2013
MIDRANGE DEDUPLICATING BACKUP APPLIANCE BUYER'S GUIDE

THE INSIDER'S GUIDE TO EVALUATING MIDRANGE DEDUPLICATING BACKUP APPLIANCES

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Table of Contents

Introduction

In the two years since DCIG issued its inaugural 2011 Midrange Deduplicating Backup Appliance Buyer's Guide, much has changed in the data storage industry. New products have been introduced and old ones revamped. New technologies not existing two years ago are now commonplace. Because of all these changes, DCIG has released more targeted versions of its Buyer's Guides to serve an audience with increasingly varied storage needs and budget constraints, resulting in this 2013 Midrange Deduplicating Backup Appliance Buyer's Guide.

Deduplication as a technology continues to become more pervasive in the data storage industry as time passes and the technology further matures. Data deduplication saves disk space by storing only one copy of data when identical data is found. As a result, less storage space is needed for the data backup and the end result means cost savings.

The storage volume necessary for digital media is already at incredibly high levels and the rate of growth is not slowing down. Predictions by Gartner show information managed by enterprise data centers will increase 50 times from 2011 to 2015.[1] A similar statistic issued by IDC estimates that the amount of data reached more than 1.8 zettabytes in 2011 and is more than doubling every two years.[2]

As such, organizations need smarter ways to address the problem of runaway storage volumes. Deduplication technology fills this important gap by providing storage reduction ratios of 10 – 20 times of what can be achieved using standard storage technologies.

Given the ever-growing need for more storage, it should not be surprising that purpose built backup appliances (PBBAs), a category in which deduplicating backup appliances fit, are targeted for large growth.

Recently issued 1QCY13 statistics from IDC show the PBBA market is growing faster than all other areas of the external disk storage and data protection markets. PBBAs are increasing at 17% quarterly year-over-year and shipments have increased by 45% on a year-over-year basis.[3]

Deduplication—maybe more than any other technology—has transformed the backup storage space. Other technologies like thin provisioning, utility computing and virtualization have promised and largely delivered high levels of costs savings and operating efficiency in many environments. However, deduplicating PBBAs often provide these types of results almost immediately in nearly every organization into which they are introduced.

Companies and systems administrators face many challenges when it comes to keeping their backups running smoothly. One of the main challenges in the era of Big Data is to

1. Kalakota, Ravi. "Big Data Infographic and Gartner 2012 Top 10 Strategic Tech Trends | Business Analytics 3.0."Business Analytics 3.0. http://practicalanalytics.wordpress.com/2011/11/11/big-data-infographic-and-gartner-2012-top-10-strategic-tech-trends/.
2. Miller, Rich. "'Digital Universe' to Add 1.8 Zettabytes in 2011 » Data Center Knowledge." Data Center Knowledge: Industry News and Analysis About Datacentres. 28 June 2011. http://www.datacenterknowledge.com/archives/2011/06/28/digital-universe-to-add-1-8-zettabytes-in-2011/.
3. IDC Press Release. "Worldwide Purpose-Built Backup Appliance (PBBA) Market Experiences Robust Growth in First Quarter of 2013, According to IDC."

Introduction continued

control and minimize backup data growth. As organizations can realistically expect to cut storage space by 10 to 20 times using deduplicating PBBAs, that goal can be realized. The savings in disk space offered by deduplication can lead to major cost reductions for any business, from small data centers all the way up to those at an enterprise level.

Deduplication may be implemented at the source, the target or both in the backup process, but target deduplicating PBBAs are generally the least disruptive to introduce and may be installed into an existing backup environment. This Buyer's Guide focuses on target dedupli-cating PBBAs and should be used as a resource for any organization in search of one. When making a decision on purchasing a new backup appliance, organizations face a dizzying array of choices and must research what features are offered by each solution, like in-line vs. post-process deduplication, scalability, packaged software and many other key variables.

This Buyer's Guide does all of that research for organizations. It lists those solutions from which DCIG could reliably obtain information, which features are supported on each prod-uct, weights those features and then scores and ranks each target-based deduplicating backup appliance.

This Buyer's Guide takes the place of the heavy lifting that IT organizations normally would have to perform in order to understand the vendor landscape and the scope of available solu-tions. By using this Buyer's Guide, organizations can immediately understand what features and functions are available so they can move more quickly to making a buying decision.

We hope this Buyer's Guide serves its intended purposes in your environment.

Charley & Jerome

Executive Summary

Rapidly growing volumes of data storage have long been a concern of any business, ranging from small and medium sized companies, up to the enterprise. If left unchecked, this data growth inevitably leads to computer storage sprawl as companies spend corporate dollars on the hardware needed to store data and also manage the increasing cooling costs for effective operations of the data center.

Data deduplication is a technology that reduces data stored to disk and may be the technical solution for which many companies are searching. For some time now, companies have been moving to disk at their preferred backup target driven by its disk's lower price, improved performance and higher backup and recovery success rates versus tape. The increase in storage efficiency provided by deduplication processes furthers the cause for using disk in lieu of tape.

Deduplication, when used with disk, reduces the space needed on disk for backup and is able to achieve storage reduction of 10 to 20 times on average, and sometimes even greater numbers are realized. Instead of storing every piece of data, deduplication stores one instance and then provides pointers to one location for exact duplicate copies. As a result of this innovative use of technology, the storage space needed for backup is significantly reduced.

Deduplication may not be the only technology for reducing storage costs, but it is one of the most effective, and deduplication has in many cases replaced tape within companies who are looking to build up their data center cost savings efforts. Aside from helping to decrease administration backup costs, disk-based deduplication also helps to improve the speed and reliability of data protection while facilitating the ability to support multiple backup jobs occuring at the same time.

Deduplication is a technology that crosses industry lines. Organizations in disparate industries ranging from financial services to medical practices can see an improvement to their backup environment through the implementation of a deduplicating backup appliance, though the sum benefit relies heavily on the type of data being stored.[1]

A major feature of deduplicating backup appliances is their ability to handle in-line or post-process deduplication. Both have benefits, but they handle the removal of duplicate data in very different ways. In-line deduplication deduplicates data at it is ingested by the appliance while post-process deduplication does not deduplicate data until after it is stored by the backup device.

Another notable feature of deduplicating backup appliances is upstream processing. This method divides deduplication between the source and target, so the total time and the workload associated with deduplicating data are both lessened. While initially offered by Symantec through its OpenStorage Technology API *(OST)* in 2006, this is a key feature that has seen widespread adoption with many deduplicating backup appliance vendors now offering their own version of this technology to complement their support for OST.

1. Kruschwitz, Paul. "In 2013, deduplication smartens up." *Network World*. 24 Dec. 2012. http://www.networkworld.com/news/tech/2012/122412-deduplication-265350.html.

Executive Summary continued

While compiling this Buyer's Guide, DCIG spoke to various end-users to get a sense of how the end-user would weight their needs in various areas. We then evaluated each vendor's capabilities by applying weighting to these features based on our conversations with these end-users.

It is in this context that DCIG presents its 2013 Midrange Deduplicating Backup Appliance Buyer's Guide. As prior Buyer's Guides have done, it puts at the fingertips of organizations a comprehensive list of deduplicating backup solutions and the features they offer in the form of detailed, standardized data sheets that can assist them in this important buying decision.

This Buyer's Guide is the result of a multi-month effort that involved communicating with multiple providers and evaluating over 100 features on 46 different deduplicating backup solutions.

Each provider was given the opportunity to complete a survey with over 85 questions that examined how its solution delivered on features associated with deduplication, management, hardware, scalability and support.

In instances where vendors did not respond, DCIG completed the surveys on the vendor's behalf and then sent the completed survey to the vendor for their review. In every case, every vendor had the opportunity to review and respond to the survey and the information regarding their product displayed on the data sheets included in this Buyer's Guide.

The DCIG 2013 Midrange Deduplicating Backup Appliance Buyer's Guide accomplishes the following objectives:

- Provides an objective, third party evaluation of deduplicating backup appliances that evaluates and scores their features from an end user's perspective.

- Scores and ranks the features of each deduplicating backup appliance based upon the criteria that matter most to end users and then presents these results in an easy to understand table that displays the products' scores and rankings so they can quickly ascertain which deduplicating backup appliance solution is the most appropriate for their needs.

- Provides a standardized data sheet for each of the 46 deduplicating backup appliance solutions from 10 different deduplicating backup appliance providers so users may do quick comparisons of the features that are or are not supported with each product.

- Gives any organization a solid foundation for getting competitive bids from different deduplicating backup appliance providers that are based on "apples-to-apples" comparisons.

How to Use the DCIG 2013 Midrange Deduplicating Backup Appliance Buyer's Guide

The DCIG 2013 Midrange Deduplicating Backup Appliance Buyer's Guide will help IT organizations initiate an informed evaluation of midrange deduplicating backup appliances so they may quickly create a short list of products to consider.

The "Best-In-Class," "Recommended," "Excellent," "Good," and "Basic" rankings included in this Buyer's Guide are a measure of how much functionality and capability each solution has relative to the overall landscape. It should be noted that the five rankings do not determine if the solution is the most appropriate fit for any particular IT organization.

The Buyer's Guide is intended to rank the products in order from those appliances that have the most features and functions to those that have lesser amounts of functionality. However, the Buyer's Guide cannot tell the reader which functions and features are the most appropriate or needed in their particular environment.

Rather, this Buyer's Guide provides IT organizations with much needed guidance and insight as to what midrange deduplicating backup appliances are available. It also helps to assure organizations that if they select a solution that scores highly in this Buyer's Guide, it is more likely to possess all of the features they are likely to need in a backup appliance.

IT organizations should, therefore, use this Buyer's Guide as a handbook to understand:

- *Who* provides midrange deduplicating backup appliances

- *What* target-based midrange deduplicating backup appliance solutions are available

- What features and functions are available on each solution

DCIG recommends that one use this DCIG 2013 Midrange Deduplicating Backup Appliance Buyer's Guide to understand each product's strengths and weaknesses around four major categories. Furthermore, IT organizations inevitably have to report back to the business side of the house and there is nothing the business side of the house understands better than a number. To help in this endeavor, each product

is scored and ranked so conversations regarding new technology can more quickly shift from a focus on which technology to buy to how the purchase of this technology will help the bottom line.

Lastly, the Appendix of this Buyer's Guide explains and normalizes the jargon specific to target-based deduplicating backup appliances in order to enhance the quality and productivity of the discussions around the technology. The Appendix also provides contact information for each vendor should one wish to reach out to them.

Disclosures

Over the last few years the general trend in the US has been for both large and boutique analyst firms to receive some or all of their revenue from technology providers.

DCIG is no different in that respect as it also receives payment for the different services it performs for technology providers. The services that DCIG provides include blogging, case studies, product reviews, executive white papers, full length white papers and Special Reports.

In the interest of being fully transparent, a number of the technology providers included in this DCIG 2013 Midrange Deduplicating Backup Appliance Buyer's Guide are or have been DCIG clients.

This is not to imply that these technology providers were given preferential treatment in the Buyer's Guide. Instead, it means that DCIG had more knowledge of their target-based midrange deduplicating backup appliance(s) and that DCIG would consider their midrange deduplicating backup appliances for inclusion in this Buyer's Guide—nothing more.

There are a number of important facts to keep in mind when considering the information contained in this DCIG 2013 Midrange Deduplicating Backup Appliance Buyer's Guide and its merit:

- No technology provider paid DCIG any fee to develop this Buyer's Guide

- DCIG did not guarantee any technology provider that its midrange deduplicating backup appliance would be included in this Buyer's Guide

- DCIG did not imply or guarantee that a specific midrange deduplicating backup appliance would receive a good score on this Buyer's Guide

- All research was based upon publicly available information, information provided by the technology provider, and the expertise of those evaluating the target-based midrange deduplication appliances

- Because of the number of features analyzed, how these features were weighted, and then how these midrange deduplicating backup appliance models were scored and then ranked, there was no way for DCIG to predict at the outset how individual models would end up scoring or ranking when all was said and done

- *DCIG wants to emphasize that no technology provider was privy to how DCIG did the scoring and ranking of the deduplicating backup appliance.* In every case the technology providers only found out the scores and rankings of their individual midrange deduplicating backup appliance models after the analysis was complete.

Midrange Deduplicating Backup Appliances Inclusion and Exclusion Criteria

Inclusion of products in the DCIG 2013 Midrange Deduplicating Backup Appliance Buyer's Guide was based primarily upon the following criteria:

- *The solution's primary purpose had to be for the deduplication of backup data.* There are some storage solutions that offer data deduplication technology *(solutions from NetApp, Nimbus Data, Tegile Systems and Whiptail Technologies are such examples.)* However, the primary intent of these products is not to deduplicate backup data but primary data so they tend not to function as well when used as a deduplicating backup appliance. This fact was confirmed by conversations that DCIG had both with end users and the technology providers.

- *Its primary intent is to do target-based deduplication of backup data.* Deduplication may also occur at either the backup client or on the backup media server. However, when deduplication is done in that manner, it is usually delivered and included as part of the backup software. In cases of target-based midrange deduplicating backup appliances, the deduplication technology is delivered and occurs independently of the backup software. However, specific integrations *(such as with Symantec's OpenStorage API)* may exist between the backup software and the deduplication appliance for enhanced deduplication performance and/or management features.

- *It had to offer a network attached storage (NAS) interface and support the CIFS or NFS protocols.* DCIG found that most IT organizations looking to deploy target-based midrange deduplication appliances will primarily deploy them using the NAS option. While a number of these solutions offer a virtual tape library *(VTL)* option, this was not viewed as a prerequisite feature for midrange deduplicating backup appliances. In IT organizations where this is a requirement, they should carefully review each product's data sheet.

The Seven-Step Process Used to Score and Rank Midrange Deduplicating Backup Appliances

To score and rank each midrange deduplicating backup appliance, DCIG went through a seven-step process to come to the most objective conclusion possible.

1. *DCIG listed out of all of the features available on all of the midrange deduplicating backup appliances.* Prior to selecting the features that were included in the final evaluation in the Buyer's Guide, DCIG went through and quantified what features each midrange deduplicating backup appliances model possessed. DCIG then 'normalized' the list of features available on midrange deduplicating backup appliances such that a common name for each feature was established.

2. *DCIG established which features would be included in the Buyer's Guide.* One of the goals of this Buyer's Guide was to try to only include features on each midrange deduplicating backup appliance model that could be objectively and authoritatively analyzed.

   For example, *"Maximum Raw Storage Capacity"* was evaluated as a feature instead of "Logical Storage Capacity" which is what vendors often promote. While logical storage capacity is what users ultimately care about and use, a consistent, objective answer cannot be arrived at because of all of the variances in how

each vendor calculates deduplication ratios. So *"Maximum Raw Storage Capacity"* was selected as the feature to evaluate and score since an answer could be objectively ascertained and supported.

3. **Each feature had a weighting associated with it.** The weightings were used to reflect whether or not a feature was supported and potentially how well it was implemented. For example, "*24x7 Support*" is more of a "*Yes*" or "*No*" type response, whereas "*Storage Networking Protocols*" could include a number of different protocols. As such, each feature was weighted and scored differently.

4. **A questionnaire that asked about each of the features scored in this Buyer's Guide was sent to each technology provider.** In addition to using the information that was publicly available on each provider's website, each technology provider included in this Buyer's Guide had the opportunity to respond to a questionnaire sent by DCIG. This was done to both verify that the information DCIG found on the provider's website was correct as well as remove any ambiguities that existed regarding how some of the features were implemented.

5. **All of the features were scored based upon the information that was gathered.** The weighting and scoring was done by DCIG.

6. **Broke the features into several categories.** The features for target-based midrange deduplicating backup appliances broke down into four larger categories: Deduplication, Hardware, Management, and Scalability & Support.

   • **Deduplication.** How deduplication is done includes what algorithms are used, how it is performed *(concurrent, in-line or post-processing)* and what options are available to manage it.

   • **Hardware.** Hardware components covered include network protocols, network interfaces, controller configurations and storage capacity.

   • **Management.** This category covers what backup software products recognize and manage, the midrange deduplication appliance as well as what replication features the midrange appliance offers.

   • **Scalability & Support.** This category covers how well the midrange deduplication appliance could scale or adjust to specific replication or deduplication demands. It also provides information on what support options are available *(phone, email, web)* as well as how alerts were generated.

7. **The midrange deduplicating backup appliances were ranked using standard scoring techniques.** The goal of all DCIG Buyer's Guides is to establish clear lines of differentiation between the products included in them. To accomplish this objective, after each product is weighted and score, the mean or average score and standard deviation for all of the products were determined. These were then used as the basis for developing a ranking for each midrange deduplicating backup appliance model:

   • Those midrange deduplicating backup appliances that were .375 or greater standard deviations below the mean were given the rank of "Basic"

   • Those midrange deduplicating backup appliances that were .375± standard deviations above or below the mean were ranked as "Good"

   • Those appliances that were .375 – 1.125 standard deviations above the mean were ranked as "Excellent"

   • Those appliances that were greater than 1.125 standard deviations above the mean were ranked as "Recommended"

   • The top ranked appliance was given the classification of "Best-In-Class"

Using this scoring and ranking method, DCIG feels confident that all of the appliances included in this report can be reasonably classified as a "*Midrange Deduplicating Backup Appliance*" as all appliances were within two (2) standard deviations of the mean.

DCIG Comments and Thoughts On...
The Cloud

The "cloud" term is being tossed around a lot these days in the technology industry and deduplicating backup appliances are poised to leverage this technology greatly in the very near future. There are two ways in which the cloud

plays a role in the operation of midrange deduplicating backup appliances.

Once the deduplicating backup appliance has completed deduplicating the backup data, or sometimes even as it is deduplicating the data, an organization may look to move a copy of that data offsite. The cloud is a logical place to send this second copy of the data. Public storage clouds such as those offered by Amazon and others provide an economical and easy way to store this data offsite. This functionality is supported by a number of appliances in this Guide.

The more interesting angle is that once this backup data is in the cloud, organizations may begin to explore recovering their applications offsite, potentially with the hosting provider. This gives them the ability to go the final mile and put in place a viable off-site disaster recovery plan. While achieving this feat is still a bit of stretch based on current technologies, the larger trend is in this direction.

However as organizations look to go down this path, they should also be aware of its limitations. The key limitation is the time it takes to send and retrieve backup data to and from the cloud due to network constraints.

While there are barriers to cloud storage usage, there are also solutions. When uploading and restoring data, cloud providers may send, or seed the upload, or restore using disks sent from the backup location to the cloud, and vice versa. Also, if the restore is going to be lengthy, an organization can wait long periods of time *(potentially days)* for the data to be retrieved from the cloud. For these reasons, cloud storage should only be used in the backup and recovery process after both its benefits and risks are thoroughly understood.

Branch Office—Data Center Appliance Applications

Midrange data centers can vary greatly in size and for the purposes of this report, DCIG looked at a specific range of deduplicating backup appliances. Many may classify a data center in the midrange category if it stores from 30 TBs to 100 TBs of data while larger data centers will typically exceed 100 TBs and may potentially scale to house PBs of data. Because of the large range of capacity sizes that may fit under the midrange moniker, DCIG looked at deduplicating backup appliances that start at around 8 TBs and ranging up to ~500 TBs.

Deduplicating backup appliances often do not work singularly in a data center backup environment. The deduplication ratio is largely determined by how the backup appliance is used. Deduplication devices can do "*fan-in*" replication to a larger appliance, or "*fan-out*" replication from a large appliance to many smaller ones. Deduplication devices may also be configured in a cascade, where one appliance fans out to several others, and those other appliances then fan out to even more appliances. In these configurations the deduplication ratio will vary depending on the number of hops in the cascade.

It goes without saying that branch offices need less storage space for their backup needs than central data centers. However, a greater deduplication ratio can be achieved when several deduplicating backup appliances are used together. In a "*fan-in*" scenario, branch offices can have a single target 1 TB deduplication appliance at their location, but replicate back to a central target deduplication appliance capable of storing up to 60 TBs of data. In this scenario, the target deduplicating branch office backup appliance is finding redundancies at the branch location. Additionally, with several branch backup appliances going to a central deduplication appliance, the example target device is finding redundancies across the various branch office appliances.

Sizing a Midrange Deduplicating Appliance

Various factors need to be considered when sizing a deduplicating backup appliance. Some of the data points that must be looked at include the amount of backup data necessary, compression ratio, and the frequency of incremental and full backups. The type of data to be backed up is also important because some types of data deduplicate better than others. Those with greater redundancies in data will produce the best results in reducing the amount of storage space used.

In simple terms, 10 TBs of backup data is stored with a 2:1 compression ratio when using a deduplicating backup appliance, equates to 5 TBs of backup after the first run. From there, further deduplication results depend on the retention policies of an organization. Some may store data for six (6) weeks. Others may store it for six (6) months. Still others may possibly retain the data even longer.

If a firm does weekly full backups that experience a change rate of 1 percent between backups with each backup retained for six (6) months, the appliance should be storing

approximately 7 TBs of backup data once deduplication and compression are factored in.

Once the appliance has been up and running, the deduplication ratio can then be calculated by dividing the total amount of data to be backed up by the amount of data stored on the appliance after deduplication. The longer an appliance is used, the greater the deduplication ratio generally gets. In a typical environment, deduplication ratios range from 10:1 to 20:1. If a 20:1 ratio is achieved, then a single appliance with 10 TBs of storage capacity can theoretically store up to 200 TBs of backup data.

Most organizations with which DCIG has spoken find they can achieve a 10:1 deduplication ratio with relatively ease and, with some tuning and attention to detail, achieve a 20:1 deduplication ratio over time. As such, most companies should, as a rule of thumb, use a 1:1 ratio when sizing a deduplicating backup appliance. Using this formula, the usable capacity of the backup appliance should equate to the total amount of data that an organization has to backup in its environment.

Software Keys

Deduplicating backup appliance storage expansion can be achieved in two ways: scaling-up and scaling-out. In a scale-up configuration, administrators add storage shelves to an existing appliance in set storage capacities such as through additional disk drives or entire disk shelves.

Scale-out refers to a system where nodes are connected together to grow the backup storage pool linearly. Scale-out systems present a single logical image to the backup software even as compute and/or storage resources are added to it. Each node contains the hardware necessary to grow the storage pool by adding in disk drives, processors, memory, networking for throughput, and controllers.

A third, lesser-used option for storage expansion that deduplicating backup appliance vendors sometimes offer on the lower end of the market is a software key. A software key allows organizations to purchase a storage key to "unlock" additional storage on an appliance, typically doubling the amount accessible. For example, organizations with 4 TBs of initial storage can purchase a software key to access another 4 TBs of storage that is otherwise inaccessible, but already available on the appliance. In this scenario, those with an appliance that begins with 4 TBs of storage can

scale-up to larger amounts of capacity without needing to physically install more storage capacity.

At this time, the use of a software key is geared towards the low-end of the midrange deduplicating appliance market, mainly due to the amount of TBs shipped with each appliance. In small segments, a backup appliance vendor may be able to justify including a couple of TBs that can be later accessed by the organization as its backup storage capacity needs grow.

Midrange Deduplicating Backup Appliance: Ranking Observations and Recommendations

General observations regarding all of the products covered in the DCIG 2013 Midrange Deduplicating Backup Appliance Buyer's Guide include:

- All appliances compress data after deduplicating the data
- All appliances offer variable length block deduplication as a means to deduplicate data
- All appliances offer at least four (4) Ethernet storage networking ports
- All appliances can deduplicate incoming data while concurrently replicating data
- 98% of the appliances offer at least 12 TBs of raw storage capacity
- 98% of the appliances support hot-swappable drives
- 96% of the appliances support both the CIFS and NFS networking protocols
- 96% of the appliances natively include deduplication software
- 96% of the appliances verify data integrity after deduplicating data
- 93% of the appliances support RAID 6
- 91% of the appliances support Symantec OpenStorage API (OST)
- 87% of the appliances support 10Gb Ethernet ports
- 85% of the appliances support SATA drives
- 76% of the appliances begin deduplicating data before all backup data arrives
- 74% of the appliances support NDMP

Best-In-Class/Recommended

Observations

The products that earned "Best-in-Class" and "Recommended" rankings in the 2013 Midrange Deduplicating Backup Appliance Buyer's Guide generally shared the following features in common:

- Give organizations two options to encrypt data
- Have starting list prices of over $250,000
- Scale to at least 100 TBs in raw capacity with the Best-in-Class scaling to over 700 TBs
- Scale to support dozens of concurrent backup streams with no performance degradation
- Scale to support hundreds of GBs of cache

Recommendations

NEC HYDRAstor deduplicating backup appliances captured four of the top five spots in the DCIG 2013 Deduplicating Backup Appliance Buyer's Guide with its HS8-4006R model earning the DCIG "Best-In-Class" designation. NEC appliances achieved these high rankings by offering the most scalable hardware among the appliances that DCIG evaluated.

Other features that contributed to NEC earning the high rankings in this Guide included its global deduplication, scale-out architecture, use of dynamic disk pools, large numbers of partitions and storage numbers of storage networking ports and lengthy product warranty (3 years.) However its hardware features contributed most heavily to NEC's high rankings as all of its models scored very well in the Hardware category of this Guide with its NEC HYDRAstor HS8-4006R model also achieving a "Best-in-Class" ranking in this category.

As an example of the scalability this model offers, its raw capacity can scale to over 700 TBs. Yet due to its scale-out architecture, organizations can start out with only as many accelerator (performance) or storage (capacity) nodes as they initially need. They may then non-disruptively add nodes to their existing configuration. In this way, any data center can start off with only as much capacity or performance as they need and then increase capacity or performance in increments as their specific environment requires.

The Quantum DXi8500 was the lone non-NEC model to achieve a Recommended ranking in this Guide. Unlike the NEC models, the Quantum DXi8500 offers two controllers configured as Active-Active for high availability. While it also delivers high levels of capacity (up to 330 TBs usable) its robust management software contributed the most to its high ranking as the DXi8500 achieved a "Recommended" ranking in the Management category. Its software gives organizations a high level of visibility into the appliance's deduplication activities informing them how well the appliance is performing and deduplicating data as well as giving them flexibility to optimize deduplication due to its integration with multiple backup software products.

Excellent

Observations

The products that achieved an "Excellent" ranking in the 2013 Midrange Deduplicating Backup Appliance Buyer's Guide generally shared the following features in common:

- Can optionally encrypt backup data
- Globally deduplicate data
- Offer a scale-out architecture
- Scale to at least 50TBs of raw capacity

Recommendations

It is noteworthy that the majority (80%) of the products achieving an "Excellent" ranking use scale-out architectures. ExaGrid, NEC and Sepaton all use this architecture as they give organizations the flexibility to start with only as much capacity and performance as their environment initially requires and then non-disruptively add more capacity, performance or both.

Of the solutions in this ranking, ExaGrid particularly stands out. All of its products have a starting price point of under $100,000 with many of them starting out for less than $50,000. This makes its solutions a compelling option for many small and midsized enterprises as well as remote and branch offices.

Large enterprises should pay special attention to NEC and Sepaton. Due to the capacity and performance that both of these providers offer in their models, they provide enterprise organizations a comprehensive deduplication solution that can satisfy the needs of their central data centers as well as their remote and branch offices.

Appliances from Quantum and Symantec round out the Excellent category. Their products are distinguished by the robust management software though in different ways. Quantum is well tuned for environments where multiple backup software solutions may be present while Symantec's appliance is specifically well tuned for environments where NetBackup backup software is in use.

Good

Observations

The products that earned a "Good" ranking in the 2013 Midrange Deduplicating Backup Appliance Buyer's Guide generally shared no specific features in common in this particular Buyer's Guide.

Recommendations

Only eight (8) products achieved the ranking of "Good" in this Buyer's Guide. While in other Buyer's Guide the characteristics that define a ranking can usually be summarized in 3-5 points, that was not the case in this Guide.

Each of the appliances from ExaGrid, FalconStor Software, NEC, Quantum and Symantec that achieved this ranking had areas of strengths that were offset by other weaknesses. For instance, appliances from ExaGrid and NEC which were both strong in their respective hardware capabilities again offered scale-out capabilities for these appliances in this ranking. However these models did not scale to very high levels of capacity as they used smaller capacity and/or fewer hard drives in their capacity nodes.

In the cases of Quantum and Symantec, their appliance management software drove their products to their respective high rankings in this Guide. That management software still comes into play here though fewer features of their management software are available on their models with the "Good" ranking. As such, the models from all of these providers are generally more suitable for small enterprise and remote and branch offices that have smaller amounts of data to backup. The only exception to this would be the Symantec NetBackup 5030 which does scale to over 300 TBs but which should only be deployed in situations where the backup environment is well understood.

FalconStor Software also makes its first showing in this Guide. Making the appearance of its VTL SAM16 notable is that it is one of only a few models that offers a virtual tape library (VTL) interface and supports both Ethernet (NFS/CIFS) and fibre channel (FC) protocols. This would make it appealing to those organizations that need to send backups over multiple interfaces.

Basic

Observations

The products that achieved a "Basic" ranking in the 2013 Midrange Deduplicating Backup Appliance Buyer's Guide generally shared the following characteristics in common;

- Scale to support less than 35TBs of raw capacity
- Vendors use the same appliance management software as is found on higher ranked/more robust appliance models

Recommendation

While organizations still have options with a range of midrange deduplicating backup appliances, the majority of products ranked in the "Basic" category are at the low-end of scalability. A number only offer raw storage capacity in the single TB range and more than 80% do not scale higher than 35 TBs of raw storage capacity.

In spite of the lowered capacity range, the good news is that these appliances still offer the same management capabilities as is found on the larger systems of this size. As a result, organizations will have available to them the levels of backup acceleration, "fan-in" and "fan-out" abilities and related hardware necessary to support their remote and branch office.

Small and midsize businesses may also find these appliances appropriate for use in their environment. In addition to being "right-sized" from a capacity perspective for their size environments, a growing number of these appliances now offer connectivity to public cloud providers which gives them a means to easily store their backup data offsite.

MIDRANGE DEDUPLICATING BACKUP APPLIANCE SCORES AND RANKINGS

The scores and rankings for the deduplicating backup appliances contain the following information:

- A chart that includes the scores and rankings for all of the products

- The mean and the standard deviation that were used to establish how each backup appliance was ranked

- A summary of the primary findings

OVERALL SCORES AND RANKINGS

	Midrange Deduplicating Backup Appliances	Score	Ranking
1.	NEC HYDRAstor HS8-4006R-720	75.78	BEST-IN-CLASS
2.	NEC HYDRAstor HS8-3020R	74.74	Recommended
3.	NEC HYDRAstor HS8-3010R	73.79	Recommended
4.	Quantum DXi8500 Enterprise	72.44	Recommended
5.	NEC HYDRAstor HS8-4002S-192	70.97	Recommended
6.	Quantum DXi6802	69.88	Excellent
7.	NEC HYDRAstor HS8-4002S-96	69.45	Excellent
8.	NEC HYDRAstor HS8-3004S-24-48	68.78	Excellent
9.	NEC HYDRAstor HS8-3004R-24-48	68.68	Excellent
10.	ExaGrid Systems EX13000E	66.92	Excellent
11.	ExaGrid Systems EX10000E	66.69	Excellent
12.	ExaGrid Systems EX7000	66.04	Excellent
13.	ExaGrid Systems EX5000	65.78	Excellent
14.	ExaGrid Systems EX4000	65.64	Excellent
15.	Sepaton S2100-ES3 Series 2925	65.32	Excellent
16.	ExaGrid Systems EX3000	65.14	Excellent
17.	Quantum DXi6700 Series	64.02	Excellent
18.	NEC HYDRAstor HS8-4001S(12-48)	63.03	Excellent
19.	NEC HYDRAstor HS8-3002S(12-24)	62.91	Excellent
20.	Symantec-NetBackup-5230	61.67	Excellent
21.	ExaGrid Systems EX2000	60.54	Good
22.	ExaGrid Systems EX1000	60.34	Good
23.	NEC HYDRAstor HS8-4001S-96	60.11	Good
24.	Symantec NetBackup 5030	57.70	Good
25.	NEC HYDRAstor HS3-410	56.81	Good
26.	NEC HYDRAstor HS3-310	55.51	Good
27.	Quantum DXi4601	55.36	Good
28.	FalconStor Software VTL SAM16	54.15	Good
29.	HP StoreOnce B6200 48TB Backup System	52.21	Basic
30.	FalconStor Software FDS SA623	51.93	Basic

13

OVERALL SCORES AND RANKINGS (continued)

	MIDRANGE DEDUPLICATING BACKUP APPLIANCES	SCORE	RANKING
31.	FalconStor Software FDS SA310	51.17	Basic
32.	FalconStor Software FDS SA304	50.73	Basic
33.	EMC Data Domain DD860	50.46	Basic
34.	FalconStor Software VTL SAP16	49.84	Basic
35.	Symantec Backup Exec 3600	49.25	Basic
36.	Dell DR4100	48.71	Basic
37.	EMC Data Domain DD670	48.28	Basic
38.	EMC Data Domain DD640	46.56	Basic
39.	IBM Storage System TS7600 ProtecTIER Deduplication	46.49	Basic
40.	EMC Data Domain DD620	43.36	Basic
41.	FalconStor HDS FS FDS H150	42.74	Basic
42.	FalconStor HDS FS FDS 220S	41.31	Basic
43.	HP StoreOnce 4430 Backup System	32.94	Basic
44.	HP StoreOnce 4220 Backup System	32.52	Basic
45.	HP StoreOnce 4420 Backup System	32.36	Basic
46.	HP StoreOnce 4210 Backup System	32.10	Basic

Total Number of Products   **46**

Rankings

Highest Score	**75.78**	Recommended	**70.42 – 75.78**
Lowest Score	**32.10**	Excellent	**61.47 – 70.41**
Average (Mean)	**56.98**	Good	**52.51 – 61.46**
Standard Deviation	**11.94**	Basic	**32.10 – 52.50**

HARDWARE SCORES AND RANKINGS

	Midrange Deduplicating Backup Appliances	Score	Ranking
1.	NEC HYDRAstor HS8-4006R-720	30.78	BEST-IN-CLASS
2.	NEC HYDRAstor HS8-3020R	29.74	Recommended
3.	NEC HYDRAstor HS8-3010R	28.79	Recommended
4.	NEC HYDRAstor HS8-4002S-192	25.97	Recommended
5.	NEC HYDRAstor HS8-4002S-96	24.45	Recommended
6.	HP StoreOnce B6200 48TB Backup System	23.91	Excellent
7.	NEC HYDRAstor HS8-3004S-24-48	23.68	Excellent
8.	NEC HYDRAstor HS8-3004R-24-48	23.68	Excellent
9.	ExaGrid Systems EX13000E	23.47	Excellent
10.	ExaGrid Systems EX10000E	23.24	Excellent
11.	ExaGrid Systems EX7000	22.59	Excellent
12.	ExaGrid Systems EX5000	22.33	Excellent
13.	ExaGrid-Systems EX4000	22.19	Excellent
14.	ExaGrid Systems EX3000	21.69	Excellent
15.	Sepaton S2100-ES3 Series 2925	21.32	Excellent
16.	NEC HYDRAstor HS8-4001S-96	19.51	Excellent
17.	NEC HYDRAstor HS8-4001S-48	19.03	Excellent
18.	NEC HYDRAstor HS8-3002S	18.91	Excellent
19.	Quantum DXi8500 Enterprise	18.84	Excellent
20.	ExaGrid Systems EX2000	17.09	Good
21.	ExaGrid Systems EX1000	16.89	Good
22.	Quantum DXi6802	16.33	Good
23.	FalconStor Software VTL SAM16	14.45	Good
24.	Symantec NetBackup 5030	14.39	Good
25.	NEC HYDRAstor HS3-410	13.71	Good
26.	Symantec NetBackup 5230	13.51	Good
27.	Quantum DXi6700 Series	12.77	Basic
28.	NEC HYDRAstor HS3-310	12.41	Basic
29.	FalconStor Software VTL SAP16	12.39	Basic
30.	EMC Data Domain DD860	12.05	Basic

HARDWARE SCORES AND RANKINGS (continued)

	MIDRANGE DEDUPLICATING BACKUP APPLIANCES	SCORE	RANKING
31.	IBM TS7620 ProtecTIER Deduplication ApplianceExpress	10.79	Basic
32.	EMC Dat Domain DD670	10.22	Basic
33.	FalconSor Software FDS SA310	9.92	Basic
34.	Falcontor Software HDS FS FDS H150	9.74	Basic
35.	FalcoStor Software FDS SA623	9.63	Basic
36.	EMCData Domain DD640	8.75	Basic
37.	FalcnStor Software FDS SA304	8.48	Basic
38.	HPStoreOnce 4430 Backup System	7.64	Basic
39.	Dell DR4100	7.46	Basic
40.	HP StoreOnce 4220 Backup	7.22	Basic
41.	HP StoreOnce 4420 Backup	7.16	Basic
42.	HP StoreOnce 4210 Backup	7.10	Basic
43.	EMC Data Domain DD620	7.03	Basic
44.	Quantum DXi4601	6.86	Basic
45.	Symantec Backup Exec 3600 Appliance	4.95	Basic
46.	FalconStor Software HDS FS FDS 220S	4.76	Basic

Total Number of Products   46

Rankings

Highest Score	30.78	Recommended	24.04 – 30.78
Lowest Score	4.76	Excellent	18.57 – 24.03
Average (Mean)	15.82	Good	13.09 – 18.56
Standard Deviation	7.30	Basic	4.76 – 13.08

16

MIDRANGE DEDUPLICATING BACKUP APPLIANCE MODELS

Dell DR4100
Approximate Starting List Price: $10,000–$20,000

2013 DCIG BUYER'S GUIDE — MIDRANGE DEDUPLICATING BACKUP APPLIANCE

DCIG Scores and Rankings

	OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
	48.71	8.00	7.46	23.00	10.25
	BASIC	BASIC	BASIC	GOOD	RECOMMENDED

DEDUPLICATION

Deduplication Included	✓
Compress Deduplicated Data	✓
Deduplication Level / Type	Variable Length Block, Sliding Scale
Bypass Deduplication	✗
Verify Data Integrity / Rate	✓
Inline Deduplication	✓
Post Process Deduplication	✗
Inline/Post Process Option	✗
Deduplication Ratios by Backup Job	✗
Deduplication Algorithms	1

SCALABILITY & SUPPORT

Replication Options	1:1; N:1
Replication Bandwidth Throttling	✓
Data Optimization Options (Total #)	1
Single Controller Replication	✗
Single Controller Deduplication	✗
Warranty	3 Year
24x7x365	✓
Access Methods (Total #)	5
Alerting Options (Total #)	2
Battery Backup/UPS	✗

MANAGEMENT

Max Concurrent Backup Streams	32
Encryption Options	1
Instant VM Recovery	✗
Encryption EKM	1
Multi-stream Encryption	✓
Encryption Methods (Total #)	2
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	2
Bundled Software Licenses (Total #)	7
Backup Software Natively Hosted (Total #)	0
Cloud Providers (Total #)	0
NDMP	✓
Backup Software Streams Recognized (Total #)	15
Native Backup Software Mgt	2
Concurrent Deduplication/Replication	✓
Compress/Encrypt Replicated Data	✓
Replication Status by Backup Job	✓
Replication Types (Total #)	2
Display Real Time Deduplication Ratio	✓

HARDWARE

Raw Storage Capacity (Max)	108TB*
Ethernet ports (Max)	8
FC Ports (Max)	2
Storage Networking Interfaces	1/10Gb Ethernet
Max # Storage Networking Ports	6
Hot Swappable Drives	✓
FC Support	✗
Concurrent FC/Ethernet Mix	✗
Max HDDs	36
5.4K RPM SATA HDDs (Max)	✗
7.2K RPM SATA HDDs (Max)	✗
SSDs	✗
FC / SAS HDDS	✓
Concurrent HDD Mix	✓
Cache (Max)	32 GB
Erasure Coding	✗
Processor Cores (Max)	12
Controllers (Max)	1
Storage Networking Protocols	CIFS, NFS
VTL Interface	✗
Partitions (Max)	32
Concurrently Present NAS/VTL	✗
Controller Configurations	Single Controller
Global Deduplication	✗
Deduplication HA	✗
Storage Capacity Expansion	Scale-up
RAID Levels	RAID 6

✓ Supported   ✗ Unsupported

EMC DD620

Approximate Starting List Price: $20,000–$50,000

DCIG Scores and Rankings

	OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
	43.36	7.50	7.03	22.58	6.25
	BASIC	BASIC	BASIC	GOOD	BASIC

DEDUPLICATION

Deduplication Included	✓
Compress Deduplicated Data	✓
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✗
Verify Data Integrity / Rate	✓
Inline Deduplication	✓
Post Process Deduplication	✗
Inline/Post Process Option	✗
Deduplication Ratios by Backup Job	✗
Deduplication Algorithms	2

SCALABILITY & SUPPORT

Replication Options	1:1; N:1
Replication Bandwidth Throttling	✓
Data Optimization Options (Total #)	1
Single Controller Replication	✗
Single Controller Deduplication	✗
Warranty	1 Year
24x7x365	✓
Access Methods (Total #)	2
Alerting Options (Total #)	2
Battery Backup/UPS	✓

MANAGEMENT

Max Concurrent Backup Streams	30
Encryption Options	2
Instant VM Recovery	✗
Encryption EKM	1
Multi-stream Encryption	✗
Encryption Methods (Total #)	2
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	2
Bundled Software Licenses (Total #)	2
Backup Software Natively Hosted (Total #)	4
Cloud Providers (Total #)	0
NDMP	✓
Backup Software Streams Recognized (Total #)	10
Native Backup Software Mgt	4
Concurrent Deduplication/Replication	✓
Compress/Encrypt Replicated Data	✓
Replication Status by Backup Job	✓
Replication Types (Total #)	3
Display Real Time Deduplication Ratio	✓

HARDWARE

Raw Storage Capacity (Max)	7TB/12TB
Ethernet ports (Max)	4
FC Ports (Max)	2
Storage Networking Interfaces	1/10Gb Ethernet, 4Gb FC
Max # Storage Networking Ports	6
Hot Swappable Drives	✓
FC Support	✓
Concurrent FC/Ethernet Mix	✓
Max HDDs	12
5.4K RPM SATA HDDs (Max)	✗
7.2K RPM SATA HDDs (Max)	✓
SSDs	✗
FC / SAS HDDS	✗
Concurrent HDD Mix	✗
Cache (Max)	6GB
Erasure Coding	✗
Processor Cores (Max)	2
Controllers (Max)	1
Storage Networking Protocols	CIFS, NFS
VTL Interface	✓
Partitions (Max)	100
Concurrently Present NAS/VTL	✓
Controller Configurations	Single Controller
Global Deduplication	✗
Deduplication HA	✗
Storage Capacity Expansion	Scale-up
RAID Levels	RAID 6

All information on this product is based strictly upon DCIG's own research and information found on the provider's web site.   ✓ Supported   ✗ Unsupported

EMC DD640

Approximate Starting List Price: $20,000–$50,000

DCIG Scores and Rankings

OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
46.56	**7.50**	**8.75**	**24.06**	**6.25**
BASIC	BASIC	BASIC	GOOD	BASIC

DEDUPLICATION

Deduplication Included	✓	
Compress Deduplicated Data	✓	
Deduplication Level / Type		Variable Length Block
Bypass Deduplication	✗	
Verify Data Integrity / Rate	✓	
Inline Deduplication	✓	
Post Process Deduplication	✗	
Inline/Post Process Option	✗	
Deduplication Ratios by Backup Job	✗	
Deduplication Algorithms		2

SCALABILITY & SUPPORT

Replication Options		1:1; N:1
Replication Bandwidth Throttling	✓	
Data Optimization Options (Total #)		1
Single Controller Replication	✗	
Single Controller Deduplication	✗	
Warranty		1 Year
24x7x365	✓	
Access Methods (Total #)		2
Alerting Options (Total #)		2
Battery Backup/UPS	✓	

MANAGEMENT

Max Concurrent Backup Streams		90
Encryption Options		2
Instant VM Recovery	✗	
Encryption EKM		1
Multi-stream Encryption	✗	
Encryption Methods (Total #)		2
Backup Accelerator Options (Total #)		1
Backup Accelerator Features (Total #)		2
Bundled Software Licenses (Total #)		2
Backup Software Natively Hosted (Total #)		4
Cloud Providers (Total #)		0
NDMP	✓	
Backup Software Streams Recognized (Total #)		10
Native Backup Software Mgt		2
Concurrent Deduplication/Replication	✓	
Compress/Encrypt Replicated Data	✓	
Replication Status by Backup Job	✓	
Replication Types (Total #)		3
Display Real Time Deduplication Ratio	✓	

HARDWARE

Raw Storage Capacity (Max)		35TB
Ethernet ports (Max)		8
FC Ports (Max)		2
Storage Networking Interfaces		1/10Gb Ethernet, 4Gb FC
Max # Storage Networking Ports		10
Hot Swappable Drives	✓	
FC Support	✗	
Concurrent FC/Ethernet Mix	✓	
Max HDDs		35
5.4K RPM SATA HDDs (Max)	✗	
7.2K RPM SATA HDDs (Max)	✓	
SSDs	✗	
FC / SAS HDDS	✗	
Concurrent HDD Mix	✗	
Cache (Max)		12GB
Erasure Coding	✗	
Processor Cores (Max)		4
Controllers (Max)		1
Storage Networking Protocols		CIFS, NFS
VTL Interface	✓	
Partitions (Max)		100
Concurrently Present NAS/VTL	✓	
Controller Configurations		Single Controller
Global Deduplication	✗	
Deduplication HA	✗	
Storage Capacity Expansion		Scale-up
RAID Levels		RAID 6

All information on this product is based strictly upon DCIG's own research and information found on the provider's web site. ✓ Supported ✗ Unsupported

EMC DD670

Approximate Starting List Price: $50,000–$100,000

DCIG Scores and Rankings

OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
48.28	7.75	10.22	24.06	6.25
BASIC	BASIC	BASIC	GOOD	BASIC

DEDUPLICATION

Deduplication Included	✓
Compress Deduplicated Data	✓
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✗
Verify Data Integrity / Rate	✓
Inline Deduplication	✓
Post Process Deduplication	✗
Inline/Post Process Option	✗
Deduplication Ratios by Backup Job	✓
Deduplication Algorithms	2

SCALABILITY & SUPPORT

Replication Options	1:1; N:1
Replication Bandwidth Throttling	✓
Data Optimization Options (Total #)	1
Single Controller Replication	✗
Single Controller Deduplication	✗
Warranty	1 Year
24x7x365	✓
Access Methods (Total #)	2
Alerting Options (Total #)	2
Battery Backup/UPS	✓

MANAGEMENT

Max Concurrent Backup Streams	90
Encryption Options	2
Instant VM Recovery	✗
Encryption EKM	1
Multi-stream Encryption	✗
Encryption Methods (Total #)	2
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	2
Bundled Software Licenses (Total #)	2
Backup Software Natively Hosted (Total #)	4
Cloud Providers (Total #)	0
NDMP	✓
Backup Software Streams Recognized (Total #)	10
Native Backup Software Mgt	4
Concurrent Deduplication/Replication	✓
Compress/Encrypt Replicated Data	✓
Replication Status by Backup Job	✓
Replication Types (Total #)	3
Display Real Time Deduplication Ratio	✓

HARDWARE

Raw Storage Capacity (Max)	76TB
Ethernet ports (Max)	10
FC Ports (Max)	2
Storage Networking Interfaces	1/10Gb Ethernet, 8Gb FC
Max # Storage Networking Ports	12
Hot Swappable Drives	✓
FC Support	✗
Concurrent FC/Ethernet Mix	✓
Max HDDs	38
5.4K RPM SATA HDDs (Max)	✗
7.2K RPM SATA HDDs (Max)	✓
SSDs	✗
FC / SAS HDDS	✗
Concurrent HDD Mix	✗
Cache (Max)	36 GB
Erasure Coding	✗
Processor Cores (Max)	4
Controllers (Max)	1
Storage Networking Protocols	CIFS, NFS
VTL Interface	✓
Partitions (Max)	100
Concurrently Present NAS/VTL	✓
Controller Configurations	Single Controller
Global Deduplication	✗
Deduplication HA	✗
Storage Capacity Expansion	Scale-up
RAID Levels	RAID 6

All information on this product is based strictly upon DCIG's own research and information found on the provider's web site.   ✓ Supported   ✗ Unsupported

EMC DD860

Approximate Starting List Price: $100,000–$250,000

DCIG Scores and Rankings

	OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
	50.46	7.75	12.05	24.41	6.25
	BASIC	BASIC	BASIC	GOOD	BASIC

DEDUPLICATION

Deduplication Included	✔
Compress Deduplicated Data	✔
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✖
Verify Data Integrity / Rate	✔
Inline Deduplication	✔
Post Process Deduplication	✖
Inline/Post Process Option	✖
Deduplication Ratios by Backup Job	✔
Deduplication Algorithms	2

SCALABILITY & SUPPORT

Replication Options	1:1; 1:N; N:1; 1:N:N
Replication Bandwidth Throttling	✔
Data Optimization Options (Total #)	1
Single Controller Replication	✖
Single Controller Deduplication	✖
Warranty	1 Year
24x7x365	✔
Access Methods (Total #)	2
Alerting Options (Total #)	2
Battery Backup/UPS	✔

MANAGEMENT

Max Concurrent Backup Streams	90
Encryption Options	2
Instant VM Recovery	✖
Encryption EKM	1
Multi-stream Encryption	✖
Encryption Methods (Total #)	2
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	2
Bundled Software Licenses (Total #)	2
Backup Software Natively Hosted (Total #)	4
Cloud Providers (Total #)	0
NDMP	✔
Backup Software Streams Recognized (Total #)	10
Native Backup Software Mgt	4
Concurrent Deduplication/Replication	✔
Compress/Encrypt Replicated Data	✔
Replication Status by Backup Job	✔
Replication Types (Total #)	3
Display Real Time Deduplication Ratio	✔

HARDWARE

Raw Storage Capacity (Max)	192TB
Ethernet ports (Max)	10
FC Ports (Max)	2
Storage Networking Interfaces	1/10Gb Ethernet, 8Gb FC
Max # Storage Networking Ports	12
Hot Swappable Drives	✔
FC Support	✖
Concurrent FC/Ethernet Mix	✔
Max HDDs	96
5.4K RPM SATA HDDs (Max)	✖
7.2K RPM SATA HDDs (Max)	✔
SSDs	✖
FC / SAS HDDS	✖
Concurrent HDD Mix	✖
Cache (Max)	72GB
Erasure Coding	✖
Processor Cores (Max)	8
Controllers (Max)	1
Storage Networking Protocols	CIFS, NFS
VTL Interface	✔
Partitions (Max)	100
Concurrently Present NAS/VTL	✔
Controller Configurations	Single Controller
Global Deduplication	✖
Deduplication HA	✖
Storage Capacity Expansion	Scale-up
RAID Levels	RAID 6

✔ Supported   ✖ Unsupported

ExaGrid EX1000

Approximate Starting List Price: $10,000–$20,000

DCIG Scores and Rankings

	OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
	60.34	9.00	16.89	25.95	8.50
	GOOD	GOOD	GOOD	EXCELLENT	GOOD

DEDUPLICATION

Deduplication Included	✔
Compress Deduplicated Data	✔
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✔
Verify Data Integrity / Rate	✔
Inline Deduplication	✖
Post Process Deduplication	✔
Inline/Post Process Option	✖
Deduplication Ratios by Backup Job	✖
Deduplication Algorithms	3

SCALABILITY & SUPPORT

Replication Options	1:1; 1:N: N:1
Replication Bandwidth Throttling	✖
Data Optimization Options (Total #)	✖
Single Controller Replication	✔
Single Controller Deduplication	✖
Warranty	1 Year
24x7x365	✔
Access Methods (Total #)	4
Alerting Options (Total #)	3
Battery Backup/UPS	✔

MANAGEMENT

Max Concurrent Backup Streams	200
Encryption Options	1
Instant VM Recovery	✔
Encryption EKM	✖
Multi-stream Encryption	✔
Encryption Methods (Total #)	0
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	3
Bundled Software Licenses (Total #)	8
Backup Software Natively Hosted (Total #)	20
Cloud Providers (Total #)	1
NDMP	✔
Backup Software Streams Recognized (Total #)	20
Native Backup Software Mgt	9
Concurrent Deduplication/Replication	✔
Compress/Encrypt Replicated Data	✖
Replication Status by Backup Job	✖
Replication Types (Total #)	3
Display Real Time Deduplication Ratio	✔

HARDWARE

Raw Storage Capacity (Max)	35TB
Ethernet ports (Max)	20
FC Ports (Max)	✖
Storage Networking Interfaces	1Gb Ethernet
Max # Storage Networking Ports	20
Hot Swappable Drives	✔
FC Support	✖
Concurrent FC/Ethernet Mix	✖
Max HDDs	70
5.4K RPM SATA HDDs (Max)	✖
7.2K RPM SATA HDDs (Max)	✔
SSDs	✖
FC / SAS HDDS	✖
Concurrent HDD Mix	✖
Cache (Max)	640GB
Erasure Coding	✖
Processor Cores (Max)	4/40
Controllers (Max)	1/10
Storage Networking Protocols	CIFS, NFS
VTL Interface	✖
Partitions (Max)	✖
Concurrently Present NAS/VTL	✖
Controller Configurations	Scale-Out, Single Controller
Global Deduplication	✔
Deduplication HA	✖
Storage Capacity Expansion	Scale-out
RAID Levels	RAID 6

✔ Supported ✖ Unsupported

ExaGrid EX2000

Approximate Starting List Price: $10,000–$20,000

2013 DCIG BUYER'S GUIDE — MIDRANGE DEDUPLICATING BACKUP APPLIANCE

DCIG Scores and Rankings

	OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
	60.54	9.00	17.09	25.95	8.50
	GOOD	GOOD	GOOD	EXCELLENT	GOOD

DEDUPLICATION

Deduplication Included	✓
Compress Deduplicated Data	✓
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✓
Verify Data Integrity / Rate	✓
Inline Deduplication	✗
Post Process Deduplication	✓
Inline/Post Process Option	✗
Deduplication Ratios by Backup Job	✗
Deduplication Algorithms	3

SCALABILITY & SUPPORT

Replication Options	1:1; 1:N; N:1
Replication Bandwidth Throttling	✗
Data Optimization Options (Total #)	✗
Single Controller Replication	✓
Single Controller Deduplication	✗
Warranty	1 Year
24x7x365	✓
Access Methods (Total #)	4
Alerting Options (Total #)	3
Battery Backup/UPS	✓

MANAGEMENT

Max Concurrent Backup Streams	200
Encryption Options	1
Instant VM Recovery	✓
Encryption EKM	✗
Multi-stream Encryption	✓
Encryption Methods (Total #)	0
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	3
Bundled Software Licenses (Total #)	8
Backup Software Natively Hosted (Total #)	20
Cloud Providers (Total #)	1
NDMP	✓
Backup Software Streams Recognized (Total #)	20
Native Backup Software Mgt	9
Concurrent Deduplication/Replication	✓
Compress/Encrypt Replicated Data	✗
Replication Status by Backup Job	✗
Replication Types (Total #)	3
Display Real Time Deduplication Ratio	✓

HARDWARE

Raw Storage Capacity (Max)	55TB
Ethernet ports (Max)	20
FC Ports (Max)	✗
Storage Networking Interfaces	1Gb Ethernet
Max # Storage Networking Ports	20
Hot Swappable Drives	✓
FC Support	✗
Concurrent FC/Ethernet Mix	✗
Max HDDs	120
5.4K RPM SATA HDDs (Max)	✗
7.2K RPM SATA HDDs (Max)	✓
SSDs	✗
FC / SAS HDDS	✗
Concurrent HDD Mix	✗
Cache (Max)	640GB
Erasure Coding	✗
Processor Cores (Max)	4/40
Controllers (Max)	1/10
Storage Networking Protocols	CIFS, NFS
VTL Interface	✗
Partitions (Max)	✗
Concurrently Present NAS/VTL	✗
Controller Configurations	Scale-Out, Single Controller
Global Deduplication	✓
Deduplication HA	✗
Storage Capacity Expansion	Scale-out
RAID Levels	RAID 6

✓ Supported   ✗ Unsupported

ExaGrid EX3000

Approximate Starting List Price: $20,000–$50,000

2013 DCIG BUYER'S GUIDE — MIDRANGE DEDUPLICATING BACKUP APPLIANCE

DCIG Scores and Rankings

	OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
	65.14	9.00	21.69	25.95	8.50
	EXCELLENT	GOOD	EXCELLENT	EXCELLENT	GOOD

DEDUPLICATION

Deduplication Included	✔
Compress Deduplicated Data	✔
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✔
Verify Data Integrity / Rate	✔
Inline Deduplication	✖
Post Process Deduplication	✔
Inline/Post Process Option	✖
Deduplication Ratios by Backup Job	✖
Deduplication Algorithms	3

SCALABILITY & SUPPORT

Replication Options	1:1; 1:N: N:1
Replication Bandwidth Throttling	✖
Data Optimization Options (Total #)	✖
Single Controller Replication	✔
Single Controller Deduplication	✖
Warranty	1 Year
24x7x365	✔
Access Methods (Total #)	4
Alerting Options (Total #)	3
Battery Backup/UPS	✔

MANAGEMENT

Max Concurrent Backup Streams	200
Encryption Options	1
Instant VM Recovery	✔
Encryption EKM	✖
Multi-stream Encryption	✔
Encryption Methods (Total #)	0
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	3
Bundled Software Licenses (Total #)	8
Backup Software Natively Hosted (Total #)	20
Cloud Providers (Total #)	1
NDMP	✔
Backup Software Streams Recognized (Total #)	20
Native Backup Software Mgt	9
Concurrent Deduplication/Replication	✔
Compress/Encrypt Replicated Data	✖
Replication Status by Backup Job	✖
Replication Types (Total #)	3
Display Real Time Deduplication Ratio	✔

HARDWARE

Raw Storage Capacity (Max)	55TB
Ethernet ports (Max)	60
FC Ports (Max)	✖
Storage Networking Interfaces	1/10Gb Ethernet
Max # Storage Networking Ports	60
Hot Swappable Drives	✔
FC Support	✖
Concurrent FC/Ethernet Mix	✖
Max HDDs	55
5.4K RPM SATA HDDs (Max)	✖
7.2K RPM SATA HDDs (Max)	✔
SSDs	✖
FC / SAS HDDS	✖
Concurrent HDD Mix	✖
Cache (Max)	640GB
Erasure Coding	✖
Processor Cores (Max)	4/40
Controllers (Max)	1/10
Storage Networking Protocols	CIFS, NFS
VTL Interface	✖
Partitions (Max)	✖
Concurrently Present NAS/VTL	✖
Controller Configurations	Scale-Out, Single Controller
Global Deduplication	✔
Deduplication HA	✖
Storage Capacity Expansion	Scale-out
RAID Levels	RAID 6

✔ Supported   ✖ Unsupported

ExaGrid EX4000

Approximate Starting List Price: $20,000–$50,000

DCIG Scores and Rankings

	OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
	65.64	9.00	22.19	25.95	8.50
	EXCELLENT	GOOD	EXCELLENT	EXCELLENT	GOOD

DEDUPLICATION

Deduplication Included	✔
Compress Deduplicated Data	✔
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✔
Verify Data Integrity / Rate	✔
Inline Deduplication	✘
Post Process Deduplication	✔
Inline/Post Process Option	✘
Deduplication Ratios by Backup Job	✘
Deduplication Algorithms	3

SCALABILITY & SUPPORT

Replication Options	1:1; 1:N: N:1
Replication Bandwidth Throttling	✘
Data Optimization Options (Total #)	✘
Single Controller Replication	✔
Single Controller Deduplication	✘
Warranty	1 Year
24x7x365	✔
Access Methods (Total #)	4
Alerting Options (Total #)	3
Battery Backup/UPS	✔

MANAGEMENT

Max Concurrent Backup Streams	200
Encryption Options	1
Instant VM Recovery	✔
Encryption EKM	✘
Multi-stream Encryption	✔
Encryption Methods (Total #)	0
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	3
Bundled Software Licenses (Total #)	8
Backup Software Natively Hosted (Total #)	20
Cloud Providers (Total #)	1
NDMP	✔
Backup Software Streams Recognized (Total #)	20
Native Backup Software Mgt	9
Concurrent Deduplication/Replication	✔
Compress/Encrypt Replicated Data	✘
Replication Status by Backup Job	✘
Replication Types (Total #)	3
Display Real Time Deduplication Ratio	✔

HARDWARE

Raw Storage Capacity (Max)	110TB
Ethernet ports (Max)	60
FC Ports (Max)	✘
Storage Networking Interfaces	1/10Gb Ethernet
Max # Storage Networking Ports	60
Hot Swappable Drives	✔
FC Support	✘
Concurrent FC/Ethernet Mix	✘
Max HDDs	110
5.4K RPM SATA HDDs (Max)	✘
7.2K RPM SATA HDDs (Max)	✔
SSDs	✘
FC / SAS HDDS	✘
Concurrent HDD Mix	✘
Cache (Max)	640GB
Erasure Coding	✘
Processor Cores (Max)	4/40
Controllers (Max)	1/10
Storage Networking Protocols	CIFS, NFS
VTL Interface	✘
Partitions (Max)	✘
Concurrently Present NAS/VTL	✘
Controller Configurations	Scale-Out, Single Controller
Global Deduplication	✔
Deduplication HA	✘
Storage Capacity Expansion	Scale-out
RAID Levels	RAID 6

✔ Supported   ✘ Unsupported

ExaGrid EX5000

Approximate Starting List Price: $20,000–$50,000

2013 DCIG BUYER'S GUIDE — MIDRANGE DEDUPLICATING BACKUP APPLIANCE

DCIG Scores and Rankings

	OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
	65.78	9.00	22.33	25.95	8.50
	EXCELLENT	GOOD	EXCELLENT	EXCELLENT	GOOD

DEDUPLICATION

Deduplication Included	✔
Compress Deduplicated Data	✔
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✔
Verify Data Integrity / Rate	✔
Inline Deduplication	✘
Post Process Deduplication	✔
Inline/Post Process Option	✘
Deduplication Ratios by Backup Job	✘
Deduplication Algorithms	3

SCALABILITY & SUPPORT

Replication Options	1:1; 1:N: N:1
Replication Bandwidth Throttling	✘
Data Optimization Options (Total #)	✘
Single Controller Replication	✔
Single Controller Deduplication	✘
Warranty	1 Year
24x7x365	✔
Access Methods (Total #)	4
Alerting Options (Total #)	3
Battery Backup/UPS	✔

MANAGEMENT

Max Concurrent Backup Streams	200
Encryption Options	1
Instant VM Recovery	✔
Encryption EKM	✘
Multi-stream Encryption	✔
Encryption Methods (Total #)	0
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	3
Bundled Software Licenses (Total #)	8
Backup Software Natively Hosted (Total #)	20
Cloud Providers (Total #)	1
NDMP	✔
Backup Software Streams Recognized (Total #)	20
Native Backup Software Mgt	9
Concurrent Deduplication/Replication	✔
Compress/Encrypt Replicated Data	✘
Replication Status by Backup Job	✘
Replication Types (Total #)	3
Display Real Time Deduplication Ratio	✔

HARDWARE

Raw Storage Capacity (Max)	130TB
Ethernet ports (Max)	60
FC Ports (Max)	✘
Storage Networking Interfaces	1/10Gb Ethernet
Max # Storage Networking Ports	60
Hot Swappable Drives	✔
FC Support	✘
Concurrent FC/Ethernet Mix	✘
Max HDDs	130
5.4K RPM SATA HDDs (Max)	✘
7.2K RPM SATA HDDs (Max)	✔
SSDs	✘
FC / SAS HDDS	✘
Concurrent HDD Mix	✘
Cache (Max)	640GB
Erasure Coding	✘
Processor Cores (Max)	4/40
Controllers (Max)	1/10
Storage Networking Protocols	CIFS, NFS
VTL Interface	✘
Partitions (Max)	✘
Concurrently Present NAS/VTL	✘
Controller Configurations	Scale-Out, Single Controller
Global Deduplication	✔
Deduplication HA	✘
Storage Capacity Expansion	Scale-out
RAID Levels	RAID 6

✔ Supported ✘ Unsupported

DCIG

ExaGrid EX7000

Approximate Starting List Price: $20,000–$50,000

2013 DCIG BUYER'S GUIDE — MIDRANGE DEDUPLICATING BACKUP APPLIANCE

DCIG Scores and Rankings

OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
66.04	**9.00**	**22.59**	**25.95**	**8.50**
EXCELLENT	GOOD	EXCELLENT	EXCELLENT	GOOD

DEDUPLICATION

Deduplication Included	✔
Compress Deduplicated Data	✔
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✔
Verify Data Integrity / Rate	✔
Inline Deduplication	✖
Post Process Deduplication	✔
Inline/Post Process Option	✖
Deduplication Ratios by Backup Job	✖
Deduplication Algorithms	3

SCALABILITY & SUPPORT

Replication Options	1:1; 1:N: N:1
Replication Bandwidth Throttling	✖
Data Optimization Options (Total #)	✖
Single Controller Replication	✔
Single Controller Deduplication	✖
Warranty	1 Year
24x7x365	✔
Access Methods (Total #)	4
Alerting Options (Total #)	3
Battery Backup/UPS	✔

MANAGEMENT

Max Concurrent Backup Streams	200
Encryption Options	1
Instant VM Recovery	✔
Encryption EKM	✖
Multi-stream Encryption	✔
Encryption Methods (Total #)	0
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	3
Bundled Software Licenses (Total #)	8
Backup Software Natively Hosted (Total #)	20
Cloud Providers (Total #)	1
NDMP	✔
Backup Software Streams Recognized (Total #)	20
Native Backup Software Mgt	9
Concurrent Deduplication/Replication	✔
Compress/Encrypt Replicated Data	✖
Replication Status by Backup Job	✖
Replication Types (Total #)	3
Display Real Time Deduplication Ratio	✔

HARDWARE

Raw Storage Capacity (Max)	160TB
Ethernet ports (Max)	60
FC Ports (Max)	✖
Storage Networking Interfaces	1/10Gb Ethernet
Max # Storage Networking Ports	60
Hot Swappable Drives	✔
FC Support	✖
Concurrent FC/Ethernet Mix	✖
Max HDDs	130
5.4K RPM SATA HDDs (Max)	✖
7.2K RPM SATA HDDs (Max)	✔
SSDs	✖
FC / SAS HDDS	✖
Concurrent HDD Mix	✖
Cache (Max)	640GB
Erasure Coding	✖
Processor Cores (Max)	4/40
Controllers (Max)	1/10
Storage Networking Protocols	CIFS, NFS
VTL Interface	✖
Partitions (Max)	✖
Concurrently Present NAS/VTL	✖
Controller Configurations	Scale-Out, Single Controller
Global Deduplication	✔
Deduplication HA	✖
Storage Capacity Expansion	Scale-out
RAID Levels	RAID 6

✔ Supported ✖ Unsupported

DCIG

ExaGrid EX10000E

Approximate Starting List Price: $20,000–$50,000

DCIG Scores and Rankings

OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
66.69	9.00	23.24	25.95	8.50
EXCELLENT	GOOD	EXCELLENT	EXCELLENT	GOOD

DEDUPLICATION

Deduplication Included	✓
Compress Deduplicated Data	✓
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✓
Verify Data Integrity / Rate	✓
Inline Deduplication	✗
Post Process Deduplication	✓
Inline/Post Process Option	✗
Deduplication Ratios by Backup Job	✗
Deduplication Algorithms	3

SCALABILITY & SUPPORT

Replication Options	1:1; 1:N N:1
Replication Bandwidth Throttling	✗
Data Optimization	✗
Single Controller Replication	✓
Single Controller Deduplication	✗
Warranty	1 Year
24x7x365	✓
Access Methods (Total #)	4
Alerting Options (Total #)	3
Battery Backup/UPS	✓

MANAGEMENT

Max Concurrent Backup Streams	200
Encryption Options	1
Instant VM Recovery	✓
Encryption EKM	✗
Multi-stream Encryption	✓
Encryption Methods (Total #)	0
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	3
Bundled Software Licenses (Total #)	8
Backup Software Natively Hosted (Total #)	20
Cloud Providers (Total #)	1
NDMP	✓
Backup Software Streams Recognized (Total #)	20
Native Backup Software Mgt	9
Concurrent Deduplication/Replication	✓
Compress/Encrypt Replicated Data	✗
Replication Status by Backup Job	✗
Replication Types (Total #)	3
Display Real Time Deduplication Ratio	✓

HARDWARE

Raw Storage Capacity (Max)	260TB
Ethernet ports (Max)	60
FC Ports (Max)	✗
Storage Networking Interfaces	1/10Gb Ethernet
Max # Storage Networking Ports	60
Hot Swappable Drives	✓
FC Support	✗
Concurrent FC/Ethernet Mix	✗
Max HDDs	130
5.4K RPM SATA HDDs (Max)	✗
7.2K RPM SATA HDDs (Max)	2TB
SSDs	✗
FC / SAS HDDS	✗
Concurrent HDD Mix	✗
Cache (Max)	640 GB
Erasure Coding	✗
Processor Cores (Max)	4/40
Controllers (Max)	1/10
Storage Networking Protocols	CIFS, NFS
VTL Interface	✗
Partitions (Max)	✗
Concurrently Present NAS/VTL	✗
Controller Configurations	Scale-Out, Single Controller
Global Deduplication	✓
Deduplication HA	✗
Storage Capacity Expansion	Scale-out
RAID Levels	RAID 6

✓ Supported ✗ Unsupported

ExaGrid EX13000

Approximate Starting List Price: $50,000–$100,000

DCIG Scores and Rankings

OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
66.92	9.00	23.47	25.95	8.50
EXCELLENT	GOOD	EXCELLENT	EXCELLENT	GOOD

DEDUPLICATION

Deduplication Included	✓
Compress Deduplicated Data	✓
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✓
Verify Data Integrity / Rate	✓
Inline Deduplication	✗
Post Process Deduplication	✓
Inline/Post Process Option	✗
Deduplication Ratios by Backup Job	✗
Deduplication Algorithms	3

SCALABILITY & SUPPORT

Replication Options	1:1; 1:N: N:1
Replication Bandwidth Throttling	✗
Data Optimization	✗
Single Controller Replication	✓
Single Controller Deduplication	✗
Warranty	1 Year
24x7x365	✓
Access Methods (Total #)	4
Alerting Options (Total #)	3
Battery Backup/UPS	✓

MANAGEMENT

Max Concurrent Backup Streams	200
Encryption Options	1
Instant VM Recovery	✓
Encryption EKM	✗
Multi-stream Encryption	✓
Encryption Methods (Total #)	0
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	3
Bundled Software Licenses (Total #)	8
Backup Software Natively Hosted (Total #)	20
Cloud Providers (Total #)	1
NDMP	✓
Backup Software Streams Recognized (Total #)	20
Native Backup Software Mgt	9
Concurrent Deduplication/Replication	✓
Compress/Encrypt Replicated Data	✗
Replication Status by Backup Job	✗
Replication Types (Total #)	3
Display Real Time Deduplication Ratio	✓

HARDWARE

Raw Storage Capacity (Max)	320TB
Ethernet ports (Max)	60
FC Ports (Max)	✗
Storage Networking Interfaces	1/10Gb Ethernet
Max # Storage Networking Ports	60
Hot Swappable Drives	✓
FC Support	✗
Concurrent FC/Ethernet Mix	✗
Max HDDs	160
5.4K RPM SATA HDDs (Max)	✗
7.2K RPM SATA HDDs (Max)	✓
SSDs	✗
FC / SAS HDDS	✗
Concurrent HDD Mix	✗
Cache (Max)	640GB
Erasure Coding	✗
Processor Cores (Max)	4/40
Controllers (Max)	1/10
Storage Networking Protocols	CIFS, NFS
VTL Interface	✗
Partitions (Max)	✗
Concurrently Present NAS/VTL	✗
Controller Configurations	Scale-Out, Single Controller
Global Deduplication	✓
Deduplication HA	✗
Storage Capacity Expansion	Scale-out
RAID Levels	RAID 6

✓ Supported ✗ Unsupported

FalconStor Software FDS SA304

Approximate Starting List Price: $20,000–$50,000

DCIG Scores and Rankings

	OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
	50.73	10.25	8.48	24.75	7.25
	BASIC	RECOMMENDED	BASIC	GOOD	BASIC

DEDUPLICATION

Deduplication Included	✔
Compress Deduplicated Data	✔
Deduplication Level / Type	Fixed Block, Variable Length Block
Bypass Deduplication	✔
Verify Data Integrity / Rate	✔
Inline Deduplication	✖
Post Process Deduplication	✔
Inline/Post Process Option	✔
Deduplication Ratios by Backup Job	✔
Deduplication Algorithms	3

SCALABILITY & SUPPORT

Replication Options	1:1; 1:N: N:1; 1:N:N
Replication Bandwidth Throttling	✔
Data Optimization Options (Total #)	1
Single Controller Replication	✖
Single Controller Deduplication	✖
Warranty	1 Year
24x7x365	✔
Access Methods (Total #)	4
Alerting Options (Total #)	2
Battery Backup/UPS	✖

MANAGEMENT

Max Concurrent Backup Streams	32
Encryption Options	1
Instant VM Recovery	✖
Encryption EKM	✖
Multi-stream Encryption	✖
Encryption Methods (Total #)	1
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	1
Bundled Software Licenses (Total #)	6
Backup Software Natively Hosted (Total #)	7
Cloud Providers (Total #)	0
NDMP	✔
Backup Software Streams Recognized (Total #)	23
Native Backup Software Mgt	8
Concurrent Deduplication/Replication	✔
Compress/Encrypt Replicated Data	✔
Replication Status by Backup Job	✔
Replication Types (Total #)	3
Display Real Time Deduplication Ratio	✔

HARDWARE

Raw Storage Capacity (Max)	4.2TB/60TB
Ethernet ports (Max)	10
FC Ports (Max)	✖
Storage Networking Interfaces	1/10Gb Ethernet
Max # Storage Networking Ports	11
Hot Swappable Drives	✖
FC Support	✔
Concurrent FC/Ethernet Mix	✔
Max HDDs	54
5.4K RPM SATA HDDs (Max)	✖
7.2K RPM SATA HDDs (Max)	✔
SSDs	✖
FC / SAS HDDS	✖
Concurrent HDD Mix	✖
Cache (Max)	✖
Erasure Coding	✖
Processor Cores (Max)	4
Controllers (Max)	1
Storage Networking Protocols	CIFS, NFS
VTL Interface	✖
Partitions (Max)	4,096
Concurrently Present NAS/VTL	✖
Controller Configurations	Single Controller
Global Deduplication	✖
Deduplication HA	✖
Storage Capacity Expansion	Scale-up
RAID Levels	RAID 6

✔ Supported   ✖ Unsupported

FalconStor Software FDS SA310

Approximate Starting List Price: $20,000–$50,000

DCIG Scores and Rankings

	OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
	51.17	10.25	9.92	23.75	7.25
	BASIC	RECOMMENDED	BASIC	GOOD	BASIC

DEDUPLICATION

Deduplication Included	✓
Compress Deduplicated Data	✓
Deduplication Level / Type	Fixed Block, Variable Length Block
Bypass Deduplication	✓
Verify Data Integrity / Rate	✓
Inline Deduplication	✗
Post Process Deduplication	✓
Inline/Post Process Option	✓
Deduplication Ratios by Backup Job	✓
Deduplication Algorithms	3

SCALABILITY & SUPPORT

Replication Options	1:1; 1:N; N:1; 1:N:N
Replication Bandwidth Throttling	✓
Data Optimization Options (Total #)	1
Single Controller Replication	✗
Single Controller Deduplication	✗
Warranty	1 Year
24x7x365	✓
Access Methods (Total #)	4
Alerting Options (Total #)	2
Battery Backup/UPS	✗

MANAGEMENT

Max Concurrent Backup Streams	32
Encryption Options	1
Instant VM Recovery	✗
Encryption EKM	✗
Multi-stream Encryption	✗
Encryption Methods (Total #)	1
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	1
Bundled Software Licenses (Total #)	6
Backup Software Natively Hosted (Total #)	7
Cloud Providers (Total #)	0
NDMP	✓
Backup Software Streams Recognized (Total #)	23
Native Backup Software Mgt	8
Concurrent Deduplication/Replication	✓
Compress/Encrypt Replicated Data	✓
Replication Status by Backup Job	✓
Replication Types (Total #)	3
Display Real Time Deduplication Ratio	✓

HARDWARE

Raw Storage Capacity (Max)	54TB
Ethernet ports (Max)	10
FC Ports (Max)	✗
Storage Networking Interfaces	1/10Gb Ethernet
Max # Storage Networking Ports	11
Hot Swappable Drives	✗
FC Support	✓
Concurrent FC/Ethernet Mix	✓
Max HDDs	66
5.4K RPM SATA HDDs (Max)	✗
7.2K RPM SATA HDDs (Max)	✓
SSDs	✗
FC / SAS HDDS	✗
Concurrent HDD Mix	✗
Cache (Max)	✗
Erasure Coding	✗
Processor Cores (Max)	4
Controllers (Max)	1
Storage Networking Protocols	CIFS, NFS
VTL Interface	✗
Partitions (Max)	4,096
Concurrently Present NAS/VTL	✗
Controller Configurations	Single Controller
Global Deduplication	✗
Deduplication HA	✗
Storage Capacity Expansion	Scale-up
RAID Levels	RAID 6

✓ Supported   ✗ Unsupported

FalconStor Software FDS SA623

Approximate Starting List Price: $50,000–$100,000

DCIG Scores and Rankings

OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
51.93	10.25	9.63	24.80	7.25
BASIC	RECOMMENDED	BASIC	GOOD	BASIC

DEDUPLICATION

Deduplication Included	✓
Compress Deduplicated Data	✓
Deduplication Level / Type	Fixed Block, Variable Length Block
Bypass Deduplication	✓
Verify Data Integrity / Rate	✓
Inline Deduplication	✕
Post Process Deduplication	✓
Inline/Post Process Option	✓
Deduplication Ratios by Backup Job	✓
Deduplication Algorithms	3

SCALABILITY & SUPPORT

Replication Options	1:1; 1:N: N:1; 1:N:N
Replication Bandwidth Throttling	✓
Data Optimization	1
Single Controller Replication	✕
Single Controller Deduplication	✕
Warranty	1 Year
24x7x365	✓
Access Methods (Total #)	4
Alerting Options (Total #)	2
Battery Backup/UPS	✕

MANAGEMENT

Max Concurrent Backup Streams	32
Encryption Options	1
Instant VM Recovery	✓
Encryption EKM	✕
Multi-stream Encryption	✕
Encryption Methods (Total #)	1
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	1
Bundled Software Licenses (Total #)	6
Backup Software Natively Hosted (Total #)	7
Cloud Providers (Total #)	0
NDMP	✓
Backup Software Streams Recognized (Total #)	24
Native Backup Software Mgt	8
Concurrent Deduplication/Replication	✓
Compress/Encrypt Replicated Data	✓
Replication Status by Backup Job	✓
Replication Types (Total #)	3
Display Real Time Deduplication Ratio	✓

HARDWARE

Raw Storage Capacity (Max)	112TB
Ethernet ports (Max)	10
FC Ports (Max)	✕
Storage Networking Interfaces	1/10Gb Ethernet
Max # Storage Networking Ports	11
Hot Swappable Drives	✕
FC Support	✓
Concurrent FC/Ethernet Mix	✓
Max HDDs	72
5.4K RPM SATA HDDs (Max)	✕
7.2K RPM SATA HDDs (Max)	✓
SSDs	✕
FC / SAS HDDS	✕
Concurrent HDD Mix	✕
Cache (Max)	✕
Erasure Coding	✕
Processor Cores (Max)	4
Controllers (Max)	1
Storage Networking Protocols	CIFS, NFS
VTL Interface	✕
Partitions (Max)	4,096
Concurrently Present NAS/VTL	✕
Controller Configurations	Single Controller
Global Deduplication	✕
Deduplication HA	✕
Storage Capacity Expansion	Scale-up
RAID Levels	RAID 6

✓ Supported   ✕ Unsupported

FalconStor HDS FS FDS H150

Approximate Starting List Price: Not Provided

DCIG Scores and Rankings

	OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
	42.74	9.25	9.74	17.50	6.25
	BASIC	EXCELLENT	BASIC	BASIC	BASIC

DEDUPLICATION

Deduplication Included	✔
Compress Deduplicated Data	✔
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✔
Verify Data Integrity / Rate	✔
Inline Deduplication	✘
Post Process Deduplication	✔
Inline/Post Process Option	✔
Deduplication Ratios by Backup Job	✔
Deduplication Algorithms	2

SCALABILITY & SUPPORT

Replication Options	1:N
Replication Bandwidth Throttling	✘
Data Optimization	1
Single Controller Replication	✘
Single Controller Deduplication	✘
Warranty	1 Year
24x7x365	✔
Access Methods (Total #)	3
Alerting Options (Total #)	2
Battery Backup/UPS	✘

MANAGEMENT

Max Concurrent Backup Streams	10
Encryption Options	1
Instant VM Recovery	✔
Encryption EKM	✘
Multi-stream Encryption	✘
Encryption Methods (Total #)	1
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	1
Bundled Software Licenses (Total #)	5
Backup Software Natively Hosted (Total #)	2
Cloud Providers (Total #)	0
NDMP	✔
Backup Software Streams Recognized (Total #)	10
Native Backup Software Mgt	2
Concurrent Deduplication/Replication	✔
Compress/Encrypt Replicated Data	✔
Replication Status by Backup Job	✔
Replication Types (Total #)	3
Display Real Time Deduplication Ratio	✔

HARDWARE

Raw Storage Capacity (Max)	135TB*
Ethernet ports (Max)	6
FC Ports (Max)	2
Storage Networking Interfaces	1/10Gb Ethernet, 8Gb FC
Max # Storage Networking Ports	8
Hot Swappable Drives	✔
FC Support	✔
Concurrent FC/Ethernet Mix	✘
Max HDDs	45
5.4K RPM SATA HDDs (Max)	✘
7.2K RPM SATA HDDs (Max)	✘
SSDs	✘
FC / SAS HDDS	✔
Concurrent HDD Mix	✘
Cache (Max)	32GB
Erasure Coding	✘
Processor Cores (Max)	4
Controllers (Max)	1
Storage Networking Protocols	CIFS, NFS
VTL Interface	✘
Partitions (Max)	✘
Concurrently Present NAS/VTL	✘
Controller Configurations	Single Controller
Global Deduplication	✔
Deduplication HA	✔
Storage Capacity Expansion	Scale-up
RAID Levels	RAID 6

*Usable

✔ Supported   ✘ Unsupported

FalconStor HDS FS FDS 220S

Approximate Starting List Price: Not Provided

2013 DCIG MIDRANGE DEDUPLICATING BACKUP APPLIANCE BUYER'S GUIDE

DCIG Scores and Rankings

OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
41.31	9.25	4.76	20.80	6.50
BASIC	EXCELLENT	BASIC	BASIC	BASIC

DEDUPLICATION

Deduplication Included	✔
Compress Deduplicated Data	✔
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✔
Verify Data Integrity / Rate	✔
Inline Deduplication	✘
Post Process Deduplication	✔
Inline/Post Process Option	✔
Deduplication Ratios by Backup Job	✔
Deduplication Algorithms	2

SCALABILITY & SUPPORT

Replication Options	1:1: N:1
Replication Bandwidth Throttling	✔
Data Optimization	✘
Single Controller Replication	✔
Single Controller Deduplication	✘
Warranty	1 Year
24x7x365	✔
Access Methods (Total #)	4
Alerting Options (Total #)	2
Battery Backup/UPS	✘

MANAGEMENT

Max Concurrent Backup Streams	10
Encryption Options	1
Instant VM Recovery	✔
Encryption EKM	✘
Multi-stream Encryption	✘
Encryption Methods (Total #)	1
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	1
Bundled Software Licenses (Total #)	5
Backup Software Natively Hosted (Total #)	2
Cloud Providers (Total #)	0
NDMP	✔
Backup Software Streams Recognized (Total #)	12
Native Backup Software Mgt	2
Concurrent Deduplication/Replication	✔
Compress/Encrypt Replicated Data	✔
Replication Status by Backup Job	✔
Replication Types (Total #)	3
Display Real Time Deduplication Ratio	✔

HARDWARE

Raw Storage Capacity (Max)	16TB*
Ethernet ports (Max)	6
FC Ports (Max)	✘
Storage Networking Interfaces	1/10Gb Ethernet
Max # Storage Networking Ports	6
Hot Swappable Drives	✘
FC Support	✘
Concurrent FC/Ethernet Mix	✘
Max HDDs	8
5.4K RPM SATA HDDs (Max)	✘
7.2K RPM SATA HDDs (Max)	✘
SSDs	✘
FC / SAS HDDS	✔
Concurrent HDD Mix	✘
Cache (Max)	✘
Erasure Coding	✘
Processor Cores (Max)	4
Controllers (Max)	1
Storage Networking Protocols	CIFS, NFS
VTL Interface	✘
Partitions (Max)	✘
Concurrently Present NAS/VTL	✘
Controller Configurations	Single Controller
Global Deduplication	✔
Deduplication HA	✔
Storage Capacity Expansion	Scale-up
RAID Levels	RAID 6

*Usable

✔ Supported ✘ Unsupported

FalconStor Software VTL SAM16
Approximate Starting List Price: $50,000–$100,000

2013 DCIG BUYER'S GUIDE — MIDRANGE DEDUPLICATING BACKUP APPLIANCE

DCIG Scores and Rankings

	OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
Score	54.15	10.25	14.45	22.20	7.25
Rank	GOOD	RECOMMENDED	GOOD	GOOD	BASIC

DEDUPLICATION

Deduplication Included	✓
Compress Deduplicated Data	✓
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✓
Verify Data Integrity / Rate	✓
Inline Deduplication	✓
Post Process Deduplication	✓
Inline/Post Process Option	✓
Deduplication Ratios by Backup Job	✓
Deduplication Algorithms	2

SCALABILITY & SUPPORT

Replication Options	N:1
Replication Bandwidth Throttling	✗
Data Optimization	1
Single Controller Replication	✗
Single Controller Deduplication	✗
Warranty	1 Year
24x7x365	✓
Access Methods (Total #)	4
Alerting Options (Total #)	2
Battery Backup/UPS	✗

MANAGEMENT

Max Concurrent Backup Streams	32
Encryption Options	1
Instant VM Recovery	✓
Encryption EKM	✗
Multi-stream Encryption	✗
Encryption Methods (Total #)	1
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	1
Bundled Software Licenses (Total #)	6
Backup Software Natively Hosted (Total #)	7
Cloud Providers (Total #)	0
NDMP	✓
Backup Software Streams Recognized (Total #)	23
Native Backup Software Mgt	8
Concurrent Deduplication/Replication	✓
Compress/Encrypt Replicated Data	✓
Replication Status by Backup Job	✓
Replication Types (Total #)	3
Display Real Time Deduplication Ratio	✓

HARDWARE

Raw Storage Capacity (Max)	260TB
Ethernet ports (Max)	6
FC Ports (Max)	5
Storage Networking Interfaces	1/10Gb Ethernet, 8Gb FC
Max # Storage Networking Ports	11
Hot Swappable Drives	✓
FC Support	✓
Concurrent FC/Ethernet Mix	✓
Max HDDs	130
5.4K RPM SATA HDDs (Max)	✗
7.2K RPM SATA HDDs (Max)	✓
SSDs	✗
FC / SAS HDDS	✗
Concurrent HDD Mix	✗
Cache (Max)	256GB
Erasure Coding	✗
Processor Cores (Max)	4
Controllers (Max)	1
Storage Networking Protocols	CIFS, FC, NFS
VTL Interface	✓
Partitions (Max)	255
Concurrently Present NAS/VTL	✗
Controller Configurations	Single Controller
Global Deduplication	✗
Deduplication HA	✗
Storage Capacity Expansion	Scale-up
RAID Levels	RAID 5 & 6

✓ Supported   ✗ Unsupported

FalconStor Software VTL SAP16

Approximate Starting List Price: $50,000–$100,000

2013 DCIG BUYER'S GUIDE — MIDRANGE DEDUPLICATING BACKUP APPLIANCE

DCIG Scores and Rankings

	OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
Score	49.84	8.25	12.39	21.95	7.25
Rank	BASIC	BASIC	BASIC	GOOD	BASIC

DEDUPLICATION

Deduplication Included	✓
Compress Deduplicated Data	✓
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✓
Verify Data Integrity / Rate	✓
Inline Deduplication	✓
Post Process Deduplication	✓
Inline/Post Process Option	✓
Deduplication Ratios by Backup Job	✓
Deduplication Algorithms	2

SCALABILITY & SUPPORT

Replication Options	N:1
Replication Bandwidth Throttling	✗
Data Optimization	1
Single Controller Replication	✗
Single Controller Deduplication	✗
Warranty	1 Year
24x7x365	✓
Access Methods (Total #)	4
Alerting Options (Total #)	2
Battery Backup/UPS	✗

MANAGEMENT

Max Concurrent Backup Streams	128
Encryption Options	1
Instant VM Recovery	✓
Encryption EKM	✗
Multi-stream Encryption	✗
Encryption Methods (Total #)	1
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	2
Bundled Software Licenses (Total #)	5
Backup Software Natively Hosted (Total #)	2
Cloud Providers (Total #)	0
NDMP	✓
Backup Software Streams Recognized (Total #)	14
Native Backup Software Mgt	2
Concurrent Deduplication/Replication	✓
Compress/Encrypt Replicated Data	✓
Replication Status by Backup Job	✓
Replication Types (Total #)	1
Display Real Time Deduplication Ratio	✓

HARDWARE

Raw Storage Capacity (Max)	260TB
Ethernet ports (Max)	6
FC Ports (Max)	5
Storage Networking Interfaces	1/10Gb Ethernet, 8Gb FC
Max # Storage Networking Ports	11
Hot Swappable Drives	✓
FC Support	✓
Concurrent FC/Ethernet Mix	✓
Max HDDs	130
5.4K RPM SATA HDDs (Max)	✗
7.2K RPM SATA HDDs (Max)	✓
SSDs	✗
FC / SAS HDDS	✗
Concurrent HDD Mix	✗
Cache (Max)	✗
Erasure Coding	✗
Processor Cores (Max)	4
Controllers (Max)	1
Storage Networking Protocols	CIFS, FC, NFS
VTL Interface	✓
Partitions (Max)	255
Concurrently Present NAS/VTL	✓
Controller Configurations	Single Controller
Global Deduplication	✗
Deduplication HA	✗
Storage Capacity Expansion	Scale-up
RAID Levels	RAID 5 & 6

✓ Supported ✗ Unsupported

HP StoreOnce 4210 Backup

Approximate Starting List Price: $20,000–$50,000

DCIG Scores and Rankings

	OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
Score	32.10	7.50	7.10	10.00	7.50
Ranking	BASIC	BASIC	BASIC	BASIC	BASIC

DEDUPLICATION

Deduplication Included	✓
Compress Deduplicated Data	✓
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✗
Verify Data Integrity / Rate	✓
Inline Deduplication	✓
Post Process Deduplication	✗
Inline/Post Process Option	✗
Deduplication Ratios by Backup Job	✗
Deduplication Algorithms	2

SCALABILITY & SUPPORT

Replication Options	1:1; 1:N; N:1; 1:N:N
Replication Bandwidth Throttling	✓
Data Optimization Options (Total #)	0
Single Controller Replication	✗
Single Controller Deduplication	✗
Warranty	1 Year
24x7x365	✓
Access Methods (Total #)	4
Alerting Options (Total #)	4
Battery Backup/UPS	✗

MANAGEMENT

Max Concurrent Backup Streams	48
Encryption Options	0
Instant VM Recovery	✗
Encryption EKM	✗
Multi-stream Encryption	✗
Encryption Methods (Total #)	0
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	1
Bundled Software Licenses (Total #)	5
Backup Software Natively Hosted (Total #)	0
Cloud Providers (Total #)	0
NDMP	✓
Backup Software Streams Recognized (Total #)	0
Native Backup Software Mgt	9
Concurrent Deduplication/Replication	✓
Compress/Encrypt Replicated Data	✗
Replication Status by Backup Job	✗
Replication Types (Total #)	1
Display Real Time Deduplication Ratio	✗

HARDWARE

Raw Storage Capacity (Max)	12TB
Ethernet ports (Max)	2
FC Ports (Max)	2
Storage Networking Interfaces	1/10Gb Ethernet, 8Gb FC
Max # Storage Networking Ports	4
Hot Swappable Drives	✓
FC Support	✓
Concurrent FC/Ethernet Mix	✓
Max HDDs	24
5.4K RPM SATA HDDs (Max)	✗
7.2K RPM SATA HDDs (Max)	✓
SSDs	✗
FC / SAS HDDS	✗
Concurrent HDD Mix	✗
Cache (Max)	16GB
Erasure Coding	✗
Processor Cores (Max)	12
Controllers (Max)	2
Storage Networking Protocols	CIFS, FC, iSCSI, NFS
VTL Interface	✓
Partitions (Max)	0
Concurrently Present NAS/VTL	✓
Controller Configurations	Single Controller
Global Deduplication	✗
Deduplication HA	✗
Storage Capacity Expansion	Scale-up
RAID Levels	RAID 6

✓ Supported   ✗ Unsupported

HP StoreOnce 4220 Backup

Approximate Starting List Price: $20,000–$50,000

DCIG Scores and Rankings

	OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
	32.52	7.50	7.22	10.30	7.50
	BASIC	BASIC	BASIC	BASIC	BASIC

DEDUPLICATION

Deduplication Included	✔
Compress Deduplicated Data	✔
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✘
Verify Data Integrity / Rate	✔
Inline Deduplication	✔
Post Process Deduplication	✘
Inline/Post Process Option	✘
Deduplication Ratios by Backup Job	✘
Deduplication Algorithms	2

SCALABILITY & SUPPORT

Replication Options	1:1; 1:N; N:1; 1:N:N
Replication Bandwidth Throttling	✔
Data Optimization Options (Total #)	0
Single Controller Replication	✘
Single Controller Deduplication	✘
Warranty	1 Year
24x7x365	✔
Access Methods (Total #)	4
Alerting Options (Total #)	4
Battery Backup/UPS	✘

MANAGEMENT

Max Concurrent Backup Streams	48
Encryption Options	0
Instant VM Recovery	✘
Encryption EKM	✘
Multi-stream Encryption	✘
Encryption Methods (Total #)	0
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	2
Bundled Software Licenses (Total #)	5
Backup Software Natively Hosted (Total #)	0
Cloud Providers (Total #)	0
NDMP	✔
Backup Software Streams Recognized (Total #)	0
Native Backup Software Mgt	10
Concurrent Deduplication/Replication	✔
Compress/Encrypt Replicated Data	✘
Replication Status by Backup Job	✘
Replication Types (Total #)	1
Display Real Time Deduplication Ratio	✘

HARDWARE

Raw Storage Capacity (Max)	24TB
Ethernet ports (Max)	2
FC Ports (Max)	2
Storage Networking Interfaces	1/10Gb Ethernet, 8Gb FC
Max # Storage Networking Ports	4
Hot Swappable Drives	✔
FC Support	✔
Concurrent FC/Ethernet Mix	✔
Max HDDs	24
5.4K RPM SATA HDDs (Max)	✘
7.2K RPM SATA HDDs (Max)	✔
SSDs	✘
FC / SAS HDDS	✘
Concurrent HDD Mix	✘
Cache (Max)	16GB
Erasure Coding	✘
Processor Cores (Max)	12
Controllers (Max)	2
Storage Networking Protocols	CIFS, FC, iSCSI, NFS
VTL Interface	✔
Partitions (Max)	0
Concurrently Present NAS/VTL	✔
Controller Configurations	Single Controller
Global Deduplication	✘
Deduplication HA	✘
Storage Capacity Expansion	Scale-up
RAID Levels	RAID 6

✔ Supported   ✘ Unsupported

HP StoreOnce 4420 Backup

Approximate Starting List Price: $50,000–$100,000

2013 DCIG BUYER'S GUIDE — MIDRANGE DEDUPLICATING BACKUP APPLIANCE

DCIG Scores and Rankings

	OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
Score	32.36	7.50	7.16	10.20	7.50
Ranking	BASIC	BASIC	BASIC	BASIC	BASIC

DEDUPLICATION

Deduplication Included	✓
Compress Deduplicated Data	✓
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✗
Verify Data Integrity / Rate	✓
Inline Deduplication	✓
Post Process Deduplication	✗
Inline/Post Process Option	✗
Deduplication Ratios by Backup Job	✗
Deduplication Algorithms	2

SCALABILITY & SUPPORT

Replication Options	1:1; 1:N; N:1; 1:N:N
Replication Bandwidth Throttling	✓
Data Optimization Options (Total #)	0
Single Controller Replication	✗
Single Controller Deduplication	✗
Warranty	1 Year
24x7x365	✓
Access Methods (Total #)	4
Alerting Options (Total #)	4
Battery Backup/UPS	✗

MANAGEMENT

Max Concurrent Backup Streams	96
Encryption Options	0
Instant VM Recovery	✗
Encryption EKM	✗
Multi-stream Encryption	✗
Encryption Methods (Total #)	0
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	2
Bundled Software Licenses (Total #)	5
Backup Software Natively Hosted (Total #)	0
Cloud Providers (Total #)	0
NDMP	✓
Backup Software Streams Recognized (Total #)	0
Native Backup Software Mgt	10
Concurrent Deduplication/Replication	✓
Compress/Encrypt Replicated Data	✗
Replication Status by Backup Job	✗
Replication Types (Total #)	1
Display Real Time Deduplication Ratio	✗

HARDWARE

Raw Storage Capacity (Max)	48TB
Ethernet ports (Max)	4
FC Ports (Max)	2
Storage Networking Interfaces	1/10Gb Ethernet, 8Gb FC
Max # Storage Networking Ports	6
Hot Swappable Drives	✓
FC Support	✓
Concurrent FC/Ethernet Mix	✓
Max HDDs	48
5.4K RPM SATA HDDs (Max)	✗
7.2K RPM SATA HDDs (Max)	✗
SSDs	✗
FC / SAS HDDS	✓
Concurrent HDD Mix	✗
Cache (Max)	16GB
Erasure Coding	
Processor Cores (Max)	12
Controllers (Max)	3
Storage Networking Protocols	CIFS, FC, iSCSI, NFS
VTL Interface	✓
Partitions (Max)	0
Concurrently Present NAS/VTL	✓
Controller Configurations	Single Controller
Global Deduplication	✗
Deduplication HA	✗
Storage Capacity Expansion	Scale-up
RAID Levels	RAID 6

✓ Supported   ✗ Unsupported

HP StoreOnce 4430 Backup

Approximate Starting List Price: $118,000

DCIG Scores and Rankings

	OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
	32.94	7.50	7.64	10.30	7.50
	BASIC	BASIC	BASIC	BASIC	BASIC

DEDUPLICATION

Deduplication Included	✓
Compress Deduplicated Data	✓
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✗
Verify Data Integrity / Rate	✓
Inline Deduplication	✓
Post Process Deduplication	✗
Inline/Post Process Option	✗
Deduplication Ratios by Backup Job	✗
Deduplication Algorithms	2

SCALABILITY & SUPPORT

Replication Options	1:1; 1:N; N:1; 1:N:N
Replication Bandwidth Throttling	✓
Data Optimization Options (Total #)	0
Single Controller Replication	✗
Single Controller Deduplication	✗
Warranty	1 Year
24x7x365	✓
Access Methods (Total #)	4
Alerting Options (Total #)	4
Battery Backup/UPS	✗

MANAGEMENT

Max Concurrent Backup Streams	96
Encryption Options	0
Instant VM Recovery	✗
Encryption EKM	✗
Multi-stream Encryption	✗
Encryption Methods (Total #)	0
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	2
Bundled Software Licenses (Total #)	5
Backup Software Natively Hosted (Total #)	0
Cloud Providers (Total #)	0
NDMP	✓
Backup Software Streams Recognized (Total #)	0
Native Backup Software Mgt	10
Concurrent Deduplication/Replication	✓
Compress/Encrypt Replicated Data	✗
Replication Status by Backup Job	✓
Replication Types (Total #)	1
Display Real Time Deduplication Ratio	✗

HARDWARE

Raw Storage Capacity (Max)	96TB
Ethernet ports (Max)	4
FC Ports (Max)	2
Storage Networking Interfaces	1/10Gb Ethernet, 8Gb FC
Max # Storage Networking Ports	6
Hot Swappable Drives	✓
FC Support	✓
Concurrent FC/Ethernet Mix	✓
Max HDDs	48
5.4K RPM SATA HDDs (Max)	✗
7.2K RPM SATA HDDs (Max)	✓
SSDs	✗
FC / SAS HDDS	✗
Concurrent HDD Mix	✗
Cache (Max)	32GB
Erasure Coding	✗
Processor Cores (Max)	12
Controllers (Max)	3
Storage Networking Protocols	CIFS, FC, iSCSI, NFS
VTL Interface	✓
Partitions (Max)	0
Concurrently Present NAS/VTL	✓
Controller Configurations	Single Controller
Global Deduplication	✗
Deduplication HA	✗
Storage Capacity Expansion	Scale-up
RAID Levels	RAID 6

✓ Supported   ✗ Unsupported

HP StoreOnce B6200
48TB Backup System

Approximate Starting List Price: $100,000–$250,000

DCIG Scores and Rankings

OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
52.21	7.50	23.91	13.30	7.50
BASIC	BASIC	EXCELLENT	BASIC	BASIC

DEDUPLICATION

Deduplication Included	✓
Compress Deduplicated Data	✓
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✗
Verify Data Integrity / Rate	✓
Inline Deduplication	✓
Post Process Deduplication	✗
Inline/Post Process Option	✗
Deduplication Ratios by Backup Job	✗
Deduplication Algorithms	2

SCALABILITY & SUPPORT

Replication Options	1:1; 1:N; N:1; 1:N:N
Replication Bandwidth Throttling	✓
Data Optimization Options (Total #)	0
Single Controller Replication	✗
Single Controller Deduplication	✗
Warranty	1 Year
24x7x365	✓
Access Methods (Total #)	4
Alerting Options (Total #)	4
Battery Backup/UPS	✗

MANAGEMENT

Max Concurrent Backup Streams	384
Encryption Options	0
Instant VM Recovery	✗
Encryption EKM	✗
Multi-stream Encryption	✗
Encryption Methods (Total #)	0
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	2
Bundled Software Licenses (Total #)	5
Backup Software Natively Hosted (Total #)	0
Cloud Providers (Total #)	0
NDMP	✓
Backup Software Streams Recognized (Total #)	0
Native Backup Software Mgt	10
Concurrent Deduplication/Replication	✓
Compress/Encrypt Replicated Data	✗
Replication Status by Backup Job	✗
Replication Types (Total #)	1
Display Real Time Deduplication Ratio	✗

HARDWARE

Raw Storage Capacity (Max)	768TB
Ethernet ports (Max)	48
FC Ports (Max)	16
Storage Networking Interfaces	1/10Gb Ethernet, 8Gb FC
Max # Storage Networking Ports	64
Hot Swappable Drives	✓
FC Support	✓
Concurrent FC/Ethernet Mix	✓
Max HDDs	384
5.4K RPM SATA HDDs (Max)	✗
7.2K RPM SATA HDDs (Max)	✗
SSDs	✗
FC / SAS HDDS	✓
Concurrent HDD Mix	✗
Cache (Max)	16GB
Erasure Coding	✗
Processor Cores (Max)	96
Controllers (Max)	12
Storage Networking Protocols	CIFS, FC, iSCSI, NFS
VTL Interface	✓
Partitions (Max)	0
Concurrently Present NAS/VTL	✓
Controller Configurations	Single Controller
Global Deduplication	✗
Deduplication HA	✓
Storage Capacity Expansion	Scale-up, Scale-out
RAID Levels	RAID 6

✓ Supported   ✗ Unsupported

IBM TS7620 ProtecTIER Deduplication Appliance Express

Approximate Starting List Price: $20,000–$50,000

MIDRANGE DEDUPLICATING 2013 DCIG BUYER'S GUIDE BACKUP APPLIANCE

DCIG Scores and Rankings

	OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
	46.49	9.00	10.79	18.20	8.50
	BASIC	GOOD	BASIC	BASIC	GOOD

DEDUPLICATION

Deduplication Included	✓
Compress Deduplicated Data	✓
Deduplication Level / Type	Fixed Block & Variable Length Block
Bypass Deduplication	✓
Verify Data Integrity / Rate	✓
Inline Deduplication	✓
Post Process Deduplication	✗
Inline/Post Process Option	✗
Deduplication Ratios by Backup Job	✗
Deduplication Algorithms	3

SCALABILITY & SUPPORT

Replication Options	1:1; 1:N; N:1
Replication Bandwidth Throttling	✓
Data Optimization Options (Total #)	0
Single Controller Replication	✓
Single Controller Deduplication	✓
Warranty	1 Year
24x7x365	✓
Access Methods (Total #)	5
Alerting Options (Total #)	2
Battery Backup/UPS	✓

MANAGEMENT

Max Concurrent Backup Streams	64
Encryption Options	0
Instant VM Recovery	✗
Encryption EKM	✗
Multi-stream Encryption	✗
Encryption Methods (Total #)	0
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	2
Bundled Software Licenses (Total #)	6
Backup Software Natively Hosted (Total #)	0
Cloud Providers (Total #)	0
NDMP	✓
Backup Software Streams Recognized (Total #)	4
Native Backup Software Mgt	1
Concurrent Deduplication/Replication	✓
Compress/Encrypt Replicated Data	✗
Replication Status by Backup Job	✓
Replication Types (Total #)	2
Display Real Time Deduplication Ratio	✓

HARDWARE

Raw Storage Capacity (Max)	72TB
Ethernet ports (Max)	10
FC Ports (Max)	2
Storage Networking Interfaces	1/10Gb Ethernet, 8Gb FC
Max # Storage Networking Ports	6
Hot Swappable Drives	✓
FC Support	✓
Concurrent FC/Ethernet Mix	✗
Max HDDs	35
5.4K RPM SATA HDDs (Max)	✗
7.2K RPM SATA HDDs (Max)	✓
SSDs	✗
FC / SAS HDDS	✓
Concurrent HDD Mix	✓
Cache (Max)	✗
Erasure Coding	✗
Processor Cores (Max)	6
Controllers (Max)	1
Storage Networking Protocols	CIFS, FC, NFS
VTL Interface	✓
Partitions (Max)	64
Concurrently Present NAS/VTL	✗
Controller Configurations	Single Controller
Global Deduplication	✓
Deduplication HA	✗
Storage Capacity Expansion	Scale-up
RAID Levels	RAID 1 & 5

✓ Supported   ✗ Unsupported

NEC HYDRAstor HS3-310

Approximate Starting List Price: $20,000 to $50,000

DCIG Scores and Rankings

	OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
	55.51	**8.75**	**12.41**	**25.10**	**9.25**
	GOOD	GOOD	BASIC	GOOD	EXCELLENT

DEDUPLICATION

Deduplication Included	✔
Compress Deduplicated Data	✔
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✘
Verify Data Integrity / Rate	✔
Inline Deduplication	✔
Post Process Deduplication	✘
Inline/Post Process Option	✘
Deduplication Ratios by Backup Job	✔
Deduplication Algorithms	3

SCALABILITY & SUPPORT

Replication Options	1:1: 1:N; N:1
Replication Bandwidth Throttling	✔
Data Optimization Options (Total #)	2
Single Controller Replication	✘
Single Controller Deduplication	✘
Warranty	3 Year
24x7x365	✔
Access Methods (Total #)	4
Alerting Options (Total #)	2
Battery Backup/UPS	✘

MANAGEMENT

Max Concurrent Backup Streams	64
Encryption Options	2
Instant VM Recovery	✘
Encryption EKM	✘
Multi-stream Encryption	✔
Encryption Methods (Total #)	2
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	2
Bundled Software Licenses (Total #)	4
Backup Software Natively Hosted (Total #)	0
Cloud Providers (Total #)	0
NDMP	✘
Backup Software Streams Recognized (Total #)	13
Native Backup Software Mgt	10
Concurrent Deduplication/Replication	✔
Compress/Encrypt Replicated Data	✔
Replication Status by Backup Job	✔
Replication Types (Total #)	1
Display Real Time Deduplication Ratio	✔

HARDWARE

Raw Storage Capacity (Max)	12TB
Ethernet ports (Max)	6
FC Ports (Max)	✘
Storage Networking Interfaces	1/10Gb Ethernet
Max # Storage Networking Ports	6
Hot Swappable Drives	✔
FC Support	✘
Concurrent FC/Ethernet Mix	✘
Max HDDs	12
5.4K RPM SATA HDDs (Max)	✘
7.2K RPM SATA HDDs (Max)	✔
SSDs	✘
FC / SAS HDDS	✘
Concurrent HDD Mix	✘
Cache (Max)	24GB
Erasure Coding	✔
Processor Cores (Max)	8
Controllers (Max)	1
Storage Networking Protocols	CIFS, NFS
VTL Interface	✘
Partitions (Max)	250
Concurrently Present NAS/VTL	✘
Controller Configurations	Single Controller
Global Deduplication	✔
Deduplication HA	✔
Storage Capacity Expansion	Scale-up
RAID Levels	RAID 1, 5, 6 & Dynamic Disk Pools

✔ Supported   ✘ Unsupported

NEC HYDRAstor HS3-410

Approximate Starting List Price: $20,000–$50,000

DCIG Scores and Rankings

OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
56.81	8.75	13.71	25.10	9.25
GOOD	GOOD	GOOD	GOOD	EXCELLENT

DEDUPLICATION

Deduplication Included	✔
Compress Deduplicated Data	✔
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✖
Verify Data Integrity / Rate	✔
Inline Deduplication	✔
Post Process Deduplication	✖
Inline/Post Process Option	✖
Deduplication Ratios by Backup Job	✔
Deduplication Algorithms	3

SCALABILITY & SUPPORT

Replication Options	1:1: 1:N; N:1
Replication Bandwidth Throttling	✔
Data Optimization Options (Total #)	2
Single Controller Replication	✔
Single Controller Deduplication	✖
Warranty	3 Year
24x7x365	✔
Access Methods (Total #)	4
Alerting Options (Total #)	2
Battery Backup/UPS	✖

MANAGEMENT

Max Concurrent Backup Streams	64
Encryption Options	2
Instant VM Recovery	✖
Encryption EKM	✖
Multi-stream Encryption	✔
Encryption Methods (Total #)	2
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	2
Bundled Software Licenses (Total #)	4
Backup Software Natively Hosted (Total #)	0
Cloud Providers (Total #)	0
NDMP	✖
Backup Software Streams Recognized (Total #)	13
Native Backup Software Mgt	10
Concurrent Deduplication/Replication	✔
Compress/Encrypt Replicated Data	✔
Replication Status by Backup Job	✔
Replication Types (Total #)	1
Display Real Time Deduplication Ratio	✔

HARDWARE

Raw Storage Capacity (Max)	24TB
Ethernet ports (Max)	6
FC Ports (Max)	✖
Storage Networking Interfaces	1/10Gb Ethernet
Max # Storage Networking Ports	6
Hot Swappable Drives	✔
FC Support	✖
Concurrent FC/Ethernet Mix	✖
Max HDDs	12
5.4K RPM SATA HDDs (Max)	✖
7.2K RPM SATA HDDs (Max)	✔
SSDs	✖
FC / SAS HDDS	✖
Concurrent HDD Mix	✖
Cache (Max)	48GB
Erasure Coding	✔
Processor Cores (Max)	12
Controllers (Max)	1
Storage Networking Protocols	CIFS, NFS
VTL Interface	✖
Partitions (Max)	250
Concurrently Present NAS/VTL	✖
Controller Configurations	Single Controller
Global Deduplication	✖
Deduplication HA	✖
Storage Capacity Expansion	Scale-up
RAID Levels	RAID 1, 5, 6 & Dynamic Disk Pools

✔ Supported   ✖ Unsupported

NEC HYDRAstor HS8-3002S

Approximate Starting List Price: $50,000–$100,000

DCIG Scores and Rankings

	OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
	62.91	8.75	18.91	26.00	9.25
	EXCELLENT	GOOD	EXCELLENT	EXCELLENT	EXCELLENT

DEDUPLICATION

Deduplication Included	✓
Compress Deduplicated Data	✓
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✗
Verify Data Integrity / Rate	✓
Inline Deduplication	✓
Post Process Deduplication	✗
Inline/Post Process Option	✗
Deduplication Ratios by Backup Job	✓
Deduplication Algorithms	3

SCALABILITY & SUPPORT

Replication Options	1:1: 1:N; N:1
Replication Bandwidth Throttling	✓
Data Optimization Options (Total #)	2
Single Controller Replication	✓
Single Controller Deduplication	✓
Warranty	3 Year
24x7x365	✓
Access Methods (Total #)	4
Alerting Options (Total #)	2
Battery Backup/UPS	✗

MANAGEMENT

Max Concurrent Backup Streams	64
Encryption Options	2
Instant VM Recovery	✗
Encryption EKM	✗
Multi-stream Encryption	✓
Encryption Methods (Total #)	2
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	2
Bundled Software Licenses (Total #)	4
Backup Software Natively Hosted (Total #)	0
Cloud Providers (Total #)	0
NDMP	✗
Backup Software Streams Recognized (Total #)	13
Native Backup Software Mgt	10
Concurrent Deduplication/Replication	✓
Compress/Encrypt Replicated Data	✓
Replication Status by Backup Job	✓
Replication Types (Total #)	1
Display Real Time Deduplication Ratio	✓

HARDWARE

Raw Storage Capacity (Max)	24TB
Ethernet ports (Max)	6
FC Ports (Max)	✗
Storage Networking Interfaces	1/10Gb Ethernet
Max # Storage Networking Ports	6
Hot Swappable Drives	✓
FC Support	✗
Concurrent FC/Ethernet Mix	✗
Max HDDs	24
5.4K RPM SATA HDDs (Max)	✗
7.2K RPM SATA HDDs (Max)	✓
SSDs	✗
FC / SAS HDDS	✗
Concurrent HDD Mix	✗
Cache (Max)	60GB
Erasure Coding	✓
Processor Cores (Max)	24
Controllers (Max)	1
Storage Networking Protocols	CIFS, NFS
VTL Interface	✗
Partitions (Max)	250
Concurrently Present NAS/VTL	✗
Controller Configurations	Scale-out, Single Controller
Global Deduplication	✓
Deduplication HA	✓
Storage Capacity Expansion	Scale-up, Scale-out
RAID Levels	RAID 1, 5, 6 & Dynamic Disk Pools

✓ Supported   ✗ Unsupported

NEC HYDRAstor HS8-3004R

Approximate Starting List Price: $100,000 to $250,000

DCIG Scores and Rankings

	OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
	68.78	8.75	23.68	27.10	9.25
	EXCELLENT	GOOD	EXCELLENT	GOOD	EXCELLENT

DEDUPLICATION

Deduplication Included	✓
Compress Deduplicated Data	✓
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✗
Verify Data Integrity / Rate	✓
Inline Deduplication	✓
Post Process Deduplication	✗
Inline/Post Process Option	✗
Deduplication Ratios by Backup Job	✓
Deduplication Algorithms	3

SCALABILITY & SUPPORT

Replication Options	1:1: 1:N; N:1
Replication Bandwidth Throttling	✓
Data Optimization Options (Total #)	2
Single Controller Replication	✓
Single Controller Deduplication	✓
Warranty	3 Year
24x7x365	✓
Access Methods (Total #)	4
Alerting Options (Total #)	2
Battery Backup/UPS	✗

MANAGEMENT

Max Concurrent Backup Streams	128
Encryption Options	2
Instant VM Recovery	✗
Encryption EKM	✗
Multi-stream Encryption	✓
Encryption Methods (Total #)	2
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	2
Bundled Software Licenses (Total #)	4
Backup Software Natively Hosted (Total #)	0
Cloud Providers (Total #)	0
NDMP	✗
Backup Software Streams Recognized (Total #)	13
Native Backup Software Mgt	10
Concurrent Deduplication/Replication	✓
Compress/Encrypt Replicated Data	✓
Replication Status by Backup Job	✓
Replication Types (Total #)	1
Display Real Time Deduplication Ratio	✓

HARDWARE

Raw Storage Capacity (Max)	48TB
Ethernet ports (Max)	12
FC Ports (Max)	✗
Storage Networking Interfaces	1/10Gb Ethernet
Max # Storage Networking Ports	12
Hot Swappable Drives	✓
FC Support	✗
Concurrent FC/Ethernet Mix	✗
Max HDDs	48
5.4K RPM SATA HDDs (Max)	✗
7.2K RPM SATA HDDs (Max)	✓
SSDs	✗
FC / SAS HDDS	✗
Concurrent HDD Mix	✗
Cache (Max)	120GB
Erasure Coding	✓
Processor Cores (Max)	48
Controllers (Max)	2
Storage Networking Protocols	CIFS, NFS
VTL Interface	✗
Partitions (Max)	500
Concurrently Present NAS/VTL	✗
Controller Configurations	Scale-out
Global Deduplication	✓
Deduplication HA	✓
Storage Capacity Expansion	Scale-up, Scale-out
RAID Levels	RAID 1, 5, 6 & Dynamic Disk Pools

✓ Supported   ✗ Unsupported

NEC HYDRAstor HS8-3004S

Approximate Starting List Price: $100,000 to $250,000

DCIG Scores and Rankings

	OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
	68.68	8.75	23.68	27.00	9.25
	EXCELLENT	GOOD	EXCELLENT	EXCELLENT	EXCELLENT

DEDUPLICATION

Deduplication Included	✓
Compress Deduplicated Data	✓
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✗
Verify Data Integrity / Rate	✓
Inline Deduplication	✓
Post Process Deduplication	✗
Inline/Post Process Option	✗
Deduplication Ratios by Backup Job	✓
Deduplication Algorithms	3

SCALABILITY & SUPPORT

Replication Options	1:1: 1:N; N:1
Replication Bandwidth Throttling	✓
Data Optimization Options (Total #)	2
Single Controller Replication	✓
Single Controller Deduplication	✓
Warranty	3 Year
24x7x365	✓
Access Methods (Total #)	4
Alerting Options (Total #)	2
Battery Backup/UPS	✗

MANAGEMENT

Max Concurrent Backup Streams	128
Encryption Options	2
Instant VM Recovery	✗
Encryption EKM	✗
Multi-stream Encryption	✓
Encryption Methods (Total #)	2
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	2
Bundled Software Licenses (Total #)	4
Backup Software Natively Hosted (Total #)	0
Cloud Providers (Total #)	0
NDMP	✗
Backup Software Streams Recognized (Total #)	13
Native Backup Software Mgt	10
Concurrent Deduplication/Replication	✓
Compress/Encrypt Replicated Data	✓
Replication Status by Backup Job	✓
Replication Types (Total #)	1
Display Real Time Deduplication Ratio	✓

HARDWARE

Raw Storage Capacity (Max)	48TB
Ethernet ports (Max)	12
FC Ports (Max)	✗
Storage Networking Interfaces	1/10Gb Ethernet
Max # Storage Networking Ports	12
Hot Swappable Drives	✓
FC Support	✗
Concurrent FC/Ethernet Mix	✗
Max HDDs	48
5.4K RPM SATA HDDs (Max)	✗
7.2K RPM SATA HDDs (Max)	✓
SSDs	✗
FC / SAS HDDS	✗
Concurrent HDD Mix	✗
Cache (Max)	120GB
Erasure Coding	✓
Processor Cores (Max)	48
Controllers (Max)	2
Storage Networking Protocols	CIFS, NFS
VTL Interface	✗
Partitions (Max)	500
Concurrently Present NAS/VTL	✗
Controller Configurations	Scale-out
Global Deduplication	✓
Deduplication HA	✓
Storage Capacity Expansion	Scale-up, Scale-out
RAID Levels	RAID 1, 5, 6 & Dynamic Disk Pools

✓ Supported   ✗ Unsupported

NEC HYDRAstor HS8-3010R 120TB

Approximate Starting List Price: Over $250,000

DCIG Scores and Rankings

	OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
	73.79	8.75	28.79	27.00	9.25
	RECOMMENDED	GOOD	RECOMMENDED	EXCELLENT	EXCELLENT

DEDUPLICATION

Deduplication Included	✔
Compress Deduplicated Data	✔
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✘
Verify Data Integrity / Rate	✔
Inline Deduplication	✔
Post Process Deduplication	✘
Inline/Post Process Option	✘
Deduplication Ratios by Backup Job	✔
Deduplication Algorithms	3

SCALABILITY & SUPPORT

Replication Options	1:1: 1:N; N:1
Replication Bandwidth Throttling	✔
Data Optimization Options (Total #)	2
Single Controller Replication	✔
Single Controller Deduplication	✔
Warranty	3 Year
24x7x365	✔
Access Methods (Total #)	4
Alerting Options (Total #)	2
Battery Backup/UPS	✘

MANAGEMENT

Max Concurrent Backup Streams	320
Encryption Options	2
Instant VM Recovery	✘
Encryption EKM	✘
Multi-stream Encryption	✔
Encryption Methods (Total #)	2
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	2
Bundled Software Licenses (Total #)	4
Backup Software Natively Hosted (Total #)	0
Cloud Providers (Total #)	0
NDMP	✘
Backup Software Streams Recognized (Total #)	13
Native Backup Software Mgt	10
Concurrent Deduplication/Replication	✔
Compress/Encrypt Replicated Data	✔
Replication Status by Backup Job	✔
Replication Types (Total #)	1
Display Real Time Deduplication Ratio	✔

HARDWARE

Raw Storage Capacity (Max)	120TB
Ethernet ports (Max)	30
FC Ports (Max)	✘
Storage Networking Interfaces	1/10Gb Ethernet
Max # Storage Networking Ports	30
Hot Swappable Drives	✔
FC Support	✘
Concurrent FC/Ethernet Mix	✘
Max HDDs	120
5.4K RPM SATA HDDs (Max)	✘
7.2K RPM SATA HDDs (Max)	✔
SSDs	✘
FC / SAS HDDS	✘
Concurrent HDD Mix	✘
Cache (Max)	300GB
Erasure Coding	✔
Processor Cores (Max)	120
Controllers (Max)	5
Storage Networking Protocols	CIFS, NFS
VTL Interface	✘
Partitions (Max)	1,250
Concurrently Present NAS/VTL	✘
Controller Configurations	Scale-out
Global Deduplication	✔
Deduplication HA	✔
Storage Capacity Expansion	Scale-up, Scale-out
RAID Levels	RAID 1, 5, 6 & Dynamic Disk Pools

✔ Supported   ✘ Unsupported

NEC HYDRAstor HS8-3020R 240TB

Approximate Starting List Price: Over $250,000

DCIG Scores and Rankings

OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
74.74	8.75	29.74	27.00	9.25
RECOMMENDED	GOOD	RECOMMENDED	EXCELLENT	EXCELLENT

DEDUPLICATION

Deduplication Included	✔
Compress Deduplicated Data	✔
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✖
Verify Data Integrity / Rate	✔
Inline Deduplication	✔
Post Process Deduplication	✖
Inline/Post Process Option	✖
Deduplication Ratios by Backup Job	✔
Deduplication Algorithms	3

SCALABILITY & SUPPORT

Replication Options	1:1: 1:N; N:1
Replication Bandwidth Throttling	✔
Data Optimization Options (Total #)	2
Single Controller Replication	✔
Single Controller Deduplication	✔
Warranty	3 Year
24x7x365	✔
Access Methods (Total #)	4
Alerting Options (Total #)	2
Battery Backup/UPS	✖

MANAGEMENT

Max Concurrent Backup Streams	640
Encryption Options	2
Instant VM Recovery	✖
Encryption EKM	✖
Multi-stream Encryption	✔
Encryption Methods (Total #)	2
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	2
Bundled Software Licenses (Total #)	4
Backup Software Natively Hosted (Total #)	0
Cloud Providers (Total #)	0
NDMP	✖
Backup Software Streams Recognized (Total #)	13
Native Backup Software Mgt	10
Concurrent Deduplication/Replication	✔
Compress/Encrypt Replicated Data	✔
Replication Status by Backup Job	✔
Replication Types (Total #)	1
Display Real Time Deduplication Ratio	✔

HARDWARE

Raw Storage Capacity (Max)	240TB
Ethernet ports (Max)	60
FC Ports (Max)	✖
Storage Networking Interfaces	1/10Gb Ethernet
Max # Storage Networking Ports	60
Hot Swappable Drives	✔
FC Support	✖
Concurrent FC/Ethernet Mix	✖
Max HDDs	240
5.4K RPM SATA HDDs (Max)	✖
7.2K RPM SATA HDDs (Max)	✔
SSDs	✖
FC / SAS HDDS	✖
Concurrent HDD Mix	✖
Cache (Max)	600GB
Erasure Coding	✔
Processor Cores (Max)	240
Controllers (Max)	10
Storage Networking Protocols	CIFS, NFS
VTL Interface	✖
Partitions (Max)	2,500
Concurrently Present NAS/VTL	✖
Controller Configurations	Scale-out
Global Deduplication	✔
Deduplication HA	✔
Storage Capacity Expansion	Scale-up, Scale-out
RAID Levels	RAID 1, 5, 6 & Dynamic Disk Pools

✔ Supported   ✖ Unsupported

NEC HYDRAstor HS8-4001S 12-48TB

Approximate Starting List Price: $100,000–$250,000

DCIG Scores and Rankings

	OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
	63.03	8.75	19.03	26.00	9.25
	EXCELLENT	GOOD	EXCELLENT	EXCELLENT	EXCELLENT

DEDUPLICATION

Deduplication Included	✓
Compress Deduplicated Data	✓
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✕
Verify Data Integrity / Rate	✓
Inline Deduplication	✓
Post Process Deduplication	✕
Inline/Post Process Option	✕
Deduplication Ratios by Backup Job	✓
Deduplication Algorithms	3

SCALABILITY & SUPPORT

Replication Options	1:1: 1:N; N:1
Replication Bandwidth Throttling	✓
Data Optimization Options (Total #)	2
Single Controller Replication	✓
Single Controller Deduplication	✓
Warranty	3 Year
24x7x365	✓
Access Methods (Total #)	4
Alerting Options (Total #)	2
Battery Backup/UPS	✕

MANAGEMENT

Max Concurrent Backup Streams	64
Encryption Options	2
Instant VM Recovery	✕
Encryption EKM	✕
Multi-stream Encryption	✓
Encryption Methods (Total #)	2
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	2
Bundled Software Licenses (Total #)	4
Backup Software Natively Hosted (Total #)	0
Cloud Providers (Total #)	0
NDMP	✕
Backup Software Streams Recognized (Total #)	13
Native Backup Software Mgt	10
Concurrent Deduplication/Replication	✓
Compress/Encrypt Replicated Data	✓
Replication Status by Backup Job	✓
Replication Types (Total #)	1
Display Real Time Deduplication Ratio	✓

HARDWARE

Raw Storage Capacity (Max)	48TB
Ethernet ports (Max)	6
FC Ports (Max)	✕
Storage Networking Interfaces	1/10Gb Ethernet
Max # Storage Networking Ports	6
Hot Swappable Drives	✓
FC Support	✕
Concurrent FC/Ethernet Mix	✕
Max HDDs	12
5.4K RPM SATA HDDs (Max)	✕
7.2K RPM SATA HDDs (Max)	✓
SSDs	✕
FC / SAS HDDS	✕
Concurrent HDD Mix	✕
Cache (Max)	96GB
Erasure Coding	✓
Processor Cores (Max)	16
Controllers (Max)	1
Storage Networking Protocols	CIFS, NFS
VTL Interface	✕
Partitions (Max)	250
Concurrently Present NAS/VTL	✕
Controller Configurations	Scale-out, Single Controller
Global Deduplication	✓
Deduplication HA	✓
Storage Capacity Expansion	Scale-up, Scale-out
RAID Levels	RAID 1, 5, 6 & Dynamic Disk Pools

✓ Supported   ✕ Unsupported

NEC HYDRAstor HS8-4001S 96TB

Approximate Starting List Price: Over $250,000

DCIG Scores and Rankings

	OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
	60.11	8.75	19.51	22.60	9.25
	GOOD	GOOD	EXCELLENT	GOOD	EXCELLENT

DEDUPLICATION

Deduplication Included	✓
Compress Deduplicated Data	✓
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✗
Verify Data Integrity / Rate	✓
Inline Deduplication	✓
Post Process Deduplication	✗
Inline/Post Process Option	✗
Deduplication Ratios by Backup Job	✓
Deduplication Algorithms	3

SCALABILITY & SUPPORT

Replication Options	1:1: 1:N; N:1
Replication Bandwidth Throttling	✓
Data Optimization Options (Total #)	2
Single Controller Replication	✓
Single Controller Deduplication	✓
Warranty	3 Year
24x7x365	✓
Access Methods (Total #)	4
Alerting Options (Total #)	2
Battery Backup/UPS	✗

MANAGEMENT

Max Concurrent Backup Streams	64
Encryption Options	2
Instant VM Recovery	✗
Encryption EKM	✗
Multi-stream Encryption	✓
Encryption Methods (Total #)	2
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	2
Bundled Software Licenses (Total #)	4
Backup Software Natively Hosted (Total #)	0
Cloud Providers (Total #)	0
NDMP	✗
Backup Software Streams Recognized (Total #)	13
Native Backup Software Mgt	10
Concurrent Deduplication/Replication	✓
Compress/Encrypt Replicated Data	✓
Replication Status by Backup Job	✓
Replication Types (Total #)	1
Display Real Time Deduplication Ratio	✓

HARDWARE

Raw Storage Capacity (Max)	96TB
Ethernet ports (Max)	6
FC Ports (Max)	✗
Storage Networking Interfaces	1/10Gb Ethernet
Max # Storage Networking Ports	6
Hot Swappable Drives	✓
FC Support	✗
Concurrent FC/Ethernet Mix	✗
Max HDDs	24
5.4K RPM SATA HDDs (Max)	✗
7.2K RPM SATA HDDs (Max)	✓
SSDs	✗
FC / SAS HDDS	✗
Concurrent HDD Mix	✗
Cache (Max)	192GB
Erasure Coding	✓
Processor Cores (Max)	28
Controllers (Max)	1
Storage Networking Protocols	CIFS, NFS
VTL Interface	✗
Partitions (Max)	250
Concurrently Present NAS/VTL	✗
Controller Configurations	Scale-out, Single Controller
Global Deduplication	✗
Deduplication HA	✗
Storage Capacity Expansion	Scale-out
RAID Levels	RAID 1, 5, 6 & Dynamic Disk Pools

✓ Supported   ✗ Unsupported

NEC HYDRAstor HS8-4002S 96TB

Approximate Starting List Price: Over $250,000

DCIG Scores and Rankings

	OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
	69.45	8.75	24.45	27.00	9.25
	EXCELLENT	GOOD	RECOMMENDED	GOOD	EXCELLENT

DEDUPLICATION

Deduplication Included	✓
Compress Deduplicated Data	✓
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✗
Verify Data Integrity / Rate	✓
Inline Deduplication	✓
Post Process Deduplication	✗
Inline/Post Process Option	✗
Deduplication Ratios by Backup Job	✓
Deduplication Algorithms	3

SCALABILITY & SUPPORT

Replication Options	1:1: 1:N; N:1
Replication Bandwidth Throttling	✓
Data Optimization Options (Total #)	2
Single Controller Replication	✓
Single Controller Deduplication	✓
Warranty	3 Year
24x7x365	✓
Access Methods (Total #)	4
Alerting Options (Total #)	2
Battery Backup/UPS	✗

MANAGEMENT

Max Concurrent Backup Streams	128
Encryption Options	2
Instant VM Recovery	✗
Encryption EKM	✗
Multi-stream Encryption	✓
Encryption Methods (Total #)	2
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	2
Bundled Software Licenses (Total #)	4
Backup Software Natively Hosted (Total #)	0
Cloud Providers (Total #)	0
NDMP	✗
Backup Software Streams Recognized (Total #)	13
Native Backup Software Mgt	10
Concurrent Deduplication/Replication	✓
Compress/Encrypt Replicated Data	✓
Replication Status by Backup Job	✓
Replication Types (Total #)	1
Display Real Time Deduplication Ratio	✓

HARDWARE

Raw Storage Capacity (Max)	96TB
Ethernet ports (Max)	12
FC Ports (Max)	✗
Storage Networking Interfaces	1/10Gb Ethernet
Max # Storage Networking Ports	12
Hot Swappable Drives	✓
FC Support	✗
Concurrent FC/Ethernet Mix	✗
Max HDDs	24
5.4K RPM SATA HDDs (Max)	✗
7.2K RPM SATA HDDs (Max)	✓
SSDs	✗
FC / SAS HDDS	✗
Concurrent HDD Mix	✗
Cache (Max)	192GB
Erasure Coding	✓
Processor Cores (Max)	32
Controllers (Max)	2
Storage Networking Protocols	CIFS, NFS
VTL Interface	✗
Partitions (Max)	500
Concurrently Present NAS/VTL	✗
Controller Configurations	Scale-out
Global Deduplication	✓
Deduplication HA	✓
Storage Capacity Expansion	Scale-out
RAID Levels	RAID 1, 5, 6 & Dynamic Disk Pools

✓ Supported   ✗ Unsupported

NEC HYDRAstor HS8-4002S 192TB

Approximate Starting List Price: Over $250,000

DCIG Scores and Rankings

	OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
	70.97	8.75	25.97	27.00	9.25
	RECOMMENDED	GOOD	RECOMMENDED	EXCELLENT	EXCELLENT

DEDUPLICATION

Deduplication Included	✔
Compress Deduplicated Data	✔
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✖
Verify Data Integrity / Rate	✔
Inline Deduplication	✔
Post Process Deduplication	✖
Inline/Post Process Option	✖
Deduplication Ratios by Backup Job	✔
Deduplication Algorithms	3

SCALABILITY & SUPPORT

Replication Options	1:1: 1:N; N:1
Replication Bandwidth Throttling	✔
Data Optimization Options (Total #)	2
Single Controller Replication	✔
Single Controller Deduplication	✔
Warranty	3 Year
24x7x365	✔
Access Methods (Total #)	4
Alerting Options (Total #)	2
Battery Backup/UPS	✖

MANAGEMENT

Max Concurrent Backup Streams	128
Encryption Options	2
Instant VM Recovery	✖
Encryption EKM	✖
Multi-stream Encryption	✔
Encryption Methods (Total #)	2
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	2
Bundled Software Licenses (Total #)	4
Backup Software Natively Hosted (Total #)	0
Cloud Providers (Total #)	0
NDMP	✖
Backup Software Streams Recognized (Total #)	13
Native Backup Software Mgt	10
Concurrent Deduplication/Replication	✔
Compress/Encrypt Replicated Data	✔
Replication Status by Backup Job	✔
Replication Types (Total #)	1
Display Real Time Deduplication Ratio	✔

HARDWARE

Raw Storage Capacity (Max)	192TB
Ethernet ports (Max)	12
FC Ports (Max)	✖
Storage Networking Interfaces	1/10Gb Ethernet
Max # Storage Networking Ports	12
Hot Swappable Drives	✔
FC Support	✖
Concurrent FC/Ethernet Mix	✖
Max HDDs	48
5.4K RPM SATA HDDs (Max)	✖
7.2K RPM SATA HDDs (Max)	✔
SSDs	✖
FC / SAS HDDS	✖
Concurrent HDD Mix	✖
Cache (Max)	384GB
Erasure Coding	✔
Processor Cores (Max)	56
Controllers (Max)	2
Storage Networking Protocols	CIFS, NFS
VTL Interface	✖
Partitions (Max)	500
Concurrently Present NAS/VTL	✖
Controller Configurations	Scale-out
Global Deduplication	✔
Deduplication HA	✔
Storage Capacity Expansion	Scale-up, Scale-out
RAID Levels	RAID 1, 5, 6 & Dynamic Disk Pools

✔ Supported ✖ Unsupported

NEC HYDRAstor HS8-4006R 720TB

Approximate Starting List Price: Over $250,000

DCIG Scores and Rankings

	OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
	75.78	8.75	30.78	27.00	9.25
	BEST-IN-CLASS	GOOD	BEST-IN-CLASS	EXCELLENT	EXCELLENT

DEDUPLICATION

Deduplication Included	✔
Compress Deduplicated Data	✔
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✖
Verify Data Integrity / Rate	✔
Inline Deduplication	✔
Post Process Deduplication	✖
Inline/Post Process Option	✖
Deduplication Ratios by Backup Job	✔
Deduplication Algorithms	3

SCALABILITY & SUPPORT

Replication Options	1:1: 1:N; N:1
Replication Bandwidth Throttling	✔
Data Optimization Options (Total #)	2
Single Controller Replication	✔
Single Controller Deduplication	✔
Warranty	3 Year
24x7x365	✔
Access Methods (Total #)	4
Alerting Options (Total #)	2
Battery Backup/UPS	✖

MANAGEMENT

Max Concurrent Backup Streams	384
Encryption Options	2
Instant VM Recovery	✖
Encryption EKM	✖
Multi-stream Encryption	✔
Encryption Methods (Total #)	2
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	2
Bundled Software Licenses (Total #)	4
Backup Software Natively Hosted (Total #)	0
Cloud Providers (Total #)	0
NDMP	✖
Backup Software Streams Recognized (Total #)	13
Native Backup Software Mgt	10
Concurrent Deduplication/Replication	✔
Compress/Encrypt Replicated Data	✔
Replication Status by Backup Job	✔
Replication Types (Total #)	1
Display Real Time Deduplication Ratio	✔

HARDWARE

Raw Storage Capacity (Max)	720TB
Ethernet ports (Max)	36
FC Ports (Max)	✖
Storage Networking Interfaces	1/10Gb Ethernet
Max # Storage Networking Ports	36
Hot Swappable Drives	✔
FC Support	✖
Concurrent FC/Ethernet Mix	✖
Max HDDs	180
5.4K RPM SATA HDDs (Max)	✖
7.2K RPM SATA HDDs (Max)	✔
SSDs	✖
FC / SAS HDDS	✖
Concurrent HDD Mix	✖
Cache (Max)	1,440GB
Erasure Coding	✔
Processor Cores (Max)	204
Controllers (Max)	6
Storage Networking Protocols	CIFS, NFS
VTL Interface	✖
Partitions (Max)	1,500
Concurrently Present NAS/VTL	✖
Controller Configurations	Scale-out
Global Deduplication	✔
Deduplication HA	✔
Storage Capacity Expansion	Scale-out
RAID Levels	RAID 1, 5, 6 & Dynamic Disk Pools

✔ Supported   ✖ Unsupported

Quantum DXi4601

Approximate Starting List Price: $20,000–$50,000

2013 DCIG BUYER'S GUIDE — MIDRANGE DEDUPLICATING BACKUP APPLIANCE

DCIG Scores and Rankings

OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
55.36	**9.50**	**6.86**	**29.75**	**9.25**
GOOD	EXCELLENT	BASIC	EXCELLENT	EXCELLENT

DEDUPLICATION

Deduplication Included	✓
Compress Deduplicated Data	✓
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✓
Verify Data Integrity / Rate	✓
Inline Deduplication	✓
Post Process Deduplication	✗
Inline/Post Process Option	✗
Deduplication Ratios by Backup Job	✗
Deduplication Algorithms	3

SCALABILITY & SUPPORT

Replication Options	1:1; 1:N; N:1
Replication Bandwidth Throttling	✓
Data Optimization Options (Total #)	2
Single Controller Replication	✓
Single Controller Deduplication	✓
Warranty	1 Year
24x7x365	✓
Access Methods (Total #)	5
Alerting Options (Total #)	4
Battery Backup/UPS	✓

MANAGEMENT

Max Concurrent Backup Streams	32
Encryption Options	1
Instant VM Recovery	✗
Encryption EKM	✗
Multi-stream Encryption	✗
Encryption Methods (Total #)	2
Backup Accelerator Options (Total #)	2
Backup Accelerator Features (Total #)	3
Bundled Software Licenses (Total #)	6
Backup Software Natively Hosted (Total #)	1
Cloud Providers (Total #)	1
NDMP	✓
Backup Software Streams Recognized (Total #)	21
Native Backup Software Mgt	10
Concurrent Deduplication/Replication	✓
Compress/Encrypt Replicated Data	✓
Replication Status by Backup Job	✓
Replication Types (Total #)	3
Display Real Time Deduplication Ratio	✓

HARDWARE

Raw Storage Capacity (Max)	12TB*
Ethernet ports (Max)	4
FC Ports (Max)	0
Storage Networking Interfaces	1Gb Ethernet
Max # Storage Networking Ports	4
Hot Swappable Drives	✓
FC Support	✗
Concurrent FC/Ethernet Mix	✗
Max HDDs	8
5.4K RPM SATA HDDs (Max)	✗
7.2K RPM SATA HDDs (Max)	✓
SSDs	✗
FC / SAS HDDS	✗
Concurrent HDD Mix	✗
Cache (Max)	32 GB
Erasure Coding	✓
Processor Cores (Max)	8
Controllers (Max)	1
Storage Networking Protocols	CIFS, NFS
VTL Interface	✗
Partitions (Max)	0
Concurrently Present NAS/VTL	✗
Controller Configurations	Single Controller
Global Deduplication	✗
Deduplication HA	✗
Storage Capacity Expansion	Scale-out
RAID Levels	RAID 6

✓ Supported   ✗ Unsupported

Quantum DXi6700 Series

Approximate Starting List Price: $50,000–$100,000

2013 DCIG BUYER'S GUIDE — MIDRANGE DEDUPLICATING BACKUP APPLIANCE

DCIG Scores and Rankings

OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
64.02	9.50	12.77	32.25	9.50
EXCELLENT	EXCELLENT	BASIC	RECOMMENDED	EXCELLENT

DEDUPLICATION

Deduplication Included	✓
Compress Deduplicated Data	✓
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✓
Verify Data Integrity / Rate	✓
Inline Deduplication	✓
Post Process Deduplication	✗
Inline/Post Process Option	✗
Deduplication Ratios by Backup Job	✗
Deduplication Algorithms	3

SCALABILITY & SUPPORT

Replication Options	1:1; 1:N; N:1
Replication Bandwidth Throttling	✓
Data Optimization Options (Total #)	2
Single Controller Replication	✓
Single Controller Deduplication	✓
Warranty	1 Year
24x7x365	✓
Access Methods (Total #)	5
Alerting Options (Total #)	4
Battery Backup/UPS	✓

MANAGEMENT

Max Concurrent Backup Streams	64
Encryption Options	2
Instant VM Recovery	✗
Encryption EKM	✗
Multi-stream Encryption	✓
Encryption Methods (Total #)	2
Backup Accelerator Options (Total #)	2
Backup Accelerator Features (Total #)	3
Bundled Software Licenses (Total #)	8
Backup Software Natively Hosted (Total #)	1
Cloud Providers (Total #)	1
NDMP	✓
Backup Software Streams Recognized (Total #)	21
Native Backup Software Mgt	10
Concurrent Deduplication/Replication	✓
Compress/Encrypt Replicated Data	✓
Replication Status by Backup Job	✓
Replication Types (Total #)	3
Display Real Time Deduplication Ratio	✓

HARDWARE

Raw Storage Capacity (Max)	80TB
Ethernet ports (Max)	8
FC Ports (Max)	4
Storage Networking Interfaces	1/10Gb Ethernet, 8Gb FC
Max # Storage Networking Ports	12
Hot Swappable Drives	✓
FC Support	✓
Concurrent FC/Ethernet Mix	✓
Max HDDs	124
5.4K RPM SATA HDDs (Max)	✗
7.2K RPM SATA HDDs (Max)	✓
SSDs	✓
FC / SAS HDDS	✗
Concurrent HDD Mix	✓
Cache (Max)	64GB
Erasure Coding	✓
Processor Cores (Max)	8
Controllers (Max)	4
Storage Networking Protocols	CIFS, FC, NFS
VTL Interface	✓
Partitions (Max)	128
Concurrently Present NAS/VTL	✓
Controller Configurations	Single Controller
Global Deduplication	✗
Deduplication HA	✗
Storage Capacity Expansion	Scale-out
RAID Levels	RAID 1 & 6

✓ Supported   ✗ Unsupported

DCIG

Quantum DXi6802

Approximate Starting List Price: $100,000–$250,000

DCIG Scores and Rankings

OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
69.88	9.50	16.33	34.55	9.50
EXCELLENT	EXCELLENT	GOOD	RECOMMENDED	EXCELLENT

DEDUPLICATION

Deduplication Included	✓
Compress Deduplicated Data	✓
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✓
Verify Data Integrity / Rate	✓
Inline Deduplication	✓
Post Process Deduplication	✗
Inline/Post Process Option	✗
Deduplication Ratios by Backup Job	✓
Deduplication Algorithms	3

SCALABILITY & SUPPORT

Replication Options	1:1; 1:N; N:1
Replication Bandwidth Throttling	✓
Data Optimization Options (Total #)	2
Single Controller Replication	✓
Single Controller Deduplication	✗
Warranty	1 Year
24x7x365	✓
Access Methods (Total #)	5
Alerting Options (Total #)	4
Battery Backup/UPS	✓

MANAGEMENT

Max Concurrent Backup Streams	64
Encryption Options	2
Instant VM Recovery	✗
Encryption EKM	✗
Multi-stream Encryption	✓
Encryption Methods (Total #)	2
Backup Accelerator Options (Total #)	2
Backup Accelerator Features (Total #)	4
Bundled Software Licenses (Total #)	8
Backup Software Natively Hosted (Total #)	1
Cloud Providers (Total #)	1
NDMP	✓
Backup Software Streams Recognized (Total #)	21
Native Backup Software Mgt	10
Concurrent Deduplication/Replication	✓
Compress/Encrypt Replicated Data	✓
Replication Status by Backup Job	✓
Replication Types (Total #)	3
Display Real Time Deduplication Ratio	✓

HARDWARE

Raw Storage Capacity (Max)	156TB*
Ethernet ports (Max)	9
FC Ports (Max)	6
Storage Networking Interfaces	1/10Gb Ethernet, 8Gb FC
Max # Storage Networking Ports	15
Hot Swappable Drives	✓
FC Support	✓
Concurrent FC/Ethernet Mix	✓
Max HDDs	84
5.4K RPM SATA HDDs (Max)	✗
7.2K RPM SATA HDDs (Max)	✗
SSDs	✗
FC / SAS HDDS	✓
Concurrent HDD Mix	✓
Cache (Max)	128 GB
Erasure Coding	✓
Processor Cores (Max)	16
Controllers (Max)	1
Storage Networking Protocols	CIFS, FC, NFS
VTL Interface	✓
Partitions (Max)	128
Concurrently Present NAS/VTL	✓
Controller Configurations	SIngle Controller
Global Deduplication	✗
Deduplication HA	✗
Storage Capacity Expansion	Scale-out
RAID Levels	Dynamic Disk Pool

*Usable

✓ Supported ✗ Unsupported

Quantum DXi8500 Enterprise
Approximate Starting List Price: Over $250,000

DCIG Scores and Rankings

OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
72.44	9.50	18.84	34.85	9.25
RECOMMENDED	EXCELLENT	EXCELLENT	RECOMMENDED	EXCELLENT

DEDUPLICATION

Deduplication Included	✓
Compress Deduplicated Data	✓
Deduplication Level / Type	Variable Length Block
Bypass Deduplication	✓
Verify Data Integrity / Rate	✓
Inline Deduplication	✓
Post Process Deduplication	✗
Inline/Post Process Option	✗
Deduplication Ratios by Backup Job	✗
Deduplication Algorithms	3

SCALABILITY & SUPPORT

Replication Options	1:1; 1:N; N:1
Replication Bandwidth Throttling	✓
Data Optimization Options (Total #)	2
Single Controller Replication	✓
Single Controller Deduplication	✗
Warranty	1 Year
24x7x365	✓
Access Methods (Total #)	5
Alerting Options (Total #)	4
Battery Backup/UPS	✓

MANAGEMENT

Max Concurrent Backup Streams	256
Encryption Options	2
Instant VM Recovery	✗
Encryption EKM	✗
Multi-stream Encryption	✓
Encryption Methods (Total #)	2
Backup Accelerator Options (Total #)	2
Backup Accelerator Features (Total #)	4
Bundled Software Licenses (Total #)	8
Backup Software Natively Hosted (Total #)	1
Cloud Providers (Total #)	1
NDMP	✓
Backup Software Streams Recognized (Total #)	21
Native Backup Software Mgt	10
Concurrent Deduplication/Replication	✓
Compress/Encrypt Replicated Data	✓
Replication Status by Backup Job	✓
Replication Types (Total #)	3
Display Real Time Deduplication Ratio	✓

HARDWARE

Raw Storage Capacity (Max)	330TB*
Ethernet ports (Max)	10
FC Ports (Max)	4
Storage Networking Interfaces	1/10Gb Ethernet, 8Gb FC
Max # Storage Networking Ports	14
Hot Swappable Drives	✓
FC Support	✓
Concurrent FC/Ethernet Mix	✓
Max HDDs	183
5.4K RPM SATA HDDs (Max)	✗
7.2K RPM SATA HDDs (Max)	✓
SSDs	✗
FC / SAS HDDS	✓
Concurrent HDD Mix	✓
Cache (Max)	256GB
Erasure Coding	✓
Processor Cores (Max)	12
Controllers (Max)	5
Storage Networking Protocols	CIFS, FC, NFS
VTL Interface	✓
Partitions (Max)	128
Concurrently Present NAS/VTL	✓
Controller Configurations	Active-Active
Global Deduplication	✗
Deduplication HA	✗
Storage Capacity Expansion	Scale-out
RAID Levels	RAID 1 & 6

*Usable

✓ Supported   ✗ Unsupported

Sepaton S2100-ES Series 2925

Approximate Starting List Price: Over $250,000

2013 DCIG BUYER'S GUIDE MIGRATING/REPLICATING BACKUP APPLIANCE

DCIG Scores and Rankings

	OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
	65.32	8.25	21.32	26.25	9.50
	EXCELLENT	BASIC	EXCELLENT	EXCELLENT	EXCELLENT

DEDUPLICATION

Deduplication Included	✓
Compress Deduplicated Data	✓
Deduplication Level / Type	Fixed Block, Variable Length Block, Sliding Scale
Bypass Deduplication	✓
Verify Data Integrity / Rate	✗
Inline Deduplication	✗
Post Process Deduplication	✓
Inline/Post Process Option	✗
Deduplication Ratios by Backup Job	✓
Deduplication Algorithms	1

SCALABILITY & SUPPORT

Replication Options	1:1; 1:N; N:1; 1:N:N
Replication Bandwidth Throttling	✓
Data Optimization Options (Total #)	2
Single Controller Replication	✓
Single Controller Deduplication	✓
Warranty	1 Year
24x7x365	✓
Access Methods (Total #)	5
Alerting Options (Total #)	5
Battery Backup/UPS	✓

MANAGEMENT

Max Concurrent Backup Streams	512
Encryption Options	1
Instant VM Recovery	✗
Encryption EKM	3
Multi-stream Encryption	✓
Encryption Methods (Total #)	1
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	3
Bundled Software Licenses (Total #)	5
Backup Software Natively Hosted (Total #)	0
Cloud Providers (Total #)	0
NDMP	✓
Backup Software Streams Recognized (Total #)	4
Native Backup Software Mgt	5
Concurrent Deduplication/Replication	✓
Compress/Encrypt Replicated Data	✓
Replication Status by Backup Job	✓
Replication Types (Total #)	1
Display Real Time Deduplication Ratio	✓

HARDWARE

Raw Storage Capacity (Max)	2.59PB
Ethernet ports (Max)	6
FC Ports (Max)	4
Storage Networking Interfaces	1/10Gb Ethernet, 8GB FC
Max # Storage Networking Ports	10
Hot Swappable Drives	✓
FC Support	✓
Concurrent FC/Ethernet Mix	✓
Max HDDs	1,296
5.4K RPM SATA HDDs (Max)	✗
7.2K RPM SATA HDDs (Max)	✗
SSDs	✗
FC / SAS HDDS	✓
Concurrent HDD Mix	✓
Cache (Max)	128GB
Erasure Coding	✓
Processor Cores (Max)	128
Controllers (Max)	8
Storage Networking Protocols	CIFS, FC, NFS
VTL Interface	✓
Partitions (Max)	108
Concurrently Present NAS/VTL	✗
Controller Configurations	Scale-Out
Global Deduplication	✓
Deduplication HA	✓
Storage Capacity Expansion	Scale-up, Scale-out
RAID Levels	RAID 6

✓ Supported   ✗ Unsupported

DCIG

Symantec Backup Exec 3600 Appliance

Approximate Starting List Price: $10,000 to $20,000

DCIG Scores and Rankings

	OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
Score	49.25	9.25	4.95	24.55	10.50
Ranking	GOOD	EXCELLENT	BASIC	GOOD	RECOMENDED

DEDUPLICATION

Deduplication Included	✓
Compress Deduplicated Data	✓
Deduplication Level / Type	Fixed Block, Variable Length Block
Bypass Deduplication	✓
Verify Data Integrity / Rate	✓
Inline Deduplication	✓
Post Process Deduplication	✗
Inline/Post Process Option	✗
Deduplication Ratios by Backup Job	✓
Deduplication Algorithms	1

SCALABILITY & SUPPORT

Replication Options	1:1; 1:N; N:1; 1:N:N
Replication Bandwidth Throttling	✗
Data Optimization Options (Total #)	2
Single Controller Replication	✗
Single Controller Deduplication	✗
Warranty	3 Year
24x7x365	✓
Access Methods (Total #)	4
Alerting Options (Total #)	5
Battery Backup/UPS	✓

MANAGEMENT

Max Concurrent Backup Streams	32
Encryption Options	2
Instant VM Recovery	✗
Encryption EKM	✗
Multi-stream Encryption	✓
Encryption Methods (Total #)	2
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	2
Bundled Software Licenses (Total #)	8
Backup Software Natively Hosted (Total #)	1
Cloud Providers (Total #)	1
NDMP	✓
Backup Software Streams Recognized (Total #)	6
Native Backup Software Mgt	1
Concurrent Deduplication/Replication	✓
Compress/Encrypt Replicated Data	✓
Replication Status by Backup Job	✓
Replication Types (Total #)	1
Display Real Time Deduplication Ratio	✓

HARDWARE

Raw Storage Capacity (Max)	8TB
Ethernet ports (Max)	5
FC Ports (Max)	0
Storage Networking Interfaces	1/10Gb Ethernet, 6Gbps SAS
Max # Storage Networking Ports	6
Hot Swappable Drives	✓
FC Support	✗
Concurrent FC/Ethernet Mix	✗
Max HDDs	6
5.4K RPM SATA HDDs (Max)	✗
7.2K RPM SATA HDDs (Max)	✗
SSDs	80GB
FC / SAS HDDS	✓
Concurrent HDD Mix	✓
Cache (Max)	128MB
Erasure Coding	✗
Processor Cores (Max)	4
Controllers (Max)	1
Storage Networking Protocols	CIFS, NFS
VTL Interface	✗
Partitions (Max)	✗
Concurrently Present NAS/VTL	✗
Controller Configurations	Single Controller
Global Deduplication	✗
Deduplication HA	✗
Storage Capacity Expansion	✗
RAID Levels	RAID 1 & 6

✓ Supported   ✗ Unsupported

Symantec NetBackup 5030

Approximate Starting List Price: $50,000 to $100,000

2013 DCIG BUYER'S GUIDE — MIDRANGE DEDUPLICATING BACKUP APPLIANCE

DCIG Scores and Rankings

OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
57.70	7.75	14.39	25.06	10.50
GOOD	BASIC	GOOD	GOOD	RECOMMENDED

DEDUPLICATION

Deduplication Included	⊗
Compress Deduplicated Data	✓
Deduplication Level / Type	Fixed Block, Variable Length Block, Sliding Scale
Bypass Deduplication	✓
Verify Data Integrity / Rate	✓
Inline Deduplication	✓
Post Process Deduplication	⊗
Inline/Post Process Option	✓
Deduplication Ratios by Backup Job	✓
Deduplication Algorithms	1

SCALABILITY & SUPPORT

Replication Options	1:1; 1:N; N:1; 1:N:N
Replication Bandwidth Throttling	✓
Data Optimization Options (Total #)	2
Single Controller Replication	⊗
Single Controller Deduplication	⊗
Warranty	3 Year
24x7x365	✓
Access Methods (Total #)	4
Alerting Options (Total #)	3
Battery Backup/UPS	✓

MANAGEMENT

Max Concurrent Backup Streams	100+
Encryption Options	2
Instant VM Recovery	✓
Encryption EKM	⊗
Multi-stream Encryption	✓
Encryption Methods (Total #)	2
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	4
Bundled Software Licenses (Total #)	0
Backup Software Natively Hosted (Total #)	1
Cloud Providers (Total #)	0
NDMP	✓
Backup Software Streams Recognized (Total #)	3
Native Backup Software Mgt	2
Concurrent Deduplication/Replication	✓
Compress/Encrypt Replicated Data	✓
Replication Status by Backup Job	✓
Replication Types (Total #)	2
Display Real Time Deduplication Ratio	✓

HARDWARE

Raw Storage Capacity (Max)	300TB
Ethernet ports (Max)	6
FC Ports (Max)	4
Storage Networking Interfaces	1/10Gb Ethernet, 8GB FC
Max # Storage Networking Ports	10
Hot Swappable Drives	✓
FC Support	✓
Concurrent FC/Ethernet Mix	✓
Max HDDs	18
5.4K RPM SATA HDDs (Max)	⊗
7.2K RPM SATA HDDs (Max)	⊗
SSDs	⊗
FC / SAS HDDS	✓
Concurrent HDD Mix	⊗
Cache (Max)	3.15GB
Erasure Coding	✓
Processor Cores (Max)	12
Controllers (Max)	2
Storage Networking Protocols	CIFS, FC, FCoE, NFS
VTL Interface	✓
Partitions (Max)	2
Concurrently Present NAS/VTL	✓
Controller Configurations	Single Controller
Global Deduplication	✓
Deduplication HA	⊗
Storage Capacity Expansion	Scale-up, Scale-out
RAID Levels	RAID 1 & 6

✓ Supported   ⊗ Unsupported

Symantec NetBackup 5230

Approximate Starting List Price: $20,000 to $50,000

DCIG Scores and Rankings

OVERALL SCORE	Deduplication	Hardware	Management	Scalability & Support
61.67	8.75	13.51	28.91	10.50
EXCELLENT	GOOD	GOOD	EXCELLENT	RECOMMENDED

DEDUPLICATION

Deduplication Included	⊗
Compress Deduplicated Data	✓
Deduplication Level / Type	Fixed Block, Variable Length Block, Sliding Scale
Bypass Deduplication	✓
Verify Data Integrity / Rate	✓
Inline Deduplication	✓
Post Process Deduplication	✓
Inline/Post Process Option	✓
Deduplication Ratios by Backup Job	✓
Deduplication Algorithms	1

SCALABILITY & SUPPORT

Replication Options	1:1; 1:N; N:1; 1:N:N
Replication Bandwidth Throttling	✓
Data Optimization Options (Total #)	2
Single Controller Replication	⊗
Single Controller Deduplication	⊗
Warranty	3 Year
24x7x365	✓
Access Methods (Total #)	4
Alerting Options (Total #)	3
Battery Backup/UPS	✓

MANAGEMENT

Max Concurrent Backup Streams	100+
Encryption Options	2
Instant VM Recovery	✓
Encryption EKM	⊗
Multi-stream Encryption	✓
Encryption Methods (Total #)	2
Backup Accelerator Options (Total #)	1
Backup Accelerator Features (Total #)	4
Bundled Software Licenses (Total #)	0
Backup Software Natively Hosted (Total #)	1
Cloud Providers (Total #)	4
NDMP	✓
Backup Software Streams Recognized (Total #)	6
Native Backup Software Mgt	1
Concurrent Deduplication/Replication	✓
Compress/Encrypt Replicated Data	✓
Replication Status by Backup Job	✓
Replication Types (Total #)	2
Display Real Time Deduplication Ratio	✓

HARDWARE

Raw Storage Capacity (Max)	106TB
Ethernet ports (Max)	8
FC Ports (Max)	10
Storage Networking Interfaces	1/10Gb Ethernet, 8GB FC
Max # Storage Networking Ports	16
Hot Swappable Drives	✓
FC Support	✓
Concurrent FC/Ethernet Mix	✓
Max HDDs	42
5.4K RPM SATA HDDs (Max)	⊗
7.2K RPM SATA HDDs (Max)	⊗
SSDs	⊗
FC / SAS HDDS	✓
Concurrent HDD Mix	⊗
Cache (Max)	5.69GB
Erasure Coding	✓
Processor Cores (Max)	12
Controllers (Max)	2
Storage Networking Protocols	CIFS, FC, FCoE, NFS
VTL Interface	⊗
Partitions (Max)	4+
Concurrently Present NAS/VTL	✓
Controller Configurations	Single Controller
Global Deduplication	⊗
Deduplication HA	⊗
Storage Capacity Expansion	Scale-up
RAID Levels	RAID 1 & 6

✓ Supported   ⊗ Unsupported

DCIG 2013 MIDRANGE DEDUPLICATING BACKUP APPLIANCE BUYER'S GUIDE

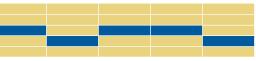**THE INSIDER'S GUIDE TO EVALUATING MIDRANGE DEDUPLICATING BACKUP APPLIANCES**

Product Rankings Dashboard

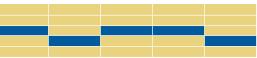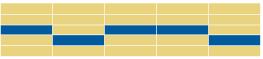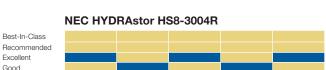Column headers (both sides): OVERALL SCORE, DEDUPLICATION, HARDWARE, MANAGEMENT, SCALABILITY & SUPPORT

Row categories (top to bottom): Best-In-Class, Recommended, Excellent, Good, Basic

Dell DR4100

EMC DD620

EMC DD640

EMC DD670

EMC DD860

ExaGrid EX1000

ExaGrid EX2000

ExaGrid EX3000

ExaGrid EX4000

ExaGrid EX5000

ExaGrid EX70000

ExaGrid EX10000E

ExaGrid EX13000

FalconStor Software FDS SA304

DCIG 2013 MIDRANGE DEDUPLICATING BACKUP APPLIANCE BUYER'S GUIDE

THE INSIDER'S GUIDE TO EVALUATING MIDRANGE DEDUPLICATING BACKUP APPLIANCES
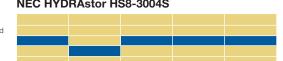
Product Rankings Dashboard (continued)

FalconStor Software FDS SA310

FalconStor Software FDS SA623

FalconStor HDS FS FDS H150

FalconStor HDS FS FDS 220S

FalconStor Software VTL SAM16

FalconStor Software VTL SAP16

HP StoreOnce 4210 Backup

HP StoreOnce 4220 Backup

HP StoreOnce 4420 Backup

HP StoreOnce 4430 Backup

HP StoreOnce B6200 48TB Backup System

IBM TS7620 ProtecTIER Deduplication Appliance Express

NEC HYDRAstor HS3-310

NEC HYDRAstor HS3-410

Product Rankings Dashboard (continued)

NEC HYDRAstor HS8-3002S

NEC HYDRAstor HS8-4002S 96TB

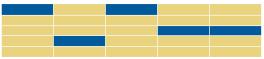### NEC HYDRAstor HS8-3004R

NEC HYDRAstor HS8-4002S 192TB

NEC HYDRAstor HS8-3004S

NEC HYDRAstor HS8-4006R 720TB

NEC HYDRAstor HS8-3010R 120TB

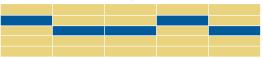### Quantum DXi4601

NEC HYDRAstor HS8-3020R 240TB

Quantum DXi6700 Series

NEC HYDRAstor HS8-4001S 12-48TB

Quantum DXi6802

NEC HYDRAstor HS8-4001S 96TB

Quantum DXi8500 Enterprise

Product Rankings Dashboard (continued)

OVERALL SCORE   DEDUPLICATION   HARDWARE   MANAGEMENT   SCALABILITY & SUPPORT

Sepaton S2100-ES Series 2925

Best-In-Class
Recommended
Excellent
Good
Basic

Symantec Backup Exec 3600 Appliance

Best-In-Class
Recommended
Excellent
Good
Basic

Symantec NetBackup 5030

Best-In-Class
Recommended
Excellent
Good
Basic

Symantec NetBackup 5230

Best-In-Class
Recommended
Excellent
Good
Basic

APPENDIX

Appendix A—Definitions, Explanations and Terminology

Definitions, Explanations and Terminology

This section contains brief definitions and/or explanations of the terms used when developing the data sheets found in the DCIG 2013 Midrange Deduplicating Backup Appliance Buyer's Guide.

Deduplication

Deduplication Included

Deduplicating backup appliances may or may not include deduplication software as part of their backup appliance; this indicates that deduplication software is part of the offering.

Compress Deduplicated Data

Data deduplication does not eliminate spaces or leading zeros that may be found in a backup job. It is only after data is deduplicated that it is compressed. This typically adds by a factor of 2-3X the total amount of data that can be stored on the appliance.

Deduplication Level/Type

This reflects the level of granularity of deduplication provided by the appliance. All deduplication appliances deduplicate data at the block level which breaks the backup data stream into blocks (called chunking). Some use variable length blocks which break the backup data stream at various points while some use fixed block which breakup the backup data stream based upon preset parameters.

Bypass Deduplication

Some data does not deduplicate well (videos, images, etc.) If this feature is supported and turned on, ingested data will bypass the deduplication process and be stored in its native format.

Verify Data Integrity/Rate

After the data is stored, an algorithm is run against the stored data to verify that the data written is what was supposed to be written. The stored data is also checked periodically to verify it is still readable and the media on which it resides has not become corrupted or degraded such that the data is unreadable or inaccessible.

Inline Deduplication

Data is deduplicated as it is ingested into the deduplicating backup appliance and before it is stored to disk.

Post Process Deduplication

Data is first stored to disk on the deduplicating backup appliance in its native or raw format and then deduplicated.

Inline/Post Process Option

The appliance may be configured to either deduplicate data using the inline or post process technique.

Deduplication Ratios by Backup Job

Deduplication Ratios by Backup Job allows administrators to see how successful deduplication is by the backup job being carried out.

Deduplication Algorithms

These are the various deduplication algorithms used by the deduplicating backup appliance. Options include hashing, delta differencing, variable length block, fixed length block and sub-file. The total number of algorithms supported is listed here. For a detailed list of exactly which algorithms are supported, please access the DCIG Interactive Buyer's Guide (IBG).

Scalability & Support

Replication Options

If replication is supported, this indicates what options the midrange deduplicating backup appliance offers to configure data replication. (1:1, 1:N, N:1, or N:N)

Replication Bandwidth Throttling

If replication is supported, this indicates if the midrange deduplicating backup appliance can control or throttle data as it is replicated.

Data Optimization

If replication is supported, this indicates if the midrange deduplicating backup appliance optimizes data as it is replicated.

Single Controller Replication

If replication is supported, this indicates if the midrange deduplicating backup appliance can dedicate a single controller to data replication.

Single Controller Deduplication

This indicates if the midrange deduplicating backup appliance can dedicate a single controller to data deduplication.

Appendix A—Definitions, Explanations and Terminology (continued)

Warranty

This indicates the standard warranty that is offered with the deduplication appliance.

24x7x365

This indicates if phone support is available 24x7x365.

Access Methods (Total #)

This lists all of the methods in which IT organizations can access support from the provider. The total number of access methods is listed here. For a detailed list of exactly which access methods are supported, please access the DCIG Interactive Buyer's Guide (IBG).

Alerting Options (Total #)

This lists all of the methods which the midrange deduplicating backup appliance provides alerts as to its conditions. The total number of access options is listed here. For a detailed list of exactly which access methods are supported, please access the DCIG Interactive Buyer's Guide (IBG).

Battery Backup/UPS

This indicates if the midrange deduplicating backup appliance natively provides a battery backup and/or UPS (uninterruptible power supply) for availability in the event of a power outage.

Management

Max Concurrent Backup Streams

The maximum number of backup streams that a target-based midrange deduplicating backup appliance can ingest at one time. For example, if the maximum number is 32, that means that 32 backup jobs can be executing on backup clients and concurrently sending data to the target.

Encryption Options

The total number of encryption options is listed here. The two available options are in-transit and at-rest encryption and both provide a level of security. In-transit encryption encrypts data as it is sent from the source to the target and at-rest encryption encrypts data where it resides on disk. For additional details on supported access encryption options, please access the DCIG Interactive Buyer's Guide (IBG).

Instant VM Recovery

If a Deduplicating Backup Appliance offers the ability to recover a virtual machine, this indicates the speed at which recovery is possible.

Encryption EKM

Extensible Key Management (EKM) is generally used in a tape environment where a key is required to transfer data between users. EKMs may also be encrypted to provide an additional level of security.

Multi-stream Encryption

Deduplicating Backup Appliances may be able to encrypt data streams sent to a second location for replication. While most use encryption for this purpose, some may not be able to function in a multi-stream replication environment.

Encryption Methods (Total #)

The total number of encryption options is listed here, with possible options being AES-128 and/or AES-256 bit. These are security algorithms initially introduced by the U.S. Government. For additional details on supported access encryption methods, please access the DCIG Interactive Buyer's Guide (IBG).

Backup Accelerator Options (Total #)

Indicates if the midrange deduplicating backup appliance offers any software or option to accelerate the performance of backup software when doing backups. The total number of backup acceleration options is listed here. For a detailed list of exactly which backup accelerator options are supported, please access the DCIG Interactive Buyer's Guide (IBG).

Backup Accelerator Features (Total #)

Lists the number of backup accelerator features speeding the deduplication process. For example, Symantec's OST offers three accelerator features: optimized duplication, path to tape, and also optimized synthetics, a way of creating backup representations through a combination of full and incremental backups. For a detailed list of exactly which backup accelerator features are supported, please access the DCIG Interactive Buyer's Guide (IBG).

Bundled Software Licenses (Total #)

This lists what software licenses are bundled with the midrange deduplicating backup appliance when it is purchased. The total number of backup acceleration options is listed here. For a detailed list of exactly which backup accelerator options are supported, please access the DCIG Interactive Buyer's Guide (IBG).

Backup Software Natively Hosted (Total #)

This indicates whether or not backup software is hosted on the appliance. Backup software can be hosted on the

Appendix A—Definitions, Explanations and Terminology (continued)

appliance or accessed through the appliance and hosted elsewhere. The total number of backup software products natively hosted is listed here. For a detailed list of exactly which backup software products are natively hosted, please access the DCIG Interactive Buyer's Guide (IBG).

Cloud Providers (Total #)

Indicates if the deduplicating backup appliance provides direct access to cloud storage and which cloud providers are offered as available options. The total number of cloud providers supported is listed here. For a detailed list of exactly which cloud providers are supported, please access the DCIG Interactive Buyer's Guide (IBG).

NDMP

Network Data Management Protocol (NDMP) is a protocol for moving data to a backup appliance without going through the backup server, in turn providing a direct path to backup. Network Data Management Protocol expedites the backup process.

Backup Software Streams Recognized (Total #)

Deduplicating backup appliances integrate with various backup software products. The number of backup streams recognized indicates how many backup streams the appliance recognizes from the backup software; a higher number means it can duplicate its backup stream in a more optimal manner. For a detailed list of exactly which backup software streams the appliance recognizes, please access the DCIG Interactive Buyer's Guide (IBG).

Native Backup Software Mgt (Management)

This lists the various backup software products which can manage the deduplicating backup appliance. The total number of backup software products that can natively manage the appliance is listed here. For a detailed list of exactly which backup software products can natively manage the appliance, please access the DCIG Interactive Buyer's Guide (IBG).

Concurrent Deduplication/Replication

Indicates whether the Deduplicating Backup Appliance can deduplicate incoming data as it replicates or it must send the data to a second location for storage.

Compress/Encrypt Replicated Data

If supported, deduplication devices are able to encrypt or compress data as it is replicating, in turn providing an additional layer of security.

Replication Status by Backup Job

This indicates if the deduplicating backup appliance supports the replication of data associated with specific backup jobs.

Replication Types (Total #)

Indicates the maximum number of replication options supported by the midrange deduplicating backup appliance. The total number of replication types is listed here. For a detailed list of exactly which replication types are supported by the appliance, please access the DCIG Interactive Buyer's Guide (IBG).

Display Real Time Deduplication Ratio

Indicates if the midrange deduplicating backup appliance displays the deduplication ratio it is achieving in real time.

Hardware

Raw Storage Capacity (Max)

Lists the maximum number of raw storage capacity supported by the midrange deduplicating backup appliance.

Ethernet Ports (Max)

The maximum number of Ethernet ports (1 or 10 Gb) supported by the midrange deduplicating backup appliance.

FC Ports (Max)

The maximum number of FC (Fibre Channel) ports supported by the midrange deduplicating backup appliance.

Storage Networking Interfaces

Lists all of the storage networking interfaces supported by the midrange deduplicating backup appliance. Examples include 1/10 Gb Ethernet and FC.

Max # Storage Networking Ports

Regardless of the type of ports offered (1/10GbE or 4/8Gb FC) this shows the total number of ports supported by the deduplicating backup appliance.

Hot Swappable Drives

If hot swappable drives are available, the appliance does not need to be taken offline while a drive is changed out on the fly should one drive fail.

FC Support

Fibre Channel is used as a storage networking protocol to transmit data between computer devices, such as a server and a storage appliance.

Appendix A—Definitions, Explanations and Terminology (continued)

Concurrent FC/Ethernet Mix

Indicates if the midrange deduplicating backup appliance supports a concurrent mix of Ethernet and FC ports.

Max HDDs

The maximum number of internal hard disk drives (HDDs) that the midrange deduplicating backup appliance supports.

5.4K RPM SATA HDDs (Max)

This lists the largest capacity 5.4K RPM SATA HDD it supports.

7.2K RPM SATA HDDs (Max)

7.2K RPM SATA internal HDDs are offered on all midrange deduplicating backup appliances. This lists the largest capacity it supports.

SSDs

Indicates whether Solid State Drives (SSDs) are offered or if the Deduplicating Backup Appliances uses the more standard SATA disk drive. SSDs provide performance than SATA drives and use less power because they have no moving parts.

FC/SAS HDDs

Indicates that the deduplicating backup appliance uses either FC or SAS disk drives. Other options include SATA and Solid State Drives (SSDs), which are noted elsewhere on the data sheet. The types differ in their connection used. For example, SAS drives use the Serial Attached SCSI (SAS) serial protocol, as opposed to the Serial Advance Technology Attachment (SATA).

Concurrent HDD Mix

Indicates if the midrange deduplicating backup appliance supports a mix of different HDD types.

Cache (Max)

Indicates the maximum capacity of the midrange deduplicating backup appliance's cache storage.

Erasure Coding

Erasure coding offers data protection by breaking data into fragments. The fragmented data is then expanded and encoded with redundant data and stored across multiple disks or other storage locations.

Processor Cores (Max)

The number of processor cores offered by deduplicating backup appliances play a role in their processing speed.

The backup appliances in this report may contain dual or quad core processors and may have a number of each. This lists the maximum number of processor cores supported by the appliance.

Controllers (Max)

Lists the maximum number of controllers supported by the midrange deduplicating backup appliance.

Storage Networking Protocols

Lists the storage networking interfaces supported by the midrange deduplicating backup appliance. Examples include CIFS, FC, NFS, and OST.

VTL Interface

Indicates if the midrange deduplicating backup appliance offers a Virtual Tape Library (VTL) interface.

Partitions (Max)

Indicates if the midrange deduplicating backup appliance can be partitioned either logically or physically so each partition can operate as its own independent midrange deduplicating backup appliance with its own administrators. If supported, the maximum number of partitions is listed.

Concurrently Present NAS/VTL

Indicates if the midrange deduplicating backup appliance supports a concurrent mix of NAS and VTL interfaces.

Controller Configurations

Lists what controller configurations the midrange deduplicating backup appliance offers.

Global Deduplication

Global Deduplication is a way of configuring a multi-controller system so one controller does the deduplication and spreads the deduplicated data across multiple nodes.

Deduplication HA

High availability deduplication addresses a scale-out multi-node environment and guarantees an operational level of uptime.

Storage Capacity Expansion

Indicates if the midrange deduplicating backup appliance supports the addition of external storage capacity.

RAID Levels

Indicates what RAID options the midrange deduplicating backup appliance supports.

Appendix B—Technology Provider Contact Information

Technology Provider Contact Information

Dell, Inc.
1 Dell Way
Round Rock, TX 78682
+1.800.671.3355
http://www.dell.com

EMC Corporation
176 South Street
Hopkinton, MA 01748
info@isilon.com
+1.866.438.3622
http://www.emc.com

ExaGrid Systems, Inc.
2000 West Park Drive
Westborough, MA 01581
info@exagrid.com
+1.800.868.6985
http://www.exagrid.com

FalconStor Software, Inc.
2 Huntington Quadrangle, 2S01
Melville, NY 11747
+1 631.777.5188
http://www.falconstor.com

Hewlett-Packard Corporation
3000 Hanover Street
Palo Alto, CA 94304
+1.866.625.0242
http://www.hp.com

IBM Corporation
1 New Orchard Rd
Armonk, NY 10504-1722
callserv@ca.ibm.com
+1.800.426.4968
http://www.ibm.com/storage

NEC Corporation of America
2880 Scott Blvd
Santa Clara, CA 95050
+1.408.844.1475
http://www.necam.com

Quantum Corporation
1650 Technology Drive, Suite 700
San Jose , CA 95110-1382
+1.408-944-4000
http://www.quantum.com

Sepaton, Inc.
400 Nickerson Rd.
Marlborough, MA 01752-4658
+1.866.737.2866
http://www.sepaton.com

Symantec Corporation
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Mountain View, CA 94043
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