

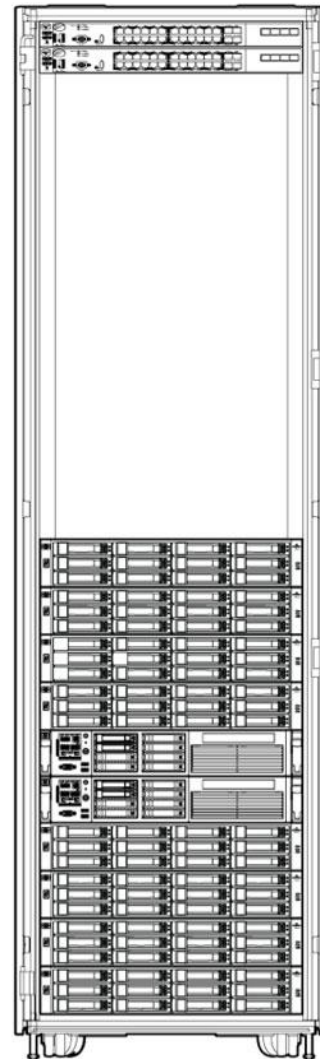
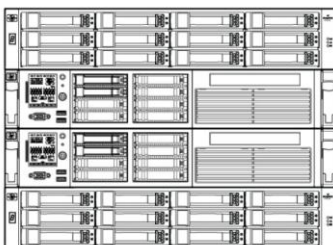
Overview

HP B6000 StoreOnce Backup Systems

Longing to take the pain out of backup and disaster recovery across your enterprise? You need a scale-out disk backup solution that reduces management overheads, cuts storage costs and keeps pace with data growth.

HP B6000 Backup Systems take HP StoreOnce to the enterprise, providing efficient disk based backup with data deduplication for effective longer term on site data retention, remote office data protection and off site disaster recovery. The B6000 is highly scalable, offering up to 768TB of capacity and industry-leading performance up to 28TB/hr* to match enterprise performance requirements and meet ever shrinking backup windows. The B6200 StoreOnce offers rapid data recovery, where restore performance = ingest performance with no restore performance penalty, to provide fast access to data. Integrating seamlessly into your current IT environment, B6000 Backup Systems simplify data management across complex and distributed enterprises enabling you to manage data protection from a single pane of glass. Designed with autonomic restart, no single point of failure, and hot add capability, you can be confident in a highly available system and the availability of your backup.

* Actual performance is dependent upon data set type, compression levels, number of data streams, number of devices emulated and number of concurrent tasks, such as housekeeping or replication.



Overview

HP B6200 StoreOnce 48TB Backup System

HP B6200 StoreOnce 48TB Backup System in a 42U rack with
HP B6200 Switch Assembly and 3x B6200 Upgrade Kits



Features and Benefits

Scale out capacity for the enterprise Scale your backup to keep pace with data growth. Scale-out from 48TB out to 768TB of raw capacity (32TB to 512TB usable), by using a simple capacity upgrade for a lower cost alternative to purchasing additional systems. Purchase your base unit dual-node couplet with 48TB raw capacity (32TB usable) then scale in increments of 24TB or 48TB raw (16 or 32TB usable), up to a maximum of 192TB raw (128TB usable) capacity for the couplet. Add 3 more B6200 couplets and scale out to 768TB of raw capacity (512TB usable) in two standard racks.

The B6000 offers flexibility to balance capacity and performance within a couplet.

A fully configured couplet with 3 capacity upgrade kits, can be managed as a single file system of up to 192TB raw capacity (128TB usable), however to optimize performance within a couplet, capacity should be balanced across both nodes within a couplet.

To scale up in terms of performance, add in 1 more B6200 48TB Backup System, and again scale up by adding capacity upgrade kits. This gives you a maximum configuration of two fully configured B6200 Backup systems of 2 couplets with a total capacity of 384TB raw capacity (256TB usable) in a single rack.

Industry-leading Performance to meet shrinking backup windows Backup big data within short backup windows with the B6000 Backup Systems high performance multi-streaming capability. Consolidate multiple parallel backup streams via standard Ethernet or Fibre Channel network to a single disk-based system to achieve industry-leading aggregate backup speeds of up to 28TB* per hour.

**Actual performance is dependent upon data set type, compression levels, number of data streams, number of devices emulated and number of concurrent tasks, such as housekeeping or replication.*

Consolidate and automate daily backup to free-up IT resources Consolidate and automate your backup processes using a single B6000, allowing you to reduce the time spent managing multiple data protection devices and processes. The HP B6000 can span multiple enterprise network platforms to consolidate your backup in one.

Reduce your backup data storage needs with HP StoreOnce deduplication HP StoreOnce deduplication reduces the disk space required to store backup data sets by typically 20x without impacting backup performance. Retaining more backup data on disk for longer, enables greater data accessibility for rapid restore of lost or corrupt files and reduces impact on business productivity while providing cost savings in disk storage, IT resource, physical space, and power requirements.

With HP Labs innovation, the HP StoreOnce deduplication technology enables a unified, high performance data deduplication software platform across the enterprise. Using HP StoreOnce with a fully configured B6000, can provide extended data retention on the same disk footprint for up to 10 PBs of backup data.

Lower the cost of disaster recovery and remote office data protection HP StoreOnce deduplication also enables network efficient offsite data replication. B6000 StoreOnce Backup Systems use StoreOnce data deduplication to significantly reduce the amount of data that needs to be replicated, enabling the use of lower bandwidth, lower cost links to transmit data offsite.

StoreOnce enabled replication opens the way to cost-effective centralized backup from remote sites or



Features and Benefits

branch offices, and delivers a consolidated disaster recovery solution for the data center.

Reliable remote office data protection

Centralize the backup of multiple remote sites, the HP B6000 allows a fan-in of up to 384 backup streams to a single target system at the data center.

HP B6000 Replication licensing requirements grow as your system grows. Licensing is per target backup system, so you won't add to the cost no matter how many remote offices you need to replicate to a single B6200 appliance.

NOTE: For the B6200 backup system, each couplet being used as a replication target within the backup system requires a replication license.

See the 'Related Options - Replication licenses' section of this document for ordering and fulfillment information for Replication licenses.

Highly available solution increases backup reliability

Autonomic restart and no single point of failure in your backup process and redundancy at every level:

- Autonomic restart and node failover - simply swap to the other node in the couplet if one node fails. The backup application will continue to retry backup jobs.
- Built-in hardware redundancy - dual path disk arrays, dual path internal network, dual power supplies throughout.
- Dual fabric support for the backup jobs to the system via bonded Ethernet connections and dual fibre channel ports per node.
- Hot add server nodes and storage without the need to have scheduled maintenance.
- Includes hardware RAID 6 to reduce the risk of data loss due to disk failures.

Simplify remote management

B6000 StoreOnce Backup Systems offer an intuitive web-based browser interface allowing you to monitor your backup systems, locally or remotely, to view results or change settings across the enterprise. This self-managing device also reduces your routine maintenance.

Seamlessly integrates into any environment

The B6000 StoreOnce Backup Systems offer virtual tape library and NAS targets for backup applications allowing for ease of use and integration in to existing IT environments. B6000 Backup Systems are rack-mounted in standard 42U racks for efficient use of space in the data center and remote offices. Supported by all leading backup applications, this allows each Backup System to be installed and used without additional investment in software.

Special Features

Scale-out, future-ready design to deliver leading capacity and performance

The HP B6000 StoreOnce Backup Systems are designed to deliver a resilient solution to provide enterprise wide data protection. Scale-out capacity and performance to keep pace with shrinking backup windows, reliable disaster recovery, simplified protection of remote offices and rapid file restore to meet today's SLAs.

Customers can start out by purchasing one HP B6200 48TB StoreOnce Backup System consisting of two nodes connected in failover configuration as a couplet. This is delivered in a standard 42U rack



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which also contains the necessary networking capabilities for future expansion within the entire rack using an HP StoreOnce B6000 Backup System switch assembly.

To scale-out in terms of capacity, simply add up to 3 capacity upgrade kits to each couplet. Each upgrade kit comprises 2 shelves which are added symmetrically, either side of the couplet. Each shelf contains 12x 1TB or 2TB disks, giving 24TB or 48TB raw capacity (16- 32TB usable), allowing up to a maximum of 192TB raw capacity (128TB usable) associated with the original node.

Capacity upgrade kits can be added to the couplet while the Backup System is online in order to reduce unnecessary downtime.

A fully configured couplet with 3 capacity upgrade kits, can be managed as a single file system of up to 192TB raw capacity (128TB usable), however to optimize performance within a couplet, capacity should be balanced across both nodes within a couplet.

To scale-out in terms of performance, add in 1 more B6200 48TB Backup System, and again scale up by adding capacity upgrade kits. This gives you a maximum configuration of two fully configured B6200 Backup systems of 2 couplets with a total capacity of 384TB raw capacity (256TB usable) in a single rack.

To scale-out to 768TB raw (514TB usable) purchase a second rack with expansion switch assembly, and populate as before.

HP StoreOnce deduplication - extend data retention on disk

Data deduplication is a method of reducing storage needs by eliminating redundant data so that over time only one unique instance of the data is actually retained on disk. As a result, typically 20x more backup data can be retained in the same disk footprint.

Adding data deduplication to disk-based backup delivers a number of benefits:

- A cost effective way of keeping your backup data on disk for a number of weeks or even months. More efficient use of disk space effectively reduces the cost-per-gigabyte of storage and the need to purchase more disk capacity.
- Making file restores fast and easy from multiple available recovery points. By extending data retention periods on disk, your backup data is more accessible for longer periods of time, before archiving to tape. In this way, lost or corrupt files can be quickly and easily restored from backups taken over a longer time span.
- Ultimately, data deduplication makes the replication of backup data over lower bandwidth WAN links financially viable (providing offsite protection for backup data) as only changed data is sent across the connection to a second device (either a second identical device or one that comes from this product family).

HP StoreOnce deduplication

HP StoreOnce deduplication software simplifies the deployment of deduplication technology across IT infrastructures. With explosive data growth driving IT sprawl, deduplication technology is quickly becoming a requirement for many customers to help reduce the capacity required to store information.

- Traditional deduplication technologies tend to approach the problem from a fragmented perspective and this results in multiple deduplication methodologies being deployed adding to the management complexity of the infrastructure. HP StoreOnce is different; as a next



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generation deduplication architecture, it is not sold as standalone software, but rather is a portable engine that can be consistently embedded in multiple products, eliminating the complexity of first generation deduplication. HP StoreOnce uses patented innovation and features designed by HP Labs to maximize backup and restore performance while minimizing management and hardware overhead.

How it works

Deduplication works by examining the data stream as it arrives at the storage appliance, checking for blocks of data that are identical and eliminating redundant copies. If duplicate data is found, a pointer is established to the original set of data as opposed to actually storing the duplicate blocks, removing or "deduplicating" the redundant blocks from the volume. The key here is that the data deduplication is being done at the block level to remove far more redundant data than deduplication done at the file level where only duplicate files are removed.

Data deduplication is especially powerful when it is applied to backup, since most backup data sets have a great deal of redundancy. The amount of redundancy will depend on the type of data being backed up, the backup methodology and the length of time the data is retained.

Example. Backing up a large customer database that gets updated with new orders throughout the day. With the typical backup application you would normally have to back up, and store the entire database. Even incremental backups will result in storing the full database to disk once again, taking up increasing amounts of disk space with almost identical backup data sets. With block-level deduplication, you can backup the same database to the device on two successive nights and, due to its ability to identify redundant blocks, only the blocks that have changed will be stored. All the redundant data will have pointers established.

The HP approach to deduplication

HP StoreOnce deduplication software simplifies the deployment of deduplication technology across IT infrastructures. With explosive data growth driving IT sprawl, deduplication technology is quickly becoming a requirement for many customers to help reduce the capacity required to store information.

Traditional deduplication technologies tend to approach the problem from a fragmented perspective and this results in multiple deduplication methodologies being deployed adding to the management complexity of the infrastructure. HP StoreOnce is different; as a next generation deduplication architecture, it is not sold as standalone software, but rather is a portable engine that can be consistently embedded in multiple products, eliminating the complexity of first generation deduplication. HP StoreOnce uses patented algorithms and features designed by HP Labs to maximize backup and restore performance while minimizing management and hardware overhead.

HP Backup systems feature HP StoreOnce deduplication which uses an optimized in-line process to provide enhanced performance and is architected to be portable to other HP products in the future.

NOTE: The HP VLS product family uses a post-process, object-level data deduplication scheme for increased performance in large scale Fibre Channel deployments. StoreOnce and VLS deduplication platforms are not compatible. They use different technologies that cannot be used together.

For more information on HP StoreOnce deduplication refer to the white papers available on <http://www.hp.com/go/StoreOnce>



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What deduplication ratio can I expect?

The actual data deduplication ratio you can expect will depend on a number of factors including: the type of data, the backup methodology used, and the length of time you retain your data. However, assuming standard business data mix and extended on disk retention (periods of more than 12 weeks) you could expect to see 20:1 deduplication ratio assuming a weekly full and daily incremental backup model

Is there likely to be any impact on performance?

The actual performance achieved using a B6000 StoreOnce Backup Systems is dependent upon a number of factors including data set type, compression levels, number of data streams, number of devices emulated and number of concurrent tasks, such as backup and deduplication, housekeeping, and replication. In general, the more process steps, the longer it may take. Consequently, when compared to backup without deduplication, a reduced amount of data will be backed up AND replicated within the same timeframe.

For help with choosing the most appropriate B6000 StoreOnce Backup System configuration for your specific environment, we recommend you talk to your HP partner or sales advisor about using the HP storage Sizing Tool which can be downloaded from the Downloads section of www.hp.com/go/d2dsizer

Making use of the backup systems ability to run multiple backups in parallel can substantially improve aggregate throughput. This and a number of other best practices can help you to optimize the performance of a StoreOnce Backup System, Please refer to: "Best Practices for configuring HP B6200 StoreOnce Backup Systems"/documentation which will be available in Spring 2012 at: <http://h20000.www2.hp.com/bizsupport/TechSupport/DocumentIndex.jsp?lang=en&cc=us&taskId=101&prodClassId=1&contentType=SupportManual&docIndexId=64180&prodTypeId=12169&prodSeriesId=3896393> For more information on achieving deduplication ratios go to: www.hp.com/go/deduplication

Data replication - network efficient disaster recovery

Data replication is the process of making a duplicate copy of a data set across a network to a "target site". It is generally used to transmit backup data sets off-site to provide disaster recovery (DR) protection in the event of catastrophic data loss at the "source site"

Replicating large volumes of data backup over a typical WAN is expensive. However, today's products with data deduplication have made it possible to replicate data over lower bandwidth links for a more cost-effective, network efficient replication solution that provides a practical disaster recovery solution and an ideal solution for centralizing the backup of remote offices.

Data deduplication shrinks the amount of backup data that needs to be replicated from the source HP appliance, and as a result significantly reduces replication bandwidth requirements. Once a replica of the data backup set has been created on a remote HP target appliance all that is required to keep the replica identical to the source is the automatic, periodic copying and movement of the new data segments which are created during each backup. With such small amounts of data being transmitted asynchronously, lower bandwidth networks offer sufficient performance and a much lower cost solution.

HP's data replication feature includes replication bandwidth limiting functionality, restricting the amount of bandwidth being used when replicating data for even more network-efficient replication. Without replication bandwidth limiting, a replication job could use as much bandwidth as is



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available, potentially making other network activities unresponsive. Replication bandwidth limiting is customer configurable at the appliance level via the graphical user interface and is set as a percentage of the available network bandwidth.

For B6200 StoreOnce 48TB Backup Systems, a total of 96 source appliances can replicate to a single HP B6200 48TB target, this increases to 384 when 4 couplets are used.

HP B6000 Replication licensing requirements grow as you system grows. Licensing is per target backup system, so you won't add to the cost no matter how many remote offices you need to replicate to a single B6200 appliance.

NOTE: For the B6200 backup system, each couplet being used as a replication target within the backup system requires a replication license.

See the 'Related Options - Replication licenses' section of this document for ordering and fulfillment information for Replication licenses.

Once licensing has been applied, configuring and using replication is made straightforward by the graphical user interface and configuration wizard on the HP appliance.

NOTE: Replication of data can only occur between devices within the same product family ie. D2D and B6000 StoreOnce, but not VLS.

Highly Available data protection

The B6000 backup systems are highly available solutions designed with no single point of failure. The hardware of the B6200 couplet handles any one component failing. This means the following high availability features:

- Autonomic Restart and node failover
- RAID storage, with RAID6 as the minimum redundancy level (so each RAID set can survive a double disk failure)
- The front-end controllers (nodes) within a couplet are configured in failover mode so that if one controller fails all critical non-replaceable aspects of that controller are transparently moved to another controller and the failed controller is disabled.
- Dual storage controllers (RAID and JBOD), with cache mirroring between the RAID controllers (so that if a controller fails the data is preserved and is still written to media by the other controller)
- Dual paths to the disk drives
- Power failure protection for all caching within the storage
- Dual power supplies, such that the hardware will continue operating at full performance if one power supply is offline.
- Redundant fans, such that the hardware will continue operating at full performance if one fan is offline
- Mirrored system disks in each controller (node) to store the device operating system and software
- Front-end high availability (dual fabric support): each controller will have at least two front-end ports per port type to support the customer's external LAN/SAN fabrics. Thus if any external fabric fails there is still full access to every node in the device.
- Hot add additional storage or server nodes without scheduled downtime.
- A single GUI/CLI interface is presented from any one node in the system, if that controller



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fails then the GUI will automatically move to a different controller whilst still being presented at the same network address.

Data protection for complex and heterogeneous environments

B6000 StoreOnce Backup Systems are capable of supporting both VTL and NAS targets for backup applications on a single platform.

The device will present standard NAS protocols over the front-end 10Gb LAN ports of the device, thus providing a LAN backup target (with deduplication) that can be used transparently with any enterprise backup application

Models

For help with configuring the most appropriate B6000 StoreOnce Backup Systems for your specific environment, we recommend you talk to your HP partner or sales advisor about using the HP Storage Sizing Tool which can be downloaded from the Downloads section of www.hp.com/go/d2dsizer

HP B6200 48TB StoreOnce Backup System

B6200 StoreOnce Backup Systems take HP StoreOnce to the enterprise, providing disk based backup with deduplication for cost effective, longer term on site data retention and off site disaster recovery. These highly scale out solutions offer from 32TB to 512TB of usable capacity and industry-leading aggregate speeds of up to 28TB/hr* to match enterprise performance requirements and meet ever shrinking backup windows. The B6200 StoreOnce offers rapid data recovery, where restore performance = ingest performance with no restore performance penalty, to provide fast access to data. Designed with no single point of failure; you can be confident in system high availability. Integrating seamlessly into your current IT environment, B6000 StoreOnce Backup Systems simplify data management across complex and distributed enterprises enabling you to manage data protection from a single pane of glass.

*Actual performance is dependent upon data set type, compression levels, number of data streams, number of devices emulated and number of concurrent tasks, such as housekeeping or replication.



Compatibility

HP extensive compatibility testing program assures that your HP Backup Systems work with leading servers, operating systems, and backup applications, including those not manufactured by HP.

Server Compatibility The HP B6000 StoreOnce Backup Systems are supported on servers that use Microsoft Windows or Linux operating systems, including HP ProLiant, HP Integrity Servers and a variety of third-party servers.

For compatibility details on specific servers, refer to our website for the latest hardware compatibility information: <http://www.hp.com/go/ebs>

OS Support The HP B6000 StoreOnce Backup Systems are supported with Microsoft Windows, Linux, HP-UX and Solaris operating systems.

For more details, refer to our website for the latest information: <http://www.hp.com/go/ebs>

Software Support The HP B6000 StoreOnce Backup Systems are supported by a range of popular backup applications, including HP Data Protector software.

For details of specific backup application compatibility, refer to our website for the latest information: <http://www.hp.com/go/ebs>

Network Compatibility For the best performance, the HP B6000 StoreOnce Backup Systems should be connected to the servers it protects via a 10Gb (gigabit) Ethernet network. It is supported on all 10Gb Ethernet network interface cards (NICs) and switches, dependent on product. The devices will run on either IPv4 networks.

The HP B6000 StoreOnce Backup Systems are also supported on 100 base-T Ethernet networks, but performance will be severely restricted. 100 base-T would be a possible connection for the Web GUI access such as a management network in a Data Centre.

This product is not supported on networks using slower Ethernet technology.

SAN Compatibility The HP B6000 StoreOnce Backup Systems support a variety of Fibre Channel switches and HBAs.

For more details of SAN compatibility, refer to our website for the latest information: <http://www.hp.com/go/ebs>

Tape compatibility - migrating data to Tape HP B6000 StoreOnce Backup Systems are an excellent solution for regular and daily backup with data deduplication allowing more data to be retained on disk for longer, and enabling network-efficient data replication to deliver a cost-effective off-site disaster recovery solution.

Using the device should enable a significant reduction in the amount of data stored on physical tape, so that for example, there is no longer any need to store daily incremental backups on tape. However, HP still recommends periodic off-load to tape as the most cost-effective, energy efficient and robust solution for:

1. Long-term archival of data to meet regulatory requirements



Compatibility

2. Or off-site storage for disaster recovery where data replication is not an option

The HP B6000 does not support direct attach to tape. However, there are two methods available to migrate data to tape:

For highest performance, create a separate physical tape backup. This uses the backup application to create a completely separate tape backup from the server to a physical tape drive or library in parallel to the D2D backup. However, this will require the user to periodically manage two separate backup processes (D2D on a daily basis, and both D2D and Tape where archival is being prepared).

For a straight-forward and easier to manage solution, and where performance is less of an issue, use backup application copy. This uses the backup application to copy cartridges or NAS file shares that have been backed up to the target device to a physical tape drive or library that is connected elsewhere in the storage network either directly connected to a media server or on a Fibre Channel SAN. This method may have a performance impact, as the data has to be re-assembled on the backup system for copy and performance depends on the number of streams read/copied in parallel.

Service and Support, HP Care Pack, and Warranty Information

Warranty and Services Included with the Product Hewlett-Packard provides a 1 year parts exchange, 1 year labor, 1 year on site, normal business hours, next business day response for HP Backup Systems, plus 9x5 phone support for the duration of the warranty.

For more information about HP's Global Limited Warranty and Technical Support, visit:
<ftp://ftp.compaq.com/pub/products/storageworks/warranty/321708-408.pdf>

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.



Service and Support, HP Care Pack, and Warranty Information

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:
<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 Installation and Startup Service for HP Backup System

Complementing your new HP Backup System, the HP Installation and Startup Service provides the necessary activities required to deploy your Backup System. The service includes planning, deployment, installation verification tests (IVT) and a customer orientation session.

- Allows your IT resources to stay focused on their core tasks and priorities
- Reduces implementation time, impact and risk to your storage environment
- Helps you effectively utilize HP product by knowledge gained during onsite delivery of the service

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA2-9557ENW.pdf>

HP Backup and Recovery Solution Service

Rapid recovery from system downtime can hinge on the efficiency of your backup and recovery management environment - and on how well that environment is integrated with your storage infrastructure. But integration processes can be time-consuming and complex, and your IT resources are already stretched thin. Where can you find the expert help you need?

For fast, effective integration of your backup solution into an existing or new storage infrastructure, turn to the storage experts at HP Services. Our Backup and Recovery Solution Service (BRSS) provides end-to-end management of your backup integration process. The BRSS team works with you to



Service and Support, HP Care Pack, and Warranty Information

analyze your business and IT environment; develop a comprehensive integration plan and timetable; design an architecture that suits your critical requirements; install backup software; implement your solution; and validate your configuration.

- By engaging HP to implement HP Data Protector, customers' IT staff can stay focused on their core tasks and priorities, resulting in less impact to your business
- Professional backup and recovery planning that aligns with customer's business needs and implementation that reduces project execution time and risk to the storage environment
- HP's expertise with backup and recovery helps ensure issues are avoided

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-7442EN.pdf>

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



Service and Support, HP Care Pack, and Warranty Information

- 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

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>



Configuration Information

Step 1 - Select a Configuration

Select one:

	Part Number
HP B6200 48TB StoreOnce Backup System HP B6200 48TB StoreOnce Backup System with 48 TB of disk storage Contents: HP B6200 Processing Nodes (2 off) HP B6200 Storage Controllers (2 off)(each with 12 * 2TB HDDs) 8 * 0.5m Mini SAS cables 8 x Power cords (with IEC 320 C13 plug for Rack PDU) Installation Guide	EJ022A
HP B6200 24TB StoreOnce Upgrade Kit HP B6200 24TB upgrade kit, offering additional 24 TB of disk storage Contents: HP B6200 Storage JBODs (2 off)(each with 12 * 1TB HDDs) 4 * 0.5m Mini SAS cables 4 x Power cords (with IEC 320 C13 plug for Rack PDU) Installation Guide HP B6200 24TB Capacity Upgrade License Entitlement Certificate HP B6200 Storage JBODs (2 off)(each with 12 * 1TB HDDs) 4 * 0.5m Mini SAS cables	EJ024A
HP B6200 48TB StoreOnce Upgrade Kit HP B6200 48TB upgrade kit, offering additional 48 TB of disk storage Contents: HP B6200 Storage JBODs (2 off)(each with 12 * 2TB HDDs) 4 * 0.5m Mini SAS cables>> 4 x Power cords (with IEC 320 C13 plug for Rack PDU) Installation Guide HP B6200 48TB Capacity Upgrade License Entitlement Certificate HP B6200 Storage JBODs (2 off)(each with 12 * 2TB HDDs) 4 * 0.5m Mini SAS cables	EJ025A

Step 2 - Related Options

Replication Licenses	HP B6200 Replication License	EJ026A
	HP B6200 Replication License E-LTU	EJ026AAE
	<ul style="list-style-type: none">• These licenses enable an appliance to host replication targets. (No license is required for appliances which only act as replication sources)• Licensing is "per couplet" i.e. A single license is required to enable a couplet to host its replication targets• A total of 96 source appliances can replicate to a single HP B6200 48TB target. This increases to 384 when a 4 couplet configuration is used.	



Configuration Information

- Each couplet being used as a replication target within the backup system requires a replication license.
- Licenses are delivered via www.webware.hp.com and are node-locked by appliance serial number (and are not transferable)

10GbE Connectivity

Direct Attach Cable	HP 0.5m SFP+ 10GbE Copper Cable	487649-B21
	HP 1m SFP+ 10GbE Copper Cable	487652-B21
	HP 3m SFP+ 10GbE Copper Cable	487655-B21
	HP 5m SFP+ 10GbE Copper Cable	537963-B21
	HP 7m SFP+ 10GbE Copper Cable	487658-B21

NOTE: Direct Attach Cable (DAC) must be purchased separately for copper environments.

Fiber Optic Modules	HP BLC 10Gb SR SFP+	455883-B21
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NOTE: Fiber transceivers and cables must be purchased separately for fiber-optic environments.

Fiber Optic Cables	HP 2m SW LC/SC FC Cable Kit	221691-B21
	HP 5m SW LC/SC FC Cable Kit	221691-B22
	HP 15m SW LC/SC FC Cable Kit	221691-B23
	HP 2m SW LC/LC FC Cable Kit	221692-B21
	HP 5m SW LC/LC FC Cable Kit	221692-B22
	HP 15m SW LC/LC FC Cable Kit	221692-B23
	HP 30 m LC-LC Multi-Mode OM2 Fiber Optic Cable	221692-B26
	HP 50 m LC-LC Multi-Mode OM2 Fiber Optic Cable	221692-B27
	HP .5 m LC-LC Multi-Mode OM3 Fiber Optic Cable	AJ833A
	HP 1 m LC-LC Multi-Mode OM3 Fiber Optic Cable	AJ834A
	HP 5 m LC-LC Multi-Mode OM3 Fiber Optic Cable	AJ836A
	HP 15 m LC-LC Multi-Mode OM3 Fiber Optic Cable	AJ837A
	HP 30 m LC-LC Multi-Mode OM3 Fiber Optic Cable	AJ838A
	HP 50 m LC-LC Multi-Mode OM3 Fiber Optic Cable	AJ839A

NOTE: Fiber transceivers and cables must be purchased separately for fiber-optic environments.

HP ProCurve 10GbE Connectivity

Direct Attach Copper Cables	HP X242 SFP+ SFP+ 1 m Direct Attach Cable	J9281B
	HP X242 SFP+ SFP+ 3 m Direct Attach Cable	J9283B
	HP X242 SFP+ SFP+ 7 m Direct Attach Cable	J9285B
	HP X244 XFP SFP+ 1 m Direct Attach Cable	J9300A
	HP X244 XFP SFP+ 3 m Direct Attach Cable	J9301A



Configuration Information

NOTE: Direct Attach Cable (DAC) must be purchased separately for copper environments.

Fiber Optic Cables	HP 0.5 m PremierFlex OM3+ LC/LC Optical Cable	BK837A
	HP 1 m PremierFlex OM3+ LC/LC Optical Cable	BK838A
	HP 2 m PremierFlex OM3+ LC/LC Optical Cable	BK839A
	HP 5 m PremierFlex OM3+ LC/LC Optical Cable	BK840A
	HP 15 m PremierFlex OM3+ LC/LC Optical Cable	BK841A
	HP 30 m PremierFlex OM3+ LC/LC Optical Cable	BK842A
	HP 50 m PremierFlex OM3+ LC/LC Optical Cable	BK837A

NOTE: Fiber transceivers and cables must be purchased separately for fiber-optic environments.

HP B6000 StoreOnce Backup Systems Configurations -

NOTE: Use the steps below as a guide but TO PLACE ACTUAL ORDERS USE WATSON and CLIC TO CONFIGURE A SYSTEM SO THAT ALL RULES ASSOCIATED WITH B6000 BACKUP SYSTEMS ARE ADHERED TO. THIS IS ESPECIALLY TRUE FOR SYSTEMS WITH OPTION #0D1 WHICH REQUIRE MANDATORY FACTORY EXPRESS INTEGRATION TO ALLOW THEM TO MOVE THROUGH THE MANUFACTURING PROCESS. THE STORAGE SIZER TOOL MUST ALSO BE USED TO CORRECTLY SIZE A DEDUPLICATION AND REPLICATION ENABLED SYSTEM!

Step 1 - Configurations (Option #0D1 must be added to products listed for essential factory integration) For the most accurate sizing of the solution necessary for your environment please be sure that your sales rep or partner utilizes the HP Sizer tool. This is especially important when considering deduplication and replication.

B6000 Configurations - (EJ022A) based configurations

Factory Integrated Clusters

	Couplet 1		Couplet 2		Couplet 3		Couplet 4	
Switch kit (required)	Qty 1 - EJ021A				Qty 1 - EJ027A			
B6000 48TB Couplet	Qty 1 - EJ022A		Qty 1 - EJ022A		Qty 1 - EJ022A		Qty 1 - EJ022A	
Add capacity	Qty 1 EJ024A 24TB	Qty 1 EJ025A 48TB	Qty 1 EJ024A 24TB	Qty 1 EJ025A 48TB	Qty 1 EJ024A 24TB	Qty 1 EJ025A 48TB	Qty 1 EJ024A 24TB	Qty 1 EJ025A 48TB
Add capacity	Qty 1 EJ024A 24TB	Qty 1 EJ025A 48TB	Qty 1 EJ024A 24TB	Qty 1 EJ025A 48TB	Qty 1 EJ024A 24TB	Qty 1 EJ025A 48TB	Qty 1 EJ024A 24TB	Qty 1 EJ025A 48TB
Add capacity	Qty 1 EJ024A 24TB	Qty 1 EJ025A 48TB	Qty 1 EJ024A 24TB	Qty 1 EJ025A 48TB	Qty 1 EJ024A 24TB	Qty 1 EJ025A 48TB	Qty 1 EJ024A 24TB	Qty 1 EJ025A 48TB
Replication license	Qty 1 - EJ026A		Qty 2 - EJ026A		Qty 3 - EJ026A		Qty 4 - EJ026A	

Factory Integrated Clusters Form Factors



Configuration Information

	Couplet 1		Couplet 2		Couplet 3		Couplet 4	
Switch kit (required)	2U				2U			
B6000 48TB Couplet	8U		8U		8U		8U	
Add capacity 24TB/48TB	4U	4U	4U	4U	4U	4U	4U	4U
Add capacity 24TB/48TB	4U	4U	4U	4U	4U	4U	4U	4U
Add capacity 24TB/48TB	4U	4U	4U	4U	4U	4U	4U	4U
Standard Rack	42U		42U		42U		42U	

Step 2 - Select appropriate Services/Support (optional)

- Determine whether you require services via HP direct/HP authorized enterprise resellers or HP authorized commercial resellers.
- Choose Installation or Installation and Startup service desired. HP recommends Installation and Startup. (Details of specific part numbers in service section.)
- Choose support uplift type. There are different service uplifts uplifting years of service, hours of availability and response time. HP recommends three year 24X7 support uplifts. (Details of specific part numbers in service section.)

Technical Specifications

B6000 maximum RAW capacity TB				
	1 couplet	2 couplet	3 couplet	4 couplet
Base couplet	48	96	144	192
1 24TB expansion kit	72	144	216	288
2 24TB expansion kit	96	192	288	384
3 24TB expansion kit	120	240	360	480
Or...				
1 48TB expansion kit	96	192	288	384
2 48TB expansion kit	144	288	432	576
3 48TB expansion kit	192	384	576	768

NOTE: A mixture of 24 or 48TB expansion kits can be used up to a maximum of 3 per couplet.

B6000 maximum usable capacity TB				
	1 couplet	2 couplet	3 couplet	4 couplet
Base couplet	32	64	96	128
1 24TB expansion kit	48	96	144	192
2 24TB expansion kit	64	128	192	256
3 24TB expansion kit	80	160	240	320
Or...				
1 48TB expansion kit	64	128	192	256
2 48TB expansion kit	96	192	288	384
3 48TB expansion kit	128	256	384	512
Data Deduplication Usable capacity using data deduplication at 20:1 *	2.5 PB	5.1 PB	7.7 PB	10.2 PB

Actual results of data deduplication will vary with data type, change rates over time and backup methodologies used. Assuming standard business data mix and extended on-disk retention, typically a 20:1

NOTE: A mixture of 24 or 48TB expansion kits can be used up to a maximum of 3 per couplet

Replication

Supports data replication. Replication is automatic and appliances may function as both replication targets and sources simultaneously with licensing only being required for any appliance acting as a target.

Replication of data can occur between devices within the same product family i.e. between D2D and B6000 StoreOnce.

Targets for backup applications

Virtual tape library and NAS

Maximum aggregate performance by configuration	B6000 EJ022A
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Technical Specifications

1 Base couplet*	6 TB/hr	1667 MB/s
2 Base couplet*	12 TB/hr	3333 MB/s
3 Base couplet*	18 TB/hr	5000 MB/s
4 Base couplet*	24 TB/hr	6667 MB/s

* Assumes use of upgrade kit to achieve maximum performance. Actual performance is dependent upon data set type, compression levels, number of data streams, number of devices emulated and number of concurrent tasks, such as housekeeping or replication.

HP B6000 StoreOnce Backup System			
	per node	per couplet (2x nodes)	per cluster (4x couplets)
Number of Virtual Tape Libraries and NAS backup targets (combined)	48	96	384
Maximum number of cartridges emulated per Virtual Tape Libraries	16384		
Maximum number of source appliances per target appliance (fan in)	48	96	384
Number of Virtual Tape Drives	192	384	1536
Maximum Number of Cartridges Emulated	786432	1572864	6291456
Targets for backup	N/A	VTL and NAS	VTL and NAS
Tape Devices Emulated (check)	N/A	HP LTO- 2 Ultrium Tape Drive /LTO-3 Ultrium Tape Drive/LTO-4 Ultrium Tape Drive/LTO-5 Ultrium Tape Drive in, MSL2024 Tape Library, MSL4048 Tape Library, MSL8096 Tape Library, HP D2D Backup System Generic Library with HP Ultrium D2D Generic tape drive	
Interface	N/A	8x 1Gb Ethernet Ports per couplet, plus 4x 10Gb Ethernet Ports per couplet, plus 4x 8Gb Fibre Channel Ports per couplet	N/A
RAID Level	RAID 6		

Power Consumption by component

HP B6200 48TB StoreOnce Backup System - EJ022A	3312 W
HP B6200 24TB StoreOnce Upgrade Kit - EJ024A	912 W
HP B6200 48TB StoreOnce Upgrade Kit - EJ025A	912 W
HP B6000 Switch Assembly for B6200 StoreOnce Backup Systems - EJ021A	396 W
HP B6000 Expansion Switch Assembly for B6200 StoreOnce Backup Systems - EJ022A	748 W



Technical Specifications

Dimensions and Physical Characteristics

HP B6200 48TB StoreOnce Backup System	Form Factor	8U	
	Dimensions (server x2)	Physical Dimensions (HxWxD)	14.4 x 30 x 19.6 in (36 x 75 x 49cm)
		Shipping (HxWxD)	41.6 x 54.4 x 41.6 in (104 x 136 x 104 cm)
	Weight (server x2)	Out of Box Weight	328 lb (149Kg)
		Shipping Weight	361 lb (164Kg)
	Dimensions (expansion shelf x2)	Physical Dimensions (HxWxD)	7.2 x 24 x 19.6 in (18 x 60 x 49cm)
		Shipping (HxWxD)	27.2 x 42.4 x 29.2 in (68x106x73cm)
	Weight (expansion shelf x2)	Out of Box Weight	141 lb (64 Kg)
		Shipping Weight	154 lb (70 Kg)
HP B6200 24TB StoreOnce Upgrade Kit - EJ024A	Form Factor	4U	
	Dimensions	Physical Dimensions (HxWxD)	7.2 x 24 x 19.6 in (18 x 60 x 49cm)
		Shipping (HxWxD)	27.2 x 42.4 x 29.2 in (68x106x73cm)
	Weight	Out of Box Weight	141 lb (64 Kg)
		Shipping Weight	154 lb (70 Kg)
HP B6200 48TB StoreOnce Upgrade Kit	Form Factor	4U	
	Dimensions	Physical Dimensions (HxWxD)	7.2 x 24 x 19.6 in (18 x 60 x 49cm)
		Shipping (HxWxD)	27.2 x 42.4 x 29.2 in (68x106x73cm)
	Weight	Out of Box Weight	141 lb (64 Kg)
		Shipping Weight	154 lb (70 Kg)
Environmental	Operating temperature range	50°F to 95°F (10°C to 35°C)	
	Shipping temperature range	-40°F to 150°F (-40°C to 66°C)	
	Operating Humidity (non-condensing)	40 to 80% Relative Humidity	

Worldwide Product Safety and EMC Approvals Safety: Worldwide compliance to 60950-1

NOTE: For country specific compliance contact your local sales representative

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Technical Specifications

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

