

Overview

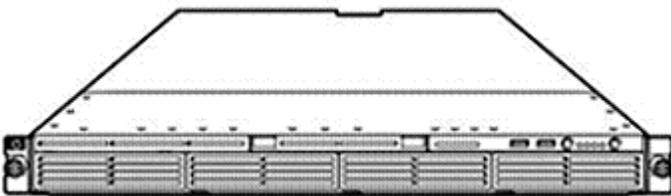
Does data growth leave you struggling with complex, distributed, and costly data protection? Keep pace with HP StoreOnce Backup systems, disk-based data protection with StoreOnce deduplication.

HP StoreOnce Backup systems reduce the amount of backup data you need to store by up to 95%, so with our scale-out architecture you can pay-as-you-grow to retain up to 10 petabytes of data in a single pool. They provide automated backup and DR operations with all the features you'd expect from dedicated disk backup, and some you can only get from HP.

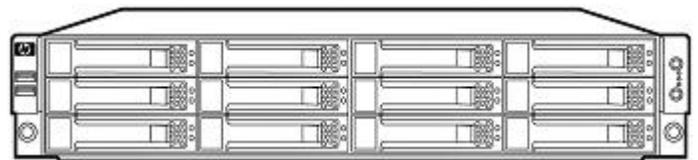
HP StoreOnce Catalyst delivers industry-leading backup speeds of up to 100 TB/hour to meet shrinking backup windows, plus Federated Deduplication across the enterprise so you can dedupe data anywhere to suit your configuration. Based on HP's single deduplication technology, StoreOnce, managing the movement of data between remote offices and enterprise data centers has never been easier.

Seamlessly integrating with your current backup applications, StoreOnce Backup systems provide flexible integration for both SAN and virtualized environments. With the HP StoreOnce B6200, Autonomic restart means a more resilient solution at a price/performance point that is up to 75% better than the leading competitor.

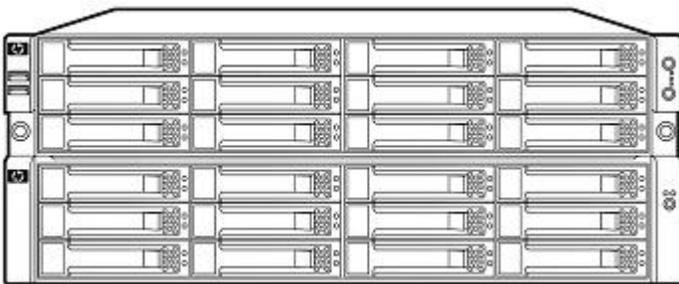
**Actual performance is dependent upon configuration data set type, compression levels, number of data streams, number of devices emulated and number of concurrent tasks, such as housekeeping or replication.*



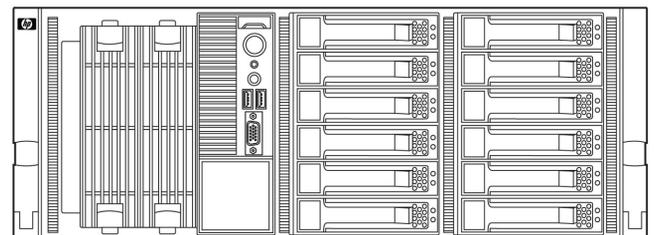
HP 2620iSCSI Backup



HP StoreOnce 4210iSCSI or 4210FC Backup

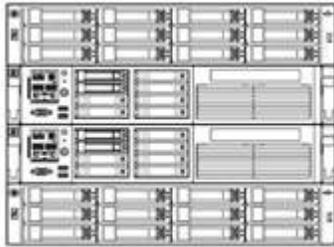


**HP StoreOnce 4210 Backup/
StoreOnce 4220 Backup
(shown with StoreOnce 4210/4220 Upgrade)**

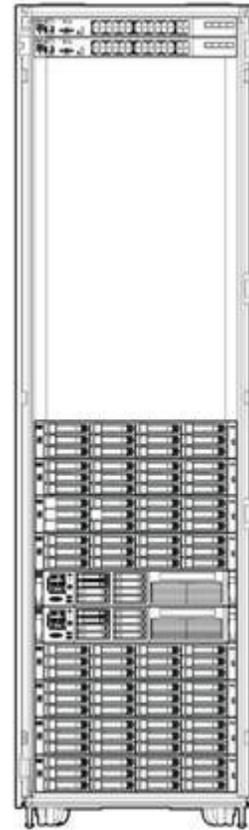


**HP StoreOnce 4420 Backup /
HP StoreOnce 4430 Backup
(shown without Upgrade Kits)**

Overview



HP StoreOnce B6200 48TB Backup



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

What's New

A new generation of single node StoreOnce Backup systems for regional data centers and remote offices, complementing the HP StoreOnce B6200, and taking HP StoreOnce Catalyst across the enterprise to deliver a broader range of superior price/performance points spanning from 1TB/hour to 100 TB/hour.

- Offers Federated Deduplication across the StoreOnce Backup range using a single deduplication technology - StoreOnce. Dedupe at the application source, at the backup server or at any of the HP StoreOnce target appliances.
- Automated, efficient Disaster Recovery and Remote Office backup operations with many-to-one and cascaded data movement.
- Simplicity of management with a single pane of glass to manage all data movement between HP StoreOnce appliances in remote offices and enterprise data centers.
- For more information please refer to www.hp.com/go/storeonce

NOTE: From December 2012 HP StoreOnce Backup systems, expansion kits and associated licenses have been rebranded and have new SKUs. For previous version of HP StoreOnce D2D Backup system please refer to:

http://h18004.www1.hp.com/products/quickspecs/13218_na/13218_na.html

Features and Benefits

Scale out capacity for across the enterprise

Keep pace with data growth, HP StoreOnce Backup offers scale-out architecture that allows you to pay as you grow.

Choose from a range of native capacity points to suit enterprise wide requirements:

From 48TBs to 768 TBs raw (512 TB useable) in the data center

From 24 TBs to 96 TBs raw (76 TB useable) in your mid-size regional offices

From 12TB to 48 TBs raw or from 6TBs to 12 TBs raw (9 TB useable) and down to 4 TB (2.5 TB useable) for remote offices.

Choose capacity points that start small and scale-out by allowing you to add in expansion shelves or nodes as upgrade kits online, without incurring system downtime.

*To optimize capacity utilization and in accordance with performance requirements, your capacity requirements should be planned following Recommended Configuration Guidelines

Please refer to: Recommended Configuration Guidelines and Installation Planning Guide for HP B6200 StoreOnce backup systems:

<http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c03116530/c03116530.pdf>

<http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c03121413/c03121413.pdf#>

or Best Practices Guidelines for StoreOnce backup systems:

<http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c02511912/c02511912.pdf#>

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.

For example, using HP StoreOnce deduplication with a fully configured HP StoreOnce B6200 can provide extended data retention on the same disk footprint for up to 10 PBs of backup data.

Industry-leading performance to meet shrinking backup windows

Backup big data within short backup windows with HP StoreOnce 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 100TB* per hour with the top of the range HP StoreOnce B6200 and HP StoreOnce Catalyst.

You can enhance performance by deduplicating anywhere; at the application source or at the backup server or at the target HP StoreOnce Backup appliance. Federated Deduplication means you can dedupe where it makes sense for your business, not where technology vendor limitations mandate. Federated Deduplication is available across all new HP StoreOnce Backup systems, and with HP Data Protector 7 and Symantec NetBackup software through OST.

*Actual performance is dependent upon configuration 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

Consolidate and automate your backup processes using a single HP StoreOnce Backup system, allowing

Features and Benefits

Automate daily backup to free-up IT resources you to reduce the time spent managing multiple data protection devices and processes. What's more, HP StoreOnce Backup can help you reduce complexity by spanning multiple enterprise network platforms to consolidate your backup in one.

With HP StoreOnce Catalyst movement of deduplicated data across the enterprise is even easier. There's no need to dedupe and rehydrate at each step, and data movement is seamlessly controlled by your backup application.

Lower the cost of disaster recovery and remote office data protection HP StoreOnce deduplication also enables network efficient offsite data replication. All HP 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 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, HP StoreOnce Backup allows a fan-in from 8 backup streams to a single HP StoreOnce 2620 target, and up to 384 backup streams to a single HP StoreOnce B6200 target at the data center. With HP StoreOnce Catalyst the movement of data between sites is seamlessly controlled by your backup application, supporting a range of flexible configurations that enable the concurrent movement of data from one site to multiple sites, and the ability to cascade data around the enterprise (sometimes referred to as multi-hop).

Industry leading restore speeds Up to 40 TB/hour industry-leading restore speeds; StoreOnce B6200 Backup restores at the same speed as native ingest.

Seamlessly integrates into your environment The HP StoreOnce Backup systems offer flexibility with virtual tape library (VTL), NAS and StoreOnce Catalyst targets for backup applications. This means that you can easily integrate StoreOnce Backup into your existing IT environment with minimum disruption. Supported by all leading backup applications, this allows each Backup System to be installed and used without additional investment in software.

The 1U, 2U and 4U HP StoreOnce Backup systems are easily rack-mounted in standard racks, while the leading performance HP StoreOnce B6200s are pre-integrated into HP extended depth 42U racks for efficient use of space in the data center and remote offices.

Highly available solution increases backup reliability HP StoreOnce Backup systems can enhance reliability by automating and consolidating backup to reduce operator intervention and consequently user-generated errors. HP understands the need for highly reliable, highly available data protection. Consequently HP StoreOnce Backup systems feature hardware RAID 6 and RAID 5 to reduce the risk of data loss due to disk failure. The high performance HP StoreOnce B6200 extends this reliability with autonomic restart and no single point of failure in your backup process by offering 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 with appropriate script or configuration settings, where supported, 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.

Features and Benefits

Special Features

Scale-out, future-ready designs to deliver leading capacity and performance HP StoreOnce Backup systems are designed to deliver 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 a single HP StoreOnce base unit/couplet, and then expanding with additional couplets and expansion shelves (in the case of the StoreOnce B6200), or additional expansion shelves (with the other StoreOnce Backup systems, apart from the entry-level HP StoreOnce 2620 Backup).

Upgrading with HP StoreOnce 4210, 4220, 4420 and 4430:

Start out with the HP StoreOnce base unit. When you're ready, simply purchase the corresponding storage expansion/capacity upgrade kits.

Upgrading with HP StoreOnce B6200:

Start out with the HP StoreOnce B6200 48TB system consisting of two nodes connected in failover configuration as a couplet. This is delivered pre-integrated into HP extended depth 42U racks which also contains the necessary networking capabilities for future expansion within the entire rack using an HP StoreOnce B6200 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, both sides 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 usage should be balanced across both nodes within a couplet.

To scale-out in terms of performance, add in one more HP StoreOnce B6200 48TB system and again scale up by adding capacity upgrade kits. This gives you a maximum configuration of two fully configured HP StoreOnce B6200 48TB system of two 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.

**To optimize capacity utilization and in accordance with performance requirements, your capacity requirements should be planned following Recommended Configuration Guidelines*

Please refer to: Recommended Configuration Guidelines and Installation Planning Guide for HP B6200 StoreOnce backup systems:

<http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c03116530/c03116530.pdf>

<http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c03121413/c03121413.pdf#>

or Best Practices Guidelines for StoreOnce backup systems:

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<http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c02511912/c02511912.pdf#>

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 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

Features and Benefits

back up 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>

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 an HP StoreOnce Backup system 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 back up without deduplication, a reduced amount of data will be backed up AND replicated within the same timeframe.

For help with choosing the most appropriate HP StoreOnce Backup 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/StoreOnceSizer

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.

For more information, refer to:

Please refer to: Recommended Configuration Guidelines and Installation Planning Guide for HP B6200 StoreOnce backup systems:

Features and Benefits

<http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c03116530/c03116530.pdf>

<http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c03121413/c03121413.pdf#>

or Best Practices Guidelines for StoreOnce backup systems:

<http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c02511912/c02511912.pdf#>

For more information on achieving deduplication ratios go to: www.hp.com/go/deduplication

Data replication - for network efficient DR

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.

NOTE: Replication of data can only occur between devices within the same product family ie. HP StoreOnce 4420 and HP StoreOnce B6200, but not between HP StoreOnce and HP VLS appliances.

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 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.

Replication Licensing:

HP delivers replication by license, either as a standalone replication solution, or as part of the HP StoreOnce Catalyst licensing (see the following section below). With HP StoreOnce Backup, replication is licensed by VTL/NAS target, this means that with one replication license:

8 source appliances can replicate to a single HP StoreOnce 2620

24 source appliances can replicate to a single HP StoreOnce 4210 or 4220

50 source appliances can replicate to a single HP StoreOnce 4420 or 4430

96 source appliances can replicate to a single HP StoreOnce B6200 48TB target

For the HP StoreOnce B6200 a set of four replication licenses will enable up to 384 source appliances to replicate to the 4 couplets of a fully populated B6200.

Replication by target makes replication from multiple remote sites to a single data center a more cost effective option with StoreOnce than with competitor products.

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Once licensing has been applied, configuring and using replication is made straightforward by the graphical user interface and configuration wizard on the HP appliance. Replication licensing requirements grow as you system grows.

NOTE: if using your StoreOnce Backup for both VTL/NAS and StoreOnce Catalyst targets, additional licensing may be required as described in the following section.

Also refer to the 'Related Options - Replication licenses' section of these QuickSpecs for more details. Electronic licenses are available and delivered via <http://www.webware.hp.com>

HP StoreOnce Catalyst - seamless data movement across the enterprise

HP StoreOnce Catalyst brings to fruition the HP StoreOnce vision of a single, integrated enterprise-wide deduplication algorithm. It allows the seamless movement of deduplicated data across the enterprise to other StoreOnce Catalyst systems without rehydration. This means that you can benefit from:

- Simplified management of data movement from a single pane of glass: tighter integration with your backup application to centrally manage file replication across the enterprise.
- Seamless control across complex environments: supporting a range of flexible configurations that enable the concurrent movement of data from one site to multiple sites, and the ability to cascade data around the enterprise (sometimes referred to as multi-hop).
- Enhance performance: distributed deduplication processing using StoreOnce Catalyst stores on the StoreOnce Backup systems and on multiple servers can optimize loading and utilization of backup hardware, network links and backup servers for faster deduplication and backup performance.
- Faster time to backup to meet shrinking backup windows: up to 100TB/hour *aggregate throughput, 4x faster than backup to a NAS target

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

HP StoreOnce Catalyst is available by electronic license for customers of any of the latest HP StoreOnce Backup systems with HP Data Protector 7 or Symantec Backup Exec and NetBackup software via OST. Licensing works in the following way:

For StoreOnce Catalyst implementation with StoreOnce 2620, 4210, 4220, 4420, 4430:

Each Catalyst-enabled product requires a StoreOnce Catalyst license per base unit that is to be used as a target for Catalyst backups or copy operations.

For StoreOnce Catalyst implementations with B6200:

Each Catalyst-enabled couplet requires a StoreOnce Catalyst license, for a fully configured B6200 up to 4 Catalyst licenses will be required.

Note that, with Catalyst licenses, additional StoreOnce replication licenses may be required if you intend to replicate between VTL and/or NAS targets in addition to Catalyst. In this case, a replication license is required for each target backup system, or couplet (B6200) - no VTL/NAS replication license is required for source systems.

Electronic licenses are available and delivered via <http://www.webware.hp.com>

It is possible for existing StoreOnce customers to convert existing StoreOnce D2D products so that they can then employ StoreOnce Catalyst. However, the conversion process is a destructive upgrade and will also reduce the usable capacity available.

Therefore caution is recommended when deciding to convert existing products. For further information

Features and Benefits

HP Replication Manager

please refer to conversion documentation posted on: www.hp.com/support/manuals

HP StoreOnce Replication Manager (RM) is a centralized management console to analyze up to 400 StoreOnce devices across multiple sites. It provides advanced monitoring, reporting, forecasting and trend analysis in NAS, VTL, and StoreOnce Catalyst environments. Specifically, Replication Manager 2.1 provides trends analysis of capacity usage, replication up times, utilization analysis and performance. This analysis can be exported in CSV format. RM 2.1 also includes real time graphical views (with auto refresh), active directory group setting, firmware identification, and a Command Line Interface. RM 2.1 is supported on 64 bit machines only.

Replication Manager software is available for download from the HP StoreOnce Software Depot Kiosk www.software.hp.com/kiosk.

In order to benefit from Replication manager, StoreOnce Backup systems require the latest firmware, which can be obtained via a free firmware upgrade by following the "Support & Drivers" link on www.hp.com/go/storeonce or by following the "HP Support & Drivers" link from: www.hp.com

Choosing the best backup target for data protection - VTL, NAS or StoreOnce Catalyst

HP StoreOnce Backup systems are capable of supporting VTL, NAS and StoreOnce Catalyst targets for backup applications on a single platform.

StoreOnce Catalyst targets are recommended for more complex data protection environments where flexibility of data movement is required. StoreOnce Catalyst can also enable distributed deduplication processing, balancing the load for optimum server, backup appliance and network.

VTL targets appear to the backup application as physically connected tape devices, with backup and recovery jobs managed in the same manner as with a physical tape device. The primary difference being that there is no physical media that must be managed. They are recommended for customers in Fibre Channel environments, or where a continued investment in tape hardware and software is a key consideration.

NAS appliances provide general disk file share and protection. HP StoreOnce Backup is designed as target storage for backup applications that need rapid restores and reduced backup windows. 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 qualified enterprise backup application, as such, it uniquely offers:

- Easier setup and administration of backup
- Data deduplication, allowing more backup data to be retained on disk for longer periods
- Data replication for cost-effective, off-site storage

NAS targets are recommended for customers in non-tape environments. NAS targets consist of one or more file shares that appear to the backup application as standard CIFS drive shares, while still supporting data deduplication and replication. The StoreOnce Backup systems should not be used for general purpose NAS operations such as file sharing.

Features and Benefits

Highly Available data protection

HP StoreOnce Backup systems are designed to deliver upmost reliability, with RAID 6 implemented across the product family (RAID 5 on StoreOnce 2600 Backup systems). However, the highest performance member of the HP StoreOnce family, the StoreOnce B6200 offers additional protection for the multi-node configuration.

HP StoreOnce B6200 is designed with no single point of hardware failure. The hardware of the HP StoreOnce B6200's 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 fails then the GUI will automatically move to a different controller whilst still being presented at the same network address.

Models

For help with choosing the most appropriate 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

NOTE: From December 2012 HP StoreOnce Backup systems, expansion kits and associated licenses have been rebranded and have new SKUs. For previous version of HP StoreOnce D2D Backup system please refer to:

http://h18004.www1.hp.com/products/quickspecs/13218_na/13218_na.html

NOTE: * - In all cases, actual performance is dependent upon configuration, data set type, compression levels, number of data streams, number of devices emulated and number of concurrent tasks, such as housekeeping or replication.

To optimize capacity utilization and in accordance with performance requirements, your capacity requirements should be planned following Recommended Configuration guidelines.

Please refer to: Recommended Configuration Guidelines and Installation Planning Guide for HP B6200 StoreOnce backup systems:

Features and Benefits

<http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c03116530/c03116530.pdf>

<http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c03121413/c03121413.pdf#>

or Best Practices Guidelines for StoreOnce backup systems:

<http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c02511912/c02511912.pdf#>

HP StoreOnce B6200 Backup

HP StoreOnce B6200 takes 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. The highest performance HP StoreOnce Backup system, these highly scale-out solutions offer from 32 TB to 512 TB of usable capacity (48 to 768 TB raw) and industry-leading aggregate speeds of up to 100TB/hr* with StoreOnce Catalyst to match enterprise performance requirements and meet ever shrinking backup windows.

HP StoreOnce 4430 Backup

HP StoreOnce 4430 delivers cost-effective, scalable disk-based backup with deduplication for longer term on-site data retention and off-site disaster recovery for larger data centers or regional offices. It also provides a replication target device for up to 50 remote or branch offices. The StoreOnce 4430 delivers a scalable 4U solution from 16 TB to 76 TB of usable capacity (24 to 96 TB raw) and speeds of up to 12.5 TB/hour* with HP StoreOnce Catalyst for protection of up to 50 TBs* of data in a 4-hour window.

HP StoreOnce 4420 Backup

HP StoreOnce 4420 delivers a balance of price and performance for midsized to large data centers or regional offices, and an ideal replication target device for up to 50 remote or branch offices. The StoreOnce 4420 delivers a scalable 4U solution from 8 TB to 38 TB of usable capacity (12 to 48 TB raw) and speeds of up to 10.8 TB/hour* with StoreOnce Catalyst for protection of up to 43 TBs* of data in a 4-hour window.

HP StoreOnce 4220 Backup

HP StoreOnce 4220 is designed for small to midsized data centers and as a replication target device for up to 24 remote and branch offices. The 2U StoreOnce 4220 delivers a scalable solution from 8 to 18 TB of useable capacity (12 to 48 TB raw) using a simple and cost effective 2U capacity upgrade. Meet backup windows with speeds of up to 2.2 TB/hour* using HP StoreOnce Catalyst for protection of up to 8.8 TBs* of data in a 4-hour window.

HP StoreOnce 4210 Backup

HP StoreOnce 4210 provides an entry point to scalable, automated backup and disaster recovery for smaller data centers or remote and branch offices. It can also provide a cost-effective backup target for up to 16 remote and branch office data sources. This 2U backup system scales from 4 to 9 TB of usable capacity (6 to 12 TB raw) using a simple and cost effective 2U capacity upgrade. Delivering speeds of up to 2.2 TB/hour* with HP StoreOnce Catalyst the StoreOnce 4210 can protect up to 8.8 TBs* of data in a 4-hour window.

HP StoreOnce 2620 Backup

HP StoreOnce 2620 delivers entry-level disk-based backup and disaster recovery that's ideal for smaller remote or branch offices and data centers. This 1U Backup system offers 2.5 TB of usable capacity (4 TB raw) and speeds of up to 1 TB/hour* with StoreOnce Catalyst, allowing a full 4 TBs* of backup to be completed in just 4 hours.

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 HP 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 and the latest hardware compatibility information, please refer to: <http://www.hp.com/go/ebs>

OS Support HP 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 HP StoreOnce Backup systems are supported by a range of popular backup applications, including HP Data Protector software.

HP StoreOnce Backup systems with StoreOnce Catalyst are supported on HP Data Protector 7 and Symantec BackupExec and NetBackup software with an OST.

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, HP StoreOnce 4420, 4430 and B6200 Backup systems should be connected to the servers they protect via a 10Gb Ethernet network. They are supported on all 10Gb Ethernet network interface cards (NICs) and switches, dependent on product. 1Gb Ethernet network connections are also supported for sites without 10Gb Ethernet networks (with reduced performance)

HP StoreOnce Backup systems are also supported on 100 base-T Ethernet networks, for connection for the Web GUI and CLI access, such as a management network in a Data Centre.

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

SAN Compatibility HP 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 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:

- Long-term archival of data to meet regulatory requirements
- Long-term archival of rich media for repurposing (for example in media and entertainment)
- Or off-site storage for disaster recovery where data replication is not an option

Compatibility

HP StoreOnce Backup systems do 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 StoreOnce disk backup. However, this will require the user to periodically manage two separate backup processes (StoreOnce on a daily basis, and both StoreOnce 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 StoreOnce 4210, StoreOnce 4220, StoreOnce 4420, StoreOnce 4430 and StoreOnce B6200 Backup systems, plus 9x5 phone support for the duration of the warranty.

The StoreOnce 2620 includes a 1-year, next-day, parts exchange, limited warranty for the HP 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](http://ftp.compaq.com/pub/products/storageworks/warranty/321708-408.pdf)

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 30 HP Critical Advantage credits.)

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

Or

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. (90 Proactive Select flexible credits.)
<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-3842ENW.pdf>

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

Plus:

HP Proactive Select-Choose from an extensive menu of consultancy and technical services, such as onsite firmware upgrades, health checks, assessments, and education. (60 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>

Plus:

HP Proactive Select-Choose from an extensive menu of consultancy and technical services, such as onsite firmware upgrades, health checks, assessments, and education. (30 Proactive Select flexible credits.)
<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-3842ENW.pdf>

Implementation

HP StoreOnce Backup Installation and Startup Service - For smooth startup and better business outcomes, HP StoreOnce Backup Installation and Startup Service provides planning, service deployment, installation verification testing (IVT), and an orientation session to facilitate deployment of the features and functionality of HP StoreOnce Backup systems. In today's new era of business technology- 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.
<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA3-7608ENW.pdf>

Remote Support Tools

HP Insight Remote Support: Count on proven technology to deliver secure, reliable 24x7 remote monitoring, diagnosis, and problem resolution, all available at no extra charge if you have an existing warranty, service agreement, or HP Care Pack Service with HP.
<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-4676ENW.pdf>

Configuration Information

Step 1 - Select a Configuration

The HP StoreOnce Backup Planning Guides help you select the correct options for power and connectivity for your data centre environment. It will also help plan for a successful and smooth installation.

For B6200 See:

<http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c03116530/c03116530.pdf>

<http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c03121413/c03121413.pdf#>

For all other StoreOnce products see:

<http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c02511912/c02511912.pdf#>

NOTE: From December 2012 HP StoreOnce Backup systems, expansion kits and associated licenses have been rebranded and have new SKUs. For previous version of HP StoreOnce D2D Backup system please refer to:

http://h18004.www1.hp.com/products/quickspecs/13218_na/13218_na.html

Select one:

	Part Number
HP StoreOnce B6200 48 TB Backup	EJ022A
HP StoreOnce B6200 Backup 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	
HP StoreOnce B6200 24 TB Upgrade Kit	EJ024A
HP StoreOnce B6200 24 TB 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	
HP StoreOnce B6200 48 TB Upgrade Kit	EJ025A
HP StoreOnce B6200 48 TB 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>>	

Configuration Information

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

HP StoreOnce 4430 Backup

BB857A

HP StoreOnce 4430 Backup with 24 TB of disk storage

Kit Contents:

HP 4430 Backup (12 x 2 TB disks)
Ethernet cable(Cat 5e) 3m (x2)
2 x Power cords (with IEC 320 C13 plug for Rack PDU)
Installation poster
HP StoreOnce Backup CD (contains installation wizard, device drivers, and documentation, all localized in multiple languages)

HP StoreOnce 4430 Upgrade Kit

EH986B

HP 4430 Backup upgrade kit, D2600 base enclosure offering additional 24 TB of disk storage

Kit Contents:

D2600 storage enclosure with 12 x 2TB discs, redundant power supplied and fan modules.
Rack-mounting hardware kit
0.5m mini-SAS cable + 2m mini-SAS cable
Two AC power cords and two PDU interconnect cords
Entitlement certificate
Installation instructions

NOTE: Upgrade kit can be used with StoreOnce 4430 and StoreOnce D2D4324

HP StoreOnce 4420 Backup

BB856A

HP StoreOnce 4420 Backup with 12 TB of disk storage

Kit Contents:

HP StoreOnce 4420 Backup (12 x 1 TB disks)
Ethernet cable(Cat 5e) 3m (x2)
2 x Power cords (with IEC 320 C13 plug for Rack PDU)
Installation poster
HP StoreOnce Backup CD (contains installation wizard, device drivers, and documentation, all localized in multiple languages)

HP StoreOnce 4220 Backup

BB855A

HP StoreOnce 4220 Backup with 12 TB of disk storage

Kit Contents:

HP StoreOnce 4220 Backup system (12 x 1 TB disks)
Ethernet cable(Cat 5e) 3m (x2)

Configuration Information

2 x Power cords (with IEC 320 C13 plug for Rack PDU)
Installation poster
HP StoreOnce Backup CD (contains installation wizard, device drivers, and documentation, all localized in multiple languages)

HP StoreOnce 4220/4420 Backup Upgrade Kit

EH995C

HP StoreOnce 4220 and HP StoreOnce 4420 Backup upgrade kit,

Kit Contents:

D2600 storage enclosure with 12 x 1TB discs, redundant power supplied and fan modules.

Rack-mounting hardware kit

0.5m mini-SAS cable + 2m mini-SAS cable

Two AC power cords and two PDU interconnect cords

Entitlement certificate

Installation instructions

NOTE: Upgrade kit can be used with StoreOnce 4220/4420 and StoreOnce D2D4112/4312

HP StoreOnce 4210iSCSI Backup

BB853A

HP StoreOnce 4210 iSCSI Backup with 6 TB of disk storage

Kit Contents:

HP StoreOnce 4210 iSCSI Backup (12 x 500 GB formatted 1 TB disks) Ethernet cable (Cat 5e) 3m (x2)

2 x Power cords (with IEC 320 C13 plug for Rack PDU)

Installation poster

HP StoreOnce Backup CD (contains installation wizard, device drivers, and documentation, all localized in multiple languages)

HP StoreOnce 4210FC Backup

BB854A

HP StoreOnce 4210 FC Backup with 6 TB of disk storage

Kit Contents:

HP StoreOnce 4210fc Backup (12 x 500 GB formatted 1 TB disks)

Ethernet cable (Cat 5e) 3m (x2)

2 x Power cords (with IEC 320 C13 plug for Rack PDU)

Installation poster

HP StoreOnce Backup CD (contains installation wizard, device drivers, and documentation, all localized in multiple languages)

HP StoreOnce 4210 Upgrade Kit

BB864A

HP StoreOnce 4210 Backup system upgrade kit

Kit Contents:

D2600 storage enclosure with 12 x 1TB (500GB Formatted) discs, redundant power supplied and fan modules.

Rack Mounting hardware kit

0.5m mini-SAS cable

Configuration Information

Two AC power cords
Entitlement certificate
Installation booklet

NOTE: Upgrade kit can be used with StoreOnce 4210 and StoreOnce D2D4106

HP StoreOnce 2620iSCSI Backup

BB852A

HP StoreOnce 2620 iSCSI Backup with 4 TB of disk storage

Kit Contents:

HP 2620 iSCSI Backup
4x 1 TB Hot swap hard drives
Ethernet cable(Cat 5e) 3m (x2)
Power cable (IEC 320 C13 Connector for Rack PDU)
Installation poster
HP StoreOnce Backup CD (contains installation wizard, device drivers, and documentation, all localized in multiple languages)

Step 2- Related Options

NOTE: From December 2012 HP StoreOnce Backup systems, expansion kits and associated licenses have been rebranded and have new SKUs. For previous version of HP StoreOnce D2D Backup system please refer to:

http://h18004.www1.hp.com/products/quickspecs/13218_na/13218_na.html

Replication Licenses

HP StoreOnce B6200 Replication E-LTU	EJ026AAE
HP StoreOnce 4430 Replication E-LTU	EH987AAE
HP StoreOnce 4420 Replication E-LTU	EH984AAE
HP StoreOnce 4220 Replication E-LTU	EH994AAE
HP StoreOnce 4210 Replication E-LTU	EH999AAE
HP StoreOnce 2600 Replication E-LTU	EH990AAE

- These licenses enable an appliance to host replication target libraries. (No license is required for appliances which only act as replication sources)
- Licensing is "per appliance" i.e. A single license is required to enable an appliance to host as many replication target libraries as it is capable of.
- For B6200 a separate license is required per couplet.
- Licenses are delivered via www.webware.hp.com and are node-locked by appliance serial number (and are not transferable)
- Download instructions of the Replication Manager are included when the replication license is downloaded
- This account license also provides authorization to download the HP OST Plug-in which enables NetBackup to manage deduplicated replication between appliances. Two replication licenses are required to use the OST Plug-in.
- Total number of source appliances that can replicate into a single target appliance is as follows:
 - StoreOnce B6200 Backup target supports up to 384 source StoreOnce appliances
 - StoreOnce 4430 Backup target supports up to 50 source StoreOnce appliances
 - StoreOnce 4420 Backup target supports up to 50 source StoreOnce appliances

Configuration Information

- StoreOnce 4220 Backup target supports up to 24 source StoreOnce appliances
- StoreOnce 4210 iSCSI Backup target supports up to 24 source StoreOnce appliances
- StoreOnce 4210 FC Backup target supports up to 24 source StoreOnce appliances
- StoreOnce 2620 iSCSI Backup target supports up to 8 source StoreOnce appliances

Replication Manager software is available for download from the HP StoreOnce Software Depot Kiosk www.software.hp.com/kiosk.

HP StoreOnce Catalyst Licenses

HP StoreOnce Catalyst B6200 OST E-LTU	TC396AAE
HP StoreOnce Catalyst B6200 DP E-LTU	TC397AAE
HP StoreOnce Catalyst 4400 OST E-LTU	BB862AAE
HP StoreOnce Catalyst 4400 DP E-LTU	BB863AAE
HP StoreOnce Catalyst 4200 OST E-LTU	BB860AAE
HP StoreOnce Catalyst 4200 DP E-LTU	BB861AAE
HP StoreOnce Catalyst 2600 OST E-LTU	BB858AAE
HP StoreOnce Catalyst 2600 DP E-LTU	BB859AAE

- StoreOnce Catalyst is a licensed feature, every StoreOnce Backup system (and B6200 couplet) that uses StoreOnce Catalyst requires a license
- Licenses enable a HP StoreOnce Backup system to create StoreOnce Catalyst targets for backup.
- StoreOnce Catalyst also provides seamless control of data movement across the organization and better utilization of servers, network bandwidth.
- The license type is linked to the backup application being used
- Currently 2 are supported:
 - HP StoreOnce Catalyst OST E-LTU (enables use of catalyst with Symantec NetBackup and BackupExec)
 - HP StoreOnce Catalyst DP E-LTU (enables use of catalyst with Data Protector)

NOTE: The HP StoreOnce Catalyst license enables StoreOnce Catalyst backup and copy; there is no need to purchase an additional replication license when using StoreOnce Catalyst backup targets. However, if you are employing VTL or NAS backup targets alongside StoreOnce Catalyst backup targets on the same StoreOnce Backup System, additional replication licenses will be required for the target appliance.

HP 10GbE Connectivity 10GbE Fibre Optic Modules

The following cables are recommended for HP 10GbE connectivity

HP BLc 10Gb SR SFP+	455883-B21
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NOTE: Fibre transceivers and cables must be purchased separately for fibre-optic environments - 4 transceivers are required for each couplet.

HP ProCurve 10GbE Connectivity Direct Attach Copper

The following cables are recommended for 10GbE connectivity with HP ProCurve network switches

HP X242 SFP+ SFP+ 1 m Direct Attach Cable	J9281B
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Configuration Information

Cables	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
	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.	
	NOTE: For additional information on 10Gb cable specifications go to: http://www.hewlett-packard.com/rnd/pdfs/10gig_cabling_technical_brief.pdf	
Other 10GbE switch environments	The following cables are available for connectivity with other 10GbE switch environments	
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 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

Configuration Information

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

HP B6000 StoreOnce Backup Systems Configurations -

NOTE: THE STORAGE SIZER TOOL MUST ALSO BE USED TO CORRECTLY SIZE A DEDUPLICATION AND REPLICATION ENABLED SYSTEM!

Use the steps below as a guide, but TO PLACE ACTUAL ORDERS USE WATSON and CLIC TO CONFIGURE A SYSTEM

THIS IS ESPECIALLY TRUE FOR THE CUSTOMERS 1st or 3rd B6200 (EJ022A) WHICH REQUIRES MANDATORY FACTORY EXPRESS INTEGRATION INTO THE EXTENDED DEPTH 42U RACK WHICH DOES NOT NEED TO BE ORDERED SEPARATELY, BUT IS AUTOMATICALLY ADDED THE ORDER CONFIGUARTION WHEN THE ASSOCIATED EJ021A OR EJ027A SWITCH KITS ARE ORDERED.

WHEN WISHING TO EXPAND AN EXISTING SYSTEM THE CUSTOMERS 2ND or 4TH B6200 (EJ022A) IS NOT FACTORY INTEGRATED AND CAN BE ORDERED WITHOUT THE #0D1 OPTION OR SWITCH KITS, AS THE 1ST AND 3RD B6200S ARE ALREADY HOUSED IN THE 42U RACKS AND HAVE BEEN FACTORY INTEGRATED WITH SWITCH KITS REQUIRED.

The HP StoreOnce B6000 StoreOnce Backup Planning Guide helps you select the correct options for power and connectivity for your data centre environment. It will also help plan for a successful and smooth installation of the B6200.

Please refer to: Recommended Configuration Guidelines and Installation Planning Guide for HP B6200 StoreOnce backup systems:

<http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c03116530/c03116530.pdf>

<http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c03121413/c03121413.pdf#>

Step 1 - Configurations (Option #0D1 must be added to products listed for essential factory integration, I.E. THE CUSTOMERS 1ST AND 3RD B6200)

NOTE: The B6200 MUST be factory integrated into the 42U extended depth rack. Non factory integration into a standard 42U rack, is not supported.

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.

StoreOnce B6000 Configurations - (EJ022A) based configurations

Factory Integrated Cluster

Configuration Information

	Couplet 1		Couplet 2		Couplet 3		Couplet 4	
Switch kit (required)	Qty 1 - EJO21A		Not required		Qty 1 - EJO27A		Not required	
42U extended depth rack	not to be ordered separately, but is automatically added to Config when EJO21A ordered				(not to be ordered separately, but is automatically added to Config when EJO27A ordered)			
StoreOnce B6200 48TB Backup	Qty 1 - EJO22A#0D1		Qty 1 - EJO22A#0D1 FOR 1ST CONFIGURATION ONLY		Qty 1 - EJO22A#0D1		Qty 1 - EJO22A#0D1 (FOR 1ST CONFIGURATION AND WHEN ADDING COUPLETS 3&4 TO AN EXISTING SYSTEM)	
Add capacity	Qty 1 EJO24A 24TB	Qty 1 EJO25A 48TB	Qty 1 EJO24A 24TB	Qty 1 EJO25A 48TB	Qty 1 EJO24A 24TB	Qty 1 EJO25A 48TB	Qty 1 EJO24A 24TB	Qty 1 EJO25A 48TB
Add capacity	Qty 1 EJO24A 24TB	Qty 1 EJO25A 48TB	Qty 1 EJO24A 24TB	Qty 1 EJO25A 48TB	Qty 1 EJO24A 24TB	Qty 1 EJO25A 48TB	Qty 1 EJO24A 24TB	Qty 1 EJO25A 48TB
Add capacity	Qty 1 EJO24A 24TB	Qty 1 EJO25A 48TB	Qty 1 EJO24A 24TB	Qty 1 EJO25A 48TB	Qty 1 EJO24A 24TB	Qty 1 EJO25A 48TB	Qty 1 EJO24A 24TB	Qty 1 EJO25A 48TB
Replication license	Qty 1 - EJO26A		Qty 2 - EJO26A		Qty 3 - EJO26A		Qty 4 - EJO26A	

Factory Integrated Cluster Form Factors

	Couplet 1		Couplet 2		Couplet 3		Couplet 4	
Switch kit (required)	2U				2U			
StoreOnce B6200 48TB Backup	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
Extended Depth 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

	StoreOnce 2620 iSCSI	StoreOnce 4210 iSCSI	StoreOnce 4210 FC	StoreOnce 4220	StoreOnce 4420	StoreOnce 4430	StoreOnce B6200 (more details in next table)
Form Factor	1U Rack	2U scalable rack	2U scalable rack	2U scalable rack	4U scalable rack	4U scalable rack	8U to 42U scalable rack
Total Capacity (Raw)	4 TB	Up to 12 TB*	Up to 12 TB*	Up to 24 TB*	Up to 48 TB*	Up to 96 TB*	Up to 768 TB*
Total Capacity (Useable)	2.5TB	Up to 9 TB*	Up to 9 TB*	Up to 18 TB*	Up to 38 TB*	Up to 76 TB*	Up to 512 TB*

To optimize capacity utilization and in accordance with performance requirements, your capacity requirements should be planned following recommended guidelines

Please refer to: Recommended Configuration Guidelines and Installation Planning Guide for HP B6200 StoreOnce backup systems:

<http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c03116530/c03116530.pdf>

<http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c03121413/c03121413.pdf#>

or Best Practices Guidelines for StoreOnce backup systems:

<http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c02511912/c02511912.pdf#>

Data retention with deduplication Total usable capacity assuming data deduplication at 20:1*	50 TB*	180 TB*	180 TB*	360 TB*	760 TB*	1.5 PB*	10.2 PB*
Maximum number of source appliances per target appliance (fan in)	8	16	16	24	50	50	384
Write Performance* (maximum aggregated data transfer rate using VTL)	670GB/hr	800GB/hr*	2.9 TB/hr*	3.3 TB/hr*	4.8 TB/hr*	4.7 TB/hr*	40 TB/hr*
Read Performance* (maximum aggregated data transfer rate using VTL)	500GB/hr	800GB/hr*	Up to 1.6 TB/hr*	1.8 TB/hr*	3.8 TB/hr*	4.1 TB/hr*	40 TB/hr*
StoreOnce Catalyst Performance (maximum aggregated data transfer rate)	1.0 TB/hr*	2.2 TB/hr*	2.2 TB/hr*	2.2 TB/hr*	10.8 TB/hr*	12.5 TB/hr*	100 TB/hr*

Technical Specifications

***NOTES:**

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 data deduplication ratio could be assumed with a weekly full and daily incremental backup model.

Assumes use of capacity upgrade kits to achieve maximum capacity and performance

Targets for backup applications

HP StoreOnce Catalyst, Virtual Tape Library (VTL) and NAS

Device Interfaces	2 x 1 Gb Ethernet	2 x 1 Gb Ethernet	2 x 8 Gb Fibre Channel and 2 x 1 Gb Ethernet	2 x 8 Gb Fibre Channel and 2 x 1 Gb Ethernet	2 x 8 Gb Fibre Channel and 2 x 10 Gb Ethernet and 2 x 1 Gb Ethernet	2 x 8 Gb Fibre Channel and 2 x 10 Gb Ethernet and 2 x 1 Gb Ethernet	8x 1Gb Ethernet Ports per couplet, and 4x 10Gb Ethernet Ports per couplet, and 4x 8Gb Fibre Channel Ports per couplet
Disk drives	1 TB, SATA 7200rpm, 3.5-inch	1 TB, SATA 7200rpm, 3.5-inch (50% configured)	1 TB, SATA 7200rpm, 3.5-inch (50% configured)	1 TB, SATA 7200rpm, 3.5-inch	1 TB, SATA 7200rpm, 3.5-inch	2 TB, SAS 7200rpm, 3.5-inch	2 TB, SAS 7200rpm, 3.5-inch
Number of Disk Drives	4	12 (min), 12 x 2 (max)	12 (min), 12 x 2 (max)	12 (min), 12x2 (max)	12 (min), 12x 4 (max)	12 (min), 12x 4 (max)	Per Couplet: 12 (min), 12x 4 (max)
RAID Support	Hardware RAID 5	Hardware RAID 6	Hardware RAID 6	Hardware RAID 6	Hardware RAID 6	Hardware RAID 6	Hardware RAID 6
Number of StoreOnce Catalyst, Virtual Tape Libraries and NAS backup targets (combined)	8	16	16	24	50	50	384
Maximum Number of Cartridges Emulated	768	16384	16384	24576	204800	204800	6291456
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 HP StoreOnce Backup systems						
HP StoreOnce Catalyst	HP StoreOnce Catalyst is available to license, providing seamless control of data movement across the organization and better utilization of servers, network bandwidth and the HP StoreOnce Backup systems for optimum backup performance. HP StoreOnce Catalyst licenses allow replication between HP StoreOnce Catalyst enabled servers and appliances and HP StoreOnce Catalyst backup targets.						

Technical Specifications

Note: From December 2012 HP StoreOnce Backup systems, expansion kits and associated licenses have been rebranded and have new SKUs. For previous version of HP StoreOnce D2D Backup system please refer to http://h18004.www1.hp.com/products/quickspecs/13218_na/13218_na.html

HP StoreOnce B6200 Specifications - in detail

StoreOnce B6200 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.

StoreOnce B6200 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

Technical Specifications

Maximum aggregate performance by configuration	B6200 EJ022A	
1 Base couplet*	Up to 10 TB/hr	2776 MB/s
2 Base couplet*	Up to 20 TB/hr	5552 MB/s
3 Base couplet*	Up to 30 TB/hr	8328 MB/s
4 Base couplet*	Up to 40 TB/hr	11104 MB/s
	B6200 EJ022A with StoreOnce Catalyst Licenses TC396AAE TC397AAE	
1 Base couplet with StoreOnce Catalyst	Up to 25 TB/hr	7000 MB/s
2 Base couplet with StoreOnce Catalyst	Up to 50 TB/hr	14000 MB/s
3 Base couplet with StoreOnce Catalyst	Up to 75 TB/hr	21000 MB/s
4 Base couplet with StoreOnce Catalyst	Up to 100 TB/hr	28000 MB/s

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

To optimize performance please refer to:

Please refer to: Recommended Configuration Guidelines and Installation Planning Guide for HP B6200 StoreOnce backup systems:

<http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c03116530/c03116530.pdf>

<http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c03121413/c03121413.pdf#>

Dimensions and Physical Characteristics

NOTE: While the option for factory integration is available across the HP StoreOnce family, the B6200 MUST be factory integrated into the 42U extended depth rack.

For the B6200: all dimensions shown below are for the Backup Systems and capacity Upgrade kits not the 42U rack which is required to house them. The HP StoreOnce B6000 StoreOnce Backup Planning Guide helps you select the correct options for configuration. It will also help plan for a successful and smooth installation of the B6200.

Please refer to: Recommended Configuration Guidelines and Installation Planning Guide for HP B6200 StoreOnce backup systems:

<http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c03116530/c03116530.pdf>

<http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c03121413/c03121413.pdf#>

Technical Specifications

StoreOnce Backup system:		2620	4220/4210	4430/4420	B6200
	Form factor	1U	2U	4U	8U
Dimensions	Out of box	1.70 x 17.64 x 26.85 in (4.32 x 44.80 x 68.20 cm)	3.5 x 18 x 28.2 in (8.9 x 45.7 x 71.6 cm)	6.9 x 19.1 x 28.7 (17.5 x 48.5 x 73.0 cm)	14.4 x 30 x 19.6 in (36 x 75 x 49cm)
	Shipping	8.88 x 23.31 x 38.56 in (22.5 x 59.2 x 97.9 cm)	11.3 x 23.0 x 38.9 in (28.7 x 58.4 x 98.8 cm)	15.0 x 23.9 x 36.2 (37.4 x 60.6 x 91.7 cm)	41.6 x 54.4 x 41.6 in (104 x 136 x 104 cm)
Weight	Out of box	37.00 lb (16.78 kg)	57 lbs (25.8kg)	84 lbs (38kg)	328 lb (149Kg)
	Shipping	51.00 lb (23 kg)	112.1 lbs (49.5 Kg)	82.7 lbs (37.5 Kg)	361 lb (164Kg)
Environmental	Operating temperature	50° to 95°F (10° to 35°C) at sea level with an altitude derating of 1.8°F per every 1000 ft (1.0°C per every 305 m) above sea level to a maximum of 10,000 ft (3050 m), no direct sustained sunlight. Maximum rate of change is 18°F/hr (10°C/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 86°F (30°C)			50°F to 95°F (10°C to 35°C)
	Shipping temperature	22° to 140° F (-30° to 60° C). Maximum rate of change is 36° F/hr (20° C/hr)			-40°F to 150°F (-40°C to 66°C)
	Operating humidity	10 to 90% relative humidity (Rh), 82.4° F (28° C) maximum wet bulb temperature, non-condensing			15 to 80% Relative Humidity
StoreOnce Backup Upgrade Kits:		4220/4210/4430/4420 Upgrade	B6200 Expansion shelves (x2)	B6200 24 TB upgrade	B6200 48 TB upgrade
	Form factor	2U	4U	4U	4U
Dimensions	Out of box	3.44 x 17.64 x 23.25 in (8.75 x 44.80 x 59 cm)	7.2 x 24 x 19.6 in (18 x 60 x 49cm)	7.2 x 24 x 19.6 in (18 x 60 x 49cm)	7.2 x 24 x 19.6 in (18 x 60 x 49cm)
	Shipping	11.6 x 23.5x35 in (29.5 x 59.7 x 88.5cm)	27.2 x 42.4 x 29.2 in (68x106x73cm)	27.2 x 42.4 x 29.2 in (68x106x73cm)	27.2 x 42.4 x 29.2 in (68x106x73cm)
Weight	Out of box	55 lbs (25kg)	141 lb (64 Kg)	141 lb (64 Kg)	141 lb (64 Kg)
	Shipping	84 lbs (38kg)	154 lb (70 Kg)	154 lb (70 Kg)	154 lb (70 Kg)

Power Consumption by component

HP StoreOnce B6200 48TB Backup System - EJ022A	1900 W
HP StoreOnce B6200 24TB StoreOnce Upgrade Kit - EJ024A	410 W
HP StoreOnce B6200 48TB StoreOnce Upgrade Kit - EJ025A	410 W
HP StoreOnce B6000 Switch Assembly for StoreOnce B6200 Backup - EJ021A	350 W
HP StoreOnce B6000 Expansion Switch Assembly for StoreOnce B6200 Backup - EJ027A	720 W

Power Requirements (per power supply)	Range Input Voltage	100 - 240 VAC
	Rated Input Frequency	47 to 63 Hz (StoreOnce2620)

Technical Specifications

Rated Input Current (StoreOnce 4220, StoreOnce 4210)	9.10 A (at 100 VAC), 4.5 A (at 200 VAC)
Rated Input Current (StoreOnce 4430, StoreOnce 4420)	6.90 A (at 100 VAC), 2.90 A (at 240 VAC)
Rated Input Current (StoreOnce 4430, StoreOnce 4220/ StoreOnce 4420 capacity upgrade)	3.9 A (at 100 VAC), 6A Maximum
Rated Input Current (StoreOnce2620)	10.0 A (at 115 VAC) 5.5A (at 230 VAC)
BTU Rating (StoreOnce 4220 StoreOnce 4210)	Maximum 1681 BTU/hr (at 100 VAC) 1646 BTU/hr (at 240 VAC)
BTU Rating (StoreOnce 4210)	Maximum 1815 BTU/hr (at 100 VAC) 1776 BTU/hr (at 240 VAC)
BTU Rating (StoreOnce 4420 StoreOnce 4430)	Maximum 2325 BTU/hr (at 100 VAC) 2270 BTU/hr (at 240 VAC)
BTU Rating (StoreOnce2620)	Maximum 940 BTU/hr (at 100 VAC) 907 BTU/hr (at 240 VAC)
Rated Steady-state Power (D2D4420, D2D4430)	552 W (at 100 VAC), 536 W (at 240 VAC)
Rated Input Frequency: 50 Rated Input Frequency (StoreOnce 4220 and capacity upgrade) to 60 Hz	
Rated Steady-state Power (StoreOnce 4220, StoreOnce 4210)	360 W (at 100 VAC), 386 W (at 240 VAC)
Rated Steady-state Power (StoreOnce2620)	215W (at 100 VAC), 211W (at 240 VAC)
Rated Steady-State Power (StoreOnce 4210)	410 W (at 100 VAC), 430 W (at 240 VAC)
Maximum Peak Power (StoreOnce 4420, StoreOnce 4430)	682 W (at 100 VAC), 666 W (at 240 VAC)
Maximum Peak Power (StoreOnce 4220, StoreOnce 4210)	500W (at 100 VAC), 515 W (at 240 VAC)
Maximum Peak Power (StoreOnce 4210)	540 W (at 100 VAC), 550 W (at 240 VAC)
Maximum Peak Power (StoreOnce2620)	280W (at 100 VAC), 280 W (at 240 VAC)
Maximum Peak Power	385 W (at 100 VAC), 390 W (at 240 VAC)

Technical Specifications

	Heat Dissipation (maximum) StoreOnce 4430, StoreOnce 4220/ StoreOnce 4420 capacity upgrade	1175 Btu/hr* * Input Power and Heat Dissipation specifications are maximum values and apply to worst-case conditions at full rated power supply load. The power/heat dissipation for your installation will vary depending on the equipment configuration.
Acoustic Noise StoreOnce 4220/ StoreOnce 4210/ StoreOnce 4420/ StoreOnce 4430	Idle (disks spinning)	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 LWAd 6.7 B LpAm 51 dBA LWAd 4.9 B LpAm 31 dBA (D2D4420 only)
	Operating (random seeks to disks)	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 LWAd 6.7 B LpAm 51 dBA LWAd 5.0 B LpAm 32 dBA (D2D4420 only)
Acoustic Noise StoreOnce 4220)	Idle (disks spinning)	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). LWAd 6.82 B LpAm 51.93 dBA
	Operating (random seeks to disks)	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). LWAd 6.84 B LpAm 51.93 dBA

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