

Overview

HPE D2220sb Storage Blade

Do you need a direct attached or shared storage solution within your BladeSystem enclosure?

Direct attached storage

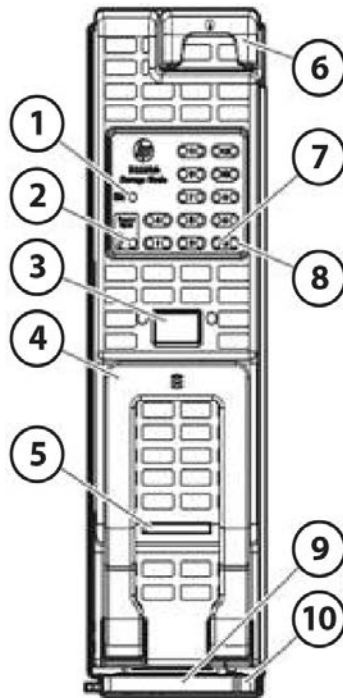
The D2220sb Storage Blade delivers direct attached storage for c-Class Gen9 blade servers, with support for up to twelve hot plug small form factor (SFF) SAS or SATA hard disk drives or SAS/SATA SSDs. The enclosure backplane provides a PCI Express connection to the adjacent c-Class server blade and enables high performance storage access without any additional cables. The D2220sb Storage Blade features an onboard Smart Array P420i controller with 2GB flash-backed write cache, for increased performance and data protection. Up to eight D2220sb storage devices can be supported off a single BladeSystem c7000 enclosure for up to 192 TB of capacity.

Two ways to create shared storage with the D2220sb

Use HPE StoreVirtual VSA software to turn the D2220sb into an iSCSI SAN for use by all servers in the enclosure and any server on the network. HPE StoreVirtual VSA software is installed in a virtual machine on a VMware ESX host server adjacent to the D2220sb. HPE StoreVirtual VSA turns the D2220sb into a scalable and robust iSCSI SAN, featuring storage clustering for scalability, Network RAID for storage failover, thin provisioning, snapshots, remote replication, and cloning. Expand capacity within the same enclosure or to other BladeSystem enclosures by adding additional D2220sb Storage Blades and HPE VSA licenses. A cost effective bundle of the D2220sb Storage Blade and a HPE StoreVirtual VSA license makes purchasing convenient. If storage needs increase, add HPE P4300 or P4500 systems externally and manage everything via a single pane of glass.

The HPE 3840 Gateway Storage Blade is a flexible storage server solution for BladeSystem environments. Combine the HPE 3840 Gateway Storage Blade with the D2220sb Storage Blade to enable file serving and iSCSI shared storage inside the BladeSystem enclosure.

Overview



1. UID LED
2. Drawer Open LED
3. Hot-plug drive drawer release button
4. Hot-plug drive drawer handle
5. Health status LED bar

6. Product information tag
7. Drive fault LED
8. Drive activity LED
9. Storage blade release latch*
10. Storage blade release button*

*** Removing the storage blade from the enclosure removes power from the hard drives.**

What's New

- Support for BL460 Gen9 Server Blade
- Support for BL660 Gen9 Server Blade
- Support for WS460 Gen9 Graphics Server Blade
- Support for expanded menu of hard disk drives (HDDs) and solid state drives (SSDs)

Product Highlights

Key Features

Features of the D2220sb include:

SFF (SAS/SATA/SAS SSD/SATA SSD) support – Delivering data transfer rates up to 6 Gb/s for SAS, SATA, SAS SSD, SATA SSD

- Support for up to twelve (12) hot plug SFF SAS/SATA/SAS SSD/SATA SSD disk drives in a half-height blade
- Internal Smart Array P420i with 2 GB flash-backed write cache
- Simple configuration and setup with HPE Smart Storage Administrator (HPE SSA)
- Easy to maintain and troubleshoot with industry standard management tools including HPE System Insight Manager
- Use with HPE StoreVirtual VSA software to create a robust shared storage environment inside BladeSystem enclosures
- Protected by HPE Services and a worldwide network of Hewlett Packard Enterprise Authorized Channel Partners. Three-year parts limited global warranty. Certain restrictions and exclusions apply

Mix and Match of Hard Drive Types

D2220sb supports mixing of different drive types (SAS/SATA, SSD/HDD) in a single enclosure. However, please note also that an array can be created across only one drive type.

Universal hot plug Hard Drive

Form factor is for use across multiple HPE ProLiant servers, disk enclosures and storage systems. With compatibility across many enterprise platforms, you are free to deploy and re-deploy these drives to quickly deliver increased storage capacity, migrate data between systems, and easily manage spare drives.

LED Indicators

Front panel LEDs indicate drive activity and system health status.

Density

The D2220sb fits into a half height bay on the BladeSystem c3000 and c7000 Enclosure.

NOTE: c7000 requires 10 fans, storage blade is not supported with 8 fan configuration. c3000 requires 6 fans, storage blade is not supported with 4 fan configuration.

Fault Tolerance

Using the internal Smart Array P420i controller with 2 GB flash-backed write cache, the D2220sb can be configured for RAID levels 0, 1, 1 + 0, 5, and 6 (RAID ADG)

Manageability

All Smart Array products utilize a standard set of management and utility software. These tools minimize Total Cost of Ownership (TCO) by reducing training requirements and technical expertise necessary to install and maintain the HPE server storage.

Fault Prevention

The following features offer detection of possible failures before they occur, allowing preventive action to be taken:

- S.M.A.R.T.: Self Monitoring Analysis and Reporting Technology first developed at HPE detects possible hard disk failure before it occurs, allowing replacement of the component before failure occurs.
- Drive Parameter Tracking monitors drive operational parameters, predicting failure and notifying the administrator.
- Dynamic Sector Repairing continually performs background surface scans on the hard disk

Product Highlights

- drives during inactive periods and automatically remaps bad sectors, ensuring data integrity.
- Smart Array Cache Tracking monitors integrity of controller cache, allowing pre-failure preventative maintenance.
- Environment Tracking for External Storage System: Monitors fan speed and cabinet temperature of ProLiant Storage System and newer HPE storage enclosures.

D2220sb Blade server support matrix

Supported Servers	Server: Full Height or Half Height	No of D2220sb Storage blades Supported	Pass Thru Card Required	Mezz slot to support 1 st Pass Thru Card	Mezz slot to support 2 nd Pass Thru Card
X86 server blades					
BL460 Gen8	Half	1	No	n/a	n/a
BL660c Gen8	Full	2	No	n/a	n/a
BL465c Gen8*	Half	1	No	n/a	n/a
WS460 Gen9	Half	1	No	n/a	n/a
BL460c Gen9**	Half	1	No	n/a	n/a
BL660c Gen9	Full	2	No	n/a	n/a

***NOTE:** For BL465c Gen8 , SPLD/CPLD FW 0x40 or higher is required to support D2220sb.

**** NOTE:** BL460c Gen9 and WS460 Gen9 must use the integrated B140i SATA controller or Smart Array P246br for storage internal to the server. Minimum list of firmware versions required for installation of D2220sb: Smart Array P246br 2.14, Smart Array P420i (D2220sb controller) 6.34, D2220sb 1.02, BIOS 1.32, Intelligent Provisioning 2.10. HPE Service Pack for ProLiant (SPP) 2015.04 provides all the necessary updates for support of D2220sb with BL460c Gen9.

Operating Systems

Windows Server: 2008 R2, 2012
 Red Hat Enterprise: RHEL5, RHEL6
 SLES (x86): SLES10, SLES11
 VMware ESX: 4.1, ESXi 5.0, 5.1, 5.5, 6.0

NOTE: For more information on HPE's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, please visit our Support Matrix at: <http://www.hp.com/go/supportos>.

Software Suite

Systems Insight Manager

- Powerful server and server options/storage manager tool
- Monitors over 1,200 system wide parameters
- Configuration/Diagnostic Utilities

HPE Smart Storage Administrator (HPE SSA)

- Powerful Web based configuration utility for all Smart Array controllers
- Provides a graphical view of HPE drive array configurations
- Allows for management of multiple arrays over a secure internet connection from anywhere in the world
- Easy to use Wizards for configuration
- Runs offline for all supported Operating Systems and runs online for Windows and Linux. For

Product Highlights

online configuration of NetWare, use CPQONLIN

HPE Option ROM Configuration for Arrays (ORCA)

- A simple method for managing logical drives during system power up by pressing F8 during POST
- Allows the ability to create arrays, logical drives, and assign an online spare drive
- Allows the ability to view and delete logical drives
- Allows the ability to select the boot controller or advanced array configurations use HPE SSA

HPE Array Diagnostic Utility (ADU)

- In depth diagnostic and reporting utility for all Smart Array controllers
- Runs offline for all supported Operating Systems, and runs online for Windows and Linux

Service and Support, HPE Care Pack, and Warranty Information

Warranty

Protected by HPE Services and a worldwide network of Hewlett Packard Enterprise Authorized Channel Partners. D2220sb has three-year parts only limited global warranty (3-0-0). Certain restrictions and exclusions apply.

Hard drive Pre-Failure Warranty: When used with any one of the Smart Array Family controllers and monitored under HPE Systems Insight Manager (v4.20 or later), HPE hard drives are supported by a Pre-Failure (replacement) Warranty. Hard drives have a one year warranty.

Service and Support

Technology Services for increased uptime, productivity and ROI

Trust HPE 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 HPE Storage Systems' capabilities requires a service partner who understands your increasingly complex environment. Team with the people who know Hewlett Packard Enterprise infrastructure hardware and software best—the experienced professionals at HPE Services.

HPE Technology Services delivers confidence, reduces risk and helps customers realize agility and stability. Connect to HPE to help prevent problems and solve issues faster. HPE Support Services enable you to choose the right service level, length of coverage and response time as you purchase your new server, giving you full entitlement to the support for need for your IT and business.

Protect your business beyond warranty

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

What HPE Storage Technology Services can do for you

HPE Storage Technology Services can help you design, deploy, test, integrate, support, and manage IT and infrastructure solutions. HPE 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

HPE 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. If you have specific IT and business requirements we can tailor a service solution for your unique support requirements. Only HPE brings together deep expertise, proactive and business critical support, and a strong partner network—together with, a full set of infrastructure services designed to power IT today and into the future.

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

HPE Proactive Care 24x7- for a higher return on your storage investment, Proactive Care delivers hardware and software support services designed specifically for your technology; rapid access to Advanced Solution Center Specialists plus, Firmware/Software management and best practice advice. Customers can optimize the return on their IT investment and realize the advantage of running their business critical applications on virtualized infrastructure. Plus, HPE Proactive Select 20 credits per year, select from an extensive menu of consultancy and technical services, such as onsite firmware upgrades, health checks, assessments, and education.

Service and Support and Warranty Information

Recommended level of support: **HPE Proactive Care* with 24x7 coverage, three year Support Service**

- delivers best performance and stability through deployment and proactive management practices

HPE Proactive Care gives customers an enhanced call experience. When your products are connected to HPE, Proactive Care helps prevent problems and maintains IT stability by utilizing personalized proactive reports with recommendations and advice. This Service combines three years proactive reporting and advice with our 24x7 coverage, four hour hardware response time when there is a problem. This service also includes collaborative software support for Independent Software Vendors (ISVs), (Red Hat, VMWare, Microsoft, etc.) running on your HPE servers

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855ENW.pdf>

***HPE Proactive Care requires that the customer connect their devices to make the most of these services and receive all the deliverables.**

Optional Services that will enhance your HPE product experience.

HPE BladeSystem c3000 Infrastructure (ICE + OS) Installation & Startup For customers who need professionally integrated hardware and software BladeSystem implementation:

The HPE Installation and Startup Service for HPE BladeSystem c-Class Infrastructure provides for the installation of an HPE BladeSystem c-Class enclosure, c-Class ProLiant and Integrity server blades, storage blades, SAN switch blades, Virtual Connect modules (Ethernet and Fibre Channel), Ethernet network interconnects, and Infiniband, as well as deployment and basic configuration of HPE Insight Control Environment for HPE BladeSystem software. Service benefits

- Efficient and effective HPE BladeSystem c-Class infrastructure setup, server deployment, and management
- Delivery of the service at a mutually scheduled time convenient to your organization
 - Expedited installation, provided all service prerequisites are met prior to commencement of service
- Verification prior to installation that all service prerequisites are met
- Reduced implementation time and cost
- More effective IT resource planning
- Increased data-center efficiency through reduction of manually intensive tasks
- Allows IT resources to stay focused on their core tasks and priorities
- Helps improve IT infrastructure uptime
- Automated diagnosis and remote support for hardware problems (via HPE Service Essentials Remote Support Pack)

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA0-5964ENW>

HPE Entry Storage Data Migration Service for Windows

For customers who need to safely migrate Windows data within their TCP/IP networks with minimal impact to their operations:

If you have a need to migrate data between Windows servers within your TCP/IP network. Or you have a need to migrate storage for your Windows servers. Or both. And you need to accomplish these migrations efficiently while minimizing risk at the same time.

HPE Entry Storage Data Migration Service for Windows offers you a cost competitive and convenient way to accommodate data migration triggered by a need to refresh or consolidate storage, or to create different storage tiers. This service offers a migration cost in line with the costs of storage products in small and medium-sized storage environments. The service is delivered via a skilled HPE service

Service and Support and Warranty Information

specialist with special consideration for data availability, integrity, and ongoing operational performance during the transfer process.

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA2-4734ENW.pdf>

Parts and Materials

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

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

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

Implementation

Installation:

Whichever level of support you select, consider our Installation and Startup Services for a smooth implementation: Basic Hardware installation

Related Services

HPE Storage Efficiency Analysis: The HPE Storage Efficiency Analysis provides customers with a view of their storage infrastructure and operating environment; highlighting recommendations for improvements. The report provides extensive insight about the existing storage environment, opportunities for efficiency gains, asset aging and replacement through interaction with key decision makers.

HPE Storage Impact Analysis: The HPE Storage Impact Analysis service provides a 2-4 week discovery engagement with executive summary presentation. The goal of this service is to help provide customers guidance on storage related issues and develop remediation plans. The service is also design to assist and the remediation efforts.

HPE Storage Modernization Service: The HPE Storage Modernization service is a 4-6 week service that defines the customers envisioned target storage environment based on a proven solution design methodology. Hewlett Packard Enterprise architects will quickly perform tool-assisted automatic discovery and facilitate a two-day strategy workshop with all key stakeholders involved in the storage infrastructure initiative.

HPE Storage Data Migration Service- HPE expertise and tools help you migrate data across your data center or around the globe. Take the burden of migration off your shoulders and put it in the capable hands of expert HPE storage migration consultants. Our proven approach helps orchestrate the complete data migration and consolidation process while maintaining consistent data availability during the transfer process.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA3-0774ENW.pdf>

HPE Technology Services Support Credits offer flexible services and technical skills to meet your changing IT demands. With a menu of service that is tailored to suit your needs, you get additional resources and specialist skills to help you maintain peak performance of your IT. Offered as annual credits, you can plan your budgets while proactively responding to your dynamic business.

HPE Datacenter Care service

Service and Support and Warranty Information

HPE Datacenter Care helps improve IT stability and security, increase the value of IT, and enable agility and innovation. It is a structured framework of repeatable, tested, and globally available services “building blocks.” You can deploy, operate, and evolve your datacenter wherever you are on your IT journey. With HPE Datacenter Care, you benefit from a personalized relationship with HPE via a single point of accountability for HPE and others’ products. For more information, visit

[**http://www.hpe.com/services/datacentercare**](http://www.hpe.com/services/datacentercare)

HPE Flexibly Capacity, a building block of HPE Datacenter Care is a pay per use model for on premise infrastructure, giving you the technology you want, the ability to manage capacity when you need it, with no upfront payment. Flexible Capacity provides the needed room to grow your environment, but only pay for actual metered use. Technology transitions with refresh can be built in, and infrastructure and services are billed monthly, enabling you to align costs to business use.

For more information [**http://www.hpe.com/services**](http://www.hpe.com/services)

To learn more on HPE Technology Services, please contact your Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise Authorized Channel Partner

HPE Technology Services are sold by HPE and Hewlett Packard Enterprise Authorized Service Partners.

Configuration Information - Factory Integrated Models (North America Only)

Step 1: D2220sb Storage Blade Configuration

Models

HP D2220sb Configure-to-order Storage Blade	QW918A
NOTE: Includes 3yr NBD Parts-Only Warranty Service	
HP D2220sb Build-to-order Storage Blade	QW917A
NOTE: Includes 3yr NBD Parts-Only Warranty Service	

Options

HPE Hard Drives

HPE D2220sb storage blades support all small form factor (SFF) SAS and SATA HDDs and SSDs currently certified in HPE Smart Carriers. Any exceptions to this qualification will be listed on this page by drive description and part number

Drive Qualification Exceptions:

At this time there are no exceptions to list.

Part Number

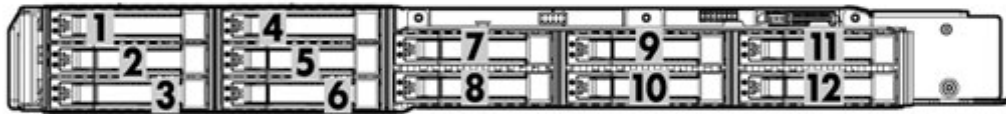
n/a

NOTE: Maximum storage capacity will vary depending upon drive size and RAID type applied.

NOTE: For Technical Specifications and additional information on SAS drives:
http://h18000.www1.hp.com/products/QuickSpecs/12244_div/12244_div.html
(Worldwide)

NOTE: Using hard drives in unsupported configurations will result in voiding the warranty and could result in damage to the drive and/or loss of data.

Storage



Top view of the D2220sb, with the drive drawer opened

Hard Drives

SAS Hot Plug SFF Enterprise (ENT) Drives

Quantity Supported	Position Supported	Controller
12	1-12	Smart Array P420i Controller

Technical Specifications

HPE D2220sb Storage Blade	Dimensions (HxWxD)	5.471cm x 18.070cm x 51.659cm (2.154" x7.114" x 20.338")		
	Weight (unloaded)	4.18 KG (9.22 lbs)		
	Weight (loaded)	7.10 KG (15.65 lbs)		
	Protocol Support	6Gb/s SAS		
	O/S Support	Defined by specific HPE array controller or SAS/ adapter used; please refer to the QuickSpecs and/or User Guide of the specific array controller or adapter		
	LED Indicators	UID System Health LED		
	Drive LED Indicators (on drive trays)	Drive LED (top) - On-line/Activity Drive Failure LED (bottom) - Drive Fault/Locate		
	Relative Humidity (non-condensing)	Operating	20% to 80%	
		Shipping	5% to 95%	
	Temperature Range	Operating	50° to 95° F (10° to 35° C°)	
	Shipping	-22° to 140° F (-30° to 60° C)		

NOTE: To maintain proper cooling and airflow, a drive blank or drive must occupy all bays during operation.

Power Consumption 12V/11A

Smart Array P420i Controller	Disk Drive and Enclosure Interface	6G SAS (Serial Attached SCSI)	
	SAS Connectors	2 internal (SFF8484) x4 wide port connectors	
	Cache Memory Speed	Embedded 72-bit DDR3 FBWC provides up to 4.2 GB/s maximum bandwidth.	
	SAS Speed	x8 6G SAS	
	Cache Memory	2 GB embedded flash-backed write cache; ECC protection, battery-backed, and transportable	
	Logical Drives Supported	Up to 32 logical drives	
	Maximum Logical Drive Capacity	24TB SAS or SATA	
	Host Memory Addressing	64-bit, supporting greater than 4GB server memory space	
	RAID Support	RAID 6 with ADG (Advanced Data Guarding) RAID 5 (Distributed Data Guarding) RAID 1+0 (Striping & Mirroring) RAID 0 (Striping)	
	Upgradeable Firmware	Upgradeable Firmware with recovery ROM feature	

Environment-friendly End-of-life Management Hewlett Packard Enterprise offers end-of-life Hewlett Packard Enterprise product return, trade-in, and recycling programs in many geographic areas.

Technical Specifications

Products and Approach and Recycling

For trade-in information, please go to <http://www.hp.com/go/green>. To recycle your product, please go to: <http://www.hp.com/go/green> or contact your nearest Hewlett Packard Enterprise sales office. Products returned to Hewlett Packard Enterprise will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard Enterprise web site at: <http://www.hp.com/go/green>. These instructions may be used by recyclers and other WEEE treatment facilities as well as HEWLETT PACKARD ENTERPRISE OEM customers who integrate and re-sell Hewlett Packard Enterprise equipment.

Summary of Changes

Date	Version History	Action	Description of Change
19-Feb-2016	From Version 11 to 12	Changed	Updated the entire document
16-Oct-2015	From Version 10 to 11	Changed	Changes made to the Product Highlights and Options Sections
05-Jun-2015	From Version 9 to 10	Changed	Changes made to the Product Highlights and Options Sections
24-Apr-2015	From Version 8 to 9	Changed	Removed Obsolete SKU's (697574-B21 & 653078-B21) Changes made to the Overview, Configuration Info and Option Sections.
05-Dec-2014	From Version 7 to 8	Changed	Changed on the Options Section; Removed Obsolete SKUs
18-Mar-2014	From Version 6 to 7	Changed	Hard Drives was revised.
20-Dec-2013	From Version 5 to 6	Changed	Updated the following: Two ways to create shared storage with the D2220sb; What's new NOTE: Key Features; Software Suite - Systems Insight Manager (Array Configuration Utility -ACU changed to Smart Storage Administrator - SSA); Warranty - removed space; Configuration Information - Step 1 - removed part of note; Options - HPE Hard Drives - added 1.2TB 6G SAS SFF - 718160-B21
10-Sep-2013	From Version 4 to 5	Changed	Changes made to the following sections Overview - What's New Product Highlights - Fault Tolerance
08-Jun-2013	From Version 2 to 4	Added	6G SATA and SAS ME Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives were added.
26-Apr-2013	From Version 1 to 2	Changed	Updated the following - Product Highlights - D2220sb blade server support matrix - added WS460c Gen8; Operating Systems - Windows Server - added 2012



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

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