

Lab Validation Report

Drobo B1200i

Reliable, Easy to Use, Feature-rich Storage for SMB Environments

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June 2012

Contents

Introduction	3
Background	3
Drobo B1200i	4
ESG Lab Validation	7
Real-world Performance	7
Ease of Deployment	11
Advanced Features	15
ESG Lab Validation Highlights.....	18
Issues to Consider	18
The Bigger Truth.....	19
Appendix	20

ESG Lab Reports

The goal of ESG Lab reports is to educate IT professionals about data center technology products for companies of all types and sizes. ESG Lab reports are not meant to replace the evaluation process that should be conducted before making purchasing decisions, but rather to provide insight into these emerging technologies. Our objective is to go over some of the more valuable feature/functions of products, show how they can be used to solve real customer problems and identify any areas needing improvement. ESG Lab's expert third-party perspective is based on our own hands-on testing as well as on interviews with customers who use these products in production environments. This ESG Lab report was sponsored by Drobo.

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Introduction

This ESG Lab Validation documents hands-on evaluation and testing of the [Drobo B1200i](#)'s ability to support real-world SMB applications and infrastructures. Analysis indicates that Drobo's deep understanding of SMB needs enabled the creation of a powerful array that uses automation and intuitive design to deliver enterprise functionality in a remarkably simple package. Because the array, on its own, provides performance and capacity optimization, data-aware tiering, efficient provisioning and capacity reclamation, RAID protection, and more, the Drobo B1200i delivers sophisticated storage that can be managed by any IT generalist.

Background

Often operating with tight budgets and staffed by one or two IT generalists, smaller organizations search for solutions that minimize complexity and administrative intervention. Automation of storage management tasks can be a tremendous boon to these organizations, enabling IT administrators to focus on more productive tasks. While being smaller doesn't diminish their need for enterprise-class data protection, application availability, or capacity optimization, it does increase the benefits gained through simplicity and management ease.

Figure 1. Drobo B1200i Overview



As ESG founder Steve Duplessie wrote in a recent blog,¹

“Today, scarcity in IT is about time and money. That's why the mid-market—the SMB—is going to change the way the rest of the world operates ... [Your] decision time should be determining what is the easiest, best way to add capacity while DECREASING the scarcity effect of what does matter. How should I add capacity in such a way that decreases the amount of time I need to spend managing it, tuning it, praying to it, etc.—and that lowers my Op-Ex?”

As a Drobo user, Duplessie has firsthand knowledge of its benefit, benefits that small organizations and IT generalists appreciated. In a recent video,² he stated:

“Time is my scarcity value metric. Drobo saves me time ... I think our guys are believers. The less time any of us has to think about complex things, the better quite frankly. Capacity isn't a scarcity item any more—time is. Easy is what matters. If I'm right, and let's face it, I usually am, eventually, Drobo is going to be loved out in the marketplace. I want everything in my life to be as simple, technologically, as this device.”

¹ <http://www.esg-global.com/blogs/scarcity-imbances-why-the-smb-and-the-cloud-will-change-the-game/>

² <http://youtu.be/QyqrvqRW370>

Drobo B1200i

The Drobo B1200i is an iSCSI SAN array that offers enterprise-class features for SMBs. The product has been engineered with automation and technical sophistication that normally accompany only more expensive, enterprise products, but with ease of use that saves administrative time and cost. The B1200i provides high-performance, highly reliable, self-optimizing storage to support a wide variety of physical and virtual business applications and is easily integrated into a standard Ethernet network. It is also certified as primary storage for VMware vSphere, Microsoft Hyper-V, and Citrix XenServer virtualization platforms. For disk backup, the B1200i is certified for Symantec Backup Exec, Acronis ABR11 and vmProtect, and Veeam Backup and Replication.

The B1200i can accommodate any 3.5" SAS, SATA, or SSD drive from any vendor, regardless of drive speed or capacity specifications. With 12 3TB drives, 36TB of capacity is possible at the time of this writing; as higher capacity drives are developed in the future, the array's capacity potential will expand. Power supplies and cooling fans are redundant and hot swappable, and the controller card is field-replaceable. To expand capacity, you simply insert a new drive into a bay—an action that can take place without downtime or interruption to data access. The new drive is automatically included in the storage pool and instantly accessed without any administration. Bare drives—without clips, screws, or carriers—are inserted directly into any bay, and can be swapped out as needed.

Drobo BeyondRAID

Drobo's key technology is BeyondRAID, which provides enhanced data protection, reliability, and scalability with ease of use. While RAID technology has been a staple in the data center since the 1980s, its complexity and restrictions have made it difficult for SMBs to take full advantage of it. For example, in traditional arrays, once RAID levels are assigned, capacity expansion or RAID alteration requires downtime and data migration as well as sufficient staging capacity for the transition. In addition, a drive failure leaves most RAID implementations vulnerable to data loss while slowing performance.

BeyondRAID eliminates complexity and interruption by performing all RAID functions automatically in the background, without any intervention from the IT administrator. Zones are created using multiple drives; these zones (carved up into 4k clusters) are the units of redundancy that enable data to be protected at all times using a combination of various striping with parity and mirroring options. With traditional arrays, RAID groups must contain drives that are the same size, but the B1200i has no such restrictions. Its redundancy zones enable protection utilizing drives of mixed capacity.

The only choice the user has for RAID configuration with Drobo is whether to have single disk redundancy or dual disk redundancy (DDR). By default, the B1200i has DDR enabled, investing capacity so that the system will tolerate up to two simultaneous drive failures without losing access to data. This is similar to RAID 6, but available across any combinations of drives. This innovative setting can be changed on the fly at any time; disabling it will instantly expand the available storage pool as the double parity capacity is marked as free. Enabling it is just as easy, as long as there is sufficient free capacity in the system to store the double parity.

Drobo uses a combination of striping with parity and mirroring based on the drives in the array so that capacity and protection are optimized at all times. Protection is the highest priority: data cannot be placed in the array if it cannot be protected, so the system only expands to the point where all stored data will tolerate the failure of any drive(s). All RAID management is automatic, so there is nothing to configure. Should a drive fail, the B1200i automatically lays out the data again to return to a protected state; data remains accessible during this process and there is no impact to performance or protection levels.

Traditional RAID systems use hot spares that waste storage capacity—these are physical drives that sit idle and are only used in the event that another drive fails. The B1200i uses a virtual hot spare that is created out of unused capacity in the storage pool; if a drive fails, the B1200i will automatically move data to free space on other drives, returning the system to a fully protected state. In essence, it automatically recovers from a drive failure by using the free space available.

The array is data-aware; that is, it knows where data is and where it isn't. As a result, RAID rebuild times are proportional to the amount of data; smaller data volumes require shorter rebuild times. This is different from traditional RAID-protected arrays, which require a lengthy rebuild regardless of volume size.

Automated Data-aware Tiering

The Drobo B1200i also supports SSD drives, and automatically stores transactional data to SSD for high performance and non-transactional data to bulk drives—a feature that until now was not available for arrays of this size or price point. Tiering is not unique to Drobo B1200i, but the method in which it is delivered, as well as the entry price for the acceleration it provides, is innovative. Other SMB solutions using traditional RAID can support SSDs in a separate RAID group, but do not have an architecture that enables the level of automation Drobo has developed.

This automated, data-aware tiering is done as data enters the array, rather than having data first placed on a drive and then moved to the appropriate tier; this ensures that both writes and reads are optimized, speeding performance for all users. Mixed data types automatically go to the best location so that storage is application-optimized without manual tuning. In addition, once it is stored, data that becomes “hot” will be automatically moved to the transactional SSD tier while “cold” data will be moved to bulk capacity. No configuration is required—once you insert an SSD into the array, tiering occurs automatically.

Up to 255 Drobo Smart Volumes can be created in seconds and managed easily. Smart Volumes use storage capacity pulled from a common pool instead of assigned to an application by LUN. The B1200i's intelligent engineering obviates the need for volume resizing and data migration as you grow, and prevents imbalances that are common when volumes must be assigned to specific RAID groups to get the right performance.

All configuration and management is done in the background without interrupting operations. In addition, system information is stored on the disks, so the disk pack can be re-ordered or removed and placed in another chassis, and operations continue as normal with configuration or attention required. This is a very significant benefit to users, particularly in smaller organizations, as tiering data to optimize capacity and performance is a labor-intensive endeavor. Up-front capacity and performance planning is complicated and time-consuming, and provisioning storage across tiers in the right way requires more resources. As behaviors change, ongoing management and re-configuration are required, which is not the case with the automated Drobo B1200i.

Ease of Use

Simple management is a hallmark of the Drobo B1200i array. As noted, disks are inserted without a carrier: simply press the latch and slide the drive in like a printer cartridge or video tape. The front bezel is easily removed and replaced, as it is secured only by magnets.

Red, yellow, and green lights on the system indicate system health and drive status for each bay, and ten blue lights indicate the percentage of capacity in use. When the system reaches 85% full, a yellow light indicates the user should “Add A Drive Soon.” Most system management and maintenance can be done using the lights on the front panel. The free Drobo Dashboard client application for Windows or MacOS provides monitoring of all Drobo arrays accessible over the network in a single pane; arrays are automatically discovered on the local subnet, and any Drobo can also be added by IP address. From the dashboard, an image of the front panel for each is displayed. The few necessary tools (for device naming, firmware updates, and shut down) display automatically once a system is selected. The dashboard displays detailed status information for each device, and e-mail notifications can be configured to alert administrators as needed.

Thin Provisioning

One of the toughest challenges the IT generalist faces with storage management is deciding how much space is needed for a server or application. If you allocate too little, you may run out of space; allocate too much, and you waste valuable storage resources by tying it up on one system. Thin provisioning is a fundamental capability of BeyondRAID, allowing the user to allocate storage today from a shared pool, while allowing future expansion of the shared pool by just adding a drive to Drobo or replacing an existing drive with a larger one. Drobo allocates capacity on write, so servers only use capacity from the shared pool when they write data. This makes provisioning much simpler, allowing for significant cost savings as the anticipated capacity over the lifecycle of an application or server can be virtually provisioned up front without having to buy all of the storage. As mentioned previously, expanding the physical storage pool is as simple as adding a drive and the entire internal configuration is done automatically. In addition, it enables thin reclamation, automatically reclaiming storage capacity as files are deleted. This prevents free capacity from being tied up by individual servers.

ESG Lab Validation

ESG Lab performed remote hands-on evaluation and testing of the Drobo B1200i storage solution leveraging system resources located at the Drobo Corporate Headquarters facility in San Jose, California. Using industry standard tools and methodologies, ESG testing was designed to demonstrate the performance benefit achieved for real-world SMB workloads with an all-hard-drive configuration as well as with the introduction of SSDs for a hybrid solution to accelerate transactional performance. Also of key interest was validating the ease of deploying and managing the B1200i and exploring the enterprise-class features included in the array.

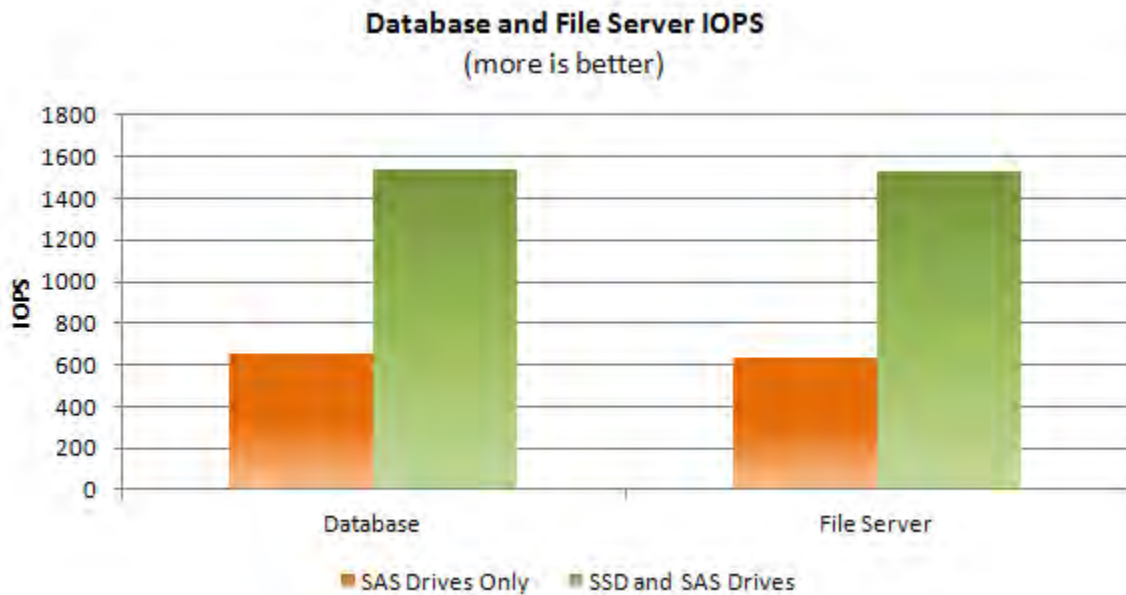
Real-world Performance

Real-world performance is the measurement of a solution’s ability to support a combination of applications typical in today’s IT environments. The methodology presented in this section of the report was designed to assess the mixed workload performance of a B1200i in virtual server environments. This is different from conventional benchmarks, which are designed to measure the performance of a single application running on a single operating system inside a single physical computer. ESG’s approach simulates a combination of servers that would typically be found in a small IT organization, producing meaningful results that can be applied directly to an SMB environment.

ESG Lab Testing

ESG Lab tested the performance of a B1200i with a focus on two main areas: (1) the overall performance impact of Automated Data-aware Tiering on accelerating I/O and throughput and (2) its ability to enable the solution to support real-world mixed workloads by simultaneously scaling applications. The Lab selected three applications common to small and medium-sized businesses: e-mail, database, and file server. Performance tests were run using two industry-standard tools: Jetstress for the e-mail application and Iometer for the other two. Figure 2 shows the performance benefit of the SSD devices with Automated Data-aware Tiering on I/O-intensive workloads.

Figure 2. Database and File Server

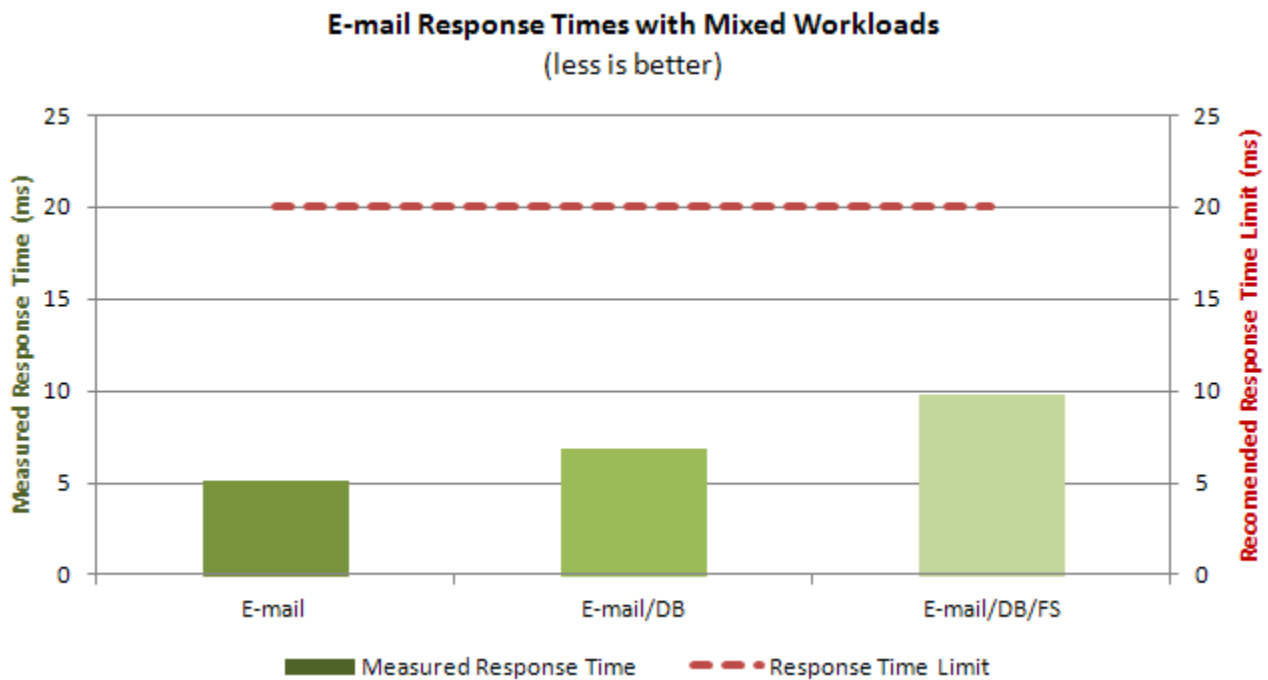


What the Numbers Mean

- HDD-only configurations deliver the IO performance that a typical SMB would require in a small virtual server environment.
 - 500-600 IOPS support a pair of clustered virtual hosts running file server and database workloads typical of organizations with 250 or fewer users.
- The addition of SSD and Automated Data-aware Tiering improved I/O-intensive workload performance.
 - Database operations improved by 2.3 times over an SAS-only configuration.
 - File server operations improved by 2.4 times over an SAS-only configuration.
- NOTE – For IT generalists not familiar with the acronym, IOPS (input/output operations per second) is a common performance measurement used to benchmark computer storage devices like hard disk drives (HDD), solid state drives (SSD), and storage area networks (SAN). The typical IOPS for a single 7,200 rpm HDD is approximately 75-100.

Next, Jetstress was configured to emulate 500 users with 200MB mailboxes performing typical Exchange operations at an IO rate of 0.18 IOPS per mailbox. A response-time goal of 20 milliseconds or less for database reads is required to pass the test. These values are defined by Microsoft as a limit beyond which end-users will feel that their e-mail system is acting slowly.³ Figure 3 shows the e-mail response time as applications are added.

Figure 3. E-mail Response Times



Workload	E-mail Response Time	# of Database Customers	# of File Server Users
E-mail Only	5.118	N/A	N/A
E-mail/OLTP	6.877	10,600	N/A
E-mail/OLTP/File Server	9.847	4300	10,411

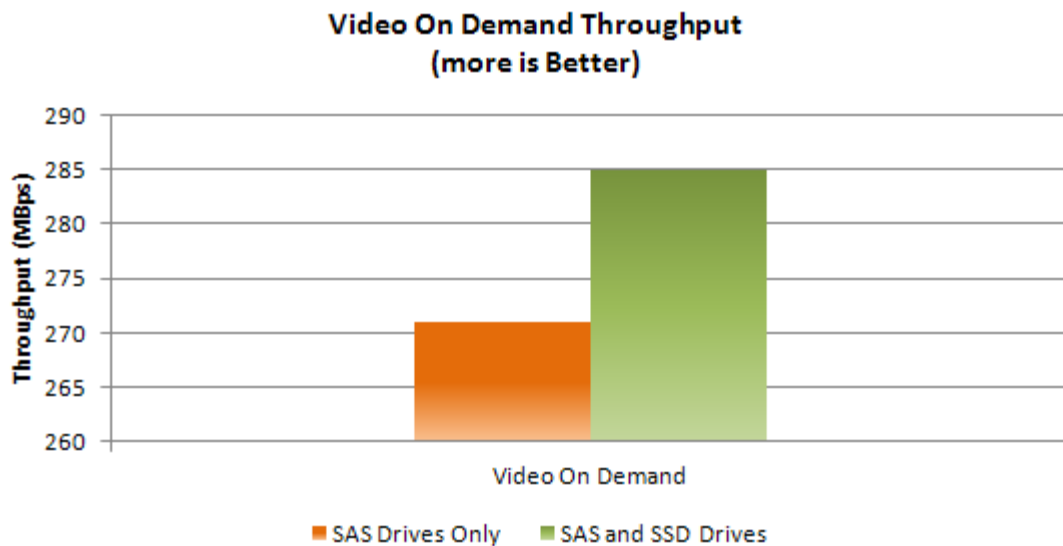
³ [http://technet.microsoft.com/en-us/library/bb738152\(EXCHG.80\).aspx](http://technet.microsoft.com/en-us/library/bb738152(EXCHG.80).aspx)

What the Numbers Mean

- The SSD configuration enabled the B1200i to handle all three workloads.
- The SAS configuration was able to support two workloads simultaneously (file server and e-mail).
- Response time for e-mail was well below the Microsoft recommended limit.
 - The SAS configuration with the e-mail-only workload can support the 500 mailboxes.
 - The SSD configuration with the e-mail-only workload can support up to 1,200 mailboxes.
- The database workload was able to support 43 concurrent users, which translates to DB of 4300 customers.⁴
- The file server workload was able to support up to 10,411 users.

Finally, ESG Lab ran the Iometer utility, emulating large file video-on-demand. Figure 4 shows the performance improvement gained by adding SSD drives to the configuration for this throughput-intensive workload.

Figure 4. Video on Demand



⁴ <http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA1-5661ENW.pdf>

What the Numbers Mean

- The addition of SSD and Automated Data-aware Tiering also improved system throughput.
- With SSD, video on demand large file reads improved by 5% over the SAS-only configuration.
 - SSDs can benefit throughput, but have less of an impact on streaming performance, which is usually not bound by the IOPS of each hard drive like in transactional workloads.

Why This Matters

While SSDs can greatly increase application performance, SMBs have traditionally been unable to take advantage of them. First, SSD arrays are often too expensive for SMBs, especially when trying to deploy enough capacity for high-speed storage. Second, SSD devices are commonly managed in a separate storage pool, with administrators manually provisioning the volumes they desire performance for, or, if there is tiering, assigning tiering policies. This level of storage management is not practical for most SMBs with minimal staff time to spare. In addition, it is difficult to identify which data is transactional, particularly when mixed characteristics are present.

The Drobo B1200i provides acceleration for all volumes within the array, enabling SMBs to affordably deploy capacity and performance together without having to sacrifice one for the other. With its automated tiering, it identifies transactional data as it enters the array and automatically stores it on SSD, speeding both reads and writes. Intelligent, automated tiering enables SMBs to speed application performance in a cost-effective solution without increasing management tasks up front and over time as characteristics change.

ESG Lab validated that with SSD devices and Automated Data-aware Tiering, the B1200i array was able to easily support an SMB-sized mixed workload environment running e-mail, database, and file server simulated applications. For some SMBs (e.g., <150 users), the SAS-only base configuration could provide ample I/O performance, with the option of adding SSDs to accelerate transactional I/O or scale-up I/O performance as the environment grows.

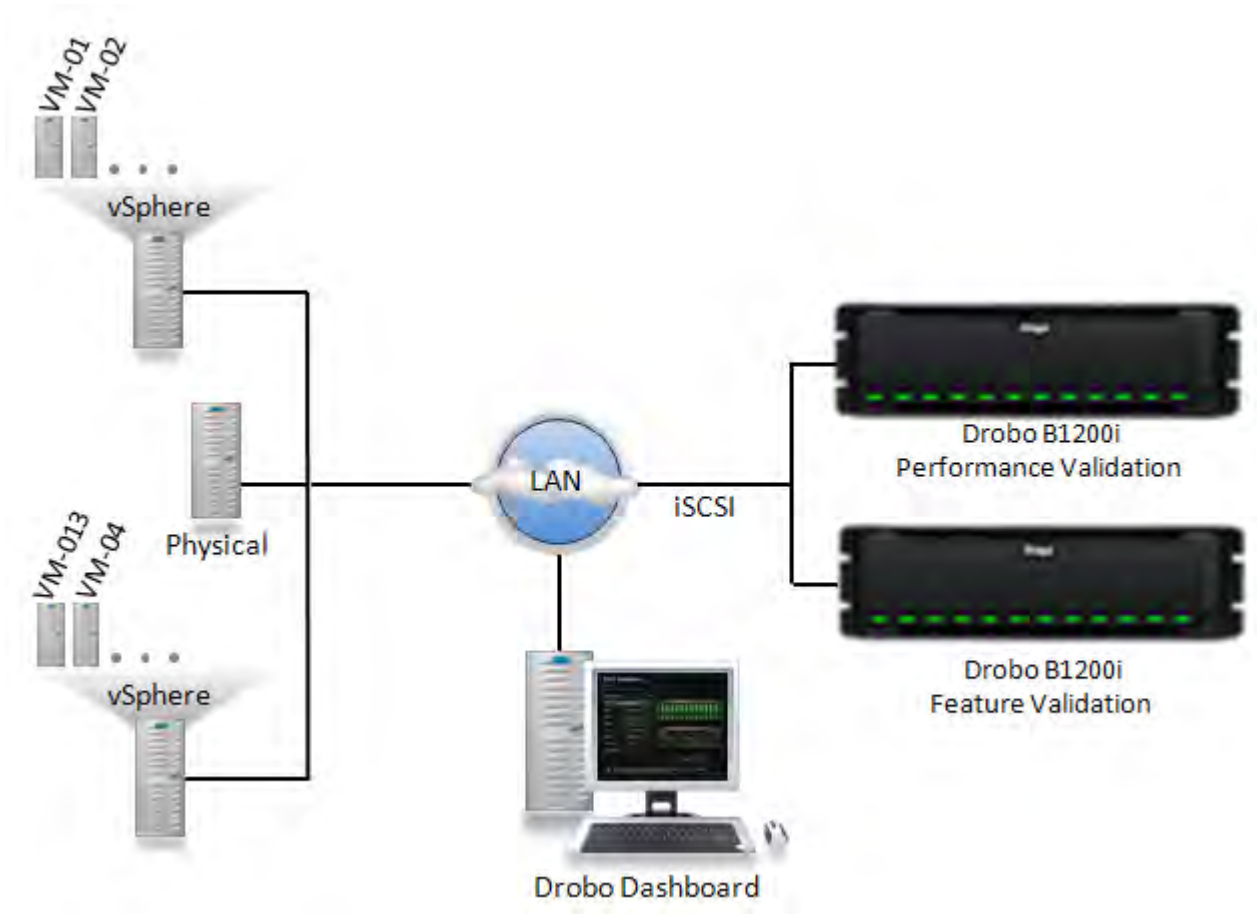
Ease of Deployment

Next, ESG Lab explored the out-of-box setup experience of the B1200i. This included basic network configuration, exploration of the administrator GUI, and provisioning of storage to the hosts in the test environment.

ESG Lab Testing

ESG Lab began deployment testing by working with Drobo technical team members to add an array to the existing test bed environment shown in Figure 5. The test environment includes both physical and virtual hosts, as seen on the left side, and a pair of B1200i storage arrays shown to the right. One array was used to support the performance testing conducted in the previous chapter, the second was used to explore features and functions of the B1200i. Both arrays are connected to the hosts via the test environment LAN using the iSCSI protocol. The diagram shows the high level connectivity map. The actual network included multiple Ethernet connections and hosts configured for multipathing.

Figure 5. The ESG Lab Test Bed



As shown in Figure 6, the Lab used the discovery feature within the Drobo Dashboard administrator interface to identify the B1200i validation environment array, as well as display other Drobo arrays configured on the same network. Drobo Dashboard is a free client application for Windows or MacOS that manages all Drobo systems.

Figure 6. Drobo Discovery



As shown in Figure 7, at the completion of the quick discovery process, ESG Lab used the Drobo Dashboard to view the status of the arrays in the environment. Other Drobo systems not in the same network as the system running Drobo Dashboard can be managed by adding them by IP address. The benefit is unified management of multiple systems across one or many networks from a single view, enabling the simplicity of scale-up architecture in a scale-out model where controllers and network ports are added as the environment grows.

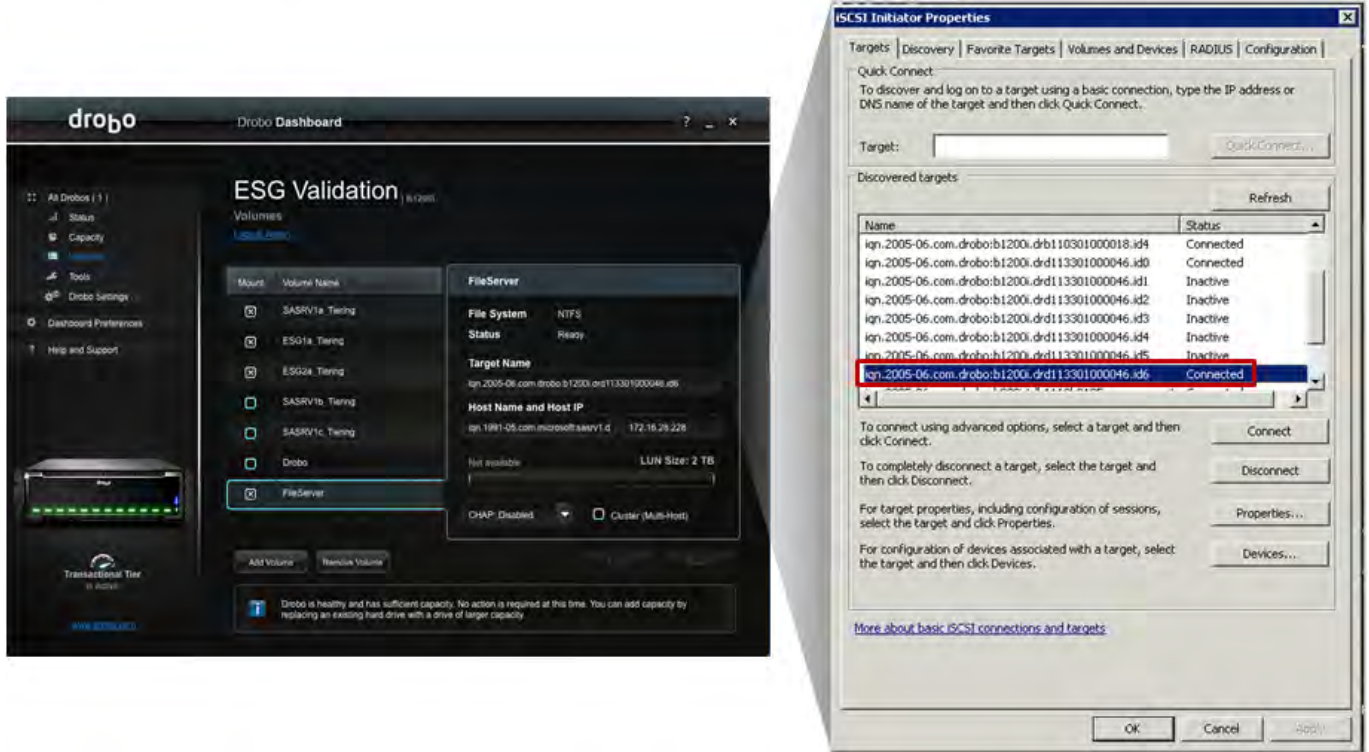
Figure 7. All Drobos View



The left side of Figure 7 shows the icon view of the ESG Lab B1200i, as well as seven other Drobo arrays found in the environment. The green bar on the right side indicated the health of each unit. The expanded view on the right side shows a detailed view of the volumes management pane of the test array. The benefit of this management framework for SMB IT managers is very simple visibility of system status.

Next, the Drobo Dashboard was launched from a physical Windows 2008 server in the test environment. As shown in Figure 8, the volumes tab was selected to provision storage to the physical server. The Lab selected the “Add Volume” button to start the provisioning process. Users are never more than two clicks away from provisioning storage volumes.

Figure 8. Volume Creation and Provisioning

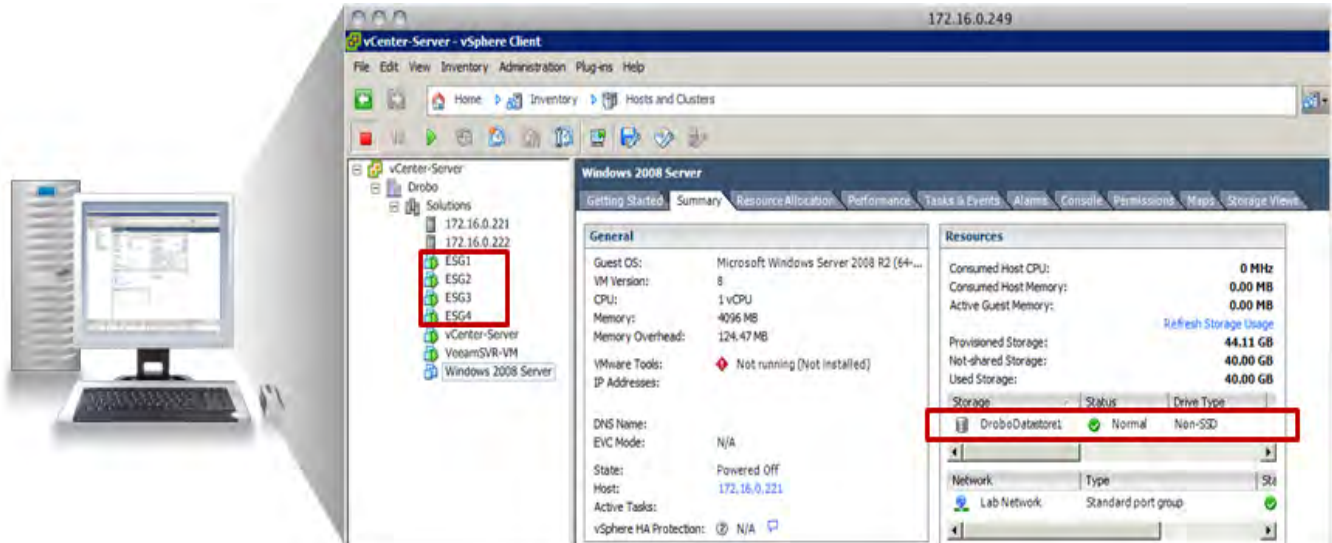


Through the Drobo Dashboard, the thin provisioned volume (FileServer) was created, presented to the server, and formatted with NTFS for use. The entire process, including iSCSI mapping, was conducted from the dashboard. This benefits users that are new to iSCSI by eliminating the need to learn how to map iSCSI targets manually; a simple check of a box for the volume performs all of the iSCSI initiator settings in the background.

The right side of Figure 8 shows the Windows server view of the iSCSI target mapping that was updated on the host as part of the add volume process. The red box shows the iSCSI identifier of the new B1200i volume that was added to the server.

Finally, ESG Lab used the VMware vSphere Client to validate the virtual machine configuration of the test bed. The Lab also used vSphere to confirm the process of adding a Drobo-provisioned VMFS datastore to the virtual test environment. As shown in the red box on the right side of Figure 9, the virtual machine Windows 2008 Server was created on the B1200i (DroboDatastore1) datastore. The red box on the left side of Figure 9 shows virtual machines ESG1 – ESG4; these VMs ran the workloads in the performance section of this report.

Figure 9. vSphere Client Test Environment View



Why This Matters

SMBs generally run with bare-bones IT staffing. They hire for the skills they most need—often Windows or VMware expertise—and ask these employees to take on myriad additional tasks, including storage administration. Another strategy in a salary-constrained environment is to hire temporary storage administrators for specific tasks during specific time periods. Given these circumstances, the more a storage array can be self-managing and minimize the amount maintenance time required, the better it is for IT organizations of any size.

Drobo arrays are designed with a level of management ease that goes beyond traditional IT. The same management simplicity included in “prosumer” storage systems (designed for home users with no IT staff) is included on the B1200i and other business-level products. ESG Lab validated the remarkable ease of administration while testing the SSD capability features of the platform.

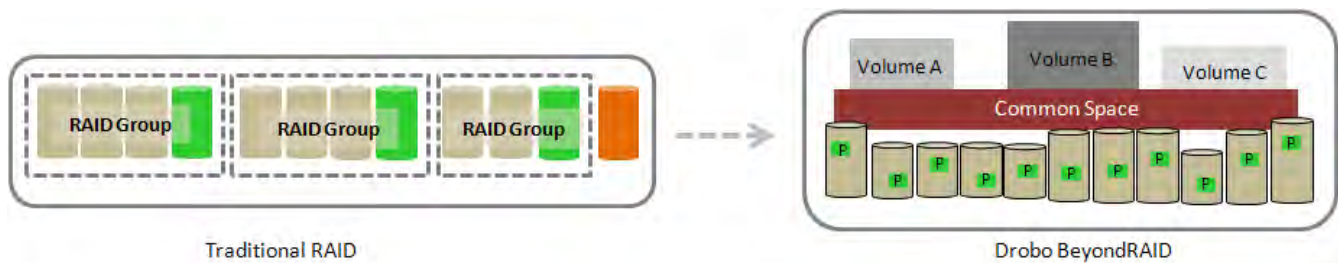
Advanced Features

The B1200i's innovative and advanced feature set enables it to deliver advanced storage functionality without the administrative overhead and complexity of other solutions. Its patented BeyondRAID technology removes the boundary silos of traditional RAID by abstracting the physical disk into a common space upon which thin provisioned protected volumes can be created. Automated Data-aware Tiering moves active hot data to the fastest available device for best performance, while an industrial chassis design and simple to use management interface make the few remaining administration tasks easy to tackle.

ESG Lab Testing

ESG Lab started its enterprise-class features validation testing of the B1200i with a review of the BeyondRAID technology. This technology enables many of the advanced storage functions available in the array. The left side of Figure 10 shows the traditional RAID paradigm with rigid hard boundaries of like-sized disks grouped into sets with dedicated parity and hot spare drives. The right side of the figure shows the Drobo approach, with parity protection spread across a set of different-sized disks to create a dynamic common space for volume creation. This eliminates otherwise necessary volume management software that spans disk groups to create a scalable environment.

Figure 10. Traditional RAID vs. Drobo BeyondRAID



Next, to demonstrate the protection and scale features of the B1200i, ESG Lab used the Device Operations tab within the Drobo Dashboard interface. As shown in Figure 11, the Lab turned on the “blink lights” option to identify the ESG array from the other array in the data center environment.

As shown in the upper left of Figure 11, a disk drive was removed from the array to confirm continuous operations and availability of the B1200i with a disk drive fault. Host-side data access to the B1200i volumes was tested by modifying files on the Drobo volumes with the missing drive. The middle of the figure shows the replaced drive capacity being incorporated back into the system.

Figure 11. Drive Replacement Process



As shown at the bottom right of Figure 11, the B1200i recovered fully from the missing drive scenario, as one would expect from a RAID system. What was observed to be different with Drobo was the ease of replacing the drive: the entire process could have been carried out exclusively by following the simple lights on the system itself. Rebuilding was automatic with the virtual hot spare, and the addition of a new drive increased available capacity for the shared storage pool without any administrator action within the GUI.

It should be noted that the process for replacing a faulted drive can also be used to dynamically increase capacity on the array, as BeyondRAID allows drives of lesser size to be replaced with larger drives in a running environment. As a result, IT administrators can increase capacity simply and easily. Traditional methods would require migrating data off of the array, replacing the drives with larger drives of all the same size, and migrating the data back to the array. With the B1200i, you simply remove a 2TB drive and replace it with a 3TB drive with no data migration or re-configuration.

Finally, ESG Lab tested the thin reclamation functionality of the B1200i array. As shown on the left side of Figure 12, the ESG benchmarking system was consuming 79% of the system's capacity and had only 21% free space remaining. The Lab deleted unused data from a test and development directory on the virtual machine. As shown on the right side, the deleted volume space was automatically given back to the system, resulting in an immediate 4% increase in available free space for existing thin volume growth of the creation new volumes. Without Drobo's BeyondRAID technology, the capacity from the deleted data would not have been immediately available to other applications and hosts until the LUN was reassigned.

Figure 12. Thin Reclamation



Why This Matters

For the IT budget-holder, the economy is showing some signs of recovery, but not enough to redirect business focus away from efficiency and cost reduction. ESG research indicates some increase in IT budgets, but a full 40% of survey respondents reported their 2012 IT budgets staying flat or decreasing relative to 2011.⁵ In this environment, the search for simple solutions that increase efficiency by automating management tasks remains a high priority.

ESG Lab validated the enterprise-class features of the Drobo B1200i, demonstrating thin provisioning and thin reclamation, and optimizing storage capacity to streamline CAPEX. In addition, tiering was automatically initiated upon the introduction of solid-state drives without administrator intervention. These features alone would not enable smaller organizations to take advantage of the CAPEX savings; the ease with which Drobo delivers the enterprise features is what makes the technology approachable for SMBs, enabling them to derive significant savings on infrastructure.

⁵ Source: ESG Research Report, [2012 IT Spending Intentions Survey](#), January 2012.

ESG Lab Validation Highlights

- ☑ Using industry standard tools and methodology to test performance, ESG Lab confirmed the B1200i's ability to easily support the application (e.g., e-mail, database, and file services) demands of today's small and mid-sized business. With tiering and SSDs, transaction performance more than doubled, helpful to SMBs that deploy HDD-only to start, but need to scale transactional performance as their e-mail or database workloads grow.
- ☑ ESG Lab confirmed that the Drobo B1200i was easy to set up and manage not just because the administrator interface was intuitive and easy to navigate, but also because many standard storage configuration and management tasks have been automated. The B1200i design philosophy makes deploying iSCSI storage quick and easy even for those new to the storage space.
- ☑ The Lab validated the ability to provision server storage without worrying about picking the best RAID type or RAID group for the back-end disk configuration; the B1200i does this for you. It was refreshing to simply focus on the storage from the server perspective. It was almost as simple as configuring an internal mirror set with the added benefit of having shared, dynamic, and scalable iSCSI storage that can also optimize transactional performance automatically with SSDs.
- ☑ IT environments are dynamic. ESG Lab was pleased to confirm that not only could the B1200i provide efficient thin provisioned volumes to the infrastructure, but it could also do thin reclamation. As soon as space was freed up in the environment, the B1200i had it ready and available for use elsewhere. This feature adds great flexibility in capacity management, eliminating hours of reconfiguration, data migration, and possible downtime.

Issues to Consider

- ☑ For best performance, Drobo recommends using a dedicated network switch for iSCSI data traffic, in keeping with common industry best practices
- ☑ The Drobo B1200i is extremely flexible when it comes to adding or replacing a drive and does not require a specialized drive sled. Because of this, best practice dictates that the drive be checked for existing data before use in the array as data loss will occur when the drive is automatically formatted for use.
- ☑ Drobo flexibility also allows for the free choice among virtually any drive for the B1200i, SATA, SAS, and SSD. Best practices dictate that "enterprise" or server-grade drives be selected to ensure the longest useful life for the drive under demanding conditions in a mixed-workload server environment.
- ☑ At the time of testing, the Drobo B1200i was not listed as certified for Microsoft Server 2008R2 clustering and Hyper-V virtual infrastructures for live migration. The version of firmware tested during the validation included enhancements over prior Drobo firmware. In parallel with the validation project, Drobo completed certification testing and initiated submission to Microsoft for inclusion in their HCL. ESG Lab hopes to see Hyper-V support for B1200i posted on the Microsoft HCL, as we note growing adoption of this virtual platform in the field and believe the B1200i would pair well.

The Bigger Truth

The growing complexity of IT can be especially burdensome for SMBs. Many organizations don't have the resources to hire dedicated staff to handle servers, networks, and storage; instead, they often rely on a single individual or a small team of generalists to handle it all. However, the fact that the IT staff may be smaller doesn't change what business managers expect in terms of application availability, data access, and data protection. In addition, IT is being asked to keep up with emerging trends such as incorporating virtual servers or D2D data protection solutions.

A solution like the Drobo B1200i, one that takes management tasks off the administrator's plate, offers significant benefits. The B1200i can save staff time and effort while providing enterprise-class availability, protection, and even performance-based tiering. For example, the server administrator can handle storage without any specialized training or expertise because the Drobo array does all the work, including optimization. Organizations can hire staff with broader skill sets and still offer SAN storage features fit for an enterprise. They can eliminate storage consultants normally used to set up or re-configure storage to meet their changing business needs.

As ESG research indicates, speed of payback and ROI are as important as improving business processes and reducing costs. With the B1200i, payback is immediate: as soon as the Drobo is installed, IT gains back storage management time that can be put toward other tasks. It also regains productivity due to uninterrupted data access regardless of what is going on in the array, performance via automated tiering using SSD drives, and storage capacity through thin provisioning and reclamation.

ESG Lab confirmed that the Drobo B1200i with Automated Data-aware Tiering and SSD drives could easily support the performance required by real-world, mixed-workload environments of a typical SMB or department in larger organization. The array easily supported e-mail performance that was well within Microsoft's recommended response time limit while also supporting a 4300-customer database and 10,411 file server users. The Drobo B1200i fits into the storage market in a unique way, targeting the SMB segment.

The tagline Drobo has adopted speaks volumes: "Small box, big storage." Drobo arrays are designed to be the size and style that SMBs need: big enough to handle multiple business applications with enterprise features, but without taking up much budget or space—and that means not just physical space in the data center, but also space on the administrator's task list. Drobo provides heaps of enterprise-class functionality, including high availability, RAID protection, data-aware tiering, thin provisioning and reclamation, flexibility, and scalability while requiring little in the way of administrative time. All configuration and management is done automatically in the background, while data access continues uninterrupted. Drobo also makes arrays designed for consumers who have no IT departments to depend on—the array does all the work for them. Bringing this level of automation to the SMB market can vastly simplify the lives of SMB IT staff.

As a final note, some additional thoughts from a blog by ESG Founder Steve Duplessie:

"Stop thinking that complexity equates to value or competitive advantage—it doesn't. I have two examples: Apple and Drobo . . . I have a Drobo. If I need more capacity, I add a drive. I don't care if it's the same size or current generation—it just works. I don't need to 'administer' anything. I don't set up RAID, it figures it out. I rip out one drive, plopp in a bigger one, and it just grows itself and reconfigures itself such that it's optimized and protected. I have no idea how. I couldn't care less. It just works."

Appendix

Table 1. ESG Lab Test Bed Detail

Storage	
Drobo	Model B1200i Firmware 1.1.1 (12) 2TB SAS drives
Drobo	Model B1200i Firmware 1.1.1 (9) 2TB SAS (3) 200GB SSD
Servers	
Dell Precision	Model T610 CPU Xeon E5504 (2.0Ghz) RAM 12GB
Network	
Dell PowerConnect	Model 5448 Firmware 4.0.1.11, A02
Software	
Windows	Version 2008 R2 Datacenter
VMware vSphere	Version ESXi 5.0
Iometer	Version 1.1.0
Jetstress 2010	Version 1.0.0.11



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