QuickSpecs

Overview

Are you faced with a hard-to-manage data explosion? The exponential growth of unstructured data can lead to rampant infrastructure costs. To gain control of your web and file-based data, you need a new storage solution that scales affordably and seamlessly.

The HP X9000 Network Storage Systems scale-out beyond traditional NAS in both capacity and performance. Designed to be extremely scalable, flexible, and cost-efficient, the X9000 systems deliver excellent performance and a modular storage infrastructure to accommodate unprecedented storage growth and performance. Central management allows the administrator to manage not just terabytes but multi-petabyte environments at the highest density possible. The pay-as-you-grow architecture lets customers avoid storage over-provisioning and manage costs. With an all-inclusive feature set there are no hidden or future costs of expensive add-ons. X9000 is the ideal platform for customers designing the next generation data center.

What's New
More solution flexibility:

- Software snapshots use namespace versioning to provide continuous and real-time view of past, allowing users to recover deleted files and administrator to restore system data (coming soon)
- Data archiving features include file immutability, retention period at the file level, and data validation and verification (coming soon)
- Expanded protocol support includes NFS, CIFS, HTTP/S, WebDAV (coming soon), FTP/S and NDMP
- X9320 adds versatility and performance; start smaller, size to fit, Enterprise and midline SAS in the same system (tier-in-a-box) and 6G SAS
- Enterprise manageability tools now include Storage Essentials and Insight Remote Support
- Consolidated block and file storage with 3PAR and X9300 Network Storage Gateway
- G7 Servers deliver more performance and use Less Power

Models
HP X9320 Network Storage Systems
HP X9320 Network Storage Systems are versatile, highly available, scale-out storage solutions that allow customers to add a performance or capacity systems quickly and easily into their environment for file data workloads.

HP X9320 1GbE Performance Block	QP330A
HP X9320 10GbE Performance Block	QP331A
HP X9320 IB Performance Block	QP332A
HP X9320 24TB Capacity Block Starter Kit	QP333A
HP X9320 24TB Capacity Block Exp Kit	QP334A
HP X9320 48TB Capacity Block Starter Kit	QP335A
HP X9320 48TB Capacity Block Exp Kit	QP336A
HP X9320 14.4TB Capacity Block Start Kit	QP337A
HP X9320 14.4TB Capacity Block Exp Kit	QP338A

Overview
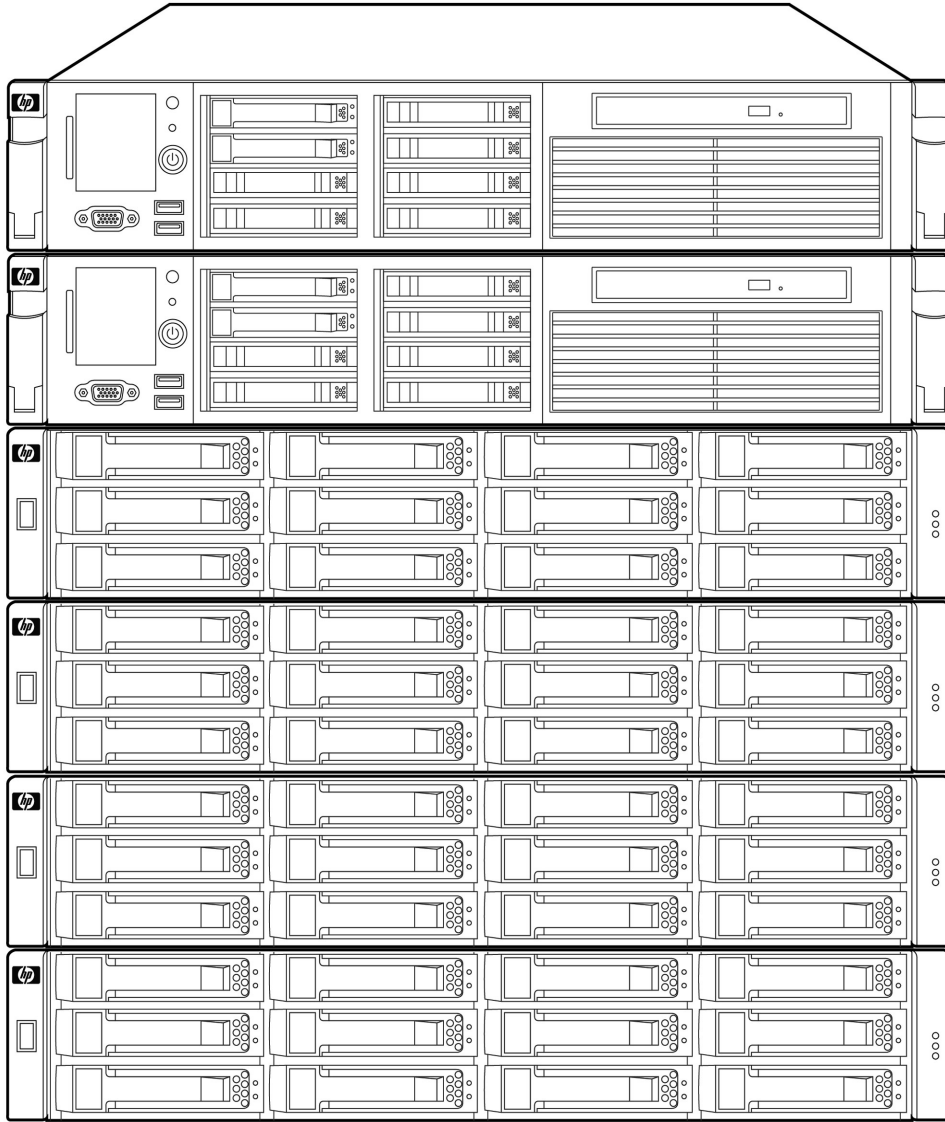
Performance Block

Capacity Block Starter Kit

Capacity Block Epansion Kit

HP X9720 Network Storage System

HP X9720 Network Storage System is a turn-key, highly dense scale-out NAS appliance designed for those customers with extreme capacity needs.

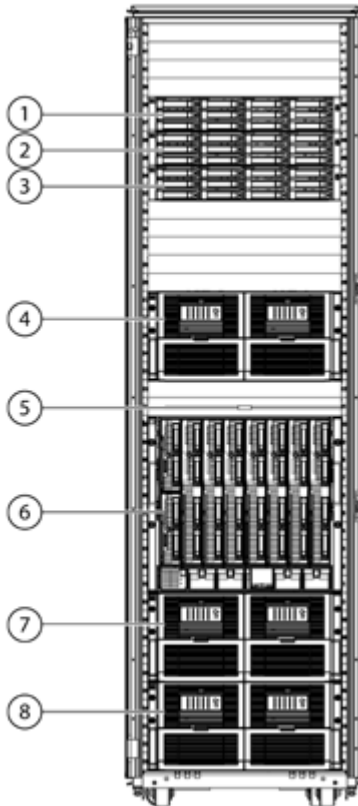|	
HP X9720 Network Storage System Base Rack	AW548A
HP X9700 Server Chassis	AW549A
HP X9700 Blade Server	AW550C
HP X9700 82TB Capacity Block	AW551A
HP X9700 164TB Capacity Block	AW598B
HP X9700 Expansion Rack	AW552A

Overview

Front View of an HP X9720 base cabinet with three storage blocks

1. X9720c 3, (Capacity block controllers and storage)
2. X9720c 2, (Capacity block controllers and storage)
3. X9720c 1, (Capacity block controllers and storage)
4. X9720cx 3, (Capacity block storage)
5. TFT monitor and keyboard
6. Blade server enclosure
7. X9720cx 2, (Capacity block storage)
8. X9720cx 1, (Capacity block storage)

Overview
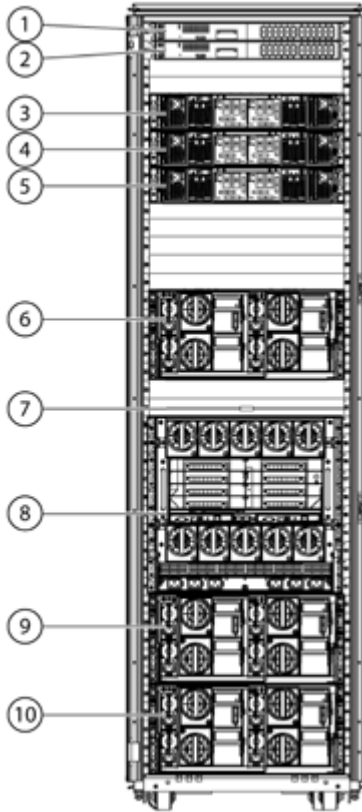
Rear view of HP X9720 Network Storage System with three storage blocks

1. Management switch 2
2. Management switch 1
3. X9720c 3, (Capacity block controllers and storage)
4. X9720c 2, (Capacity block controllers and storage)
5. X9720c 1, (Capacity block controllers and storage)
6. X9720cx 3, (Capacity block storage)
7. TFT monitor and keyboard
8. Blade server enclosure
9. X9720cx 2, (Capacity block storage)
10. X9720cx 1, (Capacity block storage)

HP X9300 Network Storage Gateways

The HP X9300 Network Storage Gateways are flexible, scale-out solutions that bring feature rich gateway file services to HP 3PAR, P4000, P2000, EVA, or 3rd party arrays or SANs.

HP X9300 1GbE Network Storage Gateway   AW539C
HP X9300 10GbE/IB Network Storage Gateway   AW540C
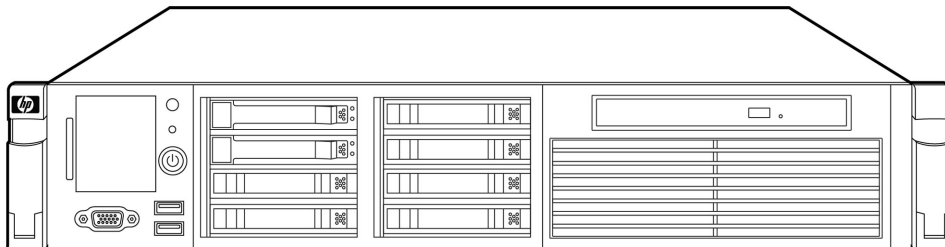
HP X9300 Network Storage Gateway

Overview

HP X9300 Management Server

The HP X9300 Management Server provides a dedicated platform for cluster maintenance, monitoring and remote management services. As of v5.6 a dedicated Management Server is no longer required or recommended. The Management Server Software has been optimized to run non-dedicated on one or more X9000 File Serving Nodes.

HP X9300 Management Server   AW547C
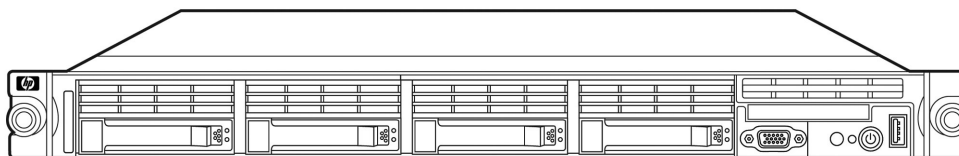
HP X9300 Management Server

Features and Benefits

Single global namespace that scales up to 16 PB's	Conveniently manage up to 16 PB of data in a single global namespace and up to 1000+ nodes to evolve with your business needs. Flexibly mix and match storage topologies (SAN/NAS) within the single domain, to optimize performance and better leverage storage assets
Centralized management	More effectively manage file system provisioning, performance and optimization from a centralized, single pane of glass management tool, reducing administrative loads and helping IT staff to be more productive
Automated data mobility and load balancing	Automated data mobility and load balancing that enables customers to respond quickly to changing demands and improve TCO
HP management tools	Integration with higher level management tools that helps customers better manage the overall infrastructure and further reduce administrative loads. Frameworks supported include HP SIM, Storage Essentials and Insight Remote Support to better serve customer support needs
Policy-based Automatic Data Tiering	Non-disruptive and automated policy based data tiering enables performance or capacity optimization for initial placement and automated movement between tiers
Protect and manage critical data	Ability to protect and manage critical data with retention policies, Write Once (WORM) file immutability to ensure regulatory compliance, and broad ISV support for optimal solution support (coming soon)
Pay as you grow	Pay as you grow by easily adding nodes or storage components as requirements evolve. No need to overprovision you IT investments, you evolve with your business needs. The all inclusive software model ensures you have access to the data services you need to maximize your investment
Converged Infrastructure	Converged Infrastructure that reduces capital and operation costs. Built on ProLiant DNA with features like iLO, intelligent power, and Insight Remote Support to reduce operational overhead
Scale capacity and performance independently	Scale capacity and performance independently with fully distributed meta-data and multi-node architecture to avoid controller bottlenecks, eliminate hotspots and enhance availability
Resilient	Maintain growth and load-balance changing workloads without disruption for greater resiliency. The small addressable block size (4k) enables high performance for ALL workloads - Small file Random, Large file Sequential, mixed random and sequential workloads, and metadata intensive workloads
Easily add/replace nodes, and migrate storage components to new technologies	Easily add/replace nodes, and migrate storage components to new technologies without disruption for ultimate investment protection and future proofing. A single button data evacuation service enables a persistent data access layer with simple and secure change management
Rich Set of data services	A Rich Set of all inclusive data services improves operational flexibility and enables you to better manage your deployment. They include: policy based tiering, Continuous Remote Replication, snapshots, automatic storage balancing, and data evacuation

Standard Features – HP X9320 Network Storage System

Performance Blocks	Each X9320 Performance Block SKU contains two File Serving Nodes. The following detail is per File Serving Node. The difference between the three Performance Block models is the public network interface. The model ordered must have the network interface required to connect the X9320 system to the customer's network.
File Serving Node	HP ProLiant DL 380 Generation 7 (G7) http://h18004.www1.hp.com/products/quickspecs/13595_div/13595_div.html
Processor / Cache	Two quad core Intel® Xeon® Processors E5620 (2.40 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)
Memory	48GB (12 x 4GB) HP 4GB 1Rx4 PC3-10600R-9 Kit

Network Ports

Description	Part Number	1 GbE Ports	10 GbE Ports	IB Ports
HP X9320 1GbE Performance Block	QP330A	8	0	0
HP X9320 10GbE Performance Block	QP331A	4	2	0
HP X9320 IB Performance Block	QP332A	4	0	2

NOTE: Each File Serving Node comes with 4-1 GbE ports for connectivity to the private cluster network all other ports are intended for connectivity to the customer data network.

Storage Controller

File Serving Node storage controllers:

External storage HBA:	(2) HP SC08e SAS HBA
Internal storage controller:	(1) Embedded P410i Smart Array Controller
Internal storage RAID level:	1

Disk Drives	(2) HP 300GB 6G SAS 10K SFF DP ENT HDD
Power / Cooling	Redundant hot plug replaceable power supply and fan modules in all servers. 2 high voltage power cords (IEC C13 to C14) standard per server. **NOTE:** X9000 series Network Storage Systems are primarily connected to PDUs in racks, so they ship standard with only PDU C-14 to C13 power cord(s). However, alternative power cords and power connectivity options exist. See the ProLiant DL Server and P2000 array QuickSpecs on hp.com for additional information on available options.

Capacity Block Starter Kit

The Capacity Block Starter Kit is the primary storage building block for the system. A X9320 system can be configured with 1 or 2 starter kits. Each Capacity Block Starter Kit includes two active-active controllers, two 12 drive LFF disk enclosures and 24 HDD's. There are three starter kit models. The difference in the kits is the models of HDD's included:

Controller:	HP P2000 G3 SAS MSA Array System Controller http://h18000.www1.hp.com/products/quickspecs/13551_div/13551_div.html
Number of controllers:	2
Controller cache:	2 GB per controller
RAID levels:	5 / 6 (based on model)
LUNs:	512

Standard Features – HP X9320 Network Storage System

Maximum LUN size:	16TB
Host interconnect:	4x 6Gb SAS host ports per controller

Disk Drives

Capacity Block Starter Kit models include 2-12 drive disk enclosures with 24 LFF HDDs.
HDD Model options:

HP P2000 600GB 6G SAS 15K LFF (3.5 inch) DP ENT HDD	AP860A
HP P2000 1TB 6G SAS 7.2K LFF (3.5 inch) DP MDL HDD	AP861A
HP P2000 2TB 6G SAS 7.2K LFF (3.5 inch) DP MDL HDD	AW555A

Power / Cooling

Redundant hot plug replaceable power supply and fan modules in all disk enclosures.
2 high voltage power cords (IEC C13 to C14) standard per disk enclosure.

NOTE: X9000 series Network Storage Systems are primarily connected to PDUs in racks, so they ship standard with only PDU C-14 to C13 power cord(s). However, alternative power cords and power connectivity options exist. See the ProLiant DL Server and MSA array QuickSpecs on hp.com for additional information on available options.

Storage Capacity

Capacity Block Starter Kit Storage Capacity

- 10.1 TB usable capacity,14.4 TB raw capacity with 24 600GB 6G SAS HDDs
- 14.25 TB usable capacity,24 TB raw capacity with 24 1TB 6G ML SAS HDDs
- 28.50 TB usable capacity,48 TB raw capacity with 24 2TB 6G ML SAS HDDs

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Management Features

The Management Server provides a single interface for administration of X9000 storage systems and clusters and can be accessed via web browser.

HP ProLiant Onboard Administrator, powered by the Integrated Lights-Out 3 management processor simplifies server setup, health monitoring, power and thermal control, and lights-out remote administration. It functions without additional software, and can be accessed from any location via a web browser.

For additional information, please see: www.hp.com/go/iLO

Management Server

The Management Server provides services used by the storage system to maintain cluster membership, quota management, file namespace management and a web based graphical user interface. HP X9000 Network Storage Systems require a Management Server to support cluster operations. The Management Server software runs on one or more of the cluster file serving nodes. A dedicated Management Server is no longer required or recommended.

The Management Server software is included with all X9000 systems and is automatically configured during installation More than one Management Server can be configured for high availability purposes. You cannot configure or operate an X9000 cluster without a Management Server.
NOTE: The dedicated Management Server is no longer required or recommended. The dedicated Management Server (AW547C) will continue to be sold separately to support legacy and exception requirements.

Standard Features – HP X9320 Network Storage System

Rack Airflow Requirements	**Rack 10000 series Cabinets** The increasing power of new high-performance processor technology requires increased cooling efficiency for rack-mounted servers. The 10000 Series Racks provide enhanced airflow for maximum cooling, allowing these racks to be fully loaded with servers using the latest processors. **CAUTION:** If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment: Front and rear doors: If your 42U server rack includes closing front and rear doors, you must allow 5,350 sq cm (830 square inches) of hole evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation). Side: The clearance between the installed rack component and the side panels of the rack must be a minimum of 7 cm (2.75 inches) **CAUTION:** Always use blanking panels to fill all remaining empty front panel U-spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage. **NOTE:** For additional information, refer to the Setup and Installation Guide or the Documentation CD provided with the server, or to the server documentation located in the Support section at the following URL: http://h18000.www1.hp.com/products/servers/proliantdl145/index.html
Telco and Threaded Hole Rack Support	Telco Rack Kit: **NOTE:** Support for all 2-post Telco racks requires the use of the standard rack kit and an additional option kit from Rack Solutions: http://www.racksolutions.com/hp

Configuration Instructions - HP X9320 Network Storage System

Introduction

Configuring and ordering an HP X9320 Network Storage System is an easy process. The ordering tools are pre-populated with built-in rules to ensure your X9320 system is properly configured. You will only need to specify the Performance Block model based on the customer network connectivity, the number and type of capacity blocks, and any system options required and the ordering system will build the appropriate X9320 storage solution.

HP X9320 Series Network Storage Systems

Common Specifications	OS and File System	RedHat Enterprise Linux 5.5 64-bit X9000 File Serving Software 5.6 with licensing for all features including: - Snapshots,file based (coming soon) - Snapshots, array based - Data Retension/WORM (coming soon) - Policy Based Tiering - Continuous Remote Replication - Data Rebalancing
	Protocol Support	NFS, CIFS, HTTP, HTTPS, FTP, FTPS and NDMP
	Optical Drive	DVD-RW standard for QuickRestore disaster recovery
	Remote Access	HP ProLiant Integrated Lights-Out 3 with Advanced Pack license
	Performance Block Platform	HP ProLiant DL380 G7 http://h18004.www1.hp.com/products/quickspecs/13595_div/13595_div.html
	Capacity Block Platform	HP P2000 G3 Modular Smart Array Systems http://h18000.www1.hp.com/products/quickspecs/13551_div/13551_div.html
	Form Factor (Configurable)	From 8U (24 HDD models) To 20U (96 HDD models)
	Factory Racking	Flexible factory racking is offered for the X9320. Factory racking for X9320 systems with other HP products such as additional X9000 series systems, HP ProLiant Servers and HP storage arrays is available based on the configuration. NOTE: #0D1 will appear after the part number on the sales order if HP factory integration is supported.

Options - HP X9320 Network Storage System

There are three major components used in an X9320 system:
HP X9320 Performance Block
HP X9320 Capacity Block Starter Kit
HP X9320 Capacity Block Expansion Kit

Step 1 Choose a Performance Block Model

The difference between the three Performance Block models is the public network interface. The model ordered must have the network interface required to connect the X9320 system to the customer's network.

HP X9320 1GbE Performance Block   QP330A
Includes two File Serving Nodes Includes 4- 1GbE ports (HP NC364T) per node for connectivity to the customer's network
NOTE: All X9320 Performance Block models include 4-1 GbE ports per node for connectivity to the X9000 cluster network

HP X9320 10GbE Performance Block   QP331A
Includes two File Serving Nodes
Includes 2 -10GbE ports (NC550SFP) per node for connectivity to the customer's network
NOTE: All X9320 Performance Block models include 4-1 GbE ports per node for connectivity to the X9000 cluster network

HP X9320 IB Performance Block   QP332A
Includes two File Serving Nodes
Includes 2 - Infiniband ports (HP IB 4X QDR CX-2 PCIe G2 Dual Port HCA) per node for connectivity to the customer's network
NOTE: All X9320 Performance Block models include 4-1 GbE ports per node for connectivity to the X9000 cluster network

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Step 2 Choose the Capacity Block Starter Kit(s) (minimum 1, maximum 2)

The Capacity Block Starter Kit is the primary storage building block for the system. A X9320 system can be configured with 1 or 2 starter kits. There are three starter kit models to choose from. The difference in the kits is the model of HDD's included. Starter kit s do not have to match. Different starter kits can be used in a system.

HP X9320 24TB Capacity Block Starter Kit   QP333A
Includes two array controllers, 2-12 bay LFF drive enclosures with 24 7200 1TB ML SAS drives

HP X9320 48TB Capacity Block Starter Kit   QP335A
Includes two array controllers, 2-12 bay LFF drive enclosures with 24 7200 2TB ML SAS drives

HP X9320 14.4 Capacity Block Starter Kit   QP337A
Includes two array controllers, 2-12 bay LFF drive enclosures with 24 15K, 600GB Ent SAS drives

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Options - HP X9320 Network Storage System

Step 3 Choose the Capacity Block Expansion Kit(s) (minimum 0, maximum 2)

The Capacity Block Expansion Kits are optional storage used to increase the system capacity. One expansion kit can be added to each starter kit. The HDD model of the expansion kit must match the HDD model of the starter kit. A X9320 system can be configured with 0, 1 or 2 expansion kits. There are three expansion kit models. The kits differ by the model of HDD's included.

HP X9320 24TB Capacity Block Exp Kit   QP334A
Includes 2-12 bay LFF drive enclosures with 24 7200 1TB ML SAS drives

HP X9320 48TB Capacity Block Exp Kit   QP336A
Includes 2-12 bay LFF drive enclosures with 24 7200 2TB ML SAS drives

HP X9320 14.4 Capacity Block Exp r Kit   QP338A
Includes 2-12 bay LFF drive enclosures with 24 15K, 600GB Ent SAS drives

Step 4 Choose the System Options

The following options are available for X9320 Network Storage Systems. For more information on X9000 compatibility with HP and non-HP hardware and software please visit the Single Point of Connectivity Knowledge (SPOCK) website:
http://h20272.www2.hp.com/

Add a Rack

The X9300 and X9320 support flexible factory rack-mounting options in either a standard 42U cabinet based on the HP 10000 G2 Series Rack or a choice of 42U extended, 36U and 22U heights.

The default rack selection for the X9300 and X9320 is the HP Universal Rack 10642 G2 Shock. The following options are automatically added to the CONFIGURATION, BY THE HP CONFIGURATORS (such as Watson or SBW)), when factory rack integration is selected:

- TFT (Keyboard with integrated mouse and 1U 17 inch flat panel display)
- KVM server console switch
- KVM IP Console 8-pack interface adapter
- (2) HP ProCurve E2910al-48G Switch W/ 10-GbE Interconnect Kit

NOTE: Factory rack integration should b selected unless a plan has been established for integrating the HP X9000 Network Storage System into the customer's existing environment. If a rack is not included with the order a network switch will not be included for the internal cluster network. A switch will be required and should be added to the order unless it will be provided by the customer.

Add 10 GbE Cables and Transceivers

HP X9320 Network Storage Systems with 10 GbE NIC's require Direct Attach Cables (DAC) for copper environments or fiber transceivers and cables for fiber-optic environments to connect to the facility network. There are multiple options and they must match the facility networking. If the customer does not already have the needed DAC's or fiber transceivers available at their site, then the correct ones should be selected. Up to four 10 GbE connections are supported per X9320. Without at least two DAC's or fiber transceivers per X9320 you will not be able to connect the system to the facility network.

For more information please see the HP NC550SFP Dual Port 10GbE Server Adapter Quickspecs
http://h18000.www1.hp.com/products/quickspecs/13555_na/13555_na.pdf.

Options - HP X9320 Network Storage System

Spare Disk Drives

P2000 LFF (3.5")   Large Form Factor (LFF) P2000 Hard Drives
                       SAS Drives 3.5", Hot Plug
                       HP P2000 600GB 6G SAS 15K 3.5in ENT HDD   AP860A
                       SAS Drives 3.5", Hot Plug
                       HP P2000 2TB 6G SAS 7.2K 3.5in MDL HDD   AW555A
                       SATA Drives 3.5", Hot Plug
                       HP P2000 1TB 6G SAS 7.2K 3.5in MDL HDD   AP861A

Add a Power Cord

HP X9000 Network Storage Systems come standard with at least one rack (IEC-IEC) PDU power cord. If you wish to use wall outlet power instead, you can choose a country- or region-specific power cord.

X9300 / X9320   HP 1.83m 10A C13-UL US Power Cord   AF556A
                     HP 1.83m 10A C13 China Power Cord   AF557A
                     HP 2.5m 10A C13-Argentina Power Cord   AF558A
                     HP 1.83m 10A C13 Brazil Power Cord   AF559A
                     HP 1.83m 10A C13 Korea Power Cord   AF560A
                     HP 1.83m 10A C13 Taiwan Power Cord   AF561A
                     HP 2.0m 10A C13 India Power Cord   AF562A
                     HP 2.5m C13 AU/NZ Power Cord   AF569A
                     HP 1.83m 10A C13 CH Power Cord   AF565A
                     HP 1.83m 10A C13 DK Power Cord   AF566A
                     HP 1.83m 10A C13 EU Power Cord   AF568A
                     HP 1.83m 10A C13 IL Power Cord   AF564A
                     HP 1.83m C13 IT/CL Power Cord   AF571A
                     HP 2m C13 Japan Power Cord   AF572A
                     HP 1.83m 10A C13 UK Power Cord   AF570A
                     HP 2.5m C13 ZA/IN Power Cord   AF567A
                     HP 1.83m 10A C13 NBR14136 Brazil Power Cord   AF591A

Specifications - HP X9320 Network Storage System

X9320 System Environmental Specifications

Specification	MinSystem - 1 Perf Block, 1 Cap Block Starter Kit:	MaxSystem - 1 Perf Block, 2 CB Starter Kits, 2 CB Exp Kits:	Each Perf Block	Each Cap Block Starter Kit	Each Cap Block Exp Kit	2 - Net Switches	Mgmt Server (Optional)
Current - Amps (240VAC)	12	22.2	8.6	3.4	3.4	2.2	2.1
Max Power - Watts	2396	4640	1,648	748	748	210	504
Max Thermal - btu/hr	8181	15843	5,627	2,554	2554	717	1,720
Weight - lbs	211	496	110	101	92	22	35
Weight - kg	96	226	50	46	42	10	16
Form Factor - Units	8U	20U	4U	4U	4U	2U	1U

Standard Features – HP X9720 Network Storage System

HP X9700 Blade Server	Blade Server Platform	HP ProLiant BL460c Generation 7 (G7) http://h18004.www1.hp.com/products/quickspecs/12518_na/12518_na.html
	Processor	Two Quad core Intel® Xeon® Processors E5620 (2.40 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)
	Memory	24GB (6 x 4GB) HP 4GB 1Rx4 PC3-10600R-9 Memory Kit
	Expansion Slots	Mezzanine Slot 1 - HP Smart Array P700M/512 Controller, external storage interface
		Mezzanine Slot 2 - Open
	Network Ports	Integrated NC553i Dual Port FlexFabric 10Gb Adapter provides 2 - 1/10 GbE ports exposed through the Server Chassis Virtual Connect modules
	Internal Storage	Two Internal HP 300GB 10K 6G 2.5 SAS DP HDD

HP X9700 Server Chassis	Server Chassis Platform	C7000 c-Class Enclosure
	Capacity	16 Blade Server Bays, 8 Interconnect Bays
	Storage Ports	HP 3Gb SAS Switch BladeSystem Dual Pack, bays 3&4, 8-4x ports (32 SAS lanes) per module, 16-4x ports (64 SAS lanes) total
	Network Ports - External	2 - HP Z BLc VC Flex-10 Enet Module,VCM, bays 1&2, 8 - 10GbE ports per module, 16 - 10 GbE, ports total
	Form Factor	10U

HP X9700 Capacity Block (82TB)	Storage Controller	MSA2060 Storage Array, Active-Active Controllers, 12 HDD Enclosure
	Storage	70 HDD SAS/SATA Enclosure
	Drives	82 HP 1TB 7.2k DP MDL SAS HDD (461137-B21), Hot Swappable
	RAID Configuration	RAID6 8+2, 2 Universal spares
	Capacity	82TB Raw, 60TB Useable
	Form Factor	7U

HP X9700 164TB Capacity Block	Storage Controller	MSA2060 Storage Array, Active-Active Controllers, 12 HDD Enclosure
	Storage	70 HDD SAS/SATA Enclosure
	Drives	82 HP 2TB 7.2k DP MDL SAS HDD (604081-001), Hot Swappable
	RAID Configuration	RAID6 8+2, 2 Universal spares
	Capacity	164TB Raw, 120TB Useable
	Form Factor	7U

HP X9720 Network Storage Sys Base Rack	Rack Model	HP 10642 Universal G2 Rack (42U)
		For more information including details on rack stabilization options: http://h18004.www1.hp.com/products/servers/proliantstorage/racks/10000series-g2/index.html

Standard Features – HP X9720 Network Storage System

	PDU's	4, model varies by region and choice of single phase or three phase, HP 32A HV Core Only Corded PDU (252663-B33) HP 24A HV Core Only Corded PDU (252663-D74) HP 40A HV Core Only Corded PDU (252663-D75) HP 3PH 24A NA Mod PDU (AF512A) HP 3PH 16A INTL Mod PDU (AF513A)
	TFT	Automatically added to the rack by the ordering system based on the region: AZ870A HP TFT7600 KVM Console US Kit AZ871A HP TFT7600 KVM Console UK Kit AZ872A HP TFT7600 KVM Console GR Kit AZ873A HP TFT7600 KVM Console FR Kit AZ874A HP TFT7600 KVM Console Itl Kit AZ875A HP TFT7600 KVM Console SP Kit AZ876A HP TFT7600 KVM Console Den Kit AZ877A HP TFT7600 KVM Console Nw Kit AZ878A HP TFT7600 KVM Console SE-FI Kit AZ879A HP TFT7600 KVM Console Swi Kit AZ880A HP TFT7600 KVM Console Port Kit AZ881A HP TFT7600 KVM Console Bel Kit AZ882A HP TFT7600 KVM Console JPN Kit AZ883A HP TFT7600 KVM Console Rus Kit AZ884A HP TFT7600 KVM Console Intl Kit
	Network Ports - Internal Cluster Only	2 - HP ProCurve Switch 2810, 24 1GbE Ports each, 48 1GbE ports total, Internal cluster connectivity
	Form Factor	42U
HP X9700 Expansion Rack	Rack Model	HP 10642 Universal G2 Rack (42U), Added to orders of more than 4 Capacity Blocks For more information including details on rack stabilization options: http://h18004.www1.hp.com/products/servers/proliantstorage/racks/10000series-g2/index.html
	PDU's	4, model varies by region and choice of single phase or three phase, HP 32A HV Core Only Corded PDU (252663-B33) HP 24A HV Core Only Corded PDU (252663-D74) HP 40A HV Core Only Corded PDU (252663-D75) HP 3PH 24A NA Mod PDU (AF512A) HP 3PH 16A INTL Mod PDU (AF513A)
	Form Factor	42U

Standard Features – HP X9720 Network Storage System

Management Features	The Management Server provides a single interface for administration of X9000 storage systems and clusters and can be accessed via web browser.

HP ProLiant Onboard Administrator, powered by the Integrated Lights-Out 3 management processor simplifies server setup, health monitoring, power and thermal control, and lights-out remote administration. It functions without additional software, and can be accessed from any location via a web browser.

For additional information, please see: www.hp.com/go/iLOHP |
| Management Server | All X9000 Network Storage Systems require a Management Server to support cluster operations. The Management Server software runs on one or more Blade Servers also acting as a file serving nodes. a dedicated Management Server is no longer required or recommended.

The Management Server software is included with all X9000 systems and is automatically configured during installation. More than one Management Server can be configured for high availability purposes. You cannot configure or operate an X9000 cluster without a Management Server.
NOTE: The dedicated Management Server (AW547C) is no longer required or recommended. The dedicated Management Server will continue to be sold separately to support legacy and exception requirements |

Rack Airflow Requirements	**Rack 10000 series Cabinets**
The increasing power of new high-performance processor technology requires increased cooling efficiency for rack-mounted servers. The 10000 Series Racks provide enhanced airflow for maximum cooling, allowing these racks to be fully loaded with servers using the latest processors.

CAUTION: If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment:

Front and rear doors: If your 42U server rack includes closing front and rear doors, you must allow 5,350 sq cm (830 square inches) of hole evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation).
Side: The clearance between the installed rack component and the side panels of the rack must be a minimum of 7 cm (2.75 inches)

CAUTION: Always use blanking panels to fill all remaining empty front panel U-spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.

NOTE: For additional information, refer to the Setup and Installation Guide or the Documentation CD provided with the server, or to the server documentation located in the Support section at the following URL: http://h18000.www1.hp.com/products/servers/proliantdl145/index.html |

Telco and Threaded Hole Rack Support	Telco Rack Kit:
NOTE: Support for all 2-post Telco racks requires the use of the standard rack kit and an additional option kit from Rack Solutions: http://www.racksolutions.com/hp

Configuration Instructions - HP X9720 Network Storage System

Introduction

Configuring and ordering an HP X9720 Network Storage System is a simple process. The ordering tools are pre-populated with built-in rules to ensure your X9720 system is properly configured. You will only need to specify the number of Blade Servers, the number and type of Capacity Blocks, and any system options required. The ordering system will build the appropriate X9720 storage solution.

HP X9720 Series Network Storage Systems

Common Specifications	OS and File System	Red Hat Enterprise Linux 5.5 64-bit X9000 File Serving Software 5.6 with licensing for all features including: - Snapshots, file based (coming soon) - Data Retension/WORM (coming soon) - Policy Based Tiering - Continuous Remote Replication - Data Rebalancing
	Protocol Support	NFS, CIFS, HTTP, HTTPS, FTP, FTPS and NDMP
	Optical Drive	DVD-RW standard for QuickRestore disaster recovery
	Remote Access	HP ProLiant Integrated Lights-Out 3 with Advanced Pack license
	Server Blade Platform	HP ProLiant BL460c G7 http://h18004.www1.hp.com/products/quickspecs/12518_na/12518_na.html
	Capacity Block Platform	HP X9000 Smart Array Systems
	Form Factor (Configurable)	From 1 to 2 42U racks based on storage configuration
	Factory Racking	All X9720 systems ship factory racked. Factory racking of X9720 systems with other HP products including other X9000 series systems, HP ProLiant Servers and HP storage arrays is not supported.

There are three configurable components used in a X9720 system:
HP X9700 Blade Server
HP X9700 82TB Capacity Block
HP X9700 164TB Capacity Block

In addition to the three configurable components all new systems automatically include a base rack and a performance chassis. Systems with more than 4 capacity blocks also automatically include an expansion rack.

Step 1 Select the Power Configuration (Single Phase or Three Phase)

Two power configurations are available for the X9720, single phase or three phase. The order default is single phase. The X9720 power configuration must match the facility power configuration. The facility power requirements are detailed in Step 5. PDU's are included with the system and are based on the order region.

Configuration Instructions - HP X9720 Network Storage System

Step 2 Choose the Number of 82TB Capacity Blocks Required (min 0, max 8)

The minimum system includes (1) 82TB Capacity Block (AW551A) or (1) 164TB Capacity Block (AW598B).
Storage capacity can be increased by adding 82TB or 164TB Capacity Blocks (AW551A or AW598B). The maximum number of Capacity Blocks is (8). Any combination of 82TB or 164TB Capacity Blocks can be used.

NOTE: For proper operation of the system a minimum of two Performance Blocks are required for each 164TB Capacity Block ordered. The ratio of two Performance Blocks per Capacity Block is also recommended for each 82TB Capacity Block ordered with the system

HP X9700 82TB Capacity Block   AW551A

Step 3 Choose the Number of 164TB Capacity Blocks Required (min 0, max 8)

The minimum system includes (1) 82TB Capacity Block (AW551A) or (1) 164TB Capacity Block (AW598B).
Storage capacity can be increased by adding 82TB or 164TB Capacity Blocks (AW551A or AW598B). The maximum number of Capacity Blocks is (8). Any combination of 82TB or 164TB Capacity Blocks can be used.

Note: For proper operation of the system a minimum of two Performance Blocks are required for each 164TB Capacity Block ordered. The ratio of two Performance Blocks per Capacity Block is also recommended for each 82TB Capacity Block ordered with the system.

HP X9700 164TB Capacity Block   AW598B

Step 4 Select the Number of Blade Servers Required (Min 2, Max 16)

The default configuration includes 2 Blade Servers both configured as file serving nodes and as an HA pair. One or more of the servers would also be configured to run the Management Server. The maximum number of Blade Servers is (16). It is recommended all Blade Servers be ordered in pairs for HA configuration.

HP X9700 Blade Server   AW550C

Options - HP X9720 Network Storage System

Step 5 Add the System Options

The following options are available for X9720 Network Storage Systems. For more information on X9000 compatibility with HP and non-HP hardware and software please visit the Single Point of Connectivity Knowledge (SPOCK) website: http://h20272.www2.hp.com/

Add 10 GbE Cables and Transceivers

Network connectivity for the X9720 is provided by redundant HP Virtual Connect Flex-10 10Gb Ethernet Modules. 10 GbE connections require either Direct Attach Cable (DAC) for copper environments or fiber transceivers and cables for fiber-optic environments. Typically fiber-optics are used for 10 GbE connectivity.. The type of fiber transceiver depends on the facility network setup. If the facility does not already have the required transceivers available at the site, then the correct transceivers should be ordered, options include:

- HP BLc 10Gb SR SFP+ Opt (455883-B21)
- HP BLc 10Gb LR SFP+ Opt (455886-B21)
- HP BLc 10Gb LRM SFP+ Opt (455889-B21)
- HP BLc VC 1Gb SX SFP Opt Kit (453151-B21)
- HP BLc VC 1Gb RJ-45 SFP Opt Kit (453154-B21)
  NOTE: One 453154-B21 is included with each Virtual Connect module for system interconnect purposes. Each Virtual Connect module can hold an additional 6 transceivers. At least two additional transceivers are required, 1 Per VC Module, to connect the system to the site network.

For more information on HP Virtual Connect Flex-10 10Gb Ethernet Module networking and related connectivity options see the QuickSpecs: http://h18004.www1.hp.com/products/quickspecs/13127_div/13127_div.html

Add Spare Disk Drives

X9720 LFF (3.5")	Large Form Factor (LFF) X9720 Hard Drives	
	HP 1TB 7.2k DP MDL SAS (Hot Plug)	461137-B21
	HP 2TB 7.2k DP MDL SAS 1y Wty HDD (Hot Plug)	604081-001

X9720 System Environmental Specifications

Base Rack	Minimum Base Rack Configuration (with 2 Blade Servers, 1 82TB Capacity Block):	Maximum Base Rack Configuration (with 16 Blade Servers, 4 164TB Capacity Blocks):	Each Blade Server	Each 82TB Capacity Block	Each 164TB Capacity Block
Current - Amps (240VAC)	10.7	50.7	0.9	6.8	8.6
Max Power - Watts	2,450	11,563	200	1,553	1,967
Typical Power - Watts	-	-	-	-	1,070
Max Thermal - btu/hr	8,357	39,447	682	5,297	6,710
Weight - lbs	1,159	2,459	14	368	368
Weight - kg	526	1,115	6	167	167

Options - HP X9720 Network Storage System

Expansion Rack	Minimum Exp Rack Configuration (with 1 82TB Capacity Block):	Maximum Exp Rack Configuration (with 4 164TB Capacity Blocks):	Each Blade Server	Each 82TB Capacity Block	Each 164TB Capacity Block
Current - Amps (240VAC)	6.8	34.2	0.9	6.8	8.6
Max Power - Watts	1,553	7,866	200	1,553	1,967
Typical Power - Watts	-	-	-	-	1,070
Max Thermal - btu/hr	5,297	26,839	682	5,297	6,710
Weight - lbs	773	1,877	14	368	368
Weight - kg	351	852	6	167	167

Facility Power Requirement (Per Rack, available under raised floor)	North America/Japan:	4 x 50A (40A useable) , 200-240VAC, Single Phase Circuits
		Facility Power Receptacle: Non-NEMA CS8264C 50A or equivalent Or 4 x 30A, Three Phase 200-240V Circuits Facility Power Receptacle: NEMA L15-30R
	International:	4 x 32A , 200-240VAC, Single Phase Circuits
		Facility Power Receptacle: IEC60309 2 pole, 3 wire, 200-240VAC, 32A Or 4 x 16A , 380-415v 3Ø Wye, Three Phase Circuits Facility Power Receptacle: IEC60309 4 pole, 5 wire, 220/380, 240/415V
		NOTE: Some X9720 configurations can be supported with only 2 power circuits per rack while still maintaining power redundancy. The base rack can support up to 4 Blade Servers and up to 2 capacity blocks powered with 2 circuits. The expansion rack can support up to 4 capacity blocks powered with 2 circuits. Expansion beyond these limits requires the addition of 2 power circuits to the appropriate rack.

Standard Features - HP X9300 Network Storage System

Gateway File Serving Node	HP ProLiant DL 380 Generation 7 (G7) http://h18004.www1.hp.com/products/quickspecs/13595_div/13595_div.html
Processor / Cache	Two Intel® Xeon® Processor E5620 (2.40 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)
Memory	48GB (12 x 4GB) HP 4GB 1Rx4 PC3-10600R-9 Registered

Expansion Slots	Slot number	Bus Type	Connector width	Bus number	Form factor	Notes
	1	X8 PCI-e	X16	7	FL/FH	
	2	X4 PCI-e	X8	10	HL/FH	
	3	X4 PCI-e	X8	13	HL/FH	
	4	X8 PCI-e	X16	16	FL/HH	Reserved for 10GbE or IB NIC
	5	X4 PCI-e	X8	20	HL/HH	
	6	X4 PCI-e	X8	23	HL/HH	

Network Ports	Model	1 GbE Ports	10 GbE Ports	Infiniband Ports
	HP X9300 1GbE Network Storage Gateway (AW539C)	8	0	0
	HP X9300 10GbE/IB Network Storage Gateway (AW540C)	4	2 or	2

NOTE: Each Gateway comes with 4-1 GbE ports for connectivity to the private cluster network. All other ports are intended for connectivity to the customer data network.

Power / Cooling	Redundant hot plug replaceable power supply and fan modules in all servers and disk enclosures. 2 high voltage power cords (IEC C13 to C14) standard per server and disk enclosure. **NOTE:** X9000 series Network Storage Systems are primarily connected to PDUs in racks, so they ship standard with only PDU C-14 to C13 power cord(s). However, alternative power cords and power connectivity options exist. See the ProLiant DL Server and MSA array QuickSpecs on hp.com for additional information on available options.

HP X9300 Network Storage Gateways are designed to be connected to a SAN or storage array by adding a recommended Fibre Channel or SAS HBA, or by using an iSCSI initiator.

Host Bus Adapter (HBA) Support	HBA selection is left as your choice based on existing infrastructure and/or desired array support. Please see compatible HBAs listed in the 'Options' section below. **NOTE:** See the following URL for additional information about Fibre Channel HBAs: http://h18006.www1.hp.com/storage/saninfrastructure/hba.html

Standard Features - HP X9300 Network Storage System

HP SAN / Array Support	HP 3PAR Utility Storage	http://h18006.www1.hp.com/storage/highlights/3par.html NOTE: Array compatibility, does not include feature integration
	HP LeftHand P4000 Storage Systems	http://h18006.www1.hp.com/storage/highlights/lefthandsans.html NOTE: Array compatibility, does not include feature integration
	HP P2000 (SAS)	http://h18006.www1.hp.com/storage/disk_storage/msa_diskarrays/index.html NOTE: Array compatibility, includes integrated snapshot feature
	HP Enterprise Virtual Array (EVA)	http://h18006.www1.hp.com/products/storageworks/eva/index.html NOTE: Array compatibility, does not include feature integration

HP X9300 Network Storage Gateways and third-party storage arrays/SAN interoperability statement

HP acknowledges that some third-party storage arrays/SAN environments have been successfully tested for interoperability with X9300 Gateway products. HP will provide support for the HP Gateway products when connected to third-party storage arrays, but HP will not provide support on third-party storage arrays/SAN unless specifically called out in an HP Support contract. HP may support the third-party SAN environment attached to HP Gateway product(s) when specifically under contract with HP, but that SAN coverage does not extend to supporting the SAN connectivity of the third-party array.

If you call HP Services and the problem is determined to be caused by a third-party storage array or the storage arrays' connectivity into a non-HP supported SAN, you will be directed to contact the third-party storage array supplier for support.

Management Features	The Management Server provides a single interface for administration of X9000 storage systems and clusters and can be accessed via web browser.
	HP ProLiant Onboard Administrator, powered by the Integrated Lights-Out 3 management processor simplifies server setup, health monitoring, power and thermal control, and lights-out remote administration. It functions without additional software, and can be accessed from any location via a web browser.
	For additional information, please see: www.hp.com/go/iLO
Management Server	The Management Server provides services used by the storage system to maintain cluster membership, quota management, file namespace management and a web based graphical user interface. HP X9000 Network Storage Systems require a Management Server to support cluster operations. The Management Server software runs on one or more of the cluster file serving nodes. A dedicated Management Server is no longer required or recommended.
	The Management Server software is included with all X9000 systems and is automatically configured during installation More than one Management Server can be configured for high availability purposes. You cannot configure or operate an X9000 cluster without a Management Server. NOTE: The dedicated Management Server is no longer required or recommended. The dedicated Management Server (AW547C) will continue to be sold separately to support legacy and exception requirements.
X9300 Management Server	The Management Server provides services used by the storage system to maintain cluster membership, quota management, file namespace management and a web based graphical user interface. HP X9000 Network Storage Systems require a Management Server to support cluster operations. The Management Server software can be run on a dedicated server (AW547C) or the software can be run on one or more of the clusters file serving nodes.

Standard Features - HP X9300 Network Storage System

A preconfigured dedicated Management Server is automatically added to all orders but can be removed if not needed. If the customer has an operating X9000 cluster with one or more Management Servers an additional server is not required. More than one Management Server (dedicated, non-dedicated or combination) can be configured for high availability purposes. You cannot configure or operate an X9000 cluster without a Management Server (dedicated or non-dedicated)

NOTE: The dedicated Management Server (AW547C) is sold separately. The non-dedicated Management Server software is included with all X9000 systems.

Server Platform	HP Proliant DL 360 G7
Form factor	1U rack optimized
NIC Ports	6 x 1GbE
Power Supplies	2
Remote management	HP Integrated Lights Out (iLO3)

Rack Airflow Requirements	**Rack 10000 series Cabinets**

The increasing power of new high-performance processor technology requires increased cooling efficiency for rack-mounted servers. The 10000 Series Racks provide enhanced airflow for maximum cooling, allowing these racks to be fully loaded with servers using the latest processors.

CAUTION: If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment:

Front and rear doors: If your 42U server rack includes closing front and rear doors, you must allow 5,350 sq cm (830 square inches) of hole evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation).
Side: The clearance between the installed rack component and the side panels of the rack must be a minimum of 7 cm (2.75 inches)

CAUTION: Always use blanking panels to fill all remaining empty front panel U-spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.

NOTE: For additional information, refer to the Setup and Installation Guide or the Documentation CD provided with the server, or to the server documentation located in the Support section at the following URL: http://h18000.www1.hp.com/products/servers/proliantdl145/index.html

Telco and Threaded Hole Rack Support

Telco Rack Kit:
NOTE: Support for all 2-post Telco racks requires the use of the standard rack kit and an additional option kit from Rack Solutions: http://www.racksolutions.com/hp

Configuration Instructions – HP X9300 Network Storage Gateway

Introduction

Configuring and ordering an HP X9300 Network Storage Gateway is an easy process. The ordering tools are pre-populated with built-in rules to ensure your X9300 order is properly configured. You will only need to specify the Gateway model based on the customer network connectivity, the storage interface cards and any system options required and the ordering system will build the appropriate X9300 Gateway solution.

HP X9300 Series Network Storage Gateways

Common Specifications	OS and File System	RedHat Enterprise Linux 5.5 64-bit
		X9000 File Serving Software 5.6 with licensing for all features including:
		- Snapshots,file based (coming soon)
		- Data Retention/WORM (coming soon)
		- Policy Based Tiering
		- Continuous Remote Replication
		- Data Rebalancing
	Protocol Support	NFS, CIFS, HTTP, HTTPS, FTP, FTPS and NDMP
	Optical Drive	DVD-RW standard for QuickRestore disaster recovery
	Remote Access	HP ProLiant Integrated Lights-Out 3 with Advanced Pack license
	Gateway Platform	HP ProLiant DL380 G7
		http://h18004.www1.hp.com/products/quickspecs/13595_div/13595_div.html
	Form Factor	2U
	Factory Racking	Flexible factory racking is offered for the X9300. Factory racking for X9300 systems with other HP products such as additional X9000 series systems, HP ProLiant Servers and HP storage arrays is available based on the configuration. NOTE: #0D1 will appear after the part number on the sales order if HP factory integration is supported.

Step 1 Choose a Gateway Model

The difference between the two Gateway models is the public network interface. The model ordered must have the network interface required to connect the X9300 to the customer's network.

HP X9300 1GbE Network Storage Gateway   AW539C
Includes 4-1GbE ports (HP NC364T) for connectivity to the customer's network

HP X9300 10GbE/IB Network Storage Gateway   AW540C
Choose between 10GbE and Infiniband high bandwidth connectivity options when configuring the Gateway
Provides 2 10GbE or IB ports for connectivity to the customer's network

NOTE: X9300 Network Storage Gateways should be implemented in pairs with storage shared between the gateways.
NOTE: All Gateway models include 4-1 GbE ports per node for connectivity to the X9000 cluster network.

Configuration Instructions – HP X9300 Network Storage Gateway

Step 2 Select the Storage Interface

NOTE: The X9300 Gateway supports up to two storage interfaces. A minimum of one and maximum of two Host Bus Adapter (FC or SAS) or Network Adapter (ISCSI) MUST be selected when configuring the system. Network ports provided with the Gateway for connectivity to the cluster network and customer's network cannot be used for interfacing with ISCSI storage.

X9300		
Storage Interfaces	HP SC08Ge HBA	488765-B21
	HP SCO8e 6 Gb SAS HBA	614988-B21
	HP 82Q 8Gb Dual Port PCI-e FC HBA	AJ764A
	HP NC364T PCIe 4Pt Gigabit Server Adptr	435508-B21
	HP NC550SFP Dual Port 10GbE Server Adptr	581201-B21

Step 3 Model AW540C Only - Add Network Interface

NOTE: AW540C supports one expansion slot for interfacing the Gateway with the customer's network. One 10GigE or Infiniband interface adapter MUST be selected when ordering.

X9300		
Model AW540C	HP NC364T PCIe 4Pt Gigabit Server Adptr	435508-B21
Network Interface	HP NC550SFP Dual Port 10GbE Server Adptr	581201-B21
	QLogic 4X QDR IB PCI-e G2 HCA	583211-B21
	HP IB 4X QDR CX-2 PCI-e G2 Dual Port HCA	592520-B21
	HP IB 4X DDR CX-2 PCI-e G2 Dual Port HCA	592521-B21

Options– HP X9300 Network Storage Gateway

Step 4 - Choose the System Options

The following options are available for X9300 Network Storage Gateways. . For more information on X9000 compatibility with HP and non-HP hardware and software please visit the Single Point of Connectivity Knowledge (SPOCK) website: http://h20272.www2.hp.com/

Add More Memory

NOTE: All models come with 48GB standard and are expandable up to 72GB with the following option kit.

X9300	**24GB Memory Upgrade (requires 6 of the following DIMMs)**	
	HP 4GB 1Rx4 PC3-10600R-9 Kit	593339-B21
	NOTE: All DDR3 memory option kits consist of one DIMM per kit. The 24GB upgrade requires that a quantity of 6 of this memory kit be ordered (3 DIMMS for each processor)	

Add a Rack

X9300
Rack Options

The X9300 and X9320 support flexible factory rack-mounting options in either a standard 42U cabinet based on the HP 10000 G2 Series Rack or a choice of 42U extended, 36U and 22U heights.

The default rack selection for the X9300 and X9320 is the HP Universal Rack 10642 G2 Shock. The following options are automatically added to the order when factory rack integration is selected:

- TFT (Keyboard with integrated mouse and 1U 17 inch flat panel display)
- KVM server console switch
- KVM IP Console 8-pack interface adapter
- (2) HP E2910al-48G Switch W/10-GbE Interconnect Kit

NOTE: Factory rack integration should b selected unless a plan has been established for integrating the HP X9000 Network Storage System into the customer's existing environment. If a rack is not included with the order a network switch will not be included for the internal cluster network. A switch will be required and should be added to the order unless it will be provided by the customer.

Options– HP X9300 Network Storage Gateway

Add 10 GbE Cables and Transceivers

X930010 GbE Cables and Transceivers

HP X9300 Network Storage Gateways with 10 GbE NIC's require Direct Attach Cables (DAC) for copper environments or fiber transceivers and cables for fiber-optic environments to connect to the facility network. There are multiple options and they must match the facility networking. If the customer does not already have the needed DAC's or fiber transceivers available at their site, then the correct ones should be selected. Up to two 10 GbE connections are supported per Gateway.

Without at least one DAC or fiber transceiver per Gateway you will not be able to connect the system(s) to the facility network. If additional 10 GbE interfaces have been selected for iSCSI storage connectivity then additional DAC's or fiber transceivers (up to two per interface) will need to be included.

For more information please see the HP NC550SFP Dual Port 10GbE Server Adapter Quickspecs
http://h18000.www1.hp.com/products/quickspecs/13555_na/13555_na.pdf

Add a Power Cord

HP X9000 Network Storage Systems come standard with at least one rack (IEC-IEC) PDU power cord. If you wish to use wall outlet power instead, you can choose a country- or region-specific power cord.

X9300 Power Cords

HP 1.83m 10A C13-UL US Power Cord	AF556A
HP 1.83m 10A C13 China Power Cord	AF557A
HP 2.5m 10A C13-Argentina Power Cord	AF558A
HP 1.83m 10A C13 Brazil Power Cord	AF559A
HP 1.83m 10A C13 Korea Power Cord	AF560A
HP 1.83m 10A C13 Taiwan Power Cord	AF561A
HP 2.0m 10A C13 India Power Cord	AF562A
HP 2.5m C13 AU/NZ Power Cord	AF569A
HP 1.83m 10A C13 CH Power Cord	AF565A
HP 1.83m 10A C13 DK Power Cord	AF566A
HP 1.83m 10A C13 EU Power Cord	AF568A
HP 1.83m 10A C13 IL Power Cord	AF564A
HP 1.83m C13 IT/CL Power Cord	AF571A
HP 2m C13 Japan Power Cord	AF572A
HP 1.83m 10A C13 UK Power Cord	AF570A
HP 2.5m C13 ZA/IN Power Cord	AF567A
HP 1.83m 10A C13 NBR14136 Brazil Power Cord	AF591A

Specifications – HP X9300 Network Storage Gateway

Standard Memory
DDR3 Registered (RDIMM) with ECC Capabilities

- 48GB (12 x 4GB)

Maximum Memory

- 36GB per processor, 72GB total (based on use of 4GB modules)

DDR3 memory population guidelines

Installation guidelines for additional memory are summarized below:

- X9300 / X9320
  - There are three (3) channels per processor; six (6) channels total
  - There are three (3) DIMM slots for each memory channel; eighteen (18) total slots
  - Memory channel 1 consists of the three (3) DIMMs that are closest to the processor
  - Memory channel 3 consists of the three (3) DIMMs that are furthest from the processor
- DIMM slots that are white should be populated first
- Use only Registered memory (RDIMMs)
- Do not install DIMMs if the corresponding processor is not installed
- If only one processor is installed in a 2CPU system, only half of the DIMM slots are available

For more information on memory configuration, consult QuickSpecs for the HP ProLiant DL380 G7 Server or the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator

Memory options:

Registered DIMMs (RDIMMs)

HP 4GB 1Rx4 PC3-10600R-9 Kit

NOTE: All DDR3 memory option kits consist of one DIMM per kit.
NOTE: 24GB memory upgrade should be ordered as a quantity of 6 of the memory kits.

X9300 System Environmental Specifications

Specification	Each X9300 Gateway	Network Switches (2)	Mgmt Server (Optional)
Max Current - Amps (240VAC)	4.3	2.2	2.1
Max Power - Watts	824	210	504
Max Thermal - btu/hr	2,813	717	1,720
Weight - lbs	55	22	35
Weight - kg	25	10	16
Form Factor - Units	2U	2U	1U

X9300

HP 750W Power Supply
Part Number - AC 750W PSU   512327-B21

X9300 Management Server

X9300 Management Server

HP X9000 Network Storage Systems require a Management Server to support cluster operations. The Management Server software runs non-dedicated on a file serving node and is configured during installation. A dedicated Management Server is no longer required or recommended. If the customer has an operating X9000 cluster with one or more Management Servers in place an additional server is not required. More than one Management Server can be configured for high availability purposes. You cannot configure or operate an X9000 cluster without a Management Server.

NOTE: The dedicated Management Server is no longer required or recommended. The dedicated Management Server (AW547C) will continue to be sold separately to support legacy and exception requirements.

Specifications		
	OS and X9000 Software	Red Hat Enterprise Linux 5.5 64-bit
		X9000 File Serving Software 5.6 Management Server
	Server Platform	HP ProLiant DL360 G7
		http://h18004.www1.hp.com/products/quickspecs/13598_div/13598_div.html
	Processor	Intel® Xeon® Processor E5506 (2.13 GHz, 4MB L3 Cache, 80 Watts, DDR3-800)
	Memory	8GB (2 x 4GB)
	Internal Controller	Internal Smart Array Controller P410i with internal SAS port for O/S drives
	Internal Storage	2 x 300GB 6G SAS 10K 3.5" ENT hot-plug SFF HDDs (O/S mirror)
	Network Ports	6 x Gigabit Ethernet (2x internal and 4x integrated NIC)
	Management Ports	1 Integrated Lights Out (iLO3) port
	Server Expansion Slots	2 x PCIe
	Form Factor	1U rack optimized

HP X9300 Management Server   AW547C
Includes quad-port 1GbE NIC (HP NC364T) for connectivity to the cluster network

Services and Support, Care Pack Information and Warranty

Warranty

HP X9000 Network Storage Systems come with a standard 3-3-3 warranty (3 years parts exchange, 3 years labor and 3 years onsite, next business day response). Software media is warranted to be free of physical defect for a period of 90 days from delivery.

Services Included with the Product   One year of HP Software Support, standard 9x5 business hours (software advisory and remedial software telephone support, new version license rights, and media and documentation distribution service).

For increased uptime, productivity and ROI -HP Care Pack packaged services for Storage

These days, you need to get the most out of your storage investment-you can't afford not to. When you buy HP storage products and solutions, it's also a good time to think about what levels of service and support you may need. To help take the worry out of deploying, designing, maintaining, and managing your environment, we've designed a portfolio of service options that are as: flexible, reliable and scalable as your storage. Unlike storage-only vendors, we take a holistic approach to your entire environment, bridging storage, servers, blades, software and network infrastructures with our HP Care Pack packaged services for Storage.

Protect your business beyond the warranty

When it comes to robustness and reliability, standard warranties on today's computing equipment have matured just as the technologies have matured. Good news on some fronts-but also a source of potential problems and subsequent consequences that come from depending on standard warranties alone. Standard warranty protects against product defects and some causes of downtime- but not the business. By using a standard approach to warranty uplifts, such as HP Care Pack Services, you can reduce downtime risks and be more certain of operational consistency for both mission-critical and standard business computing. Simply put, HP Care Pack Services normalize the warranty of combined products - helping you proactively guard against unplanned downtime.

Extending warranties with HP Care Pack Services

For cost-effective upgrading or extending your standard warranty, HP Care Pack Services offer a suite of standard reactive hardware and software support services that are sold separately, or combined as with our Support Plus and Support Plus 24 services. The portfolio also provides a combination of proactive and reactive services, such as Proactive 24 Service and Critical Service. In addition, with HP Proactive Select we offer an innovative approach to service delivery that gives you the flexibility to acquire the specific proactive services you need today, then add services as your needs evolve. HP Proactive Select offers a broad set of technical or per-event type service options - including server, storage, and network, SAN device, and software, environment, installation and education services. Services that you can mix and match depending on your specific requirements, from preliminary planning and equipment delivery to installation, configuration, integration, and testing, through every level of ongoing support. Our HP Care Pack packaged services for Storage assures help when you need it most. And for many products, post-warranty HP Care Pack Services are available when your original warranty has expired.

HP Storage Services: Offering reliability, flexibility and value-just like your storage

HP Storage Services offers a full spectrum of customer care, from technology support to complex migrations to complete completely managed services. HP Factory Express provides customization, integration and deployment services for turnkey solutions. HP Education offers flexible, comprehensive training on storage networking, disk storage systems, and storage software to help your IT staff get the most out of your investments. And HP Financial solutions extend innovative financing and asset management programs to cost-effective buy, manage and eventually retire your older equipment.

HP Storage Services, the trusted business technology experts who manage your technology in action, because when technology works, business works. http://www.hp.com/hps/storage

NOTE: Care Pack Services availability may vary by product and country.

HP Care Pack Services are sold by HP and HP Authorized Service Partners:

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

QuickSpecs

Services and Support, Care Pack Information and Warranty

- Customers purchasing from a commercial reseller can find HP Care Pack Services at
http://www.hp.com/go/lookuptool

Recommended HP Care Pack Services for optimal satisfaction with your HP product.

Recommended Services   **3-Year HP Support Plus 24**
For a higher return on your storage investment, HP Support Plus 24 provides integrated hardware and software support services designed specifically for your technology. Available 24x7, this 3-year combined reactive support option delivers onsite hardware support and over-the-phone software support around-the-clock. Leverage the full strength of HP Technology Services - customers can trust the services professionals at HP to work collaboratively with them, putting our strategic and technical know-how to work across their entire infrastructure.

- Improve uptime with responsive hardware and software services
- Enjoy consistent service coverage across geographically dispersed sites
- Update HP software at a predictable cost
- Increase customer satisfaction-with no interoperability gaps

http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6638EN.pdf

HP Enterprise NAS Implementation Service
For smooth startup and better business outcomes, HP Enterprise NAS Implementation Service - provides implementation of HP Enterprise NAS in your storage environment.

- Allows your IT resources to stay focused on their core tasks and priorities
- Customized implementation to meet your business's configuration requirements
- Reduces implementation time, impact and risk to your storage environment
- Helps ensure a successful implementation for complex deployments by providing HP project management
- Helps you more effectively utilize HP product by knowledge gained from HP Service specialist during onsite delivery of the service

http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA2-9419ENW.pdf

HP Enterprise NAS Upgrade Service
The HP Enterprise NAS Upgrade service provides HP Installation of software upgrades that enables your HP NAS cluster to be upgraded safely and with minimal service interruption. The service provides onsite upgrades for customers not wishing to perform their own upgrade installation.

- Quickly realize productivity gains through professional installation and configuration of upgrades to your HP Enterprise NAS environment
- By engaging HP, customers' IT staff can stay focused on their core tasks and priorities, resulting in less impact to your business.

http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA2-9424ENW.pdf

Services and Support, Care Pack Information and Warranty

Optional HP Care Pack Services that will enhance your HP product experience.

Optional Services

5-Year HP Support Plus 24
As an alternative to our recommended support level, for customers who need to improve uptime with responsive 24x7 product support:

HP Support Plus 24 helps you increase performance and availability with comprehensive, consistent hardware and software services. Working with your IT team, HP Services engineers deliver onsite hardware support and over-the-phone software support around-the-clock 365 days per year. Service coverage encompasses HP products and selected multivendor hardware and software.

In addition, this convenient HP Care Pack packaged service makes software updates available to you at substantial savings.

Choose Support Plus 24 when you need to:

- Improve uptime with responsive hardware and software services available anytime
- Cost-effectively obtain expert 24x7 multivendor hardware and software support
- Enjoy consistent service coverage across geographically dispersed sites
- Update HP and selected third-party software at a predictable cost
- Take advantage of subscription savings on software updates

http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6638EN.pdf

eSupport

HP eSupport is a portfolio of technology-based services that assist you with managing your business environment - from the desktop to the data center.

Support Portal
The HP support portal provides one-stop access to the information, tools and services you need to manage the daily operations of your IT environment.

Features include:

- Access to self-solve tools (including search technical knowledge base)
- Efficient logging and tracking of support cases
- Collaboration with other business and IT professionals
- Download of patches and drivers
- Access to diagnostic tools
- Proactive notification of relevant information

Access to certain features of the support portal requires an HP service agreement. To access the support portal, visit: http://www.hp.com/support

Customer Technical Training

Consider education as an integral part of your strategy to get the best return on investment for your HP storage solution. HP offers a variety of training courses on storage software, networking, archiving and disk storage systems. Our classes are available in many delivery modalities from traditional instructor-led courses at one of our 80 training centers worldwide to on-site training customized to your needs or online. www.hp.com/learn/storage

Services and Support, Care Pack Information and Warranty

HP Services Awards HP Services continues to be recognized for service and support excellence by customers, partners, industry organizations and publications around the world. Recent honors and award reflect our services team's dedications, technical expertise, professionalism and uncompromising commitment to customer satisfaction. For a list of all our awards, please visit:
http://h20219.www2.hp.com/services/cache/433028-0-0-225-121.htm

Additional Services Information For more information about HP Care Pack Services for Storage, please visit:
http://www.hp.com/hps/storage

If you have specific questions, contact your local HP representative. Contact information for a representative in your area can be found at "Contact HP" http://www.hp.com