Nimble OS version as needed

HPE Tier 1 Storage Array Start-up service - HA114A1#5MR

Provides full hardware and software installation of a new HPE Tier 1 array in a data center with up to six (6) shelves. Quote this service when you want onsite and remote assistance in setting up a new array from

Service and Support

hardware racking through setting up vVols on servers in the configuration. This service may not be quoted as part of a Greenfield or Brownfield dHCI storage configuration

HPE Tier 1 Storage Array Hardware Installation service HA113A1#5MR
Provides on-site hardware installation only of a new HPE Tier 1 array in a data center with up to six (6) shelves. This service should be quoted for customers who want assistance with the heavy lifting and hardware racking but prefer to perform the software configuration work on their own. This service may not be quoted as part of a Greenfield or Brownfield dHCI storage configuration.

HPE Tier 1 Storage Upgrade service - HA124A1#5MS
On-site installation of upgrades kits or for an existing HPE Tier 1 array. This service is for in-family upgrades only and cannot be quoted to upgrade an existing array to the next generation of storage. This service can be used to upgrade components within an existing Greenfield or Brownfield dHCI storage configuration.

HPE Tier 1 Storage Cross Family Offline Upgrade service - HA124A1#V0R
Provides the on-site hardware upgrade and disk migration from your existing array to the new family array chassis. This service is completed with the array powered off during a downtime window.
Notes: All Installation and upgrade services are optional for all HPE Alletra 5000 products.

Additional Services Available

Get the most from your HPE products. Get the expertise you need at every step of your IT journey with **HPE Pointnext Services**. We help you lower your risks and overall costs using automation and methodologies that have been tested and refined by HPE experts through thousands of deployments globally. HPE Pointnext **Advisory Services**, focus on your business outcomes and goals, partnering with you to design your transformation and build a roadmap tuned to your unique challenges. Our **Professional** and **Operational Services** can be leveraged to speed up time-to-production, boost performance and accelerate your business. HPE Pointnext specializes in flawless and on-time implementation, on-budget execution, and creative configurations that get the most out of software and hardware alike.

Consume IT on your terms
HPE GreenLake brings the cloud experience directly to your apps and data wherever they are-the edge, colocations, or your data center. It delivers cloud services for on-premises IT infrastructure specifically tailored to your most demanding workloads. With a pay-per-use, scalable, point-and-click self-service experience that is managed for you, HPE GreenLake accelerates digital transformation in a distributed, edge-to-cloud world.

- Get faster time to market
- Save on TCO, align costs to business
- Scale quickly, meet unpredictable demand
- Simplify IT operations across your data centers and clouds

Recommended Services

HPE Pointnext Tech Care
HPE Pointnext Tech Care is the new operational service experience for HPE products. Tech Care goes beyond traditional support by providing access to product specific experts, an AI driven digital experience, and general technical guidance to not only reduce risk but constantly search for ways to do things better. HPE Pointnext Tech Care has been reimagined from the ground up to support a customer-centric, AI driven, and digitally enabled customer experience to move your business forward. HPE Pointnext Tech Care is available with four service level options for HPE Alletra 5000 : Basic, which provides next business day onsite parts exchange, Basic Exchange, which provides next business day parts delivery, Essential, which provides 24x7 onsite parts exchange, and Essential Exchange, which provides 24x7 parts delivery. Regardless of the service level, Customers have direct access to Level 3 HPE Alletra 5000 support engineers by telephone 24x7.

Service and Support

https://www.hpe.com/us/en/services/tech-care.html

HPE Pointnext Complete Care
HPE Pointnext Complete Care is a modular, edge-to-cloud IT environment service that provides a holistic approach to optimizing your entire IT environment and achieving agreed upon IT outcomes and business goals through a personalized and customer-centric experience. All delivered by an assigned team of HPE Pointnext Services experts. HPE Pointnext Complete Care provides:

- A complete coverage approach -- edge to cloud
- An assigned HPE team
- Modular and fully personalized engagement
- Enhanced Incident Management experience with priority access
- Digitally enabled and AI driven customer experience

HPE Tier 1 Peer Persistence Setup Service - HA124A1#V0S
Provides remote implementation of the Peer Persistence software functionality available in the HPE Alletra 5000 Storage operating system (OS). This service provides analysis, implementation, and testing services necessary for you to deploy the HPE Peer Persistence features.

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 QuickSpecs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

Defective media retention(DMR) service feature option applies only to Disk or eligible SSD/Flash Drives replaced by Hewlett Packard Enterprise due to malfunction.

Comprehensive Defective Material Retention (CDMR) HPE CDMR allows you to keep all data retentive components.

For more information

- **http://www.hpe.com/services**
- **https://www.hpe.com/us/en/services/operational.html**

To learn more on HPE Storage Services, please contact your Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise Authorized Channel Partner. Contact information for a representative in your area can be found at "Contact HPE"
https://www.hpe.com/us/en/contact-hpe.html
HPE Support Services are sold by Hewlett Packard Enterprise and Hewlett Packard Enterprise Authorized Service Partners:

- Services for customers purchasing from HPE or an enterprise reseller are quoted using HPE order configuration tools.

Customers purchasing from a commercial reseller can find HPE Support Services at
https://ssc.hpe.com/portal/site/ssc/

Configuration Information

Step 1 - Choose a Base configuration

All HPE Alletra 5000 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

Includes HPE InfoSight predictive analytics
Additional host connectivity per controller is indicated in the product descriptions below.
Flash Cache upgrades, network upgrades and expansion shelves are available for integration in the field.

HPE Alletra 5000 - Base Configuration Base Array

Description	SKU
HPE Alletra Storage 5010H Dual Controller Configure-to-order Base Array	S0U33A
HPE Alletra 5010 Adaptive Flash Array Dual Controller Configure-to-order Base Array	R4U33A
HPE Alletra 5030 Adaptive Flash Array Dual Controller Configure-to-order Base Array	R4U34A
HPE Alletra 5050 Adaptive Flash Array Dual Controller Configure-to-order Base Array	R4U35A

Step 2 - Choose Head HDD Capacity

The HPE Alletra 5000 support (21) LFF Hard Drives for capacity and (6) Dual Flash Carriers with SFF Solid State Drives for cache. The HPE Alletra 5010H supports (11) LFF Hard Drives for capacity and (2) Dual Flash Carries with SFF SSDs for cache. The Alletra 5010H can be field upgraded with an additional (11) HDD drive bundle and a second cache bundle. Additional capacity can be added to the Alletra 5000 by connecting up to (6) expansion shelves to the base array.

Select ONE of the following options (5010, 5030, 5050):

Description	SKU
HPE Alletra 5000 42TB (21x2TB) SAS 12G FIO HDD Bundle	R4U42A
HPE Alletra 5000 84TB (21x4TB) SAS 12G FIO HDD Bundle	R4U43A
HPE Alletra 5000 126TB (21x6TB) SAS 12G FIO HDD Bundle	R4U44A
HPE Alletra 5000 210TB (21x10TB) SAS 12G FIO HDD Bundle	R4U45A
HPE Alletra 5000 294TB (21x14TB) SAS 12G FIO HDD Bundle	R4U46A

Select ONE of the following options (5010H):

Description	SKU
HPE Alletra 5010H 22TB (11x2TB) SAS 12G HDD Bundle	S0U34A

Step 3 - Choose Head SSD Cache Capacity

Select Two of the following options (5010, 5030, 5050):

Each cache bundle must be of the same capacity or should not differ by more than one step function in SSD capacity

Description	SKU
HPE Alletra 5000 Adaptive Flash Array 1.44TB (3x480GB) SATA 6G FIO Cache Bundle	R8F35A
HPE Alletra 5000 Adaptive Flash Array 2.88TB (3x960GB) SATA 6G FIO Cache Bundle	R4U47A
HPE Alletra 5000 Adaptive Flash Array 5.76TB (3x1.92TB) SATA 6G FIO Cache Bundle	R4U48A
HPE Alletra 5000 Adaptive Flash Array 11.52TB (3x3.84TB) SATA 6G FIO Cache Bundle	R4U49A
HPE Alletra 5000 Adaptive Flash Array 23.04TB (3x7.68TB) SATA 6G FIO Cache Bundle	R4U50A

Select ONE of the following options (5010H):

Description	SKU
HPE Alletra 5010H 1.92TB (2x960GB) SATA FIO Cache Bundle	S0U36A

Step 4 - 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.. The 5010/5010H support up to two (2) head networking options.

Notes:

− The following minimum ports are recommended for best performance:

   o 5010/5010H: at least 2-ports

   o 5030: at least 4-ports

   o 5050: at least 8-ports

− All 10GbE, 25GbE, 16Gb FC, and 32Gb FC cards include SFP optical transceivers

− The 25GbE NICs include SFP28 transceivers for 25G environments

− Head networking options include a total of two (2x) cards which are evenly populated in the two controllers.

Description	SKU
HPE Nimble Storage 2x1GbE 2-port FIO Adapter Kit	Q8B84B
HPE Nimble Storage 2x10GbE 2-port FIO Adapter Kit	Q8B88B
HPE Nimble Storage 2x16Gb Fibre Channel 4-port FIO Adapter Kit	Q8C03B
HPE Nimble Storage 2x1GbE 4-port FIO Adapter Kit	Q8C09B
HPE Nimble Storage 2x10GbE 4-port FIO Adapter Kit	Q8C17B
HPE Nimble Storage 2x10GBASE-T 4-port FIO Adapter Kit	Q8C20B
HPE Nimble Storage 2x32Gb 2-port Fibre Channel FIO Adapter Kit	R4G78A
HPE Alletra Storage 2x32Gb 4-port Fibre Channel FIO Adapter Kit	R0R14A

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HPE Nimble Storage 2x25GbE 2-port SFP28 FIO Adapter Kit	R3Q00A

Notes:

– The 25GbE 2-port Adapter (R3Q00A/R3P98A) supports the following transceivers and DAC cables

    o HPE 25G SFP28 Transceiver (included)

    o HPE 10G SFP+ Transceiver (R7D09A, 455883-B21)

    o HPE 10G SFP+ SFP+ 3m DAC Cable (R7D16A, 487655-B21)

    o HPE 25Gb SFP28 to SFP28 3m DAC (R7D17A, 844477-B21)

Step 5 - Add Expansion Shelves

Expansion Shelves

Add up to six (6) Adaptive expansion shelves to each array. Mix any options below up to array maximum capacity.

Please refer to configuration guidelines for specific array capacity limits.

Mix any of the following options up to platform max:

Description	SKU
HPE Alletra 2120 Adaptive Flash Array 42TB (21x2TB) SAS 12G HDD Configure-to-order Expansion Shelf	R6F55A
HPE Alletra 2120 Adaptive Flash Array 84TB (21x4TB) SAS 12G HDD Configure-to-order Expansion Shelf	R6F56A

Description	SKU
HPE Alletra 2120 Adaptive Flash Array 126TB (21x6TB) SAS 12G HDD Configure-to-order Expansion Shelf	R6F57A
HPE Alletra 2120 Adaptive Flash Array 210TB (21x10TB) SAS 12G HDD Configure-to-order Expansion Shelf	R6F58A
HPE Alletra 2120 Adaptive Flash Array 294TB (21x14TB) SAS 12G HDD Configure-to-order Expansion Shelf	R6F59A

Best practices when adding JBOD expansion shelves

- **SAS Port load balancing**
    - When adding multiple expansion shelves to an array, evenly distribute the expansion shelves across the two (2) SAS expansion ports on each controller. For example, first expansion shelf to SAS port 1, second expansion shelf to SAS port 2, third expansion shelf to SAS port 1 (via first shelf), etc.
    - No more than three (3) expansion shelves per SAS expansion port
    - Keep disk and cache capacity balanced across both SAS expansion ports

- **Shelf capacity and cache**
    - For best performance, it is recommended the head shelf and all expansion shelves are the same capacity (or at least no more than 1 disk size delta). This guideline is more important in the higher performing systems.
    - If different capacities are required, the highest capacity should be in the head shelf, followed by

Configuration Information

　　　　expansion shelves closest to the head shelf
　　　− If different cache capacities are configured, the highest cache capacity should be in the head shelf, followed by expansion shelves closest to the head shelf
　　　− Keep disk and cache capacity balanced across both SAS expansion ports

- **Scale-out configurations**
　　　− For multi-array configurations, the highest performing array should be assigned as the group leader

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Step 6 - Add Software (Mandatory)

HPE Alletra Software and Support SaaS

HPE Alletra 5000 arrays include a subscription to HPE Alletra Software and Support SaaS that enables cloud-based management of the array from the HPE Data Services Cloud Console and access to data services as they become available on HPE GreenLake. The subscription includes access to the HPE Alletra software and related support. It is included in the quote when support is selected and has the same duration as support. For more information, please refer to the HPE Data Services QuickSpecs:
https://h20195.www2.hpe.com/v2/getdocument.aspx?docname=a50002569enw.

Description	SKU
HPE Alletra 5010 Software and Support 3-year SaaS	S0L73AAE
HPE Alletra 5010 Software and Support 4-year SaaS	S0L74AAE
HPE Alletra 5010 Software and Support 5-year SaaS	S0L75AAE
HPE Alletra 5030 Software and Support 3-year SaaS	S0L79AAE
HPE Alletra 5030 Software and Support 4-year SaaS	S0L80AAE
HPE Alletra 5030 Software and Support 5-year SaaS	S0L81AAE
HPE Alletra 5050 Software and Support 3-year SaaS	S0L85AAE
HPE Alletra 5050 Software and Support 4-year SaaS	S0L86AAE
HPE Alletra 5050 Software and Support 5-year SaaS	S0L87AAE

Step 7- 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 four levels of care that cover the entire lifecycle to better address your needs from 3-, 4- and 5-year durations for service levels ranging from Basic Exchange (Next Business Day parts exchange) to Essential (4 hour onsite response).

Description	SKU
HPE Tech Care Basic Exchange SVC	HU4B5A3/4/5
HPE Tech Care Basic Exchange w/DMR SVC	HU4B6A3/4/5
HPE Tech Care Basic Exchange w/CDMR SVC	HU4B7A3/4/5
HPE Tech Care Basic SVC	HU4B2A3/4/5
HPE Tech Care Basic w/DMR SVC	HU4B3A3/4/5
HPE Tech Care Basic w/CDMR SVC	HU4B4A3/4/5
HPE Tech Care Essential Exchange SVC	HU4A9A3/4/5
HPE Tech Care Essential Exchange w/DMR SVC	HU4B0A3/4/5

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HPE Tech Care Essential Exchange w/CDMR SVC	HU4B1A3/4/5
HPE Tech Care Essential SVC	HU4A6A3/4/5
HPE Tech Care Essential w/DMR SVC	HU4A7A3/4/5
HPE Tech Care Essential w/CDMR SVC	HU4A8A3/4/5

Notes: Minimum support required 3-year HPE Tech Care Basic Exchange

Installation Services
Installation Services are intended to guide you from start to finish and to help make your installation a success.
Notes: Installation services are optional.

HPE Tier 1 Storage Array Start-up service	HA114A1#5MR
HPE Tier 1 Storage Array Hardware Installation service	HA113A1#5MR
HPE Tier 1 Storage Array Upgrade service	HA124A1#5MS
HPE Tier 1 Storage Cross Family Offline Upgrade service	HA124A1#V0R

Racks
HPE Alletra 5000 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 Alletra 5000 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

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

Required and additional power cords
HPE Alletra 5000 Arrays and expansion shelves do not ship with any power cords by default and require a minimum of two 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

Configuration Information

(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.

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 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
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

Description	SKU
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

Head Capacity Upgrades

HPE Alletra 5010H 22TB (11x2TB) SAS 12G HDD Field Upgrade	S0U35A

Cache Upgrades

HPE Alletra 5000 Adaptive Flash Array 1.44TB (3x480GB) SATA 6G Cache Field Upgrade	R8F36A
HPE Alletra 5000 Adaptive Flash Array 2.88TB (3x960GB) SATA 6G Cache Field Upgrade	R6F40A
HPE Alletra 5000 Adaptive Flash Array 5.76TB (3x1.92TB) SATA 6G Cache Field Upgrade	R6F41A
HPE Alletra 5000 Adaptive Flash Array 11.52TB (3x3.84TB) SATA 6G Cache Field Upgrade	R6F42A
HPE Alletra 5000 Adaptive Flash Array 23.04TB (3x7.68TB) SATA 6G Cache Field Upgrade	R6F43A
HPE Alletra 5010H 1.92TB (2x960GB) SATA Cache Field Upgrade	S0U37A

Networking Upgrades

HPE Nimble Storage 2x1GbE 2-port Adapter Field Upgrade	Q8C64B
HPE Nimble Storage 2x10GbE 2-port Adapter Field Upgrade	Q8C63B
HPE Nimble Storage 2x16Gb Fibre Channel 4-port Adapter Field Upgrade	Q8C66B

Configuration Information

HPE Nimble Storage 2x10GbE 4-port Adapter Field Upgrade	Q8C68B
HPE Nimble Storage 2x10GBASE-T 4-port Adapter Field Upgrade	Q8C69B
HPE Nimble Storage 2x1GbE 4-port Adapter Field Upgrade	Q8C67B
HPE Nimble Storage 2x32Gb 2-port Fibre Channel Adapter Field Upgrade	R4G79A
HPE Alletra Storage 2x32Gb 4-port Fibre Channel Adapter Field Upgrade	R0R15A
HPE Nimble Storage 2x25GbE 2-port SFP28 Adapter Field Upgrade	R3P98A

Notes:

– All 10GbE, 25GbE, 16Gb FC, and 32Gb FC cards include SFP optical transceivers

– The 25GbE NICs include SFP28 transceivers for 25G environments

– Each networking upgrade option includes two (2x) cards which are evenly populated in the two controllers

– The 25GbE 2-port Adapter (R3Q00A/R3P98A) supports the following transceivers and DAC cables

    o HPE 25G SFP28 Transceiver (included)
        o HPE 10G SFP+ Transceiver (R7D09A, 455883-B21)
        o HPE 10G SFP+ SFP+ 3m DAC Cable (R7D16A, 487655-B21)
        o HPE 25Gb SFP28 to SFP28 3m DAC (R7D17A, 844477-B21)

Upgrade Existing Shelf Cache

HPE Alletra 2120 Adaptive Flash Array 2.88TB (3x960GB) SATA 6G Cache Field Upgrade	R6H87A
HPE Alletra 2120 Adaptive Flash Array 5.76TB (3x1.92TB) SATA 6G Cache Field Upgrade	R6H88A
HPE Alletra 2120 Adaptive Flash Array 11.52TB (3x3.84TB) SATA 6G Cache Field Upgrade	R6H89A
HPE Alletra 2120 Adaptive Flash Array 23.04TB (3x7.68TB) SATA 6G Cache Field Upgrade	R6H90A
HPE Alletra 2120 Adaptive Flash Array 2.88TB (3x960GB) SATA 6G Cache Field Upgrade	R6H87A

Controller Upgrades-Cross-family & in-family

The cross-family upgrades provide an upgrade path for Gen5 Nimble Storage Adaptive Flash Arrays (HFx0) to Alletra 5000 Arrays (e.g., 5030). The Gen5 chassis and media is retained and used with the Alletra 5000 upgrade controllers so new SSD/HDD capacity does not need to be repurchased as long as the Alletra 5000 minimum system requirements are met.
The in-family upgrades provide an upgrade path within the Alletra 5000 family, e.g., Alletra 5010☎Alletra 5030.

Description	SKU
HPE Alletra 5030 Adaptive Flash Array Dual Controller Field Upgrade	R6H95A
HPE Alletra 5050 Adaptive Flash Array Dual Controller Field Upgrade	R6H96A

Notes:

– Upgraded Gen5 Nimble Storage systems must meet Alletra 5000 system requirements

– The Alletra 5030 controller upgrade is supported with the HPE Nimble Storage HF20 Array and Alletra 5010/5010H

– The Alletra 5050 controller upgrade is supported with the HPE Nimble Storage HF20, HF40, HF60 Arrays,

Configuration Information

Alletra 5010, and Alletra 5030

DC Power Supply unit (PSU)

HPE Nimble Storage AF/HF 3000W Dual DC Power Supply Kit   R0R06A

Notes:

– 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

– 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

	HPE Alletra 5010/5030/5050	HPE Alletra 2120 Expansion Shelf
Width in/mm	17.3/439	17.3/439
Depth in/mm	35/890	35/890
Height in/mm/U	6.92/175.8/4	6.92/175.8/4
Weight lb/kg	135/65	115/52

Power Requirements

	5010H	5010	5030	5050	2120
Input Voltage, frequency (1200W AC PSU w/C14 connector)	100-120V, 50-60Hz 200-240V, 50-60Hz			N/A	100-120V 200-240V
Input Voltage, frequency (3000W AC PSU w/C20 connector)		N/A		100-120V, 50-60Hz 200-240V, 50-60Hz	N/A
Input Voltage (3000W DC PSU)	-48/-72 VDC, 40A				
Max power requirements (Watts/kVA)	650 W 0.722 kVA	750 W 0.833 kVA	850 W 0.944 kVA	900 W 1.000 kVA	350 W 0.389 kVA
Thermal (BTU)	2132 BTU	2460 BTU	2788 BTU	2952 BTU	1147 BTU

Notes: The 1200W AC and 3000W AC power supplies are 80 PLUS Platinum

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

Notes: 4 Specifications are subject to change without notice.

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

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

Notes: Specifications are subject to change without notice.

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

Technical Specifications

Summary of Changes

Date	Version History	Action	Description of Change
21-Aug-2023	Version 5	Changed	Service and Support and Configuration Information sections were updated
01-May-2023	Version 4	Changed	Overview, Standard Features, Configuration Information and Technical Specifications sections were updated
06-Mar-2023	Version 3	Changed	Service and Support and Configuration Information sections were updated
03-Oct-2022	Version 2	Changed	Technical Specifications section was updated
06-Sep-2022	Version 1	New	New QuickSpecs

QuickSpecs

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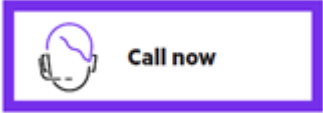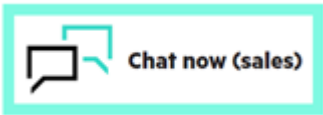
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