Lab Validation Report

Symantec Backup Exec 3600 Appliance

Evaluating the Out-of-the-Box Experience

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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 Symantec.

Introduction

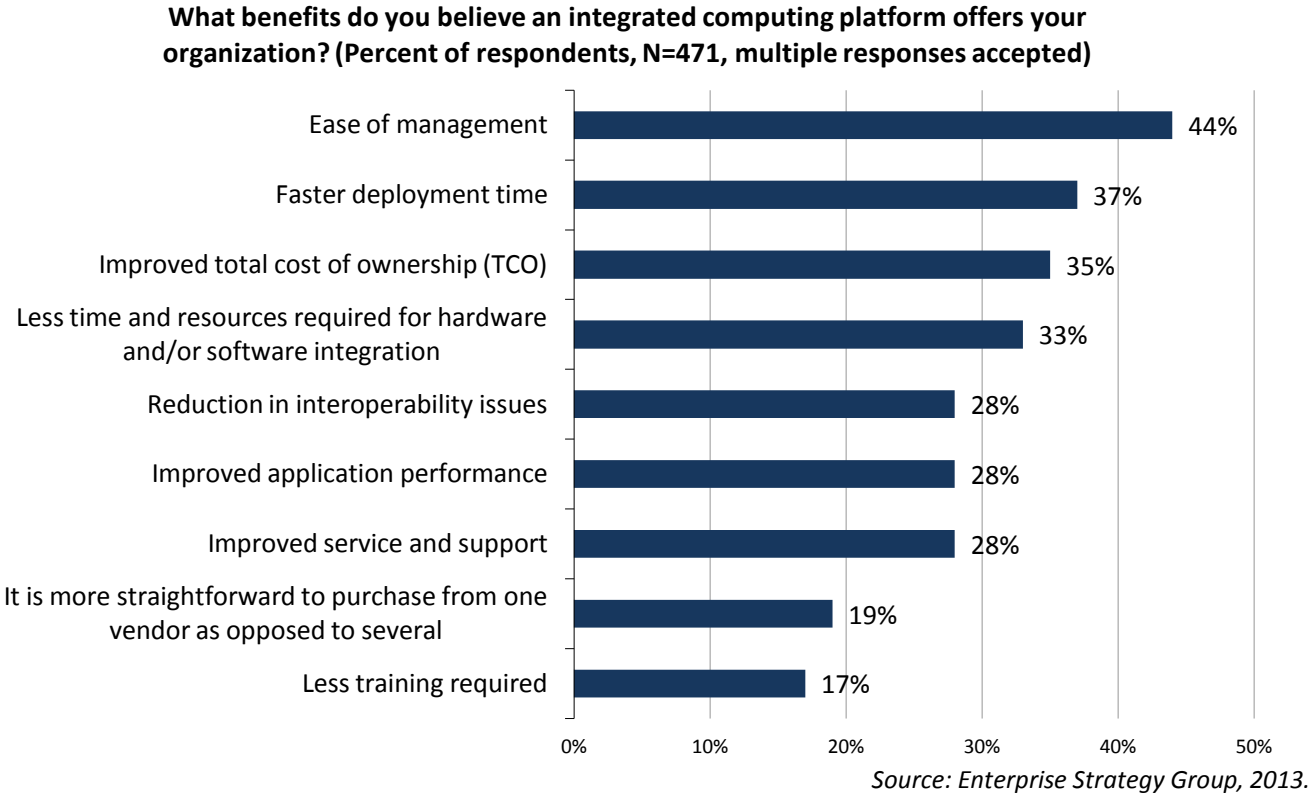
This ESG Lab Validation report documents hands-on testing of the Symantec Backup Exec 3600 Appliance, which offers advanced data protection for virtual and physical environments. The report focuses on the out-of-the-box experience, ease of management, and cost-effectiveness.

Background

Data protection continues to be one of IT's most pressing challenges. In ESG's 2013 Spending Intentions Survey, improving data backup and recovery was second on the list of top IT priorities for the year.[1] Backup and recovery processes continue to be impacted by ongoing growth of data volumes and expanding virtualization, as well as the standard challenges of reducing costs and backup/recovery times. Matching individual data protection solutions and storage to data types – physical vs. virtual, by hypervisor, or by application – complicates the landscape. In addition, a shortage of IT skills, particularly in remote offices, can make data protection unreliable.

Integrated computing platforms such as appliances can mean the difference between success and failure, offering relief from having to acquire and integrate backup software, equipment, and capacity reduction methods for each data type. Appliances can ease the burden on data center and remote office IT staff and ensure a successful implementation. ESG research bears this out. Figure 1 below shows the benefits that respondents to a recent survey experienced: simplified management; faster deployment time; improved TCO; reduced integration time and cost; fewer interoperability issues; better application performance. Equally compelling, organizations that had already deployed integrated solutions were *more likely* to report benefits across the board than potential adopters (see Figure 1).[2]

Figure 1. Benefits of Integrated Computing Platforms



Source: Enterprise Strategy Group, 2013.

[1] Source: ESG Research Report, *2013 IT Spending Intentions Survey*, January 2013.
[2] Source: ESG Research Brief, *Integrated Computing Trends*, March 2011.

Symantec Backup Exec 3600 Appliance

The Backup Exec 3600 Appliance is an all-in-one, integrated hardware and software solution for virtual and physical backup and recovery. It comes pre-configured with Symantec Backup Exec 2012 and agents to support Microsoft Exchange, SQL Server, SharePoint, Active Directory, Lotus Notes, Oracle, VMware, Hyper-V, and more. The Backup Exec 3600 Appliance is easy to deploy and integrate into a current backup environment, and is managed through a web-based console. Other features include:

- Configured with 16GB of RAM and 5.5TB of RAID5, deduplicated storage. The operating system is on two mirrored Solid State Hard drives (SSD).
- Able to protect 20TB of front end data with integrated, block-level deduplication across all backup jobs. Actual capacity depends on the redundancy your data.
- Factory-hardened OS secured with Symantec Critical System Protection
- Supports replication between Backup Exec 3600 Appliances or any managed Backup Exec Media Server
- Built-in SAS card for tape out
- Redundant NICs, power supplies, and fans
- Intel Xeon Quad Core Processor and Chipset

Backup Exec 2012

Backup Exec 2012 software comes pre-installed on the Backup Exec 3600 Appliance. Continuing Symantec's long tradition of advanced data protection, it is a single application for virtual and physical backup, supporting VMware and Hyper-V as well as Windows, Linux, and Macintosh environments. Advanced features include bare metal disaster recovery (DR), fast recovery via physical to virtual conversion, granular recovery options, and a redesigned administrative console that reflects the new server-focused (rather than job-focused) protection approach.

The server-focused management approach makes it easier to handle scale and trouble shooting. Backup jobs can be defined for groups of components for ease of use, while in the background individual jobs are created so that IT can customize as needed. This enables flexibility and ensures fast, easy resolution of individual backup failures. The customizable, content-aware GUI and intelligent defaults simplify management. Auto discovery and full-server selection help to eliminate stranded, unprotected data.

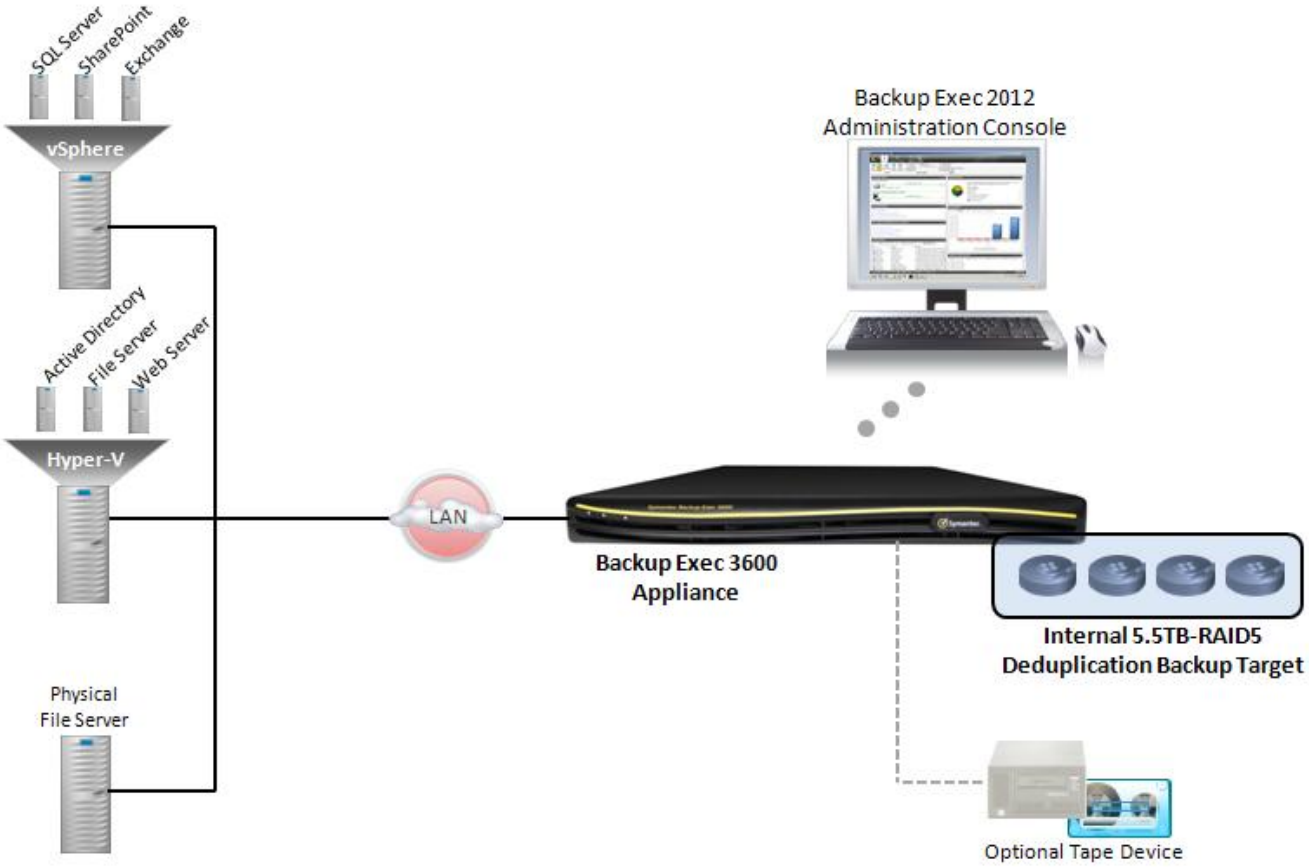
Backup Exec 2012 includes integrated source and server-side deduplication, enabling up to 90% reduction in storage capacity and reducing network bandwidth costs. Deduplication can be implemented across all protected data, not just by job, ensuring maximum savings. [3]

[3] For additional information on Backup Exec 2012, see the companion ESG Lab Validation, *Symantec Backup Exec 2012*, April 2013.

ESG Lab Test Bed

The ESG Lab test bed was designed to demonstrate Backup Exec 3600 Appliance features for protecting physical and virtual servers, and leveraged both VMware vSphere 5.0 and Microsoft Windows Server 2008 Hyper-V. As shown in Figure 2, the environment included one Backup Exec 3600 Appliance, a physical Windows 2008 R2 file server, and both vSphere and Hyper-V hosts. The backup data included physical file servers, VMware and Hyper-V file server VMs, and Exchange, SQL Server, and Active Directory VMs.

Figure 2. ESG Lab Test Bed



ESG Lab Validation

ESG Lab performed hands-on evaluation and testing of the Backup Exec 3600 Appliance at the Symantec facility in Heathrow, Florida. Testing was designed to demonstrate the ease of deployment of a single appliance for protecting virtual and physical servers. Also of interest were ease of management and cost-effectiveness.

Out-of-the-Box Experience with Backup Exec 3600 Appliance

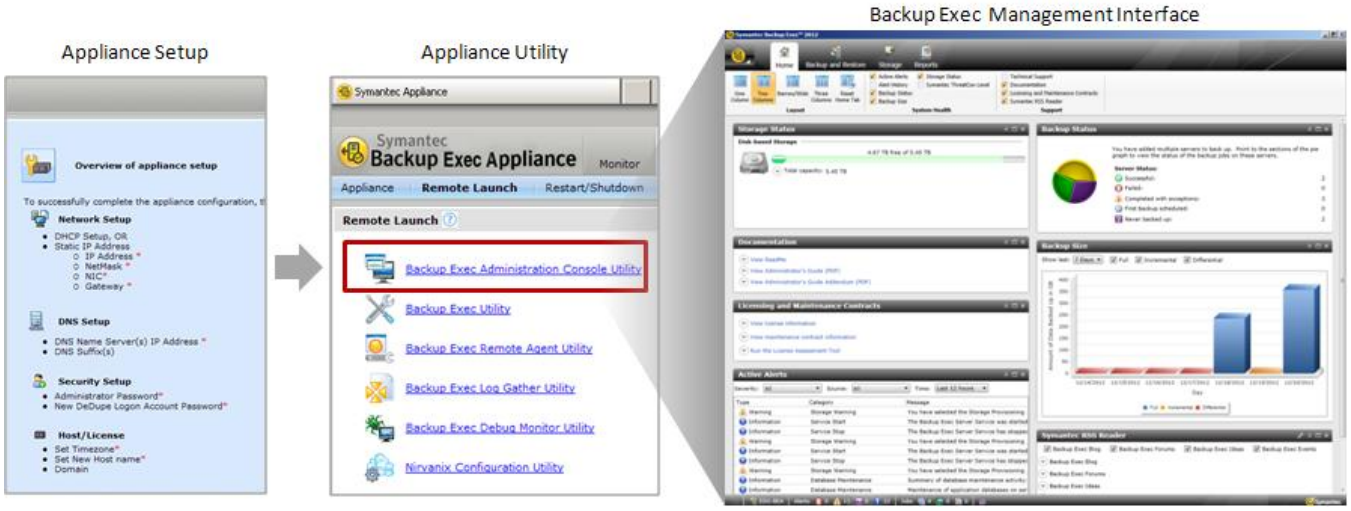
Deploying a backup environment can be time-consuming, tedious, and expensive, requiring IT to procure, test, assemble, integrate, and manage silos of resources. An integrated appliance, on the other hand, can be sized efficiently, deployed quickly, and managed easily. Successful implementation is virtually guaranteed, and can be completed in a short time.

ESG Lab Testing

ESG Lab began by unboxing a shrink-wrapped Backup Exec 3600 Appliance, including hardware, accessories, and documentation. After placing it in a rack, the Lab connected an Ethernet cable to a Windows laptop, plugged in the Appliance, and powered it on. Next the Lab set the IP address and sub-net as instructed in the Quick Start Guide. After opening a Web browser, navigating to the designated URL, and affirming security, the Backup Exec 3600 Appliance Web UI displayed the login screen, and we confirmed that the Appliance had passed the self-test.

Next, the Lab connected an Ethernet cable between the Backup Exec 3600 Appliance and the local network, logged into the Web UI with the administrator credentials provided, and navigated to the **Appliance Set Up** screen as shown in Figure 3.

Figure 3. Configuration



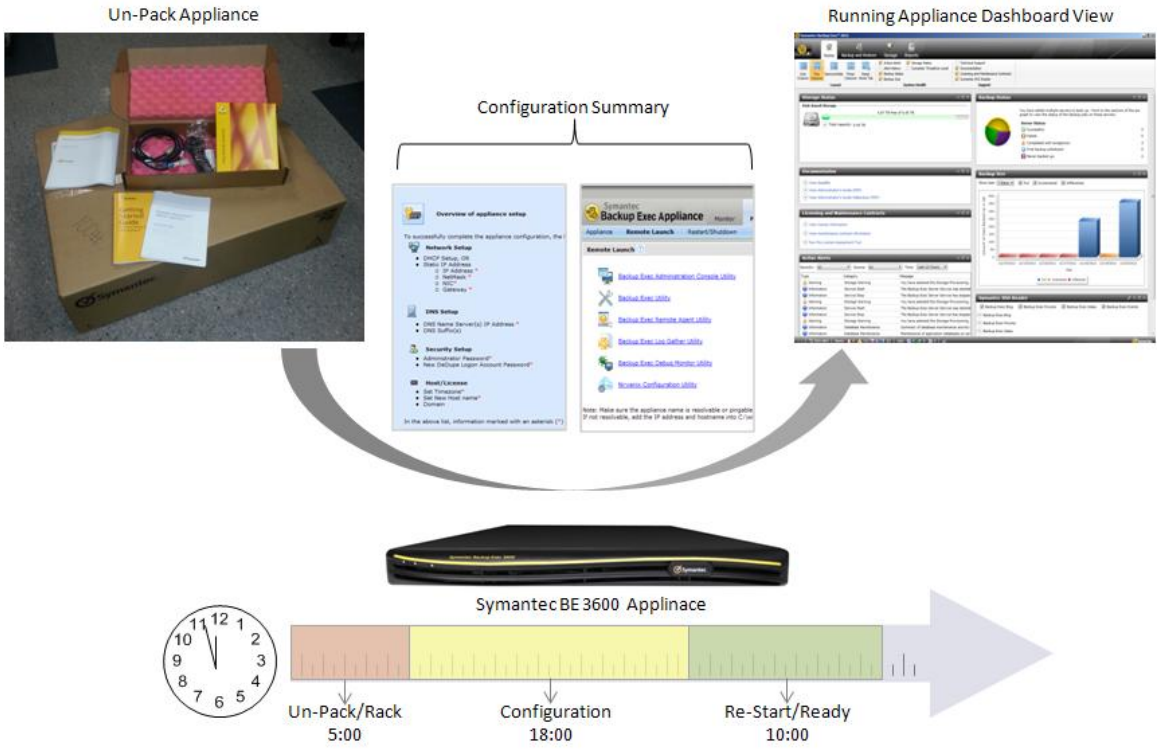
The Lab configured DNS, security, language, and time zone, changed the host name, signed the license agreement, and clicked ***Next*** to re-boot the Appliance. After 10 minutes the Appliance re-started; after verifying configuration and self-test, the Lab logged in with a new password, and clicked on the **Monitor** tab to see the Appliance summary. From the monitor tab in the web-based appliance management utility, the Backup Exec 2012 management interface was launched as show in the middle and right side of Figure 3.

The setup procedures are summarized in Figure 4, and included:

- Un-packing the appliance, cables and manuals.
- Reading the quick start guide.
- Setting up the initial network connectivity.
- Configuring environment and profile attributes (e.g., time zone, language, network, security and licenses).
- Rebooting and configuration.
- Launching Backup Exec Interface.

As shown in Figure 4, the entire process took approximately 33 minutes. At this point the Backup Exec 3600 Appliance was up and running, ready to check for software updates and configure the first backup.

Figure 4. Out of Box to Running Appliance Elapsed Time



Finally, as shown in Figure 5, the Lab connected to the Backup Exec UI and confirmed automated setup of the disk-based backup storage target. The disk target is enabled for deduplication and is completely contained on an internal RAID5 disk set. The disk-based storage provides approximately 20TB of backup capacity and eliminates the complex and time consuming process of provisioning external storage for backup operations.

Figure 5. Pre-Configured Disk Based Storage with Deduplication

It should be noted that the appliance comes configured with a built-in SAS card for tape out capabilities. This can be leveraged to stage longer term backup retention jobs to removable tape media, thereby extending the capacity of the built-in disk target. ESG Lab easily configured an optional LTO-5 stand alone SAS tape drive using the Backup Exec tape configuration wizard.

ESG Lab also verified that the hardware interface was simple and well labeled, status lights were informative, and documentation was complete and easy to understand.

Why This Matters

Creating your own backup appliance can take days to research, purchase, and setup the hardware and software, and that's assuming there are no problems. Alternatively, an appliance-based solution is more affordable, needs no integration, delivers faster time-to-value, and is purchased and supported by a single vendor. If an appliance can also eliminate the need to run multiple, parallel backup and recovery applications to serve different groups of servers (virtual vs. physical, VMware vs. Hyper-V, etc.), then it will vastly simplify the environment and reduce costs.

ESG Lab validated the speed and convenience of deploying the Backup Exec 3600 Appliance. Following the simple steps in the Quick Start Guide, ESG Lab had the appliance ready for the first backup in 33 minutes, with storage already configured and available. The self-contained appliance approach eliminates the need for a storage subject matter expert to configure and provision production storage resources for the backup environment, ultimately saving time and money. Data centers, departments, and remote/branch offices all benefit from the packaged functionality of the Backup Exec 3600 Appliance.

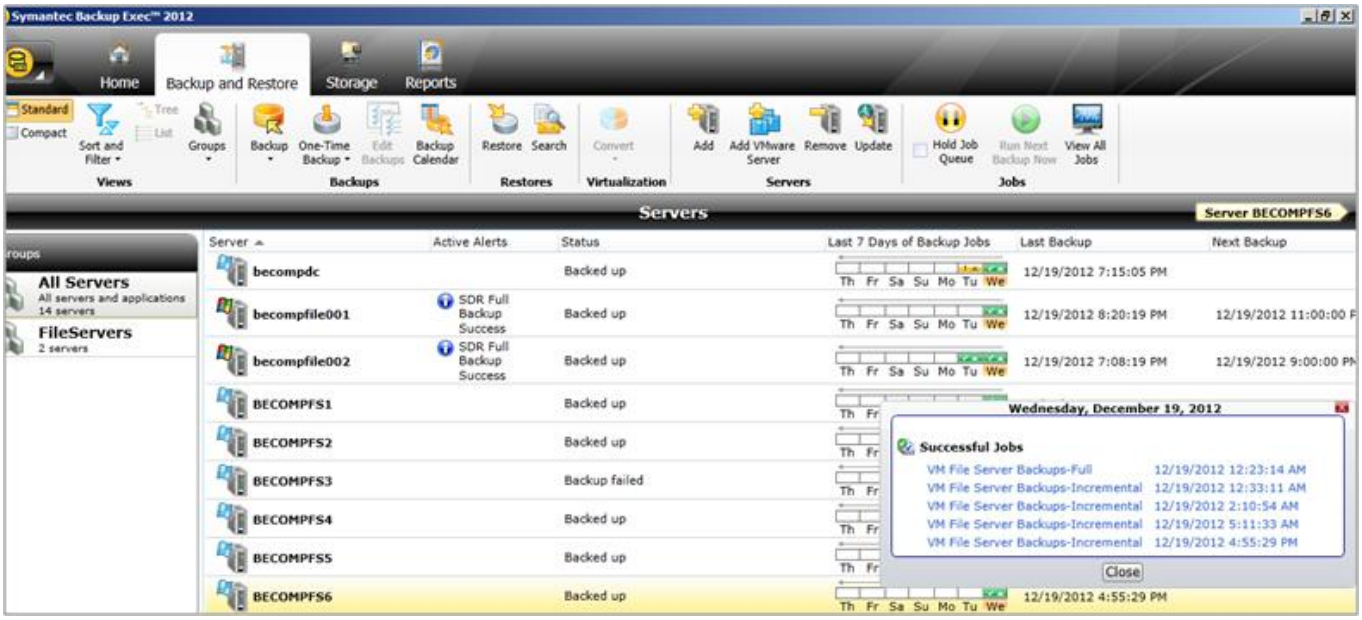
Ease of Management

Managing backup has traditionally been cumbersome, based on hundreds of individual jobs distributed among different applications and data types, with various silos of equipment. As environments grow and change – and as VMs enter the backup workflow – backup management can get out of hand. The ability to tailor backups for every type of data from a central location, using a storage appliance with advanced protection software, can help to ensure the right protection for all jobs while keeping costs down.

ESG Lab Testing

ESG Lab began by exploring the Backup Exec 2012 software which is integrated into the Backup Exec 3600 appliance and protects physical and virtual machines, including mixed hypervisors. The Backup and Restore tab is shown in Figure 6, with servers listed on the left: an Exchange VM, six additional VMware and Hyper-V VMs, and two physical Windows servers. For each server, columns display active alerts, current status, a segmented bar showing status of the last seven days of backups (with successful jobs in green), and dates/times of the last and next backups. Activity-based buttons are shown at the top for executing tasks in various categories: Views, Backups, Restores, Virtualization, Servers, and Jobs. Also of note is the *Groups* tab, under which administrators can define a backup job and apply it to a group of servers; behind the scenes, Backup Exec 2012 creates individual jobs so that each job can be individually configured if necessary.

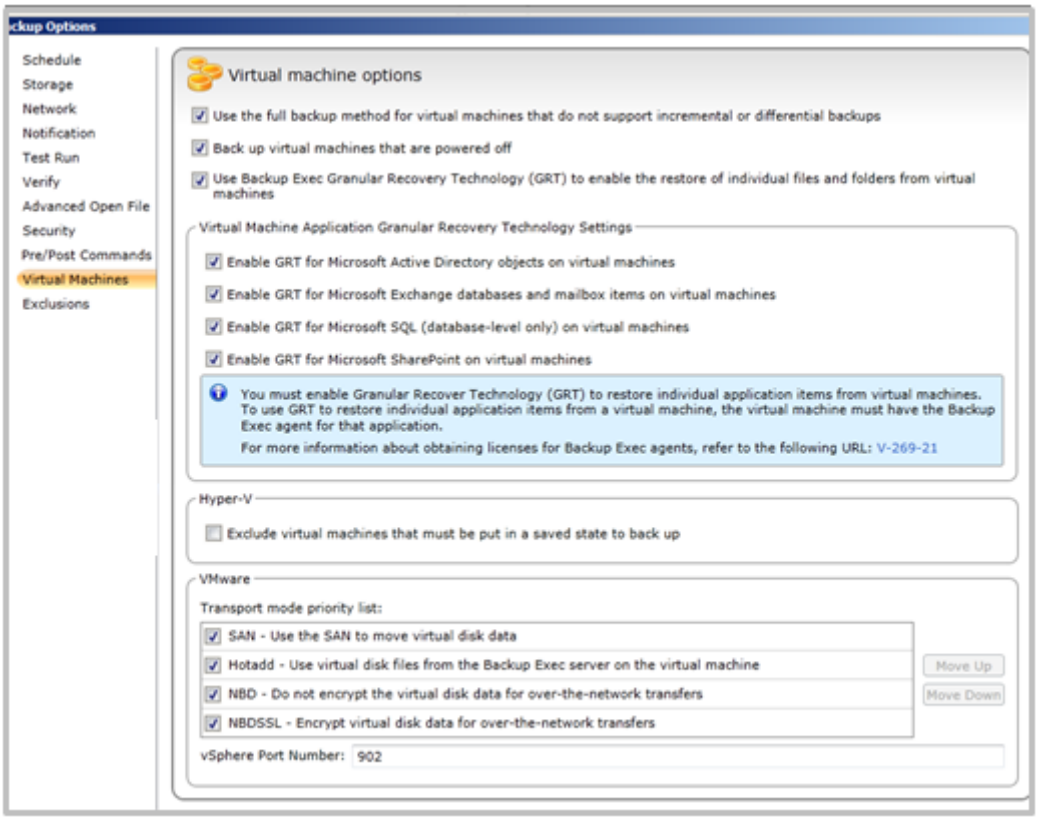
Figure 6. Backup and Restore Tab – Server-centric view



Using this GUI, the Lab was able to view the status of each server's backup. By hovering the mouse over the green bar for server *BECOMPFS6*, a VMware guest machine, the Lab was able to drill down on a particular date and view a clickable, pop-up list of successful full and incremental backup jobs for that VM on that date. If multiple servers are selected, multiple job histories are viewable. It should be noted that administrators can review any and all job histories without leaving the Backup and Restore page.

Next, the Lab looked at restore options for Microsoft applications. The Backup Exec 3600 appliance displayed the context-specific options available, as shown in Figure 7 below; because we had used the Exchange agent-based backup, granular restore options were available.

Figure 7. Virtual Machine Backup Options



Why This Matters

Backup administrators tend to wear many hats and juggle IT tasks across various domains, particularly in small to midmarket organizations. Also, in remote and branch offices there may be limited IT skills and equipment, making data protection in these locations unreliable. For both data centers and remote offices, the addition of virtual machines that need to be backed up further complicates the process. An appliance that comes already configured with deduplicated storage and an advanced backup application can make it much easier to protect data. Delivering the right backup and restore characteristics for each type of data from a single console can shrink a myriad of tasks down to manageable size, even as the environment scales.

ESG Lab validated that the Backup Exec 2012 interface configured with the Backup Exec 3600 Appliance was intuitive and easy to use. Managing backup and restore tasks was simple, and the dashboards made it easy to get an overview of job status. Drill-down detail was readily available without custom scripts or add-on tools. Further simplification comes with the content-aware GUI that eliminates options not relevant to the data and environment. Multiple options for VM backup and granular restore ensure that administrators can easily provide the right service with minimum effort.

Cost-effectiveness

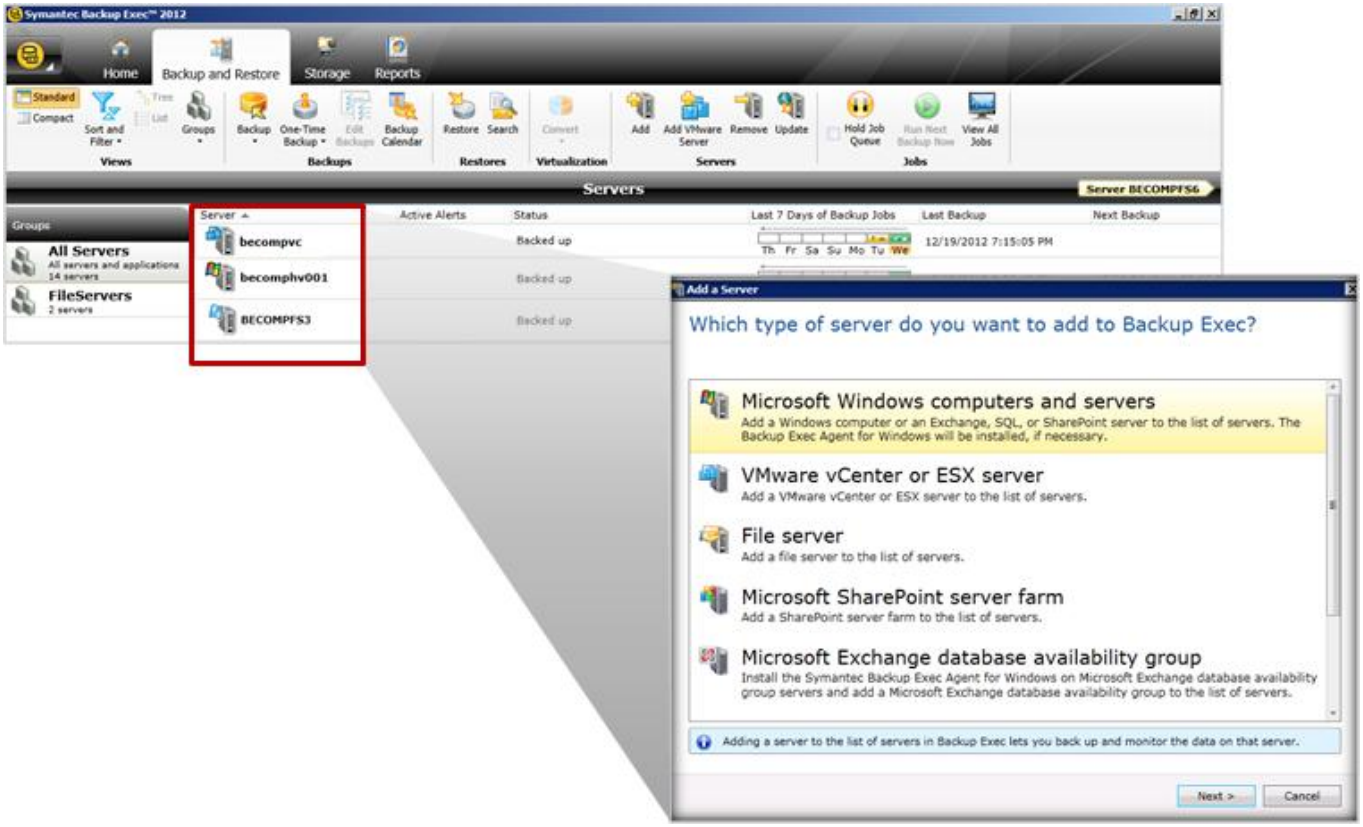
A significant part of the value of an appliance is its cost-effectiveness. To test the Backup Exec 3600 Appliance in this regard, ESG Lab focused on three features: 1) bundling of hardware and software to protect many data types, which reduces both equipment and management needs; 2) built-in deduplication for capacity savings; and 3) the ability to convert a backup to a VM for fast recovery on any hardware.

ESG Lab Testing

ESG Lab explored the unified backup capabilities of the Backup Exec 3600 Appliance. Instead of running multiple point to solutions to protect different data types – including various applications, hypervisors, and both physical and virtual servers – the 3600 protects them all from a single interface, with built-in RAID-protected storage and deduplication.

With the storage already configured in the appliance, the Lab simply added servers and initiated backup jobs. The Backup and Restore tab is shown in Figure 8, with multiple servers selected. After clicking the ***Add*** button, Backup Exec displayed the relevant protection options. The red box in Figure 8 shows that three different server types were added from the same management window: a vCenter server containing multiple guest VMs (*becompvc*), a Hyper-V host (*becomphv001*), and a file server VM (*BECOMPFS3*).

Figure 8. Adding Servers- VMware, Hyper-V, Physical



Once servers were added, the Lab selected a 60GB Exchange VM from the vCenter host by right-clicking, applied the agent to enable granular restore, and clicked ***Run Now*** to initiate a backup.

Next, ESG Lab explored built-in deduplication within the Backup Exec 3600 Appliance. As show in Figure 9, the Lab reviewed storage utilization for a backup job that consisted of one full and eight incremental backups. Figure 9 shows how deduplication built into the 3600 maintained an almost consistent capacity on the backup target while the data being protected increased between backup jobs due to normal user interaction.

Figure 9. Backup Exec 3600 Appliance Data Deduplication

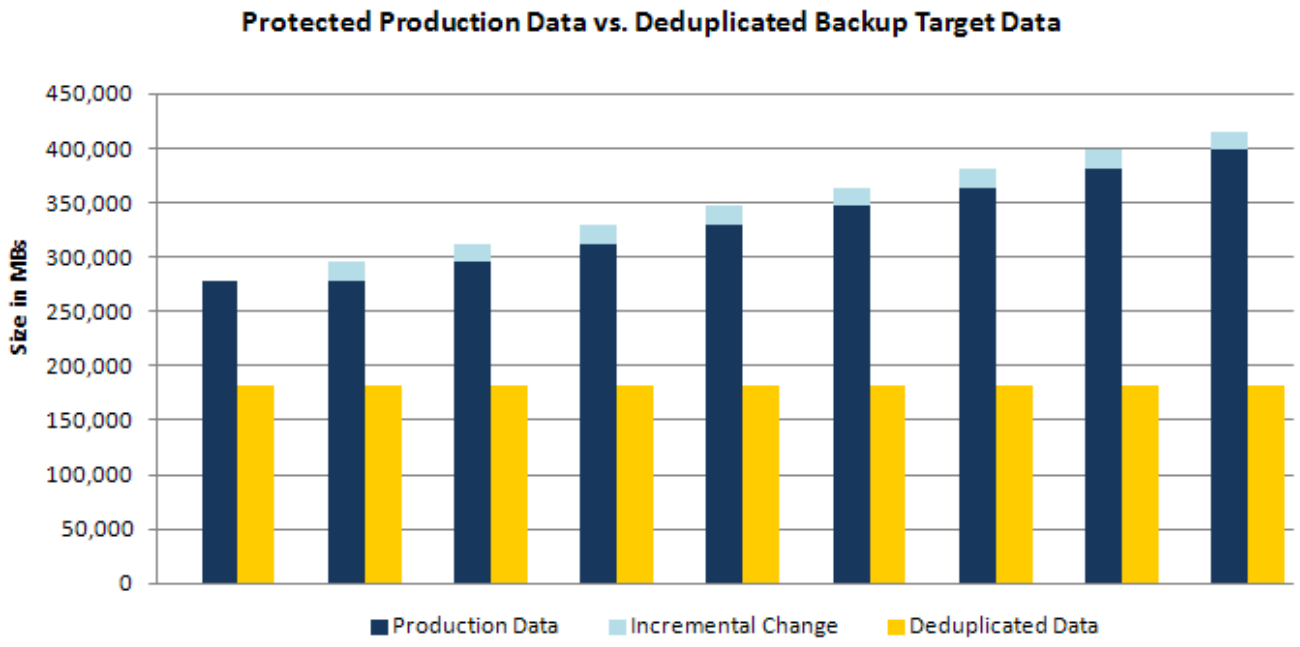


Table 1 shows the results of the ESG Lab deduplication testing.

Table 1. Data Deduplication Detail

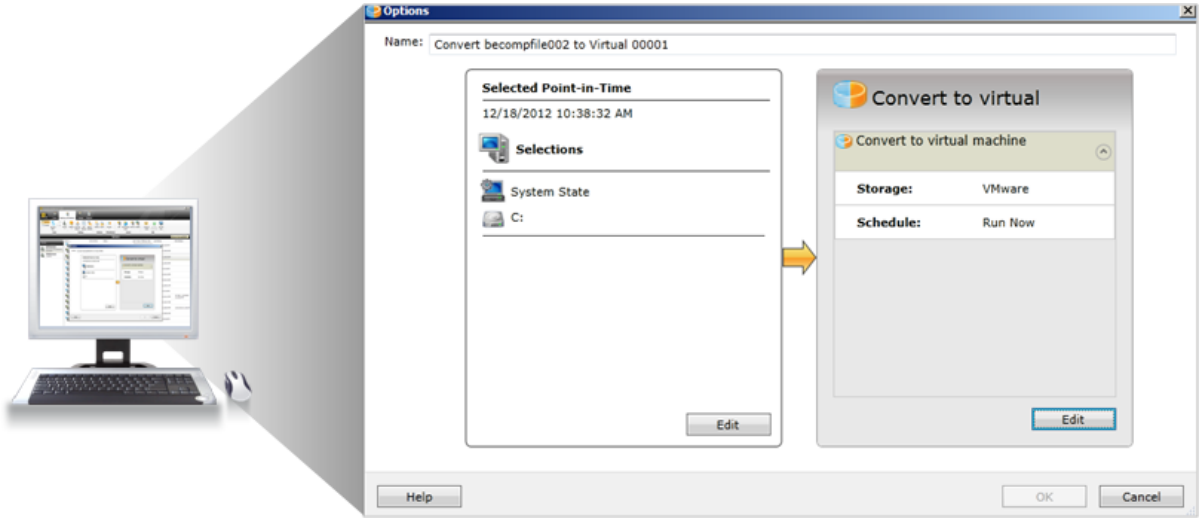
First Full	Incr. #1	Incr. #2	Incr. #3	Incr. #4	Incr. #5	Incr. #6	Incr. #7	Incr. #8
1.53:1	1.63:1	1.72:1	1.82:1	1.92:1	2.01:1	2.1:1	2.2:1	2.29:1

What the Numbers Mean

- Backup Exec deduplication maintained an almost consistent backup target capacity as user data increased.
- The deduplication ratio increased from 1.53:1 to almost 2.3:1 over the short testing period.
- The testing period was only two days in duration.
- The incremental backup data added between jobs was more random than real world data.
- Only one full backup of the data set was conducted during the test period.
- **ESG Lab would expect the deduplication to increase significantly with a longer cycle and real world data**.

Finally, the Lab reviewed the ability of the solution to create virtual machines from backups of physical servers. This enables IT to restore a backup to any hardware. The conversion process can be performed on an existing backup or as part of a stage after a backup so that the server is instantly available as a virtual machine. As shown in Figure 10, the Backup Exec conversion wizard was launched by the Lab to create a virtual machine from a backup of a physical file server, *becompfile002*.

Figure 10. Backup Exec P2V Conversion Wizard



The wizard directed the process by presenting clearly defined steps for each selection option. ESG Lab converted the backup to a VM on a Hyper-V host with a new name (*VM-BECOMPFILE002)* to distinguish it from the physical host in the environment. The lab booted and ran the VM successfully.

Why This Matters

Running multiple backup solutions to protect different data types is costly in both equipment and management effort. In addition, as "VM sprawl" can create duplicate copies of operating systems, applications, and data that clog the backup stream, backups take longer and consume enormous amounts of costly network bandwidth and storage.

ESG Lab validated that the Backup Exec 3600 Appliance saves money by protecting physical, virtual, and mixed-hypervisor environments from a single screen, with built-in deduplication that proved to reduce capacity requirements and minimize costs. The Lab also validated the ability to convert a backup to a VM, restore it, and run it, eliminating the need for additional or dedicated hardware.

ESG Lab Validation Highlights

- ☑ ESG Lab found Backup Exec 3600 Appliance extremely easy to deploy, with time-to-first-backup from a shrink-wrapped box in 33 minutes.
- ☑ The Lab noted that the Backup Exec 3600 Appliance, configured with Backup Exec 2012 software, ensures easy management and multiple restore options right out of the box, for physical and virtual backup across multiple operating systems and applications.
- ☑ ESG Lab believes that the single appliance with built-in deduplication and features such as P2V conversion will enable organizations to reduce the costs of backup and recovery, as it offers full protection with less equipment and effort.

Issues to Consider

- ☑ Currently the Backup Exec 3600 provides LAN-based backup only; the addition of a fibre channel SAN option would increase scalability.

The Bigger Truth

ESG research indicates that cost reduction initiatives have returned as the top business initiative impacting IT spending decisions.[4] This leads organizations to look for ways to get critical tasks completed at a lower cost, and appliances can be a key part of that strategy. For example, a backup appliance can ensure that remote and branch office data is fully protected without having to assign IT staff to handle it. In addition, appliances can enable backup and recovery at any location without the expense of planning and qualifying components, zoning, provision, and CPU, disk, and memory configuration.

The Backup Exec 3600 Appliance provides a simple, cost-effective, low-risk option for virtual and physical data protection. Customers gain the advantage of an integrated hardware and software solution that is fast and easy to deploy, built by a field-proven backup and recovery vendor with 30+ years of experience. For some, the Backup Exec 3600 Appliance is a great way to provide advanced data protection for mid-sized companies with small sites and remote offices; for others, it offers a natural migration from previous versions of Backup Exec.

ESG Lab was pleased to able to go from box to backup in about one-half hour. We found the setup effort to be about as challenging as setting up a new laptop on your home wireless network. The pre-configured disk backup target eliminated the time, effort, and planning typically required for implementing external disk storage devices. The Backup Exec 3600 Appliance made it easy to get started with both virtual and physical backups. After the configuration reboot the Lab was able to immediately focus on setting up data protection jobs rather than dealing with device configuration issues.

With the Backup Exec 3600 Appliance, customers get in a single package the right hardware and the right software for all their backup needs. Whatever their backup environment–physical, virtual, or unified–they benefit from Symantec's years of expertise. The Backup Exec 3600 provides deduplication for network and storage savings, greater backup and recovery options that speed productivity, and intuitive management designed using customer best practices and intelligent defaults. With the storage already configured and available, customers can be up and starting backup jobs in a matter of minutes.

[4] Source: ESG Research Report, *2013 IT Spending Intentions Survey*, January 2013

Appendix

Table 2. ESG Lab Test Bed Detail

Operating Systems and Software	
Symantec	Backup Exec Version: Backup Exec 2012
Microsoft	Windows Server 2008 Version: Windows Server 2008 R2 with Hyper-V
VMware	vSphere Version: vSphere 5.0
Microsoft	MS-Exchange Version: Exchange 2012
Microsoft	MS-SQL Version: SQL Server 2012
Servers	
Symantec	Backup Exec Appliance Model: 3600
Dell	Model: PowerEdge R815 CPU: AMD Opteron Memory: 24 GB RAM
Dell	Model: PowerEdge R610 CPU: Quad Core Intel Xeon Memory: 24 GB RAM
Storage	
Quantum	LTO-5 Stand Alone Tape Device

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