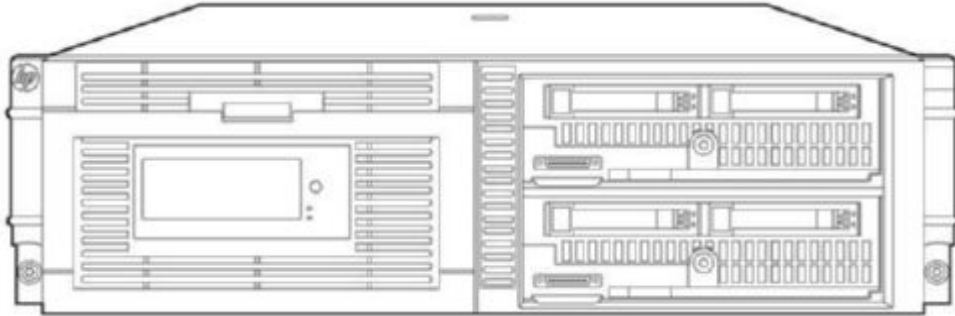


Overview



Many companies are struggling to deal with unstructured data created by the explosive growth of file content, but often without the necessary tools, resources or IT.

The new HP X5000 G2 Network Storage System is ideal for companies with Windows-centric environments to help them control and file unstructured data cost efficiently. The solution, a two node Network Attached Storage (NAS) cluster built on HP BladeSystem technology and integrated into a converged 3U chassis, provides high availability and greater storage density in one platform.

The HP X5000 G2 uses the Windows Storage Server 2008 R2 Enterprise Edition operating system and is designed to deliver a better file serving experience. Windows Storage Server-based products provide advanced storage solutions for small to large businesses. Storage technologies such as file deduplication and an iSCSI software target provide unique storage features for these converged file and block I/O storage appliances. Windows Storage Server 2008 R2 and HP management software provides simplified deployment and management of dual-node, highly-available storage clusters.

HP X5000 G2 Network Storage System At a Glance:

- Comprehensive, highly available Network Attached Storage appliance
 - Two node, active/active mid-range NAS cluster and shared storage in a single system
 - File and block storage capable - CIFS/SMB, NFS, iSCSI, HTTP, FTP, and WebDAV
 - Advanced storage management features - File deduplication, File Classification Infrastructure, Hosted BranchCache, file screening, storage quotas, and storage reporting
 - All inclusive software license
- Simple deployment and management
 - All standard hardware and software pre-installed in system
 - Power On to file serving in less than an hour
 - 100% compatible with Windows IT infrastructure - Active Directory, Distributed File System (namespace and replication), Microsoft System Center and more
 - Can be remotely managed for lights out data center or remote office locations
- Scalable and affordable
 - Capable of supporting 10,000 plus users on a single system - dependent on storage configuration, LUN and RAID settings. User testing performed with Microsoft's File Server Capacity Tool.
 - Up to 48TB of capacity inside the system, expands to over 100TB externally with HP D2000 Disk Enclosures
 - File Deduplication feature can recover up to 40% of disk space
 - File Classification Infrastructure feature provides insight into your data to help you manage it more effectively, reduce costs and mitigate risks based on the data's business value
 - No need to buy additional hardware for anti-virus screening - any Windows Server 2008 R2 compatible anti-virus software runs right on the system
- Built on Windows Server 2008 R2 File Services
 - Enables administrators to provide faster access to files while minimizing the effort required managing distributed data. Users have fast access to information that can be managed more easily by IT pros.
 - Provides organizations with better control over their data using familiar management tools and helps centralize the management of data, which reduces administrative overhead while simultaneously providing insightful information on the file infrastructures.

Features and Benefits

- Highly Available** With features like two nodes, active/active clustering with automatic failover, multipath I/O, RAID data protection, redundant power and cooling, you can be sure that your HP X5000 G2 Network Storage System has no single point of failure and your data will be available when your users need it.
- Advanced Storage Technologies** Windows Storage Server 2008 R2 adds to the functionality of Windows Server 2008 R2 SMB 2.1/CIFS file services by providing advanced storage technologies, including file deduplication and iSCSI block access. Enjoy the benefits of other storage-specific tools like File Classification Infrastructure, Hosted BranchCache, Distributed File System (DFS) Namespace and Replication, Indexed Search, Storage Quotas, File Screening, and Storage Reporting. If you have a mixed file serving environment, you also get the flexibility of heterogeneous file support with support for additional file protocols including NFS, HTTP, FTP, and WebDAV.
- Simplified Deployment and Management** HP X5000 G2 Network Storage System is designed as a turnkey solution that goes from Power On to file serving in under an hour. The Windows Storage Server 2008 R2 Enterprise Edition operating system is pre-installed, which reduces the deployment effort normally associated with a new file server. The appliance form factor also greatly reduces the amount of time to deploy a new file server, removing many management tasks, and minimizing the deployment impact on the organization's file infrastructure. In addition, the Initial Configuration Tasks user interface allows you to quickly configure the two nodes in the cluster configuration from a single console.
- Seamless integration into your Windows environment** It's running Windows, so it integrates with 100% compatibility into your SMB/CIFS file, Active Directory (AD) and Distributed File System (DFS) environments. No need to purchase additional hardware to support antivirus, backup, and storage management for your X5000 G2. Any Windows Server 2008 R2 certified antivirus, backup, and storage management application can be installed directly on the X5000 G2. Also, the Microsoft Management Console (MMC) user interface has a familiar look and feel for Windows server administrators.
- Remote and Enterprise manageability** You can manage and troubleshoot the X5000 G2 Network Storage System remotely for light out data center or remote office locations at both the operating system level (with Remote Desktop or HTTPS) and at the platform level (using Integrated Lights-Out with the included iLO Advanced Pack License). Integrated Lights Out (iLO) and the X5000 G2 Enclosure Management Utility give you complete management capabilities even when you are working remotely. Plug-ins for both Microsoft System Center and HP System Insight Manager support online updates and make management easy, using tools you know.
- Add capacity quickly** Add additional internal storage into open slots or connect up to four D2600 or D2700 Disk arrays externally to expand capacity to greater than 100 TBs.
- HP ProLiant BladeSystem technology** HP X5000 G2 Network Storage Systems use HP BladeSystem BL460c G7 server blades with Quad-core Intel processors for performance and reliability. The BL460 G7 is the world's most popular blade server according to IDC Worldwide Server Tracker, Q110 (by unit volume).
- Built on Windows Server 2008 R2 File Services** Taking advantage of the more efficient file services in Windows Storage Server 2008 R2 positions your organization to handle data more intelligently and minimize costs. As your organization grows, Windows Storage Server 2008 R2 scales to meet increased demand while helping to ensure that the data is highly available

Standard Features

Operating System

Microsoft Windows Storage Server 2008 R2, Enterprise x64 Edition

- 64-bit processing (compatible with 32-bit applications)
- Built on Windows Server 2008 R2 File Services
- Microsoft Cluster Server (MSCS) license included
- HP and Microsoft Initial Configuration Tasks Wizard: Simplifies and accelerates new device deployment by presenting basic system settings on your first boot.
- Simultaneous support for multiple network protocols, including SMB/CIFS, NFS, iSCSI, HTTP, FTP, and WebDAV. For information on NFS account mapping in Windows Storage Server 2008 R2 go to: <http://www.microsoft.com/download/en/details.aspx?id=14205>
- Single-instance Storage (SIS) file deduplication: Recovers up to 40% of disk space by deduplicating files and reducing the amount of redundant data stored ([based on Microsoft internal testing](#)). Identifies duplicate files, stores a single copy of the file in a central repository, and replaces the files with pointers to the file in the SIS common store.
NOTE: the amount of disk space recovered depends on the number of duplicate files and may be higher than 40%.
- Full support of [Volume Shadow Copy Service](#), which creates point-in-time copies (snapshots) of files and folders at predetermined time intervals that can then be accessed from client computers.
- [File Classification Infrastructure](#) (FCI): provides insight into your data to help you manage it more effectively, reduce costs and mitigate risks by providing a built-in solution for file classification, allowing administrators to automate manual processes with predefined policies based on the data's business value. Also provided is an extensible infrastructure upon which ISVs can build end-to-end solutions that enable organizations to perform advanced classification and data management.
 - More FCI information:
 - **Microsoft IT Uses File Classification Infrastructure to Help Secure Personally Identifiable Information:** <http://technet.microsoft.com/en-us/library/hh134225.aspx>
 - **Data Classification Toolkit:** <http://technet.microsoft.com/en-us/library/hh204743.aspx>
 - **File Classification How to Videos:** <http://channel9.msdn.com/tags/File+Classification/>
- [Hosted Branch Cache](#) - Using client/server architecture, Windows 7 client computers can cache content on the local network via the Hosted Cache running on the X5000 G2 Network Storage System. Other clients who need the same content retrieve it directly from the Hosted Cache.
- Search Enhancements: Indexing Service extracts the information from a set of documents and organizes it in a way that makes it quick and easy to access through the Search function for computers running Windows XP, Windows Vista and Windows 7.
- [Distributed File System \(DFS\)](#) Management Console: Updated DFS namespace failover, failback and prioritization controls.
- Distributed File System Replication (DFS-R): State-based, multi-master replication engine that supports replication, scheduling and bandwidth throttling. DFS-R uses a new compression algorithm that efficiently updates files over limited bandwidth networks by replicating only the changes needed to ensure global file consistency.
- File Server Resource Manager (FSRM): Provides both on-demand and scheduled reports detailing storage use, allows administrators to create and manage folder and volume quotas, and permits both name-based screening of files and allowing/disallowing file creation on specified folder trees.
- HP-enhanced File Server Management Console: Features the familiar look and feel of the Microsoft Management Console (MMC).
- Unified Share and Storage Management Snap-in: With a consistent and familiar interface, simplifies management of shares and volumes by unifying SMB and NFS share provisioning, integrating share and storage provisioning, and providing an overview of storage and shares.
- [Print Management](#) Console: Manage multiple printers (license for unlimited printer support)

Standard Features

- from a single console, whether locally or over the WAN
- Unlimited Client Access License (CAL) included
- Supported on Microsoft Systems Center Data Protection Manager 2010
- More information on Windows Storage Server 2008 R2 can be found here:

[Windows Storage Server 2008 R2 Home Page](#)

[Windows Storage Server 2008 R2 Blog](#)

[Windows Storage Server 2008 R2 Technical Reference Page](#)

Windows Storage Server Roles	X5000 G2
Active Directory Certificate Services	No
Active Directory Domain Services	Yes (see note below)
Active Directory Federation Services	No
Active Directory Lightweight Directory Services	Allowed
Active Directory Management Services	No
Application Server	No
DHCP Server	Allowed
DNS Server	No
FAX Server	Enabled
File Services	Enabled
Hyper-V NOTE: Up to four Virtual Machines per X5460sb G2 blade. Requires a fully licensed version of the guest operating system.	Yes
Network Policy and Access Services	No
Print Services	Enabled
Terminal Services	No
UDDI Services	No
Web Server (IIS) NOTE: Used for HTTP/HTTPS and WebDAV access to files only.	Enabled
Windows Deployment Services	No

NOTE: Installing Active Directory on the X5000 G2 is intended for customers that do not have a domain already available in their environment which could be used in setting up the cluster. Installing Active Directory Domain Services on the X5460sb G2 server blades in the HP X5000 G2 Network Storage System requires following different procedures than are standard for setting up this product. This white paper will guide you through those steps.

X5000 G2 System Enclosure

Blades per Enclosure (2) X5460sb G2 (equivalent to HP ProLiant BL460c G7 Server Blade)

Storage Controller P1210m 6 Gbps SAS controller + 1GB FBWC (one per X5460sb G2)

Enclosure Storage Hot Plug MDL SAS Maximum of 16 LFF drives or 36 SFF drives
or
Hot Plug Enterprise SAS

Standard Features

X5460sb G2

Processor

Intel® Xeon® Processor E5620 (2.40GHz/4-core/12MB/80W, DDR3-1066, HT, Turbo 1/1/2/2) Processor

NOTE: HT indicates that the processor model supports Intel® Hyper-Threading Technology.

NOTE: Turbo indicates the maximum potential frequency increment when using Intel® Turbo Boost Technology, with 4, 3, 2, and 1 cores active (on four-core processors) or with 6, 5, 4, 3, 2, and 1 cores active (on six-core processors).

NOTE: DDR3 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed.

NOTE: For the Intel Xeon 5500 and 5600 Series, the letter preceding the model number indicates the performance/wattage of the processor. "X" denotes High Performance/Wattage; "E" denotes Enterprise Performance/Wattage (Mainstream); and "L" denotes Lower Wattage.

Memory

Type	DDR3 Registered (RDIMM)
Standard (RDIMM)	24GB (3 x 8GB), per X5460sb G2 blade
Maximum	96GB (12 x 8GB), per X5460sb G2 blade

Networking

Four 10GbE ports (two per blade) via:
Integrated NC553i Dual Port FlexFabric 10Gb Adapter supporting autosensing 10Gb/1Gb Ethernet, FCoE, Flex-10, TCP/IP offload engine, hardware-based accelerated iSCSI, and iSCSI boot (one per X5460sb G2 blade).

Ten 1GbE ports (Five per blade) via
HP NC365T 4-port Ethernet Server Adapter
HP NC382m Dual Port 1GbE Multifunction BL-c Adapter (Note: only one port available for use)

Integrated Manageability

HP Integrated Lights-Out 3 (iLO 3) management processor

Storage Controller

Type	P410i 256MB cache, no battery (one per X5460sb G2 blade, used for internal 300GB SFF HDDs) Note: internal blade drives are configured as RAID-1 and used only for the operating system and supported applications such as anti-virus. P1210m 6 Gbps SAS controller + 1GB FBWC (one per X5460sb G2 blade, to connect to Enclosure Storage drawer for user data) - support RAID levels 0, 1, 1+0, 5 and 6
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Internal Storage

Hot Plug SAS	2 x 300GB 10K 6G 2.5 SAS DP HDD (per X5460sb G2 blade)
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Graphics

Integrated Matrox G200, 32 MB video memory

Standard Features

Graphics Resolution Supported	Resolution Color Depths	1600 x 1200, 64K, 256, 16 1280 x 1024, 16.7M, 64k, 256, 16 1024 x 768, 16.7M, 64k, 256, 16 800 x 600, 16.7M, 64k, 256, 16 640 x 480, 16.7M, 64k, 256, 16 NOTE: Maximum resolution available via HP Integrated Lights-Out 3 (iLO 3) remote console is 1280 x 1024.
HP Insight management software	HP Insight Foundation	<p>Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex Datacenters.</p> <p>HP provides management solutions that are designed to simplify a server's installation, configuration and maintenance throughout the entire server lifecycle. This provides the customer with higher levels of operational efficiency and highly reliable systems: http://www.hp.com/go/foundation</p> <p>The foundation pack includes:</p> <ul style="list-style-type: none">● HP SmartStart● HP Management● HP ProLiant Firmware Maintenance <p>SmartStart version supported (minimum): SmartStart 8.7. http://www.hp.com/servers/smartstart</p> <p>NOTE: The X5000 G2 Network Storage System does not support installing ProLiant Support Packs (PSPs) from SmartStart. X5000 G2 PSPs will be installed through Service Release only.</p> <p>NOTE: The X5000 G2 Network Storage System does not support ProLiant Firmware updates from SmartStart. Firmware updates will be downloadable via the web and install using the X5000 G2 firmware update tool.</p>
	HP Integrated Lights-Out (iLO)	<p>HP Integrated Lights-Out (iLO) simplifies server setup, health monitoring, power and thermal control, and lights-out remote administration of ProLiant ML, DL, and BL servers. HP iLO functions without additional software and can be accessed from any location via a web browser. HP iLO works hand-in-hand with HP Systems Insight Manager, Insight Control, and Insight Dynamics for ProLiant, helping customers unleash the value of the ProLiant platform and deliver the highest possible quality of IT service. For more information, visit: www.hp.com/go/iLO</p>
	HP Insight Control	<p>HP Insight Control, a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console.</p> <p>Two versions of Insight Control are available, to serve environments requiring either a Linux-based or a Windows-based central management server: HP Insight Control for Linux, and HP Insight Control. See www.hp.com/go/insightcontrol</p> <p>HP Insight Control includes one year of 24 x 7 HP Software Technical</p>

Standard Features

Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, please visit: <http://www.hp.com/services/insight>.

HP Insight Dynamics for ProLiant

HP Insight Dynamics for ProLiant, a product option, is advanced infrastructure management software that enables IT staff to instantly adjust their environments to meet dynamic business demands by provisioning, optimizing and protecting complex infrastructure in minutes. It's a powerful toolkit, integrated-by-design, that accelerates complex technology projects and simplifies daily operations, transforming data center economics. With Insight Dynamics IT professionals can plan capacity and power continuously, balance workloads across physical and virtual resources, and ensure cost-effective high availability. It also enables IT organizations to provision infrastructure consistently and automatically from pools of shared resources using a self-service portal. Resources provisioned can range from a single virtual machine to complex multi-tier environments and their associated physical and virtual resource requirements. In addition to the previous functional benefits, it also provides a cost-effective disaster recovery for physical and virtual environments that works with HP Continuous Access software for both the Enterprise Virtual Array and the XP storage array allowing application environments to be reactivated in minutes with the touch of a button to a remote location.

NOTE: For more information, visit:
<http://www.hp.com/go/insightdynamics>

X5460sb G2 Availability

- Two (2) hot-plug SAS/SATA hard drive bays and integrated RAID (HP Smart Array P410i Controller)
- Redundant ROM
- Advanced ECC Memory

Industry Standard Compliance

ACPI 2.0 Compliant
PCI 2.2 Compliant
WOL Support
Microsoft® Logo certifications
USB 2.0 Support

Security

- Power-on password
 - Administrator's password
 - Integrated Lights-Out 3 has 12 customizable user accounts and SSL encryption
 - Integrated Lights-Out 3 can be disabled via a Global Setting
-

Standard Features

Factory Express Portfolio for Servers and Storage

HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed.

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as HP Storage products.

For more information on Factory Express services on your specific server model please contact your sales representative or go to: <http://h71028.www7.hp.com/enterprise/cache/97688-0-0-225-121.html>

HP Enterprise Configurator

The HP e-Configure Enterprise Configurator now provides factory default racking for our HP hardware portfolio. This approach is aligned with our strategic direction to meet the needs and expectations of our valued customers. If you require "custom" rack configuration, please contact HP's Customer Business Center or an Authorized Partner for assistance or go to: <http://www.hp.com/products/configurator>

Warranty

The HP X5000 G2 Network Storage System is covered by a global limited warranty. Warranty includes 3 years parts exchange, 3 years labor and 3 years next business day on-site hardware response. Also includes 1 year of 24 x 7 telephone support for the operating system.

Customers may upgrade to higher support levels or extended durations. See the Ordering Support Care Packs section.

Related Options

HP Storage Management Pack for Microsoft System Center

The HP Management Pack for Systems Center Operations Manager provides seamless integration with Microsoft Systems Center Operations Manager and now System Center Essentials by integrating predefined discovery and state monitoring policies, event processing rules and tasks, and diagram and topology views for the storage system.

For more information:

http://h18000.www1.hp.com/products/quickspecs/14249_div/14249_div.html

HP Storage Management Pack can be downloaded free from the following website:

<https://h20392.www2.hp.com/portal/swdepot/displayProductInfo.do?productNumber=SCOM>

Models

NOTE: Each X5000 G2 system includes two X5460sb G2 Blade Servers. Specifications below (except Enclosure Storage) are for one X5460sb G2 blade server.

Blade Server	Description	Notes
Processor type	Intel® Xeon® Processor E5620	2.40GHz/4-core/12MB/80W, DDR3-1066, HT, Turbo 1/1/2/2) Processor
Memory	24GB	(3) 8GB DIMMs
Internal blade storage	(2) 300GB SFF SAS	Boot disks (WSS2008 R2 SP1, Enterprise x64 pre-installed on RAID 1 mirrored drive pair)
Blade storage controller	P410i	256MB cache, no battery - used for OS drives
Enclosure storage controller	P1210m	6 Gbps SAS controller 1GB Flash Back Write Cache (FBWC) - RAID 0,1,1+0, 5 and 6
Networking	NC553i NC365T NC382m	(2) NC553i Dual Port FlexFabric 10Gb Adapter (2) NC365T Quad Port 1GbE Adapter (1) NC382m 2-port 1Gb Ethernet (NOTE: only one port available for use)
Enclosure storage by sku model		
QK775A (8TB LFF)	(8) 1TB 6G 7.2K LFF MDL SAS HDD	(8) open internal LFF HDD slots for expansion
QK776A (16TB LFF)	(8) 2TB 6G 7.2K LFF MDL SAS HDD	(8) open internal LFF HDD slots for expansion
QW922A (24TB LFF)	(8) 3TB 6G 7.2K LFF MDL SAS HDD	(8) open internal LFF HDD slots for expansion
QK777A (32TB LFF)	(16) 2TB 6G 7.2K LFF MDL SAS HDD	No open slots
QK778A (9.6TB LFF)	(16) 600GB 6G 15K LFF ENT SAS HDD	No open slots
QW919A (10.8TB SFF)	(18) 600GB 6G 10K SFF ENT SAS HDD	(18) open internal SFF HDD slots for expansion
QW920A (16.2TB SFF)	(18) 900GB 6G 10K SFF ENT SAS HDD	(18) open internal SFF HDD slots for expansion
QW921A (32.4TB SFF)	(36) 900GB 6G 10K SFF ENT SAS HDD	No open slots

Service and Support, HP Care Pack, and Warranty Information

Service and Support **Technology Services for increased uptime, productivity and ROI**

TRUST HP storage technology experts for every level of service and support. Our integrated portfolio of Services for storage help customers reduce costs, optimize data, streamline storage management, and improve backup and recovery. Capitalizing on HP Storage Systems' capabilities requires a service partner who understands your increasingly complex environment. Team with the people who know HP infrastructure hardware and software best—the experienced professionals at HP Services.

Protect your business beyond warranty

Warranty protects against manufacturer defects, however warranty uplifts, such as HP Care Pack Services protect the business—by reducing downtime risks and providing operational consistency for mission-critical and standard business computing.

What HP Storage Technology Services can do for you

HP Storage Technology Services can help you design, deploy, test, integrate, support, and manage IT and infrastructure solutions. HP storage lifecycle support services offers a full spectrum of customer care—from technology support to complex migrations to complete managed services.

Choose the right level of support, deployment and integration services

HP support recommendations are designed to help you enhance technology operations and lower risk—and make it easier for you to seek the right balance between affordability and service-level commitments. Depending on your individual support needs, choose from three levels of care that cover the entire lifecycle to better address your needs—Optimized Care, Standard Care, and Basic Care. If none of our support recommendations meet your needs, we can tailor a service solution for your unique support requirements. Only HP brings together deep expertise, proactive and business critical support and a strong partner network—plus, a full set of infrastructure services designed to power a Converged Infrastructure.

Optimized Care—delivers best performance and stability through deployment and proactive management practices

HP Critical Advantage Level 2 Service - Choose this service when you need an end-to-end infrastructure support solution encompassing server, OS/hypervisor, storage, and network. It's the level of support well suited for business critical applications running on virtualized/x86 infrastructures. (Includes 20 HP Critical Advantage credits.)

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA3-1772ENW.pdf>

Standard Care—maintains high level of uptime, along with expert help to cut the cost and complexity of implementation and support

3-Year HP Proactive 24 Service - This is the right choice for environments where some downtime is acceptable. HP helps manage your IT environment for improved performance, stability, and availability. Your incidents are addressed 24x7, with a maximum 4-hour onsite response 365 days a year.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9842EN.pdf>

Plus:

HP Proactive Select - Choose from an extensive menu of consultancy and technical services, such as onsite firmware upgrades, health checks, assessments, and education. (10 Proactive Select flexible credits.)

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-3842ENW.pdf>

Basic Care—Minimum recommended support

3-Year Support Plus 24 - For a higher return on your server and 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.

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

Service and Support, HP Care Pack, and Warranty Information

Plus:

HP Proactive Select - Choose from an extensive menu of consultancy and technical services, such as onsite firmware upgrades, health checks, assessments, and education. (10 Proactive Select flexible credits.) <http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-3842ENW.pdf>

Implement right from the start

HPSD X5000 G2 Installation & Startup Service - For smooth startup, this service provides you with a custom-tailored deployment of the P9000 family arrays and most associated software titles, ensuring proper integration into your storage environment and helping you realize the maximum benefit from your storage investment.
<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA4-0127ENW.pdf>

Remote Support Tools

HP Insight Remote Support - Available at no additional cost to all warranty, HP Care Pack Service and service agreement customers, uses proven technology to deliver secure, reliable 24x7 remote monitoring, diagnosis and problem resolution.
<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-4676ENW.pdf>

Additional services to meet your needs

HP Storage Data Migration-Proven expertise and tools help you migrate data across your data center or around the globe.
<http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-4107EN.pdf>

For more information

www.hp.com/services/storage

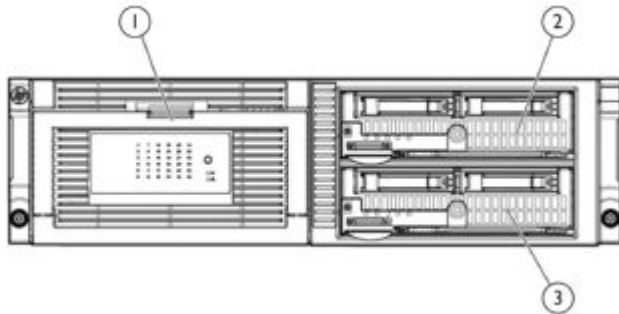
To learn more on HP Storage Services, please contact your HP sales representative or HP Authorized Channel Partner

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

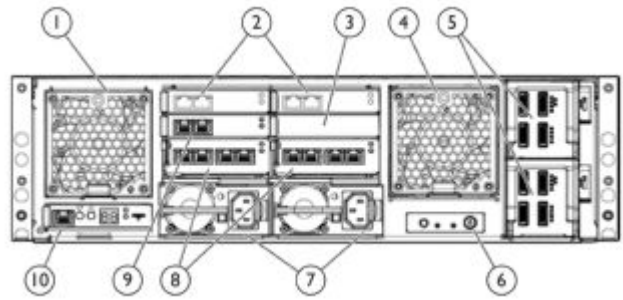
Configuration Options

HP X5000 G2 Network Storage System



Front View:

1. Disk enclosure
2. Server blade, Bay 1
3. Server blade, Bay 2



Rear View:

1. Fan
2. 10GbE LOM I/O Module (2)
3. Intraconnect Module
4. Fan
5. SAS I/O Module (2)
6. Power Button
7. Power Supply (2)
8. 1 GbE NICs (NC365T)
9. 1 GbE NIC (NC382M)
10. iLO3 Management Port

Configure your X5000 G2 Network Storage System

Step 1 - X5000 G2 Base Configuration - choose a model that best fits your needs

System Configuration	Model Description	Part Number
	HP X5520 G2 8TB LFF 7.2K Network Storage System	QK775A
	HP X5520 G2 16TB LFF 7.2K Network Storage System	QK776A
	HP X5520 G2 24TB LFF 7.2K Network Storage System	QW922A
	HP X5520 G2 32TB LFF 7.2K Network Storage System	QK777A
	HP X5520 G2 9.6TB LFF 15K Network Storage System	QK778A
	HP X5520 G2 10.8TB SFF 10K Network Storage System	QW919A
	HP X5520 G2 16.2TB SFF 10K Network Storage System	QW920A
	HP X5520 G2 32.4TB SFF 10K Network Storage System	QW921A

Step 2 - Add external storage

Up to (4) four D2600 or D2700 Disk Enclosures can be connected to an HP X5520 G2 Network Storage System.

NOTE: D2600s and D2700s Disk Enclosures cannot be mixed when connected to the same X5000 G2.

NOTE: Only 3TB, 2TB, and 1TB HP 6G SAS 7.2K rpm LFF (3.5-inch) Dual Port Midline Hard Drives or 600GB and 450GB HP 6G SAS 15K rpm LFF (3.5-inch) Dual Port Enterprise Hard Drives are supported internally in the X5000 G2 system (QK775A or QK776A) or in a D2600 attached to a X5520 G2 Network Storage System.

Configuration Options

NOTE: Only 900GB, 600GB and 450GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise Hard Drives are supported internally in the X5000 G2 system (QW919A or QW920A) or in a D2700 attached to a X5000 G2 Network Storage System

NOTE: It is not required, but is a recommended best practice to ensure that all drives internal to an X5000 G2 or in an individual D2600 or D2700 are of the same capacity and type.

NOTE: External D2600 or D2700s cannot be added to an order containing sku QK775A, QK776A, QW919A, QW920A, or QW922A, unless the open LFF or SFF slots have been filled. Otherwise it is assumed that external storage is not required.

D2600 HDD Bundles	HP D2600 w/12 3TB 6G SAS 7.2K LFF Dual port MDL HDD 36 TB Bundle	QK765A	
	HP D2600 w/6 3TB 6G SAS 7.2K LFF Dual port MDL HDD 18 TB Bundle	QK766A	
	HP D2600 w/12 2 TB 6G SAS 7.2K LFF Dual Port MDL HDD 24 TB Bundle	BK766A	
	HP D2600 w/6 2 TB 6G SAS 7.2K LFF Dual Port MDL HDD 12 TB Bundle	BK782A	
	HP D2600 w/12 1TB 6G SAS 7.2K LFF Dual Port Midline HDD 12TB Bundle	BV899A	
D2700 HDD Bundles	HP D2700 w/25 900GB 6G SAS 10K SFF Dual port HDD 22.5 TB Bundle	QK771A	
	HP D2700 w/10 900GB 6G SAS 10K SFF Dual port HDD 9 TB Bundle	QK772A	
	HP D2700 w/25 600GB 6G SAS10K SFF Dual Port HDD 15TB Bundle	BK768A	
	HP D2700 w/10 600GB 6G SAS10K SFF Dual Port HDD 6TB Bundle	BK783A	
	HP D2700 w/25 450GB 6G SAS10K SFF Dual Port HDD 11.2TB Bundle	BK767A	
HP Hard Drives	SAS Hot Plug LFF (3.5-inch) Midline (MDL) Drives		
	HP 3TB 6G SAS 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive	625031-B21	
	HP 2TB 6G SAS 7.2K rpm LFF (3.5-inch) Dual Port Midline 1yr Warranty Hard Drive	507616-B21	
	HP 1TB 6G SAS 7.2K rpm LFF (3.5-inch) Dual Port Midline 1yr Warranty Hard Drive	507614-B21	
	SAS Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives		
	HP 600GB 6G SAS 15K rpm LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	516828-B21	
	HP 450GB 6G SAS 15K rpm LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	BK767A	
	SAS Hot Plug SFF (2.5-inch) Enterprise (ENT) Drives		
	HP 900GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	619291-B21	
	HP 600GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	581286-B21	
	HP 450GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	581284-B21	
	Cables	Cables used for connecting the HP X5000 G2 to the D2600s or D2700s. These cables are only needed if the .5M cables included with the D2600 or D2700 enclosures are not long enough for your installation. You must order a quantity of two cables for each enclosure connection to the X5000 G2	
		Mini SAS 4x 2M Cable All	407339-B21
Mini SAS 4x 4M Cable All		432238-B21	
Mini SAS 4x 6M Cable All		432239-B21	

Step 3 - Other X5000 G2 Options

Configuration Options

X5460sb G2 Processor	<p>Model Description</p> <p>HP BL460c G7 Intel® Xeon® E5620 (2.40GHz/4-core/12MB/80W) Processor Kit</p> <p>NOTE: If adding a second processor to the X5460sb G2, two of the above kits are required, one kit for each blade in the X5520 system.</p>	Part Number 612127-B21
X5460sb G2 Memory	<p>Model Description</p> <p>HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit</p> <p>NOTE: Each X5460sb G2 blade in an X5520 G2 system has 12 DIMM slots, three are occupied (8GB x 3) and 9 are open. HP recommends adding memory in 8GB increments per blade. When ordering the above 8GB DIMM kit you must order in multiples of two to ensure the same amount of memory is added simultaneously to each X5460sb G2 in the system.</p>	Part Number 500662-B21
10GbE Connection Options	<p>NOTE: Verify that the cable/transceiver is supported with the connecting device</p> <p>Copper Cables</p> <p>HP 0.5m SFP+ 10GbE Copper Cable</p> <p>HP 1m SFP+ 10GbE Copper Cable</p> <p>HP 3m SFP+ 10GbE Copper Cable</p> <p>HP 5m SFP+ 10GbE Copper Cable</p> <p>NOTE: Only the Copper Cables listed above are supported with the X5000 G2</p> <p>SFP+ Modules</p> <p>HP BLc 10Gb SR SFP+</p> <p>HP BLc 10Gb LR SFP+</p> <p>HP BLc 10Gb LRM SFP+</p> <p>NOTE: Only the SFP+ Modules listed above are supported with the X5000 G2</p> <p>Optical Cables</p> <p>HP 2m SW LC/SC FC Cable Kit</p> <p>HP 5m SW LC/SC FC Cable Kit</p> <p>HP 15m SW LC/SC FC Cable Kit</p> <p>HP .5 m LC-LC Multi-Mode OM3 Fiber Optic Cable</p> <p>HP 1 m LC-LC Multi-Mode OM3 Fiber Optic Cable</p> <p>HP 2m Multi-mode OM3 LC/LC FC Cable</p> <p>HP 5 m LC-LC Multi-Mode OM3 Fiber Optic Cable</p> <p>HP 15 m LC-LC Multi-Mode OM3 Fiber Optic Cable</p> <p>HP 30 m LC-LC Multi-Mode OM3 Fiber Optic Cable</p> <p>HP 50 m LC-LC Multi-Mode OM3 Fiber Optic Cable</p> <p>NOTE: For other length Optical Cables, the use of OM3 or better Fiber Optic Cable is required.</p>	Part Number 487649-B21 487652-B21 487655-B21 537963-B21 J9150A J9151A J9152A 221691-B21 221691-B22 221691-B23 AJ833A AJ834A AJ835A AJ836A AJ837A AJ838A AJ839A
1GbE Connection Options	<p>HP 2 Port 1Gb Ethernet Modules</p> <p>NOTE: This sku is contains two dual port 1GbE I/O modules which can replace the 10GbE I/O modules that come standard with the X5000 G2. Use these for additional 1GbE if you replace the NC365Ts with FC HBAs for tape backup and need additional 1GbE connectivity or if you don't need 10GbE connectivity</p>	BV897A
FC HBAS	<p>NOTE: The HBAs would be used for a direct or SAN connected tape backup.</p>	



Configuration Options

Adding these HBAs require removal of the 1GbE NICs that come factory standard in the PCIe slots. There is not an option to ship the X5520 with FC HBAs instead of 1GbE NICs from the factory. For compatible tape backup information see the EBS Support Matrix at:

<http://h18006.www1.hp.com/products/storageworks/tapecompatibility.html>

HP 82B PCIe 8Gb Fibre Channel Dual Port Host Bus Adapter	AP770A
HP 82E 8Gb Dual Port PCI-e Fibre Channel Host Bus Adapter	AJ763A
HP 82Q 8Gb Dual Port PCI-e Fibre Channel Host Bus Adapter	AJ764A

Technical Specifications

X5000 G2 System Enclosure

Dimensions (H x W x D) (with bezel)	5.19 x 17.64 x 34.01 in (13.18 x 44.80 x 86.38 cm)	
Weight (approximate)	Maximum (16 LFF hard drives, power supplies, and blades installed)	126.4 lb. (57.36kg)
	Maximum (36 SFF hard drives, power supplies, and blades installed)	120.1 lb. (54.5kg)
	Minimum (no drives, all power supplies, and blades installed)	96.9 lb. (43.96 kg)
Input Power Requirements (both power supplies)	Rated Line Voltage	90 - 132 VAC, 180 - 264 VAC
	Rated Input Current (nominal)	5.2 A (at 120 VAC), 2.5 A (at 240 VAC)
	Rated Input Current (maximum)	6.7 A (at 120 VAC), 3.1 A (at 240 VAC)
	Rated Input Frequency	47 to 63 Hz
	Rated Input Power (nominal)	620 W (at 120 VAC), 600 W (at 240 VAC)
	Rated Input Power (maximum)	800 W (at 120 VAC), 740 W (at 240 VAC)
BTU Rating	Nominal	2116 BTU/hr (at 120 VAC) 2047 BTU/hr (at 240 VAC)
	Maximum	2730 BTU/hr (at 120 VAC) 2525 BTU/hr (at 240 VAC)
System Inlet Temperature	Operating	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed.
		System performance may be reduced if operating with a fan fault or above 30°C (86°F).
	Non-operating	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
Relative Humidity (non-condensing)	Operating	10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.
	Non-operating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
Altitude	Operating	3050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).

Technical Specifications

	Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
Acoustic Noise	Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109). The listed sound levels apply to standard shipping configurations. Additional options may result in increased sound levels.	
	Idle	2 server blades
	<i>LWAd</i>	7.3 B
	<i>LpAm</i>	55 dBA
	Operating	
	<i>LWAd</i>	7.4 B
	<i>LpAm</i>	56 dBA

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For hard drives, 1GB = 1 billion bytes. Actual formatted capacity is less.