

Symantec NetBackup™ Appliances: Key Factors in Modernizing Backup and Recovery

Who should read this paper

Directors of IT and IT Managers

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Executive summary

There is a definite need for better data protection solutions in today's enterprise data centers. The question is whether to continue with software-only backup and recovery solutions, or to make the move to a purpose-built backup appliance with deduplication capabilities. Clearly, the simplicity and completeness of the appliance model are attractive, but what other less-obvious considerations should weigh into the decision? This paper provides a structured approach to assessing the advantages of the appliance model. It summarizes the trends that have made modernizing backup and recovery an urgent priority, the key requirements for solution offerings, and the unique capabilities of Symantec NetBackup™ appliances in delivering a simple, complete, and cost-effective solution.

What's driving the need for better backup and deduplication?

The data explosion shows no sign of abating. According to IDC studies, the pace of data growth still exceeds 60 percent per year for most enterprises—and is even higher for companies with data-intensive applications, in high-growth markets, or with widely distributed data centers or workers.¹

All of this data needs to be backed up and recovered when necessary, and that is becoming increasingly expensive and time-consuming with traditional solutions. Even with the rise of storage consolidation strategies, higher capacities in storage media, and technologies such as storage virtualization, businesses are spending a higher percentage of their IT budget on acquiring and managing storage resources. Other factors compound the problem, such as:

- Traditional backup products generally require a rotational schedule of full and incremental backups. This often results in bandwidth issues and sluggish network performance—which can be disruptive for end users, diminish backup service levels, and increase the odds of data loss.
- Organization may backup to tape, disk, or cloud, and utilize snapshots for data protection. Recovering a single file can be time-consuming, require complex steps, and delay business operations.
- Deduplication has traditionally been delivered as an appliance that sits behind the backup application and alleviates backup issues caused by tape, but these appliances typically do not perform both source and target deduplication, limiting their effectiveness.

At the same time, the complexity of data backup continues to escalate. The massive influx of data from multiple sources has resulted in the implementation of piecemeal backup and recovery solutions from multiple vendors. In addition, managing virtual machine (VM) backups adds a new layer of complexity and cost. And older backup technologies, such as tape and virtual tape libraries (VTL), often consume excessive bandwidth on the company's local and wide area networks. Perhaps even more serious, the high cost of data backup, recovery, and replication sometimes forces IT to cut corners to execute the company's overall disaster recovery strategy, which in turn increases the risk of a catastrophic loss of data and raises potential compliance, regulatory, and even liability issues.

Clearly, a better approach is needed. These challenges directly impact business strategy, IT productivity, and overall financial results for the enterprise.

¹ IDC, Worldwide Data Protection and Recovery Software 2010-2014 Forecast: Cloud, Deduplication, and Virtualization Stabilize Market, August 2010, By Robert Amatruda, Research Director, Data Protection and Recovery, IDC #224526, Volume 1

Backup appliance requirements

There are many technologies, products, and services available for backup and recovery, each with its own strengths and weaknesses. The appliance model has gained traction because of its simplicity, but there are other important but less obvious considerations that should not be neglected. While every business has its own unique set of requirements, in general the key attributes to consider include:

- **Simplicity:** Is it easy to install, configure, and use? Is the solution easily ordered and shipped fully integrated to the site? Can the system be installed and operational in minutes? How many different components are you managing for firmware and patch updates?
- **Completeness:** Is it a packaged, all-in-one solution? Or are there multiple components to implement and vendors to manage? Will administrators require more training before they can use it? Does it provide end-to-end global deduplication? IDC has defined purpose-built backup appliances (PBBA) in two categories: target systems and integrated systems.²
 - *Target systems* are used in conjunction with third-party backup software and designed to integrate in heterogeneous environments.
 - *Integrated systems* are tightly integrated with backup software to orchestrate the backup and movement of data.
- **Performance and scalability:** How long will backups take? Will it bog down the network and impact employee productivity? What's the maximum capacity it can accommodate? Can performance scale to meet changing business and data storage requirements?
- **Flexibility:** Can it be deployed for a variety of use cases? Does it support all of the operating systems and applications? Does it provide flexibility in terms of how deduplication is implemented? Will it support both virtual and physical environments?
- **Cost efficiency:** How will it reduce capital expenditures (CapEx) and operating expenditures (OpEx)? What are the licensing costs for short-term and long-term? Are there any long-term strategic cost benefits?
- **Future-readiness:** Will it support and leverage new products and technologies as they emerge? Are the software licenses transferrable to newer, faster appliances?

The next sections illustrate how Symantec's solution addresses each of these key categories.

The Symantec solution: NetBackup appliances

Symantec is well known for its award-winning backup and recovery solution, Symantec NetBackup™ 7.6, which is used by tens of thousands of organizations to simplify and cut the cost of data protection throughout the enterprise.³ NetBackup appliances compound the benefits of NetBackup 7.6 by providing turnkey backup and recovery with deduplication solutions in an easy-to-deploy form factor. The integrated appliances enable efficient, storage-optimized data protection for the data center, remote office, and virtual environments. Two NetBackup integrated appliance series are available. They are complementary products and form a product family. Each appliance addresses different customer needs based on performance, capacity, resiliency, and price.

- **Symantec NetBackup™ 5200 Appliances:** Model 5230 is a versatile integrated backup appliance that can be deployed as a master server, or media server, or both, for a NetBackup domain. As a cost-optimized appliance it simplifies and offers OpEx savings over traditional build-your-own media servers.
- **Symantec NetBackup™ 5300 Appliances:** Model 5330 is an integrated backup media server with storage to support greater performance, capacity, and resiliency requirements. It is designed for larger enterprises, data centers, and disaster sites and optimized for performance and resiliency.

Why an integrated appliance? The appliance concept is well understood by enterprise customers but is particularly advantageous in the case of NetBackup appliances. These backup and recovery appliances eliminate the need to acquire, install, configure, test, manage, patch,

² IDC, Worldwide Purpose - Built Backup Appliance 2012 - 2016 Forecast and 2011 Vendor Shares, April 2012, By Robert Amatruda, Research Director, Data Protection and Recovery, IDC #234489, Volume 1.

³ VMworld 2012 and 2012 Quality Award.

and support separate hardware and software from multiple vendors. Now organizations can simply install a NetBackup appliance and have a backup and recovery solution with built-in deduplication up and running in a matter of minutes.

How NetBackup appliances address the core requirements

With the overview of NetBackup appliance product families and use cases in mind, let us now return to the list of customers' core solution requirements and consider how the appliances address each of them.

- **Simplicity:** "You can be up and running in 8 steps and in less than 25 minutes with NetBackup appliances."⁴ They arrive with all necessary hardware and software components pre-installed, can be set up for production use immediately, and are optimized for performance. In addition, day-to-day monitoring of backup operations requires minimal administrator intervention, allowing for lower operational costs. NetBackup appliances manage multi-site backup operations from a single, intuitive, Web-based management console. This includes administration of day-to-day backups, restores, replication, and reporting. Users can manage appliances using the familiar NetBackup administration console. The appliance also allows monitoring of key hardware components such as the disks, memory, power supplies, and fans. Symantec and the user are notified of any hardware component failures via the phone home feature.
- **Completeness:** Hardware, software, and support are all managed by Symantec. There is no need to unbox, load, install, test, manage, and support multiple solution elements; there is no need to integrate with other solutions from other suppliers. Equally important, both source and target deduplication is provided by one integrated solution.
- **Performance and scalability:** NetBackup appliances feature extremely high backup performance via unique multi-dimensional scalability, and performance can be scaled to run tens of thousands of backup jobs per day. In contrast with third-party target deduplication appliances where performance can be improved only by upgrading or adding hardware, the NetBackup deduplication architecture scales out at multiple levels. While adding more NetBackup appliances to a global deduplication pool increases processing power and storage capacity, the performance can also be increased by distributing deduplication processing to multiple media servers and/or to clients. For more performance information, please [visit our site](#).
- **Flexibility:** NetBackup appliances are fully integrated with existing NetBackup environments; there is no complex or disruptive migration process, no time-consuming retraining effort required. The appliances support both source-based and target-based deduplication, in-line or post-process deduplication, and virtual and physical environments. They can be deployed in a wide range of use cases, and they support all major operating systems and applications natively, so they can accommodate multiple data types and sources.
- **Cost-efficiency:** NetBackup appliances can deliver immediate CapEx savings by allowing customers to consolidate backup and recovery solutions into one platform and delay or avoid additional hardware purchases. They deliver both immediate and long-term OpEx savings by unburdening administrators via centralized management. Moreover, the front-end, capacity-based licensing model (buy it once, use it forever) for the software portion of the appliance significantly reduces the total cost of ownership as compared to other hardware-based deduplication solutions. The NetBackup appliances deliver strategic cost advantages:
 - Reduced data loss due to better backup service levels
 - More complete disaster recovery strategy resulting in higher system reliability
 - Improved ability to meet service-level agreements
- **Future-readiness:** Symantec is the market share and industry leader in backup and recovery—and the company is dedicated to continuing to lead this segment and meet customer needs by offering new delivery models and product features.⁵ In addition, Symantec and its channel partners are deeply committed to providing outstanding service and support for NetBackup appliances. The platform will continue to evolve and grow in the years ahead.

⁴ ESG Lab Review Symantec NetBackup 5230 Appliance. The Enterprise Strategy Group, December 2013. Authors: Vinny Choinski, Senior Lab Analyst, and Kerry Dolan, Lab Analyst.

⁵ Gartner Magic Quadrant for Enterprise Backup/Recover Software, 11 June 2012, ID: G00231127, Analyst(s) Dave Russell, Alan Dayley, Shelia Childs, Pushan Rinnen.

Wide range of use cases

NetBackup appliances can be used in a broad array of deployment scenarios, including:

- **Refreshing media server and point products:** NetBackup appliances provide significant OpEx savings and CapEx savings when it is time to replace obsolete or depreciated hardware. NetBackup appliances are fully integrated, streamline the acquisition and installation processes when deploying the solution, and provide on-going savings through the administration, ease of patching, and one point of contact for support. In addition, NetBackup appliances deliver CapEx savings by consolidating and eliminating point products: 1) saving valuable floor space, power, and cooling and 2) purchasing multiple hardware and software licenses and maintenance.
 - **Replacing and upgrading NetBackup media servers:** NetBackup appliances are a quick and easy way to upgrade or replace existing NetBackup media servers. No longer do administrators have to build and integrate media servers, or pay for expensive integration services. NetBackup appliances are fully integrated, performance optimized, and install in minutes.
 - **Upgrading early generation deduplication target appliances:** Many organizations are faced with replacing obsolete deduplication appliances or have outgrown their current system. Often this requires a fork-lift upgrade to replace the hardware and purchasing all new software. NetBackup appliances address this challenge through their scalability and independent hardware and software licensing. NetBackup appliances can scale both performance and capacity to provide greater total cost of ownership. Independent software licensing allows customers to upgrade the NetBackup appliance and then transfer the software license to the new system; providing significant CapEx savings over competitor solutions.⁶
 - **Providing a superior alternative to virtual tape libraries (VTLs):** NetBackup appliances are perfect for replacing aging VTLs. Often VTLs were implemented to replace physical tape libraries with disk-based storage. While VTLs brought the reliability of disk for backup storage, they fail to deliver the full potential of disk as a storage target due to the emulated tape interface. The backups must be streamed through the network or systems must be configured as backup servers to take advantage of storage area network (SAN) connectivity. NetBackup appliances require no tape emulation, thereby improving the throughput. In addition, NetBackup appliances offer source deduplication, which further minimizes network usage. Customers are able to improve their backup performance and reduce their reliance on point solutions when replacing their VTLs with NetBackup appliances.
- **Remote office backup/consolidation:** Traditionally, the cost of protecting remote offices has been high due to the cost of managing servers, backup applications, storage (typically tape), and off-site transportation requirements. Client/source-side deduplication can reduce the cost of moving remote office data off-site. However, client-side deduplication typically does not work with deduplication appliances (Symantec is an exception) and requires client updates. If recovery options for remote sites demand local storage, minimizing the server and storage footprint with a backup storage and storage appliance can be advantageous. Traditional deduplication appliances require backup software on a server and a deduplication appliance. With NetBackup, a single appliance can handle backup, storage, replication, and recovery, managed through a single console.
- **Virtual machine backups:** Many organizations are struggling with virtual machine protection because there are many issues to address. What changes need to be made to the infrastructure to support virtual machine backups? Is additional storage required? Can the same backup component be used? With NetBackup appliances, all of those questions are answered by a single packaged solution. NetBackup appliances quickly and effectively protect virtual machines by reducing the size of the backup data across virtual machines. They also eliminate traditional backup bottlenecks caused by large amounts of data that must pass through the same set of shared resources on the host such as the Ethernet adapter, central processing units, memory, and disk resources.
 - **Managing data growth:** In the data center, the backup solution should be able to protect everything and handle different data formats. NetBackup appliances provide a complete backup solution with a single pane-of-glass administration interface for day-to-day

⁶ Symantec, Open letter to EMC: Change your Data Domain licensing model and stop taxing your customers, April 27, 2011, By Trevor Daughney.

data protection tasks and monitoring. NetBackup 5200 and 5300 series appliances are 100 percent purpose-built backup appliances, not mere storage targets. The appliances provide a turnkey solution, including hardware, software, and support, to implement a new NetBackup domain or refresh existing domains. In addition, NetBackup appliances allow organizations to protect their data today but prepare for the technologies and challenges of tomorrow.

- **Shrink the backup window:** NetBackup Accelerator reduces traditional full backup times to the speed of incremental backups reducing the stress of achieving recover time objectives (RTO) and recovery point objectives (RPO) of the most demanding service level agreements (SLAs).
- **Simplify snapshot replication management:** NetBackup Replication Director streamlines and accelerates snapshot replication management and granular file level recovery from any NetBackup managed replicated snapshot image.
- **Industry-leading virtual machine protection:** NetBackup 5230 has built-in support for VMware® vSphere™ and Microsoft Hyper-V®, and protects up to 4,800 virtual machines with one appliance. It enables both direct, proxy-less backups for vSphere and Local Area Network (LAN)-free backups for Hyper-V.
- **Use less storage to protect more data with intelligent deduplication:** With intelligent deduplication, where the backup stream is processed with an intelligent stream handler that understands application specific formats, NetBackup deduplication can reduce the storage required for backup images by up to 50 times.
- **Eliminate network flooding with source deduplication:** By deduplicating closer to the source, NetBackup appliances eliminate the need to transmit the entire data stream over network. This helps eliminate the need to make costly upgrades for network infrastructure just to maintain backup windows.
- **Disaster recovery:** In order to protect against a site loss, NetBackup appliances can be deployed at the site being protected and at a disaster recovery site. In the event of a disaster, the recovery is streamlined and simplified as the administrator does not have multiple domains or images to restore due to non-integrated or point solutions. All NetBackup appliances feature built-in wide area network (WAN) replication at no additional cost. With automatic image replication (AIR), backups from the source can be classified and selectively replicated to the disaster recovery site where it is ready for restore at any time
- **Leverage the cloud for storage tiering and addressing data protection gaps:** Cloud-based data protection is easily enabled with the seamless extension for the movement and storage of data from the premise to a growing list of cloud storage providers.

Customer example: Jefferson County Public Schools

Jefferson County Public Schools in Kentucky is growing its use of technology, and being recognized for its success by both [U.S. News & World Report](#) and [Newsweek](#).

To increase efficiency, reduce costs, and enable new services, the district is moving from paper to digital records. "We have over 40 million records that are being imaged with Microsoft SharePoint®, and we need to comply with record retention policies," says Annette Harris, Disaster Recovery Administrator. "Some of those records must be retained for 22 years before they can be destroyed."

The school district has more than 50 TBs of data and it's growing rapidly. The imaging project and other initiatives are projected to quickly boost that amount fourfold to 210 TBs. One major challenge is how to protect all this data against loss, destruction, or accidental deletion. When Harris joined the district at the end of 2010, the IT team was using a backup solution from another major vendor. "It was a short-term solution," Harris explains. "It was end of life and not designed with virtualized environments in mind. It also wouldn't let us keep more than 64 days of data on disk, and that was an issue since we had done away with tape backup. With disk space being as cost-efficient as it is now, there's no reason not to keep things on disk."

The school deployed a NetBackup Integrated Backup Appliance as a combined master server and media server. In addition, three (3) NetBackup 5020 Deduplication Appliances act as a single storage target. They form a pool of 96 TBs of usable disk space, able to accommodate almost a petabyte of pre-deduplicated data.

“The NetBackup appliances are nice because they’re easy to configure,” says Harris. “Everyone’s busy these days, and the appliances reduced our deployment time by about 75 percent, saving us about a week. They were up and running in four days.”

Much comes pre-configured with an appliance, Harris adds, “and you don’t have to worry about it. We migrated 90 percent of all data to the appliances in just two weeks.”

Additional results include backup and recovery success rates that as much as doubled to 99 percent, a 90 percent drop in storage needs due to deduplication, and a clear and practical roadmap to first-ever disaster recovery capabilities.

Conclusion

No two companies have precisely the same needs or requirements for backup and recovery solutions. However, NetBackup appliances meet the core requirements—and solve the challenges—associated with traditional backup and recovery approaches. They enable fast, reliable, storage, and bandwidth-efficient backups and recovery of data across data centers, remote offices, and virtual and physical environments.

For customers who are serious about modernizing their data backup and recovery solutions, NetBackup appliances are worthy of serious consideration.

About Symantec

Symantec Corporation (NASDAQ: SYMC) is an information protection expert that helps people, businesses, and governments seeking the freedom to unlock the opportunities technology brings—anytime, anywhere. Founded in April 1982, Symantec, a Fortune 500 company operating one of the largest global data intelligence networks, has provided leading security, backup, and availability solutions for where vital information is stored, accessed, and shared. The company's more than 20,000 employees reside in more than 50 countries. Ninety-nine percent of Fortune 500 companies are Symantec customers. In fiscal 2014, it recorded revenue of \$6.7 billion. To learn more go to www.symantec.com or connect with Symantec at: go.symantec.com/socialmedia.

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