Overview

HPE Primera 600 Storage

HPE Primera is a Tier-0 enterprise storage solution that delivers the extreme resiliency and performance of high-end storage with the agility of the cloud. Built upon proven resiliency and powered by the intelligence of HPE InfoSight, HPE Primera delivers instant access to data with storage that sets up in minutes, upgrades transparently, and is delivered as a service. Ensure always-fast and always-on storage for all mission-critical applications.

HPE Primera comprises three models: HPE Primera 630, HPE Primera 650, and HPE Primera 670. Each model is available as an all-flash version (A630, A650 and A670) or converged flash version* (C630, C650, C670). Future proof, HPE Primera, can be configured as an All-NVMe or as a SAS/ NVMe flash array.

HPE Primera comes standard with HPE Tech Care and a 100% data availability guarantee without requiring special contracts or onerous terms. Ensure no disruptions are ever felt with app-aware resiliency, guaranteed across all models of HPE Primera. If you experience less than 100% availability, Hewlett Packard Enterprise works with you to resolve the issue and provide financial credit to apply toward a future purchase of HPE Primera products.

Notes:

- For more information about the value of HPE Primera 600 visit **hpe.com/storage/hpeprimera**
- * Subject to select availability

Host OS Support

Citrix® Hypervisor | HPE HP-UX® | IBM® AIX® | IBM Virtualization | Microsoft® Windows® Server and Microsoft® Hyper-V™ | | Oracle® Linux® | Oracle® Solaris | Oracle VM | Red Hat® Enterprise Linux® | SUSE® Linux Enterprise Server (SLES) | VMware ESX and ESXi | VSI OpenVMS

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

HPE Primera 600
(2-Node Storage Base)

HPE Primera 600
(4-Node Storage Base)

What's New

- Expanded Trade Agreement Act (TAA) compliant support across HPE Primera 600 Storage controller nodes and drive enclosures.
- Eliminate complexity by unifying infrastructure management silos under a cloud managed single pane of glass using Data Services Cloud Console on HPE GreenLake.
- Easily manage your fleet of data infrastructure across its lifecycle with an intuitive SaaS-based user experience – accessible from anywhere and from any device.

Standard Features

HPE Primera 600 Storage			
Summary	**630**	**650**	**670**
Number of Controller Nodes	2	2 or 4	2 or 4
CPUs per node	1	2	2
Cache Per Node	128GiB	256GiB	512GiB/ 1TiB
Max System Cache	256GiB	1TiB	2TiB/ 4TiB
Maximum Host Ports	16 ports	48 ports	48 ports
16Gb/s or 32Gb/s Fibre Channel Host Ports	0 - 16 ports	0 - 48 ports	0 - 48 ports
10Gb/s or 25Gb/s Ethernet Host Ports	0 – 16 ports	0 – 48 ports	0 – 48 ports
Built-in 10GbE Ports per node[1]	2	2	2
Max Number of NVMe SSDs	8	16	16
Max Number of SAS SSDs	144	384	576
Max Number of HDDs	240	576	960
Max Raw Capacity (SSD only)	250 TiB	1600 TiB	3200 TiB
Max Raw Capacity (SSD_HDD)*	750TiB	2000TiB	4000 TiB
Max Effective Capacity (SSD Only)#	700 TiB	4900 TiB	9900 TiB
Max number of Add-on Drive Enclosures	5 enclosures (A630) 9 enclosures (C630)*	14 enclosures (A650) 22 enclosures (C650)*	22 enclosures (A670) 38 enclosures (C670)*

Notes:

- [1] Built-in 10GbE ports include SFPs.
- *Subject to select availability.
- #Effective capacity assumes 4:1 estimated data compaction rate (including: thin provisioning, deduplication, compression, and copy technologies) in a RAID 6 (6+2, 8+2, 10+2) configuration. Note TB vs TiB. Actual ratios will vary based on workload. See HPE StoreMore Guarantee for more information.
- Max specifications assume most current HPE Primera OS, maximum nodes configured. 2 controller node configurations support 50% of a 4-controller node, same-model, configuration.

Service and Support

Warranty

HPE Primera has a three-year, parts-only warranty. The warranty on all HPE Primera Solid State Drives is five years, parts-only, and offers unconditional replacement in case of drive failure, media wear-out, or both. Hewlett Packard Enterprise warrants only that the Software media will be free of physical defects for a period of ninety (90) days from delivery. For more information about Hewlett Packard Enterprise's Global Limited Warranty and Technical Support, visit: **http://www.hpe.com/storage/warranty**

HPE Services

No matter where you are in your digital transformation journey, you can count on HPE Services to deliver the expertise you need when, where and how you need it. From planning to deployment, ongoing operations and beyond, our experts can help you realize your digital ambitions.
https://www.hpe.com/services

Consulting Services

No matter where you are in your journey to hybrid cloud, experts can help you map out your next steps. From determining what workloads should live where, to handling governance and compliance, to managing costs, our experts can help you optimize your operations.
https://www.hpe.com/services/consulting

HPE Managed Services

HPE runs your IT operations, providing services that monitor, operate, and optimize your infrastructure and applications, delivered consistently and globally to give you unified control and let you focus on innovation.
HPE Managed Services | HPE

Operational services

Optimize your entire IT environment and drive innovation. Manage day-to-day IT operational tasks while freeing up valuable time and resources. Meet service-level targets and business objectives with features designed to drive better business outcomes.
https://www.hpe.com/services/operational

HPE Complete Care Service

HPE Complete Care Service is a modular, edge-to-cloud IT environment service designed to help optimize your entire IT environment and achieve agreed upon IT outcomes and business goals through a personalized experience. All delivered by an assigned team of HPE Services experts. HPE Complete Care Service 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

https://www.hpe.com/services/completecare

HPE Tech Care Service

HPE Tech Care Service is the operational support service experience for HPE products. The service 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 Tech Care Service delivers a customer-centric, AI driven, and digitally enabled customer experience to move your business forward. HPE Tech Care Service is available in three response levels. Basic, which provides 9x5 business hour availability and a 2-hour response time. Essential which provides a 15-minute response time 24x7 for most enterprise level customers, and Critical which includes a 6-hour repair commitment where available and outage management response for severity 1 incidents.
https://www.hpe.com/services/techcare

Service and Support

HPE Lifecycle Services

HPE Lifecycle Services provide a variety of options to help maintain your HPE systems and solutions at all stages of the product lifecycle. A few popular examples include:

- Lifecycle Install and Startup Services: Various levels for physical installation and power on, remote access setup, installation and startup, and enhanced installation services with the operating system.
- HPE Firmware Update Analysis Service: Recommendations for firmware revision levels for selected HPE products, taking into account the relevant revision dependencies within your IT environment.
- HPE Firmware Update Implementation Service: Implementation of firmware updates for selected HPE server, storage, and solution products, taking into account the relevant revision dependencies within your IT environment.
- Implementation assistance services: Highly trained technical service specialists to assist you with a variety of activities, ranging from design, implementation, and platform deployment to consolidation, migration, project management, and onsite technical forums.
- HPE Service Credits: Access to prepaid services for flexibility to choose from a variety of specialized service activities, including assessments, performance maintenance reviews, firmware management, professional services, and operational best practices.

Notes: To review the list of Lifecycle Services available for your product go to:
https://www.hpe.com/services/lifecycle

For a list of the most frequently purchased services using service credits, see the **HPE Service Credits Menu**

Other Related Services from HPE Services:

HPE Education Services

Training and certification designed for IT and business professionals across all industries. Broad catalogue of course offerings to expand skills and proficiencies in topics ranging from cloud and cybersecurity to AI and DevOps. Create learning paths to expand proficiency in a specific subject. Schedule training in a way that works best for your business with flexible continuous learning options.
https://www.hpe.com/services/training

Defective Media Retention

An option available with HPE Complete Care Service and HPE Tech Care Service and applies only to Disk or eligible SSD/Flash Drives replaced by HPE due to malfunction.

Consult your HPE Sales Representative or Authorized Channel Partner of choice for any additional questions and services options.

Parts and Materials

HPE 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.

How to Purchase Services

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 services at **https://ssc.hpe.com/portal/site/ssc/**

Service and Support

AI Powered and Digitally Enabled Support Experience

Achieve faster time to resolution with access to product-specific resources and expertise through a digital and data driven customer experience.

Sign into the HPE Support Center experience, featuring streamlined self-serve case creation and management capabilities with inline knowledge recommendations. You will also find personalized task alerts and powerful troubleshooting support through an intelligent virtual agent with seamless transition when needed to a live support agent.
https://support.hpe.com/hpesc/public/home/signin

Consume IT On Your Terms

HPE GreenLake edge-to-cloud platform 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 edge-to-cloud platform 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

To learn more about HPE 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

For more information
http://www.hpe.com/services

HPE Storage SSD Extended Replacement Program
Provides for the post warranty replacement of eligible HPE Primera SSDs under active HPE support coverage at no additional cost in the event the SSD has reached its maximum usage limit based upon the HPE Primera SSD Life-Left reading.

HPE Primera Storage Installation and Startup Service
Provides onsite deployment of your HPE Primera Storage array into your storage environment.

HPE Primera Replication Software Installation and Startup Service
Provides deployment of HPE Remote Copy, Peer Motion, and Peer Persistence functionality of HPE Primera storage. The service helps you get HPE Primera replication related software up and running quickly and provides a demonstration of the product's key features using sample or test data only.

HPE Primera Base Software Installation and Startup Service
Provides deployment of Dynamic Optimization, Priority Optimization, System Reporter, Virtual Copy, and an overview of Virtual Domain and Virtual Lock. For Virtual Copy, the service provides a demonstration of the product's key features using sample or test data only.

HPE Storage Software Installation and Startup Service
Provides deployment of individual HPE Primera storage software features, helping to ensure proper installation in your storage environment as well as helping you increase the benefit from your storage investment.

Service and Support

HPE Storage Transformation Workshop

Explore data management to business-aligned visions, covering cloud, object, end to end data protection and BC/DR.

HPE Storage Data Migration Service

HPE Advisory & Professional Services helps to accelerate and simplify the data migration process from either HPE or third-party storage. Leverage HPE's depth of technical capabilities, combined with proven migration methodologies, to help you get a faster return on your storage investment, reduce risk, and accelerate your transition to HPE Primera. Reduces the impact to your operation by keeping staff focused on day-to-day responsibilities. Flexible package offerings that can be aligned to your business needs and provide a six-step process that takes you from planning to verification.

Our unique tool-less approach allows for online, minimally disruptive, and offline migrations, enabling data migrations that align with your organization's requirements, budgets, and timelines.

HPE Storage Modernization Service

Modernize your storage environment to take better advantage of physical or virtualized server environments, all flash, cloud, and object storage solutions.

HPE Backup and Recovery Efficiency Analysis Service

Rapid health check of your current backup environment, focusing on operational stability, problem identification, and capacity constraints. The output of this service provides clear metrics and high-level recommendations for your backup environment.

HPE Data Profiling Service

Assesses your current file storage and identify redundant, obsolete, and trivial data – simplifying your transformation to HPE Primera storage and reducing migration costs.

HPE Storage Integration Service

Integrate your new HPE Primera storage so that it is agile, performs effectively, and scales to rapid growth.

HPE Storage Online Import Quick Start Service

Choose the most effective, appropriate methods for configuring and migrating to a HPE Primera storage platform.

HPE SAN Deployment Service

Delivers complete design and implementation services for Fibre Channel, FCoE, FCIP, SAS, and iSCSI SAN connectivity components.

HPE Data Replication Solution Service for Virtual Copy

Enables snapshots and mirroring to facilitate data restores, minimize downtime for backups, perform application testing and support data mining use with decision-support tools.

HPE Data Replication Solution Service for Remote Copy

Configures real-time data mirroring between local and remote storage systems to safeguard critical business information.

HPE Performance Analysis Service for HPE Storage

Provides data collection, detailed I/O analysis and enhancement recommendations for HPE Storage arrays.

Service and Support

HPE Data Sanitization Storage and Server Services

Provides the skilled resources and tools to help your organization address the need to protect data when your organization is retiring systems, upgrading storage and servers, returning leased equipment, or redeploying data storing devices. The service helps ensure that data cannot be reconstructed or retrieved from hard disk media in your server and storage devices. These services offer you a smart alternative or augmentation to physical hardware destruction.

HPE Storage Rebalance Service

Helps balance data across an HPE Primera Storage array to take advantage of the capabilities of the array architecture. The service provides analysis, planning, and implementation of data movement and/or physical movement of drive magazines within the array.

Consult your HPE Sales Representative or Authorized Channel Partner of choice for any additional questions and support options

Configuration Information

Step 1: Choose a Storage Base and Controller Nodes

HPE Primera configuration starts with the selection of the Storage Base and Controller Nodes. The Storage Base includes the chassis and bays for small form factor drives, and it does not include any controller node or Power Supplies. The controller SKUs includes 2 or 4 nodes and 2 or 4 Power Supplies with Fan and Batteries.

HPE Primera Storage Base Configurations

Description	SKU
HPE Primera 600 2-way Storage Base	N9Z46A
HPE Primera 600 4-way Storage Base	N9Z47A

- One (1) Storage Configuration Base SKU must be ordered for each array.
- The 2-way Storage Configuration Base can host 2 controller nodes and up to 24 small form factor drives in 2U. All 24 drive slots are SAS, the 8 rightmost slots are dual personality SAS/NVMe.
- The 4-way Storage Configuration Base can host 2 or 4 controller nodes and up to 48 small form factor drives in 4U. All 48 drive slots are SAS, the 16 rightmost slots are dual personality SAS/NVMe.
- The Storage Configuration Base does not include any controller nodes or Power Supplies

HPE Primera Controller Nodes

	HPE Primera A630 2-node Controller	N9Z55A
*	HPE Primera C630 2-node Controller	N9Z56A
	HPE Primera A650 2-node Controller	N9Z60A
	HPE Primera A650 4-node Controller	N9Z61A
*	HPE Primera C650 2-node Controller	N9Z62A
*	HPE Primera C650 4-node Controller	N9Z63A
	HPE Primera A670 2-node Controller	N9Z64A
	HPE Primera A670 4-node Controller	N9Z65A
*	HPE Primera C670 2-node Controller	N9Z66A
*	HPE Primera C670 4-node Controller	N9Z67A
	HPE Primera A670 1TB 2-node Controller	N9Z68A
	HPE Primera A670 1TB 4-node Controller	N9Z69A
*	HPE Primera C670 1TB 2-node Controller	N9Z70A
*	HPE Primera C670 1TB 4-node Controller	N9Z71A

HPE Primera TAA-Compliant Controller Nodes*

	HPE Primera A630 2-node TAA-compliant Controller	R9B64A
*	HPE Primera C630 2-node TAA-compliant Controller	R9B65A
	HPE Primera A650 2-node TAA-compliant Controller	R9B66A
	HPE Primera A650 4-node TAA-compliant Controller	R9B67A
*	HPE Primera C650 2-node TAA-compliant Controller	R9B68A
*	HPE Primera C650 4-node TAA-compliant Controller	R9B69A
	HPE Primera A670 2-node TAA-compliant Controller	R9B70A
	HPE Primera A670 4-node TAA-compliant Controller	R9B71A
*	HPE Primera C670 2-node TAA-compliant Controller	R9B72A
*	HPE Primera C670 4-node TAA-compliant Controller	R9B73A
	HPE Primera A670 1TB 2-node TAA-compliant Controller	R9B74A
	HPE Primera A670 1TB 4-node TAA-compliant Controller	R9B75A

Notes:* Subject to select availability

Configuration Information

- Only one Controller SKU can be ordered per array. Each Controller SKU includes either two (2) nodes or four (4) nodes, two (2) or four (4) Power Supplies with Fan and Batteries, and Locking Power Cords.
- All controllers in an HPE Primera array need to be of the same type, Different controller types cannot be mixed in the same Storage Base.
- Each Node has two (2) built-in 10 Gigabit Ethernet ports for Remote Copy over IP, one (1) management port, one (1) service port and, depending on the model, two (2) SAS ports (630) or four (4) SAS ports (650 and 670).
- Each Node contains PCIe slots for adapters: two (2) slots on Primera 630 controllers, or three (3) slots on Primera 650/670 controllers.
- HPE Primera 630/650/670 are supported in the 2-way Storage Base and in the 4-way Storage Base
- When the HPE Primera 630 is configured in the 4-way Storage Base, slots 2 & 3 will remain empty
- When the HPE Primera 650/670 is configured in the 2-way Storage Base, upgrading to 4-nodes is not supported
- *HPE offers Trade Agreement Act (TAA) HPE Primera Controller options to meet the needs of US Federal Government customers. These products are either manufactured or substantially transformed in a designated country. TAA compliance is only provided when HPE options are included as part of factory integrated orders (CTO).

HPE Primera 600 Node Conversion Kits

Use the HPE Primera 600 controller node conversion Kit to convert an existing, installed, HPE Primera 600 node pair to increase scalability, and performance capabilities without requiring a data migration. This will be a data-in-place node upgrade where all hardware including drives, and enclosures will remain in place.

Description	SKU
HPE Primera 650 2-node Upgrade Conversion Kit	R4W23A
HPE Primera 670 2-node Upgrade Conversion Kit	R4V94A
HPE Primera 670 4-node Upgrade Conversion Kit	R4V95A
HPE Primera 670 1TB 2-node Upgrade Conversion Kit	R4V96A
HPE Primera 670 1TB 4-node Upgrade Conversion Kit	R4V97A

- The number of controller nodes in the Conversion Kit must match the number of controllers of the original Primera 600 System.
- R4W23A is used to upgrade a HPE Primera 630 to HPE Primera 650 2N.
- R4V94A is used to upgrade a HPE Primera 630 or HPE Primera 650 into HPE Primera 670 (2N).
- R4V95A is used to upgrade a HPE Primera 650 Storage Base into HPE Primera 670 (4N).
- R4V96A is used to upgrade a HPE Primera 630, HPE Primera 650, or HPE Primera 670 2N to a HPE Primera 670 2N with 1T cache (2N).
- R4V97A is used to upgrade a HPE Primera 670 to a HPE Primera 670 with 1T cache (4N).
- HPE Primera upgrade conversion kits upgrade A-models to A-models and C-models to C-models. Upgrading from A-model to C-model, or vice-versa is not supported.
- The HPE Primera 600 Conversion Kit includes (2 or 4) controller nodes and bezel labels.
- When upgrading from HPE Primera 630, 2x1700W Power Supplies (Qty 2 R4W00A) must also be ordered. These additional power supplies are not required when upgrading from HPE Primera 650 or HPE Primera 670.
- Controller Node Conversion Kits do not include HBAs, or NICs.

Configuration Information

HPE DC Power Supply Battery Kits

HPE Primera supports AC and DC Power configurations. Use the HPE 1700W -48VDC Power Supply Battery Kit to install the HPE Primera 600 controller in a DC Power environment. Use the HPE Primera 600 800W Power Supply kit to install the SAS Drive Enclosures in a DC Power environment. DC Power support is available on any HPE Primera 600 model.

Description	SKU
HPE 1700W -48VDC Power Supply Battery Kit	R4V53A

- A 2-way base enclosure requires two DC 1700W power supply battery kits.
- A 4-way base enclosure requires four-DC 1700W power supply battery kits.

HPE 800W -48VDC Power Supply Kit	R4V54A

- The SFF/ LFF SAS drive enclosure requires two-800W power supply kits per drive enclosure.
  Notes: DC Power is supported on Primera OS 4.2 or later.

The following DC Breaker Panel and Grounding bar can be ordered with DC PCM as an option:

E-T-A S541 2x16 Output DC Breaker Panels	G2H95A
E-T-A 6401 Two Grounding Bars w/ screws	Q9N54A

The following DC Power Cable Kits can be ordered with the DC PCM as an option:

HPE -48VDC 1.5m 2-pack Power Cable	R4X83A
HPE -48VDC 2.3m 2-pack Power Cable	R4X84A
HPE -48VDC 3.0m 2-pack Power Cable	R4X85A

- Each DC power cable kit includes 2 cables.
- One (1) Power Cable Kit is required for each pair of Power Supply Battery Kit.
- These DC Power Cable Kits are only compatible with the DC Breaker Panel G2H95A at the source end.

When considering alternative DC Power cable/ breaker panels solutions, consider the following:

- Use 6 AWG Conductor Cable for -48VDC, return, and earth ground connections.
- The recommended compression lug for the 6AWG Conductor Cable is a T&B Two-Hole, 90° Long Barrel Compression Lug. Please use T&B Part Number 54852BEUBPH.

Configuration Information

Step 2: Choose Adapters

Host adapters are used for connection to hosts. They can be ordered standalone to be installed in the field or they can be factory integrated into controller nodes. HPE Primera arrays don't have any built-in host ports therefore any configuration needs to have at least one host adapter per node.

HPE Primera Host Adapters

Description	SKU
HPE Primera 600 16Gb 4-port Fibre Channel Host Bus Adapter	N9Z38A
HPE Primera 600 32Gb 4-port Fibre Channel Host Bus Adapter	N9Z39A
HPE 10/25GbE 4-port Host Bus Adapter	N9Z37A
HPE 10GBASE-T 4-port Host Bus Adapter	N9Z40A

Host Bus Adapter SFP Kits

HPE 2-pack 25Gb Ethernet SFP Upgrade Kit	N9Z42A
HPE 2-pack 10Gb Ethernet SFP Upgrade Kit	N9Z43A

- Each node must have at least one host adapter. A node without any host adapters is not a supported configuration.
- Each node in a node pair (node 0/1 or node 2/3) must be configured with the same adapters.
- The best practice is to have all the nodes configured with the same adapters. However, in a - node system, nodes in different node pairs can have different adapters.
- The 16Gb Fiber Channel Adapter includes four- 16Gb shortwave FC SFP+ and does not support 32Gb SFP+.
- The 32Gb Fiber Channel Adapter includes four-32Gb shortwave FC SFP+ and does not support 16Gb SFP+
- The 10Gb/ 25Gb Ethernet adapters support both 10GbE SFP+ & 25GbE SFP28.
- The 10Gb/ 25Gb Ethernet Adapters do not include SFPs. A minimum qty of 1 SFP Kit (containing 2 SFPs) must be ordered per Host Bus Adapter.
- Mixing of 10Gb and 25Gb SFPs in a single HBA is supported.
- 25Gb SFPs only work at 25Gb/s and do not negotiate speed to lower speeds.

HPE Primera SAS Adapters

HPE Primera 600 12Gb SAS 4-port Host Bus Adapter	N9Z41A

- The HPE Primera SAS adapter is an optional adapter that provides additional SAS ports for drive enclosure connectivity.
- The adapter is supported only on HPE Primera 650 and 670 models and must be installed in the third PCIe slot (slot 5).
- An array with SAS adapters must have one SAS adapter per node.
- The use of the SAS adapter does not increase the max supported number of drive enclosures.

Step 3: Choose Drive Enclosures

Add drive enclosures to expand the configuration and add more drives to the configuration. Drive enclosures can be ordered separately for installation in the field, or they can be factory integrated in a rack. Drive enclosures are optional because the Storage Base products include small form factor drive bays. Each SFF drive enclosure includes 24 drive bays in 2U, each LFF drive enclosure includes 12-drive bays in 2U. The two drive enclosure types can be intermixed in a single array and only support SAS drives. LFF drive enclosures are only supported on HPE Primera C6xx models.

Drive Enclosures

HPE Primera 600 2U 24-disk SFF Drive Enclosure	N9Z50A
HPE Primera 600 2U 12-disk LFF Drive Enclosure	N9Z51A

Configuration Information

TAA-Compliant Drive Enclosures*

Description	SKU
HPE Primera 600 2U 24-disk SFF TAA-compliant Drive Enclosure	R9D21A
HPE Primera 600 2U 12-disk LFF TAA-compliant Drive Enclosure	R9D22A

- Each SFF drive enclosure includes 24 SAS SFF drive bays, (2) IO modules, (2) power and cooling modules, (1) mounting rail kit, and power cables.
- Each LFF drive enclosure includes 12 SAS LFF drive bays, (2) IO modules, (2) power and cooling modules, (1) mounting rail kit, and power cables.
- Depending on the number of drive enclosures and the HPE Primera model, drive enclosures are either directly connected to the SAS ports of the controllers or daisy chained to the SAS ports of other drive enclosures.
- The best practice is to balance the drive enclosures across all the SAS ports, remembering that the Storage Base includes (24) drives per node pair and counts as an enclosure.
- When including LFF and SFF drive enclosures in the same array, the best practice is to arrange them in the rack so that all the SFF enclosures that belong to one node pair are together and all of the LFF drive enclosures for that node pair are together.
- With a four-node configuration, the best practice is to attach the same number of drive enclosures and drive types to each node pair.
- To achieve the highest availability in multi-enclosure configurations, configure a minimum of six (6) enclosures (including the Storage Base) per node pair.
- Drive bays that are not filled with a drive must be covered with a drive blank to preserve proper air flow.
- If future capacity upgrades are expected, include enough Drive Enclosures so that there are some empty bays in each enclosure after all drives are added.
- *HPE offers Trade Agreement Act (TAA) HPE Primera 600 Drive Enclosure options to meet the needs of US Federal Government customers. These products are either manufactured or substantially transformed in a designated country. TAA compliance is only provided when HPE options are included as part of factory integrated orders (CTO).

The following SKU is required to give stability to a factory integrated HPE Primera 600 storage array during shipment when an LFF Drive Enclosure is in the bottommost in the rack:

HPE Primera 600 LFF Drive Enclosure Bracket	N9Z79A

- The bracket is only required during shipment and uses 1U of rack space.
- HPE recommends keeping the bracket installed if there is no immediate need to utilize the 1U space below the bottommost.
- LFF Drive Enclosure or if there is a plan to relocate the rack in the near future.

The bracket can be removed if another enclosure is installed below the bottommost Drive Enclosure or if there is no plan to relocate the rack

Step 4: Choose Drives

Drives are orderable at the time the array is purchased or can be added in the future when additional capacity is required. HPE Primera 600 drives are sold as single drives. Note that NVMe SSDs are only supported in the HPE Primera 600 Base and that SAS drives are compatible with the HPE Primera 600 Base and SAS Drive Enclosures.

HPE Primera NVMe SSDs

HPE Primera 600 1.92TB NVMe SFF (2.5in) FIPS Encrypted SSD	R3B21A
HPE Primera 600 3.84TB NVMe SFF (2.5in) FIPS Encrypted SSD	R3B22A
HPE Primera 600 7.68TB NVMe SFF (2.5in) FIPS Encrypted SSD	R0Q16A
HPE Primera 600 15.36TB NVMe SFF (2.5in) FIPS Encrypted SSD	R0Q10A
HPE Primera 600 1.92TB NVMe SFF (2.5in) SSD	R3B24A

Configuration Information

Description	SKU
HPE Primera 600 3.84TB NVMe SFF (2.5in) SSD	R0Q07A
HPE Primera 600 7.68TB NVMe SFF (2.5in) SSD	R0Q08A
HPE Primera 600 15.36TB NVMe SFF (2.5in) SSD	R0Q09A
HPE Primera SAS SSDs	
HPE Primera 600 1.92TB SAS SFF (2.5in) FIPS Encrypted SSD	R3R39A
HPE Primera 600 3.84TB SAS SFF (2.5in) FIPS Encrypted SSD	R0P99A
HPE Primera 600 7.68TB SAS SFF (2.5in) FIPS Encrypted SSD	R0Q00A
HPE Primera 600 15.36TB SAS SFF (2.5in) FIPS Encrypted SSD	R0Q01A
HPE Primera 600 1.92TB SAS SFF (2.5in) SSD	R0P95A
HPE Primera 600 3.84TB SAS SFF (2.5in) SSD	R0P96A
HPE Primera 600 7.68TB SAS SFF (2.5in) SSD	R0P97A
HPE Primera 600 15.36TB SAS SFF (2.5in) SSD	R0P98A
HPE Primera SAS 10K HDDs*	
HPE Primera 600 2.4TB SAS 10K SFF (2.5in) FIPS Encrypted HDD	R0Q06A
HPE Primera 600 2.4TB SAS 10K SFF (2.5in) HDD	R0Q05A
HPE Primera NL SAS HDDs*	
HPE Primera 600 8TB SAS 7.2K LFF (3.5in) FIPS Encrypted HDD	R0Q04A
HPE Primera 600 8TB SAS 7.2K LFF (3.5in) HDD	R0Q03A
HPE Primera 600 14TB SAS 7.2K LFF (3.5in) FIPS Encrypted HDD	R3B70A
HPE Primera 600 14TB SAS 7.2K LFF (3.5in) HDD	R0Q15A
HPE Primera TAA Compliant FIPS Encrypted Drives	
NVMe SSDs	
HPE Primera 600 1.92TB NVMe SFF (2.5in) FIPS Encrypted TAA-compliant SSD	R4F94A
HPE Primera 600 3.84TB NVMe SFF (2.5in) FIPS Encrypted TAA-compliant SSD	R4F95A
HPE Primera 600 7.68TB NVMe SFF (2.5in) FIPS Encrypted TAA-compliant SSD	R4F96A
HPE Primera 600 15.36TB NVMe SFF (2.5in) FIPS Encrypted TAA-compliant SSD	R4F97A
SAS SSDs	
HPE Primera 600 1.92TB SAS SFF (2.5in) FIPS Encrypted TAA-compliant SSD	R3B71A
HPE Primera 600 3.84TB SAS SFF (2.5in) FIPS Encrypted TAA-compliant SSD	R3B72A
HPE Primera 600 7.68TB SAS SFF (2.5in) FIPS Encrypted TAA-compliant SSD	R3B73A
HPE Primera 600 15.36TB SAS SFF (2.5in) FIPS Encrypted TAA-compliant SSD	R3B74A
SAS HDDs	
HPE Primera 600 2.4TB SAS 10K SFF (2.5in) FIPS Encrypted TAA-compliant HDD	R3B75A
HPE Primera 600 8TB SAS 7.2K LFF (3.5in) FIPS Encrypted TAA-compliant HDD	R3B76A

- For each drive type installed in the array, the minimum supported initial quantity is eight (8) drives per node pair for SSD and SAS 10K HDDs and twelve (12) SAS 7.2K HDDs., NVMe SSDs can be configured in quantities of eight (8) drives per node pair only in slots 16-23.
  Notes: When mixing NVMe SSD and SAS SSD, a minimum quantity of sixteen (16) SAS SSD are required per node pair.
- NVMe SSDs are supported in slots 16-23 (rightmost) on Primera A-controllers only.
- SAS HDDs are supported with Primera C-controllers only.
- NVMe SSDs are supported in slots 16-23 in the storage base (two-node or 4-node)
- The minimum upgrade quantity is 2 drives per node pair or 2 drives per enclosure, whichever is larger.
- HPE Primera only supports RAID 6 for all drive types.

Configuration Information

- All drive enclosures (including the Storage Base) must contain an even number of drives, with a minimum of two. The storage base can be left empty if HPE Primera is configured only with the LFF drive enclosure and SAS 7.2K LFF drives.
- The best practice is to add an equal number of drives of the same type to each enclosure.
- In four node configurations, the best practice is to attach the same number and type of drives to each node pair.
- SFF drives must be loaded in pairs of identical drives, beginning with the leftmost slot, slot 0, and filling to the right leaving no empty slots between drives.
- If a system already has SAS SSD configured in slots 16-23 prior to adding NVMe SSD, the SAS SSD must be relocated using HPE Storage Rebalance Service. Contact your HPE Services Sales Specialist for more information.
- Trade Acts Agreement (TAA) compliant drives are sourced from TAA compliant Country of Origin (COO) build sites.

Notes: * Subject to select availability.

HPE Primera Encryption License

Description	SKU
HPE Data Encryption LTU	R1P29A
HPE Data Encryption E-LTU	R1P29AAE

- A data encryption license (LTU) is required to enable encryption on the HPE Primera array. One encryption license is required for each encrypted array. Once encryption is enabled on the HPE Primera array, it cannot be disabled.
- An encrypted HPE Primera array (i.e. any HPE Primera array that has the Data Encryption license activated or intended to be activated), must have only self-encrypted drives installed.
- A non-encrypted HPE Primera array can have a mix of encrypted and non-encrypted drives.
- Encryption can be turned on, non-disruptively, at any time, even after data has been written to the system.
- FIPS 140-2 Validated Self-Encrypting Drives (SEDs) have been certified by the U.S. National Institute of Standards and Technology (NIST) and Canadian Communications Security Establishment (CSE) as meeting the Level 2 security requirements for cryptographic modules as defined in the Federal Information Processing Standards (FIPS) 140-2 Publication.
- Strengthen the DAR solution with an optional FIPS 140-2 Level-2 validated external key manager. Supports KMIP 1.3 and 1.4 for key management communications.
- Supports Utimaco® Enterprise Secure Key Manager (ESKM) 4.0, 5.0 and Gemalto® SafeNet KeySecure k460 centralized key management.

The local key manager is included in the HPE Primera OS. There is not a separately orderable part number for the local key manager.

HPE Primera Capacity E-RTU*

HPE Primera 1TB Capacity E-RTU	R4U27AAE

- In select regions, an electronic right to use (E-RTU) is required for each raw TB of capacity.
- The per-drive quantity of E-RTU required is equal to the RAW capacity of the individual drive rounded up to the nearest TB.

In the selected regions, the configuration tool (OCA), will automatically configure the necessary E-RTU quantity.

Notes: *This SKU is only available in select regions.

Step 5: Choose Cables for Host Connection, Drive Enclosure Connection, and Remote Copy Connection

HPE Primera 600 requires cables for drive enclosure connections and for host connectivity. SAS Copper cables are required for connecting the drive enclosures to the nodes on the same rack and for daisy chaining between adjacent drive enclosures. Storage Base products and drive enclosures do not include any Copper SAS cables, they are added to the configuration by the configurator tool (OCA). SAS Active Optical Cables are required to expand an HPE Primera 600 into an adjacent rack, to connect drive enclosures in adjacent racks to the nodes in the base rack. OM4 Fiber Cables are required for host connectivity, Remote Copy and Peer Motion.

Configuration Information

Cables

Description	SKU
SAS Active Optical Cables	
HPE 10m Mini SAS High Density Active Optical Cable	E7V95A
HPE 25m Mini SAS High Density Active Optical Cable	E7V96A
SAS Copper Cables	
HPE External Mini SAS High Definition to Mini SAS High Definition 4-lane 0.6m Cable	P11582-B21
HPE External 1.0m (3ft) Mini-SAS HD 4x to Mini-SAS HD 4x Cable	716195-B21
HPE External 2.0m (6ft) Mini-SAS HD 4x to Mini-SAS HD 4x Cable	716197-B21
HPE External Mini SAS High Definition to Mini SAS High Definition 4-lane 3m Cable	P11583-B21
OM4 Cables	
HPE Premier Flex LC/LC Multi-mode OM4 2 Fiber 1m Cable	QK732A
HPE Premier Flex LC/LC Multi-mode OM4 2 Fiber 2m Cable	QK733A
HPE Premier Flex LC/LC Multi-mode OM4 2 Fiber 5m Cable	QK734A
HPE Premier Flex LC/LC Multi-mode OM4 2 Fiber 15m Cable	QK735A
HPE Premier Flex LC/LC Multi-mode OM4 2 Fiber 30m Cable	QK736A
HPE Premier Flex LC/LC Multi-mode OM4 2 Fiber 50m Cable	QK737A
Direct Attach Copper Cables for host Connectivity	
10GbE Speed	
HPE Networking Comware	
HPE Networking X240 10G SFP+ SFP+ 3m DAC Cable	JD097C
HPE Networking X240 10G SFP+ SFP+ 5m DAC Cable	JG081C
HPE Networking Comware X240 40G QSFP+ to 4x10G SFP+ 3m Direct Attach Copper Splitter Cable	JG330A
HPE Networking Comware X240 40G QSFP+ to 4x10G SFP+ 5m Direct Attach Copper Splitter Cable	JG331A
HPE Aruba Networking	
HPE Aruba Networking 10G SFP+ to SFP+ 3m Direct Attach Copper Cable	J9283D
HPE Aruba Networking 10G SFP+ to SFP+ 7m Direct Attach Copper Cable	J9285D
Cisco	
HPE C-series 3M Passive Copper SFP+ Cable	K2Q21A
HPE C-series 5M Passive Copper SFP+ Cable	K2Q22A
HPE C-series SFP+ to SFP+ Active Copper 7.0m Direct Attach Cable	QK701A
HPE BladeSystem	
HPE BladeSystem c-Class 10GbE SFP+ to SFP+ 3m Direct Attach Copper Cable	487655-B21
HPE BladeSystem c-Class 10GbE SFP+ to SFP+ 5m Direct Attach Copper Cable	537963-B21
Broadcom	
25GbE Speed	
HPE StoreFabric	
HPE 25GbE SFP28 to SFP28 3m Smart Active Optical Cable	Q9S67A
HPE 25GbE SFP28 to SFP28 5m Smart Active Optical Cable	Q9S68A
HPE 25GbE SFP28 to SFP28 10m Smart Active Optical Cable	Q9S69A

Configuration Information

Description	SKU
HPE	
HPE 25Gb SFP28 to SFP28 3m Direct Attach Copper Cable	844477-B21
HPE 25Gb SFP28 to SFP28 7m Active Optical Cable	844483-B21
HPE 100Gb QSFP28 to 4x25Gb SFP28 3m Direct Attach Copper Cable	845416-B21

Notes:

- DAC support is available on HPE Primera 600 Storage series beginning with the OS release 4.2.
- DAC speeds of 25GbE are not supported on Primera 10GbE onboard ports.
- Primera DAC direct connection to a host is not supported. You must connect to a switch.
- SKUs 487655-B21, 537963_B21, AP819A and AP820A are not supported on Primera on-board 10GbE ports.
- For the latest information refer to Single Point of Connectivity Knowledge for HPE Storage Products (SPOCK): **http://www.hpe.com/storage/spock.**

Step 6: Choose Racking Options

HPE Primera 600 is compatible with most industry standard 4-post EIA 19-inch racks with square mounting holes. HPE Primera 600 can be factory configured and shipped in a rack or shipped without a rack for field integration into an existing rack. The racks used for factory integration are the HPE G2 Advanced Series Racks or the HPE G2 Enterprise Series Racks.

Factory Integration

HPE Primera 600 can be factory integrated in an HPE Intelligent Series Rack. The array will be configured into the HPE Intelligent Series Rack with the appropriate power distribution units (PDUs). Other products such as servers or back-up products can be factory integrated in the rack and different PDUs can be added (if needed) only via HPE Factory Express Services. Additional HPE Primera 600 controller node enclosures and drive enclosures may be ordered for multiple subsystem integration at the factory.

HPE Intelligent Series Racks

HPE 42U 600mmx1075mm G2 Enterprise Shock Rack	P9K38A
HPE G2 Rack 42U 1075mm Side Panel Kit	P9L15A
HPE 42U 600mmx1200mm G2 Enterprise Shock Rack	P9K40A
HPE G2 Rack 42U 1200mm Side Panel Kit	P9L16A
HPE 42U 600mmx1075mm G2 Kitted Advanced Shock Rack with Side Panels and Baying	P9K08A
HPE 42U 600mmx1200mm G2 Kitted Advanced Shock Rack with Side Panels and Baying	P9K10A

Notes:

- The number of components that will fit in a rack varies and is determined by the interior U-space of the rack.
- For more information on rack options, see: **http://www.hpe.com/products/rackoptions**.
- PDUs For more information on PDUs, see: **https://www.hpe.com/us/en/product-catalog/servers/power-distribution-units.html**

Non-HPE rack and power requirements

The HPE Primera Storage Base and Drive Enclosures include mounting rails that are compatible with industry standard 4-post EIA 19-inch racks with square mounting holes. For detailed information on determining compatibility of a non-HPE rack, please review the information included in the HPE Primera 600 Site Planning Guide.

Configuration Information

Step 7: Choose Software

Hewlett Packard Enterprise provides an extensive selection of features for HPE Primera 600 arrays. For convenient ordering all the software (including Recovery Manager Central, Smart SAN, and Cluster Extension for Windows and IBM AIX) is offered as part the array and does not require any additional license. The only license that is offered separately is the Data Encryption LTU.

Subscribe to the HPE Backup and Recovery Service

The HPE Backup and Recovery Service is an optional subscription service available from the HPE GreenLake Cloud Portal. There is no requirement that your HPE Primera/Nimble/Nimble dHCI systems are managed through HPE GreenLake – the service is available with Array Optimized protection for HPE Greenlake managed systems and with regular protection for locally managed systems. The Backup and Recovery Service is the modern way to protect VMware virtual machines. The subscription enables automated, cloud managed protection of your VMware virtual machines. The HPE Backup and Recovery Service is available with a subscription to meet your needs. Working with your HPE account representative you can define whether you want total flexibility to pay for the service as you use it or if you want to lock in lower prices by reserving the service for 1, 2, 3, 4, or 5 years. When you reserve the service, you choose the number of virtual machines you want to protect and, if you want to protect your virtual machines with backup to the cloud, the capacity of the Cloud Protection Store you will need. For more information, please refer to the HPE Backup and Recovery Service QuickSpecs:
https://www.hpe.com/h20195/v2/GetDocument.aspx?docname=a50004269enw

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Self-Installation

HPE Primera 600 offers customers the option to self-install the storage array, which means that the system will not be installed via an HPE service. Self-installation is available for HPE Primera 600 storage arrays that fit in a single rack and meet the following requirements:

Self-installation eligible configurations		
Model	**Factory Integrated (CTO)**	**Field Integrated (BTO/sCTO)**
HPE Primera 630	All configurations	All single rack configurations
HPE Primera 650	All configurations	Max 7 drive enclosures per node pair, no SAS HBAs
HPE Primera 670	All configurations	Max 7 drive enclosures per node pair, no SAS HBAs

In order to successfully install the HPE Primera 600 array, the installer should:

- Have a good understanding and knowledge of Storage Area Networks, Fiber Channel fundamentals and a basic understanding of TCP/IP and other networking protocols (DNS/NTP).
- Have experience creating Storage LUNs, presenting/exporting LUNs to a server and formatting the LUNs to make them usable for applications.
- Be able to troubleshoot hardware and software issues using logs and documentation.

If the installer doesn't meet the profile or is not comfortable with the self-installation process, Hewlett Packard Enterprise recommends engaging the Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise Channel Partner to purchase HPE deployment services.

Customer Responsibilities

The Customer will:

- Ensure that the host and SAN environment is supported and compliant with HPE recommendations and best practices. Host and SAN Implementation Guides are available at **https://support.hpe.com/hpesc/public/home**. Support Matrix are available on SPOCK (HP Storage Single Point of Connectivity Knowledge) **http://www.hpe.com/storage/spock**.
- Resolve any problems with their SAN and host environment, prior to installing the HPE Primera 600.

Notes: Customers performing a self-install (according to rules identified above) will not void their warranties and will be fully supported.

Technical Specifications

HPE Primera 600 Storage Specifications				
Physical Dimensions	**Width in/mm**	**Depth in/mm**	**Height in/mm/U**	**Weight lb/kg**
HPE 42U 1075mm G2 Advanced Series Rack	23.50 / 597	43.78 / 1111	78.99 / 2006	281 / 127
HPE 42U 1075mm G2 Enterprise Series Rack	23.54 / 598	44.30 / 1125	78.98 / 2007	230 / 105
HPE 42U 1200mm G2 Advanced Series Rack	23.50 / 597	50.65 / 1286	78.99 / 2006	311 / 141
HPE 42U 1200mm G2 Enterprise Series Rack	23.54 / 598	51.19 / 1300	78.98 / 2007	251 / 114
HPE Primera 630(2-way Storage Base, two controllers, two 800W PCBMs, no drives, no HBAs)	19.00 / 483	33.03 / 839	3.44 / 87.5 / 2	74.0 / 33.6
HPE Primera 650 2-nodes (4-way Storage Base, two controllers, two 1700W PCBMs, no drives, no HBAs)	19.00 / 483	33.03 / 839	6.85 / 174 / 4	104 / 47.3
HPE Primera 650 4-nodes (4-way Storage Base, four controllers, four 1700W PCBMs, no drives, no HBAs)	19.00 / 483	33.03 / 839	6.85 / 174 / 4	148 / 67.3
HPE Primera 670 2-nodes (4-way Storage Base, two controllers, two 1700W PCBMs, no drives, no HBAs)	19.00 / 483	33.03 / 839	6.85 / 174 / 4	104 / 47.3
HPE Primera 670 4-nodes (4-way Storage Base, four controllers, four 1700W PCBMs, no drives, no HBAs)	19.00 / 483	33.03 / 839	6.85 / 174 / 4	148 / 67.3
HPE Primera 600 2U24 SFF Drive Enclosure (two IOMs, two 500W PCMs, no drives); **Notes:** LFF enclosure has same power, IOMs and dimensions, but weight is 46.0 Lbs, 20.8 Kg	19.00 / 483	31.55 / 801	3.44 / 87.5 / 2	47.0 / 21.4
SFF NVMe SSD with carrier	3.15 / 80	6.69 / 170	0.58 / 14.7	0.50 / 0.23
SFF SAS SSD with carrier	3.15 / 80	6.69 / 170	0.58 / 14.7	0.50 / 0.23
SFF SAS HDD with carrier*	3.15 / 80	6.69 / 170	0.58 / 14.7	0.50 / 0.23
LFF SAS HDD with carrier*	4.24 / 108	6.69 / 170	0.95 / 24.2	1.50 / 0.68
HPE Primera 600 16Gb 4p FC HBA (with four SFPs)	3.23 / 82	8.58 / 218	0.73 / 18.5	0.50 / 0.23
HPE Primera 600 32Gb 4p FC HBA (with four SFPs)	3.23 / 82	8.58 / 218	0.73 / 18.5	0.50 / 0.23
HPE Primera 600 10/ 25Gb 4-port Ethernet Host Bus Adapter	3.23 / 82	8.58 / 218	0.73 / 18.5	0.50 / 0.23
HPE Primera 600 10GBASE-T 4-port Host Bus Adapter	3.23 / 82	8.58 / 218	0.73 / 18.5	0.50 / 0.23
HPE Primera 600 12Gb SAS 4p HBA	3.23 / 82	8.58 / 218	0.73 / 18.5	0.50 / 0.23

Notes: *Subject to select availability

Technical Specifications

Power Requirements

Input Voltage

AC PCM option

- HPE Primera 630 Node Enclosure: 100 to 240 VAC (50 to 60 Hz)
- HPE Primera 650 Node Enclosure: 200 to 240 VAC (50 to 60 Hz)
- HPE Primera 670 Node Enclosure: 200 to 240 VAC (50 to 60 Hz)
- HPE Primera 600 Drive Enclosure: 100 to 240 VAC (50 to 60 Hz)

Refer to the HPE Power Advisor online tool for power consumption, heat loading, and circuit sizing information:
https://poweradvisorext.it.hpe.com/?Page=Index

Environmental Specifications

Operating Temperature	41° to 95° F (5° to 35° C) - Reduce rating by 1° F for each 1000 ft altitude (1.8° C/1,000 m)	
Shipping Temperature	-30° to 60°C (-22 to 140°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	10% to 90% non-condensing	
Shipping Humidity	10% to 90% non-condensing	
Operating Vibration	0.25 G, Sine, 5-500 Hz; 0.25 GRMS, Random 5-500 Hz	
Non-operating Vibration	0.5 G, 5 - 500 Hz, Sine; 0.5 GRMS, Random, 5-500Hz	
Operating Shock	5G, 11ms, half-sine	
Non-operating Shock	10 G, 11ms, half-sine	
Maximum Exhaust Air Flow	HPE Primera 630 Node Enclosure: 275 CFM HPE Primera 650 Node Enclosure (with four nodes): 575 CFM HPE Primera 670 Node Enclosure (with four nodes): 575 CFM HPE Primera 600 SFF Drive Enclosure: 285 CFM HPE Primera 600 LFF Drive Enclosure: 230 CFM	
Acoustic Sound Pressure Level	**8500 RPM (typical) 60% Duty Cycle**	**14000 RPM (maximum) 100% Duty Cycle**
HPE Primera 630	70 dB	82 dB
HPE Primera 650 4-nodes	72 dB	83 dB
HPE Primera 670 4-nodes	72 dB	83 dB
HPE Primera SFF Drive Enclosure	68 dB	81 dB
HPE Primera LFF Drive Enclosure	68 dB	81dB
Acoustics Sound pressure level measured per ISO 7779 specifications		

Electromagnetic Compatibility

- CISPR 32/ EN 55032: 2015 Class A
- CISPR 24/ EN 55024:2010 +A1:2015
- IEC 61000-3-2/ EN 61000-3-2: 2014
- IEC 61000-3-3/ EN 61000-3-3: 2013
- AS/NZS CISPR 32:2013 Class A
- CNS 13438:2006 Class A
- 47 CFR Part 15 Subpart b Class A
- ICES-003 Issue 6 Class A
- VCCI-CISPR 32: 2016 Class A
- RRA Notice No. 2016-79 (2016.12.19) Class A
- RRA Notice No. 2016-26 (2016.12.19)

Technical Specifications

Safety

- IEC 60950-1:2005 (2nd Edition); +A1:2009 +A2:2013
- EN 60950-1:2006 +A11:2009 +A1:2010 +A12:2011 +A2:2013
- EN 62479:2010
- IEC 62368-1: 2014
- EN 62368-1:2014+A11:2017
- CNS 14336-1
- UL 62368-1 2nd Ed.
- CAN/CSA-C22.2 No. 62368-1-14

Certifications/Markings

- BIS
- BSMI
- cCSAus
- CE
- EAC
- EnergyStar Data Center Storage
- FCC Class A
- GS
- IC Class A
- KCC
- Morocco
- RCM
- Ukraine
- VCCI
- WEEE
- China RoHS
- EU RoHS

Summary of Changes

Date	Version History	Action	Description of Change
19-Feb-2024	Version 23	Changed	Networking product names were updated.
04-Dec-2023	Version 22	Changed	HPE Services Rebranding
05-Jul-2022	Version 21	Changed	Configuration Information sections was updated. URLs corrected on Service and Support and Technical Specifications sections
16-May-2022	Version 20	Changed	Overview and Technical Specifications sections were updated.
04-Apr-2022	Version 19	Changed	Configuration Information sections was updated
07-Mar-2022	Version 18	Changed	Overview, Service and Support and Configuration Information sections were updated.
07-Feb-2022	Version 17	Changed	Configuration Information and Technical Specifications sections were updated.
06-Dec-2021	Version 16	Changed	Configuration Information sections was updated
04-Oct-2021	Version 15	Changed	Service and Support section was updated
16-Aug-2021	Version 14	Changed	Configuration Information sections was updated
06-Jul-2021	Version 13	Changed	Service and Support and Configuration Information sections were updated.
04-May-2021	Version 12	Changed	Standard Feature, Service and Configuration Information sections were updated.
06-Apr-2021	Version 11	Changed	Overview and Configuration Information sections were updated.
02-Nov-2020	Version 10	Changed	Configuration Information section was updated.
05-Oct-2020	Version 9	Changed	Overview, Service and Configuration Information sections were updated.
17-Aug-2020	Version 8	Changed	Overview, Service and Configuration Information sections were updated.
06-Jul-2020	Version 7	Changed	Standard Features and Configuration Information sections were updated.
01-Jun-2020	Version 6	Changed	Added NVMe, ISCSI, and Energy Star certification configuration options.
02-Mar-2020	Version 5	Changed	Configuration Information and Technical Specifications sections were updated.
03-Feb-2020	Version 4	Changed	Configuration Information and Technical Specifications sections were updated.
21-Oct-2019	Version 3	Changed	Overview, Service and Support and Technical Specifications sections were updated
07-Oct-2019	Version 2	Changed	Added hybrid options
05-Aug-2019	Version 1	New	New QuickSpecs.

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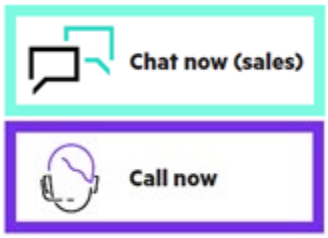

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